

California Native Plant Society

2707 K Street, Ste. 1 • Sacramento, CA 95816-5113 • (916)447-2677 • FAX (916)447-2727

David Harlow, Director
Michael Valentine, Assistant Director
Desert Renewable Energy Conservation Plan
c/o California Energy Commission Docket Office, MS-4
Docket # 09-RENEW EO-01
1516 Ninth Street
Sacramento, CA 95814-5512

Dear Director Harlow and Assistant Director Valentine,
The California Native Plant Society (CNPS) appreciates the opportunity to provide comments on the public draft report, *Recommendations of Independent Science Advisors for the California Desert Renewable Energy Conservation Plan* (ISA Report).

CNPS strongly supports the recommendations of the Independent Science Advisors (ISA) for the California Desert Renewable Energy Conservation Plan (DRECP), with the clarifications noted below, and especially where their recommendations promote least-impact development of renewable energy generation facilities in California's deserts.

To assist the DRECP process, CNPS will continue to gather and prioritize information relevant to the conservation of intact natural vegetation communities and rare plant populations within the desert planning area, and work to ensure that the final plan provides adequate protections for sensitive habitat.

We would like to clarify two recommendations that appear in Chapter 6.5.2 Restoration and Improvement of Habitat of the report.

1. Transplantation of desert vegetation employed as a restoration practice vs. a mitigation measure

CNPS wishes to emphasize the reservations made by the ISA regarding the practice of relying on "habitat creation or ecological restoration as full mitigation for new habitat disturbances" through the use of, "(s)eeding and planting of greenhouse-grown or salvaged plants" (ISA Report, p. 88). One of the principle goals of the DRECP is to conserve intact desert habitats. Therefore transplantation of rare native plants and/or plant communities should be considered **only** as a mitigation measure of last recourse. Though more recent information on successful revegetation projects is available as described in the ISA Report (Abella and Newton 2009), this still represents a paucity of substantial evidence available on the long-term success of transplanting to mitigate impacts on desert rare plants and rare plant communities. The preponderance of evidence to date demonstrates that transplanting naturally occurring wild plants does not represent a successful method of long-term conservation.

For more information regarding our reservations for using transplantation as mitigation for rare plants, we have included as Attachment A and Attachment B, the *CNPS Policy on Transplanting* and the *CNPS Policy on Mitigation Guidelines Regarding Impacts to Rare, Threatened, and Endangered Plants*, respectively.

2. Maintaining vegetation on-site, under solar structures does not represent refugia for rare plants.

The ISA Report states:

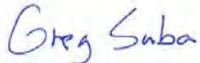
It is possible that some vegetation can coexist with energy installations to provide some habitat as well as to sequester carbon...However, it is uncertain what type of native plant species are best adapted to co-exist with energy sites, so species that can thrive with shade cast by solar structures and other aspects of the sites may need to be identified and promoted. (ISA Report p.88-89)

CNPS would like to underscore the uncertainty and speculative nature of this recommendation, and the need to assess its effectiveness over time as a general method of preserving habitat under solar structures. We further emphasize that here the ISA Report makes no specific reference to the effectiveness or applicability of this approach to the potential for rare desert plants to coexist beneath solar structures. Rare, special-status desert plants have significantly more restricted growth conditions and requirements than more common desert plant taxa (which have restricted growth requirements themselves) that might occur beneath solar structures.

Therefore, although the ISA Report makes the recommendation to maintain and assess vegetation under solar structures to the extent possible rather than removing on-site vegetation, CNPS would like to clarify with emphasis that such a practice should not be considered avoidance, minimization, or mitigation of impacts to rare plants under solar structures. This would represent a mitigation practice based on speculation.

The California Native Plant Society appreciates the high quality of work the ISA group has produced given the expansive study area to be considered, and short time frame during which to prepare this public draft. Please fully consider our comments, and do not hesitate to contact us if you have any questions regarding our information.

Respectfully,



Greg Suba
Conservation Program Director
California Native Plant Society
2707 K Street, Suite 1
Sacramento, CA 95816
(916) 447-2677 x-206



Dedicated to the preservation of California native flora



Attachment A

California Native Plant Society

POLICY ON TRANSPLANTING

Adopted December 1989

Native plants, plant communities and their habitats on public and private lands are subject to increasing development and use pressures. Little scientific information is available on the long-term success of transplanting to mitigate impacts on the plants. The preponderance of evidence to date demonstrates that transplanting naturally occurring wild plants does not represent a successful method of long-term conservation.

Therefore --The California Native Plant Society requests all responsible agencies and persons involved with the maintenance of biological diversity and rare plant protection to:

1. Develop and implement alternate strategies of plant and plant community protection that are realistic, well documented through long term monitoring, and aimed at the continued success of establishing and enhancing viable populations of rare plants, plant communities, and their habitats, and
2. Use transplanting of such plants **only** as a mitigation method of last recourse.

