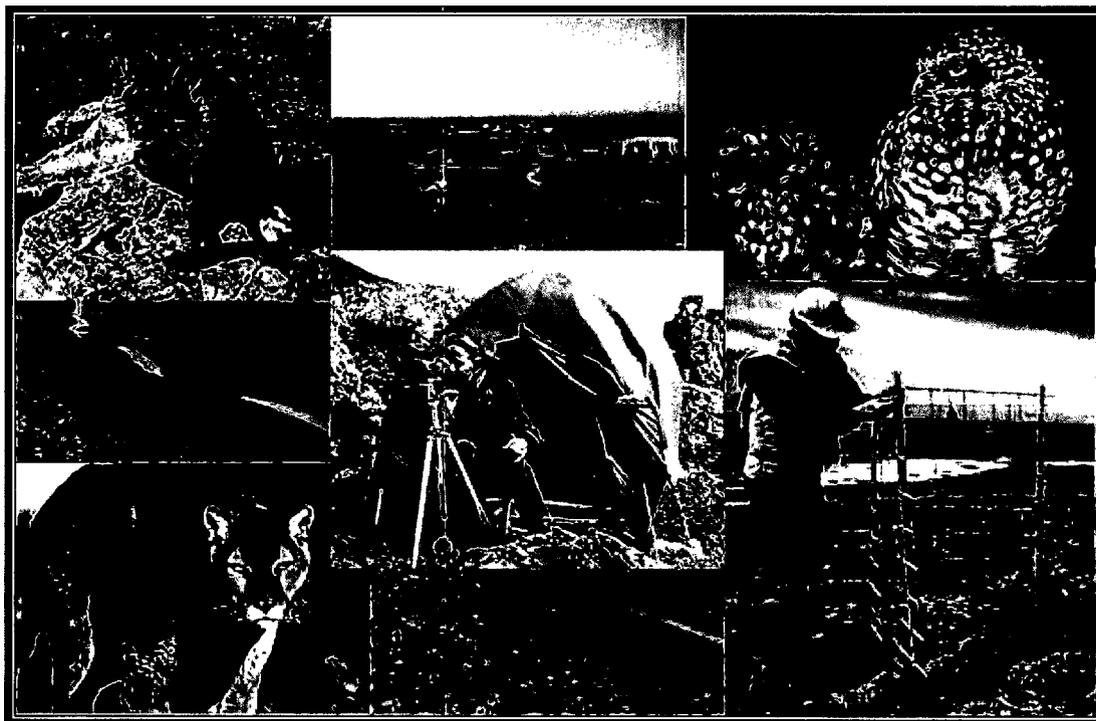


North Ranch Managed Access:
2007 Access Monitoring Plan
Pt. Buchon Loop Trail



Prepared By

Pacific Gas and Electric Company
Diablo Canyon Power Plant



January 2008

Document No. 001.3.06.14

Table of Contents

1.0 INTRODUCTION	4
1.1 Purpose.....	4
2.0 ENVIRONMENTAL BASELINE	6
2.1. Scope of Baseline Studies.....	6
2.2. Methods Employed in Completing the Comprehensive Baseline Inventory (CBI)	6
2.3. Overview of Study Results	7
2.3.1 Sustainable Agriculture.....	7
2.3.2 Cultural Resources	8
2.3.3 Botanical Resources.....	9
2.3.4 Terrestrial Wildlife.....	9
2.3.5 Marine Intertidal Resources.....	9
2.3.6 Marine Birds and Mammals.....	10
2.3.7 Geology and Soils.....	12
3.0 ACCESS PLAN AND ROUTE PLANNING PROCESS	12
3.1 Operational Considerations.....	13
4.0 ESTABLISHING A FRAMEWORK FOR ECOLOGICAL MONITORING	13
4.1. October 2005 Thresholds Workshop	13
4.2. Selected Resource Attributes and Indicators of Condition	14
5.0. ENVIRONMENTAL MONITORING OF THE PT. BUCHON LOOP TRAIL ROUTE	25
5.1. Managed Grazing.....	28
5.2 Cultural Resources Monitoring.....	29
5.3 Botanical Resources.....	30
5.4 Terrestrial Wildlife.....	31
5.4.1 Upland Birds	31
5.4.2 Small Mammals	32
5.4.3 Mesocarnivores (American badger).....	33
5.5 Freshwater and Riparian Habitats and Species.....	34
5.6 Marine Intertidal Resources.....	35
5.7 Marine Wildlife.....	37
5.7.1 Seabird Nesting Colonies.....	37
5.7.2 Marine Mammal Haulout Monitoring	38
5.8 Geology and Soils Monitoring Program	40
6.0 MONITORING VISITOR USE	42
6.1. Managed Access Program and Process of Visitor Documentation	42
6.2. Visitor Groups and Types of Uses	42
6.3. Visitor Surveys.....	42
6.4. Records Keeping	42
7.0. REPORTING	42
8.0. REFERENCES	43

List of Figures:

Figure 5.0-1. Pt. Buchon Loop Trail.....	25
--	----

List of Tables:

Table 4.3-1. Managed Grazing	17
Table 4.3-2. Cultural Resources.....	18
Table 4.3-3. Botanical Resources	19
Table 4.3-4. Terrestrial Wildlife	20
Table 4.3-5. Freshwater Habitats	21
Table 4.3-6. Marine Intertidal	22
Table 4.3-7. Marine Wildlife	23
Table 4.3-8. Geology and Soils.....	24
Table 5.0-1. Summary of natural and cultural resource monitoring activities and their relationship to trail segments.	26

List of Appendices:

APPENDIX A. Summary Results of 2005 Biological and Geological Field Studies
APPENDIX B. 2007 Monitoring Report

1.0 Introduction

This document is one of four prepared in support of a proposed plan of public access to PG&E-owned coastal lands in San Luis Obispo County, California. The first document (PG&E 2006a) presented a comprehensive baseline inventory (CBI) for the access project area, a 500-acre strip of coastal terrace located north of Diablo Canyon Power Plant (see Section 2.0), hereafter referred to as the North Ranch Study Area (NRSA). The second document (PG&E 2006b) utilized the CBI to complete a GIS-based analysis of planning constraints and to design a trail route with lowest possible impact to natural and cultural resources (see Section 3.0). The third document (PG&E 2006c) was a draft monitoring plan that described studies to assess the status of the natural and cultural resources with the NRSA being newly open to public access. This latter document was built upon the two previous documents and identified where and how resource monitoring and monitoring of public access would be performed by PG&E.

This document is the current monitoring plan, refined from the previous draft monitoring plan described in PG&E (2006c). The monitoring approaches have been modified and refined to address potential public access impacts in visitors using a prescribed trail route on the NRSA referred to herein as the Pt. Buchon Loop Trail. The Pt. Buchon Loop Trail is accessed via a gate located on the border between PG&E property and Montaña de Oro State Park. A detailed description of the Pt. Buchon Loop Trail, including a figure of the alignment, is contained in Section 5.0 of this plan.

The Pt. Buchon Loop Trail became open to public access on July 13, 2007. Near this same time, natural and cultural resource monitoring began according to protocols that are described in corresponding sections of this document, and the studies remain ongoing. Much of the data across the various studies was still in process of computer entry into a database at the time of this report submittal. Consequently, the data was not available to prepare detailed reports for each resource category, and to append each of the monitoring reports into this document. However, some monitoring information could be assembled and presented as preliminary information in this document. The preliminary monitoring information is presented in corresponding resource sections in Appendix B. The information is based on qualitative observations made during the surveys and from data that could be initially compiled from the database up to and including December 2007.

1.1 Purpose

Special Condition 3 of the Coastal Development Permit granted to PG&E by the State of California in 2004 (revised findings A-3-SLO-04-035, Pacific Gas and Electric Company, December 16, 2004) requires monitoring of the implementation and effects of a public access program. The following, taken from page 9 of the December 16, 2004 permit document, details this requirement:

Monitoring: The Access Plan shall include a monitoring and evaluation component to provide information documenting Access Plan implementation over the life of the project and that can be used as a basis for proposed adaptations, if

any, to the Plan that may be warranted by experience. Elements to be included in the monitoring and evaluation component shall include those reasonably necessary to determine the following:

- A description of whether public use has resulted in any environmental effects, including possible negative and positive impacts, based on an evaluation using the baseline environmental inventory prepared pursuant to this condition,
- A discussion of what modifications to the Plan, if any, may be appropriate based on the evaluation described above,
- A description of whether public use has resulted in any effects, negative or positive, on the continuation of environmentally sustainable agricultural activities,
- A comparison of the levels of visitation anticipated in the Plan with actual levels of visitation at the various access ways,
- A description of effects, if any, of visitation on security and public safety and on archaeological resources and any measures taken or proposed to avoid or reduce those effects.

Reporting: For each of the five years after approval by the Executive Director of the Access Plan, the Permittee shall submit annual reports to the Executive Director describing implementation of the Plan and the results of the above monitoring measures. The Executive Director shall convene the task force at least once per year during this five-year period to evaluate the monitoring results and to recommend modifications to the Access Plan, if necessary. After the first five years, the Permittee shall submit reports every five years describing experience implementing the Access Plan.

Our intent is to present a conceptual framework and approach for assuring that PG&E's proposed plan of public access will not result in impacts to sensitive biological or cultural resources, and will not significantly impact the sustainable agriculture practices PG&E currently authorizes on these lands.

This monitoring plan is based on the following information and data analysis procedures:

- A comprehensive baseline inventory (CBI) of the NRSA,
- Specific comments on monitoring received from the Diablo Task Force (DTF) during review of the Preliminary Environmental Baseline (PEB),
- A cumulative resource sensitivity analysis performed after completion of the CBI,
- An Access Plan developed to address specific route planning goals, and
- The results of an October 2005 workshop on environmental threshold monitoring conducted by PG&E specifically to support this public access project.

2.0 Environmental Baseline

What follows in this section is a brief summary of the Comprehensive Baseline Inventory (CBI) work performed by PG&E in collaboration with the DTF in 2005. A more detailed account is found in PG&E 2006a.

2.1. Scope of Baseline Studies

PG&E, at the direction of the CCC, prepared a Preliminary Environmental Baseline (PEB) for the access project area in March 2005. The PEB was assembled from existing PG&E report documents containing information on the natural and cultural resources of the NRSA and the adjacent coastline. An annotated bibliography of the entire collection of documents was also prepared. These electronic files (including 34 separate documents spanning the period 1975 through 2005) were distributed to the CCC staff and the DTF for review and comment.

During the June 2005 DTF meeting, written comments received on the PEB were summarized and presented for discussion. Gaps or other weaknesses identified in the PEB were largely addressed by supplemental field studies arranged for by PG&E and in progress at that time. PG&E agreed to implement some changes in the scope of studies to respond to specific issues raised by the DTF. An additional study on cultural resources requested by the DTF was agreed to as well. A summary of comments received on the PEB and actions taken by PG&E in response to these comments is presented in the CBI (PG&E 2006a).

2.2. Methods Employed in Completing the Comprehensive Baseline Inventory (CBI)

Standard surveys, most protocol-based, were conducted for terrestrial plant and animal species with known or potential occurrence in the NRSA. Sensitive and unique terrestrial habitats were first mapped from recent (2003) high resolution (1 pixel = 1 sq. foot) orthorectified aerial imagery within a mobile GIS platform (i.e., a rugged field computer running ArcPad® 6.0.3, ESRI). Afterward, 100% of the mapped area was ground-truthed and the mapping refined.

Cultural resource surveys involved redefining and mapping sites previously documented in the 1990s using improved (sub-meter accuracy) global positioning system (GPS) technology. Additional historical research and ethnographic studies were also performed.

Marine intertidal studies involved a combination of protocol-based transect sampling methods (horizontal and vertical band transects) and inferential analyses using habitat (substrate type) mapping to estimate species composition and relative abundance throughout the marine portion of the NRSA. An additional focused survey effort was directed at black abalone, a species that has dramatically declined in recent years due to withering syndrome (Raimondi et al. 1999, Raimondi and Bergen 2003). These efforts were benefited by an existing long-term (30-year) marine intertidal database developed for this coastline through PG&E's Receiving Water Monitoring Program (RWMP). Intertidal habitats were mapped using the same mobile computing and mobile GIS software applied to terrestrial studies (see above).

Colonial nesting seabirds and marine mammals were surveyed from the terrace bluffs using binoculars and spotting scopes. The locations of seabird nest sites as well as haulouts used by marine mammals were mapped as described earlier using the mobile GIS platform. Important off-shore rafting sites (i.e., giant kelp beds) utilized by sea otters were similarly mapped.

Analysis of geology and soils within the NRSA was based primarily on materials contained within the PEB. However, mapping of coastal bluff caves was performed using recent aerial oblique imagery (www.californiacoastline.org) to identify cave locations and GIS software to map and provide documentation of these features. Analysis of sustainable agriculture was based primarily on materials contained within the PEB. Additional historical information on past agricultural practices affecting the NRSA was provided through research performed by our cultural resources consultant. In addition, five native grass plots were created and documented in 2005 to provide a baseline for relative percent ground cover (basal area) of these native perennial species within the grassland community type.

A more detailed discussion of the techniques and approaches used in these studies is presented in the CBI report (PG&E 2006a). The objectives of the surveys included: 1) gathering information to complement and update earlier studies (i.e., the PEB), 2) informing the project planning staff of the location of sensitive natural and cultural resources and potential geologic hazards during route planning, and 3) collecting data to guide development of a monitoring program to assess the impacts of managed public access on natural and cultural resources and sustainable agriculture.

These studies were conducted from March 2005 through June 2006. Certain studies, including botanical surveys and nesting bird surveys, were initiated by PG&E prior to receiving all DTF and CCC staff comments on the PEB. These were done because the studies were recognized as necessary and were time-critical.

2.3. Overview of Study Results

2.3.1 Sustainable Agriculture

No new studies were performed specifically addressing sustainable agriculture during the 2005 – 2006 study period. Considerable information was provided in the PEB pertaining to managed grazing within the NRSA as discussed in the CBI (PG&E 2006a).

Historical research has shown that agriculture was practiced within the NRSA at least as far back as the mid-1800s, and has been continuously practiced here to the present day. Both irrigated and non-irrigated crop agriculture and grazing has occurred. Crop agriculture was stopped within the NRSA in the early to mid-1980s, but grazing has continued.

The principal issues raised by the DTF in their review of this portion of the PEB dealt with ensuring that managed grazing and native perennial grass restoration efforts would not be adversely impacted by or modified to accommodate public access. Other issues

focused on whether the public could be protected from accidents and injury resulting from livestock or guard dog interactions and contact with electrified fencing.

The existing ranch infrastructure (fencing, roads, corrals, and water developments) was identified and illustrated in the CBI, as well as the operational dynamics of the current high-intensity, short-duration grazing management system (HISD). The constraints analysis presented in the Managed Access Plan (PG&E 2006b) also considered this information.

Native bunch grasses currently occupy too small a percentage of the coastal terrace grasslands (< 1% by basal area) to be effectively mapped. Several small study plots have been created and mapped to further assess the condition and growth trend of these plants. Within these plots, perennial grasses were counted to determine density per unit area. Some counts were made along linear belt transects and other plots received total area counts.

2.3.2 Cultural Resources

Documents containing information on cultural resources were identified but not included in the PEB for reasons of confidentiality. Confidential archaeological site locations were shared in a presentation to the CCC staff in April 2006, but copies of report documents and maps showing site locations have not been provided to the Commission or to the DTF. These reports were made available to the DTF archaeological representative, Dr. Terry Jones, faculty member, Cal Poly State University, who also observed some of the 2005 fieldwork in the NRSA.

Comments received by the DTF concerning this portion of the baseline focused on two issues: 1) updating site records utilizing GPS and incorporating these data into a confidential mobile GIS platform, and 2) conducting historic research to create the necessary context for better understanding the nature of the historic sites and features.

Prior to recent work on the NRSA, complete archaeological examination of the area had been performed in 1990 and 1991. While the previous studies were performed to professional standards, mapping of the sites was inaccurate due to problems involving the USGS maps available for the area. A total of 22 archaeological sites were remapped and entered into the mobile GIS platform using sub-meter GPS data. The results of historical background research for the area has also been incorporated into the CBI, providing a better context for assessing the importance of the historic sites found in the area.

A request to provide a permanent datum for each of the archaeological sites was withdrawn by the DTF after discussions in June 2005. The sub-meter accuracy GPS data gathered in 2005 allows sites to be relocated for monitoring purposes without use of permanent survey monuments. PG&E's concern was that monuments might disclose the location of sites to unauthorized individuals.

Within close proximity to the Pt. Buchon Loop Trail corridor there are seven cultural resources sites (CA-SLO-9, -1451/H, -1450/H, -1467, -1452, -1453, -1466). The trail

corridor passes directly through five of these sites.

2.3.3 Botanical Resources

The PEB contained a significant amount of botanical information for the NRSA, including results of sensitive species surveys and descriptions of sensitive habitats. However, this information was based on work performed in the early 1990s and was considered insufficiently current to be of value to the process of trail planning and monitoring.

The DTF commented on the need to update information contained in PEB with results of new botanical field studies, and to add additional species to the survey effort. A detailed account of the criteria used for delineating sensitive habitat boundaries was also requested.

The results of new botanical field studies performed in 2005 are summarized in Appendix A, Table A-2. Two sensitive plant species and thirteen noxious weed species were found within the NRSA. In addition, two community types considered sensitive in California (coastal bluff scrub and Central Coast willow riparian scrub) were identified and mapped. PG&E obtained a field review of criteria used for mapping coastal bluff scrub habitat from Dr. David Keil, faculty, Biological Sciences Department, Cal Poly State University.

2.3.4 Terrestrial Wildlife

Information from the PEB pertaining to terrestrial wildlife (invertebrates, amphibians and reptiles, birds, and mammals) was derived largely from a comprehensive survey of the PG&E property surrounding Diablo Canyon Power Plant (DCPP), performed under direction of the Land Stewardship Committee (LSC) in the early 1990s.

The principal issues raised by the DTF in their review of this portion of the PEB dealt with the need to “refresh” results from previous surveys performed in the area, and to include surveys for species not addressed during the earlier work. Some species identified by the DTF that required focused surveys in 2005 included: Smith’s blue butterfly, San Emigdio and unsilvered fritillary butterfly; Morro shoulderband snail; foothill yellow-legged frog, California tiger salamander, California newt, silvery legless lizard, coast horned lizard, western spadefoot toad, riparian and special-status bird species, bats, and Morro kangaroo rat.

Bat surveys were not conducted because minimal habitat exists for bat roosting sites within the NRSA. Because the NRSA includes only foraging habitat, which is unlikely to be impacted by a day-use public access program, information on these species was viewed as non-essential to the development of the access or monitoring plans.

Surveys confirmed presence of a new nesting territory of the state endangered, peregrine falcon in the NRSA. This pair fledged two young in 2005. The state-endangered, willow flycatcher was identified; two non-breeding individuals were located within the riparian corridor of Coon Creek at the north end of the NRSA. Two ground-nesting birds

classified as California Species of Special Concern (grasshopper sparrow and horned lark) were identified in grassland habitat. Based on follow-up surveys conducted in spring 2006, it is likely that grasshopper sparrows nest in the NRSA. California horned larks were not observed in 2006.

The San Diego desert wood rat, a California Species of Special Concern, was identified in the NRSA. This species was found associated with coastal bluff scrub habitat throughout the NRSA. The American badger, another Species of Special Concern, was observed twice and its burrows were documented in abundance in grassland habitat areas.

2.3.5 Marine Intertidal Resources

The species sampled were for the most part ubiquitous and common inhabitants of rocky shores in central California. Spatial and temporal differences in relative abundance of species from location to location is expected based on differences in substrate types and other environmental variables including elevation, relief, exposure to wave and sand scour effects, competition for space, recruitment, herbivory, and predation.

One species, sea palms (a species of brown alga), is commercially harvested, mainly in the more northern portion of California. The Minerals Management Service, Pacific OCS Region, mapped intertidal habitats in the 1980s along the entire California coast. These surveys also documented presence of sea palms in the NRSA, describing a continuous population extending from Coon Creek to Disney Point. In 2005, sea palms were identified from just one population in the NRSA located at Disney Point. This population is likely the southernmost population of sea palms in North America.

Black abalone is another habitat-specific species that may occur as solitary individuals or in small aggregations in rock undercuts and crevice habitats. A local endemic disease complex referred to as withering syndrome has decimated black abalone populations along the Central Coast. PG&E established two permanent plots along the NRSA coast in 1989 to monitor black abalone populations. Plots were also established in Diablo Cove located south of the NRSA and in areas further to the south. Black abalone were initially dense in all plots sampled. Sampling was discontinued several years ago after abalone populations declined to near zero. The two plots on the NRSA coast were revisited and sampled in 2005. Black abalone showed no indication of recovery, with their numbers remaining near zero.

The project's coastal area was recently added to a state-wide Marine Protected Area System and designated the *Pt. Buchon State Marine Reserve*. State Marine Reserves are fully protected, meaning no extractive uses of resources are allowed except under authority of a scientific collecting permit. More information is available on the CDFG website at: www.dfg.ca.gov/mrd/mlpa/transmittaldocs.html.

2.3.6 Marine Birds and Mammals

Most seabird nesting activity was observed north of the Big Wash area and can be explained by the geophysical characteristics of the coastline. The coastal cliffs north of the Big Wash area are mainly steep rocky headlands and tall offshore pinnacles that

provide suitable nesting habitats. Excluding the Seal Rock area at the southernmost end of the NRSA, nesting activity was rare along the southern portion of the NRSA. The relative lack of suitable nesting habitat along most of the southern portion of the NRSA is due mainly to the lack of offshore rocks that are of sufficient height to provide nesting areas protected from large waves. In addition, the shore cliffs along this reach consist mainly of weathered unconsolidated soils rather than hardened rock. The cliffs are highly erosive and have few ledges and crevices that offer suitable nesting sites for seabirds.

A comparison of the 2005 survey results with earlier published studies (Frame 1972; Sowls et al. 1980) showed an overall increase in nesting activity within the NRSA for western gulls, Brandt's cormorants, and pelagic cormorants with some variation in the distribution of nests among species (see Appendix A, Table A-3). The Brandt's cormorant nesting colony documented in the 2005 study was not reported in earlier published studies and may be a recent expansion. In contrast, pigeon guillemot numbers appear to be reduced. Whether this is due to differences in survey timing and methods or represents an actual population decline is unknown.

Black oystercatcher nesting was not positively identified during the 2005 survey. However, the relatively high number of black oystercatchers observed suggests that breeding does occur within the NRSA.

In general, harbor seals have increased in numbers along the NRSA coast since the 1970s; however the relative increase has slowed in recent years. This pattern is consistent with statewide census trends that indicate population growth has slowed to less than 10% each year (Lowry et al. 2005).

Although harbor seals tend to be 'loyal' to specific haulout areas, they may vary their use at a particular area hourly, daily, and seasonally. Use is dictated by sea conditions, tidal height, and perceived exposure to danger or harassment, which can change over time. Pupping, nursing, and molting can also affect the time and place of use. Harbor seals do not hesitate to shift to alternate haulout areas when conditions warrant. The 2005 field studies estimated that about 247 harbor seals in the NRSA presently use four haulouts located between Coon Creek and Seal Rock. The total number of haulout sites used has increased slightly and the locations have shifted somewhat between the 1970s and present. A total of six areas are known to have been used as haulouts to date, including one new site at Disney Point identified during the 2005 surveys.

