

Evidence to Support a Motion to Intervene FERC P-2100

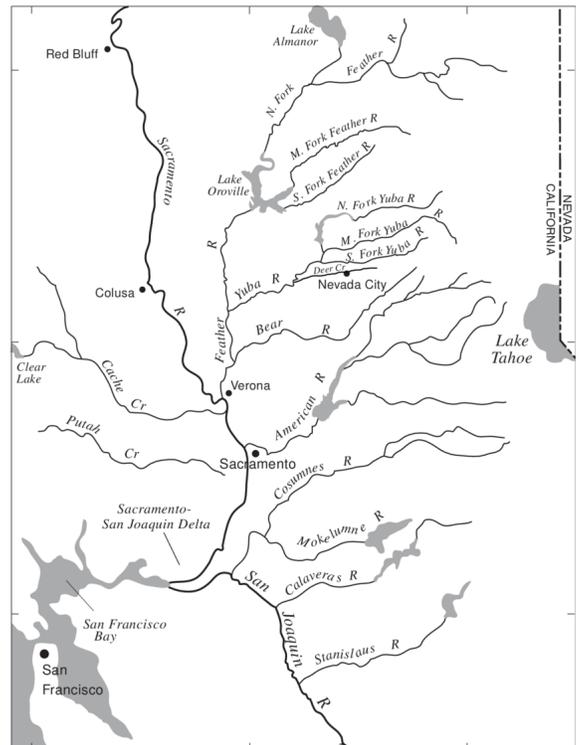
“If [Oroville Dam] failed, it would be the worst disaster in the history of the United States.”

- Robert Bea, professor emeritus of engineering at the University of California, Berkeley;

founder of Berkeley’s Center for Catastrophic Risk Management¹

The State Water Project Oroville Dam’s “gated spillway was managed and regulated to failure.”

- Robert Bea, UC Berkeley²



PREPARED FOR

The Feather River Recovery Alliance (FRRA)

AN OVERVIEW PREPARED BY THE FEATHER RIVER RECOVERY ALLIANCE

The Feather River Recovery Alliance (FRRA) commissioned Patrick Porgans, Bio-Elemental-Terrestrial Solutionist at Patrick Porgans & Associates, Inc. to compile data and information regarding the California State Water Project (SWP) Oroville Dam and Reservoir, operated by the State of California Department of Water Resources (DWR). Porgans' report includes a great deal of detail defining the “unacceptable level of risk” roughly one million California residents face due to its design, construction, management, practices, and Flood Control Operational Criteria. The following summarizes the main issues and findings identified by Porgans, and the consequential failures of the dam posing a risk upon the downstream community.

Unless specific changes are made by DWR in regards to Flood Control Operational Criteria are implemented, it will and can lead to an “Unprecedented Flood Disaster,” with far-reaching devastations throughout the State of California.

MAIN ISSUES IDENTIFIED IN THE REPORT

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The appendix to this overview provides references to the pages in the report relevant to the various issues.

1. If the Perfect Storm of events were to occur, it would be catastrophic to the state and its economy. Such costs in the past have totalled billions of dollars, to which DWR responds with minor adjustments and changes, without making a substantial effort to rectify the causes; if done properly, the costs of maintaining the dams would be far cheaper than paying for the damages resulting from the improperly managed dam.

The data proves that, although millions have been invested to minimize the risk of flood damages downstream from the Feather River Watershed (FRW), property damage downstream from the dam has amounted to over *3 billion dollars* and a significant amount of lives lost³. Since the Oroville dam and reservoir was finished in 1968, there have been 19 major flood events in the basin- the most serious in 1980, 1986, 1997, and 2017- each requiring an extensive amount of flood fighting and followed by significant structure fixes.

DWR could significantly reduce the risk of flooding and damage to downstream residents and businesses if it were to properly address the inherent issues of the dam through preventative measures. Instead, DWR consistently spends a substantial amount of money following flood events in an attempt to retroactively fix their mistakes. These fixes include, but are not limited to, \$1.1 billion to fix the Flood Control Spillway Outlet proceeding the 2017 spillway incident, \$17 billion on California's Central Valley Flood Protection Plan, and \$378 million to upgrade the Feather River West Levee Project⁴.

If there was a proper return of investment on these specific projects, there would be a noticeable change in the risk of damage. Yet instead, there is, on average, a major flood event every 12 and ½ years in the region; so, over the span of 5 decades, DWR's "fixes" did not do what they were intended to.

Each flood event can cost upwards of \$2 billion to taxpayers⁵. Just in the 1997 flood alone, over 120,000 individuals were forced out of their homes, with 55,000 having to move into shelters, and roughly 30,000 residential and 2,000 business properties suffered a considerable amount of damage or destruction⁶. The costs of the evacuation, possibly amounting to over \$10 million, are not included.

Until DWR makes a sufficient and sustained investment in state-wide flood management, 1 million Californians will remain under an unacceptable level of risk of damage and life if there were an SWP Oroville event and subsequent dam failure. The potentially affected land includes approximately \$80 billion worth of assets in buildings, homes, and prime agricultural land; damage to this broad amount of land in CA could potentially have a greater financial impact on the state and the US than Hurricane Katrina or Superstorm Sandy⁷.

2. The State Water Project Oroville Dam and Reservoir has been underfinanced since its formation. This lack of resources has led to DWR becoming the water purveyor to a large portion of the state. These contractual obligations across California have produced unethical conflicts within DWR to either prioritize their water contractors or their responsibility to maintain the dam and flood protection.

Back in 1961, DWR began construction on the SWP Oroville Dam as the foundation of California's statewide water system. Due to the Edward Hyatt Pump-Generating Plant generating electricity, DWR was required to establish a licensing agreement with the Federal Energy Regulatory Commission (FERC).

The original 50-year license to operate the Oroville facilities (FERC Project No. 2100) was issued by FERC in 1957. DWR was given the role of operating the facilities in line with the regulations for flood control purposes power generation, recreation, fish and wildlife enhancement, and water quality improvement in the Sacramento-San Joaquin Delta.

Yet despite the license agreement, the project was severely underfunded. While the project was approved and engineeringly feasible, the economic and financial feasibility was questionable. The Burns-Porter Act, which established the framework for the SWP Oroville facilities, did not provide sufficient funding so that. Governor Edmund "Pat" Brown Sr.- the main patron of the SWP- conceded that the project was underfinanced since its start, stating that they "recognized the [SWP] water project was going to be short in 1963⁸." In the licensing negotiations, the construction was initially expected to be a concrete gravity dam, which is notably stronger than alternative dam structures. At the last minute, DWR requested the dam to be earthen, or zone-filled, to cut construction costs⁹. As a result of DWR's deficient funds, the department issued revenue bonds based on the sale of power generated by the dam. Ultimately, the dam was finished in May of 1968.

After beginning operations on the SWP, DWR recognized that they could not provide the amount of water and power from the dam that the initial bonds specified, particularly given that the dam wasn't designed to meet those requirements. In essence, DWR couldn't deliver what they promised in exchange for funds to build the dam¹⁰.

To make up for their lack of funding, DWR then began agreeing to water contracts across the state, which they still remain in to this day. But while making those agreements, DWR committed to meeting water quotas that the dam couldn't fulfill. The department made up for this water deficit by releasing the required floodwater slowly and storing water unauthorized in the reservoir's designated flood storage space, during flood season, when flood protection is expected to take priority; this policy also allows DWR to generate more hydroelectric power, and therefore make more money¹¹. While this strategy benefits DWR and SWP contractors by reducing costs while increasing water supply, it increases the likelihood of greater downstream

flood damage and loss of life, simultaneously adding financial burden on downstream property owners who must pay for the maintenance and repairs of damaged levees.

DWR faces an ongoing internal conflict between ensuring flood protection and delivering water to its contractors. Their contractual obligations allow the postponement of necessary infrastructure improvements to accommodate the demands of water contractors. While these contractors run the risk of losing water supply under dam failure, they have not been willing to bear the cost of improving infrastructure to provide proper flood protection.

Today, DWR's contractors consist of 29 urban and agricultural water suppliers throughout CA, providing water to > 25 million California residents & 750,000 acres of farmland, directly supporting two-thirds of California's \$2.8 trillion economies¹².

The SWP Oroville Dam and Reservoir was essentially predetermined to fail financially since the idea was born. Subsequently, in regards to the project, DWR cut corners where they could; the department established agreements with contractors across the state, ignored appropriate dam maintenance, and ignored their responsibilities with the dam. If their current license goes through, despite a significant amount of objectives, this unethical behavior by DWR will only continue and worsen.

3. The Alternative Licensing Process used to relicense the Dam after the expiry of the original license was inappropriate and the procedures used to reach the Settlement Agreement were probably illegal.

Currently, DWR is still undergoing the process of relicensing the dam, as their original agreement expired in 2007, and the dam operates under a year-to-year license. The process used to replace the original 50-year original license was through FERC's Alternative Licensing Procedure (ALP) to expedite the proceedings. The Porgans Report shows that the terms of the original license were not complied with during the ALP process. Many of the organizations involved in the ALP have objected to the process and intervened with FERC. This is not

unexpected given the DWR's consistent failure to provide factual and critical information pertaining to the project¹³.

The continued use of one year license extensions without significant conditions is an abrogation of the responsibilities of the licensing authorities. The questions relating to compliance and safety raised in this report should be resolved in an appropriate licensing process rather than kicked down the road year after year. Until they are resolved, a repeat of the uncontrolled events of 1997/8 and 2017 is inevitable.

4. Throughout the broader Sacramento area over the past 7 decades, levee systems have been constructed without following code, inadequately, and out of coordination with each other and other water projects in the region. As a byproduct of this, the levee systems can't handle the overwhelming releases from the Oroville dam and reservoir, and yet the damages are paid out of general funds from taxpayers.

Historically speaking, prior to any major dam or levee projects in California, floodwaters would flow into the Butte-Sutter basin and never actually made it all the way downriver¹⁴. Public records reflect that, despite knowing that they were obstructing the natural flow of floodwaters originating at the Feather River, DWR willfully authorized water and levee projects in the 1950s-- not to protect properties adjacent to the feather river, but instead to ensure the protection and integrity of the downstream Sacramento Flood Protection Project Levee system from floodwaters¹⁵. So, DWR knowingly initiated projects to support their other state projects rather than addressing the issues prevalent in the region.

By building levee structures to protect downstream water systems, DWR not only ignored the flood issues but made the situation worse. Their interference with the natural overflow of Feather River floodwater simply placed property owners downstream of the Oroville dam at even greater risk and caused a larger amount of flood damage. In this, DWR neglected the CA State Water Code, Section 8700, stating that it is unlawful for any public agency to interfere with, obstruct the performance, maintenance, or operation of, or otherwise take actions that

may adversely affect facilities of the State Plan of Flood Control, designated floodways, or streams¹⁶.

The problems don't end with the historical levee projects. Currently, the capacities of downstream levees constructed along the Feather River Channel are inadequate to handle releases of 150,000 c.f.s. authorized in the Sacramento Flood Control Project Design set by the U.S. Army COE for the SWP's Oroville Flood Control Facilities. Essentially, government officials knew water releases of this magnitude would cause significant downstream damages to levees based on their designs yet continue to ignore levee maintenance and the lack of coordination between dam releases and levee designs¹⁷.

In the Federal Flood Control Manual, it restricts floodwaters from exceeding 100,000 c.f.s. above and below the mouth of the yuba river, which DWR has violated multiple times, exceeding channel design capacities and contributing to the damage done upon private levee systems¹⁸. Often times DWR's actions are heavily motivated by their need to fulfill SWP contractual obligations, while others bear the risk and consequences¹⁹.

Even prior to the dam's inception, DWR ignored warning signs of the region's immense flood risk and now continues to improperly address the uncoordinated levee systems throughout the state.

5. The costs from the devastation of flood destruction have been consequences of DWR's inaction and an inadequate job managing the dam; despite the costs being a product of DWR's behavior, the costs are paid not by DWR, but primarily by both California and American taxpayers. So, while the profits are privatized and DWR/SWC see a large portion of the profits, the costs are socialized.

Fact-finding reports gathered by Porgans lead to the conclusion that DWR's mismanagement and failure to comply with flood control regulations contributed to the 1980, 1986, 1997, & 2017 floods, causing significant damages & loss of lives downstream from the Oroville Dam²⁰.

In the case of the 2017 Oroville Dam spillway incident, DWR experienced long-term systemic failure to recognize and address inherent spillway design and construction weaknesses, poor bedrock quality, and deteriorated service spillway chute conditions. More specifically, there is evidence that DWR officials were aware of cracks in the main spillway resulting from the 1997 flood 20 years prior. In 2017, water was allowed to flow over the “emergency spillway” that was, in reality, a hillside²¹.

Even though DWR’s neglect was the source of problems with the dam, DWR suffered none of the costs. Costs for construction, maintenance, improvements, upgrades, and billions of dollars worth of damages for project levees and flood control facilities at the SWP Oroville Dam and Reservoir are typically paid for by taxpayers and borrowed funds paid for by Californians. Over the decades, damages attributed to floods have amounted to over \$2 billion²².

Additional costs have been borne by the Federal Government. The Federal Emergency Management Agency (FEMA) awarded the state a total of \$530 million dollars following the 2017 flood event, covering roughly half the cost of the new spillway. This money came out of a general fund that generated money from US taxpayers-- not just those in California²³. So, because of DWR’s negligence, downstream property owners, both CA and US taxpayers, and local government districts suffer the financial and ecological impacts.

The Feather River serves as a natural system to carry water to the SWP Delta pumps, then to the California Aqueduct System to Central and Southern CA, where the contractors receive the water. This system supplies the SWC with water they sell profitably to agriculture, industry, local governments, and households. Although these contractors receiving the water from the Oroville dam nearly for free and are responsible for the costs of maintenance, they have not been prepared to ensure that the Dam and its infrastructure are properly maintained. Costs resulting from the poor maintenance are largely covered by taxpayers²⁴.

6. Since the SWP Oroville Dam and Reservoir’s construction, DWR has essentially disregarded the Flood Control Regulations established for them by the US Army Corps of

Engineers (COE) and the Federal Energy Regulatory Commission (FERC); despite setting the criteria, the governing bodies have little to no power to enforce their own rules. Essentially, there is no defined examiner that can determine when DWR isn't doing their job correctly and hold them responsible, ultimately leading to an unacceptable level of risk placed on community members.

In the agreement to build the California SWP Oroville dam and reservoir, DWR received monetary contributions from the state and federal government for construction costs, with the understanding that DWR would ensure flood control benefits and to operate the dam for flood control in accordance with rules and regulations given by the US Army COE. Sadly, DWR has shown little willingness to follow those rules and guidelines in a way that would have substantially reduced the unavoidable risks associated with the Dam over the years.

License 2100 for SWP Oroville Dam and Reservoir clearly states that the operation of the project in the interest of flood control will be in accordance with the rules and regulations prescribed by the Secretary of the Army²⁵. Yet, in defiance of flood control criteria, the Oroville dam has still never undergone a Standard Project Flood (SPF) analysis, defined as a process intended to be reasonably characteristic of large storms that could occur in the region. SPF's are developed by studying the major storm events in the region-- excluding the most extreme. For the Oroville dam, this standard is met when 440,000 cubic feet/second flows into the reservoir, with a 72-hour volume of 1.5 million acre-feet of water²⁶. Based on the regulations determining the flood storage space held in the reservoir, an SPF would result in significantly higher releases than 150,000 c.f.s. Releases of 150,000 c.f.s have historically caused substantial damage downstream. So, it is unsettling that an SPF could occur and overwhelm the levees and even more unsettling that this possibility has not been studied as is required by regulation.

DWR is required by law to coordinate with other agencies to ensure that their flood control will not cause destruction to other water projects, properties, etc. However, they have not maintained this to the extent that the region needs. Specifically, in the 1997 flood, state and federal officials did not coordinate Feather River floodwater releases from the Oroville

Reservoir and releases from Bullard's Bar Reservoir, which exceeded the channel capacities on the Feather and Yuba Rivers, causing even further damage²⁷.

DWR has also stored water in designated flood storage space in the Oroville Dam and Reservoir for years, unchecked and unauthorized. Under contract No. DA-04-167-CIVENG-62-56 between the United States and California, the state agreed to maintain the Oroville Dam and Reservoir, reserve 750,000 acre-feet for flood control storage space, and operate the dam in the interest of flood control in accordance with rules and regulations²⁸. Even given this specific agreement, DWR continues to store water in flood storage space, constantly risking floods in the Oroville Reservoir. DWR has also been notified by the COE, warning of their breach of contract, to which DWR ignored and didn't address; ultimately, Red Tape Abatement had to initiate a Reservoir Watch Program to monitor the level of the Oroville Reservoir to ensure DWR doesn't store more than allowed in the reservoir²⁹.

Although DWR has been proven to disregard rules and regulations, there is no government body that can hold them responsible. While the COE can monitor and observe DWR's work, they have no authority to enforce DWR to comply with flood control regulations. Instead, there are articles and provisions in DWR's license with FERC that require DWR to comply w/ flood control rules and regulations. In practice, these provisions have been regularly ignored. COE are only allowed to advise and assist DWR through calls or letters³⁰.

The criteria set for the dam itself are outdated and irrelevant given the environmental changes in today's age. Oroville's flood-control manual was set in 1970, to which it hasn't been updated since at least the 1980s; this manual determines how much space should be left during the rainy season. But, with the progressing environmental and atmospheric changes coming with climate change, the dam is decades old and is not designed with a spillway capable of handling the expected mega-storms potentially arriving. Since the '80s, climate change has contributed to greater weather extremes, reduced snowpack and the Sierra snowpack melting earlier in the year, higher sea levels, and changes in river flows-- in the future, this could evolve to mean precipitation falling as rain rather than snow, enhancing flood risks³¹.

However, regulations set for the dam *should not matter*. If DWR was doing their job properly, they wouldn't need to reference regulations in their flood control. DWR has the resources to inform how much and when releases should occur, including meteorologists and flood patterns, yet chooses to ignore them and create more risk.

(Note, the DWR is taking steps to adopt a forecast-based reservoir management system similar to that now used at the Folsom reservoir. However, it remains to be seen whether this will be used to maximize the availability of water or for reducing the risk of uncontrollable releases.)

7. For more than 5 decades, DWR has been decidedly dishonest to both governing bodies and the general public. Whether it be a lack of transparency regarding data or not providing proper emergency warnings and notifications, their lack of competence in this regard has made emergencies even more problematic than they already are.

First, there is no record that downstream property owners have ever been notified or become aware of the level of risk they face from the design or operational criteria of SWP Oroville facilities. This in itself violates the first principle of civil law, that government should only “impose risks on people if and only if it is reasonable to assume they have consented to accept those risks.” Notably, the SWP Oroville facilities have increased their maximum floodwater releases from 100,000 c.f.s to 150,000 c.f.s since they became fully operational, with the release known to cause significant downstream damage³². Upon officials inquiring why the decision was made and why there was no notification when making the change, DWR had no response.

Despite this rule of law, DWR continues to not engage in the necessary communication the public needs. The facilities' flood control manual specifically requires that DWR alerts downstream property owners of impending floodwater releases, which records reflect DWR has repeatedly failed to do. More often than not, DWR waits nearly until the last minute to alert the public and ultimately panics.

In 2017 in particular, water managers noticed concrete flying into the air from the main spillway and didn't notify the public. They then let the reservoir rise until water spilled over the concrete lip of the emergency, or auxiliary spillway, which the dam operators had never used before, and design manuals reflect that it was not capable of handling more than incidental releases. At that point, the public was *still* not notified of any sort of flood emergency. This release led to immediate erosion which blocked the river below the Hyatt power plant which was threatened with flooding. Only at this point, the sheriff's department released a decision to evacuate³³.

Regardless of evacuation notices, the public has little to no information on how to prepare for a flood emergency or how to handle one. Currently, there *is* an Emergency Action Plan in the event of a disaster at the SWP Oroville facilities, yet it is not available to the public. Upon pushback from the public to make this information available, DWR claimed it would be a breach of National Security. When DWR used the auxiliary spillway, they were required to follow the EAP, yet they did not, and the public wasn't notified until the last minute. Because the plan was not, and still is not, accessible, both the general public and DWR officials are unaware of how to behave in the face of a catastrophic flood event. In Senate Bill 92 for CA, language was quietly slipped into a budget-related bill to maintain that dam emergency plans such as the EAP be kept secret; through this process, the decision didn't go through the committee process for debate or comment³⁴.

Not only does DWR lack necessary communication skills, but the department has been proven to falsify data and give data based on estimates to both FERC and the COE.

Gaging stations on the Feather and Yuba River are considered "worthless" given backwater flows, according to a representative for the Sacramento District Reservoir Control Section of the COE, so DWR and the COE instead use estimates, or "guesstimates" to come up with figures of flows for the rivers³⁵. The figures are intended to give an estimate of the water released down the spillway calculated from taking the increase in storage and subtracting the

releases period; despite using this process regularly, the calculations have an unknown margin of error, making them even less accurate and reliable³⁶.

Because of this unreliable process, all DWR documents state that they're "subject to revision" based on their guesstimates. Officials have admitted in depositions and through public records to using white-out to alter or "correct" their computation sheet and monthly reports, and when questioned, no officials could validate the changes. These numbers are periodically sent to both the US Army COE to prove DWR has operated within state and federal regulations. By looking closer at specific documents, inflow and floodwater releases have been tampered with, specifically between January 11th to 15th of 1980³⁷.

Not only is DWR unreliable with giving accurate and timely announcements, but its figures are flawed in both the process and reports.

8. Conclusions

There is a pattern to DWR's irresponsible behavior; the department has continuously failed to comply with federal and state flood control regulations, with damages sustained facilitated and exacerbated by lack of responsibility. DW addresses flood disasters with claims to improve, publicly stating that they will implement new measures to ensure mistakes are not repeated, and, unfortunately, their mistakes reoccur-- repeatedly. The lack of long-term planning for the renovation or replacement of aging assets associated with the facilities contributes to downstream damages and costs neither DWR nor SWP pay. In effect, profits resulting from the dam are privatized through low-cost water, while the costs, being paid by taxpayers, are socialized.

If a failure of the Oroville Dam were to occur, it would be the worst disaster in US History. If DWR doesn't make the essential and necessary changes, 1 million residents and \$80 billion in infrastructure will remain at risk will remain at unnecessary and unacceptable risk.

References

1. Martin, Glen. "Bob Bea Takes Us on a Deep Dive Through His Dire Oroville Report." *Cal Alumni Association*, 31 Jan. 2018, Paragraph 16, <https://alumni.berkeley.edu/california-magazine/just-in/2017-07-27/bob-bea-takes-us-deep-dive-through-his-dire-oroville-report>.
2. Fimrite, Peter. "Engineering Expert Blasts Management Failures at Oroville Dam." SFGATE, San Francisco Chronicle, 21 July 2017, Paragraph 3, www.sfgate.com/bayarea/article/Berkeley-expert-blasts-management-failures-at-11303908.php.

The remaining references are from the following report:

"Porgans, Patrick; Bio-Elemental-Terrestrial Solutionist. "FRRA's Evidence To Support A Motion To Intervene FERC P-2100".

3. Page 23, Lines 6-7
4. Page 23, Lines 13-17
5. Page 199, Lines 18-19
6. Page 199, Lines 1-13
7. Page 41, Lines 12-16, 30-31; Page 42, Lines 1-2
8. Page 45, Lines 25-27
9. Page 45, Lines 3-9
10. Page 45-46, Lines 28-30, 1-2; Page 47, Lines 1-9
11. Page 168, Lines 23-25
12. Page 179, Lines 1-12
13. In-depth analysis of the Alternative Licensing Procedures begins on Page 31, Line 6, continues until Page 38, Line 22

14. Page 60, Lines 20-26
15. Page 60, Lines 1-15
16. Page 64, Lines 8-14
17. Page 44, Lines 18-23
18. Page 99, Lines 15-21
19. Page 38, Lines 10-17
20. Page 47, Lines 14-18
21. Page 48, Lines 10-13
22. Page 37, Lines 4-11
23. Page 50, Lines 27-30
24. Page 51, Lines 19-27
25. Page 55, Lines 12-18
26. Page 69, Lines 20-33
27. Page 102, Lines 3-15
28. Page 79, Lines 5-13
29. Page 86
30. Page 76-77, Lines 5-end of 77
31. Page 93, Lines 22-30
32. Page 132-33, Lines 24-13
33. Page 182, Lines 5-19
34. Page 160
35. Page 116, Lines 33-36
36. Page 119, Lines 39-40
37. Page 83

FRRR'S EVIDENCE TO SUPPORT A MOTION TO INTERVENE FERC P-2100

"If it [Oroville Dam] failed, it would be the worst disaster in the history of the United States."¹

THE SWP OROVILLE DAM GATED FLOOD CONTROL SPILLWAY OUTLET WAS "MANAGED TO FAILURE"^{2 3}

California State Water Project's Oroville Dam and Reservoir's Design, Construction, Management Practices, and Flood Control Operational Criteria, Pose an **Unacceptable Level of Risk** to One Million Californians, \$80 Billion of Private and Public Properties and Public Trust Resources. Furthermore, unless Specific Changes in the Flood Control Operational Criteria of the Oroville Facilities are imposed, forthwith, it will lead to an Unprecedented Flood Disaster that will have far reaching downstream devastating consequences on the Sacramento River Flood Control System, Levees, Navigation, Commerce, Shipping, and Water Supply Infrastructure, throughout the Sacramento-San Joaquin Delta, Port of Stockton and S.F. Bay and Threaten the Drinking Water Supply of 23 Million Californians

SUMMARY REPORT

Prepared by Patrick Porgans, Bio-Elemental-Terrestrial Solutionist

REPORT DOCUMENTATION PAGE

Verification of Information–Findings of Fact: The information and findings contained in PorganslAssociates’ (PIA) reports are based almost exclusively from government sources, i.e., public records, reports, bulletins, formal hearings, case law, memoranda, correspondences, E-mails, government data bases, websites, press releases, interviews with government officials, when necessary, interviews are conducted by a state-certified stenographer. This report, upon request, can be accompanied with an Appendix Report, which will cost to prepare, that provides the source document(s) and the content of the indented-verbatim quotations referenced herein. PIA does not attest to the validity or accuracy of government’s data or information; questions should be addressed to the respective governmental entity.

Narrative: The contents of this Fact-Finding Summary Report provide irrefutable documentation that confirms beyond a reasonable doubt that unless the “responsible” government entities implement specific changes in the flood control operational criteria of the State Water Project’s (SWP) Oroville facilities, forthwith, it will inevitably prove to be an unprecedented catastrophic disaster. The documentation in this report provides an historical perspective and objective assessment of pre- and post-government authorized flood control projects, levees, and dams construction, within the Feather River Watershed (FRW), to evaluate the benefits and adverse impacts attributable to those facilities. It also assessed conditions that led up to the partial collapse of the SWP’s Oroville Dam Flood Control Spillway Outlet, which occurred on 7 February 2017. Albeit, a substantial forensic assessment of that incident was conducted by qualified experts, who completed several independent forensic reports that focused on the root causes and factors that contributed to the spillway collapse, citing poor design, faulty construction, deferred maintenance, and mismanagement, by the Department of Water Resources (DWR), of the SWP Oroville Flood Control Spillway Outlet facilities. **Note, due to the complexities of the subject matter, and for the readers benefit, there are redundancies of quoted text herein to maintain continuity of thought.**

PorganslAssociates (PIA) Historical Involvement in Flood Control Activities: Since 1985, PIA actively monitors the management, maintenance, and compliance with the flood control operational criteria of all government administered flood control projects and appurtenant facilities throughout California. Since then, PIA conducted an exhaustive series of studies pertaining to historical flooding, dating back to the 1850s to the present. PIA completed more than a dozen Fact-Finding Reports (Forensic Assessments) pertaining to dam operators’ compliance with federal and state flood control rules and regulations. Many of PIA’s reports focused on the “performance” of the California State water Project’s (SWP) flood control operations and damages associated with historical and recent flood events within the Feather River Watershed (FRW).

PIA was retained by property owners and law firms to conduct **Public Records Forensic Assessments** of the Jan. 1980, Feb. 1986, Jan. 1997 flood disasters within the Feather, Yuba, and American River Watersheds. PIA provided documentation on the 1980 Robinson Construction litigation, 1986 Linda-Olivehurst Paterno case,⁴ and the 1997 Mann flood litigation, resulting from DWR’s failure to ensure proper notification, maintenance of downstream levees, uncoordinated flood-flow releases from Oroville Reservoir and floodwater releases from New Bullards Bar Reservoir on the Yuba River. In each case, the Plaintiffs prevailed against DWR and awarded an undisclosed sum in the 1980 litigation: \$464 million for the 1986 flood damages, \$47 million in 1997 case. DWR/SWP contractors do not pay for damages awarded to flood victims! Payments are from the State’s General Fund.⁵

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34 *probably a bunch of determinations that the existing 100-year levels are not that anymore, but less, and a new round of*
35 *project work will be needed to provide revised 100-year flood protection, some in areas which have just done a lot of work. This*
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25	the SWP’s Oroville Dam and Reservoir to respond to an event such as the 7 February 2017 partial collapse of the Flood Control	
26	Spillway Outlet? Yes!	159
27	A: DWR submitted an Emergency Action Plan (EAP) to the Federal Energy Regulatory Commission, which was approved in	
28	2015. [EN]	159
29	Q: Is the DWR’S FERC Approved Emergency Action Plan (EAP) readily available for public review? No! FERC Refused FOIA	
30	Request to Release EAP and DWR officials stated release of the EAP would be a breach of National Security!	159
31	A: No! While public officials flounder, assuring residents there was no need for concern, then, abruptly ordered the evacuation	
32	of 188,000 people, reporters failed to ask the quintessential question, where was the DWR’s EAP for the Oroville Dam	
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34	Porgans Associates made formal contact with FERC’s External Affairs office to obtain a copy of the EAP-FERC’s response they	
35	would run it by their and DWR attorneys, and if they consented to release the EAP, we would be required to sign a	
36	“confidentiality non-disclosure form” agreeing we would not share it with anyone!.....	159
37	Shortly after Oroville Dam Spillway Collapse California Governor approved Senate Bill 92 to keep the Dam Emergency Plans	
38	Secret:	159

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2	the Feather River watershed been successful? Data Indicate DWR, FERC, and Corps of Engineers actions and failure to act,	
3	have exacerbated flooding throughout the Feather River Watershed: No!	161
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5	throughout the Feather River Watershed:	161
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16	Q: Has Flood Protections Funded by the Taxpayers and Property Owners Cost Effective? Apparently Not!	165
17	Q: Was DWR and Other State and Federal Entities Responsible for the Collapse of the <i>Oroville</i> Dam Spillway? Yes!	165
18	A: Documentation Supports Assertions Design, Construction, Deferred Maintenance and Operation of the Oroville Flood	
19	Control Spillway Outlet Chute a Dam Disaster Waiting to Happen!	165
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33	more electrical power and increase water supply to meet its overcommitted SWP Contractors entitlements:	168
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35	between DWR and DFG:	180
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37	ensure DWR is compliant with ESA:.....	180

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2	Regulations: Yes!.....	180
3	Q: Is there evidence that DWR provided the public it would implement measures to ensure that it would take the necessary	
4	actions to avoid repeating the mistakes that contributed to downstream damages? Yes! Unfortunately, by-and-large, DWR	
5	failed to follow through on those promises:.....	180
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8	Dam? Apparently not!	181
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11	floodwater releases from Oroville Reservoir that caused property damages in January 1980? No!	182
12	A: Public records reveal that DWR officials failed to provide advanced notification of the floodwater releases, which began at	
13	10:00 a.m., Saturday, 12 January 1980, to county government agencies, downstream residents, businesses, and property	
14	owners. The decision to inform the public of the floodwater releases was first officially made to the Butte County's Sheriff	
15	Office around 11:30 a.m., Sunday, 13 January. The Civil Disaster Office did not receive notification until 9:15 a.m., Monday, 14	
16	January! Ironically, DWR's Chief of Operations, Don McKillop, was present at the Friday, 11 January DWR "morning briefing"	
17	and because of the weather report, predicting more rain in the Feather River watershed, and other factors, such as, water	
18	storage and inflow into the reservoir, requested members of his staff to keep him informed through the night of any	
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14	Q: Are DWR officials conflicting role as a water purveyor and their failure to comply with federal-state flood control rules and	
15	regulations placing the public at an unreasonable level of risk to loss of life and property downstream from the State Water	
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17	DWR Acknowledged Benefits Due to Noncompliance with Federal and State Flood Control Regulations:	202
18	California Little Hoover Commission Conducted an Investigative Hearing on DWR’s Conflicting Roles:	203
19	The SWP is plagued with a wide variety of problems and challenges, some of which are endemic and others of which are	
20	interagency in nature. Without exhausting the list, I shall mention a few:.....	203
21	<i>In volume, this flood [January 1997] exceeded the previous record of the 1986 by quite a margin, perhaps 25</i>	
22	<i>percent. At one point on January 1, we [DWR] thought the inflow would be so much that the Lake would fill</i>	
23	<i>and spill – perhaps 250,000 cfs worth. People were evacuated from Oroville downstream. Happily, the rain</i>	
24	<i>ceased a little sooner than expected and the dam contained this runoff.</i>	204
25	<i>The overall Sacramento River region flood control system performed well, greatly reducing the peak flows</i>	
26	<i>on the Sacramento River system. Even so, total flows at the latitude of Sacramento in the river and in Yolo</i>	
27	<i>bypass was estimated at 600,000 cfs which is nearly half of the combined Missouri and Mississippi River flow</i>	
28	<i>of 1.3 million cfs at St. Louis in the great flood of 1993. There were two serious levee breaks in the Sacramento</i>	
29	<i>Valley, one on the Feather River south of Marysville, the other on Sutter bypass west of Yuba City.</i>	204
30	<i>The basin storm total since last Thursday in the Feather is 23.9 with 2.9 inches expected in the 24 hours</i>	
31	<i>ending 4 AM Friday. The wettest locations in the Feather basin received over 30 inches of rain the past 4</i>	
32	<i>days. Inflow into Oroville Reservoir peaked last night at 302,000 cubic feet per second, a new record which</i>	
33	<i>superseded the Feb 1986 storm.</i>	205
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4	extensive damage to the Oroville Dam flood control spillway outlet and downstream flood damages? Yes!	208
5	Q: Has development of flood control projects been consistent with federal and state policies, mandates, rules, and	
6	regulations? No!	208
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21	happened because the SWP was knowingly underfinanced from its inception:.....	215
22	Flood Flow Criteria Releases from Oroville Reservoir for Feather River Channel Capacity Based on 1907-1909 Floods:.....	215
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CHAPTER I

Introductory Statement: The documentation in this Fact-Finding Forensic Report focused on issues germane to the inherent danger and Unacceptable-Level of Risk attributable to the flood control operational criteria pertinent to the planning, design, construction, financing, operation, maintenance, and regulatory compliance, of the State Water Project (SWP) Oroville flood control facilities and downstream levee systems with federal and state law:

The primary purpose of this forensic assessment of public record was to obtain verifiable documentation and evidence that provides an historical perspective and objective analysis of natural- and government-induced factors and forces that necessitated the planning, construction, operation and management of flood control investments and projects, purportedly designed to minimize, or mitigate flood damages within the Feather River Watershed (FRW).

Feather River Recovery Alliance (FRRA) Purpose, Goals and Objectives - Dam Safety:

FRRA members retained Patrick Porgans-Solutionist (PPS) to conduct a thorough analysis to ascertain and confirm the validity of their assertions, e.g., **the design and flood control operational criteria for the SWP's Oroville facilities pose an unacceptable-level-of-risk and endangerment to the community, downstream residents, and businesses, which heretofore have not been considered nor seriously addressed by the responsible government entities.**

FRRA consist of private businesses, landowners, and concerned citizens, living, or working in the vicinity or downstream of the SWP Oroville facilities, expressed grave concerns about the effectiveness of the flood-control operational criteria, mandated by state and federal laws, and the **unacceptable level-of-risk** these facilities pose to their safety, livelihood, and future wellbeing.

Although PPS conducted an exhaustive review of the available public records, retained by federal and state agencies, with jurisdiction and regulatory authority over the design, construction, operation, maintenance, safety, and licensing of the SWP's Oroville facilities, there were no records in the files that informed downstream property owners of the level of risk posed by the design or operational criteria of those facilities.

Note No. 1: DWR's action appears to violate the First Principle of Civil Law: "Imposing Risks on people if and only if it is reasonable to assume they have consented to accept those Risks." Risk control is a central goal of Civil Law.¹(Emphasis added) (Exhibit *)

¹ *Bea, R.G.: "An Instrument of Risk Management: The Law," Center for Catastrophic Risk Management, University of California Berkeley, p. 2.*

<https://drive.google.com/open?id=0Bz1IImIutSEnYjFtGpXcTZXQmc> ^[10] ¹

2017 Oroville Dam Flood Control Spillway Failure Heightened Public's Concerns Over Dam Safety:

FRRA's heightened level of concern resulted from the partial collapse and structural failure of the Oroville Dam's Flood Control Spillway Outlet Chute, that occurred on 7 February 2017. This incident sparked an impromptu emergency mandatory alert by government officials, on [Sunday](#), 12th February,² causing an estimated 188,000 Californians to evacuate their homes, businesses, hospitals, and covalence facilities. The evacuation notice issued by the government was made public less than 24-hours. Prior to the issuance of the evacuation order, Department of Water Resources (DWR) officials repeatedly assured the public and members of the press that there was no need for concern! According to public accounts of this incident, up until that incident, it was the single-largest emergency evacuation in the nation's history.

The picture on the cover of this report depicts the extent of damages to the spillway outlet and the Oroville Dam's emergency auxiliary spillway. The DWR is responsible for the operation of the State Water Project's (SWP) Oroville facilities and oversight of downstream channel maintenance and ensure safe passage of floodwater releases in the Feather River from Oroville Reservoir and New Bullard Reservoir on the Yuba River, operated by the Yuba County water Agency. Floodwater releases from Oroville Reservoir are required to be coordinated with floodwater releases from the New Bullards Bar Dam, on the Yuba River, to ensure that floodwater releases due not exceed the downstream capacities of the levees on both rivers.³

Project Levees and Oroville Dam Flood Control Dilemma:

In order to comprehend how and why the **Sacramento River Flood Control Project** (levee structures that border the Feather and Yuba Rivers, and construction, management, and operation of the **SWP** Oroville flood control facilities, present a significant and unmitigated threat to the safety, wellbeing, and sustainability, of residents and properties downstream from the dam, it is important to understand only a portion of the historical floodwater flows made it down the main stem of the river.

