

**Independent Science Advisors' Review:
North County Subarea Plan
County of San Diego
Multiple Species Conservation Program**

**Part II: Review of Consultants' Response to Part I Report and
and Revision of Preserve Planning Process**

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This report is the second in a series of two reports prepared by our group of independent science advisors, reviewing the North County Subarea Plan of the County of San Diego's Multiple Species Conservation Program. This report includes our response to new information presented at a workshop held February 14, 2002, in San Diego. At this workshop and in an accompanying binder, the consultants for this plan (AMEC, TAIC, and CBI) presented their response to our Part I report and explained revisions made to the preserve planning process. The revisions are significant and include new analytic methods. As in our first workshop, representatives from U.S. Fish and Wildlife Service and California Department of Fish and Game were in attendance.

We emphasize that we, as independent advisors, are charged with critiquing the reserve design process, not with endorsing any particular reserve design. This report, much briefer than our first, is organized as responses to a series of questions generated by the consultants and us, followed by a few additional, specific recommendations. Before proceeding to these questions, we wish to express our general satisfaction with the revisions made by the consultants and with the overall methodology now being employed in this planning process. The response to the issues raised in our Part I report was substantive and detailed. There is absolutely no doubt among us that this is a cutting-edge conservation plan with the rare combination of scientific defensibility and pragmatism.

1. Is SITES an appropriate tool? To what degree should SITES define PAMA boundaries?

Upon a suggestion from one of us (Noss), the consultants used the simulated annealing approach of a site-selection algorithm, known as SITES, to efficiently select portfolios of sites to meet stated conservation goals. We are impressed with the proficiency that the consultants developed with SITES over a short period of time. Nevertheless, several members of our group, who were not familiar with this or similar algorithms, were

frustrated that they did not receive information on the algorithm until the day of the workshop (i.e., attachments emailed to the advisors one day prior to the workshop failed to reach many of us). Although we appreciate that the consultants worked until the last minute preparing for this workshop, we would have appreciated all materials being sent to us at least a week or two in advance.

That said, we concur that SITES is an appropriate tool for conservation planning and reserve design in the study area. We do not believe, however, that SITES modeling should lead directly to defining pre-approved mitigation area (PAMA) boundaries. Rather, SITES tends to produce a variety of alternative portfolios that meet conservation goals almost equally well. Hence, the model brackets the possibilities for PAMA designation. The further steps of conservation analysis and connectivity analysis, as explained (in part) in the binder and discussed at the workshop, are necessary to refine SITES portfolios into a system of PAMAs that will meet conservation goals and legal requirements.

SITES should not be seen as a black box that produces a completed design (i.e., PAMAs), but rather as a tool to aid decision-making when combined with expert knowledge and further analysis. This distinction needs to be made clear and transparent to the reader. As part of the process of bracketing a range of alternatives, the County and consultants should clearly explain the conditions (i.e., the selected parameters and their respective values) that lead to a given alternative. Input parameters must be thoughtfully selected, with a rationale provided. A matrix of alternatives might be presented, for examples, with the targets, quantitative goals, cost assumptions, boundary modifiers, etc., of each alternative shown, along with the results (i.e., acreage in portfolios, proportions of various goals achieved). Site selection algorithms will be unfamiliar to many readers, so the more lucid the explanation of how the program works and what the results mean, the better. The assumptions and limitations of the model also must be made clear.

2. What process is needed to finalize SITES implementation?

We recommend that a variety of alternative SITES conservation portfolios be produced, using “best runs” as well as “summed runs” options and applying a number of goal scenarios. The coverage of all elements (targets) should be tabulated across alternatives for comparison. These portfolios can then be considered by experts, in light of further conservation and connectivity analysis, and compared to portfolios based on development and agricultural objectives.

We underscore that conservation analysis and connectivity analysis are essential complements to the SITES modeling. It can be assumed that any SITES portfolio will lack sufficient connectivity for some species and ecological processes, especially as habitat fragmentation proceeds in the planning area. The discussion of connectivity should be expanded to include an explanation of its functions (i.e., as a means, not an end), which will include maintaining abiotic processes such as sediment transport as well as facilitating the movement of animals that may enhance metapopulation viability.

3. Should species distributions be included in SITES as goals or be addressed in conservation analysis?

We recommend a combined approach, where species with well-documented distributions (i.e., accurate point data) or well-validated distributional models can be included as targets in SITES analysis, in addition to separate consideration of species distributions and conservation and management requirements in the conservation analysis. The latter process of species-specific consideration will probably be necessary to obtain legal coverage in many cases.

4. Are there recommendations for SITES goals?

As suggested earlier, we recommend an empirical approach, where the consequences of many alternative goal scenarios, as well as cost equations, are investigated in SITES. It is important that goals be scaled to the conservation value (e.g., degree of imperilment) of each element (target) in a logical and consistent fashion. For example, globally critically imperiled and imperiled (G1/G2) elements should have more ambitious goals for representation in portfolios than less imperiled elements. It would also be interesting to include habitat value index (HVI) goals in some of the SITES scenarios, capturing set percentages of land with different HVI values (e.g., 90% of very high, 75% of high, etc.). Although inclusion of HVI goals would probably be redundant with other included goals, this could be examined explicitly by comparing portfolios based on HVI goals with portfolios based on other goal scenarios, and might help corroborate the HVI.

