CHAPTER 5. PLAN FORMULATION APPROACH

This chapter presents the identified planning objectives, principles, constraints, and used criteria to guide the Investigation.

PLAN FORMULATION PROCESS

The basic plan formulation process for Federal water resources studies and projects consists of the following steps:

- Inventory existing conditions and forecast likely without-project future resource conditions.
- Specify water resources problems and needs.
- Develop planning objectives, constraints, and criteria.
- Identify resources management measures and formulate potential alternative plans to meet study objectives.
- Compare and evaluate alternative plans.
- Select a plan for recommended implementation.

As described in **Chapter 1**, Phase 1 of the Investigation began in 2001 and included preliminary definition of problems and needs, objectives, and initial screening of storage sites. Phase 2 began in January 2004 with formal initiation of environmental review processes consistent with Federal and State of California regulations. The Investigation will culminate in a FR and supporting environmental documents consistent with the P&G, Reclamation directives, DWR guidance, and applicable environmental laws. Reclamation and DWR are coordinating the Investigation with the BDPAC, which provides advice to the Secretary regarding the implementation of the CALFED Program, and the CBDA, which provides general oversight and coordination of all CALFED activities.

To facilitate coordination with other agencies and related ongoing studies, preparation of the FR will include two interim planning documents: an IAIR and a subsequent PFR. The IAIR describes without-project conditions and water resources problems and needs; defines study objectives and constraints; screens surface water storage measures; describes groundwater storage measures development; and identifies preliminary water operations rules and scenarios. Retained storage measures and preliminary water operations scenarios will be included in initial alternatives.

This IAIR will be used as an initial component of the FR. The PFR will present the results of initial alternatives evaluation, identify refinements of the alternatives, and define a set of final alternatives. A Draft FR will evaluate and compare the final alternatives and identify a recommended plan. A Draft EIS and EIR will be included with the Draft FR. Following public review and comment, a final FR/EIS/EIR will be prepared. The approach for developing the FR is shown in **Figure 5-1** and described below.

