D R A F T

California Department of Parks and Recreation

Chino Hills State Park Inventory, Monitoring, and Assessment Project

Project Agreement

Natural Resources Division
and
Southern Service Center
and
Inland Empire District

April 2001

Scope of Work III

California Department of Parks and Recreation

Chino Hills State Park
Inventory, Monitoring, and Assessment Project

Natural Resource Division

Rick Rayburn, Division Chief
Dave Schaub, Supervising State Park Resource Ecologist
Roy Woodward, IMAP Program Coordinator

Inventory, Monitoring, and Assessment Program (IMAP) Team

Members consist of the southern California IMAP team members:

Ronilee Clark, Supervising State Park Resource Ecologist
Kim Marsden, Associate State Park Resource Ecologist
Karen Miner, Associate State Park Resource Ecologist
Chris Peregrin, Assistant State Park Resource Ecologist
Lisa Fields, Environmental Services Intern
Melanie Howe, Environmental Services Intern
Mike Bonk, Research Analyst I (GIS)

Inland Empire District

Members consist of selected staff from the District:

Gary Watts, District Superintendent
Ron Krueper, Sector Superintendent
_____, State Park Ranger
Geary Hund, Senior State Park Resource Ecologist
Alissa Rose Ing, Associate State Park Resource Ecologist
Brooke Lyons, Environmental Services Intern

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I Introduction

This Project Agreement is developed jointly between Natural Resource Division, the Southern Service Center's Inventory, Monitoring and Assessment Program (IMAP) team and the Inland Empire District of the California Department of Parks and Recreation. It represents the Department's strategy for the development of the Chino Hills State Park Inventory Monitoring, and Assessment Project by laying out the framework of the project process and timeframe, describing the expectations and responsibilities of all parties, and listing the specific inventory and monitoring projects to be conducted.

The objectives of this Project Agreement are:

- To hold both staff and management accountable for timely development of the Chino Hills S. P. Inventory, Monitoring, and Assessment Program.
- To establish clear expectations for the scope of the initial effort (FY00/01 thru FY01/02) through the consensus of both the District and the Southern Service Center IMAP team.
- To develop a plan for continued monitoring and assessment of established IMAP projects at Chino Hills State Park by District staff.
- To provide a measurable framework for changes as they occur in the development of the inventory, monitoring, and assessment project.
- To maintain communications throughout the inventory, monitoring, and assessment process.

In the event that the Inventory, Monitoring, and Assessment Program process is affected by unforeseen issues or circumstances, "amendments" to this Project Agreement may be submitted by the either District or the Southern Service Center IMAP team to Natural Resource Division for authorization. Such amendments will be submitted at the time that the process is affected.

Responsibilities II

To insure that the objectives of this Project Agreement are met, Natural Resource Division, the Southern Service Center IMAP team, and the Inland Empire District will assume the following project responsibilities:

Natural Resource Division

- To make commitments of staff and funding based on the Project Agreement (see Staffing and Schedule of Work on Page 15).

- To review and authorize amendments to the Project Agreement.

Southern Service Center - Inventory, Monitoring, and Assessment Program (IMAP) Team

- To designate a project liaison to serve as contact person. Karen Miner, Associate Resource Ecologist, is hereby designated as the project liaison.

- To complete project work within the approved budget and schedule (see Schedule starting on Page 15).

- To report on a quarterly basis to the District and Natural Resources Division IMAP coordinator regarding the number of days spent in the IMAP program.

- To set up the monitoring projects agreed upon in this Project Agreement at Chino Hills State Park, after which time, the IMAP team will turn these projects over to the Inland Empire District to continue monitoring into the future. Final monitoring strategy will be provided to the District no later than June 30, 2002.

- To promptly alert Natural Resource Division as problems occur in the establishment of the inventory, monitoring and assessment process.

- To prepare written amendments to the Project Agreement and submit them to Natural Resource Division for authorization, if warranted.

Inland Empire District

- To make commitments of staff time to assist in the establishment of the monitoring projects agreed upon in this Project Agreement (see Staffing Summary on Page 19).

- To make a commitment of staff time and funding to continue to implement, to the extent feasible with available funding, the monitoring projects developed for Chino Hills State Park, once the IMAP team has met its commitments and has turned the projects over to the District.

- To provide Karen Miner a monthly accounting of staff time spent on IMAP project tasks.

