DRAFT

California Bay-Delta Program

Watershed Program Performance Measurement

Implementing Agencies:

Resources Agency
State Water Resources Control Board
Department of Water Resources
Department of Fish and Game
US Dept of Agriculture- Natural Resources Conservation Service
United States Environmental Protection Agency
United States Fish and Wildlife Service

June 2004

CALIFORNIA BAY-DELTA AUTHORITY

CALIFORNIA BAY-DELTA WATERSHED PROGRAM
IMPLEMENTATION PERFORMANCE MEASUREMENTS

A description of the background, purpose and methods of performance based management of the Watershed Program

Introduction

Watershed management is the cognitive integration of human activities to achieve a desired condition, or set of conditions, within a drainage basin. It consists of projects, programs, policies, and processes implemented with recognition of dynamic relationships among the natural, cultural and economic resources affecting the watershed. The Watershed Program seeks to support communities to establish those conditions that most effectively further the mission and goals of the CALFED Bay-Delta Program. The optimum condition is one in which local watershed community goals and CALFED goals coincide, and activities planned and implemented contribute to the achievement of both.

This goal-oriented approach to watershed management recognizes that removing those attributes that are not wanted will not necessarily leave those attributes that are wanted. For instance, removing all pollutants from a water body will not necessarily result in a healthy fishery. Rather, it requires defining a desired condition, establishing a perspective and activities developed from that perspective, and monitoring the effectiveness of those activities relative to movement toward the desired condition. Watersheds, and the human communities that affect and are affected by watershed conditions, will change over time. Thus, management must be able to change as well, in order to maintain progress toward attaining or maintaining those desired conditions. Tracking changes, and adapting policies and activities to accommodate them, is adaptive management. Adaptive management requires real time knowledge of the effects of management decisions. The inclusion of information feedback loops is thus a necessary part of effective watershed management.

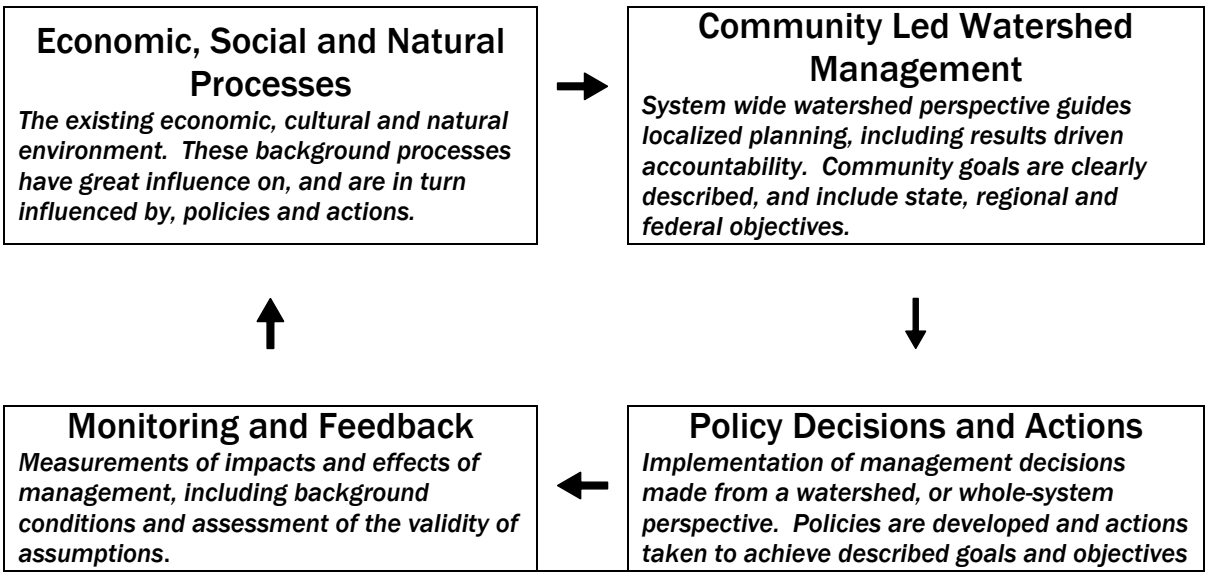
An Adaptive Management Framework

Effective feedback must be in terms of the actual measured outcome of activities and policies. Traditionally, management has relied on quantification of outputs of a system, often at the expense of knowledge of the effectiveness of those outputs relative to their purpose. The CALFED Program is committed to the use and promotion of adaptive management of the Bay-Delta system. The management model described in Figure 1 includes measurement of effectiveness and informed reflection to keep management on track toward goal achievement.

