

5.0 Management & Monitoring



5.3.7 Responsibilities, Coordination, and Reporting

There are a variety of entities currently responsible for governing land in the MSHCP Conservation Area. The success of the Biological Monitoring Program will depend on effective coordination and oversight to ensure that the program's elements are implemented consistently. To that end, the Wildlife Agencies will initially take the lead in administering the Biological Monitoring Program and will develop annual work plans for monitoring the entire MSHCP Conservation Area. Annual work plans will be submitted to the RMOC by the Biological Monitoring Program Administrator in the last quarter of each year and will include, for the following year, a description of proposed monitoring efforts, survey protocols, schedule for field work, and an estimated budget that details personnel and equipment needs and other expenses. The estimated budget will include the identification of in-lieu or contracted services to implement the Monitoring Program. To facilitate early cost planning, the Program Administrator will also provide to the RMOC on an annual basis a 3-5 year projected schedule and estimate of cost for implementing the Monitoring Program.

The results of each year's monitoring efforts will be summarized in an Annual Report and submitted by the program administrator to the RMOC. The biological monitoring report will include, at a minimum, the following:

- Objectives for the Biological Monitoring Program;
- Effects on Covered Species and Habitat/Vegetation Communities;
- Location of sampling sites;
- Methods for data collection and variables measured;
- Frequency, timing, and duration of sampling for the variables;
- Description of the data analysis and who conducted the analyses;
- Evaluation of progress toward achieving measurable biological goals and objectives
- Suggested changes/feedback for Adaptive Management; and
- Cause-and-effect relationships

5.3.8 Data Management

Overall, the data management strategy must take into consideration the long duration of the MSHCP. Protecting data becomes a paramount issue because new opportunities for data loss or corruption will arise each year. Additionally, because technology is quickly changing, the software and hardware used today will likely be obsolete in the near future. Consequently, the MSHCP Parties should not rely on current technology to manage the data in perpetuity. What can be relied on are the general roles and responsibilities that the MSHCP Parties will have now and in the future. Therefore, greater

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emphasis is placed on roles, responsibilities, and practices rather than specifying hardware and software to be used to manage the data.

➤ **Monitoring Program Database**

The data from the monitoring program will be entered into the CDFG's Uniform Field Observation (UFO) Data Management System. UFO is specifically designed to house "field observations" that are gathered by biologists and others working in the field. There are two major pieces to UFO. The first is the computer system used to house field observation data, and the second is a set of data standards and guidelines that make it easier to store data from a variety of sources together. In terms of data protection, the system has many safeguards built in, including a highly redundant architecture, fully managed backup with off site storage, a secure and environmentally controlled location where the computer equipment is housed, and around-the-clock data management and maintenance by CDFG.

➤ **Archival Roles and Responsibilities**

The MSHCP Parties will be responsible for storing the official record associated with MSHCP compliance. The CDFG will take the initial lead in compiling the data generated from the monitoring program and will provide copies ("mirroring") of the dataset to the MSHCP Parties for their official records. "Mirroring," which goes back to the 1970s, is a low-level technology for maintaining identical copies of entire file systems on computer servers located in far ranging locations. While the technology behind this technique will change, the fundamental idea (identical copies of the data kept in many locations) will not change. The mirrored files systems will create redundancy and will place the entire dataset closer to those who will use it the most. The redundancy protects against catastrophic loss or damage by making it possible to restore the entire dataset from another mirrored site. Pushing data closer to the user is mostly for convenience and conservation of network bandwidth.

➤ **Data Handling Practices**

The practices used to handle data have a significant impact on data value over time. Inconsistent data collection methods, and mishandling of data while being processed, are perhaps the two biggest problems faced in data handling. Unfortunately, decades may pass before such errors are discovered. To protect against these problems, the following practices will be observed throughout the life of this project.

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1. At the beginning of each year, all MSHCP data collectors (*i.e.*, reserve monitors, Reserve Managers) will meet to discuss data collection methodologies. Particular attention will be paid to consistency through time and scientific validity. Moreover, the field data forms that will be used by the various crews will be compared and made consistent.
2. As data is processed, all versions of a particular piece of data will be archived—from its raw state to its fully checked and verified form. Metadata will distinguish the versions from each other and will also describe the methods and steps used to process the data. The primary purpose of this practice is to make it possible to recover from data mishandling during manipulation of original source data. It also makes it possible to verify data processing methodologies at a later date should that become necessary.
3. Metadata will accompany all data generated by this project. The current standard is the Federal Geographic Data Committee (FGDC) Metadata Standard. Any future standard must be agreed upon by the RMOC.

► **Data Availability**

There are concerns over how to make this data available to the public. Some of the information may be proprietary; other data may be collected on land where landowners insist with non-disclosure agreements. Additionally, raw source data along with error corrected data will be archived. These concerns require careful consideration as to what data is made available to the public. With this in mind, the following practices will be followed:

1. No data from the Biological Monitoring Program may be distributed to outside parties or institutions without prior approval from the MSHCP Parties. This means all who are in possession of a dataset mirror may not distribute that data for others to use without the necessary approvals.
2. The County will be the designated single point of contact for publicly available data.
3. Metadata will accompany all datasets that are made public.

► **Data Compilation and Analysis**

The Monitoring Program Administrator will be responsible for compiling the data collected through the Biological Monitoring Program. Field crews will be responsible for entering the data collected during each field season into the Biological Monitoring Program database and for double-checking

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the integrity of the data. The Monitoring Program Administrator will forward the data to the data management personnel for organization, storage, and producing and distributing mirror copies. Data analysis will also be the responsibility of the Monitoring Program Administrator.

5.3.9 Anticipated Levels of Effort and Estimated Costs

The anticipated levels of effort and estimated cost to implement the Biological Monitoring Program are summarized in *Tables 5-9 and 5-10*. The anticipated levels of effort and estimated cost are based on Personnel-Years (PYs), which are defined as 1,770 work hours per year. A 10% contingency fund has been added to the estimated cost to cover any additional, unforeseen monitoring efforts. The total estimated cost provided is anticipated to be the maximum cost (in 2002 dollars) to implement the Biological Monitoring Program in a given year. A budget will be submitted annually to the RMOC which will contain an outline of costs for the following year's monitoring efforts and any unforeseen events that may require contingency funding.

The estimate of PYs assumes implementation of the monitoring program over the entire MSHCP Conservation Area as it is assembled. The initial inventory and assessment phase is expected to require fewer personnel-years than during the long-term monitoring phase due to the anticipated lag time of program start-up and the initial reduced number of acres available for surveys. With the exception of program administration, data management, and GIS support, monitoring activities will largely be conducted by temporary employees.

The following assumptions have been made with regards to levels of effort:

Administration. Two permanent, full-time, senior-level positions (2 PY's) will be required for developing annual implementation/work plans and field protocols, submitting budgets, coordinating with the County, RMOC, and Wildlife Agencies, overseeing field crews, overseeing data management and GIS support personnel, managing contracts, analyzing data, writing annual reports, and presenting results.

Data Retrieval, Storage, and Management. One permanent, part-time, associate-level position (0.5 PY's) will be required for updating the species occurrences database, gathering environmental data from other agencies (e.g., CDF, RWQCB), storing and managing data received from field crews into a query-able database, and creating standard field forms for field crews.