California Native Plant Society
1722 J Street, Suite 17
Sacramento, CA 95814
(916) 447-2677



Attachment B California Native Plant Society

POLICY ON MITIGATION GUIDELINES REGARDING IMPACTS TO RARE, THREATENED, AND ENDANGERED PLANTS California Native Plant Society Rare Plant Scientific Advisory Committee (February 1991, revised April 1998)

This document is intended to guide in the assessment and mitigation of impacts to rare and endangered plants. It supports the California Native Plant Society Policy Regarding Mitigation of Impacts to Rare and Endangered Plants (Appendix A). The goals of the policy are to prevent decline of rare plants and their habitats and to ensure that effective rare plant preservation measures are implemented.

In California the right to develop land is subject to regulation by public agencies that have discretionary control over project approval. The National Environmental Policy Act of 1969 (NEPA) and the California Environmental Quality Act of 1970 (CEQA) require project applicants to disclose, consider and avoid or reduce significant project impacts to rare or endangered species. Environmental documents required under those laws contain the project disclosures and evaluations and are available for public review.

EVALUATION GUIDELINES

Before identifying mitigation options for a project, the vegetation types, rare plants and habitats, and specialized biotic resource areas must be identified and the project impacts described and assessed. The Society recommends following the Department of Fish and Game's Guidelines for Assessing Effects of Proposed Developments on Rare and Endangered Plants and Plant Communities (Appendix B). An important aspect of the evaluation is determining whether an impact is significant as defined by CEQA and NEPA. Under CEQA, for example, a significant impact is one which would produce a substantial, or potentially substantial, adverse change in the environment.

MITIGATION GUIDELINES

The Society endorses the mitigation concepts in the California Environmental Quality Act, Statutes and Guidelines (1986) because they may be applied specifically to rare plants. The types of mitigation for environmental impacts that are listed in CEQA (Section 15370) are:

- (a) Avoiding the impact altogether by not taking a certain action.
- (b) Minimizing impacts by limiting the degree or magnitude of the action.
- (c) Rectifying the impact by repairing, rehabilitating or restoring the impacted environment.
- (d) Reducing or eliminating the impact over time by preservation and maintenance operations during the life of the project.
- (e) Compensating for the impact by replacing or providing substitute resources or environments.

These mitigation measures can be applied to a variety of environmental impacts but are not always appropriate to mitigating rare plant impacts. Mitigation measures should be developed on a site-specific basis in consultation with appropriate resources agencies. Under existing laws, a project applicant or a local lead agency may have the responsibility of consulting with public regulatory agencies on matters relating to project impacts on rare species.

For rare plants, effective mitigation options that can avoid or reduce impacts may be limited. The use of more than one measure may be necessary depending upon the type of project and the factors that make plant species rare (e.g., unusual soils, microclimates, or water regimes). Each project must be individually evaluated to determine which mitigation method or methods will avoid or reduce impacts defined by CEQA or NEPA as significant to a less than significant level. Because the life history and ecological





MITIGATION GUIDELINES PAGE 2

information needed to judge whether mitigation measures are adequate is often lacking, additional biological research may be necessary prior to mitigation design and/or implementation in order to determine which measures will be most appropriate.

Of the five mitigation types in the California Environmental Quality Act, the California Native Plant Society fully supports those which avoid net reduction of population size or species viability. For most plant species this requires the protection of habitat essential to the survival of the species. In some instances, this also requires that impacts be fully avoided in order to prevent a significant impact (i.e., a net loss of plant numbers, habitat, or genetic variability essential to the future existence and recovery of the species). Alternatives such as site restoration and off-site introduction are generally unproven, and usually unsuccessful.

Avoidance:

Impacts to rare plants may be avoided by: (1) pre-project planning and design; (2) reconfiguring an existing project design; or (3) adopting the no-project alternative. Project planning and design measures to avoid impacts may include arrangement of facilities on-site to avoid sensitive features. Additional measures are almost always required to protect avoided sites from impacts associated with construction and operation of the project. Such protection can include, but is not limited to, fencing, open space or conservation easements, and transfer of development rights. See Appendix C for a brief discussion of conservation easements.

Each of the other mitigation alternatives included in the CEQA guidelines involves the acceptance of a net loss and/or use of transplantation, artificial propagation, seed transfer, or habitat restoration. The Society believes that these methods do not fully mitigate for significant impacts to rare plants and their habitats for three reasons:

- (1) These alternatives compromise and ultimately negate mitigation by allowing net losses of rare plant populations and habitat. Mitigation must, according to CEQA, fully offset or reduce significant impacts to a less than significant level.
- (2) Most rare plants are restricted to their known locations because they have specialized, poorly understood, habitat requirements. Creating the exact environmental conditions that these plants require may not be possible.
- (3) The Society does not endorse alteration of naturally occurring plant communities through transplantation because the methodology for most rare plants is untested and therefore unreliable and because most past attempts have ultimately failed.

Although the Society does not endorse significant net losses of rare plant numbers or habitat, we recognize that where such losses are allowed or are deemed unavoidable, off-site restoration, compensation, transplantation or other salvage methods should be attempted to enhance degraded populations or provide for partial survival of the sacrificed population. Such measures also provide additional knowledge of the species' horticultural and ecological requirements. Such measures should never be performed so that an otherwise unaffected population is in any way jeopardized, for example by genetic contamination.

Mitigation alternatives other than avoidance are discussed below. These should be used alone or in combination to reduce impacts to less than significant levels. They should also be used in conjunction with monitoring and long-term management agreements.



