

# CHAPTER I INTRODUCTION

## BACKGROUND

In 2000, the U.S. Department of the Interior, Bureau of Reclamation, Mid-Pacific Region (Reclamation) re-initiated a feasibility scope investigation focusing on evaluating the potential to enlarge Shasta Dam primarily for increased water supply reliability and water quality improvement, with the potential to consider limited hydropower generation and flood damage reduction. This investigation is being conducted at the direction of Congress and to support other and ongoing Federal interests within the study area.

Enlargement of Shasta Lake has been considered previously. A primary conclusion by Reclamation in a September 1988 Enlarged Shasta Wrap-Up Report, was that enlarging Shasta Dam by up to 213 feet in height appeared to be feasible from engineering, environmental, and economical perspectives. However, Reclamation also concluded that plans for enlarging the dam were not financially or politically feasible given the relatively low estimated demand for additional water at that time and the extensive investment of public funds that the project would require.

Expansion of storage in Shasta Reservoir as part of the Central Valley Project (CVP) is one of five potential surface water storage projects identified in an August 2000 Record of Decision (ROD) for the CALFED Bay-Delta Program (CALFED). The ROD identified the potential for expansion of Shasta to help increase the pool of cold water available to maintain lower Sacramento River water temperatures needed by certain fish and provide other water management benefits, such as water supply reliability.

## PURPOSE AND SCOPE

The primary purpose of this Mission Statement Milestone Report (Report) is to define a concise mission statement for the Shasta Lake Water Resources Investigation. This primarily includes a process of:

- Identifying the pertinent water and related resources problems, needs, and opportunities within the primary and extended study areas being addressed in the investigation.
- Developing a specific set of planning objectives to address the identified problems, needs, and opportunities.
- Establishing the planning constraints, guiding principles, and criteria for which plan formulation and evaluation is to be accomplished.
- Defining the mission statement to support the established planning objectives.

To support defining the mission statement and further development of the feasibility investigation, this Report also includes:

- Description of significant water resources and related projects and programs including a review and update of pertinent information about Shasta Dam and Reservoir and Shasta's role in the CVP.
- Identification of without-project future physical, biological, and socio-economic conditions in the primary and extended study areas.
- Formulation of a preliminary set of water resource management measures and concept plans to address the planning objectives consistent with the mission statement.
- Description of a potential public and agency outreach program.
- Identification of potential major future actions for the feasibility investigation.

This Report will be used as a first component of the Initial Alternatives Summary Report and subsequent documents. Conclusions and recommendations are expected to evolve as studies progress into the decision document for the feasibility investigation.

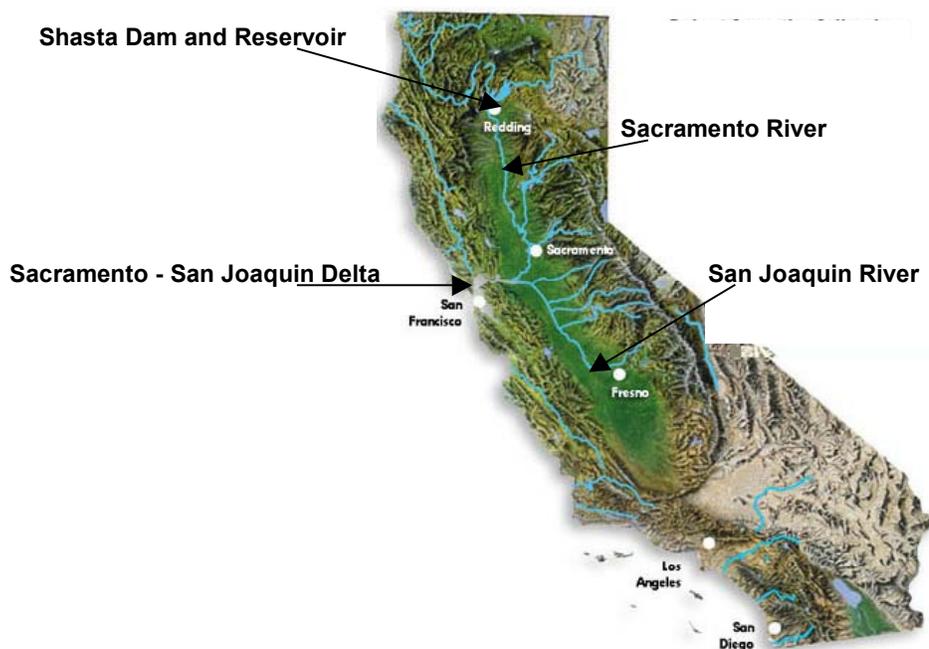
## STUDY AREA LOCATION AND DESCRIPTION

Shasta Dam and Reservoir are located on the upper Sacramento River in Northern California, as shown in **Figure 1**, about nine miles northwest of the City of Redding (see **Plate 1**). The entire reservoir is within Shasta County. Shasta Lake has 370 miles of shoreline. The reservoir controls runoff from about 6,420 square miles. The four major tributaries to Shasta Lake are the Sacramento River, McCloud River, Pit River, and Squaw Creek. There are numerous minor tributary creeks and streams.

