RECLAMATION

Managing Water in the West

Draft FINDING OF NO SIGNIFICANT IMPACT

Storage and Conveyance of the City of Santa Barbara's Gibraltar Reservoir Pass Through Water in and Through Cachuma Project Facilities

FONSI-12-086

U.S. Department of the Interior
Bureau of Reclamation

January 2016

Mission Statements

The mission of the Department of the Interior is to protect and manage the Nation's natural resources and cultural heritage; provide scientific and other information about those resources; and honor its trust responsibilities or special commitments to American Indians, Alaska Natives, and affiliated island communities.

The mission of the Bureau of Reclamation is to manage, develop, and protect water and related resources in an environmentally and economically sound manner in the interest of the American public.

BUREAU OF RECLAMATION
South-Central California Area Office, Fresno, California

Draft FONSI-12-086

Storage and Conveyance of the City of Santa Barbara's Gibraltar Reservoir Pass Through Water in and Through Cachuma Project Facilities

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Introduction

In accordance with section 102(2)(c) of the National Environmental Policy Act of 1969, as amended, the South-Central California Area Office of the Bureau of Reclamation (Reclamation), has determined that executing 5- and 40- year Warren Act contracts with the City of Santa Barbara (City) is not a major federal action that will significantly affect the quality of the human environment and an environmental impact statement is not required. This draft Finding of No Significant Impact (FONSI) is supported by Reclamation's Environmental Assessment (EA) Number EA-12-086, *Storage and Conveyance of the City of Santa Barbara's Gibraltar Reservoir Pass Through Water in and Through Cachuma Project Facilities*, and is hereby incorporated by reference.

No final decision shall be made on the FONSI until public review has been completed and comments, if any, considered.

Background

Gibraltar Reservoir, owned and operated by the City, is located on the Santa Ynez River upstream of Lake Cachuma and is a principal component of the City's municipal water supplies. The City has diverted water for municipal supply purposes from the Santa Ynez River at Gibraltar Reservoir through the City's Mission Tunnel to the City's water system since the tunnel was completed in 1911. Continuing siltation has reduced the reservoir's initial storage capacity of 15,374 acre-feet (AF) to its current volume of about 5,250 AF, despite a 23-foot increase in the height of the dam in 1948.

In 1983, the City and the State's Division of Safety of Dams agreed that Gibraltar Dam should be strengthened to withstand the maximum probable earthquake. The City planned and engineered a project to reinforce the dam in a manner that would allow for an anticipated increase in the height of the dam by 20 feet or more. A 1982 study by the Santa Barbara County Water Agency estimated a 20 foot increase at that time would result in a storage volume of 15,990 AF. In May 1988, some of the other purveyors of Santa Ynez River water sued the City, contending that the City's proposal to reinforce the dam was the beginning of a project to raise the dam and enlarge the reservoir, and that this project would have significant adverse effects on flows in the Santa Ynez River impacting downstream water uses and purveyors, as well as other environmental impacts (Santa Barbara 2008). Discussions to settle that litigation ultimately led to the signing of the Upper Santa Ynez River Operations Agreement, also known and referred to herein as the "Pass Through Agreement," in 1989 (see Appendix A of EA-12-086). All of the Cachuma Project Member Units were parties to the agreement, as was the Santa Ynez River Water Conservation District.

Reclamation, although not a party to the Pass Through Agreement, reviewed the provisions of the agreement and found that the provisions (1) did not adversely affect the financial obligations

of the Cachuma Project Member Units and the Santa Barbara County Water Agency with respect to the Cachuma Project, (2) implementation of the Pass Through Agreement will have no adverse effect on the yield of the Cachuma Project, and (3) are consistent with the obligations of the parties to the agreement and Reclamation pursuant to the various contracts, agreements, laws, rules, regulations, permits, and orders pertaining to the operation of the Cachuma Project. As such, Reclamation formally consented to and acknowledged the Pass Through Agreement and agreed to maintain its Cachuma Project records in a manner that would implement the agreement. However, the consent and acknowledgement did not waive any rights of Reclamation to enforce or implement any existing contracts, agreements, laws, rules, regulations, permits, or orders as supplemented or amended in its operation of the Cachuma Project.

Upper Santa Ynez River Operations

The Pass Through Agreement enacted a compromise among the parties that involves two key elements:

1. The City agreed to defer the enlargement of Gibraltar Reservoir;

2. The parties agreed to provisions that minimize the reduction in the City's yield from Gibraltar Reservoir due to ongoing siltation, by providing for some of the City's Gibraltar water to be "passed through" to Lake Cachuma and conveyed to the City through the Cachuma Project facilities. This "Pass Through" water is the non-Project water to be authorized by the proposed Warren Act contracts.

Upon execution of the agreement, the City suspended its plans to enlarge Gibraltar Reservoir and began operating Gibraltar Reservoir in accordance with the Pass Through Agreement.

The Pass Through Agreement addresses ongoing siltation at Gibraltar by defining two modes of operation: the "Mitigation" and "Pass Through" modes, as described in the Pass Through Agreement (see Appendix A of EA-12-086). In conjunction with Reclamation, the parties have managed the operations of Gibraltar and Cachuma reservoirs under the "Mitigation" mode since 1991, when the Pass Through Agreement was activated.

In order to initiate "Pass Through" mode, the City has requested Warren Act contract(s) from Reclamation for the storage of its non-Project (Pass Through) water in Lake Cachuma, and for conveyance of this water through the Tecolote Tunnel and South Coast Conduit for a period of up to 45 years.

Proposed Action

Reclamation proposes to execute Warren Act contracts [temporary (5-year) and long-term (40-year)] with the City for the annual storage and conveyance of up to 8,547 AF of its non-Project water as described in section 2.2 of EA-12-086.

Findings

Reclamation's finding that implementation of the Proposed Action will result in no significant impact to the quality of the human environment is supported by the following findings:

Resources Eliminated from Detailed Analysis

As described in Table 1 of EA-12-086, Reclamation analyzed the affected environment and determined that the Proposed Action does not have the potential to cause direct, indirect, or cumulative adverse effects to the following resources: land use, cultural resources, Indian Sacred Sites, Indian Trust Assets, socioeconomic resources, environmental justice, air quality, global climate, or recreation.

Water Resources

The modeling of the Proposed Action by Stetson[1] indicated that there would be no effect on flows in the Santa Ynez River between Gibraltar and Cachuma because there would be no effect on rainfall or reservoir volume, and no change in the City's ability to maximize diversions through Mission Tunnel. There would be no environmental impacts due to water conveyance or construction, because water conveyance would continue to occur through existing facilities and no construction would occur.

Cachuma Project Operations

Under the Proposed Action, a portion of the water that previously flowed from Gibraltar reservoir into Lake Cachuma as Project water or as credits to downstream accounts would be accounted for as the City's non-Project water. Assuming a Gibraltar Reservoir storage capacity of 5,250 AF, the average annual amount of inflow that would be credited to the City (and either conveyed to the City, evaporated, or spilled) is 1,004 AF, or less than 1% of the total Lake Cachuma volume of 195,578 AF and approximately 1% of average historical inflow. Following is a discussion of Stetson's modeled effects on key Cachuma Project operations due to the Proposed Action.

Cachuma Project Water Supply Water supply effects on the Cachuma Project are measured by estimated deliveries of Cachuma Project water to the Member Units, including the effect of any reductions resulting from periodic drought (see Figure 5 in EA 12-086). Under this scenario, average annual deliveries for the full modeling period are estimated to be approximately equal to "Current Conditions" (within 0.4%) for the full modeling period and to decrease by 1,033 AF per year (AFY) or 5.7% for the three-year critical drought period. Transfers of Project water or ANA water would have a similar effect under the No Action Alternative, as described in Section 3.2.2 of EA-12-086.

Declining volume at Gibraltar Reservoir from 1989 to present has resulted in increasing yield to the Member Units at Cachuma (Figure 5 in EA 12-086) and decreasing yield to the City from Gibraltar Reservoir (Figure 3 in EA 12-086). The City's election to enter Pass Through mode has the effect of partially offsetting this trend, which reflects the intention of the Pass Through Agreement to minimize the reduction in the City's yield at Gibraltar Reservoir in exchange for the City's deferral of the enlargement of Gibraltar Reservoir.

Lake Cachuma Outflows and Downstream Flows Cachuma outflows (including spills, fish releases and water rights releases) and flow in the Santa Ynez River at various points below Lake

[1] See Section 3.2.2 of EA-12-086 for a description of the modeling done by Stetson for the Pass Through Agreement; which includes implementation of the Pass Through Mode concurrent with the Warren Act Contracts (Proposed Action with Pass Through Scenario).

Cachuma are illustrated for the various scenarios in Figure 6, Table 4, and Table 5 of EA 12-086 for dry, median, wet, and high flow conditions. Values are essentially equal for all instances, with the exception of differences of as much as 2% for some of the wet and high flow conditions. The similarities are due to the small amount of the overall river water affected by the change to Pass Through mode, which would not affect the ongoing procedures for fish releases.

Downstream Water Rights The Stetson Hydrologic Report provides information on how water supplies of downstream water rights holders in the Above Narrows and Below Narrows areas are affected under the various scenarios. Credits to the ANA and BNA downstream accounts are reported for each scenario; however, a reduction in credits does not always reflect a negative effect. For example, in many instances rainfall providing recharge to the Above Narrows groundwater basin causes a reduction in ANA credits even though groundwater conditions improve. Therefore, parameters that reflect the physical hydrologic conditions are also reported. For the Above Narrows area, the parameter is the maximum amount of dewatered storage during the modeling period. For the Below Narrows area it is the average annual percolation of river flow into the groundwater basin of the Lompoc Plain.

For the Above Narrows area, average annual net ANA credits for the full modeling period are 3,799 AFY, compared to 3,848 AFY under "Current Conditions", a difference of slightly more than 1% (see Figure 7 in EA 12-086). Credits during the critical drought period are equal under all scenarios (see Table 6 in EA 12-086). The physical parameter of maximum dewatered storage, which occurs during the critical drought period, is 34,673 AF compared to 34,480 AF under "Current Conditions", a difference of less than 1%.

For the Below Narrows area, average annual net BNA credits for the full modeling period are 2,012 AFY, compared to 2,153 AFY, a difference of about 7%. The physical parameter of average annual percolation to groundwater water is 8,316 AFY, compared to 8,353 AFY under "Current Conditions", a difference of less than 1%. These effects on downstream water rights would occur with or without the Proposed Action due to the requirements of the Pass Through Agreement as agreed to by all Member Units and the Santa Ynez River Water Conservation District.

Water Quality in Lompoc Area Stetson's estimated values are equal for the Proposed Action and the "Current Conditions" scenarios, reflecting only minor differences in modeled river flow at the Lompoc Narrows (see Table 8 in EA 12-086).

Cachuma Project Facilities

As shown in Figure 4 of EA-12-086, the estimated daily lake elevations for Cachuma Lake are essentially equal for all scenarios, under dry, median, and wet conditions as the actual amount of water flowing into Lake Cachuma would not change. Accordingly, no impacts on the physical amount of water in Lake Cachuma would occur under the Proposed Action. In addition, there would be no impacts to the Tecolote Tunnel or the South Coast Conduit as the City's non-Project water would be used to meet customer's demands and would be scheduled in the same manner as their Project water. Further, conveyance of the non-Project water would be subject to capacity constraints and in lieu of a like amount of Project water as the City's non-Project water would generally be used first to avoid loss due to evaporation or spill, and would therefore not increase the overall rate of conveyance of water.

City of Santa Barbara Facilities

The Proposed Action would not affect the amount of water stored in Gibraltar Reservoir or the Santa Ynez River flows between Gibraltar Reservoir and Lake Cachuma as runoff is the result of rainfall, and would not be affected. Reservoir volumes, and corresponding spill amounts, would continue to change as a result of siltation, which is an ongoing natural process not affected by the Proposed Action. The City's diversions from Gibraltar Reservoir into the Mission Tunnel would be approximately the same as under "Current Conditions", because the City would continue to maximize these diversions in order to reduce the additional cost of storing and conveying non-Project water in and through Cachuma Project facilities.

Under the Proposed Action, as modeled by Stetson, the average annual net yield of Gibraltar Reservoir (including direct diversions through Mission Tunnel and conveyance of non-Project water through Lake Cachuma) is estimated to increase by 414 AFY to 4,330 AFY in the near term as compared to a net yield of 3,916 AFY under the "Current Conditions" scenario. The increase in Gibraltar yield compared to "Current Conditions" reflects requirements of the Pass Through Agreement to allocate some Cachuma Inflow to the City's Pass Through Account in Lake Cachuma, as discussed in Section 3.2.2 of EA-12-086 under Cachuma Project Water Supply. This change in yield is due to the City's election to enter Pass Through mode which would occur with or without the Proposed Action. This increase in Gibraltar yield replaces a portion of the yield lost due to ongoing siltation during the years since the agreement was signed and the City agreed to defer the enlargement of Gibraltar Reservoir.

Biological Resources

As described in Section 3.3.2 of EA-12-086, Reclamation has determined that the Proposed Action would have *No effect* to proposed or listed species or critical habitat under the Endangered Species Act of 1973, as amended (16 U.S.C. §1531 et seq.), and no take of birds protected under the Migratory Bird Treaty Act (16 U.S.C. §703 et seq.).

Cumulative Impacts

Cumulative impacts result from incremental impacts of the Proposed Action when added to other past, present, and reasonably foreseeable future actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time. Significance exists if it is reasonable to anticipate a cumulatively significant impact on the environment.

Water Resources

Reclamation has reviewed existing or foreseeable projects in the same geographic area that could affect or could be affected by the Proposed Action. As in the past, hydrological conditions and other factors are likely to result in fluctuating water supplies which drive requests for water service actions. Water districts provide water to their customers based on available water supplies and timing, while attempting to minimize costs. It is likely that more districts will request water service transactions in the future due to hydrologic conditions. Each water service transaction involving Reclamation undergoes environmental review prior to approval.

The Proposed Action and other similar projects would not hinder the normal operations of the Cachuma Project and Reclamation's obligation to deliver water to its contractors or to local fish

and wildlife habitat. In addition, actions associated with implementation of the 2000 Biological Opinion (NMFS 2000), Central Coast Water Authority deliveries into Lake Cachuma, and operational requirements associated with State Water Resources Control Board water rights orders would be unaffected. As discussed in Section 3.2 of EA-12-086, Cachuma elevations and Lower Santa Ynez River flows would only be expected to change during the higher flow conditions, and only to a minor extent. Downstream water rights releases would continue with only minor differences as shown in Tables 6 and 7, and Figures 7 through 9 in EA-12-086. Further, the City's non-Project water would only be allowed to enter Cachuma Project facilities if excess capacity is available and any water stored within Lake Cachuma would be limited to available capacity and would be subject to spill should capacity change over the course of the Warren Act contract(s). As such, the Proposed Action would not limit the ability of other users to make use of the facilities. Since the Proposed Action would not involve construction or modification of facilities, nor interfere with normal operations, there would be no cumulative impacts to existing facilities or other contractors.

Biological Resources

As the Proposed Action is not expected to result in any direct or indirect impacts to biological resources, there would be no cumulative impacts.

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Section 1 Introduction

1.1 Background

Gibraltar Reservoir, owned and operated by the City of Santa Barbara (City), is located on the Santa Ynez River upstream of Lake Cachuma (Figure 1) and is a principal component of the City's municipal water supplies. The City has diverted water for municipal supply purposes from the Santa Ynez River at Gibraltar Reservoir through the City's Mission Tunnel to the City's water system since the tunnel was completed in 1911. Continuing siltation has reduced the reservoir's initial storage capacity of 15,374 acre-feet (AF) to its current volume of about 5,250 AF, despite a 23-foot increase in the height of the dam in 1948.

Figure 1 Santa Ynez River Watershed and South Coast Member Units

In 1983, the City and the State's Division of Safety of Dams agreed that Gibraltar Dam should be strengthened to withstand the maximum probable earthquake. The City planned and engineered a project to reinforce the dam in a manner that would allow for an anticipated increase in the height of the dam by 20 feet or more. A 1982 study by the Santa Barbara County Water Agency estimated a 20 foot increase at that time would result in a storage volume of 15,990 AF. In May 1988, some of the other purveyors of Santa Ynez River water sued the City, contending that the City's proposal to reinforce the dam was the beginning of a project to raise the dam and enlarge the reservoir, and that this project would have significant adverse effects on flows in the Santa Ynez River impacting downstream water uses and purveyors, as well as other environmental impacts (Santa Barbara 2008). Discussions to settle that litigation ultimately led to the signing of the Upper Santa Ynez River Operations Agreement, also known and referred to herein as the

"Pass Through Agreement," in 1989 (see Appendix A). All of the Cachuma Project Member Units were parties to the agreement, as was the Santa Ynez River Water Conservation District.

Reclamation, although not a party to the Pass Through Agreement, reviewed the provisions of the agreement and found that the provisions (1) did not adversely affect the financial obligations of the Cachuma Project Member Units and the Santa Barbara County Water Agency with respect to the Cachuma Project, (2) implementation of the Pass Through Agreement will have no adverse effect on the yield of the Cachuma Project, and (3) are consistent with the obligations of the parties to the agreement and Reclamation pursuant to the various contracts, agreements, laws, rules, regulations, permits, and orders pertaining to the operation of the Cachuma Project. As such, Reclamation formally consented to and acknowledged the Pass Through Agreement and agreed to maintain its Cachuma Project records in a manner that would implement the agreement. However, the consent and acknowledgement did not waive any rights of Reclamation to enforce or implement any existing contracts, agreements, laws, rules, regulations, permits, or orders as supplemented or amended in its operation of the Cachuma Project.

Upper Santa Ynez River Operations

The Pass Through Agreement enacted a compromise among the parties that involves two key elements:

1. The City agreed to defer the enlargement of Gibraltar Reservoir;

2. The parties agreed to provisions that minimize the reduction in the City's yield from Gibraltar Reservoir due to ongoing siltation, by providing for some of the City's Gibraltar water to be "passed through" to Lake Cachuma and conveyed to the City through the Cachuma Project facilities. This "Pass Through" water is the non-Project water to be authorized by the proposed Warren Act contracts.

Upon execution of the agreement, the City suspended its plans to enlarge Gibraltar Reservoir and began operating Gibraltar Reservoir in accordance with the Pass Through Agreement.

The Pass Through Agreement addresses ongoing siltation at Gibraltar by defining two modes of operation: the "Mitigation" and "Pass Through" modes, as described in the Pass Through Agreement (see Appendix A). In conjunction with Reclamation, the parties have managed the operations of Gibraltar and Cachuma reservoirs under the "Mitigation" mode since 1991, when the Pass Through Agreement was activated.

In order to initiate "Pass Through" mode, the City has requested Warren Act contract(s) from Reclamation for the storage of its non-Project (Pass Through) water in Lake Cachuma, and for conveyance of this water through the Tecolote Tunnel and South Coast Conduit for a period of up to 45 years.

1.2 Need for the Proposed Action

Since enactment of the Pass Through Agreement, Gibraltar Reservoir has continued to experience siltation. This has decreased the reservoir volume and reduced the City's ability to

divert Gibraltar water it has rights to through Mission Tunnel. In particular, Gibraltar reservoir experienced substantial siltation following the 2007 Zaca Fire. Consequently, in order to offset lost storage capacity in Gilbraltar, the City has elected to commence the Pass Through mode pursuant to the Pass Through Agreement and has requested authorization for storage and conveyance of its Pass Through water as non-Project water.

Section 2 Alternatives Including the Proposed Action

This Environmental Assessment considers two possible actions: the No Action Alternative and the Proposed Action. The No Action Alternative reflects future conditions without the Proposed Action and provides a basis of comparison for determining the Proposed Action's potential effects to the human environment.

2.1 No Action Alternative

Under the No Action Alternative, Reclamation would not execute the proposed Warren Act contracts (temporary or long-term) with the City. Water entering Lake Cachuma from Gibraltar Reservoir would continue to be used as Project water, credited to downstream accounts, or spilled from Lake Cachuma.

Under the No Action Alternative, the City would be expected to continue to maximize diversions of Santa Ynez River water through Mission Tunnel, subject to its water rights, the provisions of the Pass Through Agreement, and constraints resulting from continuing reservoir siltation. The City would likely call upon the parties to the agreement to make "adjustments as may be necessary to carry out the purposes" of the Pass Through Agreement pursuant to Section X. I. of the agreement (see Appendix A). The most straight forward way to make such adjustments would be by transfers of Project water and/or Above Narrows Account (ANA) water among the parties as described in the Pass Through Agreement.

2.2 Proposed Action

Reclamation proposes to execute Warren Act contracts [temporary (5-year) and long-term (40-year)] with the City for the annual storage and conveyance of up to 8,547 AF of its non-Project water. Reclamation would modify its accounting of inflow to Lake Cachuma to reflect the Pass Through mode consistent with the Pass Through Agreement and would coordinate with the accounting of the City's Pass Through water in Lake Cachuma as non-Project water. The City's non-Project water would be stored in Lake Cachuma until it is either delivered to the City through Tecolote Tunnel and the South Coast Conduit, or lost to spill or evaporation. It is likely that the actual maximum amount of non-Project water stored in Lake Cachuma would be less than 8,547 AF, and that the ongoing average amount would be much less. The City estimates that the average end-of-month storage of its non-Project water in Lake Cachuma would be approximately 1,258 AF, assuming the current Gibraltar Reservoir volume of 5,250 AF. In most years, the City's non-Project water would be delivered in the same year it is stored.

Section 3 Affected Environment and Environmental Consequences

This section identifies the potentially affected environment and the environmental consequences involved with the Proposed Action and the No Action Alternative, in addition to environmental trends and conditions that currently exist.

3.1 Resources Eliminated from Further Analysis

Reclamation analyzed the affected environment and determined that the Proposed Action did not have the potential to cause direct, indirect, or cumulative adverse effects to the resources listed in Table 1.

Table 1 Resources Eliminated from Further Analysis

Resource	Reason Eliminated
Land Use	Under the Proposed Action, land uses at Gibraltar Reservoir, along the Santa Ynez River, Lake Cachuma, and in the City would not change. Therefore, there would be no impact to land uses as a result of the Proposed Action.
Cultural Resources	There would be no impacts to cultural resources as a result of implementing the Proposed Action as it would involve the flow of water through existing facilities to existing users. No new construction or ground disturbing activities would occur as part of the Proposed Action. The conveyance and storage of non-Project water would be confined to existing Cachuma Project facilities. Reclamation has determined that the Proposed Action does not have the potential to cause effects to historic properties pursuant to 36 Code of Federal Regulations Part 800.3(a)(1). See Appendix B for Reclamation's determination.
Indian Sacred Sites	The Proposed Action would not limit access to or ceremonial use of Indian sacred sites on Federal lands by Indian religious practitioners or significantly adversely affect the physical integrity of such sacred sites.
Indian Trust Assets	The Proposed Action would not impact Indian Trust Assets.
Socioeconomics	Although fees associated with the proposed Warren Act contract(s) would result in cost increases of roughly 1% or less for all socioeconomic groups in the City's service area, the Proposed Action would have an overall beneficial impact to all socioeconomic groups as it would preserve the City's urban water supply.
Environmental Justice	The Proposed Action would not cause dislocation, changes in employment, or increase flood, drought, or disease. The Proposed Action would not disproportionately impact economically disadvantaged or minority populations as there would be no changes to existing conditions.
Air Quality	Water delivery under the Proposed Action would move via gravity and electrical pumps as it would under the No Action Alternative; therefore, there would be no impact to air quality as a result of the Proposed Action. Since the Proposed Action has no potential to cause direct or indirect emissions of criteria pollutants that equal or exceed *de minimis* thresholds, a conformity analysis is not required pursuant to the Clean Air Act.
Global Climate	Water under the Proposed Action is water that would be delivered from existing facilities under either alternative and is therefore part of the existing conditions. There would be no additional impacts to global climate change as a result of the Proposed Action. Current data are not yet clear on the hydrologic changes and how they will affect Santa Barbara County. Cachuma Project water allocations are made dependent on hydrologic conditions and environmental requirements. Since Reclamation operations and allocations are flexible, any changes in hydrologic conditions due to global climate change would be addressed within Reclamation's operation flexibility and therefore surface water resource changes due to climate change would be the same with or without either alternative.

Resource	Reason Eliminated
Recreation	Storage of the City's non-Project water under the Proposed Action would be similar to the No Action Alternative resulting in very small effects on the elevation of Lake Cachuma as indicated by Figure 4. Therefore, there would be no impacts to recreation in Lake Cachuma.

3.2 Water Resources

3.2.1 Affected Environment

The affected environment for water resources includes: the Cachuma Project and associated facilities, and the Santa Ynez River and groundwater basins.

Cachuma Project

Construction of the Cachuma Project began in 1950 and was completed in 1956. The project diverts and stores waters of the Santa Ynez River, a highly variable Southern California stream, for the historically water deficient communities of the South Coast area. Primary facilities of the Cachuma Project include: Bradbury Dam, which formed Lake Cachuma; Tecolote Tunnel, which delivers water from Lake Cachuma to the South Coast; and the South Coast Conduit, which connects to the Tecolote Tunnel and distributes water across the South Coast.

Cachuma Project Operations Reclamation operates the Cachuma Project to deliver water to the Member Units pursuant to Contract No. 175r-1802R (Master Contract) between Reclamation and the Santa Barbara County Water Agency, which in turn has contracts with the five Member Units. The Project is regulated by the State Water Resources Control Board (SWRCB) water rights Permits 11308 and 11310. In addition, Project operation includes storage and release of water for downstream water rights as necessary to comply with the terms and conditions of SWRCB Water Rights Order WR 73-37 as modified by WR 89-18. These terms and conditions generally require Reclamation to release sufficient water to supply downstream percolation to groundwater in the amounts of water that would have been received in the absence of the Cachuma Project. Among other things, the terms and conditions establish the ANA and the Below Narrows Account (BNA), which accrue credits of water in Lake Cachuma that is released for groundwater recharge downstream of Lake Cachuma when called upon by the Santa Ynez River Water Conservation District. The ANA and BNA are named after the corresponding groundwater basins as shown on Figure 2.