General

The following is a summary of inventory and monitoring projects to be implemented at Chino Hills State Park within the framework of this Project Agreement. They are categorized by ecological component, followed by the Inventory or Monitoring Project number (See Section III of Natural Resources Inventorying and Monitoring Program Plan for Chino Hills State Park, December 1996) and a brief project description. The intended level of inventory or monitoring to be pursued by the IMAP Team is included in the discussion of each project. These levels generally correspond to the level of intensity and precision of the effort and fall into one of the following categories; Reconnaissance, Baseline, Comprehensive, or Intensive (See Table 1).

In order to design an efficient monitoring program, it is first necessary to inventory the target component and conduct a pilot study using the proposed methodologies and protocols, and then analyze the results for their adequacy in terms of accuracy, precision, cost-effectiveness, and ability to detect change. Since standardized protocols for many ecological components are either unavailable or untested in the ecoregion, many of the projects below are designed to collect baseline information while testing proposed protocols for use in future monitoring efforts. Other projects below are designed to analyze existing baseline information and the protocols used in order to develop a specific monitoring plan.

It is the intent of the IMAP team to work with the District to formulate a comprehensive monitoring program, which monitors and assesses key ecological components of ecosystem health pertinent to the natural resources of Chino Hills State Park. In doing so, an Environmental Condition Assessment matrix will be developed and long-term monitoring projects will be detailed. Some of these monitoring projects will be initiated during the term of this Project Agreement by the IMAP team, while some will need to be initiated by the District outside the terms of this agreement due to limitations of time or expertise of the IMAP team.

Scope of Work III

Regardless, a clear direction for initiating all key monitoring projects will be included in the final written product of this agreement.

For the purpose of designing the Unit Inventory and Monitoring Plan, ecological components and project design will be chosen, in part, to allow assessment of the effects of the following threats on the biological integrity of Chino Hills State Park:

1. Edge effects associated with surrounding urban development.
2. Fragmentation and isolation from other regional wildlands.
3. Impacts to the components and processes of perennial creek systems with a focus on Aliso Creek.
4. Air pollution from the Los Angeles Basin and Inland Empire.

III

Scope of Work

Table 1

Scope of Work III

Inventory and Monitoring Projects

Vegetation

1. Plant Communities Monitoring (I-19)

A digital vegetation map exists for the park. However, only limited ground-truthing of the map has been conducted to date. This map was based on 1993 aerial imagery using the Sawyer and Keeler-Wolf vegetation classification system (A Manual of California Vegetation, 1995). The SSC-IMAP Team will check the map in the field to detect and correct any misclassifications. In addition, the SSC-IMAP Team will conduct sampling in each community type, in order to determine vegetation components and range of variability in the distribution and cover of component species throughout the unit. Acreage of plant community polygons will be calculated using GIS tools and entered into a database for comparison to the acreage observed and documented at a later date (anticipated interval of 10 years).

Based on the variability observed, subcategories of plant communities (association level) will be determined and mapped, where appropriate. In addition, the data will be used to locate long-term sampling plots so that the range of variability is captured for each significant plant community chosen by the District for long-term monitoring. Baseline sampling of these long-term plots will then be conducted, the data analyzed, and included in a final report. Previous sampling efforts (Barry and Hund 1995) describing the Coastal Sage Scrub associations will be reviewed and incorporated, as appropriate. The plant communities mapping and monitoring project will be conducted at the Baseline Level and will serve as baseline information against which future mapping and sampling will be compared, in order to ascertain changes and trends in the areal extent, composition, and attributes of various plant communities in the park.

The District will provide the existing coastal sage scrub data to the IMAP team.

The IMAP team will produce a truthed GIS vegetation map and associated database, and a report that outlines the methodology, location of long-term sampling plots, results of all analyses, and a recommendation for the time interval for repeated monitoring by each methodology.

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Scope of Work

2. Sensitive Plant Taxa Inventory (I-18 and I-20)

The sensitive plant taxa of Chino Hills State Park include *Astragalus brauntonii, Calochortus catalinae,* and *Dudleya multicaulis,* as well as stands of native bunch grasses. Existing location and status data will be incorporated into a geo-referenced database. Additional populations will be located by identifying previously unsurveyed areas containing appropriate habitat and conducting focused surveys during the appropriate time of year in those areas. All populations located will be mapped using GPS, and information on associated taxa, extent of suitable habitat, and potential threats to their habitat will be collected. This project will be implemented at the Baseline Level.

The IMAP team will produce a map and associated database of the areas surveyed and locations and condition of populations for the rare taxa listed above (as well as any other sensitive plant taxa encountered). The team will also produce a report that outlines the methodology used and recommendations for inventorying and monitoring these sensitive taxa.