> "We need to measure, not count. Quantification has been the rage . . . these past fifty years. Accountants have proliferated as fast as lawyers. Yet we do not have the measurements we need." *Peter Drucker; Managing in a Time of Great Change, 1995.*

Figure 1: Management Model

This model represents the process used and supported by Plan implementation. Learning and information based management (adaptive management) is a keystone characteristic of the Program. Promoting and supporting adaptive management takes place at all scales, from local project implementation through overall CALFED Bay-Delta Program implementation.



The Program seeks to support management processes that involve strong feedback loops to assess the effects of policy decisions and actions. Data collected will not focus on physical outcomes alone, but also process and intermediate outcomes. Owing to the difficulty of establishing causal relationships in a complex system, the Program will use a weight of evidence (see attachment 2) approach to analyzing collected information.

This document describes how the CALFED Watershed Program intends to implement its Program Plan through performance based adaptive management. It reflects on the purposes and need for performance based management, the theory that supports it, and the actual methods used by the Program to express its role in implementing the overall CALFED Program.

The Watershed Program was established to further the mission and goals of the CALFED Bay-Delta Program to restore ecological health and improve water management by working in partnership with communities at the watershed level. The Program uses a comprehensive, integrated, basin-wide approach that emphasizes and supports local participation and government cooperation at multiple levels.

> "In recent years, with growing frequency and increasing success, governments at every level have come to rely on partnerships as an effective way to plan programs and provide services" (*A Government to Trust and Respect*" - National Academy of Public Administration, 1999).

Program Goals

The goals of the Watershed Program Plan were published in the Program Plan in July 2000. They are supported by specific objectives that help define progress toward the goals.

The goals are to:

- Provide financial and technical assistance for watershed management activities that help achieve the mission and objectives of CALFED, and
- Promote collaboration and integration among existing and future local watershed management programs.

The Program also committed to, and followed through with development of, a set of Principles (see attachment 3) to not only guide Plan implementation, but also to transcend the Program to wider applicability. The Principles are followed in Plan implementation and provide the basis for selection of projects and development of partnerships to assist with implementation. Performance measurement must provide accountability for the level to which the Program utilizes the Principles, in addition to how well it promotes actual change in community capacity for watershed management.

The major function of the Watershed Program is to facilitate the development of locally appropriate, community based strategies to maintain and improve Bay-Delta watershed conditions. The Program emphasizes the importance of locally based environmental protection and enhancement in attaining the objectives of the CALFED Bay-Delta Program. The intent is to work with and help build existing local capacity for effective watershed management. Community capacity consists of the resources, networks, organization (including local governance), attitudes, leadership and skills that allow communities to manage and sustain healthy functioning watersheds. Increased local management capacity supports the other elements of the greater CALFED Program to implement those element's projects and programs.

Program Performance

The Watershed Program Plan was developed with extensive stakeholder advice and participation, and stresses the importance of partnerships in all its planned activities. Agencies, interest groups, trade groups, watershed groups, individual private and public landowners, local governments and non-government organizations worked together to produce the Plan. Through the Bay-Delta Public Advisory Committee's (BDPAC) Watershed Subcommittee (Subcommittee), the Program consistently maintains the same high level of participation in Program implementation and assessment. The performance indicators described below were selected after nearly two years of public input, to ensure that the Program performance indicators are relevant to those most involved with the implementation and/or results of implementation of the CALFED Program. Their purpose is to inform the Program of progress toward its stated goals.

Tracking progress toward achieving these goals presents challenges. Whereas it is relatively easy to track outputs such as the number of dollars spent, or number of local coordinators funded, tracking the actual results of having done so is not so easy. The Program has used a range of national and international references and examples to refine performance indicators and measurements that have a high probability to produce useful results in assessing Program performance. From a much larger set of potential indicators and measurements, a smaller group has been selected that addresses three main aspects of

implementation: administrative performance, direct impacts of actions, and accumulated long term effects of implementation.

