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Monterey County Water Resources Agency
Reservoir Operations Advisory Committee August 31, 2017

Re: Agenda Item #6, Consider receiving an updated Operation Policy for Nacimiento Dam and make recommendations to staff for moving the document forward

Dear Committee Members;

The Salinas Valley Water Coalition (SVWC) thanks Monterey County Water Resources Agency (Agency) staff and its Board of Directors for their willingness to form an ad-hoc committee (Committee) to develop an updated Operation Policy Manual (Policy Manual) for Nacimiento and San Antonio reservoirs. The last Policy Manual updates were approved in 2000 for Nacimiento Reservoir and in 2001 for San Antonio Reservoir, so the updates are important. I participated in the ad-hoc Committee on behalf of the SVWC, and the SVWC appreciates having had the opportunity to provide input on development of an updated Policy Manual. The SVWC appreciates the effort that Agency staff put into working with the ad hoc Committee. Although the SVWC supported moving this draft Policy Manual forward for review with the Reservoir Operations Committee, the public and stakeholders, the SVWC objects to the Draft Policy Manual that Agency staff is presenting to you today for the following reasons.

1. Water Rights: At the outset of the process for updating the Policy Manual, Agency staff agreed with the ad hoc Committee members that the purpose of updating the existing manuals is to clearly document the principles governing the Agency's operation of the reservoirs. The SVWC is concerned that the current draft Policy Manual ignores the first, and most fundamental, principle governing reservoir operations: Doing no harm. In this case, that means protecting prior downstream water rights and limiting reservoir operations to storage and regulation of excess flows for later release to augment natural recharge of the Salinas Valley Groundwater Basin (Basin) in a way that protects steelhead trout. During the ad hoc Committee proceedings, certain Agency staff said the Policy Manual should not consider prior downstream water rights of riparian and overlying landowners. But when the State Water Resources Control Board (State Water Board) approved the water rights authorizing construction and operation of Nacimiento and San Antonio reservoirs, it said the new reservoirs were "SUBJECT TO VESTED RIGHTS." And when the State Water Board approved a new water right permit authorizing the Agency to use the full, built storage capacity of Nacimiento Reservoir, it did so based on the Agency's promise that prior downstream water rights would not be injured, because the reservoir would only capture excess flows that would otherwise waste to the ocean. The existence of the Agency's reservoirs is conditioned on protecting prior downstream riparian and overlying rights (i.e., "vested rights") by operating them to ensure ongoing availability of the

water that would be naturally available to downstream rights if the reservoirs did not exist. The updated Policy Manual should acknowledge that fundamental principle of doing no harm and focusing the Agency on operating the reservoirs to store excess flows that would otherwise waste to the ocean and to regulate this excess to augment natural recharge to the Basin.

2. The Biological Opinion: During the ad hoc Committee proceedings, certain Agency staff said the National Marine Fisheries Service Biological Opinion (BO) for the Salinas Valley Water Project (SVWP) supersedes any and all reservoir operating principles and dictates how the Agency must operate the reservoirs. That is incorrect. Instead, the BO applies only to the Agency's storage and regulation of *excess flows* for purposes of *augmenting natural recharge* of the Basin. The BO says as much and does not prohibit the Agency from bypassing natural reservoir inflows for purposes of preserving natural water availability for prior downstream riparian and overlying water rights. Agency staff misunderstands that basic principle and erroneously assumes that the BO governs more than the SVWP's storage and regulation of *excess flows* for purposes of augmenting natural recharge. But the BO is clear that it applies to the SVWP, and the SVWP (*i.e.,* reservoir operations) only stores and regulates excess flows that would waste to the ocean and, by definition, cannot be used by prior downstream riparian and overlying water rights.

3. The SVWP: The SVWP provides for conservation releases during the irrigation season. The Agency must operate the SVWP as intended and described in the 2003 Engineer's Report to provide the benefits of the Project, and such operation must be described in the Operation Policy. Specifically, the Operation Policy must incorporate the essential components of the SVWP, which include the reoperation of the Nacimiento Reservoir to allow for "approximately 29,000 AFY (average over hydrologic record) of additional stored water that would be available for conservation releases (i.e., recharge of the groundwater aquifers) and downstream diversion." (SVWP Engineer's Report, p. 2-2.)

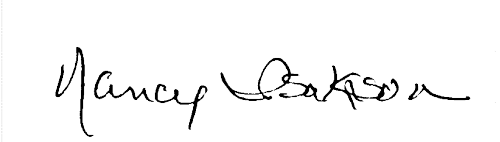
3. The Nacimiento Reservoir "rule curve": All significant reservoirs operate under some kind of "rule curve" defining how much water may be safely held in storage at different times of the year. Rule curves typically require a reservoir to bypass natural inflow during the wet season to preserve storage space adequate to absorb a large storm event without exceeding the dam's capacity to safely "spill" excess inflow without causing dam failure. The volume of that empty storage space is called a "flood pool." The SVWP modified Nacimiento Dam's spillway to increase its spill capacity and to modify the Dam's rule curve to allow higher storage levels during the wet season. Use of that additional capacity to store excess storm flows (called "reoperation") created the SVWP's approximately 29,000 AFY of additional average annual water supply yield over pre-SVWP reservoir operations. During the ad hoc Committee proceedings, Agency staff said the flood pool for winter operations is between elevations 787.75-800 feet above mean sea level, based on Nacimiento Dam's O&M Manual. Our review of the O&M Manual did not reveal any flood pool or rule curve to govern how the Agency will operate Nacimiento Reservoir during the wet season from February 1st through March 31st (in contrast to previous Agency O&M Manuals that did specify a flood pool or rule curve). The deletion of the Nacimiento rule curve is a significant departure from previous Agency policy governing operation of Nacimiento Reservoir. While the draft Policy Manual includes some discussion of flood control operations, there is a complete lack of information detailing how the Agency will balance its flood control duties with its duties to store excess inflows for regulation (i.e., for release during the dry season, called "conservation" releases, because the regulation avoids this water wasting to the ocean). The draft Policy Manual omits the rule curve used to define the re-operation of Nacimiento Reservoir pursuant to the SVWP.

Accordingly, the draft Policy Manual fails to incorporate the SVWP's centerpiece -- re-operation of Nacimiento Reservoir to create the 29,000 AFY of additional average annual yield. That yield is what Zone 2C landowners voted to pay for when they approved the Zone 2C Assessment by an 85 percent margin. That yield is what the Agency promised when it published the 2003 SVWP Engineer's Report providing the technical basis for the Zone 2C Assessment. Absent a rule curve showing how the Agency will operate Nacimiento Reservoir to produce the SVWP's 29,000 AFY of yield within the 787.75 to 800 ft flood pool, the Agency is breaking its promise to Zone 2C Assessment payers. The need for operational flexibility is understood, but the unexplained rejection of the SVWP's rule curve and recent departure from past operating practices eliminates transparency and hides the rationale for the Agency's reservoir operations in a proverbial "black box." That is the exact opposite of what the updated Policy Manual is supposed to do.

Enclosed with this letter, please find a copy of staff's Draft Nacimiento Dam Operation Policy with the SVWC's comments inserted in "comment boxes" pursuant to Agency staff's request. We also enclose the Reservoir Operations Draft Manual completed by the SVWC. This Draft Manual was submitted to Agency staff and the ad-hoc committee for their consideration for inclusion in the Draft Nacimiento Dam Operation Policy. Although all these comments were previously submitted to Agency staff during the ad hoc Committee proceedings, the majority of these comments were disregarded and are not addressed in the staff's draft Policy Manual.

In conclusion, the SVWC wants to work with the Agency in its efforts to develop an Operation Policy Manual for the reservoirs that truly, and accurately, reflects the manner in which they should be operated. That includes operating principles that will avoid harming prior downstream water rights and while augmenting natural recharge of the Basin by the 29,000 AFY promised when the Agency approved the SVWP and persuaded landowners to approve the Zone 2C Assessment required to pay for the SVWP pursuant to Proposition 218.

Thank you for your consideration of these comments.



Nancy Isakson, President
Salinas Valley Water Coalition

NACIMIENTO AND SAN ANTONIO RESERVOIR JOINT OPERATION S GUIDANCE MANUAL

MONTEREY COUNTY WATER RESOURCES AGENCY

Recommended by

RESERVOIR OPERATIONS COMMITTEE (DATE)

ADOPTED BY THE BOARD OF DIRECTORS (DATE)

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1.0 INTRODUCTION

Nacimiento and San Antonio Dams were built and are maintained by funds from property owners of the Salinas Valley. The dams are operated for the benefit of the property owners through benefits assessments. The Agency's operation of the two dams is consistent with well-established and proven criteria used to operate hundreds of similar dams throughout the country.

Since the construction and operations of the Nacimiento and San Antonio dams and reservoirs in 1957 and 1967, respectively, the Monterey County Water Resources Agency (MCWRA) and its predecessor, the Monterey County Flood Control and Water Conservation District, have always operated the dams as a combined system to provide for flood control and downstream beneficial uses of the conserved water.

Early on, the facilities were operated based on oral and written policies passed on from one Agency staff member to another. In the 1990s, it became apparent that a written policy formally adopted by the MCWRA Board of Supervisors was needed for both Nacimiento and San Antonio dams. In September of 1992, the MCWRA established *Water Conservation Release Priorities for Nacimiento Dam*, setting clear priority for releases of stored/conserved winter runoff. In August 1997, the MCWRA approved *Nacimiento and San Antonio Reservoir Joint Operations and Guidance Manual*.

Changes to the operations of the dams and reservoirs occurred in 2010 when the Salinas Valley Water Project (SVWP) was constructed upon voter approval and subsequent creation of the Zone 2C assessment district. The goals of the SVWP are to re-operate the Nacimiento and San Antonio dams and reservoirs to increase recharge to the Salinas River Groundwater Basin (Basin) to hydrologically balance the Basin; address seawater intrusion through the construction of a diversion facility [i.e., Salinas River Diversion Facility (SRDF)]; and to provide flood protection.

Prior to the construction and operations of the SVWP in 2010, the MCWRA prepared a combined Environmental Impact Report and Environmental Impact Statement (SVWP EIR/EIS), which was certified by the MCWRA in June 2003. The SVWP EIR/EIS reviewed certain baseline conditions and included certain mitigation measures to address potentially significant impacts to riparian habitats and fishery flows, which were incorporated into the SVWP. The MCWRA also engaged in formal consultation with the National Oceanic and Atmospheric Administration's National Marine Fisheries Service (NMFS) due the SVWP's potential to adversely impact South-Central California Coast steelhead (*Oncorhynchus mykiss*), which is listed as threatened under the federal Endangered Species Act (ESA), and its designated critical habitat. NMFS, upon formal consultation with MCWRA, issued a biological opinion (SVWP BO) and an incidental take statement for the SVWP. The flow prescriptions set forth in the BO were then incorporated in the State Water Resources Control Board's Order WR 2008-0037 DWR amending the water right license and permit for the dams and reservoirs.

The MCWRA subsequently modified the SVWP and prepared an Addendum to the SVWP EIR, which was certified by the MCWRA on July 31, 2007. The Addendum included the same environmental baseline and mitigation measures as the SVWP EIR/EIS.

This Nacimiento and San Antonio Reservoir Joint Operations Guidance Manual (Manual) is to consolidate all existing operational procedures, permits, and requirements into a single concise report for the operations of the dams as a combined system.

1.1 Manual Purpose

1.1.1 To provide real time, seasonal and planned operating decisions for the joint operation of Nacimiento and San Antonio Reservoirs.

1.1.2 To incorporate the operational changes with the SVWP, including the environmental baseline and mitigation measures in the SVWP EIR/EIS and the Addendum and the flow prescriptions in the SVWP BO.

1.1.3 To protect the water rights of the MCWRA and riparian and overlying owners of the Salinas River and Salinas River Groundwater Basin.

1.2 Project Owner and Operator

Monterey County Water Resources Agency (MCWRA) is the project owner responsible for maintenance, physical operation and dam safety and must operate the dams consistent with the SVWP and its EIR/EIS, SVWP BO, and SWRCB permits and licenses. In order to meet these responsibilities, the MCWRA collects assessment fees from landowners of various assessment districts in exchange for special benefits received over and above the benefits conferred on the public at large.

1.3 Authority

The Agency was legislatively created pursuant to Monterey County Water Resources Agency Act, 1990 Stats. 1159, 1991 Stats. 1130, 1993 Stats. 234, and 1994 Stats. 803 (Agency Act) and is a public entity organized and existing under the laws of State of California. The Agency Act defines the purpose, powers and authority of the Agency. Under the Agency Act, the MCWRA's responsibilities include, among others, "to provide for the control of the flood and storm waters of the MCWRA and the flood and storm waters of streams that have their sources outside the MCWRA, but which streams and flood waters flow into the Agency, and to conserve those waters for beneficial and useful purposes by spreading, storing, retaining, and causing those waters to percolate into the soil within the Agency…" (Agency Act §§4,8.)

1.4 Responsibilities

1.4.1 Governance

The MCWRA is governed by a nine-member Board of Directors (Directors) whose members are appointed by a five-member of the Monterey County Board of Supervisors (Supervisors). The Supervisors has overall responsibility for passing ordinances, addressing legal actions and matters, setting rates and adopting budgets. The Directors adopt and amend the reservoir operations guidelines, establish reservoir release schedules, adopt other related Agency policies, guidelines and procedures and appoint the Reservoir Operations Committee.

1.4.2 Reservoir Operations Committee.

The Reservoir Operations Committee was established as an Ad-Hoc Committee in December 1993; as a standing committee in October 1996; and as an advisory Committee in April 2016 by the MCWRA.

The Reservoir Operations Committee is composed of three Directors, the Chair of the Board of Directors, and 14 non-Director members. The Chair appoints non-Director members to the Committee as follows:

- One representative of a Salinas Valley City; one representative each of the Pressure, East Side, Forebay, Upper Valley and Arroyo Seco groundwater subareas; and three members of the public at large. The Committee also promotes the attendance and participation of the San Luis Obispo County Public Works Department, Monterey County Parks Department, Water Management Advisory Committee, and the Salinas River Channel Coalition.

The purpose of the Reservoir Operations committee is to review all matters pertaining to Nacimiento and San Antonio Reservoirs. The committee does not make binding decisions on those matters. Rather, the committee makes recommendations on those matters that are to be considered by the MCWRA Directors.

1.4.3 Agency Staff

The General Manager, or his designee, is responsible for the safe and professional operation of Nacimiento and San Antonio dams consistent with MCWRA policies, permits, and requirements discussed above. The dams will be operated in accordance with this Manual, using the professional judgment of qualified engineers. The dams will be operated with safety considerations and considerations for flood control, water conservation and to halt seawater intrusion for the health of the basin.

1.5 Regulating Agencies

1.5.1 State Water Resources Control Board - Manages surface water rights through issuance of permits and licenses.

1.5.2 California Department of Water Resources Division of Dam Safety - Inspects dams on a regularly scheduled basis and requires a strict adherence to the designated flood control rule curve.

1.5.3 National Oceanic Atmospheric Administration's National Marine Fisheries Service (NMFS) - Conducted formal consultation with the U.S. Army Corps of Engineers on the issuance of a section 404 permit to the MCWRA for the SVWP. NMFS issued a Biological Opinion and an incidental take statement, dated June 21, 2007, for South-Central California Coast steelhead (*Oncorhynchus mykiss*), which is listed as threatened under the ESA.

1.5.4 U.S. Fish and Wildlife Service (USFWS) – Conducted formal consultation with the U.S. Army Corps of Engineers on the issuance of a section 404 permit to the MCWRA for the SVWP. USFWS issued Biological Opinion and an incidental take state, dated July 24, 2007, for western snowy plover (*Charadrius alexandrines nivosus*), which is listed as threatened under the ESA.

1.5.5 National Weather Service (NWS), National Oceanic and Atmospheric Administration (NOAA). NWS/NOAA have legal responsibilities for issuing weather forecasts and flood warnings.

1.5.6 Federal Energy Regulatory Commission (FERC) - FERC has jurisdiction as a result of the installation and operation of the hydroelectric power generation facility on Nacimiento in 1987. As discussed below, the generation of power is an incidental benefit to the release of water for downstream beneficial use.[1]

[1] SVWP FEIR, page 2-395

2.0 DESCRIPTION

2.1 Watershed and Groundwater Basin

The Salinas River watershed is comprised of two parts, an upper watershed, that resides primarily in San Luis Obispo County and is primarily unregulated by any large reservoirs; and the lower watershed which is found primarily in Monterey County. The Nacimiento and San Antonio watersheds are the largest tributaries to the Salinas River lower watershed, and are regulated by their respective reservoirs primarily to meet flood control and water conservation objectives. The Arroyo Seco River is other major unregulated watershed that provides significant winter flood flows to the Salinas River and influences flood control operations for the two reservoirs. There are many smaller tributaries and subwatersheds contributing runoff and recharge to the Salinas River Groundwater Basin.

2.2 Water Rights

2.2.1 Nacimiento

To help increase the utilization of Salinas River flows for groundwater recharge to the Basin and to provide flood control benefits, Nacimiento Dam and Reservoir was built in 1957. The State Water Resources Control Board (SWRCB) Division of Water Rights issued License 7543 to MCWRA on November 4, 1965, pursuant to permitted Application 16124; issued License 12624 to MCWRA on December 2, 1965 (amended April 22, 1990), pursuant to permitted Application 16761; and issued Permit 21089 to MCWRA on March 23, 2001, pursuant to Application 30532. The priority of License 7543 is November 4, 1954. The priority of Amended License 12624 is December 2, 1955. The priority of Amended Permit 21089 is April 23, 1996. Permit 21089 allows for diversion and storage of an additional 27,900 afy in the Nacimiento Reservoir.

On November 8, 2004, MCWRA filed a petition to change the place of use and add a point of re-diversion under Licenses 7543 and 12624 and Permit 21089. The SWRCB adopted Order WR 2008-0037 DWR on September 5, 2008 amending the licenses and permits to include:

1. Collection of water from October 1 of each year to July 1 of the succeeding year;
2. Diversion to storage of 377,900 acre-feet per year (afy);
3. Maximum withdrawal of 180,000 afy;
4. Place of use to include 421,435 acres comprising MCWRA Zone 2C assessment zone;
5. A point of diversion to include the Salinas River Diversion Facility (SRDF); and
6. Flow prescriptions in accordance with the SVWP BO issues by NMFS on June 20, 2007.

San Luis Obispo County is entitled to 17,500 afy and has recently developed a project to begin taking the water. The MCWRA reservoir operations to-date have included the small amount of deliveries to the lakeside residents in San Luis Obispo County, under the 1959 Agreement, which total a minimum of approximately 1,300 AFY.[2]

[2] SVWP DEIR, page 5.3-5.

2.1.2 San Antonio

San Antonio Dam and Reservoir were completed in 1967, and the SWRCB issued Permit 012261 on _____ and License 012624 on April 26, 1990. The priority for this appropriative right is December 2, 1955. Under this license:

1. San Antonio Reservoir has a maximum capacity of 335,000 afy;
2. Maximum storage right of 220,000 afy to be collected from October 1 through July 1 of the succeeding;
3. Maximum annual withdrawal rate of 210,000 afy;
4. Place of use to include 421,435 acres comprising MCWRA Zone 2C assessment zone'
5. A point of diversion to include the Salinas River Diversion Facility (SRDF);
6. Flow prescriptions in accordance with the Biological Opinion issues by NMFS on June 20, 2007

2.2 MCWRA's Appropriative and Landowners' Riparian and Overlying Water Rights

A person who owns real property abutting or contiguous to a watercourse (riparian) or overlying a groundwater basin (overlying landowner) has a corresponding right to divert or produce water for use on his or her riparian or overlying land within the watershed. *People v. Skirokow* (1980) 26 Cal.3d 301, 307; *City of Pasadena v. City of Alhambra* (1949) 33 Cal.2d 908; *Phelps v. State Water Res. Control Bd.* (2007) 157 Cal.App.4th 89, 116. "Riparian" surface water rights arise from ownership of land adjacent to a natural stream. Riparian rights extend to surface water that is naturally available from the stream. "Overlying" groundwater rights arise from ownership of land overlying a groundwater basin. Overlying groundwater rights extend to groundwater that is naturally available.

Riparian and overlying rights exist and may be exercised if: (1) the water source is a natural water supply; (2) the land where the water is used is contiguous to or overlying the water source; and (3) the land where the water is used is located within the watershed of the water source. *Rancho Santa Margarita v. Vail* (1938) 11 Cal.2d 501, 528-529; Pleasant *Valley Canal Co. v. Borror* (1998) 61 Cal.App.4th 742.

Salinas Valley landowners' riparian rights extend to natural flows in the Salinas River (including flows from upstream tributaries, like the Nacimiento and San Antonio rivers). The landowners' overlying rights extend to naturally occurring groundwater from the Basin underlying their land. The naturally occurring groundwater includes water originating as recharge from Salinas River natural surface flows.

In California, a water rights "priority" system determines who gets how much water, if any, during a shortage. The characterization of a water right determines its relative priority to the source of supply. Under the priority system, the riparian and overlying owner's right to a natural water source is superior to an appropriative right in the same source. *Peabody v. City of Vallejo* (1935) 2 Cal.2d 351; *Tulare Irr. Dist. v. Lindsay-Strathmore Irr. Dist.* (1935) 3 Cal.2d 489.

The MCWRA holds appropriative surface water rights for the two reservoirs. Under the preceding water rights priority principles, MCWRA may only collect to storage those Nacimiento and San Antonio stream flows during October 1 to July 1 of each year that are surplus to the reasonable beneficial needs of downstream riparian and overlying landowners.

The availability of surplus water for appropriation by the MCWRA depends on the

reasonable and beneficial water needs of downstream riparian and overlying landowners compared to the natural flows available to meet those needs—all under a given hydrologic condition (e.g., during particular days, weeks or months of a wet year, average year or dry year). The MCWRA must operate the reservoir(s) in a manner that bypasses sufficient natural inflow to maximize recharge of Salinas River and of the Basin, consistent with MCWRA's existing water right permits/licenses and in a manner so as not to cause harm to landowners' reasonable and beneficial use of their riparian and overlying senior water rights.

2.3 Description of Facilities

Nacimiento and San Antonio Reservoirs operate as a system and are jointly operated to provide maximum benefits. The spillway crest at Nacimiento is at elevation 787.75 ft. with inflatable gates that can be raised to an elevation of 800 ft.

The Nacimiento Dam has two outlets. The High Level Outlet Works (HLOW) is composed of twin 8' x 8' square steel slide gates and cast concrete tunnels located under the center of the spillway at an elevation of 755 feet. The maximum elevation during flood stage is 825 feet, with a maximum temporary capacity of 538,000 acre feet and a temporary surface area of 7,149 acres.[3] The HLOW are designed to provide capacity for drawdown of the flood storage pool when discharges greater than the capacity of the low-level outlet works is required.

The Low Level Outlet Works (LLOW) is a 53-inch diameter pipe located near the southern side of the Dam. The inlet to the LLOW consists of three 42-inch butterfly valves for emergency closure and operated from a control building on the dam crest. A steel trash rack with 12-inch by 6-inch nominal size openings is provided on each intake. The steel outlet conduit is encased in reinforced concrete and lined with ½-inch of mortar. The conduit terminates with a six-branch outlet manifold. Five branches of the manifold are controlled by 24-inch rotating plug valves. Two of the five plug valves are designed for throttling discharges, whereas the other three valves can be operated safely only in the full open position. The sixth and farthest upstream branch is controlled by a 24-inch gage valve. The inlet to the LLOW is set in a concrete structure at an elevation of 670'. Releases from the LLOW can be made from either the manifold of 6 24-inch valves. The LLOW has a maximum capacity of approximately 600 cfs when the Lake elevation is 800 ft.

San Antonio Dam has an Outlet Works consisting of an 84-inch diameter, 1,085-foot long steel conduit located near the center of the Dam. The conduit leads through the dam embankment from a small intake structure to an outlet structure, which contains a Howell-Bunger type valve and supports a concrete house. The Outlet Works has a maximum capacity of 2,200 cfs when the reservoir elevation is 780 feet.[4]

[3] http://www.mcwra.co.monterey.ca.us/reservoirs-dams/reservoirs-dams_overview.php

[4] http://www.mcwra.co.monterey.ca.us/reservoirs-dams/reservoirs-dams_overview.php

3 HISTORICAL OPERATIONS AND SVWP

The MCWRA built and operates the reservoirs for two primary purposes: flood control and conservation of water through capture and storage of water during the wet season and subsequent controlled release of water for groundwater recharge and surface water deliveries. The Agency seeks to balance the flood control and water supply objectives, which at times, may not be compatible.[5]

Prior to the development of reservoir operations policies in the late 1990, the reservoirs were operated based on written and verbal guidelines which made it difficult for the public and policy makers to fully understand how the two reservoirs were being managed for the combined goals of flood protection and water conservation. The Directors formed the Reservoir Operations Committee, deciding that more comprehensive written policies and guidelines were needed for both Nacimiento and San Antonio dams. The MCWRA adopting the Nacimiento Dam Operation Policy in 2000 and the San Antonio Dam Operation Policy in 2001.[6] These are superseded by this Manual.

