Dune Protected Areas Network 1.0

Creating a Blueprint for Restoration in the Guadalupe Nipomo Dunes Complex

2018

DUNES COLLABORATIVE
Partners in Stewardship

THE LAND CONSERVANCY of San Luis Obispo County

Work Plan Summary and Recommendations

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1.1 Conservation Strategy Overview

Trust

There is a regional effort underway to manage the entire Guadalupe Nipomo Dunes Complex (GNDC) through a partnership known as the Dunes Collaborative. This partnership is made up of federal, state, private, and non-profit organizations such as US Fish and Wildlife Service (USFWS), the Land Conservancy of San Luis Obispo County (LCSLO), Guadalupe Nipomo Dunes Center, California State Parks - Oceano Dunes State Vehicular Recreation Area, County of Santa Barbara, State of California Coastal Conservancy and California Department of Fish and Wildlife (CDFW).

This partnership has been an important advocate of the restoration and preservation of the GNDC's native ecosystem. It was formed in 2001 in an effort to develop a partnership and maximize resources of federal, state, and private landowners in addressing restoration needs in the dunes following a 1998 settlement between the various State of California agencies and Unocal for injuries from contamination at the Guadalupe Oil Field which is within the GNDC. The Restoration Subcommittee (California Department of Fish and Wildlife, Office of Spill Prevention and Response, and California Coastal Conservancy) oversee the Trust. The Trust currently supports both restoration efforts (through the Restoration Task Force (RTF)) as well as visitor services (Visitor Serving Task Force (VSTF)).

The RTF assists the Restoration Subcommittee in the restoration planning efforts and restoration project implementation. Of the current Trust, approximately 3.6 million remains to support restoration efforts in the GNDC. The Restoration Subcommittee and the RTF have elected to reorganize the Trust into two phases to better protect pristine landscapes within the GNDC.

Phase 1: Major Spend Down (~$1.6 million)
A portion of the Trust will be spent quickly (the next 3 years) to support major restoration projects that will provide a defensible space for long-term management.

Phase 2: Long-term Endowment ($2 million)
The rest will remain intact as an endowment and only the interest (~3.5% depending on market conditions) will be spent annual for maintenance of selected restoration projects.

