

CHAPTER 3

METHODS USED

3.1 Selection and Characterization of the Priority Regional Subclasses of Waters/Wetlands

Data Compilation

Development of the HGM reference system and assessment model was initiated during the spring of 2000 for riverine waters/wetlands in the SCSBC region. Phases I and II listed in Figure 1.6 and Steps 1-5 in Figure 3.1 were completed or substantially advanced during the interval April 25 – May 18, 2000. This effort began with orientation and training in the HGM approach for the Project Clean Water staff, Santa Barbara County Assessment Team (A-team) personnel, and project cooperators. The NWSTC scientists, Project Clean Water staff, and Santa Barbara A-Team then identified priority and secondary subclasses of waters/wetland for the SCSBC based on extensive discussions and interviews with cooperators, regional wetland and water quality experts and County professional staff. Prior to initiating fieldwork, the A-Team assembled information about the landscape within the reference domain. Topographic and geologic maps, soil surveys, National Wetland Inventory (NWI) maps, aerial photographs, species lists, climatic data, and historical information were reviewed and analyzed. Members of the A-Team also identified potential reference sites (including reference standard sites) and developed initial working definitions of the Domain, and HGM class and subclasses to be sampled. In addition, the A-Team began to assemble literature pertinent to Santa Barbara County riverine waters/wetlands ecology and functions. This effort contributed to partial completion of Phase III (Figure 1.6) prior to initiation of fieldwork in mid May 2000.

3.2 Field Verification of the First Approximation Subclass Profiles, Functions, Variables, and Field Indicators

Field Reconnaissance

At the outset of this study, the Santa Barbara A-team conducted preliminary reconnaissance and sampling at a series of representative reference sites. Reference sites in the initial series were selected because they were characteristic of the range of variation in subclasses of streams in the SCSBC region. For example, some sites were chosen for examination because they were thought to be relatively unaltered (*i.e.*, La Honda Creek), and other because they were thought to be highly altered (*i.e.* Lower Mission Creek) by human activities. Some sites were selected because they represented either the middle or the extreme end of the range of topographic or geomorphic variation for the subclass (*e.g.*, low gradient transition to estuary; high gradient headwardmost extent of channel network). Others sites were visited because they were thought to be important in the context of PCW and County flood control activities.

During initial site visits, the A-team engaged in extensive discussions focused on verification of the observed characteristics of each site in comparison to the draft subclass definitions. The A-team then collectively determined which of the reference sites should be assigned to one of four priority subclasses and/or modified the draft subclass definitions to more closely fit observed field conditions.

*First
Approximation
Model*

In addition, the A-team identified functions, variables, and field indicators for the priority subclasses. First approximation HGM models for functions potentially performed by the priority wetland subclasses were refined. The A-team also developed field data sheets appropriate to local conditions to ensure consistent collection of reference site hydrology, soils, plant, habitat, and land use data. The draft assessment models and data sheets continued to evolve throughout the field sampling effort. Examples of the final data sheets used by the A-team are provided in Appendix A.

Figure 3.1
Steps Used in the
Development of an
Operational Draft HGM
Guidebook

*Steps Completed by
the Santa Barbara
County A-team
(2000-2001)*

1. Assemble A-team / Initial Training in HGM
2. Identify Study Area and Reference Domain
3. Identify and Define Wetland Subclass
4. Identify, Define and Develop First Approximation Subclass Profiles, Functions, Variables, Field Indicators and HGM Models
5. Develop and Standardize Field Forms
6. Build the Reference System (Collect Data from Reference Sites)
7. Consolidate Data, Quality Assurance / Quality Control
8. Data Input, QA/QC
9. Data Analysis and Synthesis
10. Refine Profile of Subclass by Incorporating Reference Site Data
11. Write Second Approximation HGM Model(s)
12. Internal Review / Field Test Second Approximation Draft Model(s)
13. Draft Third Approximation (Peer Review) Model(s) / Guidebook