Since 1993, Reclamation has also made releases from Lake Cachuma for fish and maintenance of habitat pursuant to the 2000 Biological Opinion (2000 BO) issued by the National Marine Fisheries Service (NMFS). Releases for fish-rearing habitat are made primarily through the Hilton Creek supplemental watering system designed to deliver water to three release points: two along Hilton Creek and one in the stilling basin below Bradbury Dam. Water is also released to maintain fish-rearing habitats along the Santa Ynez River and to meet flow targets at the Highway 154 and Alisal bridges, depending on the storage condition in Lake Cachuma (2000 BO). In addition to fish-habitat maintenance releases, water is also released to enhance passage flows in the Santa Ynez River.

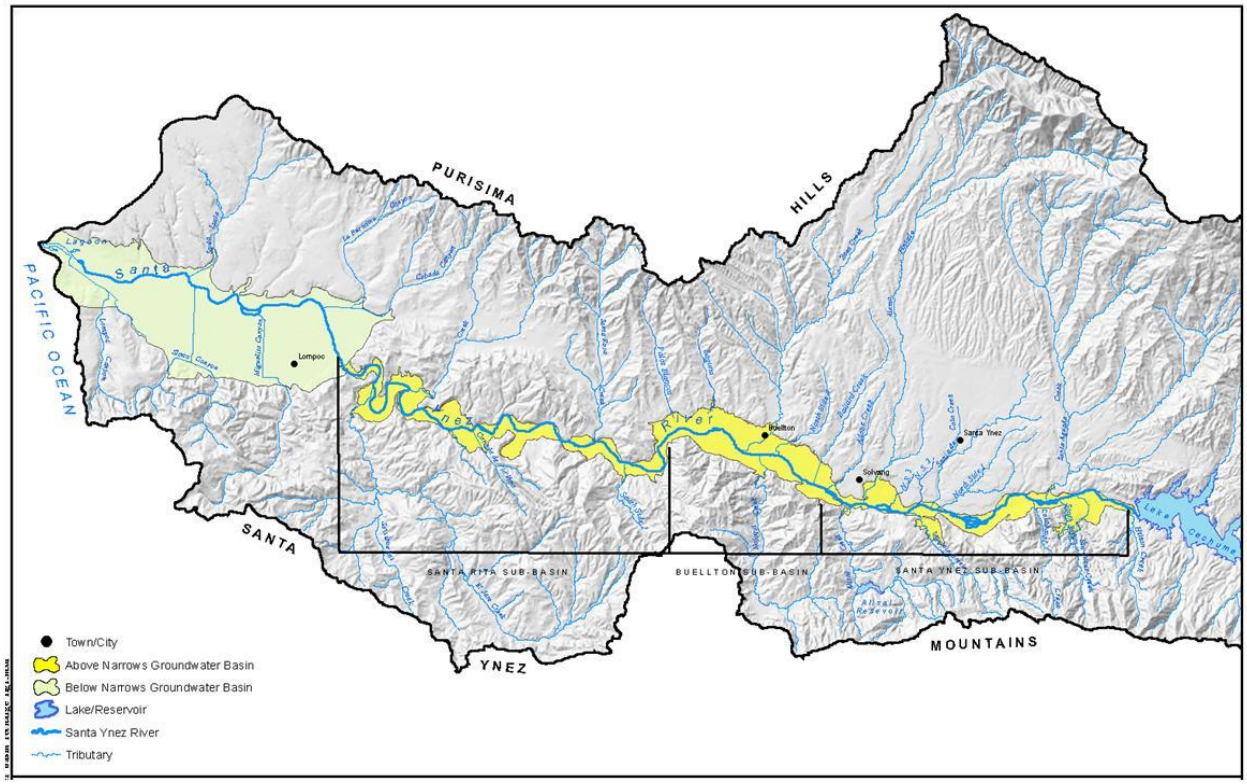


Figure 2 Lower Santa Ynez River and Groundwater

Existing Non-Project Contracts The Central Coast Water Authority (CCWA) delivers State Water Project (SWP) water to Lake Cachuma for SWP contractors on the South Coast under a 25-year Warren Act contract with Reclamation. Deliveries have averaged about 3,000 AF per year (AFY) since they began in 1997. The treated SWP water is dechloraminated at the Santa Ynez Pumping Facility before entering Project facilities. A portion of the SWP water is exchanged with Santa Ynez River Water Conservation District Improvement District No. 1 for Project water. In addition, CCWA's non-Project water is conveyed through Tecolote Tunnel to the other South Coast Member Units.

Lake Cachuma The storage capacity of Lake Cachuma, when constructed in 1953, was 204,874 AF at elevation 750 feet (SWRCB 2011, p. 2.0-1). As of a 2008 bathymetric survey, the capacity of the reservoir had been reduced to 195,578 AF with a corresponding surface area of 3,062 acres including surcharge up to elevation 753 feet (MNS Engineers, Inc. 2008). For the period of 1953 through 2009, average inflow to Lake Cachuma was 89,251 AFY with a median inflow of about 23,000 AFY, total annual spills ranged from zero to 468,150 AF with an average of 139,979 AF, deliveries of Project Water to Member Units through the Tecolote Tunnel and the South Coast Conduit have averaged 24,778 AFY, and evaporation from the reservoir averaged 11,086 AFY (SWRCB 2011, Table 2-2). Diversions to the South Coast are conveyed through the 6.4 mile long Tecolote Tunnel. Water infiltration into the tunnel is considered part of the Cachuma Project yield and averages about 2,000 AFY. Currently, the Cachuma Project contractual yield to the Project Member Units (the sum of all the lake diversions plus Tecolote Tunnel infiltration water) is 25,714 AF (SWRCB 2011).

Santa Ynez River

The Santa Ynez River originates in Los Padres National Forest, on the northern slope of the Santa Ynez Mountains near Divide Peak and the Ventura County border. The river's flow is highly variable. It usually dries up almost completely in the summer, but can experience very high flows in the winter. The river flows from east to west through the Santa Ynez Valley, reaching the Pacific Ocean at Surf, near Vandenberg Air Force Base and the city of Lompoc. The 90 mile long river drains the north slope of the Santa Ynez Mountains and the south slope of the San Rafael Mountains, as well as some open lands in southern Santa Barbara County. The Santa Ynez River is initially impounded by Juncal Dam forming Jameson Lake, operated by Montecito Water District. Mono Creek joins from the north just as the Santa Ynez River flows into Gibraltar Reservoir, impounded by Gibraltar Dam. Immediately below Gibraltar Dam, water from Devils Canyon Creek flows into the river. Further below Gibraltar Dam, Kelly Creek joins from the south, draining Los Laureles Canyon and Cold Spring Canyon. In this upper stretch of the river there is relatively little alluvial groundwater storage. The river continues from Gibraltar Reservoir and flows into Lake Cachuma. Several tributaries join the Santa Ynez River in Lake Cachuma, including Santa Cruz Creek and Cachuma Creek from the north and a number of smaller streams from the south. Below Lake Cachuma, the Santa Ynez River continues westward and enters an area of more substantial groundwater storage basins. Several tributaries join the river in this area, including Quiota, Alisal, Nojoqui, Falls, and Salsipuedes creeks from the south and Alamo Pintado, Zaca, and Santa Rosa creeks from the north. Immediately below Salsipuedes Creek the valley narrows considerably, at a location referred to as the "Narrows," providing a geologic separation between the Above Narrows and Below Narrows groundwater basins (see Figure 2). The river continues downstream of the Narrows until it reaches the Pacific Ocean.

Downstream Water Users Santa Ynez River appropriative diverters downstream of the Cachuma Project include the City of Solvang, City of Buellton, and Santa Ynez River Water Conservation District, ID #1 (SWRCB 2011). Underflow water diversions are accomplished by production wells in the river alluvium. Groundwater from the Above Narrows Alluvial Groundwater Basin is pumped by many private landowners for domestic and agricultural uses within the Santa Ynez River Water Conservation District (SWRCB 2011). In addition, the City of Lompoc, Vandenberg Village Community Services District, Mission Hills Community Services District, and private landowners pump groundwater from the Lompoc Basin and the Lompoc Plain, which receives direct recharge from the Santa Ynez River (SWRCB 2011).

City of Santa Barbara Facilities

Gibraltar Reservoir As described previously, Gibraltar Reservoir is located on the Santa Ynez River upstream of Lake Cachuma. It is owned by the City and was completed in 1920 with an initial storage capacity of 15,374 AF. In 1948, to preserve the City's water supply, Gibraltar Dam was raised by 23 feet, increasing the gross volume to 22,500 AF, with a usable storage volume of 15,000 AF after adjustment for the siltation present at that time. Continued siltation has reduced the storage capacity to its current volume of about 5,250 AF.

Since construction of Gibraltar Dam in 1920, the average annual rate of siltation has been approximately 210 AFY. Annual amounts have varied widely based on major fire events, high

flow events, and dry periods. The reservoir is not expected to fill completely with silt, due to the flushing action of high flows. An informal estimate of eventual equilibrium is approximately 2,000 AF of storage. Assuming an average siltation rate similar to the past, this equilibrium would be reached in approximately 15 years. City policy is to pursue cost effective means of sediment management, subject to the provisions of the Pass Through Agreement. Such efforts may extend that period or modify the eventual equilibrium storage capacity.

Mission Tunnel The City completed construction of Mission Tunnel in 1911, allowing the first diversion of water from the Santa Ynez River to the South Coast area. The tunnel is about 3.7 miles in length and was designed to intercept groundwater flow and to convey water from the Santa Ynez River to the City of Santa Barbara. Infiltration into Mission Tunnel varies with rainfall, but averages approximately 1,100 AFY (City of Santa Barbara 2011).

3.2.2 Hydrologic Analysis Conducted for the Proposed Action

To identify any potential effects related to the Proposed Action, the City hired Stetson Engineers, Inc. to conduct a hydrologic analysis. This selection was based on their technical expertise and long standing involvement in modeling and analyzing the hydrology and institutional aspects of the Santa Ynez River. The analysis has been documented in a report entitled Hydrologic Analyses of Pass Through Operations at Gibraltar Reservoir, ("the Stetson Hydrologic Report"), which is available upon request. Stetson's modeling assumptions and results are summarized below.

Stetson's Model Description and Assumptions

Modeling of the Upper Santa Ynez River operations (Gibraltar Reservoir and Lake Cachuma) used the Santa Ynez River RiverWare Model with a modeling period of 1942 through 2005. This allowed incorporation of the daily calculations required to compute Pass Through operations. Modeling of the Lower Santa Ynez River (i.e. below Bradbury Dam) used the monthly Santa Ynez River Hydrology Model with a modeling period of 1942 through 1993, since the RiverWare model of the Lower Santa Ynez River has not yet been completed and calibrated. The monthly model was selected for consistency with analysis for the SWRCB's Final Environmental Impact Report on the proposed modifications of Reclamation's water right permits (SWRCB 2011). In both cases, the models and modeling periods represent the latest official versions of the models. Modeling assumptions were consistent with those used for the SWRCB modeling, except for variations to reflect the scenarios modeled for this assessment.

The following assumptions about Gibraltar diversions through Mission Tunnel were used (except for the "1988 Base Operations," which are defined in the Pass Through Agreement):

- The City's normal year water supply requirement is 15,400 AFY, including 14,000 AFY of anticipated demand, plus 10% safety margin;
- The City's Cachuma Project contract allocation and Mission Tunnel infiltration are assumed to be consistent with amounts used in the environmental analysis for the 2011 SWRCB Cachuma Project Water Rights Hearing;
- Excess turbidity is assumed to interrupt Gibraltar diversions for 11 days upon the first annual inflow in excess of 1,000 AF per day with an additional interruption of 31 days upon the first annual inflow in excess of 5,000 AF per day;

- Gibraltar diversions through Mission Tunnel are subject to a maximum of 21 AF per day (7 million gallons per day) in all cases;
- No diversions occur when reservoir volume is less than 50 AF; and
- Downstream releases occur as required by the Gin Chow judgment, in accordance with Technical Memorandum Number 01-06 pursuant to the Pass Through Agreement.

Simulated average annual values for key parameters of Base Operations at Gibraltar include: inflow (51,898 AFY), spills (45,912 AFY), downstream releases (397 AFY), diversions to Mission Tunnel (5,174 AFY), and net evaporation (380 AFY). The modeled value of 5,174 AFY for average annual diversions to Mission Tunnel compares closely with modeling performed using the Santa Ynez River Hydrology Model in 1988 in support of negotiations for the Pass Through Agreement, which calculated a value of 5,160 AFY.

Stetson's Modeled Scenarios

A total of six scenarios were developed for modeling and analysis as described in Table 2. The scenarios include: "Current Conditions", "Proposed Action with Pass Through," and four additional scenarios to illustrate the long-term water management dynamics of the Pass Through Agreement. These range from the 1988 Base Operations to future scenarios representing various degrees of siltation at Gibraltar Reservoir.

Table 2 Gibraltar Reservoir Hydrologic Modeling Scenarios

Scenario Name	Gibraltar Capacity (AF)	Gibraltar Operating Mode	Upper Limit of Potential Gibraltar Diversions via Mission Tunnel per Modeling Assumptions (AFY)
1988 Base Operations	8,567	Base Operations, a hypothetical reservoir with fixed volume equal to 1988 volume as defined in the Pass Through Agreement; reflects compromise assumptions regarding the Gin Chow judgment and is used as a reference point for the City's allowable Gibraltar diversions under both modes of the Pass Through Agreement.	7,278
Pre-Zaca Fire	6,786	Mitigation mode per the Pass Through Agreement ; City diverts up to 5,000 AFY at Gibraltar and relinquishes up to 70 AFY of Cachuma contract allocation as mitigation, per Pass Through Agreement.	5,000
Current Conditions	5,250	Mitigation mode; City diverts up to 4,550 AFY at Gibraltar; City not required to relinquish any Cachuma contract allocation at this level per the Pass Through Agreement; Gibraltar storage capacity equal to approximate current capacity; no Gibraltar water stored in or conveyed through Cachuma; reflects conditions prior to the City exercising its right to elect commencement of Pass Through mode under the Pass Through Agreement.	4,550
Proposed Action with Pass Through**	5,250	Pass Through mode, reflecting the City's election to enter Pass Through mode per the Pass Through Agreement; Gibraltar storage capacity equal to approximate current capacity; Gibraltar diversions occur through Mission Tunnel and as Pass Through water stored in and conveyed through Lake Cachuma per the Pass Through Agreement; allowable diversions limited to those under 1988 Base Operations as defined in the Pass Through	4,918*

Scenario Name	Gibraltar Capacity (AF)	Gibraltar Operating Mode	Upper Limit of Potential Gibraltar Diversions via Mission Tunnel per Modeling Assumptions (AFY)
		Agreement.	
Substantial Siltation	2,000	Pass Through mode per Pass Through Agreement; reflects the approximate potential future equilibrium of Gibraltar volume.	4,918*
Extreme Siltation	500	Pass Through mode per Pass Through Agreement; included as an alternate equilibrium point to illustrate how operations would be affected.	4,918*

*The 4,918 AFY value is a demand-based model constraint, whereby Mission Tunnel diversions cannot be greater than the residual demand after the City's other available supplies are used. The model allows Gibraltar diversions in excess of 4,918 AFY to offset Cachuma shortages during drought, subject to the limits of the Pass Through Agreement and other modeling assumptions, including the demand constraint.

**This scenario also represents the anticipated operations under the No Action Alternative, as discussed in Section 2.

Note that the scenarios are arranged here in chronological sequence to facilitate comparison (the scenarios were presented in a different sequence in the Stetson Hydrologic Report).

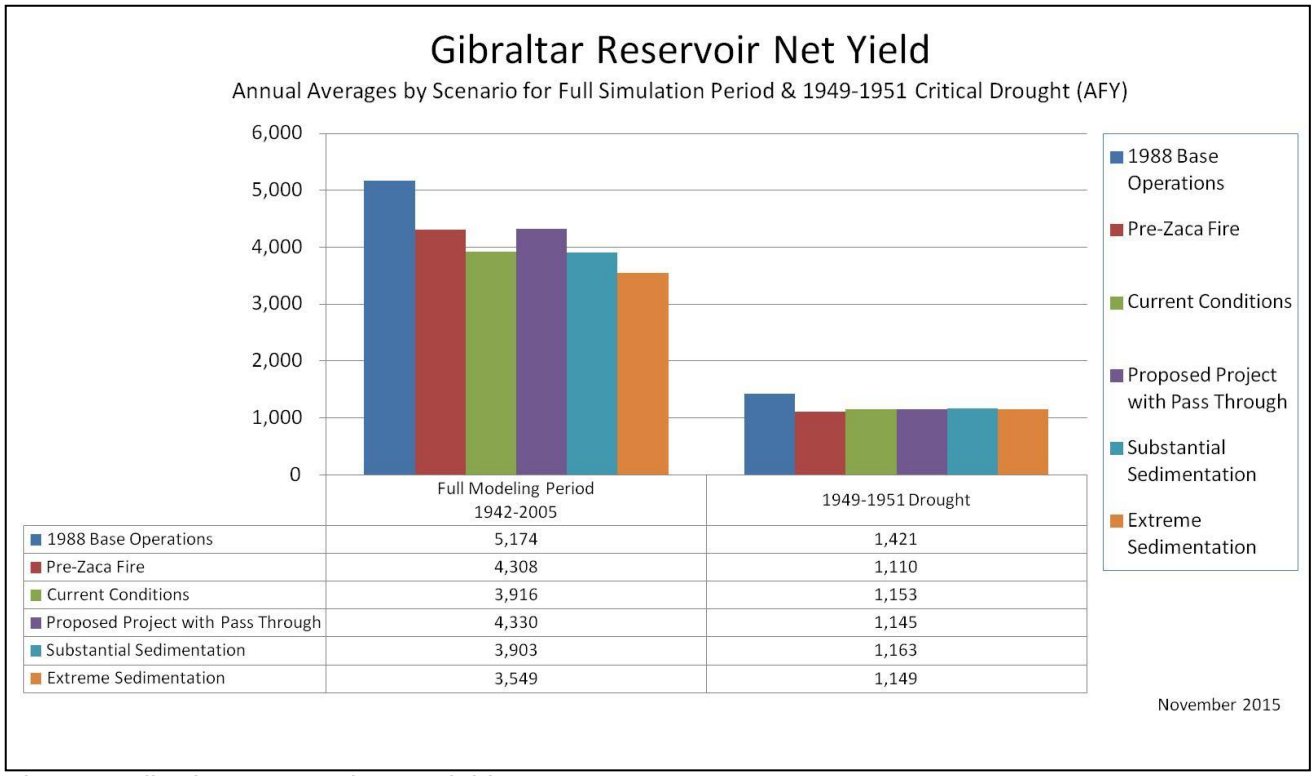
Stetson's Modeling Results

Following is a summary of modeling results for key parameters used in the Stetson Hydrologic Report to illustrate the relative effects under the six scenarios described above. Analysis of the modeling results and evaluation of effects under the various scenarios is addressed in Section 3.2.3 and Section 3.3.2.

The "Current Conditions" scenario represents operations prior to the City's election to commence Pass Through mode. The "Proposed Action with Pass Through" scenario represents the separate but concurrent actions of the Warren Act contracts that are the Proposed Action and the commencement of Pass Through mode. As discussed in Section 2, this scenario also describes the anticipated operations under the No Action Alternative under which the purposes of the Pass Through Agreement would be carried out without the proposed Warren Act contracts. Data for the other four scenarios are also included to illustrate the long-term context of the Pass Through Agreement, ranging from the 1988 Base Operations scenario to future conditions where siltation may have reduced Gibraltar Reservoir to 2,000 AF or 500 AF of storage capacity. Analysis is summarized for effects on the City's Gibraltar operations, Lake Cachuma operations, the Cachuma Project water supply yield, and the Lower Santa Ynez River area (i.e. below Lake Cachuma).

Percentiles are used in some cases to illustrate the data for a given parameter. As used here, percentiles indicate the percentage of all data values that are below a certain value. For example, the 20^{th} percentile value is the value below which 20% of all values occur. The most familiar percentile measurement is the 50^{th} percentile, or "median" value, for which 50% of the data values are above and 50% below. The use of percentiles other than the 50^{th} percentile in this analysis allows comparison of parameters under relatively wet and dry conditions, as well as the more "normal" conditions represented by the 50^{th} percentile (median). For example, Lake Cachuma water surface elevation is used as the parameter to compare the amount of water in the lake under various scenarios. Except where stated, the 20^{th} percentile elevation value represents relatively dry conditions, since elevation values exceed this value 80% of the time. Conversely, for this particular parameter, wet conditions are represented by the 80^{th} percentile value.

Gibraltar Reservoir Figure 3 shows simulated values for net Gibraltar water supply under the various scenarios. Net water supply is the sum of diversions through Mission Tunnel and credits to the Pass Through Account at Lake Cachuma; minus Pass Through Account evaporation, Pass Through Account spills, and the "relinquishment" obligation accrued during the water year (Relinquishment is the process under the Pass Through Agreement by which the City corrects for over-diversion effects on the Cachuma Project water supply). Average values are shown for the full simulation period and for the critical drought period of 1949-51.



	Full Modeling Period 1942-2005	1949-1951 Drought
1988 Base Operations	5,174	1,421
Pre-Zaca Fire	4,308	1,110
Current Conditions	3,916	1,153
Proposed Project with Pass Through	4,330	1,145
Substantial Sedimentation	3,903	1,163
Extreme Sedimentation	3,549	1,149

Figure 3 Gibraltar Reservoir Net Yield

Lake Cachuma The Stetson Hydrologic Report provides information on how the various scenarios affect Lake Cachuma. Daily reservoir elevation is used to illustrate the amount of water in the reservoir for various conditions under the six scenarios. Figure 4 shows simulated daily water elevations for the full modeling period of 1942 – 2005.

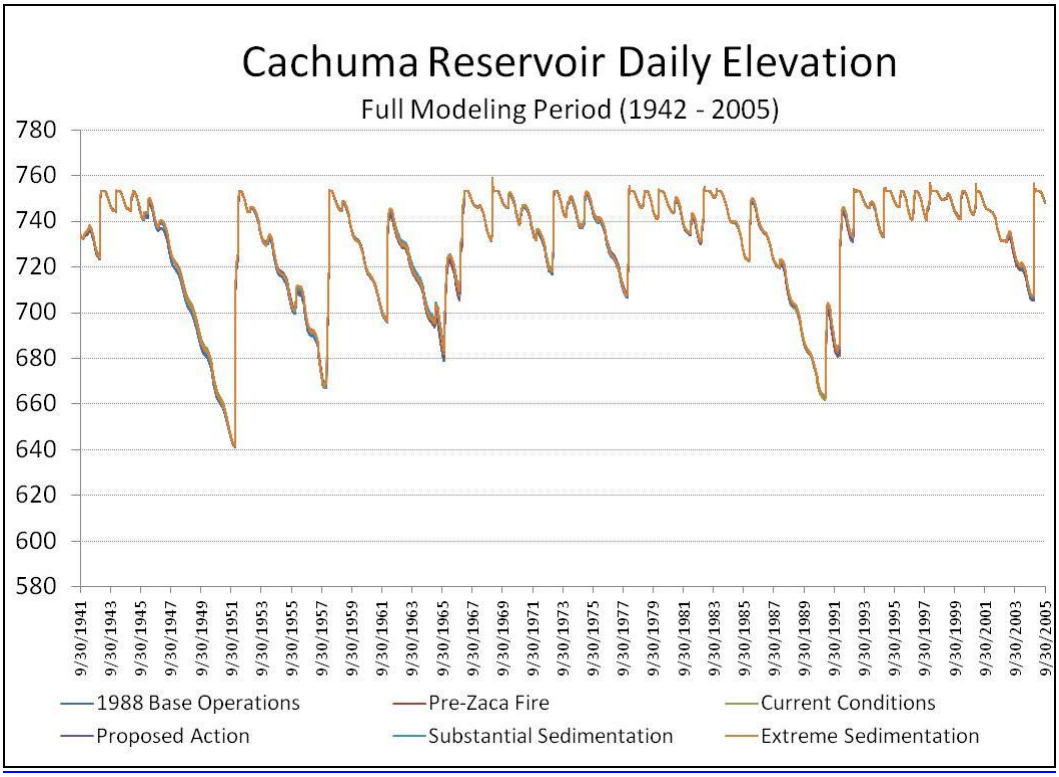
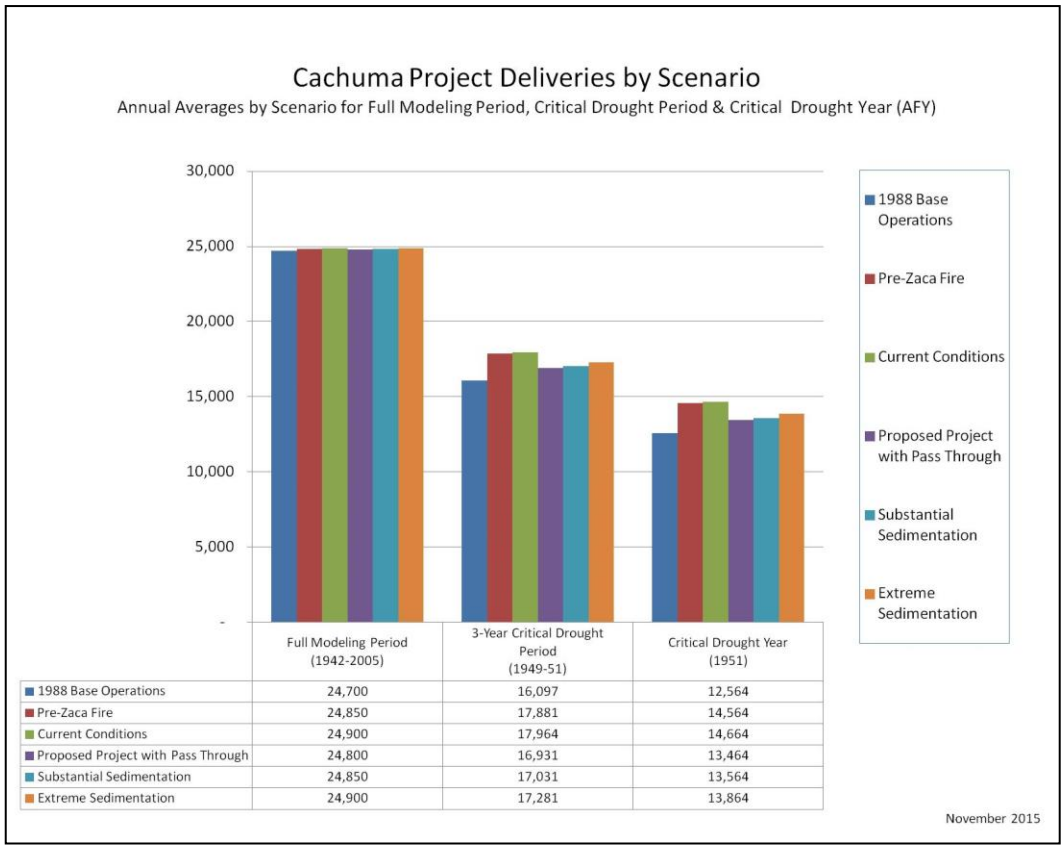


Figure 4 Cachuma Reservoir Daily Elevation – Full Modeling Period



	Full Modeling Period (1942-2005)	3-Year Critical Drought Period (1949-51)	Critical Drought Year (1951)
1988 Base Operations	24,700	16,097	12,564
Pre-Zaca Fire	24,850	17,881	14,564
Current Conditions	24,900	17,964	14,664
Proposed Project with Pass Through	24,800	16,931	13,464
Substantial Sedimentation	24,850	17,031	13,564
Extreme Sedimentation	24,900	17,281	13,864

Figure 5 Cachuma Project Deliveries by Scenario

Water supply effects on the Cachuma Project are illustrated by deliveries of Project Water to the five Member Units under each scenario. Figure 5 illustrates average annual Cachuma Project deliveries to Member Units for the full simulation period (1942-2005), for the 1949-1951 critical drought period, and for the single worst drought year of 1951. Table 3 separates these values by individual Member Unit. Scenarios are limited to three in this table to make a simpler presentation.