3. Exotic Plant Inventory and Monitoring (M-18)

Several species of invasive exotic plant taxa have become established in Chino Hills State Park, including tree-of-heaven (*Ailanthus altissima*), giant reed (*Arundo donax*), fennel (*Foeniculum vulgare*), cape ivy (*Senecio mikanioides*), and various exotic thistles. The District has previously treated some stands of these exotic plants and has plans for additional control efforts. The IMAP team will incorporate existing maps of stands and treatment areas into a unit wide GIS map of exotic plant taxa locations, map additional locations and areal extent, count or estimate numbers of individuals or percent cover at each location, and develop a long-term monitoring strategy. For those areas previously mapped and described and/or treated by the District, changes in numbers, cover, and/or extent will be assessed. This project will be conducted at the Comprehensive Level.

The District will provide existing maps and treatment information of exotic plant locations to the IMAP team.

The IMAP team will produce a map and associated database for alien taxa listed above and a report that outlines the methodology used and recommendations for monitoring these alien taxa.

4. Prescribed Fire Monitoring (M-21)

The District has conducted experimental prescribed burns in the unit, and has conducted pre- and post-fire vegetation sampling for those burns. The IMAP team will work with the District to analyze this pre-existing data, and to devise a unit wide sampling strategy for prescribed burn monitoring. The IMAP team will also sample a selection of burn plots, as directed by District ecologists. Monitoring will be conducted at the Comprehensive Level.

The District will provide existing maps of burn plots and associated information including sampling protocols and monitoring data to the IMAP team.

The IMAP team will provide a report that describes the methodology and results of the analysis for pre-existing and collected monitoring data. Sampling sites will be incorporated into the geo-referenced database.

Terrestrial Vertebrates

5. Small Mammal Inventory (I-7)

Very little information exists on the small mammal assemblages at Chino Hills State Park. This project will consist of identifying presence, distribution, and status of small mammals to provide a basic account of species in the park, and to develop a long-term monitoring strategy. This project is anticipated to be carried out under contract with San Diego State University. The contract will be managed by the IMAP team, and funded by the District. The IMAP team, with direction from the District, will develop contract specifications, and ensure that the contractor prepares a report that outlines methodology used, inventory list of species and their distribution in the park, and recommendations regarding the appropriate monitoring strategy. This project is to be conducted at the Comprehensive Level.

The District will provide the contract funds, administer the contract, and provide a back-up liaison to the contractor.

The IMAP team will serve as the State Representative for the contract, and will insure that sample sites and associated data are incorporated into the geo-referenced database.

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Scope of Work

6. Bat Inventory (I-9)

Very little information exists on the bat assemblage at Chino Hills State Park, and several sensitive species are likely present. This project will consist of identifying presence, distribution, and status of bats to provide a basic account of species in the park. The IMAP team will conduct bat surveys in representative habitat areas, as well as high bat activity areas, using mist net capture, ultrasonic detection, and roost searches. All sites sampled and active roosts, along with associated data will be incorporated into the geo-referenced database. This inventory project will be conducted at the Baseline Level.

The IMAP team will produce a report that outlines the methodology, results, and recommendations for bat fauna in the unit, including GIS mapped locations of all roosts and survey locations.

7. Medium and Large Mammal Monitoring (M-7)

Two studies of medium/large terrestrial carnivores have been conducted within the vicinity of and including the park (Beier and Barret 1993, Haas and Crooks 1999). These efforts indicate that Chino Hills State Park represents a significant portion of the core habitat remaining for long-ranging carnivore species in the Chino/Puente Hills, and that the mountain lion will use the park provided the Coal Canyon corridor between the Santa Ana Mountains and the Chino/Puente Hills remains viable. Haas and Crook also suggest that the bobcat may be the appropriate indicator species (relatively common and moderately sensitive to disturbance) for monitoring effects of habitat fragmentation on movement corridors. The Coal Canyon Corridor is now largely in State park ownership and it is important to monitor it's functionality over time as surrounding urbanization continues to encroach on the corridor and enhancement projects are undertaken. A multi-agency monitoring effort of the use of highway crossings by wildlife is being developed for stretches of Hwy 71 and Hwy 91 adjacent the park.

The IMAP team will consult with Mr. Haas and others involved in the multi-agency effort, and work with the District Resource Ecologists to devise a monitoring strategy for continued monitoring of corridor use by target medium/large mammals in the park. However, the IMAP team will not carry out the actual monitoring of medium and large mammals as part of this agreement.

