Memorandum

To:	Susan Collinge, Ph.D. Larry Ford, Ph.D. Jaymee Marty, Ph.D. Dan Rosenberg, Ph.D. Peter Trenham, Ph.D.
From:	Kathryn Gaffney, ICF David Zippin, ICF Matt Ricketts, ICF Abigail Fateman, East Contra Costa County Habitat Conservancy Forrest Ebbs, City of Antioch
Date:	February 2, 2018
Re:	**Revised Questions for the Joint Antioch HCP/NCCP and East Contra Costa County HCP/NCCP Science Advisor Panel**

The purpose of this memo is to provide a narrowed and more targeted list of questions for the Science Advisor Panel to consider during the Science Advisor Workshop (February 7-9, 2018). This list was primarily revised based on feedback from the Science Advisor Panel Chair and additional questions provided by U.S. Fish and Wildlife Service (specific to the East Contra Costa County HCP/NCCP). This revised list was reviewed and approved by the East Contra Costa County Habitat Conservancy, City of Antioch, U.S. Fish and Wildlife Service, and California Department of Fish and Wildlife.

There are three key changes to note in this revised list.

1. Several targeted sub-questions are added to East Contra Costa County HCP/NCCP question 3. These are the types of issues we would like for the Advisors to discuss when considering question 3.

2. A list of questions specifically pertaining to the Monitoring and Adaptive Management Program for the Vasco Hills/Byron Vernal Pools Management Area has been added as a new subheading under East Contra Costa County HCP/NCCP.

3. The final three questions posed under East Contra Costa County HCP/NCCP are questions that have arisen during development of the draft Monitoring Plan, but should be considered a lower priority in receiving a response than the remainder of the questions posed below to the Science Advisors.

Antioch HCP/NCCP

Covered Species and Existing Data

1. Are you aware of any new or pending taxonomic revisions or other issues that would affect the list of species proposed for coverage?

2. Are you aware of data gaps related to covered species life-cycle needs (e.g., California tiger salamander dispersal distance) or landscape ecosystem management that should be considered in development of the Antioch HCP/NCCP or implementation of the ECCC HCP/NCCP?

3. What gaps in the existing information create the greatest uncertainties for planning, analyzing, managing, and monitoring an ecosystem reserve in this setting? Are there cost-effective methods to address these data gaps?

Conservation Strategy

4. What modifications would you suggest to the original reserve design principles in the ECCC HCP/NCCP to update them to current best practice?

5. Are you aware of any new threats to any of the proposed covered species? If so, what is the nature of those threats and how might the HCP/NCCP respond to them?

6. What are some recommended tools and models for the HCP/NCCP to evaluate the potential effects of climate change on the covered species, and incorporate strategies to allow for adaptation to climate change?

7. How vulnerable are the proposed Antioch HCP/NCCP covered species to non-native invasive species? What specific management/control strategies should be considered to reduce these threats?

Land Management and Monitoring

8. Which attributes or indicators can serve to monitor population viability of covered species and ecological integrity of natural communities in the inventory area? Are there good indicator or umbrella species that can be monitored as proxies for other species or aspects of ecosystem health?

9. Is the monitoring and adaptive management framework in the ECCC HCP/NCCP sufficient for the Antioch HCP/NCCP? If not, what additional components do you recommend including? Are there other management principles or conservation goals that can be used in developing the framework?

East Contra Costa County HCP/NCCP

1. Are changes needed to habitat restoration practices to better achieve HCP/NCCP requirements?

2. Based on the information provided and the field visit, are any land management methods inappropriate, or are there alternative methods that may better meet goals and objectives?

3. Are monitoring methods proposed by the Conservancy and its contractors appropriate to measure achievement of the targeted list of biological objectives of the plan (see next section) and inform adaptive management?

   a) Does the monitoring plan contain an appropriate level of detail (protocols, sampling design, etc.) to guide monitoring of the management area?

   b) Are the methods proposed for surveys of baseline conditions appropriate to establish a baseline condition for the management area? Are there alternative methods that may better inform or more efficiently establish baseline conditions?

   c) Do the monitoring methods proposed result in the collection of appropriate and adequate data to inform adaptive management actions? Are there alternative methods that may better or more efficiently inform management actions? Is there monitoring proposed that does not inform management actions or progress towards biological goals and objectives?

   d) Is the use of management thresholds vs. performance criteria an appropriate mechanism for assessing progress towards biological goals? Is there a meaningful way to set management thresholds prior to collecting baseline data?

   e) Are the monitoring methods proposed sufficient to assess response of covered species to habitat conditions and management actions?