Sea lions and elephant seals can co-occur in the same haulout areas with harbor seals (Studer 2000). However, this has been rare along the Pecho Coast (S. Benech, pers. obs.). Elephant seals in the DCP area have tended to be juveniles, which have been observed mainly on the breakwater tri-bars of the DCP intake cove. Sea lions in the DCP area mainly haul out on Lion Rock and Pup Rock. Both are offshore and south of the NRSA. These steeper rocks can be more easily accessed by the more agile sea lions.

In contrast, sea otters can be common co-habitants with harbor seals in haulout areas. Small numbers of otters (usually 2-5) can often be seen hauled out alongside and among

harbor seals. Sea otters have been documented at as many as eight haulout locations along the Pecho Coast (Benech 1996), which includes the harbor seal haulout areas mapped in the present study. Although sea otters can haul out on rocks year-round, sea otters tend to haul out in largest numbers in spring, their peak pupping season.

2.3.7 Geology and Soils

Comments received from the DTF concerning this portion of the PEB were focused at the issue of establishing a baseline for determining rate of coastal bluff erosion. This issue was addressed through discussions between PG&E's project team and CCC staff, supported by PG&E's Geosciences Department. As discussed earlier, there is not sufficient existing information (local maps and photos) from which to document historic coastal bluff retreat in the NRSA, and the cost of developing this data using modern LIDAR technology with suitable (centimeter) accuracy is clearly beyond the scope envisioned by the CCC for this effort. PG&E proposed instead to rely on ground-based photography from permanently established sites chosen after a final trail route is selected to monitor trail safety and inform the process of adaptive management of the access program. In addition, surficial geologic features have been incorporated into the mobile GIS platform to further inform trail planning and monitoring tasks.

Since completion of the July 2006 draft monitoring plan, PG&E examined additional options for creating a bluff erosion baseline and monitoring plan. Our current plan involves use of aerial photogrammetry and survey grade GPS ground measurements to map and compare the position of the bluff edge every three years, beginning in 2007.

Ground control consisting of eight control points will be set and aerial photographs will be collected. An electronic drawing of the top of the bluff line for the Pt. Buchon Loop Trail area will be created by photogrammetric methods. The photographs will also be ortho-rectified to create an orthophoto of the study area.

In subsequent years the shoreline will be re-surveyed using photogrammetric techniques similar to those used to develop the base profiles. Changes in the location of the bluff line will be determined by overlaying the current bluff location with the previous year's location and potentially to the baseline information.

3.0 Access Plan and Route Planning Process

The approach to trail development included minimization of "built" features and prevention of human encroachment into highly sensitive areas. Visual indicators of trail construction or maintenance will be minimized or eliminated through use of existing low-maintenance unsurfaced roads and mow-strips. Trail design and materials will blend with the character of the North Ranch NRSA.

PG&E's route plan and certain key operational elements of the plan helped to define the scope of monitoring activities. A detailed discussion of trail routing is contained in Section 5.0 and illustrated in Figure 5.1-1.

3.1 Operational Considerations

Staging area and parking - The staging and parking area for the trail is located off PG&E property on State Park land near the existing Coon Creek trailhead. No improvements will be required here to accommodate the 2007 Phase-1 (Pt. Buchon Loop Trail) operations plan.

Entry and user supervision – In 2007, the trail route will be open to the public three days per week (Friday, Saturday, and Sunday). Trail users will enter PG&E property through the existing security gate which will be modified to allow pedestrian passage. Hikers will proceed across the Coon Creek Bridge to a registration kiosk where they will be met by a PG&E representative and processed for entry onto the Pt. Buchon Loop Trail. Hikers are responsible for compliance with necessary safety, resource protection, and security rules. These include keeping on designated trail routes at all times, and refraining from unsafe behaviors (e.g., open flames and smoking) that could lead to personal injury or resource damage. Authorized access will include only pedestrian travel and no companion animals are allowed on the property.

Trail/road improvements - The trail selected takes advantage of existing low maintenance ranch roads to minimize erosion, protect sensitive species and habitats, preserve cultural resources, and reduce conflicts with sustainable agriculture. Electric fences exist in close proximity to the trail route throughout the NRSA. These fences support sustainable agricultural practices and have been equipped with safety warning signs at frequent intervals for the protection of the public.

Sanitary facilities – Sanitary facilities are available on State Park land before entering the NRSA, and chemical toilets (3) have been provided at the check station. No potable water is available along the Pt. Buchon Loop Trail.

4.0 Establishing a Framework for Ecological Monitoring

4.1. October 2005 Thresholds Workshop

In August 2005, PG&E met with the CCC in San Francisco and there proposed that PG&E hold a workshop to gather information on environmental thresholds and help identify how this concept would be applied to the required monitoring program. The CCC agreed, and planning for the workshop was begun.

PG&E's technical staff advised that environmental thresholds had not received extensive research effort, and identifying specific measurable criteria for monitoring thresholds might depend largely on "expert opinion."

Dr. Steven Murray, a renowned researcher on coastal marine ecosystems, and recently appointed Dean of the College of Natural Sciences and Mathematics, California State University, Fullerton was contacted regarding planning of the workshop. Dr. Murray recommended a speaker on the subject of environmental thresholds to help direct the

workshop. Dr. Richard F. Ambrose, Professor and Director of the Environmental Science & Engineering Program, Department of Environmental Health Sciences, University of California, Los Angeles, agreed to participate in the workshop and make a presentation on the concept of environmental thresholds applied to ecological monitoring.

The goal of the workshop was to identify, by resource category, measurable parameters sensitive to the potential effects of increased public access. These key indicators serve to help identify change while use of selected control or reference areas allows filtering of natural variation from anthropogenic (human) effects. In this way, monitoring can examine the effects of managed public access on biological and cultural resources, and help direct adaptive resource management decisions aimed at avoiding significant impacts.

The workshop was attended by senior staff scientists from each of the consulting firms that participated in field studies to complete the CBI (Scott Kimura, Tenera Environmental; Tom Olson, Garcia and Associates; John Stebbins, Botany Department, California State University, Fresno). Frank Haselton, LSA Associates, served as workshop moderator. PG&E staff participants included senior consulting scientists, Mike Fry and Dr. Bill Page, senior cultural resources specialist, Glenn Caruso, and senior biologist, Sally Krenn. As mentioned above, Dr. Richard Ambrose was a keynote speaker and workshop participant.

Technical presentations on threshold theory (Dr. Ambrose) and threshold theory as applied by the Natural Resources Conservation Service in rangeland health assessments (Mike Fry) were followed by breakout sessions. The workshop participants were divided into two broad subgroups. One subgroup represented marine resources (intertidal species and habitats, marine mammals, and seabirds), along with geology and soils. The other subgroup addressed terrestrial biological resources (sensitive plants, animals, and community types) and cultural resources. Each group was tasked with developing a list of potential access-related impacts specific to their resource categories. Table 4.2-1 lists the potential impacts identified by the workshop participants along with those resources likely to be affected by a given impact.

4.2. Selected Resource Attributes and Indicators of Condition

Prior to the workshop a search of relevant literature was performed on the subject of thresholds. Some of the best work identified on the application of threshold theory to resource management came from the rangeland science discipline. Key papers provided to the participants in advance of the workshop included:

- Briske et al. (2005), State and Transition Models, Thresholds, and Rangeland Health: A Synthesis of Ecological Concepts and Perspectives, *Rangeland Ecology and Management* 58:1-10;
- Munroz-Erickson et al. (2004), Identifying Indicators of Ecosystem Health for a Semiarid Ecosystem: A Conceptual Approach (In): van Riper, C., III, and K.L. Cole, editors. *The Colorado Plateau: Cultural, Biological, and Physical Research*. The University of Arizona Press, Tucson, AZ., pg. 139 – 152; and

- USDA and USDI (2000), Interpreting Indicators of Rangeland Health, USDA, Natural Resource Conservation Service, and USDI, Bureau of Land Management, Technical Reference 1734-6.

In summary, every stable state (a recognizable, relatively resistant and resilient ecological complex or site) undergoes normal amounts of fluctuation over time. When disturbed, healthy states employ resilience and resistance mechanisms to restore equilibrium, but excessive disturbance may push a stable state to its threshold (the boundary between two states). Once this threshold is crossed the ecological site begins a transition (the trajectory of system change between states). Transitions are defined as having two phases, reversible and irreversible. During the reversible phase, stability may be restored naturally, or with relatively easy adaptive management intervention. The irreversible phase requires extreme intervention and input of energy to restore stability within an acceptable time frame, and even these measures may not succeed.

Workshop participants agreed that identifying access-related effects early (well within the reversible phase of transition following disturbance) was essential to preventing long-term environmental effects. Early detection requires knowledge of key resource attributes (*defining characteristics of a state*) as well as specific indicators to describe or quantify attribute condition.

Table 4.2-1. Potential impacts of managed access (from October 2005 workshop on environmental thresholds) within the NRSA.

IMPACTS	RESOURCE CATEGORIES							
	AG	BOT	TW	FWW	MW	MIT	GS	CR
Increase in non-native species		X	X	X				
Avoidable impacts to nesting birds (MBTA/ESA)			X	X	X			
Conflict between humans and livestock	X							
Forced reduction in livestock grazing area	X	X	X					
Declining area/condition of sensitive habitats		X	X	X	X	X		
Increased sources of fire ignition	X	X	X	X			X	X
Handling, collection, disturbance of native species		X	X	X	X	X		
Increase in area of bare ground	X	X	X	X			X	X
Increased erosion/sedimentation	X	X	X	X	X	X	X	X
Presence of people on coastal bluff			X	X	X			X
Trampling		X	X	X		X	X	X
Disturbance/collection of cultural objects								X
Vandalism/graffiti								X
Native American cultural concerns								X
Disturbing micro-habitat elements (rocks, down wood, etc.)		X	X	X		X	X	X
Compromise of long-term scientific baseline	X				X	X		X

Resource Key: AG – agriculture, BOT – botanical resources, TW – terrestrial wildlife, FWW – freshwater wetlands, MW – marine birds and mammals, MIT – marine intertidal, GS – geology and soils, CR – cultural resources

Therefore, each workshop subgroup was tasked with identifying resource-specific monitoring goals, objectives, attributes, and indicators. The following tables present these workshop findings for each of seven resource categories represented in the NRSA.

Managed Grazing – The goal identified for this resource category by the workshop participants was sustaining rangeland health. Objectives identified included preventing resource degradation and encouraging positive change in resource condition.

The continued presence of livestock within the managed access program area is consistent with the California Coastal Act and policies of the CCC toward protection of sustainable agriculture. Indicators such as increased bare ground or other types of access-related soil disturbance, increase in noxious weeds along trail routes, or decline in native perennial grasses are suitable ecological indicators for monitoring access-related effects on this resource category. The possibility exists for impacts to managed grazing that are non-ecological (e.g., negative interactive between people and livestock, people and guard dogs, people damaging ranch infrastructure or other private property). These issues are discussed in Section 6.0.

Table 4.3-1. Managed Grazing

Indicators	Attributes		
	Soil/Site Stability	Hydrologic Function	Integrity of Biological Community
Water flow patterns	X	X	X
Bare ground	X	X	
Residual dry matter (RDM)		X	X
Soil surface loss or degradation	X	X	X
Compaction	X	X	X
Plant functional/structural groups	X		X
Trophic level complexity			X
Invasive plants	X		X
Reproductive performance of perennials	X		X

Cultural Resources – Goals for this resource category were identified as preserving and protecting cultural sites and sustaining positive relationships with local Native American people. The objective selected was educating the public on the need to prevent site disturbance resulting from visitor access.

The CBI includes results of cultural studies performed in 2005. Throughout the NRSA 22 sites were identified and mapped. The importance of these sites scientifically, and to the Chumash community locally, cannot be over estimated. PG&E has developed a cultural resources mobile GIS platform with custom electronic data forms for use by professional archaeologists during the monitoring of these sites to aid in documenting their condition and effects of public access.

Table 4.3-2. Cultural Resources

Indicators	Attributes		
	Degree of Disturbance	Scientific Importance	Tribal Significance
Loss of artifacts, or changes in relative density or abundance of artifacts; indicative of illicit artifact collection	X	X	X
Increased erosion	X	X	X
Number of vandalism or graffiti incidents; indicative of human disturbance	X		X
Worn pathways; indicative of trampling effects	X		
Reaction from Native American community; indicative of loss of cultural values	X		X

Botanical Resources - The goal of maintaining or enhancing current biological diversity of native and desirable naturalized plants, and protecting sensitive habitats is consistent with the best management practices established for the Diablo Lands by the Diablo Canyon LSC and is suitably supported by the CBI. Objectives identified included intervening to correct adverse trends in site condition.

Sensitive plant species like Nuttall’s milk vetch (*Astragalus nuttallii*) and coastal gold fields (*Lasthenia macrantha* ssp. *macrantha*) are potential indicators of healthy coastal bluff scrub habitat. Native perennial grass populations may serve as indicators of rangeland health in the grassland community type; whereas, increases in noxious weed populations, bare soil, or erosion may be indicative of access-related effects.

Table 4.3-3. Botanical Resources

Indicators	Attributes		
	Soil/Site Stability	Hydrologic Function	Integrity of Biological Community
Water flow patterns	X	X	X
Bare ground	X	X	
Litter movement		X	
Soil surface loss or degradation	X	X	X
Compaction	X	X	X
Plant functional/structural groups			X
Litter amount	X		X
Invasive plants	X		X
Reproductive performance of native perennials	X		X

Terrestrial Wildlife – The workshop participants selected a goal of maintaining biological diversity for this resource category. This goal is consistent with the best management practices established for the Diablo Lands by the Diablo Canyon LSC and is suitably supported by the CBI. Objectives identified included no net loss in native species richness and strict adherence to laws directed at species protection.

The range of indicators identified allows selection of appropriate metrics to address the needs of terrestrial wildlife population monitoring for any proposed trail alignment. Presence and breeding by keystone species (e.g., American badger in the grassland community, peregrine falcon in coastal bluff and off-shore rock habitats) is an appropriate metric for monitoring access-related effects on sensitive terrestrial wildlife.

Table 4.3-4. Terrestrial Wildlife

Indicators	Attributes	
	Habitat Structure/Function	Essential Animal Behaviors
Presence and breeding by keystone species	X	X
Trophic level complexity and productivity	X	X
Presence/breeding by known special status species	X	X
Change in structure/density of foliar cover (shrublands & riparian)	X	X
Change in density and height of vegetation (grassland)	X	X
Presence/breeding by previously undocumented special status species	X	X
Change in use patterns or distribution of keystone or sensitive species in suitable habitat areas		X

Freshwater and Riparian Habitats – The freshwater habitats at Coon Creek offer essential habitat elements of limited distribution within the NRSA specifically, and the Diablo Lands in general. These areas offer a high intrinsic diversity of plant and animal life. Fresh-water sources (streams and springs) also have both historic and prehistoric significance as centers of human activity reaching back 9,000 years or more. A goal of maintaining or enhancing current biological diversity of native species and protecting sensitive habitats was identified by workshop participants. Objectives identified included intervention to correct adverse trends in site condition.

Trail routing has been designed to avoid direct access to these areas with the exception of the beach access provided at mouth of Coon Creek. Annual monitoring of these areas by the LSC began in the early 1990s and involves both photo monitoring and monitoring of grazing effects. These activities will be expanded as a result of potential public access effects in the lower Coon Creek area.

Table 4.3-5. Freshwater and Riparian Habitats and Species

Indicators	Attributes		
	Soil/Site Stability	Hydrologic Function	Integrity of Biological Community
Bed and bank condition	X	X	X
Sedimentation	X	X	X
Channel forming processes	X	X	X
Trophic level complexity			X
Aquatic vertebrate indicator organisms			X
Plant functional/structural groups	X	X	X
Presence/breeding by keystone species			X
Presence/breeding by known special-status species			X
Change in use patterns or distribution of keystone or sensitive species in suitable habitat areas			X
Invasive species	X		X

Marine Intertidal – The goal of preserving biological diversity and the objective of sustaining a unique long-term scientific baseline of marine intertidal data along the

Central Coast were considered highly important by workshop participants. Other considerations, such as public safety, protection of culturally sensitive sites, protection of marine mammal haulout locations, and a state proposal to include the NRSA coastline in a new coastal marine reserve limit the suitability of these areas for public access.

PG&E will continue to perform regular monitoring of intertidal habitats in the NRSA as part of its continuing Receiving Water Monitoring Program. Additional monitoring will be conducted in the vicinity of Coon Creek beach to assess potential access-related impacts on the intertidal community.

The State proposal to include the NRSA coastline in a new coastal marine reserve was approved in April 2007 with formation of the Pt. Buchon Marine Reserve. The mouth of Coon Creek and the adjacent beach/intertidal environment lie just north of the Reserve boundary.

Table 4.3-6. Marine Intertidal

Indicators	Attributes	
	Habitat Structure/Function	Integrity of Biological Community
Changes in the abundance of species exposed to visitor traffic resulting in worn pathways from trampling	X	X
Changes in abundance or size of target species (e.g., owl limpets, abalone) relative to controls; indicative of harvesting effects		X
Erosion exacerbated by foot traffic along the coastal bluff affecting intertidal species/habitats	X	X

Marine Wildlife (mammals and birds) – The goal identified by the workshop participants for this resource category was to sustain or enhance biological diversity. Management objectives included strict adherence to Marine Mammal Protection Act, Migratory Bird Treaty Act, and state as well as federal ESA requirements.

The Pt. Buchon Loop Trail plan provides close bluff access in the vicinity of Coon Creek beach and at an overlook provided just south of Pt. Buchon. These sites were selected because they minimize direct conflicts with sensitive biological and cultural resources and support the goals and objectives identified for the marine wildlife element of the monitoring program. At this time, both locations are believed to provide viewing of marine mammals and seabirds under circumstances that protect these species from unwarranted human disturbance. Careful monitoring of marine mammal and nesting sea bird responses to human activity in these areas is indicated.

Table 4.3-7. Marine Wildlife

Indicators	Attributes	
	Habitat Structure/Function	Essential Animal Behaviors
Change in use of traditional seabird breeding sites; indicative of human disturbance	X	X
Change in use of pupping beaches; indicative of human disturbance	X	X
Observed human-induced flight/avoidance behavior in nesting seabirds	X	X
Observed human-induced flight/avoidance behavior in marine mammals	X	X
Change in use of traditional haulout sites by marine mammals; indicative of human disturbance	X	X

Geology and Soils – Minimizing erosion and providing for public safety were identified as the principal goals for monitoring of geology and soils issues. The key objective identified was timely application of adaptive management solutions.

Ground-based monitoring to assess change in bare ground area and surface erosion along the trail route is indicated. Surveys will be conducted to monitor changes in bare ground adjacent to the trail and to document unauthorized trails and the unauthorized widening or lengthening of the Pt. Buchon Loop Trail. The monitoring will be accomplished by using square meter plots and establishing photo monitoring stations.

Monitoring of bluff edge retreat is also indicated for purposes of planning long-term adjustments in near-bluff routing. As described in Section 2.3.7, ground control consisting of eight control points will be set and aerial photographs will be collected. An electronic drawing of the top of the bluff line for the Pt. Buchon Loop Trail area will be created by photogrammetric methods. The photographs will also be ortho-rectified to create an orthophoto of the study area.

In subsequent years the shoreline will be re-surveyed using photogrammetric techniques similar to those used to develop the base profiles. Changes in the location of the bluff line will be determined by overlaying the current bluff location with the previous year's location and potentially to the baseline information. If such examination indicates that bluff retreat is being substantially affected, consideration will be given to re-routing the trail at specific locations.

Table 4.3-8. Geology and Soils

Indicators	Attributes		
	Site Stability	Hydrologic Function	Biotic Integrity
Surface fissures	X	X	
Removal of toe of slope enhanced by foot traffic across steep slopes	X		X
Length of non-approved trails		X	X
Erosion from concentration of water along trails	X	X	X
Increase in bare ground area accompanied by erosion and loss of top soil	X	X	X
Bluff retreat impact on trail location	X	X	X
Disturbance from fossil collection	X		X

5.0. Environmental Monitoring of the Pt. Buchon Loop Trail Route

The route of the Pt. Buchon Loop Trail lies in the northern-most portion of PG&E's North Ranch, as shown in Figure 5.1-1. Over the entirety of the route resources most likely affected include cultural resources, managed grazing, geology and soils, botanical resources, sensitive wildlife species (both terrestrial and marine), as well as freshwater and intertidal marine species and habitats.

Table 5.1-1 presents a summary of the proposed monitoring components for the Pt. Buchon Loop Trail. Some trail segments are identified as not requiring monitoring. Resources that warrant monitoring are identified along with attributes and indicators of change in attribute condition that could result from public access.

Figure 5.0-1. Pt. Buchon Loop Trail.

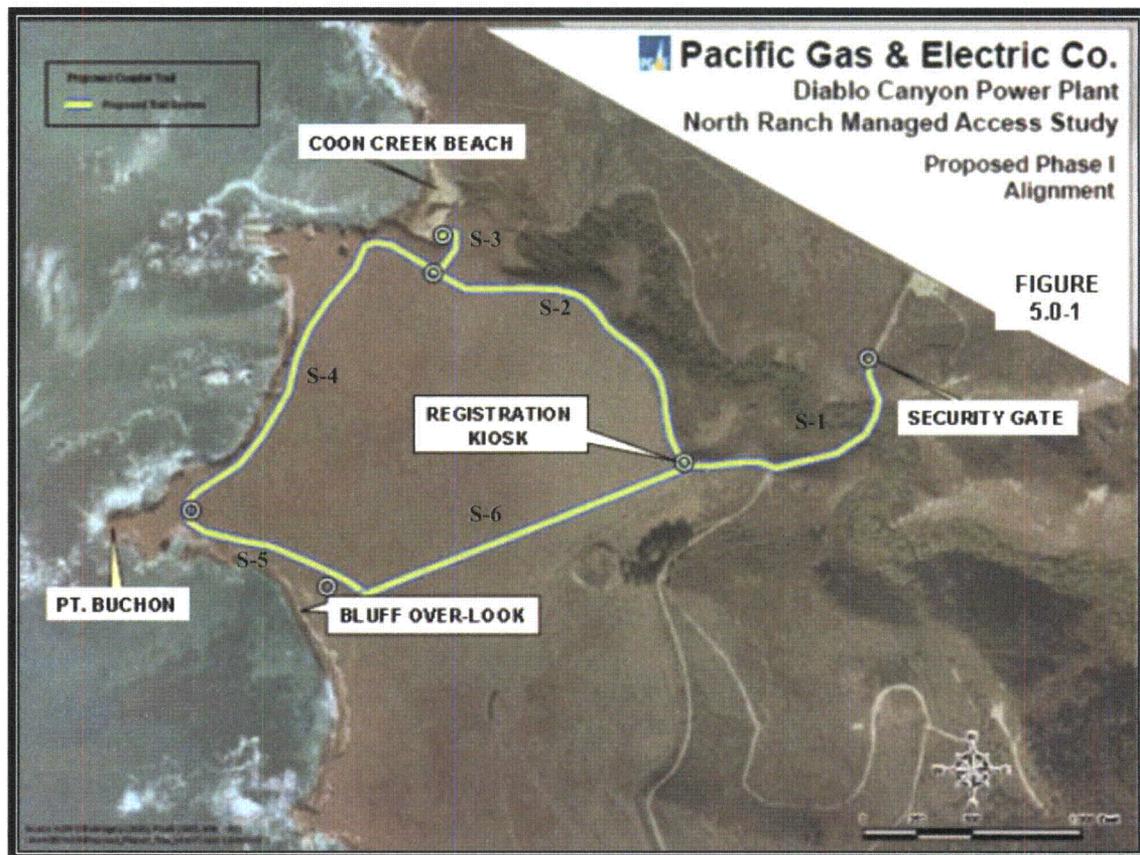


Table 5.0-1. Summary of natural and cultural resource monitoring activities and their relationship to trail segments¹.