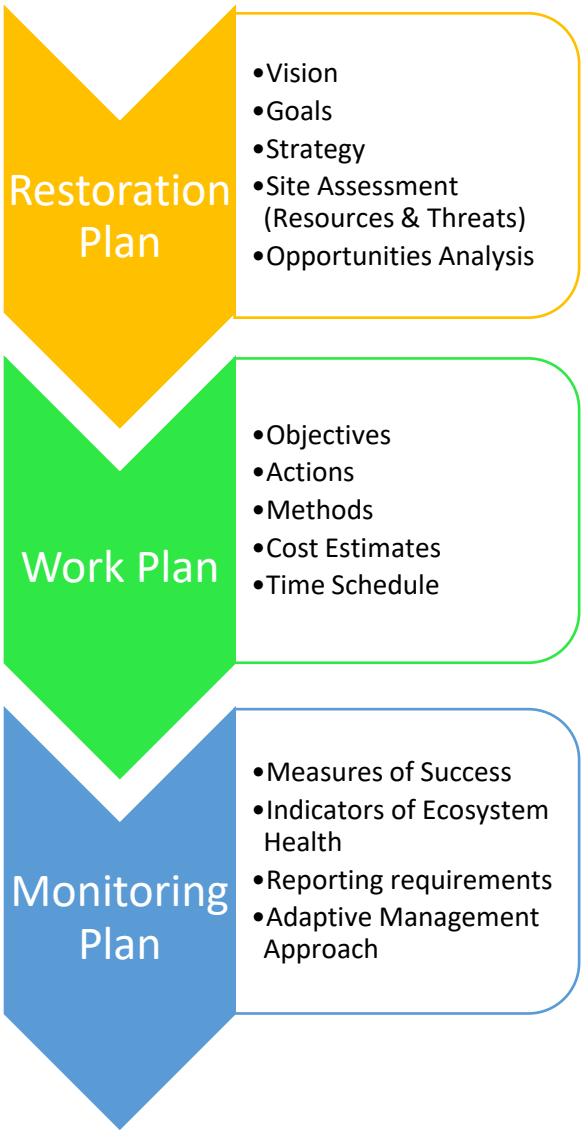
Conservation Strategy

Restoration funds from the Trust will be allocated based on the newly created Conservation strategy. The Conservation strategy is comprised of three overlapping components, a *Restoration Plan*, *Work Plan*, and *Monitoring Plan*. This Conservation Strategy will guide the management of both phases of the Trust.

The *Restoration Plan* outlines the concept and design of the Conservation Strategy and answers the question, what will be done? This provides the framework for the work to be accomplished. It is made up of a Vision for future conservation, Goals, and a Strategy to accomplish those Goals. These are fixed for the life of the Conservation Strategy. Also included in the Restoration Plan is a site assessment that identifies existing resources, the threats to those resources and identifies opportunities for conservation and restoration.

The *Work Plan* identifies how the Conservation Strategy is implemented. It answers the essential questions: How much effort will the Conservation Strategy take and what will it cost? The *Work Plan* includes Objectives, Actions and Methods to achieve those Objectives as well as cost estimates. These are time dependent and fluid. Work plans are meant to change over time based on adaptive management.

The *Monitoring Plan* measures progress towards achieving our Conservation Vision and informs subsequent actions. It is essential to knowing if your management actions are working or if you need to do something different. This can also be referred to as "adaptive management".



1.2 Vision and Goals

The RTF set forth a vision for future conservation of the Guadalupe Nipomo Dunes Complex:

The Dunes Collaborative promotes connected and continuous coastal dune complexes which support a diverse and healthy native ecosystem where plants and wildlife thrive and the dynamic nature of the dunes is preserved. These dunes will provide places of wonder for the local community, visitors, and future generations to explore and enjoy.

In order to promote this vision, the RTF identified the following goals for effective design of a Conservation Strategy:

1.3 Dune Protected Areas Network

The backbone of this Conservation strategy is a network of high priority conservation areas which promote the conservations goals, called the "Dune Protected Areas Network", or DPA Network. The DPA Network is based loosely on the "Green Infrastructure Network" concept (Figure 1) used in urban environments to protect natural habitats and pathways. It is an interconnected system of protected natural areas that conserve ecosystem functions while providing benefits for wildlife (Benedict, Edward, & McMahon, 2002). Each DPA consists of *core areas* and *hubs*, which are connected by *linkages*.

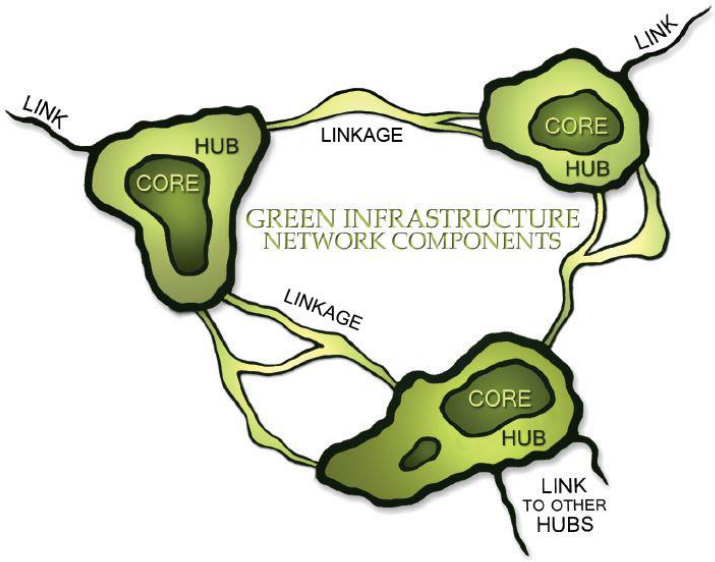


Figure 1: Green Infrastructure Network. The Dune Protected Network is roughly based on the Green Infrastructure Network used to create wildlife pathways through urban areas.