A "Confidential Report" prepared by DWR officials revealed a significant portion of floodwaters overtopped the west bank of the Feather River, pre-1954, before completion of Project levees, in the vicinity of Hamilton Bend, approximately six (6) miles downstream from the City of Oroville, those floodwaters flowed into the Butte and Sutter Basins. (Exhibit *)

² [Oroville Dam spillway damage causes mass evacuation \(yahoo.com\)](#)

³ U.S. Army Corps of Engineers, Sacramento District, *Sutter Basin Pilot Feasibility Final Report—Final Environmental Impact Report/ Supplemental Environmental Impact Statement*, October 2013, p. 1-8.

1 **Historical Flood Flows never made their way down the Feather River – Flooded Sutter-**
2 **Butte Basin:**

3
4 *During flood periods, the Feather River overflowed large areas beyond its defined low*
5 *water channels from Hamilton Bend six miles below Oroville to its confluence with the*
6 *Sacramento River. **This water** [from Hamilton Bend] **in 1909 was the deciding factor***
7 ***in the breaking of the levees at Moons Bend on the Sacramento River below Colusa***
8 ***and the flooding of the Colusa Basin.***⁴ (Emphasis added) (Refer to Exhibit *)

9
10 Public records prove government officials knowingly and willfully authorized flood control projects
11 along the banks of the Feather River channel that placed property owners, downstream from Oroville
12 Dam, at greater risk by impeding the natural overflow of Feather River floodwater to protect the
13 Sacramento River Flood Control Project Levees from being breached! Project levees, bordering the
14 Feather River were completed in 1954. Floodwaters that occurred during the 1955 disastrous flood
15 contained higher-flood flows in the channel causing levee failures. (Exhibit**)

16
17 *Levee work by the Federal Government on the Feather River system followed*
18 *a general pattern of “progressive work upstream” but for the reasons indicated there*
19 *were many variations too take care of urgent immediate problems. The first Federal*
20 *work recorded is the raising and extending of the then existing short levee in the*
21 *vicinity of Hamilton Bend in 1930 after the 1928 flood. Major construction on the right*
22 *bank levees above Yuba City was undertaken principally in the years 1934, 1945, 1947*
23 *and 1954 and consisted of both strengthening and raising of existing levees and the*
24 *construction of new levees. Work on the Feather River levees below the mouth of Bear*
25 *was undertaken in 1942, 1946 and 1955 while work on the Feather River levees above*
26 *Marysville and on the tributary levees was carried out in various locations throughout*
27 *the period 1932 through 1948..* (Exhibit.) [Emphasis added]

28 **The government’s decision to obstruct the natural overflow of floodwaters of the**
29 **Feather River appears to be in conflict with federal and state flood control regulations:**

30
31 Public records prove government officials knowingly and willfully authorized flood control projects
32 along the banks of the Feather River channel that placed property owners, downstream from Oroville
33 Dam, at greater risk by impeding the natural overflow of Feather River floodwater to protect the
34 Sacramento River Flood Control Project Levees from being breached!
35 **DWR’s data proves the volume of historical flood flows (pre-project levees and Oroville Dam),**
36 **were not contained in the river channel. The flood control operating criteria listed in the Oroville**
37 **Dam Flood Control Manual, provides for significantly higher flood flow releases from the reservoir**

⁴ U.S. Department of Agriculture, Weather Bureau.—*Bulletin 43. The Rivers and Flood of the Sacramento and San Joaquin Watersheds*, by Nathaniel R. Taylor, Washington: Government Printing Office, 1913.

1 at 150,000 cubic feet per second (c.f.s) up to 250,000 c.f.s. Floodwater releases from the dam at
2 150,000 c.f.s. resulted in disastrous downstream damages in 1986 and 1997. Although the
3 reservoir provides flood storage space, the crux of the dam dilemma is floodwater releases from
4 the dam, are designed to exceed the downstream levee channel carrying capacity, causing them
5 to fail.⁵ (Exhibit *)

6
7 ***Flood control was one of the major reasons for the initial funding and ultimate***
8 ***construction of these [SWP] facilities. Construction began in 1957 on the facilities in***
9 ***the Oroville area.***⁶ [Emphasis added] (Exhibit *)

10 **This Fact-Finding Forensic Report documents three (3) major factors, natural- and**
11 **government-induced, that pose an impending unacceptable level of risk to residents**
12 **below Oroville Dam -clear out to the San Francisco Bay:**

13
14 **“If it [Oroville Dam] failed, it would be the worst disaster in the history of the United**
15 **States.”**⁷

16
17 **State Water Project’s Oroville Dam Gated Flood Control Spillway Outlet “Managed to**
18 **Failure”**^{8 9}

19
20
21 **Synopsis of Section I: Pre-Post Levee Projects:**
22

⁵ Frank Kochis, Consulting Engineer, *History of Sacramento River Flood Control Project*, 29 July 1963, p. 26.

⁶ DWR, *California State Water Project, Volume 1, History, Planning, and Early Progress, Bulletin Number 200*, 1974, p. 8.

⁷ CAL Alumni Association, UC Berkeley, California Magazine, <https://alumni.berkeley.edu/california-magazine/just-in/2017-07-27/bob-bea-takes-us-deep-dive-through-his-dire-oroville-report>

⁸ Robert G. Bea, Emeritus Professor, Department of Civil & Environmental Engineering Advisor, Center for Catastrophic Risk Management, Oroville Dam Advisory Group, University of California Berkeley, *Root Causes Analyses of the Oroville Dam Gated Spillway Failures and other Developments* report, 17 April 2017, p. 6.

⁹ **Analysis Cites Flawed Management in Oroville Dam Failures** by *Ben DuBose* on 10/2/2017 12:22 PM <http://www.materialperformance.com/articles/material-selection-design/2017/10/analysis-cites-flawed-management-in-oroville-dam-failures>

“The gated spillway was managed and regulated to failure,” Bea says, referring to both the California Department of Water Resources (DWR) (Sacramento, California) and the U.S. Federal Energy Regulatory Commission (Washington, DC).

1 A DWR “Confidential Report” revealed that a significant portion of flood flows overtopped the west
2 bank of the Feather River, pre-1954, in the vicinity of Hamilton Bend, six (6) miles downstream from
3 the city of Oroville, those floodwaters flowed into the Butte and Sutter Basins. (Exhibit**)

4
5 Historical floodwaters (pre-project levees and Oroville Dam), just below Oroville, never made it all the
6 way downriver the flood control operating criteria, in the Oroville Dam Flood Control Manual, allows
7 floodwater releases in excess of the channel carrying capacities of downstream levees.¹⁰ (Exhibit**)

8
9 *During flood periods, the Feather River overflowed large areas beyond its defined low*
10 *water channels from Hamilton Bend six miles below Oroville to its confluence with the*
11 *Sacramento River. **This water** [from Hamilton Bend] **in 1909 was the deciding factor***
12 *in the breaking of the levees at Moons Bend on the Sacramento River below Colusa*
13 *and the flooding of the Colusa Basin.¹¹*
14 (Emphasis added) (Exhibit *)

15
16 **3.27 Functional Design: Based upon a reanalysis of the 1907 (187,000 c.f.s. at**
17 **Oroville) and 1909 flood flows in U.S.G.S. Water Supply Paper 298, 1912 (Bailey. P.**
18 **13, 14) and as a result of additional hydraulic studies, project capacity to confine**
19 **those flows were adopted as follows (S.D. 323, p. 45): Feather River above Marysville**
20 **180,000 c.f.s.¹²** (Emphasis added) (Exhibit *)

21
22
23
24
25
26
27
28
29
30

¹⁰ Department of the Army, Office of the Chief of Engineers, Washington, D.C., *Regulation No. 1110-2-240, Engineering and Design, Reservoir Regulation*, 27 April 1970,

¹¹ U.S. Department of Agriculture, Weather Bureau.—*Bulletin 43. The Rivers and Flood of the Sacramento and San Joaquin Watersheds*, by Nathaniel R. Taylor, Washington: Government Printing Office, 1913, p. 55.

¹² Frank Kochis , Consulting Engineer, *History of Development of the Sacramento River Flood Control Project*, undated.

1 **Section II: Unacceptable Level of Risk-DWR Policing Itself – not held accountable for**
2 **Billions of Dollars of Flood Damage and Loss of Lives:**
3

4 Although hundreds of millions-of-dollars were expended for levee and dam construction and
5 maintenance, within the Feather River watershed, purportedly to reduce flood damages, between
6 1955 and 2017, property damages downstream from the Oroville Dam exceeded more than three-
7 billion dollars. The data indicate that post-1955 the Feather River below Oroville Dam and Yuba River
8 experienced a major flood event, on average, every 12.5 years!

9
10 ***Since 1950, 19 flood events in the basin have required extensive flood fighting, and***
11 ***the flood of 1955 resulted in 38 deaths”, according to the USACE.***¹³ (Emphasis added)
12

13 **Those floods figures do not include the Oroville Dam’s \$1.1 Billion Flood Control Spillway Outlet**
14 **“Fix” ([already cracking](#)).**¹⁴ **It does not include the California’s \$17 billion Central Valley Flood**
15 **Protection Plan,**¹⁵ **it does** includes the \$378 million upgrade for [Feather River West Levee Project](#).
16 The question remains, will those investment provide tangible flood protections or more false
17 assurances, setting the stage for an unimaginable Catastrophic Flood Disaster?
18

19 **Oroville Dam experienced several major flood events, since it became operable, in the late 1960s,**
20 **however, it has yet to experience a Standard Project Flood (SPF). The Dam operating criteria for**
21 **such an event, occurs when 440,000 cubic feet per second flows into the reservoir, with a 72-hour**
22 **volume of 1.5 million acre-feet of water.**¹⁶ (Exhibit *)
23

24 The facts reveal how and why the DWR officials repeatedly failed to comply with the flood control
25 operational criteria, established by the U.S. Army Corps of Engineers, and other federal and state
26 regulations, that resulted in four major flood disasters, 1980, 1986, 1997, and 2017, in the Feather
27 River Watershed (**FRW**). Those flood events were exacerbated by DWR’s unauthorized storage of
28 water in the “Designated Flood Storage Space”, provided for at the SWP Oroville Dam and (Section
29 7) Reservoir facilities, and by DWR’s failure to thoroughly inspect and ensure that the downstream

¹³ U.S. Army Corps of Engineers et al, *Sutter Basin, California: Sutter Basin Pilot Feasibility Draft Report—Draft Environmental Impact Report/Supplemental Environmental Impact Statement*, June 2013.

¹⁴ Oroville Spillway Construction and Cost Estimate Update, 5 September 2018.
<https://water.ca.gov/News/News-Releases/2018/Sept-18/Oroville-Spillways-Construction-and-Cost-Estimate-Update>

¹⁵ The [Central Valley Flood Protection Plan \(CVFPP\)](#) 2012, Updated 2015
<https://water.ca.gov/Programs/Flood-Management/Flood-Planning-and-Studies/-/media/D3CA679621574F889C67FB2B7662B1C4.ashx>

¹⁶ Department of the Army, Sacramento District, Corps of Engineers, Sacramento, CA, Oroville Dam and Reservoir, Feather River, California, *Report on Reservoir Regulations for Flood Control*, August 1970.

1 levee system was properly maintained;^{17 18} this region still faces a significant catastrophic flood risk!
2 (Exhibits **)

3 **Q: Does the Corps have the Authority to Enforce the Flood Control Regulations Adopted**
4 **for Oroville Dam? No!**

5
6 ***After Section 7 regulations are officially established, responsibility for compliance***
7 ***rests with the operating agency. The Corps of Engineers has neither the responsibility***
8 ***nor authority to compel compliance.*** ^{19 20} (Exhibits *)

9 **In 1980, Porgans filed a Freedom of Information Act request with the Corps of Engineers**
10 **to obtain formal written Notifications sent to the Department of Water Resources for**
11 **the Unauthorized Storage of Water in the Designated Flood Storage Space at Oroville**
12 **Reservoir:**

13
14 After the 1980 flood, downstream from Oroville Dam, the author filed a formal Freedom of
15 Information Act (FOIA) request with the Corps of Engineers to obtain copies of written notices
16 wherein the COE formally notified the DWR of the extensive protracted unauthorized storage of
17 water, in the designated flood storage space, at the Oroville Reservoir, in violation of Section 7 of
18 the 1944 Flood Control Act, and the provisions contained in the adopted Flood Control Plan for the
19 operation of the Oroville Dam and Reservoir flood control operating criteria. (Exhibit*)

20
21 *It was noted on the monthly operation form that storage in Oroville encroached on*
22 *flood control space during late March and most of April and that the operating*
23 *agency was duly notified. Since we are unable to locate our copy of this*
24 *correspondence, please provide this office with a copy of the letter notifying the*
25 *operating of the space violation at your earliest convenience.* ²¹
26

¹⁷ U.S. Army Corps of Engineers, Sacramento District, *Oroville Dam and Lake, Feather River, California, Water Control Manual, Appendix IV to Master Water Control Manual, Sacramento River Basin, California, Preliminary Subject to Revision*, August 1989, p. III-3.

¹⁸ Sutter Butte Flood Control Agency, [Feather River West Levee Project](http://sutterbutteflood.org/projects/feather-river-west-levee-project), <http://sutterbutteflood.org/projects/feather-river-west-levee-project>

¹⁹ Department of the Army, Office of the Chief of Engineers, Washington, D.C., Engineer and Design, *Reservoir Regulations, ER 1110-2-240*, 27 April 1971, p. 7. [Oroville Dam and Reservoir are classified as a Section 7 facility.]

²⁰ U.S. Army Corps of Engineers, Sacramento District, *Oroville Dam and Reservoir, Feather River, California: Report on Reservoir Regulations for Flood Control*, August 1970, p. 30.

²¹ David Leslie for John W. Gerhart, Chief, Engineering Division, Department of the Army, South Pacific Division, Corps of Engineers, San Francisco, For the Division Engineer: Subject: Oroville Regulation, District Engineer, Sacramento, 7 June 1972.

1 *Information reported for Oroville Reservoir indicates that as of 8:00 a.m. 12*
2 *November, the amount of water in storage was 3,003,500 acre-feet and the release*
3 *was 14,100 c.f.s. **According to the flood control regulations approved for this***
4 ***reservoir, such storage implies encroachment of about 215,500 acre-feet into the***
5 ***space required for flood control. Under the prevailing circumstances, the***
6 ***regulations require a flood control release presently estimated not to exceed 80,000***
7 ***c.f.s.*** ²² (Emphasis added)

8
9 *Information obtained @ 0800 4 March 1974 indicate that in Oroville Reservoir the*
10 *amount of water in storage was 2,985,600 acre-feet and the release was 11,980 c.f.s.,*
11 *as of 0800 4 March 1974. According to the flood control regulations approved for this*
12 *reservoir, such storage implies encroachment of about 133,600 acre-feet into the*
13 *space required for flood control. Under the prevailing circumstances, the regulations*
14 *require a flood control release presently estimated to be 40,000 c.f.s.*

15
16 *If necessary, we shall be glad to provide assistance in resolving any problem that may*
17 *have arisen in the flood control operation of this reservoir.*²³

18 **In 1982, Corps of Engineers Reminds DWR of Its Obligation to Comply with Federal** 19 **Flood Control Rules and Regulations at the Oroville Facilities – Formal Written** 20 **Agreement:**

21
22 *This agreement made and entered into this 5 day of May 1982 between the*
23 *Department of Water Resources and the Corps of Engineers.*

24
25 *WHEARAS, the State of California, acting through the Department of Water*
26 *Resources, represented by its Director, has constructed dams and reservoirs in the*
27 *State of California and is responsible for normal operation and structural safety of the*
28 *projects, and*

29 *WHEARAS, the Department of the Army, acting through the Corps of Engineers,*
30 *represented by its appropriate District and Division of Engineers, is responsible for the*
31 *flood control operation plans for the certain of said dams and reservoirs in accordance*
32 *with Section 7 of the 1944 Flood Control Act (33 U.S.C. 709) and as promulgated in*
33 *Code of federal Regulations, Title 33 Part 208.11. Said dams and reservoirs of the*

²² F.C. Rockwell, Colonel, Ce, district Engineer, U.S. Army Corps of Engineers, Sacramento District, letter to Director, Department of Water Resources, notification of encroachment into the Oroville Reservoir's designated flood storage, 13 November 1973.

²³ F.C. Rockwell, Colonel, Ce, district Engineer, U.S. Army Corps of Engineers, Sacramento District, letter to Director, Department of Water Resources, notification of encroachment into the Oroville Reservoir's designated flood storage, 4 March 1974.

1 State Water Project includes: Lake Oroville and Dam, Lake De Valle and Dam, and Los
2 Banos Detention reservoir and Dam, and

3 **WHEARAS, there is a need for a working agreement to ensure a clear**
4 **understanding of the flood control regulations and information exchange required**
5 **for this project's operation.²⁴**

6 **In 1985 Author formal notification to government entities of implementation of a**
7 **Reservoir Watch Program during flood season in the Feather River Watershed:**

Note: Patrick Porgans, Government Regulatory Specialist, Red Tape Abatement's (RTA) letter to Richard Neal, Chief, Reservoir Control Section, Department of the Army, Corps of Engineers, Sacramento District, Project: Reservoir Watch Program for the Feather River Basin, **Subject: Formal Notification that Red Tape Abatement Instituted a Reservoir Watch Program—During the Flood Season—in the Feather River Basin, Monday, April 1, 1985.**

8 *Richard Neal, Chief, Reservoir Control Section, Department of the Army, Corps of*
9 *Engineers, Sacramento District, on January 1, 1985, Red Tape Abatement (RTA)*
10 *initiated a Reservoir Watch Program—During the Flood Season—in the Feather River*
11 *Basin. In essence, RTA maintains constant surveillance of the level of Oroville*
12 *Reservoir—Between October and May—to make sure that the California Department*
13 *of Water Resources does not store more water in the reservoir than federal laws*
14 *allow.²⁵*

15 **Corps of Engineers respond to Porgans Reservoir Watch Program:**

16 *Thank you for your letter of April 1, 1985 in which you describe your "reservoir*
17 *Watch Program" for the Feather River Basin.*

18 **Be assured that we will see that the flood control objectives for Oroville Dam**
19 **and Reservoir are carried out.²⁶ (Emphasis added) (Exhibits *)**

²⁴ Field Working Agreement Between State of California, Department of Water Resources and Department of the Army, Corps of Engineers for Flood Control Operation of State Water Project Dams and Reservoirs in California, Signatures, Homer Johnston, Division Engineer, South Pacific Division, Ronald R. Robie, P. A. Towner, Chief Counsel, Director, Department of Water Resources, 5 May 1982.

²⁵ Patrick Porgans, Government Regulatory Specialist, Red Tape Abatement (RTA) letter sent USPS Certified Mail P066801264, to Richard Neal, Chief, Reservoir Control Section, Department of the Army, Corps of Engineers, Sacramento District, **Project: Reservoir Watch Program for the Feather River Basin, Subject: Formal Notification that Red Tape Abatement Instituted a Reservoir Watch Program—During the Flood Season—in the Feather River Basin, Monday, April 1, 1985.**

²⁶ George C. Weddell, Chief, Engineering Division, Department of the Army, Sacramento District, Corps of Engineers, letter to Patrick Porgans, in response to formal notification of "reservoir watch program" April 1, 1985.

1 **Synopsis of Section III: DWR's Conflicting Roles Pre-Post State Water Project – Setting**
2 **the Stage for a Catastrophic Disaster:**
3

4 Public records attest to the fact that **DWR** officials consistently failed to comply with federal and
5 state laws, negating their responsibilities to properly ensure the maintenance of the Feather River
6 levee system-channel and to be compliant with the flood control operating criteria established by
7 the U.S. Army Corps of Engineers (**USACE**) and the Federal Energy Regulatory Commission (**FERC**).²⁷
8

9 **DWR's conflicting roles and responsibilities to provide flood protection and as a water purveyor**
10 **contributed to the billions of dollars of flood damages sustained by property owners downstream**
11 **from the SWP's Oroville Dam and Reservoir facilities.**
12

13 Since its inception, the SWP was underfinanced and because DWR consummated water contracts
14 with **SWP** contractors it cannot fully supply.²⁸ (Exhibit**) DWR officials make up for this water deficit,
15 by holding back on making the required floodwater releases by the unauthorized storage of water in
16 the reservoir's designated flood storage space, during flood season, when flood protection has
17 priority.²⁹ This tactic also enables DWR to generate more hydroelectric energy.³⁰
18

19 During the onset of droughts, DWR export record breaking levels of water from Oroville Reservoir,
20 stores the majority of that water in SWP terminal reservoir in Central and Southern California for the
21 SWP contractors.
22

23 Although these tactics are beneficial to **DWR** and **SWP** contractors, it exacerbates downstream flood
24 damages and loss of lives, and places an additional financial burden on downstream property owners
25 that pay for the maintenance and repairs of damaged levees.³¹ (Exhibit *)
26

²⁷ CA Department of Water Resources' *Bi-hourly Computation Sheets*, Depicting Inflow and Outflow of Water at Oroville Dam and Reservoir During Flood Season.

²⁸ California Department of Water Resources, *State Water Project Delivery Reliability Report*, Draft 2009, p. 4.

²⁹ *Field Working Agreement Between State of California, Department of Water Resources and Department of the Army, Corps of Engineers for Flood Control Operation of State Water Project Dams and Reservoirs in California*, Signatures, Homer Johnston, Division Engineer, South Pacific Division, Ronald R. Robie, P. A. Towner, Chief Counsel, Director, Department of Water Resources, 5 May 1982.

³⁰ Department of Water Resources, State of California, *Bulletin 199, California Flood Management: an evaluation of Flood Damage Prevention Programs*, Final Review Copy, October 1979, p. 4-6.6

³¹ *Testimony of Roger K. Patterson*, assistant general manager, Metropolitan Water District of Southern California, presented to Little Hoover Commission Hearing on State Water Governance, June 25, 2009, pp. 3 and 4.

1 **DWR's tactics are paramount to playing "Russian Roulette," during flood season, when**
2 **operating the SWP Oroville Dam and Reservoir facilities:**
3

4 **DWR's tactics are paramount to playing "Russian Roulette," during flood season, which, even when**
5 **the courts ruled DWR at fault for flood damages and loss of life, neither it nor the SWP contractors**
6 **pay for the damages! Money to pay for DWR's negligence and mistakes is paid by U.S. taxpayers and**
7 **from the State's General Fund.** ^{32 33 34} (Exhibit *)

8 **DWR Officials Panicked During Flood Disaster - Fails to Attend Urgent Meetings with**
9 **State Office of Emergency Services:**
10

11 **Note: On three separate events, DWR officials failed to properly notify the public of the impending**
12 **flood disasters, resulting from the impromptu floodwater releases, from the SWP Oroville**
13 **facilities.** (Exhibit * DWRs List of Entities to be Notified)

14
15 **DWR repeatedly failed to provide advanced evacuation notices of Dam floodwater releases to the**
16 **public; records show, it panicked!**³⁵(Exhibits***)

17 **A: The records indicate that de facto notifications of floodwater releases and holding**
18 **back releases, is a common practice:**

19 **Notifications – Alerts:**
20

21 ***The 1955 flood occurred due to a levee break in late December where no prior***
22 ***evacuation notice was given. In the 1997 flood, Yuba City was evacuated and during***
23 ***the evacuation a levee on the east side of the Feather River near Olivehurst (which***
24 ***was not evacuated) broke.***³⁶ (Emphasis added) (Exhibit *)

³² By Harold Kruger/Appeal-Democrat newspaper, *Governor signs bill to fund 1997 flood pact*, 17, May 2005.

<http://www.appeal-democrat.com/com/news/mann-18925-case-flood.html>

³³ Ted Thomas, Public Information Officer, California Department of Water Resources, Ted.Thomas@water.ca.gov Email to Patrick Porgans porgansinc@sbcglobal.net *Re: Paterno Case, 1986 Flood, Feather River*, Wednesday, 14 Nov. 2012, 3:57 PM.

³⁴ Legislative Analyst's Office, State of California, Analysis of the 2005-2006 Budget Bill, *Financing Flood Lawsuit Settlement with a Judgment Bond*, February 2005.

[Http://www.lao.ca.gov/analysis_2005/resoures/res_13_3860_an105.htm](http://www.lao.ca.gov/analysis_2005/resoures/res_13_3860_an105.htm)

https://lao.ca.gov/analysis_2005/resources/res_13_3860_an105.htm#_Toc95975089

³⁵ Michael Pyeatt, General Services Director, J. Michael Madden, Emergency Services Officer, Office of Emergency Services, General Services Administration, County of Butte, Oroville, CA, Subject: *DWR Communications* 1/1/1997.

³⁶ Economics Main Report, Appendix A – Economics – Sutter Basin Pilot Feasibility Study, October 2013, p. 29. *

1 1980 Floodwater Releases Documentation to support this assertion was affirmed in a deposition of
2 Mr. Phil Johns, Chief of the State Water Project's Oroville Field Division, in the lawsuit *Robinson*
3 *Construction Company v State of California*, pertaining to 1980 floodwater releases from the dam
4 without adequate prior notification.³⁷ [Exhibit *]
5

6 Letters from property owners residing along the river suffered damages due to DWRs failure to
7 provide notification, which were made days after the floodwaters were initially released.
8

9 *The important thing at this point is agreement by all Butte County Agencies contacted*
10 *that initial notification of the January 12th releases were not timely nor did releases*
11 *carry any indication of an emergency until after flooding had occurred.*³⁸ (Emphasis
12 added) [Refer to Exhibit *]
13

14 *Our official log [Office of Sheriff-Coroner County of Butte] shows that 1:03 p.m. on*
15 *January 12, 1980, we were notified by Don Struble of the Department of Water*
16 *Resources that the spillway was open and releases from the Oroville Dam would be*
17 *made down the Feather River. This was the first notification we received and there*
18 *was no indication that an emergency situation was connected to the releases.*³⁹
19 [Emphasis added]

³⁷ Certified copy of Deposition of Phil Johns, deposition of Mr. Phil Johns, Chief of the State Water Project's Oroville Field Division, in the lawsuit *Robinson Construction Company v State of California*, conducted by Donald A. Duensing, CSR, License No. 128, Duensing Reporters, Chico., CA., 25 May 1983, pp. 9 and 10.

³⁸ Jean Pratt, property owner, letter to Ron Robie, Director, California Department of Water Resources regarding incongruities of the notification of floodwater releases from Oroville Reservoir, in January 1980, letter dated, 13 May 1980.

³⁹ Richard Stenberg, Undersheriff, Sheriff-Coroner, County of Butte, letter to Jean Pratt, Refer to File Number. 2063.

CHAPTER II

Objectives and Tasks to Accomplished for Feather River Recovery Alliance (FRRR):

The primary purpose of this Report is to provide the FRRR with data and documentation to support its Motion for Safety Intervention in the Department of Water Resources (DWRs) relicensing of the State Water Project's (SWPs) Project No. 2100, pending before the Federal Energy Regulatory Commission (FERC):

Due to the complexities and myriad of issues associated with the design, construction, operational criteria, flood control requirements, power production, recreational, fish and wildlife protection, preservation and enhancement, and regulatory compliance with federal and state laws, it is imperative to focus on the articles and provisions contained in the FERC license issued to the DWR for Project No. 2100 for the SWP Oroville Facilities in 1957 and examine the inherent flaws in the pending licensing Procedure DWR chose for renewal of Project No. 2100.

Article 32 of License 2100:

*The licensee shall collaborate with the Department of the Army in formulating a program of operation in the interest of flood control. (Refer to Exhibit *) *Appendix 41 PPs 1985 rpt Oro Dam regs*

Article 50 of License 2100:

The operation of the project in the interest of flood control as provided in Article 32 of the license shall be in accordance with the rules and regulations prescribed by the Secretary of the Army pursuant to Section 204 of the Federal Flood Control Act of 1958. (Emphasis added)

** Appendix 40 PPs 1985 rpt Oro Dam regs*

Article 51 of License 2100:

*Approval by the Commission of any plans for Project No. 2100 shall not relieve the Licensee of its responsibility for compliance with Contract No. DA-04-167-CIVENG-62-56 (P.L. 85-500).⁴⁰ (Emphasis added) * Appendix 40 PPs 1985 rpt Oro Dam regs*

a. A contract No. DA-04-167-CIVENG-62-56 was executed between the United States and the State of California on 8 March 1968, and was approved by the Secretary of the Army on 19 April 1962, Under the terms of this contract, the State agreed to construct and to maintain Oroville Dam and Reservoir, to reserve 750,000 acre-feet

1 of storage space for flood control, providing for operation of the reservoir in such
2 manner as will produce the flood control benefits upon which the monetary
3 contribution was predicated, and to operate the dam for flood control in accordance
4 with rules and regulations prescribed by the Secretary of the Army pursuant to the
5 provision of Section 7 of the Flood Control Act of 1944 (58 Stat. 890).⁴¹ (Exhibit *)

6 **DWR opted to use FERC's Alternative Licensing Procedure (ALP) to Expedite Approval of**
7 **Project No. 2100 – It is currently 13-years behind schedule and benefit from delays:**

8
9 **In January of 2000, DWR Personnel Officially “Kicked-off” the Relicensing of the SWP Oroville**
10 **Facilities:**

11
12 *The Oroville facilities, also known as FERC Project No. 2100, or P-2100, are*
13 *located on the Feather River in Butte County. The principal features of P-2100 include*
14 *the Oroville Dam and Reservoir as well as Edward Hyatt Powerplant, Thermalito*
15 *Facilities, Feather River Fish Hatchery, and associated recreational, fish and wildlife*
16 *preservation and enhancement facilities. The hydroelectric facilities of P-2100 have a*
17 *combined license capacity of approximately 762 megawatts, which produce an*
18 *average of 2.2 billion kilowatt-hours of electricity each year.*

19 *The Department of Water Resources (DWR) has filed with the Federal Energy*
20 *Regulatory Commission (Commission) for a New License to operate the Oroville*
21 *Facilities (Commission Project # 2100). **The Oroville Facilities (Project) were developed***
22 *as part of the State Water Project (SWP), which includes water storage, water*
23 *delivery, and hydroelectric systems. As part of the SWP the Project is operated for*
24 *flood control, power generation, recreation, fish, and wildlife, and to meet regulatory*
25 *requirements in the Sacramento-San Joaquin Delta. The original license for the*
26 *Project was issued by the Commission on February 11, 1957, with an effective date of*
27 *February 1, 1957, and expired on January 31, 2007. The Project is currently operating*
28 *under an annual license which extends the terms of the original license. The Project*
29 *is located on the Feather River near the City of Oroville in Butte County.*⁴² [Emphasis
30 added] (Exhibit**)
31

Commented [P1]:

⁴¹ Oroville Dam and Reservoir, Feather River, Report on Reservoir Regulation for Flood Control, Department of the Army, Sacramento District, Corps of Engineers, Sacramento, California, August 1970, pp. 36 and 37.

⁴² State Water Resources Control Board, **ORDER WQ 2010-0016**. Water Quality Certification for the **Department Of Water Resources Oroville Facilities Federal Energy Regulatory Commission Project No. 2100** - Feather River Butte County, **Water Quality Certification for Federal Permit or License**, December 15, 2010, p. 3.

1 **The 2006 ALP Settlement Agreement provides \$1 Billion for mitigation and**
2 **enhancement projects – however, those funds are contingent on FERC’s approval of the**
3 **DWR’S pending license renewal for Project 2100:**
4

5 *On March 26, 2006, DWR and an overwhelming majority of stakeholders successfully*
6 *concluded negotiations and signed a Settlement Agreement that has been estimated*
7 *to provide approximately \$1 billion in environmental, recreational, cultural, and other*
8 *benefits over a proposed 50-year new license term.⁴³*

9 **Oroville Dam’s Alternative Licensing Procedure is Fundamentally Flawed -**
10 **Circumvention of the Applicable Federal and State Laws:**
11

12 **It is important to note, that the Alternative Licensing Procedure (ALP) was fundamentally flawed,**
13 **which came to light during the proceeding, resulting in a breakdown in the “collaborative**
14 **process” and a vote of no confidence by the majority of the ALP participants.⁴⁴(Exhibit*)**

15 **Breakdown in the ALP due to deceptive and combative actions of DWR personnel:**
16

17 The breakdown resulted from the DWR officials’ consistent failure to provide factual and critical
18 information pertaining to the scope of the project boundaries. DWR’s failure to provide this
19 information impaired the federal fisheries agencies’ ability to perform their statutory and
20 prescriptive authorities.
21

22 ***“NOAA Fisheries reviewed DWR’s Guidance Document and find DWR’s purpose and***
23 ***intent in advancing an alternative scoping document unclear. DWR’s document***
24 ***defines and restricts what information the Services [National Marine Fisheries Service***
25 ***[(NMFS)] and U.S. Fish and Wildlife Service [FWS] will need to administer their***
26 ***prescriptive and consultive authorities.”⁴⁵ [Emphasis added.]***
27

28 The data indicate that DWR officials also failed to provide credible documentation to quantify and
29 qualify the ecological adversities associated with the **ALP** relicensing to ensure that the relicensing
30 of the project would be in compliance with the provisions of the Federal Endangered Species Act
31 (**ESA**), the Clean Water Act (**CWA**), Federal Power Act (**FPA**), National Environmental Policy Act
32 (**NEPA**) and other state and federal rules and regulations pertaining to flood control and public
33 safety. The following statement was made by the NMFS to the DWR during the ALP:

⁴³ California Department of Water Resources, Oroville Facilities, Project No. 2100,
<https://water.ca.gov/Programs/State-Water-Project/SWP-Facilities/Oroville/HLPCO-Oroville-Facilities-Project-2100>

⁴⁴ Department of Water Resources – **Oroville Facilities Relicensing Program. March 26, 2004 Plenary Group Meeting Summary Draft**, p. 8.

⁴⁵ NOAA-National Marine Fisheries Service’s letter to Rick Ramirez, California Department of Water Resources regarding the **Cumulative Impacts Guidance Assessment Document**, Dec. 5, 2002.

1 Regarding cumulative impact assessment, DWR's Guidance Document incorrectly
2 combines NEPA, ESA and CEQA definitions of cumulative impacts. **It is important to**
3 **identify the different statutory authorities, so that it is clear what information will be**
4 **expected for the Service's Biological Opinions. Also, care should be taken to avoid**
5 **confusing the distinction between direct and indirect impacts of the project and**
6 **cumulative impacts.**⁴⁶ [Emphasis added.]

7 **Porgans conducted a Fact-Finding Report, based on government reports, that raised**
8 **doubts about the validity and sustainability of DWR's Habitat Expansion Plan for ESA**
9 **listed Feather River Spring-run salmon as required under the pending FERC relicensing**
10 **of DWR's Project No. 2100 and enforcement of the Clean Water Act:**

11
12 The author also raised issues regarding DWR's the validity and sustainability of the proposed
13 Habitat Expansion Plan proposal as mitigation for the loss of ESA listed Feather River Spring-run
14 salmon as required under the pending FERC relicensing of DWR's Project No. 2100.⁴⁷ (Note: Based
15 on the record, it appears that DWR'/PG&E's proposed Yuba River HEP to mitigate for Feather River Spring
16 runs losses, will not be approved by NOAA Fisheries, for many of the reasons stated in P/A's report.
17 NOAA's response to DWR/PGE is due in November 2013.)

18
19 The author was also active in DWR's Water Quality Certification required as a component of
20 the pending FERC relicensing effort. Based on government documents, raised serious
21 questions regarding the enforcement requirements contained therein. Similar concerns were
22 raised by the California State Water Resources Control, which ultimately approved the WQC,
23 **Pursuant to Section 401(a)(1) of the Federal Clean Water Act (33USC §1341 et seq.)**⁴⁸

24
25 Among other dubious actions, DWR consistently mislead the ALP participants on several key issues,
26 e.g., insisting members of the public participating in the ALP would be required by law to sign a
27 confidentiality agreement that they would not discuss the contents of the proceeding with other

⁴⁶ NOAA-National Marine Fisheries Service's letter to Rick Ramirez, California Department of Water Resources regarding the **Cumulative Impacts Guidance Assessment Document**, Dec. 5, 2002.

⁴⁷ Patrick Porgans, Solutionist, **Fact-Finding Report: California Department of Water Resources' Relicensing of the State Water Project's Oroville Hydroelectric Facilities --- Federal Energy Regulatory Commission (FERC) License 2100, NOAA-NMFS Review of the California Department of Water Resources, State Water Project Contractors, and PG&E's 2010 Habitat Expansion Plan (HEP) Proposal as Mitigation for the Loss of Feather River Spring-run Salmonid, Attributable to the Construction, Operation and Maintenance of Dams in the Feather River Watershed**, May 2012.

⁴⁸ Patrick Porgans, Solutionist, **Fact-Finding Report: Fact-Finding Report: Department of Water Resources' (DWR) Application for Water Quality Certification (WQC) for the State Water Project (SWP) Oroville Hydroelectric Facilities, Federal Energy Regulatory Commission's License Number 2100, Pursuant to Section 401(a)(1) of the Federal Clean Water Act (33USC §1341 et seq.)**, Oct 2010.

- 1 members of the public. After several months of the author's persistent probing the matter, FERC
 2 officials conceded to the ALP participants that DWR's assertion was false; details are as follow:

PATRICK PORGANS & ASSOCIATES, INC.

