

# **THE CACHUMA PROJECT CONTRACT AND MANAGEMENT**

## ***Whiskey Is For Drinking - But MUST We Fight Over Water?*<sup>1</sup>**

### **SUMMARY**

The Santa Barbara County Grand Jury (Jury) studied plans for the renewal of the 1995 Contract<sup>2</sup> (Contract) between the Santa Barbara County Water Agency (SBCWA) and the United States Bureau of Reclamation (Bureau), which governs the Cachuma Project (Project). The renewal is due in September 2020 and the Jury reviewed information about the Project and related issues on the websites of water agencies within the County. It also sought ways to reduce disagreements among SBCWA and the five Member Units which receive and distribute Project Water.

The Jury recommends that SBCWA and the Member Units speak with one voice to the Bureau on vital decisions, especially in regard to the quantities of water to be diverted to the Member Units each year. Regular meetings of the technical staffs could alleviate disagreements prior to presentation to the Bureau. When disagreements do occur and cannot be resolved, the positions of all parties should be given equal weight.

The current Contract needs more than revision. Its terminology is often ambiguous as several different technical terms can mean the same thing, and a single technical term can have several meanings. Its coverage is outdated and does not address the challenges of the future, especially the expected disruptions due to climate change. The Jury recommends planning to revise outdated provisions every five years.

Local websites and other information sources leave questions for which documented answers are not readily available. This report fills some of the gaps and recommends that local agencies combine to create a website which provides the essentials about the Project and gives links to more complex material.

### **INTRODUCTION AND BACKGROUND**

The Santa Barbara County Grand Jury (Jury) was asked to investigate plans for the renewal of the 1995 Contract<sup>2</sup> (Contract) between the Santa Barbara County Water Agency (SBCWA) and the US Bureau of Reclamation (Bureau), which governs the Cachuma Project (Project). The renewal, due in September 2020, is expected to be in effect for 25 years. The request asked the Jury to report on the 1995 Contract, the changes desired by SBCWA or any of the five Member Units (MUs, the Water Districts which receive and distribute Project Water), and measures needed to deal with climate change and other likely problems.

The Jury studied many documents, including two recent Grand Jury reports,<sup>3,4</sup> to understand the meaning and purpose of terms contained in the 1995 Contract. These documents help explain why the Contract contains some of its provisions and the possible limitations on a renewal. They also describe much of the Project's history and governance. Appendix A of this report draws on them for a detailed account.

This Report has five parts: Report text, Report Endnotes, Appendix, Appendix Endnotes, and Glossary. Both sets of Endnotes are numbered 1,2, 3, .... They have some items in common but are different.

### **The Cachuma Project: History and Infrastructure**

The primary purpose of the Project is to provide water to most of the South Coast (Gaviota to the Ventura County line). The Project consists of Bradbury Dam (Dam) on the Santa Ynez River creating Lake Cachuma (Cachuma), located on the northern edge of the Santa Ynez mountains, the Tecolote Tunnel (Tunnel) from Cachuma through the mountains, and the South Coast Conduit (Conduit). The Conduit meets the Tunnel and carries Cachuma water east as far as Carpinteria and west to Goleta.<sup>5</sup>

Cachuma is an artificial lake created by the Dam and fed by the Santa Ynez River, which begins in Ventura County and flows to the ocean. The river can dry up in summer but flood in winter. The Project's aim was a steady, reliable water supply. Water from Cachuma passes through the Tunnel to the Conduit, then to treatment facilities, from which it goes to the City of Santa Barbara and the Goleta, Montecito and Carpinteria Valley Water Districts.

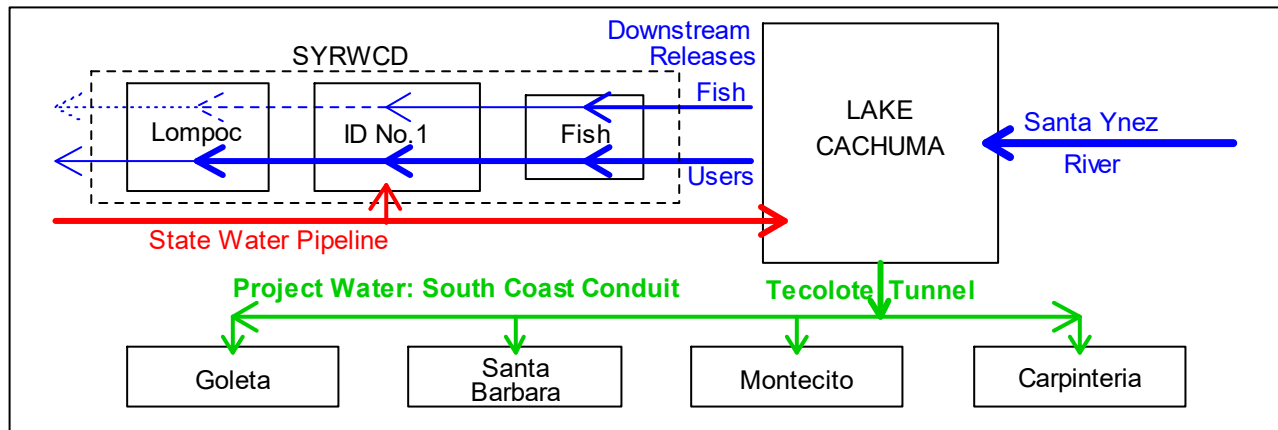
The Project also delivers water to a fifth MU, the Santa Ynez River Water Conservation District, Improvement District No. 1 (ID No.1). At first, this was a part of the Santa Ynez River Water Conservation District (SYRWCD), but it is now a separate agency. When it was first built, the Project sent water to ID No.1 via a pipeline from Cachuma. That pipeline is now used as the State Water Project's (SWP) last section to bring water from ID No.1 to Cachuma. An agreement among Project parties enabled ID No.1 to exchange its lost Cachuma water for SWP water delivered directly.<sup>6</sup>

With the construction of the Project, the users downstream of the Dam potentially lost access to an essential water source. For example, the City of Lompoc depends on groundwater replenished by the Santa Ynez River. A 50-year legal dispute was resolved in 2002 by a settlement agreeing to a schedule for downstream releases<sup>7</sup> during summer and early fall, from a tunnel under the Dam.<sup>8</sup>

Plants, wildlife and fish, especially steelhead trout, also depended on the river below the Dam. The steelhead trout became subject to the Endangered Species Act and are protected by additional releases required by the National Marine Fisheries Service (NMFS). Most of these are relatively small.

Project water flow is shown schematically in Figure 1. It shows that ID No.1 gets water from three sources. It gets far more from the downstream releases than from the Project (the red State Water arrow).

**Figure 1.**  
**Water Flow in the Cachuma Project<sup>9</sup>**



The quantities of water in Figure 1 vary wildly from year to year. The following values are approximate (Appendix A, Project Inflow and Outflow). Annual flow from the Santa Ynez River into Cachuma has an average of 74,000 acre-feet (AF).<sup>10</sup> At capacity Cachuma contains 190,000 AF; it diverts<sup>7</sup> 26,000 AF to Member Units, releases up to 18,000 AF to downstream users and 3,500 AF to fish, and loses up to 16,000 AF to evaporation.<sup>11</sup>

Lake Cachuma was explicitly intended for water supply,<sup>3,12</sup> but the Bureau often encourages or mandates the development of recreation areas at the sites of its water projects.<sup>13</sup> In 1953 the County entered into a long-term lease with the Bureau to manage the 9,000 acre Cachuma Lake Recreation Area. Each year, this area has nearly a half-million visitors, with cost and revenue both slightly under \$3 million.

## Project Governance

The main Agencies involved in the Project are shown in Table 1. The agencies of most interest in this report are SBCWA and the five Member Units (MUs).

**TABLE 1**  
**Agencies involved in the Cachuma Project**

<b><u>Role<sup>14</sup></u></b>	<b><u>Formal Name<sup>15</sup></u></b>	<b><u>Name in this Report</u></b>
S	United States Bureau of Reclamation	the Bureau
S	Santa Barbara County Water Agency	SBCWA
PR	National Marine Fisheries Service	NMFS
PR	California State Water Resources Control Board	SWRCB
PR	Santa Ynez River Water Conservation District	SYRWCD
MU	Carpinteria Valley Water District	Carpinteria
MU	Goleta Water District	Goleta
MU	Montecito Water District	Montecito
MU	City of Santa Barbara	Santa Barbara
MU	Santa Ynez River Water Conservation District, Improvement District Number 1	ID No.1
JPA	Cachuma Conservation Release Board	CCRB
JPA	Cachuma Operations and Management Board	COMB
JPA	Central Coast Water Agency	CCWA

The Bureau, a branch of the US Department of the Interior, owns Lake Cachuma, the Dam, the Tunnel, the Conduit, and the four small regulating reservoirs along the Conduit: Glen Anne, Lauro, Ortega, and Carpinteria. It operates the Dam and makes final decisions about the allocation of water, but it must satisfy the requirements of the Endangered Species Act, the permits issued by SWRCB, legal settlements, and the Contract. Its decisions usually follow the advice of local Project agencies.