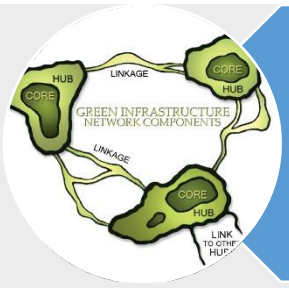
Core areas are the nucleus of the network and are chosen by their biological significance or pristine example of unique habitat. The core areas were first selected using conservation modeling software; a tool being used around the world to efficiently select unbiased areas for conservation. Consultation with the RTF, professional recommendations and available occurrence data of rare and listed species finalized the selection of each core area. These selected core areas are relatively undisturbed and have low invasive species intrusion.

Hubs buffer the core areas to offer additional protection against invasion and disturbance. These extensions of the core areas allow for less fragmentation of habitat types and offer continuous native cover. Hubs may contain multiple core areas, connecting them together as a unit.

Linkages are linear features connecting hubs together to facilitate wildlife movement, seed dispersal, and gene flow between core areas freely. Connectivity between hubs is essential for preservation of species in perpetuity. Connectivity was analyzed using Linkage Mapper software specifically designed to support regional wildlife habitat connectivity analyses (McRae & Kavanagh, 2011). The output of the software was modified to meet the needs of each DPA.

1.4 Management Strategy

Creation and management of this DPA Network is built around four key design elements:



1. Maintain intact (viable) landscapes The intent of this element is to protect and improve the ecological integrity and long term viability of the more intact (core) landscapes of the Dunes. Within these areas, priority actions would be to: repair historic impacts, remove threats and reinstate ecological processes.

2. Reverse declines This element aims to stem species declines and reinstate critical ecological processes (such as ecological succession and pollination). Within these areas, priority actions would reinstate natural dune succession and open space habitat.

3. Recover threatened species and ecological communities This element ensures the long term persistence of species and ecosystems at immediate risk of extinction in the wild. The actions required to implement this work are specific to individual species and ecosystems, but typically focus on increasing distribution and abundance and halting declining trends.

4. Control emerging threats This element addresses threats to our vision of the Dunes before their impacts are fully realised. The more pervasive threats to the Dunes include climate change and invasive species. Actions promoted to adapt to a changing climate include: Passive adaptation to improve resilience of ecosystems by maintaing functional areas (DPAs) and ensuring representativeness of habitats. The other emerging threat is arrival, spread and impact of invasive species. Actions to address this threat include prevention, early detection and rapid response, and containg spread.

Essential to the concept of the DPA Network is flexibility. While initial management may only be able to focus on a handful of priority areas, the concept is that management will expand to other priority areas as resources become available. Management plans for individual DPA's will follow the same general format and contain the following elements:

Element 1 – Site Description

Element 2 – Site Assessment (Assets, Threats & Opportunities)

Element 3 – Opportunity Prioritization

Element 4 – Management Objectives, Actions, Methods, Timeline and Budgets

Element 5 – Preventing or Mitigating Effects to Non-Target Resources

Element 6 – Monitoring, Data Management and Reporting

2.0 DPA Work Plan Selection

With limited restoration funds, six DPAs were selected within the DPA Network for the creation of a work plan. A prioritization was created to guide the selection of the DPAs for the work plan and subsequent implementation of restoration projects. Ultimately, the final selection of DPAs was guided by the RTF and land managers. The DPAs selected for work plan development are Black Lake Ecological Area, Nipomo lupine, National Wildlife Refuge/ Chevron Successional Dune, Big Coreopsis Hill, Rancho Guadalupe, and Point Sal.

Trust funds from Phase 1 will be used in these DPAs. The goal of the Phase 1 funds is to provide support for large scale restoration projects which will allow each of the selected DPAs to be managed minimally in perpetuity. Phase 2 endowment funds will assist in supporting the selected DPAs in the long term.