Route Segment	Monitoring Required	Affected Resources	Frequency	Selected Attributes	Selected Indicators	Monitoring Methods
S-1	<ul style="list-style-type: none"> No 	<ul style="list-style-type: none"> None 	NA	NA	NA	NA
S-2	<ul style="list-style-type: none"> Yes 	<ul style="list-style-type: none"> Botanical Res. (Weeds) Soils (surface erosion) Terrestrial Wildlife Cultural 	Twice-annually 3 x/year (nesting birds) 2 x/year for all others 4 x/year	<ul style="list-style-type: none"> Integrity of biological community Soil/site stability Essential animal behaviors Degree of disturbance, scientific importance, and tribal significance 	<ul style="list-style-type: none"> Invasive plants Bare ground Change in use patterns or distribution of keystone or special-status species Site vandalism or adverse reaction from Native American community 	<ul style="list-style-type: none"> Floristic surveys Ground and aerial photo monitoring Protocol-based field surveys Frequent in-field review of potentially affected sites
S-3	<ul style="list-style-type: none"> Yes 	<ul style="list-style-type: none"> Botanical Res. (weeds and emergent aquatic plants) Freshwater habitats and species Soils (surface erosion) Marine (intertidal) Terrestrial Wildlife Marine (wildlife) Cultural 	Twice-annually 3 x/year (nesting birds) 2 x/year for all others Up to 5 x/year 4 x/year	<ul style="list-style-type: none"> Integrity of biological community Soil/site stability Habitat structure and function Essential animal behaviors Essential animal behaviors Integrity of biological community Degree of disturbance, scientific importance, and tribal significance 	<ul style="list-style-type: none"> Invasive plants Bare ground Harvesting or trampling effects Flight/avoidance behavior Presence/breeding by keystone species Change in use patterns or distribution of keystone or special-status species; bed and bank condition Site vandalism or adverse reaction from Native American community 	<ul style="list-style-type: none"> Floristic surveys Ground and aerial photo monitoring Quantitative intertidal sampling Direct observation Protocol-based field surveys Protocol-based field surveys and habitat condition assessments Frequent in-field review of potentially affected sites
S-4	<ul style="list-style-type: none"> Yes 	<ul style="list-style-type: none"> Botanical Res. (weeds and coastal bluff scrub habitat) Soils (surface erosion; 	Twice-annually	<ul style="list-style-type: none"> Integrity of biological community Soil/site stability Essential animal behaviors 	<ul style="list-style-type: none"> Invasive plants, sensitive plants and other native plants Bare ground; bluff retreat 	<ul style="list-style-type: none"> Floristic surveys Ground and aerial photo monitoring and precision mapping of bluff edge

¹ Trail segments are identified in Figure 5.0-1. Monitoring of trail use and user satisfaction is covered in Section 6.0.

		<ul style="list-style-type: none"> coastal bluff erosion) Grazing Terrestrial Wildlife Marine (wildlife) Cultural 	<p>3 x/year (nesting birds) 2 x/year for all others</p> <p>Up to 5 x/year</p> <p>4 x/year</p>	<ul style="list-style-type: none"> Essential animal behaviors Degree of disturbance, scientific importance, and tribal significance Integrity of biological community 	<ul style="list-style-type: none"> Flight/avoidance behavior Presence/breeding by keystone species Site vandalism or adverse reaction from Native American community Plant functional/structural groups and invasive species 	<ul style="list-style-type: none"> Direct observation Protocol-based field surveys Frequent in-field review of potentially affected sites Ground-based and aerial photogrammetric analysis
S-5	<ul style="list-style-type: none"> Yes 	<ul style="list-style-type: none"> Botanical Res. (weeds and coastal bluff scrub habitat) Soils (surface erosion; coastal bluff erosion) Grazing Terrestrial Wildlife Marine (wildlife) Cultural 	<p>Twice-annually</p> <p>3 x/year (nesting birds) 2 x/year all others</p> <p>Up to 5 x/year</p> <p>4 x/year</p>	<ul style="list-style-type: none"> Integrity of biological community Soil/site stability Essential animal behaviors Degree of disturbance, scientific importance, and tribal significance Integrity of biological community 	<ul style="list-style-type: none"> Invasive plants, sensitive plants and other native plants Bare ground; bluff retreat Flight/avoidance behavior Presence/breeding by keystone species Site vandalism or adverse reaction from Native American community Plant functional/structural groups and invasive species 	<ul style="list-style-type: none"> Floristic surveys Ground and aerial photo monitoring and precision mapping of bluff edge Direct observation Protocol-based field surveys Frequent in-field review of potentially affected sites Ground-based and aerial photogrammetric analysis
S-6	<ul style="list-style-type: none"> Yes 	<ul style="list-style-type: none"> Botanical Resources (weeds and native grasses) Soils (surface erosion) Grazing Terrestrial Wildlife 	<p>Twice-annually</p> <p>3 x/year (nesting birds) 2 x/year all others</p>	<ul style="list-style-type: none"> Integrity of biological community Soil/site stability Essential animal behaviors Integrity of biological community 	<ul style="list-style-type: none"> Invasive plants and native species Bare ground Presence/breeding by keystone species Plant functional /structural groups and invasive species 	<ul style="list-style-type: none"> Floristic surveys Ground-based and aerial photogrammetric analysis Protocol-based field surveys Ground-based and aerial photogrammetric analysis

5.1. Managed Grazing

Background and Potential Impacts

The Pt. Buchon Loop Trail goes through several livestock paddocks that are part of a managed grazing program on North Ranch. Trail use has the potential to affect this program by increasing soil compaction and soil erosion, by influencing the behavior of certain keystone rangeland wildlife species, and by changing the plant species composition. The latter effect could include decreases in native grasses and/or increases in invasive, non-native plants. Each of these factors will be assessed. Human conflicts with livestock and livestock management operations are also possible as discussed in Section 6.0.

Changes in vegetation along public access trails resulting from visitor use, including changes to vegetation cover and composition is a growing concern to resource managers, particularly related to the potential for introduction and spread of non-native plants and accelerated erosion. Vegetative cover, plant density, and species composition can be affected by trampling; accidental introduction of seeds from weedy species; unauthorized plant collecting; as well as by routine trail management practices (mowing, and other trail maintenance). These effects could occur along the authorized trail route, as well as in areas affected by unauthorized off-trail hiking. Viewing areas are especially susceptible to trampling effects.

Monitoring Design

The objective of the rangeland monitoring effort is to *prevent resource degradation and encourage positive change in resource condition*. The key attribute monitored will be the *integrity of the biological community*. The key indicator used exclusively for rangeland condition assessment will be *change in the extent, density, and species of native grasses in areas directly affected by trail routing*.

Other monitoring efforts carried out simultaneously with this assessment will provide additional indicators of rangeland health. These include monitoring of botanical resources (Section 5.3, invasive plants), geology and soils (Section 5.8, increase in bare ground area), and terrestrial wildlife (Section 5.4, retention of keystone species). Indicators chosen from these other resource monitoring categories will be used along with the native grass indicator to arrive at a comprehensive assessment of the effects of public access on rangeland health.

Analysis and Assessment of Impacts

Permanent monitoring transects will be established approximately every 500 feet along the trail and will include key viewing sites (15 transects). Quadrat sampling (one meter-square quadrat) will be used to measure percent ground cover and relative composition of native and non-native grasses at each transect location. Samples will be taken both along the trail route and a minimum 20 feet adjacent to each side of the route for comparison (for a total of three quadrats per transect). Additional control data will be collected from plots established in 2006 that provide baseline information on species and density of native grasses in the NRSA. Trail routing includes lightly used secondary road surfaces

where soil conditions (primarily compaction) may differ significantly from adjacent areas. Therefore, other comparable secondary roads outside the trail route will be sampled and the data used to help filter out road-specific effects (5 additional transects).

A total of 60 quadrats will be sampled. Plants within each quadrat will be identified to the species level (when possible). Other data collected will include percent ground cover of perennial grasses, species richness, and presence and cover of non-native species. Comparisons of plants found within trail impacted areas and control areas will permit evaluation of differences owing primarily to trampling damage.

5.2 Cultural Resources Monitoring

Background and Potential Impacts

Trail routing for the Pt. Buchon Loop Trail has been designed to avoid the most sensitive portions of known cultural sites; however the trail does not completely avoid these sites. Planning efforts for this portion of the trail have focused on insuring that all new structures (i.e. additional fencing, signage, viewing platforms, etc.) are placed on the surface with little to no ground disturbance.

The Native American community has expressed considerable concern about the trail opening. PG&E will continue to work with representatives from the local Chumash community to recognize and mitigate impacts from public access.

Monitoring Design

The objective selected for this resource category was *educating the public on the need to prevent site disturbance resulting from visitor access*. The key attribute selected for monitoring is *degree of site disturbance*. The key indicators of attribute condition will be *increased surface disturbance within sites, indications of deliberate vandalism of sites, and continued feedback from the Native American community*. PG&E has developed a cultural resources mobile GIS platform with map coverage of all known cultural sites on the property. Mapping is based on detailed field surveys performed in 2005 and 2006, the results of which are included in the CBI. The GIS platform also contains custom electronic data forms for capture and updating of attribute data in the field. This work will be performed by professional archaeologists.

Analysis and Assessment of Impacts

All sites directly affected or potentially affected by public access will be examined in the field 4 times each year, or as necessary to accurately document attribute condition at all sites. A report will be completed annually with detailed information on the status of these sites and any documented effects of public access. Summary data from this report (of a non-sensitive nature) will be included in the comprehensive annual monitoring report submitted to the CCC.

5.3 Botanical Resources

Background and Potential Impacts

The Pt. Buchon Loop Trail crosses areas adjacent to populations of two special-status plant species, Nuttall's milk-vetch (*Astragalus nuttallii*) and goldfields (*Lasthenia macrantha* ssp. *macrantha*). These species may be thought of as keystone species of the coastal bluff scrub community found on the North Ranch. Although these populations do not lie directly on the trail there is potential for impacts (trampling and collecting), especially from unauthorized off-trail activity near the bluff edge. Native perennial grasses are another botanical resource important to the overall integrity of the grassland community. Native grasses are part of the monitoring plan for managed grazing (see Section 5.1).

Other potential impacts to botanical resources include potential to riparian vegetation along Coon Creek, soil surface and bluff edge erosion, and establishment or spread of invasive, non-native plant species. Impacts to riparian vegetation could occur due to trail users leaving the authorized trail and hiking along Coon Creek. Bluff erosion and changes in bare ground will be reported in the Geology and Soils sections of monitoring reports.

Monitoring Design

The attribute chosen for botanical resources monitoring is *integrity of biological communities*. The objective chosen is *intervening to correct adverse trends in site condition*. Indicators of attribute condition will be *plant functional/structural groups, invasive plants, and bare ground*.

Other monitoring efforts carried out simultaneously with this assessment will provide additional indicators of botanical resource condition. These include monitoring of native perennial grasses (see Section 5.1), monitoring of soil surface disturbance, and bluff retreat (see Section 5.8).

Analysis and Assessment of Impacts

Sampling to determine attribute condition will involve annual field surveys to determine the status/condition of keystone species (e.g., goldfields, Nuttall's milk-vetch), invasive plant populations, change in percent ground cover of vegetation along the Pt. Buchon Loop Trail, and changes in bank stability and riparian habitat structure along Coon Creek.

Current populations of the species identified above occur within and adjacent to trail segments 4 and 5 (see Figure 5.0-1). The area covered by these populations (percent ground cover) as well as the estimated number of each species will be determined in each of these segments and compared year-to-year. Control populations of both species occur in areas not expected to be impacted by public access. These will also be sampled annually and used to help filter out non-access related effects on these species.

Invasive plant populations mapped during the development of the CBI will be examined annually and remapped as necessary to update their status and help direct efforts at

controlling currently known populations. All new populations will also be mapped using the mobile GIS platform. Annual field surveys will give special attention to all areas directly affected by trail routing in order to identify any new invasive plant populations potentially resulting from public access. Invasive species currently known to occur near the trail route include poison hemlock, tocalote, Italian thistle, veldt grass, and ice plant. It should be noted that weed control measures are on-going as a component of the stewardship program; monitoring efforts for invasive weeds associated with trail use will take into account the on-going control measures, and the appearance of new weed species and/or occurrences will be communicated to the stewardship program.

A “Green Line Survey” will be conducted from bank to bank across Coon Creek to assess bank stability and changes in riparian vegetation composition and structure. This will be accomplished to evaluate potential impacts to the riparian zone associated with trail users straying off the authorized trail and hiking along the creek.

Monitoring change in bare ground area will be part of the geology and soils monitoring described in Section 5.8, and will be conducted annually using one-meter-square quadrats located along the current trail route, as well as in areas to the south where the trail will be extended in 2008.

5.4 Terrestrial Wildlife

The Pt. Buchon Loop Trail traverses or is adjacent to several important wildlife habitats supporting a variety of wildlife species, some of which have been afforded special protective status in California. There is potential for impacts to these species and their habitats resulting directly or indirectly from public access. Monitoring to assess impacts to terrestrial wildlife will include the following faunal groups and keystone species:

- Ground-nesting birds (grassland habitat; grasshopper sparrow, horned lark, and burrowing owl)
- Small mammals (coastal bluff scrub; San Diego desert woodrat), and
- Mesocarnivores (grassland habitat; American badger)

Additional wildlife species (riparian birds, amphibians, and aquatic reptiles) are addressed in Section 5.5, Freshwater and Riparian Habitats and Species.

5.4.1 Upland Birds

Background and Potential Impacts

The Pt. Buchon Loop Trail traverses non-native grassland on the coastal bluff used in previous years by grasshopper sparrows and California horned larks during nesting season, and burrowing owls (over wintering). Both grasshopper sparrows and horned larks were observed in 2005 exhibiting nesting behavior. In 2006, only grasshopper sparrows were observed.

Although the trail will be marked, any off-trail activity could result in loss of nests. In addition, use of the trail could cause nearby ground nests to be abandoned. Disturbance of grassland burrows used by burrowing owls is another potential impact from trail use. To date no observations of burrowing owls have been made in the immediate vicinity of the Pt. Buchon Loop Trail, however these birds are known to inhabit the grasslands a short distance to the south in winter.

Monitoring Design

The attributes chosen for monitoring this faunal group are *habitat structure/function* and *essential animal behaviors*. Indicators used to determine attribute condition are *change in density and height of vegetation* and *change in use patterns or distribution of keystone or sensitive species in suitable habitat areas*.

Monitoring will focus on a comparison of the numbers of grasshopper sparrows and horned larks detected in impact vs. control areas. Quantitative data collected from meter-square plots during rangeland health monitoring (see Section 5.1) will be used to assess quality of the grassland habitat for both of these species. Breeding bird surveys will be conducted two times annually during the nesting season.

Analysis and Assessment of Impacts

Results of the monitoring survey will be evaluated and comparisons made between the impact area and control area. Patterns and trends in the relative numbers of grasshopper sparrows and horned larks will be described. Quality of the grassland habitat will be assessed using published models of habitat suitability for each species. The published scientific literature is expected to yield models that describe the physical characteristics of grassland vegetation known to be of low, moderate, or high value for these birds. If adequate models are not found in the published literature, qualitative word models will be developed for use based on best available life history information for these species and other expert opinion.

No inferential statistics will be used in the analysis. Indicators to be evaluated will include:

- Change in use patterns of sensitive species, specifically grasshopper sparrow and horned lark, and
- Changes in habitat structure, specifically the height and density of the grassland vegetation.

The areas to be monitored will include grassland sites immediately adjacent to the trail (impact area) and similar grassland habitats beyond the influence of the trail, to the south (control area).

5.4.2 Small Mammals

Background and Potential Impacts

The Pt. Buchon Loop Trail traverses areas of coastal bluff scrub habitat known to be used year-round by the San Diego desert woodrat, a keystone species for this habitat type. There is potential for trail users to walk into areas used for nesting by woodrats. Impacts could occur to the species, including direct loss of individuals, collapsing of nests, and abandonment of otherwise suitable habitat due to increased human presence.

Monitoring Design

Attributes to be evaluated are *habitat structure/function* and *essential animal behaviors*. Indicators selected for monitoring attribute condition are *presence and breeding by keystone species* and *change in structure/density of foliar cover*.

Monitoring will focus on a comparison of the number of San Diego desert woodrats humanly trapped and released in the impact and control areas each year. Qualitative information will also be collected on the bluff habitat relative to woodrat requirements. A total of 200 trap-nights will be sampled annually. All small mammals trapped will be identified by species, sex, and age, as possible.

Analysis and Assessment of Impacts

Results of the monitoring survey will be evaluated and comparisons made between the impact area and control area. Patterns and trends in the relative numbers of desert woodrats will be described. The data collected will also be compared to the baseline data gathered in 2005.

Change in quality of the bluff habitat over time will be determined based on results of annual quantitative sampling along fixed transects at locations where the trail route crosses the coastal bluff scrub habitat. Signs of human-caused habitat degradation will be noted. Indicators to be evaluated will include:

- Change in use patterns of the keystone species, San Diego desert woodrat, and
- Change in structure or density of the coastal bluff scrub habitat used by woodrats for nesting.

5.4.3 Mesocarnivores (American badger)

Background and Potential Impacts

One of the outstanding features of the North Ranch ecosystem is its high natural productivity and the complexity/diversity of its predator and prey populations. Mammalian predators including the American badger, bobcat, grey fox, coyote, and mountain lion are known to occur (and most likely breed) on the property. The Pt. Buchon Loop Trail traverses grassland areas that support foraging (and possibly breeding) by the American badger, a keystone species confirmed at sites south of the Loop Trail during baseline studies in 2005 and 2006. Increased human activity has the potential to impact the suitability of grassland areas as habitat for this species (and other mammalian predators) or to alter existing patterns of habitat use. The areas to be monitored will include the approximately 48 acres of grassland habitat encircled by the

trail (impact area) and a similarly sized area of grassland south of the trail where badgers are known to occur (control area).

Monitoring Design

The attribute chosen for evaluation is *essential animal behaviors*. Indicators of attribute condition will be *trophic level complexity and productivity* and *change in use patterns or distribution of keystone or sensitive species in suitable habitat areas*. Monitoring will focus on a comparison of the number of suitable and known occupied burrows of this species recorded from impact and control areas, and the extent of foraging activity detected in each area.

Any significant change in structural characteristics of the grassland habitat with potential to impact habitat suitability for this species will be evaluated from the results of parallel monitoring efforts (see Section 5.4.2). Burrows will be examined closely in the field for evidence of occupation and current status. Evidence of human disturbance to burrows will be noted.

Night time spotlight surveys will be performed to identify individuals at suspected active burrow sites and in areas suspected of being principal foraging locations.

Analysis and Assessment of Impacts

Analysis will focus on detection of patterns and trends in the distribution of this species and in its use of suitable habitat areas. These data will also be compared to baseline data collected in 2005 and 2006. The structural/functional aspects of the grassland community will be examined from data gathered in support of monitoring activities for other keystone grassland species (see Section 5.4.2) and assessed using descriptive models of habitat suitability for this species from the published literature. Signs of human impact to burrows loss will be noted. Indicators to be evaluated will include:

- Change in use patterns of American badgers, and
- Changes in the integrity of the grassland habitat and burrows used by this species.

5.5 Freshwater and Riparian Habitats and Species

Background and Potential Impacts

The northern boundary of the Pt. Buchon Loop Trail lies adjacent to Coon Creek, a perennial stream, and includes the mouth of this stream where it empties into the Pacific Ocean. The trail includes the beach opposite the mouth of Coon Creek. There is potential for trail users to go off-trail and into the riparian zone and waters of Coon Creek. Direct impacts could include loss of steelhead adults moving upstream or downstream, damage and loss of reeds during spawning, and loss of smolts moving downstream to the ocean. Heavy use of portions of the creek could also result in disturbance to riparian vegetation, and bank de-stabilization. Hikers wandering through the dense riparian vegetation could also cause disturbance or other direct impacts to nesting or foraging riparian birds.

Monitoring Design

The attribute selected for monitoring is *integrity of the biological community*. Indicators selected for determining attribute condition are *bed and bank condition* and *change in use patterns or distribution of keystone or sensitive species in suitable habitat areas*. Keystone vertebrate species selected for monitoring were chosen to represent all aspects of the fluvial environment including primary channel (south-central-coast steelhead), secondary channel/floodplain (California red-legged frog, southwestern pond turtle, and two-striped garter snake), and stream-side riparian habitat (song sparrow, Swainson's thrush, Hutton's vireo, common yellowthroat, and Bewick's wren).

Analysis and Assessment of Impacts

Monitoring will occur along a 0.4-mile reach of Coon Creek located immediately downstream of the bridge (impact reach) and along a length of stream located immediately upstream from the bridge (control reach). Data collected in each area will include:

Riparian Birds

- Presence of keystone riparian nesting birds, such as song sparrow, Swainson's thrush, Hutton's vireo, common yellowthroat, and Bewick's wren (all known to breed at Coon Creek).
- Changes in habitat structure, specifically the height and density of vegetative cover for riparian birds.
- Change in use patterns by special status species, specifically yellow warbler, and willow flycatcher.

Amphibians and Aquatic Reptiles

- Monitoring will focus on assessing the quality of aquatic and riparian habitats along Coon Creek relative to requirements of potential keystone species such as California red-legged frog, southwestern pond turtle, and two-striped garter snake (not currently found in Coon Creek but with potential to occur).
- Assessment of habitat quality will be based upon habitat suitability models from the published literature, or lacking established models will be based on models developed by PG&E's science team.
- Observations of all herpetofauna will be noted; relative numbers of common species, such as Pacific tree frogs, may prove important in early detection of habitat change.

South-Central Coast Steelhead

- Monitoring will focus on documentation of annual spawning activity through comparison of the numbers of redds found in both impact and control stream reaches.
- Data gathering will be done in cooperation with biologists from the City of San Luis Obispo and the California Department of Fish and Game and will help support the steelhead habitat restoration project begun on Coon Creek in 2003.
- Direct observation of off-trail activity by the public in the area of Coon Creek will also be documented.