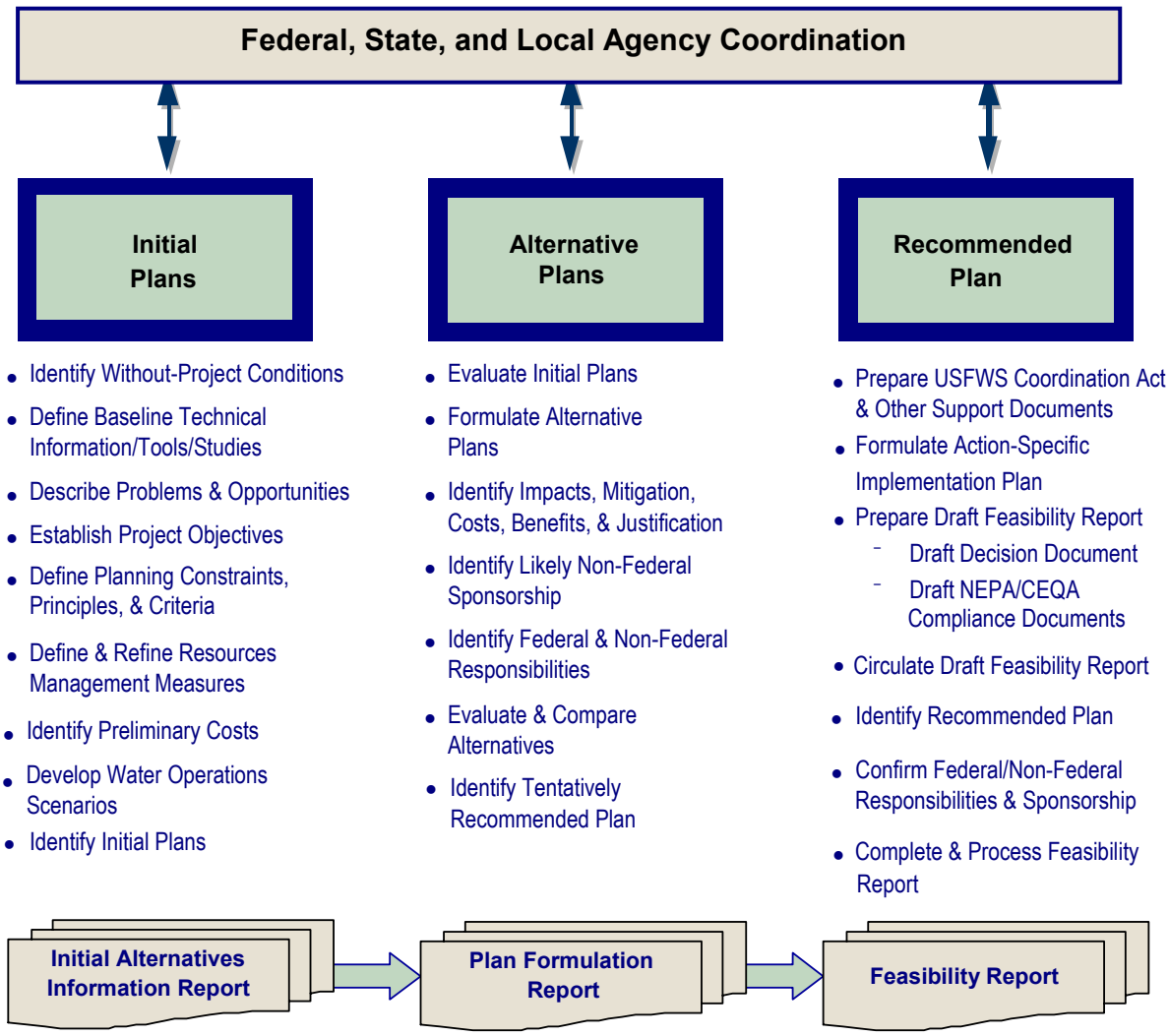

FIGURE 5-1.
PLAN FORMULATION PROCESS

Initial Plans – Identify without-project future conditions, define resulting resources problems and opportunities, define a specific set of planning objectives, identify the constraints and criteria in addressing the planning objectives, identify potential resources management measures to address planning objectives, and formulate, coordinate, and compare a set of initial plans. The Initial Plans stage, documented herein, is nearing completion. A summary of existing and potential future without-project conditions (consistent with the NEPA Baseline) and problems, needs, and opportunities is included in **Chapters 3** and **4**, respectively.

Alternative Plans – From the initial plans, formulate specific alternative plans to address the planning objectives, evaluate, coordinate, and compare the plans, and identify a plan for tentative recommendation.

Recommended Plan – Complete development of a tentatively recommended plan and prepare, coordinate, and process supporting decision documentation.

PLANNING OBJECTIVES

Planning objectives were developed based on CALFED Program and Investigation-specific goals as described in the ROD. CALFED Program goals include increasing water supply reliability, improving water quality for all beneficial uses, improving ecosystem conditions for Delta-dependent species, and improving Delta levee stability. Investigation-specific considerations include identified problems and needs in the study area in relation to study authorities, study planning principles, and requirements in the P&G, as described in **Chapter 4**. From this review, primary and secondary planning objectives were established for the Investigation. Alternatives will be formulated to address primary objectives. Secondary objectives address opportunities that should be considered in the plan formulation process, but only to the extent possible through pursuit of the primary planning objectives.

Primary Objectives

As described in **Chapter 4,** and recognized in the CALFED ROD and supporting documents, increasing the reliability of managed water supplies from the San Joaquin River is integral in addressing ecosystem restoration, water quality, and water management problems in the study area. Therefore, alternatives will be formulated with a focus on developing and managing new water supplies from the San Joaquin River that address the following primary objectives:

- Contribute to San Joaquin River restoration
- Improve San Joaquin River water quality
- Facilitate additional conjunctive water management in the eastern San Joaquin Valley to reduce groundwater overdraft and support exchanges that improve the quality of water delivered to urban areas

To date, quantifiable restoration, water quality, and water management targets have not been established. Therefore, the Investigation will identify the extent to which alternatives can contribute to the primary objectives.

Secondary Objectives

To the extent possible, through pursuit of the primary planning objectives, alternatives will include features to help accomplish the following secondary objectives:

- Increase control of flood flows at Friant Dam
- Contribute to long-term EWA water supply
- Develop hydropower generation capacity in the upper San Joaquin River basin
- Develop additional recreational opportunities in the study area

PLANNING CONSTRAINTS

Fundamental to the plan formulation process is identifying and developing basic constraints specific to the Investigation. Planning constraints are used to help guide the conduct of the feasibility study. Some planning constraints are rigid, such as Congressional direction, current applicable laws, and physical conditions (topography, hydrology, etc.). Other planning constraints, such as agency regulations and policies, are less stringent but are still influential in guiding the Investigation. Major constraints in formulating and ultimately implementing a plan to meet Investigation study objectives are described below.

Study Authorization – In 2003, Federal authorization was provided to prepare a feasibility report for storage in the upper San Joaquin River basin (PL 108-7, Division D, Title II, Section 215). Congress again authorized the Secretary to conduct planning and feasibility studies for storage in the upper San Joaquin River basin in the October 2004 Water Supply, Reliability, and Environmental Improvement Act (PL 108-361). State of California authorization is in place to study reservoirs or reservoir systems for gathering and distributing flood or other water not under beneficial use in any stream, stream system, lake, or other body of water.

Laws, Regulations, and Policies – Numerous laws, regulations, executive orders, and policies need to be considered, including NEPA, the Fish and Wildlife Coordination Act, Clean Water Act, Clear Air Act, Federal and State ESAs, CEQA, and the CVPIA.