MITIGATION GUIDELINES PAGE 3

Reducing Impacts:

The significance of impacts may be minimized by reducing the size of the project (i.e., partial avoidance) and by locating the project in the least environmentally sensitive area. Areas where impacts are avoided should be surrounded by buffer zones where impacts are absorbed, and set aside and permanently protected in conservation or open space easements. Efforts should be made to salvage portions of the population that will be lost.

Restoration:

Restoration can be used to mitigate impacts from projects approved prior to environmental regulations, or impacts allowed through a "statement of overriding considerations."

Depending upon the degree of impact, habitat restoration may be as simple as removing debris and controlling public access. In more complex situations, however, partial or total restoration of degraded habitat may require extensive revegetation, and soil protection and stabilization programs. Restoration must be tailored to the specific project site based on the habitat and species involved. General guidelines for restoration projects involving rare plants are discussed in Appendix D.

Reduction Over Time:

Impacts may be significantly reduced or eliminated by controlling public access and by fencing or staking the habitat area to prevent accidental intrusion into the site. Monitoring rare plants and habitats during all phases of a project will help ensure that construction and operation activities do not encroach on protected habitat.

When project actions have ended, restraints may or may not be removed depending on the completed project's potential for long-term impacts on the sensitive area. In most instances, control of public access to sensitive habitat sites needs to be continued beyond the construction phase of an individual project, especially in moderate and high density development areas. Public education about the value of the protected resources should also be considered for these areas.

Attempts to reduce or eliminate impacts over the life of the project should be required for all projects if the potential exists for secondary impacts due to human access; mitigation agreements that require placement of a conservation or open space easement on the mitigation site should be considered to implement this measure.

Off-site Compensation:

Compensating for the impact by protecting substitute resources or environments has been used in some instances to mitigate unavoidable impacts. In most instances off-site compensation does not fully reduce impacts to an insignificant level because a net loss of individuals or habitat that supports a natural self-sustaining rare plant population results. In spite of this, off-site compensation is a useful tool under specific circumstances where other mitigation alternatives cannot be applied or do not fully mitigate significant impacts.

Off-site compensation has been approached in several different ways, including: 1) permanent protection of an existing off-site native population; 2) permanent protection of an off-site introduced population; 3) a combination of 1) and 2); or 4) mitigation banking.

Determining habitat value for off-site compensation is difficult. The size of the acquisition will vary depending upon the type, condition, extent and rarity of the habitat and species. In any case, the acquisition and permanent protection of an alternative parcel does not alter the fact that the loss of the



MITIGATION GUIDELINES PAGE 4

initial site brings the rare habitat and species one step closer to ultimate extinction. Species preservation is greatly enhanced when plants are protected at a number of separate sites. Although the permanent protection of a vigorous, self-sustaining population of the species tends to reduce the endangerment potential of the species at that particular site, it does not necessarily fully compensate for the loss of the habitat known to support a viable population. To further reduce the endangerment potential for the species and habitat, the ratio of acquisition to loss must in most cases exceed 1:1 for any species. The ratio should be higher for rarer species, particularly for those that occupy irreplaceable habitats. In addition, enhancing off-site compensation areas (e.g., reducing grazing or OHV impacts) can help to more fully compensate for the net loss of plants at a project site.

If transfer of the threatened population is being attempted, an ecological study of the site, including an inventory of rare species, is needed to identify the feasibility of introduction. Genetic contamination can occur by mixing of populations of the rare plants and needs to be avoided, as does hybridization between the rare plant and close relatives that could occur at the introduction site. In no case are unthreatened populations to be jeopardized by the transfer of genetic material from the threatened site. If the compensation site is considered suitable, acquisition or other permanent protection efforts are required to ensure adequate long-term protection, and therefore to mitigate for a net loss of rare plants or habitat. A propagation program should be developed for the salvage and transfer of rare plant populations from the initial parcel before initiating any activities. Permits may be required from California Department of Fish and Game (DFG) or the U.S. Fish and Wildlife Service. Propagation methods for the salvaged population must be developed on a case-specific basis. The propagation program schedule must provide adequate lead time to plan and carry out transfer at the correct time of the year. In order to serve as mitigation, the transfer must be successfully completed before the project's construction activities eliminate plants or habitats. Maintenance and monitoring programs which include the collection of data to document degree of success should also be developed for the compensation site to ensure the transplanted population is self-sufficient and thereby demonstrate success.

MITIGATION IMPLEMENTATION

The mitigation design, implementation techniques and reporting procedures must be clearly documented. Responsibilities of the landowner/applicant, contractors, and agencies, and criteria that define successful mitigation, should be placed in writing to prevent later confusion or disagreement. The DFG Plant Conservation Program has prepared a mitigation plan annotated outline that includes the basic information needed to develop a mitigation plan for State-listed plant species that would be acceptable to the DFG. This document discusses important considerations in designing appropriate mitigation and monitoring plans and establishing appropriate performance criteria, and should be consulted when developing mitigation for impacts to any rare plant species.