Black Lake Ecological Area

Nipomo Lupine

National Wildlife Refuge/ Chevron Successional Dune

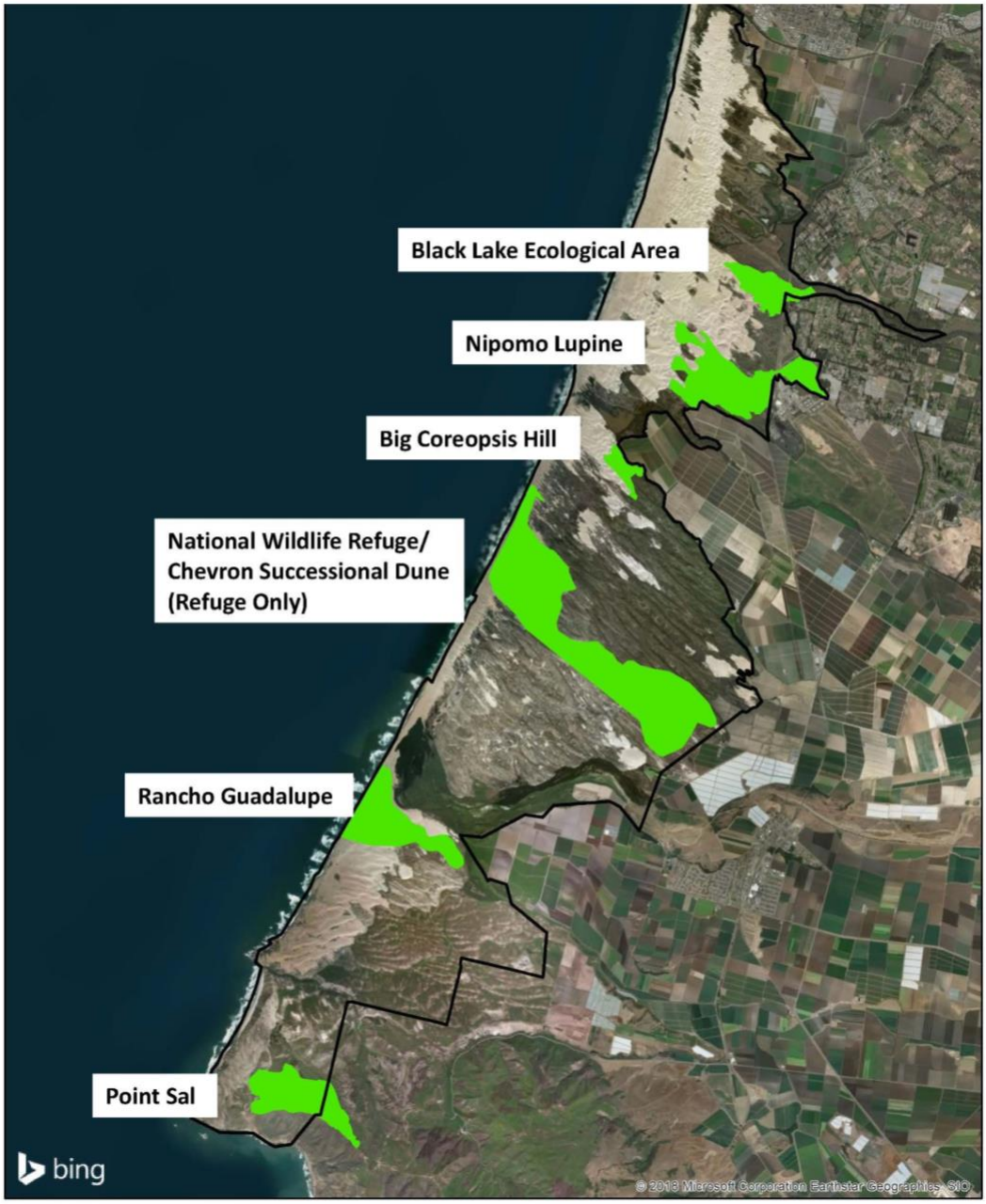
Big Coreopsis Hill

Rancho Guadalupe

Point Sal

3.0 Recommended Opportunities and Estimates

Below are the recommended restoration opportunities which will result in pristine, ecologically diverse DPAs which are achievable and defensible. A full description of each selected DPA, the restoration opportunities, and budget estimates for implementation are given in the Work Plan. This document is only a summary to provide important but brief information about the process. Phase 1 Trust funds are allotted to fill these restoration opportunities, providing approximately $1.6 million to be divided among the selected DPAs. The RTF must decide which restoration opportunities are to be implemented and how many DPAs are managed with these funds.



DPA/Opportunity	Cost/ 3 Years
Black Lake Ecological Area	
1A: Perennial veldtgrass control	$ 312,675.60
1B: Nipomo Lupine Reintroduction	$ 33,141.66
2B: Saharan mustard control	$ 52,574.36
Monitoring: Grid and Releve Surveys	$ 26,337.54
Total	**$ 424,729.16**
Nipomo Lupine	
Opportunity 1A: Perennial Veldtgrass & European Beachgrass	$ 248,300.00
Monitoring	$ 35,000.00
Total	**$ 283,300.00**
Big Coreopsis Hill	
Opportunity 1A: Perennial Veldtgrass Control	$ 15,920.00
Pre-treatment survey	$ 2,400.00
Monitoring	$ 7,000.00
Total	**$ 25,320.00**
National Wildlife Refuge/ Chevron Successional Dune	
Opportunity 1A: European beachgrass control	$ 158,701.51
Opportunity 1B: Myrtle Pond Enhancement	$ 91,229.23
Opportunity 2A: Highway Iceplant and Sea fig control (hubs and cores)	$ 210,601.20
Monitoring: Grid and Releve Surveys	$ 48,848.64
Total	**$ 509,380.58**
Additional Opportunities/Options	
Opporuntity 2C: Invasive plant control in Cores	$ 302,869.94