Performance Indicators

In its summary of the Government Performance and Results Act of 1993, the U. S. General Accounting Office notes a series of practices for federal agencies to include in performance based management. A summary of the major elements includes:

- Involve stakeholders
- Assess the (internal and external) environment
- Align activities, core processes, and resources
- Produce a set of performance measures
- Collect sufficient data
- Identify performance gaps
- Use performance information to support decisions

The primary key to the process is selection of appropriate performance measures and indicators. Measures chosen must have clear relevance to Program goals. Indicators must be specific, measurable, affordable, and realistic ("do-able").

Reliable performance measures provide appropriate benchmarks to track the effects of policies and activities, and to track trends over time. A good indicator reflects the essence of the performance measure, is clear and understandable, can be statistically measured at regular intervals, and is easy to communicate in concept as well as relevance.

Successful performance measurement and management involves, typically, a series of related actions including: specifying the goals and objectives of the Watershed Program; identifying suitable progress indicators; measuring those key aspects of the structure, processes and characteristics of Program implementation; analyzing the data collected to distinguish between controllable and uncontrollable variations; publishing the comparisons and benchmarks; and, as appropriate, implementing management action to raise performance levels towards the chosen benchmarks.

This document presents a preliminary set of measurements to help determine the effectiveness of implementation of the CBDA Watershed Program Plan element of the California Bay-Delta Program. The Watershed Program Plan (Plan) outlines an approach to help attain the primary objectives of the Bay-Delta Program. Performance measurement will track how well that approach is implemented, and how well it is working to achieve the desired results.

The Program has impacts in three related areas, each of which requires some means of tracking performance. They exist within a hierarchy of scale and complexity. To be effective, the Program must make positive progress across all levels, with strong integration of the results in one area with the results in the other two.

- The first area is within the CALFED Bay-Delta Program as a whole. The Program strives to thoroughly integrate with all elements of CALFED on a watershed scale. This area is largely one of tracking administrative performance, and of tracking levels of collaboration among elements. These measurements are

technically challenging to make, although the direct causal relationship with Program activities to results is stronger than the tertiary effects on watershed condition described below.

- The second area is the support for increasing management capacity in local and regional watershed communities. Performance is related to the cohesiveness and breadth of management perspectives and resources, and to the effective execution of management itself. This is the area where Program capacity building activities are dominant. Measurements in this arena will be an important link to assess potential causal relationships between the first and third areas of measurement.
- The third area is in affecting measurable change in the physical, biological and chemical characteristics of the Bay-Delta watershed system. Information gathering to assess the impacts of Plan implementation will be done largely by others who are able to use the increased management capacity from Program activities to effect changes. The time scale for this level of assessment is extended, with quantification of performance not likely for ten years or more. While these measurements will be technically more available, the direct causal relationship to Program activities will be more difficult, owing to the many diverse factors involved, and to the variety of active change agents. In many cases, correlations and associations may be described, with causal relationships assumed, but not directly proved.

Basic elements of performance measurement are described in multiple programs nationally and internationally. The following elements used by the Program are common to all major performance measurement approaches reviewed by the Program, including that of the US General Accounting Office (*Executive Guide: Effectively Implementing the Government Performance and Results Act*).

Figure 2: Elements of Performance Measurement

I: Define the mission and desired outcomes

Practices-

1. *Involve stakeholders*
2. *Describe the internal and external environment*
3. *Align priorities, processes, and activities*

II: Measure performance to gauge progress.

Practices-

1. *Produce measures at each organizational level that:*
   - *Demonstrate results, and*
   - *Are limited to the vital few*
2. *Collect data*

III: Use the assembled data to learn, adapt and manage

Practices-

1. *Analyze and report information*
2. *Identify performance gaps and imbalances*
3. *Build capacity where needed*
4. *Integrate management actions*

I: Define the mission and desired outcomes.
The Program mission is to provide substantive support to implement the CALFED Bay-Delta Program. That mission was established through the development of the Watershed Program (originally the Watershed Strategy) as one element of the overall CALFED Bay-Delta Program. The desired outcomes were subsequently determined in the development of the Program Plan, published in July 2000. The desired outcome for the Program is improved management of the Bay-Delta watershed relative to the purposes of CALFED. Management, unlike projects that result from management decisions, has no end point, but does have qualitative attributes that can be tracked.