Mitigation agreements entered into as a condition of a discretionary permit must contain assurances of implementation, monitoring and maintenance. Permits for development generally require a mitigation plan prior to approval. Project construction is sometimes completed before mitigation is fully implemented, especially where restoration or revegetation is involved. In these and related instances mitigation commitments should be guaranteed by a negotiable performance security. The amount of the negotiable security should be large enough to complete the mitigation and to purchase other rare plant habitat in the event the applicant fails to successfully complete the work in accordance with the approved mitigation agreement.

Clear criteria should be included in the mitigation agreement to define the conditions under which the mitigation measures are to be considered complete or successful, so that the performance security may be returned. Any mitigation effort requiring manipulation of plants or of habitats should be monitored for success or failure for a minimum of five years before relinquishing the performance security. The duration of the evaluation period must be based on the biological constraints of the species involved.



MITIGATION GUIDELINES PAGE 5

MAINTENANCE AND MONITORING IMPLEMENTATION

Maintenance and monitoring of rare plant populations and habitats are essential even where these are "protected" by mitigation measures. Monitoring enables project applicants and regulatory agencies to document compliance with mitigation agreements. Monitoring also enables scientists to gather valuable knowledge on the effectiveness of rare plant mitigation methods. The financial responsibility for monitoring and maintenance of rare plant populations and habitat is typically that of the project applicant. In all cases, monitoring should be conducted by an experienced botanist. Maintenance responsibilities must be clearly stated in contractual agreements to eliminate any confusion during future maintenance and monitoring.

Maintenance must consider the ecological needs of the species and habitat and the types of mitigation used. Where undisturbed habitat is set aside, maintenance may consist of little more than controlling public access, maintaining fences, or periodic weed removal. Restoration and revegetation programs may require more complex maintenance programs. For example, invasive non-native plants may require specialized control measures to keep them from spreading; herbivores may also need to be controlled to protect the native vegetation.

Monitoring programs must be developed to meet the needs of the specific mitigation program. For example, it may be necessary to monitor the progress of construction activities, if these activities have the potential to damage rare plant habitat. Monitoring of restoration and revegetation projects is essential to document success or failure and identify areas where additional work is needed. Monitoring undisturbed sites that have been set aside and are not likely to suffer direct or cumulative impacts may require only periodic visits to determine if easement violations have occurred. Requirements to correct violations should be described in the conservation easement or mitigation agreement.

In the past, mitigation for many approved projects was not properly implemented and agencies failed to enforce compliance by project developers. To rectify this, legislation passed in 1989 (AB 3180, Cortese) amended CEQA by adding section 21081.6 to allow California agencies to require monitoring of mitigation measures that were defined for a given project. The features to be monitored must be outlined in a formal monitoring plan which must be sufficient to identify failures in mitigation throughout the life of the project, not just during the construction phase. Agencies can enforce compliance with monitoring plans through several means, including specifying penalties for failure to meet monitoring obligations, through the use of existing police power such as fines or restraining orders, and/or by requiring a performance security of the project applicant.

Monitoring a conservation easement is the responsibility of the easement holder, whether this is a nonprofit organization or a public agency. The easement holder is also responsible for seeking redress for violations of the conservation easement contract.

CONCLUSION

The Society supports project alternatives that completely avoid significant project impacts to rare and endangered plant species and their habitats. In cases where other mitigation alternatives are approved, mitigation plans should be designed based on the specific requirements of the species and habitat involved. Although the current limited understanding of the ecological requirements for most rare species makes this task difficult, the use of preliminary ecological studies in mitigation planning will help to develop successful mitigation programs. Emphasis must be placed on conserving not only the rare plant but its habitat. The increased awareness of the need for solutions to problems of human impact on the environment and endangered species is encouraging. This awareness and concern has led to the participation of many agencies, conservation organizations, and concerned individuals in an effort to develop the criteria needed for rare plant protection. The California Native Plant Society has dedicated itself to helping realize this goal, and is always available to assist private individuals, local governments, public agencies and others in designing truly effective mitigation measures. Some of the references cited



MITIGATION GUIDELINES PAGE 6

in the bibliography contain information relating to studies of specific rare plants and mitigation implementations for specific development projects.

ACKNOWLEDGEMENTS

The CNPS Mitigation Policy and Guidelines were produced through the dedicated effort of many individuals. Special thanks go to Betty Guggolz for her lead role in the production of this document and her patient endurance of innumerable modifications to the text. Others who contributed valuable advice, criticism and support were: Ken Berg, Roxanne Bittman, Fredrica Bowcutt, Susan Cochrane, Charlice Danielsen, Phyllis Faber, Jack Guggolz, James Jokerst, Tim Messick, Mary Meyer, James Nelson, Thomas Oberbauer, David Schonum, Teresa Sholars, Mark Skinner, James Payne Smith, Joan Vilms, Laurie Wickenheiser, and Vernal Yadon.

BIBLIOGRAPHY

Barrett, Thomas S., and Putnam Livermore, for the Trust For Public Land. *The Conservation Easement in California*, Island Press, Covelo, California, 1983.

Christian, John. U.S. Fish and Wildlife Service Mitigation Policy, Federal Register, Vol. 46 No. 15, Department of the Interior, Washington D. C., 1981.