*Steps remaining to be
completed*

14. Training
15. Initiate A-team and Peer Reviews of Third Approximation Draft Guidebook
16. Respond to A-team and Peer Review with Operational Draft
17. Present Operation Draft; Two Year Use Between Revisions

3.3 Development of the Reference System

Sampling of 60 Reference Sites

Throughout the course of the field work, the A-team identified 60 reference sites in the priority waters/wetlands subclasses for sampling (Figure 3.2). Reference sites were selected with great care. Such caution was warranted due to limited field time and the large size and intrinsic variability of riverine waters/wetlands within the SCSBC domain identified for this project. The A-team recognized early that each reference site would have a great deal of influence or weight in the final data subsets that constitute the reference system. In selecting sites for sampling, and consistent with national guidance, the A-team targeted the range of variation exhibited by the priority subclasses within the SCSBC domain.

In offering this *Draft Guidebook*, the authors would like to emphasize that, by design, the A-team chose to use our collective experience to develop data collection techniques at the 60 reference sites that would largely encompass procedures required for use in the final assessment protocol developed in this *Draft Guidebook*. Using this approach, we believe that (a) a large amount of our practical field experience is embedded in the assessment models, and (b) measurements stipulated in the assessment procedure developed in this *Draft Guidebook* are as efficient and rapid as possible for users with limited resources, staff, and field time. A further development of these field techniques as developed by the A-team can be found in Appendix D.

3.4 Refinement of the Draft HGM Assess- ment Model

Model Refinement

Before leaving the field, the A-team reexamined the critical functions and variables identified at the outset of field sampling. The A-team worked to refine the draft assessment models for use in a working *Draft Guidebook*. The A-team reconsidered and, when necessary refined, the descriptions of all functions identified for each subclass. With the benefit of the experience derived during the reference system fieldwork, the A-team honed and simplified field sampling approaches so that this *Draft Guidebook* could be accurate, easily understood, and thus, widely used. In completing these refinements, the A-team completed Phase III (Figure 1.6) of the protocol for development of regional guidebooks.

Field Testing

Consistent with the steps outlined in Figure 3.1, the A-team completed an internal review of the *Draft Guidebook* in September and October of 2000. Field testing was conducted in both October and December of 2000. Field testing and review comments submitted by the A-team members present at the field testing session were incorporated into this *Draft Guidebook*.

3.5 Future Development of the HGM Ap- proach in Santa Barbara County

The Authors have worked to be as consistent as possible with national guidance and action plans that are focused on development of the HGM systems [Smith *et al.* 1995; Brinson *et al.* 1995; Federal Register: August 16, 1996 (Volume 61, Number 160, Pages 42593-42603); Federal Register: June 20, 1997 (Volume 62, Number 119, Pages 33607-33620); U.S. Army Corps Of Engineers 1997)]. In keeping with this guidance, the following activities are required to bring this *Draft Guidebook* to final form:

1. Obtain an initial peer review of the *Draft Guidebook*.
2. Conduct interagency and interdisciplinary workshop to critique the *Draft Guidebook*.
3. Revise the *Draft Guidebook* to reflect recommendations from peer review and workshop.
4. Obtain second peer-review of the *Draft Guidebook*.
5. Publish as an operational *Draft* of the regional wetland subclass HGM functional assessment guidebook to be used in the field.
6. Train users of HGM classification and evaluation.
7. Provide assistance to users.
8. Review and Revise Operational *Draft Guidebook* after field testing.

Future work on HGM in Santa Barbara County may result in expansion of the geographic and/or sampled reference domain(s) to include (a) high and moderate gradient streams on uplifted coastal surfaces, and perhaps (b) other stream subclasses or larger river ecosystems in the SCSBC region. In addition, the faunal support/habitat functions included in this effort are not as fully developed as the other functions. They could benefit greatly from incorporation of additional data and synthesis. The open structure of this *Draft Guidebook* is intended to allow assimilation of new information into the reference system offered herein, and to facilitate transforming new technical information into tools for (a) rapid HGM functional assessments, (b) improved ecosystem restoration designs, and (c) improved monitoring programs for Santa Barbara County riverine waters/wetlands.