SBCWA is a dependent special district set up by the State and administered by the County as part of the Department of Public Works. Its employees are County employees and its Board of Directors is the Board of Supervisors. It was created by the state legislature in 1945 "to control and conserve storm, flood and other surface waters for beneficial use and to enter into contracts for water supply" with the federal government (the Bureau), municipalities, and water districts.<sup>16</sup> It entered into the initial 1949 Contract with the Bureau for development of the Cachuma Project.<sup>12</sup> It also entered into subcontracts with SYRWCD, and with the Water Districts of Carpinteria, Goleta, Montecito, Summerland and the City of Santa Barbara, which were designated as Member Units of SBCWA. Later, ID No.1 separated from SYRWCD and Summerland merged with Montecito.

NMFS is a branch of the National Oceanographic and Atmospheric Administration. It issues Biological Opinions governing releases of Cachuma water for the survival of downstream steelhead trout.<sup>17</sup>

SWRCB is a State agency. Its permits<sup>2</sup> allow the Bureau to operate the Project. Their conditions ensure that the 2002 Settlement Agreement<sup>8</sup> with downstream users is implemented,<sup>18</sup> and help protect steelhead.

SYRWCD is a special district (or local service agency). Its primary role is protecting downstream rights, and it has a designated role in determining the times and quantities of downstream releases.<sup>19</sup> It was the "parent" of ID No.1 but they are now separate agencies.

The MUs are the water agencies receiving water from the Project. Except for ID No.1, their names in this Report correspond to cities or unincorporated areas. The correspondence is only approximate. A MU's service area may not contain the entire city or area of its name and may contain other outside land. In this Report, these names always refer to the MUs. Each MU has an elected board of directors and a technical staff. The directors of the Santa Barbara MU are the members of the Santa Barbara City Council. In all other cases, the directors are elected specifically to manage the Water District.

CCRB is a Joint Powers Authority formed by Carpinteria (which dropped out), Goleta, Montecito, and Santa Barbara to protect their Cachuma rights. It helped develop a Fish Management Plan<sup>17</sup> and continues to monitor Cachuma Project actions and decisions on behalf of its members.

COMB is a Joint Powers Authority formed by the MUs except for ID No.1. It operates and maintains the Tunnel, the Conduit (flow control valves, meters, etc.), and four regulating reservoirs (Lauro, Ortega, Carpinteria and Glen Anne). It implements the Fish Management Plan by conducting scientific studies, monitoring conditions, and installing fish passage improvements.

CCWA is a Joint Powers Authority formed by the MUs and the Cities of Buellton, Guadalupe and Santa Maria to manage the County's SWP facilities, including deliveries to Lake Cachuma. It is not otherwise directly involved in the Project.

The current Contract became effective in 1995, but was signed in 1996. It is mainly a renewal of the 1949 Contract, updated to cover changes of Member Units, acknowledge downstream Water Rights, and add such environmental goals as maintaining the steelhead fishery below the Dam and restoring the damaged habitat of rare, threatened, or endangered species. Some details of the downstream commitments are to be filled in later by legal settlements and agreements involving other entities such as SWRCB and environmental agencies.

## **METHODOLOGY**

The Jury conducted interviews with local elected officials and professional or technical staff from SBCWA and all five Member Units. It studied the 1949 and 1995 Contracts, other documents dealing with the Project's Contracts, permits, legal settlements, planning, and history; the websites of all the agencies listed in Table 1; the agencies reports, letters, board meeting agendas and minutes, district newsletters; and accounts in the local press. It reviewed previous Grand Jury reports from 2006-2007<sup>20</sup>, 2015-2016<sup>3</sup> and 2016-2017.<sup>4</sup>

## **OBSERVATIONS**

### **Clarity of Project Information**

At the outset of this investigation, the Jury's focus was the renewal of the 1995 Contract. However, it soon found parts of the Contract to be unclear. It also learned that the Contract is not the only source of rules governing the Project. Some changes that seemed desirable were not possible because of rules imposed by permits, legal settlements, or State and Federal laws. Some Contract rules, or procedures based on the rules, seemed suboptimal at first but were based on reasons or compromises that were still valid.

The Jury sought Project records to educate itself on these matters. Most of the search was online: it was not expected to be difficult and could show how easily citizens with an active interest in water issues, or candidates for a Water District board, could find information they needed. The search revealed two problems. Terminology was unclear in both the 1949 and 1995 Contracts and in other related documents, and local websites provide little access to detailed information about the Project.

### **Contract Terminology**

Some key terms in the 1995 Contract are unclear or ambiguous. An important issue is the quantity of water to be diverted to the Member Units in a Water Year, currently October 1 to September 30. The Contract uses several terms in this context, but does not describe how any of them are to be calculated or used. "Available supply" and "annual project yield" are defined, but only as general concepts. Other terms, such as "sustained annual yield" and "entitlement," are given only as unexplained numbers. The "safe yield" is given only in an attachment (Exhibit C) as 25,714 acre-feet. This precision suggests a calculation method which achieves a clear purpose, but neither a method nor a reference to one is given for any of these quantities. The 1949 Contract also uses different terms for diversion quantities.

The background documents do not resolve these ambiguities. For example, the 1995 Contract was partly based on a draft environmental impact report written to comply with the California Environmental Quality Act. A version, dated 2003<sup>21</sup>, has different definitions of "safe yield" and "operational yield" from those assumed in the 1995 Contract. It also uses "entitlement" and "allocation" differently.

SBCWA and the MUs also use these terms indiscriminately at times. In the dispute discussed below, the MUs' request is an "entitlement request" and a "40% Allocation." The MUs ask for "10,285 acre-feet (AF) as Available Supply," which may seem to quantify the current Available Supply but means only that the Available Supply is sufficient for the request.

A related term is the "design drought." The Jury has been unable to find a clear origin or definition of this term.<sup>22</sup> The Bureau's history<sup>23</sup> states that "the Cachuma Project was planned to weather a seven-year drought" but gives no definition of what it means to "weather" a drought, or a reference to one.

Some terms in a contract need to be defined vaguely because the quantity or item they describe may change over the life of the contract. The definitions of available supply and annual project yield in the 1995 Contract allow for natural changes, such as siltation, and for changes in laws or permits governing the Project's operation. Flexibility is important in a 25-year contract. However, it does not require the use of several terms all meaning the same thing, or of a single term having several different meanings, either in the same document or closely related ones. Standardized terminology could enhance flexibility by reducing uncertainty. In fact, both Contracts have inflexible features, such as the 1949 Contract's hard

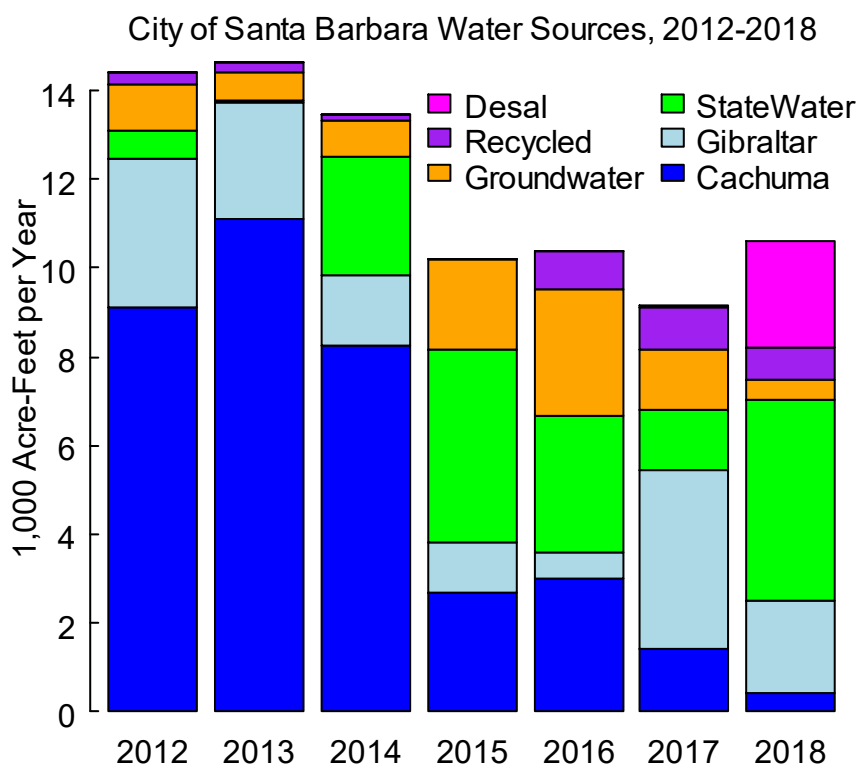
numbers for diversion quantities more than 35 years in the future (Article 11), and the 1995 Contract's hard number (25,714) for annual project yield and safe yield.