Elias, Thomas S. (ed.). *Conservation and Management of Rare and Endangered Plants*, California Native Plant Society, 1987.

Fahselt, D. The Dangers of Transplantation as a Conservation Technique. *Natural Areas Journal* 8:238-243, 1988.

Hall, Lauren A. Transplantation of Sensitive Plants as Mitigation for Environmental Impacts. Pages 413-420 in Elias, Thomas S. (ed.) "*Conservation and Management of Rare and Endangered Plants*", California Native Plant Society, 1987.

Hoose, Philip M. *Building An Ark, Tools for Preservation of Natural Diversity through Land Protection*, Island Press, 1981.

Howald, Ann M., and Laurie P. Wickenheiser. *Mitigation Plan Annotated Outline for Endangered Plants of California*. California Department of Fish and Game, Endangered Plant Program, 1990.

Nachlinger, Jan, Gankin, Roman and Robert Powell (eds.). C.N.P.S. Working Conference, Conservation, Rare Plants and Legislation, February 5-7, 1982, Yosemite Institute, Marin Headlands, California Native Plant Society, July 1982.

Remy, Michael H., Thomas, Tina A., Duggan, Sharon E., and James G. Moose. *Guide to the California Environmental Quality Act*, Solano Press Books, 1990.

Rieger, John P. and Bobbie A. Steele (eds.). *Proceedings of the Native Plant Revegetation Symposium*, Nov.15, 1984, San Diego, California, California Native Plant Society, 1985.

Smith, J.P., Jr. and Ken Berg (eds.). *Inventory of Rare and Endangered Vascular Plants of California*, 4th ed. Special Publication No.1, California Native Plant Society, Sacramento, California, 1988.



MITIGATION GUIDELINES PAGE 7

RELEVANT LEGISLATION

California Endangered Species Act. Fish and Game Code, Sections 2050-2098. Native Plant Protection Act. Fish and Game Code, Sections 1900-1913.

State of California, The California Environmental Quality Act, Statutes and Guidelines. Office of Planning and Research, 1986.

State of California. Tracking CEQA Mitigation Measures Under AB 3180, Office Of Planning and Research, 1989.

The Federal Endangered Species Act of 1973. (Public Law 93-295).

The National Environmental Policy Act of 1969. (42 USC 4321-4347).

California Native Plant Society
1722 J Street, Suite 17
Sacramento, CA 95814
(916) 447-2677



MITIGATION GUIDELINES PAGE 8

APPENDIX A

**POLICY REGARDING MITIGATION OF IMPACTS TO
RARE AND ENDANGERED PLANTS**

Adopted by the CNPS Board of Directors: June 6, 1987

The policy of the California Native Plant Society is that all potential direct, indirect, and cumulative impacts to rare, threatened, or endangered plants and their habitats must be assessed and that appropriate measures be implemented to prevent such impacts resulting from projects. The policy of the Society is also that environmental documents and mitigation plans be based on complete, accurate and current scientific information. Viability of rare, threatened, or endangered plants and their habitats takes precedence over economic or political expediency. Because of the tremendous diversity of rare plant habitats in California, and the dependence of rare plants on their local habitats, it is imperative that mitigation measures be developed on a site specific basis. Local environmental conditions, species biology, land use patterns and other factors must be incorporated into the design of mitigation plans.

The goals of this policy are to prevent the decline of rare plants and their habitats and to ensure that effective rare plant preservation measures are implemented.

Of the mitigation measures listed in the California Environmental Quality Act, the Society fully endorses only that of avoiding the impact. Measures to minimize, to rectify, or to reduce or eliminate the impact over time are recognized by the Society as partial mitigation. The Society does not recognize off-site compensation as mitigation.

Guidelines for project review and evaluation of mitigation proposals are available from the California Native Plant Society. The Rare Plant Scientific Advisory Committee will revise the guidelines periodically so that they are easily used with the California Environmental Quality Act and other current legislation.

California Native Plant Society
1722 J Street, Suite 17
Sacramento, CA 95814
(916) 447-2677



MITIGATION GUIDELINES PAGE 9

APPENDIX B

GUIDELINES FOR ASSESSING THE EFFECTS OF PROPOSED DEVELOPMENTS ON RARE, THREATENED, AND ENDANGERED PLANTS AND PLANT COMMUNITIES

State of California
THE RESOURCES AGENCY
Department of Fish and Game
May 4, 1984
Revised August 15, 1997

The following recommendations are intended to help those who prepare and review environmental documents determine when a botanical survey is needed, who should be considered qualified to conduct such surveys, how field surveys should be conducted, and what information should be contained in the survey report. The Department may recommend that lead agencies not accept the results of surveys that are not conducted according to these guidelines.

1. Botanical surveys that are conducted to determine the environmental effects of a proposed development should be directed to all rare, threatened, and endangered plants and plant communities. Rare, threatened, and endangered plants are not necessarily limited to those species which have been "listed" by state and federal agencies but should include any species that, based on all available data, can be shown to be rare, threatened, and/or endangered under the following definitions:

A species, subspecies, or variety of plant is "endangered" when the prospects of its survival and reproduction are in immediate jeopardy from one or more causes, including loss of habitat, change in habitat, over-exploitation, predation, competition, or disease. A plant is "threatened" when it is likely to become endangered in the foreseeable future in the absence of protection measures. A plant is "rare" when, although not presently threatened with extinction, the species, subspecies, or variety is found in such small numbers throughout its range that it may be endangered if its environment worsens.