Table 3 Cachuma Project Average Annual Deliveries by Member Unit

	Full Modeling Period (1942-2005)			**3-Year Critical Drought (1949-51)**			**Critical Drought Year (1951)**		
	1988 Base Ops.	Current Conditions	Proposed Action with Pass Through	1988 Base Ops.	Current Conditions	Proposed Action with Pass Through	1988 Base Ops.	Current Conditions	Proposed Action with Pass Through
Goleta Water District	8,953	9,026	8,990	5,835	6,512	6,137	4,554	5,316	4,881
City of Santa Barbara	7,951	8,015	7,983	5,182	5,782	5,450	4,044	4,720	4,334
Montecito Water District	2,546	2,567	2,557	1,660	1,852	1,745	1,295	1,512	1,388
Carpinteria Valley Water District	2,702	2,724	2,713	1,761	1,965	1,852	1,374	1,604	1,473
SYRWCD ID#1	2,546	2,567	2,557	1,660	1,852	1,745	1,295	1,512	1,388
Total	**24,700**	**24,900**	**24,800**	**16,097**	**17,964**	**16,931**	**12,564**	**14,664**	**13,464**

Figure 6 shows average annual simulated outflows from Lake Cachuma for each scenario. Outflows include spills, releases for fish, and downstream water rights releases. Table 4 includes data values for Figure 6, as well as simulated daily percentile values for outflows from Lake Cachuma. The 20th percentile represents relatively low outflow conditions; the 50th percentile represents median conditions, the 80th percentile represents outflows during wet conditions, and the 98th percentile represents the high end of the range of outflows.

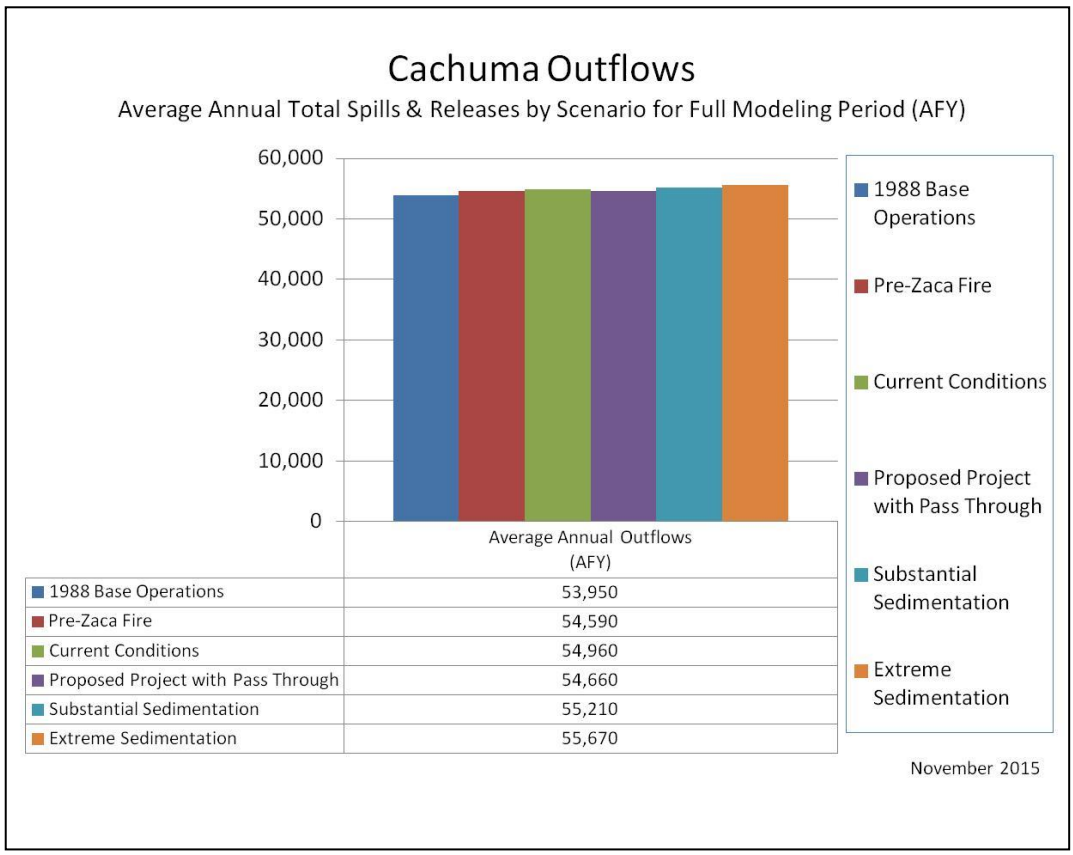


Figure 6 Cachuma Outflows

Table 4 Cachuma Outflows Including Spills and Releases

Scenario	Average Annual Outflows (AFY)	Daily Flows (cubic feet per second)			
		Dry (20th percentile)	Median (50th percentile)	Wet (80th percentile)	High Flow (98th percentile)
1988 Base Operations	53,950	4.5	7.0	35	674
Pre-Zaca Fire	54,590	4.5	7.0	35	688
Current Conditions	54,960	4.5	7.0	35	704
Proposed Action with Pass Through	54,660	4.5	7.0	35	689
Substantial Siltation	55,210	4.5	7.0	35	702
Extreme Siltation	55,670	4.5	7.0	35	682

Lower Santa Ynez River Simulated Lower Santa Ynez River flows are shown in Table 5 for each scenario at three representative locations that represent key hydrologic locations and are used in management programs related to releases for fish and downstream water rights. The 20th percentile values represent relatively dry, low flow conditions. The 80th percentile represents wet conditions, and the 98th percentile values represent high flow conditions.

Table 5 Lower Santa Ynez River Flows (simulated flows for Modeling Period 1942-1993)

Highway 154 Bridge					
Scenario	Average Annual Flow (AFY)	Daily Flows (cubic feet per second)			
		Dry (20th percentile)	Median (50th percentile)	Wet (80th percentile)	High Flow (98th percentile)
1988 Base Operations	44,300	3.0	7.5	33.5	655
Pre-Zaca Fire	44,800	3.0	7.5	33.5	669
Current Conditions	45,200	3.0	7.5	33.5	682
Proposed Action with Pass Through	44,900	3.0	7.5	33.5	671
Substantial Siltation	45,400	3.0	7.5	33.5	685
Extreme Siltation	45,700	3.0	7.5	33.5	694
Solvang Bridge					
Scenario	Average Annual Flow (AFY)	Daily Flows (cubic feet per second)			
		Dry (20th percentile)	Median (50th percentile)	Wet (80th percentile)	High Flow (98th percentile)
1988 Base Operations	47,300	0.0	5.5	27.0	770
Pre-Zaca Fire	47,900	0.0	6.0	27.5	786
Current Conditions	48,200	0.0	6.0	28.0	802
Proposed Action with Pass Through	47,900	0.0	6.0	27.5	789
Substantial Siltation	48,400	0.0	6.0	28.0	805
Extreme Siltation	48,800	0.0	6.0	27.5	816
Lompoc Narrows					
Scenario	Average Annual Flow (AFY)	Daily Flows (cubic feet per second)			
		Dry (20th percentile)	Median (50th percentile)	Wet (80th percentile)	High Flow (98th percentile)
1988 Base Operations	64,400	0.0	3.5	34.5	1,159
Pre-Zaca Fire	65,000	0.0	3.5	34.0	1,160
Current Conditions	65,300	0.0	3.5	34.0	1,160
Proposed Action with Pass Through	65,000	0.0	3.5	34.0	1,161
Substantial Siltation	65,500	0.0	3.5	34.0	1,161
Extreme Siltation	65,800	0.0	3.5	34.5	1,160

As described in Section 3.1.1, water is credited to and stored in Lake Cachuma for the benefit of the Above Narrows and Below Narrows areas. Net credits are the accrued credits less debits resulting from spills or changes in dewatered groundwater storage. Figure 7 shows the simulated average annual net ANA and BNA credits, respectively, for the six scenarios over the full simulation period. Table 6 shows simulated average annual net ANA and BNA credits during the 1949-1951 critical drought period. The much lower values in Table 6 reflect the fact that ANA credits are based on inflow to Lake Cachuma, which is minimal during a critical drought period.

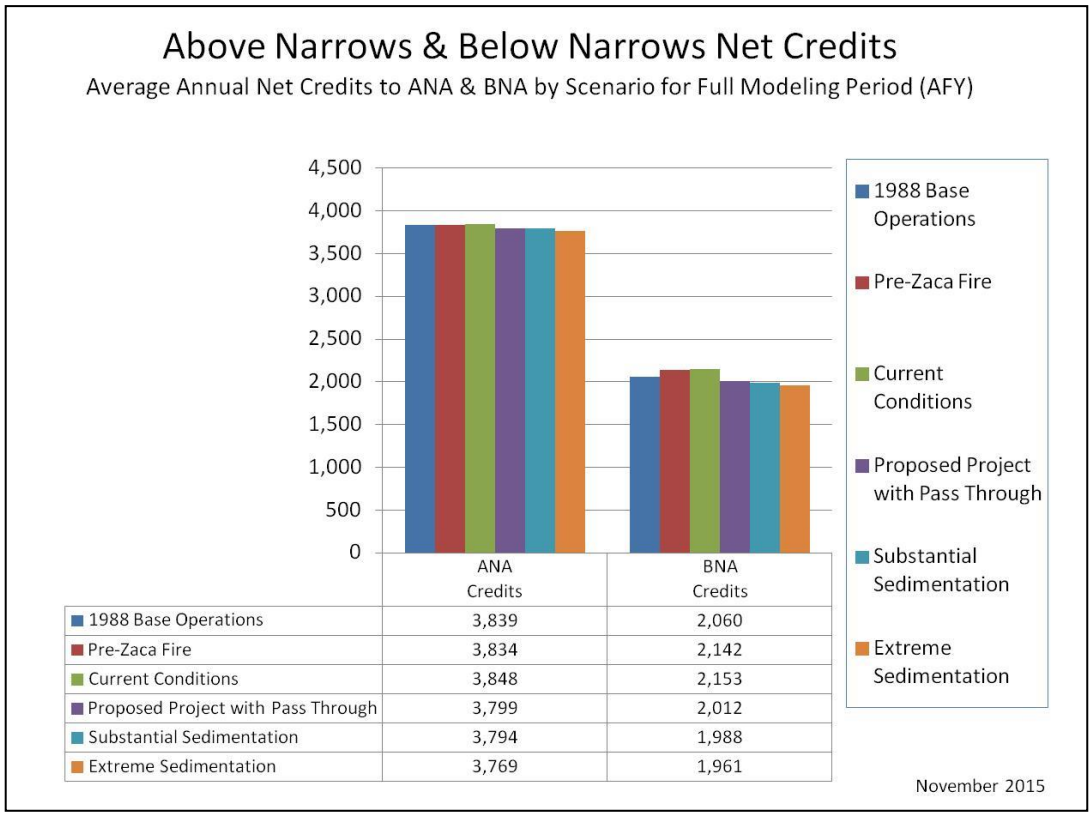
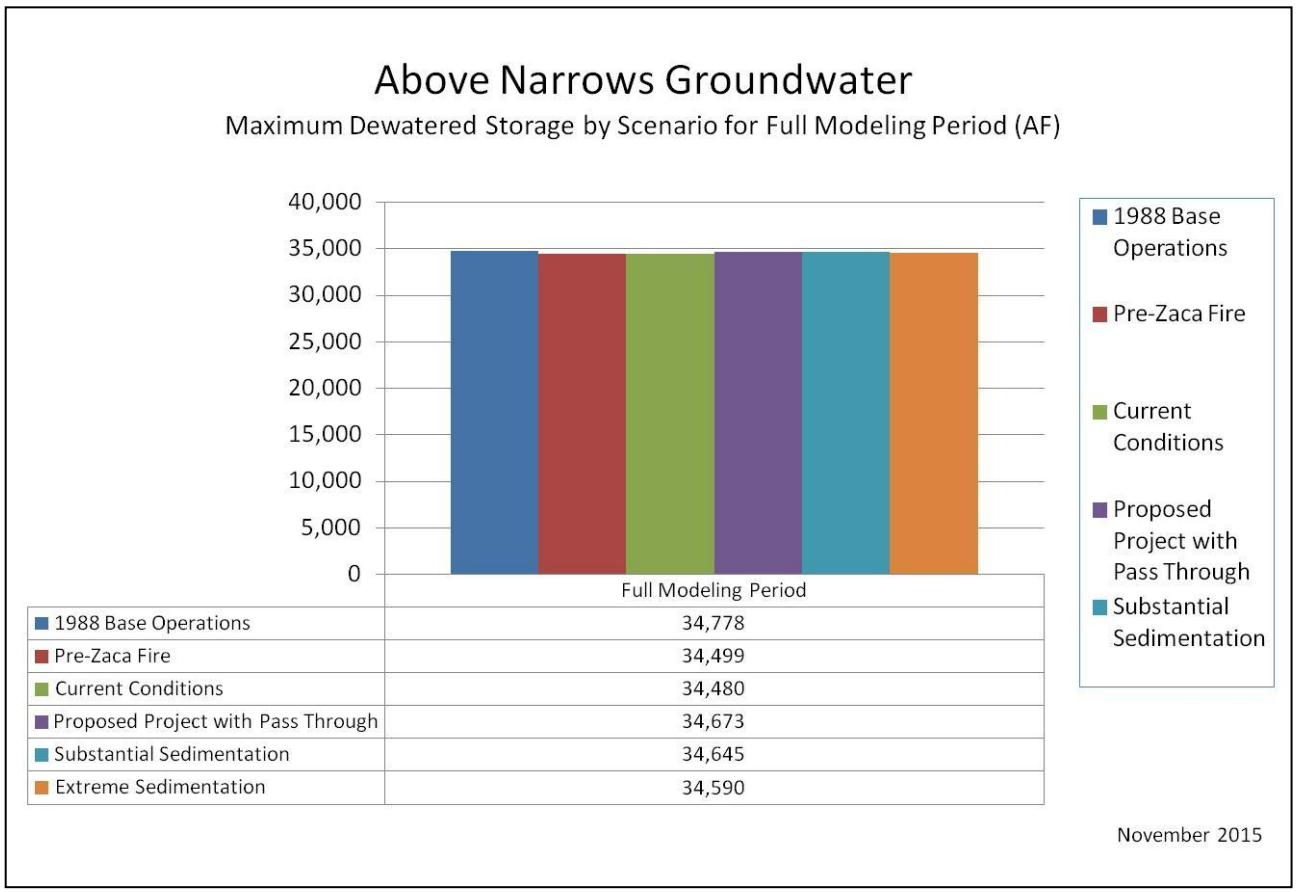


Figure 7 Average Annual Net Credits to ANA and BNA by Scenario for Full Modeling Period

Table 6 Average Annual ANA and BNA Credits by Scenario During Critical Drought Period (1949-51)

Scenario	Net ANA Credits (AFY)	Net Credits BNA Credits (AFY)
1988 Base Operations	749	77
Pre-Zaca Fire	749	77
Current Conditions	749	77
Proposed Action with Pass Through	749	77
Substantial Siltation	749	77
Extreme Siltation	749	77

To illustrate groundwater effects in the Above Narrows area, Figure 8 shows the maximum Above Narrows dewatered groundwater storage over the full modeling period for the six scenarios. The maximums occur during the critical drought period of 1949-1951.



	Full Modeling Period
1988 Base Operations	34,778
Pre-Zaca Fire	34,499
Current Conditions	34,480
Proposed Project with Pass Through	34,673
Substantial Sedimentation	34,645
Extreme Sedimentation	34,590

Figure 8 Maximum Dewatered Storage by Scenario for Full Modeling Period

Percolation of Santa Ynez River flow into the Lompoc groundwater basin, including the net effects of BNA credits, is used to illustrate the water supply effects of the various scenarios on the Below Narrows area. Table 7 shows average annual percolation for the 1949-1951 critical drought period. The values are all the same because there is not enough credit water available to make BNA releases during the critical drought period. Water for Lompoc groundwater recharge is supplied from local tributaries below Bradbury Dam during this period. Figure 9 shows simulated average annual percolation for the full modeling period.

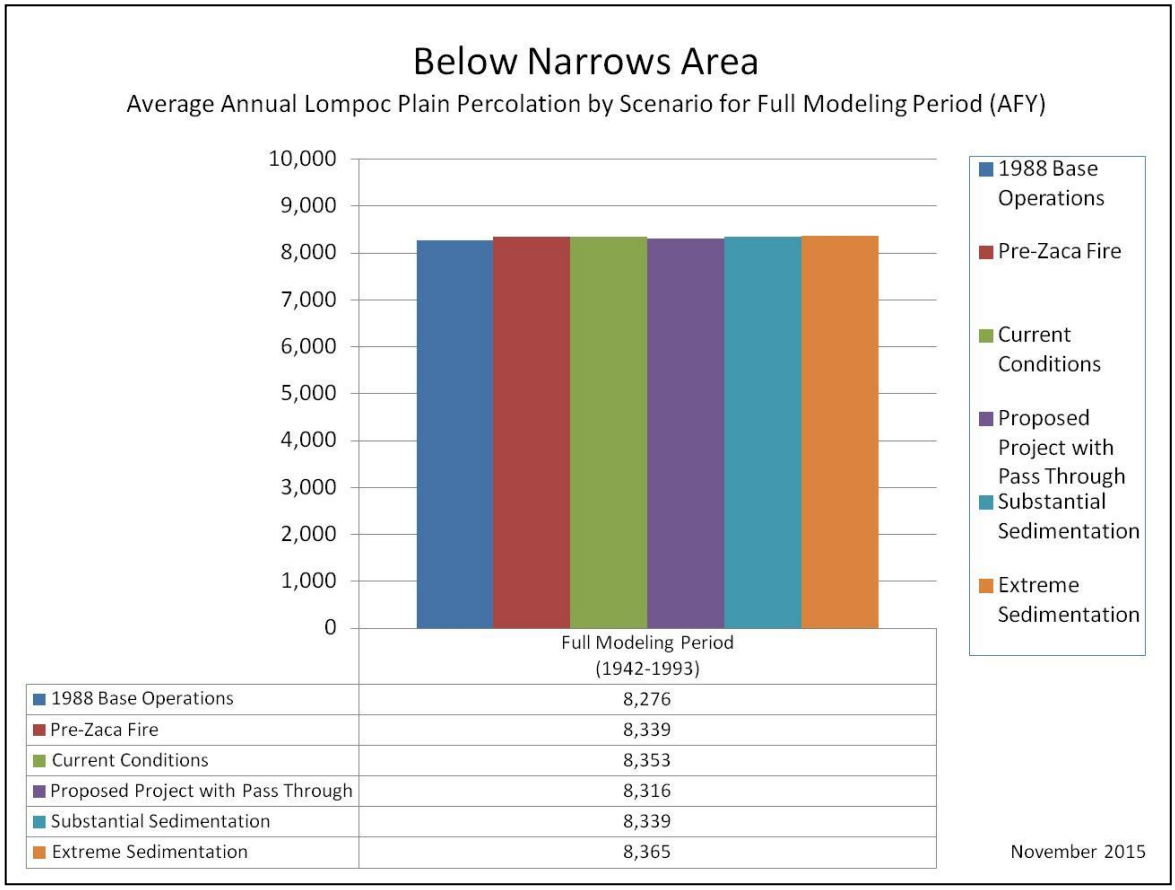


Figure 9 Average Annual Lompoc Plain Percolation by Scenario for Full Modeling Period

Table 7 Average Annual Lompoc Plain Percolation During Critical Drought Period (1949-51)

Scenario	Average Annual Percolation (AFY)
1988 Base Operations	516
Pre-Zaca Fire	516
Current Conditions	516
Proposed Action with Pass Through	516
Substantial Siltation	516
Extreme Siltation	516

Salinity of Santa Ynez River flow at the Lompoc Narrow is used as an indicator of the relative water quality effects of the scenarios. Table 8 shows the 20th percentile (wet conditions), 50th percentile (median conditions), and 80th percentile (dry conditions) values for simulated Lompoc Narrows salinity.

Table 8 Salinity at Lompoc Narrows by Scenario for Full Modeling Period (1942- 1993)

Scenario	Salinity (mg/L)		
	Wet (20th percentile)	Median (50th percentile)	Dry (80th percentile)
1988 Base Operations	750	1,005	1,215
Pre-Zaca Fire	745	1,005	1,215
Current Conditions	745	1,005	1,215
Proposed Action with Pass Through	745	1,005	1,215
Substantial Siltation	740	1,005	1,215
Extreme Siltation	735	1,005	1,215

3.2.3 Environmental Consequences

No Action

Under the No Action Alternative, Reclamation would not execute Warren Act contracts with the City. The non-execution of these contracts would not affect the flows of water in the Santa Ynez River between Gibraltar and Cachuma, since river flow is determined primarily by rainfall, reservoir volume, and diversions from the river. Rainfall and changes in reservoir volume due to siltation are natural phenomena that would not be affected. The City would be expected to continue to maximize diversions from Gibraltar Reservoir through Mission Tunnel as under current conditions, subject to its water rights, the effects of continuing siltation, and the provisions of the Pass Through Agreement. Gibraltar spills would be expected to increase over time, due to continuing siltation, a natural phenomenon unrelated to the No Action Alternative.

There would be no environmental impacts from changes in water conveyance or construction, because water conveyance would continue to occur through existing facilities and no construction would occur.

If Reclamation does not enter into the proposed Warren Act contracts, the City would be expected to invoke the provisions of the Pass Through Agreement that require the parties to make adjustments as necessary to carry out the purposes of the Pass Through Agreement. The environmental effects on water resources at Lake Cachuma and downstream of the lake would be expected to be similar to those described under the modeling scenario entitled "Proposed Action with Pass Through".

Proposed Action

The modeling of the Proposed Action by Stetson[1] indicated that there would be no effect on flows in the Santa Ynez River between Gibraltar and Cachuma because there would be no effect on rainfall or reservoir volume, and no change in the City's ability to maximize diversions through Mission Tunnel. There would be no environmental impacts due to water conveyance or

[1] Includes implementation of the Pass Through Mode concurrent with the Warren Act Contracts (Proposed Action with Pass Through Scenario).

construction, because water conveyance would continue to occur through existing facilities and no construction would occur.

Cachuma Project Operations Under the Proposed Action, a portion of the water that previously flowed from Gibraltar reservoir into Lake Cachuma as Project water or as credits to downstream accounts would be accounted for as the City's non-Project water. Assuming a Gibraltar Reservoir storage capacity of 5,250 AF, the average annual amount of inflow that would be credited to the City (and either conveyed to the City, evaporated, or spilled) is 1,004 AF, or less than 1% of the total Lake Cachuma volume of 195,578 AF and approximately 1% of average historical inflow. Following is a discussion of Stetson's modeled effects on key Cachuma Project operations due to the Proposed Action.

Cachuma Project Water Supply Water supply effects on the Cachuma Project are measured by estimated deliveries of Cachuma Project water to the Member Units, including the effect of any reductions resulting from periodic drought (see Figure 5). Under this scenario, average annual deliveries for the full modeling period are estimated to be approximately equal to "Current Conditions" (within 0.4%) for the full modeling period and to decrease by 1,033 AFY (5.7%) for the three-year critical drought period. Transfers of Project water or ANA water would have a similar effect under the No Action Alternative, as described above.