### Access to Information

The Jury found that key Project information and documents, including the 1949 and 1995 Contracts, were often unavailable on local websites for SBCWA, the MUs, COMB and CCRB. These sites differ in organization and coverage, but some generalizations are possible. Ratepayer information, current news, conservation advice, and district governance (board meetings, budgets, and management plans), are well-covered.

Joint projects get less attention. All these sites describe the Cachuma Project mainly in terms of its

**Figure 2**



relationship to their own responsibilities. The Project's physical structure is outlined by Goleta and Santa Barbara, and given more briefly by Montecito, Carpinteria and SBCWA. The Urban Water Management plans<sup>24</sup> are more complete but the outlines do not refer to these plans. Links to more detailed information on State and Federal websites are not provided. Even less information is given about Project governance. COMB gives brief summaries of "History," "Operations," and "Fisheries." CCRB's<sup>25</sup> Documents section has the most thorough background information, but it is limited to downstream issues.

### The need for a comprehensive local website

Of the thirteen agencies listed in Table 1, the Bureau and NMFS are

Federal, SWRCB is State, and the other ten are in Santa Barbara County. Six of these are governed by directly elected Boards; all but Santa Barbara are elected entirely to manage water issues. Three more (the JPAs) have Boards consisting of elected Directors of member agencies, appointed by their colleagues. SBCWA is less directly tied to elections but is ultimately responsible to the Board of Supervisors.

These agencies make or implement rules about State Water, groundwater, desalination, reclaimed water, sales or exchanges between districts, and other water issues.<sup>26</sup> They all interact with the Cachuma Project. For example, investment in facilities for groundwater, desalination and reclamation may depend on expected future Cachuma supplies.

Figure 2<sup>27</sup> shows how Cachuma supplies can affect demand for other sources. Cachuma was full in 2012. It then declined, reaching its smallest level in October, 2016. The decreased heights of the 2015-2018 bars in Figure 2 show the results of intense conservation efforts.

Thus, water management is of growing importance, directly sensitive to voter choices, and often complex. Clear information, readily available online, would encourage conservation and active involvement, and aid voters and potential candidates for water management offices.

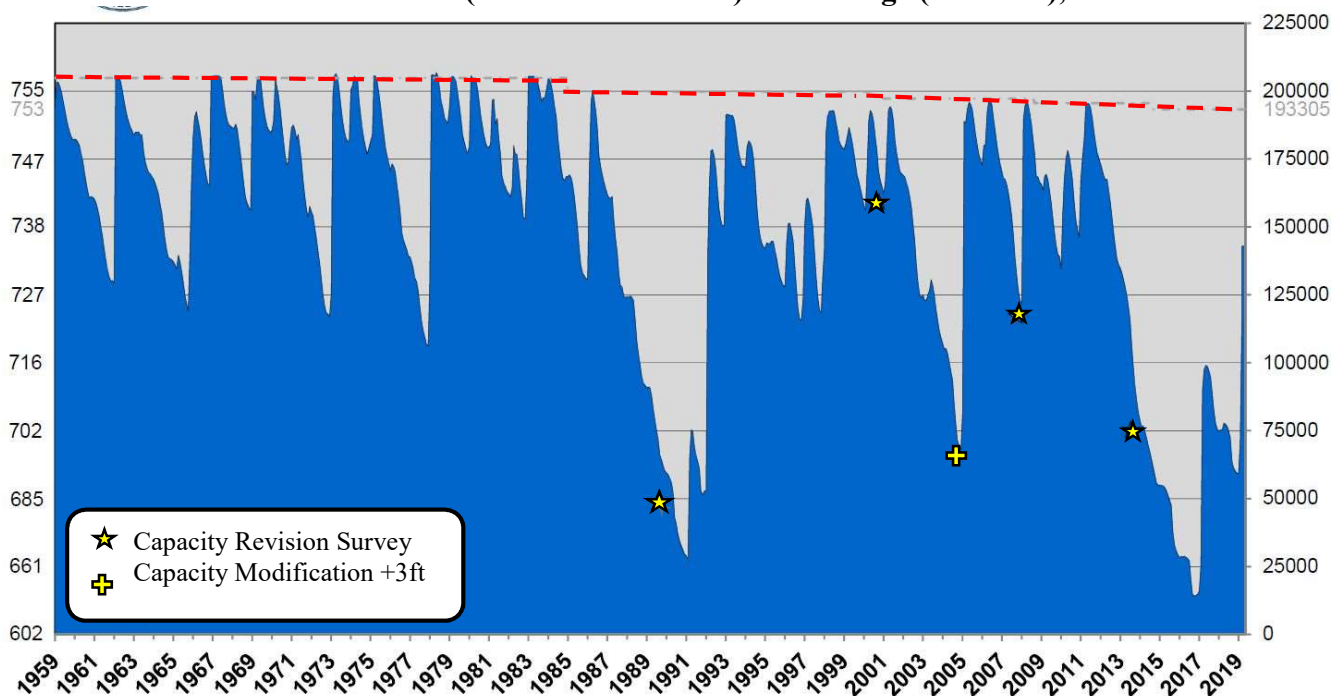
Water districts cannot provide decades of archived information. A single website, overseen by SBCWA and the MUs as a group, could provide more Project details than any one of them can at present, and give links to SWRCB, the Bureau, and other sites for older or more complex information. Districts could post items of special interest to them on their own sites, but otherwise avoid duplication by linking to this site.

### Diversion Quantities

Multiple sources told the Jury that the most pressing current issue is how the quantity of water to be diverted to Member Units should be determined in each Water Year. Figure 3 suggests this decision is becoming increasingly difficult due to climate change. (The dashes show Cachuma's total capacity, which declines over time due to siltation.)

**Figure 3**

**Lake Cachuma Water Level (feet above sea level) and storage (acre-feet), 1959 - 2019.<sup>28</sup>**



### The role of SBCWA

In the 1995 Contract, Article 3(a) specifies that SBCWA will send to the Bureau any joint request from the MUs for the total quantity of water diversion and the monthly schedule of deliveries for the next Water Year. The deadline is July 1, three months before the Water Year begins.

The MUs made such a request on June 18, 2018.<sup>29</sup> SBCWA sent it to the Bureau on June 20 but asked 2018-2019 Santa Barbara County Grand Jury



for a one-month extension of the deadline to review the request.

On July 23, SBCWA sent the request again but, for the first time, as an attachment to its own recommendation for a two-stage procedure. Cachuma's rainy season is December-March, so SBCWA recommended that the MUs get half of their request in the first six months (October-March) and the balance if enough water was available.

The Jury heard arguments for each recommendation. SBCWA's professional staff felt a responsibility for the prudent management of Cachuma, which must provide water for fish and downstream users as well as MUs. They were especially concerned to avoid what they saw as the rainfall overestimates of Water Years 2014-2015 and 2015-2016 which reduced Cachuma to seven percent of capacity, its lowest level since the construction of the Dam. The MUs contend that their engineers and geologists are as capable and more focused on Cachuma than SBCWA's staff, who have a wider range of responsibilities. The MUs' conservation efforts demonstrate their prudence; for example, residential use (gallons per day per capita) dropped from 120 (late 1980s) through 93 (2007) to 59 (2016) in the City of Santa Barbara.<sup>30</sup>

In November, MUs' Counsel wrote to County Counsel complaining that SBCWA's action was "contrary to the terms of the Contract," "not supported by data," and "expressly opposed" by the MUs. The SBCWA's recommendation "substantially reduced" the MUs' request.

County Counsel replied that the Contract does not "prohibit (SBCWA) from providing its own recommendation" and that "as a whole (it) shows the parties' intention ... for (SBCWA) to be actively involved in water conservation planning and implementation." The SBCWA's recommended diversion "was based on the actual conditions of Cachuma Lake ... accounting for evaporation and the ongoing drought." However, SBCWA's letter provides no quantitative support data. The MUs' original request shows projections allowing for evaporation, based on repeats of previous drought years.

Although the two proposals look similar, SBCWA had at first proposed a zero allocation, so MUs may not have been confident of getting the second half of their request. Further, the Jury was told that MUs much prefer to plan a year ahead, rather than six months.

The MUs also objected to SBCWA writing an earlier letter to the Bureau about Contract renewal, without telling them. County Counsel's response was that SBCWA had to make the renewal request at the time it did, and that it is the "first step in a long negotiation process."