3.1 Historical Operation

3.1.2 Storage of Natural Flows and Operations

Prior to construction and operation of the Nacimiento and San Antonio reservoirs, rain falling in the watershed would gather into streams flowing into the Salinas River, which flowed into Monterey Bay. The Salinas River's bed is porous and those flows would naturally recharge the Basin. During wet winters, the natural flows exceeded the maximum groundwater recharge rate, causing flooding and discharging large quantities of fresh water into Monterey Bay. For the past 50 or years, the MCWRA has preserved landowners' riparian and overlying water rights while operating the reservoir to store excess water in the wet season for release during the dry season to artificially augment groundwater supplies.

Reservoir releases normally peak twice each year, during late winter or early spring for flood control purposes, and during the summer when controlled releases are made for downstream groundwater percolation. Normal low discharge periods have been in December and January and again in April and May. However, large flood releases have also occurred during these periods. During average to wet years, the MCWRA has historically been able to limit fluctuation of the reservoirs, drawing down the reservoir to the top of the conservation pool during December of each year. Then as winter precipitation slowed, river inflow was gradually stored in the reservoir through February and March. During this period reservoir releases have been controlled and water stored depending on flood potential, up to the spillway top of the designated flood pools. Historically, during April and May releases were normally kept to a minimum, thus maintaining maximum reservoir storage for summer releases. From June through December releases were made for downstream users and groundwater percolation, with the

[5] SVWP FEIR, page 2-395

[6] SVWP DEIR, page 5.3-4

reservoir storage being released principally during the summer months into October[7].

3.1.3 Flood Control

The first priority for flood operations is to protect the dams. The dams were designed to retain the probable maximum flood (PMF) and to minimize flood risk and damage to downstream areas. Nacimiento and San Antonio Lakes store winter storms in a defined flood control pool. The PMF for Nacimiento was updated in 2001 and for San Antonio in 1999. Releases can then be timed to avoid adding flood flows to the unregulated runoff from the upper watershed. The objective is to let the peak flows from the upper watershed pass, then provide controlled releases from the combined flood pools. To the degree possible, the flood operations also seek to time reservoir releases such that the controlled releases do not add to the peak flood flows from the Arroyo Seco River. The amount of empty flood storage needed decreases in the spring, and the Lakes are allowed to fill up as the probability of major rain events and runoff decreases.

3.1.4 Water Conservation

The water right permits and licenses define what waters can be stored and conserved. Both reservoirs have defined conservation pools that retain winter runoff to be released down the Salinas River through the spring and summer to percolate through the river bed and recharge the Salinas River Groundwater Basin.

3.1.5 Water Storage Operating Ratio

Given the topography and hydrology of the region, the Nacimiento watershed generates three times the amount of runoff than that generated by the San Antonio watershed. Given this difference, the MCWRA historically operated the reservoirs to ensure the amount of empty storage space in Nacimiento Reservoir remained approximately three times that of San Antonio Reservoir. The MCWRA historically has had a target storage rule of 3:1 for Nacimiento and San Antonio reservoirs. The target storage ratio seeks to balance storage and releases between the two reservoirs to optimize water conservation and flood protection benefits. By maintaining the 3:1 ratio, the Agency effectively operated the two reservoirs as a single system in a way that maximized the reservoirs' flood protection and water conservation benefits.[8]

3.2 The Salinas Valley Water Project (SVWP)

The Salinas Valley Water Project (SVWP) has been approved, built and is being operated by the MCWRA. The SVWP resulted in planned changes to the operation of the two reservoirs. The SVWP includes:

1. Reoperation and maintenance of the existing reservoirs;
2. Construction of the Nacimiento Dam Spillway Modifications; and
3. Construction of the Salinas River Diversion Facility.

The first component, operation and maintenance of the existing reservoirs, includes direct operations and maintenance of the existing facilities, along with the associated activities of

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[7] MCWRA Nacimiento Dam Emergency Action Plan, December 1996, included at attachment to the existing reservoir operations manual; Appendix V, page V-3

[8] SVWP FEIR, page 2-54

maintenance of the Salinas River channel, Salinas River mouth, cloud seeding, debris clearing, data collection and management, and other administrative tasks[9].

The second component is construction of the spillway modifications at Nacimiento Dam. The proposed improvements include lowering of the existing spillway, installation of an inflatable dam on the new spillway sill, and enlargement of the spillway chute. The spillway modifications allow for changes in the way the reservoirs are operated for both flood control and water supply.

The third component is the construction of the Salinas River Diversion Facility, the point of diversion in the amended rights for the two reservoirs; an inflatable diversion structure and associated fish screen and pumping facilities that would allow for diversion of Salinas River water into the existing Castroville Seawater Intrusion Project (CSIP) distribution system. The purpose of the Diversion Facility is to halt seawater intrusion. It is important to point out that if the Nacimiento Lake were operated so that lake levels were not reduced below 730 feet in certain hydrologic conditions, modeling performed as part of the SVWP shows that seawater intrusion would not be halted and the objectives of the SVWP would not be met.[10]

In 2003, a successful assessment ballot proceeding pursuant to Proposition 218 approved and funded the SVWP. The MCWRA Board of Supervisors adopted Resolution No. 04203, which created Zone 2C as the benefit zone for SVWP. Within Zone 2C, each property was assessed in proportion to the special benefits conferred by the SVWP. Reservoir operations changed through SVWP in order to provide additional water for surface diversion and groundwater recharge; ensure adequate flood control capacity; maximize conservation releases; and halt seawater intrusion for the health of the basin.

The SVWP EIR contemplated the changes to the operations of the two reservoirs as follows:

> "Once the SVWP is operational, the MCWRA would need to consider whether to revise its reservoir operation practices (including the maintenance of the 3:1 ratio in storage space between the two reservoirs) in order to reflect the larger spillways and the need for increased releases to recharge the Basin. The MCWRA intends to consider revision of these operations standards (including revisions that would lessen impacts on recreational impacts at Lake Nacimiento) as it gains experience in operating the reservoirs under these new conditions. Because any such changes will be the result of future experience gained through operating under real-time (rather than modeled) conditions, however, it is premature and speculative at this time for the MCWRA to commit to any specific changes."[11]

The total amount of water in the watershed that flows through the reservoirs did not change substantially between pre-SVWP and post-SVWP. However, the timing of the releases changed, with the SVWP allowing more water to be retained at the reservoirs during the non-irrigation season (instead of being released as spills to allow for more flood storage), for release during the irrigation season.[12] The spillway modifications at Nacimiento Dam allowed changes in the way both reservoirs are operated, resulting in additional water for surface diversion and/or groundwater

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[9] Salinas Valley Water Project, Engineers Report, RMC January 2003.

[10] SVWP FEIR, page 2-49

[11] SVWP FEIR, page 2-41

[12] SVWP, FEIR, page 2-44

recharge, assuring the provision of adequate flood control capacity, and maximizing conservation releases. Based on the hydraulic modeling conducted for the SVWP, it was determined that reoperation of both reservoirs could (1) increase the water available for surface diversion and/or groundwater recharge and (2) halt seawater intrusion.

The increased flexibility provided by the spillway modification is realized during the late winter and early spring when Nacimiento Reservoir levels have historically been maintained at a maximum elevation of 777 feet (per the currently accepted rule curve) for flood control operation and to accommodate existing spillway capacity. During normal and heavier rainfall years, this meant that MCWRA was forced to release water from the reservoir that could otherwise have been stored for conservation (i.e., recharge) uses later in the year during the late-spring/summer months. By increasing the capacity of the spi1lway and reoperating Nacimiento and San Antonio Reservoirs, more water can be stored during the winter/spring, while still passing the PMF, thus making more water available for release later in the year. Reoperation involves changes in the amount, frequency, and schedule for releases of water from the reservoirs into the Nacimiento and San Antonio rivers connecting to the Salinas River. Specifically, the average change in water elevation as a result of reoperation and spillway modification is a decrease from 13 to 16 feet from January to May, and from 19 to 27 feet lower from June to December as compared to pre-SVWP conditions. From July through December Nacimiento Reservoir will be operating below 730 feet.[13]

Although no physical modifications were required at San Antonio Reservoir, the operation and management of the two reservoirs are influenced by each other, and therefore, a change in operation at Nacimiento Dam translates into a change in operation at San Antonio Dam.[14] Releases from San Antonio Reservoir are generally higher during the summer months than under pre-SVWP conditions. Reoperation increases the releases from San Antonio Reservoir during the irrigation months to enhance groundwater recharge and meet diversion requirements. During the winter and early spring months, a reduction in releases should occur so that recharge and diversion occur during the April through October period.[15]

[13] SVWP DEIR, page 5.8-20 & Table 5.8-5

[14] SVWP Engineers Report, page 2-2

[15] SVWP Engineers Report, page 2-2

4 OPERATIONAL GUIDELINES AND POLICY

4.1 Preparation of Reservoir Conservation Release Schedule (Natural Flows and Fish Flows are Addressed Separately below)

Nacimiento and San Antonio Reservoirs are to be operated jointly to provide maximum water conservation and recharge, water quality (i.e., seawater intrusion) and flood control special benefits and is funded by the Zone 2C assessments. The operations must be consistent with water rights and prevailing local, state and federal laws.

Each year, MCWRA staff will draft a Preliminary Reservoir Release Schedule that will be consistent with this Manual. The purpose of the Preliminary Reservoir Release Schedule is to guide the MCWRA releases from both Nacimiento and San Antonio Dams and will be prepared each spring for consideration at the Reservoir Operations Committee April meeting. The Reservoir Operations Committee will recommend the Proposed Release Schedule to the Board of Directors for adoption during a noticed public meeting. The Reservoir Operations Committee will review the adopted Release Schedule monthly and make recommendations of changes as needed to the Board of Directors for their ultimate approval during a noticed public meeting.

4.2 Flood Operations Rule Curves and Constraints

The purpose of the rule curve is to insure that sufficient flood storage is available in the reservoir at the start of the Probable Maximum Flood (PMF), for routing the flood through the reservoir without overtopping the dam. Probable Maximum Precipitation (PMP) estimates from Hydrometeorological Report No. 36 (HMR 36), published by the National Weather Service[16].

4.2.1 Nacimiento

Nacimiento Reservoir may be filled with the inflatable gates (Obermier Weir) raised to an elevation of 800 ft. Based on this modification pursuant to, and as approved by, the SVWP, there is no required DSOD and FERC flood rule curve for Nacimiento Reservoir because the new spillway was designed to pass the PMF safely, without damage to the dam structure. However, the MCWRA has a flood control rule curve during the rainy season, in order to have sufficient storage available to reduce the risk of downstream flooding. Figure 1 shows the pre-SVWP and SVWP modified rule curve for Nacimiento Reservoir.[17]

[16] The National Weather Service (NWS) has revised the PMP estimates for California, and replaced HMR 36 with a new report, HMR 58, published in January of 1999.

[17] SVWP FEIR, page 3-19

Figure 1 – Nacimiento Rule Curves

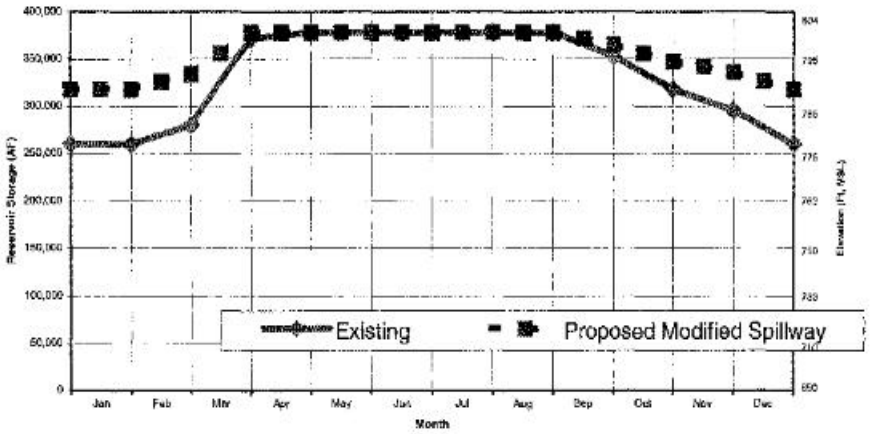

Figure 5.3-4: Existing and Proposed Flood Control Space Requirements for Nacimiento Reservoir

The Tables below include the Nacimiento – flood control storage and the Nacimiento—Rule Curve.[18] These are the targets and rule curve for flood storage to be utilized by the MCWRA as its baseline for managing the operations of the reservoirs in order to meet the objectives of the SVWP.

[18] These assumptions included and utilized in the SVIGSM, pre-SVWP and post-SVWP with the Biological Opinion

NACIMIENTO - FLOOD CONTROL STORAGE					
	Pre-SVWP		Post-SVWP w/ BO		
Month	Storage (acre feet) Beginning	Storage (acre-feet) Ending	Storage (acre feet) Beginning	Storage (acre-feet) Ending	Difference (Ending)
1	267900	267900	317900	317900	50000
2	267900	267900	317900	333900	66000
3	322900	322900	333900	377900	55000
4	377900	377900	377900	377900	0
5	377900	377900	377900	377900	0
6	377900	377900	377900	377900	0
7	377900	377900	377900	377900	0
8	377900	377900	377900	377900	0
9	377900	377900	377900	365200	-12700
10	310900	310900	365200	347500	36600
11	281900	281900	347500	335900	54000
12	272900	272900	335900	317900	45000

NACIMIENTO - FLOOD CONTROL STORAGE (By Elevation)			
	Pre-SVWP	Post-SVWP & BO	
Elevation	Storage (acre-feet)	Storage (acre-feet)	Difference/ Additional Capture
825		538250	35000
820		503250	33400
815		469850	32050
810		437800	59900
800	377900	377900	
790	323050	323050	
780	272900	272900	
770	227500	227500	
760	186950	186950	
750	150950	150950	
740	119450	119450	
730	92150	92150	
720	69000	69000	
710	50150	50150	
700	35450	35450	
690	24300	24300	
680	16150	16150	
670	10300	10300	
660	6250	6250	
650	0	0	

4.2.1.1 Nacimiento Operating Elevations

1. Dead Pool: Elevation 670 feet, 10,300 acre feet, the invert of the Intake Structure of the LLOW. Water cannot flow by gravity out of the Lake below elevation 670 feet.

2. Minimum Pool: Minimum pool elevation is 670[19] - 687.8 feet, 10,300 acre feet -22,300 acre feet. Water will not be released below this elevation by the MCWRA. San Luis Obispo County may take its water entitlement from below this elevation.

3. Conservation Pool Elevation: Elevation 670 – 787.75 feet. The storage above the Minimum Pool, 670 - 687.8 feet, and below the Flood Pool (defined below), 670 - 787.75 feet, is used to store water for release to the Salinas Valley for groundwater recharge, fish passage and the operation of the SVWP. The volume of the Conservation Pool is 289,013 acre feet – 311,313 acre feet. [20]

4. Flood Pool Elevation: Elevation 787.75 feet – 800 feet, 311,313 acre feet – 377,990 acre feet. The bottom of the Flood Pool is the spillway elevation 787.75, 311,313 acre feet. The top of the Flood Pool is the maximum lake elevation 800 feet, 377,900 acre feet. The size of the flood pool varies monthly based on flood probability.

5. Maximum Lake Elevation: The top of the raised Obermeyer spillway gate is at elevation 800 feet, 377,900 acre feet. This is the maximum Lake elevation that can be sustained, and is the level at which the Lake is considered full.

6. Top of Dam: The top of the Dam is at elevation 825 feet. This is the maximum temporary elevation the Lake will ever attain during the PMF. The MCWRA has flood easements around the Lake up to this elevation. The MCWRA requires any construction of habitable structures, or structures that can be damaged by inundation be above elevation 825 feet. Construction of any structures, such as boat ramps or roads; or grading, that occurs below elevation 825 feet requires approval from the MCWRA prior to beginning work.

4.2.2 San Antonio

The MCWRA conducted hydrologic study based on HMR 58, updated PMF and revised the flood rule curves in 1999 (GEI, 1999). Based on the updated PMF and reservoir flood-routing analyses, MCWRA petitioned the DSOD to permanently remove the current seasonal storage restriction based on the DSOD mandated rule curve. Removing the rule curve allowed MCWRA to operate the reservoir for water supply and flood control without DSOD restriction.

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[19] MCWRA Nacimiento Dam Emergency Action Plan, December 1996, included at attachment to the existing reservoir operations manual

[20] MCWRA Nacimiento Dam Emergency Action Plan, December 1996, included at attachment to the existing reservoir operations manual

4.2.2.1 San Antonio Operating Elevations

1. Dead Pool: Elevation 645 feet, 10,000 acre feet.
2. Minimum Pool: Elevation 666 feet, 23,000 acre feet, is the minimum pool elevation. Water below elevation of 666 feet is reserved for fish and wildlife and wildlife storage.
3. Conservation Pool Elevation: The conservation pool which extends from minimum pool, 666 feet, to elevation of 774.5 feet, 305,000 acre feet of storage are the operation pool used to store water for later release to the Salinas River for groundwater recharge, fish passage, and the operation of SVWP.
4. Flood Pool Elevation: The flood pool extends from the conservation pool to the spillway elevation of 780 feet, 335,000 acre feet of storage. It varies monthly based on flood probability. The flood pool is intended to provide winter flood protection by maintaining the ability of the spillway to pass the PMF without overtopping the dam.
5. Maximum Lake Elevation: When the reservoir is full (elevation 780 feet), which is the crest of the spillway, it has a maximum storage capacity of 335,000 acre-feet, is 16 miles long, and has about 100 miles of shoreline. The maximum elevation during flood stage is 802 feet, with a maximum temporary capacity of about 477,000 acre-feet and a temporary surface area of about 7,500 acres.
6. Top of Dam: The crest of the dam elevation is 802 feet above mean sea level (msl) with a spillway crest elevation of 780 feet.

4.3 Storage Operations Guidance and Target Objectives

The Nacimiento Dam flood control rule curve changes provide additional flood evacuation capability through the enlarged spillway. This change results in a reduction in the required empty storage space at Nacimiento Reservoir during some months. The target storage rule curve between Nacimiento and San Antonio also generally maintained the 3:1 ratio storage/release ration between the two reservoirs. The change in the target storage rule curve essentially results in less water having to be released from Nacimiento Reservoir and more being released from San Antonio Reservoir.[21]

4.4 SVWP

Consistent with the approval of the SVWP, it is the policy of the Board that the joint reservoir operations will seek to;

1. Operate Nacimiento Lake starting from July through December so that lake levels are reduced below 730 feet in order to halt seawater intrusion.[22]

[21] SVWP FEIR, page 2-55

[22] If the Nacimiento Lake were operated so that lake levels were not reduced below 730 feet in certain hydrologic conditions, modeling performed as part of the SVWP shows that seawater intrusion would not be halted and the objectives of the SVWP would not be met. (Reference:

2. Provide a target average annual increase in storage of approximately 29,000 AFY (average over hydrologic record) to be made available for conservation releases (i.e., recharge of the groundwater aquifers) and downstream diversion.[23]
3. Provide a target of up to 11,000 acre feet per month for the April through August period[24] for diversion and recharge during the irrigation months.
4. The annual increase above the historical average in storage, recharge and diversions will be reported in the Reservoir Operations Annual report

4.5 Use of Outlet Works to meet Flow Guidelines and Requirements

1. The Low Level Outlet Works of Nacimiento Dam shall be the primary outlet for releases. The capacity of the outlet is approximately 600 cfs and 585 cfs when the Lake elevation is 767, and at elevations less than 755, an optimal capacity of up to 585cfs.
2. When the need for releases exceeds the 600 cfs capacity of the LLOW, releases shall be made from the HLOW (high level gates) if the Lake elevation is above 755 and/or from the Obermeyer spillway gate if the lake elevation exceeds 787.75 feet or from San Antonio Reservoir.
3. The outlet works at San Antonio will be operated to meet the downstream flows consistent with the stage- discharge curves.

4.6 Monitoring Natural Flow

1. The MCWRA must operate the reservoir(s) in a manner that bypasses sufficient natural inflow to maximize recharge of the Salinas River Groundwater Basin, consistent with MCWRA's existing water right permits/licenses and in a manner so as not to cause harm to landowners' reasonable and beneficial use of their riparian and overlying senior water rights.

4.7 SVWP

1. Releases shall be consistent with the MCWRA appropriative water rights, SVWP, SVWP Engineer's Report, SVWP EIR and Addendum to the EIR.
    a. Provide releases of natural inflow in the Nacimiento and San Antonio reservoirs in February and March for adult passage consistent with the SVWP (and as described in the Biological Opinion).
    b. Provide releases of natural inflow in the Nacimiento and San Antonio reservoirs during July through September when MCWRA does not have the right to appropriate any excess water under its licenses/permits.
    c. Provide releases of water as part of the SVWP reoperation of up to 11,000 acre feet per month from April through August, which is a covered activity in the NMFS' Incidental Take Statement.
    d. During the period of December 1 to May 31and while the Arroyo Seco daily average flow as measured at the USGS Arroyo Seco near Soledad gage is 173

SVWP FEIR, page 2-49.)

[23] SVWP Engineers Report, page 2-2

[24] SVWP Engineers Report, page 2-2

cfs or more or if daily average flow in the Salinas River measured at Paso Robles is 60 cfs or more, provide sufficient releases from Nacimiento and/or San Antonio reservoirs, such that Salinas River daily average flows upstream of Spreckels (measured at the USGS Spreckels gage or estimated from the Chualar gage) would not be below 155 cfs, and Salinas River daily average flows downstream of Spreckels would not be below 72 cfs[25]. (Mitigation Measure)

e. During the period of December 1 to May 31 while the surface diversion facility is in operation and while the Arroyo Seco daily average flow as measured at the USGS Arroyo Seco near Soledad gage has been 173 cfs or more within the preceding 10 day period or if daily average flow in the Salinas River measured at Paso Robles has been 60 cfs or more within the preceding 10 day period, sufficient flow would be bypassed at the diversion facility to allow passage of steelhead to the Salinas River lagoon. A flow of 45 cfs from the dam site to the lagoon has been estimated as sufficient for passage when the lagoon is open to the ocean[26]. (Mitigation Measure)

f. During the period of December 1 to May 31 and when the lagoon is closed and the surface diversion facility is in operation, the lagoon surface would be maintained at an elevation of not less than 3.0 feet NGVD by regulating the flow through the lagoon outlet gate. A minimum flow to the lagoon of 15 cfs will be bypassed at the diversion facility under these conditions. Flow through the outlet gate will be maintained at a level sufficient to allow passage of steelhead to the Old Salinas River channel during this period.[27] (Mitigation Measure)

g. For adult Steelhead migration in the Upper Salinas Basin 155 cfs measured at Bradley, and 60 cfs in the Salinas River measured at Paso Robles will be released during the migration period for adults migrating upstream to spawn, which is from December 1 through April 15.[28] (Environmental Baseline)

h. For smolts, a minimum migration flow of 56 cfs in the Salinas River downstream of Spreckels, 112 cfs in the Salinas River upstream of Spreckels, and 173 cfs in the Arroyo Seco (depth criteria were relaxed from 0.6 feet to 0.4 feet) will be released for the period when smolts and post-spawning adults are migrating downstream, which is from January 15 to May 31.[29] (Environmental Baseline)

4.8 Biological Opinion

Releases shall be consistent with the SVWP BO, which flow prescription has been incorporated into the SWRCB license and permit for Nacimiento Reservoir. The flow

[25] SVWP EIR, pg. 5-6-60; SVWC EIR Addendum, page 2-1

[26] SVWP EIR, pg. 5-6-60; SVWC EIR Addendum, page 2-1

[27] SVWP EIR, page 5-6-60; SVWC EIR Addendum, page 2-1

[28] SVWP EIR, page 5.6-60 & 5.6-61

[29] SVWP EIR, page 5.6-60 & 5.6-61

prescription in the SVWP BO was developed from MCWRA's *Salinas Valley Water Project Flow Prescription for Steelhead Trout*, dated December 11, 2005. The flow prescription developed therein is interrelated and interdependent of the covered activities under the Incidental Take Statement.