Involve stakeholders
Through its extensive public and inter-governmental interactions, the Watershed Program has defined the goals, objectives and desired outcomes in its Plan. It functions as a strategic plan for Program implementation. It is further defined by the construction of annual and mid-range (4-5 years) plans during the course of full implementation. Agency stakeholders participate through the Interagency Watershed Advisory Team (IWAT). Non-agency participation is through the public stakeholder oriented BDPAC Subcommittee. Typically, the IWAT members also participate actively in planning with the Subcommittee.

The Program functions under basic principles that are deeply rooted in substantive and substantial stakeholder participation in all phases of Plan implementation, assessment and adjustment.

Describe the internal and external environment
The Program continually assesses conditions in the internal Program situation and the extended external environment of CALFED. That is done through multiple avenues, including interaction with CALFED Program Managers, IWAT, Subcommittee meetings, and through other needs assessment such as specific analysis of applications for grant funding. State and federal budget changes, funding source changes, changes in law or procedure, and changes in annual implementing agencies are examples of external shifts to which implementation must adjust in order to continue progress toward desired outcomes.

Align priorities, processes, and activities
The annual and mid-term priorities for Plan implementation are regularly aligned to best pursue desired outcomes given changes in both internal and external realities, and after review of progress to date. This requires extensive interaction with stakeholders and a willingness to be creative. It also requires a commitment to change when change is necessary to maintain maximum beneficial combination of Program resources and assets.

Changes in Program alignments are done through consensus among IWAT, Subcommittee participants, and the overall CALFED Program. That consensus is informed in part by the results of performance measurement, response from involved partners, and from analysis of outputs from various Program activities.

II: Measure performance to gauge progress.

Measuring performance success is crucial to guiding Program progress. It is also perhaps the most difficult of the steps involved in performance-based management. Selecting a few vital indicators among a very large number of potential measures requires a great deal of forethought and, eventually, experience. A complex program mission as that of the Watershed Program has multiple layers of scale and complexity. Each level has different important markers, and each has a different scale of time and complexity of measurement. Yet, to be effective, the end set of indicators must be small enough to be reasonably tracked, and complete enough to produce reliable, actionable information. Each level of organizational scale (from local project to overall CALFED scale) may use different measures or goals from those of the Program, in order to produce useful scale-appropriate returns of data. The challenge for the Program is to isolate those few critical indicators that will produce an overall picture of aggregate progress toward the Plan's stated desired outcomes.

Produce measures at each organizational level that demonstrate results and are limited to a vital few

The Program itself has minimal organizational levels. The environment in which it is embedded, and upon which it hopes to have impact, however, consists of multiple complex layers. The challenge for the Program is to find those vital indicators that will tell the Program how well it is achieving its mission and goals, as well as how effectively it executes various activities. The Program has three major levels of organizational reference: local watershed communities, regional communities as outlined in the five major CALFED regions, and CALFED as a whole. The Program is structured to enhance the management capabilities and results locally to promote regional impacts, the aggregate of which will result in positive contributions to the achievement of CALFED goals and objectives. Early Program emphasis is on the first level – the enhancement of the capacity of local watershed communities to effectively manage watershed resources. The second is fostering communication and partnerships regionally that will contribute to region-wide improvements in condition, and the third is extending the growth of management expertise into improvement in Bay-Delta system-wide conditions. Each is measured on a different time scale, and with a different set of performance indicators.

In addition to the overall, higher level indicators listed below, the Program will also track various outputs from individual Program activities, such as the grant program, local coordinator support program, and its educational efforts. Those measurements will also include some outcome related results.

Collect data

Each scale also has variation in the parties and entities most likely to be gathering the data necessary to gauge progress. Each level of information gathering is necessary to track progress at the appropriate level. From among the multiple sources of information, the Program must find the few indicators that will track both short and long term results of implementation. In some cases, multiple local data can be collected and aggregated. In others, the local data may need to be interpreted and presented differently to give useful

information at the next scale of organization. This synthesis tends to be a longer-term issue, and will gather more definition with time and experience.