Declining volume at Gibraltar Reservoir from 1989 to present has resulted in increasing yield to the Member Units at Cachuma (Figure 5) and decreasing yield to the City from Gibraltar Reservoir (Figure 3). The City's election to enter Pass Through mode has the effect of partially offsetting this trend, which reflects the intention of the Pass Through Agreement to minimize the reduction in the City's yield at Gibraltar Reservoir in exchange for the City's deferral of the enlargement of Gibraltar Reservoir.

Lake Cachuma Outflows and Downstream Flows Cachuma outflows (including spills, fish releases and water rights releases) and flow in the Santa Ynez River at various points below Lake Cachuma are illustrated for the various scenarios in Figure 6, Table 4, and Table 5 for dry, median, wet, and high flow conditions. Values are essentially equal for all instances, with the exception of differences of as much as 2% for some of the wet and high flow conditions. The similarities are due to the small amount of the overall river water affected by the change to Pass Through mode, which would not affect the ongoing procedures for fish releases.

Downstream Water Rights The Stetson Hydrologic Report provides information on how water supplies of downstream water rights holders in the Above Narrows and Below Narrows areas are affected under the various scenarios. Credits to the ANA and BNA downstream accounts are reported for each scenario; however, a reduction in credits does not always reflect a negative effect. For example, in many instances rainfall providing recharge to the Above Narrows groundwater basin causes a reduction in ANA credits even though groundwater conditions improve. Therefore, parameters that reflect the physical hydrologic conditions are also reported. For the Above Narrows area, the parameter is the maximum amount of dewatered storage during the modeling period. For the Below Narrows area it is the average annual percolation of river flow into the groundwater basin of the Lompoc Plain.

For the Above Narrows area, average annual net ANA credits for the full modeling period are 3,799 AFY, compared to 3,848 AFY under "Current Conditions", a difference of slightly more than 1% (see Figure 7). Credits during the critical drought period are equal under all scenarios (see Table 6). The physical parameter of maximum dewatered storage, which occurs during the critical drought period, is 34,673 AF compared to 34,480 AF under "Current Conditions", a difference of less than 1%.

For the Below Narrows area, average annual net BNA credits for the full modeling period are 2,012 AFY, compared to 2,153 AFY, a difference of about 7%. The physical parameter of average annual percolation to groundwater water is 8,316 AFY, compared to 8,353 AFY under "Current Conditions", a difference of less than 1%. These effects on downstream water rights would occur with or without the Proposed Action due to the requirements of the Pass Through Agreement as agreed to by all Member Units and the Santa Ynez River Water Conservation District.

Water Quality in Lompoc Area Stetson's estimated values are equal for the Proposed Action and the "Current Conditions" scenarios, reflecting only minor differences in modeled river flow at the Lompoc Narrows (see Table 8).

Cachuma Project Facilities As shown in Figure 4, the estimated daily lake elevations for Cachuma Lake are essentially equal for all scenarios, under dry, median, and wet conditions as the actual amount of water flowing into Lake Cachuma would not change. Accordingly, no impacts on the physical amount of water in Lake Cachuma would occur under the Proposed Action. In addition, there would be no impacts to the Tecolote Tunnel or the South Coast Conduit as the City's non-Project water would be used to meet customer's demands and would be scheduled in the same manner as their Project water. Further, conveyance of the non-Project water would be subject to capacity constraints and in lieu of a like amount of Project water as the City's non-Project water would generally be used first to avoid loss due to evaporation or spill, and would therefore not increase the overall rate of conveyance of water.

City of Santa Barbara Facilities The Proposed Action would not affect the amount of water stored in Gibraltar Reservoir or the Santa Ynez River flows between Gibraltar Reservoir and Lake Cachuma as runoff is the result of rainfall, and would not be affected. Reservoir volumes, and corresponding spill amounts, would continue to change as a result of siltation, which is an ongoing natural process not affected by the Proposed Action. The City's diversions from Gibraltar Reservoir into the Mission Tunnel would be approximately the same as under "Current Conditions", because the City would continue to maximize these diversions in order to reduce the additional cost of storing and conveying non-Project water in and through Cachuma Project facilities.

Under the Proposed Action, as modeled by Stetson, the average annual net yield of Gibraltar Reservoir (including direct diversions through Mission Tunnel and conveyance of non-Project water through Lake Cachuma) is estimated to increase by 414 AFY to 4,330 AFY in the near term as compared to a net yield of 3,916 AFY under the "Current Conditions" scenario. The increase in Gibraltar yield compared to "Current Conditions" reflects requirements of the Pass Through Agreement to allocate some Cachuma Inflow to the City's Pass Through Account in

Lake Cachuma, as discussed in Section 3.2.2 under Cachuma Project Water Supply. This change in yield is due to the City's election to enter Pass Through mode which would occur with or without the Proposed Action. This increase in Gibraltar yield replaces a portion of the yield lost due to ongoing siltation during the years since the agreement was signed and the City agreed to defer the enlargement of Gibraltar Reservoir.

Cumulative Impacts

Cumulative impacts result from incremental impacts of the Proposed Action when added to other past, present, and reasonably foreseeable future actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time. Significance exists if it is reasonable to anticipate a cumulatively significant impact on the environment. Reclamation has reviewed existing or foreseeable projects in the same geographic area that could affect or could be affected by the Proposed Action. As in the past, hydrological conditions and other factors are likely to result in fluctuating water supplies which drive requests for water service actions. Water districts provide water to their customers based on available water supplies and timing, while attempting to minimize costs. It is likely that more districts will request water service transactions in the future due to hydrologic conditions. Each water service transaction involving Reclamation undergoes environmental review prior to approval.

The Proposed Action and other similar projects would not hinder the normal operations of the Cachuma Project and Reclamation's obligation to deliver water to its contractors or to local fish and wildlife habitat. In addition, actions associated with implementation of the 2000 BO, CCWA deliveries into Lake Cachuma, and operational requirements associated with SWRCB water rights orders would be unaffected. As discussed in Section 3.2, Cachuma elevations and Lower Santa Ynez River flows would only be expected to change during the higher flow conditions, and only to a minor extent. Downstream water rights releases would continue with only minor differences as shown in Tables 6 and 7, and Figures 7 through 9. Further, the City's non-Project water would only be allowed to enter Cachuma Project facilities if excess capacity is available and any water stored within Lake Cachuma would be limited to available capacity and would be subject to spill should capacity change over the course of the Warren Act contract(s). As such, the Proposed Action would not limit the ability of other users to make use of the facilities. Since the Proposed Action would not involve construction or modification of facilities, nor interfere with normal operations, there would be no cumulative impacts to existing facilities or other contractors.

3.3 Biological Resources

3.3.1 Affected Environment

The affected environment includes Gibraltar Reservoir, the Santa Ynez River, Lake Cachuma, and the existing facilities that convey water from Lake Cachuma to the City. A species list for this area was obtained from the U.S. Fish and Wildlife Service (Service) Ventura Field Office website (http://ecos.fws.gov/ipac/wizard/trustResourcesList!prepare.action) on January 21, 2014 and covers the following quadrangles: Little Pine Mountain, San Marcos Pass, Lake Cachuma, Santa Ynez, Solvang, Santa Rosa Hills, Lompoc, Surf, Dos Pueblos Canyon, Goleta, Santa Barbara, Carpinteria, and White Ledge Peak. The species list includes species that are under the jurisdiction of NMFS and the Service. The California Department of Fish and Wildlife's

California Natural Diversity Database (CNDDB) was also queried for records of protected species within the vicinity of the affected environment (CNDDB 2014). The information collected above, in addition to information within Reclamation's files, was combined to determine the likelihood of protected species occurrence within the action area. This occurrence information and Reclamation's effects determinations are summarized below in Table 9.

Table 9 Special Status Species with the Potential to occur within the Action Area

Species	Status[1]	Effects[2]	Occurrence in the Study Area[3]
INVERTEBRATES			
El Segundo Blue butterfly *Euphilotes battoides allyni*	E	NE	**Potential**. Historically, this species was not known to occur as far north as Santa Barbara County. This species was reportedly seen at the Vandenberg Air Force Base in 2005 and 2007, but it is uncertain whether it was actually the Blue Segundo Butterfly or just a very similar species.
Vernal pool fairy shrimp *Branchinecta lynchi*	T, X	NE	**Absent.** The Action Area consists of reservoirs, water conveyance facilities, and the Santa Ynez River, which do not provide suitable habitat for this species. Although designated critical habitat overlaps the Action Area along the Santa Ynez River west of Lake Cachuma, the primary constituent elements are not present, and the Santa Ynez River does not provide suitable habitat for this species.
FISH			
Southern Steelhead- Southern California Distinct Population Segment *Oncorhynchus mykiss*	E, X (NMFS)	NE	**Present.** This species is known to occur in the Santa Ynez River, and its tributaries, below Lake Cachuma and there is designated critical habitat for this species in the Santa Ynez River below Lake Cachuma.
Tidewater Goby *Eucyclogobius newberryi*	E	NE	**Present**. There are suitable habitat and CNDDB records of this species within the Action Area in the western portion of the Santa Ynez River.
Unarmored Threespine stickleback *Gasterosteus aculeatus williamsoni*	E	NE	**Potential**. There are no CNDDB occurrences of this species in the Action Area, or in waters connected to the Action Area; however, some potentially suitable habitat is present in the Santa Ynez River.
AMPHIBIANS			
Arroyo toad *Anaxyrus californicus*	E	NE	**Potential.** There is a 2004 CNDDB record of this species east of Gibraltar in the Santa Ynez River.
California tiger salamander *Ambystoma californiense*	E	NE	**Potential.** There are some CNDDB records of this species in the western portion of the Action Area, to the north of the Santa Ynez River.
California red-legged frog *Rana draytonii*	T, X	NE	**Present.** There are suitable habitat and CNDDB records of this species along the Santa Ynez River in the Action Area and there is designated critical habitat for this species along the Santa Ynez River between Gibraltar Reservoir and Lake Cachuma.
BIRDS			
California least tern *Sterna antillarum browni*	E	NE	**Present.** There are CNDDB-recorded occurrences of this species in the western-most portion of the Action Area along the Santa Ynez River.

Species	Status[1]	Effects[2]	Occurrence in the Study Area[3]
California condor *Gymnogyps californianus*	E	NE	**Potential.** There are CNDDB recorded occurrences of California condors, and their nesting habitat, within 10 miles of Lake Cachuma and the Santa Ynez River. California condors may forage near the Action Area.
Least Bell's vireo *Vireo bellii pusillus*	E, X	NE	**Present.** There is suitable habitat and CNDDB recorded occurrences of this species in the eastern portion of Gibraltar Reservoir and along the Santa Ynez River and Designated Critical Habitat for this species is present in the Action Area along the eastern portion of Gibraltar Reservoir.
Light-Footed Clapper rail *Rallus longirostris levipes*	E	NE	**Potential.** There is potentially suitable coastal salt marsh habitat for this species in the western portion of the Santa Ynez River. The nearest CNDDB records of this species occurred in Goleta (now extirpated) and in Carpinteria.
Marbled murrelet *Brachyramphus marmoratus*	T	NE	**Potential**. There are no CNDDB-recorded occurrences of this species near the Action Area. This species may forage in the Ocean near the western portion of the Santa Ynez River, but it is unlikely because there is not suitable nesting habitat (old growth redwood forest) near the Action Area.
Southwestern Willow flycatcher *Empidonax traillii extimus*	E, X	NE	**Present.** There are CNDDB occurrences and suitable habitat for this species along the Santa Ynez River and designated critical habitat for this species is present in the Action Area along the Santa Ynez River between Solvang and Lompoc.
Western Snowy plover *Charadrius alexandrines nivosus*	T	NE	**Present**. There is suitable habitat and a CNDDB record of this species in the western-most portion of the Action Area where the Santa Ynez River meets the Pacific Ocean.
MAMMALS			
Southern Sea otter *Enhydra lutris nereis*	T	NE	**Absent**. This species may occur in near shore coastal habitats to the west of the Action Area, but not within the Action Area itself.
PLANTS			
Beach layia *Layia carnosa*	E	NE	**Absent.** This species requires openings in coastal sand dune habitats, there is an occurrence from 2006 about 4 miles south of where the Santa Ynez River enters the ocean.
Contra Costa goldfields *Lasthenia conjugens*	E	NE	**Absent.** This species grows in vernal pools, swales, moist flats and depressions within grassland habitats, none of which are present within the Action Area. The only nearby CNDDB occurrence of this species has been extirpated.
Gambel's watercress *Rorippa gambellii*	E	NE	**Absent.** This plant grows in swamps and freshwater marshes. There is one wild population left at Vandenberg Air Force Base to the north of the Action Area.
Gaviota Tarplant *Deinandra increscens* ssp. *Villosa*	E	NE	**Present.** This plant grows on marine terraces and in grassland habitats. There are several CNDDB records within one mile of where the Santa Ynez River meets the ocean.

Species	Status[1]	Effects[2]	Occurrence in the Study Area[3]
La Graciosa thistle *Cirsium loncholepis*	E	NE	**Absent.** This plant grows in riparian habitats, often near seeps or in marshes. There is one possibly extirpated CNDDB record from 1990 about a mile south of the Santa Ynez River, but no records within the Action Area.
Lompoc yerba santa *Eriodictyon capitatum*	E	NE	**Present.** This plant grows in maritime chaparral and coastal sage scrub habitats, and sometimes occurs in disturbed areas near roads. There is an extant population at the Vandenberg Air Force Base about 1.5 miles north of the Santa Ynez River.
Marsh Sandwort *Arenaria paludicola*	E	NE	**Absent.** There are no occurrences or extant populations of this plant within the Action Area.
Salt Marsh bird's-beak *Cordylanthus maritimus* ssp. *maritimus*	E	NE	**Absent.** This plant grows in coastal salt marsh habitat, which is present in the western portion of the Santa Ynez River; however there are no known populations in the Action Area.
Ventura Marsh Milk-vetch *Astragalus pycnostachyus* var. *lanosissimus*	E, X	NE	**Absent.** This species did not originally grow in Santa Barbara County, and only occurs in Santa Barbara at Carpinteria Marsh and the Coal Oil Point reserve where they were planted. There is no designated critical habitat for this species within the Action Area.

1 Status= Listing of Federally special status species
E: Listed as Endangered
T: Listed as Threatened
X: Critical Habitat designated for this species
NMFS: Species under the Jurisdiction of the National Oceanic & Atmospheric Administration Fisheries Service.
2 Effects = Effect determination
NE: No Effect from the Proposed Action to federally listed species
3 Definition Of Occurrence Indicators
Absent: Species not recorded in study area and/or habitat requirements not met
Potential: Species has the potential to occur in the Action area
Present: Species recorded in or near Action area and habitat present

3.3.2 Environmental Consequences

No Action

Under the No Action Alternative, Reclamation would not execute Warren Act contract(s) with the City. The non-execution of these contracts would not affect the flows of water in the Santa Ynez River between Gibraltar and Cachuma, since river flow is determined primarily by rainfall, reservoir volume, and diversions from the river. Rainfall and changes in reservoir volume due to siltation are natural phenomena that would not be affected. The City would be expected to continue to maximize diversions from Gibraltar Reservoir through Mission Tunnel as under current conditions, subject to its water rights, the effects of continuing siltation, and the provisions of the Pass Through Agreement. Gibraltar spills would be expected to increase over time, due to continuing siltation, a natural phenomenon unrelated to the No Action Alternative. There would be no environmental impacts from changes in water conveyance or construction, because water conveyance would continue to occur through existing facilities and no construction would occur. The City would likely call upon the parties to the agreement to make "adjustments as may be necessary to carry out the purposes" of the Pass Through Agreement pursuant to Section X. I. of the agreement (see Appendix A). The most straight forward way to make such adjustments would be by transfers of Project water and/or ANA water among the parties as described in the Pass Through Agreement (see Appendix A). Consequently, the

environmental effects on biological resources at Lake Cachuma and downstream of the lake would be expected to be similar to those described under the Proposed Action.

Proposed Action

The Proposed Action would not involve any construction, modification of existing facilities, or ground-disturbing activities. The City would be expected to continue to maximize diversions from Gibraltar Reservoir through Mission Tunnel, subject to water rights, the effects of siltation, and operations agreements, as under "Current Conditions" and the No Action Alternative. Therefore, the Proposed Action would have no effect on potential habitat in Gibraltar Reservoir, near Mission Tunnel, or in the Santa Ynez River between Gibraltar Dam and Bradbury Dam. Lake Cachuma inflows would not change under the Proposed Action, because there would be no effect on the amount of water that would enter Cachuma from Gibraltar Reservoir.

Specific hydrologic conditions that may change under the Proposed Action were analyzed in the Stetson Hydrologic Report (see Section 3.2.2). The potential effects of these changes on federally listed species are discussed individually in further detail below, with an emphasis on the Southern California Distinct Population Segment of steelhead (*O. mykiss*).

Frequency of Daily Elevations at or above Surcharge and Spill Levels Analysis of data developed for the Stetson Hydrologic Report found that average daily elevations in Lake Cachuma under the "Proposed Action with Pass Through" scenario would be very similar to those under the "Current Conditions" scenario, decreasing by about 0.01% (Stetson 2013). This minor decrease would diminish over time as Gibraltar Reservoir continues to lose capacity from ongoing siltation. By the time Gibraltar Reservoir capacity decreases to 2,000 AF, daily elevation levels in Lake Cachuma would return to current conditions, and would then increase to slightly above the levels predicted under the "Current Conditions" scenario. Gibraltar Reservoir has historically lost an average of 210 AF of storage per year, and will likely reach the 2,000 AF capacity in about 15½ years, although it may reach this point sooner if a fire, or another natural event, significantly increases siltation rates. Assuming Gibraltar siltation rates continue at 210 AFY, the frequency of daily elevations at or above the full reservoir levels (750 feet without surcharge and 753 feet with surcharge) in Lake Cachuma would decrease for about 15½ years; this would result in Lake Cachuma being above the 750 foot elevation for an average of about 1 day less than under "Current Conditions", in years in which Lake Cachuma rises above the 750 foot level. Furthermore, the frequency of spill years and years with spills greater than 20,000 AF would not change. The Fish Conservation Pool accounts and Mainstem rearing target flows that are dependent on spills would not be affected because they are based on surcharge or spill years, and the frequency of spill and surcharge years would not change under the Proposed Action with Pass Through scenario. The minor temporary change in daily elevation values would have no effect on *O. mykiss*, other federally protected species that occur within the Santa Ynez River, or Critical Habitat.

Lower Santa Ynez River Flows The Stetson Hydrologic report found that, under the "Proposed Action with Pass Through" scenario, Lower Santa Ynez River flows at various points along the river would be the same as under "Current Conditions" under dry (20^{th} percentile) and median flow rates, up to 1.8% less during wet (80^{th} percentile) flow rates, and up to 1.6% less during high (98^{th} percentile) flow rates (see Table 5). These minor decreases in flows would diminish as Gibraltar Reservoir continues to lose capacity to siltation. Once Gibraltar reaches

the 2,000 AF storage capacity, Lower Santa Ynez River flows would increase to be equal to or slightly above "Current Conditions". The initial slight decreases in Lower Santa Ynez River flows would occur in the wettest (80^{th} percentile and above) years when flows in the Lower Santa Ynez River are above target flows and adequate passage for *O. mykiss* is provided. The number of fish passage days, defined as times when the flows in the Alisal Reach are greater than or equal to 25 cubic feet per second and when the lagoon that connects the Lower Santa Ynez River to the Pacific Ocean is open, would not decrease under the "Proposed Action with Pass Through" scenario. The initial minor decreases in Lower Santa Ynez River flows during wet and high flow years would have no effect on *O. mykiss*, other federally protected species that occur within the Santa Ynez River, or Critical Habitat.

Cachuma Project Water Supplies As discussed in Section 3.2.3, the Stetson Hydrologic Report found that the "Proposed Action with Pass Through" scenario would result in decreases to Cachuma Project water supplies, compared to the "Current Conditions" scenario, during periods when the reservoir does not spill. Project water deliveries could decrease by about 8.18% in a single critical drought year and may decrease by as much as 5.75% over the course of a three-year critical drought period. Average annual Project water deliveries would decrease by about 0.4% over the full modeling period (see Table 3). The following discussion analyzes these decreases for potential effects on biological resources.

In most years, when Lake Cachuma does not spill, the water required to meet fish target flows in Hilton Creek and the Highway 154 Reach is taken first from any remaining surcharged rearing supplies and is then taken from Cachuma Project supplies. Even though Cachuma Project water supplies would decrease under the Proposed Action, perennial target flows in Hilton Creek and the Highway 154 Reach would continue to be met per the requirements of the 2000 BO (NMFS 2000) or any future Cachuma Project operations biological opinion. The frequency of daily elevation values at or below the level at which pumping to Hilton Creek occurs, via the existing Hilton Creek Watering System, is not expected to change under the Proposed Action, therefore, the Proposed Action would not have an effect on water delivery to Hilton Creek.

Reductions in Project water supplies during critical drought years as described in the 2000 BO may cause critical drought operations to be triggered sooner than under "Current Conditions". This difference is expected to be negligible because Project water supplies would be reduced by no more than about 1,200 AF. In an average day, Lake Cachuma loses about 121.5 AF of water from evaporation, releases for minimum fish target flows, and deliveries of Project water, so 1,200 AF of water could be lost from the reservoir within about 10 days of normal operation. Based on this information, the Proposed Action would not be expected to trigger critical drought operations any more than two weeks sooner than they would be triggered under the "Current Conditions" scenario.

The reservoir elevation at which critical drought operations would be triggered is variable because, in addition to Project supplies, the reservoir contains water from several different accounts including: downstream water rights accounts, the fish passage account, the adaptive management account, and other water temporarily stored in the reservoir. While it is possible to develop general estimates of when critical drought operations may be triggered, it should be noted that the precise week or month at which Project water supplies would actually reach the

critical drought threshold cannot be reasonably predicted in the modeling because it would depend on several unpredictable factors like rainfall, extent of carryover storage and drought reductions in water usage by Member Units. Furthermore, Reclamation is currently in consultation with NMFS on critical drought operations, which may result in changes to operational triggers. While we cannot accurately predict the point in time at which critical drought operations would be triggered, the Proposed Action may cause critical drought operations to be triggered sooner. This potential change in timing would have no effect on *O. mykiss* because the timing of critical drought operations is determined largely by natural phenomena outside of Reclamation's control (i.e. drought) and would continue to be highly variable and unpredictable under both the Proposed Action and No Action alternatives.

For the reasons stated above, the decreases in supplies of Cachuma Project water would have no effect on *O. mykiss*, other federally protected species within the Santa Ynez River or Lake Cachuma, or Critical Habitat.

Water Rights Credits The Stetson Hydrologic Report shows that under the "Proposed Action with Pass Through" scenario, average annual ANA credits would decrease by about 1% (approximately 49 AF) and average annual BNA credits would decrease by an average of about 6% (approximately 141 AF) , as compared to "Current Conditions". Water rights releases generally begin in the summer months and continue into early fall, and are normally not necessary in wet or spill years when there is sufficient water in the Lower Santa Ynez River to recharge groundwater basins (Reclamation 2013). As the timing of the water rights releases are outside the *O. mykiss* migration and spawning seasons, the slight decreases in water rights credits would have no effect on *O. mykiss* migration or spawning. Water quality conditions in these lower reaches are controlled by geomorphic and ambient weather conditions and, therefore, are not affected by releases from Bradbury Dam (Reclamation 2013, R2 Resource Consultants 2013a, and R2 Resource Consultants 2013b). Water rights releases are used to recharge the Above Narrows groundwater basin, or both the Above Narrows and Below Narrows groundwater basins. The 1% decrease in ANA credits is not expected to have an effect on *O. mykiss* in Hilton Creek or the Lower Santa Ynez River because water rights flows would still be sufficient to improve summer rearing habitat within 5½ miles of Bradbury Dam during the water rights releases. Furthermore, the minor decrease in ANA credits would be neutralized in spill or wet years, so there really would be no overall difference in ANA credits between the "Current Conditions" and "Proposed Action with Pass Through" scenarios. The 6% decrease in BNA credits is also not expected to have an effect on *O. mykiss* because the water rights flows would be sufficient to deliver water below the Lompoc Narrows, and would therefore continue to improve rearing habitat within 5½ miles of Bradbury dam for the duration of the releases, as under "Current Conditions". As minor decreases in ANA and BNA Water Rights credits would have no effect on *O. mykiss*, other federally protected species that occur within the Lower Santa Ynez River, or Critical Habitat, Reclamation has determined that the Proposed Action would have *No effect* to proposed or listed species or critical habitat under the Endangered Species Act of 1973, as amended (16 U.S.C. §1531 et seq.), and no take of birds protected under the Migratory Bird Treaty Act (16 U.S.C. §703 et seq.).

Cumulative Impacts

As the Proposed Action is not expected to result in any direct or indirect impacts to biological resources, there would be no cumulative impacts.

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Section 4 Consultation and Coordination

4.1 Public Review Period

Reclamation intends to provide the public with an opportunity to comment on the Draft Finding of No Significant Impact and Draft Environmental Assessment during a 30 day public review period.