- **Upper Sacramento River** – The upper Sacramento River drains an area of roughly 430 square miles. Its headwaters include portions of Mount Shasta and the Trinity and Klamath mountains. It flows south for approximately 40 miles before entering Shasta Lake.
- **McCloud River** – The McCloud River Basin drains an area of about 600 square miles. Its headwaters are at Colby Meadows near Bartle. The river flows southwesterly for approximately 50 miles to its terminus at Shasta Lake.
- **Pit River** – The Pit River watershed is located in northeastern California and southeastern Oregon. The north and south forks of the Pit River drain the northern portion of the watershed. The north fork of the Pit River originates at the outlet of Goose Lake and the south fork originates in the south Warner Mountains at Moon Lake, Lassen County. The Pit River is joined by the Fall River in Shasta County. There are twenty-one named tributaries, totaling about 1,050 miles of perennial stream and encompassing approximately 4,700 square miles.
- **Squaw Creek** – The Squaw Creek watershed is located east of Shasta Lake and drains 103 square miles. It flows to the southwest through generally steep terrain.

Most of the outflow from Shasta Dam travel south in the Sacramento River to the Sacramento-San Joaquin Delta. From there, flows mingled with runoff primarily from the San Joaquin River

watershed and flow to the Pacific Ocean through the San Francisco Bay. The total drainage area of the Sacramento River at the Delta is about 26,300 square miles. The average annual runoff volume to the Delta from the Sacramento River watershed is about 17.2 million acre-feet (MAF). This represents about 62 percent of the total 27.8 MAF inflow to the Delta.



**Figure 1 – Shasta Dam and Reservoir is located north of Redding on the Sacramento River**

Shasta Dam was constructed during the period from September 1938 to June 1945. Storage of water in Shasta Lake began in December 1943. Gates, valves, and other items of finish work, deferred during World War II, were completed following the war and the project was placed in full operation in April of 1949. Approximately 37 miles of the Southern Pacific Railroad main line to Portland, Oregon, and 21 miles of U.S. Highway 99 (Interstate Route 5) were relocated around the reservoir during this period. When constructed, Shasta Dam was the second highest and second largest concrete dam in the world. It was exceeded only by Bolder Dam (Hoover Dam) in height and by Grand Coulee Dam in volume, but many dams now rank above it. Shasta delivers about 55 percent of the total annual water supply developed by the CVP. The Shasta Dam and Reservoir project was constructed by Reclamation as an integral element of the CVP for six purposes: irrigation water supply, municipal and industrial (M&I) water supply, flood control, hydropower generation, fish and wildlife conservation, and navigation. The project also supports vigorous water-oriented recreation at the lake. For flood control, Reclamation operates the facility in accordance with guidelines provided by the U.S. Army Corps of Engineers (Corps). All outflows from Shasta Dam flow into and through Keswick Reservoir, located about 5 miles west of Redding. Keswick Reservoir also receives inflows from Whiskeytown Reservoir on Clear Creek.

The primary study area for the Shasta Lake Water Resources Investigation is Shasta Dam and Reservoir; inflowing rivers and streams including the Sacramento River, McCloud River, Pit River, and Squaw Creek; and the Sacramento River downstream to about the Red Bluff Diversion Dam (RBDD). **Plate 1** is a map showing the primary study area within the Sacramento River Basin. **Plate 2** shows the Shasta Reservoir area.

Because of the potential influence of a modification of Shasta Dam on other programs and projects primarily in the Central Valley, the extended study area includes the Sacramento River Watershed, the Sacramento-San Joaquin and Delta, and San Joaquin and Tulare Lake basins. This area comprises one of the world's most diverse regions. California's Central Valley is home to more than four million people and a wide variety of fish and wildlife including about 180 special-status plant and animal species. The river basins provide drinking water to over two thirds of Californians. The robust economy of this region is centered on an agricultural industry that is a major source of reliable, high quality crops for the nation and the world.

## STUDY AUTHORIZATION

On August 30, 1935, in the Rivers and Harbors Bill, the initial amount of Federal funds was authorized for the construction of Kennett (now Shasta) Dam. Fundamental authorization for the Shasta Lake Water Resources Investigation is under the 1980 Public Law (PL) 96-375. This law authorized the Secretary of the Interior to engage in feasibility studies relating to: (1) enlarging Shasta Dam and Reservoir, or constructing a replacement dam on the Sacramento River and (2) the use of the Sacramento River for conveying water from such enlarged dam. Another pertinent piece of legislation is contained in the Central Valley Project Improvement Act (CVPIA) of 1992 (PL 102-575).

## REPORT ORGANIZATION

This Report is organized in five basic parts:

- The first is Chapter II, in which other related studies, projects, and programs are highlighted.
- The second is Chapter III, which includes a description of existing and projected future without-project water resources and related conditions.
- The third is Chapter IV, which contains a description of the fundamental problems being addressed in the investigation.
- The fourth is Chapter V, which includes the planning objectives for the investigation and the fundamental planning constraints, principles, and criteria. Also included in Chapter V is the Mission Statement for the investigation.
- The last basic part is in Chapters VI through IX, which includes information on potential concept plans, how the study is being coordinated, a description of future actions needed to complete interim documents and the final feasibility report, and a summary of findings.