There has been agreement among MUs on most issues recently, including diversions. However, there have been past disagreements. Each of the MUs is unique in its sources for water and the needs of its ratepayers. For example, ID No.1 depends more on downstream releases than on the Project while Goleta and Carpinteria have more groundwater capacity than Montecito or the City of Santa Barbara, which have Jameson and Gibraltar Reservoirs respectively. On the South Coast, Goleta and Carpinteria are likely to have different priorities for upgrades to the Conduit. Each MU has its own mix of agriculture, industry, hotels, urban and suburban housing, large estates, parks and campuses, and also of income levels, lifestyle preferences, and general values.

## **Reducing disagreements**

The Jury heard several suggestions for reducing future conflict, especially about diversions.

### **1. Strengthen the role of SBCWA, as the "lead agency."**

The 2016-2017 Grand Jury<sup>4</sup> recommended one version of this proposal: grant SBCWA enforcement power over County water supplies. The responses from MUs, SBCWA, and the Board of Supervisors all rejected this as undesirable and legally impossible. A weaker version is for the new Contract to allow explicitly for SBCWA to add its own recommendation when sending the MUs' Water Year request to the Bureau. The MUs' objections apply to this version also. Several sources told the Jury that, despite the unanimity among the MUs or the strength of their arguments, the Bureau was almost sure to choose a recommendation from SBCWA because it is more familiar and represents the larger entity, which may seem more stable financially. However, SBCWA has "no water customers, water rights, or operational responsibilities with respect to the Cachuma Project."<sup>29</sup> Local agencies understand their own needs, constraints and unique powers. They are also closer to the people they serve. Directors of four of the five MUs are elected specifically to manage water supply. The Santa Barbara MU's directors (the City Council) are elected on a range of issues, but water is a major one; these directors, and their appointed Water Commissioners, interact closely with their Water Resources Division. By contrast, SBCWA is a small part of the responsibilities of its elected directors (the Board of Supervisors); the Board will expect reports, but frequent visits and close supervision are unlikely, unless there appear to be urgent problems. Thus, SBCWA will be less sensitive to the concerns of Cachuma Project stakeholders.

### **2. Weaken the role of SBCWA.**

Apart from the arguments just listed, the Jury heard MUs' claims that the County may be biased because higher Cachuma levels would benefit the Recreation Area, which is a source of County revenue. One suggestion was to restrict SBCWA explicitly to its minimum role in the 1995 Contract: to act as the MUs' agent and convey their requests to the Bureau. This had little support among the MU officials interviewed by the Jury. Another suggestion was for SBCWA to make recommendations only in unusual circumstances, for example only when the MUs disagree, or only after obtaining approval from the Board of Supervisors. The first restriction had mild support, the second very little. While MU interviewees opposed SBCWA's 2018 intervention and preferred to trust their own criteria and the expertise of their own engineers and modelers in cases of strong disagreement, they supported active SBCWA involvement. They expressed respect for SBCWA's leaders and technical staff and welcomed their collaboration and input. They depend on SBCWA as a source of data, models, general information and feedback.

### **3. A seat at the table for the MUs.**

In their interviews with the Jury, the most frequent suggestion by MU officials was for MUs and SBCWA to work together; one arena would be the contract negotiation. MU officials understand the Bureau prefers to work with a single partner, but the MUs want that partner to be constantly aware of their concerns and the reasons for them, to represent the MUs' positions firmly. They expect SBCWA to be the sole local signatory, but believe they can make valuable contributions, whether participating in the discussion at the table or just being in the room and available for consultation.

Another suggestion was regular meetings of technical staff of the MUs and SBCWA. This step was urged by officials from both the MUs and SBCWA. The letter from County Counsel<sup>29</sup> expresses commitment to cooperative work with the MUs which "should occur primarily through staff-to-staff discussions."<sup>31</sup> The Jury was told that such meetings had occurred in the recent past, but were sometimes hard to arrange, cancelled with little notice, or poorly attended. A well-organized schedule of meetings could include Bureau representatives from time to time.

It was suggested that the new Contract could provide for a "Standard Operating Procedure" whereby the Bureau would agree to follow the recommendations of formal meetings between SBCWA and the MUs when possible, especially concerning diversions; and otherwise give reasons based on legal requirements or the Project's physical limitations. Article 3(b) of the 1995 Contract<sup>2</sup> specifies these types of reasons, but does not explicitly require the Bureau to give them.

Article 9(g) calls for SBCWA, the Member Units, and the Bureau to meet during the Contract period to discuss "changes to the operations of the Project." This Article is not ideal for the next Contract. First, the meetings are to occur "not more frequently than every five years." This allows meetings to be more than five years apart, perhaps at the whim of a single participant. It also prohibits meetings less than five years apart, even though rapid environmental changes could require emergency responses.

Second, these meetings are to "protect the environment and groundwater quality downstream ..., conserve Project Water, and promote efficient water management," and they must not "reduce the Available Supply in any Water Year." This ignores the possibility that engineering innovations or better models could lead to increased diversions to MUs without harm to any other Project functions, despite temporarily reducing available supply.

Third, the meetings are to be "an open, public process." This is required by California's "open meetings" laws, but as one MU official emphatically pointed out, such a setting does not encourage uninhibited exchange and discussion of information and ideas among technical staff. The official suggested—and the Jury concurs—that the 5-year meetings should be preceded by informal meetings of technical staff from the Bureau, SBCWA, and the Member Units. Those preliminary meetings of technical staff could give the decision-makers a better understanding of the problems to be addressed at their 5-year meetings, along with the most technically-sound options for resolving those problems.

#### 4. More explicit use of quantitative methods.

Formal quantitative methods can help clarify the reasons for disagreements. Quantitative methods are mathematical strategies for comparing management options, based on probabilities of future outcomes that can be given a numerical preference score. For example, an option might be a formula for deciding how much water to divert to MUs in each year for five years. The option's outcome depends on the rainfall pattern of the next five years, each possible pattern has a probability, and the outcome it produces could be scored based on the supplies diverted to the MUs and the quantity remaining in the Lake.

In practice, there may be only a few management options, but many possible rainfall patterns, and outcomes might depend on the availability of alternative sources of water. Possible rainfall patterns

and their probabilities might be estimated from past experience but might need to allow for climate change. Scoring would depend on trade-offs, such as between MU supplies and Cachuma reserves or between reliability and total quantity in MU supplies (e.g., is five years of 2,000 AF better than three years of 4000 AF and two years of zero?). These problems exist but are not insurmountable.

The point of using this quantitative approach is not to micromanage engineers, but to clarify why their recommendations differ. It could be the rainfall patterns they believe most probable or their scores for outcomes. Knowing where the differences exist can make negotiation and compromise easier.

Several sources suggested parts of this formal approach. One was the option of a sliding-scale formula based on the volume of water in Cachuma. Another was to display outcomes by plots showing quantities diverted and quantities remaining over time. Several MU interviewees called for such yield curves, as did the Board of Supervisors and SBCWA in their responses to the 2016-2017 Grand Jury. A proposed scoring criterion was to keep enough water in Cachuma for the "dead pool" (a generally agreed essential minimum of 12,000 AF), downstream users and the fish, after allowing for evaporation and leaks. Outcomes missing this goal would get very low scores.

## **Other Issues**

Some interviewees strongly suggested that the next Contract should be a **new** Contract rather than a **renewal**.

Some issues such as terminology, the roles of SBCWA and the MUs, and their meetings with the Bureau, are mentioned above. Another is the need to address the challenge of rapid climate change. Droughts, storms, fires, and sea level rise can all affect water supply. A stress on flexibility and frequent review or adaptation is critically important. The Jury felt that the choice of words matters: a renewal suggests minor changes, but a new Contract implies the addition of new Articles and close scrutiny of existing ones.

There are two other issues the Jury decided to report without recommendations. One is the allocation of losses due to evaporation. For example, if Cachuma loses ten percent of its volume to evaporation, should every use category (fish, MUs, etc.) be reduced by ten percent, or should some categories (dead pool, downstream users, fish) be exempt? In the latter case, to compensate for the exemptions, the other categories must be reduced by more. One of these categories is carryover water, left in Cachuma by a MU which did not take its full share at an earlier release. Reducing this category discourages conservation by creating a "use it or lose it" situation.

The second issue is the fish releases. For example, the Winter 2019 issue of "ID No.1 News" says it must "budget hundreds of thousands of dollars to pay for fish studies, fish monitoring programs, habitat enhancements (oak tree restoration projects), and other related environmental programs, for less than 10 steelhead." A counter-argument is that this low count proves the steelhead are truly endangered.

## **FINDINGS AND RECOMMENDATIONS**

### **Finding 1**

The current Contract does not fully address future water management problems such as will arise from climate and other rapid environmental changes.

### **Recommendation 1**

That the Directors of the Member Units and the Santa Barbara County Board of Supervisors, acting as Directors of the SBCWA, pursue the upcoming 2020 contract negotiations as an opportunity to create a completely new contract.

### **Finding 2**

Public understanding and effective operation of the Cachuma Project would be enhanced if key terms in the Contract were defined and used more precisely.