Monitoring: Grid Only	$ 29,033.76
Rancho Guadalupe	
Option 1 (Iceplant and Searocket Control in Foredunes)	
Opportunity 1A: Western snowy plover/ CA least Tern habitat enhancement	$ 55,817.16
Monitoring: Grid and Releve Surveys	$ 25,731.84
Total	**$ 81,549.00**
Option 2 (Iceplant and Searocket Control Throughout the DPA)	
Opportunity 2A: Highway Iceplant and Sea Fig Control	$ 55,108.80
Opportunity 2B: Euporean Searocket control	$ 61,078.08
Monitoring: Grid and Releve Surveys	$ 25,731.84
Total	**$ 141,918.72**
Point Sal	
Opportunity 1A: Jubata grass eradication	$ 42,842.16
Opportunity 1B: Stablize erosion on trail system	$ 98,162.78
Monitoring: Grid Surveys	$ 17,545.80
Total	**$ 158,550.74**

Recommended Opportunities	
Black Lake Ecological Area	$ 424,729.16
Nipomo Lupine	$ 283,300.00
Big Coreopsis Hill	$ 25,320.00
National Wildlife Refuge/ Chevron Sucessional Dune	$ 509,380.58
Rancho Guadalupe	$ 81,549.00
Point Sal	$ 158,550.74
Total Cost	**$ 1,482,829.48**
Average Cost per DPA	**$ 247,138.25**

Black Lake Ecological Area
Restoration in this DPA would focus on perennial veldtgrass treatment. Black Lake Ecological Area has been treated for perennial veldtgrass for the last 15 years, providing pristine native wildlife habitat. The treatment area will be expanded to reflect natural boundaries. Valleys, rather than property boundaries will provide defensible boundaries to perennial veldtgrass invasion. Perennial veldtgrass is naturally lower percent cover in the valleys, thus decreasing the level of management necessary to keep perennial veldtgrass out of the DPA.

Treatment would be conducted by a field crew twice a year with the support of two annual aerial herbicide applications to populations not near sensitive resources. The treatment would decrease percent cover of perennial veldtgrass to 1-5% through the DPA.