GOVERNMENT REGULATORY INTERVENTION



HOLISTIC RESOURCE CONVERGENCE

Telephone: (916) 374-8197 Fax: 372-7679 P.O. Box 1713, W. Sacramento, CA 95691

REVISED SUMMARY REPORT
February 2004

To: The Federal Energy Regulatory Commission and All Members of the Plenary Group

Project: California Department of Water Resources' (DWR) Relicensing of the State Water Project's Oroville Facilities — Federal Energy Regulatory Commission (FERC) Project 2100

Subject: Notification to Plenary Group of Porgans & Associates Decision to Suspend Participation in the Alternative Licensing Procedure (ALP) and of Our Intent to Inform FERC and the Public of the ALP's Inherent Shortcomings, which are Diametric To Meaningful Public Input, Government's Trust Responsibilities and the California Department of Water Resources' (DWR) Written Assurances

1 Notification: Porgans & Associates (P&A),
 2 Inc., is compelled to formally notify the
 3 Plenary Group and the Federal Energy
 4 Regulatory Commission (FERC) of our intent to
 5 suspend participation in the Plenary Group due
 6 to the inherent shortcomings of the ALP that
 7 are diametric to meaningful public input and
 8 government's trust responsibilities. In good
 9 conscience we cannot be a party to a process
 10 that for all intent and purpose is perfunctory,
 11 disingenuous and in conflict with the public's
 12 interest and DWR's written assurances to the
 13 Plenary Group. On numerous occasions, P&A
 14 and other participants requested DWR to
 15 address longstanding concerns and issues
 16 regarding the inherent shortcomings of the
 17 ALP; i.e., who and what constitutes consensus
 18 (who should be involved in consensus decisions), collaborative/cooperation, trust, transparency, cumulative impacts
 19 study plan, DWR's failure to adhere to written assurances, and its evasive and combative tactics that lack a
 20 collaborative spirit. To DWR's credit, it did attempt to address some of the issues; however, it failed to reconcile
 21 the majority of the critical issues and concerns raised consistently over a three-year period.¹

DWR's Actions in Conflict with Assurances to Plenary: The tactics employed by DWR's management-level personnel were inconsistent with the assurances that they agreed to from the onset of the process; i.e., cooperation/collaboration, trust, consensus, transparency, and above all DWR's written assurances that the Plenary Group was to *serve as the forum in which to ultimately decide the terms of the settlement agreement*. Conversely, the records will attest to the fact that in matters of critical importance to the local participants and several federal agencies, DWR was less than cooperative, recalcitrant, and in some instances non responsive. Furthermore, as was pointed out by an objective observer (a skilled facilitator familiar with FERC relicensing procedures), who inform P&A and others, that the department's demeanor at the Plenary meetings which he had attended was **combative and not collaborative**.

1
 Porgans & Associates' communication to Plenary Group, Project: Department of Water Resources Oroville Facilities Relicensing — Plenary Meeting, Subject: P&A's Perspective, Concerns and Suggestions Regarding the ALP, May 1, 2001.
 P&A's written communication to All Members of the Plenary Group, Project: California Department of Water Resources Relicensing of the SWP's Oroville Facilities, Subject: *Issues of Concern and in Need of Clarification and Interpretation*, Preliminary Draft, Oct. 22, 2002.
 P&A's written communication to Patti Kroen (Facilitator) and All Members of the Plenary Group, Project: California Department of Water Resources Relicensing of the SWP's Oroville Facilities, Subject: *Issues of Concern and in Need of Clarification and Interpretation at the Plenary Level*, Final, Jan. 17, 2003.
 P&A's Meeting with DWR Officials, Resources Building, 1416 Ninth Street, Rm. 1603, Sacramento, California, Subject: Oroville Facilities Relicensing: Plenary Action Item Meeting Agenda (Off-Line Discussion), Sept. 12, 2003.
 P&A's Fax to Mary Nichols, Secretary of Resources and Mike Spears, Interim Director, California DWR, RE: *Department Solicitation for Solutions to an Apparent Breakdown in Its FERC Alternative Relicensing Process for the Oroville Facilities: Resolution of Impasse Concerning Fairness, Trust and Confidence*, Oct. 15, 2003.

PATRICK PORGANS & ASSOCIATES, INC.

GOVERNMENT REGULATORY INTERVENTION

HOLISTIC RESOURCE CONVERGENCE

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P.O. Box 1713, W. Sacramento, CA 95691

FAX COVER LETTER

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1/15/04

SENT TO: RICHARD MILES

AFFILIATION: FERC

FAX No: (202) 219-2730

TELE. No: (202) 502-8702

SENT BY: PATRICK PORGANS

CONFIRMATION: Yes No

RE: CONFIRMATION OF ISSUES DISCUSSED DURING OUR TELEPHONE CONVERSATION OF JAN. 12, 2004, FERC PROJECT NO. 2100 — PORGANS & ASSOCIATES' (P&A) REQUEST FOR FERC'S ASSISTANCE IN Alternative Dispute Resolution WITH CALIFORNIA DEPARTMENT OF WATER RESOURCES

TO: MR. MILES

This fax transmission reiterates issues discussed during our telephone conversation of Jan. 12, 2004, regarding Porgans & Associates (P&A) et al request for FERC to provide dispute resolution assistance between ALP participants and the California Department of Water Resources (DWR) in the matter of Project No. 2100 (relicensing of State Water Project's Oroville Facilities. Please refer to P&A's fax transmissions of Oct. 23, 2003 [Re: FERC License No 2100 — Transmission of DWR's Response to List of Issues in Need of Resolution/Solution: Includes Porgans & Associates' (P&A) Recent Submittal] AND Oct. 2, 2003 [Re: FERC License No 2100 — Transmission of List of Issues in Need of Resolution].

As stated in P&A's Oct. 23 fax, we were awaiting your written reply from DWR's Ralph Torres and/or Ward Tabor, as to the specific reason(s) as to why the department chose not to participate in the alternative dispute resolution process. You stated, that at a meeting with those DWR representatives, on or about Nov. 5, 2003, they simply informed you that the department was not prepared at that time to participate in that forum. Furthermore, you reiterated that there are no provisions in FERC's regulations that compel DWR or any other ALP participant to participate in the alternative dispute resolution.

In addition, we discussed the issue of whether or not "confidentially" in the Alternative Licensing Procedure (ALP) was a FERC requirement -- a rule or by some regulatory statute. You stated that you had discussed the issue of confidentially with Jim Fargo and other FERC staff, and that based upon those discussions there does not appear to be a confidentially requirement inherent in FERC's ALP. You said that the issue of confidentially is a matter that the participants can establish on their own volition.

After you have had the opportunity to review this fax, and providing it is an accurate reiteration of your comments, please acknowledge receipt by signing and dating this fax, and fax it back to me. Thank you.

Respectfully,



Patrick Porgans

PP:sp fnl: 1 dwr/ferc/oro/plenary/FAX2003

1 As stated above, at the behest of Patrick Porgans, **ALP** participants notified **FERC** officials, in
2 Washington, D.C., regarding the breakdown and, in accordance with the **ALP** protocols, requested
3 that **FERC** intervene. Unfortunately, the **ALP** did not provide a viable remedy for redress. **FERC**
4 informed Petitioners that it was up to DWR if it wanted to have a “sit-down” with the Protestants
5 to reconcile the breakdown, however, DWR officials refused to do so. This information, and the
6 accompanying documents, containing 24 pages were emailed to B. Davis on 11/19/2020.⁴⁹ (Exhibit

7 **DWR’s Existing License Requires Compliance with Federal Flood Control Regulations:**

8
9 The contents and findings in this report focuses on the Articles contained in the FERC license
10 **Project No. 2100**, that address compliance with the flood control regulatory requirements, dam
11 safety, and the operational criteria in force for the SWP Oroville flood control facilities.

12
13 Regulations provided by the U.S. Army Corps of Engineers (COE), and the Federal Energy
14 Regulatory Commission (FERC), requires that DWR be compliant with the operational criteria for
15 floodwater releases and notification of floodwater releases from the SWP Oroville facilities.

16
17 Language contained in the Articles of the DWR’s FERC license Project No. 2100, specifically require
18 **DWR** to be compliant with the adopted flood control regulations established by the **COE**,⁵⁰ and
19 that it is within **FERC**’s purview to ensure compliance.⁵¹

20 **DWR is Monitoring and Policing Itself:**

21
22 However, once the **COE** establishes the flood control regulations for the SWP Oroville Dam and
23 Reservoir, it does not have a mandate nor the authority to compel compliance! Essentially, DWR is
24 monitoring and policing itself.
25

⁴⁹ Patrick Porgans, Solutionist, *Summary Report, California Department of Water Resources Relicensing of the State Water Project’s Oroville Facilities – Federal Energy Regulatory Commission Project No. 2100, Subject: Notification to Plenary Group of P&A’s Decision to suspend Participation in the Alternative Licensing Procedure and of Our Intent to Inform FERC and the Public of the ALP’s Inherent Shortcomings which are Diametric to Meaningful Public Input, Government’s Trust Responsibilities and the Department of Water Resources’ Written Assurances*, 2004.

⁵⁰ Department of the Army, Sacramento District Corps of Engineers, Sacramento, CA, *Oroville Dam and Reservoir, Feather River, CA, Report on Reservoir Regulations for Flood Control*, August 1970.

⁵¹ Federal Energy Regulatory Commission, *License P-2100*, issued to the California Department of Water Resources in 1957.

1 **After Section 7 regulations are officially established, responsibility for compliance**
2 **rests with the operating agency. The Corps of Engineers has neither the responsibility**
3 **nor authority to compel compliance.** ⁵² ⁵³(Emphasis added) (Exhibits **)

4 **Even when DWR is found Legally at Fault for Failing to Comply with State and Federal**
5 **Flood Control Rules and Regulations, Resulting in Billions of dollars of damages and**
6 **Loss of Lives, it is not Held Accountable – Cost for Damages are from U.S. Taxpayers and**
7 **borrowed funds paid for by Californians:**

8
9 Public Records reveal that even when DWR is found at fault for violating federal and state flood
10 control regulations, it does not pay for the billions of dollars in damages nor is held accountable for
11 loss of lives, resulting from its negligence; those costs are paid by the public.⁵⁴ (Exhibit**)

12 **Department of Water Resources Conceded It is Required to Comply with State and**
13 **Federal Flood Control Laws, when Operating the Oroville Flood Control Facilities:**

14
15 **I am sure you realize that the flow releases which we [DWR officials] must make after**
16 **a storm to the lower river are mandated by federal standards to protect the**
17 **downstream river areas from disastrous flooding. If we [DWR] encroach on the flood**
18 **storage reserve in Oroville Reservoir to control runoff from a storm, and not make**
19 **this release, we could encounter a situation that the project could not control runoff**
20 **and the areas below Oroville would be flooded with the loss of property and possibly**
21 **lives.** ⁵⁵(Emphasis added)

⁵² Department of the Army, Office of the Chief of Engineers, Washington, D.C., Engineer and Design, *Reservoir Regulations, ER 1110-2-240*, 27 April 1971, p. 7. [Oroville Dam and Reservoir are classified as a Section 7 facility.]

⁵³ U.S. Army Corps of Engineers, Sacramento District, Oroville Dam and Reservoir, Feather River, California: Report on Reservoir Regulations for Flood Control, August 1970, p. 30.

⁵⁴ By Harold Kruger/Appeal-Democrat newspaper, *Governor signs bill to fund 1997 flood pact*, 17, May 2005.

<http://www.appeal-democrat.com/com/news/mann-18925-case-flood.html>

Ted Thomas, Public Information Officer, California Department of Water Resources,

Ted.Thomas@water.ca.gov Email to Patrick Porgans porgansinc@sbcglobal.net Re: *Paterno Case, 1986 Flood, Feather River*, Wednesday, 14 Nov. 2012, 3:57 PM.

Legislative Analyst's Office, State of California, Analysis of the 2005-2006 Budget Bill, *Financing Flood Lawsuit Settlement with a Judgment Bond*, February 2005.

[Http://www.lao.ca.gov/analysis_2005/resources/res_13_3860_an105.htm](http://www.lao.ca.gov/analysis_2005/resources/res_13_3860_an105.htm)

https://lao.ca.gov/analysis_2005/resources/res_13_3860_an105.htm#_Toc95975089

⁵⁵ Lawrence A. Mullnix, Chief, Water Engineering Office, Division of Operation and Maintenance, California Department of Water Resources, correspondence to Bob Baiocchi, Vice-President, Conservation Chairman, Northern California Council of Fly-Fishing Clubs, cc: to Patrick Porgans, 18 September 1979.

1 Public records obtained by the author provide documentation to substantiate the fact that DWR
2 officials repeatedly failed to comply with the flood control provisions contained in the FERC license.

3
4 DWRs inherent conflict as a water purveyor and mandate to ensure flood protection has impaired
5 its ability and willingness to comply with the flood control rules and regulations and has and
6 continues to place the public at an unacceptable level of risk! *(FN)

7 **Statements-Findings in this Report are Prefaced on Documents Obtained Primarily from**
8 **Government Sources:**

9
10 It is imperative the reader understands a primary cause for levee and property damages, within the
11 Feather River Watershed, downstream from Oroville Dam, are related to DWR officials' failures and
12 conflicting role as a water purveyor, resulting from their overcommitted contractual obligation to
13 meet SWP Contractors water entitlements, and their responsibilities to ensure flood protections, in
14 accordance with state and federal flood control rules and regulations. DWR does not have the legal
15 right to willfully "take" property⁵⁶ ⁵⁷ or cause levee damages that are inconsistent with the law;⁵⁸
16 especially when the DWR's actions are predicated to insure SWP contractors' water entitlements, at
17 the expense and demise of others that bear the consequences of this unreasonable level of risk.

18
19 ***These egregious long-term repeated failures [at SWP Oroville Facilities] violated***
20 ***the First Principle of Civil Law: "imposing Risks on people if and only if it is***
21 ***reasonable to assume they have consented to accept those Risks." Risk control***
22 ***is a central goal of Civil Law.***⁵⁹ (Emphasis added) (Exhibit**)

23

* **California Constitution - ARTICLE I DECLARATION OF RIGHTS [SECTION 1 - SEC. 32]** (*Article 1 adopted 1879.*) **SEC. 19.**

(a) Private property may be taken or damaged for a public use and only when just compensation, ascertained by a jury unless waived, has first been paid to, or into court for, the owner.

https://leginfo.ca.gov/faces/codes_displaySection.xhtml?lawCode=CONS§ionNum=SEC.%2019.&article=I

⁵⁷ <https://www.dailysignal.com/2015/06/22/supreme-court-decision-makes-it-harder-for-government-to-take-personal-property-from-americans/>

⁵⁸ *Stoney Creek Orchards et al., Plaintiffs and Appellants, v. State of California, Defendants and Respondents.* 90312 C.A. 3rd 903; 91 Cal Rptr. 139 (Civ. No. 12267. Third Dist. Nov. 9, 1970.

<https://law.justia.com/cases/california/court-of-appeal/3d/12/903.html>

⁵⁹ ***These egregious long-term repeated failures violated the First Principle of Civil Law: "imposing Risks on people if and only if it is reasonable to assume they have consented to accept those Risks." Risk control is a central goal of Civil Law.***^[10] ⁵⁹

Bea, R.G.: "An Instrument of Risk Management: The Law," Center for Catastrophic Risk Management, University of California Berkeley, <https://drive.google.com/open?id=0Bz11mlutSEnYjFfTGpXeTZXQmc>

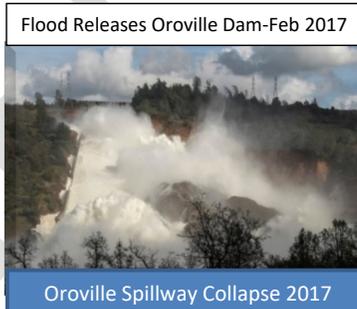
CHAPTER III

Synopsis of Preliminary Findings:

Government records, and supporting data, indicate that unless DWR officials, and other “responsible” agencies, institute fundamental changes in their current flood control practices, especially the flood control operational criteria, at the SWP’s Oroville facilities, and pay strict adherence to established flood control rules and regulations, failure to do so will set the stage for an unprecedented catastrophic flood disaster downstream from the Dam, which would include levee damages and failures. DWR officials’ “track-record” are comparable to baseball, three-strikes you are out; 1986, 1997, and 2017 flood events brought on by the DWR’s negligence and foul play.

Millions Spent for Feather River Flood Protections-Billions of Dollars in Flood Damages!

This report examined the effectiveness of government’s attempts, since the 1940’s, to reduce flood damages and loss of lives in the Feather River Watershed (FRW). Public records, and case law, indicate flood damages within the FRW have been exacerbated by government actions, e.g., levee construction, floodplain designations and reservoirs flood control projects. A plethora of studies, reports, plans, levees, reservoirs, and other flood prevention efforts have been undertaken in the FRW. Notwithstanding, the data attest to the fact that although millions of dollars have been expended to prevent or minimize flood damages and loss of lives, subsequent to such expenditures, the FRW, downstream from Oroville Dam experienced billions of dollars in damages and loss of lives.



Hundreds of millions of taxpayers’ funds were expended, from the mid-1930s through the year 2000, to provide flood protection in the FRW; however, since construction of the levee system and Oroville Dam and Reservoir, billions of dollars in flood damages occurred downstream from the Dam; this region still faces a significant flood risk!

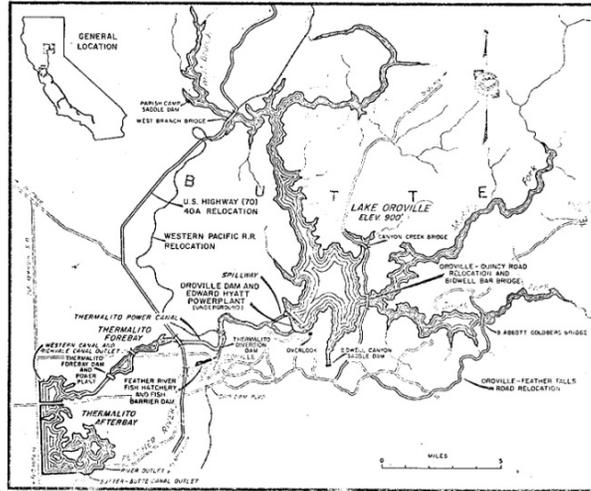
Since 1950, 19 Flood Events in the Basin have required Extensive Flood Fighting, and the Flood of 1955 Resulted in 38 Deaths, Subsequent Floods in the Feather River Basin, Caused Billions of dollars in Damages, does not Include the \$1.1 Billion Oroville Dam Spillway Outlet “Fix” [Already Cracking](#) or the \$17 Billion Central Valley Flood Protection Plan:

Since 1950, 19 flood events in the basin have required extensive flood fighting, and the flood of 1955 resulted in 38 deaths, according to the USACE.⁶⁰ (Emphasis added)

⁶⁰ U.S. Army Corps of Engineers et al, *Sutter Basin, California: Sutter Basin Pilot Feasibility Draft Report—Draft Environmental Impact Report/Supplemental Environmental Impact Statement*, June 2013.

1 Those floods figures do not
 2 include the Oroville Dam's \$1.1
 3 Billion Flood Control Spillway
 4 Outlet "Fix" (already cracking).⁶¹ It
 5 does not include the California's
 6 \$17 billion Central Valley Flood
 7 Protection Plan,⁶² it does include
 8 the \$378 million upgrade for Feather
 9 River West Levee Project). The
 10 question remains, will those
 11 investments provide tangible flood
 12 protections or more false
 13 assurances, setting the stage for an
 14 unimaginable catastrophic flood
 15 disaster?

16 More importantly, will downstream
 17 property owners continue to be
 18 taxed to pay for repair and
 19 maintenance of the levee system
 20 along the Feather River (AKA-SWP conveyance canal)? The DWR's requested payment for repairs of the
 21 Spillway Outlet from the Federal Emergency Management Agency (FEMA). As of January 31, 2021, FEMA
 22 awarded the State a total of \$530 million⁶³ for the repairs of the improperly maintained partial collapsed
 23 Spillway.



24 **Government's Extent and Character of Floodwater Releases - Areas Impacted** 25 **Downstream of Oroville:**

26
 27 ***Extent and character of flooded area. – The flood plain of Sacramento River and***
 28 ***tributaries is about 180 miles long and 1 to 40 miles wide. It comprises an area of***
 29 ***about 2,000 square miles of rich agricultural lands containing about 50 scattered***
 30 ***communities. These communities include the cities of Willows, Colusa, Yuba City,***
 31 ***Marysville, North Sacramento, Sacramento and portions of Red Bluff, Chico,***
 32 ***Woodland and Rio Vista. Most of the flood plain is protected by levees of the***

⁶¹ Oroville Spillway Construction and Cost Estimate Update, 5 September 2018.
<https://water.ca.gov/News/News-Releases/2018/Sept-18/Oroville-Spillways-Construction-and-Cost-Estimate-Update>

⁶² The Central Valley Flood Protection Plan (CVFPP) 2012, Updated 2015
<https://water.ca.gov/Programs/Flood-Management/Flood-Planning-and-Studies/-/media/D3CA679621574F889C67FB2B7662B1C4.ashx>

⁶³ Sierra Sun Times <https://goldrushcam.com/sierrasuntimes/index.php/news/local-news/27871-congressman-kevin-mccarthy-commends-fema-making-307-8m-award-to-the-state-of-california-for-repairs-at-oroville-dam>

1 **Sacramento River Flood Control Project and by Folsom and Shasta Reservoirs on the**
2 **American and Sacramento Rivers, respectively.**⁶⁴ (Emphasis added) (Exhibit *)

3 **One Million California lie in the wake of an unacceptable-level of risk, posed by Oroville**
4 **Dam, the tallest dam in North America, an earth-filled structure, rife with faulty**
5 **construction, mismanagement; experts claim is a catastrophic disaster waiting to**
6 **happen:**

7
8 The inevitable consequence of the California Department of Water Resources' (DWR) failure to
9 comply with the adopted flood control operational criteria at the State Water Project (SWP) Oroville
10 Dam and Reservoir Facilities will lead to the worst catastrophe in U.S. History:

11
12 *Approximately 1 million Californians live and work in the floodplains of the valley,*
13 *which contain approximately \$80 billion worth of infrastructure, buildings, homes,*
14 *and prime agricultural land. A major flood in the Central Valley could have a far*
15 *greater financial impact on California and the nation than the devastation caused by*
16 *Hurricane Katrina or Superstorm Sandy.*⁶⁵ (Emphasis added) (Exhibit *)

17 **Report prepared by DWR claims approximately 1 Million Californians work in**
18 **floodplains of the valley, about \$80 billion of assets at risk from flood damages:**

19 *The Central Valley Flood Protection Plan (CVFPP) is California's strategic blueprint to*
20 *improve flood risk management in the Central Valley. The first plan was adopted in*
21 *2012 and is updated every 5 years. The plan lays out strategies to:*

- 22 • *Prioritize the State's investment in flood management over the next 3 decades.*
- 23 • *Promote multi-benefit projects.*
- 24 • *Integrate and improve ecosystem functions associated with flood risk reduction*
25 *projects.*
- 26 • *Considerable progress has been made to improve flood management in the Central*
27 *Valley; however, this vast region still faces significant flood risk. Approximately 1*
28 *million Californians live and work in the floodplains of the valley, which contain*
29 *approximately \$80 billion worth of infrastructure, buildings, homes, and prime*
30 *agricultural land. A major flood in the Central Valley could have a far greater financial*
31 *impact on California and the nation than the devastation caused by Hurricane Katrina*

⁶⁴ U.S. Army Corps of Engineers, Sacramento District, *Oroville Dam and Reservoir, Feather River, California: Report on Reservoir Regulations for Flood Control*, August 1970, p. 9.

⁶⁵ California Department of Water Resources, *Central Valley Flood Protection Plan*, Update 2017
<https://water.ca.gov/Programs/Flood-Management/Flood-Planning-and-Studies/Central-Valley-Flood-Protection-Plan>

1 **or Superstorm Sandy. Without sufficient and sustained investment in statewide flood**
2 **management, the risk to life and property will increase. (Exhibit *)**⁶⁶

3 **Department of Water Resources report states a Major Flood in Central Valley Poses a**
4 **Greater Financial Impact to California and the Nation than the Devastation Caused by**
5 **Hurricane Katrina or Superstorm Hurricane Sandy Economic Impact and Loss of Lives:**
6

7 *Hurricane Sandy hit New Jersey on October 29, 2012. It did \$74.8 billion in economic*
8 *damage. This figure has been adjusted for inflation. It was the fourth-worst storm in*
9 *U.S. history.⁶⁷ Tragically, there were 159 hurricane-related deaths.⁶⁸*

10 *Hurricane Katrina was a Category 5 hurricane that hit Louisiana on August 29, 2005.^[1]*

11 *National Weather Service. "[Extremely Powerful Hurricane Katrina Leaves a Historic](#)*
12 *Mark on the Northern Gulf Coast." Accessed Jan. 28, 2020.*

13 *It was the most destructive [natural disaster](#) in U.S. history.² It impacted 93,000*
14 *square miles.^[3] Its storm surge crested at 27 feet.^[4]*

15 *Katrina was massive before it even made landfall. Its hurricane-force winds reached*
16 *75 nautical miles east of the center.^[5] Its maximum winds stretched 25 to 30 nautical*
17 *miles. It forced the evacuation of 75% of the 819 manned oil platforms in the Gulf of*
18 *Mexico.³ That reduced oil production by a third. Katrina did most of its*
19 *Damage after the National Hurricane Center reclassified down to a Category 3*
20 *hurricane.^[6] Like most hurricanes, it slowed down when it hit land.*

21 **The Facts on Hurricane Katrina's Damage:**

22 *[Damage and Insurance:](#) Hurricane Katrina cost a staggering \$125 billion.^[7] Insurance*
23 *covered only \$80 billion of the losses, according to Swiss Re.^[8] Flooding in New*
24 *Orleans caused a considerable amount of damage. It destroyed or rendered*
25 *uninhabitable 300,000 homes.^[9] It left in its wake 118 million cubic yards of*
26 *debris. That made cleanup efforts a mind-boggling challenge.*

⁶⁶ California Department of Water Resources, *Central Valley Flood Protection Plan*, Update 2017
<https://water.ca.gov/Programs/Flood-Management/Flood-Planning-and-Studies/Central-Valley-Flood-Protection-Plan>

⁶⁷ [Hurricane Sandy: Facts, Damage, Economic Impact](https://www.thebalance.com/hurricane-sandy-damage-facts-3305501) <https://www.thebalance.com/hurricane-sandy-damage-facts-3305501>

⁶⁸ National Oceanic and Atmospheric Administration. "[Billion-Dollar Weather and Climate Disasters: Events](#)." Accessed Oct. 24, 2020.

1 **Economic Impact:** ⁶⁹ Katrina's true cost was \$250 billion, according to the University
2 of North Texas Professor Bernard Weinstein. He includes both the damage
3 and its economic impact. Weinstein estimated uninsured losses at \$215 billion and
4 insured losses at \$35 billion.¹⁰ The worst flooding occurred in New Orleans' 9th Ward.
5 It was a low-income area that was mostly uninsured. These facts were discussed at
6 the university during Katrina's third anniversary on August 28, 2008.⁷⁰

7 **Feather River Watershed Below Oroville Dam Experienced 20-Major Floods Events**
8 **since mid-1950s – But has not experienced a “100-Year Flood”, Standard Project Flood**
9 **or a Maximum Probable Rainstorm Event:**

10 Since completion of the Project levees, in 1954, and Oroville Dam becoming operable in 1968, the
11 Feather River Watershed (FRW) experienced 20 major flood events. However, the FRW has yet to
12 experience the damaging effects of a “Standard Project Flood” (SPF) or a “Maximum Probable
13 Rainstorm” (MPRS). During either the SPF or the MPRS the adopted flood control operational criteria
14 for floodwater releases from the Oroville Dam and Reservoir facilities permits water releases from
15 150,000 cubic feet per second (c.f.s.) up to 250,000 c.f.s.!

16
17
18 **According to the DWR’s “estimates” the maximum floodwater released from the reservoir was**
19 **160,019 c.f.s., on New Year’s Day 1997, which caused more than one-billion dollars in damages,**
20 **levees failed, and lives lost; however, that flood event did not even meet the SPF criteria!**

21
22 **During the 1997 flood event, DWR officials predicted inflow into the reservoir around 440,000**
23 **c.f.s., they panicked, assuming floodwaters would breach the dam, and failed to attend a meeting**
24 **they scheduled with the State Office of Emergency Service, prompting a massive evacuation of the**
25 **Oroville region, which was issued by the Butte County Sheriff’s office, and not by DWR officials, with**
26 **less than a 24-hour notice.**

27
28
29
30
31
32

⁶⁹ [Somer G. Anderson](#), *Hurricane Katrina was a Category 5 hurricane that hit Louisiana on August 29, 2005.1 It was the most destructive natural disaster in U.S. history. It impacted 93,000 square miles,* Updated September 27, 2020.

⁷⁰ By The Balance, By [Kimberly Amadeo](#) Reviewed by [Somer G. Anderson](#) *Hurricane Katrina Facts, Damage, and Costs What Made Katrina so Devastating*, Updated, 27 Sept. 2020.

<https://www.thebalance.com/hurricane-katrina-facts-damage-and-economic-effects-3306023>

CHAPTER IV

Synopsis of Findings of Fact for Feather River Watershed (FRW):

1) Public records, and case law, indicate flood damages within the **FRW** have been exacerbated by government actions and flood control projects. **These safety issues should be of paramount concern to the Federal Energy Regulatory Commission (FERC) and need to be assessed and thoroughly addressed in the DWR's pending relicensing of FERC Project No. 2100.**

2). The inherent shortcomings and unacceptable-level of risk posed by the operational criteria of the SWP Oroville facilities is prefaced on a thorough analysis of the public record, the findings are presented in a **Question and Answer (Q&A)** format and attest to the following findings of fact.

3). Government's initial motive to authorize construction of Project levees along the west bank of the Feather River was not intended to provide protection to properties bordering the Feather River, rather they were constructed to protect the levees already constructed along the Sacramento River from Damaging floodwaters originating from the Feather River.

4). The designed flood flow capacities of the downstream levees constructed along the Feather River Channel are prefaced on the flood events on 1907 and 1909 and based on the extensive flood damages resulting from floodwater releases from Oroville Reservoir, during the 1986 and 1997 floods, are inadequate to handle the 150,000 cubic-feet per second (c.f.s.) floodwater releases authorized in the Standard Project Flood Control Criteria established by the U.S. Army Corps of Engineers for the State Water Project's Oroville Flood Control Facilities.

5). Government officials, including the DWR personnel, knew beforehand that flood water releases of 150,000 would cause significant downstream damages below the dam.

6). As early as 1969, the first year after the SWP Oroville facilities became fully operational, hearings were held regarding public concerns that the floodwater release change from a maximum of 100,000 CFS to 150,000 CFS were known to cause significant downstream damages. Local government officials inquired why they were not notified of this change. The DWR personnel present at the meeting could not answer that critical question.

7). Although the Flood Control Manual in force for the operation of the SWP Oroville Flood Control Facilities specifically requires that DWR alert downstream property owners of impending floodwater releases, the record indicate it repeatedly failed to do so.

8). In each of the flood events that occurred in 1980 1986, 1997, and 2017 DWR failed to provide adequate evacuation notices to other public agencies and on several occasions simply panicked!

1 9). Financial shortcoming of the knowingly underfinanced SWP facilities altered the level of flood
2 protection and safety that would have otherwise been provided.

- 3 a. The initial Federal energy Regulatory Commission (FERC) license, issued to the
4 Department of Water Resources (DWR), in 1957, FERC Project No. 2100, included
5 the construction of a concrete gravity dam, which was later modified, at DWR's
6 request, to be an earthen (zone-filled) structure.
- 7 b. Public records confirm the SWP was underfinanced since its inception, in order to
8 make up for the financial shortcoming, DWR cut-corners, which reduced the level
9 of protection and safety that would have otherwise been provided.
- 10 c. *"In October 1960, Charles T. Main, Inc., declared the project to be engineeringly*
11 *feasible, but gave qualified answers to the questions of economic and financial*
12 *feasibility. It pointed out the probability that construction costs would escalate,*
13 *questioned the ability of agricultural water users to repay their share of the costs,*
14 *and declared that the state must be prepared to assume the risk that it might not*
15 *be completely reimbursed during the bond repayment period. Specifically, it stated*
16 *that the Burns-Porter Act [enabling legislation authorizing the state Water Project*
17 *facilities] fell slightly short of providing construction funds on the basis of 1960*
18 *costs."*⁷¹
- 19 d. Governor Edmund "Pat" Brown, Sr., the architect of the State Water Project
20 conceded that the SWP was underfinanced since its inception. ***"We had to scrape***
21 ***and pull to put the project over. I mean don't kid yourself. (Laughs) It was a close***
22 ***fit and \$1.75 billion was about all we felt we could get a bond act. We were afraid***
23 ***to make it \$2 billion. It was like a \$1.99 rather than \$2.00. We thought that***
24 ***sounded better to the people."***⁷²
- 25 e. *We recognized that the [SWP] water project was going to be short in 1963 and*
26 *that's why we [the Department of Water Resources] issued revenue bonds for the*
27 *Oroville Dam.*⁷³
- 28 f. *"Recognizing the shortages inherent in financing authorization of the State Water*
29 *Project, the department in 1963 proposed to issue revenue bonds under the*
30 *authorization contained in the Central Valley Project Act and based upon the sale of*

⁷¹ Senate Committee on Water Resources, Progress Report to the Legislature, 1968, Regular Session, ***Report No. 2, State Water Project Financing***, p. 12.

⁷² Malca Chall, Regional Oral History Office, the Bancroft Library, University of Berkeley, California, Governmental History Documentation Project, Goodwin Knight/Edmund Brown, Sr., Era, Edmund G. Brown, Sr., ***The California Water Project, Personal Interest and Development in the Legislation, Public Support, and Construction, 1950-1966***. Interview conducted by Malca Chall in 1979, published in 1981, p. 45.

⁷³ Patrick Porgans Taped-recorded Interview with Donald Sandison, Comptroller, Department of Water Resources, ***Financing of the State Water Project***, March 26, 1982, and April 23, 1982.

1 Oroville-Thermalito power. The authority to issue such bonds was upheld by the
2 California Supreme Court in the same year.”⁷⁴

3 g. **“The [SWP] was underfinanced since the very start. It is not my intention to dwell on this,
4 but the people were allowed to believe that the original bond issue would cover the cost.
5 This was never true.”** –Gov. Ronald Reagan.⁷⁵

6 h. The author spent 15-years, at his own expense, conducting an exhaustive review of the
7 history, planning, operation, maintenance, and financing of the SWP. He completed a
8 series of fact-finding forensic report that focused on the **“State of the State Water
9 Project.”**⁷⁶

⁷⁴ Patrick Porgans, Government Regulatory Specialist, Red-Tape Abatement, Ltd., *The State of the State Water Project, Transcript – Interview between Patrick Porgans and Lawrence Swenson, Chief, State Water Project Analysis Office and Donald A. Sandison, Fiscal Advisor, Comptroller, Division of Fiscal Services, California Department of Water Resources*. Reported by Juli Price Jackson, Certified Shorthand Reporter, CSR No. 5214, 1981.

⁷⁵ San Francisco Chronicle, 15 November, 1969.

⁷⁶ Patrick Porgans Taped-recorded Interview with Donald Sandison, Comptroller, Department of Water Resources, *Financing of the State Water Project*, March 26, 1982, and April 23, 1982.

⁷⁶ Patrick Porgans, Government Regulatory Specialist, *State of the State Water Project, Report No. 1, Who’s Financing It? Is it Paying for Itself?* 1980.

Patrick Porgans, Government Regulatory Specialist, Red-Tape Abatement, Ltd., *The State of the State Water Project, Transcript – Interview between Patrick Porgans and Lawrence Swenson, Chief, State Water Project Analysis Office and Donald A. Sandison, Fiscal Advisor, Comptroller, Division of Fiscal Services, California Department of Water Resources*. Reported by Juli Price Jackson, Certified Shorthand Reporter, CSR No. 5214, 1981.

Patrick Porgans, Government Regulatory Specialist, Red-Tape Abatement, Ltd., *The State of the State Water Project, Transcript – Interview between Patrick Porgans and Donald A. Sandison, Fiscal Advisor, Comptroller, Division of Fiscal Services, California department of Water Resources*, 1981. Reported by Juli Price Jackson, Certified Shorthand Reporter, CSR No. 5214, 1981.

Patrick Porgans, Government Regulatory Specialist, Red-Tape Abatement, Ltd., *State of the State Water Project, Transcript – Interview between Patrick Porgans and Ray Walsh, Chief, Water rights Division, California State Water Resources Control Board: Appropriated and Unappropriated Water in California*, 1982.

Patrick Porgans, Government Regulatory Specialist, Red-Tape Abatement, Ltd., *The State of the State water Project, Report No. 2, The state water Project has been Underfinanced Since Its Inception: The Project is Unable to Meet Its contractual Obligations: The Peripheral Canal (Delta Facility) and Other Facilities in Senate Bill 200 were Approved and Funded in the 1960’s. The Money was Spent, but the Facilities were Never Built*, 1982.

Patrick Porgans, Government Regulatory Specialist, Red-Tape Abatement, Ltd., *Preliminary Report – Request for an Independent Audit of the California State Water Project*, 1987.

Patrick Porgans, Government Regulatory Specialist, Red-Tape Abatement, Ltd., *Summary Report – Independent Assessment of the State Water Project’s Kern Water Bank*, 1988.

Patrick Porgans and Associates, *Draft: State of the State Water Project, Supply, Demand, Financing and Management, Independent (Pro Bono) Report, Prepared for the California senate Committee on Agriculture and Water Resources*, 1994.

- 1 i. The inherent financial shortcomings of the underfinanced and contractually over
2 committed State Water Project came to a crescendo in 1994 when a report Porgans
3 prepared for the California State Legislature’s Senate Agricultural and Water Committee
4 held a series of hearings, based on the author’s report. During those Senate hearing, both
5 the DWR and the SWP contractors conceded the Project was facing a financial crisis. The
6 crisis stemmed from the fact that major agricultural contractors could not pay for the
7 water. Default on the repayment of the General Obligation Bonds, used to finance the
8 SWP, was imminent danger of going into default, which would adversely affect the credit
9 rating of the State of California.⁷⁷
- 10 j. The State water Project is faced with major problems and challenges. “The project is in a
11 financial crisis and if it was a private business, it would be bankrupt,” according to Tom
12 Clark, general manager of the Kern County Water Agency, the second largest SWP
13 contractor, provide the majority of water to agricultural clients.⁷⁸
- 14 k. Porgans completed a series of Fact-Finding Reports pertaining to the DWR’s
15 mismanagement and failure to comply with federal and state flood control rules and
16 regulations at the SWP Oroville facilities that contributed to the 1980, 1986, 1997, and
17 2017 floods that caused significant damages and loss of lives, downstream from the
18 Oroville Dam. These reports were prepared for clients and law firms.⁷⁹

⁷⁷ Patrick Porgans, Solutionist, *Summary Report, California Department of Water Resources Relicensing of the State Water Project’s Oroville Facilities – Federal Energy Regulatory Commission Project No. 2100, Subject: Notification to Plenary Group of P&A’s Decision to suspend Participation in the Alternative Licensing Procedure and of Our Intent to Inform FERC and the Public of the ALP’s Inherent Shortcomings which are Diametric to Meaningful Public Input, Government’s Trust Responsibilities and the Department of Water Resources’ Written Assurances*, 2004.