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Appendix A

Upper Santa Ynez River Operations Agreement

Agreement No. 15,070
(Includes revised Appendix C-1
dated 8/2/89)

UPPER SANTA YNEZ RIVER OPERATIONS AGREEMENT

This AGREEMENT, dated this 1st day of August, 1989, is by and between

CITY OF SANTA BARBARA, a municipal corporation ("City"),

and

CARPINTERIA COUNTY WATER DISTRICT
GOLETA WATER DISTRICT
MONTECITO WATER DISTRICT
SUMMERLAND COUNTY WATER DISTRICT
SANTA YNEZ RIVER WATER CONSERVATION DISTRICT
SANTA YNEZ RIVER WATER CONSERVATION DISTRICT,
IMPROVEMENT DISTRICT NO. 1
("Downstream Purveyors")

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Recitals

1. In 1920, the City completed construction of its Gibraltar Dam and related facilities ("Gibraltar") pursuant to a Notice of Appropriation posted in 1904. The City's operation of this new water supply facility led to litigation with downstream riparian interests entitled Gin Chow, et al. v. City of Santa Barbara ("Gin Chow"); the litigation culminated in a Superior Court judgment establishing the rights of the various parties to the lawsuit; the judgment was ultimately upheld by the California Supreme Court. Since the Gin Chow judgment was rendered, there have been occasional disagreements between the City and various downstream riparian and appropriative interests as to whether the City's mode of operating Gibraltar was in compliance with the judgment. One purpose of the following agreement is to resolve some of those differences. It is intended as a compromise, or physical solution, to clarify these pre-existing, senior rights, to maximize the use of Santa Ynez River water for all users as contemplated and directed by Article X, Section 2 of the Constitution of the State of California, and to settle existing litigation and to avoid future litigation.

2. In 1983, the City and the California Division of Safety of Dams agreed that Gibraltar Dam would be strengthened to withstand the maximum probable earthquake. The City immediately began planning and engineering a project to reinforce the dam, a project which is required to be completed no later than December 1990 ("Gibraltar Strengthening Project"), which project also includes the buttressing of the existing dam to permit its possible future enlargement. In May, 1988, some of the Downstream Purveyors instituted an action against the City with respect to this project, contending that it was the beginning of a project to enlarge Gibraltar Dam which would have significant adverse impacts on water users downstream and would diminish the natural flow of the Santa Ynez River; the case is captioned Montecito Water District v. City of Santa Barbara, Santa Barbara Superior Court No. 171410 (the "lawsuit").

3. Since Gibraltar was constructed, the reservoir has been gradually losing capacity to store water due to siltation. This problem was first addressed by the City in 1949 when it raised the height of the dam. The City has also tried to remove silt by means of dredging, although that approach has proven both expensive and difficult over the long term due to inadequate sites to place the dredge material. In 1985, the City began planning efforts to again raise the height of the dam in order to increase the storage capacity of the reservoir. Gibraltar had an estimated storage capacity as of May 15, 1988 of 8,567 acre-feet (AF) at elevation 1400.00 feet Mean Sea Level (MSL) and the City has drafted from Gibraltar an average of 6,120 acre-feet per year (AFY) from 1969 through 1987. (A September 1986 silt survey prepared for the City and used by the United States Geological Survey based on the spillway elevation 1399.82 feet MSL resulted in a storage capacity determination of 8240 AF. A concurrent (October 1986) topographic survey prepared for the City using aerial photogrammetry covering the lake elevation of 1392.5 feet MSL demonstrated the existence of additional storage capacity. The staff of the Santa Barbara County Flood Control and Water Conservation District utilized the information from both surveys and calculated the

storage capacity for Gibraltar Reservoir which resulted in the numbers used in this agreement.)

4. The plan to raise the height of the dam has encountered some difficulties, most notably the potential impact of the project on a bird listed as an endangered species, the Least Bells Vireo. In addition, a number of water purveyors and other interests downstream of Gibraltar have expressed their concern that enlargement of Gibraltar could have a detrimental impact on the yield from, and feasibility of, the existing Cachuma Project, a proposal for a Cachuma Enlargement Project, and an adverse impact on the interests of riparian interests downstream of Bradbury Dam. Moreover, there is disagreement between the City and downstream interests as to whether or not the dam raising project may be undertaken pursuant to the water rights recognized in the Gin Chow judgment; litigation has been threatened against the City if it proceeds with the project.

5. In January, 1987, staff of the Santa Barbara County Flood Control and Water Conservation District (hereinafter "Flood Control District") put forth a proposal under which the City would defer enlarging Gibraltar in exchange for a stabilization of its current yield from Gibraltar by gradually transferring its diversions of water from Gibraltar Reservoir to Cachuma Reservoir as the former experiences storage reductions due to siltation. Since the proposal was made, the parties hereto have been negotiating in an attempt to arrive at a comprehensive agreement which achieves the various goals of the parties.

6. The City is empowered to enter into this agreement by virtue of its home rule authority recognized by Article 11, §7 of the California Constitution and as stated in Santa Barbara City Charter §400. This Agreement was specifically approved by ordinance of the Santa Barbara City Council.

7. The Downstream Purveyors other than the Santa Ynez River Water Conservation District ("SYRWCD") and its Improvement District No. 1 ("I.D. No. 1") are empowered to enter into this Agreement by virtue of California Water Code Section 30,000 et seq. SYRWCD and I.D. No. 1 execute this agreement pursuant to their powers as described in California Water Code Section 74,000 et seq. (the Water Conservation District Law of 1931) and specifically Part 5, Article 4, Chapter 6, which authorizes the districts to commence and compromise, in the name of the district, any action or proceeding (a) involving or affecting the ownership or use of water or water rights within the district, used or useful for any purpose of the district, or of common benefit to the lands situated therein; (b) to prevent interference with or diminution of the natural flow of any stream or streams or unnavigable river or rivers, including the natural subterranean supply of water therefrom, which may be used or useful for any purpose of the district, or a common benefit to the lands within the district or its

inhabitants. This Agreement has been approved by the governing bodies of each of the Downstream Purveyors, and the officials executing this Agreement for each Downstream Purveyor have been authorized to do so. The Santa Ynez River Water Conservation District ("SYRWCD"), in executing this Agreement, is acting for the common benefit of the lands situated within the SYRWCD's boundaries and on behalf of all landowners and public entities located therein, except the City of Lompoc if it chooses to join this agreement as a party as provided in Section X, I.

8. The United States Bureau of Reclamation ("USBR") constructed the Cachuma Project pursuant to an agreement with the Santa Barbara County Water Agency ("SBCWA") dated September 12, 1949 (No. 175r-1802). The yield from the Cachuma Project is shared by the initial parties to this agreement pursuant to a set of agreements between those parties and the SBCWA ("Member Unit Contracts"). The USBR operates the Cachuma Project pursuant to permits issued by the State Water Resources Control Board, which, among other things, require the USBR to collect certain data, to maintain essential records relating to project operations and to make releases below Bradbury Dam for the protection of downstream water rights.

9. The parties, after careful analysis, have determined that there is no possibility that the execution and implementation of this agreement will have a significant adverse effect on the environment. Actual operation of Gibraltar will remain substantially unchanged. The siltation of Gibraltar Dam is a natural condition recognized but not created by the parties. The deferral of an enlargement of Gibraltar Dam as contemplated by this agreement is not a project under CEQA. Any enlargement of Gibraltar Dam is not a part of this agreement and would require appropriate environmental review should it ever occur. The exchange of water between the City and I.D. No. 1 involves marginal increases in downstream releases of water which would otherwise spill from Gibraltar Dam due to siltation. It involves no change in use of water or operation by I.D. No. 1. The transfer of Cachuma Project water to the City is provided for in existing contracts. New accounting procedures are included in the agreement for the purpose of assuming the maintenance of the status quo. Any enlargement of the Cachuma Project is not a part of the agreement and is presently undergoing environmental review. Any conjunctive use program implemented by the City is not a part of this agreement and would require appropriate environmental review should it occur.

NOW, THEREFORE, in consideration of the above Recitals and the mutual promises made herein, the parties agree as follows:

I. Definitions

A. **Cachuma Enlargement Project** means enlargement of the Bradbury Dam and Cachuma Reservoir either as an "in lieu project" undertaken pursuant to the State

Water Contract dated February 26, 1963, as amended, between the State of California and the Flood Control District or otherwise.

B. **Cachuma Project** means Bradbury Dam, Lake Cachuma (hereinafter referred to as Cachuma Reservoir), Tecolote Tunnel, the South Coast Conduit and appurtenant water storage and transmission facilities constructed by the USBR.

C. **Cachuma Project Member Unit Contract** means those certain agreements for the furnishing of water from the Cachuma Project between the City, the Downstream Purveyors and the Santa Barbara County Water Agency entered into between September 12, 1949 and December 27, 1954.

D. **City** means the City of Santa Barbara, a municipal corporation.

E. **Downstream Purveyors** means Carpinteria County Water District, Goleta Water District, Montecito Water District, Summerland County Water District, Santa Ynez River Water Conservation District, and Santa Ynez River Water Conservation District, Improvement District No. 1. The term also includes the City of Lompoc if it elects to execute this agreement pursuant to Section X, I.

F. **Gibraltar Enlargement Project** means the creation or enlargement of water storage capacity of any water supply project or projects upstream of the Cachuma Project on the Santa Ynez River or any of its tributaries, including the Gibraltar Dam and Reservoir. As to the Gibraltar Dam and Reservoir, it means increasing the reservoir storage capacity above its approximate 1988 storage capacity of 8,567 AF (calculated at elevation 1400.00 feet MSL) by either (i) raising the height of Gibraltar Dam, (ii) dredging, or (iii) any other means. Gibraltar Enlargement Project does not include maintenance or cleaning of existing facilities such as the Mono Debris Basin, including removal of silt therefrom, nor activities involving any facilities associated with Mission Tunnel and other facilities located south of the Santa Ynez Mountains.

G. **Santa Ynez River Water** means water which originates within the boundaries of the Santa Ynez River watershed, excluding water which, through seepage or infiltration, is delivered to the City through Mission Tunnel.

H. **USBR** means the United States Bureau of Reclamation.

I. **Water Year** means that period commencing May 15 and ending on May 14 of the following year, or such other period as may be subsequently selected by the parties.

II. Gibraltar Enlargement Project Deferral

A. Purpose. The Downstream Purveyors seek to have the City postpone or terminate efforts to construct the Gibraltar Enlargement Project in order to remove the perceived threat the City's plan may pose to the Cachuma Enlargement Project, so long as the Cachuma Enlargement Project is actively under consideration by its potential local sponsors and participants, is in the process of administrative review and permitting, is in the process of actual construction, or has been completed and is delivering water pursuant to contracts with its local participants.

B. Deferral. The City will not undertake commencement of construction of a Gibraltar Enlargement Project except in accordance with the following limitations:

1. The City shall not commence construction of a Gibraltar Enlargement Project until July 1, 1995 in any event.

2. The City shall not commence construction of a Gibraltar Enlargement Project prior to July 1, 1997 if, prior to July 1, 1995:

(a) the Cachuma Enlargement Project has been approved and permitted by all federal and state agencies with jurisdiction over the project; and

(b) each public agency or private party which will receive water from the Cachuma Enlargement Project has approved that participant's share of the Project financing and has executed the necessary contracts to participate, and those contracts are sufficient to assure that the local share of the project cost will be fully paid.

3. The City shall not commence construction of a Gibraltar Enlargement Project after July 1, 1997 unless one of the following circumstances exists:

(a) construction of the Cachuma Enlargement Project is not commenced prior to July 1, 1997;

(b) construction of the Cachuma Enlargement Project has commenced but has been abandoned, as defined herein; or

(c) the Cachuma Enlargement Project is completed but (i) deliveries of water to the City from the Cachuma Enlargement Project (not including water which the City is entitled to receive under its existing Member Unit Contract) are reduced, for a period of three water years, below fifty percent (50%) of the quantity of water stated as the City's Retained Rights under the Water Supply Retention

Agreement between the City and the Flood Control District dated June 25, 1985, as amended, not including any supplemental rights to State Water Project Water from the Cachuma Reservoir acquired by the City, (ii) the delivery reduction is caused by a condition other than a drought, and (iii) there is little reasonable likelihood that full deliveries will be recommenced within the subsequent three (3) years; provided, however, that if the City is not a participant in the Cachuma Enlargement Project, this paragraph (c) is not applicable.

C. Definitions.

1. "Commencement" Defined. For purposes of this Section II, "commence construction of a Gibraltar Enlargement Project" means any of the following activities as they may be required to enlarge the capacity of Gibraltar Reservoir above its 1988 level:

(a) Approving or executing a construction contract.

(b) Adoption of a project description under CEQA or NEPA, or other subsequent activities required by those statutes.

(c) Filing an application for a permit from a state or federal agency.

For purposes of this Section II, "commencement of construction of the Cachuma Enlargement Project" means the first act of physical construction following the contract award for such construction.

2. Cachuma "Abandonment" or "Abandoned" Defined. Abandonment of the Cachuma Enlargement Project shall be deemed to have occurred if either (a) construction of that project is interrupted for whatever reason and no physical work on the facility has occurred for a consecutive period of eighteen (18) months, or (b) the entity charged with the obligation to construct the Cachuma Enlargement Project has expressly declared that the project will not be constructed and further work has been terminated.

D. Other Preparatory Activities Permitted. The following preparatory activities shall not be considered "commencement of the Gibraltar Enlargement Project" for purposes of this agreement: engineering studies, feasibility studies, establishment of replacement habitat for the Least Bells Vireo and construction of silt dams to slow the rate of siltation of the Gibraltar Reservoir, provided any such silt dam does not result in any net increase in water storage capacity above Gibraltar's 1988 water storage

capacity. The Downstream Purveyors agree to take no actions which might hinder, obstruct, impair or delay any City efforts authorized by this paragraph D.

E. Notice of Commencement. In the event the City elects to commence the Gibraltar Enlargement Project, it shall provide ninety (90) days written advance notice to each of the Downstream Purveyors prior to any act constituting commencement of the project.

III. City's Diversions; Base Operation.

A. Diversion Without Downstream Mitigation. The City is permitted to divert to use, through its Gibraltar facilities and other facilities historically associated therewith (except facilities associated with diversions from Devil's Canyon), an amount of water not exceeding the quantity calculated using the Base Operation (Appendix C), and shall have no obligation to mitigate the impact of those diversions, if any, on any downstream facilities, owners, interests, or projects, including but not limited to the Cachuma Reservoir or any of the Downstream Purveyors.

B. Purpose is to Compromise. The parties recognize that the diversion level under the Base Operation was determined by utilizing the following amounts, both of which were reached through a negotiated compromise among the parties as set forth in Section VII, B: (i) the City's entitlement under the Gin Chow judgment to annually divert up to Four Thousand One Hundred Eighty Nine (4,189) AFY of ordinary flows, and (ii) an additional amount of water which the City is permitted to divert under a definition of "storm, freshet and flood flows". It is understood that the diversions authorized by this Section III do not represent an agreement by the parties as to the meaning of the Gin Chow judgment but, rather, represent a compromise to avoid litigation over the City's water rights and manner of operating Gibraltar Reservoir, which compromise is expressed in Section VII of this agreement and is subject to the limitations stated in Section X, B.

C. Long Term Yield. The parties have determined that the City would have been able to divert, between 1918 and 1979, a long term (62 year) average of approximately five thousand one hundred sixty (5,160) AFY from Gibraltar Reservoir if the City had operated that facility in accordance with the Base Operation criteria stated herein.

IV. Pass Through Water.

A. Purpose. The purpose of this Section IV is to minimize the reduction in the amount of water the City diverts from the Santa Ynez River as a result of siltation of Gibraltar and consequent loss of its storage capacity.

B. Pass Through Operations. To the extent that the City's ability to divert water from Gibraltar is impaired due to reduction in storage capacity of Gibraltar due to siltation, the City shall reduce its diversions from Gibraltar and increase the level of its deliveries from Cachuma pursuant to the procedures set forth in Appendix D so that the reduction in supply of Santa Ynez River Water to the City is minimized. This quantity of water diverted from Cachuma Reservoir shall be known as the "pass through water" and the operational mode in which this Section IV is implemented shall be known as "pass through operations." Pass through operations shall be deemed to have commenced at such time as the City elects to do so, which election may only be made at the end of a Mitigation Calculation Interval or pursuant to Section V, H.

V. Downstream Mitigation.

A. Purpose. The purpose of this Section V is to optimize the yield from the Santa Ynez River by permitting the City to divert to use water in excess of the use which would have occurred under Base Operations pursuant to the procedures set forth in Appendix C, and to provide for the complete mitigation of the downstream impacts of any such increased diversion by having the City relinquish a specified annual amount of water it is contractually entitled to receive from the Cachuma Project and to make adjustment to the manner in which inflow to Cachuma Reservoir is calculated pursuant to Section VI. This arrangement is beneficial to the Downstream Purveyors in that it increases the amount of water in the Cachuma Project available to them since the City will be relinquishing entitlement to Cachuma deliveries it might otherwise receive. It is beneficial to the City in that it permits the City to approximate its historical levels of diversion from Gibraltar until Gibraltar's siltation has made such diversion levels impractical.

B. Definition: "Spilling" of Cachuma Reservoir. For purposes of Subsections F and G of this Section V, Cachuma Reservoir is "spilling" when all of the following conditions exist:

1. Water is being released from Cachuma Reservoir through open gates or outlet works or water spilling over spillways at a total combined rate of at least Two Hundred (200) cubic feet per second ("cfs").

2. There is a continuous surface stream existing between Bradbury Dam and the Pacific Ocean.

3. USBR has declared that Cachuma Reservoir is spilling, provided USBR, or its successor, is operating Cachuma Reservoir and has a policy of declaring a spill condition.

C. Definition: "Mitigation Calculation Interval". For purposes of this Section V, the term "Mitigation Calculation Interval" or "Interval" shall mean each of the following:

1. The period of time commencing the first time that the water surface of Gibraltar Reservoir reaches elevation thirteen hundred ninety-nine and eighty-two hundredths (1399.82) feet MSL and terminating upon the earlier of (i) the first day Cachuma Reservoir is full and water flows through the spillway, or (ii) May 14, 2000 (or such other date as to which all the parties may agree).

2. The period of time commencing upon expiration of the preceding Mitigation Calculation Interval as defined in Paragraph 1 above and terminating upon the earlier of (i) the first day Cachuma Reservoir is full and water flows through the spillway, or (ii) a date which is twelve (12) years from the commencement of the Interval.

D. Mitigation of Impacts on Cachuma. Prior to the ninetieth (90th) day following commencement of a Mitigation Calculation Interval (the "election date"), the City shall notify the Downstream Purveyors and the USBR as to the maximum amount of water it intends to divert from the Gibraltar Reservoir during any year of the Interval, which amount shall not exceed eight thousand (8,000) AFY unless the City can establish that a higher diversion level is not reasonably likely to have an adverse impact on the quantity, or a significant adverse impact on the quality, of water available to the Downstream Purveyors. Thereafter, and retroactive to the commencement of the Interval, the City shall (i) divert through its Gibraltar facilities an amount of water each year not exceeding the diversion level selected and subject to the monthly delivery limitations attached as Appendix B, or a lesser amount if the City so chooses, and (ii) relinquish each month the amount of water from its Cachuma Project contractual entitlement needed to mitigate the impacts of the diversions on the Cachuma Project, which amount shall be determined by reference to Appendix A. It is understood that the City's obligation to relinquish a specified amount of its Cachuma Project contractual water each month shall not depend on whether the City actually diverts the full amount of water it has elected to divert at Gibraltar.

E. Mitigation of Downstream Impacts. The impacts of the diversions authorized by this Section V on the Downstream Purveyors, and those they represent, using water downstream of Bradbury Dam are to be mitigated pursuant to the provisions of Section VI.

F. Additional Diversions During Spill. During any period that Cachuma Reservoir is spilling, the limitations on the amount of water the City may divert from

the Gibraltar Reservoir under this agreement shall not apply. There shall be no obligation for the City to undertake any mitigation by relinquishing any of its Cachuma contractual entitlement water as a result of any diversions during any period that Cachuma Reservoir is spilling.

G. Spill Ends Mitigation Requirement. The parties understand and agree that the necessity of mitigating the Cachuma impacts of diversions authorized by this Section V ends when Cachuma Reservoir is spilling, and therefore agree that the occurrence of such a spill shall end a Mitigation Calculation Interval and relieve the City of any further Cachuma mitigation obligations as to that Interval and the diversions related thereto.

H. Substantial and Sudden Reduction in Water Deliveries. The parties acknowledge that Appendix A was prepared on the assumption that Gibraltar Reservoir will fill with silt and lose water storage capacity on a gradual basis, and does not account for the possibility of a substantial and sudden reduction in water deliveries from the Gibraltar Reservoir, including but not limited to a catastrophic siltation event (defined as a loss of one thousand (1000) AF of water storage capacity over a period of ninety (90) days due to siltation), nor for the possibility of other unexpected conditions which significantly reduce water deliveries to the City from the Gibraltar Reservoir (for example, collapse of Mission Tunnel). If the City shall experience a substantial and sudden reduction in water deliveries from the Gibraltar Reservoir, the City shall notify the parties as to whether it wishes to elect a lower diversion level and a corresponding lower mitigation level pursuant to Appendix A or, alternatively, whether it elects to commence pass through operations. Upon receiving notice, the parties shall meet and negotiate in good faith to adjust the mitigation requirements set forth in Appendix A to provide adequate mitigation over the remainder of the Interval, if necessary to carry out the purposes of this agreement.

I. Completion of Cachuma Enlargement Project. Prior to completion of the Cachuma Enlargement Project, the Technical Committee established pursuant to Section IX of this agreement will undertake a technical review of the effect of the diversions authorized by this Section V on the yield of the Cachuma Enlargement Project. Upon completion of that technical review, the parties will negotiate in good faith to make revisions to Appendix A as may be necessitated by the completion of that project and in order to fulfill the purposes of this Section V. After the Cachuma Enlargement Project is completed and Appendix A is revised, this Section V shall continue in effect unless a Downstream Purveyor establishes that there are adverse impacts on quantity, or significant adverse impacts on the quality, of water available to the Downstream Purveyors as a result of continuation of diversions authorized by this Section V, in which event each of the parties agrees to further revise Appendix A to mitigate such impacts.

J. Overdiversion. In the event the City diverts, in a given month, an amount of water in excess of the diversion level selected pursuant to Section V, D, and does not correct such overdiversion by a compensating under diversion in the following month, the City shall assure complete mitigation of Cachuma impacts by relinquishing, in the second month following the overdiversion, an additional amount from its Cachuma contractual entitlement equal to the excess diversion.

VI. Mitigation of Impacts Downstream of Cachuma.

The impacts of the diversions authorized by this agreement on Downstream Purveyors, and those they represent, using water downstream of Bradbury Dam shall be mitigated by utilizing the method of calculating "Constructive Inflow" to Cachuma Reservoir set forth in Appendix E. Appendix E establishes a method of calculating inflow to Cachuma Reservoir to determine the Above and Below Narrows Accounts credits pursuant to State Water Resources Control Board ["SWRCB"] Order No. 73-37 ("the Order"), which Order is presently undergoing review by the SWRCB. Appendix E was prepared on the assumption that the Order would be amended to generally conform to the proposal made to the SWRCB by USBR dated March 13, 1989 and approved by the parties to this agreement. In the event the SWRCB amends the Order in a manner substantially different than the USBR proposal, the parties agree to meet and negotiate in good faith to make such amendments to Appendix E as may be necessitated by the SWRCB action to fully mitigate downstream impacts.

VII. Gin Chow Issues.

The parties intend to compromise on a number of issues which have been the subject of disagreement since the Gin Chow judgment was rendered:

A. Annual Downstream Release Period. The parties agree that the annual period during which the City is to release downstream the inflow to Gibraltar Reservoir (up to the limit of 616 AFY) pursuant to Paragraph 1 of the Gin Chow judgment shall commence on June 1 and shall end on November 30 of each year.

B. Distinguishing Flood from Ordinary Flows. For purposes of calculating the Base Operation only:

1. The parties agree that inflow to Gibraltar, on days in which the twenty four (24) hour average inflow rate is below eight hundred (800) cubic feet per second (cfs) shall be deemed to be "ordinary flow" and that inflow in excess of that rate will be deemed to be "flood, freshet and storm flow".

2. In any year, the City may divert up to 4,189 AFY of ordinary flow. Any additional diversion must come from flood flows.

VIII. Cachuma Deliveries; Effect of Unexpected Reduction

A material inducement for the City to enter into this agreement is the fact that it is entitled to deliveries of Cachuma Project water pursuant to its Cachuma Project Member Unit Contract, and in fact has planned for and relied on the continuation of those deliveries in its land use decisions. Further, the City has for many years pursued a policy of diversified water sources so that a sudden and severe reduction in water from one source could be, at least in part, offset by increased deliveries from another source. In furtherance of these objectives, the parties agree that in the event the amount of water delivered to the City pursuant to the Cachuma Project Member Unit Contract (or any successor agreement) is suddenly and substantially reduced (for example, due to a closure of Tecolote Tunnel), the City shall be relieved of any limitations on diversions of water from Gibraltar Reservoir stated in this agreement, but shall not be relieved of any obligation imposed by this agreement to mitigate the impact of any such diversions on any Downstream Purveyor. The relief stated in this paragraph shall terminate upon correction of the condition which caused the reduction in deliveries and restoration of deliveries at the level which existed prior to the delivery reduction.

IX. Administration

This agreement shall be administered by a technical committee comprised of a representative of the City, a representative of the USBR, a representative of SYRWCD, one representative selected jointly by the Goleta, Montecito, Carpinteria County and Summerland County Water Districts and, if it elects to execute this agreement, a representative of the City of Lompoc, who shall meet as frequently as needed, but in no event less than four times per year, to resolve any issues which may arise in the course of this agreement, to review monthly operational data, and to insure that data regarding constructive Cachuma inflow is provided to the USBR in a timely manner each month. The committee shall not have the authority to amend this agreement, nor shall the members have the authority to take action which is binding upon any party to this agreement who does not have a representative on the committee. The committee may act only upon unanimous consent of those present. Any dispute between the parties with respect to a decision of the committee shall be resolved pursuant to Section X, G.