Which goal scenario is appropriate for the final or selected portfolio is a matter of expert judgment, but must also consider practical and legal issues. For instance, placing 99% of the remaining undeveloped land in preserves will not likely be politically acceptable. Regulatory requirements will determine, in part, which goals are acceptable. As indicated above, even the final SITES portfolio should be modified by further expert input, especially through the conservation analysis and connectivity analysis processes. Costs need to be characterized in practical terms, which include economic, transportation, land-use objectives, and other issues.

5. Are there recommendations for modifying the habitat evaluation model (HEM)?

As we suggested at the workshop, it would be useful to incorporate hydrological processes and stream protection explicitly in the HEM. The arroyo toad habitat should be checked and revised (i.e., tributaries seem to be missing). The issue of stream protection, and how to handle this relative to the SITES analysis, has been discussed extensively in email correspondence between Robert Fisher and the consultants. We trust the consultants to address this issue as they see fit, given the advice received.

Furthermore, it will be useful to compare in quantitative terms the new HEM analysis with that conducted previously---i.e., the HEM results presented in February 2002 compared with those presented in May 2001.

6. Were the concerns that we raised in our Part I report adequately addressed by the consultants?

The consultants' responses to our recommendations and concerns in the Part I report were generally thorough and substantial. At some point, however, the extensive recommendations we made in our Part I report for monitoring and adaptive management should be addressed (see recommendation D, below). Although the consultants' written response was that these issues "will be addressed during plan development," we reiterate that they are crucial and must not fall through the cracks. Among the issues from our Part I report that were deferred for consideration later, designing buffer zones and mitigating the impacts of adverse edge effects are especially important. It would be helpful if the details of approved build-out and land use around reserves, including such considerations as dwelling density and agricultural vs. residential use of properties adjacent to reserves, are specified in the PAMA design and considered in the conservation analysis. The sooner and more rigorously these issues can be addressed in Plan development, the better.

Additional Recommendations:

- A. The conservation analysis is a key component of the planning process and requires further, more detailed description. Explicit information on species occurrences, habitat requirements, population dynamics, geophysical processes, and other factors should be addressed during this component.
- B. As we recommended (p. 16 of our Part I report), the wildlife corridor analysis was pulled out of the preliminary PAMA designation process. Connectivity will now be dealt with retrospectively by considering the needs of particular focal species vis-a-vis selected PAMAs. However, the connectivity analysis needs further, rigorous consideration. Which species will be considered and at which spatial scales? Potential core areas in the initial reserve design (i.e., PAMAs) based on SITES modeling and the conservation analysis, must be linked, perhaps at two or more spatial scales, by corridors suitable to particular focal species. How will this analysis be done? It will helpful to illuminate the differences between corridors under the County's control and corridors outside the County's control. One area that stands out for connectivity analysis is the area within the San Pasqual Valley, including lands north and south of the Wild Animal Park and connecting the Fallbrook/Valley Center with the Ramona focus areas. The importance of this area for linking selected planning units is evident from Figs. 3-14 and 3-15. Previous land-use decisions in this area were piecemeal, lacking the broad focus of the North County MSCP. Now is the time to correct that process and maintain what connectivity still exists, if at all possible.
- C. Make sure that narrow endemic species are given adequate protection in the Plan. In many cases, populations of these species will be conserved here or not at all.
- D. Compare the consequences of considering Forest Service and other public lands "reserves" vs. unprotected in SITES runs. This comparison will help illuminate the contribution these lands potentially make to conservation goals. How these

lands are managed, of course, will reflect administrative policies, shaped by politics.

- E. The penultimate Plan requires a further round of peer review, from us or others. This review will provide an opportunity for critical issues not yet addressed---e.g., those related to monitoring and adaptive management---to be evaluated. Hence, this review would not revisit boxes 1 through 6 in Fig. 2-1, but would focus on box 7 (Conservation Analysis) and box 8 (Implementing Agreements, including monitoring and adaptive management plans). Additional peer review will insure that the final components of the Plan reach the same high standards as the components we had the opportunity to review.
- F. The mitigation ratios inside and outside PAMAs need to be specified. The Summary (p. 15) indicates that in developing PAMAs, it was generally assumed that 75% of the overall PAMA would be preserved. Specific goals, which may vary by PAMA, should be stated explicitly in the final Plan.
- G. Will detailed biological surveys be required within PAMAs after designation? What, specifically, will be the requirements for these surveys? How will the monitoring and adaptive management suggestions we made in our Part I report be implemented?
- H. Fire, another issue discussed in our Part I report, needs additional consideration in Plan development and adaptive management. In order to maintain biodiversity over time, a means must be provided to cycle fire through landscapes.