⁷⁸ Statement made by Tom Clark, general manager, Kern County Water Agency, before the Senate Committee on Agriculture and Water Resources’ Hearing on the *State Water Project: Supply, Demand and Financing, as recorded by the California State Senate Television Program*, Tape #1. 31 January 1994,

⁷⁹ Patrick Porgans, Government Regulatory Specialist, *Flood Storage and Water Releases at Oroville Dam, State Water Project, between 1969 through 1980*, February 1980.

Patrick Porgans, Government Regulatory Specialist, Preliminary Report, *Flood Storage and water Releases at Oroville Dam, State Water Project, between January 7 – 18, 1980*, March 1980.

Patrick Porgans, Government Regulatory Specialist, *Supplemental Report, Flood Storage and water Releases at Oroville Dam, State Water Project, between January 7 – 18, 1980*, May 1980.

Patrick Porgans, Government Regulatory Specialist, *Flood Storage and water Releases at Oroville Dam, State Water Project, Final Report, Administrative Rules and Regulations in Designated Floodways of California*, September 1980.

Patrick Porgans, Government Regulatory Specialist, *Oroville Dam and reservoir, California State Water Project, flood Control Laws, Floodwater Releases, Erosion and Channel Scouring, Preliminary Performance Report*, 1985.

Patrick Porgans, Government Regulatory Specialist, *Preliminary Performance Report – Flood storage and water Releases at Oroville Dam, State water Project – February 1986*, published in 1987.

- 1 i. The author was retained by county government, farmers, businesses, and commercial and
2 sport-fishing guides, in the Plumas, Butte, Sutter, and Yuba Counties, adversely impacted
3 by the DWR's mismanagement of the SWP Oroville facilities and failure to assure the
4 maintenance of downstream levees.⁸⁰
- 5 **m. DWR officials had previously been warned that the emergency spillway was unreliable,
6 but apparently they never imagined they would be forced to use it. When they did, it
7 caused quick erosion—so much so that DWR officials feared the structure could fail
8 entirely, unleashing a torrent of water. At that point, they ordered a mass evacuation
9 downstream.**⁸¹
- 10 **n. The Oroville Dam spillway incident was caused by a long-term systemic failure of the
11 California Department of Water Resources (DWR), regulatory, and general industry
12 practices to recognize and address inherent spillway design and construction
13 weaknesses, poor bedrock quality, and deteriorated service spillway chute conditions.**⁸²
- 14 o. State Water Contractors opposed a concrete lining below the emergency (auxiliary)
15 spillway, well in advance of the February 2017 partial collapse of the Oroville Dam Spillway
16 Outlet and the massive erosion resulting from floodwater overflowing the emergency
17 spillway.

Porgans and Associates, *Preliminary Performance Report – Food Storage and Water Releases at New Bullards Bar Dam and Reservoir, North Yuba River, Yuba County Water Agency, Project – February 1986 Phase – II, Linda-Olivehurst Study*, 1987.

Patrick Porgans, Government Regulatory Specialist, *Final Report, Vol. I: Feather River Enhancement Project: Plan to Protect Private Property and Public Trust Resources, Plan of Action*, 1996.

Patrick Porgans and Associates, *Initial Inquiry into the Regulatory and Fiduciary Relationship between the U.S. Army Corps of Engineers and the California Department of Water Resources: To Ascertain if Their Relationships Present an Unnecessary Risk to the Public*, 1996.

Patrick Porgans, Government Regulatory Specialist, *Feather River Watershed, Preliminary Assessment, Government Bathymetric Studies Documenting Sediment Deposition at Lake Oroville and Geomorphological Changes within the Feather River Watershed, Above and below Oroville Dam*, 1997.

Porgans and Associates, *Preliminary Assessment, Feather and Yuba Rivers Water Basins – Watershed Conditions and Government Activities Leading up to the 1986-1997 Floods*, published 1997.
Patrick Porgans and Associates, Inc., *Fact-Finding Report, Natural and Government-induced Factors and Projects Identified with Flood Damages and Property Losses Sustained by Clients, in the Lower Feather River Basin, below Oroville Dam*, 1999.

⁸⁰ Government Regulatory Specialist, *Final Report Vol. III, Identifying Sources of Funds to Protect Private Property and Public Trust Resources within the Feather River Basin – Watershed*, 1996.

Patrick Porgans, Government Regulatory Specialist, *Appendix Report, Vol. II: Feather River Enhancement Project: Plan to Protect Private Property and Public Trust Resources*, 1996.

Government Regulatory Specialist, *Appendix Report, Vol. IV, Identifying Sources of Funds to Protect Private Property and Public Trust Resources within the Feather River Basin – Watershed*, 1997.

⁸¹ The Sacramento Bee, By Stuart Leavenworth, Oroville puts focus on dam spillways—aging and some never tested, Feb. 15, 2017. <https://www.sacbee.com/news/nation-world/article132992819.html>

⁸² Independent Forensic Team Report Final, *Summary*, 5 January 2018, p. S-1
<https://www.ussdams.org/our-news/oroville-dam-spillway-incident-independent-forensic-team-final-report/>

- 1 p. The author obtained evidence, via the California Public Records Act, which revealed DWR
2 officials were aware of cracks in the main spillway resulting from previous floodwater
3 releases, in excess of 160,000 cfs, resulting from the January 1997 flood disaster.⁸³
- 4 q. Documentation supports assertions design, construction, deferred maintenance, and
5 operation of the Oroville Flood Control Spillway Outlet Chute was a Dam-Disaster waiting
6 to happen!⁸⁴
- 7 r. ***“The primary objectives of the flood control operation are to minimize flood damages
8 downstream.”***⁸⁵
- 9 s. In 1984, author expresses concern the Army Corps of Engineers that there is no
10 Comprehensive Flood Management Plan in place to address and deal with ongoing flood
11 disasters in Northern California. Information to that effect, was confirmed in oral and
12 written communications with the Sacramento District of the Corps of Engineers. This fact
13 was confirmed by George C. Weddell, Chief, Engineering Division, Department of the
14 Army.⁸⁶
- 15 t. Between 1984 and 2012, the author relentlessly pushed for the development and
16 implementation of a comprehensive flood control plan for Northern California. In 2012,
17 the State of California approved ***the \$17 billion Central Valley flood Protection Plan
18 (CVFPP)*** which was updated in 2015. The DWR prepared the report for the Central Valley
19 Flood Protection **Board**. The author initially supported the **CVFPP**, because it contained
20 three (3) very essential components, if adopted and implemented, that would have
21 provided much needed protection to reduced flood damages associated with floodwater
22 releases from Oroville Dam and the limited carrying capacity of downstream levees.
23 Porgans, on behalf of clients, he once represented, was instrumental in getting those three
24 (3) components into the Plan; (1) additional flood storage space behind Oroville Dam, (2)
25 construct a bypass channel that would divert water from the Feather River, a few miles
26 downstream from the Dam to reduce the volume of floodwaters so as not to exceed the
27 capacity of the downstream levees, and (3), were feasible dredge the Feather River
28 channel. Unfortunately, at the last minute, the three (3) components were removed from
29 the adopted CVFPP. Porgans submitted both oral and written testimony stating objections

⁸³ Patrick Porgans, Solutionist, Public Records Act request to the Department of Water Resources, Public Information Office, Re: Annual Inspection Reports of the State Water Project's Oroville Dam and Reservoir, 2017.

⁸⁴ **__ Fact-Finding Report, Forensic Accounting of the Failure of State Water Project Oroville Dam and Reservoir Flood Control Outlet and Emergency Spillway, Natural or Government-Induced Catastrophe; Initiated February 2017, Status of Report - Ongoing.**

⁸⁵ Department of the army, Sacramento District, Corps of Engineers, Sacramento California, ***Oroville Dam and Reservoir, Feather River, California, Report on Reservoir Regulation for Flood Control***, August 1970.

⁸⁶ Patrick Porgans, Red Tape abatement, Ltd., Work Log Report, ***Project: Need for Comprehensive Flood Management Plan for California, 28 November 1984. Subject: Mr. Weddell's 7 August 1984 correspondence responding to Patrick Porgans, Red Tape Abatement, Ltd. letter to Mr. Brian Doyle, U.S. Army Corps of Engineers, Sacramento District, 24 July 1984.***

1 to the deletion of the three components of the Plan. He made it a point to inform the
 2 Central Valley Flood Control **Board** that as a matter of record, he was exhausting the
 3 administrative remedy, providing the **Board** and **DWR** prior notice, that in the event a
 4 catastrophic disaster results, within the reach of the Feather, downstream from Oroville
 5 Dam, they will not be able to plead the ignorance defense; they were put on notice. The
 6 [Central Valley Flood Protection Plan \(CVFPP\)](https://water.ca.gov/Programs/Flood-Management/Flood-Planning-and-Studies/-/media/D3CA679621574F889C67FB2B7662B1C4.ashx) 2012, Updated 2015
 7 [https://water.ca.gov/Programs/Flood-Management/Flood-Planning-and-Studies/-](https://water.ca.gov/Programs/Flood-Management/Flood-Planning-and-Studies/-/media/D3CA679621574F889C67FB2B7662B1C4.ashx)
 8 [/media/D3CA679621574F889C67FB2B7662B1C4.ashx](https://water.ca.gov/Programs/Flood-Management/Flood-Planning-and-Studies/-/media/D3CA679621574F889C67FB2B7662B1C4.ashx) .

9 u. In 2012, the author conducted a confidential report for clients that own property along the
 10 Feather River, appraising them of the status of the CVFPP, and the potential effects associated with
 11 the updated plan, and other activities within the river channel, that pose a threat to their lands.⁸⁷

12 v. **Q: Do the State Water Project contractors pay for the water it receives from the Feather
 13 River?**

14 **A: No! Although the contractors are required to pay for the construction, maintenance,
 15 water deliveries, bond debt, and other related costs for the repayment obligations for
 16 the SWP, as required by California Water Code [section 12937](#),⁸⁸ there is no actual charge
 17 for the water – it is free!⁸⁹**

18 w. **Q: Did the DWR or SWP contractors pay for the flood control facilities at the SWP Oroville
 19 Dam and Reservoir?**

20 **A: No! Oroville Dam and flood control facilities were paid for with federal and state taxes.⁶**

21 x. **Q: What level of annual income does water from the SWP generate?**

22 y. *The SWP consists of 34 reservoirs and lakes, 701 miles of aqueducts, 5 power plants,
 23 and 24 pumping plants. The SWP delivers water to 29 urban and agricultural water
 24 suppliers in California, providing water to over 25 million California residents and
 25 750,000 acres of irrigated farmland, directly supporting two-thirds of California's \$2.8
 26 trillion economy.*⁹⁰ (Emphasis added)

27 z. **Q: Has the DWR or State Water Project contractors paid for costs for construction,
 28 maintenance, improvements, upgrades, and damages for project levees?**

29 **A: No! Costs are paid for with state and federal taxpayer money, state's general fund
 30 and property tax assessments.⁹¹**

⁸⁷ Patrick Porgans, Solutionist, **CONFIDENTIAL Fact-Finding Report: Confidential Advisory Notice, Feather River Watershed Downstream from State Water Project Oroville Dam Facilities: (I) Historical and Existing Flood Protections Found Detrimental to Downstream Property Owners, (II) Status of the State of California's \$17 Billion Central Valley Flood Protection Plan, and (III) Granite-Hearst Power House Aggregate Mining Project to Excavate 1,000,000 Tons of Aggregate Annual from the Feather River Channel on Property Adjacent to the State's Oroville Wildlife Area**, Dec. 2012.

⁸⁸ California Water Code [section 12937](#), https://california.public.law/codes/ca_water_code_section_12937

⁸⁹ Information obtained from the California Department of Water Resources Office of Public Affairs.

⁹⁰ Coachella Valley Water District <https://cvwd.org/170/Californias-State-Water-Project>

⁹¹ Sutter Butte Flood Control Agency, *Feather River West Levee Project*, <http://sutterbutteflood.org/projects/feather-river-west-levee-project>

- 1 **aa. The Sutter Butte Flood Control Agency is repairing 44 miles of levees from Thermalito**
2 **Afterbay south to the Sutter Bypass.**
- 3 **bb. The most recent cost estimate – \$378 million – reflects the combined costs of the Feather**
4 **River West Levee Project I, which is nearly completed, and Project II work. To date, the**
5 **state is expected to pay as much as 78 percent of the costs for Project I. Property**
6 **assessment revenues (approved by property owners in June 2010) will be used to pay the**
7 **remaining share. In addition, the state committed up to \$4.2 million for emergency**
8 **measures to address flooding in February 2017.⁹²**
- 9 **cc. Q: Does this project benefit DWR and SWP Contractors?**
- 10 **dd.A: Yes. It reduces seepage and groundwater recharge, retaining more water in the river**
11 **channel, and ensures channel conveyance stability.**
- 12 **ee.Q: Currently, there is talk that Levee District No. 1 and Levee District No. 9 are**
13 **considering putting a measure on the ballot to increase property assessments for the**
14 **annual operation, maintenance, and repair of their sections of the \$378 million**
15 **upgraded levees.⁹³**

16 **Major Recipients State Water Project's Oroville Reservoir Water do not Pay to Maintain**
17 **Feather River Channel:**

- 18
- 19 **ff. Since Oroville Dam and Reservoir became operable in 1967, the Feather River has**
20 **become a massive water conveyance system.** The DWR is using the river as “channel” to
21 transport millions of acre-feet of water to its SWP contractors in central and southern
22 California via the Sacramento-San Joaquin Delta (Delta). Although SWP contractors are the
23 major recipients of water stored, released, and transported from the reservoir, they do
24 not pay for flood control maintenance, protection, or damages downstream from the
25 reservoir. Ironically, downstream property owners, taxpayers, and local government
26 districts, absorb and suffer from the financial and ecological impacts associated with
27 conveying SWP water from Oroville Reservoir to central and southern California.
- 28 **gg. According to DWR the costs to maintain the levees, that contain the water in the channel**
29 **are paid almost exclusively by private landowners, reclamation districts, and the cost for**
30 **flood channel maintenance is paid for by the public from the State's General Fund and U.S.**
31 **taxpayers. [Emphasis added] (Refer to Exhibit *)**

32

33 ***The Department's channel maintenance responsibilities apply to flood control***
34 ***“project” channels and the work is done to assure that the design flood quantities***
35 ***will pass through a given reach of stream without exceeding the design flood***
36 ***elevations. The Department's channel maintenance work is not done for the purpose***

⁹² Sutter Butte Flood Control Agency, *Feather River West Levee Project*,
<http://sutterbutteflood.org/projects/feather-river-west-levee-project>

⁹³ Feather River West Levee Project <http://sutterbutteflood.org/projects/feather-river-west-levee-project>

1 **of reduction of bank erosion or seepage problems. Correction of those problems is**
2 **the responsibility of local agencies or individuals. The Department's costs for flood**
3 **channel maintenance work are paid from the general funds of the State.**⁹⁴ [Emphasis
4 added] (Refer to Exhibit *)

5 ii. Q: Do DWR and SWP contractors benefit from the taxpayer funded levees along the
6 Feather River downstream from Oroville Dam?

7 A: **Yes! The SWP contractors concede that the Feather River serves as a conveyance**
8 **system to move water from Oroville Reservoir to the SWP Delta pumps, where it is**
9 **conveyed via the California Aqueduct SWP.**⁹⁵

10 Note: The DWR and its SWP Contractors have spent "very limited" funds to maintain the channel
11 even though DWR acknowledges that obstructions in the channel are causing property damages.⁹⁶
12 Conversely, they have spent hundreds-of-millions of dollars constructing and maintaining the
13 California Aqueduct, which is the channel south of the SWP's delta pumps, used to deliver water to
14 central and southern California **SWP** contractors.⁹⁷

16 **Legislative Counsel Opinion Claims State Liable for Levee Damages:**

17
18 hh. In the 1980's, the author was retained by clients from the Delta Cross Channel Committee,
19 composed of both public and private entities, in the Sacramento-San Joaquin Delta to
20 conduct a similar study to quantify and qualify the adverse impacts of the SWP water
21 conveyance on their respective properties and levees and develop a Plan of Action to
22 minimize or eliminate damages and obtain funds to protect their respective properties.⁹⁸

23 ii. During the course of that project, RTA and its clients had Legislator Norman Waters
24 request and opinion from the Legislative Counsel of California, as to whether the State
25 would be liable for damage to private levees in the Sacramento-San Joaquin Delta, caused
26 by the transfer of water across the Delta as part of the operation of the SWP. The
27 Legislative Counsel concluded that the State would be held liable for damages to private

⁹⁴ The Department of Water Resources letter to Patrick Porgans, Red Tape Abatement, Ltd., Re: **Feather River Flood Maintenance Responsibility**, 27 July 1984.

⁹⁵ State Water Project Contractor, Coachella Valley Water District
<https://cvwd.org/170/Californias-State-Water-Project>

⁹⁶ The Department of Water Resources, Edward F. Huntley, Chief, Division of Operation and Maintenance, Memorandum to Ryan Broderick, Region II, Department of Fish and Game, **Subject: Improvement in Feather River Channel Capacity**, 12 July 1995.

⁹⁷ The Department of Water Resources, **Management of the California State Water Project, Bulletin 132-94, Chapter 15, Financial Analysis, Table 15-1 and Appendix B, Data and Computations Used in Determining Water Charges for 1995**, December 1995, p. 235 et seq.

⁹⁸ Patrick Porgans, Red Tape Abatement, Ltd., **Delta Dilemma, A Perspective, (Phase I-II), Effects of Government Default on Flood Protection and Water Rights in the Sacramento-San Joaquin Delta**, Report No. RTA-WRI/SWP/Delta 016083, April 1983.

1 property by the transfer of water across the Delta. Mr. Bion M. Gregory, Legislative
2 Counsel, in his Opinion, made the following statements:

3
4 ***The State would be liable for damages to private levees in the Sacramento-San
5 Joaquin Delta caused by the transfer of water across the Delta as part of the
6 operation of the State Water facilities.*** (Emphasis added)

7
8 *Section 19 of Article I of the California Constitution⁹⁹ provides that private property may
9 be taken of damage for public use only when just compensation has been paid to owner
10 of the property. Under that constitutional provision, any actual physical damage to real
11 property proximately caused by a public work as deliberately planned and carried out
12 is compensable whether foreseeable or not ([Albert v. County of Los Angeles](#) 62 Cal. 2d
13 250, 263-4).*

14
15 *To the extent, therefore, that the transfer of water across the Sacramento-San Joaquin
16 Delta as part of the operation of the State Water Facilities proximately causes actual
17 physical damages to private property in the Delta, the State would be liable for that
18 damage.*

19 **Case Law: Damage to Private Property:**

20
21 *In this connection, we note that, in the case of [Stoney Creek Orchards v. State of
22 California](#) 12 Cal. App. 3d 903, the court upheld a cause of action which involved
23 damages to private property caused by the use of the Sacramento River for the
24 transfer of water as part of the operation of the Central Valley Project. The Court, at
25 page 906, summarized the basis for the cause of action as follows:* (Emphasis added)

26
27 ***“The plain history of Plaintiff’s action is that use of the Sacramento River as a canal
28 and the artificial regiment of its flow attributable to the plan, design, construction,
29 and operation of the Shasta, Keswick and Black Butte Dams substantially contribute
30 to erosion of the riverbanks on Plaintiff’s properties and the State of California,
31 having participation in the planning and development of this multi-reservoir system,
32 is answerable in damages for that harm.”*** (Emphasis added)

⁹⁹ California Constitution - ARTICLE I DECLARATION OF RIGHTS [SECTION 1 - SEC.

32] (*Article 1 adopted 1879.*) SEC. 19. (a) Private property may be taken or damaged for a public use and only when just compensation, ascertained by a jury unless waived, has first been paid to, or into court for, the owner.

https://leginfo.ca.gov/faces/codes_displaySection.xhtml?lawCode=CONS§ionNum=SEC.%2019.&article=I <https://www.dailysignal.com/2015/06/22/supreme-court-decision-makes-it-harder-for-government-to-take-personal-property-from-americans/>

1
2 **According, it is our opinion that the State would be liable for damage to private levees**
3 **in the Sacramento-San Joaquin Delta caused by the transfer of water across the Delta**
4 **as part of the operation of the State Water Facilities.** ¹⁰⁰ (Emphasis added) (Exhibit *)
5 (Note: Refer to P/A Appendix 50)@
6

7 *On the project RTA conducted for the Cross Delta Channel Committee, the author used*
8 *government data to reveal that SWP water conveyance through the Delta was causing*
9 *erosion to private levees. The author also identified a source of revolving fund money*
10 *in the State Water Project's revenue stream; funds derived from royalties from the sale*
11 *of publicly-owned tideland oil. Porgans extensive analysis of the funding sources of the*
12 *SWP proved that the DWR had not repaid \$500 million used to fund the SWP. Working*
13 *with Senator Boatwright, we obtained approximately \$120 million from the State*
14 *Water Project's "revolving fund" to finance levee revetment and levee improvement*
15 *projects, which government data proved that the transport of SWP water through the*
16 *Delta. The source of funds was derived from monies being repaid to the California*
17 *Water Fund and did not require the issuance of General Obligation Bonds or levying*
18 *new taxes on the public.* ¹⁰¹
19

20 **DELTA FLOOD PROTECTION ACT - cwc.ca.gov**

21
22 *Sacramento-San Joaquin Delta region passed the Delta Flood Protection Act. The bill ([SB 34](#))*
23 *created the Delta Flood Protection Fund and declared legislative intent to appropriate \$12*
24 *million annually for Delta flood protection for 10 years starting July 1, 1988.* ¹⁰²

25 **Q: Did DWR fail to properly-inspect channel conditions leading up to a major levee**
26 **break? Yes!**
27

28 **A: According to the Corps of Engineers:**
29

30 ***The limitations of the downstream levees and potential for disaster were evident***
31 ***during the 1986 Flood when a levee break occurred on the south bank of the Yuba***

¹⁰⁰ Letter from Bion M. Gregory, Legislative Counsel and Thomas D. Whelan, Deputy Legislative Counsel to Honorable Senator Borman s. Waters, *Re: State Water Project: Private Levees* #13455, September 29, 1982.

¹⁰¹ Patrick Porgans, red Tape Abatement, Ltd., *Delta Dilemma: A Perspective (Phase II), Effects of Government Default on Flood Protections and Water Rights in the Sacramento-Joaquin Delta*, Report No. RTA-WRI/SWP/016083, April 1983.

¹⁰² California Department of Water Resources, Division of Planning, *Actions & Priorities, Delta Flood Protection Act*, March 1990. <https://cwc.ca.gov/-/media/CWC-Website/Files/...>

1 ***River at the town of Linda and Olivehurst, just above the Feather River Junction.*** ¹⁰³
2 [Emphasis added] (Refer to Exhibit *)

3 **Q: Did excessive floodwaters contribute to downstream erosion, property, and levee**
4 **damages along the River? Yes!**

5
6 **A: According to Sutter-Butte Flood Control Agency Report:**

7
8 ***The repairs are needed because levees along the west bank of the Feather River suffer***
9 ***from potential underseepage and through-seepage. Similar problems caused major***
10 ***levee failures in Yuba City in 1955 and Yuba County in 1986 and 1997.*** ¹⁰⁴ [Emphasis
11 added] (Refer to Exhibit *)

12 **Q: Does the FERC License Project 2100 require that DWR Officials be Compliant with the**
13 **Articles Contained therein, and Regulations Prescribed by the U.S. Army Corps of**
14 **Engineers? Yes!**

15
16 A: Regulations provided by the U.S. Army Corps of Engineers,¹⁰⁵ and the Federal Energy Regulatory
17 Commission (FERC)¹⁰⁶ requires that DWR be compliant with the operational criteria for floodwater
18 releases and notification of floodwater releases.

19 **Q: Is the Department of Water Resources Required to inform the public of Floodwater**
20 **Releases from Oroville Dam? Yes!**

21
22 A: Regulations provided by the U.S. Army Corps of Engineers,¹⁰⁷ and the Federal Energy Regulatory
23 Commission (FERC)¹⁰⁸ requires that DWR be compliant with the operational criteria for floodwater
24 releases and notification of floodwater releases.
25

¹⁰³ U.S. Army Corps of Engineers, Sacramento District, *Oroville Dam and Lake, Feather River, California, Water Control Manual, Appendix IV to Master Water Control Manual, Sacramento River Basin, California, Preliminary Subject to Revision*, August 1989, p. III-3.

¹⁰⁴ Sutter Butte Flood Control Agency, [Feather River West Levee Project, http://sutterbutteflood.org/projects/feather-river-west-levee-project](http://sutterbutteflood.org/projects/feather-river-west-levee-project)

¹⁰⁵ Department of the Army, Sacramento District Corps of Engineers, Sacramento, CA, *Oroville Dam and Reservoir, Feather River, CA, Report on Reservoir Regulations for Flood Control*, August 1970.

¹⁰⁶ Federal Energy Regulatory Commission, *License P-2100*, issued to the California Department of Water Resources in 1957.

¹⁰⁷ Department of the Army, Sacramento District Corps of Engineers, Sacramento, CA, *Oroville Dam and Reservoir, Feather River, CA, Report on Reservoir Regulations for Flood Control*, August 1970.

¹⁰⁸ Federal Energy Regulatory Commission, *License P-2100*, issued to the California Department of Water Resources in 1957.

1 (5) Keeping downstream interests advised of impending changes in flood
2 control releases which may affect them.¹⁰⁹
3

4 (Exhibit *)
5

6 The FERC required Emergency Action Plan (EAP), in the event of an Emergency/Disaster
7 at the SWP Oroville Facilities, is not available to the public - DWR officials stated release
8 of the EAP would be a breach of National Security!
9

10 Q: Is the Department of Water Resources required to file an Emergency Action Plan
11 (EAP) for as a condition for the operation of the State Water Project Oroville Dam
12 and Reservoir facilities. Yes! Is the EAP readily available to the public. No!
13

14 A: Shortly after the partial collapse of the spillway. The author made contact with
15 GER personnel, in Washington, D.C., to obtain a copy of the EAP. FERC Public Affairs
16 personnel informed Porgans that they would have to run it by FERC and DWR
17 attorneys, and if they approved release of the EAP, the author would have to sign a
18 Non-Disclosure form stating the EAP is not to be shared with anyone. When
19 questioned about the absence of the EAP, DWR officials stated release of the EAP
20 would be a breach of National Security!

21 The author has obtained a dated copy of the EAP, submitted to FERC by the Yuba County
22 Water Agency for the operation of New Bullards Bar Dam:
23

24 *The Office of Electric Power Regulation of the Federal Energy Regulatory Commission*
25 *has recently adopted guidelines for the preparation of Emergency Action Plans. An*
26 *updated emergency Action Plan for New Bullards Bar Dam has been prepared in*
27 *accordance with those guidelines. One requirement of the new guidelines is evidence*
28 *that public entities in the affected flood plain understand their role in carrying out*
29 *the plan.*¹¹⁰ (Exhibit *)
30
31
32
33
34
35

¹⁰⁹ U.S. Army Corps of Engineers, Sacramento District, *Oroville Dam and Reservoir, Feather River, California: Report on Reservoir Regulations for Flood Control*, August 1970, p. 30.

¹¹⁰ Donald R. Frost, Administrator, Yuba County Water Agency, correspondence to George C. Weddell, Department of the Army, Corps of Engineers, Sacramento District, October 1, 1980.

CHAPTER V

Confidential DWR Reports Reveal Construction of Project Levees Retain Higher Flood Flows in the River:

SECTION I: Pre- and Post-Levee Projects: Historical and Existing Flood Protections Detrimental to Downstream Property Owners:

Q: Is there evidence to substantiate that pre- and post-levee projects constructed along the Feather River and Yuba River have exacerbated flood damages? Yes!

A: A DWR confidential report documents the fact that historical pre-1955 Sacramento Flood Control Project Levees, constructed along the banks of the Feather River, from Hamilton Bend, downstream, beyond the confluence of the Yuba River, exacerbated post-1955 downstream flood damage; government's decision and motive for constructing those levees, appear to be in conflict with Federal and State Flood Control Rules and regulations.

History and Purpose of the Sacramento River Flood Control Project – Exacerbates Flood Damages:

After the massive 1907 and 1909 Floods, government opted to block the Feather River channel's natural floodwater overflow outlets; it also decided not to provide levee protection on the left bank (east side) of the Feather River from the confluence of Honcut Creek upstream on the left bank. During those flood events, massive amounts of floodwater breached the Feather River where it makes a sharp right angle turn around Hamilton Bend (Hazelbush levee), in proximity to the SWP's Thermalito Afterbay Outlet. Government documents indicate Feather River floodwater breached the right banks of the river and flowed into the Butte Sink, breaching the levees on the Sacramento River and reportedly was the cause of a levee collapse on the westward side of that river!

*During flood periods, the Feather River overflowed large areas beyond its defined low water channels from Hamilton Bend six miles below Oroville to its confluence with the Sacramento River. **This water** [from Hamilton Bend] **in 1909 was the deciding factor in the breaking of the levees at Moons Bend on the Sacramento River below Colusa and the flooding of the Colusa Basin.***¹¹¹

(Emphasis added) (Exhibit *)

In fact, the flood control capacities of the Sacramento Flood Control System and the levees contained therein, are based on flow measurements recorded during the 1907-1909 flood events.

¹¹¹ U.S. Department of Agriculture, Weather Bureau.—*Bulletin 43. The Rivers and Flood of the Sacramento and San Joaquin Watersheds*, by Nathaniel R. Taylor, Washington: Government Printing Office, 1913, p. 55.

1 Furthermore, the flood control space reserved behind Oroville Dam and Reservoir (750,000 acre-
2 feet of water) is also prefaced on the 1907-1909 Floods, which is purportedly designed to limit
3 floodwater releases into the Feather River channel. Details on the floodwater releases and the
4 downstream levees capacities are listed in this report.

5 **Flood Flow Criteria Releases from Oroville Reservoir for Feather River Channel Capacity** 6 **Based on 1907-1909 Floods:**

7
8 **3.27 Functional Design: Based upon a reanalysis of the 1907 (187,000 c.f.s. at**
9 **Oroville) and 1909 flood flows in U.S.G.S. Water Supply Paper 298, 1912 (Bailey. P.**
10 **13, 14) and as a result of additional hydraulic studies, project capacity to confine**
11 **those flows were adopted as follows (S.D. 323, p. 45): Feather River above Marysville**
12 **180,000 c.f.s.¹¹² (Emphasis added) (Exhibit *)**

13
14 **Levee work by the Federal Government on the Feather River system followed**
15 **a general pattern of “progressive work upstream” but for the reasons indicated there**
16 **were many variations too take care of urgent immediate problems. The first Federal**
17 **work recorded is the raising and extending of the then existing short levee in the**
18 **vicinity of Hamilton Bend in 1930 after the 1928 flood. From 1930 to 1940 construction**
19 **work was largely concentrated on the left bank levees of the Feather between the**
20 **mouth of the Yuba and the Bear involving new levee “set-backs” to provide project flow**
21 **capacity and strengthening of existing levees. The Marysville levees were intensely**
22 **worked on during the period 1935 to 1945. Levee work in the Yuba City area and**
23 **southward thereof was mainly accomplished in 1939 and 1940. Such work, in general,**
24 **consisted of strengthening existing levees to bring them to protect standards. Major**
25 **construction on the right bank levees above Yuba City was undertaken principally in**
26 **the years 1934, 1945, 1947 and 1954 and consisted of both strengthening and raising**
27 **of existing levees and the construction of new levees. Work on the Feather River levees**
28 **below the mouth of Bear was undertaken in 1942, 1946 and 1955 while work on the**
29 **Feather River levees above Marysville and on the tributary levees was carried out in**
30 **various locations throughout the period 1932 through 1948.. *(Exhibit No. X, pp. 7 and**
31 **8.) [Emphasis added]**

32 **More than 50 separate construction contracts were let on the Feather River**
33 **levee system over the period 1930 to 1955. Their total construction cost amounted to**
34 **over \$10,000,000 (Federal expenditure). In addition, state expenditures on Feather**
35 **amounted to about \$1,500,000. (Total expenditures by Federal Government and State**
36 **work approximately \$52,500,000 and \$25,800,000, respectively. Expenditures on**

¹¹² Frank Kochis, Consulting Engineer, *History of Development of the Sacramento River Flood Control Project*, undated.

1 Feather equal to 20% of all Federal and 7% of all State or 15% of State.)¹¹³ *(Emphasis
2 added) (Exhibit *)

3 **Q: Has development of flood control projects been consistent with federal and state**
4 **policies, mandates and rules and regulations? Apparently Not!**
5

6 Public records confirm since completion of the Sacramento River Flood Control Project Levees, on
7 the right bank of the Feather River, from Hamilton Bend downstream to the confluence of the
8 Sacramento River, the torrent of natural floodwater overflow that would have been discharged into
9 the Sutter-Butte basin have been confined within the Feather River channel.

10
11 Although hundreds of millions-of-dollars have been expended for levee and dam construction and
12 maintenance, within the Feather River Watershed (FRW), purportedly to reduce flood damages,
13 between 1955 and 2017, property damages downstream from the SWP Oroville Dam exceeded more
14 than four-billion dollars. The data indicate, that post-1955, this reach of the Feather River, below
15 Oroville Dam, experienced a major flood event, on average, every 12.5 years!
16

17 **Q: Is there evidence to support the fact that government knowingly constructed flood control**
18 **projects that would exacerbate flood damages within the FRW, as a means to protect pre-**
19 **existing flood control projects beyond the confines of the FRW? Yes!**
20

21 A: In the late 1940s

22
23 *(1) An extensive levee system has been constructed to protect the Feather River flood*
24 *plain downstream from Oroville Reservoir. A levee extends along the right bank of*
25 *Feather River from Hamilton Bend to the mouth of Feather River. Levees have also*
26 *been constructed along the lower reaches of Bear and Yuba Rivers, around the city of*
27 *Marysville and around a local reclamation district. The extent of the levee system is*
28 *shown on charts 1 and 28. (p. 3) [Emphasis added]*
29

30 A: Public records and Congressional documents establish the irrefutable fact that government
31 officials knowingly and willfully authorized flood control projects that placed property owners,
32 downstream of Oroville Dam, at greater risk by impeding the natural overflow of Feather River
33 floodwater to protect Sacramento River Flood Control Levees from being breached!
34
35

36 **Historical Volume of Floodwaters Did Not Go Down Feather River-Overtopped West**
37 **Bank into Butte-Sutter Basins:**
38

¹¹³ Frank Kochis, Consulting Engineer, *History of Sacramento River Flood Control Project*, 29 July 1963, p. 26.

1 A Department of Water Resources (DWR)
 2 confidential report attest to the fact that since
 3 construction of government sanctioned
 4 project levees, on the west bank of the
 5 Feather River, commencing at Hamilton Bend,
 6 downstream, beyond the confluence of the
 7 Yuba River, have significantly exacerbated
 8 subsequent downstream flood damages from
 9 the 1950's to present. These levees were
 10 authorized as a part of the [Sacramento River](#)
 11 [Flood Control Project](#).¹¹⁴ (Exhibit *) They
 12 were willfully designed and constructed to



13 constrain the natural-historical flood flows within the Feather River channel to prevent floodwaters
 14 from inundating the Butte and Sutter basins and to protect Project levees on the Sacramento River
 15 from damage. Reconfiguration of the Feather River's floodwater carrying capacity increases the
 16 duration, stages, and velocity of floodwaters, which now cause the eastern portion of the river
 17 channel to heighten flooding and inundation. The documentation to support this assertion is stated
 18 in detailed in DWR's 1957 confidential report; excerpts from that document, read as follow:

19
 20 ***Under natural conditions the river channel were of moderate section and***
 21 ***conveyed but a small fraction of the flood discharges. The lateral basins carried the***
 22 ***greater portions of the flood waters and acted as flood storage reservoirs. They also***
 23 ***received and retained a large portion of the sediments delivered to the valley floor.***
 24 ***During flood periods, the Feather River overflowed large areas beyond its defined low***
 25 ***water channels from Hamilton Bend six miles below Oroville to its confluence with***
 26 ***Sacramento River.*** (Refer to Plate 1-2., Study Area map.) [Emphasis added] (Exhibit *)

27
 28 ***Along the east bank from Oroville to Honcut Creek the inundation was***
 29 ***confined to a relatively narrow strip of land limited by bluffs paralleling the river***
 30 ***channel. A wider area (now known as reclamation district 10) was subject to inundation***
 31 ***between Honcut Creek and Yuba River.***

32
 33 ***The volume of overflow waters along the west bank of the Feather River greatly***
 34 ***exceeded the volumes discharged over the east bank. At Hamilton Bend overbank flows***
 35 ***through Hamilton Slough and for a distance of several miles downstream there from***
 36 ***coursed westward to Butte Basin where they merged with the Sacramento River***
 37 ***overflows near Colusa. The magnitude of this cross-country flow from Feather River is***
 38 ***evidenced from reports concerning the 1907 and 1909 floods which state that the rush***

¹¹⁴ U.S. Army Corps of Engineers, Sacramento River General Reevaluation Report,
<https://www.spk.usace.army.mil/Missions/Civil-Works/Sacramento-River-GRR/>

1 **of water from Feather River flowed across Butte Basin north of the Sutter-Buttes,**
2 **breached the Sacramento River levees and entered Colusa Basin on the west side of**
3 **that river.** [Emphasis added]
4

5 *South of the Hamilton Bend vicinity flood flows over poured the west bank of Feather*
6 *River through a number of slough channels extending southeasterly to Sutter Basin,*
7 *among which was Gilsizer Slough which passes through the area now occupied by Yuba*
8 *City. The entire area south of the present location of Gridley between the Feather River*
9 *and Sutter Basin, with the exception of the Sutter-Buttes, was subject to inundation.*
10 *This area comprised lands now included in Drainage District No. 777; Levee District No.*
11 *9 and No. 1, Sutter County; and Reclamation District No. 823 and 803. Reports on the*
12 *1907 and 1909 floods state that at the latitude of Marysville the inundation area*
13 *extended westward in a continuous expanse for some 25 miles with only occasional*
14 *high knolls and alluvial ridges standing above the flood level. Although there were some*
15 *individual and district reclamations at that time, Sutter Basin had not been reclaimed*
16 *and other than the levees surrounding the City of Marysville, **all levees upstream and***
17 ***downstream from that city on both riverbanks were incapable of restraining the flood***
18 ***waters and were overtopped and breached at many locations, and in general the***
19 ***disposition of flood waters in those floods conformed to natural conditions. Accounts***
20 ***of the near legendary floods of 1861-62 indicate that the magnitude of those floods***
21 ***appreciably exceeded the floods of 1907 and 1909 and that the flood of December***
22 ***1955, if it had occurred under natural conditions without the existence of mountain***
23 ***storage and valley flood control works, would have resulted in conditions similar to***
24 ***1861-62 which were far more severe than those of 1907 and 1909.*** (pp. 1 thru 4.)
25 (Emphasis added) *(**Exhibit** No. x, Includes Map depicts flood flows*)

26 **Conflicting Dichotomy Regarding Federal and State Policy Pertaining to Government's**
27 **Intentional Construction of a Levee System in One Region to Ensure the Protection and**
28 **Integrity of a Preexisting Sacramento Flood Protection Project Levee in Another Region**
29 **that Results in Creating or Exacerbating Flood Flows Adversely Affecting and**
30 **Endangering the Lives and Property in Another Region:**
31

32 *California Water Code Sec. § 8706.5 Any activity that does or may interfere with,*
33 *obstruct the performance, maintenance, or operation of, or otherwise adversely affect*
34 *facilities of the State Plan of Flood Control, designated floodways, or streams that are*
35 *regulated by the board constitutes a public nuisance, and the board may ...*
36

37 **Water Code Section 8700(a)**: *It is unlawful for any person or public agency to interfere*
38 *with, obstruct the performance, maintenance, or operation of, or otherwise take*
39 *actions that may adversely affect facilities of the State Plan of Flood Control,*
40 *designated floodways, or streams that are regulated by the board.*

1 **Feather River Property Owners Denied Permit to Protect Their Land from Flooding**
2 **Caused by the Construction of Levees on the West Bank of the River, Authorized as Part**
3 **of the Sacramento River Flood Control Project (SRFCP):**
4

5 Portions of the lands, located on the east bank of the Feather River were not included as part of the
6 SRFCP; however, as a result their lands were subjected to higher floodwater flows from construction
7 of the levee on the west bank of the river. Property owners on the east bank of the Feather River,
8 above Honcut Creek filed an application with the California Reclamation Board (renamed as the
9 Central Valley Flood Protection Board), in an attempt to alleviate the higher floodwater flows that
10 inundated their land. Ironically, the Board denied the application of Heringers Enterprises (land
11 subsequently acquired by J.E.M. Farms in 1977), to construct a levee to protect his property from
12 higher flood flows exacerbated by the construction of the levee on the west bank, which were
13 completed during the mid-1950s, as part of the SRFCP.