4. What is the appropriate scale in the inventory area at which to develop and implement preserve management and monitoring plans?

5. Cost of implementation for the Monitoring Program is and will continue to be a critical factor. Can the advisors recommend cost-saving approaches to monitoring while also meeting the stated objectives of the Monitoring Program?

6. *(Lower Priority, time allowing)* Should a Preserve Management Plan developed for a specific Management Area address monitoring for species for which there is little (if any) suitable habitat, even if there is some modeled habitat? E.g., foothill yellow-legged frog in the Vasco Hills/Byron Vernal Pools Management Area.

7. *(Lower Priority, time allowing)* Similarly, should a Preserve Management Plan developed for a specific Management Area address monitoring for natural communities that are only present in very small acreages and were not known to be historically present? E.g., oak woodland and/or riparian in the Vasco Hills/Byron Vernal Pools Management Area.

8. *(Lower Priority, time allowing)* Is it appropriate to be managing for—and allocating limited resources to—a natural community in a geographic area where it was not historically abundant?

Detailed Questions

9. Is the management objective of maintaining grass height between 6 and 12 inches and RDM between 750 and 1,100 pounds per acre appropriate to promote habitat conditions for the covered species in the management area?

10. What sample size/proportion of ponds should be surveyed to monitor status and trends of California red-legged frog, California tiger salamander, and western pond turtle in the management area?

11. Would repeated surveys of an appropriate random subset of ponds or a rolling sample of ponds (such that all ponds are surveyed at some point) be more effective to assess progress towards biological goals? What is an appropriate survey interval for conducting these surveys?

12. What information/methods/decision framework should be used to guide management decisions when covered species have conflicting habitat requirements?

Recommended List of Biological Goals and Objectives for Review

The following table identifies 16 biological goals and 33 biological objectives we recommend that the Science Advisors review because these goals and objectives focus on effectiveness monitoring. We request that the Science Advisors review these biological goals and objectives in the context of the questions posed above for the East Contra Costa County HCP/NCCP.

Table 1. ECCC HCP/NCCP Biological Goals and Objectives and Associated Monitoring Type

Biological Goals and Objectives	Monitoring Type
Wetlands (and other Aquatic) Biological Goals and Objectives	
Goal 2: Maintain and enhance hydrogeomorphic and ecological function of wetlands and ponds to promote covered species, native biological diversity, and habitat heterogeneity	Effectiveness
Objective 2.1. Maintain or increase native emergent vegetation where appropriate	Effectiveness
Objective 2.2. Reduce sediment deposition and transport where appropriate	Effectiveness
Objective 2.3. Maintain or increase wetland and pond capacity and water duration as appropriate.	Effectiveness
Objective 2.4. Maintain or increase flows to and connectivity among wetlands and wetland complexes as appropriate	Effectiveness
Objective 2.5. Eliminate or reduce non-native animals	Effectiveness
Objective 2.6. Eliminate or reduce exotic plants	Effectiveness
Objective 2.7. Maintain or enhance upland habitat in close proximity to wetlands and ponds to support the life-history requirements of wetland-dependent covered species	Effectiveness
Goal 7: Maintain or increase the population and distribution of western pond turtle	Effectiveness
Objective 7.1. Increase number and distribution of basking sites and underwater refugia in ponds	Compliance/ Effectiveness
Objective 8.1. Preserve occupied habitat within the Preserve System at a ratio of 3:1 or dedicate an equivalent number of mitigation bank credits	Compliance/ Effectiveness