Rare plant communities are those communities that are of highly limited distribution. These communities may or may not contain rare, threatened, or endangered species. The most current version of the California Natural Diversity Database's List of California Terrestrial Natural Communities may be used as a guide to the names and status of communities.

2. It is appropriate to conduct a botanical field survey to determine if, or the extent that, rare, threatened, or endangered plants will be affected by a proposed project when:
 - a. Based on an initial biological assessment, natural vegetation occurs on the site and it is unknown if rare, threatened, or endangered plants or habitats occur on the site; or
 - b. Rare plants have historically been identified on the project site, but adequate information for impact assessment is lacking.
3. Botanical consultants should possess the following qualifications:
 - a. Experience conducting floristic field surveys;
 - b. Knowledge of plant taxonomy and plant ecology;
 - c. Familiarity with the plants of the area, including rare, threatened, and endangered species; and
 - d. Familiarity with the appropriate state and federal statutes related to plants and plant collecting.



MITIGATION GUIDELINES PAGE 10

4. Field surveys should be conducted in a manner that will locate any rare, threatened, or endangered species that may be present. Specifically, rare, threatened, or endangered plant surveys should be:

- a. Conducted in the field at the proper time of year when rare, threatened, or endangered species are both evident and identifiable. Usually, this is when the plants are flowering.

Additionally, field surveys should be conducted with sufficient number of visits spaced throughout the growing season to accomplish a floristic survey of the site (see 4.b.).

When rare, threatened, or endangered plants are known to occur in the type(s) of habitat present in the project area, nearby accessible occurrences of the plants (reference sites) should be observed to determine that the species are identifiable at the time of the survey.

- b. Floristic in nature. A complete species list should be included in every botanical survey report.
 - c. Conducted in a manner that is consistent with conservation ethics. Collections of rare, threatened, or endangered species, or suspected rare, threatened, or endangered species (voucher specimens) should be made only when such actions would not jeopardize the continued existence of the population and in accordance with applicable state and federal permit requirements. A collecting permit from the Plant Conservation Program of DFG is required for collection of state-listed plant species. Voucher specimens should be deposited at recognized public herbaria for future reference. Photography should be used to document plant identification and habitat whenever possible, but especially when the population cannot withstand collection of voucher specimens.
 - d. Conducted using systematic field techniques in all habitats of the site to ensure a thorough coverage of potential impact areas.
 - e. Well documented. When a rare, threatened, or endangered plant (or rare plant community) is located, a California Native Species (or Community) Field Survey Form or equivalent written form, accompanied by a copy of the appropriate portion of a 72 minute topographic map with the occurrence mapped, should be completed and submitted to the Natural Diversity Data Base.
5. Reports of botanical field surveys should be included in or with environmental assessments, negative declarations and mitigated negative declarations, EIR's, and EIS's, and should contain the following information:
 - a. Project description, including a detailed map of the project location and study area.
 - b. A written description of biological setting referencing the community nomenclature used and a vegetation map.
 - c. Detailed description of survey methodology.
 - d. Dates of field surveys and total person-hours spent on field surveys.
 - e. Results of field survey (including detailed maps).
 - f. An assessment of potential impacts.
 - g. Discussion of the importance of rare, threatened, or endangered plant populations with consideration of nearby populations and total species distribution.



MITIGATION GUIDELINES PAGE 11

- h. Recommended measures to avoid impacts.
- i. List of all species occurring on the project site.
- j. Description of reference site(s) visited and phenological development of rare or endangered plant(s).
- k. Copies of all California Native Species Field Survey Forms or Natural Community Field Survey Forms.
- l. Name of field investigator(s).
- m. References cited, persons contacted, herbaria visited, and disposition of voucher specimens.



MITIGATION GUIDELINES PAGE 12

APPENDIX C

CONSERVATION EASEMENTS

Open Space or Conservation Easements have been used in a number of jurisdictions throughout California. In open space or conservation easements the landowner transfers the rights to develop a parcel to a conservation organization or public agency. The legal basis for this action is found in Government Code Section 51050 et seq., particularly Section 51083.5 which describes the granting of easements to nonprofit organizations. Easements granted to an impartial third party, interested organization, or resource agency are the only secure types. Those granted to a local public jurisdiction can be eliminated or modified with a majority vote.

Determining the appropriate size of an easement is difficult. It must be large enough to support, in perpetuity, a biologically secure, reproducing population with an adequate buffer zone. The proposed land use surrounding the easement and current and future land uses of the conservation or open space easement area must also be taken into consideration. A land use or management plan that accounts for the type of rare plant habitat and the biology of the resident species needs to be developed for easement areas. The design of the protection area boundaries and management plan must be scientifically based, utilizing baseline studies and species biology information.