14
15 It is important to note, that prior to the completion of the SRFCP levee on the west bank, the extent
16 and degree of flood damages sustained by Heringers Enterprise. The following comments are
17 verbatim excerpt from The Reclamation Board hearing:

18
19 *In the matter of Application No. 2427 of Heringers Enterprises, Findings, Conclusions,*
20 *and Decision. Findings of Fact: That after appropriate notice this matter came on the*
21 *regularly for hearings before The Reclamation Board in Sacramento, California, on the*
22 *days of December 18, 1958, January 2, 1959, and February 18, 1959. That the applicant,*
23 *Heringers Enterprise, appeared by Frederick Heringers, and other interested parties*
24 *representing various levee and reclamation districts appeared. Evidence both oral and*
25 *documentary having been reviewed and duly considered and being fully informed in the*
26 *premises, the undersigned members of the Reclamation Board, having either heard or*
27 *having read a transcript thereof, make the following findings of fact, conclusions, and*
28 *decisions.*

29 I *That the Reclamation Board has jurisdiction under Sections 8710 through 8723,*
30 *8525 and 12648 of the Water Code, to consider the application of Heringers Enterprises*
31 *filed on November 8, 1956, for the approval of plans to construct a levee on the east*
32 *bank of the Feather River and on the north side of Honcut Creek, and to hear evidence*
33 *in regard thereto.*

34 II *...The proposed levee to have the same slopes and the same crown as the*
35 *finished levee on the west side of the Feather River and to follow down the Feather*
36 *River with the same grade...*

37
38 III *That the westerly levee of the Feather River, the southerly levee of Honcut Creek*
39 *and the easterly levees downstream from the mouth of Honcut Creek are all authorized*
40 *parts of the plan of flood control for the Sacramento River and tributaries, adopted by*
41 *the United States by acts of Congress approved March 1, 1917, May 15, 1928, August*

1 26, 1937, and August 18, 1941, and by the Legislature of the State of California by
2 Sections 8525 and 12648 of the Water Code. However, there is no levee authorized for
3 the northerly bank of Honcut Creek or the easterly bank of the Feather River upstream
4 from the mouth of Honcut Creek in accordance with the authorized flood control plan
5 for the Sacramento Flood Control Project. That said plan of flood control was adopted
6 and has been in effect since 1911.

7
8 IV That the said authorized levees have been designed and constructed by the
9 Corps of Engineers, United States Army, in accordance with the said authorized statutes
10 to protect the areas inside these levees.

11 V That the works proposed by Herringers Enterprises in Application No. 24277,
12 have not been designed to accommodate the flood flow of the Feather River and Honcut
13 Creek without resulting in the hazards of flood and resultant damage to others and to
14 the works of the aforesaid project of flood control.

15
16 VI The construction if the works proposed in the said application will not provide
17 for an adequate channel to carry the waters if the Feather River and Honcut Creek
18 during periods of flood flow.

19
20 VII **That during of flood flow in this reach of the Feather River the failure to**
21 **provide such a channel would be injurious to or damage the works of the project**
22 **adopted by the Legislature, including, but not limited to the west levee of the Feather**
23 **River, would interfere with the successful operation and functioning of the**
24 **Sacramento River Flood Control Project, and would substantially obstruct the free**
25 **flow of the waters of the Feather River and Honcut Creek. That, in addition, the**
26 **proposed works and lands of Heringers Enterprises would be similarly**
27 **threatened.**(Emphasis added)

28
29 VIII That the construction of the works proposed in the said application would
30 endanger persons and property as well as improvements constructed in reliance upon
31 the established plan of flood control for this area.

32 **CONCLUSIONS** From the findings of fact hereinabove set forth, The Reclamation Board
33 hereby concluded:

34
35 (1) That said Application No. 2427 of Heringers Enterprises may and should be denied
36 under the provisions of Section 8273 of the Water Code.

37 (2) That the proposed works are not designed to provide an adequate flood channel
38 and as a necessary result thereof would jeopardize the integrity of the project works
39 and constitute a hazard to life and property.

1 (3) That the proposed works would be contrary to the provisions of Sections [8596](#)¹¹⁵
2 and [8706](#)¹¹⁶ of the Water Code.

3 (4) That the proposed works would constitute a nuisance since they would interfere
4 with the use and enjoyment of property of interest therein.¹¹⁷ (Refer to Exhibit *)
5

6 **The DWR's failures and conflicts raise fundamental questions, e.g.,**
7

8 **Q: Does DWR have the legal right to place the public at an unacceptable level of risk**
9 **without their consent? No!**

10 **A: DWR's action appears to violate the First Principle of Civil Law? Yes.**
11

12 ***"Imposing Risks on people if and only if it is reasonable to assume they have***
13 ***consented to accept those Risks." Risk control is a central goal of Civil Law.***¹¹⁸
14 **(Emphasis added) (Exhibit *)**

15 **Q: Does DWR have the right to willfully "take" property or cause levee damages that are**
16 **inconsistent with the law? Not according to case law and U.S. and California Constitutions:**
17

1. ¹¹⁵ California Water Code Sec. § 8596 The board may maintain actions in the name of the people of the State to restrain, or to recover damages for, the doing of any act or thing that may be injurious to any of the works necessary to the plan of flood control or that may interfere with the successful execution of the plan ... https://california.public.law/codes/ca_water_code_section_8596

¹¹⁶ Water Code Section 8706 (a). The board may maintain actions in the name of the state to compel by injunction the owner or owners of any bridge, trestle, wire line, viaduct, embankment, or other structure or obstruction that shall be intersected, traversed, or crossed by any bypass, drainage canal, channel, or overflow channel to construct or alter any structure in order to offer a minimum of obstruction to the free flow of water. In the case of existing works, the board may compel the removal or alteration of structures or obstructions that impede the free flow of water.

Section 8706.5; California Water Code Sec. § 8706.5 Any activity that does or may interfere with, obstruct the performance, maintenance, or operation of, or otherwise adversely affect facilities of the State Plan of Flood Control, designated floodways, or streams that are regulated by the board constitutes a public nuisance, and the board may ...

¹¹⁷ Before the Reclamation Board, State of California, *In the Matter of the Application No. 2427 of Heringers Enterprises, Findings, Conclusions, and Decision*, Sept. 7, 1960.

¹¹⁸ These egregious long-term repeated failures [violated the First Principle of Civil Law: "imposing Risks on people if and only if it is reasonable to assume they have consented to accept those Risks." Risk control is a central goal of Civil Law](#)^[10] ¹¹⁸

Bea, R.G. (200): "An Instrument of Risk Management: The Law," Center for Catastrophic Risk Management, University of California Berkeley, <https://drive.google.com/open?id=0Bz11mlutSEnYiFfTGpXeTZXQmc>

1 **A: The DWR's actions to willfully "take" property or cause levee damages¹¹⁹ are apparently in**
 2 **conflict with the U.S. and California Constitutions,¹²⁰ case law, statutes, and regulatory mandates.**
 3 ^{121 122} (Exhibit *)

4 **DWR's Confidential Report Confirms Massive Floodwater Flows Pre-Project Levee**
 5 **Construction did not make it all the way down the Feather River:**

6
 7 **A: The DWR's actions to willfully "take" property or cause levee damages¹²³ are apparently**
 8 **in conflict with the U.S. and California Constitutions,¹²⁴ case law, statutes, and regulatory**
 9 **mandates. ^{125 126} (Exhibit *)**

10 **Q: Has development of flood control projects within the FRW been consistent with federal and**
 11 **state policies, mandates and rules and regulations? No! Not According to Government**
 12 **documents!**

13
 14 **A: The data reveals that** government knowingly constructed flood control projects that would
 15 exacerbate flood damages within the **FRW**, as a means to protect pre-existing flood control
 16 projects beyond the confines of the **FRW**. Project levees, bordering the river were completed
 17 in 1954, in the vicinity of Hamilton Bend, approximately six (6) miles downstream from the
 18 city of Oroville, flowed into the Butte and Sutter Basins. **The west side levee will need to be**

¹¹⁹ *Stoney Creek Orchards et al., Plaintiffs and Appellants, v. State of California, Defendants and Respondents*. 90312 C.A. 3rd 903; 91 Cal Rptr. 139 (Civ. No. 12267. Third Dist. Nov. 9, 1970. <https://law.justia.com/cases/california/court-of-appeal/3d/12/903.html>

¹²⁰ **California Constitution - ARTICLE I DECLARATION OF RIGHTS [SECTION 1 - SEC. 32]** (*Article 1 adopted 1879.*) **SEC. 19.** (a) Private property may be taken or damaged for a public use and only when just compensation, ascertained by a jury unless waived, has first been paid to, or into court for, the owner. https://leginfo.ca.gov/faces/codes_displaySection.xhtml?lawCode=CONS§ionNum=SEC.%2019.&article=I

¹²² <https://www.dailysignal.com/2015/06/22/supreme-court-decision-makes-it-harder-for-government-to-take-personal-property-from-americans/>

¹²³ *Stoney Creek Orchards et al., Plaintiffs and Appellants, v. State of California, Defendants and Respondents*. 90312 C.A. 3rd 903; 91 Cal Rptr. 139 (Civ. No. 12267. Third Dist. Nov. 9, 1970. <https://law.justia.com/cases/california/court-of-appeal/3d/12/903.html>

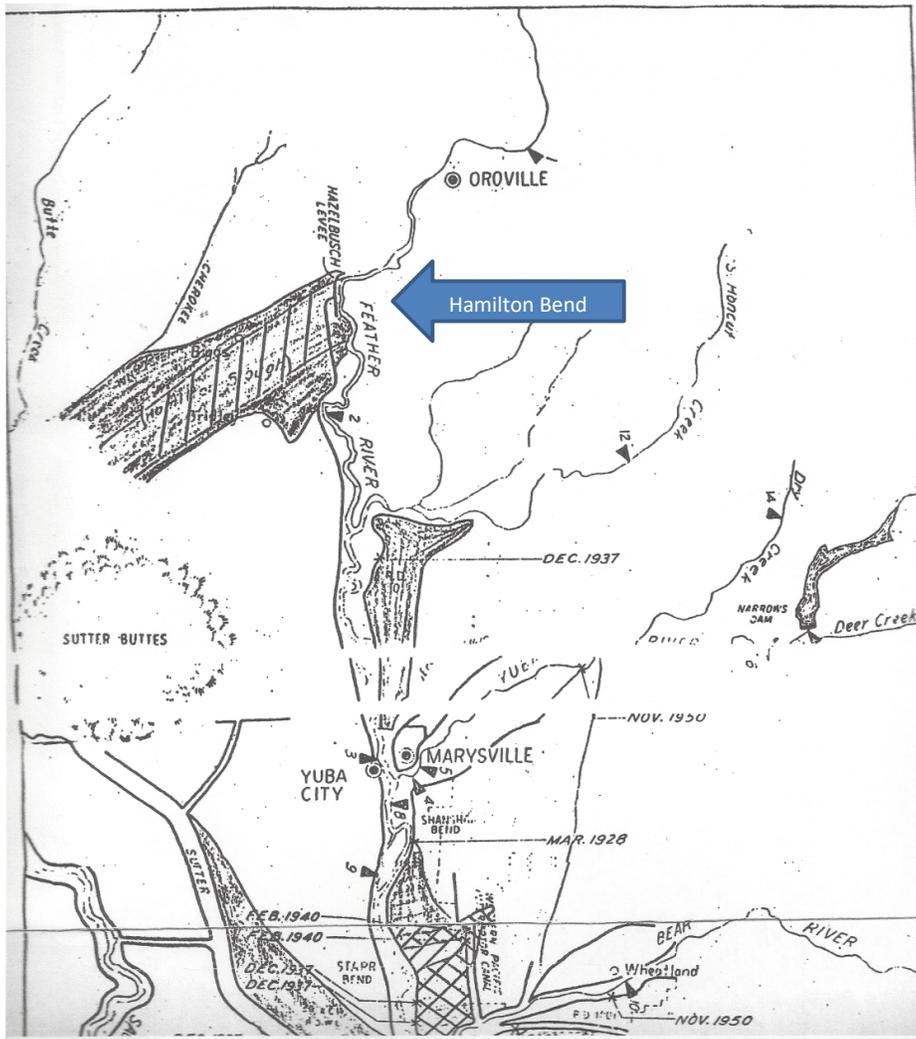
¹²⁴ **California Constitution - ARTICLE I DECLARATION OF RIGHTS [SECTION 1 - SEC. 32]** (*Article 1 adopted 1879.*) **SEC. 19.** (a) Private property may be taken or damaged for a public use and only when just compensation, ascertained by a jury unless waived, has first been paid to, or into court for, the owner. https://leginfo.ca.gov/faces/codes_displaySection.xhtml?lawCode=CONS§ionNum=SEC.%2019.&article=I

¹²⁶ <https://www.dailysignal.com/2015/06/22/supreme-court-decision-makes-it-harder-for-government-to-take-personal-property-from-americans/>

1 ***extended to and across Hamilton Slough, through which flow waters now escape from***
2 ***Feather River to Butte Basin.*** The 1955, 1986 and 1997 disastrous floods that occurred in the
3 FRW contained higher-flood flows in the channel.¹²⁷ (Emphasis added) (Exhibit *)
4
5

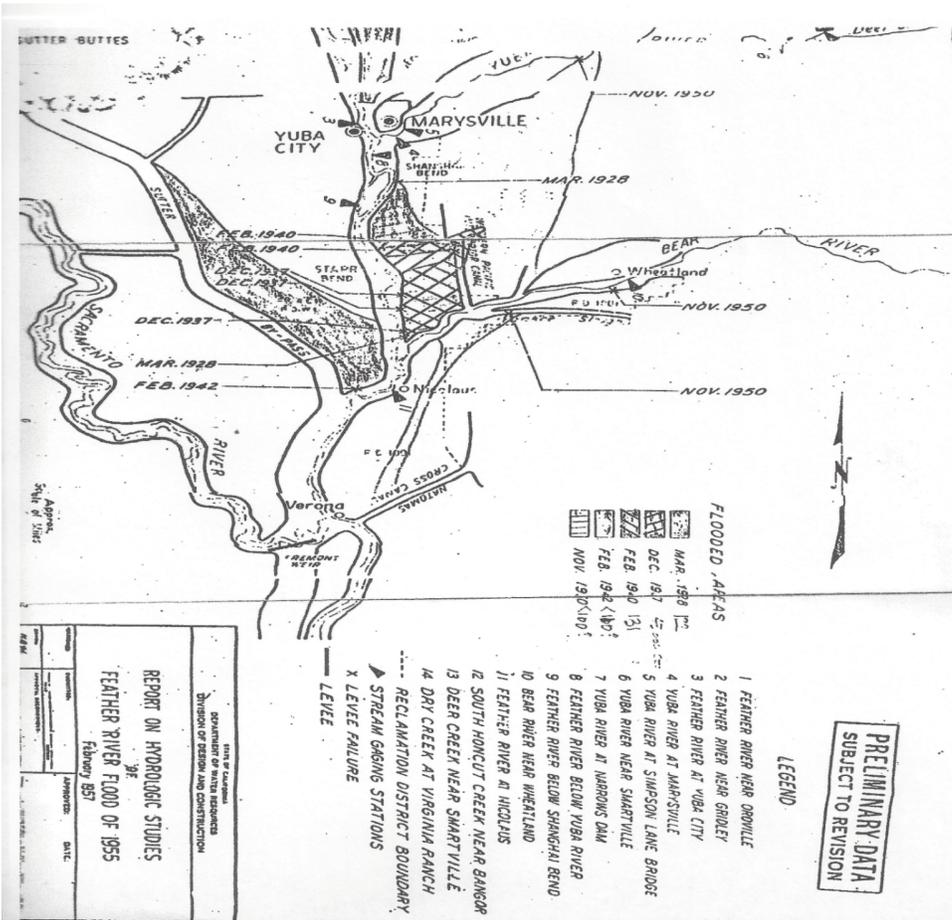
DRAFT

¹²⁷ Frank Kochis, Consulting Engineer, *History of Sacramento River Flood Control Project*, 29 July 1963, p. 26.



Graph and Legend continues on next page

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Note: Graphic clearly indicate that the major portion of the flood flows in the Feather River breached the alluvial ridges and those levees that were in place pre-construction and completion of the Sacramento Project Levees that were completed on the west bank of the Feather in 1954. (Exhibit)

CHAPTER VI

Standard and Maximum Floodwater Control Release Criteria from Oroville Dam would be Catastrophic:

The contents of this report reveal how and why activation of the adopted flood control criteria for flood water releases from the Oroville Dam and Reservoir facilities, under a “Standard Project Flood” (SPF) or a “Maximum Probable Rain-Storm” (MPRS) event, within the Feather River Watershed (FRW), would result in an unparalleled catastrophic flood that experts claim would be the worst disaster in U.S. history, especially during a MPRS event.

Note: It is imperative the reader understand that a primary cause for levee and property damages, within the FRW, downstream from Oroville Dam, permitted under the adopted floodwater release criteria has and will continue to exceed the design capacity of the downstream levee system. A confidential report prepared by the DWR reveals that the allowable floodwater releases under a “Standard Project Flood” (SPF) or a “Maximum Probable Rain Flood” (MPRF), within the FRW would have disastrous and irreconcilable effects.

Oroville Dam Spillway Standard Project Flood Criteria Established by the U.S. Army Corps of Engineers:

Q: Has the Oroville Dam and Reservoir experienced a “Standard Project Flood” (SPF) event, as defined in the federal Flood Control Manual, since it became operable in 1968? No!

A: Although the Oroville Dam experienced several major flood events, since it became operable, in 1967, it has yet to experience a SPF. The criteria for such an event, occurs when 440,000 cubic feet per second flows into the reservoir, with a 72-hour volume of 1.5 million acre-feet of water. (An acre-foot of water is enough water to flood an acre of land one foot deep in water.)¹²⁸ (Exhibit No.)

The Feather River levees are part of the Sacramento Flood Control Project, which was constructed by the Corps of Engineers and is being maintained by state and local agencies. The design capacity of the leveed channel below Marysville is 300,000 second-feet. The flow in the Yuba River which enters the Feather River at Marysville will eventually be controlled to a

¹²⁸ U.S. Army Corps of Engineers, Sacramento District, Oroville Dam and Reservoir, Feather River, California: Report on Reservoir Regulations for Flood Control, August 1970, p. 13.

1 **maximum of 120,000 second-feet with the recently completed Bullards Bar**
 2 **Reservoir and the authorized Marysville Reservoir.** [Emphasis added]

3 **Sacramento River Flood Control System:**

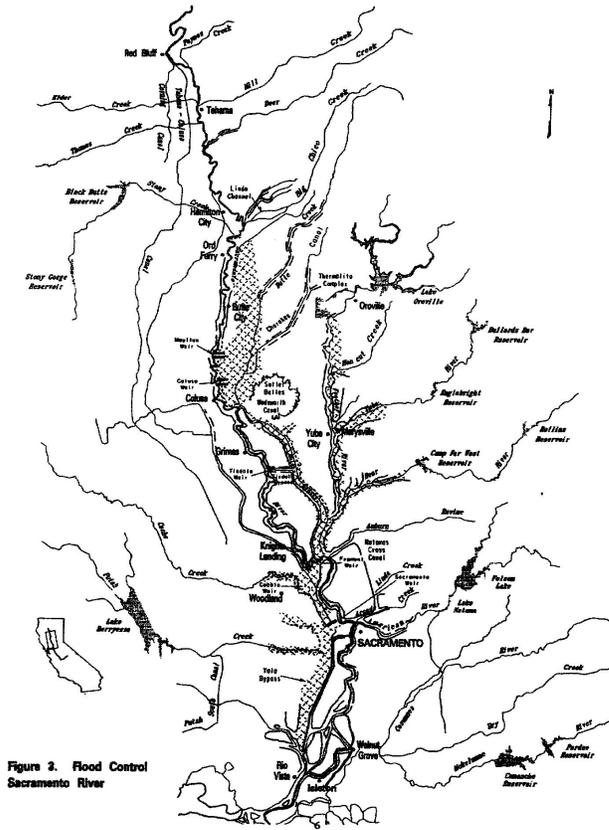


Figure 2. Flood Control Sacramento River

4 **Historical Flood Flows in the Feather River at Oroville Prior to Completion of Dam**

5
 6 Historical flood flows in the Feather River at Oroville prior to completion of the dam have exceeded
 7 150,000 second-feet seven times since the turn of the century. In December 1955, the peak flow at Oroville
 8 was 203,000 second-feet. This flow, in combination with the Yuba River, overtopped and breached the

1 Feather River levee opposite Marysville and caused extensive damage and loss of life.¹²⁹ (Emphasis added)
2 (Exhibit No.)

3 ***Flood control was one of the major reasons for the initial funding and***
4 ***ultimate construction of these facilities. Construction began in 1957 on the***
5 ***facilities in the Oroville area.***¹³⁰ (Emphasis added) (Exhibit No.)

6 **1986 and 1997 flood flows exceeded Sacramento Flood Control Project Design Capacity:**

7
8 ***Without the federal, state, and local reservoirs, the potential flood flows in the lower***
9 ***Sacramento River system could have exceeded a million cubic feet per second, in a***
10 ***system designed for 590,000 [cubic feet per second].***¹³¹ (Emphasis added) (Exhibit No.
11 *)

12 ***March 19, 1907: Flood of '07 – First flood event to occur with USGS staff gages in***
13 ***place to measure river levels – Observed flow calculated to be 600,000 cfs (more than***
14 ***double the Dabney design flood). Feather River dumps into Butte Sink, Yuba City &***
15 ***Shanghai Bend Sacramento River jumps banks both north and south of Colusa. Flood of***
16 ***'09 [1909] nearly as large as the Flood of '07.***¹³²(Emphasis added) (Exhibit No.)

17 **Flood Waters of the 1986 and 1997 reached Danger Stage Exceeded the Design Flow of** 18 **the Sacramento River Flood Control System:**

19
20 ***February 11, 1986: Flood of '86 – 600,000 cfs (maximum design flow) pours into***
21 ***Sacramento-San Joaquin Delta via Sacramento River and Yolo Bypass. Only upstream***
22 ***flood control reservoirs prevent approximately one million cfs from severely testing***
23 ***the Sacramento Flood Control Project. As a result, the system largely works as***
24 ***designed.*** (Emphasis added) (Exhibit No.)

25
26 ***January 3, 1997: Flood of '97 – nearly 600,000 cfs again pours into Sacramento-San***
27 ***Joaquin Delta via Sacramento River and Yolo Bypass. Only upstream reservoirs***

¹²⁹ William R. Gianelli, Director, Department of Water Resources, The Resources Agency, State of California, Flood Control Operation Oroville Dam and Lake Oroville, Presented before the Senate Committee on Water Resources at Sacramento, California 18 March 1971, p. 1.

¹³⁰ Department of Water Resources, *California State Water Project, Volume 1, History, Planning, and Early Progress, Bulletin Number 200*, 197 4, p. 8.

¹³¹ California Department of Water Resources, *The Flood of February 1986*, undated.

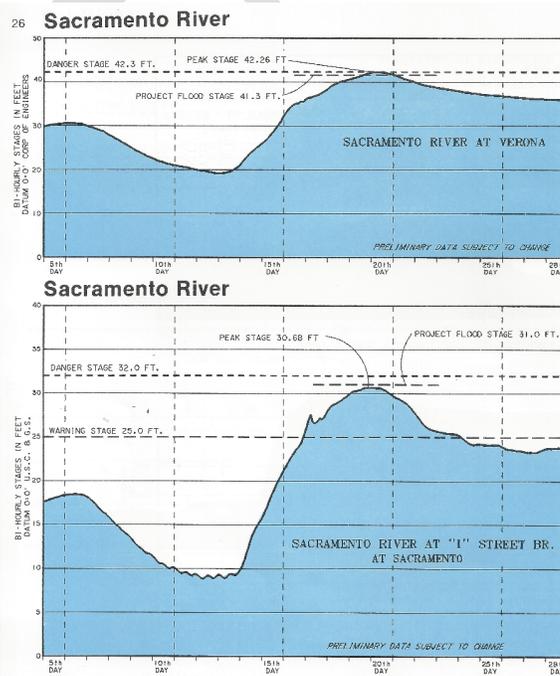
¹³² Mitch Russo, Water Resources Engineer, (916) 574-2369 mrusso@water.ca.gov California DWR, Flood Operations Branch, *Fact Sheet, Sacramento River Flood Control Project Weirs and Flood Relief Structures*, December 2010, p. 20.

1 prevent approximately one million cfs from inundating the Sacramento River Flood
 2 Control Project.¹³³ (Emphasis added) (Exhibit No.)

3 **Essentially, the data indicates the inevitability of a catastrophic event, when the**
 4 **Sacramento River Basin is faced with all the variables that would precipitate the Perfect**
 5 **Storm!**

6
 7 Note: The significance of this data reveals that although neither a Standard Project Flood nor
 8 a Maximum Probable Rain-Storm Event has yet to Occur, in the Feather River Watershed, the
 9 major tributary to the Sacramento River, floodwaters passing through the Sacramento Flood
 10 Control System reached the danger stage. The data supports the DWR statement:

- 11 • Considerable progress has been made to improve flood management in the Central Valley; however, this vast region still faces significant flood risk. Approximately 1 million Californians live and work in the floodplains of the valley, which contain approximately \$80 billion worth of infrastructure, buildings, homes, and prime agricultural land. A major flood in the Central Valley could have a far greater financial impact on California and the nation than the devastation caused by Hurricane Katrina or Superstorm Sandy. Without sufficient and sustained investment in statewide flood management, the risk to life and property will increase.¹³⁴
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- 32 • (Exhibit *)
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¹³³ Mitch Russo, Water Resources Engineer, (916) 574-2369 mrusso@water.ca.gov California DWR, Flood Operations Branch, *Fact Sheet, Sacramento River Flood Control Project Weirs and Flood Relief Structures*, December 2010, p. 23.

¹³⁴ California Department of Water Resources, *Central Valley Flood Protection Plan*, Update 2017 <https://water.ca.gov/Programs/Flood-Management/Flood-Planning-and-Studies/Central-Valley-Flood-Protection-Plan>

1 **Note:** The Oroville Dam and Reservoir Flood Control Diagram in Force for the Flood Control
2 Operational Criteria, does not include the 1861-1862, 1986, nor the 1997 Flood Events:

3 **Oroville Dam's flood-control manual has not been updated since 1970:**

4
5 The critical document that determines how much space should be left during the rainy season
6 has not been updated since 1970.¹³⁵

7 **Aging Dam and Climate Change:**

8
9 [WASHINGTON](#)

10 **Oroville puts focus on dam spillways – aging and some never tested:**

11 *EDITORS: END OPTIONAL TRIM*

12 ***Climate change poses another challenge for dam operators and their spillways.***
13 ***Many of these dams are decades old and were not designed with outlets and***
14 ***spillways capable of handling the expected mega-storms of the future. Operators of***
15 ***these dams are stuck between competing demands to maximize water storage and***
16 ***also save space for flood control. They work under operating manuals that don't***
17 ***account for recent trends, such as the Sierra snowpack melting earlier in the year.***

18
19 ***When operators of Oroville Dam suddenly ordered evacuations on Sunday, it***
20 ***focused a big spotlight on a crucial piece of California's flood-control infrastructure***
21 ***– spillways. (Emphasis added) (Exhibit *)***

22 *California is home to more than 1,500 dams, and all of the major ones have spillways*
23 *to release water in big floods and relieve pressure on the dam itself. Some of these*
24 *spillways are old; some have never been used before. Some are lined with concrete.*
25 *Some aren't. Many are too small to handle the sorts of floods California faces now*
26 *and in the future.*

27 *All of them have been overlooked – until now.*

28 *“California has a very good division of dam safety, but we also have a large number of*
29 *dams, and a chronic problem of underinvesting in flood control,” said Jay Lund, an*
30 *engineering professor who directs the UC Davis Center for Watershed Sciences.*
31 *Spillways will now get more attention, he said, but only because the unfolding crisis.*

¹³⁵ <https://www.sacbee.com/news/local/article133030529.html> Note: Article is no longer appearing on the website.

1 At Oroville, the tallest dam in the United States, the concrete-lined main spillway
2 worked properly for 48 years – until it didn't. On Feb. 7, after heavy flow down the
3 spillway, water managers noticed that the water had dug a hole in the structure,
4 tossing chunks of concrete into the air.

5 To relieve pressure on the main spillway, Oroville's operator, the California
6 Department of Water Resources, decided to let the reservoir rise in elevation until
7 water spilled over the concrete lip of the emergency spillway, also known as the
8 "auxiliary spillway." The dam's operators had never before used this spillway, an
9 earthen hillside. **When they did, it caused quick erosion – so much so that DWR**
10 **officials feared the structure could fail entirely, unleashing a torrent of water. At**
11 **that point, they ordered a mass evacuation downstream.**

12 DWR officials had previously been warned that the emergency spillway was
13 unreliable, but apparently they never imagined a scenario where they would be forced
14 to use it. Now, with more storms approaching, DWR is left with three compromised
15 options to get water out of Lake Oroville – the main spillway, the emergency spillway
16 and the dam's hydroelectric generators. "All three of those are unreliable," said Lund.

17 [Jay] **Lund, the UC Davis engineer**, [professor who directs the UC Center for
18 Watershed Sciences] **said the 1997 flood demonstrates how dam spillways and the**
19 **channels below them must be designed in unison.** "In the case of New Don Pedro,
20 the channel is way undersized," said Lund. He called it "criminal" there isn't more
21 channel capacity near Modesto, a city of more than 200,000 people.¹³⁶

22 **Engineers have known for decades that Oroville's backup spillway was unreliable :**

23 By Stuart Leavenworth, Sean Cockerham and Ryan Sabalow

24 *MCCLATCHY WASHINGTON BUREAU*

25 February 13, 2017 07:29 PM,

26
27 Read more here: <https://www.mcclatchydc.com/news/nation-world/national/article132527714.html#storylink=cpy>.

28
29

¹³⁶ The Sacramento Bee, By Stuart Leavenworth, *Oroville puts focus on dam spillways – aging and some never tested*, February 15, 2017.

<https://www.sacbee.com/news/nation-world/national/article132992819.html>

1 **Q: What is the annual minimal, average, and maximum runoff recorded in the FRW**
2 **above Oroville Dam? Maximum 9.3 million-acre-feet of water:**
3

4 Note: That is enough water to fill Oroville Reservoirs more than two-and-one half times!

5 **A: Annual Variation of Water Runoff in the Feather River Watershed-Maximum 9.3**
6 **Million Acre-feet:**
7

8 *Runoff in Feather River and tributaries varies both seasonally and from year to year.*
9 **The average annual runoff of Feather River at Oroville for 65 years of record is,**
10 **4,201,000 acre-feet, the maximum recorded value being 9,330,000 acre-feet (222**
11 **percent) for the 1903-04 water-year and the minimum, 1,800,000 acre-feet (28**
12 **percent) in 1923-24. (Emphasis added) (Exhibit *)**

13 **Runoff Characteristic in the Feather River Watershed:**
14

15 ***The runoff of Feather River is produced mostly by intense precipitation in winter,***
16 ***augmented by snowmelt in spring. Highest flows occur normally during the months of***
17 ***December through June, with the largest sustained flows usually in April and May.***
18 ¹³⁷(Emphasis added) (Exhibit No.)

19 **Flood Flow Criteria Releases from Oroville Reservoir for Feather River Channel Capacity**
20 **Based on 1907-1909 Floods:**
21

22 ***3.27 Functional Design: Based upon a reanalysis of the 1907 (187,000 c.f.s. at***
23 ***Oroville) and 1909 flood flows in U.S.G.S. Water Supply Paper 298, 1912 (Bailey. P.***
24 ***13, 14) and as a result of additional hydraulic studies, project capacity to confine***
25 ***those flows were adopted as follows (S.D. 323, p. 45): Feather River above Marysville***
26 ***180,000 c.f.s.¹³⁸ (Emphasis added) (Exhibit *)***
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¹³⁷ Department of the Army, Sacramento District, Corps of Engineers, Sacramento, CA, Oroville Dam and Reservoir, Feather River, California, *Report on Reservoir Regulations for Flood Control*, August 1970, p.7.

¹³⁸ Frank Kochis, Consulting Engineer, *History of Development of the Sacramento River Flood Control Project*, undated.

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CHAPTER VII

Section II: Oroville Dam Presents an Unacceptable Level of Risk – Department of Water Resources Policing Itself:

Q: Does the Corps have the Authority to Enforce the Flood Control Regulations Adopted for Oroville Dam? No!

A: The Department of Water Resources is Policing and Monitoring itself!

After Section 7 regulations are officially established, responsibility for compliance rests with the operating agency. The Corps of Engineers has neither the responsibility nor authority to compel compliance.^{139 140}(Emphasis added) (Exhibits **)

37. FLOOD CONTROL REGULATIONS

*The flood control regulation for Oroville Dam and Reservoir, prepared for publication in the Federal Register, are contained in Appendix A to this report. *(Exhibit No. *)*

38. OPERATIONAL RESPONSIBILITIES

Responsibility for flood control operation of Oroville Reservoir are summarized in the following paragraphs. A list of personnel involved in operation of the reservoir for flood control is included at the front of this report.

The Director, Department of Water Resources, State of California, is responsible for:

- (1) Accomplishing the physical operation of the reservoir and associated facilities in accordance with the official regulations.** [Emphasis added*]
- (2) Advising the District Engineer, Sacramento District, Corps of Engineers, of any need for emergency change in operation.**
- (3) Annually inspecting channel conditions to determine if any deterioration in flow capacity has occurred that could inhibit release of water corresponding to flows of 150,000 c.f.s. below Oroville Dam or 180,000 c.f.s. in the Feather River above Yuba River, 300,000 c.f.s. below Yuba River, and 320,000 c.f.s. below Bear River.**

¹³⁹ Department of the Army, Office of the Chief of Engineers, Washington, D.C., Engineer and Design, *Reservoir Regulations, ER 1110-2-240*, 27 April 1971, p. 7. [Oroville Dam and Reservoir are classified as a Section 7 facility.]

¹⁴⁰ U.S. Army Corps of Engineers, Sacramento District, Oroville Dam and Reservoir, Feather River, California: Report on Reservoir Regulations for Flood Control, August 1970, p. 30.

1
2 (4) Reporting to the District Engineer, Sacramento District, Corps of Engineers, any unusual
3 condition in the reservoir or along downstream channels that might temporarily
4 interfere with planned flood control operation of the reservoir.

5
6 (5) **Keeping downstream interests advised of impending changes in flood control**
7 **releases which may affect them.** (Emphasis added) (Exhibit No. *)

8
9 **Note:** The author obtained a list of the public and businesses DWR would contact when
10 releasing floodwaters from Oroville spillway. (Exhibit No.)

11
12 (6) Reporting by telephone to the Reservoir Regulation Section, Sacramento District, Corps
13 of Engineers, the data outlined in paragraph 42-a below, and other data that may be
14 requested from time to time.

15
16 (7) Keeping informed of the rules and regulations contained in these instructions and
17 bringing to the attention of the Sacramento District, Corps of Engineers, any features
18 contained herein that may require clarification or revision.

19
20 (8) Immediately after the end of each month, transmitting to the Reservoir Regulation
21 Section, Sacramento District, Corps of Engineers, data specified in paragraph 42-b
22 below.