X. Other Provisions

A. Inaccurate Information and Changed Circumstances. The parties agree to negotiate in good faith and will modify this agreement to achieve the purposes set forth herein if (i) information developed during the term of this agreement demonstrates that

any data, analyses, or computations upon which this agreement is based (including but not limited to the Appendices) are inaccurate, (ii) the mitigations or calculations provided for herein are inaccurate or inadequate to avoid adverse impacts on any Downstream Purveyors, or (iii) events have occurred which adversely affect the computations required in this agreement. It is understood that this agreement does not attempt to deal with any possible future limitations on the amounts of diversion or storage or any requirements or increased releases which might be legally imposed on Cachuma Reservoir, Gibraltar Reservoir and Jameson Lake for environmental reasons, including the establishment of fisheries (hereinafter "future operational constraints"). While it would be inconsistent with the parties' implied covenant of good faith and fair dealing for a party to propose or support any such future operational constraint, a party may undertake to avoid any such future operational constraint by suggesting that it be imposed on another party or upon a person or entity not a party to this agreement. If such a future operational constraint is imposed on one or more parties to this agreement, the parties agree to negotiate in good faith to modify this agreement so that its purposes may be achieved notwithstanding the future operational constraint.

B. No Admission, Waiver, Prescription or Abandonment.

1. No Admission. No provision of this agreement shall be construed to constitute an acknowledgment or admission by any party as to the extent of the water rights the City claims or may claim pursuant to the Gin Chow judgment or otherwise.

2. No Waiver. No party to this agreement shall be deemed to have waived or otherwise compromised any claims it may have with respect to the extent of the City's water rights in the Santa Ynez River, except as stated in this Paragraph 2. So long as this agreement is in effect, (i) the City agrees not to claim under the Gin Chow judgment any right to divert water in excess of the provisions of this agreement from the Santa Ynez River upstream of the Cachuma Project, and (ii) the Downstream Purveyors agree not to attempt to limit the City's rights to divert water from the Santa Ynez River upstream of the Cachuma Project to amounts less than those provided in this agreement, except as provided in Section X, C. Notwithstanding any other provision of this agreement, no party waives any right to claim or protest, at any time, the right to divert or use water from Devil's Canyon, which Canyon is described in SWRCB Application No. 28687.

3. No Prescription. The City shall not be deemed to have acquired any water right by prescription by virtue of this agreement or the exercise or non-exercise of any rights granted under this agreement.

4. No Abandonment. The City's execution of this agreement, and the City's undertaking to operate Gibraltar in accordance therewith, shall not constitute, nor be deemed to have accomplished, a waiver, relinquishment, or abandonment of water rights, if any, established by the Gin Chow judgment, nor shall any of the Downstream Purveyors assert that any deferral of enlargement or limitation on diversions as provided for in this agreement constitutes such a waiver, relinquishment or abandonment of those rights.

C. Covenant of Noninterference. So long as this agreement is in effect, the Downstream Purveyors: (i) agree to take no action attempting to hinder, obstruct, delay or interfere with the City's rights to divert Santa Ynez River water pursuant to this agreement, and (ii) expressly waive any right to protest or challenge the exercise of those rights, whether by means of court challenge or otherwise, or to participate, directly or indirectly, in any such protest or challenge. Notwithstanding the foregoing, if the City gives notice of commencement of a Gibraltar Enlargement Project pursuant to Section II, E hereof, the Downstream Purveyors may take any lawful action they deem appropriate to challenge or oppose said Enlargement Project or the existence or exercise of any or all rights the City may assert regarding Santa Ynez River water; provided, however, the City's contractual rights under this agreement shall not be impaired or modified by any such challenge unless and until this agreement is terminated pursuant to Section XI.

D. Full Settlement; Tolling of Deadlines for Prosecution. All parties expressly agree that upon execution of this agreement by all parties and for the period the agreement remains in full force and effect, it represents a full and fair compromise and settlement of that litigation commonly known as Montecito Water District, et al. v. City of Santa Barbara, Santa Barbara Superior Court No. 171410. While this agreement remains in effect no party nor their attorneys shall take any action in the above referenced litigation without the consent of each of the other parties, provided that upon execution of this agreement by all parties and for the duration of this agreement, any and all statutes of limitation requiring diligent prosecution of civil actions shall be tolled, including but not limited to California Code of Civil Procedure Section 583.330.

E. Dismissal of Claims. The Downstream Purveyors will (i) within fifteen (15) days of (a) execution of this agreement by all parties, (b) execution of the Consent and Acknowledgment by the USBR, and (c) execution by the City of the Supplemental State Water Cost and Benefit Sharing Agreement, withdraw each and every objection, protest or comment lodged with any federal or state agency pertaining to the Gibraltar Strengthening Project, and to affirmatively indicate that the withdrawing party has no further objection or comment to the project and (ii) take no action to hinder, obstruct, delay or interfere with the Gibraltar Strengthening Project.

F. Conjunctive Use. The Downstream Purveyors acknowledge that the City intends to undertake a conjunctive use program utilizing the water it will divert from the Santa Ynez River pursuant to this agreement, and expressly agree to that use of that water, and further expressly agree to take no action attempting to hinder, obstruct, delay or interfere with the City's establishment and operation of a conjunctive use program, except and only to the extent that the water diverted pursuant to this agreement is not used on lands served by the City or the limitations set forth in Section V, D are exceeded. The Downstream Purveyors expressly waive any right to protest or challenge establishment of that program, whether by means of court challenge or otherwise, or to participate, directly or indirectly, in any such protest or challenge.

G. Time is of the Essence. The parties acknowledge that time is of the essence to this agreement and agree to discharge their obligation to meet and negotiate in good faith within forty-five (45) days of any event which so requires. If the parties are unable to resolve any differences within the aforementioned forty-five day period, a "dispute" between the parties within the meaning of Subsection H shall be deemed to have arisen.

H. Conflict Resolution. In the event of a dispute between the parties arising from or pertaining to this agreement, the following procedure shall be instituted:

1. The parties to the dispute shall immediately provide written notice to each of the other parties to this agreement of the dispute.

2. The parties to the dispute shall promptly submit the disputed matter to arbitration pursuant to the provisions of California Code of Civil Procedure Sections 1141.10 et seq. Written notice of commencement of the arbitration proceedings shall be given to each party to this agreement.

I. USBR Consent and Acknowledgment; Additional Party. The USBR has been kept apprised of the negotiations leading up to this agreement and has participated to the extent necessary to protect federal interests. The USBR has agreed to execute the attached Consent and Acknowledgment pursuant to which it will maintain its records consistent with this agreement, and intends to pursue having the USBR formally join the agreement as a party. If the USBR agrees to join this agreement, it shall execute a counterpart thereof and deliver the original to the City and a copy to each other party, and thereupon shall be bound by this agreement to the extent consistent with federal law. In the event the USBR for any reason fails or refuses to maintain its records and operate the Cachuma Project consistent with the provisions of this agreement, any party adversely affected thereby may demand that the other parties thereto negotiate in good faith to make such adjustments as may be

necessary to carry out the purposes of this agreement notwithstanding the USBR's failure or refusal, and the other parties shall be under a duty to so negotiate and make such adjustments.

J. City of Lompoc as Additional Party. The parties to this agreement recognize that the City of Lompoc ("Lompoc") has participated in the negotiations leading up to this agreement, and may elect to join this agreement as a Downstream Purveyor. If Lompoc agrees to so join this agreement, it shall execute a counterpart of this agreement and, from the date of that execution, shall be considered to be a Downstream Purveyor for purposes of this agreement.

K. Amendment to Federal Law. The parties agree to support enactment of amendments to federal law in order to permit the Cachuma Project to be used for the storage or transmission of pass through water.

L. Appendices Incorporated by Reference. Appendices A, B, C, C-1, C-2, C-3, C-4, D, E, F, F-1, and F-2 are part of this agreement and are incorporated herein as if set out in full in the text of the agreement.

M. Operation of Juncal Dam and Jameson Lake. The operation of Juncal Dam and Jameson Lake by Montecito Water District (MWD) may have an effect on the inflow to Gibraltar Reservoir and, as a consequence, on the calculations and mitigations which are required under this agreement. Questions have been raised as to the MWD's operation of Juncal Dam and Jameson Lake. The parties have agreed that all issues between them relating to the operation of Juncal Dam and Jameson Lake are reserved and that no rights are waived by any party regarding that operation or its effects. The parties agree to negotiate in good faith with respect to those issues.

XI. Term; Termination.

Unless it is sooner terminated as provided herein, this agreement shall be in effect in perpetuity. If the City undertakes to build a Gibraltar Enlargement Project, this agreement terminates upon completion of the project.

XII. Standard Provisions

A. Notices. Notices may be given to the parties and interested entities by mailing written notice, with first class postage prepaid, as follows (except as a party may provide written notice to all of the parties of a change of address):

To the City of Santa Barbara: City Administrator, P.O. Drawer P-P, Santa Barbara, California 93102.

To the Carpinteria County Water District: District Manager, P.O. Box 578, Carpinteria, California 93013.

To the Goleta Water District: District Manager, P.O. Box 788, Goleta, California 93116.

To the Montecito Water District: District Manager, P.O. Box 5037, Montecito, California 93150.

To the Summerland County Water District: District Manager, P.O. Box 346, Summerland, California 93067.

To the Santa Ynez River Water Conservation District: Secretary, P.O. Box 157, Santa Ynez, California 93460.
To the Santa Ynez River Water Conservation District, Improvement District No. 1: District Manager, P.O. Box 157, Santa Ynez, California 93460.

To the United States Bureau of Reclamation: Regional Director, 2800 Cottage Way, Sacramento, California 95825-1898.

To the City of Lompoc (if it executes this agreement): City Manager, City of Lompoc, City Hall, 100 Civic Center Plaza, Lompoc, California 93438.

B. Headings. The titles and headings of this agreement are for purposes of convenience only, and shall be given no substantive meaning in interpreting this agreement.

C. Validation. To the extent authorized by law, any party to this agreement may bring a validation action pursuant to California Code of Civil Procedure Section 860 et seq.

D. Counterparts. This agreement may be executed in counterparts and as so executed shall constitute one agreement which shall be binding on all parties hereto, notwithstanding that all parties are not signatory to the original or the same counterpart.

E. California Law Applies. This agreement shall be construed pursuant to the laws of the State of California.

SO AGREED.

CITY OF SANTA BARBARA

Attest:

By: _____
Sheila Lodge, Mayor

_____
City Clerk Deputy

Agreement #15,070

CARPINTERIA COUNTY WATER DISTRICT

Attest:

By: _____
Harry G. Fox
President

_____
Secretary

GOLETA WATER DISTRICT

Attest:

By: _____
Patrick T. Mylod
President

_____
Secretary

MONTECITO WATER DISTRICT

Attest:

By: _____
Carol L. Valentine
President

_____
Secretary

SUMMERLAND COUNTY WATER DISTRICT

Attest:

By: _____
Reeve Woolpert
President

_____
Secretary

(signatures continued on next page)

E. California Law Applies. This agreement shall be construed pursuant to the laws of the State of California.

SO AGREED.

CITY OF SANTA BARBARA

Attest:

By: _____ _____

Sheila Lodge, Mayor City Clerk

CARPINTERIA COUNTY WATER DISTRICT

By: Harold H. Sullwold Attest:

Harold H. Sullwold, Vice-President

By: _____ Robert R Lieberknecht

For: Harry G. Fox Secretary ,Robert R. Lieberknecht

President

GOLETA WATER DISTRICT

Attest:

By: _____ _____

Patrick T. Mylod Secretary

President

MONTECITO WATER DISTRICT

Attest:

By: _____ _____

Carol L. Valentine Secretary

President

SUMMERLAND COUNTY WATER DISTRICT

Attest:

By: _____ _____

Reeve Woolpert Secretary

President

(signatures continued on next page)

E. California Law Applies. This agreement shall be construed pursuant to the laws of the State of California.

SO AGREED.

CITY OF SANTA BARBARA

Attest:

By: _____ _____

Sheila Lodge, Mayor City Clerk

CARPINTERIA COUNTY WATER DISTRICT

Attest:

By: _____ _____

Harry G. Fox Secretary
President

GOLETA WATER DISTRICT

Attest:

By: _____ _____

Patrick T. Mylod Secretary
President

MONTECITO WATER DISTRICT

Attest:

By: _____ _____

Carol L. Valentine Secretary
President

SUMMERLAND COUNTY WATER DISTRICT

Attest:

By: _____ _____

Reeve Woolpert Secretary
President

(signatures continued on next page)

E. California Law Applies. This agreement shall be construed pursuant to the laws of the State of California.

SO AGREED.

CITY OF SANTA BARBARA

Attest:

By: _____ _____

Sheila Lodge, Mayor City Clerk

CARPINTERIA COUNTY WATER DISTRICT

Attest:

By: _____ _____

Harry G. Fox Secretary
President

GOLETA WATER DISTRICT

Attest:

By: _____ _____

Patrick T. Mylod Secretary
President

MONTECITO WATER DISTRICT

Attest:

By: _____ C. Charles Evans

Carol L. Valentine Secretary
President

SUMMERLAND COUNTY WATER DISTRICT

Attest:

By: _____ _____

Reeve Woolpert Secretary
President

(signatures continued on next page)

E. California Law Applies. This agreement shall be construed pursuant to the laws of the State of California.

SO AGREED.

CITY OF SANTA BARBARA

Attest:

By: _____ _____
Sheila Lodge, Mayor City Clerk

CARPINTERIA COUNTY WATER DISTRICT

Attest:

By: _____ _____
Harry G. Fox Secretary
President

GOLETA WATER DISTRICT

Attest:

By: _____ _____
Patrick T. Mylod Secretary
President

MONTECITO WATER DISTRICT

Attest:

By: _____ _____
Carol L. Valentine Secretary
President

SUMMERLAND COUNTY WATER DISTRICT

Attest:

By: _____ Cathy T. Mineis
Reeve Woolpert Secretary
President

(signatures continued on next page)

(signatures continued from previous page)

SANTA YNEZ RIVER WATER CONSERVATION DISTRICT

By: _____
William Laranjo
President

Attest: _____
Secretary

SANTA YNEZ RIVER WATER CONSERVATION DISTRICT, IMPROVEMENT DISTRICT NO. 1

By: _____
Robert J. Lindberg
President

Attest: _____
Secretary

(signatures continued from previous page)

SANTA YNEZ RIVER WATER CONSERVATION DISTRICT

Attest:

By: _____

William Laranjo
President

_____
Secretary

SANTA YNEZ RIVER WATER CONSERVATION DISTRICT, IMPROVEMENT DISTRICT NO. 1

Attest:

By: _____

Robert J. Lindberg
President

_____
Secretary

CONSENT AND ACKNOWLEDGMENT BY THE BUREAU OF RECLAMATION

The United States Bureau of Reclamation ("USBR"), although not a party to this operations agreement, has reviewed its provisions and finds that (i) such provisions do not adversely effect the financial obligations of the Cachuma Project Member Units and the Santa Barbara County Water Agency with respect to the Cachuma Project; (ii) implementation of this agreement will have no adverse effect on the yield of the Cachuma Project; and (iii) such provisions are consistent with the obligations of the parties to this agreement and the USBR pursuant to the various contracts, agreements, laws, rules, regulations, permits and orders pertaining to the operation of the Cachuma Project. Nothing in this consent and acknowledgment or the operations agreement waives any rights of the USBR to enforce or implement any existing contracts, agreements, laws, rules, regulations, permits or orders as hereafter supplemented or amended in its operation of the Cachuma Project. Accordingly, the USBR has consented to this agreement and the operations contemplated herein and will maintain its records so as to implement this operations agreement pursuant to the USBR's authority under the agreement between the USBR and the Santa Barbara County Water Agency dated September 12, 1949 (No. 175r-1802), the Member Unit Contracts and applicable law.

8/17/89
Date

UNITED STATES BUREAU OF RECLAMATION

By: Lawrence F. Hancock

LAWRENCE F. HANCOCK
REGIONAL DIRECTOR

ADDITIONAL PARTIES PURSUANT TO SECTION X, H & I

CITY OF LOMPOC

By: _____
Marvin Loney, Mayor

ATTEST:

_____
City Clerk

UNITED STATES BUREAU OF RECLAMATION

By: _____

APPENDIX A
DOWNSTREAM MITIGATION TABLE

(1)	(2) GIBRALTAR	(3)	(4)	(5) CACHUMA	(6)	(7)	(8)
Name of Run	Max Draft Level (AFY)	62 Yr Avg Yld (AFY)	Net Yield (AFY)	Mitigation @ Cachuma (AFY)	Total Yield * (AFY)	Mitigation @ Cachuma (AF/MO)	Net Yield From Gibraltar (AFY)
	4580	4377	28156	0	28156	0.0	4377
	4600	4394	28153	3	28156	0.25	4391
	4700	4480	28137	19	28156	1.58	4461
	4800	4566	28121	35	28156	2.92	4531
	4900	4652	28105	51	28156	4.25	4601
"Actual 5k"	5000	4738	28089	67	28156	5.58	4671
	5100	4818	28072	84	28156	7.03	4733
	5200	4898	28054	102	28156	8.48	4796
	5300	4977	28037	119	28156	9.93	4858
	5400	5057	28019	137	28156	11.38	4921
	5500	5137	28002	154	28156	12.83	4983
	5600	5217	27985	171	28156	14.28	5045
	5700	5297	27967	189	28156	15.73	5108
	5800	5376	27950	206	28156	17.18	5170
	5900	5456	27932	224	28156	18.63	5233
"Actual 6k"	6000	5536	27915	241	28156	20.08	5295
	6100	5608	27894	262	28156	21.82	5346
	6200	5680	27874	283	28156	23.55	5398
	6300	5752	27853	303	28156	25.28	5449
	6400	5824	27832	324	28156	27.02	5500
	6500	5897	27812	345	28157	28.75	5552
	6600	5969	27791	366	28157	30.48	5603
	6700	6041	27770	387	28157	32.22	5654
	6800	6113	27749	407	28157	33.95	5705
	6900	6185	27729	428	28157	35.68	5757
"Actual 7k"	7000	6257	27708	449	28157	37.42	5808
	7100	6326	27686	471	28157	39.26	5855
	7200	6396	27664	493	28157	41.10	5902
	7300	6465	27641	515	28157	42.94	5950
	7400	6534	27619	537	28157	44.78	5997
	7500	6604	27597	560	28157	46.63	6044
	7600	6673	27575	582	28156	48.47	6091
	7700	6742	27553	604	28156	50.31	6138
	7800	6811	27530	626	28156	52.15	6186
	7900	6881	27508	648	28156	53.99	6233
"Actual 8k"	8000	6950	27486	670	28156	55.83	6280
	8100	7014	27465	691	28156	57.56	6323
	8200	7077	27445	711	28156	59.28	6366
	8300	7141	27424	732	28156	61.01	6408
	8400	7204	27404	753	28156	62.73	6451
	8500	7268	27383	774	28157	64.46	6494
	8600	7331	27362	794	28157	66.18	6537
	8700	7395	27342	815	28157	67.91	6580
	8800	7458	27321	836	28157	69.63	6622
	8900	7522	27301	856	28157	71.36	6665
"Actual 9k"	9000	7585	27280	877	28157	73.08	6708
	9100	7646	27261	896	28157	74.68	6750
	9200	7707	27242	915	28157	76.27	6792
	9300	7769	27223	934	28157	77.86	6834
	9400	7830	27204	953	28157	79.45	6876
	9500	7891	27185	973	28157	81.04	6919
	9600	7952	27165	992	28157	82.63	6961
	9700	8013	27146	1011	28157	84.23	7003
	9800	8075	27127	1030	28157	85.82	7045
	9900	8136	27108	1049	28157	87.41	7087
"Actual 10k"	10000	8197	27089	1068	28157	89.00	7129
Base Operation			28156	0	28156	0.0	

*Note: Cachuma Reservoir safe yield is computed to be greater than the 27,800 AFY determination by the USBR because of the effects of cloud seeding included in this analysis. See Column (4) explanation on next page.

7/14/89

APPENDIX A - EXPLANATION OF DOWNSTREAM MITIGATION TABLE

Column (1) indicates the name of the Santa Ynez River Model (SYRM) run. The base model run approximates the analysis of Gibraltar operations which utilized the criteria for ordinary and flood flows. "Actual" model runs do not include these operating criteria but are based on the monthly diversion schedule shown in Appendix B without regard to distinguishing between ordinary and flood flow for storage and diversion.

Column (2) represents the maximum annual draft level from Gibraltar Reservoir. "Actual" model runs were performed at intervals of 1,000 AFY of maximum draft levels. Intermediate values (100 AFY increments) are interpolated from these model results.

Column (3) represents the 62-year average yield from Gibraltar Reservoir using the SYRM for the hydrologic period from 1918 through 1979 and using the stated maximum draft levels. The yield includes the effect of cloud seeding at a 50 percent level of effectiveness which modifies the actual hydrologic conditions during that period.

Column (4) represents the safe yield of existing Cachuma Reservoir using the SYRM over the same hydrologic period (1918-1979). The results include the effects of cloud seeding using an arithmetic mean between no seeding and 90 percent effective cloud seeding over the 62-year period (1918-1979). All analyses are based on dewatering Cachuma Reservoir to the same minimum level during the critical drought period (1946-1951). The stated net yields for "actual" runs in Column (4) represent reduced Cachuma yields as compared to the safe yield (28,156 AFY) under Base Operation.

Column (5) is the mitigation necessary to offset the amount of reduction in the safe yield of Cachuma Reservoir (28,156 AFY) under the Base Operation of Gibraltar Reservoir. The mitigation is provided by the City of Santa Barbara at Cachuma Reservoir through a reduction in its annual Cachuma entitlement. The mitigation value remains constant during a Mitigation Calculation Interval except under limited circumstances provided by this agreement.

Column (6) is the sum of Columns (4) and (5). It represents the theoretical yield of Cachuma Project after mitigating for the impacts of operations at Gibraltar Reservoir.

Column (7) is the monthly reduction in the City's Cachuma entitlement for mitigating the effect of Gibraltar operations on Cachuma Reservoir expressed by Column (5) divided by 12.

Column (8) is the modeled yield of Gibraltar Reservoir over the 62-year period less the amount of mitigation provided at Cachuma Reservoir or Column (3) minus Column (5).

Example: Gibraltar and Cachuma Yields / City Mitigation at Cachuma Reservoir

Gibraltar Maximum Draft Level - Column (2)	6,800 AFY
Gibraltar 62-Year Average Yield - Column (3)	6,113 AFY
Cachuma Safe Yield Without Mitigation - Column (4)	27,749 AFY
City's Annual Mitigation at Cachuma Reservoir - Column (5)	407 AFY
Theoretical Safe Yield of Cachuma Project - Column (6)	28,157 AFY
Gibraltar 62-Year Average Net Yield - Column (8)	5,705 AFY
City's Monthly Mitigation at Cachuma Reservoir - Column (7)	33.95AF/Mo

NOTE: Rounding errors may cause sums to vary by + or - 1 AFY.

APPENDIX B
MONTHLY DIVERSION SCHEDULE
ACTUAL OPERATION OF GIBRALTAR RESERVOIR

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	TOTAL
(1) Monthly Diversion -	11.5%	9.4%	9.4%	8.8%	8.4%	11.3%	11.7%	12.7%	10.5%	2.7%	2.2%	1.4%	100.0%
(2) Allowable Increment-	0.83%	0.83%	0.83%	0.83%	0.83%	0.83%	0.83%	0.83%	0.83%	0.83%	0.83%	0.83%	10.0%
(3) Max Div. for Month-	12.33%	10.23%	10.23%	9.63%	9.23%	12.13%	12.53%	13.53%	11.33%	3.53%	3.03%	2.23%	N/A

Explanation of Table

This Table provides the schedule for monthly diversion from Gibraltar Reservoir expressed as a percentage of the maximum annual draft level. It applies only to the actual operations when Gibraltar is operated with downstream mitigation requirements.

(1) Monthly Diversion

It specifies the monthly diversion (in percent) of the yearly draft level. The yearly draft level is the maximum amount of water the City intends to divert from the Gibraltar Reservoir during any year of the mitigation calculation interval(column (2) of Appendix A).

(2) Allowable Increment

The allowable increment provides for variations in monthly diversions to recognize operational constraints. It is expressed as a percentage of the maximum annual Gibraltar draft level and is added to monthly diversion for purposes of determining the maximum diversion amount in any given month.

(3) Maximum Diversion for Month

The maximum diversion for the month is also expressed as a percentage of the maximum annual Gibraltar draft level. It represents the maximum amount which can be diverted in a given month when Gibraltar is operated under the provisions of Section 5 of the agreement. The sum of the actual monthly diversions may not exceed the maximum annual draft level.

EXAMPLE

Gibraltar Maximum Draft Level = 6800 AFY
Oct. Diversion = 6800 x .115 = 782 AF
Oct. Allowed Increment = .0083 x 6800 = 56 AF
Maximum Oct. Diversion = .1233 x 6800 = 838 AF

APPENDIX C

BASE OPERATION CALCULATIONS

1. Introduction. The following Appendix is used to calculate the amount of water the City could have diverted from the Santa Ynez River at Gibraltar Reservoir assuming (i) no loss of storage capacity in Gibraltar Reservoir due to siltation after May 15, 1988, and (ii) operating criteria for Gibraltar Reservoir agreed to between the parties (as set forth in this Appendix and in Section VII, B of the agreement). The calculations for the Base Operation are based on the information that will be collected under the actual operation of Gibraltar Reservoir and will be used in the manner specified herein. The results of Base Operation calculation are used in conjunction with the actual operation of Gibraltar Reservoir in order to determine the amount of pass through water, if any, which reaches Cachuma Reservoir (see Appendix D) and to make the necessary adjustments in calculating Cachuma Constructive Inflow (see Appendix E).

In order to undertake Base Operation calculations, it is necessary to utilize (i) the data collected under actual Gibraltar Reservoir operation and (ii) apply that data to a set of specified criteria under the Base Operation.

