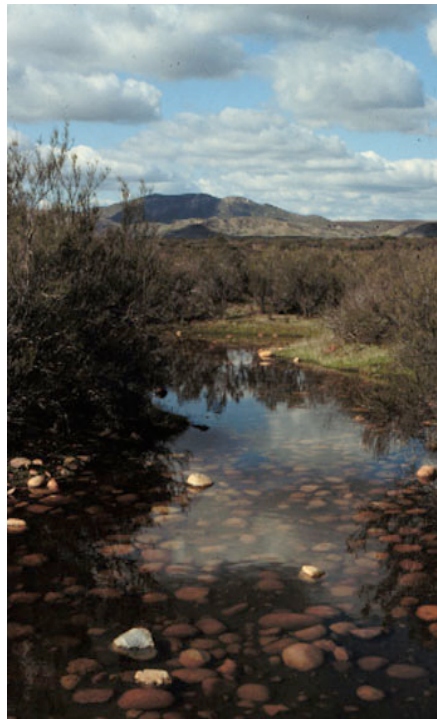


# A Draft Regional Guidebook for Applying the Hydrogeomorphic Approach to Assessing Wetland Functions of Vernal Pool Depressional Wetlands in Southern California

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**ABSTRACT:** This Draft Guidebook is an assessment tool that focuses on the functioning of vernal pool wetlands within the Southern Californian eco-region, specifically San Diego County. Its purpose is to provide trained practitioners the means to achieve efficient, reproducible and logical functional assessment results for vernal pool wetlands in San Diego County, California. Results of these assessments can then be used in a variety of ways, such as evaluation of sites for restoration potential, assessment of impacts from existing or proposed projects and monitoring restoration success. Due to the high degree of variability experienced by temporary wetlands in arid climates, we have developed both direct and indirect functional indices for four of the five functions we identified. Direct assessments can only be made when there is sufficient precipitation to elicit the responses that demonstrate function, and we have sought to objectively define "sufficient." Consistent with an HGM approach, use of this Draft Guidebook should be confined to the geographic region and hydrogeomorphic class, subclass and pool types for which it was developed. Use of this methodology outside the boundaries of the reference domain is wholly inappropriate. We are hopeful that our approach can be modified for other pool types within the region, and to vernal pools in other parts of California and Oregon.

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# Acknowledgements

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A team effort such as this requires the cooperation and coordination of many individuals with diverse skills and backgrounds. This study was no exception. We set out knowing that we were tackling one of the most—if not the most—difficult wetland ecosystems to characterize, due to its inherent spatial and temporal variability. In southern California, years may pass without sufficient precipitation to elicit the responses of the habitat that are unique to vernal pools: surface and sub-surface water storage, hydrologic connections, biogeochemical processes and active growth of the plant and animal communities.

We are especially appreciative of the work done by Mary Butterwick of the US Environmental Protection Agency, Region IX, on behalf of this project. We recognize her strong commitment to completing this complex and difficult study, her recognition of the importance of a science-based assessment of wetland functions in vernal pools and her work to secure funding and oversee the myriad administrative details. We also thank her for actively participating in the workshops and field-testing phases, and for providing us with her unique expertise related to the wetlands of arid climates. We thank her most especially for her extraordinary patience.

Many other people contributed to our effort by helping us locate field sites, field test our protocols and collect pertinent literature and studies. We leaned upon many of them to augment our own knowledge and experience, and to comment upon both large and small aspects of the project. We list the names below and hope that no one has been overlooked. The affiliations are for the period when each person contributed to this project.

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## Forward

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The following Draft Guidebook has been partially funded by a wetlands protection state development grant from the U. S. Environmental Protection Agency, Region IX, San Francisco, CA as an assessment tool that focuses on the functioning of vernal pool wetlands within the southern Californian eco-region, specifically San Diego County. The conclusions and opinions contained in this document represent the authors and not the agency. The assessment methodology presented in the Draft Guidebook is based on the Hydrogeomorphic (HGM) approach, one of the most widely accepted reference-based protocols for assessing waters/wetland ecosystem functions in the U.S. This Draft Guidebook follows very closely the format and procedures outlined in documents published by the U. S. Army Corps of Engineers and outlined by the National Action Plan (NAP) to Implement the Hydrogeomorphic Approach (National Interagency Implementation Team, *Federal Register*, 1997).

The purpose of this Draft Guidebook is to allow trained practitioners to achieve efficient, reproducible and logical functional assessment results for vernal pool wetlands in San Diego County, California. Results of these assessments can then be used in a variety of ways, such as evaluation of sites for restoration potential, assessment of impacts from existing or proposed projects and monitoring restoration success. Consistent with an HGM approach, use of this Draft Guidebook should be confined to the geographic region and hydrogeomorphic class, subclass and pool types for which it was developed. Specifically, use of this methodology outside the boundaries of the reference domain is wholly inappropriate. We are hopeful that our approach can be modified for other pool types within the region, and to vernal pools in other parts of California and in Oregon.

Due to the high degree of variability experienced by temporary wetlands in arid climates, we have developed both direct and indirect functional indices for four of the five functions we identified. Direct assessments can only be made when there is sufficient precipitation to elicit the responses that demonstrate function, and we have sought to objectively define "sufficient."

Because it is often necessary to make an assessment under less than ideal conditions, we have also developed protocols for indirect assessment that can be conducted under nearly all conditions and during any season. However, we caution that these indirect assessments provide only a partial and incomplete picture of vernal pool wetland functionality. Depending on the purpose of the assessment, indirect estimates of vernal pool function may be sufficient. However, a full assessment of pool functions necessitates hydrologic conditions (*i.e.*, sufficient precipitation) that can facilitate a more accurate and complete direct functional assessment. Direct assessments will be necessary when endangered species are likely to be present in the proposed Wetland Assessment Area (WAA).

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- D.1. Precipitation Context and Data Collection Guidelines
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