### **Recommendation 2**

That the Directors of the Member Units and the Santa Barbara County Board of Supervisors, acting as Directors of the SBCWA, require that key terms in the new Contract are defined clearly and used in a consistent manner.

### **Finding 3**

The roles and responsibilities of SBCWA and the Member Units are not clearly defined in the current Contract.

### **Recommendation 3**

That the Directors of the Member Units and the Santa Barbara County Board of Supervisors, acting as Directors of the SBCWA, ensure their roles and responsibilities are clearly defined in the new Contract.

### **Finding 4**

The current Water Year, October 1 to September 30, makes diversion recommendations and decisions difficult because it comes just before the rainy season, when the quantity of water in Cachuma for the next few months is highly unpredictable.

### **Recommendation 4**

That the Directors of the Member Units and the Santa Barbara County Board of Supervisors, acting as Directors of the SBCWA, strongly urge in negotiations for the new Cachuma Project Contract that the Water Year should run from May 1 to April 30, or a similar period, to allow diversion requests to be made soon after the usual winter rain period.

### **Finding 5**

Provisions in the 2020 Contract will need more frequent updating than those in previous Contracts due to rapid climate change altering the natural conditions affecting water supply.

### **Recommendation 5**

That the Directors of the Member Units and the Santa Barbara County Board of Supervisors, acting as Directors of the SBCWA, propose to the Bureau of Reclamation that the new Cachuma Project Contract require a meeting between them and the Bureau every five years, with a public agenda, to consider 2018-2019 Santa Barbara County Grand Jury

changes to Contract provisions which have become outdated.

### **Finding 6**

Under the 1995 Contract, Article 9(g), the required five-year meetings cannot result in increased water diversion to Member Units.

### **Recommendation 6**

That the Directors of the Member Units and the Santa Barbara County Board of Supervisors, acting as Directors of the SBCWA, propose to the Bureau of Reclamation that the required five-year meetings allow changes to the operations of the new Contract, including increased diversions, provided they are consistent with Federal law, State law, and Project Water Rights, and do not negatively affect the environment or the groundwater quality downstream of Bradbury Dam.

### **Finding 7**

Member Units and SBCWA have expressed support for formal, quantitative methods of decision-making under uncertainty which can identify sources of disagreement, and thus facilitate compromise solutions.

### **Recommendation 7**

That the Directors of the Member Units and the Santa Barbara County Board of Supervisors, acting as Directors of the SBCWA, establish a format for quantitative decision-making under uncertainty; and seek to narrow their differences on such components as probabilities of future rainfall patterns and criteria for desirable outcomes.

### **Finding 8**

SBCWA and the Member Units agree that meetings of their technical staffs are valuable but disagree over the organizational concerns of past meetings, such as claims of infrequency, non-attendance, non-response and cancellation without notice.

### **Recommendation 8**

That each year the Directors of the Member Units and the Santa Barbara County Board of Supervisors, acting as Directors of the SBCWA, determine a schedule of multiple meetings of key technical staff to discuss Cachuma Project operations, including upcoming diversions, and to report major points of potential agreement or disagreement to their Boards.

### **Finding 9**

The websites of the Member Units and SBCWA lack clarity and detail on the Cachuma Project.

### **Recommendation 9**

That the Directors of the Member Units and the Santa Barbara County Board of Supervisors, acting as Directors of the SBCWA, set up and maintain a specific website for detailed information on the Cachuma Project's history, structure, governance, and operations, with links to additional historical documents and records.

## REQUEST FOR RESPONSE

Pursuant to *California Penal Code Section 933 and 933.05*, the Santa Barbara County Grand Jury requests each entity or individual named below to respond to the enumerated findings and recommendations within the specified statutory time limit:

Responses to Findings shall be either:

- Agree
- Disagree wholly
- Disagree partially with an explanation

Responses to Recommendations shall be one of the following:

- Has been implemented, with brief summary of implementation actions taken
- Will be implemented, with an implementation schedule
- Requires further analysis, with analysis completion date of no more than six months after the issuance of the report
- Will not be implemented, with an explanation of why

### **Santa Barbara County Water Agency – 90 Days**

Findings 1, 2, 3, 4, 5, 6, 7, 8, and 9

Recommendation 1, 2, 3, 4, 5, 6, 7, 8a, 8b, and 9

### **Carpinteria Valley Water District – 90 Days**

Findings 1, 2, 3, 4, 5, 6, 7, 8, and 9

Recommendation 1, 2, 3, 4, 5, 6, 7, 8a, 8b, and 9

### **Goleta Water District – 90 Days**

Findings 1, 2, 3, 4, 5, 6, 7, 8, and 9

Recommendation 1, 2, 3, 4, 5, 6, 7, 8a, 8b, and 9

### **Montecito Water District – 90 Days**

Findings 1, 2, 3, 4, 5, 6, 7, 8, and 9

Recommendation 1, 2, 3, 4, 5, 6, 7, 8a, 8b, and 9

### **City of Santa Barbara – 90 Days**

Findings 1, 2, 3, 4, 5, 6, 7, 8, and 9

Recommendation 1, 2, 3, 4, 5, 6, 7, 8a, 8b, and 9

## **Santa Ynez River Water Conservation District, Improvement District No. 1 – 90 Days**

Findings 1, 2, 3, 4, 5, 6, 7, 8, and 9

Recommendation 1, 2, 3, 4, 5, 6, 7, 8a, 8b, and 9

## **Santa Barbara County Board of Supervisors – 90 Days**

Findings 1, 2, 3, 4, 5, 6, 7, 8, and 9

Recommendation 1, 2, 3, 4, 5, 6, 7, 8a, 8b, and 9



## REPORT ENDNOTES

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- <sup>1</sup> "Whiskey is for drinking and water is for fighting over" has been attributed to Mark Twain.
- <sup>2</sup> *Contract Between the United States and Santa Barbara County Water Agency Providing for Water Service from the Project*. Bureau of Reclamation, Cachuma Project, 1996. (Contract No. I75r-1802R). (Jury's copy from Santa Barbara County Water Agency.) Article 2 sets the renewal date.
- <sup>3</sup> <http://sbcgj.org/default.asp> 2015-2016, "Lake Cachuma – Protecting a Valuable Resource" Last visit 06012019.
- <sup>4</sup> <http://sbcgj.org/default.asp> 2016-17, "Managing Regional Water Supplies: Are There Better Solutions?" Last visit 06012019.
- <sup>5</sup> A map showing the Cachuma Project is in Appendix A.
- <sup>6</sup> <http://www.ccwa.com/docs/History1.pdf> "The State Water Project in Santa Barbara County." Last visit 06012019.
- <sup>7</sup> In this Jury report, a "release" refers to water released from Cachuma for downstream users or fish. A "diversion" is the total quantity of Project water made available to the Member Units in a Water Year. The quantity delivered may be less, because a Member Unit can choose to leave part of its share in Cachuma, as "carryover" for use at a later time.
- <sup>8</sup> [www1.cityoflompoc.com/councilagenda/2002/021203/021203No8A.pdf](http://www1.cityoflompoc.com/councilagenda/2002/021203/021203No8A.pdf) last visit 06012019.
- <sup>9</sup> Figure 1 is simplified. The Tecolote Tunnel emerges at the Conduit's Goleta end. See the map in Appendix A.
- <sup>10</sup> <https://www.countyofsb.org/pwd/waterreports.sbc> Select "Water Resources of Santa Barbara County 2000" Last visit 06182019.
- <sup>11</sup> <http://cosb.countyofsb.org/uploadedFiles/pwd/Water/Hydrology/2016%20Hydrology%20Report.pdf> "Santa Barbara County Hydrology Report" (2016) Last visit 06012019.
- <sup>12</sup> *Contract for the Furnishing of Water to Member Units of Santa Barbara County Water Agency*. United States Department of the Interior, Bureau of Reclamation, Santa Barbara County Project, 1949. Jury's copy from Santa Barbara County Water Agency.
- <sup>13</sup> <https://www.usbr.gov/recreation/partners.html> Last visit 06012019.
- <sup>14</sup> Roles are: S = Signatory to the Contract; PR = Agency with Prior Rights; MU = Member Unit; JPA = Joint Powers Authority
- <sup>15</sup> All these agencies have websites. The descriptions given here come partly from these.
- <sup>16</sup> <https://www.countyofsb.org/pwd/watermission.sbc> SB County Public Works Water Resources Mission.
- <sup>17</sup> <https://www.cachuma-board.org/annual-reports-and-documents> Last visit 06012019.
- <sup>18</sup> [https://www.waterboards.ca.gov/waterrights/water\\_issues/programs/hearings/cachuma/](https://www.waterboards.ca.gov/waterrights/water_issues/programs/hearings/cachuma/) See 2018-2019 Santa Barbara County Grand Jury

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especially "Revised Draft Order Amending Permits 11308 and 11310 (Applications 11331 and 11332)," March 27, 2019.