2. Gin Chow Releases Criteria: Actual and Base Operations. The releases required by the Gin Chow judgment and as agreed to in Section VII, A of the agreement shall be made using the following operational criteria. Those releases shall commence on June 1, or as soon thereafter as any spill occurring on June 1 has terminated, and continue until: (i) such releases total 616 acre-feet; or (ii) November 30 of that year, whichever occurs first. In the event Gibraltar Reservoir is spilling as determined under Paragraph C on or after June 1, such releases shall not begin until the reservoir ceases to spill. To the extent it is feasible to do so, inflow subject to release shall be released on the same day it flows into Gibraltar Reservoir. Any underrelease or overrelease shall be corrected the next day. For the purpose of Gin Chow releases, the inflow to Gibraltar Reservoir is deemed to be no less than five acre-feet per month, unless visual observation of surface inflow to Gibraltar shows no such inflow in which case the inflow shall be deemed to be zero for that month. These criteria shall be used in both actual operations and in base operations calculations.

3. Data Collection. The following data shall be collected under actual operation of Gibraltar Reservoir.

a. Inflow. Santa Ynez River inflow to Gibraltar Reservoir shall be computed on a daily basis utilizing measured change in storage, precipitation, evaporation, tunnel diversion, releases and spills from the Reservoir. For these purposes, the City shall measure, on a daily basis, evaporation, precipitation, wind movement and temperature

near Gibraltar Dam. The spreadsheet attached as Appendix C-1 sets forth the manner in which this data is used to calculate the daily inflow.

(1) Precipitation falling on Gibraltar Reservoir is computed based on measurement of actual precipitation and the computed water surface area determined using the area capacity table representing the actual reservoir capacity.

(2) Evaporation from Gibraltar Reservoir is computed based on evaporation measurements and the computed water surface area determined using the area capacity table representing the actual reservoir capacity.

b. Storage Volume. At the start of each water year, the City shall determine the storage volume of Gibraltar Reservoir by either undertaking an area-capacity survey or by making an appropriate adjustment to the results of the most current survey (provided no catastrophic siltation event has occurred since that prior survey). In any event, an area-capacity survey shall be undertaken at intervals of at most every five years. In the event of watershed burn or large flood flows resulting in a significant siltation in Gibraltar Reservoir or a catastrophic siltation event, an area-capacity survey shall be undertaken as soon as feasible. The inflow computations following the significant siltation event may have to be adjusted as a result of the new area-capacity table.

c. Releases and Spills. Downstream releases from Gibraltar Reservoir (including releases under Paragraph 1 of the Gin Chow judgment) shall be measured daily by the gauge on the release channel from Gibraltar Dam to the Santa Ynez River. Both spill and release also shall be measured by the USGS gauge on the Santa Ynez River immediately below Gibraltar Reservoir. "Spill" means an uncontrolled discharge of water from the reservoir, including water which is released during spill or which would have discharged from the reservoir in the absence of that release. Any water other than spills, discharged into the Santa Ynez River downstream of the Gibraltar Dam shall be considered a release for purposes of these calculations and the agreement.

d. Maintenance. The City shall provide, maintain and periodically calibrate the necessary measuring devices for continuous measurement of: (i) water surface elevation of Gibraltar Reservoir; (ii) diversions from Gibraltar Reservoir; and (iii) releases from Gibraltar Reservoir.

e. Time Period. All daily measurements will be for the period commencing at 8:00 a.m.

4. Base Operations Calculations. Using the data collected under Section 3 of this Appendix, the Base Operation is simulated and calculations are made based upon the following operating criteria:

a. Gibraltar Storage Capacity Held Constant. The 8567 AF storage capacity at Gibraltar Reservoir corresponding to water surface elevation of 1400 feet MSL shall remain unchanged for purposes of making Base Operation calculations. The area-capacity table for this size reservoir is attached hereto as Appendix C-2, and is used in Base Operation calculations.

b. Flood versus Ordinary Flows. The flow of Santa Ynez River computed as daily inflow to Gibraltar Reservoir under the actual operation (see Section 3 of this Appendix), shall be utilized to determine the flood or ordinary flows. The flow is deemed to be ordinary if the average inflow over a twenty four hour period commencing at 8 a.m. is less than eight hundred (800) cubic feet per second (cfs). Otherwise, the inflow for that period of time is deemed to be flood flow.

c. Storage of Flood and Ordinary Flows. The amount of inflow which would have been stored in Gibraltar is determined by calculating the available storage (on a daily basis) and allocating to that storage on a daily basis either ordinary flows or flood flows, depending on the nature of the inflow as determined under Paragraph b. The amount of ordinary flow stored in Gibraltar Reservoir is accounted separately from the stored flood flows.

(1) Precipitation. The precipitation falling on Gibraltar Reservoir is computed based on precipitation measurement and the computed water surface area determined from the area capacity table in Appendix C-2. To the extent computed precipitation can be stored, it will be allocated to flood storage if it falls on the reservoir on a day as to which the inflow is deemed to be flood water, and will be allocated to ordinary flow storage on a day as to which the inflow is deemed to be ordinary flow.

(2) Evaporation. The evaporation from Gibraltar Reservoir is computed based on evaporation measurements and the computed water surface area determined from the area-capacity table in Appendix C-2. When the Reservoir is not spilling, the quantity of water evaporated each day shall be allocated to the flood and ordinary storage accounts in proportion to the amount of flood and ordinary flow water in those accounts in storage on that day.

d. Diversions from Storage. The amount of water which would have been diverted from storage under the conditions specified above shall be calculated as follows. First, it is assumed that, under the Base Operation, the City would have diverted ordinary flow up to a maximum of 4,189 acre-feet per year, using the monthly diversion schedule attached as Appendix C-3. The rate of diversion of ordinary flows is assumed to be constant for each day within any month. Second, in addition to the diversion of ordinary flow in a given month, it is assumed that the City would have

diverted from flood flow storage an amount equal to the difference between (i) the City's maximum diversion demand from Gibraltar Reservoir for that month, as shown on Appendix C-4, and (ii) the amount diverted during that month from ordinary flow storage. The rate of diversion demand shown on Appendix C-4 is assumed to be constant for each day within any month.

e. Gin Chow Releases. Releases from Gibraltar Reservoir as required by the Gin Chow judgment and as agreed to in Section VII, A of the agreement shall be computed on a daily basis. The computation under the Base Operation shall assume that all of the operational criteria set forth in Section 2 of this Appendix were followed.

f. Calculation of Reservoir Spill. By means of the above calculations, the amount of water which would have spilled from Gibraltar Reservoir assuming no siltation after May 15, 1988 and assuming the Reservoir was operated under the agreed-upon operating criteria shall be determined on a daily basis. The calculated monthly spill quantity shall be compared to the actual spill occurring for that month in order to determine the incremental amount of spill between the Base and actual operations. This incremental amount is then used for other calculations contemplated by the agreement, including pass through operations (see Appendix D), and Constructive Inflow to Cachuma Reservoir (see Appendix E), after adjustment for conveyance losses (see Appendix F).

APPENDIX C-1

EXPLANATION OF GIBRALTAR OPERATIONS SPREADSHEETS

I. Spreadsheet

The spreadsheet is to be used each month to record and calculate the actual Gibraltar Reservoir operation on a daily basis as well as the Base Operation calculations. Two spreadsheet examples (Table 1 and 2 of Appendix C-1) are attached and explained below.

II. Description of Spreadsheet

Columns in the spreadsheet are described for each computation day. All entries, references and computations are for each current day unless it is specified to be for the preceding day or for the computation month.

Table 1 - Actual Gibraltar Reservoir Operation

Column	Description	Unit
A	Day of Month	
B	Measured Water Surface Elevation at Gibraltar Reservoir	Feet, MSL (to 1/100 foot)
C	Reservoir Water Surface Area Compute using elevation (Column B) and current area/capacity table.	Acres

Column	Description	Unit
D	Reservoir Storage Volume Compute using elevation (Column B) and current area/capacity table.	Acre-Feet
E	Measured Precipitation	Inches (to 1/100 inch)
F	Reservoir Precipitation Column F = (Column C) x (Column E) ÷ 12	Acre-Feet
G	Measured Pan Evaporation	Inches (to 1/100 inch)
H	Estimated Reservoir Evaporation Column H = (Column C) x (Column G) x (0.8) ÷ 12	Acre-Feet
I	Measured Diversions from Gibraltar to Mission Tunnel	CFS-Day
J	Diversion from Gibraltar Reservoir Column J = (Column I) x 1.98347	Acre-Feet

Column	Description	Unit
K	Measured Releases from Gibraltar	CFS-Day
L	Releases from Gibraltar Reservoir Column L = (Column K) x 1.98347	Acre-Feet
M	Measured Spills from Gibraltar	CFS-Day
N	Spills from Gibraltar Reservoir Column N = (Column M) x 1.98347	Acre-Feet
O	Inflow to Gibraltar Reservoir Column O = (Column P) ÷ 1.98347	CFS-Day
P	Computed Inflow to Gibraltar Reservoir Column P = (Column D) - (Column D*) - (Column F)+ (Column H) + (Column J) + (Column L) + (Column N) *preceding day	Acre-Feet
Q	Measured Santa Ynez River Flow Below Los Laureles Canyon	CFS-Day

Column	Description	Unit
R	Santa Ynez River Flow Below Los Laureles Canyon Column R = (Column Q) x 1.98347	Acre-Feet
S	Designation of Livestream Day[1] Livestream day : 1 Non-livestream day : 0	

[1]Livestream day is determined by the USBR in accordance with WR 73-37, as amended.

Table 2 - Base Operation Calculations

Column	Description	Unit
T	Day of Month	
U	Ordinary Inflow to Gibraltar Reservoir	Acre-Feet
	Column U = Column P	
	provided inflow (Column P) is less than 1,578 acre-feet (800 cfs);	
	otherwise, Column U = 0	
V	Flood Inflow to Gibraltar Reservoir	Acre-Feet
	Column V = Column P	
	provided inflow (Column P) is equal or greater than 1,587 acre-feet (800 cfs);	
	otherwise, Column V = 0	
W	Allocation of Reservoir Precipitation to Ordinary Flow Storage	Acre-Feet
	Column W = (Column E) x (Column AH$^{*}_{\text{preceding day}}$) ÷ 12	
	provided inflow (Column P) is less than 1,587 acre-feet (800 cfs);	
	otherwise, Column W = 0	

Column	Description	Unit
X	Allocation of Reservoir Precipitation to Flood Flow Storage	Acre-Feet

Column X = (Column E) x (Column AH*) ÷ 12
*preceding day

provided inflow (Column P) is equal or greater 1,587 acre-feet (800 cfs);

otherwise, Column X = 0

Y — Allocation of Reservoir Evaporation to Ordinary Flow Storage — Acre-Feet

Column Y = (Column G) x (Column AH*) x (0.8) x (Column AI*) ÷ (Column AK*)
*preceding day *preceding day *preceding day

Z — Allocation of Reservoir Evaporation to Flood Flow Storage — Acre-Feet

Column Z = (Column G) x (Column AH*) x (0.8) x (Column AJ*) ÷ (Column AK*)
*preceding day *preceding day *preceding day

AA — Gin Chow Releases — Acre-Feet

1. December 1 through May 31:

   Column AA = 0

Column	Description	Unit

2. June 1 through November 30:

Column AA = Column P, unless;

a. accumulated release (Column AB) equals 616 acre-feet[1], then Column AA = 0, or

b. reservoir spill (Column AF) is greater than zero, then Column AA = 0, or

c. total computed inflow (Column P) for the computation month is less than 5.0 acre-feet[2], then for each day in that month

$$\text{Column AA} = (5.0 \text{ acre-feet}) \div (\text{Number of Days}^{*}_{\text{in computation month}})$$

subject to conditions (a) and (b) above, or

---

[1] In the day the accumulated releases reach 616 acre-feet,

$$\text{Column AA} = (616 \text{ acre-feet}) - (\text{Column AB}^{*}_{\text{preceding day}})$$

[2] Unless visual observations of surface inflow to Gibraltar Reservoir for the computation month with total computed inflow of less than five acre-feet show occurrence of no inflow, in which case Column AA = 0.

Column	Description	Unit

d. total computed inflow (Column P) for the computation month is greater than 5.0 acre-feet and includes days with computed negative inflow, then for each day in that month

$$\text{Column AA} = (\text{Column P}^{*}) \div (\text{Number of Days}^{*})$$

*total month *in computation month

subject to conditions (a) and (b) above.

AB — Accumulated Gin Chow Release — Acre-Feet

Cumulative release (Column AA) from June 1 through November 30 or until 616 acre-feet is released, whichever comes first.

AC — Accumulated Diversion to Mission Tunnel — Acre-Feet

Cumulative diversions from ordinary flow storage (Column AD) and flood flow storage (Column AE) since October 1.

AD — Diversion from Ordinary Flow Storage to Mission Tunnel — Acre-Feet

Diversion schedule is based on Appendix C-3 and computed as:

$$\text{Column AD} = (\text{Monthly Diversion}^{*}) \div (\text{Number of Days}^{*})$$

*per Appendix C-3 *in computation month

Ordinary flow diversion equals zero if ordinary flow storage is less than 50 acre-feet.

Column	Description	Unit
AE	Diversion from Flood Flow Storage to Mission Tunnel	Acre-Feet

Diversion schedule is based on Appendices C-3 and C-4 and calculated as:

Column AE = [(Monthly Diversion*) - (Monthly Diversion*)] ÷ (Number of Days*)
*per Appendix C-4 *per Appendix C-3 *in computation month

Flood flow diversion equals zero if flood flow storage is less than 50 acre-feet.

AF	Computed Gibraltar Spill	Acre-Feet

Column AF = (Column AK*) + (Column P) + (Column W) + (Column X)
*preceding day
- (Column Y) - (Column Z) - (Column AA) - (Column AD)

- (Column AE) - (8,567 acre-feet)

If the result of above sum is less than zero, the computed Gibraltar spill (Column AF) is set equal to zero.

AG	Computed Water Surface Elevation at Gibraltar Reservoir	Feet, MSL

Compute using storage volume (Column AK) and Appendix C-2.

Column	Description	Unit
AH	Computed Water Surface Area	Acres

Compute using storage volume (Column AK) and Appendix C-2.

AI — Ordinary Flow Storage — Acre-Feet

1. For inflow (Column P) less than 1,587 acre-feet (800 cfs),

$$\text{Column AI} = (\text{Column AI}^*)_{\text{*preceding day}} + (\text{Column U}) + (\text{Column W}) - (\text{Column Y}) - (\text{Column AD}) - (\text{Column AA})$$

provided the Base Operation reservoir is not spilling; otherwise

$$\text{Column AI} = (\text{Column AI}^*)_{\text{*preceding day}} - (\text{Column AK}^*)_{\text{*preceding day}} + (\text{Column AE}) + (8{,}567 \text{ acre-feet})$$

2. For inflow (Column P) equal or greater than 1,587 acre-feet (800 cfs),

$$\text{Column AI} = (\text{Column AI}^*)_{\text{*preceding day}} - (\text{Column AD}) - (\text{Column Y})$$

provided the Base Operation reservoir is not spilling; otherwise

$$\text{Column AI} = (\text{Column AI}^*)_{\text{*preceding day}} - (\text{Column AD})$$

Column	Description	Unit
AJ	Flood Flow Storage	Acre-Feet

1. For inflow (Column P) equal or greater than 1,587 acre-feet (800 cfs),

   Column AJ = (Column AJ*) + (Column V) + (Column X) - (Column Z)
   *preceding day
   - (Column AE) - (Column AA)

   provided the Base Operation reservoir is not spilling; otherwise

   Column AJ = (Column AJ*) - (Column AK*) + (Column AD) + (8,567 acre-feet)
   *preceding day *preceding day

2. For inflow (Column P) less than 1,587 acre-feet (800 cfs),

   Column AJ = (Column AJ*) - (Column Z) - (Column AE)
   *preceding day

   provided the Base Operation reservoir is not spilling; otherwise

   Column AJ = (Column AJ*) - (Column AE)
   *preceding day

AK	Total Storage	Acre-Feet

Column AK = (Column AI) + (Column AJ)

GIBRALTAR PASSTHROUGH SPREADSHEET
ACTUAL GIBRALTAR RESERVOIR OPERATIONS:

1400.20 = This month's starting elevation (ft,MSL).
3836 = This month's starting volume (acre-feet).
174.7 = This month's starting area (acres).
2010 = CALENDAR YEAR
JULY = MONTH

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S
	EXISTING GIBRALTAR LAKE 24 HOUR PERIOD ENDING			PRECIP.		Evaporation PAN	LAKE	DIVERSION		RELEASE		SPILLS		COMPUTED INFLOW		SANTA YNEZ RIVER @ LOS LAURELES		LivStream day no=0 yes=1
DAY	Elev	Area	Volume	inches	ac-ft	inches	ac-ft	cfs	ac-ft	cfs	ac-ft	cfs	acre-ft	cfs	acre-ft	cfs	acre-ft	
1	1400.19	174.6	3834	0.00	0.0	0.31	3.6	4.5	8.9	0.0	0.0	50.0	99	55.4	110	44.0	87	1
2	1400.18	174.6	3833	0.00	0.0	0.31	3.6	4.5	8.9	0.0	0.0	48.0	95	53.4	106	44.0	87	1
3	1400.17	174.6	3831	0.00	0.0	0.31	3.6	4.5	8.9	0.0	0.0	46.0	91	51.4	102	44.0	87	1
4	1400.16	174.5	3829	0.00	0.0	0.31	3.6	4.5	8.9	0.0	0.0	44.0	87	49.4	98	40.0	79	1
5	1400.15	174.5	3827	0.00	0.0	0.31	3.6	4.5	8.9	0.0	0.0	42.0	83	47.4	94	40.0	79	1
6	1400.14	174.5	3826	0.00	0.0	0.31	3.6	4.5	8.9	0.0	0.0	40.0	79	45.4	90	37.0	73	1
7	1400.13	174.5	3824	0.00	0.0	0.31	3.6	4.5	8.9	0.0	0.0	38.0	75	43.4	86	37.0	73	1
8	1400.12	174.4	3822	0.00	0.0	0.31	3.6	4.5	8.9	0.0	0.0	36.0	71	41.4	82	35.0	69	1
9	1400.11	174.4	3820	0.00	0.0	0.31	3.6	4.5	8.9	0.0	0.0	34.0	67	39.4	78	33.0	65	1
10	1400.10	174.4	3818	0.00	0.0	0.31	3.6	4.5	8.9	0.0	0.0	32.0	63	37.4	74	33.0	65	1
11	1400.09	174.4	3817	0.00	0.0	0.31	3.6	4.5	8.9	0.0	0.0	30.0	60	35.4	70	33.0	65	0
12	1400.08	174.3	3815	0.00	0.0	0.31	3.6	4.5	8.9	0.0	0.0	28.0	56	33.4	66	33.0	65	0
13	1400.07	174.3	3813	0.00	0.0	0.31	3.6	4.5	8.9	0.0	0.0	26.0	52	31.4	62	29.0	58	0
14	1400.06	174.3	3811	0.00	0.0	0.31	3.6	4.5	8.9	0.0	0.0	24.0	48	29.4	58	27.0	54	0
15	1400.05	174.2	3810	0.00	0.0	0.31	3.6	4.5	8.9	0.0	0.0	22.0	44	27.4	54	26.0	52	0
16	1400.04	174.2	3808	0.00	0.0	0.31	3.6	4.5	8.9	0.0	0.0	20.0	40	25.4	50	26.0	52	0
17	1400.03	174.2	3806	0.00	0.0	0.31	3.6	4.5	8.9	0.0	0.0	17.0	34	22.4	44	26.0	52	0
18	1400.02	174.2	3804	0.00	0.0	0.31	3.6	4.5	8.9	0.0	0.0	12.0	24	17.4	35	22.0	44	0
19	1400.01	174.1	3803	0.00	0.0	0.31	3.6	4.5	8.9	0.0	0.0	7.0	14	12.4	25	22.0	44	0
20	1400.00	174.1	3801	0.00	0.0	0.31	3.6	4.5	8.9	0.0	0.0	3.0	6	8.4	17	20.0	40	0
21	1399.99	174.1	3799	0.00	0.0	0.31	3.6	4.5	8.9	0.0	0.0	1.0	2	6.4	13	20.0	40	0
22	1399.98	174.0	3798	0.00	0.0	0.31	3.6	4.5	8.9	0.0	0.0	0.0	0	5.4	11	18.0	36	0
23	1399.97	174.0	3796	0.00	0.0	0.31	3.6	4.5	8.9	0.0	0.0	0.0	0	5.4	11	18.0	36	0
24	1399.95	174.0	3792	0.00	0.0	0.31	3.6	4.5	8.9	0.0	0.0	0.0	0	4.6	9	18.0	36	0
25	1399.82	173.6	3770	0.00	0.0	0.31	3.6	4.5	8.9	9.5	18.8	0.0	0	4.5	9	17.0	34	0
26	1399.70	173.3	3749	0.00	0.0	0.31	3.6	4.5	8.9	7.5	14.9	0.0	0	3.3	7	16.0	32	0
27	1399.60	173.0	3732	0.00	0.0	0.31	3.6	4.5	8.9	6.0	11.9	0.0	0	3.6	7	16.0	32	0
28	1399.50	172.7	3715	0.00	0.0	0.31	3.6	4.5	8.9	6.0	11.9	0.0	0	3.6	7	16.0	32	0
29	1399.39	172.4	3695	0.00	0.0	0.31	3.6	4.5	8.9	6.5	12.9	0.0	0	3.2	6	16.0	32	0
30	1399.30	172.1	3680	0.00	0.0	0.31	3.6	4.5	8.9	4.5	8.9	0.0	0	2.9	6	15.0	30	0
31	1399.20	171.9	3663	0.00	0.0	0.31	3.6	4.5	8.9	4.5	8.9	0.0	0	2.1	4	14.0	28	0
Avg/ Tots	1399.95	173.9	3792	0.00	0.0	9.61	111.5		276.7		88.3		1190		1493		1656	

APPENDIX C1
TABLE 1

August 2, 1989

SIMULATED BASE GIBRALTAR OPERATIONS: JULY 2010

0 = This month's starting cumulative Gin Chow release (ac-ft).
5611 = Cumulative total diversions from Oct 1 (ac-ft).
4567 = This month's starting ordinary flow volume (ac-ft).
4000 = This month's starting flood flow volume (ac-ft).

425000 = Cumulative Los Laureles flow from Oct 1 (ac-ft).

1 = This month's starting day for Gin Chow release.
1400.00 = This month's starting lake elevation (feet, MSL).
291.7 = This month's starting lake area (acres).
8567 = This month's starting total storage (ac-ft).
196 = This month's maximum diversion (ac-ft).
31 = Number of days in this month.
6.3 = This month's daily diversion rate (ac-ft).