23
24 a. In connection with the operation of this project for flood control, the Sacramento
25 District, Corps of Engineers, is responsible for:

26
27 (1) Approving or disapproving emergency changes in operation recommended by the
28 operating agency or issuing instructions for such changes on his own initiative. (p. 30)

29
30 (2) Advising the operating agency and the Chief of Engineers of any departure from the
31 flood control regulations.

32
33 (3) Preparing the monthly operation and other special reports, required by the Office, Chief
34 Engineers, relative to operation of the reservoir.

FLOOD CONTROL OPERATION REQUIREMENTS

- a. **Oroville Dam and Reservoir will be operated for flood control in accordance with flood control regulations prescribed by the Secretary of the Army.**¹⁴¹ (Emphasis added)

Chapter 1 – General Information

Authority and Scope

- a. *This report on reservoir regulation for flood control, Oroville Dam and Reservoir, Feather River Basin (a major tributary to Sacramento River), California, is an appendix to the Master Manual of Reservoir Regulations, Sacramento River Basin, California, and is prepared in accordance with the instructions contained in ER 1110-2-240, EM 1110-2-3600, and EC 1110-2-67, which pertains to requirements for reports on reservoir operation for projects subject to the provisions of Section 7 of the Flood Control Act of 1944 (58 Stat. 890). The pertinent portion of that act reads as follows:*

“Hereafter it shall be the duty of the Secretary of War to prescribe regulations for the use of storage allocated for flood control or navigation at all reservoirs constructed wholly or in part with Federal funds provided on the basis of such purposes, and the operation of any such project shall be in accordance with such regulations...”

Coordinated Operation of Floodwater Releases from Oroville and New Bullards Bar Reservoirs on Yuba River:

- b. **This report covers present conditions which include Oroville Reservoir and New Bullards Bar Reservoir and will cover future conditions after completion of Marysville Reservoir. It contains descriptive information about the project, the method of operation, and the prescribe regulations for flood control operation.** [Emphasis added]

Authorization for Flood Control Allocation:

- b. **A Monetary contribution by the Federal Government toward the construction cost of Oroville Dam and Reservoir in the interest of flood control was authorized by the Flood Control Act of 1958 (Public Law 85-500, 3 July 1958, 85th Congress, 2nd Session). Based on the flood control benefits to be derived, 22 percent of the construction cost of the dam and reservoir, exclusive of power and recreational facilities, was**

¹⁴¹ Department of the Army, Sacramento District, Corps of Engineers, Sacramento, California, **Oroville Dam and Reservoir, Feather River, Report on Reservoir Regulation for Flood Control**, Chapter 7 – Flood Control Operation, August 1970, p. 31.

1 **allocated to flood control with a total sum not to exceed \$85 million. The cost**
2 **allocation was approved by the President on 10 January 1962. (p. 36) (Emphasis**
3 **added)**

- 4
- 5 c. *A contract No. DA-04-167-CIVENG-62-56 was executed between the United States*
6 *and the State of California on 8 March 1968, and was approved by the Secretary of*
7 *the Army on 19 April 1962, Under the terms of this contract, the State agreed to*
8 *construct and to maintain Oroville Dam and Reservoir, to reserve 750,000 acre-feet*
9 *of storage space for flood control, providing for operation of the reservoir in such*
10 *manner as will produce the flood control benefits upon which the monetary*
11 *contribution was predicated, and to operate the dam for flood control in accordance*
12 *with rules and regulations prescribed by the Secretary of the Army pursuant to the*
13 *provision of Section 7 of the Flood Control Act of 1944 (58 Stat. 890).¹⁴² (Exhibit *)*

14 **Policies: Corps of Engineers Projects:**

- 15
- 16 a. *Reservoir regulations plans will be prepared to conform with objectives and specific*
17 *provisions of project authorization, including any applicable authorities established*
18 *after project construction. Thorough analysis and testing studies will be made as*
19 *necessary to establish the optimum regulation plans possible within prevailing*
20 *constraints.*
- 21
- 22 b. *Necessary actions will be taken to keep approved reservoir regulations up-to-date.*
23 *For this purpose, plans will be subject to continuing and progressive study by*
24 *personnel in field offices of the Corps of Engineers who are professionally qualified*
25 *in technical areas involved and who are familiar with comprehensive project*
26 *objectives and considerations affecting reservoir regulations.*
- 27
- 28 c. *Reservoir regulation plans proposed for specific projects and systems will be clearly*
29 *documented in appropriate "Reservoir Regulation Manuals," and reviewed and*
30 *approved by authorities specified in paragraph 8b of this regulation. These manuals*
31 *will be prepared to meet initial requirements when storage in the reservoir begins*
32 *and will be revised when necessary to conform with changing requirements,*
33 *resulting from progressive developments in project areas, improvements in basic*
34 *techniques or other relative factors.¹⁴³ (Exhibit *)*

¹⁴² Oroville Dam and Reservoir, Feather River, Report on Reservoir Regulation for Flood Control, Department of the Army, Sacramento District, Corps of Engineers, Sacramento, California, August 1970, pp. 36 and 37.

¹⁴³ Department of the Army, Office of the Chief of Engineers, Washington, D.C., Regulation No. 1110-2-240, Engineering and Design, Reservoir Regulation, 27 April 1970, p. 2.

1 **Q: What has been the maximum amount of water flowing into the Oroville Reservoir and**
2 **the maximum floodwater released from the Dam since it became operable in 1968 - Did**
3 **DWR Exceeded Maximum Floodwater Releases? Yes!**
4

5 **A: The maximum inflow, into Oroville Reservoir was 301,002 cubic-feet per second (c.f.s.) of water,**
6 **with a 72-hour volume of 1.2 million acre-feet, which occurred on January 1, 1997, maximum**
7 **floodwater releases 160,917 c.f.s., however, the Army Corps of Engineers claim the maximum**
8 **floodwater release was 167,000 c.f.s.¹⁴⁴ (Exhibit *)**
9

10 **How does DWR Measure Inflow into Oroville Reservoirs and Floodwater Releases from**
11 **the Dam, Following Statements Made by DWR Personnel Responsible for Flood Control**
12 **Operations at Oroville Reservoir: Verbatim Quotations from Deposition Resulting from**
13 **Flood Damage Litigation on the Feather River: - Inflow and Releases not based on Gauge**
14 **Measurements:**
15

16 **Plaintiff's Attorney:** Daniel V. Blackstock, Leonard & Lyde:
17

18 **Mr. BLACKSTOCK Q: I don't know if I asked you before, but where do you [DWR]**
19 **measure the inflow? What point in the complex? (Emphasis added)**
20

21 **Respondent:** DONALD H. MCKILLOP, Chief, Operation Control Branch, Division of
22 Operation and Maintenance
23

24 **A: The inflow is measured by changes of storage. The exact point of the location**
25 **of the staff gauge I do not know.**

26 **Q: In other words, there is nothing out there in any part of the rivers or creeks**
27 **or what have you leading into the reservoir that is gauging it? You are gauging your**
28 **inflow by the change in elevation in the lake, itself?**

29 **A: Yes, by a computation of inflow/outflow and change in storage. There are**
30 **gauges up there, but they are not used too much for this process.¹⁴⁵ (Emphasis added)**
31 **(Exhibit *)**

¹⁴⁴ Ron MacAfee, Department of Water Resources Memo to Patrick Porgans, Re: Oroville Reservoir Bi-Hourly Computation Sheets for January 1997, 8 January 1997.

¹⁴⁵ In the Superior Court of the State of California, in and for the County of Butte, *Robinson Construction Company vs. State of California*, No. 71957, Deposition of Donald H. McKillop, Chief, Operation Control Branch, Division of Operation and Maintenance, California Department of Water Resources, Appearances: for the Plaintiffs, Leonard & Lyde, by Daniel v. Blackstock, Esq., For the Defendant: George Deukmejian, Attorney General of the State of California, Prepared by: Barbara M. Franks, CSR #1510, Shellooe, King & Associates, May 12, 1982, pp. 51-52.

1 A: **Not right off hand.**¹⁴⁶ (Emphasis added)

2 **Q: How accurate is DWR's self-reporting and compliance record for the operation and**
3 **maintenance of the SWP's Oroville flood control facilities?**

4
5 A: Public records and depositions of DWR officials, by Daniel V. Blackstock, Esq., Law Offices of
6 Leonard & Lyde, revealed that numbers detailing inflow and outflow, listed on the Oroville Reservoir
7 Computation Sheets (operational logs) and monthly reports, pertaining to flood control operations
8 were altered "whited-out" and changed. When questioned, under oath, about the obvious
9 discrepancies, the responsible DWR officials could not explain why such changes were made. The
10 accuracy of this information is critical as it provides data to the U.S. Army Corps of Engineers that
11 confirms that DWR is operating the flood control facilities in accordance with state and federal rules
12 and regulations.

13
14 The following are excerpts from a deposition of Donald H. McKillop, Chief, Operation Control Branch,
15 Division of Operation and Maintenance, California Department of Water Resources, deposed by the
16 Plaintiffs' attorney, Daniel Blackstock, regarding validity and accuracy of data listed in the DWR's
17 Operations Summary Lake Oroville for January 1980:

18
19 MR. BLACKSTOCK Q: Now, I would like to show you a page from the Lake Oroville Operation. It is a
20 green binder. And page for January of 1980. It is entitled, "State of California, The Resources Agency,
21 Department of Water Resources, Division of Operations and Maintenance, Operations Control
22 Branch."

23
24 MR. BLACKSTOCK: *Is the information that is on that page prepared by your*
25 *department?*

26
27 MR. MCKILLOP A: *Yes sir.*

28
29 Q: *In other words, this information, shall we say, was prepared under your*
30 *direction?*

31
32 A: *Yes sir, it was.*

33
34 Q: *Now, my question is: You will notice what appears to be changes that had been*
35 *made particularly in the area, say: from January 11 through in this area. January 11th*

¹⁴⁶ Patrick Porgans, Resource Management Consultant, Red Tape Abatement, letter to Charles "Chuck" Matlock, Reservoir Control Section, U.S.U.S. Army Corps of Engineers, Sacramento District, Re: Verification of Flow Data, contained in the Corps **Report on the February 1986 Floods, Northern California and Northwestern Nevada, published in January 1987**, letter sent via U.S. Postal Service Certified Mail P-506 372 154, on Wednesday, April 23, 1987

1 through the 15th. Appears to have been whited out. Do you know why that would have
2 been – why there would be obviously a modification?
3

4 A: No sir, I do not.
5

6 Q: Who would keep these particular records, the record we are looking at up to
7 date?
8

9 A: That record would be kept by the records section under my direction. That is a
10 document sent to the Corps of Engineers.
11

12 MR. BLACKSTOCK: I would like to have this one marked as well if we could.
13

14 (A document entitled, "Lake Oroville Operations, January 1980," was marked as
15 Plaintiffs' Exhibit 4.)
16

17 MR. BLACKSTOCK: Q: Are you familiar in keeping these records, for instance, on
18 a showing for January 12th, it indicates a total release of 126,680. Are these figures for
19 this particular report—
20

21 MR. ANDREWS (Attorney for DWR): I believe you have the wrong date.
22

23 MR. BLACKSTOCK: Q: I am sorry. Let be back up. I will pick another one. Let's
24 take January 15th. And we show a total release of 161,238(sic) [cubic feet per second].
25

26 A: Uh-hun *affirmative.)
27

28 Q: And the other release of 130,580. (sic)
29

30 A: Uh-hun *affirmative.)
31

32 Note: The total release of 161,238 and the other release of 130,580 was not the release of
33 water from the reservoir, it was the amount of inflow into Oroville Reservoir.
34

35 Q: Now, this other release would be going down the river, I would presume, past
36 Oroville, is that correct?
37

38 A: Yes, sir.
39

40 Q: Does it appear to you that those figures have been corrected?

1 MR. ANDREWS: *Before you answer that, let me have this.*
2 *Well, I would object to the form of the question. The witness can describe what*
3 *– the document speaks for itself.*

4
5 MR. BLACKSTOCK: *I am just asking him if it appears to him it has been corrected.*

6
7 MR. ANDREWS: ***You can hold it up to the light and see there are dark spots***
8 ***and light spots on it. But beyond – well anyway, object to the form, “corrected.” Object***
9 ***to the question in the form it relates to corrections. Implies there’s some error.***
10 *(Emphasis added)*

11
12 MR. BLACKSTOCK: *Well, I was trying to be polite, counsel. I am assuming it is*
13 *correct now and not correct before it was modified.*

14
15 MR. ANDREWS: *There is no showing it is modified. All you are seeing is white-*
16 *out. I don’t know what the deal is at all. I just don’t want the witness to answer a*
17 *question that is has built into it an assumption which may not be correct.*
18 *Anyway, if you can answer the question.*

19
20 MR. BLACKSTOCK: *Can you answer the question?*

21
22 A: ***It would appear that some correction had been made to certain of the figures.***
23 *(Emphasis added)*

24
25 MR. ANDREWS: *I am sorry?*

26
27 THE WITNESS: *It appears that some corrections had been made to some of the*
28 *figures.*

29
30 Mr. BLACKSTOCK: Q: *Going back to how that particular document that you have*
31 *in your hand is compiled, is the information put on that particular page day by day or*
32 *do you wait for a full month’s operation and then have the whole page prepared?*

33
34 A: *To be honest with you, I cannot answer that. I only see it completed at the end*
35 *of the month.*

36
37 Q: *So, the first time you would see it is at the end of the month?*

38
39 A: *Yes.*

1 Q: *Who would be able to tell us that they would put these figures in, type them in*
2 *day by day or would they wait until the end of the month to compile them from other*
3 *records?*

4
5 A: *That particular record was made under the supervision of Van Lemons.*

6
7 Q: *Is he still with the department?*

8
9 A: *Yes.*

10
11 Q: *And, incidentally, do you know the name of the records from which these figures*
12 *are taken?*

13
14 A: *I don't personally know how precisely they are compiled at this time.*

15
16 Q: *Has your procedure changed in any way relative to the compiling of these*
17 *figures?*

18
19 A: *It is now inserted into a computer bank. At the time it was not.*

20
21 Q: *In other words, now you get a regular computer printout?*

22
23 A: *Yes.* (Emphasis added)

24
25 **Note:** All of the data pertaining to reservoir storage, inflow, and spill (floodwater releases)
26 obtained by the author, via a Public Records Act request, was written in longhand; with the
27 exception of the Summary of Releases from the Oroville Complex for the period of January
28 and February 1986 (all in cubic feet per second), they were typed up upon receipt from the
29 Department of Water Resources. The bi-hourly Computation Sheets for the Oroville Reservoir
30 floodwater releases for the period of 11 January through 15 January 1980, when placed under
31 a florescent-light, revealed that the inflow and floodwater releases had been tampered with
32 during that period. The documents referred to as "whited-out" were provided by Patrick
33 Porgans, consultant to the Robinson Construction Company, and given to the Plaintiffs'
34 attorney, Mr. Blackstock.

35
36 Q: *But let's assume for a moment that you wanted to double-check the amount of*
37 *inflow into Oroville or let's say for January the 12th, you see the figures there 163,223.*
38 *Where would you go to double-check that? You want to double-check this information.*

39
40 A: *I would go to the dispatcher's daily report.*

- 1 Q: *The dispatcher's daily report?*
2
3 A: Yes.
4
5 Q: *Now this is to be distinguished from the dispatcher's log that we have been*
6 *talking about?*
7
8 A: *That is correct.*
9
10 Q: *And also, for instance, let's suppose you wanted to look at the total release for*
11 *January 15th, would you go to the dispatcher's –*
12
13 A: *Daily report.*
14
15 Q: *MR. BLACKSTOCK: Q: Let's go back to the 12th for the total release. What does*
16 *your dispatchers' daily report –*
17
18 A: *It reflects two figures. It shows 28,917 for spill.*
19
20 Q: *That is the other release?*
21
22 A: *Plus 19,496 [cubic feet per second] for power release. Now this report is*
23 *prepared at midnight or shortly thereafter. And this would be the place I would initially*
24 *go back to see if there was a major shift. I will not testify that these are correct –*
25 *(Emphasis added)*
26
27 *MR. ANDREWS: Just a second. You are not being asked a question. Don't*
28 *volunteer anything.*
29
30 *MR. BLACKSTOCK: Q: But what I am getting at, as I understand it from what you*
31 *are testifying to me that if you wanted to verify these figures, you would go to the*
32 *dispatcher's daily report?*
33
34 A: *Initially.*¹⁴⁷ (Exhibit *)

¹⁴⁷ In the Superior Court of the State of California, in and for the County of Butte. Robinson Construction Company, a Corporation, and Robinson & Sons, a co-partnership, Plaintiffs vs. State of California, No. 71957, **Deposition of Donald A. McKillop**, Appearances: For Plaintiffs: Leonard & Lyde, by Daniel V. Blackstock, Esq., For Defendants: George Deukmejian, Attorney General of the State of California, May 12, 1982, page 52 through 58.

1 **Note: The bi-hourly “estimates” are based on reservoir elevations, in real-time, absent**
2 **of stream gages, handwritten data in stamped: Preliminary: Subject to Revision!**
3

4 **Q: Does the Corps have the Authority to Enforce the Flood Control Regulations Adopted**
5 **for Oroville Dam? No!**

6 **In 1985 Author formal notification to government entities of implementation of a**
7 **Reservoir Watch Program during flood season in the Feather River Watershed:**

Note: Patrick Porgans, Government Regulatory Specialist, Red Tape Abatement’s (RTA) letter to Richard Neal, Chief, Reservoir Control Section, Department of the Army, Corps of Engineers, Sacramento District, Project: Reservoir Watch Program for the Feather River Basin, **Subject: Formal Notification that Red Tape Abatement Instituted a Reservoir Watch Program—During the Flood Season—in the Feather River Basin, Monday, April 1. 1985.**

Richard Neal, Chief, Reservoir Control Section, Department of the Army, Corps of Engineers, Sacramento District, on January 1, 1985, Red Tape Abatement (RTA) initiated a Reservoir Watch Program—During the Flood Season—in the Feather River Basin. In essence, RTA maintains constant surveillance of the level of Oroville Reservoir—Between October and May—to make sure that the California Department of Water Resources does not store more water in the reservoir than federal laws allow. RTA makes its flood storage computations using the Flood Control Diagram, and the wetness index published in the Corps of Engineers’ Oroville Dam and Reservoir Report on Reservoir Regulation for Flood Control, Feather River, August 1970, and subsequent amendments. The primary objective of RTA’s Reservoir Watch Program are as follows:

1). Minimize the unauthorized use (encroachment) of the designated flood storage space at the State Water Project’s Oroville Dam and Reservoir.

2). Minimized the downstream damages associated with floodwater releases from these facilities; and

3). To provide the maximum degree of flood control protection allowable by law.¹⁴⁸ (Emphasis added) (Exhibit *)

¹⁴⁸ Red Tape Abatement (RTA) letter sent USPS Certified Mail P066801264, to Richard Neal, Chief, Reservoir Control Section, Department of the Army, Corps of Engineers, Sacramento District, **Project: Reservoir Watch Program for the Feather river Basin, Subject: Formal Notification that Red Tape Abatement Instituted a Reservoir Watch Program—During the Flood Season—in the Feather River Basin, Monday, April 1. 1985.**

1 **Q: What are the operational criteria for a Standard Project Flood (SPF) and the**
2 **Maximum Probable Rainstorm (MPR) in force for Oroville Dam facilities?**
3

4 **A: According to regulations established by the U.S. Army, Corps of Engineers,**
5 **the criteria for such an event, occurs when 440,000 cubic feet per second flows**
6 **into the reservoir, with a 72-hour volume of 1.5 million acre-feet of water.** (An
7 acre-foot of water is enough water to flood an acre of land one foot deep in
8 water.)¹⁴⁹ (Exhibit *)

9 **Q: What are the Operational Criteria for a Maximum Probable Rain Flood (MPRF) in Force for**
10 **the Oroville Dam Facilities?**
11

12 **A: According to regulations established by the U.S. Army, Corps of Engineers**
13

14 ***A probable maximum rain flood on the Feather River above Oroville Dam,***
15 ***developed for spillway design purposes, has a peak flow of 720,000 c.f.s. and a***
16 ***72-hour runoff value of 2,510,000 acre-feet, and results from a 72-hour storm***
17 ***depositing 21.1 inches of precipitation on the drainage area above Oroville***
18 ***Reservoir.***¹⁵⁰ [Emphasis added] (Exhibit *)

19 **Q: Has either the Standard Project Flood or the MPRF Flood occurred since Oroville**
20 **Dam became operable? No!**
21

22 A: Although the Feather River Watershed experienced several disastrous floods since the Dam
23 became operable, DWR's records show **the maximum inflow into Oroville Reservoir was**
24 **301,002 cubic-feet per second (c.f.s.) of water, with a 72-hour volume of 1.2 million acre-**
25 **feet, which occurred on January 1, 1997 and the maximum floodwater releases was in**
26 **excess of 160,000 c.f.s.**¹⁵¹ (Exhibit *)

27
28 ***At one point on January 1, [1997] we [DWR] thought the inflow would be so***
29 ***much that the Lake would fill and spill – perhaps 250,000 cfs worth. People***
30 ***were evacuated from Oroville downstream. Happily, the rain ceased a little***

¹⁴⁹ U.S. Army Corps of Engineers, Sacramento District, Oroville Dam and Reservoir, Feather River, California: Report on Reservoir Regulations for Flood Control, August 1970, p. 13.

¹⁵⁰ U.S. Army Corps of Engineers, Sacramento District, Oroville Dam and Reservoir, Feather River, California: Report on Reservoir Regulations for Flood Control, August 1970, p. 13.

¹⁵¹ Ron MacAfee, Department of Water Resources Memo to Patrick Porgans, Re: Oroville Reservoir Bi-Hourly Computation Sheets for January 1997, 8 January 1997.

1 **sooner than expected and the dam contained this runoff.**¹⁵² [Emphasis added]
2 (Exhibit *)

3
4 **Note:** The “250,000 cfs worth” is the amount of floodwater that would have been released
5 from Oroville Dam!

6 **Q: What is the maximum amounts of floodwater that can be released from Oroville Dam**
7 **during a flood event? 250,000 cubic feet per second:**

8
9 **A:** Type gated flood control outlet and an emergency weir; Crest length 1700 ft;
10 **Discharge Capacity 250,000 cfs; Reservoir Storage capacity; maximum capacity**
11 **3,537,577 acre-feet; Power Production**¹⁵³
12 [Emphasis added] (Exhibit *)

13
14 **@Note:** This report contains documentation that the public was misinformed as to
15 what the maximum allowable floodwater releases from the State Water Project
16 Oroville Flood Control Facilities and changed without explanation from 100,000 c.f.s.
17 to 150,000 c.f.s., which federal and state officials conceded beforehand that
18 floodwater releases at 150,000 c.f.s. would cause significant damage to property
19 downstream from the Dam!

20 **Q: How much flood storage space is reserved at the State Water Project Oroville**
21 **Reservoir during Flood Season? 750,000 acre-feet:**

22 **A: Authorization for Flood Control Allocation:**

- 23
24 d. *A Monetary contribution by the Federal Government toward the construction cost of*
25 *Oroville Dam and Reservoir in the interest of flood control was authorized by the Flood*
26 *Control Act of 1958 (Public Law 85-500, 3 July 1958, 85th Congress, 2nd Session). **Based***
27 *on the flood control benefits to be derived, 22 percent of the construction cost of the*
28 *dam and reservoir, exclusive of power and recreational facilities, was allocated to*
29 *flood control with a total sum not to exceed \$85 million. The cost allocation was*
30 *approved by the President on 10 January 1962. (p. 36) [Emphasis added]*
- 31
32 e. *A contract No. DA-04-167-CIVENG-62-56 was executed between the United States and*
33 *the State of California on 8 March 1968, and was approved by the Secretary of the Army*

¹⁵² *The Great New Year's Flood of 1997 in Northern California*, Maurice Roos, Chief Hydrologist, CA Department of Water Resources, P.O. Box 219000, Sacramento, CA 95821-9000. Prepared at the Sierra College California Weather Symposium, June 28, 1997 in Rocklin, CA, page 5 and page 8.

¹⁵³ [Oroville Dam - Center for Watershed Sciences](https://watershed.ucdavis.edu/shed/lund/dams/Oroville/OrovilleDam.html)
<https://watershed.ucdavis.edu/shed/lund/dams/Oroville/OrovilleDam.html>

1 *on 19 April 1962, Under the terms of this contract, the State agreed to construct and*
2 *to maintain Oroville Dam and Reservoir, to reserve 750,000 acre-feet of storage*
3 *space for flood control, providing for operation of the reservoir in such manner as will*
4 *produce the flood control benefits upon which the monetary contribution was*
5 *predicated, and to operate the dam for flood control in accordance with rules and*
6 *regulations prescribed by the Secretary of the Army pursuant to the provision of*
7 *Section 7 of the Flood Control Act of 1944 (58 Stat. 890).¹⁵⁴ (p. 37) [Emphasis added]*
8 *(Exhibit *)*

9 **Q: What are the primary objectives and purpose of the Oroville Dam flood control**
10 **operations?**

11 *Oroville Dam and Reservoir will be operated for flood control in accordance with*
12 *flood control regulations prescribed by the Secretary of the Army, a draft of which is*
13 *contained in Appendix A, Accompanying the regulations are the flood control diagram,*
14 *chart A-1, and the emergency spillway release diagram, chart A-2, which together*
15 *define the schedule for flood control operations of Oroville Reservoir. **The primary***
16 ***objectives of flood control operations are (1) to minimize flood damages***
17 ***downstream, and (2) to avoid causing damages, insofar as practicable, that would***
18 ***not have occurred under conditions without the project. The release schedule shown***
19 ***on Chart A-1 will provide protection for agricultural development within the***
20 ***floodway from frequently occurring floods, without scarifying reservoir design flood***
21 ***(SPF) protection for lands outside the floodway.**¹⁵⁵ (Emphasis added) (Exhibit *, charts*
22 *A-1 and A-2)*

23 *The amount of storage space in Lake Oroville which is utilized for flood control*
24 *varies between 375,000 and 750,000 acre-feet. The amount of storage required*
25 *between these limits depends on the 60-day antecedent "basin means precipitation."*
26 *Reservation of storage space for flood control begins on September 15 and ends on*
27 *June 15 of the following year. Between these dates, the reservoir must be drawn*
28 *down to capacity indicated by the flood control diagram and the antecedent rainfall.*
29 *Flood flows entering the reservoir may be stored temporarily above the flood control*
30

¹⁵⁴ Oroville Dam and Reservoir, Feather River, Report on Reservoir Regulation for Flood Control, Department of the Army, Sacramento District, Corps of Engineers, Sacramento, California, August 1970, pp. 36 and 37.

¹⁵⁵ U.S. Army Corps of Engineers, Sacramento District, Oroville Dam and Reservoir, Feather River, California: Report on Reservoir Regulations for Flood Control, August 1970, p. 28.

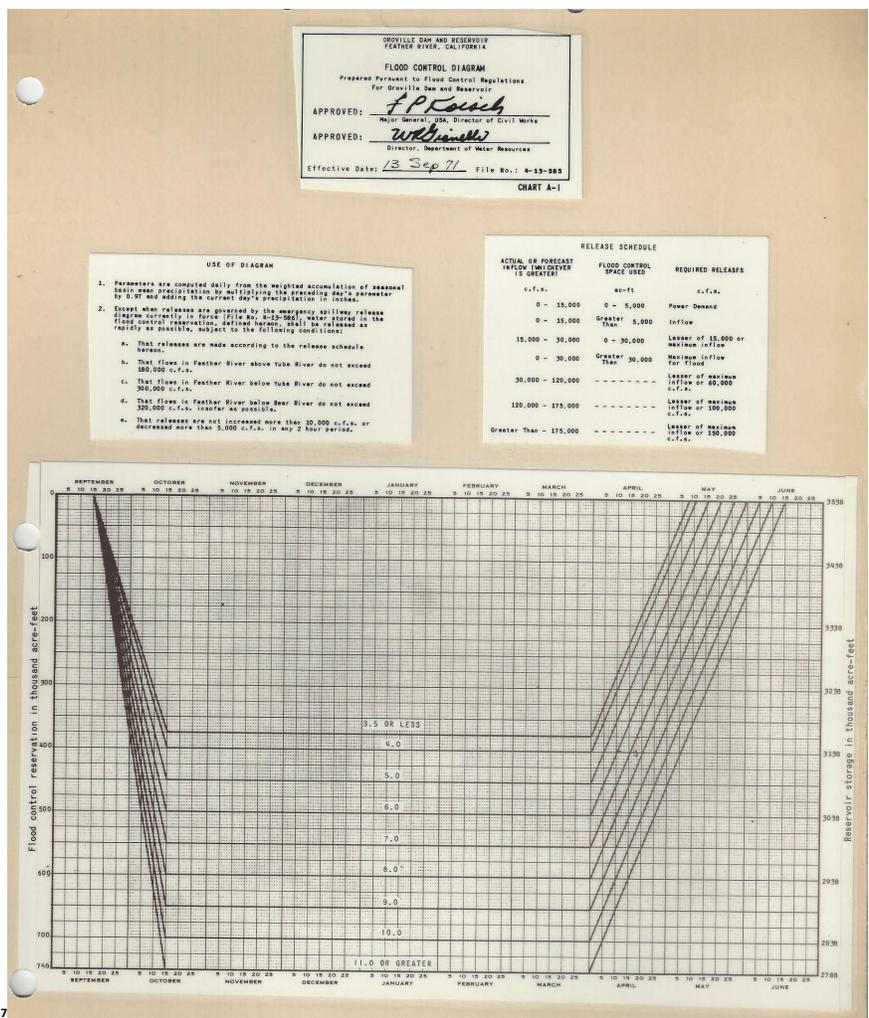
1 **reservation but must be evacuated down to the required level as quickly as possible**
2 **within the constraints previously described.** ¹⁵⁶ [Emphasis added] (Exhibit *)

3 **Historical Floods-Damages in the Feather River watershed associated with warm Storm**
4 **Systems:**

5
6 *Damaging floods in the Feather River Basin usually results from winter*
7 *rainstorms, occasionally augmented by snow melting. A typical flood-producing storm*
8 *may last several days and is actually not a signals storm but usually a rapid succession*
9 *several individual storms. Historically. **Major floods such as in 1907, 1955, and 1964***
10 ***were attributed to heavy rainfall accompanying by usually warm weather caused***
11 ***by rapid melting of snow and runoff.*** (Emphasis added)

¹⁵⁶ William R. Gianelli, Director, Department of Water Resources, The Resources Agency, State of California, Flood Control Operation Oroville Dam and Lake Oroville, Presented before the Senate Committee on Water Resources at Sacramento, California 18 March 1971.

Chart A-1: Oroville Reservoir Flood Control Diagram



157 Source: Department of the Army, Sacramento District, Corps of Engineers, Sacramento, CA., Oroville Dam and Reservoir, Feather River, CA., **Report on Reservoir Regulations for Flood Control**, August 1970. Page 91 | 219

Chart A-2: Oroville Dam Operating Instructions

- OPERATING INSTRUCTIONS**
1. Follow regular flood control regulation schedule until larger releases are required by this schedule.
 2. Adjust the spillway outflow each hour on the basis of the rate of rise of reservoir elevation in feet for the preceding hour and the current reservoir elevation as indicated by the curves.
 3. After the reservoir elevation starts to fall, maintain current gate openings until the flow has been reduced to 150,000 c.f.s.
 4. Once operation in accordance with the emergency spillway release diagram is initiated, gate changes shall be made only in accordance with the above criteria.

- NOTES:**
1. Parameter values are the rate of rise in reservoir elevation in feet during preceding hour.
 2. Sill of the flood control outlet is at elevation 813.6 feet. Ungated spillway crest is at elevation 901 feet.
 3. Discharge through the flood control outlet is controlled by eight 17.6' x 33.0' gates with an additional 1730 feet of uncontrolled spillway above elevation 901 feet.

OROVILLE DAM AND RESERVOIR
Feather River, California

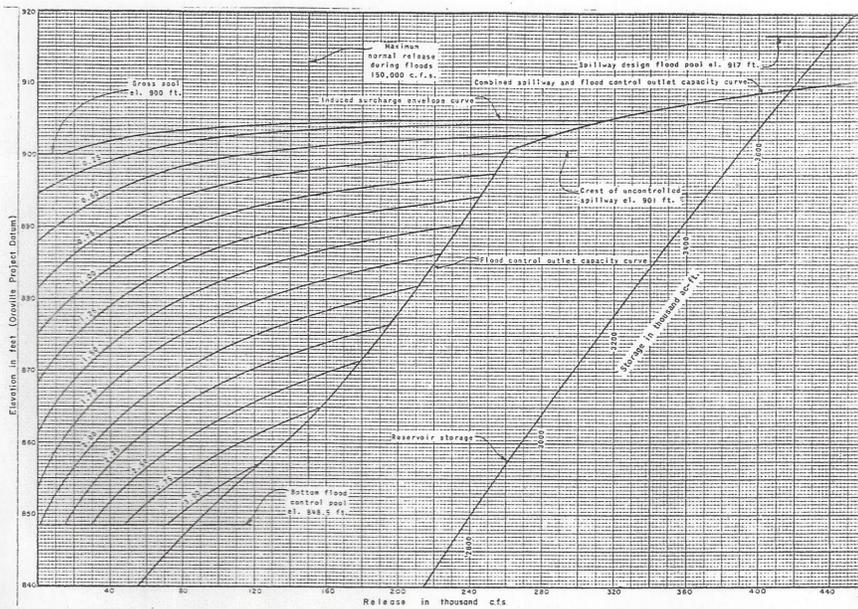
EMERGENCY SPILLWAY RELEASE DIAGRAM
Prepared Pursuant to Flood Control Regulations
for Oroville Dam and Reservoir

APPROVED: *LP Koisch*
Chief, Design Section, Division of Civil Works

APPROVED: *William B. ...*
Director, Department of Water Resources

Effective Date: *13 Sep 71* File No: 4-13-586

CHART A-2



1 **1986 and 1997 Flood Frequencies on Feather River Indicate Increased Risk at given**
2 **Design Flows.**

3
4 The following statements are excerpts from a flood report, published by the DWR in 2010.

5
6 ***The recent flood [1997] again set new records on major Sierra rivers. When these are***
7 ***plugged into a frequency determination, the amount at a given frequency or the risk***
8 ***at given design levels will go up. We'll [DWR] introduce a new round of charts and***
9 ***probably a bunch of determinations that the existing 100-year levels are not that***
10 ***anymore, but less, and a new round of project work will be needed to provide revised***
11 ***100-year flood protection, some in areas which have just done a lot of work. This is one***
12 ***of the problems with working on statistic based on relatively short record. Maybe for***
13 ***major projects we should go back to the old standard project flood idea or justify to***
14 ***some level of historical storm. People are being misled by all these numbers and risks,***
15 ***not realizing how tentative they are, and the rather large uncertainty involved.***
16 [Emphasis added]

17
18 ***The Feather River chart shows the comparison for Oroville dam. As noted before, this***
19 ***one [1997 Flood] was perhaps 25 percent bigger than 1986, which itself was the***
20 ***biggest to that time, although not too much more than a 1907 flood.***¹⁵⁸ [Emphasis
21 added] *[Exhibit .]

22 **Department of Water Resources Climate Change Program Predict Greater Weather**
23 **Extreme – Flooding:**

24
25 ***Climate change is having a profound impact on California's water resources, as***
26 ***evidenced by greater weather extremes, reduced snowpack, higher sea levels, and***
27 ***changes in river flows. Models predict that more precipitation will fall as rain instead***
28 ***of snow, enhancing flood risks and creating additional challenges for water supply***
29 ***reliability. These impacts are expected to intensify in the future.***¹⁵⁹ (Emphasis added)
30 (Exhibit *)

¹⁵⁸ *The Great New Year's Flood of 1997 in Northern California*, Maurice Roos, Chief Hydrologist, CA Department of Water Resources, P.O. Box 219000, Sacramento, CA 95821-9000. Prepared at the Sierra College California Weather Symposium, June 28, 1997 in Rocklin, CA., p. 9.

¹⁵⁹ California Department of Water Resources, Climate Change Program, <https://water.ca.gov/Programs/All-Programs/Climate-Change-Program>

CHAPTER VIII

Federal Energy Regulatory Commission's License issued to the DWR for the Oroville facilities Project No. 2100, issued in February 1957, to manage, maintain, and operate, the federally-funded flood control facilities at the SWP and the downstream levee system? Yes!

A: Federal Energy Regulatory Commission's (FERC) License Issued to the Department of Water Resources, Project No. 2100 Applies to Flood Control Compliance:

*The Secretary of the Army and the Chief Engineers have reported: that the plans of the project structures affecting navigation are satisfactory insofar as the interest of navigation are concerned; that the plans of the structures are in general satisfactory insofar as the interests of flood control are concerned, **subject to the pertinent provisions in the contract (No. DA-04-167-CIVENG-62-56) dated March 8, 1962, between the United States and the State of California; and that the operation of the project in the interest of flood control as provided for in Article 32 of the license shall be in accordance with rules and regulations to be prescribed by the Secretary of the Army pursuant to Section 204 of the Flood Control Act of 1958.** (Emphasis added*) (Refer to Exhibit *) Note *Appendix 40 PPs 1985 rpt Oro Dam regs*

Article 32 of License 2100:

*The licensee shall collaborate with the Department of the Army in formulating a program of operation in the interest of flood control. (Refer to Exhibit *) *Appendix 41 PPs 1985 rpt Oro Dam regs*

Article 50 of License 2100:

The operation of the project in the interest of flood control as provided in Article 32 of the license shall be in accordance with the rules and regulations prescribed by the Secretary of the Army pursuant to Section 204 of the Federal Flood Control Act of 1958. (Emphasis added)

** Appendix 40 PPs 1985 rpt Oro Dam regs*

Article 51 of License 2100:

*Approval by the Commission of any plans for Project No. 2100 shall not relieve the Licensee of its responsibility for compliance with Contract No. DA-04-167-CIVENG-62-56 (P.L. 85-500).¹⁶⁰ (Emphasis added) * Appendix 40 PPs 1985 rpt Oro Dam regs*

1 **Federal Energy Regulatory Commission License Project No. 2100 – Amended Concrete**
2 **to Earth Filled:**

3
4 **(b) Principal structures comprising:**

5
6 **(1) Oroville Dam, of concrete gravity section, about 730 feet high above streambed,**
7 **across Feather River immediately upstream from State Highway No. 24 crossing of**
8 **Feather River, about 5.5 miles upstream from Oroville; two auxiliary dams, at low**
9 **points in the periphery of the reservoir, described as Bidwell Canyon Dam with a**
10 **maximum height of about 35 feet above natural ground; Oroville Reservoir, formed by**
11 **the above three dams, with a storage capacity of 3,500,000 acre-feet at normal water**
12 **surface elevation 900.0 (U.S.G.D. datum);**¹⁶¹ [p. 263] (Emphasis added)

13
14 *Article 31. The Licensee shall operate the project in such manner that changes in rates*
15 *of releases from the Oroville Reservoir and after-bay dams will be gradual and minimal*
16 *at all times insofar as this is consistent with operation requirements: Provided, **That***
17 ***during flood periods such releases will not increase flood flows above those prior to***
18 ***project existence: Provided, further, That the Commission reserves the right, after***
19 ***notice and opportunity for hearing to prescribe the changes in rates of releases upon***
20 ***the recommendation of the Federal agencies concerned.*** (Emphasis added)

21
22 *Article 32. The Licensee shall collaborate with the Department of the Army in*
23 ***formulating a program of operations for the project in the interest of flood control.***¹⁶²
24 [266] (Emphasis added) (Exhibit *)

25
26 **@ Q: What remedies are provided by FERC if the DWR fails to comply with the provisions**
27 **and requirements contained in the License (Project No. 2100)?**

28
29 **Note:** Bill Davis. Attorney can fill in the consequences of noncompliance.