Many of the data needs for effective Plan implementation will be gathered by entities in partnership with the Program. Those include other CBDA Program elements, grant funded partners, implementing agencies, and others involved with local watershed management in the greater Bay-Delta system. The Program will gather some data directly, some through funded projects and programs, and some by special arrangement with other specific programs and through directed actions by the Program. The indicators outlined below trend heavily toward human activities, policies, programs and practices that can have a large impact on watershed condition and productivity. This type of data predominates in Program performance measurements.

III: Use the assembled data to learn, adapt and manage

Watersheds are complex systems, with a limited range of predictability. Management must thus be quickly adaptable to change, and flexible enough to promulgate change when necessary. That is only possible when sufficient information is readily available to notice change or the need for change, to identify it, and to determine how best to deal with it. This requires innovative thinking, and recognition of the inherent complexity. It also requires openness and transparency to enable a diversity of perspectives to bear on the analysis and reporting of the effectiveness of performance.

Program performance assessment and adaptation decisions are guided in part by the following assumptions:

- The state of natural resources and natural resource systems at any given time is the emergent result of cumulative management decisions (frequently made independently of one another) at many scales in the context of natural variation in climate and other natural phenomena. Some of those decisions are directly related to natural resources, such as habitat restoration, stream alterations, or resource extraction. Other activities are not directly related, but can affect the state of the physical environment. Zoning decisions, economic expansion or contraction, changes in general recreational preferences, and transportation infrastructure design are examples of the latter.

> ". . . the distinction between innovation and optimization looms large. Optimization in complex adaptive systems is rarely possible, and it is often not even meaningful. What would be the optimal organization for an animal inhabiting a tropical forest? Significant innovation requires discovering a combination that is intermediate between obvious cut-and-try and the infeasible optimum." (John Holland, *Emergence – from chaos to order*, 1998)

- Virtually all sub-watersheds in the Bay-Delta watershed are dominated by human activity. The effects are generated principally on the basis of individual management decisions on both privately and publicly held lands. Historically, land management decisions have been made based on nearby characteristics and limited

information regarding possible ecological consequences, and frequently are to deal with past events and/or short term results.

- Increased information and improved accessibility to additional accurate information will promote decision making at all levels that is more likely to result in long-term sustainability of watershed resources. The resulting sustained resource health will significantly further the achievement of Bay-Delta Authority objectives.
- For effective watershed management to achieve those objectives, knowledge of emergent conditions resulting from interactions of watershed components and processes is equally important as knowledge of discreet components and processes.
- Information generated through monitoring should be directly useful, and easily available to local decision makers (public or private) for use in routine management. Data should also be gathered and presented in such a way as to make it available for direct use in decision making by as wide a range of data users as possible.

Analyze and report information

Analysis of Program performance consists of active interaction with Program implementing agencies, and other stakeholders. When sufficient information accumulates to guide adjustment decisions, the Program develops a summary report for review. The report is circulated for review and comment among the major Program partners at the Subcommittee, the IWAT, the CBDA Board and the Science Program. The Program implementation partners use the recommendations resulting from open discussions of the summary results to develop adjustments in the annual work plan for the Program. Adjustments may also be made in any appropriate long range plans for implementation. Any changes will maintain consistency with the commitments made in the Record of Decision and supporting documents. As necessary, new performance measures, or adjustments to existing measures, will be developed coincident with any changes in priority and planned actions.

This performance based assessment will allow the Program to respond positively to changes in condition in the many variables involved in watershed functions. The ongoing assessment process will help keep the Program focused on the desired outcomes of Program implementation and on the major objectives of the overall Bay-Delta Program. Qualitative assessment of Program effectiveness will involve a range of experts from both agencies and non-government interests. The Program anticipates that long term results will help confirm or adjust many of the necessary underlying assumptions.

Identify performance gaps and imbalances

Program status reports, and the comments and recommendations from its review, are used to examine and define those areas of interest in which the Program is making progress, as well as those on which it needs to provide more emphasis. The report recommendations developed help keep the Program moving forward in a balanced manner, in terms of geography, topic, and the other CALFED elements. Gaps and imbalances in Plan implementation will be outlined and included in both annual and long-range implementation work plans.