Conservation and open space easement contracts should include a legal description of the easement parcel, the purpose of the easement and describe the specific resources or conditions being protected by the easement. The contract should also include the rights of the grantee, the grantors rights and uses, restrictions of undesirable activities, and a general restriction of all uses inconsistent with the purposes of the easement. Language should be included that states that the conditions of the easement contract are binding not only on the grantor, but also on his heirs, assigns, and all other successors and interests so that the term of the easement runs with the land in perpetuity.

Conservation easement contracts should also include: (1) specific restrictions to protect the site from land use change, introduction of nonnative plant species and public access; and (2) the right of the grantee to enforce compliance with the terms of the easement and to require restoration of the habitat at the grantor's expense should damage to the habitat result from violation of the agreement by the grantor.

Maintenance and monitoring agreements and guideline documents for the conservation easement should be incorporated into the easement contract.

California Native Plant Society
1722 J Street, Suite 17
Sacramento, CA 95814
(916) 447-2677



MITIGATION GUIDELINES PAGE 13

APPENDIX D

BRIEF GUIDELINES FOR RESTORATION PROJECTS

General guidelines for restoration projects are as follows:

1. Prior to the development of a restoration program, the goals of the completed project must be established and a course of action developed to achieve that goal.
2. Pre-impact site conditions should be determined. Clues to this may be found in remnants of the existing habitat, in herbarium research, and from botanists who have collected in the area in the past. Local historical files or societies may be a source of information if the site is near an urban area.
3. Other site factors which may require study are land contours, soil types, erosion control, topsoil protection, and pre-impact hydrologic patterns.
4. An ecological study of the species being considered for reintroduction is necessary, including their total distribution, other habitat sites, associated species and pollinators.
5. Revegetation methodology research may include propagation techniques, material sources, propagule collection and preparation, planting densities, seedling protection, weed and invasive exotics control, site protection, public access and many other factors. The present knowledge of propagation requirements for rare plants is so limited that all efforts to propagate and reintroduce them in the wild should be carried out under the direct supervision of a specialist well versed in the cultural requirements of the genus.
6. A maintenance and monitoring program should also be included in the development of restoration/revegetation plans, and should utilize consistently documented data to further augment the existing knowledge of the species and to develop criteria for other revegetation projects.

California Native Plant Society
1722 J Street, Suite 17
Sacramento, CA 95814
(916) 447-2677



MITIGATION GUIDELINES PAGE 14

APPENDIX E

DEFINITIONS

The following definitions are used in this document:

Maintenance: the process of ensuring that rare plants and their habitats remain viable and in good condition.

Mitigation: actions taken to avoid or reduce significant adverse impacts. Impacts are less than significant if no net loss of population size or habitat quality results.

Mitigation banking: A large preserve or open space which individual developers buy into at a predetermined compensation ratio to satisfy their mitigation debt. Mitigation banking focuses mitigation efforts into significant amounts of habitat rather than permitting establishment of many smaller and less significant or less defensible preserves or open space areas.

Monitoring: periodic assessment of the status of a plant population or habitat to determine its condition and reveal trends in vigor and viability; should be conducted in a scientific and standardized fashion.

Off-site Compensation: preservation in perpetuity of alternate sites containing similar habitat types and species to offset or "compensate" for unavoidable losses. The ratio of acquisition to loss should be greater than one to one for any species. In lieu of this, an equitable sum of money may be paid for the purchase of an alternate site.

Preservation: the maintenance and protection of rare plants and habitats at levels that existed prior to the commencement of a project.

Rare Species: for the purpose of this policy, and to avoid undue repetition, the word "rare" is used to include "rare", "threatened", and "endangered" plant species as defined in Section 3(4)(15) of The Federal Endangered Species Act of 1973, and The California Environmental Quality Act Guidelines, Section 15380 (1986). The latter section is reproduced below:

(b) A species of plant is:

(1) "Endangered" when its survival and reproduction in the wild are in immediate jeopardy from one or more causes, including loss of habitat, change in habitat, overexploitation, predation, competition, disease, or other factors; or

(2) "Rare" when either:

(A) Although not presently threatened with extinction, the species is existing in such small numbers throughout all or a significant portion of its range that it may become endangered if its environment worsens; or

(B) The species is likely to become endangered within the foreseeable future throughout all or a significant portion of its range and may be considered "threatened" as that term is used in the Federal Endangered Species Act.

(c) A species of plant shall be presumed to be rare or endangered if it is listed in:

(1) Sections 670.2 or 670.5, Title 14, California Administrative Code; or



MITIGATION GUIDELINES PAGE 15

(2) Title 50, Code of Federal Regulations, Section 17.11 or 17.12 pursuant to the Federal Endangered Species Act as threatened or endangered; or

(d) A species not included in any listing identified in subsection (c) shall nevertheless be considered to be rare or endangered if the species can be shown to meet the criteria in subsection (b).

Division 2, Chapter 1.5 of the California Fish and Game Code (California Endangered Species Act Section 2067) defines a "threatened" species as a native species or subspecies of a plant that, although not presently threatened with extinction, is likely to become an endangered species in the foreseeable future in the absence of special protection and management efforts required in this chapter.