Three years of treatment will not be enough to confidently control perennial veldtgrass. Additional funds will be needed in years 4 and 5 from the long-term endowment to ensure success.

Nipomo Lupine
The Nipomo lupine DPA is the location of the only known natural population of federally endangered Nipomo lupine. Removal and control of invasive species (perennial veldtgrass and European beachgrass) is essential to the protection and expansion of Nipomo lupine. Restoration efforts in this DPA focus on control of European beachgrass and perennial veldtgrass via herbicide application on State Parks Property and within the Phillips 66 lease site. The two recommended approaches for invasive species control include herbicide application via helicopter (2 trips annually) followed by on-the ground spray treatment. The treatment would decrease percent cover to 1-5% through the DPA.

Big Coreopsis Hill
Major management challenges in this DPA include the threat of invasive species and the private ownership of much of the DPA. Perennial veldtgrass is dense in the areas to the east of the DPA, also owned by the same private owner. No invasive species management is currently being done within this DPA but the neighboring ODSVRA has actively managed for European beachgrass and perennial veldtgrass. The agricultural operation to the north presents a constant source of nonnative seed and agricultural invasive species, specifically that of annual grasses. Private ownership limits the management of this DPA, but project partners including Coastal San Luis RCD have engaged with the landowner on other projects and is well suited to help catalyze

restoration in this DPA. This estimate includes an initial site survey for invasive and rare species as well as treatment of the roughly estimated perennial veldtgrass in the DPA.

National Wildlife Refuge/ Chevron Successional Dune
Restoration efforts in this DPA would only take place in the Refuge, as funding is not allowed within Chevron Restoration Site. Selected restoration opportunities would focus on control of European beachgrass and habitat enhancement of Myrtle pond. European beachgrass is a major target throughout the GNDC. Treatment would control European beachgrass with herbicide by a field crew. The treatment would decrease percent cover of European beachgrass to 1-5% throughout the DPA. Planning and implementing safe access to the site will be a large component of this project. Myrtle pond is home to many sensitive resources and needs an upgraded fence to keep pigs out. This estimate also includes surveys of the sensitive and invasive plant species in and surrounding the pond.

Rancho Guadalupe
Restoration efforts in this DPA focus on enhancement of Western snowy plover and California least tern habitat. There are two recommended options for restoration, one which focuses only on foredune habitat invasive species and the other, invasive species throughout the DPA. Both options recommend treatment of iceplant species (*Carpobrotus* ssp) and European searocket. The treatment would decrease percent cover to 1-5% through the DPA.

Point Sal
Point Sal is very remote, and access will be a major concern for treatment. Much of we know in this DPA is from a 2017 aerial survey of invasive and rare species. Because the survey was done by helicopter, it is difficult to know how access to the DPA will be. The estimate includes this uncertainty. Restoration opportunities selected for this DPA are also based on the restoration needs outlined in the Point Sal Reserve Management Plan (1991, 2002). Eradication of jubata grass and the stabilization of the trail system were selected as recommendation restoration opportunities. Jubata grass was detected in the aerial survey and is a high priority eradicative species in the GNDC. The treatment would completely remove jubata grass from the DPA. The Point Sal Reserve Management Plan reported the trail system in poor condition and is in need of repair. Erosion control measure will protect neighboring habitats from disturbance and protect against invasive species. The current condition of the trails in unknown, so initial work would begin with a survey of the trails system. The current estimate in include two CCC tours.

Monitoring
The recommended monitoring protocol for the selected DPAs entails both 50 meter^2 grid mapping and releve vegetation sampling. Monitoring will be conducted at the end of Year 1 and Year 3. Years 1 monitoring will only be conducted in treatment areas to assess progress. Year 3 monitoring will encompass the entire DPA to provide long term insight into changes in the DPA. Additional monitoring may be necessary for specific projects not selected in each DPA. Once the Restoration Opportunities have been selected, monitoring protocols can be finalized.