- <sup>19</sup> [https://www.waterboards.ca.gov/waterrights/water\\_issues/programs/hearings/cachuma/phase2/exhibits](https://www.waterboards.ca.gov/waterrights/water_issues/programs/hearings/cachuma/phase2/exhibits) Click on "exhibits" then scroll down to "doi30.pdf". Its title is " Cachuma Project, California Guidelines for Operation, 2003." Last visit 06182019.
- <sup>20</sup> <http://sbcgj.org/default.asp> The 2006-2007 report title is "Carpinteria Valley Water District."
- <sup>21</sup> [https://www.waterboards.ca.gov/waterrights/water\\_issues/programs/hearings/cachuma/#deir2003](https://www.waterboards.ca.gov/waterrights/water_issues/programs/hearings/cachuma/#deir2003) To download, click on "Draft Environmental Impact Report (DEIR)." Last visit 06012019.
- <sup>22</sup> But see "Water History of Santa Barbara County." (Page 37). <https://www.santabarbaraca.gov> Enter this title into the Search line and click Go. Click the link to download the file "2017-12-21\_December\_21\_2017\_Item\_6-c\_SB\_County\_Water\_History.pdf" Last visit 06182019.
- <sup>23</sup> <https://www.usbr.gov/projects/index.php?id=336>. Cachuma Project History. This history includes the building of the Dam, Tunnel, Conduit, and other facilities, which is not described in this Report. Last visit 06012019.
- <sup>24</sup> SBCWA's plan is at <https://www.countyofsb.org/pwd/irwmp.sbc> Carpinteria's plan is available on its web site under "About" – "Public Information". The others can be found on their websites by entering "urban water management plan" in the Search line. ID No. 1 is not required to have a management plan. Last visit 06182019.
- <sup>25</sup> <https://www.ccrb-board.org/> Last visit 06012019.
- <sup>26</sup> <http://countyofsb.org/pwd/water/irwmp/plan-2019.sbc> (Chapter 2, especially sections 2.6 and 2.7.) Last visit 06012019. A clear, relatively brief, account of these multiple sources is in the 2016-2017 Grand Jury Report, endnote 4 above.
- <sup>27</sup> Suggested years and data provided by City of Santa Barbara Water Resources Division. The years are Water Years, so "2012" means October 1, 2011 to September 30, 2012.
- <sup>28</sup> <https://www.countyofsb.org/pwd/rainhistory.sbc> "Reservoir Storage Trends." Last visit 06022019.
- <sup>29</sup> This account uses a letter from MUs' Counsel, attaching the MUs' request, SBCWA's recommendation, and the Bureau's response (11/13/2018); it also uses County Counsel's reply to MUs' Counsel (12/18/2018). These are public information but are not online. All were provided by SBCWA.
- <sup>30</sup> <https://www.santabarbaraca.gov/gov/depts/pw/resources/system/docs/default.asp> "Water Facts – Past 10 Years" Last visit 06022019.
- <sup>31</sup> A MU official stressed this last point, saying that the Brown Act could require the meetings to be public if elected officials were present, which would inhibit compromises and imaginative ideas from technical staff.

## **APPENDIX**

### **CACHUMA PROJECT DETAILS**

Cachuma Project details are contained in documents of several types: permits, legal settlements, environmental impact reports, memorandums of understanding, management plans, and agency reports. Some of them are hundreds of pages long, unavailable online, or unknown to the Jury. However, the Jury believes that the details in this Appendix clarify the aims and effects of items in the 1949 and 1995 Cachuma Project Contracts, and their interactions with decisions found in these other documents.

This Appendix overlaps with the Background sections of this and two previous Grand Jury Reports.<sup>1,2</sup> However, there are details, and especially sources, here that are not found in those sections.

#### **The Cachuma Project Background**

The Project consists of Bradbury Dam, Tecolote Tunnel, and the South Coast Conduit.<sup>3</sup> They bring water from the Santa Ynez River watershed to the South Coast. The Project also releases water to parts of the Santa Ynez Valley, as described later. It is shown in the map in Figure 1.<sup>4</sup>

The Cachuma Project  
 The colored areas are the Member Units, except for the Lake (blue) and La Cumbre Mutual Water Co. (bottom, middle). The State Water Project pipeline is in red, at left. Montecito owns Doulton Tunnel. Santa Barbara owns Mission Tunnel. It ends at Lauro Dam, not South Coast Conduit.

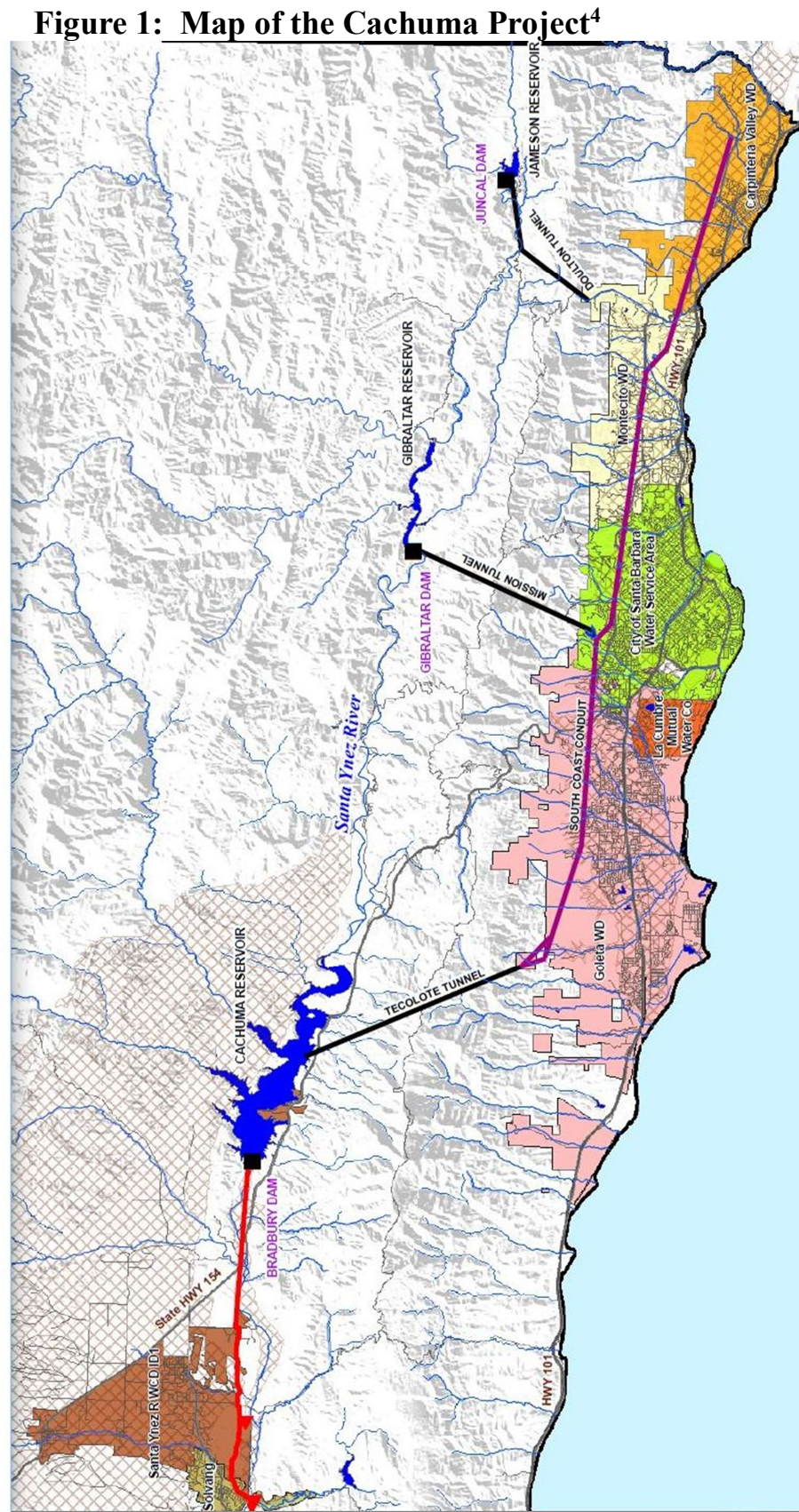


Figure 1: Map of the Cachuma Project<sup>4</sup>

The City of Santa Barbara completed Gibraltar Dam and Reservoir in 1920, linking it to Mission Tunnel, built 1904-1911.<sup>5</sup> Montecito Water District completed Juncal Dam and Jameson Reservoir, linked to Doulton Tunnel, in 1930.<sup>6</sup> These facilities were clearly too small for the growing population by the 1930s. Major studies for a long-term solution began in 1938 and became a joint project of the County and the Bureau in 1941. Meanwhile, the Santa Ynez River Water Conservation District (SYWRCD) was formed to protect the water supplies of the Santa Ynez and Lompoc valleys.<sup>7</sup>