Transfer of Development Rights (TDR): Under this process, an applicant may gain density bonuses in designated development areas if rare plant populations and habitat are left in permanent open space. This alternative also requires an organized plan by a local agency identifying those areas to be left undisturbed and those that may be used by the applicant for density increases in return for protecting the areas to be left undisturbed. Protection in perpetuity is a necessary requirement of TDR proposals that are implemented to protect rare plant populations. TDR is being used increasingly as a mitigation tool for on-site rare plant protection.

Unavoidable significant impacts: impacts resulting from a "statement of overriding considerations" where the public benefits of a project have been determined to outweigh the significance of the environmental impact, or where an emergency situation or natural disaster may destroy, or has destroyed rare plant habitat and species.

California Native Plant Society
1722 J Street, Suite 17
Sacramento, CA 95814
(916) 447-2677



MITIGATION GUIDELINES PAGE 16

APPENDIX F

CNPS RARE PLANT LISTS (Skinner and Pavlik, 1994)

The California Native Plant Society currently tracks 1742 plant species, subspecies, and varieties as rare in California. They are assigned to one of five "lists" in an effort to categorize their degree of rarity.

List 1A: Plants Presumed Extinct in California

The 37 plants of List 1A are presumed extinct because they have not been seen or collected in the wild in California for many years. Although most of them are restricted to California, a few are found in other states as well. In many cases, repeated attempts have been made to rediscover these plants by visiting known historical locations. Even after such diligent searching, CNPS is constrained against saying that they are extinct, since for most of them rediscovery remains a distinct possibility. Note that care should be taken to distinguish between "extinct" and "extirpated." A plant is extirpated if it has been locally eliminated, but it may exist in abundance elsewhere in its range.

All of the plants constituting List 1A meet the definitions of Sec. 1901, Chapter 10 (Native Plant Protection Act [NPPA]) or Secs. 2062 and 2067 (California Endangered Species Act [CESA]) of the California Department of Fish and Game Code, and are eligible for state listing. Should these taxa be rediscovered, it is mandatory that they be fully considered during preparation of environmental documents relating to the California Environmental Quality Act (CEQA).

List 1B: Plants Rare, Threatened or Endangered in California and Elsewhere

The 857 plants of List 1B are rare throughout their range. All but a few are endemic to California. All of them are judged to be vulnerable under present circumstances or to have a high potential for becoming so because of their limited or vulnerable habitat, their low numbers of individuals per population (even though they may be wide ranging), or their limited number of populations. Most of the plants of List 1B have declined significantly since the arrival of non-indigenous humanity in California.

All of the plants constituting List 1B meet the definitions of Sec. 1901, Chapter 10 (NPPA) or Secs. 2062 and 2067 (CESA) of the California Department of Fish and Game Code, and are eligible for state listing. It is mandatory that they be fully considered during preparation of environmental documents relating to CEQA.

List 2: Plants Rare, Threatened, or Endangered in California, But More Common Elsewhere

Except for being common beyond the boundaries of California, the 272 plants of List 2 would have appeared on List 1B. From the federal perspective, plants common in other states or countries are not eligible for consideration under the provisions of the Endangered Species Act. Until 1979, a similar policy was followed in California. However, after the passage of the NPPA, plants were considered for protection without regard to their distribution outside the state.

All of the plants constituting List 2 meet the definitions of Sec. 1901, Chapter 10 (NPPA) or Secs. 2062 and 2067 (CESA) of the California Department of Fish and Game Code, and are eligible for state listing. It is mandatory that they be fully considered during preparation of environmental documents relating to CEQA.

List 3: Plants About Which We Need More Information -- A Review List

The 47 plants that comprise List 3 are united by one common theme -- CNPS lacks the necessary information to assign them to one of the other lists or to reject them. Nearly all of the plants remaining on



MITIGATION GUIDELINES PAGE 17

List 3 are taxonomically problematic. Data regarding distribution, endangerment, ecology, and taxonomic validity will be gratefully received by CNPS.

Some of the plants constituting List 3 meet the definitions of Sec. 1901, Chapter 10 (NPPA) or Secs. 2062 and 2067 (CESA) of the California Department of Fish and Game Code, and are eligible for state listing. CNPS recommends that List 3 plants be evaluated for consideration during preparation of environmental documents relating to CEQA.

List 4: Plants of Limited Distribution -- A Watch List

The 532 plants in this category are of limited distribution or infrequent throughout a broader area in California, and their vulnerability or susceptibility to threat appears low at this time. While CNPS cannot call these plants "rare" from a statewide perspective, they are uncommon enough that their status should be monitored regularly. Should the degree of endangerment or rarity of a List 4 plant change, we will transfer it to a more appropriate list.

Very few of the plants constituting List 4 meet the definitions of Sec. 1901, Chapter 10 (NPPA) or Secs. 2062 and 2067 (CESA) of the California Department of Fish and Game Code, and few, if any, are eligible for state listing. Nevertheless, many of them are significant locally, and CNPS recommends that List 4 plants be evaluated for consideration during preparation of environmental documents relating to CEQA. This may be particularly appropriate for the type locality of a List 4 plant, for populations at the periphery of a species' range or in areas where the taxon is especially uncommon or has sustained heavy losses, or for populations exhibiting unusual morphology or occurring on unusual substrates.

California Native Plant Society
1722 J Street, Suite 17
Sacramento, CA 95814
(916) 447-2677