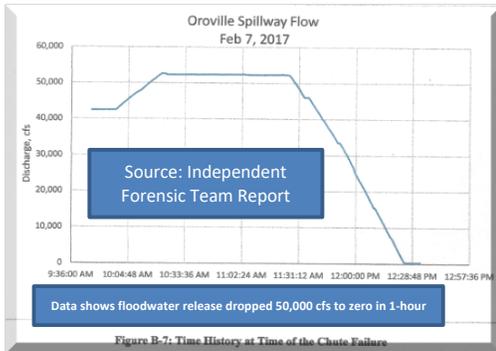
30
31
32
33
34
35

¹⁶¹ Federal Power Commission, Before Commissioners: Jerome Kuykendall, Chairman: Seaborne L. Digby, Fredrick Stueck and William R. Connole. Department of Water Resources of the State of California, *Project Number 2100, Order Issuing Licensee* (Major) issued February 11, 1957, p. 263 and 266..

¹⁶² Federal Power Commission, Before Commissioners: Jerome Kuykendall, Chairman: Seaborne L. Digby, Fredrick Stueck and William R. Connole. Department of Water Resources of the State of California, *Project Number 2100, Order Issuing Licensee* (Major) issued February 11, 1957, p. 263 and 266..

1 **Q: Did DWR Officials Violate Bi-hourly Increases and Decreases in floodwater Releases?**
 2 **Yes!**

3
 4 **A:** According to DWR's records, floodwater releases exceeded those permitted in the flood Control Manual. ***"Releases from Oroville Dam are not to be increased more than 10,000 c.f.s. or decreased more than 5,000 c.f.s. in any 2-hours."***¹⁶³ [Emphasis added]



DWR's records also reveal that on a number of occasions, **during the February 1986, January 1997, and February 2017 flood events, it increased flood water releases in excess 10,000 c.f.s. increments within a 2-hour period.**¹⁶⁴ (Refer to Exhibit *) **During the February 2017 flood event, it dropped floodwater releases**

17 **from 50,000 c.f.s. to zero c.f.s. in less than one-hour!** These radical reductions in floodwater
 18 **releases exacerbate bank and levee erosion and cause the death and "unauthorized take" of listed**
 19 **Endanger Species Act salmon.**¹⁶⁵ (See graph below, Oroville Spillway Flow, Feb. 7, 2017.) (Emphasis
 20 added) (Exhibit *)

21 **Q: Has DWR complied with the flood control regulations that restrict floodwater**
 22 **releases to protect downstream properties and project levees? No!**

23
 24 **A:** The Federal Flood Control Manual restricts floodwater releases from Oroville Dam to the
 25 following flood flows:

26
 27 ***"Feather River flows should not exceed 150,000 c.f.s. at Oroville, nor 180,000 c.f.s.***
 28 ***and 300,000 c.f.s. above and below the mouth of Yuba River, respectively.***¹⁶⁶
 29 (Emphasis added) (Exhibit *)

¹⁶³ U.S. Army Corps of Engineers, Sacramento District, Oroville Dam and Reservoir, Feather River, California: Report on Reservoir Regulations for Flood Control, August 1970, p. 30.

¹⁶⁴ Ron MacAfee, Department of Water Resources Memo to Patrick Porgans, Re: Oroville Reservoir Bi-Hourly Computation Sheets for January 1997, 8 January 1997.

¹⁶⁵ Independent Forensic Team Report, Oroville Spillway Incident, Appendix B – Hydraulic Analysis, January 2018, p. B-9.

¹⁶⁶ Department of the Army, Sacramento District, Corps of Engineers, *Oroville Dam and Reservoir, Feather River, California, Report on Reservoir Regulation for Flood Control*, August 1970.

Department of Water Resources Reservoir Bi-Hourly Data Sheets January 1, 1997

DEPARTMENT OF WATER RESOURCES RESERVOIR BI-HOURLY DATA SHEET						
OROVILLE						TOTAL RELEASE
DATE	TIME	ELEVATION	STORAGE	INFLOW	DAM SPILL	FEATHER RIVER
01/01/97	0000	858.87	2,729,103	153,070	96,500	100,000
	0200	859.70	2,940,586	171,190	100,500	105,000
	0400	861.09	2,959,889	218,864	103,000	110,000
	0600	862.92	2,985,436	236,800	103,000	110,000
	0800	865.23	3,017,904	274,881	109,500	115,000
	1000	867.70	3,052,903	300,492	170,000	139,000
	1200	869.79	3,082,736	300,369	130,000	130,000
	1400	871.31	3,109,955	296,171	143,000	150,000
	1600	873.00	3,131,101	278,353	147,500	150,000
	1800	874.76	3,154,511	302,013	157,500	
	2000	876.70	3,182,835	302,007	155,000	160,917
	2200	878.31	3,206,497	274,472	153,000	160,000
	2400	879.66	3,226,424	262,834	144,250	160,000
DEL VALLE						
DATE	TIME	ELEVATION	STORAGE	INFLOW	DAM SPILL	
01/01/97	0000	687.95	30161	139		
	0200	687.99	30184	139		
	0400	688.03	30208	143		
	0600	688.08	30233	180		
	0800	688.14	30273	237		
	1000	688.2	30309	374		
	1200	688.36	30342	951		
	1400	688.68	30551	181		
	1600	689.21	30907	2031		
	1800	689.82	31272	2238		
	2000	690.52	31697	2582		
	2200	691.34	32158	2532		
	2400	692.14	32693	2320		



0 Backup
no for
last dam
9th Dec Update 3:00

AGO 2935

Data shows between 0800 & 1000 DWR increased dam spill outflows by 15,000 CFS. & between 1200 to 1400 DWR increased dam spill from 130,000 CFS to 150,000 CFS in violation of 2-hour release limits

Department of Water Resources Reservoir Bi-Hourly Data Sheet January 2, 1997

DEPARTMENT OF WATER RESOURCES RESERVOIR BI-HOURLY DATA SHEET						
OROVILLE	DATE	TIME	ELEVATION	STORAGE	INFLOW	TOTAL RELEASE DAM SPILL FEATHER RIVER
	1/2/97	0000	879.66	3226424	262834	144,250
		0200	880.79	3243171	246856	150,000
		0400	881.77	3257749	230321	150,000
		0600	882.62	3276432	210769	150,000
		0800	883.33	3281053	208281	150,000
		1000	883.96	3290497	201173	140,000
		1200	884.42	3297406	179824	130,000
		1400	884.92	3304527	170038	120,000
		1600	885.45	3312912	160330	120,000
		1800	885.95	3320458	157690	120,000
		2000	886.25	3324992	147461	120,000
		2200	886.50	3328774	140417	110,000
		2400	886.75	3332558	132917	110,000
DEL VALLE	DATE	TIME	ELEVATION	STORAGE	INFLOW	DAM SPILL
		0000	692.14	32693	2320	0
		0200	692.86	33142	1953	
		0400	693.47	33526	1656	
		0600	693.99	33856	1425	
		0800	694.50	34181	1684	
		1000	695.08	34554	2157	
		1200	695.78	35006	2094	
		1400	696.10	35216	2238	
		1600	697.15	35908	3276	
		1800	697.94	36424	3423	
		2000	698.78	36998	3276	
		2200	699.54	37513	2896	
		2400	700.14	37957	2496	

AGO 2936

Data shows releases from 2000 hour on Jan. 1, 1997 thru 0000 (midnight) Jan. 2, 1997 were at or above 160,000 cfs, under the prevailing conditions, wetness index (ground saturation), antecedent precipitation, and weather forecast, DWR violated the flood control operating criteria, which restricts dam spill to 150,000 CFS. The prevailing condition did not meet the criteria of the Standard Project Flood! Also, the data indicate river decreases in increments of 10,000 cfs every two-hours; regulations limit to 5,000 cfs.

1 **Reliability of DWR’s Data in Question During the 1997 Flood Event – Conflicting with**
2 **Governor’s, USGS, U.S. Army Corps of Engineers, and Porgans Registered Engineers**
3 **Reports on Floodwater Releases from Oroville Dam and Reservoir:**
4

5 On a number of occasions, DWR Director, David Kennedy, made several conflicting statements
6 relative to water storage and releases from Oroville Reservoir and related flood flows in the
7 Feather River. For example, he initially testified before the legislature that Lake Oroville
8 accommodated 1.44 million-acre-feet of runoff in a three-day period, during the January floods.¹⁶⁷
9

10 Furthermore, he stated “**...it is not certain whether flows exceeded 300,000 cfs in the Feather**
11 **River below the confluence with the Yuba River.**” (Emphasis added) Again, Director Kennedy’s
12 statement conflicts with two government reports; one that his Department participating
13 publishing, and another that was issued by the U.S. Army Corps of Engineers, presented to the
14 legislature, in January 1997, which relied on data furnished by Director Kennedy’s Department.

15 **A Report prepared for the Governor, entitled Flood Emergency Action Team (FEAT),**
16 **published in February 1997, states, Flows in Feather River Contributed to Two Levee**
17 **Breaks Below Marysville:**
18

19 ***Flows in the Feather River below Marysville and in the Sutter Bypass exceeded***
20 ***channel design capacities, contributing to factors that caused two major levee***
21 ***failures in those areas.***¹⁶⁸ [Emphasis added]

22 **Most Critical flood situation Maysville-Yuba City occurs when flood flows are**
23 **concurrently high in the Feather and Yuba Rivers, which occurred during the 1986 and**
24 **1997 flood disasters:**
25

26 ***The most critical flood situation in the Marysville-Yuba City urban area would***
27 ***occur when there is a flood of the magnitude of the standard project flood on the***
28 ***Yuba River concurrently with high flows in the Feather River. When the Feather***
29 ***River flows at Yuba City is high, the combined flow of the Yuba and Feather Rivers***
30 ***may also exceed the capacity of the lower Feather River floodway. For these***
31 ***reasons, the flood protection system for the Feather-Yuba Rivers flood plain is***
32 ***managed as a single system.*** (Emphasis added)
33

167 Statements made by DWR Director, David Kennedy to the Joint Legislative Hearings: 1997 Floods, Senate Agricultural and Water Committee and the Assembly Water, Parks and Wildlife Committee, January 14, 1997.

168 Governor’s *Flood Emergency Action Team* report, February 10, 1997, p. 1.

1 The floodway capacity in the lower 4-1/2 miles of the Yuba River is affected by
2 backwater from the Feather River and is 120,000 cfs under conditions of high flow in
3 the Feather River.

4
5 Flooding in the Marysville-Yuba City area is affected by the operation of two
6 reservoirs for flood control: Oroville Dam on the Feather River, with 750,000 acre-feet
7 of flood storage reservation, and New Bullards Bar Dam on the North Yuba River, with
8 a flood storage reservation of 170,000 acre-feet. These reservoirs are operated for
9 flood control under the interim coordinated operating procedure. Oroville Dam
10 outflows are reduced when coincident high flows in the Yuba River are anticipated.
11 With such operation, the standard project flood (SPF) cannot be controlled cannot be
12 controlled at Oroville Reservoir. New Bullards Bar Dam controls runoff from only 36
13 percent (487 sq. miles) of the Yuba River basin drainage area and has no control
14 overflows in the Middle and South Yuba Rivers. It is, therefore, operated to delay the
15 peak flows on the North Yuba River until the peak flows on the other tributaries have
16 passed through the lower Yuba River. **The New Bullards Bar design operating
17 procedures limits outflow, in so far as possible, to those not causing flows in the
18 Yuba River at Marysville to exceed 120,000 cfs; however, the location of New
19 Bullards Bar Dam is such that it cannot control flows in the lower Yuba River and
20 Feather Rivers to nondamaging rates under severe flood conditions.**¹⁶⁹(Emphasis
21 added) (Exhibit *)

22 **Q: Is the DWR required by law to coordinate flood control operations with other**
23 **agencies? Yes!**

24
25 **A: Coordination with other agencies. In order to ensure that the flood control**
26 **operation of Oroville Reservoir will be effective and reasonable as possible, it is**
27 **essential that the operating agency keep advised at all times of possible flood**
28 **hazards, weather conditions, inflow into the reservoir, flow in downstream**
29 **tributaries, and in the Feather River below Oroville Dam. This requires close liaison**
30 **with other agencies, including the weather bureau, and the Corps of Engineers, on a**
31 **daily or hour basis as required.**¹⁷⁰ (Emphasis added) (Refer to Exhibit *)

¹⁶⁹ Department of the Army, Sacramento District, Corps of Engineers, Sacramento, California, *Design Memorandum No. 3, Marysville Lake, Yuba River, California, General Design Memorandum, Phase I, Plan Formulation, Preliminary Report, Appendixes A-N*, March 1977, pp. 22, 23 and 24.

¹⁷⁰ U.S. Army Engineer District, Corps of Engineers, Sacramento, CA, *Interim Instructions for Flood Control Operation, Oroville Dam and Reservoir, Feather River, CA*, December 1967, p. 5.

1 Coordinated Flood Control Operation of New Bullards Bar and Oroville Reservoirs:

2 1.7.2 Upstream Reservoirs

3
4 *The Oroville Dam and Reservoir, built in 1967 and operated by the State of*
5 *California, is a unit of the Feather River Project, which is a part of the State Water*
6 *Project. Oroville Dam is located on Feather River, a tributary of Sacramento River, in*
7 *the Feather River Canyon, about 6 miles upstream from the town of Oroville. The dam*
8 *was built for multi-purpose functions: water supply, flood control, power generation,*
9 *recreation, and conservation. The reservoir provides water supply to the areas adjacent*
10 *to the Feather River as well as additional water for diversions from Sacramento-San*
11 *Joaquin Delta to areas in the San Joaquin Valley, San Francisco Bay Area, and Southern*
12 *California.*

13
14 *The 750,000 acre-feet flood control storage space in Oroville Reservoir provides*
15 *flood protection to the cities of Marysville, Yuba City, Oroville, and many smaller*
16 *communities located in the floodplain.*

17
18 *New Bullards Bar, built in 1969 and operated by the Yuba County Water*
19 *Agency, is located on the Yuba River, it provides 170,000 acre-feet of flood control*
20 *space. Operations at New Bullards Bar are coordinated with operations at Oroville to*
21 *control flood flows on the Feather River. For both Oroville and New Bullards Bar, the*
22 *flood control space was purchased under Section 7 of the Flood Control Act of 1944*
23 *(58 Stat. 890) by the Federal government. Any encroachment into the flood control*
24 *space must be released during the flood season, as defined by the water control*
25 *operations manual. [Emphasis added.]*

26
27 *Flood control operations for the Feather River (as defined in the Oroville and*
28 *New Bullards Bar Water Control Manual(s) require Feather River flows to not exceed*
29 *150,000 cubic feet per second (cfs) at Oroville, 180,000 cfs above Yuba River, and*
30 *300,000 cfs below Yuba River. Insofar as possible, the Feather River below Bear River*
31 *must be limited to 320,000 cfs. During very large floods, releases greater than*
32 *150,000 cfs at Oroville may be required, as indicated by the emergency operations,*
33 *in order to minimize uncontrolled spillway discharges.*¹⁷¹ [Emphasis added]

34
35 *Given the unregulated local flows in the Feather River and Yuba River drainage areas*
36 *as well as the uncertainties associated with regulating for downstream controls, the*
37 *State, in cooperation with Yuba County Water Agency and USACE, has invested*
38 *heavily in coordinating operations, including developing models, establishing off-site*

¹⁷¹ SUTTER BASIN PILOT FEASIBILITY FINAL REPORT—FINAL ENVIRONMENTAL IMPACT REPORT/ SUPPLEMENTAL ENVIRONMENTAL IMPACT STATEMENT Prepared by : U.S. Army Corps of Engineers, Sacramento District, October 2013, p. 1-8.
Page 101 | 219

1 **data servers, and holding annual mock operations scenarios.**¹⁷² [FN] [Emphasis
2 added] * [Refer to Exhibit X, p. x.]

3 **Did State and Federal officials coordinate Feather River floodwater releases from**
4 **Oroville Reservoir and Yuba River floodwater releases from Bullards Bar Reservoir,**
5 **during the Jan. 1997 flood to maintain flood flows so as not to exceed the channel**
6 **capacities on the Feather and Yuba Rivers? No!**

7 **A:** Public records disclose that government officials failed to coordinate floodwater releases from
8 **Oroville Dam with floodwater releases from New Bullards Bar. Flood flows from the Yuba River**
9 **watershed, during flood season, according to the Flood Control Manual, are not to exceed 120,000**
10 **c.f.s. Data obtained from the Yuba County Water Agency recorded the Yuba River flow, at the**
11 **confluence of the Feather River, to be 173,000 c.f.s., during the January 1997 flood, with a**
12 **subsequent levee failure just below its confluence with the Feather River.**¹⁷³ (Refer to Exhibit *)
13 **Total flow in the Feather River, just below Yuba River, was estimated to be in excess of 350,000**
14 **c.f.s. The Manual sets a limit of 300,000 c.f.s. just below the confluence of the Yuba River.**¹⁷⁴ (Refer
15 to Exhibit *)

16 **Q: Did DWR fail to inspect channel conditions leading up to a major levee break? Yes!**

17
18 **The limitations of the downstream levees and potential for disaster were evident**
19 **during the 1986 Flood when a levee break occurred on the south bank of the Yuba**
20 **River at the town of Linda and Olivehurst, just above the Feather River Junction.** ¹⁷⁵
21 [Emphasis added] (Refer to Exhibit *)

22 **Q: Did excessive floodwaters contribute to downstream erosion, property, and levee**
23 **damages? Yes!**

24
25 **The repairs are needed because levees along the west bank of the Feather River suffer**
26 **from potential underseepage and through-seepage. Similar problems caused major**
27 **levee failures in Yuba City in 1955 and Yuba County in 1986 and 1997.** ¹⁷⁶ [Emphasis
28 added] (Refer to Exhibit *)

¹⁷² *Ibid.* **SUTTER BASIN PILOT FEASIBILITY FINAL REPORT**, October 2013, p. 1-8.

¹⁷³ Don Wilson, P. E., Engineer-Administrator, Yuba County Water Agency, provided Patrick Porgans with a Graphic illustrating Flows on the Yuba River, Just Above the Confluence of the Feather River, Measured 173,000 cfs in January 1997.

¹⁷⁴ Flood flow figures obtained from the U.S. Geological Survey, California Department of Water Resources, and the Yuba County Water Agency, January 1997.

¹⁷⁵ U.S. Army Corps of Engineers, Sacramento District, *Oroville Dam and Lake, Feather River, California, Water Control Manual, Appendix IV to Master Water Control Manual, Sacramento River Basin, California, Preliminary Subject to Revision*, August 1989, p. III-3.

¹⁷⁶ Sutter Butte Flood Control Agency, [Feather River West Levee Project](http://sutterbutteflood.org/projects/feather-river-west-levee-project), <http://sutterbutteflood.org/projects/feather-river-west-levee-project>

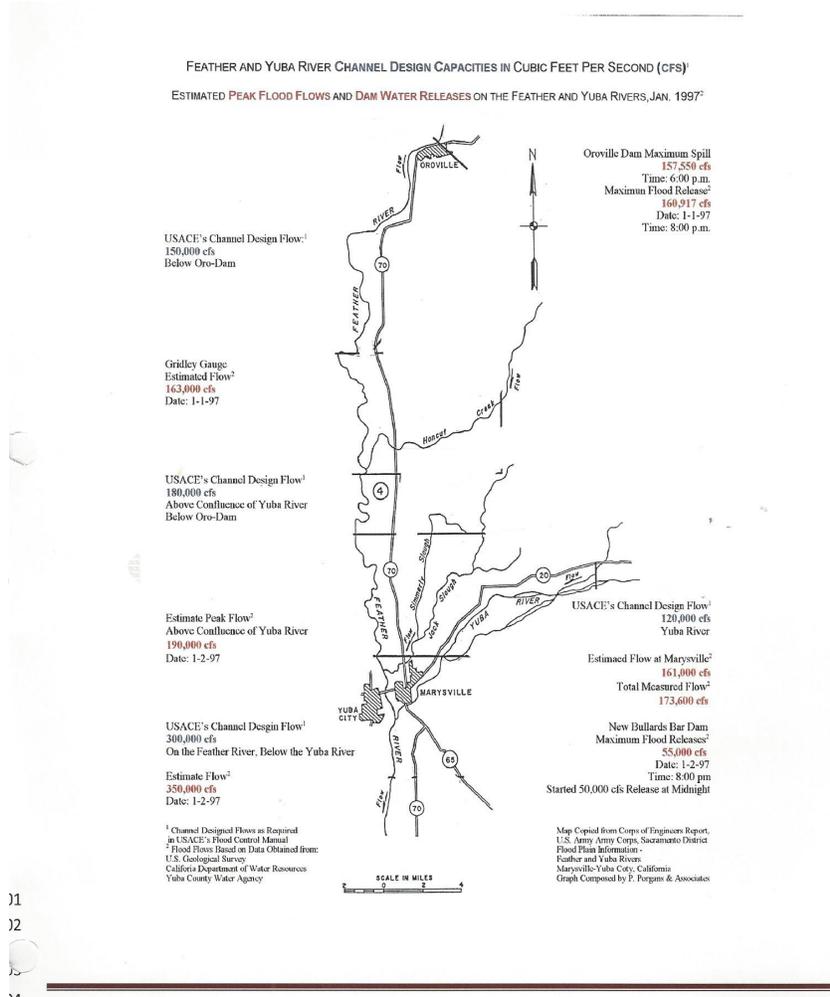
1 **Q: Has the DWR released floodwaters from Oroville Dam in excess of what is required in**
2 **the Flood Control Manual not to exceed downstream channel capacities? Yes!**
3 **Floodwater releases during January 1997 Flood Event was 167,000 Cubic Feet Per**
4 **Second according to the Army Corps of Engineers' report:**
5

6 **A:** In addition, during the January 1997 flood event, DWR officials exceeded the maximum allowable
7 floodwater release from Oroville Reservoir, which under the condition that prevailed during that
8 event limited floodwater release to 150,000 c.f.s., consistent with the criteria referred to as a
9 "Standard Project Flood" (SPF); in DWR's January 2001 *"Initial Information Package Report"*, for the
10 "kick-off" of its FERC Relicensing efforts, it stated, **floodwater releases from Oroville during the**
11 **January 1997 flood was 167,000 cfs.**¹⁷⁷ (Emphasis added) (Refer to Graph on following page.)
12

13 Note: The Graph indicating the "Maximum Flood Release" of 160.917 cfs, was revised, and updated,
14 as stated above, to 167,000 cfs, as stated in the DWR's information submitted to the Federal Energy
15 Regulatory Commission, back in 2001, as part of the relicensing of Project No. 2100.
16
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¹⁷⁷ California Department of Water Resources, Federal Energy Regulatory Commission, License No. 2100. Initial Information Package, Relicensing of the Oroville Facilities, January 2001.

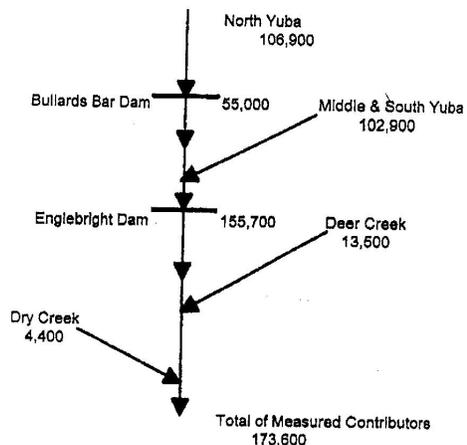
1 **Graph Illustrating 1997 Floodwater Flows in the Feather River Above and Below**
 2 **Confluence of Yuba River – Flows Exceeded Limitations of the Flood Control Diagram**
 3 **and Channel Design Capacities – Contributing to the Levee Failures, Property Damages**
 4 **and Loss of Lives:**
 5



6 Don Wilson, P. E., Engineer-Administrator, Yuba County Water Agency, provided Patrick Porgans
 7 with this Graphic illustrating Flows on the Yuba River, Just Above the Confluence of the Feather River,
 8 Measured 173,000 cfs in Jan. 1997.

Flood Flows in the Yuba River merged with high-flood flows of the Feather River:

Jan 97 Yuba River Flows In CFS



Source: Graphic Obtained from Donn Wilson, P.E., Engineer Administrator, Yuba County Water Agency

- 1
- 2 Graph illustrates Feather River Channel and Yuba River Designed Capacities in Cubic Feet Per Second
- 3 (cfs) and the. Estimated Peak Flood Flows and Dam Water Releases on the Feather and Yuba Rivers,
- 4 Jan 1997.)

1 **1997 Yuba City Informs Director of Department of Water Resources no Longer**
2 **Convinced Current Criteria for Operating Oroville Dam through Yuba City are Accurate:**
3

4 *We are deeply concerned about the current levee conditions in Yuba City and the*
5 *operation of Oroville Dam as it affects downstream levees.*

6
7 *It has been eight months since the storm of record giving DWR ample opportunity*
8 *to re-evaluate their release policy and criteria for operating the dam. We in Yuba*
9 *City are no longer convinced that the current criteria and flow levels through Yuba*
10 *City are accurate. We hope these inaccuracies will be taken into consideration when*
11 *storing and releasing water from Oroville Dam.*¹⁷⁸ (Emphasis added) (Exhibit *)

12 **DWR Director's Written Response to Yuba City Inaccuracies of Flood Flow and**
13 **Operating Criteria of Oroville Dam:**
14

15 *This is in response to your letter of August 18, 1997, regarding concerns about flood*
16 *control protection on the Feather River.*

17
18 *The State, in cooperation with the U.S. Army Corps of Engineers, is evaluating a*
19 *variety of scenarios and exploring options for our winter flood operations given this*
20 *year's conditions. We will certainly give serious consideration to your concerns.*¹⁷⁹ ¹⁸⁰
21 (Exhibit *)

22 **Flood Control Committee of Yuba and Sutter Counties letter to DWR Director, David**
23 **Kennedy, concerns of Future Flood Disasters:**
24

25 *Mr. Kennedy, we urge you to establish emergency criteria now to permit lowering the*
26 *normal level of Lake Oroville when there is the presence of heavy snowpack together*
27 *with the weather predictions of major tropical rainfall. Such a program is the only way*
28 *to reduce the great risk of another winter poses.*¹⁸¹
29

¹⁷⁸ Karen Cartoscelli, R,N, Mayor, Yuba City letter to David Kennedy, Director, California Department of Water Resources, *Re; Sutter County – Flood Protection*, September 8, 1997.

¹⁷⁹ David Kennedy, Director, California Department of Water Resources, letter responding to Karen Cartoscelli, R, N, Mayor, Yuba City, *Re; Sutter County – Flood Protection*, October 10, 1997.

¹⁸⁰ Karen Cartoscelli, R,N, Mayor, Yuba City letter to David Kennedy, Director, California Department of Water Resources, *Re; Sutter County – Flood Protection*, September 8, 1997.

¹⁸¹ Marilyn Speth, Member, Flood Control Committee of Yuba, and Sutter Counties letter to DWR Director, David Kennedy, *Need to Establish emergency Criteria to Permit Lowering of Lake Oroville*, August 18, 1997.

1 **Is the designed carrying capacity of downstream levees the “Achilles Heel” that limits**
 2 **floodwater releases from Oroville Reservoirs?: Yes!**

3
 4 **Flood Control Rules and Regulations that Apply to DWR’s Operation and Maintenance for**
 5 **Downstream Project Levees and the Operation of the State Water Project’s Oroville Dam and**
 6 **Reservoir Flood Control Facilities and the New Bullards Bar Reservoir on the Yuba River:**

7
 8 *Flood control operations for the Feather River require Feather River flows to not*
 9 *exceed 150,000 cubic feet per second (cfs) at Oroville, 180,000 cfs above Yuba River,*
 10 *and 300,000 cfs below Yuba River. Insofar as possible, the Feather River below Bear*
 11 *River must be limited to 320,000 cfs. During very large floods, releases greater than*
 12 *150,000 cfs at Oroville may be required, as indicated by the emergency operations,*
 13 *in order to minimize uncontrolled spillway discharges.*¹⁸² [Emphasis added]

14 **31. RELATION TO OTHER PROJECTS**

- 15
 16 a. *A coordinated reservoir plan for the entire Feather-Yuba-Bear system is*
 17 *essential to proper regional flood control. The flood control operation of*
 18 *Oroville Reservoir will ultimately be directly related to that of the other flood*
 19 *control reservoirs in the Feather-Yuba-Bear system. Of these, only New Bullards*
 20 *Bar reservoir has been constructed, however, in order to insure (sic) future*
 21 *coordination, the channel capacities in the Feather River below Yuba and Bear*
 22 *Rivers have been designed for controlled flows from these tributaries. (pp. 26*
 23 *and 27) [Emphasis added]*

24 **Did Government Officials Fail to Coordinate Floodwater Releases from Oroville Dam**
 25 **with Floodwater Releases from New Bullards Bar? Yes!**

26 **DISCRIPTION OF THE AREA**

- 27
 28 a. *Feather River, a major tributary of Sacramento River, rises high in the Sierra Nevada at*
 29 *elevations close to 10,000 feet, and flows for about 200 miles to its junction with*
 30 *Sacramento River on the valley floor. Its upper reaches branch into several forks: West*
 31 *Branch and South Fork lie on the western slope of Sierra Nevada; North and Middle Forks*
 32 *rise on a high plateau east of the mountains. These streams flow in a generally*
 33 *southeasterly direction, cutting through steep rugged canyons to their respective*
 34 *confluences with the mainstream in the foothills above the mouth of Feather River*
 35 *Canyon. Oroville Dam is located below the junctions of the forks, six miles above the*
 36 *town of Oroville. After leaving the mountains near Oroville, Feather River turns south*

¹⁸² *SUTTER BASIN PILOT FEASIBILITY FINAL REPORT—FINAL ENVIRONMENTAL IMPACT REPORT/
 SUPPLEMENTAL ENVIRONMENTAL IMPACT STATEMENT* PREPARED BY: U.S. Army Corps of Engineers,
 Sacramento District, October 2013, p. 1-8.

1 **and flows through the rich agricultural lands of the Sacramento River Valley for about**
 2 **50 miles to its mouth at Verona on Sacramento River, 20 miles above the city of**
 3 **Sacramento. Feather River has two main tributaries that join in the valley, Yuba River**
 4 **(with 1,350 square mile drainage area) at Yuba City, and Bear River (with 550 square**
 5 **miles drainage area) at Nicolas.** (Emphasis added)

6
 7 (2) **About 36 percent of the Yuba drainage basin area is control by recently completed**
 8 **New Bullards Bar Reservoir located about 35 miles upstream from the Feather River.**
 9 **The remaining 64 percent will be uncontrolled area until authorized Marysville Dam**
 10 **and Reservoir is built and put into operation. Complete protection on the Yuba River is**
 11 **not possible without the authorized Marysville Reservoir.** [Emphasis added]

12
 13 (3) *The Bear River drainage area has a total area of about 550 square miles above the*
 14 *confluence with the Feather River. The four existing reservoirs on Bear River have no*
 15 *storage allocated to flood control. The largest of these reservoirs is the New Camp Far*
 16 *West Dam and Reservoir completed in 1963. Studies are being conducted for*
 17 *construction of the Garden Bar Dam and Reservoir which would have storage allocated*
 18 *to flood protection.* ¹⁸³[FN] *[Refer to Exhibit No. XX.]

19
 20 (4) **An extensive levee system has been constructed to protect the Feather River flood**
 21 **plain downstream from Oroville Reservoir. A levee extends along the right bank of**
 22 **Feather River from Hamilton Bend to the mouth of Feather River. Levees have also**
 23 **been constructed along the lower reaches of Bear and Yuba Rivers, around the city of**
 24 **Marysville and around a local reclamation district. The extent of the levee system is**
 25 **shown on charts 1 and 28. (p. 3)** [Emphasis added]

26
 27 Yuba and Sutter County Officials Raise Their Concerns to DWR Stating that the 150,000 CFS
 28 Floodwater Releases Know to Cause Significant Flood Damages to Marysville and Yuba City and the
 29 Operational Criteria for Flood Control Releases from Oroville Dam Need to be Modified:

30 **Q: Is the DWR required by law to coordinate flood control operations with other**
 31 **agencies? Yes!**

32
 33 **A: Coordination with other agencies. In order to ensure that the flood control**
 34 **operation of Oroville Reservoir will be effective and reasonable as possible, it is**
 35 **essential that the operating agency keep advised at all times of possible flood**

¹⁸³ U.S. Army Engineer District, Corps of Engineers, Sacramento, CA, *Interim Instructions for Flood Control Operation, Oroville Dam and Reservoir, Feather River, CA*, December 1967.

¹⁸³ U.S. Army Corps of Engineers, Sacramento District, *Oroville Dam and Lake, Feather River, California, Water Control Manual, Appendix IV to Master Water Control Manual, Sacramento River Basin, California, Preliminary Subject to Revision*, August 1989, p. III-3.

1 **hazards, weather conditions, inflow into the reservoir, flow in downstream**
2 **tributaries, and in the Feather River below Oroville Dam. This requires close liaison**
3 **with other agencies, including the weather bureau, and the Corps of Engineers, on a**
4 **daily or hour basis as required.**¹⁸⁴ (Emphasis added) (Refer to Exhibit *)

5 **Coordinated Flood Control Operation of New Bullards Bar and Oroville Reservoirs:**

6 **1.7.2 Upstream Reservoirs**

7
8 *The Oroville Dam and Reservoir, built in 1967 and operated by the State of*
9 *California, is a unit of the Feather River Project, which is a part of the State Water*
10 *Project. Oroville Dam is located on Feather River, a tributary of Sacramento River, in*
11 *the Feather River Canyon, about 6 miles upstream from the town of Oroville. The dam*
12 *was built for multi-purpose functions: water supply, flood control, power generation,*
13 *recreation, and conservation. The reservoir provides water supply to the areas adjacent*
14 *to the Feather River as well as additional water for diversions from Sacramento-San*
15 *Joaquin Delta to areas in the San Joaquin Valley, San Francisco Bay Area, and Southern*
16 *California.*

17
18 *The 750,000 acre-feet flood control storage space in Oroville Reservoir provides*
19 *flood protection to the cities of Marysville, Yuba City, Oroville, and many smaller*
20 *communities located in the floodplain.*

21
22 *New Bullards Bar, built in 1969 and operated by the Yuba County Water*
23 *Agency, is located on the Yuba River, it provides 170,000 acre-feet of flood control*
24 *space. Operations at New Bullards Bar are coordinated with operations at Oroville to*
25 *control flood flows on the Feather River. For both Oroville and New Bullards Bar, the*
26 *flood control space was purchased under Section 7 of the Flood Control Act of 1944*
27 *(58 Stat. 890) by the Federal government. Any encroachment into the flood control*
28 *space must be released during the flood season, as defined by the water control*
29 *operations manual.* [Emphasis added.]

30
31 *Flood control operations for the Feather River (as defined in the Oroville and*
32 *New Bullards Bar Water Control Manual(s) require Feather River flows to not exceed*
33 *150,000 cubic feet per second (cfs) at Oroville, 180,000 cfs above Yuba River, and*
34 *300,000 cfs below Yuba River. Insofar as possible, the Feather River below Bear River*
35 *must be limited to 320,000 cfs. During very large floods, releases greater than*

¹⁸⁴ U.S. Army Engineer District, Corps of Engineers, Sacramento, CA, *Interim Instructions for Flood Control Operation, Oroville Dam and Reservoir, Feather River, CA*, December 1967, p. 5.

1 **150,000 cfs at Oroville may be required, as indicated by the emergency operations,**
2 **in order to minimize uncontrolled spillway discharges.**¹⁸⁵ [Emphasis added]

3
4 **Given the unregulated local flows in the Feather River and Yuba River drainage areas**
5 **as well as the uncertainties associated with regulating for downstream controls, the**
6 **State, in cooperation with Yuba County Water Agency and USACE, has invested**
7 **heavily in coordinating operations, including developing models, establishing off-site**
8 **data servers, and holding annual mock operations scenarios.**¹⁸⁶ [FN] [Emphasis
9 added] * [Refer to Exhibit X, p. x.]