8. Rare Passerine Inventory and Monitoring (I-14)

Previous bird surveys conducted in the park indicate the presence of three Federal and/or State-listed species of passerines, the least Bell's vireo, willow flycatcher, and California gnatcatcher, as well as numerous other rare or sensitive passerine species. This project will be designed to locate territories and monitor nesting success of the three listed species, including impacts from brood parasitism by the brown-headed cowbird, through focused surveys in appropriate habitat and nest monitoring of detected pairs. At the same time and locations, area searches will be performed to detect common non-target bird species, as well as other potential sensitive or rare species. Surveys and nest monitoring activities will be coordinated with other entities conducting similar studies in and adjacent to the park. Area search locations, and the territories and nest locations of listed-species will be mapped, and along with the associated data, incorporated into a geo-referenced database. This project is being conducted at the Comprehensive Level.

The District will provide field time of qualified personnel to assist in conducting area searches, or nest monitoring, depending on specific qualifications of the personnel.

The IMAP team will conduct the majority of the area searches and listed-species nest monitoring work. A report will be prepared that details methodology, results, and recommendations for continued monitoring as well as management objectives for the listed species.

9. Nesting Birds of Prey Inventory and Monitoring (M-13)

Based on casual observations, raptor abundance and diversity appears to be high at Chino Hills State Park. Pete Bloom as opportunistically mapped nest locations over the last few years under a park Collecting Permit and Chris Brady (1997) monitored the Brush Canyon golden eagle. This project will be designed to monitor the presence of birds of prey, both diurnal and nocturnal, along standardized transects distributed within each of the major watersheds of the park. A second component will be to attempt to revisit Pete Blooms nests and locate new nests for the various individual raptors detected and to record nesting success. Transect locations and observations of individuals and nests will be mapped and incorporated into a geo-referenced database. This project is being conducted at the Baseline Level.

The District will provide staff time to assist the SSC team in conducting this study.

III Scope of Work

The IMAP team will be the lead in conducting the surveys, and prepare a report that includes detailed methodology, results, and recommendations for continued monitoring, including associated GIS maps.

10. Terrestrial Amphibian and Reptile Monitoring (I-13)

There is an on-going study of terrestrial amphibians and reptiles in the park and adjacent hills by Dr. Robert Fisher of the Western Ecological Research Center of the USGS Biological Resources Division out of San Diego State University. The study began in June of 1998 and consists of 19 pitfall-trap arrays with added snake traps, which are opened and checked for a 10-day period several times a year. Data through November 1999 indicates the presence of 23 species. Sensitive species captured include the western spadefoot toad, western whiptail, coast horned lizard, western ringneck snake, coast patch-nosed snake, and red diamond rattlesnake. IMAP will provide additional funding to allow increased sampling sites to incorporate urban-edge sampling locations.

The IMAP team will incorporate data from the on-going study into the geo-referenced database for the park, and consult with Dr. Fisher and his staff to devise a long-term monitoring strategy for terrestrial amphibians and reptiles within the park. However, the IMAP team will not carry out the actual monitoring of terrestrial amphibians and reptiles as part of this agreement.

Aquatic Environment

11. Aquatic Life Inventory and Monitoring (M-10, M-11, I-15)

Aliso Creek is a small perennial water stream and the only unchanneled tributary of the Santa Ana River below Prado Dam. It is extremely important regionally to native aquatic life and has the potential to provide habitat for four native freshwater fish species, as well as aquatic amphibians and the southwestern pond turtle. The creek is known to currently support populations of the native arroyo chub and the southwestern pond turtle (Taylor 1984, Goodman 1994), both species of special concern. There are also several exotic aquatic species potentially in the creek, including the Louisiana red swamp crayfish, fat-head minnow, bullfrog and African clawed frog, which pose threats to the native species. The District has a currently funded project to remove exotic aquatic species from Aliso Creek.

Scope of Work III

The goal of the Aquatic Life Inventory and Monitoring project is to characterize the aquatic habitat of Aliso Creek and estimate the abundances of fish, aquatic amphibian species, and pond turtles. In addition, aquatic invertebrates will be sampled to provide a preliminary list of the taxa present in the system. Major habitats identified and delineated, survey routes and sampling points will be mapped in GIS and the data entered into a relational database. This project is being conducted at the Comprehensive Level.

The District will provide a portion of the funding for equipment and staff time to collaborate in data collection. The district will also conduct pond turtle sampling.