4.8.1 Release of water from Nacimiento and/or San Antonio Reservoirs will be made when combined water storage is 220,000 acre-feet or more (total storage in Nacimiento plus total storage in San Antonio). As such time when combined storage surpasses 220,000 acre-feet, releases will be made in accordance with triggers and flow criteria described in the Adult Upstream migration and Juvenile Passage to the Lagoon sections; and Releases of water from Nacimiento and/or San Antonio Reservoirs will be made for engineered smolt outmigration flows when combined water storage is 150,000 acre-feet or more (total storage in Nacimiento plus total storage in San Antonio).

4.8.2 The above 220,000 acre-feet minimum combined storage value is derived from the sum of the following uses:

Average annual conservation releases from reservoirs with the Project operational	. 172,000 AF
Average annual irrigation diversion	9,700 AF
Nacimiento Reservoir minimum pool	22,300 AF
San Antonio Reservoir dead pool	10,000 AF
Approximately two months' minimum releases from Nacimiento and San Antonio Reservoirs	6000 AF
Total	220,000 AF

4.8.3 ***Adult Steelhead Upstream Migration.*** Adult steelhead upstream migration triggers will be in effect from February 1 through March 31. When flow triggers occur, MCWRA intends to facilitate upstream migration of adult steelhead by insuring flows of 260 cfs at the Salinas River near Chualar (U.S. Geological Survey [USGS] stream gage 11152300) for 5 or more consecutive days when the river mouth is open to the ocean. To insure this minimum flow and duration, MCWRA will provide reservoir releases when necessary to augment natural flows. These reservoir releases will occur if the following triggers are met:

1. combined storage of Nacimiento and San Antonio reservoirs is greater than 220,000 AF,
2. 340 cfs or higher flows are present at the Arroyo Seco near the Soledad gage (USGS stream gage 11152000), and
3. 173 cfs or higher flows are present at the Arroyo Seco below the Reliz Creek gage (USGS stream gage 11152050).

4.8.4 ***Downstream Migration of Smolting Steelhead.*** To facilitate the downstream migration of smolts and rearing juvenile steelhead in the Salinas River during normal category water years, MCWRA will provide, beginning March 15th (or April 1), reservoir

releases (i.e., block flow releases) of 700 cfs at Salinas River at Soledad for 5 days and 300 cfs at Salinas River near Spreckels for 15 days thereafter or until April 20 (or May 31), whichever is longer (totaling 45 Block-flow days) when the following flow triggers are met:

1. the water year type is dry-normal, normal-normal, or wet-normal,
2. combined storage of Nacimiento and San Antonio reservoirs is 150,000 AF or more, and
3. 125 cfs or higher at the Nacimiento River below Sapaque Creek gage (USGS stream gage 11148900), or 70 cfs at the Arroyo Seco below Reliz Creek gage (USGS stream gage 11152050).

4.8.5 ***Downstream Migration of Juvenile and Post Spawn Adult Steelhead.*** In some years, block flow releases for smolt migration may not occur because triggers for those releases are not met. However, in those years MCWRA will provide reservoir releases and SRDF bypass flows to enhance migration opportunities for juvenile steelhead and post-spawn adult steelhead (kelts).

Beginning April 1st, when smolt migration block flows are not triggered, MCWRA will provide reservoir releases under the following circumstances: For dry year-types, MCWRA will provide 2 cfs to the lagoon when the SRDF is operating or during aquifer conservation releases. For non-dry year-types, and if the combined reservoir storage is 220,000 AF or more, MCWRA will provide additional supplemental bypass flows. If the lagoon is open to the ocean, then MCWRA will provide 45 cfs to the lagoon for 10 days or until the lagoon closes to the ocean, whichever occurs first, then 15 cfs to the lagoon through June 30th, then 2 cfs as long as the SRDF is operating or during aquifer conservation releases. If the lagoon is not open to the ocean, then MCWRA will provide 15 cfs to the lagoon through June 30th, then 2 cfs as long as the SRDF is operating or during aquifer conservation releases.

4.8.6 ***Spawning and Rearing Habitat in the Nacimiento River.*** MWCRA will provide, through reservoir releases, steelhead spawning and rearing flows for the Nacimiento River below Nacimiento Dam. To provide spawning opportunities, 60 cfs from Nacimiento Reservoir will be released beginning the eighth day after the first adult steelhead passage day occurs on the Salinas River near Spreckels after January 1st. Until further studies are conducted to determine adequate rearing flows in the Nacimiento River below the reservoir during summer and fall, a minimum of 60 cfs will be released throughout the year as minimum rearing flow as long as the water surface elevation of Nacimiento Reservoir is above the elevation 687.8 feet mean sea level (msl) -- the reservoir's minimum pool.

4.9 Drought Contingency[30]

Planning for and understanding how the SVWP would operate during drought conditions was a critical factor in the development of the SVWP. Drought contingency planning provides a means to manage the Salinas River Groundwater Basin during expected drought periods, such as the drought period of the late 1980's/ early 1990's. The SVWP has been designed to accommodate expected drought episodes (based on the drought of record that occurred in 1987-1991) while

[30] SVWP DEIR, page 3-25

continuing to meet its overall objectives.

The SVWP assumes the basic conjunctive use of ground and surface water during drought. Conjunctive use takes advantage of surface water supplies during periods of availability and preserves groundwater supplies for use during periods of drought or other periods when surface water supplies are not available. Surface water supply that would be derived through reservoir reoperation and river diversion is variable and would be constrained during drought periods.

The SVWP EIR/EIS utilized the Salinas Valley Integrated Ground and Surface Water Model (SVIGSM) to assess groundwater conditions that would result from the SVWP's continued in-stream groundwater recharge and the delivery of diverted Salinas River water. The underlying assumption is that groundwater pumping would occur where surface water deliveries are made. Drought contingency was evaluated against the historic droughts of record within the Salinas Valley during the 1949 - 1994 hydrologic period. The delivery of diverted Salinas River water during normal to wet years results in reduced groundwater pumping. This in turn results in increased groundwater levels. The SVIGSM evaluations assumed that groundwater is pumped whenever river diversions are not available or are not adequate to meet the needs of the designated delivery area. The results indicate that groundwater supplies are adequate to meet SVWP objectives without re-establishing intrusion in the Salinas Valley through droughts of historic record.

4.10 Incidental Benefits

The below lists incidental benefits of the Nacimiento and San Antonio dams and reservoirs. The operations set forth in this Manual are not intended to operate to maximize any one of these incidental benefits.

4.10.1 Recreation

Both the Nacimiento and San Antonio Reservoirs have provided recreational opportunities since the reservoirs began operation.[31] With the SVWP, it was anticipated that reduction in lake levels at Nacimiento and San Antonio Reservoirs (short and long term) would substantially affect recreational opportunities during the peak recreation season.[32]

The existing facilities at Lake Nacimiento Resort would be sufficient in most conditions to provide reservoir access under the SVWP. At lake level of approximately 690 feet, the surface area of the lake is approximately 760 acres, compared with 2,350 acres at a surface elevation of 730 feet and 5,370 acres at full capacity. Thus, while accessible, the small surface area of the lake makes boating less desirable, especially to water skiers. The extension of boat launch facilities at private homeowner association facilities, namely Heritage Ranch and Oak Shores, was found not to be feasible. This is due to the fact that existing facilities already extend to the lake bed at the locations of the launches. During low lake conditions, the area under the ramps, and for a large distance surrounding the ramps, is dry due to relatively flat topography. To access the lake, private property owners would be able to use the existing boat launch and proposed boat launch at

[31] SVWP Eng. Report, page 3-1

[32] SVWP DEIR, page 2-16.

Lake Nacimiento Resort, which provides deeper access than at Heritage Ranch and Oak Shores.[33]

At Lake San Antonio, boat launch facilities are operated by Monterey County Parks.[34]

The SVWP EIR concluded that recreational impacts were significant based on the expected number of days that reservoir levels would fall below a 730-foot threshold compared with Pre-SVWP conditions and that recreational resources at Lake Nacimiento and Lake San Antonio would be significantly affected by the SVWP.[35]

4.10.2 Fishery in the Reservoirs

Nacimiento and San Antonio reservoirs are managed for largemouth bass production. Introduced exotic fish are primarily valued by sport anglers with largemouth bass the most popular game species.

San Antonio and Nacimiento Reservoirs do not provide habitat for protected species, nor do migratory fish pass through them. Native warmwater species are primarily stream fish that are able to use the reservoir during part or all of their life-cycle. The native species rely primarily on flowing streams for reproduction and their success in the reservoirs does not depend significantly on reservoir elevation or fluctuation.[36]

4.10.3 Hydroelectric Plant

At the Nacimiento Dam, there is an indoor powerplant housing two small hydroelectric units. Unit one is a Francis turbine with rotor and stator capable of generating up to 4418 kVA. Unit two is an induction generator capable of producing 375 kW. The Powerplant was constructed in 1987 and is situated on the downstream slope at the base of the dam on the south side. The facility is under the jurisdiction of the Federal Energy Regulatory Commission (FERC). [37]

The hydroelectric plant at Lake Nacimiento was designed to take the normal water conservation releases from Lake Nacimiento into both the Nacimiento and Salinas Rivers and route them through the plant to convert the flow into electrical energy generating revenue for the MCWRA. Releases from the reservoir whether for groundwater recharge or for downstream diversion, are used to generate power at the hydroelectric plant. The

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[33] SVWP FEIR, page 2-50.

[34] SVWP, FEIR, page-250

[35] SVWP, FEIR, page 2-48

[36] SVWP DEIR, pages 5-6.44 – 5.6-45; 5-6.85

[37] http://www.mcwra.co.monterey.ca.us/nacimiento_hydroelectric_plant/nacimiento_hydroelectric_plant.php

generation of power is an incidental benefit to the release of water for downstream beneficial use.[38]

[38] SVWP FEIR, page 2-395

Draft Nacimiento Dam Operation Policy

Monterey County Water Resources Agency

Adopted by the Board of Directors
[Date]

Recommended by the Reservoir Operations Advisory Committee
[Date]

June 26, 2017

Contents

Figures

Appendices

Section I – Introduction and Background

Nacimiento Dam began operating in 1957. From 1957 to 1996, the Monterey County Water Resources Agency (Agency), then the Monterey County Flood Control and Water Conservation District, operated this facility according to a combined written and oral policy. Various documents comprised the written part of the policy and the oral portion was passed from one Agency staff member to another. Inquiries about the policy from the public or other agencies were answered on an as needed basis.

In 1996, it became apparent that a more comprehensive written policy was needed for both Nacimiento and San Antonio dams. In August 1997, the Agency Board of Directors approved the Nacimiento Dam Operation Policy as recommended by the Reservoir Operations Committee and Agency staff.

Following the recommendation of the Reservoir Operations Committee, the Agency Board of Directors adopted a policy change for Nacimiento and San Antonio dams on April 24, 2000, that shifted the target area for the location of end of flow in the Salinas River during water conservation releases from the vicinity of Chualar to the vicinity of Spreckels.

In 2002, the Agency Board of Supervisors certified the Final Environmental Impact Report / Environmental Impact Statement (EIR / EIS) and applied to the U.S. Army Corps of Engineers (Corps) for a permit to construct the Salinas Valley Water Project (SVWP). The SVWP consists of three components: modification of the Nacimiento Dam spillway, reoperation of Nacimiento and San Antonio Reservoirs, and the Salinas River Diversion Facility (SRDF).

In 2003 a Proposition 218 mail-in election was approved by property owners in the Salinas Valley to fund the SVWP through the creation of assessment Zone 2C.

During the SVWP permitting process, the National Oceanic and Atmospheric Administration's National Marine Fisheries Service (NMFS) initiated a formal Section 7 consultation with the Corps on the issuance of a permit for the SVWP. This consultation resulted in the Agency authoring the SVWP Flow Prescription for Steelhead Trout in the Salinas River (Flow Prescription) in 2005. This Flow Prescription was incorporated into the National Marine Fisheries Service Biological Opinion (BO), issued on June 21, 2007, to govern flows and related monitoring activities. This Flow Prescription also refined fish migration objectives to protect steelhead initially described in the Final EIR / EIS certified in 2002. These new Flow Prescription objectives to enhance steelhead season migrations and modifications to the SVWP are described in the addendum to the Final EIR / EIS, adopted July 30, 2007, and supersede any previously identified flow regimes in the final EIR/EIS.

The new Flow Prescription objectives were added to applicable water rights held by the Agency in 2008. Reoperation of the reservoirs under BO requirements began in 2010 with the startup of the SRDF.

This version of the Nacimiento Dam Operation Policy incorporates changes resulting from the construction of the SVWP, including a Nacimiento Dam rule curve change, and reoperation of the Nacimiento Dam and Reservoir in accordance with BO and water rights license requirements.

As a multi-use facility, Nacimiento Dam and Reservoir is operated with consideration to many factors including dam safety, flood protection, groundwater recharge, operation of the SRDF, water supply, fish migration, fish habitat requirements, agriculture, and recreation.

This document does not reflect new policy but rather consolidates all existing operational procedures, permits, and requirements into a single concise report.

This document is subject to revision due to future projects, changes in regulatory requirements, agreements with outside entities, or the need for changes in operational procedures. Revisions are subject to approval by the Agency Board of Directors.

All reservoir elevations referenced in this document are based on the National Geodetic Vertical Datum of 1929 (NGVD29).

General Description / Information

Nacimiento Dam (Dam) and its reservoir, Nacimiento Reservoir (Reservoir), are located in northern San Luis Obispo County, about 20 miles from the coast, in central California. The Dam is owned by the Agency. The seven million dollar issuance to construct the Dam in the mid-1950s was retired in 1996, and the Agency owns the facility outright.

As a multi-use facility, Nacimiento Dam and Reservoir is operated with consideration to many factors including dam safety, flood protection, groundwater recharge, operation of the SRDF, water supply, fish migration, fish habitat requirements, agriculture, and recreation. This Operation Policy defines parameters and describes guidelines and requirements the Agency will follow to operate the Dam and meet the challenges of balancing the sometimes competing interests involved in operating this multi-use facility.

Nacimiento River

The Nacimiento River originates in the Santa Lucia Mountains south of Cone Peak within the Ventana Wilderness of Los Padres National Forest. The river flows southeasterly through the Los Padres National Forest, Fort Hunter Liggett and Camp Roberts and a few private parcels as

well as the Nacimiento reservoir before it reaches its confluence with the Salinas River. The river is 54.2 miles in length of which 9.5 miles are located within the Los Padres National Forest. With the exception of the upper section including the headwaters, much of the Nacimiento River streambed remains dry during the summer. However, year round water can be found in various pools along portions of the river[1].

Nacimiento Dam

Completed in 1957, the earth fill dam has a height of 215 feet and a crest length of 1,650 feet. The crest elevation is 825 feet with a spillway elevation of 787.75 feet which can be raised to an elevation of 800 feet by use of an inflatable spillway gate system. In addition to the inflatable spillway gates which can be used to regulate spillway releases above elevation 787.75 feet, the Dam has two outlets. The High Level Outlet Works (HLOW) is composed of two eight-foot by eight-foot square steel slide gates under the spillway with an invert elevation of 755 feet. The HLOW has a maximum capacity of approximately 5,500 cubic feet per second (cfs) when the reservoir elevation is 800 feet. The Low Level Outlet Works (LLOW) consists of an inlet structure with an invert elevation of 670 feet, a 53-inch diameter conduit located near the southern side of the Dam, and six 24-inch discharge outlets with valves at the downstream end of the conduit. Releases from the LLOW can be made from either the conduit outlet valves or the hydroelectric power plant. The LLOW has a maximum release capacity of 460 cfs[2].

Nacimiento Hydroelectric Plant

A 4.351 Megawatt/hour capacity hydroelectric power plant began operation downstream of the Dam in 1987. The plant contains a larger (Unit 1) and a smaller (Unit 2) turbine that are operated in the ranges of 150 cfs to 460 cfs, and 25 cfs, respectively. The hydroelectric plant requires a minimum reservoir elevation of 690 feet for the operation of Unit 1 and 728 feet for the operation of Unit 2. To maximize power production, two turbine runners have been

[1] As described in the San Antonio and Nacimiento Rivers Watershed Management Plan, October 2008.

[2] At reservoir elevation 800 feet (full reservoir), flow through the LLOW can reach up to approximately 585 cfs. However, after the hydroelectric plant was constructed in 1987, the LLOW has been operated more conservatively, as the Nacimiento Hydroelectric Project Operations and Maintenance Manual by R.W. Beck & Associates, August 1987, recommends maximum water velocity below 30 feet per second (fps) to prevent accelerated wear of the low level conduit lining. 30 fps water velocity corresponds to 460 cfs flow through the 53-inch diameter low level conduit. The 1997 and 2000 Nacimiento Dam Operations Policy states "At Lake elevation 800 feet, maximum [LLOW] capacity is about 460 cfs…" consistent with the Hydroelectric Project Operations and Maintenance Manual. In September 2016, the Agency requested Hollenbeck Consulting to evaluate the maximum water velocity recommendation through the LLOW. Hollenbeck concluded: "Based on longevity of conduit performance with no reported issues, a maximum velocity of no more than 30 fps appears acceptable; however, based on accepted engineering references, it is recommended that MCWRA consider limiting the low level outlet conduit velocity to a maximum of 20 fps if such operations meet …release goals." (Appendix A). MCWRA staff recommends that maximum water velocity through the LLOW conduit remain below 30 fps to prevent accelerated wear of the conduit lining, which corresponds to a maximum flow of 460 cfs.

provided for Unit 1. The high head runner is used for elevations above 735 feet. The low head runner is required for operation between elevations of 690 feet and 735 feet.

Nacimiento Water Project (NWP)

The NWP is owned and operated by the San Luis Obispo County Flood Control and Water Conservation District (SLO District). The project, which came on line in 2007, consists of an intake system near Nacimiento Dam and approximately 45 miles of pipeline to deliver water to communities within San Luis Obispo County.

Pertinent Nacimiento Reservoir Elevations

The following reservoir elevations are referenced to NGVD29:

NWP Intake

The NWP intake consists of a 48-inch diameter stainless steel pipe with screened intakes between elevation 660 feet and 780 feet allowing SLO District to pump water starting at elevation 670 ft. The intakes supply a 52-inch diameter shaft leading to a 180-foot deep, 20-foot diameter shaft and pump station.

Dead Pool

The storage between the bottom of the reservoir and elevation 670 feet, the invert of the Intake Structure of the LLOW. The volume of the Dead Pool is 10,300 acre-feet (AF) but water cannot flow by gravity out of the reservoir below elevation 670 feet.

Minimum Pool

The storage above the Dead Pool, elevation 670 feet, and below the Conservation Pool (defined below), elevation 687.8 feet, is the Minimum Pool. The volume of this pool is 12,000 AF which is reserved for use by the County of San Luis Obispo per the 1959 San Luis Obispo County Agreement[3].

Minimum Recreation Elevation

At an elevation of 730 feet most of the boat ramps around the reservoir are useable and most private property owners have access to the reservoir. The Agency, to the extent possible, will keep this elevation in mind when making the release schedule and consider a goal each year of keeping the Reservoir above 730 feet until after Labor Day.

[3] Article 11(j) of the October 19, 1959 Agreement (Appendix C).

Conservation Pool

The storage above the Minimum Pool, elevation 687.8 feet, and below the Flood Pool (defined below), elevation 787.75 feet, is used to store water for release to the Salinas Valley for groundwater recharge, operation of the SRDF, water supply, fish migration, and fish habitat requirements. The volume of the Conservation Pool is 289,013 AF. It is dedicated to storing winter inflow from the Nacimiento watershed for later release.

Flood Pool

The bottom of the Flood Pool is the concrete spillway elevation of 787.75 feet. The top of the Flood Pool is the top of the raised inflatable spillway gates, elevation 800.0 feet, which is the maximum reservoir elevation (see below). During the winter, flood protection is provided by maintaining empty space within the Flood Pool to temporarily store flood water. The maximum flood pool storage volume is 66,587 acre feet. The actual volume of the flood pool reserved for flood protection will vary based on factors such as current conditions, time of year, and forecasted weather. If conditions allow, winter inflow stored in this pool can be used for later release to the Salinas Valley for groundwater recharge, operation of the SRDF, water supply, fish migration, and fish habitat requirements.

Maximum Reservoir Elevation

The top of the raised inflatable spillway gate system is at elevation 800 feet, 377,900 AF. This is the maximum reservoir elevation and is the level at which the reservoir is full.

Top of Dam

The top of the Dam is at elevation 825 feet (the dam crest). The Agency has flood easements around the reservoir up to this elevation. The Agency requires that any construction of habitable structures, or structures that can be damaged by inundation, be above elevation 825 feet. Construction of any structures, such as boat ramps, roads, or grading, that occurs below elevation 825 feet requires approval from the Agency prior to beginning work.

The maximum reservoir elevation reached under the Probable Maximum Flood Analysis is 823 feet, two feet below the dam crest (GEI Consultants, Inc., 2003).

Figure 1 shows pertinent Nacimiento Reservoir elevations and storage volumes.

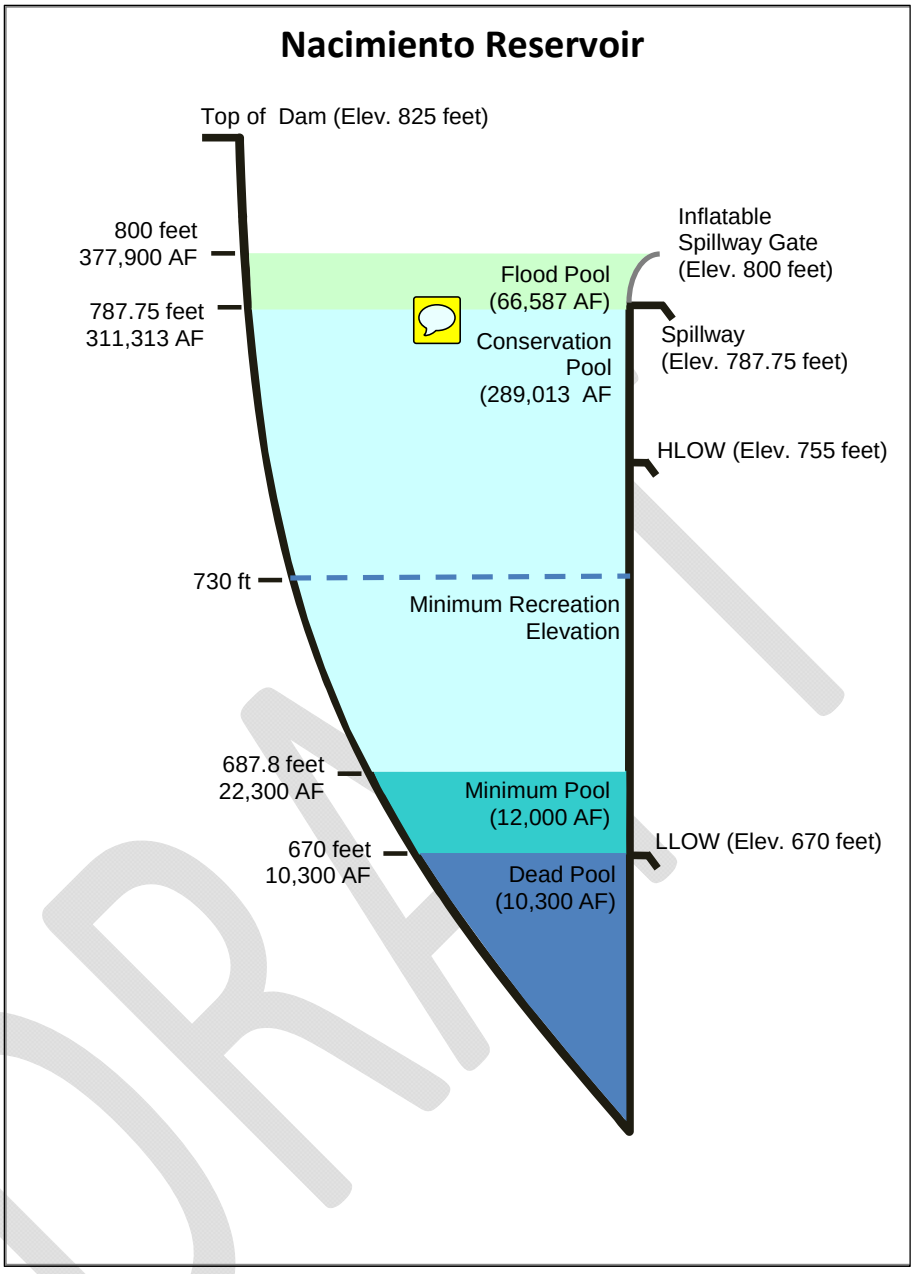

Figure 1. Schematic of Nacimiento Reservoir Pools

Section II – Governance and Water Rights

Monterey County Water Resources Agency Board of Supervisors

The Agency Board of Supervisors has overall responsibility for passing ordinances, conducting litigation matters, and adopting budgets for the Agency.