The Santa Barbara Water Agency (SBCWA) is described in this Grand Jury Report. In the initial Contract with the Bureau for development of the Cachuma Project,<sup>8</sup> the City of Santa Barbara, SYRWCD, and the Water Districts of Carpinteria Valley, Goleta, Montecito, and Summerland were designated as "Member Units of Santa Barbara County Water Agency."<sup>9</sup>

There have been two changes of Member Units. The Project was to serve only a part of SYRWCD, which formed SYRWCD Improvement District No. 1 (ID No.1) to handle this service in 1963. ID No.1 became a separate agency in 1968 and replaced SYRWCD as a Member Unit in 1993.<sup>10</sup> In 1995, the Summerland District was absorbed into the Montecito District.<sup>1</sup>

In 1991, voters in 11 County cities and water districts, including all Cachuma Member Units, approved issuing bonds for the local facilities needed to import water from the State Water Project (SWP).<sup>11</sup> The Central Coast Water Authority (CCWA) was formed to construct and operate these facilities. To reduce capital costs, the SWP pipeline was extended from Vandenberg Air Force Base to Lake Cachuma, so deliveries to the South Coast could use Project infrastructure. The pipeline which had previously delivered water from Cachuma to ID No.1. was now used as the SWP pipeline's last section, to deliver water from ID No.1 to Cachuma. An agreement among Cachuma Project parties enabled ID No.1 to exchange its "lost" Cachuma water for SWP water.<sup>11</sup>

The Project was explicitly intended for water supply.<sup>3,8</sup> It was explicitly not for flood control, but the SBCWA developed a plan for Modified Storm Operations which the Bureau agreed to consider in making precautionary releases in preparation for large storms.<sup>12</sup> The Bureau is expected to coordinate with local authorities in recreation developments and encourage them to manage recreation at its project areas, especially water projects.<sup>13</sup> In 1953, the County entered into a long-term lease with the Bureau to manage the 9,000 acre Cachuma Lake Recreation Area. Each year, this has nearly half a million visitors, with cost and revenue just under \$3 million. Recently, the Board of Supervisors designated \$12 million for upgrades.<sup>14</sup> For comparison, the total County budget is just under \$1.1 billion, the Parks budget is just under \$13 million.<sup>15</sup> In millions, the MUs' approximate budgets are ID No. 1: \$9; Carpinteria: \$13; Montecito: \$20; Goleta: \$45; and Santa Barbara: \$65.<sup>16</sup>

The current Contract<sup>17</sup> became effective in 1995, but was signed in 1996. It is a renewal of the 1949 Contract, updated to cover changes of MUs,<sup>18</sup> acknowledge downstream Water Rights, and add such environmental goals as restoring habitat that has been damaged by the Project, especially that of rare, threatened, or endangered species. Some details of the downstream commitments were to be filled in later by legal settlements and agreements involving SWRCB and environmental agencies and other entities.

## **Project Governance**

The main Agencies involved in the Project are shown in Table 1 of this Grand Jury Report. The Bureau, NMFS, the MUs, and COMB are described there. The others are partly described; some details are added

below.

As a dependent special district, the SBCWA has a guaranteed share of County property tax. In theory it has property-taxing power of its own, but only with a popular vote, due to Proposition 13. Its exact role in the Project is disputed: opinions range from active leader of the Member Units to passive messenger for them. It is involved in several water supply projects other than Cachuma, such as cloud seeding, regional water efficiency, development of hydrologic data and models, groundwater assessment, the Twitchell project, and State Water.<sup>19</sup>

SWRCB is a five-member Board appointed by California's Governor.<sup>20</sup> It sets statewide water policy, oversees and supports the nine Regional Water Boards, and is solely responsible for assigning surface water rights. Its permits<sup>17</sup> allow the Bureau to operate the Project. Their conditions initially protected prior downstream rights holders<sup>21</sup> and now ensure that the 2002 Settlement Agreement<sup>22</sup> between the Bureau, CCRB, SYRWCD, ID No.1, and Lompoc is implemented<sup>23</sup>. This is accomplished by releases from a tunnel under the Bradbury Dam during summer and early fall. ID No.1 gets more water this way, using wells adjacent to the river, than it gets from the Project. This agreement ended nearly 50 years of dispute and litigation. The permits have also protected steelhead populations (before, and now complementary to, the orders of NMFS) by requiring additional releases.

SYRWCD is a special district with an elected Board of Directors.

CCRB helped develop a Fish Management Plan<sup>24</sup> for downstream, and was the primary implementing agency until 2011 when COMB took over.

CCWA is a Joint Powers Agency formed to construct, manage and operate Santa Barbara County's local facilities for distribution and treatment of State water. Its directors are appointed by its eight member agencies: the five MUs and the Cities of Buellton, Guadalupe and Santa Maria. It has five other "Project (SWP) Participants." Its operations include deliveries to Lake Cachuma, but it is not otherwise directly involved in the Project.

### **Project Inflow and Outflow<sup>25</sup>**

In principle, the amount of water flowing naturally into Cachuma should equal the amount of Project water flowing out. In practice, neither calculation is easy.

The main reason for the Project is that inflow is highly variable: inflow and outflow will be equal only on average over many years. Most of the inflow is from the Santa Ynez river. SBCWA<sup>26</sup> gives the annual flow into Cachuma as having a median of 20,000 acre-feet (AF), an average of approximately 74,000 AF, and a maximum of approximately 500,000 AF. In 2009, the Bureau's Operations Chief responsible for the Dam testified<sup>27</sup> that average flow of the Santa Ynez river below Gibraltar Dam was 42,000 AF for 1921-2002, but 50,000 AF for 1953-2002. Below Cachuma, at a metering station near Santa Ynez, the 1953-2002 average was 74,000, and the average "computed inflow" to Cachuma was 89,000 AF. This measures inflow by adding Cachuma's increase, releases, diversions, evaporation, and spills, and subtracting SWP and rain on the surface (about 4,000 AF). Carpinteria's 2016 Agricultural Water Management Plan<sup>28</sup> estimated the average Santa Ynez flow as 66,000 AF. The US Geological Survey's annual means at Los Laureles<sup>29</sup> (about a mile upstream from Cachuma) averaged 63,000 AF for 1952-2018, but 70,000 AF for 1952-2002. Thus, different measurement methods (computed inflow, or gages at different sites, or models using several gages) can give quite different estimates.



Outflow includes metered diversions and releases, but evaporation, spill and leakage are more difficult to measure. For example, SBCWA's 2016 Hydrology Report<sup>30</sup> estimates annual evaporation to be 16,000 AF but its Integrated Regional Water Management (IRWM) plans<sup>31</sup> estimate 11,000 AF based on "a standard evaporation rate" of 3.6 feet per year and a lake area of 3100 acres. The annual estimates for 1953-1996 in SWRCB's Environmental Impact Report<sup>32</sup> (EIR) also average 11,000 AF. Neither estimate would claim to be reliable in all circumstances, since evaporation depends on the area of Cachuma exposed to sun and wind, which decreases as the water level falls: the SWRCB data show less evaporation during droughts.

A common term is "safe yield." The EIR defines this as "the amount of water a project can be expected to deliver, on average, over a sustained hydrologic period – a period that preferably is long enough to contain representative wet periods as well as droughts." The meaning of "on average" is unclear, and it seems to have been ignored, assuming that the safe yield could be delivered in every year. The concept of a "design drought" plays a role, but it seems clear that the survival of supplies through such a drought must depend on further assumptions, such as Cachuma's initial volume and the inflow during the drought. Cachuma's first "safe yield" seems to arise from the 1949 Contract's Article 11, which specifies all Water Year diversion amounts for each MU, for each five-year period between May 1960 and May 1995. These are treated as maximum values: more diversion would cost extra, and there may be shortages. The amounts for 1990-1995 add to 32,000 AF, which the 1995 Contract calls the "safe yield" (before changing it in Exhibit C of the 1995 Contract). When the 1949 diversion amounts are divided by their total (32,000 AF), the resulting fractions are those used for the 1995 Contract's "allocations," and will remain as the relative shares in the next Contract; the Jury was told that no party wants to renegotiate them. While all these numbers seem reasonable, the Jury was unable to find sources giving the calculation methods or a rationale.