5.6 Intertidal Resources

Background and Potential Impacts

Shoreline access from the Pt. Buchon Loop Trail is provided at Coon Creek Beach. Accessible rocky intertidal habitat to explore tidepools occurs immediately north of the mouth of Coon Creek adjacent to Montaña de Oro State Park. Tidepool exploring is a popular activity and excessive visitor traffic can negatively affect marine species by trampling, turning rocks, disturbing animals, and collecting. Fishing from the shore can also result in impacts if bait (e.g. mussels and worms) is collected from the intertidal zone.

Monitoring Design

The attribute chosen for monitoring is *integrity of the biological community*. The indicator of attribute condition selected is *change in abundance or size of target species (owl limpets, marine algae, and black abalone) relative to controls; indicative of harvesting effects*.

The intertidal monitoring program will consist of three components:

- Band transect monitoring
- Owl limpet monitoring, and
- Black abalone monitoring

Band transect sampling captures species abundance at the community level, within broad areas exposed to visitor traffic and is the same approach used for intertidal sampling in the Diablo Canyon power plant Receiving Water Monitoring Program (RWMP). By incorporating this sampling approach into the Pt. Buchon Loop Trail intertidal monitoring program, linkage is provided to an existing long-term data set representing the project area coastline.

A band transect station will be established immediately north of the mouth of Coon Creek adjacent to Montaña de Oro State Park. The RWMP has two existing band transect stations along the North Ranch coast south of the proposed Pt. Buchon Loop Trail that can serve as controls for the Coon Creek band transect station.

The Coon Creek station will consist of two band transects, each approximately 15 meters (m) in length. Data on algal cover and invertebrate densities will be recorded. Sampling will be conducted four times annually to coincide with the RWMP band transect sampling schedule.

Owl limpets are collected for food under provisions of the California Fish and Game Code. Up to 35 owl limpets can be collected per day per person with a fishing license. This species was chosen for monitoring because it is a large conspicuous organism and is known to be susceptible to human harvesting (both legal harvesting and poaching).

Fixed plots will be established to follow the abundances of owl limpets in the intertidal zones adjacent to Coon Creek and at control stations located to the south. All owl limpets sampled will be measured for shell length. Both density and size-class distributions can then be followed. Sampling will coincide with the band transect sampling.

Black abalone has declined in many California coastal areas including the Diablo Canyon coastline due to a disease called ‘withering syndrome.’ The decline has been so pronounced that black abalone is now listed as a candidate species for listing under the Federal Endangered Species Act.

Reconnaissance surveys for abalone will be done in the Coon Creek area concurrent with the other surveys. Crevices with abalone, if found, will be marked using GPS, photographed, and mapped. The numbers of abalone and their sizes will be recorded. Suitable control sites south of the Coon Creek area will be similarly documented and used for comparisons over time.

Analysis and Assessment of Impacts

Patterns and trends in algal and invertebrate abundances will be described from qualitative and professional interpretation of the data. No statistical analyses are proposed at this time. It is anticipated that the data from the initial monitoring efforts will be focused on describing the communities in the different areas. Changes at Coon Creek will be described relative to the changes at control sites. In assessing trampling effects, any diverging trends in a single species between areas may be due to a number of causes other than visitor traffic. Consequently, impacts from visitor traffic may only be implicated if decreases occur in multiple species susceptible to trampling effects, relative to changes in the same species at control stations.

In the owl limpet and abalone studies, a decline in densities combined with decreases in the average shell size at a location may indicate effects from collecting/poaching, as collectors will generally take the largest individuals. Results from other monitoring studies in San Luis Obispo County can be used to help assess the health and condition of owl limpets and abalone exposed to visitor traffic at Coon Creek.

5.7 Marine Wildlife

The marine wildlife monitoring program includes both seabird nesting colonies and marine mammal haulout sites.

5.7.1 Seabird Nesting Colonies

Background and Potential Impacts

Seabirds are vulnerable to disturbances from human intrusion, particularly during the breeding and nesting season (spring-summer). Seabirds are long-lived and have low reproductive rates, so breeding success is essential to the maintenance of population levels. Human disturbances can impact a nesting colony by disrupting courtship and nest site prospecting, feeding of young, resting behaviors, and nest site defense. Human disturbances can lead to nest abandonment and consequently reduced egg and fledgling survivorship from exposure to starvation, increased predation, and hypothermia.

The Migratory Bird Treaty Act of 1918 provides federal protection to most migratory non-game birds, which includes seabirds, and prohibits deliberate harassing or killing of these birds or deliberate destruction of their nests and eggs. Seabirds are most susceptible to impacts from visitors to the shoreline during the breeding and nesting season (May-August). The baseline inventory surveys completed in spring-summer 2005 along the North Ranch coastline identified several seabird nesting colonies.

Monitoring Design

The principal attribute to be monitored will be *essential animal behaviors*. Indicators used to assess attribute condition will be *change in use of traditional seabird breeding sites; indicative of human disturbance* and *observed human-induced flight/avoidance behavior in nesting seabirds*. Monitoring will document the patterns and variations in nesting along the coastal reach of the Pt. Buchon Loop Trail and will compare these with similar data from control sites located south of the trail area.

The seabird species of focus include the western gull, black oystercatcher, pigeon guillemot, pelagic cormorant, and Brandt's cormorant (PG&E 2006). Nesting areas of these species will be monitored using accepted survey techniques that call for repeated surveys during the active breeding/nesting season. As many as seven surveys will be completed in April through August of each year and scheduled to account for the different timing of nest site selection and peaks in nesting among the various species. Data recorded each survey will include the number of species, total number of each species, number of nests, and ratio of chicks to adults. Weather conditions and visibility will also be recorded. All observations will be made from the cliff bluff. Surveys will also be done while visitors are on the bluff trails to note whether nesting seabirds display disturbance/flight avoidance behaviors when people come into close proximity of nesting sites.

Analysis and Assessment of Impacts

Patterns and trends in nesting will be described from the empirical (observational) data and compared between impact and control areas. Some documented nesting sites are located in close proximity to, and visible from, the coastal bluff trail. A decrease in seabird nesting activity in such areas without similar decrease in nesting within control areas will be considered symptomatic of human disturbance impacts.

5.7.2 Marine Mammal Haulout Monitoring

Background and Potential Impacts

The primary marine mammal species of concern along the North Ranch coast is the Pacific harbor seal. Harbor seals commonly haul out on the shore, and can therefore be suddenly disturbed by approaching people. Unlike other pinnipeds, harbor seals, when left undisturbed, tend to remain in the same area and use the same haul out locations year after year for resting, molting, giving birth, and nursing pups. A haulout area may have 30-80 animals. Sea otters also occasionally haulout on the same rocks to rest. Where sea

otters raft in nearby kelp beds may also be influenced by the presence of people on the shore, and some types of disturbances may cause these animals to move from the area. The Marine Mammal Protection Act of 1972 provides federal protection to marine mammals, including harbor seals and sea otters, and prohibits any activity that results in harassing or killing of these animals.

Monitoring Design

The principal attribute selected for monitoring marine mammals is *essential animal behaviors*. Indicators used to assess attribute condition are *change in use of traditional haulout/resting sites by marine mammals; indicative of human disturbance* and *observed human-induced flight/avoidance behavior in marine mammals*. Monitoring will document patterns and variations in haulout use by harbor seals and sea otters within the impact area and control sites located south of the Pt. Buchon Loop Trail.

Bi-weekly monitoring will be performed to coincide with the surveys of an ongoing sea otter count program. Haulout locations and number of harbor seals (adults and pups) and sea otters at each location will be described and mapped during each survey. Weather, sea state, and tide levels will be recorded.

Ideally, haulout surveys should be conducted during low tide when there is the largest amount of intertidal shoreline area for marine mammals to haulout onto. However, many low tides occur during the night. Consequently, completing all of the surveys only during the lowest tides is not feasible. Instead, the surveys are scheduled for morning hours to the best extent possible, regardless of tide level. As a result, some surveys will be conducted during a daytime low tide while others will be conducted during a daytime high tide. Furthermore, a survey beginning in the south area may start during a low tide, but when the survey is completed at the north end of the study region the tide level will be undoubtedly higher, and vice versa.

It is expected, however, that bi-weekly surveys should provide a sufficient number of observations under a number of environmental conditions to fully document the spatial and temporal patterns in haulout use along the NRSA coast and in reference areas. Furthermore, many people, if not most, will visit and use public access bluff trails regardless of tide level. It is therefore important to document haulout use independent of tide level (and sea conditions).

The bi-weekly surveys, however, will be augmented with specially scheduled mapping surveys to more definitively confirm whether haulout site(s) have not been abandoned or if they have been completely abandoned. This effort will be scheduled to occur in late spring/early summer (May-July) after the annual March pupping season. This effort will also be scheduled in this period to occur during calm sea and low tide conditions and during the harbor seal's summer molt when animals are most likely to spend time out of the water. Data collected during these specific conditions when most

harbor seals would be expected to be out of the water will provide an additional baseline on haulout use.

Analysis and Assessment of Impacts

Patterns and trends in use of haulout sites by marine mammals will be based on the empirical (observational) data gathered in the field and expert opinion. Consistency and variations in use of haulout sites by harbor seals and sea otters, including use of rafting sites by sea otters, will be examined.

Separating potential visitor impacts from natural variation will rely on comparisons made between impact and control areas. Changes indicative of visitor impacts include abandonment of a historic haulout site close to the bluff trail or change in diet use patterns (avoiding times when visitors are present).

5.8 Geology and Soils Monitoring Program

Background and Potential Impacts

The opening of the Pt. Buchon Loop Trail to the public could potentially result in bluff retreat impacts, increases in bare ground in the vicinity of the trail, and site instability due to the establishment of new, unauthorized trails, as well as the unauthorized widening or lengthening of the Pt. Buchon Loop Trail. The spur trail to the beach access at the mouth of Coon Creek could potentially be impacted by the creation of shortcuts (bypassing switchbacks in the trail) and by slippage of the slope from uphill widening of the trail.

The routing of the Pt. Buchon Loop Trail is relatively close to the coastal bluff at some locations. Coastal bluff erosion is a continuous process and represents a long-term trail management issue, as well as a source of public safety concern. Areas of highest concern are those where coastal cave formations underlie the bluff near the trail alignment increasing the risk of a sudden mass wasting event (sinkhole formation). Surficial soil erosion caused by human traffic is also a concern throughout.

Monitoring Design

The attribute to be monitored is *site stability*. Indicators selected to monitor attribute condition are *increase in bare ground area accompanied by erosion and loss of top soil, and bluff retreat impact on trail location*.

Surficial erosion and bare ground are of concern also to managed grazing and botanical resource protection. As such, the monitoring approach presented here will help inform the process of monitoring described in Sections 5.1 and 5.3. Permanent one-square meter quadrats will be used to assess bare ground and surface erosion at selected locations along the Pt. Buchon Loop Trail. Control sites (as described in Sections 5.1 and 5.3) will provide additional information for use in interpreting hiker impacts. Additional sites will be established to the south where the trail will be extended in 2008. The portions of the trail on which square-meter plots are established will be examined and a trail condition classification (discussed below) assigned to each.

Photo monitoring points will be established at points where overlooks may result in hikers to stray from the trail and narrow the interval of undisturbed ground between the trail and the edge of bluff. The sinkhole is a good example. Some of the photo monitoring points will support data collected on bluff retreat impacts (described below).

Coastal bluff erosion will be monitored using controlled aerial photography at a scale of one-square foot per pixel or higher resolution to produce high quality color digital orthophotos and computer aided design (CAD) drawings. This will require setting several permanent monuments (rebar & cap) in the coastal plain area and temporary aerial panels (white cross on black background) at the time of the flight. Survey-grade GPS will provide accuracy of +/- one-centimeter.

Analysis and Assessment of Impacts

The aerial survey contractor, supported by PG&E's professional surveyors will create both digital orthophoto and CAD drawings of the top-of-bluff and bluff-edge from which to determine change over time. These comparisons will be made from flights performed once every three years beginning in 2007.

Analysis of soil erosion will use the trail condition classification system currently used by the Department of Interior, National Park Service, and will include photo documentation. This classification system rates trail conditions from Class I through Class IV, as summarized below:

- Class I – Lightly damaged trail. One to several impact features may be present. Overall, the trail is stable and does not require any maintenance as long as the conditions do not deteriorate further.
- Class II – Moderately damaged trail. Trail segments clearly show deteriorating conditions. Either a single impact feature with significant damage or a combination of more than two impact features is present. Trail damage is significant enough to prescribe some management actions.
- Class III – Highly damaged trail. Potential hotspot; magnitude and extent of damage are significant.
- Class IV – Severely damaged trail or “hotspot”. A trail under this classification requires urgent repair, without which land degradation is inevitable in the near future. Damage is likely to spread.

The trail will be assessed annually using the permanent square-meter plots that will be established in 2007. Percent bare ground and trail class condition will be evaluated over time, as will the incidence of unauthorized trail establishment and widening/lengthening of the authorized trail. The integrity of each site surveyed will be assessed. Photos will be examined to evaluate the potential loss of undisturbed ground near the bluff edge at overlooks. Recommendations will be made regarding re-routes and improvements to trail stability, as appropriate.

6.0 Monitoring Visitor Use

6.1. Managed Access Program and Process of Visitor Documentation

As part of the North Ranch Managed Access Program, all hikers are required to check in, read and sign a waiver document, familiarize themselves with hiker safety information provided by PG&E, and check out again on leaving the property. This process helps support site security, and emergency preparedness/response.

6.2. Visitor Groups and Types of Uses

Public access is limited to pedestrian use only and hikers are instructed to remain on the trail at all times. Unauthorized uses include, but are not limited to: horseback riding, motorized biking, camping, bicycling, and group functions such as weddings, family picnics, and concerts. The public may not bring animals of any kind, including companion animals onto the property. Unauthorized uses have been established primarily for the protection of natural and cultural resources, the protection of private property and for the safety of the public during their enjoyment of these lands.

6.3. Visitor Surveys

The Managed Access Program will monitor and document visitor attendance. Incidents regarding security issues and trespassing will also be collected. Comments received through informal contact between visitors and PG&E staff will also be documented. Informal comments from visitors will help identify potential conflicts (e.g., pedestrian interaction with livestock, working dogs, guardian dogs and electrified fencing), helping inform decisions aimed at improving the visitor experience.

6.4. Records Keeping

Daily visitor numbers and security incidents, including witnessed trespassing will be maintained by PG&E or its contracted Management Agency in a project database. Summary statistics will be drawn from these data for inclusion in required monitoring reports (see below) and submitted to the California Coastal Commission (CCC).

7.0. Reporting

Each year for five years following approval of the Access Plan by the Executive Director, PG&E will submit a report to the CCC describing implementation of the Plan and the results of the monitoring measures described here. The Executive Director will ask the DTF to evaluate the monitoring results and to recommend modifications to the Access Plan, if necessary. After the first five years, PG&E will submit monitoring reports only every fifth year, but will continue to conduct and document monitoring activities on an annual basis.

PG&E will use short, standardized reporting templates to record and transmit the results of monitoring over nine subject areas. These subject areas include:

- Planned vs. Actual Visitation
- Current-Year Conditions Affecting Monitoring
- Access-Related Impacts on Natural Resources
- Access-Related Impacts on Cultural Resources
- Access-Related Impacts on Sustainable Agriculture
- Security and Public Safety
- Proposed Modifications Addressing Impacts
- Schedule and Costs of Proposed Modifications

The annual report of monitoring will include these short one to two page reports arranged like chapters with an appropriate introduction to provide overall continuity. On approval by the CCC of a final plan of access, PG&E will make all necessary adjustments to the monitoring plan and then will design these reporting templates to suit the specific needs of the access program.

8.0. References

- Benech, S.V. 1996. Observations of the Sea Otter (*Enhydra lutris*) Population between Pt. Buchon and Rattlesnake Creek, January through December 1995. Unpublished report. 59pp.
- Briske, D. D., S. D. Fuhlendorf, and F. E. Smeins. 2005. State-and-Transition Models, Thresholds, and Rangeland Health: A Synthesis of Ecological Concepts and Perspectives. *Rangeland Ecol. Manage.* 58:1–10. January.
- Frame, M. A. 1972. Cormorant nesting, San Luis Obispo County, California, 1972. Calif. Dept. Fish and Game, Spec. Wildl. Invest. Prog. Rept., Proj. W-54-R-4.
- Krenn, S.J. and S.V. Benech. 1987. Distribution of pinniped haulout sites in the vicinity of Diablo Canyon Power Plant, July 1973 - June 1986. Chapter VIII in Behrens, D.W. and White, C.O. (eds.), *Environmental investigations at Diablo Canyon, 1986*. Volume I - Marine ecological studies. PG&E, Dept. Engr. Res. December 1987.
- Lowry, M.S., J.V. Carretta, and K.A Forney. 2005. Pacific harbor seal (*Phoca vitulina richardsi*) census in California during May-July 2004. National Marine Fisheries Service, Southwest Fisheries Science Center. Admin Rept. LJ-05-06. pp.1-30.
- Munoz-Erickson, T. A., M. R. Loeser, and B. J. Aguilar-Gonzalez. 2004. Identifying Indicators of Ecosystem Health for a Semiarid Ecosystem: A Conceptual Approach (In): van Riper, C., III, and K.L Cole, editors. *The Colorado Plateau: Cultural, Biological, and Physical Research*. The University of Arizona Press, Tucson, AZ. pp. 139 – 152.

PG&E. 2006a. (Draft) North Ranch Managed Access: Comprehensive Baseline Inventory. Pacific Gas and Electric Company, Diablo Canyon Power Plant. July 2006.

_____. 2006b. North Ranch Managed Access Plan. Pacific Gas and Electric Company, Diablo Canyon Power Plant. July 2006.

_____. 2006c. (Draft) North Ranch Managed Access: Access Monitoring Plan. Pacific Gas and Electric Company, Diablo Canyon Power Plant. July 2006.

Raimondi, P.T., R.F. Ambrose, J.M. Engle, S.N. Murray, M. Wilson. 1999. Monitoring of rocky intertidal resources along the central and southern California mainland. 3-Year Report for San Luis Obispo, Santa Barbara, and Orange Counties (Fall 1995-Spring 1998). OCS Study, MMS 99-0032, U.S. Minerals Management Service, Pacific OCS Region.

Raimondi, P. and L. Bergen. 2003. Withering syndrome in black abalone. Ecosystem Observations. Monterey Bay National Marine Sanctuary.

Sowls, A. L., A. R. DeGrange, J. W. Nelson, and G. S. Lester, 1980. Catalog of California Seabird Colonies. U.S. Department of the Interior, Fish and Wildlife Service, Biological Services Program. FWS/OBS-80/37.

Studer, M. 2000. California's Pacific Harbor Seals. White Paper. Project Pacific. Unpublished report. 15pp.

Silverman, B. W. 1986. Density Estimation for Statistics and Data Analysis. Chapman and Hall Publishers. 76pp.

USDA and USDI. 2000. Interpreting indicators of rangeland health. Natural Resources Conservation Service and the Bureau of Land Management, Technical Reference 1734.

APPENDICES

APPENDIX A.

Summary Results of 2005 Biological and Geological Field Studies

Table A-1. Terrestrial wildlife surveys, 2005.

Species	Investigative Methods	Results
INVERTEBRATES		
Morro shoulderband snail	Protocol-level surveys conducted by C. Rogers.	None found during protocol surveys. Found offsite at same time.
Monarch butterfly	Surveyed for in conjunction with protocol surveys by C. Rogers for the Morro shoulderband snail.	Individual monarchs observed during the first two surveys. Potential aggregation sites noted, but none definitely identified.
Morro Bay blue butterfly	No specific surveys, but searched for during each visit for the Morro shoulderband snail	None observed.
Smith's blue butterfly	No specific surveys, but searched for during each visit for the Morro shoulderband snail	None observed.
San Emigdio blue butterfly	No specific surveys, but searched for during each visit for the Morro shoulderband snail	None observed.
Unsilvered fritillary butterfly	No specific surveys, but searched for during each visit for the Morro shoulderband snail.	None observed.
FISH		
Steelhead	No surveys conducted. Known use of Coon Creek – reported in recent San Luis Obispo Co. EIR and other sources.	Known use of Coon Creek. Recent habitat improvement project in Coon Creek focused on this species.
Tidewater goby	No surveys conducted. Known use of mouth of Coon Creek – reported in recent San Luis Obispo Co. EIR and other sources.	Known use of Coon Creek at the mouth and lower reaches.
AMPHIBIANS AND REPTILES		
California tiger salamander	No specific surveys, but Trout Pond surveyed for aquatic herptiles during protocol CRLF surveys.	No eggs, larvae, metamorphs, or adults observed.
Western spadefoot toad	No specific surveys, but Trout Pond surveyed for aquatic herptiles during CRLF surveys.	No eggs, larvae, metamorphs, or adults observed.
Coast Range newt	Coon Creek thoroughly examined during protocol CRLF surveys.	None observed.
Foothill yellow-legged frog	Coon Creek thoroughly examined during protocol CRLF surveys.	None observed.
California red-legged frog (CRLF)	Protocol-level surveys conducted at Trout Pond and along Coon Creek.	None observed. Also no observations during non-protocol surveys prior to stream improvements (per recent San Luis Obispo Co. EIR).
Southwestern pond	Coon Creek and Trout Pond both	None observed during surveys for CRLF.

turtle	thoroughly examined during CRLF surveys.	
Two-striped garter snake	Coon Creek and Trout Pond both thoroughly examined during CRLF surveys.	None observed during surveys for CRLF.
Southern rubber boa	No specific surveys, but upland areas examined during reconnaissance for live-trapping, and during surveys for silvery legless lizard and coast horned lizard.	None observed during reconnaissance for, and implementation of, live-trapping for small mammals. None observed during surveys for other terrestrial species.
Silvery legless lizard	Thorough survey during Sept. 26-27, 2005. Upland areas also surveyed during reconnaissance surveys and during live-trapping.	None observed. Soil substrate is rocky/cobbly material from Irish Hills. Not ideal for this species. Small dune area at mouth of Coon Creek over-washed by high tides and high runoff. Habitat more suitable east of Pecho Valley Road.
Coast horned lizard	Thorough survey during Sept. 26-27, 2005. Upland areas also surveyed during reconnaissance and during live-trapping.	None observed during surveys. NRSA lacked sign of dominant native ants. May be some present in NRSA, but limited in number.
BIRDS		
Raptors	Sightings incidental to other surveys. Also monitored activity at peregrine falcon nest site on June 7 and June 25, 2005.	Pair of peregrine falcons nested on the NRSA property in 2005. Three sightings of burrowing owls (likely three separate individual birds) by PG&E biologists during night surveys for badgers. Observations of red-tailed hawk, golden eagle, northern harrier, barn owl, great horned owl during herptile, bird, and small mammal surveys. No observations of Cooper's hawk.
Western snowy plover	Surveyed small dune area at mouth of Coon Creek each time LBVI/WIFL survey conducted.	None observed. The small dune area is mostly unsuitable habitat. Nesting could take place, but there is no adequate foraging habitat for chicks to feed. Dunes subject to inundation too often by high tides.
California horned lark (HOLA)	2005: Incidental sightings during surveys for LBVI and WIFL, as well as during monitoring of the peregrine falcon nest. 2006: Focused surveys performed during spring.	2005: Observed HOLA and heard singing males on three occasions in April and June. Likely breeding population in grassland on coastal bluff. 2006: None observed.
Loggerhead shrike	2005: Searched for during surveys for LBVI and WIFL, as well as during monitoring of peregrine falcon nest. 2006: Searched for during upland surveys.	2005: None observed. If present, would be in low densities. 2006: None observed.
Southwestern willow flycatcher (WIFL)	Protocol-level surveys conducted.	Two willow flycatcher individuals (subspecies unknown) observed on April 22. These individuals were not present during later surveys. Probably transients of the <i>brewsteri</i> subspecies.
Least Bell's vireo (LBVI)	Protocol-level surveys conducted.	None observed during any of the protocol-level surveys.