Build capacity where needed
As the Program refines its implementation based on status and performance reports, it will need to adjust those areas in which it provides support. That will from time to time require specific expertise in the areas identified as needing attention. The Program will first look to the other elements of CALFED and its implementing agencies for the needed expertise and/or resources. It will seek assistance from other areas, including contracts as necessary with non-government organizations, for those left unfilled by arrangement with the other CALFED elements. Decisions regarding needed expertise acquisition will be made through the IWAT, with active participation by the Subcommittee.

Integrate management actions
Management action adjustments resulting from the performance assessments will be tempered with lower level performance and output data gathered during the course of implementation. Specific parts of the Program, including the educational initiatives and grant programs, will generate data giving specific information regarding implementation effectiveness of those aspects of Plan implementation. That information will be put into the context of overall Program evaluation, and will result in changes to the specific individual parts of Plan implementation as necessary. Those changes will help align each action with the overall direction of Program adjustments, such that the education, financial support, and technical service functions of the Program will be mutually supportive. Information collected on these more specific aspects of the Program will track the progress each aspect makes relative to the objectives stated in the Program Plan.

The following Performance Measurements are intended as a beginning source of information to assess Program effectiveness. The data collected regarding Performance Measurement will provide the Program with invaluable feedback regarding effectiveness of Plan implementation.

Program Goal	Desired Outcome	Performance Measure	Indicator	Baseline	Target
Promote collaboration and integration among existing and future local watershed programs	Improved collaboration between public and private parties	Tributary watershed management partnerships with continuous activity.	Diversity of involvement and continuity of local watershed initiatives, by tributary watershed	Known efforts as of August 2000 with at least 3 years continuous activity	Active, diverse participation in community based watershed management for 11 tributaries to the Bay-Delta.
	Maximized benefits to the CALFED Bay-Delta Program	Extent of Watershed Program supported activities that address multiple CALFED Program objectives	Percent of supported projects that help achieve objectives of three or more CALFED elements	Status as of August 2000	Greater than 80% of supported projects further the objectives of three or more CALFED elements

Provide assistance for local watershed management	Improved local watershed planning and management	Effective support for local watershed planning and management	Percent area of the Bay-Delta watershed with completed assessments	Status as of August 2000	Current watershed assessment for at least 80% of the Bay-Delta watershed
	Sustained local watershed management	Active participation in watershed management by local government and land use decision makers	Level of local government involvement in ongoing watershed initiatives, by tributary watershed	Status as of August 2000	Active involvement of cities and counties in watershed management of 11 tributary watersheds.
	Improved watershed ecosystem maintenance and enhancement	Positive changes in characteristics of tributary hydrographs	Hydrograph changes relative to selected reference watersheds	Hydrographs as of August 2000	Maximum reasonable correspondence between tributary hydrographs and reference hydrographs

Data Sources

Measurements and data collection for the performance measures outlined above will come from four significant sources.

- Direct measurements undertaken by the Program
- Measurements taken by supported projects, such as grant recipients
- Data collected directly and indirectly by other elements of the CALFED Bay-Delta Program
- Data collected by local, state and federal agencies.

The Program and implementing agencies will undertake the gathering and sorting of the various data sets directly, and/or through contracting with other government or non-government entities for assistance. The Program will work closely with other CBDA Program elements to ensure that data sharing is available, appropriate, and useable.

Additional data about the physical condition of the watershed will be collected from local monitoring efforts, state and federal programs, other Bay-Delta Authority elements, and projects supported with funding from the Watershed Program. In conjunction with the other Programs, and with the support of the Science Program, the Program will assist with long term assessment of status and trends in the greater Bay-Delta system.

Data Use

The information collected will be consolidated to form the foundation for an independent Program Performance Audit from an outside entity to be selected through a competitive bid process. The data, in conjunction with the results of periodic audits, will be used to guide performance management of the Program (adaptive management). The Program recognizes the difficulty of tracking progress in watershed management. Complex causal processes, multiple physical and social variables, interactive effects and feedback loops, and non-linear responses all complicate direct assessment of Program impact on the Bay-Delta system. The Program will use a "weight of evidence" approach to assess correspondence of actions *vis a vis* system responses where it is not possible or reasonable

to measure direct causation. In some cases, a relative impact may be estimated where direct impacts may be accompanied or assisted by actions taken by others.