Reallocation of Contract Water Supplies – As described in **Chapter 3**, Friant Dam was authorized and is operated for water supply and flood protection purposes. Federal authorization for the Investigation focuses on development of additional water supplies and management of new and existing supplies to support CALFED objectives, and does not provide authorization to reallocate water supplies from long-term contractual commitments. As described in **Chapter 2**, the CVPIA requires the Secretary to develop a comprehensive restoration plan address fish, wildlife, and habitat concerns on the San Joaquin River. During the time the Secretary is developing such a restoration plan, and until Congress has authorized the Secretary to implement the plan, the Secretary shall not make releases for the restoration of flows between Gravelly Ford and the Mendota Pool for purposes of implementing the CVPIA. Following completion of a restoration plan, the Secretary shall not thereafter make releases from Friant Dam as a measure to implement the CVPIA without a specific Act of Congress authorizing such releases. The Investigation will evaluate approaches to managing existing supplies in conjunction with developing new supplies; however, reallocation of existing supplies will not be included in the plan formulation process. Water operations evaluations that involve development and management of water supplies for additional releases to the San Joaquin River will demonstrate that without-project water delivery quantities are maintained.

PLANNING PRINCIPLES

In addition to the planning constraints, a series of planning principles were identified to help guide plan formulation. Many of the planning principles result from the Federal P&G and other Federal planning regulations. Planning principles and guidelines relate to economic justification, environmental compliance, technical standards, etc. Also, many of the principles result from local policies, practices, and conditions. Several examples of principles in the Investigation for use in formulating, evaluating, and comparing initial alternatives, and later, detailed alternatives, include the following:

- Alternatives and their major elements are to be consistent with the identified planning constraints.
- A direct and significant geographical, operational, and physical dependency must exist between major components of alternatives.
- Each alternative should address primary planning objectives at minimum and, to the extent possible, address the secondary planning objectives.
- Measures to address secondary objectives should be either directly or indirectly related to the primary objectives (i.e., plan features should not be independent increments).
- Alternatives should avoid unmitigated adverse impacts to hydrologic and/or hydraulic systems such as water supply pumping and conveyance facilities, flood control works, hydropower generation, recreation facilities, or other significant water resource uses in the study area.
- Alternatives should strive to either avoid potential adverse impacts to environmental resources, or to include features to mitigate unavoidable impacts through enhanced designs, construction methods, and/or facilities operations.
- Alternatives should strive to avoid potential adverse impacts to present or historical cultural resources, or to include features to mitigate unavoidable impacts.
- Alternatives should recognize the purposes, operations, and limitations of existing and without-project future projects and programs.
- Alternatives will be formulated and evaluated based on a 100-year period of analysis.
- First costs for alternatives are to reflect current prices and an allowance for interest during construction, and annual costs are to include the current Federal discount rate.
- Alternatives should have a high certainty for achieving the intended benefits and not significantly depend on long-term actions (past the initial construction period) for success.

CRITERIA FOR FORMULATING AND EVALUATING ALTERNATIVES

Federal planning criteria were defined to help formulate and evaluate alternative plans and to assess which alternatives best address the planning objectives. Initial alternatives will be developed and evaluated consistent with four criteria based on P&G, including (1) effectiveness, (2) efficiency, (3) acceptability, and (4) completeness. Each criterion is described in the following sections with examples of the types of metrics that will be considered. Initial alternatives will be evaluated on their relative ability to meet each of the criteria.

Effectiveness

Effectiveness is the extent to which a plan alleviates problems and achieves objectives. For example, effectiveness may be considered according to a water supply reliability measurement or water quality goal. Effectiveness will be evaluated in terms of the ability to develop and manage San Joaquin River water supplies to support the primary purposes. Specific criteria may include new water supply at Friant Dam, ability to carry over stored water to dry periods, ability to develop a cold water pool to support potential restoration requirements, ability to manage supplies for diversion when canal capacity is available, and quality of stored water to support restoration, river water quality, and water quality exchanges.

Efficiency

Efficiency is the extent to which an alternative plan is the most cost-effective means of alleviating specified problems and realizing specified opportunities, consistent with protecting the Nation's environment. Some potential ways to evaluate efficiency include dollars per unit of economic benefit, least cost of attaining a given objective, or reduced opportunity costs relative to accomplishments of other alternatives. Specific criteria may include long-term average water supply cost, potential to develop pumped storage, water supply relative to inundation-related environmental impacts, and potential to increase control of flood flows at Friant Dam.

Acceptability

Acceptability is the workability and viability of the alternative plan with respect to acceptance by State and local entities and the public, and compatibility with existing laws, regulations, and public policies. Specific criteria will be developed in coordination with other Federal and State agencies, local stakeholders, and potential non-Federal sponsors. Criteria likely will include impacts to natural, cultural, and socioeconomic resources, potential to develop adequate mitigation in the vicinity, willingness of private parties to sell affected lands and facilities, and consistency with existing authority.

Completeness

Completeness is an indication of the extent to which an alternative provides and accounts for all necessary investments or other actions to ensure the realization of the planned effects. The completeness of each alternative will be identified through a determination that all necessary components and actions are identified, including the adequate mitigation of significant adverse impacts, and the degree of uncertainty (or reliability) of achieving the intended objectives.