Yellow warbler	Surveyed for this species while conducting protocol surveys for LBVI and WIFL.	Detected during seven surveys. One confirmed nesting pair. Possibly three other pairs.
Yellow-breasted chat	Surveyed for this species while conducting protocol surveys for LBVI and WIFL.	None observed. Coon Creek riparian lacks well-developed overstory preferred by chat.
Bell's sage sparrow	No specific surveys. Incidental sightings during other bird surveys (LBVI/WIFL) and monitoring of peregrine falcon nest.	None observed or heard. NRSA lacks chaparral/scrub vegetation required by this species.
Grasshopper sparrow	2005: Incidental sightings during other bird surveys (LBVI/WIFL), reconnaissance for live-trapping, and monitoring of peregrine falcon nest. Focused surveys performed in spring 2006	2005: Singing males heard by K. Whitney on three occasions and on one occasion each by T. Olson and P. Collins. Likely breeding population in grassland on coastal bluff. 2006: Multiple males detected, no known nest sites, but likely nesting in the NRSA.
Tricolored blackbird	No specific surveys, but included as a target species during other bird surveys (LBVI/WIFL), reconnaissance for live-trapping, and monitoring of peregrine falcon nest.	None observed during bird surveys along Coon Creek, reconnaissance for live-trapping, or herpetological surveys at Trout Pond and along Coon Creek. Most suitable habitat at mouth of Coon Creek had nesting colony of red-winged blackbirds, but no tri-colored blackbirds.
MAMMALS		
San Diego desert woodrat	Live-trapping surveys conducted. Reconnaissance survey done ahead of time to identify potential woodrat habitat areas.	San Diego desert woodrats trapped at all locations identified as possible habitat (four of five trap lines).
Morro Bay kangaroo rat	Live-trapping conducted in one area on coastal bluff with possible kangaroo rat burrows.	No kangaroo rats of any species trapped. Area with possible burrows was mostly pocket gopher activity. Dunes at mouth of Coon Creek appear to be unsuitable due to periodic inundation by high tides and high runoff.
American badger	Night-lighting for individuals. Searches for burrows by P. Fidenci, S. Krenn, and M. Fry. Additional night surveys by PG&E biologists.	Two individual badgers observed. Several burrows found in coastal bluff area.
Ringtail	No specific surveys conducted. Previous studies reviewed, as well as databases. Potential to observe this species during night-time surveys for badgers.	No sign of ringtail observed during surveys for other species. Unlikely to occur onsite, but could be present in nearby canyons, further upstream.
Bobcat	No specific surveys conducted. Incidental observations made during other surveys.	Observed on at least two occasions during bird and invertebrate surveys.
Mountain lion	No specific surveys conducted. Incidental observation made during other surveys.	Observed during one of the botanical surveys.
Bats	No specific surveys conducted. Results of previous studies reviewed, as well as databases. Potential to incidentally observe bats surveys in evenings and at night.	No observations. Some foraging by bats possible in NRSA. No roosting habitat in the form of larger trees present. Could be roosting in nearby canyons.

Table A-2. Sensitive plant species known or potentially occurring in the NRSA.

Species	Common Name	F/S/CNPS	Habitat	Results
<i>Arctostaphylos cruzensis</i>	Arroyo de la Cruz manzanita	SC/-/1B	Sandy coastal bluffs	Not found, habitat poor
<i>Arctostaphylos morroensis</i>	Morro manzanita	T/-/1B	Sand dunes	Not found, habitat absent
<i>Arctostaphylos pechoensis</i>	Pecho manzanita	SC/-/1B	Coastal scrub – shale	Not found, occurs nearby, habitat poor
<i>Arctostaphylos wellsii</i>	Wells' manzanita	-/-/1B	Sandstone chaparral	Not found, habitat lacking
<i>Atriplex coulteri</i>	Coulter's saltbush	-/-/1B	Coastal bluffs, clay soils	Not found, habitat present
<i>Astragalus nuttallii nuttallii</i>	Nuttall's milk-vetch	-/-/4	Coastal bluffs, clay soils	Found both seasons on coastal bluffs and points
<i>Calochortus obispoensis</i>	San Luis mariposa lily		Chap. grassland, serpentine	Not found, habitat lacking
<i>Calystegia subacaulis episcopalism</i>	Cambria morning glory	-/-/1B	Chaparral, woodland	Not found, habitat lacking
<i>Carex obispoensis</i>	San Luis sedge	-/-/1B	Serpentine springs	Not found, habitat absent
<i>Castilleja densiflora obispoensis</i>	Obispo indian paintbrush	-/-/1B	Coastal grassland	Not found, habitat present
<i>Chorizanthe breweri</i>	Brewer's spineflower	-/-/1B	Coastal scrub, serpentine	Not found, habitat marginal
<i>Cirsium occidentale compactum</i>	Compact cobwebby thistle	-/-/1B	Coastal prairie scrub, chaparral	Not found, habitat present
<i>Eridictyon altissimum</i>	Indian knob mountain balm	-/-/1B	Chaparral, sandstone	Not found, occurs nearby, habitat lacking
<i>Lasthenia macrantha macrantha</i> **	Gold fields	-/-/1B	Coastal bluffs	Found, occurs on bluffs; sensitive habitat type
<i>Layia jonesii</i>	Jones' layia	-/-/1B	Chaparral, grassland, serp.	Not found, habitat marginal
<i>Suaeda californica</i>	California suaeda	E/-/1B	Coastal salt marsh	Not found, habitat absent

Notes: California Native Plant Society (CNPS) ranks are: 1A = plant presumed extinct in California, based on 2000 inventory; 1B = plants rare and endangered in California and elsewhere; 4 = plants of limited distribution in California. California Department of Fish and Game (S or CDFG) ranks are: E = endangered; T = threatened; R = rare. U.S. Fish and Wildlife Service (F or USFWS) ranks are: E = endangered; T = Threatened; PE = proposed for endangered status; PT = proposed for threatened status; SC = Species of Concern

* Based upon spring (05 and 06) and summer (05) on site field surveys performed at approximately 21-day intervals in the described NRSA. Species that are known to occur in unique or specialized habitats (e.g. vernal pools) that are not present on the property were not specifically targeted although all species observed were inventoried (see Appendix).

** This taxon may be a new species or subspecies (acc. To D. Keil, Cal Poly, SLO). Investigation ongoing (5-05) with R. Chan (UC Berkeley).

Table A-3. NRSA marine baseline surveys for intertidal species, nesting seabirds, and marine mammal haulouts, 2005-2006.

Species	Investigative Methods	Results
Intertidal species	<ul style="list-style-type: none"> • The entire NRSA cliff bluff, including headlands, was walked twice to identify and validate potential shoreline access locations. • All locations were mapped in GIS. • The types and extent of intertidal habitats below each cliff access location were noted, including the functional traversable length of shore at the waterline. 	<ul style="list-style-type: none"> • 10 cliff locations where visitors could potentially access the intertidal zone were identified and mapped. • The locations differed in access and egress safety. • Ropes, ladders, handholds, and/or stairways would be needed at most locations. • All shoreline areas differed in wave exposure and the types and amounts of rocky intertidal and sand beach habitats present. • All areas differed in their proximity to other potentially sensitive resources (e.g., nesting seabirds, marine mammal haulout sites, cultural resources). • DCPD Receiving Water Monitoring Program (RWMP) stations are located near 5 of the 10 access locations.
Intertidal species	<ul style="list-style-type: none"> • The intertidal zone at each access location was qualitatively surveyed for species composition and abundance. • The types and extent of shoreline habitats were also noted. • No specialized sampling was conducted to quantify species composition and abundances at the access locations. • Quantitative data collected from 1976 to present at the 5 RWMP stations located along the NRSA coast can be used to characterize overall intertidal species composition and relative abundances for the general north coast. 	<ul style="list-style-type: none"> • The north coast RWMP station database provides abundance information on ~90 algal taxa and ~150 invertebrate taxa. • Spatial and temporal variation can be described from the data. • The same top 10 taxa comprise ~95% of the total abundance across the RWMP stations. • The most common species at the access locations were the same as those at the RWMP north coast stations. • Species abundances between areas differ slightly as a function of habitat variation and amount of suitable habitat. • Species susceptible to visitor impacts (trampling, collecting) can be described for each access location from the qualitative surveys. • Species susceptible to visitor impacts differ between areas, due to habitat variation.
Nesting seabirds	<ul style="list-style-type: none"> • Two surveys were conducted along the NRSA coast during spring-summer 2005 to identify cliffs, offshore rocks, and sea stacks that tend to be used most as seabird nesting sites. • All observations were made from the mainland cliff bluff. • Nesting sites, species, numbers, and behavior were mapped in GIS. 	<ul style="list-style-type: none"> • Nesting seabird sites were closely associated with sea cliff geomorphology and offshore rocks and sea stacks. • Bedrock sea cliffs and headlands, which provide ledge, crevice, and undercut nesting habitats, are much more common in the reach between Coon Creek and Tom's Pond than between Tom's Pond and Crowbar Canyon. • The sides and tops of offshore rocks and sea stacks also provide seabird nesting habitats, and are more common between Coon Creek and Tom's Pond.

	<ul style="list-style-type: none"> • The sea cliffs and headlands of the entire mainland shore were inspected because observations could be made from several angles and vantage points. • Only the inshore sides of offshore rocks and sea stacks could be inspected from the mainland. • No observations were made of the seaward sides of offshore rocks and sea stacks. 	<ul style="list-style-type: none"> • Seabirds and nests were significantly more abundant on the mainland sea cliffs and offshore rocks and sea stacks between Coon Creek and Tom's Pond than between Tom's Pond and Crowbar Canyon.
Marine mammals	<ul style="list-style-type: none"> • Four surveys were conducted along the entire DCPN north coast during summer 2005 to map primary and secondary seal haulout sites. • Species, numbers, and locations were mapped in GIS. 	<ul style="list-style-type: none"> • Harbor seals tend to haulout on the beaches and bench platforms at the cliff base, while sea lions tend to haulout on offshore rocks. • The seal haulout sites observed during the four surveys were generally consistent with those mapped by Krenn and Benech (1987). One new primary haulout site was discovered in 2005 (base of Disney Point). • 100-200 harbor seals may be hauled out at any given time along the NRSA coast property. • Several sea otters may be hauled out, typically in the same areas as harbor seals.

Table A-4. NRSA geology and soils baseline surveys for coastal bluff caves, 2005.

Target	Investigative Methods	Results
Sea caves	<ul style="list-style-type: none"> • The locations of sea caves were mapped in GIS to indicate coastal bluff areas that may be prone to collapse from the voids beneath the top-of-cliff. • Sea caves were mapped from oblique aerial photographs of the entire NRSA coast. 	<ul style="list-style-type: none"> • Sea caves were defined as a hole of sufficient dimension where one could sit or stand in. • The sea cliffs between Coon Creek and Tom’s Pond to the south consist mainly of bedrock peppered with sea caves of various dimensions. Many caves are very large. Arch rocks also characterize the same stretch of coast. • There are essentially no sea caves south of Tom’s Pond. • The lack of sea caves south of Tom’s Pond is due to the sea cliffs consisting of unconsolidated sediments that are more prone to land sliding and erosion from rainfall. • The top-of-cliff throughout the entire NRSA coast property is mainly unconsolidated sediments, which also overlie the bedrock cliffs and headlands north of Tom’s Pond. Consequently, the entire cliff bluff edge throughout the NRSA property should be considered fragile, and one should not traverse too closely to the cliff edge in any area. The cliff edge drops off vertically, and some cliff edges are undercut.

APPENDIX B.
2007 Monitoring Report

Table of Contents

1.0	
INTRODUCTION.....	55
1.1. BACKGROUND.....	55
1.2. PURPOSE OF THIS DOCUMENT	56
1.3. MONITORING APPROACH	57
2.0 RESOURCE-SPECIFIC	
MONITORING.....	60
2.1. MANAGED GRAZING.....	60
2.2. CULTURAL RESOURCES.....	62
2.3. BOTANICAL RESOURCES	65
2.4. TERRESTRIAL WILDLIFE.....	67
2.5. FRESHWATER AND RIPARIAN HABITATS AND SPECIES	73
2.6. MARINE INTERTIDAL RESOURCES.....	79
2.7. MARINE WILDLIFE	83
2.8. GEOLOGY AND SOILS	87
3.0 VISITOR	
USE.....	90

List of Figures

Figure B-1. Pt. Buchon Loop Trail and Pecho Coast Trail Visitors Bar Graph	40
--	----

List of Tables

Table B-1. Pt. Buchon Loop Trail and Pecho Coast Trail Visitors	39
Table B-2. Trespassers	41
Table B-3. Security Incidents	41

1.0 INTRODUCTION

1.1. BACKGROUND

In December of 2004, Pacific Gas & Electric Company (PG&E) received from the California Coastal Commission (CCC) a Coastal Development Permit (CDP) for construction of a spent fuel storage facility at Diablo Canyon Power Plant (DCPP) (revised findings A-3-SLO-04-035, PG&E, December 16, 2004). Under Special Condition 3 of this permit, PG&E is required to prepare a managed access plan for public use of Diablo Canyon lands north of the power plant, referred to herein as the North Ranch Study Area (NRSA). Special Condition 3 also requires monitoring of the implementation and effects of the public access program. The following, taken from page 9 of the December 16, 2004 permit document, details this requirement:

Monitoring: The Access Plan shall include a monitoring and evaluation component to provide information documenting Access Plan implementation over the life of the project and that can be used as a basis for proposed adaptations, if any, to the Plan that may be warranted by experience. Elements to be included in the monitoring and evaluation component shall include those reasonably necessary to determine the following:

- A description of whether public use has resulted in any environmental effects, including possible negative and positive impacts, based on an evaluation using the baseline environmental inventory prepared pursuant to this condition,
- A discussion of what modifications to the Plan, if any, may be appropriate based on the evaluation described above,
- A description of whether public use has resulted in any effects, negative or positive, on the continuation of environmentally sustainable agricultural activities,
- A comparison of the levels of visitation anticipated in the Plan with actual levels of visitation at the various access ways,
- A description of effects, if any, of visitation on security and public safety and on archaeological resources and any measures taken or proposed to avoid or reduce those effects.

Reporting: For each of the five years after approval by the Executive Director of the Access Plan, the Permittee shall submit annual reports to the Executive Director describing implementation of the Plan and the results of the above monitoring measures. The Executive Director shall convene the task force at least once per year during this five-year period to evaluate the monitoring results and to recommend modifications to the Access Plan, if necessary. After the first five years, the Permittee shall submit reports every five years describing experience implementing the Access Plan.

PG&E prepared an Access Plan, based on the following information and data analysis procedures:

- A comprehensive baseline inventory (CBI) of the NRSA,
- Specific comments on monitoring received from the Diablo Task Force (DTF) during review of the Preliminary Environmental Baseline (PEB) prepared by PG&E,
- A cumulative resource sensitivity analysis performed after completion of the CBI,
- An Access Plan developed to address specific route planning goals, and
- The results of an October 2005 workshop on environmental threshold monitoring conducted by PG&E specifically to support this public access project.

In July of 2007, the first portion of the NRSA was opened for public access. The Pt. Buchon Loop Trail located in the northernmost part of the NRSA was opened on Fridays through Sundays. The trail is shown on Figure 5.0-1 of the Monitoring Plan. Public access will be extended further to the south within the NRSA in the future.

1.2. PURPOSE OF THIS DOCUMENT

The purpose of this first monitoring report is to present results of initial monitoring surveys conducted in 2007. The 2007 monitoring surveys focused on the Pt. Buchon Loop Trail to evaluate the level of impacts caused by the first months of public access. However, some survey effort also took place on the NRSA south of the Pt. Buchon Loop Trail in anticipation of subsequent extension of public access. These additional surveys will assist in evaluating impacts due to public access by collecting pre-use (control) data.

Surveys were conducted to evaluate potential impacts caused by public access to the following resource categories:

- Sustainable agriculture
- Cultural resources
- Botanical resources
- Terrestrial wildlife
- Freshwater and Riparian Habitats and Species
- Marine intertidal resources
- Marine birds and mammals
- Geology and soils, including conditions along the coastal bluff and public access trail

In addition, analyses of visitor levels and safety and security issues are included in the report.

Section 2 of this report discusses each of the above-listed resource categories, including descriptions of the baseline conditions, methods used to monitor the resources during the initial months of public access, the current conditions, and results of the monitoring surveys. Section 3 addresses patterns in visitor usage of the NRSA.

Because this first report does not entail an entire year of monitoring, but rather less than a half-year, monitoring efforts for some resource categories are not complete. For example, data on special-status plants and invasive plants will be collected during the spring and summer of 2008 when plants are readily identifiable. Similarly, surveys for breeding birds, both marine and terrestrial, will be conducted in spring 2008. It is anticipated that a more complete monitoring report, with a full year of monitoring data, will be produced in 2009.

1.3. MONITORING APPROACH

The approach to monitoring the effects of public access followed PG&E's 2007 Access Monitoring Plan. To the extent possible, control and impact areas were established in the study area. As described previously, the monitoring efforts emphasized the Pt. Buchon Loop Trail, currently the only portion of the NRSA open to public access. However, in anticipation of expanded public access in the NRSA, monitoring data were also collected in portions of the NRSA south of the Pt. Buchon Loop Trail. The specific approaches to monitoring are described for each resource category in Section 2.

Surveys Conducted in 2005 and 2006

Prior to the opening of the Pt. Buchon Loop Trail, surveys were conducted in the NRSA during 2005 and 2006. Baseline data were collected for the following resources within the NRSA:

- Terrestrial botanical resources
- Terrestrial wildlife
- Freshwater and Riparian Habitats and Species
- Marine resources
- Cultural resources
- Sustainable agriculture
- Geology and soils

The objectives of the 2005 and 2006 surveys were to: (1) supplement data compiled in the previously referenced PEB; (2) develop an environmental baseline that could be used for comparative purposes during subsequent monitoring; and (3) provide input for the development of a plan to monitor the effects of public access on the natural and cultural resources of the NRSA. Data from the 2005 and 2006 field surveys were combined with the PEB data, a summarization of results from 34 previous studies that occurred between 1975 and 2005. The resultant document was the Comprehensive Baseline Inventory.

Environmental Thresholds Workshop

In August 2005, PG&E met with the CCC in San Francisco and there proposed that PG&E hold a workshop to gather information on environmental thresholds and help identify how this concept would be applied to the required monitoring program. The CCC agreed, and planning for the workshop was begun.

The goal of the workshop, held on October 5, 2005, was to identify, by resource category, measurable parameters sensitive to the potential effects of increased public access. These key indicators serve to help identify change while use of selected control or reference areas allows filtering of natural variation from anthropogenic (human) effects. In this way, monitoring can examine the effects of managed public access on biological and cultural resources, and help direct adaptive resource management decisions aimed at avoiding significant impacts.

The workshop was attended by senior staff scientists from each of the consulting firms that participated in field studies to complete the CBI (Scott Kimura, Tenera Environmental; Tom Olson, Garcia and Associates; John Stebbins, Botany Department, California State University, Fresno). Frank Haselton, LSA Associates, served as workshop moderator. PG&E staff participants included senior consulting scientists, Mike Fry and Dr. Bill Page, senior cultural resources specialist, Glenn Caruso, and senior biologist, Sally Krenn.

Technical presentations on threshold theory (Dr. Richard Ambrose of the Dept. of Environmental Health Sciences, UCLA) and threshold theory as applied by the Natural Resources Conservation Service in rangeland health assessments (Mike Fry of PG&E) were followed by breakout sessions. The workshop participants were divided into two broad subgroups. One subgroup represented marine resources (intertidal species and habitats, marine mammals, and seabirds), along with geology and soils. The other subgroup addressed terrestrial biological resources (sensitive plants, animals, and community types) and cultural resources. Each group was tasked with developing a list of potential access-related impacts specific to their resource categories (Table 4.2.-1 of the Monitoring Plan).

Table 4.2-1 of the Monitoring Plan. Potential impacts of managed access (from October 2005 workshop on environmental thresholds) within the NRSA.

IMPACTS	RESOURCE CATEGORIES							
	AG	BOT	TW	FWW	MW	MIT	GS	CR
Increase in non-native species		X	X	X				
Avoidable impacts to nesting birds (MBTA/ESA)			X	X	X			
Conflict between humans and livestock	X							
Forced reduction in livestock grazing area	X	X	X					
Declining area/condition of sensitive habitats		X	X	X	X	X		
Increased sources of fire ignition	X	X	X	X			X	X
Handling, collection, disturbance of native species		X	X	X	X	X		
Increase in area of bare ground	X	X	X	X			X	X
Increased erosion/sedimentation	X	X	X	X	X	X	X	X
Presence of people on coastal bluff			X	X	X			X
Trampling		X	X	X		X	X	X
Disturbance/collection of cultural objects								X
Vandalism/graffiti								X
Native American cultural concerns								X
Disturbing micro-habitat elements (rocks, down wood, etc.)		X	X	X		X	X	X
Compromise of long-term scientific baseline	X				X	X		X

Resource Key: AG – agriculture, BOT – botanical resources, TW – terrestrial wildlife, FWW – freshwater wetlands, MW – marine birds and mammals, MIT – marine intertidal, GS – geology and soils, CR – cultural resources

From this list, the workshop subgroups identified resource-specific monitoring goals, objectives, attributes, and indicators. Attributes and indicators for the eight resource categories listed above are described in the Monitoring Plan to which this summary report is appended.

2.0 RESOURCE-SPECIFIC MONITORING

2.1 MANAGED GRAZING

Introduction

Historical research has shown that agriculture has taken place within the boundaries of the current NRSA from the mid-1880s to the present. Since the mid-1980s, crop production has been discontinued and the form of agriculture occurring on the NRSA is managed livestock grazing. The continued presence of livestock within the Pt. Buchon Loop Trail area is consistent with the California Coastal Act and the policies of the California Coastal Commission.

The Pt. Buchon Loop Trail traverses several livestock paddocks that are a part of the managed grazing program. The grazed paddocks contain native bunchgrasses that are being restored in the NRSA. Public access-related effects could include trampling by hikers straying off the trail. Trail use has the potential to affect this program by increasing soil compaction and soil erosion, by influencing the behavior of certain keystone rangeland wildlife species, and by changing the plant species composition. The latter effect could include decreases in native grasses and/or increases in invasive, non-native plants. In addition, there is concern for human safety due to possible interactions with livestock, guard dogs, and electric fences.