T	U	V	W	X	Y	Z	AA	AB	AC	AD	AE	AF	AG	AH	AI	AJ	AK
													(all flows & volumes in acre-feet)				
	Inflow		Rainfall to		Evapratn from		GINCHOW		Cumulative	Diversns from			24 hour period ending				
DAY	ordinry	flood	ordinry	flood	ordinry	flood	Release	Cuml	Diversions	ordinry	flood	Spills	Elev	Area	OrdVl	FldVl	TotVl
1	110	0	0.0	0.0	3.2	2.8	0	0	5617.3	3.6	2.7	98	1400.00	291.7	4570	3997	8567
2	106	0	0.0	0.0	3.2	2.8	0	0	5623.6	3.6	2.7	94	1400.00	291.7	4572	3995	8567
3	102	0	0.0	0.0	3.2	2.8	0	0	5630.0	3.6	2.7	90	1400.00	291.7	4575	3992	8567
4	98	0	0.0	0.0	3.2	2.8	0	0	5636.3	3.6	2.7	86	1400.00	291.7	4578	3989	8567
5	94	0	0.0	0.0	3.2	2.8	0	0	5642.6	3.6	2.7	82	1400.00	291.7	4580	3987	8567
6	90	0	0.0	0.0	3.2	2.8	0	0	5648.9	3.6	2.7	78	1400.00	291.7	4583	3984	8567
7	86	0	0.0	0.0	3.2	2.8	0	0	5655.3	3.6	2.7	74	1400.00	291.7	4586	3981	8567
8	82	0	0.0	0.0	3.2	2.8	0	0	5661.6	3.6	2.7	70	1400.00	291.7	4588	3979	8567
9	78	0	0.0	0.0	3.2	2.8	0	0	5667.9	3.6	2.7	66	1400.00	291.7	4591	3976	8567
10	74	0	0.0	0.0	3.2	2.8	0	0	5674.2	3.6	2.7	62	1400.00	291.7	4594	3973	8567
11	70	0	0.0	0.0	3.2	2.8	0	0	5680.5	3.6	2.7	58	1400.00	291.7	4596	3971	8567
12	66	0	0.0	0.0	3.2	2.8	0	0	5686.9	3.6	2.7	54	1400.00	291.7	4599	3968	8567
13	62	0	0.0	0.0	3.2	2.8	0	0	5693.2	3.6	2.7	50	1400.00	291.7	4602	3965	8567
14	58	0	0.0	0.0	3.2	2.8	0	0	5699.5	3.6	2.7	46	1400.00	291.7	4604	3963	8567
15	54	0	0.0	0.0	3.2	2.8	0	0	5705.8	3.6	2.7	42	1400.00	291.7	4607	3960	8567
16	50	0	0.0	0.0	3.2	2.8	0	0	5712.2	3.6	2.7	38	1400.00	291.7	4610	3957	8567
17	44	0	0.0	0.0	3.2	2.8	0	0	5718.5	3.6	2.7	32	1400.00	291.7	4613	3954	8567
18	35	0	0.0	0.0	3.2	2.8	0	0	5724.8	3.6	2.7	22	1400.00	291.7	4615	3952	8567
19	25	0	0.0	0.0	3.2	2.8	0	0	5731.1	3.6	2.7	12	1400.00	291.7	4618	3949	8567
20	17	0	0.0	0.0	3.2	2.8	0	0	5737.5	3.6	2.7	4	1400.00	291.7	4621	3946	8567
21	13	0	0.0	0.0	3.3	2.8	0	0	5743.8	3.6	2.7	0	1400.00	291.7	4623	3944	8567
22	11	0	0.0	0.0	3.3	2.8	11	11	5750.1	3.6	2.7	0	1399.96	291.3	4616	3938	8555
23	11	0	0.0	0.0	3.2	2.8	11	22	5756.4	3.6	2.7	0	1399.91	290.9	4609	3933	8542
24	9	0	0.0	0.0	3.2	2.8	9	31	5762.7	3.6	2.7	0	1399.87	290.5	4603	3927	8530
25	9	0	0.0	0.0	3.2	2.8	9	40	5769.1	3.6	2.7	0	1399.83	290.1	4596	3922	8518
26	7	0	0.0	0.0	3.2	2.8	7	46	5775.4	3.6	2.7	0	1399.79	289.7	4589	3917	8505
27	7	0	0.0	0.0	3.2	2.8	7	53	5781.7	3.6	2.7	0	1399.74	289.3	4582	3911	8493
28	7	0	0.0	0.0	3.2	2.8	7	60	5788.0	3.6	2.7	0	1399.70	288.8	4575	3906	8481
29	6	0	0.0	0.0	3.2	2.7	6	67	5794.4	3.6	2.7	0	1399.66	288.4	4568	3900	8468
30	6	0	0.0	0.0	3.2	2.7	6	73	5800.7	3.6	2.7	0	1399.61	288.0	4561	3895	8456
31	4	0	0.0	0.0	3.2	2.7	4	77	5807.0	3.6	2.7	0	1399.57	287.6	4554	3889	8444
Avg/																	
Tots	1493	0	0.0	0.0	100.2	86.3	77			113.0	83.0	1157	1399.92	291.0	4593	3952	8545

APPENDIX C1
TABLE 2

August 2, 1989

APPENDIX C2

GIBRALTAR DAM
TABLE OF ELEVATIONS, VOLUMES & AREAS *
(elevations in feet, MSL; volumes in Acre feet; areas in acres)

ELEV	VOLUME	AREA	ELEV	VOLUME	AREA
1345	0	1.0	1377	3628	171.3
1346	6	10.0	1378	3801	174.1
1347	22	24.0	1379	3976	176.9
1348	52	37.0	1380	4155	179.7
1349	95	49.0	1381	4336	182.5
1350	149	59.7	1382	4520	185.2
1351	213	67.4	1383	4706	188.0
1352	284	75.5	1384	4896	190.9
1353	364	84.1	1385	5088	193.7
1354	453	93.2	1386	5283	196.5
1355	551	102.7	1387	5481	199.3
1356	655	106.8	1388	5682	202.1
1357	764	111.1	1389	5885	204.9
1358	877	115.4	1390	6091	207.8
1359	995	119.7	1391	6303	215.2
1360	1117	124.2	1392	6522	222.7
1361	1243	126.9	1393	6748	230.3
1362	1371	129.7	1394	6982	238.0
1363	1502	132.5	1395	7224	245.9
1364	1636	135.3	1396	7475	254.7
1365	1772	138.1	1397	7734	263.8
1366	1912	140.8	1398	8002	272.9
1367	2054	143.5	1399	8280	282.2
1368	2199	146.3	1400	8567	291.7
1369	2347	149.1	1401	8863	301.6
1370	2497	151.9	1402	9170	311.6
1371	2650	154.6	1403	9487	321.9
1372	2806	157.4	1404	9814	332.3
1373	2965	160.2	1405	10151	342.8
1374	3127	163.0			
1375	3291	165.8			
1376	3458	168.5			

* Calculated by the staff of the Santa Barbara County Flood Control and Water Conservation District, based on fall, 1986 silt survey with concurrent air photogrammetry covering the lake area above water surface elevation 1392.5 feet, MSL.

July 14, 1989

APPENDIX C-3

MONTHLY DIVERSION OF ORDINARY FLOW FROM GIBRALTAR RESERVOIR UNDER BASE OPERATION

Month	Acre Feet
October	482
November	394
December	394
January	368
February	352
March	474
April	490
May	532
June	440
July	113
August	92
September	58
TOTAL	4,189

APPENDIX C4

MAXIMUM MONTHLY DIVERSION DEMAND BY THE CITY AT MISSION TUNNEL (NORTH PORTAL) UNDER BASE OPERATION

Month	Acre Feet
October	837
November	685
December	685
January	640
February	611
March	822
April	852
May	924
June	764
July	196
August	160
September	102
TOTAL	7,278

APPENDIX D

PASS THROUGH OPERATIONS CALCULATIONS

1. Election. If an election to commence pass through operations has been made by the City pursuant to Section IV, B of the agreement, the City's actual operation shall be compared with the Base Operation (see Appendix C) to calculate the volume of water which the City will be entitled to withdraw from Gibraltar and Cachuma Reservoirs.

2. Alternative Methods. There are two alternative methods for the City to secure delivery of the pass through water, and the City may elect whichever method is the most appropriate at any given point in time.

a. Method A: Storage in Cachuma. To the extent the Cachuma project facilities may be so used under law, pass through water may be stored in the Cachuma Reservoir, and delivered to the City through the Cachuma project facilities.

(1) Calculating Volume of Pass Through Inflow to Cachuma. The amount of pass through water flowing into Cachuma Reservoir shall be calculated by the fifth (5th) business day of each month by determining the arithmetic difference between (i) the amount of water spilled or released from Gibraltar in the preceding month, adjusted for conveyance losses calculated pursuant to Appendix F, and (ii) the amount of water which would have spilled or been released from Gibraltar during the preceding month utilizing the Base Operation Calculations (Appendix C), and adjusted for conveyance losses calculated pursuant to Appendix F. The difference resulting from that calculation may be a positive or a negative value.

(2) Calculating Amount Stored in Cachuma. The amount of pass through water stored in Cachuma and available for delivery to the City shall be calculated as follows. The result pursuant to Paragraph (1) above, if a negative value, shall be debited or, if a positive value, shall be credited to a Gibraltar Pass Through Account. (The amount of debit or credit to the Girbaltar Pass Through Account shall correspond directly to the net increment to be added to or subtracted from the measured inflow to Cachuma to calculate Constructive Inflow pursuant to Appendix E.) Any positive balance in the Pass Through Account shall be adjusted to account for evaporation, on a daily basis, by deducting an amount equal to the proportion the Gibraltar storage water bears to the total amount of water stored in Cachuma, multiplied by the Cachuma Reservoir evaporation for that day. A monthly report relating to Cachuma storage shall show the account balance in the Gibraltar Pass Through Account.

(3) Withdrawal. The City may withdraw pass through water stored in such amounts it may require from time to time. The City shall exert its best efforts to, and shall be allowed to, withdraw pass through water as early as feasible in order to minimize losses due to evaporation and spill. The amount of pass through water credited to the Gibraltar Pass Through Account in Cachuma Reservoir shall be treated as a diversion from Gibraltar Reservoir for purposes of this agreement.

(4) Spills. In the event Gibraltar pass through water is stored at Cachuma Reservoir when Cachuma Reservoir spills, the Gibraltar pass through water shall be deemed to have spilled from Cachuma Reservoir prior to above and below Narrows account water and Cachuma Project water.

(5) Payment. The City shall pay any costs associated with storage and transmission of pass through water.

b. Method B: Exchange with I.D. No. 1. The City may undertake to arrange with I.D. No. 1 to make controlled releases from Gibraltar Reservoir to be exchanged for water I.D. No. 1 is entitled to receive under its Cachuma Member Unit Contract.

(1) Coordination. Prior to making controlled releases for exchange purposes from Gibraltar, the City shall coordinate such releases with I.D. No. 1 to determine the expected delivery rates of Cachuma Project water to I.D. No. 1 during the proposed release period, and shall notify the USBR at least five days prior to that release. The City shall not make controlled releases for exchange purposes until Gibraltar Reservoir has ceased to be in spill condition as determined under Appendix C, Section 3, Paragraph c. Both I.D. No. 1 and the USBR shall be notified of the time and date of the start and termination of such releases as well as the rates of releases from Gibraltar Reservoir, which shall correlate with I.D. No. 1 deliveries, taking into consideration travel time from Gibraltar to I.D. No. 1's inlet works. I.D. No. 1 will use its best efforts to maximize its use of water reaching Cachuma Reservoir during the release period, but may meet some or all of its demand from other sources if it has compelling operational reasons for doing so.

(2) Releases; Conveyance Losses. The City shall release from Gibraltar to Cachuma a quantity of water which when it reaches Cachuma Reservoir, is less than or approximately equal to the amount of water I.D. No. 1 expects to take delivery of from Cachuma during the time the water released by the City flows into Cachuma. The quantity released shall be adjusted for conveyance losses pursuant to Appendix F to calculate the quantity arriving at Cachuma Reservoir.

(3) Delivery to I.D. No. 1. The water made available at Cachuma Reservoir as a result of the pass through operation shall be considered to be the

property of I.D. No. 1 and shall be deemed to be immediately released from Cachuma to that District to the extent the District actually takes delivery of water from Cachuma. The quantity of water reaching Cachuma and delivered to I.D. No. 1 shall not be considered to be inflow to the Cachuma Project and shall be deducted from the measured inflow to Cachuma (see Appendix E). Water delivered to I.D. No. 1 hereunder shall not be considered to be Cachuma Project water delivered to I.D. No. 1.

(4) Exchange. Upon delivery of a quantity of water to I.D. No. 1 as a result of pass through operations, that District shall be deemed to have requested that an identical quantity of water ("exchange water") it is entitled to receive pursuant to its Member Unit Contract be transferred to the City, and the City shall be entitled to treat that water as Cachuma project entitlement. The amount of pass through water transferred to the City through the exchange shall be treated as a diversion from Gibraltar Reservoir for the purposes of this agreement.

(5) Payment. Immediately following completion of the exchange, I.D. No. 1 shall send a written claim to the City for the difference between the amount I.D. No. 1 previously paid for Cachuma Project water and the amount it is required to pay pursuant to Article 17(b) of its Member Unit Contract as a result of the transfer to the City, and the City shall promptly pay the claim.

3. Overdiversion. In the event the City diverts, in a given month, an amount of water in excess of the amount calculated for the Base Operation (utilizing Appendix C), and does not correct that overdiversion by a compensating underdiversion in any other month during that water year, the City shall assure complete mitigation of those overdiversions by relinquishing, in the first month of the next water year following the overdiversion, an additional amount from its Cachuma contractual entitlement equal to the excess diversion. For the purpose of computing overdiversion at the end of each water year, the amount of pass through water credited to the Gibraltar Pass Through Account in Cachuma Reservoir or transferred to the City through the exchange shall be treated as a diversion from Gibraltar Reservoir in that year.

APPENDIX E

CALCULATION OF CONSTRUCTIVE INFLOW TO CACHUMA RESERVOIR

1. Introduction

Under current operation, all inflow to Cachuma Reservoir is computed on a daily basis by the USBR based on the measurements of change in storage, spill and releases, diversions, precipitation and evaporation from the reservoir. For purposes of this agreement, the inflow computed from the above measurements is referred to as "measured Cachuma inflow".

Cachuma Reservoir is operated in a manner so as to provide protections to Santa Ynez River water users downstream of Bradbury Dam. In accordance with the State Water Resources Control Board Order WR 73-37, as amended ("the Order"), the Santa Ynez River inflows to Cachuma Reservoir are utilized to provide storage credits in Cachuma Reservoir for the benefit of the areas above and below the Lompoc Narrows. The credits stored in Cachuma Reservoir for the above and below Narrows areas are referred to as the above Narrows account (ANA) and below Narrows account (BNA).

The inflow to Cachuma Reservoir is affected by the operation of Gibraltar Reservoir. Consequently, it is necessary to make adjustments in the manner of calculating Cachuma inflow in order to fulfill the purposes of the Order. The effect on Cachuma inflows under the actual operation of Gibraltar Reservoir can be determined by comparison with the Base Operation as defined in the Agreement. Accordingly, measured inflow to Cachuma Reservoir can be adjusted to calculate what will be known as "constructive Cachuma inflow" utilizing the procedures in this Appendix E.

2. Pass Through Operations

a. Method A: Cachuma Reservoir Storage. To the extent that pass through water is stored in Cachuma as described in Method A of Appendix D, constructive Cachuma inflow shall be computed as follows.

(1) Incremental Spill and Release Volume. Each month, the volume of water actually spilled and released from Gibraltar Reservoir shall be compared to the Base Operation spill and release calculated for that month using Appendix C. The difference between those quantities is referred to herein as the "incremental Gibraltar spill/release."

(2) Actual Exceeds Base Spill/Release. If the actual spill/release exceeds the Base Operation spill/release, the incremental Gibraltar spill/release shall be adjusted to account for conveyance losses pursuant to Appendix F. The resulting net incremental spill/release, after adjustment for conveyance losses, shall be reported to the USBR and subtracted from the measured Cachuma inflow by the USBR; the result of that calculation is the constructive Cachuma inflow for that month.

(3) Base Exceeds Actual Spill/Release. If the Base Operations spill/release exceeds the actual spill/release, the incremental Gibraltar spill/release shall be adjusted to account for conveyance losses pursuant to Appendix F. The resulting net incremental spill/release, after adjustment for conveyance losses, shall be reported to the USBR and added to measured Cachuma inflow by the USBR; the result of that calculation is the constructive Cachuma inflow for that month.

b. Method B: Exchange of Water with I.D. No. 1. To the extent that pass through water is exchanged for Cachuma project water pursuant to Method B in Appendix D, constructive Cachuma inflow shall be calculated as follows.

(1) Adjustment in Measured Inflow Due to Exchange Release. Such controlled releases shall be subject to an adjustment to account for conveyance losses pursuant to Appendix F. To the extent that I.D. No. 1 actually takes delivery of such releases reaching Cachuma Reservoir during that calendar month, the amount of such delivered water shall be reported to the USBR and deducted from the measured Cachuma inflow by the USBR. The result of that calculation is "constructive Cachuma inflow."

(2) Special Rule: Straddling Months. Pass through water may be released in one calendar month, and may either be in transit to Cachuma when the month ends or may not have been fully delivered to I.D. No. 1 when the month ends. In that event, the City, I.D. No. 1 and USBR shall ascertain the actual transmission time and, based thereon, shall determine which portion of the pass through water was actually delivered to I.D. No. 1 in the first month; constructive Cachuma inflow for that month shall be determined using that quantity. The balance shall be used to calculate constructive Cachuma inflow for the following month.

(3) Constructive Cachuma Inflow Calculation. Each month the amount actually spilled/released from Gibraltar shall be compared with the Base Operation spill/release. If the Base Operation spill/release exceeds the actual spill/release, the incremental Gibraltar spill/release, after adjustment for conveyance losses (pursuant to Appendix F), shall be reported to the USBR and added to the measured Cachuma inflow by the USBR to obtain constructive Cachuma inflow. Otherwise, the constructive Cachuma inflow shall equal measured Cachuma inflow for that month, except as provided in Paragraph b(1) above.

3. Downstream Mitigation Operation

For each month during a mitigation interval, or during any period that Cachuma Reservoir is spilling (as defined in Section V, B of this agreement) the amount of monthly spill/release from Gibraltar Reservoir under actual operation is compared with the amount of monthly spill/release computed for the Base Operation pursuant to Appendix C. If the Base Operation spill/release exceeds the actual spill/release, the incremental spill/release, after adjustment for the conveyance losses between Gibraltar Dam and Cachuma Reservoir (pursuant to Appendix F), shall be reported to the USBR and added to measured Cachuma inflow by the USBR to obtain constructive Cachuma inflow in that month. Otherwise, constructive Cachuma inflow shall equal the measured Cachuma inflow for that month.

4. Procedures

For proper and timely computation of constructive Cachuma inflow, the following shall be undertaken.

a. Live Stream Determination by USBR. In accordance with the Order, the USBR currently determines the days during which a live stream condition exists below Bradbury Dam. By the third day of each month, the City shall obtain from the USBR the determination of live stream days during the previous month. For each month in which a live stream existed, the City shall compute the Gibraltar Reservoir spill and releases for each live stream and non-live stream day in that month. These amounts shall be utilized to determine, on a daily basis, the increment to be added or subtracted from the measured Cachuma inflow to obtain constructive Cachuma inflow. Occurrence of live stream days in a month will result in the computation of two increments (a live stream increment and a non-live stream increment) to be added or subtracted to the corresponding measured Cachuma inflows in that month to calculate ANA credits. For purposes of calculating BNA credits, the two increments shall be combined. The City shall report monthly increments, if applicable, to the USBR.

b. I.D. No. 1 Water Delivery Data. Water delivered from Cachuma Reservoir to I.D. No. 1 currently is measured continuously by the USBR. The City shall obtain the record by the third day of each month of deliveries for the previous month.

c. Los Laureles Gauge Data. By the third day of each month, the City shall obtain from the U.S. Geological Survey the daily Los Laureles gauge readings for the previous month.

d. Notification to USBR to Calculate Constructive Inflow. Prior to the fifth day after the end of any month in which exchange water was delivered to I.D. No. 1, the City shall report to USBR the quantity of water which was both released from Gibraltar Reservoir and delivered to I.D. No. 1 in that month (see Appendix D). For the purpose of computing the "constructive Cachuma inflow", the amount delivered to I.D.

No. 1 shall be subtracted from the measured inflow to Cachuma Reservoir. Additional adjustment to the measured inflow may be required under Paragraph e below.

e. Conveyance Losses. Prior to the fifth day of each month, the City shall report to the USBR the computed increment in Gibraltar Reservoir spill/release after adjustment for conveyance losses (see Appendix F) for the previous computation month, if any, to be added to or subtracted from the measured Cachuma inflow in that month in order to obtain the constructive Cachuma inflow.

f. Procedures if Cachuma Storage is Allowed. To the extent that federal law permits the City to store and divert Gibraltar Reservoir water in and from Cachuma Reservoir under the pass through operation, Paragraphs b and d shall not apply because the exchange between the City and I.D. No. 1 is not necessary.

g. In accordance with the Order, the Santa Ynez River inflows to Cachuma Reservoir are utilized to determine storage credit in Cachuma Reservoir for the benefit of the ANA and BNA. Consistent with this agreement, the USBR shall utilize the constructive Cachuma inflow in place of the measured Cachuma inflow for computations of storage credits to the ANA and BNA in any month when the computed Cachuma inflow is deemed to be different than the measured Cachuma inflow as provided in this Appendix. Otherwise, the monthly measured Cachuma inflow shall be used for the computation of the ANA and BNA.

APPENDIX F

CONVEYANCE LOSSES

1. Introduction

Water released or spilled from Gibraltar Reservoir may experience losses ("conveyance losses") before reaching Cachuma Reservoir. This Appendix sets out the method to make adjustments for those losses. All daily measurements will be for the period commencing at 8 a.m.

2. Adjustment for Conveyance Losses.

The gauge below Los Laureles Canyon, located immediately upstream of Cachuma Reservoir, measures the flow in the Santa Ynez River. Based on the measurements of the Santa Ynez River flow at that gauge, and the spills/releases from Gibraltar Reservoir, the adjustment for losses shall be calculated using Appendix F-1, as follows:

a. Adjustment Under Actual Operation.

The total amounts of actual daily spills/releases from Gibraltar Reservoir (measured at Gibraltar Dam) and the flow of Santa Ynez River below Los Laureles Canyon shall be calculated for each month. Using this data, the adjustment factor is determined pursuant to Appendix F-1. The actual daily spills/releases during that month shall be multiplied by the adjustment factor so determined to estimate the quantity of spill/release water reaching Cachuma Reservoir.

b. Adjustment to Spills Under Base Operation.

The totals of computed daily spills/releases under the Base Operation calculated pursuant to Appendix C and Santa Ynez River flow below Los Laureles Canyon for each month shall be used in the following calculation. In each month in which spills/releases occur under both actual and base operations of Gibraltar Reservoir, the adjustment factor used for the actual operation pursuant to Paragraph a above shall be applied by multiplication to the computed daily spills/releases under the Base Operation during that month.

In the event the Base Operation results in a computed spill/release during a month and there is no actual spill in that month, the Base Operation spill/release is adjusted for the computed losses using the adjustment factor determined pursuant to Appendix F-2. The adjustment factor so determined shall be applied to the Base Operation spill/release on a daily basis by multiplying daily Base Operations spill/release by the adjustment factor to estimate the amount of Gibraltar Reservoir spill/release which would have reached Cachuma Reservoir under the Base Operation.

APPENDIX F-1

CRITERIA FOR DETERMINATION OF ADJUSTMENT FACTOR FOR GIBRALTAR RESERVOIR SPILLS/RELEASES UNDER ACTUAL OPERATIONS [1]

Measured Flow of Santa Ynez River at Los Laureles Gauge [2] for Current Month is:	Accumulated Measured Monthly Flows at Los Laureles Gauge [2] October 1 through Preceding Month is: [3]	Measured Monthly Flows at Los Laureles Gauge [2] less Gibraltar Spill for Current Month is:	Adjustment Factor
In excess of calculated flow [4]	Not applicable	Not applicable	1.0
Less than calculated flow [4] [5]	In excess of 10,000 AF	Not applicable	1.0
Less than calculated flow [4]	10,000 AF or less	In excess of 1,000 AF	1.0
Less than calculated flow [4]	10,000 AF or less	1,000 AF or less	Calculated Ratio [6]

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1 *This Appendix F-1 is to be used whether or not Gibraltar Reservoir is spilling under the Base Condition.*

2 *The USGS stream gauge located on the Santa Ynez River below Los Laureles Canyon.*

3 *Not applicable for May through September.*

4 *Calculated flow at Los Laureles is the sum of 25 percent of Gibraltar inflow and all of actual Gibraltar spill/release for that month.*

5 *Use next two conditions for May through September.*

6 *Adjustment factor is calculated to be the ratio of measured flow at the Los Laureles gauge to the calculated flow (see footnote 4).*

CRITERIA FOR DETERMINATION OF ADJUSTMENT FACTOR FOR GIBRALTAR RESERVOIR SPILLS/RELEASES UNDER BASE OPERATIONS [1]

Measured Flow of Santa Ynez River at Los Laureles Gauge [2] for Current Month is:	Accumulated Measured Monthly Flows at Los Laureles Gauge [2] October 1 through Preceding Month is: [3]	Measured Monthly Flows at Los Laureles Gauge [2] Exceeds Calculated Flow. [4]	Adjustment Factor
In excess of 1,000 AF	Not applicable	Not applicable	1.0
1,000 AF or less [5]	In excess of 10,000 AF	Not applicable	1.0
1,000 AF or less	10,000 AF or less	Yes	1.0
1,000 AF or less	10,000 AF or less	No	Calculated Ratio [6]

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1 *This Appendix F-2 is to be used only if Gibraltar Reservoir is not spilling under actual operation and it is deemed to be spilling under the Base Operation.*

2 *The USGS stream gauge located on the Santa Ynez River below Los Laureles Canyon.*

3 *Not applicable for May through September.*

4 *Calculated flow at Los Laureles is 25 percent of Gibraltar inflow for that month.*

5 *Use next two conditions for May through September.*

6 *Adjustment factor is calculated by adding (1) the measured flow at Los Laureles and (2) computed spill/release from Gibraltar Reservoir under Base Operation, and dividing that sum by the sum of (1) 25 percent of Gibraltar inflow and (2) computed spill/release from Gibraltar Reservoir under Base Operation for that month.*

Appendix B

Reclamation's Cultural Resources Determination

United States Department of the Interior

BUREAU OF RECLAMATION
Mid-Pacific Regional Office
2800 Cottage Way
Sacramento, California 95825-1898

IN REPLY
REFER TO:
MP-153
ENV-3.00

VIA ELECTRONIC MAIL ONLY

August 27, 2013
MEMORANDUM

To: Rain Healer
Natural Resource Specialist – South-Central California Area Office

From: William Soule
Archaeologist – Division of Environmental Affairs

Subject: 13-SCAO-256: Warren Act Contracts for the Storage and Conveyance of Non-Project water from City of Santa Barbara Gibraltar Reservoir in and Through Cachuma Project Facilities.

This proposed undertaking by Reclamation is to enter into Warren Act contracts with the City of Santa Barbara (City) to store and convey non-project water in and through Cachuma Project facilities. This is the type of undertaking that does not have the potential to cause effects to historic properties, should such properties be present, pursuant to the National Historic Preservation Act (NHPA) Section 106 regulations codified at 36 CFR Part 800.3(a)(1).

Reclamation proposes to execute Warren Act contracts (temporary and/or long-term) with the City over a 45-year period for the storage and conveyance of its non-project water (Gibraltar Reservoir Pass Through water) in and through Cachuma Project Facilities. The City's Pass Through water would be stored in Lake Cachuma until it is either delivered to the City through Tecolote Tunnel and the South Coast Conduit, or lost to spill or evaporation. The maximum amount of Pass Through water to be stored in Lake Cachuma would be 8,567 acre-feet at any one time. There is no ground disturbance, construction of new facilities, alternation of existing facilities, or change in land use associated with this proposed action.

After reviewing the materials provided for the Section 106 determination of effect for this undertaking, I concur with a statement in EA-12-086 that neither this Proposed Action or the No Action Alternative would have significant impacts on properties listed, or eligible for listing, on the National Register of Historic Places as determined by Reclamation. This memorandum is intended to convey the completion of the NHPA Section 106 process for this undertaking. Reclamation has no further obligations under NHPA Section 106, pursuant to 36 CFR § 800.3(a)(1). Please retain a copy in the administrative record for this action. Should changes be made to this project, additional NHPA Section 106 review, possibly including consultation with the State Historic Preservation Officer, may be necessary. Thank you for providing the opportunity to comment.

CC: Cultural Resources Branch (MP-153), Anastasia Leigh – Regional Environmental Officer (MP-150)