Objective 9.1. Identify, protect, and maintain populations of adobe navarretia in the inventory area	Compliance/ Effectiveness
Grassland Biological Goals and Objectives	
Goal 11: Enhance grassland to promote native biological diversity and habitat heterogeneity	Effectiveness
Objective 11.1. Increase the relative cover of native grasses and forbs in native grassland vegetation alliances and other grassland types	Effectiveness
Objective 11.2. Increase structural diversity by creating and maintaining a mosaic of grassland types and conditions	Effectiveness
Objective 11.3. Reduce the biomass, cover, and extent of exotic plants (i.e., non-native invasive plants) in the Preserve System	Effectiveness
Goal 12: Increase availability of burrows within grassland for San Joaquin kit fox, California tiger salamander, California red-legged frog, and western burrowing owl	Effectiveness
Objective 12.1. Increase the number and distribution of California ground squirrel burrows	Effectiveness
Goal 14: Maintain or increase population size and distribution of Townsend's western big-eared bat in the Preserve System	Effectiveness
Objective 14.2. Enhance roosting habitat by protecting any abandoned mine, cave, or building in the Preserve System and, if feasible, creating artificial hibernacula	Effectiveness
Goal 15: Maintain or increase population size and distribution of golden eagles in the inventory area	Effectiveness
Goal 16: Maintain or increase population size and distribution of western burrowing owl	Effectiveness
Goal 18: Enhance populations of grassland-dependent covered plants	Effectiveness
Objective 18.1. Increase population size and distribution of grassland-dependent covered plants, where feasible and biologically desirable	Effectiveness
Oak Woodland Biological Goals and Objectives	
Goal 20: Maintain the current canopy coverage of oaks and other native overstory trees within oak woodland and oak savanna land-cover types	Effectiveness
Objective 20.1. Ensure tree recruitment and age structure are adequate to replace lost trees and maintain canopy coverage	Effectiveness
Objective 20.2. Reduce competition between tree seedlings and other plants to enhance survival rates of tree seedlings and saplings	Effectiveness
Goal 21: Enhance oak woodland and oak savanna to promote biological diversity and habitat heterogeneity	Effectiveness
Objective 21.1. Increase the proportion of native species in oak woodland and oak savanna understories	Effectiveness
Objective 23.1. Identify and maintain or increase populations of showy madia in the inventory area	Effectiveness

Chaparral/Scrub Biological Goals and Objectives	
Goal 25: Enhance chaparral/scrub to promote native biological diversity and habitat heterogeneity	Effectiveness
Objective 25.1. Maintain or mimic the natural fire regime	Effectiveness
Objective 25.2. Maintain a mosaic of stand ages and species composition across the landscape	Effectiveness
Objective 25.3. Promote canopy gaps within chaparral/scrub patches	Effectiveness
Goal 26: Contribute substantially to the recovery of Alameda whipsnake in the inventory area by protecting and enhancing chaparral/scrub	Compliance/Effectiveness
Objective 26.3. Maintain diverse canopy-coverage stages	Effectiveness
Streams and Riparian Woodland/Scrub Biological Goals and Objectives	
Goal 29: Enhance riparian woodland/scrub to promote native biological diversity and habitat heterogeneity	Effectiveness
Objective 29.1. Maintain or increase the cover, width, and connectivity of existing riparian vegetation consistent with current stream and habitat function	Effectiveness
Objective 29.2. Reduce the biomass, cover, and extent of exotic plants in the Preserve System	Effectiveness
Goal 30: Maintain and enhance instream aquatic habitat for covered species and native fish	Effectiveness
Objective 30.1. Promote the natural disturbance regime (e.g., flooding, sediment deposition, and scour)	Effectiveness
Objective 30.2. Reduce water temperature and temperature variation	Effectiveness
Objective 30.3. Increase inputs of organic matter where appropriate	Effectiveness
Objective 30.4. Reduce sediment input and downstream sediment transport and deposition, where appropriate	Effectiveness
Objective 30.5. Maintain and enhance instream structural diversity, where appropriate	Effectiveness
Objective 30.6. Improve stream flow and connectivity for native aquatic wildlife	Effectiveness
Objective 30.7. Control or reduce non-native animals including bullfrogs and fish	Effectiveness
Goal 32: Maintain or increase population size and distribution of Swainson's hawk in the inventory area	Effectiveness
Goal 33: Protect, maintain, or increase populations of foothill yellow-legged frog	Compliance/Effectiveness