The objective of the rangeland monitoring effort is to prevent resource degradation and encourage positive change in resource condition. The key attribute monitored will be the integrity of the biological community. The key indicator used exclusively for rangeland condition assessment will be change in the extent, density, and species of native grasses in areas directly affected by trail routing. Other monitoring efforts carried out simultaneously with this assessment will provide additional indicators of rangeland health. These include monitoring of botanical resources (invasive plants), geology and soils (increase in bare ground area), and terrestrial wildlife (retention of keystone species). Indicators chosen from these other resource monitoring categories will be used along with the native grass indicator to arrive at a comprehensive assessment of the effects of public access on rangeland health.

In conjunction with Geology and Soils (assessment of erosion along the trail), a series of one square-meter plots were established in December 2007. The plots were established in impact and control areas along the Pt. Buchon Loop Trail, as well as in areas to the south where the trail will be extended in 2008. The percentage of bare ground was estimated in each of the plots. Photos were taken of each plot.

Additional one square-meter plots will be established in spring. Plants within each quadrat will be identified to the species level (when possible). Other data collected will include percent ground cover of perennial grasses, species richness, and presence and cover of non-native species. Comparisons of plants found within trail-impacted areas and control areas will permit evaluation of differences owing primarily to trampling damage.

Preliminary Findings

Most data collection to evaluate indicators listed in Table 4.3-1 of the Monitoring Plan will be done in spring/summer 2008. Some data on bare ground were collected in December 2007 in conjunction with evaluation of trail erosion as part of the Geology/Soils monitoring.

Indicator: Increase in bare ground accompanied by erosion and loss of topsoil

Widened trail use, especially along the trail to the beach, has resulted in an increase in bare ground. This has also occurred to a lesser extent near the fence around the sinkhole. Plots along the Pt. Buchon Loop Trail will be sampled again in 2008 to evaluate if increases in bare ground are continuing. Additional data on bare ground area will be collected in more one square-meter plots to be established in spring/summer 2008. The bare ground data will be collected along with information on native grasses, occurrence of non-native plants, and species richness of plants

Indicator: Presence and breeding by keystone species

Based on results from 2005 surveys, keystone small mammal species were deer mouse (*Peromyscus maniculatus*) and desert woodrat (*Neotoma lepida*). During the September 2007 surveys, desert woodrats were captured at four of the five sites, and deer mice were trapped at three of the five sites. The distribution of keystone species captures was similar to results from 2005 surveys. Overall, a total of 116 small mammals were caught. The small mammals consisted of seven species: harvest mouse (*Reithrodontomys megalotis*), deer mouse (*Peromyscus maniculatus*), California mouse (*Peromyscus californicus*), desert woodrat (*Neotoma lepida*), dusky-footed woodrat (*Neotoma macrotis*), California meadow vole (*Microtus californicus*), and California pocket mouse (*Chaetodipus californicus*). The majority of animals caught were desert woodrats (59%), followed by deer mice (15%), and California mice (12%). Based on this indicator there was no change in the presence of keystone small mammal species that could be attributed to public access.

The American badger is a keystone mesocarnivore species in the NRSA. Badger observations included detection of sign and one live individual. Thirty-nine American badger burrows and numerous badger diggings were found within the boundaries of the survey area. It is likely that only a fraction of the 39 burrows found were active at the time of the survey. Badgers are known to move frequently from burrow to burrow. The eyeshine of a live badger was also observed on the night of October 19 at a location

approximately 150 meters northwest of the western burrowing owl /American badger survey area. Based on monitoring results, there is no indication that use of the Pt. Buchon Loop Trail has affected badgers on the NRSA.

Conclusions

Initial Geology/Soil surveys along the Pt. Buchon Loop Trail indicated that public use is resulting in some increases in bare ground due to trail widening and lengthening, as well as due to the creation of unauthorized trails. As such, there is potential for increases in bare ground, as well as compaction and loss of native grasses by trampling in portions of the grazed paddocks that are traversed by the trail. Small mammal trapping surveys and surveys for badgers indicated no substantial change from 2005 results. It appears that public access from the opening of the trail in July 2007 until the surveys were conducted in September 2007 did not impact keystone mammal species that occur in the grazed paddocks.

Surveys to be conducted in 2008 will help evaluate these indicators. The one square-meter plots will be repeated as part of Geology and Soils monitoring. Other monitoring surveys to be conducted will include one square-meter plots for invasive plant species, bare ground, and plant species richness, as well as surveys for terrestrial bird and mammal species to assess the health of keystone species.

2.2 CULTURAL RESOURCES

Introduction

The NRSA is rich in cultural resources dating to both the prehistoric and historical eras. Cultural resources include archaeological and historical sites as well as places important to living communities; these are fragile, non-renewable resources that are easily damaged. Many sites in the NRSA, particularly those along the coastal bluff, are vulnerable to damage or destruction as a result of increased public access.

Section 30244 of the Coastal Act requires that reasonable mitigation measures shall be implemented where development would adversely impact archaeological or paleontological resources. The California Environmental Quality Act of 1970 also recognizes actions that diminish the integrity of historical resources (i.e., properties eligible for the National Register of Historic Places, California Register of Historical Resources, or a local register) as significant environmental impacts. The National Historic Preservation Act of 1966, National Environmental Policy Act of 1969, and other federal laws, statutes, and regulations provide protection to cultural resources and require that effects on such resources from federal undertakings be taken into account during the course of project development.

NRSA cultural resource surveys and site condition assessments are intended to monitor for changes in the condition and integrity of archaeological and historical sites and areas of importance to local Native American communities resulting from intensified

recreational land uses (Table 4.3-2 of the Monitoring Plan). To generate baseline data, Applied Earthworks (Æ) performed background historical research and field surveys. Background research focused on historical uses of the project area, including the farming activities of Japanese immigrants during the 1920s and 1930s. Fieldwork for baseline data collection was performed during October 2005. Twenty-two known archaeological sites were located, and the area in and around each resource was intensively surveyed. Information gathered during that field effort was combined with data from the original site records, and each site was recorded to current standards on the appropriate California Department of Parks and Recreation form (DPR-523). Each site was photographed and current site conditions were documented. The nature and distribution of cultural remains visible on the surface was compared to the data recorded on the existing site record, and site boundaries were established based on both data sets.

To document impacts of public access on seven archaeological sites along the Pt. Buchon Loop Trail, Æ performed three separate condition assessments. The first assessment was conducted on July 5, 2007, immediately prior to the initial opening of the trail loop. Two assessments were conducted after the trail was opened to the public, on October 2 and November 27, 2007. In accordance with the original documentation conducted in 2005, each site was located, intensively surveyed, documented and photographed during each site assessment. Any impacts resulting from increased foot traffic, trampling, vandalism, erosion, or other human or natural factors were noted for each site. Additionally, tours of the NRSA were provided to Chumash tribal representatives, and their insights and concerns regarding cultural resources were recorded.

Preliminary Findings

Indicator: Change in density of surface artifacts; indicative of artifact looting by visitors

Baseline data indicated that substantial numbers of flaked and ground stone artifacts were evident on the surface of the large site complex on the south side of Coon Creek. During the October and November site assessments, no such artifacts were visible, suggesting that they had been collected by visitors. To test this assumption, a large flaked stone projectile point was deposited in a surface location hidden from but accessible to trail users; that artifact had been removed within 30 days.

Indicator: Change in relative abundance or distribution of artifacts; indicative of artifact looting or movement

Comparison of baseline data with site assessment information indicates that larger, more visible artifact types (ground and flaked stone tools, large pieces of debitage) are being taken by visitors, while smaller or less obvious materials (shell and bone debris) have been left behind.

Indicator: Increase in number of foot paths across recorded sites; indicative of artifact trampling and midden compaction

Comparison of baseline data with site assessment information indicates that visitors are not staying on the existing trail and new footpaths are being created through sites.

Indicator: Increased erosion of the coastal bluff; indicative of trampling and loss of site deposits

This indicator was particularly evident on the north and south sides of Coon Creek, where there is clear evidence of visitors accessing the beach through archaeological deposits. Midden deposits in these areas are eroding rapidly from this increased traffic on the slope.

Indicator: Increased concern voiced by local Native American representatives; indicator of loss of traditional values and tribal significance

In a series of meetings and site visits, representatives of Northern Chumash tribal groups have voiced substantial concern over the increased traffic on residential sites, loss of site integrity, and potential impacts to human remains and sacred sites.

Conclusions

Cultural resource condition assessments indicate that archaeological sites are being impacted as a result of increased visitation. Site monitoring in 2008 will continue for the trail segment between Coon Creek and Pt. Buchon, but also will include surveys and condition assessments for sites south of Pt. Buchon. Surveys may also include monitors watching sites while people are on bluff trails and down on the shore, to note the extent to which visitors are knowingly focusing on archaeological sites.

Future trail routing plans should consider the sensitivity of cultural resources that are in close proximity to bluff trails and down on the shore. Trails should be routed away from known sites.

2.3 BOTANICAL RESOURCES

Introduction

The Pt. Buchon Loop Trail crosses areas adjacent to populations of two special-status plant species, Nuttall's milk-vetch (*Astragalus nuttallii*) and goldfields (*Lasthenia macrantha* ssp. *macrantha*). The former is on the California Native Plant Society's (CNPS) List 4 (Watch List), while the *Lasthenia* is included on CNPS's List 1B (Plants Rare, Threatened, or Endangered in California and Elsewhere). In addition to their special status, these species may also be thought of as keystone species of the coastal bluff scrub community found on the NRSA. Although these populations do not lie directly on the trail there is potential for impacts (trampling and collecting), especially from unauthorized off-trail activity near the bluff edge. Native perennial grasses are another botanical resource important to the overall integrity of the grassland community. Native grasses are part of the Monitoring Plan for managed grazing.

Other potential impacts to botanical resources include damage to riparian vegetation along Coon Creek, soil surface and bluff edge erosion, and establishment or spread of invasive, non-native plant species. Impacts to riparian vegetation could occur due to trail users leaving the authorized trail and hiking along Coon Creek. Bluff erosion and changes in bare ground will be reported in the Geology and Soils sections of monitoring reports.

The attribute chosen for botanical resources monitoring was integrity of biological communities. The objective chosen was intervening to correct adverse trends in site condition. Indicators of attribute condition will be plant functional/structural groups, invasive plants, and bare ground (see Table 4.3-3 of the Monitoring Plan).

Other monitoring efforts carried out simultaneously with this assessment will provide additional indicators of botanical resource condition. These include monitoring of native perennial grasses (to be included as part of the Managed Grazing monitoring), monitoring of soil surface disturbance (included as part of the Geology and Soils monitoring), and bluff retreat (also part of Geology and Soils). Data on perennial grasses will be collected in spring/summer 2008. Initial data collections on soil surface disturbance/bare ground area and bluff retreat were conducted in late fall and winter 2007. See the Geology and Soils section of this report for additional description.

Other surveys to monitor effects of public access on botanical resources will be conducted in spring/summer 2008 when plants are actively growing and readily identifiable. Such surveys will include annual field surveys to determine the status/condition of keystone species (e.g., goldfields, Nuttall's milk-vetch), invasive plant populations, and changes in bank stability and riparian habitat structure along Coon Creek. Specific methodologies will be one square-meter plots to count special-status/keystone species and invasive species, and to estimate percent bare ground. In addition, a Green Line Survey will be conducted from bank to bank across Coon Creek to

assess bank stability and changes in riparian vegetation composition and structure. This will be accomplished to evaluate potential impacts to the riparian zone associated with trail users straying off the authorized trail and hiking along the creek.

Preliminary Findings

Data on occurrence of the two special-status/keystone species and invasive species will be collected in spring/summer of 2008, as will data on riparian vegetation resources (via the Green Line sampling). Some information on bare ground in the vicinity of Pt. Buchon Loop Trail has already been collected in conjunction with Geology and Soils monitoring, as reported below.

Indicator: Increase in bare ground accompanied by erosion and loss of topsoil

As reported in the Geology and Soils section, widened trail use, especially along the trail to the beach, has resulted in an increase in bare ground. This has also occurred to a lesser extent near the fence around the sinkhole. These data collected along the Pt. Buchon Loop Trail indicate that some increases in bare ground are occurring. These plots will be sampled again in 2008 to evaluate if increases in bare ground are continuing. For evaluation of botanical resources, additional data on bare ground area will be collected in more one square-meter plots to be established in spring/summer 2008. The bare ground data will be collected along with information on native grasses, occurrence of non-native plants, and species richness of plants

Conclusions

Initial Geology/Soil surveys along the Pt. Buchon Loop Trail indicated that public use is resulting in some increases in bare ground due to trail widening and lengthening, as well as due to the creation of unauthorized trails. As such, there is potential for increases in bare ground in other areas of the Pt. Buchon Loop Trail area. There is potential for localized impacts due to public access. Other impacts could occur to botanical resources, including effects on plant functional/structural groups, declines in keystone plant species (such as Nuttall's milk vetch and perennial goldfields), and increases in invasive plant species. Those indicators will be evaluated following surveys in 2008. It should also be noted that some unauthorized pathways in the Coon Creek riparian zone were observed during the steelhead habitat evaluation survey. If this type of impact continues, it will likely be detected during the 2008 Green Line survey.

Surveys in 2008 will include the one square-meter plots that will be repeated as part of Geology and Soils monitoring. Other monitoring surveys to be conducted will include one square-meter plots for invasive plant species, bare ground, and plant species richness, and the Green Line survey of the Coon Creek riparian zone.

2.4 TERRESTRIAL WILDLIFE

2.4.1 UPLAND BIRDS

Introduction

The upland habitats on the NRSA are utilized by a variety of birds, including year-round resident species, breeding species that winter elsewhere, and wintering species that nest elsewhere. Upland birds can be disturbed by the presence of humans. This is especially true for nesting species and those wintering in specialized habitats, such as burrowing owls that utilize burrows made by California ground squirrels (*Spermophilus beecheyi*) and American badgers (*Taxidea taxus*). Although adult birds are usually able to move out of harm's way, the contents of nests on the ground (eggs, nestlings) can be trampled. If disturbed, nesting adults could potentially abandon the nests prior to eggs hatching or prior to young fledging from the nests. If burrows are inadvertently collapsed by trail users, birds can become trapped inside.

Nearly all native species of birds and their nests are protected by the Migratory Bird Treaty Act of 1918, as well as by California Fish and Game Code, Sections 3503 and 3513. Fully protected species are protected by California Fish and Game Code, Section 3511. In addition, there are upland birds known from the region that are considered to be Species of Special Concern in California. One species known to nest in cliff habitat on the NRSA, the peregrine falcon (*Falco peregrinus*), is a state-listed endangered species and formerly was a federal-listed endangered species that has been delisted.

The monitoring program for upland birds will evaluate potential visitor-related impacts, such as nest abandonment and decreases in the use of areas along the trail by breeding and nesting upland birds (see Table 4.3-4 of the Monitoring Plan). Monitoring of upland birds at the NRSA will include: (1) surveys for upland breeding birds, with emphases on California horned lark (*Eremophila alpestris actia*) and grasshopper sparrow (*Ammodramus savannarum*), both Species of Special Concern; (2) monitoring of the peregrine falcon nest site; and (3) surveys for wintering western burrowing owls (*Athene* [= *Speotyto*] *cunicularia hypugea*). The first two efforts have not occurred as part of the Pt. Buchon Loop Trail monitoring program. Because monitoring surveys for terrestrial wildlife began in September 2007, breeding by upland birds had already concluded, as had nesting by peregrine falcons. These two monitoring tasks will be conducted in spring/summer 2008.

Surveys for wintering burrowing owls on the NRSA were conducted in conjunction with surveys for American badgers by Rob Gilman and Brian Carris, on October 19 and 20, 2007. An area in the southern portion of the NRSA was chosen because it contained a large open expanse of grazed grassland containing numerous burrows large enough to accommodate burrowing owls. The biologists systematically walked linear transects to search for burrowing owls and their sign (i.e. burrows, scat, pellets, tracks, feathers, and prey remains). The area surveyed was south of the Pt. Buchon Loop Trail. Results were compared to survey results from 2005 to evaluate if disturbance due to public access is

affecting this species in areas of known use to the south. The September 2007 survey results will also serve as the “before” results prior to the extension of the Pt. Buchon Loop Trail southward into the NRSA later in 2008.

Preliminary Findings

Indicator: Presence/breeding by known special-status species

The burrowing owl is a Species of Special Concern in California. None were observed in the NRSA during surveys conducted in October 2007. Although the trail opened in July 2007, surveys for burrowing owls did not occur until October. However, the timing of the surveys was appropriate for detecting this species in wintering areas. Despite the lack of sightings, the Pt. Buchon Loop Trail area contains suitable habitat for burrowing owls, as do adjacent areas to the south. Burrowing owls were observed during earlier surveys on the NRSA in 1993, and three were sighted during night surveys by PG&E biologists in September and October 2005.

Indicator: Changes in use patterns or distribution of keystone or special-status species in suitable habitat areas

Although observed in 1993 and 2005, this species was not observed during the monitoring surveys of October 2007. The number observed by PG&E biologists in the fall of 2005 was relatively small (three individuals observed). As such, the lack of sightings in 2007 may not be due to increased human presence associated with trail use. Continued monitoring during fall/winter months will add to the knowledge of the NRSA by wintering burrowing owls. If surveys in the future result in no observations of this species in fall/winter, that may be an indication of human presence affecting use of the area by burrowing owls.

Indicator: Presence/breeding by previously undocumented special-status species

Nesting by burrowing owls has not been documented in the NRSA. Surveys for breeding upland birds to be conducted in spring 2008 could potentially result in the detection of breeding by this species, and could indicate a lack of impact caused by trail users.

Indicator: Change in density and height of vegetation

Additional surveys will be conducted, including collection of data on vegetation density and height. Results will be evaluated for changes that may be due to increased human use of the area.

Conclusions

Surveys in 2008 will include those for breeding upland birds, with emphases on grasshopper sparrow, California horned lark, and burrowing owl. If upland birds are

affected by the opening of the trail, such impacts may be more readily detected during these spring/summer surveys. Disturbance by humans could potentially cause upland birds to nest in lower densities along the Pt. Buchon Loop Trail. The lowered densities of nesting birds may be indicated by fewer males heard vocalizing during the surveys. If one or more active burrowing owl nests are located, their locations should be evaluated relative to the Pt. Buchon Loop Trail. If necessary, portions of the trail should be re-routed or closed during nesting by this species to avoid nest abandonment.

If peregrine falcons nest again in 2008 at the NRSA, the nest should be periodically monitored to assess if public use of the Pt. Buchon Loop Trail (or extensions of the trail to be opened to the public in 2008) are causing behavioral changes in the adult birds. Similar to the possibility of burrowing owl nest sites, it may be necessary to re-route or close a portion of the trail during the nesting season.

2.4.2 SMALL MAMMALS

Introduction

A number of small mammal species are known or have the potential to utilize the NRSA. Increased use of a portion of the NRSA by users of the Pt. Buchon Loop Trail could affect small mammal populations, primarily by trampling burrows and nests used by these species. For example, desert woodrats (*Neotoma lepida*) often establish nests in and near the bluffs overlooking the ocean. Such areas attract trail users who are interested in the ocean views. A high volume of foot traffic along the bluffs could result in loss of woodrat nests. In addition, increased human presence could cause some diurnal small mammals to avoid use of areas altogether.

Small mammal species potentially occurring along or near the Pt. Buchon Loop Trail include the San Diego desert woodrat (*Neotoma lepida intermedia*) and the Morro Bay kangaroo rat (*Dipodomys morroensis*). The former is a Species of Special Concern in California, while the latter is state- and federal-listed endangered species, protected by the California and Federal Endangered Species Acts.

Small mammal trapping was conducted in September 2007 by Garcia and Associates biologists. The trapping survey was conducted about two months after the opening of the Pt. Buchon Loop Trail. Emphasis was placed on documenting the presence of small mammals to compare to results from previous years' surveys (especially those conducted in 2005) and to surveys to be conducted in the future. Five lines, each with 20 traps, were trapped for three consecutive nights. Three of the trap lines were established within the impact area of the Pt. Buchon Loop Trail. The other two were located south of the current trail, in areas where the trail will likely be extended during 2008. Indicators of interest included the presence of keystone and special-status species, changes in the pattern of use by such species, and the breeding/presence by previously unknown species (see Table 4.3-4 in the Monitoring Plan). Based on previous small mammal trapping efforts, species

commonly known from the area included desert woodrat and deer mouse (*Peromyscus maniculatus*).

Preliminary Findings

Indicator: Presence and breeding by keystone species

Based on results from 2005 surveys, keystone small mammal species were deer mouse (*Peromyscus maniculatus*) and desert woodrat (*Neotoma lepida*). During the September 2007 surveys, desert woodrats were captured at four of the five sites, and deer mice were trapped at three of the five sites. The distribution of keystone species captures was similar to results from 2005 surveys. Overall, a total of 116 small mammals was caught. The small mammals consisted of seven species: harvest mouse (*Reithrodontomys megalotis*), deer mouse (*Peromyscus maniculatus*), California mouse (*Peromyscus californicus*), desert woodrat (*Neotoma lepida*), dusky-footed woodrat (*Neotoma macrotis*), California meadow vole (*Microtus californicus*), and California pocket mouse (*Chaetodipus californicus*). The majority of animals caught were desert woodrats (59%), followed by deer mice (15%), and California mice (12%). Based on this indicator there was no change in the presence of keystone small mammal species that could be attributed to public access.

Indicator: Presence/breeding by known special-status species

The desert woodrats captured during the survey were likely the San Diego desert woodrat subspecies, a Species of Special Concern in California. This was the only special-status species live-trapped during both the previous survey in 2005 and the monitoring survey in September 2007. Thus, there was no change in the indicator involving presence of known special-status species.

Indicator: Changes in use patterns or distribution of keystone or special-status species in suitable habitat areas

As described above, special-status (San Diego desert woodrat) and keystone species (San Diego desert woodrat and deer mouse) were both captured in habitats, locations, and total numbers similar to the 2005 survey.

Indicator: Presence/breeding by previously undocumented special-status species

Four species of small mammals captured during September 2007 had not been live-trapped in the past: western harvest mouse, dusky-footed woodrat, California vole, and California pocket mouse. In contrast, there were two species live-trapped in 2005 that were not captured in 2007: Botta's pocket gopher and California ground squirrel. All the species captured during only one year or the other were common species and were represented by a small number of individuals. In addition, the one trap line in 2007 was new and was located to better represent habitats occurring not only along the Pt. Buchon

Loop Trail, but also in the southern portions of the NRSA into which the trail may be extended in 2008. The differences in species represented in 2005 and 2007 results are not significant enough to possibly be attributed to public access.

Conclusions

For similarly located trap lines, there was no significant difference in results between the September 2007 and 2005 surveys. In both years, the most frequently captured species were desert woodrat and deer mouse. Relative to previous surveys, three new species were captured in 2007. Two species trapped in 2005 were not captured in 2007. The principal factor in the change in species detected was the change in location of one trap line. The new trap line was included to assist in monitoring areas south of the Pt. Buchon Loop Trail because it is likely that the trail will be extended to the south. The new line, as well as a limited number of traps in other lines, were closer to larger expanses of scrub habitat and also included areas characterized by grassland with little shrub component. As a result, two species found in shrub-dominated habitats (dusky-footed woodrat and California mouse) and two grassland-adapted species (western harvest mouse, California vole) were detected in 2007. Overall, none of the four indicators for which data were collected suggested differences either between the impact and control areas, or between September 2007 survey results and results from previous surveys. Currently, there is no indication of adverse effects to small mammal populations due to public access.