The Program will also use the information to assess relative value received from the expenditure of Program resources, in order to help discern areas of future priority attention. The Program will develop a narrative assessment of the level of effort (financial and non-financial) expended; what was accomplished through the expenditure (both outputs and outcomes), and; the relation of effort to outcome. Additional information in periodic performance assessment will outline the elements of Plan implementation that are substantially within the Program (such as project grants, directed actions, and Program staff activities), and elements that are peripheral to, or entirely outside of, the Program's influence (such as weather, state and federal policy shifts, and economic conditions). Estimates of the role of outside influences on Program performance will be included to help describe additional context for the performance assessment.

Attachments

1: Getting There: Building capacity through assessment and planning to create a basis for adaptive management

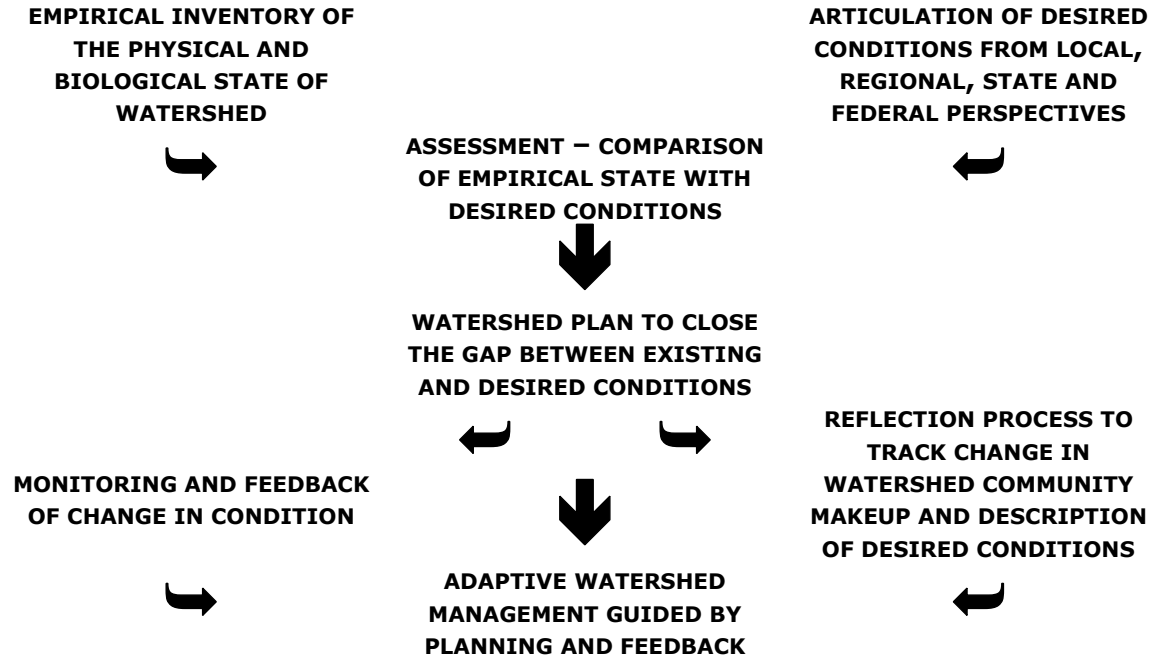
2: Discussion of "weight of evidence" approach

3: CALFED Watershed Program Principles of Participation

4: Reference Bibliography

Attachment 1

Getting There: Building capacity through assessment and planning to create a basis for adaptive management.



This chart illustrates the relationships among goals, policies, actions, and results-based accountability for actions taken to achieve watershed goals.

Information flow and use is of great importance in effective systems management. Real time data, widely shared and used, helps create management and management adjustments that are more harmonious than management based on discreet, independent data sources of variable currency. The combination of results-based science data and decision-based management actions provides support for timely, accurate and productive progress toward desired conditions within a watershed community. Extensive interaction between science and management provides support to both, and generates continual improvement in the outcomes of management, policies, processes and actions.

Attachment 2

Weight of Evidence

"This is a kind of holistic thinking, or organismic thinking, in which everything is related to everything else and in which what we have is not like a chain of links, or like a chain of cause and effects, but rather resembles a spider web or geodesic dome in which every part is related to every other part. The best way to see everything is to consider the whole darn thing one big unit." Abraham Maslow

In a system with a large number of variables, with each varying according to its own stimulus, a determination of cause and effect relationships is often difficult, if not impossible. A watershed and its community is such a system. Decisions are frequently necessary without completely certain data to support them, or with data certain from different sources that conflict with one another. The "weight of evidence" approach is a technique to help improve the likelihood of the making the most prudent decision, given the data available. It is frequently used in law and in medicine, but also has applicability in watershed management.