Monterey County Water Resources Agency Board of Directors

The Agency Board of Directors establishes long-term and short-term operations policy for the Agency, establishes standing and advisory committees, lets construction contracts, holds public hearings, and recommends action to the Agency Board of Supervisors for all aspects of the Agency.

The Board of Directors has taken the following actions of note related to operational policy of Nacimiento Dam:

- Adopted release priorities on September 28, 1992,
- Established an Ad-Hoc Reservoir Operations Committee in December 1993,
- Changed the Committee's status to a standing committee in October 1996,
- Adopted a Nacimiento Dam Operation Policy on August 25, 1997,
- Amended the Nacimiento Dam Operation Policy on April 24, 2000. The April 24, 2000 Nacimiento Dam Operation Policy is superseded by this document.
- Changed the Committee's status to an advisory committee in April 2016,
- Established a 17-member Reservoir Operations Advisory Committee in September 2016.

Reservoir Operations Advisory Committee

The Reservoir Operations Advisory Committee consists of three Board members, the Board Chair, and non-Director members. The Chair shall appoint non-Director members to the Reservoir Operations Advisory Committee as follows: one representative of a Salinas Valley City; one representative each of the Pressure, East Side, Forebay, and Upper Valley groundwater subareas; three members of the public at large; the San Luis Obispo County Public Works Department, Monterey County Parks Department, the lakes resort concessionaire, Nacimiento Regional Water Management Advisory Committee, and the Salinas River Channel Coalition[4].

[4] As per Agency Bylaws amended September 19, 2016.

The purpose of the Reservoir Operations Advisory Committee is to review all matters pertaining to Nacimiento and San Antonio Reservoirs and to make recommendations on those matters for consideration by the Agency Board of Directors.

Agency Staff

The General Manager, or his designee, is responsible for the safe and professional operation of Nacimiento Dam. Staff shall operate the Dam according to this Policy, using the professional judgment of qualified engineers. The Dam shall be operated with safety as the primary consideration. Operational considerations for flood protection, groundwater recharge, operation of the SRDF, water supply, fish migration, fish habitat requirements, agriculture, and recreation will be given careful and professional consideration.

Agreements for Diversion and Use of Water

This section describes the water rights the Agency holds for water of the Nacimiento River and the water use agreements the Agency has with San Luis Obispo County and the Nacimiento Water Company. Water rights held by private land owners and other water use agreements with private properties around Nacimiento Reservoir are not detailed in this Policy.

Water Rights License 7543

License for Diversion and Use of Water, No. 7543, from the California State Water Resources Control Board, was issued August 6, 1964. This license was last amended September 5, 2008 (Appendix B) to specify that the place of use of water from this license changed to include 421,435 acres of land comprising the Agency's Zone 2C assessment zone, to add a point of rediversion at the Salinas River Diversion Facility (SRDF), and to add fish flow requirements consistent with the June 21, 2007, National Marine Fisheries Service BO.

License No. 7543 gives the Agency the right to store 350,000 AF from October 1 of each year to July 1 of the succeeding year and to use 180,000 AF per year for irrigation, domestic, municipal, industrial, and recreational uses.

Water Rights Permit 21089

Permit for Diversion and Use of Water, No. 21089, from the California State Water Resources Control Board, was issued March 23, 2001. This license was last amended September 5, 2008 (Appendix B) to specify that the place of use of water from this license changed to include 421,435 acres of land comprising the Agency's Zone 2C assessment zone, to add a point of rediversion at the SRDF, and to add fish flow requirements consistent with the BO.

The original reservoir volume computations submitted and subsequently approved in License No. 7543, were based on United States Geological Survey (USGS) Quad sheets from the 1940s. In the early 1990s, aerial surveys with increased accuracy showed that the actual volume of Nacimiento Reservoir was greater than the 350,000 AF in License 7543. In order to correct this discrepancy, the Agency filed water rights Application No. 30532. Nacimiento Dam has never been modified in any way to increase storage and the reservoir volume is unchanged from the time of the dam's construction, with the exception of the inflow of silt from natural runoff which has decreased storage volume.

As a result of this application, the Agency has a permit to store 27,900 AF per annum to be collected from October 1 of each year to July 1 of the succeeding year. The total quantity of water collected to storage under this permit and License 7543 shall not exceed 377,900 AF per year.

Water Rights Permit 19940

Permit for Diversion and Use of Water, No. 19940, from the California State Water Resources Control Board, was issued December 31, 1986 (Appendix B).

Permit 19940 gives the Agency the right to divert up to 500 cfs through the Hydroelectric Plant from January 1 to December 31 of each year for irrigation, domestic, municipal, industrial and recreational uses. Diversion under this permit is incidental to releases being made for other purposes.

San Luis Obispo County Agreement

The Agency's Water Rights License No. 7543 is subject to an agreement between the Agency and SLO District which gives SLO District the right to use 17,500 AF of water annually from Nacimiento Reservoir. A portion of the total, approximately 1,750 AF, is designated for use around Nacimiento Reservoir. Heritage Ranch Community Services District (HRCSD) has an agreement with SLO District to use 1,100 AF of the 1,750 AF; HRCSD takes their allotment from a well gallery in the Nacimiento River downstream of the Dam. SLO District can use up to the remaining 15,750 AF per water year through the NWP. It was also agreed that the Agency will not make conservation releases during the water year that result in a reservoir elevation below 687.8 feet on September 30 of each year. The 12,000 acre foot Minimum Pool below elevation 687.8 feet will be reserved for SLO District use. SLO District maintains agreements with users within their 17,500 acre-foot allotment.

The original agreement is dated October 19, 1959, and it has been amended six different times in 1959, 1967, 1970, 1977, 1988, and 2007. These documents are collectively referred to as the Nacimiento Water Agreement. (Appendix C).

Nacimiento Water Company Agreement

The 1984 agreement with the Agency (Appendix D) allows the Nacimiento Water Company a water allocation of up to 600 AF per year to be extracted from wells within the floodage easement of Nacimiento Reservoir. The Nacimiento Water Company shall pay the Agency quarterly for water from the allocation on the basis of AF used at a rate determined by this agreement.

Section III – Operations

Salinas Valley Water Project

Through a collaborative effort with Salinas Valley interests the Agency developed the SVWP to address the water resources management issues within the Salinas Valley. The goal of the SVWP is to provide for the long-term management and protection of groundwater resources in the basin by meeting the following objectives: stopping seawater intrusion and providing adequate water supplies and flexibility to meet current and future (year 2030) needs. In addition, the project provides the surface water supply necessary to attain a hydrologically balanced groundwater basin in the Salinas Valley. Future project elements may, however, be necessary to achieve this objective.

In 2002, the Agency Board of Supervisors certified the Final Environmental Impact Report / Environmental Impact Statement (EIR/ EIS) and applied to the U.S. Army Corps of Engineers (Corps) for a permit to construct the SVWP. The SVWP consists of three components:

1. The Nacimiento Dam Spillway Modification.
2. Reoperation of Nacimiento and San Antonio reservoirs.
3. The Salinas River Diversion Facility.

SRDF/Water Conservation Operation

The highest priority of water conservation operations is to maximize the amount of groundwater recharge in the Salinas Valley aquifers through reservoir releases and the operation of the SRDF. This is accomplished by storing winter inflow to Nacimiento and San Antonio reservoirs so that water is available for release during the irrigation season. It is intended that reservoir releases be made in accordance with existing regulations and agreements in a manner that reduces impacts to both fish and recreation, while still meeting the primary goals of groundwater recharge and SRDF operation.

Reservoir Yield

The average annual inflow into Nacimiento Reservoir between water year 1959 and 2015 was approximately 198,000 AF per water year which is approximately three times the average inflow to nearby San Antonio Reservoir[5]. Total Nacimiento Reservoir releases for all purposes between water year 1959 and 2015 averaged approximately 191,000 AF per water year of

[5] Inflow data for water years 1959 through 2013 developed in 2014 by ECORP Consulting, Inc. and used for computer model simulations for the Interlake Tunnel and San Antonio Spillway Modification Projects. Inflow data for water years 2014 and 2015 was developed by Agency staff using the same method.

which an average of approximately 119,000 AF per water year was released for groundwater recharge and SRDF operations. Reservoir release averages between 1959 and 2015 are influenced by periods of different operational strategies that may not reflect current or future operations.

Reservoir Release Considerations

Salinas River Flow

Releases may be made following the cessation of natural flow or to supplement natural flow for groundwater recharge (conservation releases) or SRDF operations. Impoundment of water at the SRDF can begin as early as April 1st and continue through October 31st. As required by the BO, the Agency will maintain flow to the Salinas River Lagoon when the SRDF is operating or during conservation releases.

As described further on page 21, in dry year-types, the Agency will provide two cfs to the Salinas River Lagoon. For non-dry year-types, and if the combined reservoir storage is 220,000 AF or more, the Agency will provide additional supplemental SRDF bypass flows. If the lagoon is open to the ocean, then the Agency will provide 45 cfs to the lagoon for 10 days or until the lagoon closes to the ocean, whichever occurs first, then 15 cfs to the lagoon through June 30th, then two cfs as long as the SRDF is operating or during conservation releases. If the lagoon is not open to the ocean, then the Agency will provide 15 cfs to the lagoon through June 30th, then two cfs as long as the SRDF is operating or during conservation releases.

Quantity and Flow Rates of Releases

- Releases shall be made for groundwater recharge (conservation releases) or SRDF operations as are needed to maintain minimum BO flow requirements to the Salinas River Lagoon as long as SRDF diversions are occurring or conservation releases are being made to the Salinas River.
- The LLOW of Nacimiento Dam shall be the primary outlet for conservation releases. The LLOW has a maximum capacity of 460 cfs. When the need for releases exceeds the capacity of the LLOW, releases shall be made from the inflatable spillway gates if the lake elevation exceeds 787.75 feet or from San Antonio Reservoir.
- The HLOW of Nacimiento Dam does not provide the operational flexibility required to effectively make conservation releases but may be used for flood control releases when the lake elevation exceeds 755 feet.
- Power generation shall be incidental to the operation of Nacimiento Dam and shall not be used as criteria for flood control or conservation releases scheduling. Power may be generated when releases are made.

Concurrent Releases

- Nacimiento and San Antonio reservoirs will be operated jointly to provide maximum flood control and water conservation benefits.
- Concurrent releases from Nacimiento and San Antonio reservoirs may be necessary for groundwater recharge or to meet operational needs at the SRDF consistent with BO flow requirements at Salinas River Lagoon.
- Annual inflow into Nacimiento Reservoir is approximately three times that of San Antonio Reservoir, on average.
- When practical, the Agency shall attempt to create empty space in the Nacimiento Water Conservation Pool that is three times that of the empty space in the San Antonio Water Conservation Pool at the end of the SRDF/conservation release period. This operational strategy helps to maximize capture of winter flows and reduce flood control releases.

Recreation

- To minimize the impact of reservoir releases on reservoir levels during peak recreational periods the Agency will, to the extent possible, adjust reservoir releases to equalize the rate of decline in elevation between both reservoirs during the Memorial Day, 4th of July, and Labor Day holiday periods.
- At an elevation of 730 feet most of the boat ramps around the reservoir are useable and most private property owners have access to the reservoir. The Agency shall keep this elevation in mind when making up the release schedule and realize that a goal each year is to keep the water surface above 730 feet until after Labor Day.

Bass Spawn

- The bass spawn usually begins in May or early June, and often at somewhat different times in Nacimiento and San Antonio reservoirs. In many years the Agency has been able to shift releases between the two reservoirs to reduce impacts to spawning bass.
- The Agency will make an effort not to exceed a maximum decrease in reservoir elevation of one foot per week for a three week period during bass spawning. A goal of six inches per week or less shall be used when practical. The Agency will coordinate with the California Department of Fish and Wildlife for timing of these efforts.

Release Schedule

- The Reservoir Release Schedule acts as a guideline for releases made for groundwater recharge (conservation releases) or for SRDF operations.
- Agency staff shall draft a Preliminary Release Schedule each year, generally in the spring, when inflow to Nacimiento Reservoir is nearly complete, and conservation releases will soon begin. Staff will draft a release schedule based on the various factors contained in this Policy and present it to the Reservoir Operations Advisory Committee for review.
- The Reservoir Operations Advisory Committee shall review the Preliminary Release Schedule submitted by staff each year and recommend a Proposed Release Schedule to the Board of Directors for adoption.
- The Board of Directors shall review the Reservoir Release Schedule recommended by the Advisory Committee and consider adoption.
- The Reservoir Operations Advisory Committee shall periodically review the adopted Release Schedule during the season and recommend changes to the Board of Directors as needed.

Release Notification

Releases can affect property owners downstream and around Nacimiento Reservoir. The Agency will provide post-change email notification of release changes to potentially affected parties upon request.

Environmental Compliance Operations

This section includes environmental regulatory requirements currently being imposed by the NMFS and the California Department of Fish and Wildlife (CDFW). These requirements make up the framework within which the Agency operates the reservoirs for all other beneficial uses.

National Marine Fisheries Service Requirements

During the permitting process for the SVWP, the NMFS initiated a formal Section 7 consultation with the Corps on the issuance of a permit for the SVWP. This consultation resulted in the Agency authoring the Flow Prescription in 2005. The Flow Prescription was incorporated into the NMFS BO, issued in 2007, to govern flows and related monitoring activities. On July 30, 2007, an addendum to the 2002 EIR/EIS was adopted by the Agency Board of supervisors reflecting the contents of the Flow Prescription and superseding the flow regimes previously identified in the 2002 EIR/EIS.

The Flow Prescription defines flow requirements and operational targets for managing steelhead trout (*Oncorhynchus mykiss*) in the Salinas River. When specific conditions are met

the Agency will operate the reservoirs to enhance upstream or downstream passage conditions for migrating steelhead. The Agency will also maintain prescribed flows for spawning and rearing habitat in the Nacimiento River below Nacimiento Dam.

The following items represent the language incorporated into the BO from the Flow Prescription. Similar language for these items was also incorporated into the addendum of the EIR/ EIS, the U.S. Fish and Wildlife Biological Opinion, and Nacimiento River Water Rights license 7543 and Water Rights permit 21089.

Figure 2 shows the location of facilities and flow data collection points referenced in the BO as well as the place of use for water released from Nacimiento Reservoir (Zone 2C)

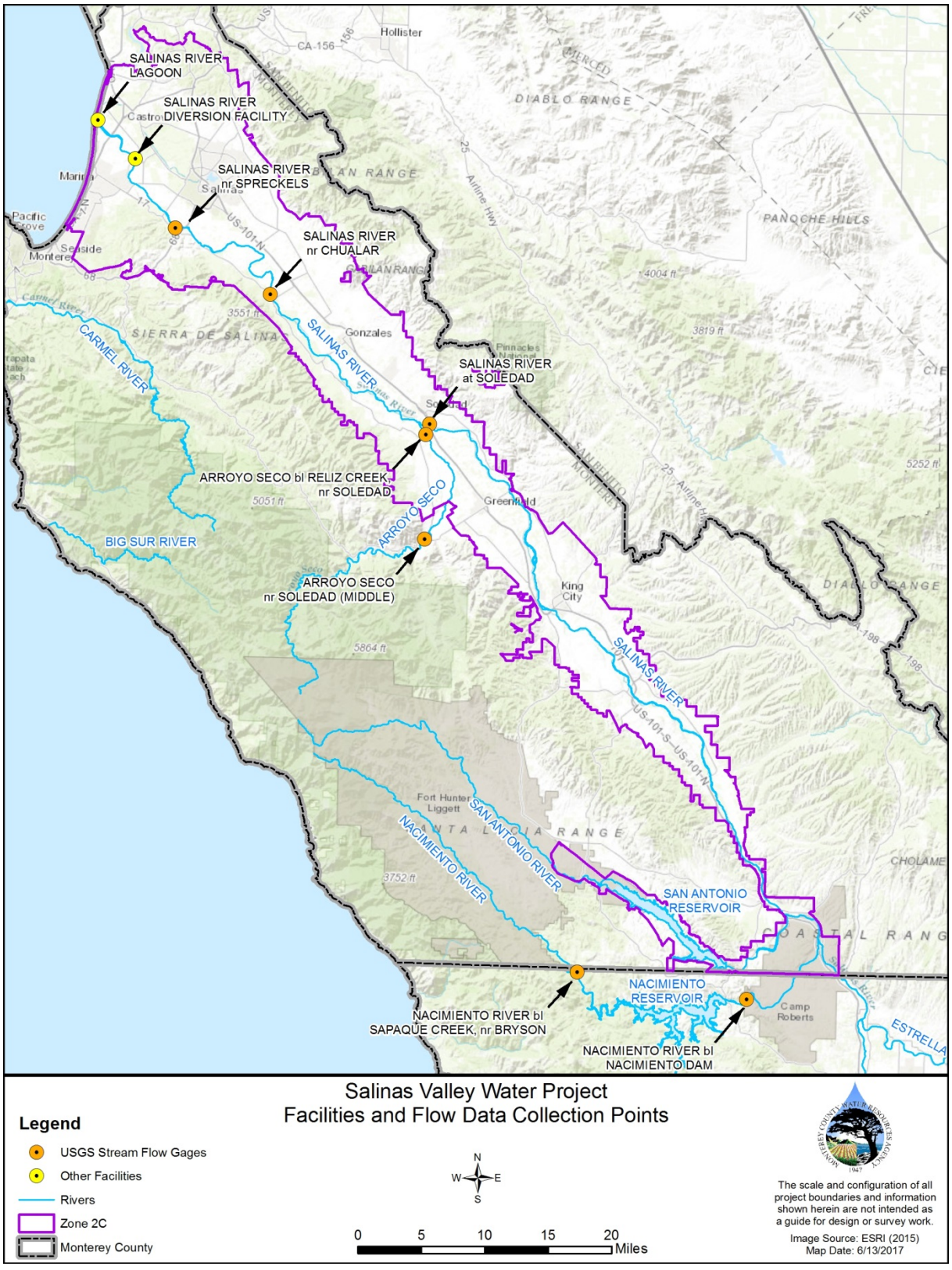

Figure 2. SVWP Facilities and Flow Data Collection Points

Water-Year Type Categorization

For purposes of applying the flow prescriptions in this section, a determination of water-year type (dry, normal, wet) is made based on an indexing of unimpaired annual mean flows at the USGS streamgage on the Arroyo Seco near Soledad (USGS Streamgage 11152000). Annual mean flows are ranked in descending order and the stream flows corresponding to the 25th and 75th percentile are selected as the thresholds for the wet (below the 25th percentile), normal (between the 25th and 75th percentiles), and dry years (above the 75th percentile). Normal year types are subcategorized into wet-normal, normal, and dry-normal categories. Year type determinations will be made on March 15th (preliminary) and April 1st (official) of each year.

Adult steelhead upstream migration

Adult steelhead upstream migration triggers will be in effect from February 1st through March 31st. When flow triggers occur, the Agency intends to facilitate upstream migration of adult steelhead by insuring flows of at least 260 cfs at the Salinas River near Chualar (USGS streamgage 11152300) for five or more consecutive days when the river mouth is open to the ocean. To insure this minimum flow and duration, the Agency will provide reservoir releases when necessary to augment natural flows. These reservoir releases will occur if the following triggers are met:

- combined storage of Nacimiento and San Antonio reservoirs is greater than 220,000 AF,
- 340 cfs or higher flows are present at the Arroyo Seco near the Soledad gage (USGS streamgage 11152000), and
- 173 cfs or higher flows are present at the Arroyo Seco below the Reliz Creek gage (USGS streamgage 11152050).

Figure 3 provides a visual summary of the conditions for the flow prescription as it relates to upstream migration for adult steelhead.

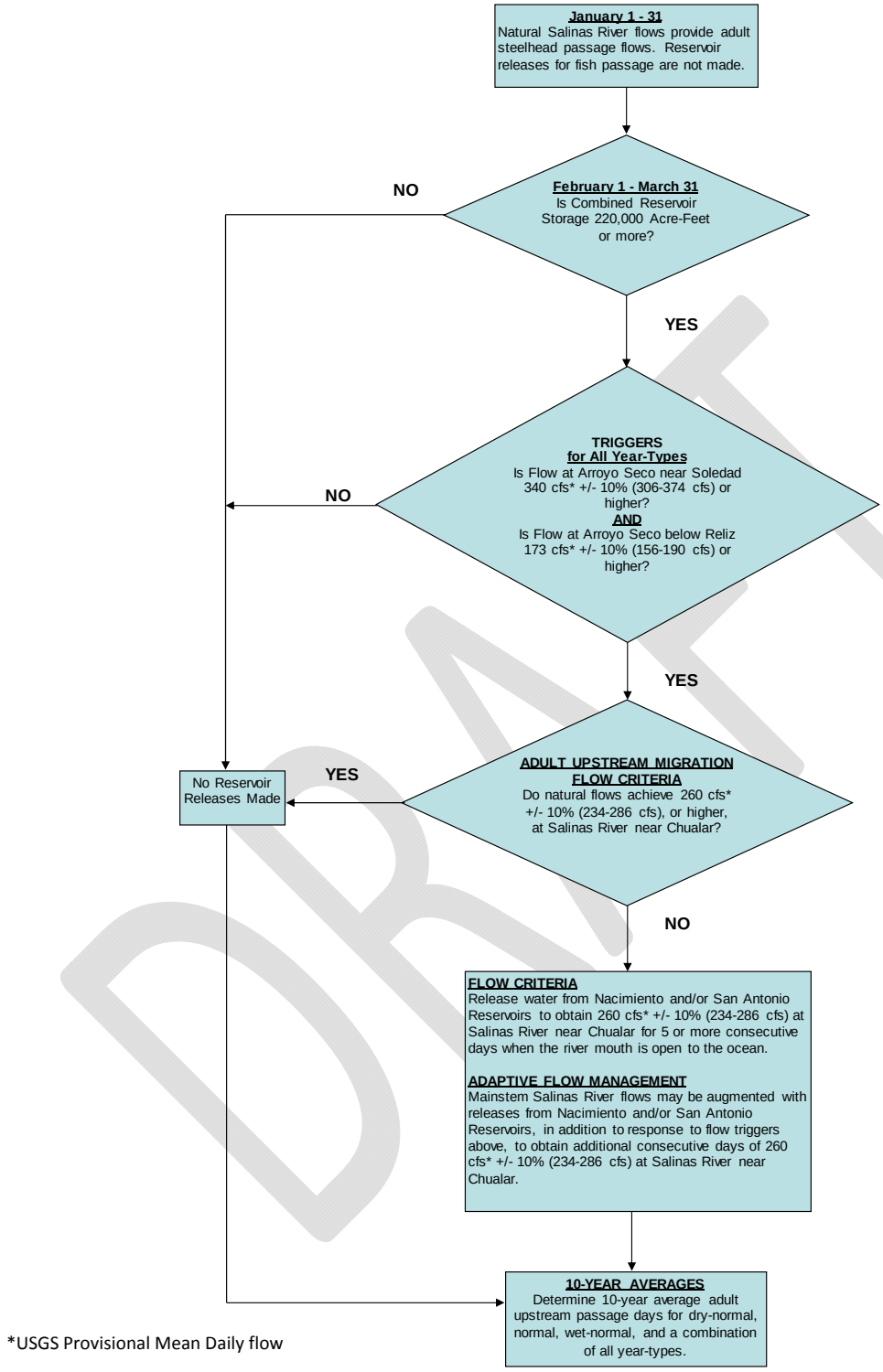

Figure 3. Flow release schedule to enhance upstream migration conditions for adult steelhead.

Downstream migration of Smolting Steelhead (Block Flows)

To facilitate the downstream migration of smolts[6] and rearing juvenile steelhead in the Salinas River during normal category water years, the Agency will provide, beginning March 15th, reservoir releases (hereafter referred to as "block flows") when the following flow triggers are met:

- the water year type is dry-normal, normal-normal, or wet-normal,
- combined storage of Nacimiento and San Antonio reservoirs is 150,000 AF or more on March 15th, and
- 125 cfs or higher at the Nacimiento River below Sapaque Creek gage (USGS streamgage 11148900), or 70 cfs at the Arroyo Seco below Reliz Creek gage (USGS streamgage 11152050).