Monitoring of small mammals in 2008 will consist of a similar live-trapping effort in September. If these taxa are affected by trail users, this may be detected by decreases in numbers of species or individuals captured. Emphasis will be placed on evaluation of desert woodrat, both a keystone and special-status species in the NRSA.

2.4.3 MESOCARNIVORES (AMERICAN BADGER)

Introduction

The American badger was considered in past years to be a Species of Special Concern in California and is regulated as a furbearer species by the California Department of Fish and Game. It is known to inhabit the grassland areas of the NRSA. Most of the badger occurrence is south of the Pt. Buchon Loop Trail. Increased use of the area due to the opening of the trail has the potential to affect badgers. This is especially true of areas to the south, where the trail may be extended. Badger burrows could be collapsed, and badgers may discontinue utilizing areas with increased human presence.

Monitoring surveys conducted by Garcia and Associates biologists included searches for burrows (in conjunction with surveys for burrowing owls), as well as spotlight surveys for eyeshine. A daytime survey was conducted by Rob Gilman and Brian Carris on October 19 and 20, 2007. An area in the southern portion of the NRSA was chosen because it contained a large open expanse of grazed grassland containing numerous burrows large enough to accommodate badgers. The survey was conducted by systematically walking linear transects to search for live badgers and their sign (i.e.

burrows, scat, tracks, and remains). The area surveyed was south of the Pt. Buchon Loop Trail. Results were compared to survey results from 2005 to evaluate if disturbance due to public access is affecting badgers in areas of known use to the south. The October 2007 survey results will also serve as the “before” results prior to the extension of the Pt. Buchon Loop Trail southward into the NRSA later in 2008. In addition to the daytime survey, Mr. Carris searched for badger eyeshine on the nights of October 19 and 20. He used a 500,000 candle-power spotlight while driving a vehicle along existing dirt roads.

Preliminary Findings

Indicator: Presence and breeding by keystone species

The American badger is a keystone mesocarnivore species in the NRSA. Badger observations included detection of sign and one live individual. Thirty-nine American badger burrows and numerous badger diggings were found within the boundaries of the survey area. It is likely that only a fraction of the 39 burrows found were active at the time of the survey. Badgers are known to move frequently from burrow to burrow. The eyeshine of a live badger was also observed on the night of October 19 at a location approximately 150 meters northwest of the western burrowing owl /American badger survey area. Based on monitoring results, there is no indication that use of the Pt. Buchon Loop Trail has affected badgers on NRSA.

Indicator: Presence/breeding by known special-status species

The badger is also a special-status species occurring on the NRSA. Monitoring survey results are described above. Based on those results, there is no indication that opening the Pt. Buchon Loop Trail had negative impacts on this species.

Indicator: Changes in use patterns or distribution of keystone or special-status species in suitable habitat areas

A comparison of results of surveys conducted in 2005 and October 2007 did not indicate a change in the pattern of use of the Pt. Buchon Loop Trail area by this species. Results from subsequent surveys will allow further evaluation of this indicator. Biologists will evaluate if there have been changes in the use patterns or distribution of badgers in grassland areas of the Pt. Buchon Loop Trail and areas to the south.

Indicator: Change in density and height of vegetation

Additional surveys will be conducted, including collection of data on vegetation density and height.

Conclusions

Results of the October 2007 surveys for American badgers were similar to those of surveys conducted in 2005. In both years, badgers were detected by eyeshine at night and by the presence of burrows and digging activity found during daytime surveys. The Pt. Buchon Loop Trail, as well as other portions of the NRSA to the south are suitable for badgers. Overall, none of the indicators for which data were collected suggested differences between October 2007 survey results and results from previous surveys. Currently, there is no indication of adverse effects to American badgers due to public access.

Badger monitoring in 2008 will consist of additional daytime surveys for burrows and digging activity, as well as limited night surveys for eyeshine. If active badger burrows are found near the trail, consideration should be given to re-routing that portion of the trail. This is more likely to happen in areas south of the Pt. Buchon Loop Trail, if the trail is extended in 2008.

2.5 FRESHWATER AND RIPARIAN HABITATS AND SPECIES

2.5.1 STEELHEAD HABITAT IN COON CREEK

Introduction

The northern boundary of the Pt. Buchon Loop Trail lies adjacent to Coon Creek, a perennial stream, and includes the mouth of this stream where it empties into the Pacific Ocean. The trail includes the beach opposite the mouth of Coon Creek. There is potential for trail users to go off-trail and into the riparian zone and waters of Coon Creek. Direct impacts could include loss of steelhead (*Oncorhynchus mykiss*) adults moving upstream or downstream, damage and loss of reeds during spawning, and loss of smolts moving downstream to the ocean. The South-Central Coast steelhead is recognized as a federal-endangered taxon. Heavy use of portions of the creek could also result in disturbance to riparian vegetation and bank de-stabilization.

Attributes evaluated during the initial year of monitoring included site stability and integrity of biological community (see Table 4.3-5 of the Monitoring Plan). Indicators evaluated were bed and bank condition and presence of known special-status species. During future surveys, other indicators will be evaluated, such as sedimentation, channel-forming processes, trophic level structure, and changes in use patterns or distribution of keystone or special-status species.

Coon Creek was evaluated as habitat for steelhead (*Oncorhynchus mykiss*) above (control area) and below (impact area) the Pecho Valley Road bridge. Two evaluation protocols were used. First, the California Department of Fish and Game's (CDFG) Stream Habitat Inventory Protocol for instream habitats was utilized. Data were collected at every fifth pool in both the impact and control areas. This was the most efficient means of collecting

data on potential rearing habitat in the creek. The second method used was the Pfankuch methodology to characterize bank stability above and below the bridge.

Preliminary Findings

Indicator: Channel-forming processes

This reach of Coon Creek includes good quality steelhead habitat. The quality of the habitat was increased in recent years by a steelhead improvement project. The dominant channel-forming process was this man-made project. A series of connecting pools was either improved or created to facilitate passage by steelhead. The pools created by the project are deeper and wider than pools elsewhere in this reach. The dominant feature of the creek and associated riparian zone is that vegetation in undisturbed reaches is so dense that it is nearly impassible. Those areas in which pool creation and steelhead habitat improvement were implemented have less dense vegetation due to the disturbance caused by the project. Because more of the habitat improvement project took place downstream of the bridge, the impact area has a more open riparian zone than does the control area.

Indicator: Bed and bank condition

Observations made during the initial monitoring survey indicated a high degree of bed and bank stability, in part due to the steelhead habitat improvement project. Hikers wandering off the designated trail have the potential to impact the condition of the creek bank. Incidental observations made during the survey included those of recent human activities in the lowest reaches of the stream (near the beach), as well as along the north bank in the impact area. Neither area appeared to contain significant amounts of human disturbance, but they are early indicators of human-related disturbance. In contrast, there was little indication of human disturbance in the control area at the time of the survey, probably influenced by the greater degree of very dense vegetation along the creek upstream of the bridge.

Indicator: Presence/breeding by known special-status species

Small trout that could be considered juvenile steelhead were observed in natural and created pools in both the impact and control areas. Most pools contained from one to three juvenile steelhead. Additional observations in future surveys will add to the knowledge of this special-status species in the creek, including possible sightings of adult steelhead.

Conclusions

The Pecho Valley Road bridge over Coon Creek, which defines the boundary between the control and impact areas, bisects the stream habitat improvement project site described above. Because the channel created by the project is very different from the natural channel, it should be considered separately. One of the ramifications of the

project is that the channel above the improved area quickly becomes a Rosgen "B" type channel, while the stream has a "C" type channel across the coastal plain. This needs to be considered when designing future monitoring surveys of steelhead habitat in the NRSA.

For future monitoring surveys, permanent monitoring stations should be added above and below the habitat improvement project. This would allow a comparison of impact and control areas without the influence of the project. The station in the control area should be located as close as possible to the upstream end of the habitat improvement project. In the impact area, the station should be just upstream of the lagoon area. Consideration should be given to use of the CDFG Bioassessment Protocol, which includes detailed habitat measurements and invertebrate collections (which, in turn, provide information about the trophic structure and quality of the habitat).

2.5.2 AMPHIBIANS AND AQUATIC REPTILES

Introduction

Hikers wandering through the dense riparian vegetation could cause disturbance or other direct impacts to amphibians and aquatic reptiles. Special-status species known or with potential to occur in and along Coon Creek include California red-legged frog (*Rana aurora draytonii*), southwestern pond turtle (*Actinemys marmorata marmorata*), and two-striped garter snake (*Thamnophis hammondi*). The special-status herptiles (amphibians and reptiles) have not been detected, but suitable habitat occurs in Coon Creek. The red-legged frog is a federal-listed species with protection under the Federal Endangered Species Act. The other two species are considered to be Species of Special Concern in California.

Attributes emphasized during the first year's monitoring surveys were site stability and integrity of the biological community (see Table 4.3-5 of the Monitoring Plan). Indicators evaluated were bed and bank condition, presence/breeding by keystone species, and presence/breeding by known special-status species. Other indicators will be evaluated in future years, including change in use patterns or distribution of keystone and special-status species and trophic level complexity.

GANDA biologists conducted surveys for these three species along Coon Creek and at Tom's Pond on October 16 and 17, 2007. The mouth of Coon Creek upstream to the bridge served as the impact area, and from the bridge to 200 meters upstream served as the control area. Tom's Pond was surveyed in anticipation of the public access trail eventually extending south of Pt. Buchon. As such, the survey of Tom's Pond served as a "control survey" in that it was conducted prior to public access. Results will be compared to subsequent surveys that will be conducted after the public is allowed access to an extended trail that may be adjacent to Tom's Pond. Two day and two night surveys were conducted for red-legged frogs at Coon Creek, and one day survey and one night survey were conducted at Tom's Pond.

Preliminary Findings

Indicator: Presence/breeding by keystone species

Keystone species for both Coon Creek and Tom's Pond are chorus frog and western toad, common widely distributed species. Chorus frogs were detected in both the impact and control areas along Coon Creek. No herpetiles were observed at Tom's Pond. Results from future surveys will allow evaluations of trends in these two species along Coon Creek and at Tom's Pond. If changes occur, they could potentially indicate impacts due to public access to the NRSA.

Indicator: Presence/breeding by known special-status species

To date, there have been no observations of special-status amphibians or reptiles on the NRSA. That includes results from 2005 surveys and the October 2007 surveys. As such, there are no indications of impacts on special-status species due to public access. There is potential for detection of previously undocumented special-status species during upcoming surveys in spring 2008.

Indicator: Bed and bank condition

Similar to observations made during the steelhead habitat evaluation, the bed and bank of Coon Creek showed little human-caused impact. Some off-trail hiking into the riparian zone of Coon Creek has occurred, but that has been limited to a few incidents. Future surveys will allow this indicator to be tracked over time.

Conclusions

In general, the control area and the steelhead trout pools in the impact area provide good habitat for California red-legged frog. The pools are relatively large and deep, with dense emergent vegetation and riparian plant species along the banks. Tom's Pond also provides suitable habitat, but the presence of predatory mosquitofish reduces the opportunity for successful breeding by amphibians and aquatic reptiles. The pond is permanent, medium-sized, and deep, but dense cattails along the shore cover up potential basking sites for pond turtles and lower the habitat suitability for California red-legged frogs.

No differences were detected in the occurrence of aquatic herpetiles at the impact area versus the control area of Coon Creek. There were no observations of special-status species in either area and few sightings of common species. The habitats in the impact area and control areas near the Pecho Valley Road bridge are similar. The created pools provide suitable habitat for amphibians and aquatic reptiles, even though there were few observations.

Monitoring in 2008 will include similar day and night surveys and general evaluation of the aquatic habitats. Survey coverage should be extended further upstream in Coon Creek into the control area of the Pt. Buchon Loop Trail.

2.5.3 RIPARIAN BIRDS

Introduction

Similar to potential impacts to herptiles, hikers wandering through the dense riparian vegetation could also cause disturbance or other direct impacts to nesting or foraging riparian birds. Breeding could be disrupted by interference with courtship, nest-building, and attendance by parents at the nests. Nests could be abandoned at the egg or nestling stage, resulting in decreases in reproduction. Potential impacts at other times of the year could include a decrease in the use of the riparian habitat by migrating and wintering bird species. Riparian zones are crucial to birds during all seasons due to the continued loss of such habitat in southern and central California.

The primary attribute emphasized for evaluation during the 2007 monitoring surveys was the integrity of the biological community (see Table 4.3-5 of the Monitoring Plan). The indicators evaluated were presence/breeding by keystone species, presence/breeding by known special-status species, and presence/breeding by previously undocumented special-status species. Other indicators will be evaluated in future years, including changes in patterns of use or distribution of keystone and special-status species and changes in density and structure of foliar cover. The latter will be evaluated as part of the Green Line survey conducted for botanical resources.

Special-status species known or with potential to occur in and along Coon Creek include willow flycatcher (*Empidonax traillii*) and yellow warbler (*Dendroica petechia*). Both were observed in the riparian zone of Coon Creek in 2005. The willow flycatcher (southwestern subspecies) is a federal-listed species with protection under the Federal Endangered Species Act. The full species of willow flycatcher is also a state-listed species with protection under the California Endangered Species Act. The yellow warbler is considered to be Species of Special Concern in California. From results of previous bird surveys along Coon Creek, those birds that can be considered keystone species include song sparrow (*Melospiza melodia*), Swainson's thrush (*Catharus ustulatus*), Hutton's vireo (*Vireo huttoni*), common yellowthroat (*Geothlypis trichas*), and Bewick's wren (*Thryomanes bewickii*)

Preliminary Findings

Indicator: Presence/breeding by keystone species

Based on surveys conducted in 2005, keystone bird species in the riparian habitat for the fall/winter seasons include chestnut-backed chickadee (*Poecile rufescens*), Bewick's wren (*Thryomanes bewickii*), hermit thrush (*Catharus guttatus*), common yellowthroat (*Geothlypis trichas*), and song sparrow (*Melospiza melodia*). Other species, such as

black-headed grosbeak (*Pheucticus melanocephalus*) and Swainson's thrush (*Catharus ustulatus*) that could be considered keystone species during nesting season are absent or in reduced numbers during October. Such species are more appropriate as keystone species during spring/summer surveys.

The fall/winter keystone species were all well-represented in the survey results. The five species were among the most frequently observed species. The one partial exception is that no common yellowthroats were sighted in the control area. Of the four remaining species, three (chestnut-backed chickadee, Bewick's wren, and song sparrow) were sighted more often in the impact area than in the control area. Hermit thrush was the only species detected more often in the control area. Differences in numbers of individuals observed per species between the impact and control areas are likely due to two factors: (1) greater survey coverage in the impact area, both in terms of time spent and length of creek surveyed; and (2) more open understory in the impact area due to the implementation of a steelhead habitat improvement in recent years. Results from this first survey effort did not indicate changes in the presence of keystone species, either between impact and control areas, or between observations during previous surveys and those of October 2007. There was no indication that opening the Pt. Buchon Loop Trail to the public had an adverse effect on keystone riparian bird species.

Indicator: Presence/breeding by known special-status species

The October 2007 observations included eight species with special-status designations. Seven of the eight were detected in the impact area, and six of those were associated with the ocean and beach. The only special-status species observed in the control area was a sharp-shinned hawk. It is too early in the monitoring program to evaluate if the observations of these eight species in the fall/winter season are indicative of public access-related impacts. However, these results will allow comparisons with results from surveys in subsequent years.

Indicator: Presence/breeding by previously undocumented special-status species

Similar to the previously described indicator (breeding/presence of special-status species), it is too early in the monitoring program to make conclusions about the observations of special-status species. Relative to surveys conducted in 2005, all of the special-status species observed in October 2007 were new sightings. However, the 2005 surveys were conducted in spring and summer and did not emphasize birds associated with beach and ocean habitats. The October 2007 surveys will assist in establishing a baseline of special-status species that can be compared to results from subsequent years' surveys.

Conclusions

There were three factors that could have influenced the sightings of substantially more bird species in the impact area than in the control area. First, the impact area extended

downstream to the mouth of the creek, providing opportunities for biologists to observe waterfowl, shorebirds, and gulls. The closest point of the control area to the mouth of the creek is more than one-quarter mile. As discussed previously, 13 of the 64 species sighted in the impact area were ducks, shorebirds, and ocean-related birds (gulls, loons, grebes, pelicans, and cormorants). In contrast, only one species in this same collective group (common pochard) was sighted in the control area.

A second possible factor contributing to the differences in numbers of species between the impact and control areas was the level of effort. Because the October 2007 surveys occurred at the beginning of the monitoring program (soon after the opening of the Pt. Buchon Loop Trail to the public) more effort was placed on the impact area. Such information collected in October 2007 will be useful for comparisons with later monitoring surveys as the public access program continues. The additional time spent in the impact area could have contributed to the increase in species detected. Finally, the understory of the two areas differs. The steelhead habitat improvement project described in the steelhead section resulted in trimming and removal of willow shrubs above and below the Pecho Valley Road bridge. Because the willows have not fully recovered since that project, there is a relatively open understory. More of the project occurred in the impact area below the bridge than in the control area above the bridge. As such, there is more open riparian habitat in the impact area. Birds are more likely to be detected by sight than sound in the fall, so the area with greater visibility and better access by biologists (impact area) would be expected to have more observations of birds.

Overall, none of the three indicators for which data were collected suggested differences either between the impact and control areas, or between October 2007 survey results and results from previous surveys. Currently, there is no indication of adverse effects to riparian bird populations due to public access along the Pt. Buchon Loop Trail. Monitoring in 2008 will include two surveys of the riparian zone of Coon Creek, both above (control) and below (impact) the Pecho Valley Road bridge. The time spent in the surveys should be similar to allow meaningful comparison of the control and impact areas.

2.6 MARINE INTERTIDAL RESOURCES

Introduction

This section describes monitoring of intertidal habitat and communities conducted by Tenera Environmental. The NRSA intertidal monitoring program focuses on examining the effects of visitor traffic and activities along the shores of the NRSA, which as of July 13, 2007 became newly open to public access. Indicators of visitor impacts include declines in species abundances resulting from foot traffic (trampling) and poaching (Table 4.3-6 of the Monitoring Plan).

Sampling began on July 3-6, 2007 prior to the Pt. Buchon Loop Trail becoming open to public access, and utilized the study approach and sampling methods described in Section

5.6 of the Monitoring Plan - Intertidal Resources. Sampling was completed in the Coon Creek area where visitors had access to explore the shore and rocky intertidal zones. Sampling was also completed in a reference area located south of Coon Creek where visitor access remained prohibited. Sampling was repeated in both areas on December 20-21, 2007, approximately five months after the trail opening.

Preliminary Findings

Indicator: Changes in the abundance of species exposed to visitor traffic resulting in worn pathways from trampling

Indicators of trampling effects may be most readily identified by declines in the cover of algal species and the creation of worn pathways by excessive foot traffic. Algal fronds and blades provide canopy shelter for understory invertebrates, and consequently a decline in canopy species can affect the habitat structure and abundance of associated species.

Band transect sampling is being completed to follow changes in species exposed to potential trampling effects. Two band transects were established on the only rocky habitat at Coon Creek where foot traffic would be expected to be greatest and potentially affect intertidal species. cursory inspection of the band transect data collected in the July and December surveys indicates that declines occurred in the abundant featherboa kelp (*Egregia menziesii*) and iridescent seaweed (*Mazzaella flaccida*). However, declines over this period can be considered consistent with seasonal changes that normally occur in these species from summer to winter.

While algal cover declined at the band transects, the transects remained populated by a variety of species, such as limpets, turban snails, sea stars, anemones, sea urchins, mussels, chitons, and others. There were no substantial changes between the July and December surveys in invertebrate abundances, with the exception of a large decline in the abundant shield limpet (*Lottia pelta*). The reason for the decline remains unknown, but could have been associated with the decline in the protective cover provided by featherboa kelp and iridescent seaweed, both of which also declined in abundance (above).

Indicator: Changes in abundance or size of target species (e.g., owl limpets, abalone) relative to controls; indicative of harvesting effects

The study of target species focuses on two invertebrate species that are often collected for human consumption, owl limpets (*Lottia gigantea*) and abalone (*Haliotis cracherodii*). Owl limpets, in particular, have been taken illegally in mass quantities on two separate recent occasions in north San Luis Obispo County. Poachers were seized with approximately 2,500 and 1,500 owl limpets.

Our studies of owl limpets in the Coon Creek and reference areas did not reveal any indications that the populations had been subjected to poaching in mass quantities. None of our sample sites that could be readily accessed by collectors lacked the larger-size individuals. A lack of larger-size individuals would have been indicative of poaching effects, as poachers tend to collect the larger individuals. Instead, we found healthy owl limpet populations both before and after the Pt. Buchon Loop Trail became open to public access. In fact, we found more owl limpets in the December survey than the July survey. However, this was likely because sampling conditions during the December survey did not have the high surf conditions that occurred in the July survey. The safer working conditions in December allowed more time to sample and find more owl limpets. Despite the differences in numbers of owl limpets found between surveys, the data indicates the populations at all of the sampling sites remained healthy, dense, and viable, as evidenced by the numbers of both small and relatively large individuals representing a healthy distribution of age-classes.

In contrast to owl limpets, the abalone population along the NRSA represents a pre-existing, significantly reduced population. This is largely due to withering syndrome disease (WS). WS resulted in mass mortalities of black abalone in the late 1980s throughout central California, which included the Diablo Canyon coastline. Abalone have not since recovered. Consequently, any take of abalone would remove individuals from an already reduced population.

A reconnaissance survey for black abalone in the Coon Creek area remains ongoing, but it is likely that abalone are not present there, not because of collecting, but due mainly to lack of suitable habitat for abalone (crevices, rock undercuts). Potential habitats for abalone might occur in the vicinity, but these areas are difficult, if not impossible, to access because they are separated from land by deep surge channels.

Abalone were found in the reference area where there was more suitable habitat and where the habitats were easier to access. All crevices with abalone in the July survey had the same number of abalone in the December survey, with the exception of one crevice that declined by two abalone.

The December survey included surveying rocky habitats in the reference area that were in addition to those sampled in July. The survey was successful in finding more locations (crevices) with abalone. None of the abalone found in the July and December surveys were small juveniles, which would indicate a recruitment event.

Indicator: Erosion exacerbated by foot traffic along the coastal bluff affecting intertidal species/habitats

The intertidal monitoring did not include studies to assess coastal bluff erosion as a result of foot traffic on bluff trails and on access paths to the shore. However, it is not expected that soils eroded from the bluff trail and path to the Coon Creek area will affect rocky intertidal communities in the proximity.