Issue: Results of scientific studies and/or expert opinion are difficult to interpret with certitude. What criteria can be used to evaluate the veracity of scientific conclusions and expert opinion?

Background: Evaluating causal criteria that link a stimulus with a specific result is surprisingly complex. This often involves integrating data from many studies that differ in terms of experimental conditions and in the endpoints that are examined. Many scientific issues are also fraught with conflicting findings, making it difficult to determine what the truth may be. What is needed is a set of criteria that can be used to evaluate the opinions and data relative to a given management decision.

Tendencies: When attempting to determine the level of impact of Program activities on actual outcomes in the watershed, changes in the watershed over time should be considered. Did the changes occur since the action(s) was taken? Has the change accelerated subsequent to the action(s) compared to before?

Are there alternate explanations for any perceived change? Because watershed systems react to different stimuli at varying rates in time, a look at other possible direct causal agents is useful. Did the change begin prior to Program activities?

Consistency: If Program actions are indeed playing a causal role in changes in the watershed and its community, then it is expected that results from activities operating in relative independence from each other would show similar effects. If similar management decisions made following a Program action do not show other major sources of stimulus, it would be an indication that there may not be other major factors at play beyond the Program action, and thus the evidence either in favor of or against a positive Program influence has "weight."

Plausibility: The issue of plausibility is addressed by examining multiple potential areas of stimulus that have a likelihood of stimulating actions similar to those taken. This

examination should be placed into the context of local goals and local mechanisms of decision making.

Reversibility: An assessment (through interviews, observation, or actual trial) of whether the activity or policy would continue if Program stimulus was withdrawn will yield additional evidence of causation.

Cumulative strength of evidence: The areas of investigation listed above provide a framework to enable a diverse group of reviewers to make a judgment regarding the overall strength of evidence that a there is a relationship between Program actions and measured or observed changes in watershed management of the Bay-Delta system. It may also highlight areas of investigation in which the Program can invest to raise the level of confidence in the determinations of effectiveness made using this technique.

Attachment 3

Principles of participation

The Watershed Program Principles represent an underlying framework for Plan implementation. They state that the Watershed Program seeks partnership projects that:

- ✓ Are community based and
  - Promote community and landowner involvement,
  - Have demonstrable community support
  - Contribute to ongoing watershed management,
  - Foster the development and maintenance of local watershed efforts,
  - Reach out to and encourage participation of local leadership, Reach out to and encourage participation of individuals with diverse interests, and
  - Foster collaboration among multiple interests.
- ✓ Collaborate and are consistent with the CALFED Bay-Delta Program implementation, and that
  - Are consistent with the goals and objectives of CALFED,
  - Promote information exchange with CALFED, and
  - Promote local community involvement in CALFED implementation
- ✓ Address multiple watershed issues, and
  - Address multiple ecosystem issues,
  - Are consistent with related resources protection activities and applicable regulations,
  - Contribute to beneficial environmental results,
  - Improve ecosystem values and watersheds that directly or indirectly affect the Bay-Delta system, and
  - Are consistent with general principles of good watershed management.
- ✓ Are coordinated with and supported at multiple levels to
  - Enhance coordination between CALFED, government agencies, and local community groups.
- ✓ Provide for ongoing implementation and
  - Identify performance measures to achieve goals and objectives,
  - "Leverage" other funding sources and institutional mechanisms, and
  - Possess the flexibility to allow for adaptive management.
- ✓ Include monitoring protocols that
  - Measure success and are consistent with CALFED monitoring protocols as they are developed,
  - Support coordination of local and regional monitoring efforts, and
  - Promote citizen monitoring programs where appropriate.
- ✓ Increase learning and awareness through
  - Promoting conservation education in local watershed, schools, or to the general public,
  - Enhance local skills in watershed management,
  - Promote technology and information transfer between local watershed efforts, and
  - Deliver technical assistance and information to local watershed efforts.

Attachment 4

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