If block flows are triggered between March 15th and March 31st, 700 cfs will be provided at the Salinas River near Soledad (USGS streamgage 11152000) for five days, and then thereafter 300 cfs will be maintained in the Salinas River near Spreckels (USGS streamgage 11152500) until April 20th.

If the block flow triggers occur in April, 700 cfs will be provided at the Salinas River near Soledad for five days, and then thereafter 300 cfs will be provided at Spreckels for an additional 15 days. Thus, the duration of the block flow will range from 20 to 45 days.

After a block flow is completed, if outmigration of steelhead smolts from the Arroyo Seco to the Salinas River could occur (i.e., flow at the USGS streamgage 11152050 near Reliz is greater than 1 cfs), flow to the ocean will be maintained for 10 days after smolt outmigration flow at the Reliz Creek gage drops below 1 cfs. Figure 4 provides a visual summary of the block flow release schedule for smolt outmigration. The same flow prescription for smolt outmigration represented in figure 4 of this document appears with a different visual representation as Figure 1 in the water rights documents for License 7543 and Permit 21089 (Appendix B).

If on March 15th the determination of the water year type category is "wet" or "dry," no reservoir releases are made to meet block flow criteria and the year type will be re-evaluated on April 1st. If on April 1st the water year type is either "wet" or "dry," then no reservoir releases to facilitate smolt migration will occur, though smaller releases may occur as described in the next section.

[6] A young salmon or sea trout about two years old that is at the stage of development when it assumes the silvery color of the adult and is ready to migrate to the sea. "Smolt." Merriam-Webster.com. Merriam-Webster, n.d. Web. 17 Nov. 2016.

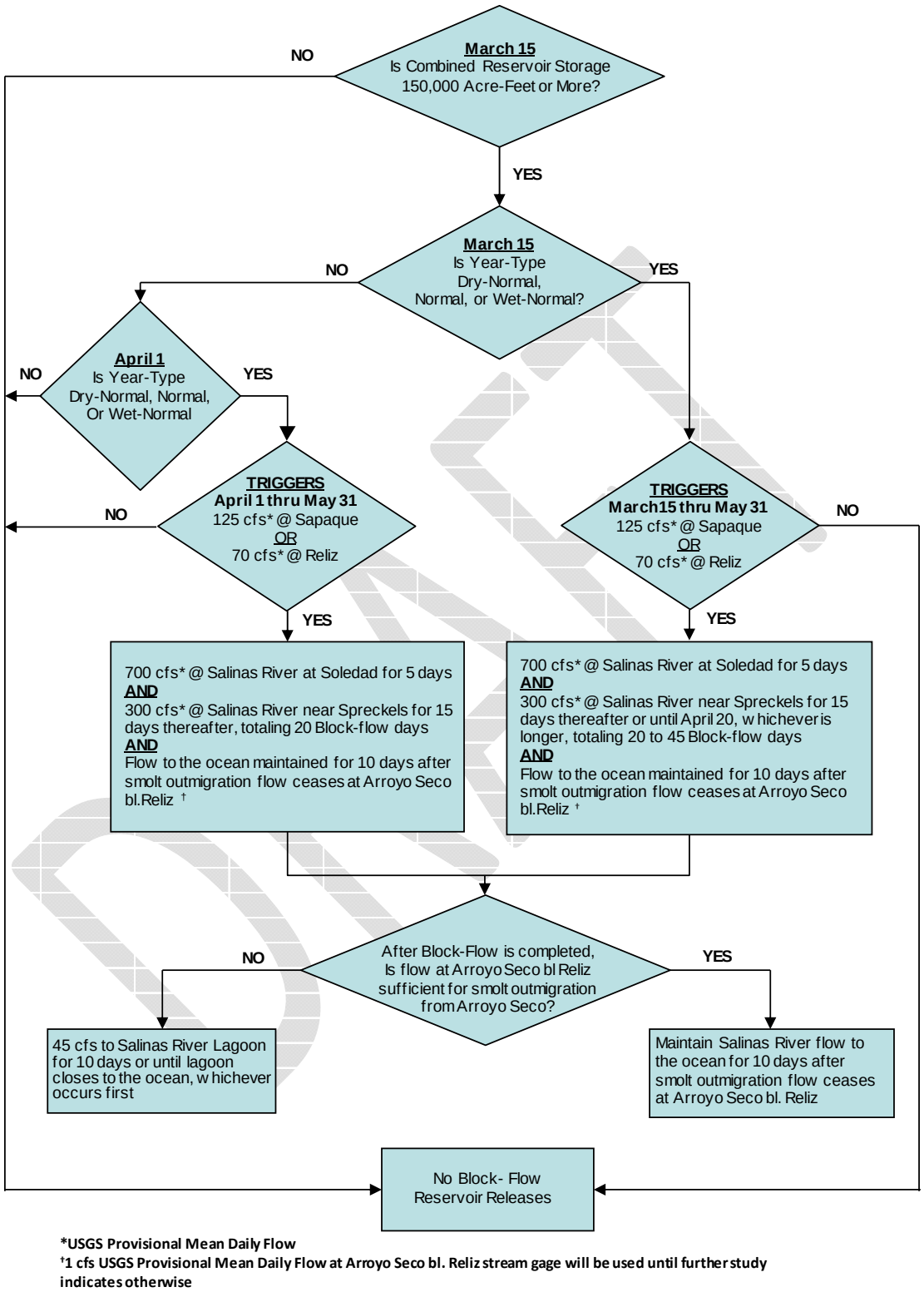

Figure 4. Flow release schedule to enhance outmigration conditions for smolts.

Downstream Migration of Juvenile and Post Spawn Adult Steelhead

In some years, block flow releases for smolt migration may not occur because triggers for those releases are not met. However, in those years the Agency will provide reservoir releases and SRDF bypass flows to enhance migration opportunities for juvenile steelhead and post-spawn adult steelhead (kelts). Beginning April 1st, when smolt migration block flows are not triggered, the Agency will provide reservoir releases under the following circumstances.

For dry year-types, the Agency will provide two cfs to the lagoon when the SRDF is operating or during conservation releases, with a wetted streambed channel along the entire reach.

For non-dry year-types, and if the combined reservoir storage is 220,000 AF or more, the Agency will provide additional supplemental SRDF bypass flows. If the lagoon is open to the ocean, then the Agency will provide 45 cfs to the lagoon for 10 days or until the lagoon closes to the ocean, whichever occurs first, then 15 cfs to the lagoon through June 30th, then two cfs as long as the SRDF is operating or during conservation releases. If the lagoon is not open to the ocean, then the Agency will provide 15 cfs to the lagoon through June 30th, then two cfs as long as the SRDF is operating or during conservation releases.

At the end of the irrigation diversion season, the SRDF impoundment will be filled to its storage capacity of approximately 108 AF of water. Once irrigation diversion from the SRDF is completed for the season, water will be allowed to pass from the full SRDF impoundment to the lagoon at a rate of two cfs until the impoundment is effectively emptied. At a two cfs rate of flow from the 108 AF capacity, the impoundment is expected to empty in approximately 27 days. In no case will the SRDF impounded water be stored for more than 29 days. The Agency reserves the right to empty the SRDF impoundment (by increasing flow releases above two cfs) during this 27 day period of two cfs flow to the lagoon after the irrigation season, if necessary, to empty the impoundment in time to perform facility maintenance before river flows prevent such maintenance work.

Figure 5 provides a visual summary of the flow release schedule for juvenile steelhead and kelts. The same flow prescription for downstream migration of juvenile steelhead and kelts represented in figure 5 of this document appears with a different visual representation as Figure 2 in the water rights documents for License 7543 and Permit 21089 (Appendix B).

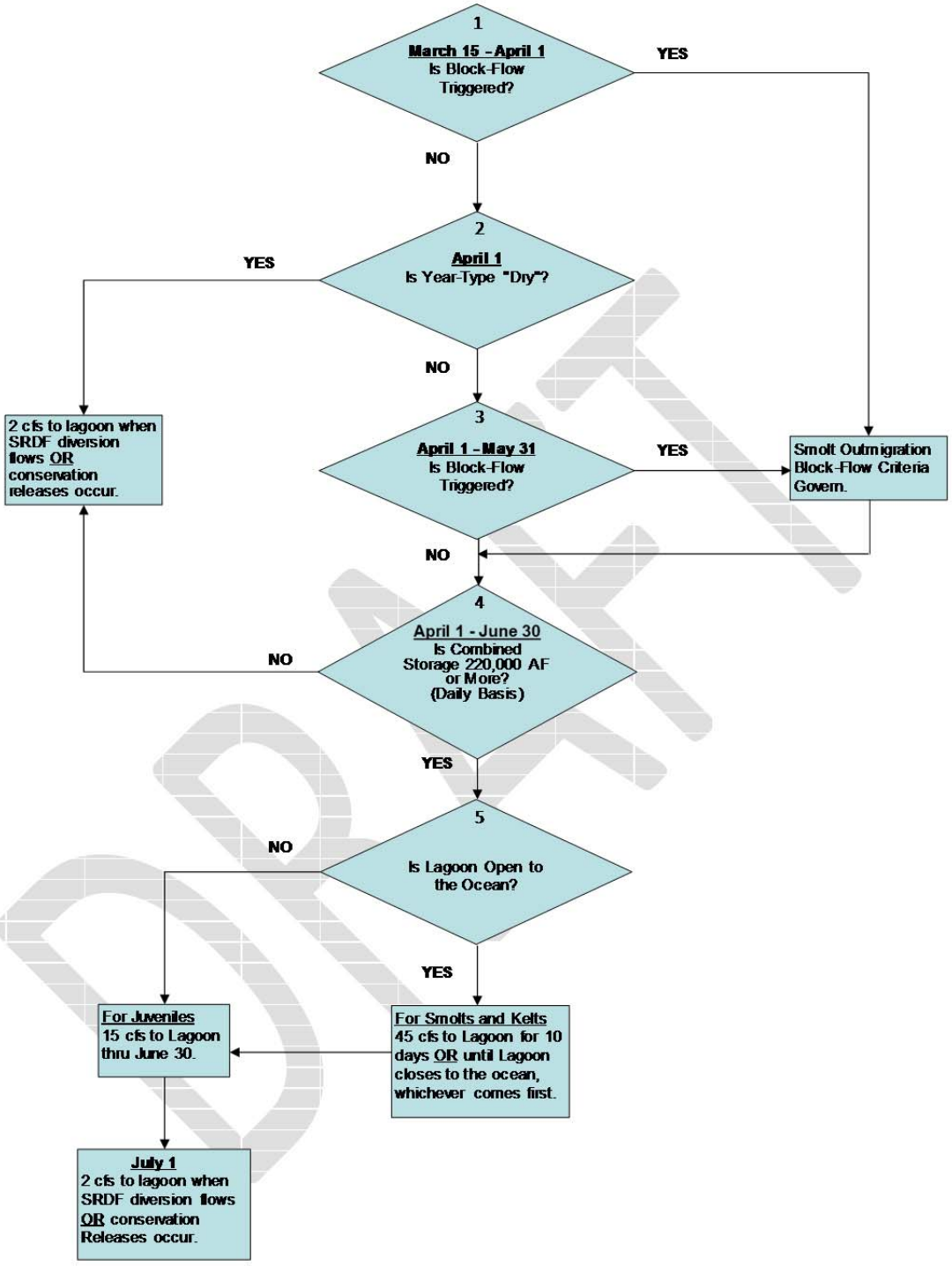

Figure 5. Flow release schedule to enhance downstream migration conditions for juvenile steelhead and kelts.

Spawning and Rearing Habitat in the Nacimiento River

The Agency will provide, through reservoir releases, steelhead spawning and rearing flows for the Nacimiento River below Nacimiento Dam. To provide spawning opportunities, the Agency will augment flow in the Nacimiento River by releasing 60 cfs from Nacimiento Reservoir beginning the eighth day after the first adult steelhead passage day occurs on the Salinas River near Spreckels after January 1st[7]. These flows will be continued through May 31st. Until further studies are conducted to determine adequate rearing flows in the Nacimiento River below the reservoir during summer and fall, the Agency will release a minimum of 60 cfs throughout the year as minimum rearing flow as long as the water surface elevation of Nacimiento Reservoir is above the minimum pool elevation 687.8 feet.

California Department of Fish and Wildlife Requirements

California Department of Fish and Game (currently the California Department of Fish and Wildlife) Code 5937 requires the owner of a dam to allow sufficient water at all times to pass over, through, or around the dam, to keep in good condition any fish that may be planted or exist below the dam.

With the installation of the hydroelectric plant at Nacimiento Dam the Agency entered into an agreement with the California Department of Fish and Game. Per the November 13, 1985 agreement (Appendix E) and in compliance with Section 5937 of the State Fish and Game Code, the Agency shall maintain a minimum discharge of 25 cfs from Nacimiento Reservoir at all times except under drought or emergency conditions as described in the agreement.

The 1985 Fish and Game agreement remains valid but the BO flow requirement of 60 cfs for spawning and rearing habitat on the Nacimiento River supersedes the 25 cfs discharge requirement.

Figure 6 shows the periods with Nacimiento Reservoir BO compliance operation requirements to provide opportunities for fish migration and for spawning and rearing habitat.

[7] The first day of passage is the beginning date of the first period with five consecutive days with flows of 260 cfs or higher at the Salinas River near Chualar. The first potential spawning day in the Nacimiento River is assumed to be eight days after the first passage day.

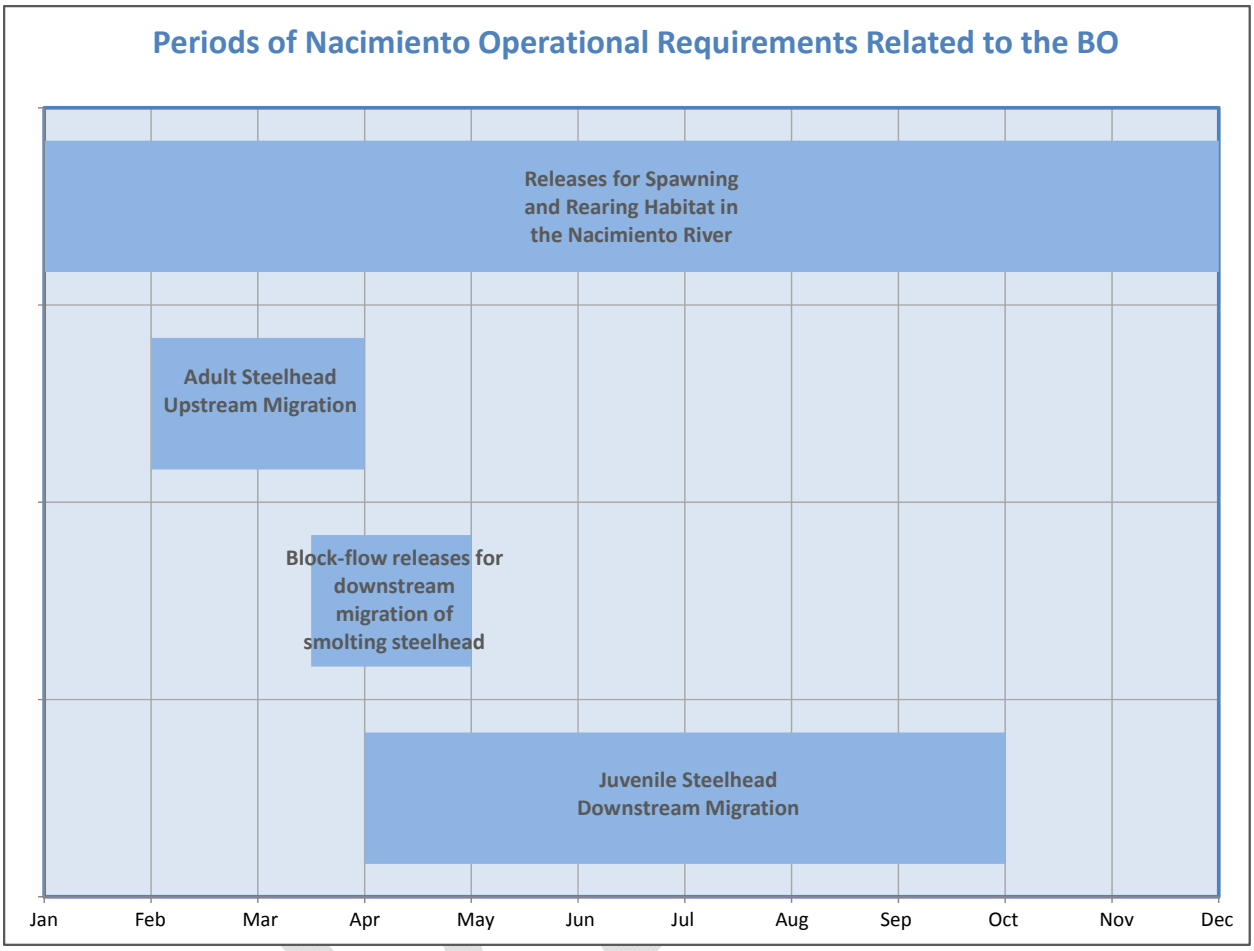

Figure 6. Periods of the Year with Reservoir Operation Environmental Compliance Requirements.

Flood Control Operation

During the winter, when heavy rains can cause flooding in the Salinas Valley, the Nacimiento Dam provides flood protection by regulating the Nacimiento River, the largest tributary of the Salinas River in terms of average annual flow.

In 2009, as a component of the Salinas Valley Water Project, the Nacimiento Dam Spillway was modified to address safety issues associated with the flood flows that must be conveyed through the reservoir and the spillway. The spillway modification included the lowering of the existing concrete spillway crest to accommodate an inflatable spillway gate system as well as improvements to the spillway chute walls to accommodate the higher spillway discharge made possible by the inflatable gates. The spillway modification allows the Agency to store water up to an elevation of 800 feet, which is the top of the raised inflatable spillway gates and the same elevation as the previous concrete spillway crest. Without this modification, the Agency would

have had to provide additional flood storage equal to 17 feet of elevation by lowering the reservoir level as of January 1 every year to 765 feet.

The two main agencies with regulatory authority over the Nacimiento Dam are the California Department of Water Resources, Division of Safety of Dams (DSOD) and the Federal Energy Regulatory Commission (FERC).

Nacimiento Dam is under the jurisdiction of the DSOD. Besides inspecting the Dam on a regular basis, they are responsible for issuing a Certificate of Approval showing the conditions under which the Agency can operate Nacimiento Dam (Appendix F). On December 29, 2009, the DSOD issued a Certificate of Approval to the Agency for the impoundment of water up to an elevation of 800 feet NGVD29, the top of the inflated spillway gate system. If the reservoir reaches an elevation of 801 feet, an operator shall be dispatched to the dam to ensure the gates are fully lowered.

As a result of the installation and operation of the hydroelectric power generation facility in 1987, Nacimiento Dam is under the jurisdiction of the FERC. To meet FERC requirements the Agency has adopted an Emergency Action Plan (EAP) for Nacimiento Dam. The EAP contains a High Flow Operations Plan (Appendix G) to ensure the dam is operated safely during flood events and that the appropriate agencies are notified of expected flood control releases.

The flood rule curve adopted by the Agency in 1985 was superseded by the December 29, 2009, DSOD Certificate of Approval allowing the impoundment of water up to an elevation of 800 feet year round. The Agency shall identify a self-imposed range of operating elevations within the flood pool that will provide adequate reservoir storage space during the winter for the Agency to respond to forecasted storm events. The elevations will be developed with a goal of reducing the likelihood of flood control releases greater than 4,000 cfs while maintaining a reservoir elevation of no greater than 800 feet. Reservoir releases greater than 4,000 cfs have the potential to damage the river intake of the Heritage Ranch Community Services District as well as bridges and infrastructure in Camp Roberts.

During some severe, or unusual, flood events, situations may arise where the Agency must choose between: (1) making releases from the Dam that may result in property damage because such releases add to the flood flow of the Salinas River, and (2) holding the releases and potentially endangering the Dam, or risking a greater release, with even greater potential for property damage in the near future.

During such situations, the safety of the Dam shall be the primary consideration. Next in importance is the reduction of property damage from flooding. The actions that are likely to result in the least overall property damage shall be chosen by the Agency. The Agency will consult the High Flow Operations Plan (Appendix G) in addition to other available information, such as weather forecasts, streamflow forecasts, streamgage data, and Automated Local Evaluation in Real Time (ALERT) Flood Warning System data, to develop the best course of action. Weather forecasts from the National Weather Service (NWS) and streamflow forecasts

from the California Nevada River Forecast Center (CNRFC) will be used to help forecast reservoir inflow and river conditions. The Agency shall consider forecasted reservoir inflow and peak river flows when planning flood control releases in order to minimize downstream damage and maximize reservoir storage. The Agency will use USGS streamflow gages and ALERT Flood Warning System data to assist in the timing of flood control releases and track releases and streamflow peaks through the Salinas River system.

Recreation Management Plan

Nacimiento Reservoir is a major recreation attraction. Many businesses depend upon visitors and property owners who use the reservoir for boating, fishing, swimming, and scenic viewing. Keeping in mind the priorities of flood protection, groundwater recharge, water supply, fish migration, and fish habitat requirements, the Agency will operate the Dam in such a manner as to enhance the recreation benefits of the reservoir to the extent possible, as described in the Recreation and Bass Spawn sections on page 13.

Drought Contingency Plan

A Drought Contingency Plan describing reservoir operations will be incorporated into this document after such a plan is developed, reviewed by the Reservoir Operations Advisory Committee, and adopted by the Agency Board of Directors.

Section IV – Safety and Maintenance

Emergency Preparedness

The Agency has prepared an EAP for Nacimiento Dam in accordance with FERC guidelines. The purpose of the EAP is to safeguard lives and reduce damage at Nacimiento Dam and Reservoir, and along the Nacimiento and the Salinas Rivers in the unlikely event of a failure of the Nacimiento Dam. The EAP is to be used during major flooding events along the Nacimiento and Salinas Rivers as a guide for emergency personnel in determining maximum flood water elevations, and for notifying emergency personnel during any significant flood event or potential emergency situation regarding Nacimiento Dam.

Dam Safety

Jurisdictions, Hazard, Critical Infrastructure

The Agency owns and operates the dam and its supporting facilities (including, but not limited to, valves, controls, roads, bridge, residence, out-buildings, etc.) and is responsible for their safe operation and maintenance.

Jurisdiction over matters of dam safety is held by the State of California through the DSOD as specified in California Code of Regulations Title 23, Division 2 and California Water Code, Division 3. DSOD issues a Certificate of Approval describing conditions under which an owner can operate a dam under their jurisdiction. As described in the Flood Control Operation section of this Policy, the DSOD issued a Certificate of Approval to the Agency on December 29, 2009 (Appendix F) for the impoundment of water up to an elevation of 800 feet (NGVD29), the top of the inflated spillway gates. If the reservoir reaches elevation 801 feet, an operator shall be dispatched to the dam to ensure the spillway gates are fully lowered.

Upon completion of the Nacimiento Hydroelectric Project in 1987, supplied by Nacimiento Dam/Reservoir, the Federal Energy Regulatory Commission (FERC) retains Federal jurisdiction for dam safety matters and implements its responsibilities through the Code of Federal Regulations, Title 18, Part 12 (18CFR Part 12).

Nacimiento Dam is considered a “High Hazard” dam by DSOD and FERC due to the potential for downstream loss of life and property damage in the event of a catastrophic dam failure.

Nacimiento Dam and its appurtenant facilities are classified “critical infrastructure” under Homeland Security Presidential Directive 7, and as further defined in FERC Order No. 630,

issued February 21, 2003. Consequently, the Agency does not provide information regarding the dam or its appurtenant facilities that may create a security risk.

Inspections

The following inspections are performed for Nacimiento Dam:

The Dam is observed daily by the Agency Reservoir Operator and Maintenance staff. Additional inspections are performed periodically by Agency Maintenance and Engineering staff. Post-earthquake inspections are performed by Agency maintenance staff after earthquakes of magnitude 3.5 or larger within 35 miles, and by Agency maintenance and engineering staff after earthquakes of magnitude 5.0 or larger within 50 miles. Agency staff also performs at least two annual inspections of all facilities along with inspectors from other agencies, as described below. An annual settlement and shift survey is performed to assure that no unusual movement of the embankment occurs. Valves, gates and emergency equipment (e.g., generators and connections) are regularly exercised.

DSOD personnel and FERC personnel each inspect the dam annually. Per FERC requirement, every five years the Agency hires a qualified engineering consultant to provide an independent safety inspection, to update the dam potential failure mode analysis, and provide a comprehensive report to the Agency and to FERC. The report is performed according to Title 18 of the Code of Federal Regulations Part 12D (18CFR12D) guidelines.