### **Some Effects of Changing Climate**

The quantities discussed in this section, and other important ones, will be even more difficult to estimate, or predict, in future, due to climate change. All local agencies have shown acute awareness of the need to plan for its effects, many of them now inevitable though of unpredictable size.<sup>33</sup>

## APPENDIX ENDNOTES

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- <sup>1</sup> <http://sbcgj.org/default.asp> "Lake Cachuma – Protecting a Valuable Resource," 2015-16 Grand Jury Report. Last visit 06012019.
  - <sup>2</sup> <http://sbcgj.org/default.asp> "Managing Regional Water Supplies: Are There Better Solutions?" 2016-17 Grand Jury Report. Last visit 06012019.
  - <sup>3</sup> <https://www.usbr.gov/projects/index.php?id=336> Cachuma Project History. This history includes the building of the Dam, Tunnel, Conduit, and other facilities, which is not described in this Report. Last visit 06012019.
  - <sup>4</sup> <https://www.countyofsb.org/pwd/waterreports.sbc> (Map of "Water Sources.") Last visit 06062019.
  - <sup>5</sup> <https://www.santabarbaraca.gov/gov/depts/pw/resources/system/sources/misstunnel.asp> Last visit 06062019.
  - <sup>6</sup> <http://www.countyofsb.org/pwd/water/irwmp/plan-2013.sbc> (Chapter 3.) Last visit 06062019.
  - <sup>7</sup> <https://syrwcd.com/annual-report> 40th Annual Report (2017-2018). Last visit 06062019.
  - <sup>8</sup> *Contract for the Furnishing of Water to Member Units of Santa Barbara County Water Agency.* United States Department of the Interior, Bureau of Reclamation, Santa Barbara County Project, 1949. (Jury's copy from Santa Barbara County Water Agency.)
  - <sup>9</sup> This terminology is in the title and Article 2 of the 1949 Contract, where it is attributed to the Santa Barbara County Water Agency Act, July 18, 1945. However, the Jury could not find this phrase in the Act.
  - <sup>10</sup> <https://www.countyofsb.org/pwd/water/irwmp/plan-2019.sbc> Santa Barbara County IRWM Plan Update 2019, pp. 91-2. Last visit 06062019.
  - <sup>11</sup> <http://www.ccwa.com/about.html> "Our History" Last visit 06062019.
  - <sup>12</sup> [https://www.waterboards.ca.gov/waterrights/water\\_issues/programs/hearings/cachuma/phase2/exhibits](https://www.waterboards.ca.gov/waterrights/water_issues/programs/hearings/cachuma/phase2/exhibits) Scroll down to "doi30.pdf". Its title is " Cachuma Project, California Guidelines for Operation, 2003." Last visit 06182019.
  - <sup>13</sup> <https://www.usbr.gov/recreation/partners.html> Last visit 06062019.
  - <sup>14</sup> "Santa Barbara County supervisors affirm list of priority projects for capital improvements." Santa Maria Times, March 19, 2019.
  - <sup>15</sup> <https://www.countyofsb.org/budgetbook.sbc> Recommended Budget 2017-2019. (pp. B-12, C-28.) Last visit 06062019.
  - <sup>16</sup> <https://www.syrwd.org/article-categories/1640-budget> <http://www.goletawater.com/district-budget> <http://www.montecitowater.com/about-the-district/financials/> <http://www.cvwd.net/about/budget.htm> <https://www.santabarbaraca.gov/gov/depts/finance/budget/adopted.asp> All last visited 06062019.
  - <sup>17</sup> *Contract Between the United States and Santa Barbara County Water Agency Providing for Water Service from the Project.* Bureau of Reclamation, Cachuma Project, 1996. Contract No. I75r-1802R.



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Jury's copy from Santa Barbara County Water Agency.

- <sup>18</sup> The phrase "Member Units of Santa Barbara County Water Agency" is not used in the 1995 Contract.
- <sup>19</sup> <https://www.countyofsb.org/pwd/wateragency.sbc> Last visit 06062019.
- <sup>20</sup> <https://www.waterboards.ca.gov/> Last visit 06062019.
- <sup>21</sup> [https://www.waterboards.ca.gov/waterrights/board\\_decisions/adopted\\_orders/decisions](https://www.waterboards.ca.gov/waterrights/board_decisions/adopted_orders/decisions)  
Select "D850 to D899" and scroll down to "See Related, ORDER WR 73-09, ..., ORDER WR 94-05."  
These all update decisions related to downstream users or fish (steelhead). Last visit 06062019.
- <sup>22</sup> [www1.cityoflompoc.com/councilagenda/2002/021203/021203No8A.pdf](http://www1.cityoflompoc.com/councilagenda/2002/021203/021203No8A.pdf) Last visit 06062019.
- <sup>23</sup> [https://www.waterboards.ca.gov/waterrights/water\\_issues/programs/hearings/cachuma/](https://www.waterboards.ca.gov/waterrights/water_issues/programs/hearings/cachuma/)  
Scroll down to the hearing of March 27, 2019. Last visit 06062019.
- <sup>24</sup> <https://www.cachuma-board.org/annual-reports-and-documents>
- <sup>25</sup> Water volumes in acre-feet (AF) are rounded to the nearest 1,000.
- <sup>26</sup> <https://www.countyofsb.org/pwd/waterreports.sbc> Select "Water Resources of Santa Barbara County 2000." Last visit 06182019.
- <sup>27</sup> [https://www.waterboards.ca.gov/waterrights/water\\_issues/programs/hearings/cachuma/phase2/exhibits](https://www.waterboards.ca.gov/waterrights/water_issues/programs/hearings/cachuma/phase2/exhibits)  
Scroll down to "doi8.pdf". Its title is "Testimony of Antonio M. Buelna." Last visit 06182019.
- <sup>28</sup> [http://www.cvwd.net/pdf/about/public\\_info/CarpinteriaVWD-AWMP-Final--4-22-2016-all.pdf](http://www.cvwd.net/pdf/about/public_info/CarpinteriaVWD-AWMP-Final--4-22-2016-all.pdf)
- <sup>29</sup> <https://waterdata.usgs.gov/ca/nwis/annual/> Select by the Site Number: 11123500. Check the box next to Parameter Code 00060 and then "Submit."
- <sup>30</sup> <https://www.countyofsb.org/pwd/hydrology.sbc> 2016 Hydrology Report. Last visit 06052019.
- <sup>31</sup> See endnote 10 above: Appendix 2-1, Table 2-4. Last visit 06062019.
- <sup>32</sup> [https://www.waterboards.ca.gov/waterrights/water\\_issues/programs/hearings/cachuma/#feir2011](https://www.waterboards.ca.gov/waterrights/water_issues/programs/hearings/cachuma/#feir2011)  
Final Environmental Impact Report, Volume III, Appendices A–D to the 2011 2nd RDEIR, Table 2.18.  
Also obtainable from <https://www.ccrb-board.org/docsphotos.htm> Last visit 06192019.
- <sup>33</sup> <http://www.countyofsb.org/pwd/water/irwmp/plan-2019.sbc> Last visit 06192019. Choose "IRWM 2019 Plan Update Appendices" (1700 pages); Section 2.6 (p. 2-18) of "Long Term Supplemental Water Supply Alternatives Report." Also see Section 3.6, Table 3.6 of endnote 6 above. Other examples are in Member Units' Management Plans: see Report Endnote 24 of this Grand Jury Report.

## **GLOSSARY**

AF	Acre-foot. The volume in a container with area of one acre and depth of one foot. It equals 1,233.5 cubic meters, 43,560 cubic feet, and 325,851 US gallons
Bureau	United States Bureau of Reclamation
Carpinteria	Carpinteria Valley Water District
Carryover	Water which a Member Unit is entitled to take from Cachuma but chooses to keep there for use in a later Water Year
CCRB	Cachuma Conservation Release Board
CCWA	Central Coast Water Agency
COMB	Cachuma Operations and Management Board
Conduit	South Coast Conduit, a pipeline running from Goleta to Carpinteria
Dam	Bradbury Dam on Lake Cachuma
Diversion	The Project water made available to the Member Units in a Water Year. The amount delivered may be less, because a Member Unit can choose to leave part of its share in Cachuma, as "carryover" for use at a later time
Gallon	A US gallon equals 0.134 cubic feet, 3.785 liters, and 231 cubic inches.
Goleta	Goleta Water District
ID No.1	Santa Ynez River Water Conservation District, Improvement District Number 1, a separate agency from the Santa Ynez River Water Conservation District
IRWMP	Integrated Regional Water Management Plan
Montecito	Montecito Water District
MU	Member Unit
NMFS	National Marine Fisheries Service
Release	Water allowed to flow through the tunnel under the Bradbury Dam into the Santa Ynez riverbed for the benefit of downstream users and fish
Santa Barbara	City of Santa Barbara, regarded as a Water District
SBCWA	Santa Barbara County Water Agency
SWRCB	California State Water Resources Control Board
SYRWCD	Santa Ynez River Water Conservation District
Tunnel	Tecolote Tunnel from Lake Cachuma to the South Coast Conduit
Water Year	A one-year period set by the Contract, currently October 1 to September 30, over which diversions and releases are specified in advance by the Bureau