The main area of concern with regards to potential impacts from bluff erosion to the intertidal zone is the access path that leads to Coon Creek from the Pt. Buchon Loop Trail. The path slopes gently downward to the shore, has switch-backs, and is maintained with footsteps. This design minimizes the potential for soil erosion and the amount of eroded soils that could eventually reach the shore. In any regards, the shoreline at the base of the path is a sand beach berm. Consequently, any soils that erode from footpaths and reach the beach will be significantly minor in volume in comparison to the volume of beach sediments. It must also be noted that the rocky intertidal habitats in the proximity are already exposed to sand scour, mainly from wave-borne sand from the beach sediments, and some areas become temporarily buried when the beach sediments move on and off the shore.

Conclusions

The California Department of Fish and Game (CDFG) has jurisdiction over the State's marine resources, and the CDFG recently placed greater protections to marine species along most of the NRSA shoreline. On September 21, 2007, California's Marine Life Protection Act of 1999 went into effect in the region between and including San Mateo County to Santa Barbara County (central coast region). The Act established a system of 29 distinct marine protected areas (MPAs) in the central coast region to increase the protection of marine life.

The 29 MPAs include two newly created MPAs in the area, the Pt. Buchon State Marine Reserve and the Pt. Buchon State Marine Conservation Area. Both occur along the NRSA coast. The Pt. Buchon State Marine Conservation Area is offshore of the Pt. State Marine Reserve. In both of the MPAs, all species are prohibited from take with the only exception being salmon and albacore in the Pt. Buchon State Marine Conservation Area. These changes in marine resource protections along the NRSA occurred independent of the Pt. Buchon Loop Trail being created for new coastal access to the shore. One exception to the new prohibitions is that certain species can still be taken with a scientific collecting permit issued by the CDFG.

The MPA of most relevance to the NRSA is the Pt. Buchon State Marine Reserve, because it extends to the mean high tide line along the shore. However, because of its configuration, the Pt. Buchon State Marine Reserve does not encompass all of the NRSA. The shores surrounding the Pt. Headland and extending northward through Montaña de Oro State Park are not in the Reserve.

Despite the new protections provided by the Pt. Buchon State Marine Reserve, the effectiveness of the new protections may be compromised by the NRSA now having become newly open to public access. People can now access the shore from land, which increases opportunities to collect. The designation of the Pt. Buchon State Marine Reserve cannot in itself be expected to protect intertidal species. This is because people are often unaware that they are in an MPA and unaware of collecting restrictions, despite signs and brochures describing collecting violations.

PG&E does exercise the right to not allow any fishing and collecting by anyone crossing the company's private property, and the gatekeeper at the entrance to the NRSA deters fisher people from entering the NRSA. However, a concern that has grown larger since opening day of the Pt. Buchon Loop Trail is trespassing and people secretly poaching. Since opening day, there was at least one witnessed account of a person with a gunny-sack and a pry tool leaving the south Pt. Buchon intertidal area. The person climbed back up to the bluff top well south of the Pt. Buchon Loop Trail. Unfortunately, the individual was not approached and questioned to determine whether any collecting had been done. Also, the individual had obviously not obeyed the access rule of staying on the Pt. Buchon Loop Trail. Also, people have been witnessed trespassing into the NRSA on non-visitation days (Sally Krenn, PG&E, pers. comm.). One can suspect that some collecting might have occurred on those days.

CDFG wardens cannot be at every location to protect marine resources from poaching. Therefore and due to limitations in legal enforcement presence, we plan to complete monitoring of owl limpets and abalone in additional areas within the NRSA to provide a more complete record on the status and health of these species in the face of potential poaching in the NRSA. The Pt. Buchon headland area is a priority area to conduct additional owl limpet and abalone monitoring.

2.7 MARINE WILDLIFE

2.7.1 NESTING SEABIRD COLONIES

Introduction

Seabird colonies utilize many areas along the NRSA coast to breed and nest. However, nesting activities can be disturbed by the presence of people. Close presence of humans can agitate nesting seabirds, and may cause them to flush from their nests. Repeated disturbance to a nest site by humans can result in total nest abandonment. The consequence can be overall reproductive failure when the eggs and offspring become injured and left exposed to predation, hypothermia, and starvation.

The Migratory Bird Treaty Act of 1918 provides federal protection to migratory birds, which includes seabirds, and prohibits any activity that results in disturbance, harassment, or mortality. Nesting seabirds are also protected under Sections 3503 and 3513 of the California Fish and Game Code, which pertain to all native non-game birds.

The NRSA nesting seabird colony surveys, conducted by Tenera Environmental, monitor for changes in use of traditional seabird breeding sites and occurrences of flight/avoidance behaviors by seabirds in response to the presence of people on bluff trails and on the shore (Table 4.3-7 of the Monitoring Plan). Two nesting seabird colony surveys were completed in 2007. The first survey was in July, just prior to the public

opening of the Pt. Buchon Loop Trail. The second survey was in August, approximately one month after the trail opening.

The seabird species that nest in the area are the western gull, Brandt's cormorant, pelagic cormorant, pigeon guillemot, and black oystercatcher. The entire NRSA coast was monitored for these species in both of the surveys completed in 2007. Counts and observations were made from fixed vantage points in order that the same methods and search effort could be repeated each survey.

Preliminary Findings

Indicator: Change in use of traditional seabird breeding sites; indicative of human disturbance

No changes in nesting activities occurred that were suspected as having been influenced by visitors using the newly open bluff trail. It must be noted that the July and August surveys were completed near the end of the nesting season. All nesting colonies were in place when the Pt. Buchon Loop Trail became open to public access, during which time, nearly all activities associated with nesting were also coming to a close. There was no complete sudden abandonment of nest sites revealed in the observations and data.

Several additional bird species of conservation importance were observed in the surveys. These were the California brown pelican, peregrine falcon, and great blue heron.

The California brown pelican is a federal and state endangered species that occurs abundantly along the NRSA coastline. Although brown pelicans do not nest in the vicinity, their communal roosts (rocks where they tend to aggregate) are of sensitive status. Communal roosts occur on offshore rocks at several locations along the NRSA coast.

An offshore rock near the center of the NRSA coast appears to be a nest site for a pair of peregrine falcons. Peregrine falcon nest sites are protected under the California Endangered Species Act (CESA) under the endangered species classification.

Great blue heron rookeries are also classified as sensitive. Great blue herons were observed in the monitoring surveys, but were foraging, not nesting.

Indicator: Observed human-induced flight/avoidance behavior in nesting seabirds

Project monitors were not present to specifically watch nesting seabird behaviors while people were walking along the cliff bluffs or down on the shore. Consequently, project monitors were not present to witness any potential time-specific human disturbance, such as the close presence of people causing nesting seabirds to suddenly take flight from an area and then possibly abandon nests.

Conclusions

Seabird monitoring in 2008 will include surveys starting at the onset of seabird nesting (April). Shifts in nesting locations, should they occur as a result of people on the bluff trails and shore, may be more readily seen at this phase when seabirds are searching for nesting sites. Surveys will also include monitors watching nesting seabird behaviors while people are on bluff trails and down on the shore. This is to note whether seabirds exhibit sudden flight/avoidance behaviors in response to the presence of people.

Future trail routing plans should consider the sensitivity of nesting seabird colonies that are in close visual contact with people on bluff trails and down on the shore. Trails should be routed away from known nesting sites, where possible, and/or trail sections could be closed on a seasonal basis to avoid disturbing nesting seabirds.

2.7.2 MARINE MAMMAL HAULOUT MONITORING

Introduction

This section describes monitoring surveys conducted for marine mammal haulouts. The surveys were completed and results summarized by Benech Biological and Associates with Tenera Environmental. Harbor seal haulout surveys began in July 2007, remain ongoing, and consist of bi-weekly surveys to count and map haulout areas throughout the entire NRSA coast. The purpose is to describe whether patterns in haulout use are affected by visitors using bluff trails and by visitors venturing down onto the shore. Harbor seals haulout onto rocks to rest, give birth, nurse, and molt, and can 'flush' from the area and abandon sites when frightened by unusual noises, sightings, and approaching people. Sea otters also haul out on rocks, but mainly to rest, and will similarly flush from an area when frightened. The Marine Mammal Protection Act of 1972 provides federal protection to marine mammals, which includes harbor seals and sea otters. Sea otters are further protected by the Endangered Species Act of 1973. These Acts prohibit any human activity that results in harassing, disturbing, or killing marine mammals.

The indicators of potential visitor impacts to marine mammals are presented in Table 4.3-7 of the Monitoring Plan. Disturbance to resting and nursing behaviors, in particular, may affect how and where haulout areas are used.

Bi-weekly harbor seal and sea otter haulout surveys began on July 8, 2007, five days before the Pt. Buchon Loop Trail became open to public access. A total of 12 surveys was completed between July and December 2007, and the initial findings are reported here. All observations, counts, and mapping were done from the cliff bluffs.

Preliminary Findings

Indicator: Change in use of pupping beaches; indicative of human disturbance

An area near the base of 'Barn Rd.' located in the southern section of the NRSA is the only harbor seal pupping area along the NRSA coast (Sue Benech, pers. comm.). No pups were observed there during the surveys, likely because the pupping season had ended when the first survey started in July.

Indicator: Observed human-induced flight/avoidance behavior in marine mammals

Marine mammal monitors were not present on opening day or on other days when the bluff trail was open to public access. Therefore, there are no determinations or witnessed accounts by project staff on whether hauled out marine mammals had suddenly flushed from a haulout site in response to approaching people. However, it is possible that this occurred in the Disney Point area (below).

Indicator: Change in use of traditional haulout sites by marine mammals; indicative of human disturbance

The surveys in July-December 2007 found that the shoreline around the Pt. Buchon headland and at Coon Creek where the Pt. Buchon Loop Trail meanders were not used as haulout sites, both immediately before the trail become open to public access and during the remainder of the year. All haulout areas were south of Pt. Buchon. Coincidentally however, a heavily used haulout site at Disney Point appeared to have become completely abandoned after the Pt. Buchon Loop Trail became open to public access. This particular haulout site is unique in that it is very close to the bluff edge and where as many as 105 harbor seals have been seen there hauled out on the shore at the cliff base. Why harbor seals were never seen hauled out there in subsequent surveys might be due to the timing of many of the follow-up surveys occurring when tides were high and seas were rough, conditions that are not conducive for harbor seals to haul out. However, another explanation for the possible abandonment may be visitor-related. There were accounts of people venturing off the Pt. Buchon Loop Trail and into the Disney Point restricted area during the time when the haulout site became abandoned (Sally Krenn, PG&E, pers. comm.).

No sea otters were observed hauled out on rocks during all surveys. However, the numbers of sea otters rafting in kelp beds shifted in location after public access. While sea otter occurrences in kelp beds can be variable over time and location, a change that occurred one month after opening the Pt. Buchon Loop Trail was the area on the north side of the Pt. Buchon headland where rafting sea otters could generally be seen on a frequent basis became devoid of sea otters. Coincident with this decline was an increase in sea otters on the immediate south side of the Pt. Buchon headland. It is possible that the sea otters simply moved south around the headland.

Conclusions

Additional surveys are needed to more accurately describe the consistency and variations in haulout use among sites in order to determine whether any changes in haulout use can be linked with visitor access. However, a possible exception may be the Disney Point haulout site where harbor seals appeared to have abandoned this particular site since opening day of the Pt. Buchon Loop Trail. With visitor access presently suspected as being the cause of the site abandonment, future extensions of the bluff trail should take into consideration that the trail route should avoid known haulout areas.

2.8 GEOLOGY AND SOILS

2.8.1 TRAIL EROSION STUDY (SURFICIAL EROSION AND BARE GROUND)

Introduction

The NRSA, including the Pt. Buchon Loop Trail, contains scenic resources and now provides new recreational opportunities. Prior to the opening of the trail in July 2007, this portion of the coast was not accessible to the general public. The trail now allows public access to the beach, vista points along the bluffs, and natural habitats, such as coastal bluff scrub, riparian, and non-native grassland. Authorized and unauthorized uses of the trail could result in impacts. The designated trail may become widened or lengthened with repeated use. New, unauthorized trails may become established, including cut-off trails to the beach that bypass switchbacks in the designated trails. Use of the trail may also cause erosion, loss of topsoil, and concentration of runoff water.

Initial monitoring of trail erosion (surface erosion and bare ground adjacent to the trail) occurred in December 2007. Attributes to be evaluated were site stability and hydrologic function (see Table 4.3-8 of the Monitoring Plan). The monitoring focused on indicators that would be most suitable to begin the process of assessing potential impacts due to visitors, including the presence of surface fissures, increases in bare ground, and the unauthorized establishment of new trails or lengthening of authorized trails. Such changes could be caused by trail users following the opening of the Pt. Buchon Loop Trail.

A trail erosion study was conducted by GANDA biologists along the Pt. Buchon Loop Trail and the existing dirt road between Pt. Buchon and Big Wash on December 10 and 11, 2007. The latter area was included because it is scheduled to be part of an extended trail to be opened to the public later in 2008. The objective of the study was to evaluate the amount of erosion occurring along the Pt. Buchon Loop Trail (and along the future extended trail to the south) that can be attributed to new public access. The study included a series of one square-meter plots that focused on (1) composition of bare ground to vegetated groundcover at specific locations along the trails, (2) changes in the widths of the authorized trails, and (3) the creation of unauthorized spur trails. Data collected from the same locations will be used as a basis for comparison in future years.

The widths of any trails present within the plots were measured with a tape measure and labeled as Classes I – IV, depending on the amount of erosion visible. These four classes are defined as follows:

- Class I: No erosion present on the trail.
- Class II: Some erosion has occurred; however, the trail remains intact and functional.
- Class III: A substantial amount of erosion has occurred. Immediate action is necessary to prevent the trail from eroding completely.
- Class IV: The trail has been severely eroded and is no longer functional.

Preliminary Findings

Indicator: Length of non-approved trails

Since the Pt. Buchon Loop Trail opened on July 13, 2007, unauthorized spur trails and signs of trail erosion have occurred. This user-related erosion is most evident at the Coon Creek Beach access, where several unauthorized spur trails have been created, and the condition of the existing authorized trail has reached Class III. Other user-related erosion and new spur trails are present (1) between the Pt. Buchon Loop Trail and the westernmost portion of the Pt. Buchon peninsula, (2) the area surrounding the sinkhole, and (3) along a spur trail leading from the Coon Creek Bridge to an old abandoned building along Coon Creek.

Indicator: Surface fissures

Surface fissures were noted at a number of locations at the edge of the trail, especially that portion that leads to the beach. This impact has resulted from the designated trail being widened.

Indicator: Removal of toe of slope enhanced by foot traffic across steep slopes

The toe of slope has been lost on the trail segment that leads to the beach at the mouth of Coon Creek. Trail users have walked on the upslope edge of the trail to the extent that soil is slipping adjacent to the trail. In at least one location, this type of impact has caused the trail to be rated as Class III, in need of immediate action to prevent it from becoming Class IV (non-functional). See below for recommendations in the Conclusions section.

Indicator: Increase in bare ground accompanied by erosion and loss of topsoil

Widened trail use, especially along the trail to the beach, has also resulted in an increase in bare ground. This has also occurred to a lesser extent near the fence around the

sinkhole. The one square-meter plots will be surveyed again in 2008 to assess if the percentage of bare ground continues to increase. If trails widen and bare ground increases, there will be an accompanying loss of topsoil. Recommendations will be made to stop the trend of increasing bare ground.

Indicator: Erosion from concentration of water along trails

The trail erosion survey will be repeated to evaluate this indicator after the completion of a rainy season. There is potential for concentration of water in some areas along the trail, but insufficient precipitation has fallen since the start of public access to evaluate this.

Conclusions

The December 2007 monitoring surveys indicated that erosion has already begun along some portions of the Pt. Buchon Loop Trail. This was especially evident along the portion of the trail that provides access to the beach. Along that portion, cut-off trails have been established resulting in increases in bare ground, surface fissures, and instability in some areas of the authorized trail. Trail users have also widened the trail to the beach on the uphill side, causing slippage and loss of toe of slope.

In 2008, the one square-meter plots will be re-visited to monitor the rate of erosion between Coon Creek Beach and Big Wash. Consideration should be given to possibly re-designing a portion of the trail to create a more direct access to the beach. Perhaps a system of trails and stairs would provide safe access to the beach and help eliminate the creation of shortcuts and subsequent erosion.

2.8.2 COASTAL BLUFF EROSION

The routing of the Pt. Buchon Loop Trail is relatively close to the coastal bluff at some locations. Coastal bluff erosion is a continuous process and represents a long-term trail management issue, as well as a source of public safety concern. Areas of highest concern are those where coastal cave formations underlie the bluff near the trail alignment increasing the risk of a sudden mass wasting event (sinkhole formation).

The shoreline survey was completed using photogrammetric methods under the direction of PG&E Principal Land Surveyor Jeffrey D. Little, PLS 6372. Initially, ground control consisting of eight control points was set, and 8" x 5' aerial panels were centered over them by PG&E surveying forces on August 21, 2007. The approximate location of the control points was determined by Paul Baragona of Golden State Aerial Surveys (GSAS) of San Luis Obispo. The shoreline was flown and photographed on August 27, 2007 by GSAS. The aerial photographs were developed, and GSAS created an Autocad drawing of the top of the bluff line for the Pt. Buchon area by photogrammetric methods. The photographs were ortho-rectified to create an orthophoto of the study area.

In subsequent years the shoreline will be re-surveyed using photogrammetric techniques similar to those used to develop the base profiles. Changes in the location of the bluff line will be determined by overlaying the current bluff location with the previous year's location and potentially with the baseline information.

3.0 VISITOR USE

The North Ranch Managed Access Program provides access opportunities for up to 275 visitors per day to both the Pt. Buchon Loop Trail and the Pecho Coast Trail combined. During Phase I (July 2007 through January 2008), the Pt. Buchon Loop Trail has been opened three (3) days per week, consistently on Fridays, Saturdays and Sundays. Phase II, which will be kicked off in February 2008, will expand the days of trail operation to five (5) days a week – Thursday through Monday.

At the Pt. Buchon Loop Trailhead, hikers are required to check in, read and sign a waiver document, familiarize themselves with hiker safety information provided by PG&E, and check out again upon leaving the property. This process allows PG&E to track visitor numbers and helps support site security and emergency response should a hiker not check out at the end of the day or if the trail needs to be evacuated in an emergency.

PG&E has been tracking the number of visitors to the Pt. Buchon Loop Trail since the trail opened on July 13, 2007 (see Table B-1 and Figure B-1). Table B-1 and Figure B-1 also provide the number of visitors to the Pecho Coast Trail when hikes occurred on the same days that the Pt. Buchon Loop Trail was also open. Access opportunities are limited to 275 visitors per day for both trails.

Aside from the trail debut, which lasted for about the first three (3) weeks, and holiday weekends (e.g., Labor Day, Thanksgiving, and Christmas), the number of visitors to the Pt. Buchon Loop Trail has been fairly consistent and has not approached visitor limits. Trail numbers began to drop off precipitously in December with the onset of reduced daylight, and colder and wetter weather.

Table B-1: Pt. Buchon Loop Trail and Pecho Coast Trail Visitors

	Pt. Buchon	Pecho Coast	Daily Totals		Pt. Buchon	Pecho Coast	Daily Totals		Pt. Buchon	Pecho Coast	Daily Totals
7/13/2007	175		175		9/14/2007	25	25		11/16/07	7	7
7/14/2007	313	2	315		9/15/2007	87	103		11/17/07	43	117
7/15/2007	600	16	616		9/16/2007	128	128		11/18/07	106	106
7/20/2007	245		245		9/21/07	47	47		11/23/07	275	275
7/21/2007	270	40	310		9/22/07	70	83		11/24/07	150	275
7/22/2007	275		275		9/23/07	102	102		11/25/07	84	84
7/27/2007	129	14	143		9/28/2007	50	50		11/30/07	22	0
7/28/2007	194		194		9/29/2007	67	82		12/1/07	37	114
7/29/2007	270	18	288		9/30/2007	90	97		12/2/07	43	0
8/3/2007	105		105		10/5/07	20	20		12/7/07	0	0
8/4/2007	190	12	202		10/6/07	60	60		12/8/07	41	66
8/5/2007	206		206		10/7/07	152	168		12/9/07	53	53
8/10/2007	90		90		10/12/07	14	14		12/14/07	14	14
8/11/2007	161	16	177		10/13/07	70	70		12/15/07	61	76
8/12/2007	197	14	211		10/14/07	70	70		12/16/07	30	30
8/17/2007	90		90		10/19/07	76	76		12/21/07	3	3
8/18/2007	179	4	183		10/20/07	75	75		12/22/07	63	78
8/19/2007	127		127		10/21/07	81	87		12/23/07	91	91
8/24/2007	49		49		10/26/07	40	40		12/28/07	36	36
8/25/2007	148	20	168		10/27/07	88	88		12/29/07	98	180
8/26/2007	157		157		10/28/07	122	142		12/30/07	164	164
8/31/2007	41	10	51		11/2/07	4	4				
9/1/2007	101	4	105		11/3/07	85	120				
9/2/2007	220		220		11/4/07	135	135				
9/7/2007	25		25		11/9/07	14	14				
9/8/2007	125	10	135		11/10/07	74	139				
9/9/2007	91		91		11/11/07	80	80				

Figure B-1: Pt. Buchon Loop Trail and Pecho Coast Trail Visitors Bar Graph

Security Incidents

PG&E has been keeping a log of security incidents, including trespassers, since the trail opened on July 13, 2007 (See Table B-2 and Table B-3). As is evidenced by the information found in the tables, there have been a few security incidents associated with the trail that have required the attention of PG&E personnel, plant security, or law enforcement officials. The most pervasive “incidents” that have occurred on the Pt. Buchon Loop Trail are issues related to trespassing. PG&E is currently modifying the existing boundary fence with Montaña de Oro State Park to eliminate illegal and unsafe access to the trail. This action will help reduce trespassing opportunities.

Table B-2: Trespassers

Date	Number of Trespassers
8/5/07	4 (signed waivers leaving and included in daily visitor total)
7/21/07	2 (found on beach, exited through a hole in fence)
9/2/07	2
9/9/07	6
10/26/07	4
11/23/07	14
11/24/07	4
12/9/07	3
12/29/07	3 (tried to cut fence)

Table B-3: Security Incidents

Date	Security Incident
8/12/07	Hikers tried to access the beach from Pt. Buchon Lookout.
8/18/07	People climbed over rope demarcating Pt. Buchon Lookout and tried to access an adjacent beach.
7/21/07	Women followed several hikers through a hole in the fence at the mouth of Coon Creek; people were collecting sticks, shells and rocks from the beach.
7/22/07	Several hikers off the trail near Pt. Buchon headland.
9/1/07	A kayak was floating off Pt. Buchon Beach with no apparent kayaker on board. The U.S. Coast Guard was called and a diver surfaced as the Coast Guard arrived.
10/12/07	A small plane and helicopter were flying together along the coast of the North Ranch. Security and law officials met the two aircraft once they landed at the airport. The craft were with Paramount Studios and were filming for “Raiders of the Lost Arc”.
11/24/07	A hiker with a gunny sack and a knife was observed on Coon Creek Beach; several hikers were observed drinking alcohol on Coon Creek Beach.
12/21/07	There was a Mountain Lion sighting at approximately 1:00 PM and the trail was closed at that time.