Monitoring and Reporting

An Owners Dam Safety Program (ODSP) for Nacimiento Dam was adopted by the Agency Board of Directors in April 2012. The ODSP, a FERC required program, is intended to ensure that Agency personnel and consultants understand and maintain awareness of the need to comply with dam safety measures and requirements to help safeguard lives and reduce damage downstream of and at Nacimiento Dam. The ODSP for Nacimiento Dam includes: Designation of responsibilities for dam safety, dam safety training of appropriate personnel, communications and reporting procedures, record keeping retention, succession planning, and assessments and audits of the Dam Safety Program.

The Agency maintains a Dam Safety Surveillance and Monitoring Plan (DSSMP), a FERC required document, which provides details on how performance of the dam structure is monitored and evaluated. The DSSMP may be revised when significant investigations or instrumentation modifications occur.

A Dam Safety Surveillance and Monitoring Report (DSSMR), a FERC required document, is prepared annually and submitted to FERC and DSOD for review. The DSSMR includes review of instrumentation and monitoring data, inspection information, and other relevant data,

collected and evaluated in accordance with the DSSMP, to determine if any potential failure modes are developing and to provide information to remediate such an occurrence if found.

Operation

The Dam shall be operated with safety as the primary consideration. During flood events, the Dam will be operated as described in the Flood Control Operation section of this Policy.

Maintenance

The Agency maintains a multi-year maintenance plan for the dam and its supporting facilities. The plan is updated annually (or more frequently as needed) and is used for the planning and budgeting of inspection, monitoring and reporting, maintenance, repair and improvement work at the dam and its supporting facilities.

Maintenance and repair of the Dam and supporting facilities are required. The Agency will reduce or stop flows through the LLOW and/or HLOW if the Agency determines such is necessary to ensure the safety of personnel performing the maintenance or repair work. The Agency will endeavor to schedule reduction or cessation of flows to minimize impacts to State or Federal Endangered Species Act species in Nacimiento River below the dam. The Agency will document the occurrence and duration of any flow reduction or cessation for such maintenance or repair purposes.

If debris within the lake or on the water surface threatens the safe operation of the dam, its spillway or outlet facilities, the Agency will take action to remove or retain such debris. The Agency maintains two floating debris booms in an effort to prevent excessive debris from collecting on the dam, spillway or outlet areas. One boom is located across the reservoir upstream of the dam, and one boom is located across the spillway inlet channel. The Agency is under no regulatory obligation to remove debris that washes into the general reservoir during flood events.

In the event it becomes necessary to perform non-emergency maintenance, repair, or construction work at the Dam or its supporting facilities that require lowering the reservoir to elevations below those described in other sections of this policy, to the extent possible, such work shall be scheduled to occur during a period when the reservoir level would have reached the necessary lower elevation based on criteria listed in other sections of this policy.

In the event of an emergency where a hazardous situation threatens the structural integrity of the dam, rapid drawdown of the reservoir may be undertaken by the Agency to reduce hydraulic forces acting on the dam. Drawdown for such purpose may also be directed by DSOD or FERC. Such reservoir drawdown may be accomplished through the spillway gates, HLOW and LLOW.

Section V – Reporting

Annual Reports

Agency staff will produce a written annual summary that includes reservoir conditions for a particular Water Year. Contents of the annual summary report shall include: reservoir inflow, flood control releases, conservation and SRDF Operation releases, Nacimiento Water Project diversions, hydropower production, reservoir levels, rainfall and evaporation data, and a cumulative yearly summary.

The annual summary will be presented to the Reservoir Operations Advisory Committee by July 1st of the following water year.

References

ECORP Consulting, Inc., Interlake Tunnel and San Antonio Enlargement Project Simulation Modeling Technical Memorandum, November 12, 2014.

EDAW, Inc., Final Environmental Impact Report/Environmental Impact Statement for the Salinas Valley Water Project Volumes I and II, 2002

EDAW, Inc., Salinas Valley Water Project Draft Environmental Impact Report/Environmental Impact Statement, 2001

ENTRIX, Salinas Valley Water Project EIR Addendum, 2007.

GEI Consultants, Inc., Supplemental PMF Hydrology Report for Nacimiento Reservoir FERC Projects 6378-CA, October 2003.

Monterey County Water Resources Agency, Salinas Valley Water Project Flow Prescription for Steelhead Trout in the Salinas River, October 11, 2005.

Nacitone Watersheds Steering Committee and Central Coast Salmon Enhancement, Inc., San Antonio and Nacimiento Rivers Watershed Management Plan, October 2008.

National Marine Fisheries Service, Biological Opinion of the Salinas Valley Water Project, June 21, 2007.

U. S. Fish and Wildlife Service, Biological Opinion on Issuance of Department of the Army Permits to the Monterey County Water Resources Agency for Construction of a Surface Water Diversion Structure in the Salinas River, Near the City of Salinas (Corps File Number 24976s) and for Breaching of the Salinas River Lagoon (Corps File Number 16798S) in Monterey County, California (1-8-06-F-54), July 24, 2007.

Draft Nacimiento Dam Operation Policy

Monterey County Water Resources Agency

Adopted by the Board of Directors
[Date]

Recommended by the Reservoir Operations Advisory Committee
[Date]

June 26, 2017

Contents

Figures

Appendices

Section I – Introduction and Background

Nacimiento Dam began operating in 1957. From 1957 to 1996, the Monterey County Water Resources Agency (Agency), then the Monterey County Flood Control and Water Conservation District, operated this facility according to a combined written and oral policy. Various documents comprised the written part of the policy and the oral portion was passed from one Agency staff member to another. Inquiries about the policy from the public or other agencies were answered on an as needed basis.

In 1996, it became apparent that a more comprehensive written policy was needed for both Nacimiento and San Antonio dams. In August 1997, the Agency Board of Directors approved the Nacimiento Dam Operation Policy as recommended by the Reservoir Operations Committee and Agency staff.

Following the recommendation of the Reservoir Operations Committee, the Agency Board of Directors adopted a policy change for Nacimiento and San Antonio dams on April 24, 2000, that shifted the target area for the location of end of flow in the Salinas River during water conservation releases from the vicinity of Chualar to the vicinity of Spreckels.

In 2002, the Agency Board of Supervisors certified the Final Environmental Impact Report / Environmental Impact Statement (EIR / EIS) and applied to the U.S. Army Corps of Engineers (Corps) for a permit to construct the Salinas Valley Water Project (SVWP). The SVWP consists of three components: modification of the Nacimiento Dam spillway, reoperation of Nacimiento and San Antonio Reservoirs, and the Salinas River Diversion Facility (SRDF).

In 2003 a Proposition 218 mail-in election was approved by property owners in the Salinas Valley to fund the SVWP through the creation of assessment Zone 2C.

During the SVWP permitting process, the National Oceanic and Atmospheric Administration's National Marine Fisheries Service (NMFS) initiated a formal Section 7 consultation with the Corps on the issuance of a permit for the SVWP. This consultation resulted in the Agency authoring the SVWP Flow Prescription for Steelhead Trout in the Salinas River (Flow Prescription) in 2005. This Flow Prescription was incorporated into the National Marine Fisheries Service Biological Opinion (BO), issued on June 21, 2007, to govern flows and related monitoring activities. This Flow Prescription also refined fish migration objectives to protect steelhead initially described in the Final EIR / EIS certified in 2002. These new Flow Prescription objectives to enhance steelhead season migrations and modifications to the SVWP are described in the addendum to the Final EIR / EIS, adopted July 30, 2007, and supersede any previously identified flow regimes in the final EIR/EIS. 

The new Flow Prescription objectives were added to applicable water rights held by the Agency in 2008. Reoperation of the reservoirs under BO requirements began in 2010 with the startup of the SRDF.

This version of the Nacimiento Dam Operation Policy incorporates changes resulting from the construction of the SVWP, including a Nacimiento Dam rule curve change, and reoperation of the Nacimiento Dam and Reservoir in accordance with BO and water rights license requirements.

As a multi-use facility, Nacimiento Dam and Reservoir is operated with consideration to many factors including dam safety, flood protection, groundwater recharge, operation of the SRDF, water supply, fish migration, fish habitat requirements, agriculture, and recreation.

This document does not reflect new policy but rather consolidates all existing operational procedures, permits, and requirements into a single concise report.

This document is subject to revision due to future projects, changes in regulatory requirements, agreements with outside entities, or the need for changes in operational procedures. Revisions are subject to approval by the Agency Board of Directors.

All reservoir elevations referenced in this document are based on the National Geodetic Vertical Datum of 1929 (NGVD29).

General Description / Information

Nacimiento Dam (Dam) and its reservoir, Nacimiento Reservoir (Reservoir), are located in northern San Luis Obispo County, about 20 miles from the coast, in central California. The Dam is owned by the Agency. The seven million dollar issuance to construct the Dam in the mid-1950s was retired in 1996, and the Agency owns the facility outright.

As a multi-use facility, Nacimiento Dam and Reservoir is operated with consideration to many factors including dam safety, flood protection, groundwater recharge, operation of the SRDF, water supply, fish migration, fish habitat requirements, agriculture, and recreation. This Operation Policy defines parameters and describes guidelines and requirements the Agency will follow to operate the Dam and meet the challenges of balancing the sometimes competing interests involved in operating this multi-use facility.

Nacimiento River

The Nacimiento River originates in the Santa Lucia Mountains south of Cone Peak within the Ventana Wilderness of Los Padres National Forest. The river flows southeasterly through the Los Padres National Forest, Fort Hunter Liggett and Camp Roberts and a few private parcels as

well as the Nacimiento reservoir before it reaches its confluence with the Salinas River. The river is 54.2 miles in length of which 9.5 miles are located within the Los Padres National Forest. With the exception of the upper section including the headwaters, much of the Nacimiento River streambed remains dry during the summer. However, year round water can be found in various pools along portions of the river[1].

Nacimiento Dam

Completed in 1957, the earth fill dam has a height of 215 feet and a crest length of 1,650 feet. The crest elevation is 825 feet with a spillway elevation of 787.75 feet which can be raised to an elevation of 800 feet by use of an inflatable spillway gate system. In addition to the inflatable spillway gates which can be used to regulate spillway releases above elevation 787.75 feet, the Dam has two outlets. The High Level Outlet Works (HLOW) is composed of two eight-foot by eight-foot square steel slide gates under the spillway with an invert elevation of 755 feet. The HLOW has a maximum capacity of approximately 5,500 cubic feet per second (cfs) when the reservoir elevation is 800 feet. The Low Level Outlet Works (LLOW) consists of an inlet structure with an invert elevation of 670 feet, a 53-inch diameter conduit located near the southern side of the Dam, and six 24-inch discharge outlets with valves at the downstream end of the conduit. Releases from the LLOW can be made from either the conduit outlet valves or the hydroelectric power plant. The LLOW has a maximum release capacity of 460 cfs[2].

Nacimiento Hydroelectric Plant

A 4.351 Megawatt/hour capacity hydroelectric power plant began operation downstream of the Dam in 1987. The plant contains a larger (Unit 1) and a smaller (Unit 2) turbine that are operated in the ranges of 150 cfs to 460 cfs, and 25 cfs, respectively. The hydroelectric plant requires a minimum reservoir elevation of 690 feet for the operation of Unit 1 and 728 feet for the operation of Unit 2. To maximize power production, two turbine runners have been

[1] As described in the San Antonio and Nacimiento Rivers Watershed Management Plan, October 2008.

[2] At reservoir elevation 800 feet (full reservoir), flow through the LLOW can reach up to approximately 585 cfs. However, after the hydroelectric plant was constructed in 1987, the LLOW has been operated more conservatively, as the Nacimiento Hydroelectric Project Operations and Maintenance Manual by R.W. Beck & Associates, August 1987, recommends maximum water velocity below 30 feet per second (fps) to prevent accelerated wear of the low level conduit lining. 30 fps water velocity corresponds to 460 cfs flow through the 53-inch diameter low level conduit. The 1997 and 2000 Nacimiento Dam Operations Policy states "At Lake elevation 800 feet, maximum [LLOW] capacity is about 460 cfs…" consistent with the Hydroelectric Project Operations and Maintenance Manual. In September 2016, the Agency requested Hollenbeck Consulting to evaluate the maximum water velocity recommendation through the LLOW. Hollenbeck concluded: "Based on longevity of conduit performance with no reported issues, a maximum velocity of no more than 30 fps appears acceptable; however, based on accepted engineering references, it is recommended that MCWRA consider limiting the low level outlet conduit velocity to a maximum of 20 fps if such operations meet …release goals." (Appendix A). MCWRA staff recommends that maximum water velocity through the LLOW conduit remain below 30 fps to prevent accelerated wear of the conduit lining, which corresponds to a maximum flow of 460 cfs.

provided for Unit 1. The high head runner is used for elevations above 735 feet. The low head runner is required for operation between elevations of 690 feet and 735 feet.

Nacimiento Water Project (NWP)

The NWP is owned and operated by the San Luis Obispo County Flood Control and Water Conservation District (SLO District). The project, which came on line in 2007, consists of an intake system near Nacimiento Dam and approximately 45 miles of pipeline to deliver water to communities within San Luis Obispo County.

Pertinent Nacimiento Reservoir Elevations

The following reservoir elevations are referenced to NGVD29:

NWP Intake

The NWP intake consists of a 48-inch diameter stainless steel pipe with screened intakes between elevation 660 feet and 780 feet allowing SLO District to pump water starting at elevation 670 ft. The intakes supply a 52-inch diameter shaft leading to a 180-foot deep, 20-foot diameter shaft and pump station.

Dead Pool

The storage between the bottom of the reservoir and elevation 670 feet, the invert of the Intake Structure of the LLOW. The volume of the Dead Pool is 10,300 acre-feet (AF) but water cannot flow by gravity out of the reservoir below elevation 670 feet.

Minimum Pool

The storage above the Dead Pool, elevation 670 feet, and below the Conservation Pool (defined below), elevation 687.8 feet, is the Minimum Pool. The volume of this pool is 12,000 AF which is reserved for use by the County of San Luis Obispo per the 1959 San Luis Obispo County Agreement[3].

Minimum Recreation Elevation

At an elevation of 730 feet most of the boat ramps around the reservoir are useable and most private property owners have access to the reservoir. The Agency, to the extent possible, will keep this elevation in mind when making the release schedule and consider a goal each year of keeping the Reservoir above 730 feet until after Labor Day.

[3] Article 11(j) of the October 19, 1959 Agreement (Appendix C).

Conservation Pool

The storage above the Minimum Pool, elevation 687.8 feet, and below the Flood Pool (defined below), elevation 787.75 feet, is used to store water for release to the Salinas Valley for groundwater recharge, operation of the SRDF, water supply, fish migration, and fish habitat requirements. The volume of the Conservation Pool is 289,013 AF. It is dedicated to storing winter inflow from the Nacimiento watershed for later release.

Flood Pool

The bottom of the Flood Pool is the concrete spillway elevation of 787.75 feet. The top of the Flood Pool is the top of the raised inflatable spillway gates, elevation 800.0 feet, which is the maximum reservoir elevation (see below). During the winter, flood protection is provided by maintaining empty space within the Flood Pool to temporarily store flood water. The maximum flood pool storage volume is 66,587 acre feet. The actual volume of the flood pool reserved for flood protection will vary based on factors such as current conditions, time of year, and forecasted weather. If conditions allow, winter inflow stored in this pool can be used for later release to the Salinas Valley for groundwater recharge, operation of the SRDF, water supply, fish migration, and fish habitat requirements.

Maximum Reservoir Elevation

The top of the raised inflatable spillway gate system is at elevation 800 feet, 377,900 AF. This is the maximum reservoir elevation and is the level at which the reservoir is full.

Top of Dam

The top of the Dam is at elevation 825 feet (the dam crest). The Agency has flood easements around the reservoir up to this elevation. The Agency requires that any construction of habitable structures, or structures that can be damaged by inundation, be above elevation 825 feet. Construction of any structures, such as boat ramps, roads, or grading, that occurs below elevation 825 feet requires approval from the Agency prior to beginning work.

The maximum reservoir elevation reached under the Probable Maximum Flood Analysis is 823 feet, two feet below the dam crest (GEI Consultants, Inc., 2003).

Figure 1 shows pertinent Nacimiento Reservoir elevations and storage volumes.

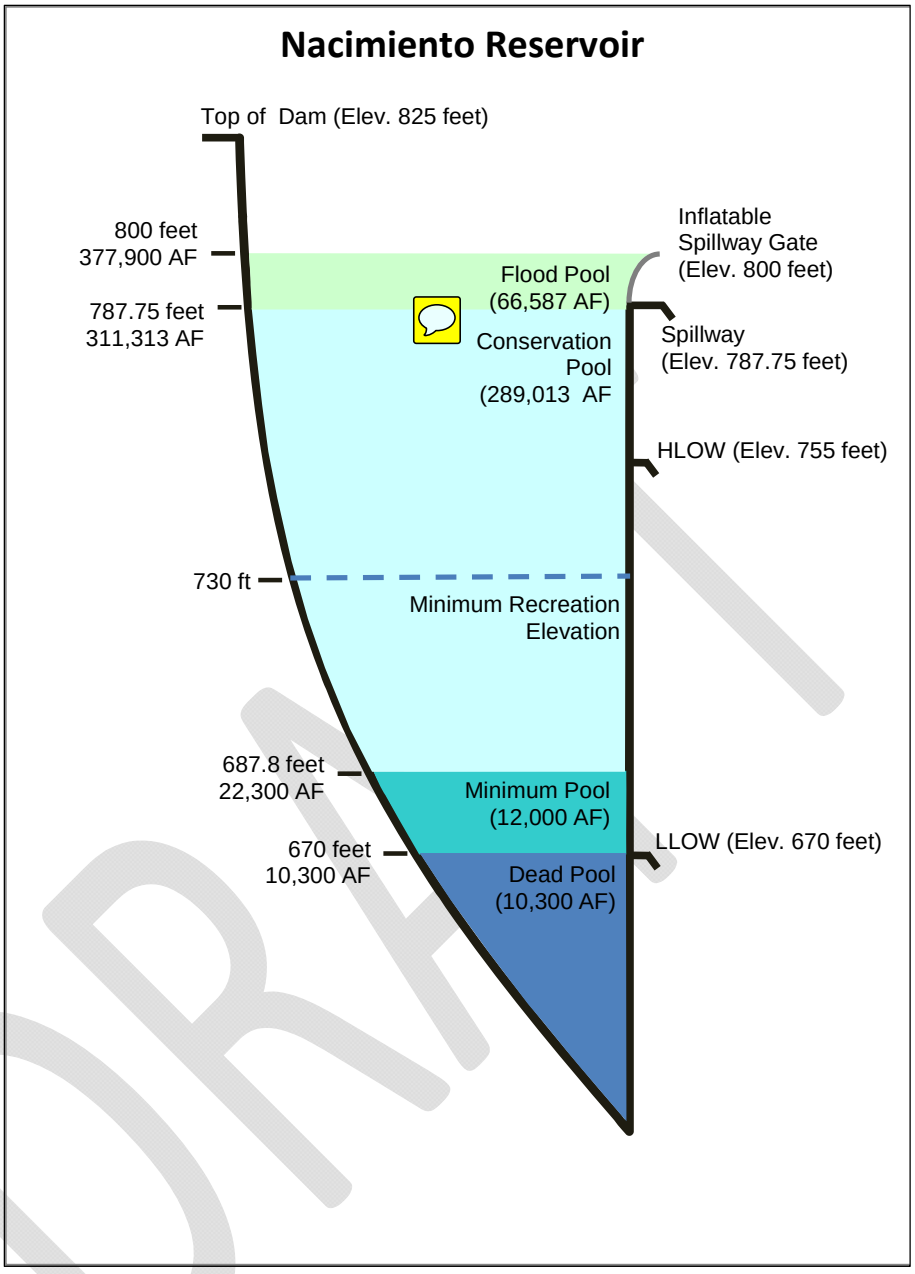

Figure 1. Schematic of Nacimiento Reservoir Pools

Section II – Governance and Water Rights

Monterey County Water Resources Agency Board of Supervisors

The Agency Board of Supervisors has overall responsibility for passing ordinances, conducting litigation matters, and adopting budgets for the Agency.

Monterey County Water Resources Agency Board of Directors

The Agency Board of Directors establishes long-term and short-term operations policy for the Agency, establishes standing and advisory committees, lets construction contracts, holds public hearings, and recommends action to the Agency Board of Supervisors for all aspects of the Agency.

The Board of Directors has taken the following actions of note related to operational policy of Nacimiento Dam:

- Adopted release priorities on September 28, 1992,
- Established an Ad-Hoc Reservoir Operations Committee in December 1993,
- Changed the Committee's status to a standing committee in October 1996,
- Adopted a Nacimiento Dam Operation Policy on August 25, 1997,
- Amended the Nacimiento Dam Operation Policy on April 24, 2000. The April 24, 2000 Nacimiento Dam Operation Policy is superseded by this document.
- Changed the Committee's status to an advisory committee in April 2016,
- Established a 17-member Reservoir Operations Advisory Committee in September 2016.

Reservoir Operations Advisory Committee

The Reservoir Operations Advisory Committee consists of three Board members, the Board Chair, and non-Director members. The Chair shall appoint non-Director members to the Reservoir Operations Advisory Committee as follows: one representative of a Salinas Valley City; one representative each of the Pressure, East Side, Forebay, and Upper Valley groundwater subareas; three members of the public at large; the San Luis Obispo County Public Works Department, Monterey County Parks Department, the lakes resort concessionaire, Nacimiento Regional Water Management Advisory Committee, and the Salinas River Channel Coalition[4].

[4] As per Agency Bylaws amended September 19, 2016.

The purpose of the Reservoir Operations Advisory Committee is to review all matters pertaining to Nacimiento and San Antonio Reservoirs and to make recommendations on those matters for consideration by the Agency Board of Directors.

Agency Staff

The General Manager, or his designee, is responsible for the safe and professional operation of Nacimiento Dam. Staff shall operate the Dam according to this Policy, using the professional judgment of qualified engineers. The Dam shall be operated with safety as the primary consideration. Operational considerations for flood protection, groundwater recharge, operation of the SRDF, water supply, fish migration, fish habitat requirements, agriculture, and recreation will be given careful and professional consideration.

Agreements for Diversion and Use of Water

This section describes the water rights the Agency holds for water of the Nacimiento River and the water use agreements the Agency has with San Luis Obispo County and the Nacimiento Water Company. Water rights held by private land owners and other water use agreements with private properties around Nacimiento Reservoir are not detailed in this Policy.

Water Rights License 7543

License for Diversion and Use of Water, No. 7543, from the California State Water Resources Control Board, was issued August 6, 1964. This license was last amended September 5, 2008 (Appendix B) to specify that the place of use of water from this license changed to include 421,435 acres of land comprising the Agency's Zone 2C assessment zone, to add a point of rediversion at the Salinas River Diversion Facility (SRDF), and to add fish flow requirements consistent with the June 21, 2007, National Marine Fisheries Service BO.

License No. 7543 gives the Agency the right to store 350,000 AF from October 1 of each year to July 1 of the succeeding year and to use 180,000 AF per year for irrigation, domestic, municipal, industrial, and recreational uses.

Water Rights Permit 21089

Permit for Diversion and Use of Water, No. 21089, from the California State Water Resources Control Board, was issued March 23, 2001. This license was last amended September 5, 2008 (Appendix B) to specify that the place of use of water from this license changed to include 421,435 acres of land comprising the Agency's Zone 2C assessment zone, to add a point of rediversion at the SRDF, and to add fish flow requirements consistent with the BO.

The original reservoir volume computations submitted and subsequently approved in License No. 7543, were based on United States Geological Survey (USGS) Quad sheets from the 1940s. In the early 1990s, aerial surveys with increased accuracy showed that the actual volume of Nacimiento Reservoir was greater than the 350,000 AF in License 7543. In order to correct this discrepancy, the Agency filed water rights Application No. 30532. Nacimiento Dam has never been modified in any way to increase storage and the reservoir volume is unchanged from the time of the dam's construction, with the exception of the inflow of silt from natural runoff which has decreased storage volume.

As a result of this application, the Agency has a permit to store 27,900 AF per annum to be collected from October 1 of each year to July 1 of the succeeding year. The total quantity of water collected to storage under this permit and License 7543 shall not exceed 377,900 AF per year.

Water Rights Permit 19940

Permit for Diversion and Use of Water, No. 19940, from the California State Water Resources Control Board, was issued December 31, 1986 (Appendix B).

Permit 19940 gives the Agency the right to divert up to 500 cfs through the Hydroelectric Plant from January 1 to December 31 of each year for irrigation, domestic, municipal, industrial and recreational uses. Diversion under this permit is incidental to releases being made for other purposes.