The IMAP team will provide a portion of funding for equipment and will coordinate and conduct the fish, amphibian, and invertebrate sampling in coordination with the District and Department of Fish and Game. A report will be prepared that includes detailed methodology, results, and recommendations for continued monitoring.

12. Stream Hydrology and Water Quality Monitoring (I-1, M-3, M-2)

Several small creeks (Carbon Creek, Telegraph Creek, Aliso Creek) and a portion of the Santa Ana River flow through the park. Water quality and quantity are affected by many activities and jurisdictions, including water treatment, regulated dam releases, oil extraction, and roads inside and outside of the park. Water quality and quantity are important resources of the park, affecting both biotic communities and the visiting public. There was some water quality sampling conducted in Aliso Canyon as part of the original inventory of features (Taylor 1984), and again as part of a contracted hydrogeologic study (Nourse 1994). The District has recently initiated water quality monitoring within the park. The goal of this project will be to gather and organize existing information from these and other sources outside the department (e.g. Army Corp of Engineers, Water Quality Control Board, Environmental Protection Agency, Robert Diemer Filtration Plant) into a database and devise a sampling strategy for Aliso Creek and areas not covered by existing monitoring programs. This project is being conducted at the Baseline Level.

The District will be the lead on this project and will collect existing information with assistance from the IMAP team, and will provide equipment and personnel for any water quality sampling to be conducted.

The IMAP team will assist the District in collecting and organizing the existing data into a database, and in developing a comprehensive monitoring strategy.

III Scope of Work

Landform

13. Soil Erosion and Stability Monitoring (part of I-5, M-24)

The Chino Hills are prone to frequent landslides and the soils have been characterized as being high in erosion hazard and shrink-swell potential. There are many roads, trails, and utility lines in the park, the use and maintenance of which may contribute to erosion and landslides, and sediment inputs to the creeks. A hydrogeologic study conducted for the Aliso Canyon Watershed mapped landslides from aerial photos of the park (Nourse 1994). This project will digitize existing landslide maps for the park, map current land-movement zones, determine locations where roads, trails, or utility lines may be affecting landslides or erosion zones, and develop a photo-monitoring program for susceptible areas. This project is being conducted at the Baseline Level.

The District will provide personnel familiar with the park to assist in mapping of current land-movement zones, and in developing the photo-stations.

The IMAP team will digitize maps, coordinate field work, and provide a report documenting the actions taken and the monitoring protocol to follow in the future.

Aesthetics

14. Scenic Viewshed and Photo Point Monitoring

There are several potential impacts to the Chino Hills State Park resources and visitor's experience which are not easily quantified nor can be monitored with existing funds and personnel at this time, including obscured views from air pollution and urban encroachment, and cumulative deterioration of resources. This project will establish permanent photo-monitoring points throughout the park in order to detect changes of this sort. GIS technology will be used to determine key locations for the placement of photo-points with respect to viewsheds. Other locations will be determined by ground reconnaissance and polling the collective experience of State Park personnel and long-time visitors. A method for cataloguing and storing digital images will be developed.

The District will provide personnel to assist in determining photo-point locations and protocols, and to take the baseline set of photos.

Scope of Work III

The IMAP team will assist in development of the monitoring strategy, coordinate the determination of photo-stations, take some of the baseline photos, and work with the District to prepare a report describing in detail the monitoring and photo storage protocols for the continuation of photo-point monitoring in the park.

IV Staffing and Schedule of Work

Staffing and Schedule of Work IV

[Insert Work Plan Spreadsheet]

IV Staffing and Schedule of Work

Staffing and Schedule of Work IV

IV Staffing and Schedule of Work

Staffing and Schedule of Work IV

Contract Services

Item	Amount	Source
Small Mammal Sampling	$30,000	District
Aquatic Laboratory Analysis	$3,000	IMAP-SSC

V Signatures

APPROVED

California Department of Parks and Recreation
Natural Resource Division

_____

Dave Schaub, Supervising Resource Ecologist

Date: _____

APPROVED

California Department of Parks and Recreation
Natural Resources Division

_____

Roy Woodward, Program Coordinator
Inventory, Monitoring, and Assessment Program

Date: _____

APPROVED

California Department of Parks and Recreation
Southern Service Center

_____

Ronilee Clark, Supervising Resource Ecologist

Date: _____

APPROVED

California Department of Parks and Recreation
Inland Empire District

_____

Gary Watts, District Superintendent,

Signatures V

Date: _____