San Luis Obispo County Agreement

The Agency's Water Rights License No. 7543 is subject to an agreement between the Agency and SLO District which gives SLO District the right to use 17,500 AF of water annually from Nacimiento Reservoir. A portion of the total, approximately 1,750 AF, is designated for use around Nacimiento Reservoir. Heritage Ranch Community Services District (HRCSD) has an agreement with SLO District to use 1,100 AF of the 1,750 AF; HRCSD takes their allotment from a well gallery in the Nacimiento River downstream of the Dam. SLO District can use up to the remaining 15,750 AF per water year through the NWP. It was also agreed that the Agency will not make conservation releases during the water year that result in a reservoir elevation below 687.8 feet on September 30 of each year. The 12,000 acre foot Minimum Pool below elevation 687.8 feet will be reserved for SLO District use. SLO District maintains agreements with users within their 17,500 acre-foot allotment.

The original agreement is dated October 19, 1959, and it has been amended six different times in 1959, 1967, 1970, 1977, 1988, and 2007. These documents are collectively referred to as the Nacimiento Water Agreement. (Appendix C).

Nacimiento Water Company Agreement

The 1984 agreement with the Agency (Appendix D) allows the Nacimiento Water Company a water allocation of up to 600 AF per year to be extracted from wells within the floodage easement of Nacimiento Reservoir. The Nacimiento Water Company shall pay the Agency quarterly for water from the allocation on the basis of AF used at a rate determined by this agreement.

Section III – Operations

Salinas Valley Water Project

Through a collaborative effort with Salinas Valley interests the Agency developed the SVWP to address the water resources management issues within the Salinas Valley. The goal of the SVWP is to provide for the long-term management and protection of groundwater resources in the basin by meeting the following objectives: stopping seawater intrusion and providing adequate water supplies and flexibility to meet current and future (year 2030) needs. In addition, the project provides the surface water supply necessary to attain a hydrologically balanced groundwater basin in the Salinas Valley. Future project elements may, however, be necessary to achieve this objective.

In 2002, the Agency Board of Supervisors certified the Final Environmental Impact Report / Environmental Impact Statement (EIR/ EIS) and applied to the U.S. Army Corps of Engineers (Corps) for a permit to construct the SVWP. The SVWP consists of three components:

1. The Nacimiento Dam Spillway Modification.
2. Reoperation of Nacimiento and San Antonio reservoirs.
3. The Salinas River Diversion Facility.

SRDF/Water Conservation Operation

The highest priority of water conservation operations is to maximize the amount of groundwater recharge in the Salinas Valley aquifers through reservoir releases and the operation of the SRDF. This is accomplished by storing winter inflow to Nacimiento and San Antonio reservoirs so that water is available for release during the irrigation season. It is intended that reservoir releases be made in accordance with existing regulations and agreements in a manner that reduces impacts to both fish and recreation, while still meeting the primary goals of groundwater recharge and SRDF operation.

Reservoir Yield

The average annual inflow into Nacimiento Reservoir between water year 1959 and 2015 was approximately 198,000 AF per water year which is approximately three times the average inflow to nearby San Antonio Reservoir[5]. Total Nacimiento Reservoir releases for all purposes between water year 1959 and 2015 averaged approximately 191,000 AF per water year of

[5] Inflow data for water years 1959 through 2013 developed in 2014 by ECORP Consulting, Inc. and used for computer model simulations for the Interlake Tunnel and San Antonio Spillway Modification Projects. Inflow data for water years 2014 and 2015 was developed by Agency staff using the same method.

which an average of approximately 119,000 AF per water year was released for groundwater recharge and SRDF operations. Reservoir release averages between 1959 and 2015 are influenced by periods of different operational strategies that may not reflect current or future operations.

Reservoir Release Considerations

Salinas River Flow

Releases may be made following the cessation of natural flow or to supplement natural flow for groundwater recharge (conservation releases) or SRDF operations. Impoundment of water at the SRDF can begin as early as April 1st and continue through October 31st. As required by the BO, the Agency will maintain flow to the Salinas River Lagoon when the SRDF is operating or during conservation releases.

As described further on page 21, in dry year-types, the Agency will provide two cfs to the Salinas River Lagoon. For non-dry year-types, and if the combined reservoir storage is 220,000 AF or more, the Agency will provide additional supplemental SRDF bypass flows. If the lagoon is open to the ocean, then the Agency will provide 45 cfs to the lagoon for 10 days or until the lagoon closes to the ocean, whichever occurs first, then 15 cfs to the lagoon through June 30th, then two cfs as long as the SRDF is operating or during conservation releases. If the lagoon is not open to the ocean, then the Agency will provide 15 cfs to the lagoon through June 30th, then two cfs as long as the SRDF is operating or during conservation releases.

Quantity and Flow Rates of Releases

- Releases shall be made for groundwater recharge (conservation releases) or SRDF operations as are needed to maintain minimum BO flow requirements to the Salinas River Lagoon as long as SRDF diversions are occurring or conservation releases are being made to the Salinas River.
- The LLOW of Nacimiento Dam shall be the primary outlet for conservation releases. The LLOW has a maximum capacity of 460 cfs. When the need for releases exceeds the capacity of the LLOW, releases shall be made from the inflatable spillway gates if the lake elevation exceeds 787.75 feet or from San Antonio Reservoir.
- The HLOW of Nacimiento Dam does not provide the operational flexibility required to effectively make conservation releases but may be used for flood control releases when the lake elevation exceeds 755 feet.
- Power generation shall be incidental to the operation of Nacimiento Dam and shall not be used as criteria for flood control or conservation releases scheduling. Power may be generated when releases are made.

Concurrent Releases

- Nacimiento and San Antonio reservoirs will be operated jointly to provide maximum flood control and water conservation benefits.
- Concurrent releases from Nacimiento and San Antonio reservoirs may be necessary for groundwater recharge or to meet operational needs at the SRDF consistent with BO flow requirements at Salinas River Lagoon.
- Annual inflow into Nacimiento Reservoir is approximately three times that of San Antonio Reservoir, on average.
- When practical, the Agency shall attempt to create empty space in the Nacimiento Water Conservation Pool that is three times that of the empty space in the San Antonio Water Conservation Pool at the end of the SRDF/conservation release period. This operational strategy helps to maximize capture of winter flows and reduce flood control releases.

Recreation

- To minimize the impact of reservoir releases on reservoir levels during peak recreational periods the Agency will, to the extent possible, adjust reservoir releases to equalize the rate of decline in elevation between both reservoirs during the Memorial Day, 4th of July, and Labor Day holiday periods.
- At an elevation of 730 feet most of the boat ramps around the reservoir are useable and most private property owners have access to the reservoir. The Agency shall keep this elevation in mind when making up the release schedule and realize that a goal each year is to keep the water surface above 730 feet until after Labor Day.

Bass Spawn

- The bass spawn usually begins in May or early June, and often at somewhat different times in Nacimiento and San Antonio reservoirs. In many years the Agency has been able to shift releases between the two reservoirs to reduce impacts to spawning bass.
- The Agency will make an effort not to exceed a maximum decrease in reservoir elevation of one foot per week for a three week period during bass spawning. A goal of six inches per week or less shall be used when practical. The Agency will coordinate with the California Department of Fish and Wildlife for timing of these efforts.

Release Schedule

- The Reservoir Release Schedule acts as a guideline for releases made for groundwater recharge (conservation releases) or for SRDF operations.
- Agency staff shall draft a Preliminary Release Schedule each year, generally in the spring when inflow to Nacimiento Reservoir is nearly complete, and conservation releases will soon begin. Staff will draft a release schedule based on the various factors contained in this Policy and present it to the Reservoir Operations Advisory Committee for review.
- The Reservoir Operations Advisory Committee shall review the Preliminary Release Schedule submitted by staff each year and recommend a Proposed Release Schedule to the Board of Directors for adoption.
- The Board of Directors shall review the Reservoir Release Schedule recommended by the Advisory Committee and consider adoption.
- The Reservoir Operations Advisory Committee shall periodically review the adopted Release Schedule during the season and recommend changes to the Board of Directors as needed.

Release Notification

Releases can affect property owners downstream and around Nacimiento Reservoir. The Agency will provide post-change email notification of release changes to potentially affected parties upon request.

Environmental Compliance Operations

This section includes environmental regulatory requirements currently being imposed by the NMFS and the California Department of Fish and Wildlife (CDFW). These requirements make up the framework within which the Agency operates the reservoirs for all other beneficial uses.

National Marine Fisheries Service Requirements

During the permitting process for the SVWP, the NMFS initiated a formal Section 7 consultation with the Corps on the issuance of a permit for the SVWP. This consultation resulted in the Agency authoring the Flow Prescription in 2005. The Flow Prescription was incorporated into the NMFS BO, issued in 2007, to govern flows and related monitoring activities. On July 30, 2007, an addendum to the 2002 EIR/EIS was adopted by the Agency Board of supervisors reflecting the contents of the Flow Prescription and superseding the flow regimes previously identified in the 2002 EIR/EIS.

The Flow Prescription defines flow requirements and operational targets for managing steelhead trout (*Oncorhynchus mykiss*) in the Salinas River. When specific conditions are met

the Agency will operate the reservoirs to enhance upstream or downstream passage conditions for migrating steelhead. The Agency will also maintain prescribed flows for spawning and rearing habitat in the Nacimiento River below Nacimiento Dam.

The following items represent the language incorporated into the BO from the Flow Prescription. Similar language for these items was also incorporated into the addendum of the EIR/ EIS, the U.S. Fish and Wildlife Biological Opinion, and Nacimiento River Water Rights license 7543 and Water Rights permit 21089.

Figure 2 shows the location of facilities and flow data collection points referenced in the BO as well as the place of use for water released from Nacimiento Reservoir (Zone 2C)

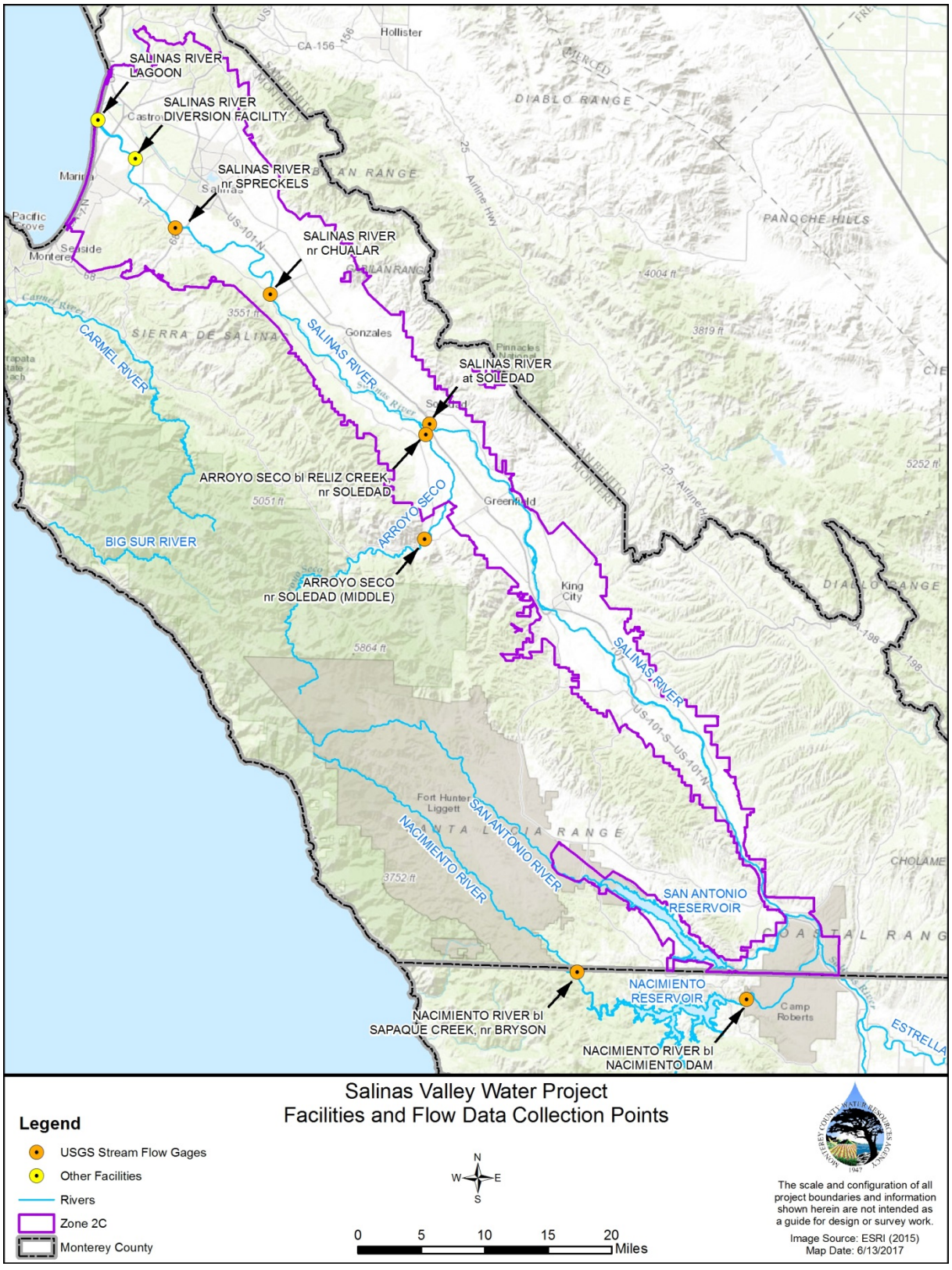

Figure 2. SVWP Facilities and Flow Data Collection Points

Water-Year Type Categorization

For purposes of applying the flow prescriptions in this section, a determination of water-year type (dry, normal, wet) is made based on an indexing of unimpaired annual mean flows at the USGS streamgage on the Arroyo Seco near Soledad (USGS Streamgage 11152000). Annual mean flows are ranked in descending order and the stream flows corresponding to the 25th and 75th percentile are selected as the thresholds for the wet (below the 25th percentile), normal (between the 25th and 75th percentiles), and dry years (above the 75th percentile). Normal year types are subcategorized into wet-normal, normal, and dry-normal categories. Year type determinations will be made on March 15th (preliminary) and April 1st (official) of each year.

Adult steelhead upstream migration

Adult steelhead upstream migration triggers will be in effect from February 1st through March 31st. When flow triggers occur, the Agency intends to facilitate upstream migration of adult steelhead by insuring flows of at least 260 cfs at the Salinas River near Chualar (USGS streamgage 11152300) for five or more consecutive days when the river mouth is open to the ocean. To insure this minimum flow and duration, the Agency will provide reservoir releases when necessary to augment natural flows. These reservoir releases will occur if the following triggers are met:

- combined storage of Nacimiento and San Antonio reservoirs is greater than 220,000 AF,
- 340 cfs or higher flows are present at the Arroyo Seco near the Soledad gage (USGS streamgage 11152000), and
- 173 cfs or higher flows are present at the Arroyo Seco below the Reliz Creek gage (USGS streamgage 11152050).

Figure 3 provides a visual summary of the conditions for the flow prescription as it relates to upstream migration for adult steelhead.

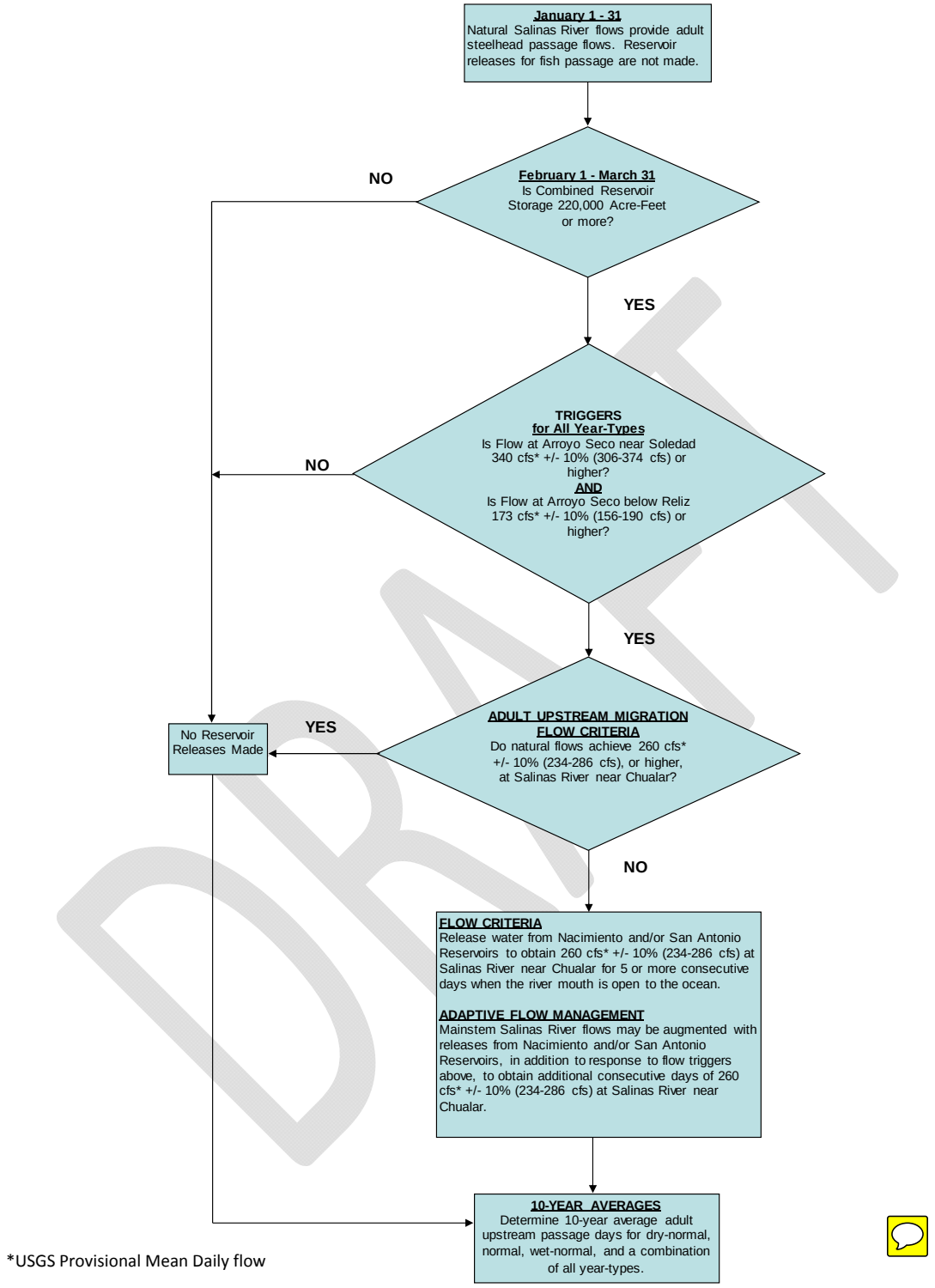

Figure 3. Flow release schedule to enhance upstream migration conditions for adult steelhead.

Downstream migration of Smolting Steelhead (Block Flows)

To facilitate the downstream migration of smolts[6] and rearing juvenile steelhead in the Salinas River during normal category water years, the Agency will provide, beginning March 15th, reservoir releases (hereafter referred to as "block flows") when the following flow triggers are met:

- the water year type is dry-normal, normal-normal, or wet-normal,
- combined storage of Nacimiento and San Antonio reservoirs is 150,000 AF or more on March 15th, and
- 125 cfs or higher at the Nacimiento River below Sapaque Creek gage (USGS streamgage 11148900), or 70 cfs at the Arroyo Seco below Reliz Creek gage (USGS streamgage 11152050).

If block flows are triggered between March 15th and March 31st, 700 cfs will be provided at the Salinas River near Soledad (USGS streamgage 11152000) for five days, and then thereafter 300 cfs will be maintained in the Salinas River near Spreckels (USGS streamgage 11152500) until April 20th.

If the block flow triggers occur in April, 700 cfs will be provided at the Salinas River near Soledad for five days, and then thereafter 300 cfs will be provided at Spreckels for an additional 15 days. Thus, the duration of the block flow will range from 20 to 45 days.

After a block flow is completed, if outmigration of steelhead smolts from the Arroyo Seco to the Salinas River could occur (i.e., flow at the USGS streamgage 11152050 near Reliz is greater than 1 cfs), flow to the ocean will be maintained for 10 days after smolt outmigration flow at the Reliz Creek gage drops below 1 cfs. Figure 4 provides a visual summary of the block flow release schedule for smolt outmigration. The same flow prescription for smolt outmigration represented in figure 4 of this document appears with a different visual representation as Figure 1 in the water rights documents for License 7543 and Permit 21089 (Appendix B).

If on March 15th the determination of the water year type category is "wet" or "dry," no reservoir releases are made to meet block flow criteria and the year type will be re-evaluated on April 1st. If on April 1st the water year type is either "wet" or "dry," then no reservoir releases to facilitate smolt migration will occur, though smaller releases may occur as described in the next section.

[6] A young salmon or sea trout about two years old that is at the stage of development when it assumes the silvery color of the adult and is ready to migrate to the sea. "Smolt." Merriam-Webster.com. Merriam-Webster, n.d. Web. 17 Nov. 2016.

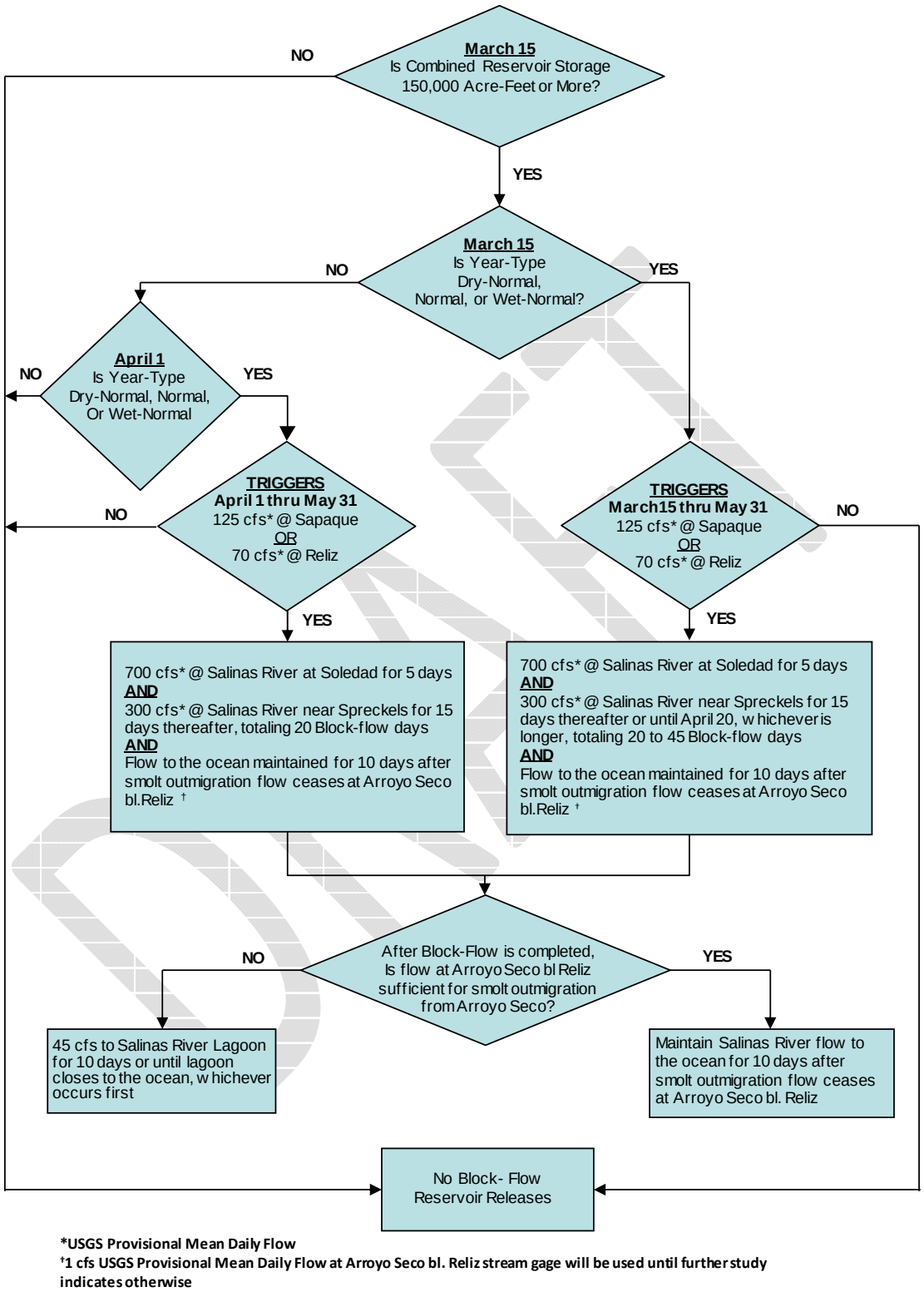

Figure 4. Flow release schedule to enhance outmigration conditions for smolts.

Downstream Migration of Juvenile and Post Spawn Adult Steelhead

In some years, block flow releases for smolt migration may not occur because triggers for those releases are not met. However, in those years the Agency will provide reservoir releases and SRDF bypass flows to enhance migration opportunities for juvenile steelhead and post-spawn adult steelhead (kelts). Beginning April 1st, when smolt migration block flows are not triggered, the Agency will provide reservoir releases under the following circumstances.

For dry year-types, the Agency will provide two cfs to the lagoon when the SRDF is operating or during conservation releases, with a wetted streambed channel along the entire reach.

For non-dry year-types, and if the combined reservoir storage is 220,000 AF or more, the Agency will provide additional supplemental SRDF bypass flows. If the lagoon is open to the ocean, then the Agency will provide 45 cfs to the lagoon for 10 days or until the lagoon closes to the ocean, whichever occurs first, then 15 cfs to the lagoon through June 30th, then two cfs as long as the SRDF is operating or during conservation releases. If the lagoon is not open to the ocean, then the Agency will provide 15 cfs to the lagoon through June 30th, then two cfs as long as the SRDF is operating or during conservation releases.

At the end of the irrigation diversion season, the SRDF impoundment will be filled to its storage capacity of approximately 108 AF of water. Once irrigation diversion from the SRDF is completed for the season, water will be allowed to pass from the full SRDF impoundment to the lagoon at a rate of two cfs until the impoundment is effectively emptied. At a two cfs rate of flow from the 108 AF capacity, the impoundment is expected to empty in approximately 27 days. In no case will the SRDF impounded water be stored for more than 29 days. The Agency reserves the right to empty the SRDF impoundment (by increasing flow releases above two cfs) during this 27 day period of two cfs flow to the lagoon after the irrigation season, if necessary, to empty the impoundment in time to perform facility maintenance before river flows prevent such maintenance work.

Figure 5 provides a visual summary of the flow release schedule for juvenile steelhead and kelts. The same flow prescription for downstream migration of juvenile steelhead and kelts represented in figure 5 of this document appears with a different visual representation as Figure 2 in the water rights documents for License 7543 and Permit 21089 (Appendix B).

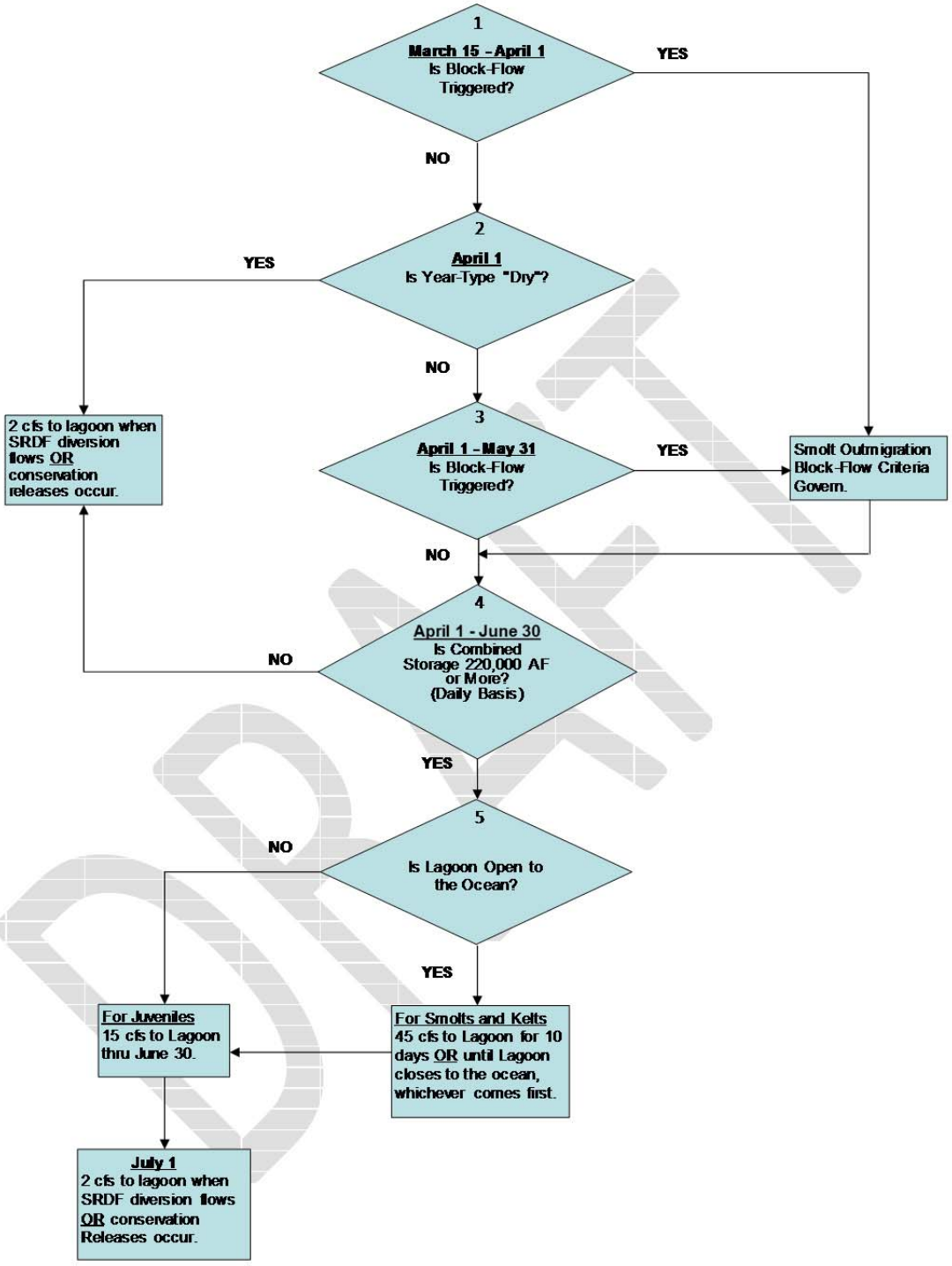

Figure 5. Flow release schedule to enhance downstream migration conditions for juvenile steelhead and kelts.

Spawning and Rearing Habitat in the Nacimiento River

The Agency will provide, through reservoir releases, steelhead spawning and rearing flows for the Nacimiento River below Nacimiento Dam. To provide spawning opportunities, the Agency will augment flow in the Nacimiento River by releasing 60 cfs from Nacimiento Reservoir beginning the eighth day after the first adult steelhead passage day occurs on the Salinas River near Spreckels after January 1st[7]. These flows will be continued through May 31st. Until further studies are conducted to determine adequate rearing flows in the Nacimiento River below the reservoir during summer and fall, the Agency will release a minimum of 60 cfs throughout the year as minimum rearing flow as long as the water surface elevation of Nacimiento Reservoir is above the minimum pool elevation 687.8 feet.

California Department of Fish and Wildlife Requirements

California Department of Fish and Game (currently the California Department of Fish and Wildlife) Code 5937 requires the owner of a dam to allow sufficient water at all times to pass over, through, or around the dam, to keep in good condition any fish that may be planted or exist below the dam.

With the installation of the hydroelectric plant at Nacimiento Dam the Agency entered into an agreement with the California Department of Fish and Game. Per the November 13, 1985 agreement (Appendix E) and in compliance with Section 5937 of the State Fish and Game Code, the Agency shall maintain a minimum discharge of 25 cfs from Nacimiento Reservoir at all times except under drought or emergency conditions as described in the agreement.

The 1985 Fish and Game agreement remains valid but the BO flow requirement of 60 cfs for spawning and rearing habitat on the Nacimiento River supersedes the 25 cfs discharge requirement.

Figure 6 shows the periods with Nacimiento Reservoir BO compliance operation requirements to provide opportunities for fish migration and for spawning and rearing habitat.

[7] The first day of passage is the beginning date of the first period with five consecutive days with flows of 260 cfs or higher at the Salinas River near Chualar. The first potential spawning day in the Nacimiento River is assumed to be eight days after the first passage day.

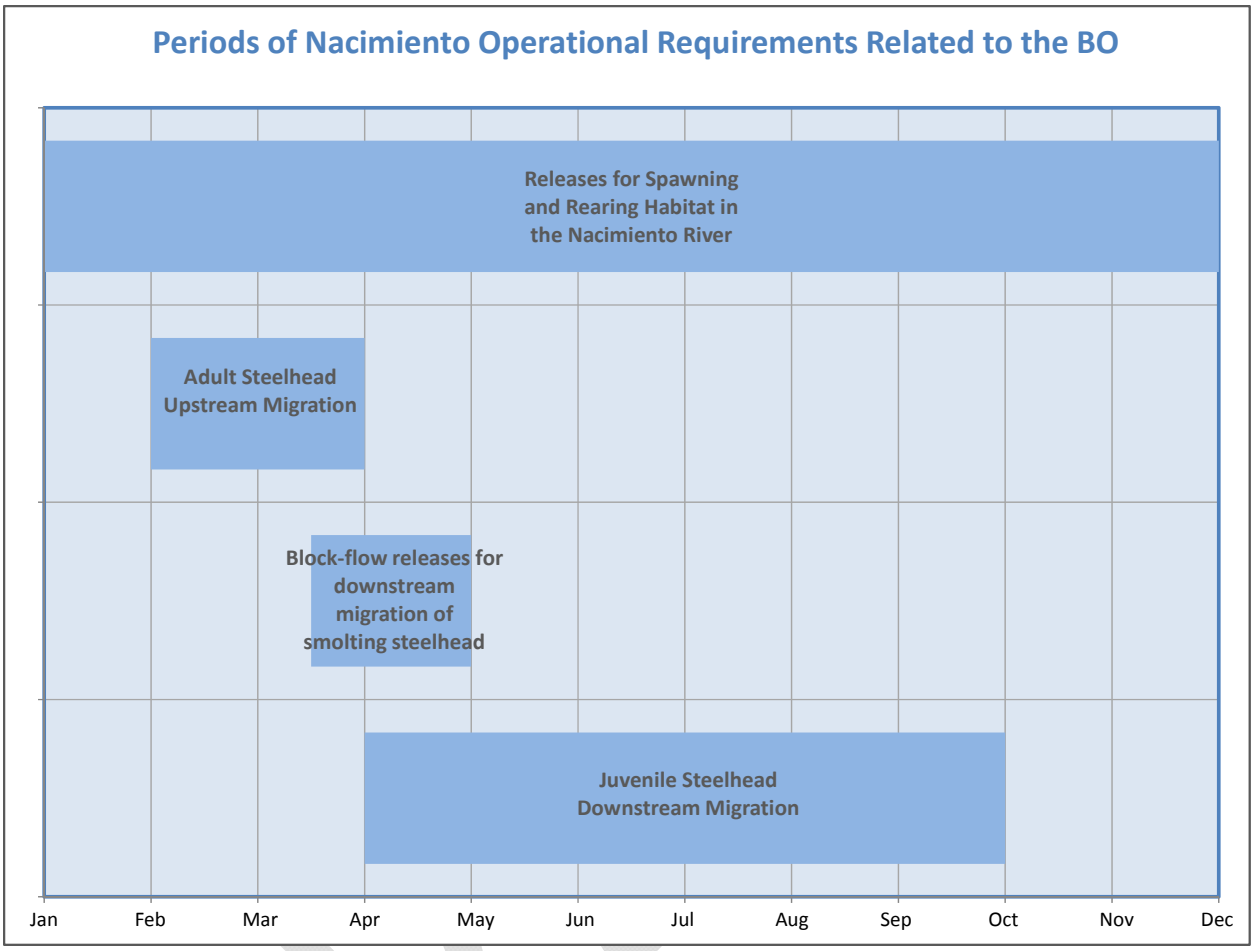

Figure 6. Periods of the Year with Reservoir Operation Environmental Compliance Requirements.

Flood Control Operation

During the winter, when heavy rains can cause flooding in the Salinas Valley, the Nacimiento Dam provides flood protection by regulating the Nacimiento River, the largest tributary of the Salinas River in terms of average annual flow.

In 2009, as a component of the Salinas Valley Water Project, the Nacimiento Dam Spillway was modified to address safety issues associated with the flood flows that must be conveyed through the reservoir and the spillway. The spillway modification included the lowering of the existing concrete spillway crest to accommodate an inflatable spillway gate system as well as improvements to the spillway chute walls to accommodate the higher spillway discharge made possible by the inflatable gates. The spillway modification allows the Agency to store water up to an elevation of 800 feet, which is the top of the raised inflatable spillway gates and the same elevation as the previous concrete spillway crest. Without this modification, the Agency would

have had to provide additional flood storage equal to 17 feet of elevation by lowering the reservoir level as of January 1 every year to 765 feet.

The two main agencies with regulatory authority over the Nacimiento Dam are the California Department of Water Resources, Division of Safety of Dams (DSOD) and the Federal Energy Regulatory Commission (FERC).

Nacimiento Dam is under the jurisdiction of the DSOD. Besides inspecting the Dam on a regular basis, they are responsible for issuing a Certificate of Approval showing the conditions under which the Agency can operate Nacimiento Dam (Appendix F). On December 29, 2009, the DSOD issued a Certificate of Approval to the Agency for the impoundment of water up to an elevation of 800 feet NGVD29, the top of the inflated spillway gate system. If the reservoir reaches an elevation of 801 feet, an operator shall be dispatched to the dam to ensure the gates are fully lowered.

As a result of the installation and operation of the hydroelectric power generation facility in 1987, Nacimiento Dam is under the jurisdiction of the FERC. To meet FERC requirements the Agency has adopted an Emergency Action Plan (EAP) for Nacimiento Dam. The EAP contains a High Flow Operations Plan (Appendix G) to ensure the dam is operated safely during flood events and that the appropriate agencies are notified of expected flood control releases.

The flood rule curve adopted by the Agency in 1985 was superseded by the December 29, 2009, DSOD Certificate of Approval allowing the impoundment of water up to an elevation of 800 feet year round. The Agency shall identify a self-imposed range of operating elevations within the flood pool that will provide adequate reservoir storage space during the winter for the Agency to respond to forecasted storm events. The elevations will be developed with a goal of reducing the likelihood of flood control releases greater than 4,000 cfs while maintaining a reservoir elevation of no greater than 800 feet. Reservoir releases greater than 4,000 cfs have the potential to damage the river intake of the Heritage Ranch Community Services District as well as bridges and infrastructure in Camp Roberts.

During some severe, or unusual, flood events, situations may arise where the Agency must choose between: (1) making releases from the Dam that may result in property damage because such releases add to the flood flow of the Salinas River, and (2) holding the releases and potentially endangering the Dam, or risking a greater release, with even greater potential for property damage in the near future.

During such situations, the safety of the Dam shall be the primary consideration. Next in importance is the reduction of property damage from flooding. The actions that are likely to result in the least overall property damage shall be chosen by the Agency. The Agency will consult the High Flow Operations Plan (Appendix G) in addition to other available information, such as weather forecasts, streamflow forecasts, streamgage data, and Automated Local Evaluation in Real Time (ALERT) Flood Warning System data, to develop the best course of action. Weather forecasts from the National Weather Service (NWS) and streamflow forecasts

from the California Nevada River Forecast Center (CNRFC) will be used to help forecast reservoir inflow and river conditions. The Agency shall consider forecasted reservoir inflow and peak river flows when planning flood control releases in order to minimize downstream damage and maximize reservoir storage. The Agency will use USGS streamflow gages and ALERT Flood Warning System data to assist in the timing of flood control releases and track releases and streamflow peaks through the Salinas River system.

Recreation Management Plan

Nacimiento Reservoir is a major recreation attraction. Many businesses depend upon visitors and property owners who use the reservoir for boating, fishing, swimming, and scenic viewing. Keeping in mind the priorities of flood protection, groundwater recharge, water supply, fish migration, and fish habitat requirements, the Agency will operate the Dam in such a manner as to enhance the recreation benefits of the reservoir to the extent possible, as described in the Recreation and Bass Spawn sections on page 13.

Drought Contingency Plan

A Drought Contingency Plan describing reservoir operations will be incorporated into this document after such a plan is developed, reviewed by the Reservoir Operations Advisory Committee, and adopted by the Agency Board of Directors.

Section IV – Safety and Maintenance

Emergency Preparedness

The Agency has prepared an EAP for Nacimiento Dam in accordance with FERC guidelines. The purpose of the EAP is to safeguard lives and reduce damage at Nacimiento Dam and Reservoir, and along the Nacimiento and the Salinas Rivers in the unlikely event of a failure of the Nacimiento Dam. The EAP is to be used during major flooding events along the Nacimiento and Salinas Rivers as a guide for emergency personnel in determining maximum flood water elevations, and for notifying emergency personnel during any significant flood event or potential emergency situation regarding Nacimiento Dam.

Dam Safety

Jurisdictions, Hazard, Critical Infrastructure

The Agency owns and operates the dam and its supporting facilities (including, but not limited to, valves, controls, roads, bridge, residence, out-buildings, etc.) and is responsible for their safe operation and maintenance.

Jurisdiction over matters of dam safety is held by the State of California through the DSOD as specified in California Code of Regulations Title 23, Division 2 and California Water Code, Division 3. DSOD issues a Certificate of Approval describing conditions under which an owner can operate a dam under their jurisdiction. As described in the Flood Control Operation section of this Policy, the DSOD issued a Certificate of Approval to the Agency on December 29, 2009 (Appendix F) for the impoundment of water up to an elevation of 800 feet (NGVD29), the top of the inflated spillway gates. If the reservoir reaches elevation 801 feet, an operator shall be dispatched to the dam to ensure the spillway gates are fully lowered.

Upon completion of the Nacimiento Hydroelectric Project in 1987, supplied by Nacimiento Dam/Reservoir, the Federal Energy Regulatory Commission (FERC) retains Federal jurisdiction for dam safety matters and implements its responsibilities through the Code of Federal Regulations, Title 18, Part 12 (18CFR Part 12).

Nacimiento Dam is considered a “High Hazard” dam by DSOD and FERC due to the potential for downstream loss of life and property damage in the event of a catastrophic dam failure.

Nacimiento Dam and its appurtenant facilities are classified “critical infrastructure” under Homeland Security Presidential Directive 7, and as further defined in FERC Order No. 630,

issued February 21, 2003. Consequently, the Agency does not provide information regarding the dam or its appurtenant facilities that may create a security risk.

Inspections

The following inspections are performed for Nacimiento Dam:

The Dam is observed daily by the Agency Reservoir Operator and Maintenance staff. Additional inspections are performed periodically by Agency Maintenance and Engineering staff. Post-earthquake inspections are performed by Agency maintenance staff after earthquakes of magnitude 3.5 or larger within 35 miles, and by Agency maintenance and engineering staff after earthquakes of magnitude 5.0 or larger within 50 miles. Agency staff also performs at least two annual inspections of all facilities along with inspectors from other agencies, as described below. An annual settlement and shift survey is performed to assure that no unusual movement of the embankment occurs. Valves, gates and emergency equipment (e.g., generators and connections) are regularly exercised.

DSOD personnel and FERC personnel each inspect the dam annually. Per FERC requirement, every five years the Agency hires a qualified engineering consultant to provide an independent safety inspection, to update the dam potential failure mode analysis, and provide a comprehensive report to the Agency and to FERC. The report is performed according to Title 18 of the Code of Federal Regulations Part 12D (18CFR12D) guidelines.

Monitoring and Reporting

An Owners Dam Safety Program (ODSP) for Nacimiento Dam was adopted by the Agency Board of Directors in April 2012. The ODSP, a FERC required program, is intended to ensure that Agency personnel and consultants understand and maintain awareness of the need to comply with dam safety measures and requirements to help safeguard lives and reduce damage downstream of and at Nacimiento Dam. The ODSP for Nacimiento Dam includes: Designation of responsibilities for dam safety, dam safety training of appropriate personnel, communications and reporting procedures, record keeping retention, succession planning, and assessments and audits of the Dam Safety Program.

The Agency maintains a Dam Safety Surveillance and Monitoring Plan (DSSMP), a FERC required document, which provides details on how performance of the dam structure is monitored and evaluated. The DSSMP may be revised when significant investigations or instrumentation modifications occur.

A Dam Safety Surveillance and Monitoring Report (DSSMR), a FERC required document, is prepared annually and submitted to FERC and DSOD for review. The DSSMR includes review of instrumentation and monitoring data, inspection information, and other relevant data,

collected and evaluated in accordance with the DSSMP, to determine if any potential failure modes are developing and to provide information to remediate such an occurrence if found.

Operation

The Dam shall be operated with safety as the primary consideration. During flood events, the Dam will be operated as described in the Flood Control Operation section of this Policy.

Maintenance

The Agency maintains a multi-year maintenance plan for the dam and its supporting facilities. The plan is updated annually (or more frequently as needed) and is used for the planning and budgeting of inspection, monitoring and reporting, maintenance, repair and improvement work at the dam and its supporting facilities.

Maintenance and repair of the Dam and supporting facilities are required. The Agency will reduce or stop flows through the LLOW and/or HLOW if the Agency determines such is necessary to ensure the safety of personnel performing the maintenance or repair work. The Agency will endeavor to schedule reduction or cessation of flows to minimize impacts to State or Federal Endangered Species Act species in Nacimiento River below the dam. The Agency will document the occurrence and duration of any flow reduction or cessation for such maintenance or repair purposes.

If debris within the lake or on the water surface threatens the safe operation of the dam, its spillway or outlet facilities, the Agency will take action to remove or retain such debris. The Agency maintains two floating debris booms in an effort to prevent excessive debris from collecting on the dam, spillway or outlet areas. One boom is located across the reservoir upstream of the dam, and one boom is located across the spillway inlet channel. The Agency is under no regulatory obligation to remove debris that washes into the general reservoir during flood events.

In the event it becomes necessary to perform non-emergency maintenance, repair, or construction work at the Dam or its supporting facilities that require lowering the reservoir to elevations below those described in other sections of this policy, to the extent possible, such work shall be scheduled to occur during a period when the reservoir level would have reached the necessary lower elevation based on criteria listed in other sections of this policy.

In the event of an emergency where a hazardous situation threatens the structural integrity of the dam, rapid drawdown of the reservoir may be undertaken by the Agency to reduce hydraulic forces acting on the dam. Drawdown for such purpose may also be directed by DSOD or FERC. Such reservoir drawdown may be accomplished through the spillway gates, HLOW and LLOW.

Section V – Reporting

Annual Reports

Agency staff will produce a written annual summary that includes reservoir conditions for a particular Water Year. Contents of the annual summary report shall include: reservoir inflow, flood control releases, conservation and SRDF Operation releases, Nacimiento Water Project diversions, hydropower production, reservoir levels, rainfall and evaporation data, and a cumulative yearly summary.

The annual summary will be presented to the Reservoir Operations Advisory Committee by July 1st of the following water year. 

References

ECORP Consulting, Inc., Interlake Tunnel and San Antonio Enlargement Project Simulation Modeling Technical Memorandum, November 12, 2014.

EDAW, Inc., Final Environmental Impact Report/Environmental Impact Statement for the Salinas Valley Water Project Volumes I and II, 2002

EDAW, Inc., Salinas Valley Water Project Draft Environmental Impact Report/Environmental Impact Statement, 2001

ENTRIX, Salinas Valley Water Project EIR Addendum, 2007.

GEI Consultants, Inc., Supplemental PMF Hydrology Report for Nacimiento Reservoir FERC Projects 6378-CA, October 2003.

Monterey County Water Resources Agency, Salinas Valley Water Project Flow Prescription for Steelhead Trout in the Salinas River, October 11, 2005.

Nacitone Watersheds Steering Committee and Central Coast Salmon Enhancement, Inc., San Antonio and Nacimiento Rivers Watershed Management Plan, October 2008.

National Marine Fisheries Service, Biological Opinion of the Salinas Valley Water Project, June 21, 2007.

U. S. Fish and Wildlife Service, Biological Opinion on Issuance of Department of the Army Permits to the Monterey County Water Resources Agency for Construction of a Surface Water Diversion Structure in the Salinas River, Near the City of Salinas (Corps File Number 24976s) and for Breaching of the Salinas River Lagoon (Corps File Number 16798S) in Monterey County, California (1-8-06-F-54), July 24, 2007.