10 **Did State and Federal officials coordinate Feather River floodwater releases from**
11 **Oroville Reservoir and Yuba River floodwater releases from Bullards Bar Reservoir,**
12 **during the Jan. 1997 flood to maintain flood flows so as not to exceed the channel**
13 **capacities on the Feather and Yuba Rivers? No!**

14 **A: Public records disclose that government officials failed to coordinate floodwater releases from**
15 **Oroville Dam with floodwater releases from New Bullards Bar. Flood flows from the Yuba River**
16 **watershed, during flood season, according to the Flood Control Manual, are not to exceed 120,000**
17 **c.f.s. Data obtained from the Yuba County Water Agency recorded the Yuba River flow, at the**
18 **confluence of the Feather River, to be 173,000 c.f.s., during the January 1997 flood, with a**
19 **subsequent levee failure just below its confluence with the Feather River.**¹⁸⁷ (Refer to Exhibit *)
20 **Total flow in the Feather River, just below Yuba River, was estimated to be in excess of 350,000**
21 **c.f.s. The Manual sets a limit of 300,000 c.f.s. just below the confluence of the Yuba River.**¹⁸⁸ (Refer
22 to Exhibit *)

23 **Q: Did DWR fail to inspect channel conditions leading up to a major levee break? Yes!**

24
25 **The limitations of the downstream levees and potential for disaster were evident**
26 **during the 1986 Flood when a levee break occurred on the south bank of the Yuba**
27 **River at the town of Linda and Olivehurst, just above the Feather River Junction.**¹⁸⁹
28 [Emphasis added] (Refer to Exhibit *)

¹⁸⁵ *SUTTER BASIN PILOT FEASIBILITY FINAL REPORT—FINAL ENVIRONMENTAL IMPACT REPORT/ SUPPLEMENTAL ENVIRONMENTAL IMPACT STATEMENT* Prepared by : U.S. Army Corps of Engineers, Sacramento District, October 2013, p. 1-8.

¹⁸⁶ *Ibid. SUTTER BASIN PILOT FEASIBILITY FINAL REPORT*, October 2013, p. 1-8.

¹⁸⁷ Don Wilson, P. E., Engineer-Administrator, Yuba County Water Agency, provided Patrick Porgans with a Graphic illustrating Flows on the Yuba River, Just Above the Confluence of the Feather River, Measured 173,000 cfs in January 1997.

¹⁸⁸ Flood flow figures obtained from the U.S. Geological Survey, California Department of Water Resources, and the Yuba County Water Agency, January 1997.

¹⁸⁹ U.S. Army Corps of Engineers, Sacramento District, *Oroville Dam and Lake, Feather River, California, Water Control Manual, Appendix IV to Master Water Control Manual, Sacramento River Basin, California, Preliminary Subject to Revision*, August 1989, p. III-3.

1 **Q: Did excessive floodwaters contribute to downstream erosion, property, and levee**
2 **damages? Yes!**

3
4 ***The repairs are needed because levees along the west bank of the Feather River suffer***
5 ***from potential underseepage and through-seepage. Similar problems caused [major](#)***
6 ***[levee failures](#) in Yuba City in 1955 and Yuba County in 1986 and 1997.*** ¹⁹⁰ [Emphasis
7 added] (Refer to Exhibit *)

8 **De Cuir & Somach, Attorneys for Sutter County letter to the Secretary of the Army for**
9 **Civil Works,, Washington, D.C. The Pentagon, Re: Sutter County – Flood Protection:**

10
11 *As Mr. Somach set forth, Sutter County is concerned about the Corps of Engineers' (COE)*
12 *completion of all levee related repair work prior to the 1997-1998 winter season in order to*
13 *prevent a repeat of last winter's flooding within Sutter County and to protect the public*
14 *health and safety. While Sutter County will continue to be vigilant in its review of all of the*
15 *COE's actions in this regard, this constitutes Sutter County's notice to the COE of its intent to*
16 *seek appropriate re-operation of Oroville Dam and Reservoir ("Oroville Reservoir") flood*
17 *control operations, should COE's downstream levee repair effort prove to be untimely or*
18 *otherwise inadequate.*

19
20 *Where changed conditions affect flood control (and navigation), COE is obligated to revise*
21 *the Oroville Reservoir water control plan¹⁹¹ and all associated documents. (Title 33 C>F>R>,*
22 *part 208, section 11 (d)(10).) The downstream channels currently have a reduced capacity as*
23 *a result of damages caused during last winter's flooding, as well as other related problems.*
24 *Unless they are promptly repaired, these changed conditions may require revisions to the*
25 *Oroville Reservoir water control plan and, specifically, may compel revisions to Oroville*
26 *Reservoir flood control operations.*

27
28 *Furthermore, the current flood control operation is suspect even absent the levee damage.*
29 *When Oroville Reservoir water control plan was devised , COE made certain assumptions that*
30 *have since proved to be erroneous. Consequently, reoperation of Oroville Reservoir may be*
31 *required irrespective of current levee conditions. For example, the flood control plan was*
32 *designed assuming construction of the Marysville Dam to control the Yuba River, a major*
33 *tributary to the Feather river. (Oroville flood control plan, (30 (1)...). Marysville Dam,*
34 *however, was never constructed. Thus, COE should already revisited the issue of flood control*
35 *operations of Oroville Reservoir to compensate for the absence of Marysville Dam.*¹⁹²

¹⁹⁰ Sutter Butte Flood Control Agency, [Feather River West Levee Project,](http://sutterbutteflood.org/projects/feather-river-west-levee-project)
<http://sutterbutteflood.org/projects/feather-river-west-levee-project>

¹⁹¹ The Oroville Reservoir flood control plan is formally titled, the *Oroville Dam and Reservoir, Feather River, California, Report on Reservoir regulations for Flood Control* (August 1970), including attachments.

¹⁹² De Cuir & Somach, Attorneys at Law, letter sent via Facsimile and Federal Express to the Honorable Michael Davis, Deputy Assistant Secretary of the Army for Civil Works, Department of the Army, The Pentagon, Washington, D.C. *Re: Sutter County – Flood Protection*, September 12, 1997.

1 **De Cuir & Somach, Attorneys for Sutter County letter to David Kennedy, Director,**
2 **Department of Water Resources, Re: Sutter County – Flood Protection:**
3

4 *I [Stuart L. Somach] represent Sutter County as Special Legal Counsel. I know that you are*
5 *aware of the flood-related problems that exist within Sutter County and, as a consequence,*
6 *will not belabor that point here. **I am not certain, however, that you fully understand the***
7 *dilemma that Sutter County currently faces. I have today forwarded the enclosed letter to*
8 *the Corps of Engineers (“COE”). The letter is fairly frank, and I can assure you that Sutter*
9 *County is very serious about exhausting every avenue available to obtain the level of relief*
10 *to which it is entitled. Your continued assistance in moving the COE toward prompt and*
11 *responsible action would, of course, be welcome. (Emphasis added)*
12

13 *I am concerned also about actions that are more directly-related to the Department of*
14 *Water Resources (“DWR”) obligations. In the absence of COE relief, we believe that DWR is*
15 *obligated to re-operate Oroville Reservoir in a manner that will relieve the pressure on the*
16 *various levees that currently protect Sutter County. Assuming no action by the COE, this*
17 *letter constitutes Sutter County’s notice to DWR that it expects this type of reoperation.*
18 *We would be happy to meet with DWR to discuss how this can be accomplished. (we believe*
19 *that the United States Bureau of Reclamation (“USBR”) is similarly obligated with respect to*
20 *Shasta Dam, and I have on this date forwarded a letter to Roger Patterson notifying him of*
21 *our intention to ensure re-operation of Shasta Dam so that facility can also provide the level*
22 *of protection to which Sutter County is entitled.)*¹⁹³ (Emphasis added)

23 **De Cuir & Somach, Attorneys for Sutter County follow up letter to David Kennedy,**
24 **Director, Department of Water Resources, Re: Sutter County – Flood Protection:**
25

26 This follows Stuart Somach’s August 28, 1997, letter regarding flood-related problems that currently
27 exist within Sutter County. Enclosed please find a copy of our most recent letter to the Corps of Engineers
28 (“COE”) regarding this matter.

29 Sutter County continues to be concerned about the COE’s failure to complete, and in most cases
30 begin, critical levee repair work. While Sutter County would like to avoid compelling revision of the Oroville
31 Dam and Reservoir (“Oroville Reservoir”) flood control operations and to avoid impact on water supply,
32 COE’s failure to act promptly and adequately will soon leave Sutter County with no other option. Your
33 continued assistance in moving COE toward prompt and responsible action is appreciated.

34 Please note as well that if flood control emergency occur again this winter, the Department of
35 Water Resources may need to make flood control operational decisions without COE’s input. **This would**
36 **include departing from the current inadequate, Oroville Reservoir flood control plan. (Title 33 C.F.R., part**

¹⁹³ Stuart L. Somach, Special Legal Counsel, County of Sutter, De Cuir & Somach, Attorney at Law, letter to David Kennedy, Director, CA Department of water Resources **Re: Sutter County – Flood Protection, Hand Delivered**, August 28, 1997.

1 **208, section 11(d)(9)(vii)**) Coe’s proper attention to Sutter County’s concerns, however, would significantly
2 reduce that possibility.¹⁹⁴

3 **Yuba County Water Agency expressed concerns to Corps of Engineers how floodwater**
4 **releases were held back from New Bullards Bar Reservoir, not coordinated with**
5 **floodwater releases from Oroville Reservoir:**

6
7 *My Board of Directors is very concerned with the methods by which releases from*
8 *our New Bullards Bar Reservoir were handled. Therefore, they have requested that I*
9 *[Arthur N. Aseltine, P.E., Administrator] inquire into the reasons for not releasing more*
10 *water from the New Bullards Bar Reservoir sooner than you actually did.*

11 *We realize that in the past you normally made releases from Oroville Reservoir first*
12 *and then release from Bullards after the runoff from Oroville begins to slack off.*

13 *However, in the case of the heavy rain period of February 16—19, 1986 it has been*
14 *determined that:*

- 15
16 1. *At 0400 hours on February 17, 1986 Bullards’ water level reached its maximum winter-*
17 *time elevation of 1918 feet – 3500 cfs was being released through the powerhouse –*
18 *Inflows were approximately 35,000 cfs.*
19 2. *By 1800 hours on February 17, inflows had increased to approximately 83,500 cfs.*
20 3. *It wasn’t until 1840 hours that you ordered us to release 5,000 cfs per hour until we*
21 *reached a release of 20,000 cfs.*
22 4. *By 2200 hours inflow reached approximately 93,300 cfs with a release of 10,000 cfs +*
23 *3,500 cfs.*
24 5. *The maximum water level in Bullards reached 1955.56, some 0.44 feet less than the*
25 *Gross Pool elevation.*
26 6. *It is our understanding that the peak flow from Oroville releases from Oroville would*
27 *not have arrived until at the Marysville/Yuba City area until around noon on February*
28 *18, 1986.*

29 *Therefore, was there not a 24-hour period between 0400 hours on February 17*
30 *and 0400 hours on February 18 that additional water could have been releases from*
31 *Bullards? In particular could not releases have been made as soon as 0400 hours on*
32 *February 17, and in a greater quantity that actually called for, and then reduced to*
33 *accommodate the Oroville release’s peak as it approached Marysville/Yuba City area?*

¹⁹⁴ Donald B. Gilbert, Attorney, De Cuir & Somach, Attorney at Law, letter to David Kennedy, Director, CA Department of water Resources **Re: Sutter County – Flood Protection**, Via Hand Delivery, September 12, 1997.

1 According to your spillway rating curve in 1918, we could have been releasing as
2 high as 15,000 cfs and easily could have continued to increase spills at 5,000 cfs per
3 hour.¹⁹⁵ (Exhibit *)

4 **Yuba County Water Agency Met with Corps of Engineers to Discuss Why it Was Ordered**
5 **to Hold Back on Making Floodwater Releases from New Bullards Bar Reservoir that**
6 **Would have Reduced Exceeding Designed Flood Flow River Stages at the Confluence of**
7 **the Feather and Yuba Rivers:**

8 The Board of Directors of the Yuba County Water Agency would like a member
9 if your Reservoir Control section to be present at their next Board meeting on Tuesday,
10 April 15, 1986 at 9:00 a.m. to be held in the Supervisors Chambers, Yuba County
11 Courthouse, 215 Fifth Street, Marysville, CA.

12 The Board would like to discuss the overall picture of the operation of the
13 Feather/Sacramento system.¹⁹⁶ (Exhibit *)

14
15
16 **Red Tape Abatement (RTA) Filed a Formal Freedom of Information Act (FOIA) Request**
17 **with the Corps of Engineers to Obtain Public Records Pertaining to the February 1986**
18 **Flood Basis for Corps Order for the YCWA to Hold Back on Floodwater Releases from**
19 **New Bullards Bar Reservoir:**

20
21 Reference is made to your Freedom of Information Act request concerning the
22 above projects, which was received by this office on March 24, 1987. There is some
23 question regarding the reliability of certain materials contained in the correspondence
24 file for the New Bullards Bar Reservoir. As such, your request has been forwarded to a
25 higher authority for action, as required by the Department of Army regulations.

26
27 With regard to the information that is being denied releasability, you will receive
28 a response from the U.S. Army Corps of Engineers Chief Counsel's office in the near
29 future. Any further inquiry involving this matter should be directed to: Commander,
30 HQUSACE, ATTN; DAEN-CCK, FOIA, Martin R. Cohen, Office of the Chief Counsel,
31 Washington, D.C. 20314-1000.¹⁹⁷ (Exhibit *)

¹⁹⁵ Arthur N. Aseltine, P.E., Administrator, Yuba County Water Agency, letter to District Engineer, Corps of Engineers, Sacramento District, February 25, 1986.

¹⁹⁶ Arthur N. Aseltine, P.E., Administrator, Yuba County Water Agency, letter to District Engineer, Corps of Engineers, Sacramento District, Re: My letter of February 25, 1986.

¹⁹⁷ Annette B. Kuz, Freedom of Information Act Officer, Department of the Army, Sacramento District, Corps of Engineers, Office of the Chief Counsel, Initial Response to RTA's, Patrick Porgans, March 24, 1987, FOIA Request: **Subject Freedom of Information Act Request; New Bullards Bar Dam and Reservoir; and Narrows Dam on the Yuba River**, April 6, 1987.

1 **RTA Filed an Appeal-Response from Office of Chief Counsel, U.S. Army Corps Denied Part**
2 **of FOIA Request, Release of Certain Public Records would have a “Chilling Effect” on the**
3 **Study and Review Process:**
4

5 *This letter concerns your Freedom of information Act (FOIA) request for*
6 *documents concerning the New Bullards Bar Dam and Reservoir and the Narrows*
7 *Dam on the Yuba River. I [Martin R. Cohen, Assistant Chief Counsel] understand the*
8 *Sacramento District, Corps of Engineers, has offered to make most of the documents*
9 *available to you for inspection. The District has forwarded your request and several*
10 *other documents (see attached list) referenced by your request to me for a release*
11 *determination.*

12 *It is the policy of the Department of the Army to release the maximum amount*
13 *of information under the Freedom of Information Act (FOIA) unless the information is*
14 *exempt from release and a significant reason exists for non-disclosure.*

15 *I [Martin R. Cohen, Assistant Chief Counsel] have reviewed the documents*
16 *forwarded by the District and decided to withhold them under exemption 5 of FOIA, 5*
17 *U.S.C. s.552(b) (5). This provision governs the withholding of information which is part*
18 *of the agency’s predecisional deliberative decisional-making process, and which is*
19 *“normally privileged in the civil discovery context.” N.L.R.B. v. Sears, Roebuck & Co.,*
20 *421 U.S. at 151. See also Coastal States Gas Corp. v. Doe, 617 F. 2d 854, 866,132, 149*
21 *(1975). The purpose of the deliberative process privilege is to “prevent injury to the*
22 *quality of the agency decisions” by encouraging honest and frank discussions within*
23 *the agency N.R.L.B. v. Sears, 421 U.S.at 866, D.C. Cir. 1980). Finally, the exemption is*
24 *intended to protect against public confusion that might result from disclosure of*
25 *reason and rationale that were not in fact ultimately the grounds for an agency’s*
26 *action, Jordan v. Department of Justice, 591 F. 2d 753, 772-773 (D.C. Cir. 1979).*

27 *The documents you seek are predecisional intra-agency memoranda, letters,*
28 *and file notes containing internal advice, opinions, and recommendations. In my*
29 *opinion, **release of the documents would have a chilling effect on the study and***
30 ***review process by discouraging candid comments by Corps employees.**¹⁹⁸ (Emphasis*
31 *added) (Exhibit *)*

¹⁹⁸ Martin R. Cohen, Assistant Chief Counsel, Department of the Army, Office of the Chief Counsel, Washington, D.C. Response to Patrick Porgans, Red Tape Abatement’s FOIA Appeal Request, Sacramento District, Corps of Engineers, Office of the Chief Counsel, March 24, 1987, FOIA Request: *Subject Freedom of Information Act Request; New Bullards Bar Dam and Reservoir; and Narrows Dam on the Yuba River*, April 15, 1987.

1 **Some of the Documents Office of the Chief Counsel Refused to Release: Safety Inspection,**
2 **Meeting with Yuba County Water Agency; Marysville Lake Frequency Curves; ;**
3 **Releases*)**

4 **On the night of February 17, 1986, a flow of 265,000 cfs was recorded on the Feather**
5 **River, above the Dam, higher than flows that devastated Marysville in 1955:**

6
7 ***On the Feather River on the night of February 17 were a record of 265,000 cfs,***
8 ***considerably higher than the 1955 Feather River flows that devastated Marysville***
9 ***before Oroville Dam was built. Oroville releases went as high as 150,000 cfs, breaking***
10 ***the previous record release of 70,000 cfs but still within the design limits of the***
11 ***Oroville system.***¹⁹⁹ (Emphasis added) (Exhibit *)

12
13 **Lake Oroville Operations during the January 1997 Flood Event – Reservoir Storage, Inflow and**
14 **Outflow Feather River:**

15
16 **Author contacted Reservoir Control Section, U.S. Army Corps of Engineers, Sacramento**
17 **District for verification of flow data – Corps response – “pure estimates”:**

18
19 *Q: How did you come up with the “estimated actual maximum actual flows” for the*
20 *Feather River; 178,000, 300,000 and 320,000 cfs, respectively. Were these figures*
21 *(flows based on either a gage height reading, or rating curve tables?*

22
23 **A: No. They are pure estimates.** (Emphasis added)

24
25 *Q: So, they are not figures extrapolated from the gaging station, or rating curves?*

26
27 *A: They are not hard gage height readings, or a rating table related to it.*

28
29 *Q: There are gaging stations on the Feather and Yuba Rivers in proximity to the*
30 *confluence of these rivers, why didn't you use the data provided by these stations to*
31 *determine actual flows.*

32
33 **A: Those gaging stations are worthless under backwater.** You've got a gage height
34 **there, that all you've got. You don't have anything else there, no way to measure**
35 **backwater from the Feather River, and the same with the gaging station upstream on**
36 **the Yuba River, that's influenced by backwater.**

37

¹⁹⁹ California Department of Water Resources, *The Flood of February 1986*, undated.

1 **Q: Okay. I realize now from our conversation that those flows which you provided**
2 **for the Corps report, were not extrapolated from the gage height, or rating tables.**
3 **So, in essence these figures are guesstimates?**

4
5 **A: That's correct.**

6
7 **Q: And there is no way with the present instruments (gaging stations) you can say**
8 **what the actual flows were during the February 1986 floods?**

9
10 **A: Not really.**

11
12 **Q: So, it would be difficult to come up with an accurate figure (flow) because of the**
13 **backwater? The actual flow could have been more or less; 10 percent one way of**
14 **the other?**

15
16 **A: It may be even more. I don't know how much backwater influence that is there.**

17
18 **Q: Do you know anyone that would know?**

19
20 **A: Not right off hand.²⁰⁰ (Emphasis added)**

21 **State's Expert Testimony Regarding Formula for Floodwater Releases at Oroville Dam**
22 **and Reservoir – Directed not to Answer Question Regarding Accuracy of Floodwater**
23 **Release Estimates:**
24

25 Note: The following quotations are verbatim quotations extrapolated from a Deposition of
26 Larry Keith Gage, Chief, Division of Operation and Maintenance, Department of Water
27 Resources, *Kevin McMahan et al v. State of California*, Reclamation District 784, and Does 1
28 through 10,000, Case No. CV 061561, pertaining to the January 1997 Floods along the
29 Feather River.
30

31 Q. So to prepare the bi-hourly data sheet does the underlying data to be prepare this
32 comes orally over the phone or how does it come to the people who are preparing
33 the bi-hourly data sheets?

34 Taking a look at exhibit 322 is there a mathematical calculation that used to compute
35 the inflow from the [reservoir] elevation?

36 **A. Yes.**

²⁰⁰ Patrick Porgans, Resource Management Consultant, Red Tape Abatement, letter to Charles "Chuck" Matlock, Reservoir Control Section, U.S.U.S. Army Corps of Engineers, Sacramento District, Re: Verification of Flow Data, contained in the Corps *Report on the February 1986 Floods, Northern California and Northwestern Nevada, published in January 1987*, letter sent via U.S. Postal Service Certified Mail P-506 372 154, on Wednesday, April 23, 1987

1 Q. Do you happen to know that calculation?

2 A. It is done by taking the increase in storage and subtracting releases period.

3 Q. Can you give us an example of how that would be calculated maybe by using a
4 particular point in time on the bi-hourly data sheets, Exhibit 322?

5 A. Looking at January 1, 1996 (sic), 0200 [hours].

6 Q. January 1, 1997

7 MR. PHILLIPS: January 1.

8 THE WITNESS [Mr. Gage]: That happened to be where we open to. Storage
9 was 2,940,586. At midnight two hours before it was 2,929,103. Subtract those two
10 and I get – if I subtract correctly I get 11,483 [acre-feet] in storage. Releases were
11 100, let's see, this page does not indicate any amount of water from generation. I
12 suspect, I think there was a small amount of water from generation.

13 MR. MANN [Plaintiff's Attorney]:

14 Q. Power generation?

15 A. Power generation. It indicates a dam spill of 101,500 [cubic feet per second], and a
16 total release of 105,000 which probably means there was a 4,500 generation. So,
17 105,000 cfs. Eight feet divided by hours times 12.1 equals cfs. 105,000 cfs divided by
18 12.1 gives me 8,678. 8678 acre-feet that was released.

19 So, if the lake went up 11.500 and they released 8678, the total inflow would have
20 been those two combined or 23,161 acre-feet, 243,948 cfs. That's what I [Gage]
21 calculate. And it's way different what shown there so I must have made a mistake.
22 This sheet shows 171,190.

23 MR. IVERSON: You calculated at 105,000. Shouldn't have been 100 or is that
24 105?

25 MR. PHILLIPS [Attorney for the State]: You are talking about the total release.
26 He's looking at the second line at 2:00 o'clock.

27 MR. IVERSON: He calculated 105,000. Shouldn't have been calculating this one
28 up here? To show the difference?

29 THE MR. PHILLIPS: WITNESS: Are you asking should I have used the dam spill
30 number?

31 No, I think he's asking -- I think you're taking about different things. The 100,000 on
32 top. I have.

33 THE WITNESS: You're correct. I've should have been.

34 MR. IVERSON: That's been releasing for an hour.

35 THE WITNESS: We assumed it has happened for two hours, and if the change
36 happened at 0200 [hours] I don't really know that for a fact. It may have changed at
37 0100.

38 BY MR. MANN: Q: Maybe you could just give us the formula. Why you don't
39 you give us the formula if you make the calculation.

40 Mr. IVERSON. What are we calculating now?

1 Mr. MANN: Is it just the –

2 BY MR. MANN: Q. Could you tell us again, I think you've already done it but if
3 you tell us the formula?

4 A. Storage now minus storage two hours ago. That will give you have much the lake
5 went up in acre-feet. To that you need to add what was released in acre-feet and to
6 get what was released in acre-feet you take the cfs number, divided it by 12.1. I think I
7 see my mistake. And in this case multiply by two because this is for a two-hour period,
8 not a one-hour period.

9 MR. IVERSON: So, you multiply the acre-feet by two. Total cubic feet per
10 second.

11 THE WITNESS: The 12.1 takes that into account. One acre-foot in an hour is
12 equal to one over 12.1 cfs or about a 08.

13 MR. MANN: Q. In lay terms what is an acre-foot? An acre-foot is a volume of
14 water that would fill a surface area of one acre to a depth of one foot.

15 MR. REGAN [Plaintiffs' attorney]: How is the dam spill calculated?

16 THE WITNESS: Dam spill is -- I believe is estimated by the spillway release curve
17 which is in here I think in Exhibit 319.

18 A. Looking at the Table of Contents on Exhibit 319, page DWR 5306, chart under 19 is
19 the Spillway and Flood Control Outlet Rating Curve.

20 Q. So far we've talked about how you calculate the inflow and how you calculate dam
21 spill. How are total releases calculated?

22 A. Dam spill plus whatever is going through the generators.

23 Q. How is the dam – now can you describe how the spill is calculated using the chart
24 number 19? Is basically opening of the – well, let me ask you this. The opening of the
25 spillway gate or gates?

26 A. I believe there are eight gates there, yes.

27 Q. And so, can you tell us how you use chart number 19 to calculate dam spill?

28 A. Chart number 19 I believe gives you the unregulated capability of the spillway
29 for various elevations. (Emphasis added)

30 Q. Is that assuming the gates are open all the way?

31 A. Yes. It gives you the maximum. Then you can calculate from your gate opening
32 anything smaller than that. (Emphasis added)

33 Q. So, this is a mathematical calculation that's done on the – based on the gate
34 opening? (Emphasis added)

35 A. I believe so.

36 Q. And that gives you in essence of the estimate of the amount of water that's
37 going down the spillway?

38 A. Correct.

39 Q. Do you happen to know of the degree of error in that calculation?

40 A. No, I don't.

1 **Q. Can you say it's accurate to within plus or minus a certain amount or**
2 **percentage?**

3 *MR. PHILLIPS: I am going to object that. That calls for an expert for an expert*
4 *opinion and I am not going to let him answer that. So, don't answer that question.*

5 *MR MANN. Well, this is based on the witness' understanding and you're*
6 *presenting him as the person most knowledgeable regarding Oroville Operations.*
7 *Seems like a fair question to me. If he has an understanding, he should tell us.*

8 *MR. PHILLIPS: Well, he's not going to because I think you're asking him for*
9 *opinion of the margin of error and I don't think that -- I think that's a little different*
10 *than what he would knowledgeable about. (Emphasis added)*

11 *MR. MANN: Sherly could you please when you prepare the transcript, could*
12 *you for every question there is an instruction not to answer could you please type out*
13 *a question like in a separate page?*

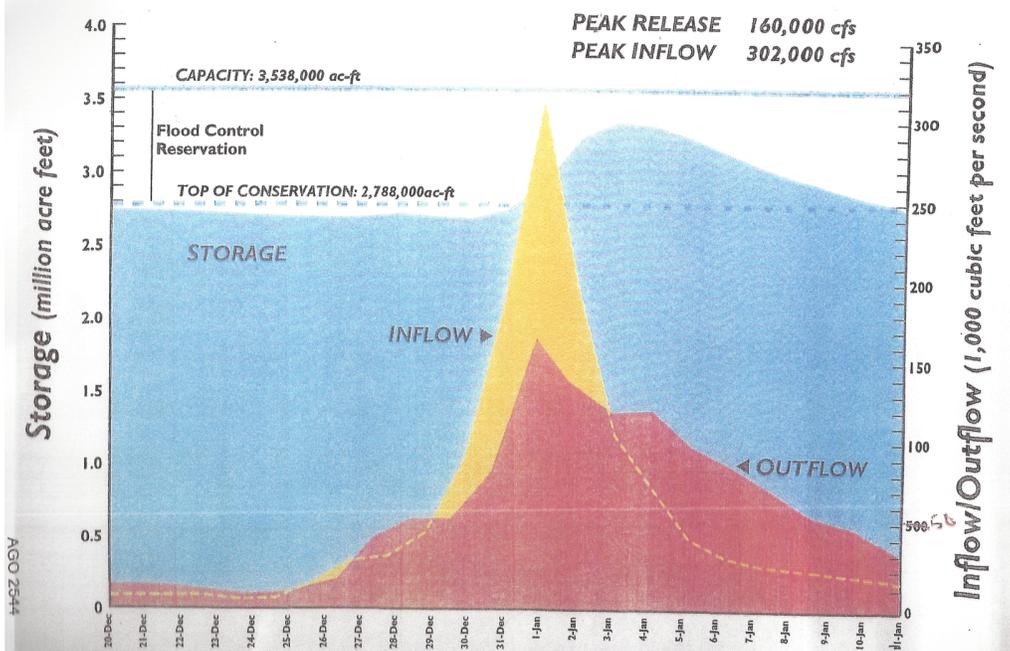
14 *THE REPORTER: Yes. It will be in its own index.²⁰¹*

15 **Q: Are there provisions in the Federal Energy Regulatory Commission's License issued**
16 **to the DWR for the Oroville facilities Project No. 2100, issued in February 1957, to**
17 **manage, maintain, and operate, the federally-funded flood control facilities at the SWP**
18 **and the downstream levee system? Yes!**
19

20 Note: Information is inclusive in the text of this report.

²⁰¹ Deposition of Larry Keith Gage, Chief, Division of Operation and Maintenance, Department of Water Resources, Kevin McMahan et al v. State of California, Reclamation District 784, and Does 1 through 10,000, Case No. CV 061561, pertaining to the January 1997 Floods along the Feather River.

LAKE OROVILLE OPERATIONS Feather River



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New Bullards Bar Reservoir Operations during January 1997 Flood Event – Reservoir Storage, Inflow and Outflow Yuba River:

NEW BULLARDS BAR RESERVOIR OPERATIONS Yuba River

Englebright Inflow = New Bullards Bar Outflow + Middle Fork and South Fork Yuba River

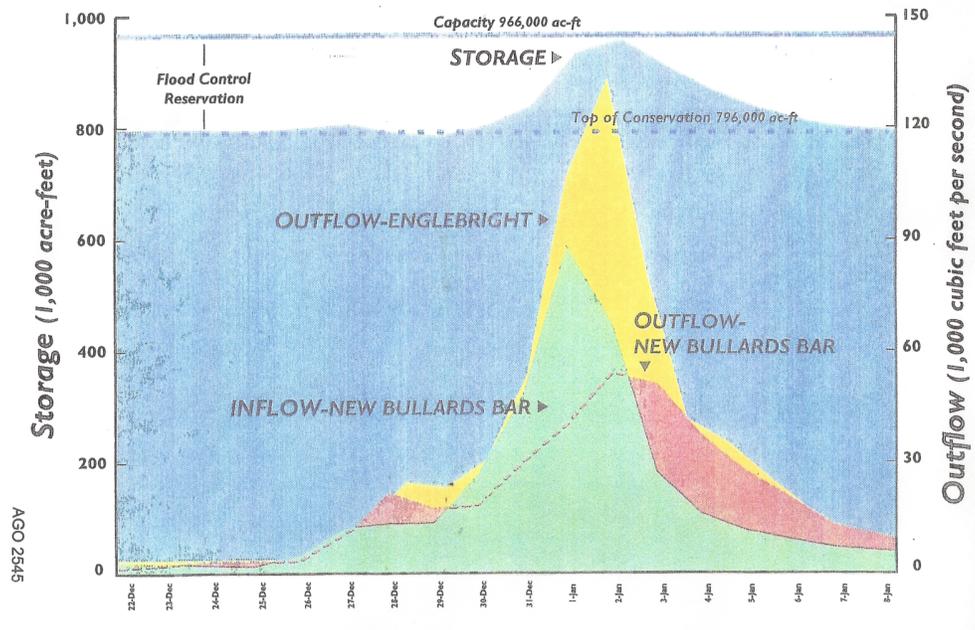


Table I: Feather River Flows Near Oroville – Pre-Post Oroville Dam from 1907 thru 2017

FLOWS IN FEATHER RIVER NEAR OROVILLE PRE-OROVILLE DAM Flow in Cubic Feet Second (CFS) Above 50,000				TABLE 1:	Flows in Feather River Near Oroville Post-Oroville Dam Flow in Cubic Feet Second (CFS) Above 50,000			
1	1964	22	Dec.	250,000 ^{19(a)}	1969	22	Jan.	65,000 ²¹ [Exhibit 88.]
2	1907	19	Mar.	230,000 ¹	1970	25	Jan.	75,000 ²² [Exhibit 89.]
3	1955	19	Mar.	203,000 ¹	1974	04	Apr.	53,666 ²³ [Exhibit 90.]
4	1963	31	Jan.	191,000 ¹	1980	15	Jan.	85,000 ²⁴ [Exhibit 91.]
5	1937	11	Dec.	185,000 ¹	1981	20	Dec.	60,081 ²⁵ [Exhibit 92.]
6	1928	26	Mar.	185,000 ¹	1982	18	Feb.	54,905 ²⁶ [Exhibit 93.]
7	1940	27	Feb.	152,000 ¹	1982	13	Apr.	57,000 ²⁷ [Exhibit 94.]
8	1909	16	Jan.	140,000 ¹	1983	03	Mar.	60,261 ²⁸ [Exhibit 95.]
9	1962	13	Oct.	138,000 ¹	1986	19	Feb.	147,355 ²⁹ [Exhibit 95.]
10	1960	8	Feb.	135,000 ¹	1995	11	Mar.	86,852 ³⁰ [Exhibit 97.]
11	1906	16	Jan.	128,000 ¹	1996	31	Dec.	78,604 ³¹ [Exhibit 98.]
12	1913	31	Dec.	122,000 ¹	1997	02	Jan.	160,917 ³² [Exhibit 99.]
13	1904	24	Feb.	118,000 ¹				
14	1958	WY		102,000 ²⁰				
15	1927			94,000 ²	2017	12	Feb	100,000 {Exhibit 100}
16	1951			92,100 ²				
17	1936			85,400 ²				
18	1941			84,200 ²				
19	1957			83,100 ²				
20	1915			81,400 ²				
21	1905			81,000 ²				
22	1917			80,400 ²				
23	1919			65,900 ²				
24	1925			64,300 ²				
25	1921			62,300 ²				
26	1945			60,100 ²				
27	1952			59,500 ²				
28	1933			58,600 ²				
29	1926			54,400 ²				
30	1967			53,000 ²				
31								
32				[Exhibit 87.]				
33								
34								
35				(a) Inflow to Oroville Reservoir, reduced to				
36				158,000 cfs peak outflow by partially				
37				constructed Oroville Dam embankment.				

2017 12 Feb 100,000 {Exhibit 100}

²¹ DWR, Short-Period Reservoir Computations, Oroville Reservoir, Sheet #1, Jan., 1969.

²² U.S. Army Corps of Engineers, Sacramento District, *Short Period Reservoir Data, Oroville*, Sheet #4, Jan., 1970.

²³ DWR, *Short-Period Reservoir Inflow Computations, Oroville* (Bi-Hourly Sheets), April, 1974.

²⁴ Department of Water Resources, *Reservoir Inflow Computation Sheets* (Bi-Hourly Sheets), Jan., 1980.

²⁵ Department of Water Resources, *Reservoir Inflow Computation Sheets* (Bi-Hourly Sheets), Dec., 1981.

²⁶ Department of Water Resources, *Reservoir Inflow Computation Sheet* (Bi-Hourly Sheets), Feb., 1982.

²⁷ DWR, *Short-Period Reservoir Inflow Computations, Oroville* (Bi-Hourly Sheets), April, 1982.

²⁸ Department of Water Resources, *Reservoir Inflow Computation Sheets* (Bi-Hourly Sheets), Mar., 1983.

²⁹ Department of Water Resources, *Reservoir Inflow Computation Sheets* (Bi-Hourly Sheets), Feb., 1986.

³⁰ DWR, *State Water Project Operations Data*, Table 4: Lake Oroville, Daily Operations and Table 6: Thermalito Afterbay, Daily Operations, Mar., 1995, pp. 5 and 7.

³¹ DWR, *State Water Project Operations Data*, Table 4 and Table 6, Mar., 1995, pp. 5 and 7.

³² DWR, *Reservoir Bi-Hourly Data Sheets*, Jan. 1997.

¹⁹ Department of the Army, Sacramento District, Corps of Engineers, Sacramento, California, *Oroville Dam and Reservoir, Feather River, California, Report on Reservoir Regulation for Flood Control*, Aug., 1970, p. 11. [Exhibit 86.]

²⁰ Data obtained from U.S. Geological Survey's Website [http://waterdata.usgs.gov], *Peak Flow for Feather River near Oroville*, by Water Year (WY).

1 **State's Expert Testimony Regarding Formula for Floodwater Releases at Oroville Dam**
2 **and Reservoir – Directed not to answer question regarding Accuracy of Floodwater**
3 **Release Estimates:**
4

5 Note: The following statements are verbatim quotations extrapolated from a Deposition of
6 Larry Keith Gage, Chief, Division of Operation and Maintenance, Department of Water
7 Resources, *Kevin McMahan et al v. State of California*, Reclamation District 784, and Does 1
8 through 10,000, Case No. CV 061561, pertaining to the January 1997 Floods along the
9 Feather River.

10
11 *MR. MANN PLAINTIFFS' Attorney: Q. So, to prepare the bi-hourly data sheet*
12 *does the underlying data to be prepare this comes orally over the phone or how does*
13 *it come to the people who are preparing the bi-hourly data sheets?*

14 *Taking a look at exhibit 322 is there a mathematical calculation that used to compute*
15 *the inflow from the [reservoir] elevation?*

16 *A. Yes.*

17 *Q. Do you happen to know that calculation?*

18 *A. It is done by taking the increase in storage and subtracting releases period.*

19 *Q. Can you give us an example of how that would be calculated maybe by using a*
20 *particular point in time on the bi-hourly data sheets, Exhibit 322?*

21 *A. Looking at January 1, 1996 (sic), 0200 [hours].*

22 *Q. January 1, 1997*

23 *MR. PHILLIPS: January 1.*

24 *THE WITNESS [Mr. Gage]: That happened to be where we open to. Storage was*
25 *2,940,586. At midnight two hours before it was 2,929,103. Subtract those two and I*
26 *get – if I subtract correctly, I get 11,483 [acre-feet] in storage. Releases were 100, let's*
27 *see, this page does not indicate any amount of water from generation. I suspect, I*
28 *think there was a small amount of water from generation.*

29 *MR. MANN [Plaintiff's Attorney]:*

30 *Q. Power generation?*

31 *A. Power generation. It indicates a dam spill of 101,500 [cubic feet per second], and a*
32 *total release of 105,000 which probably means there was a 4,500 generation. So,*
33 *105,000 cfs. Eight feet divided by hours times 12.1 equals cfs. 105,000 cfs divided by*
34 *12.1 gives me 8,678 acre-feet that was released.*

35 *So, if the lake went up 11,500 and they released 8678, the total inflow would have*
36 *been those two combined or 23,161 acre-feet, 243,948 cfs. That's what I [Gage]*
37 *calculate. And it's way different what shown there so I must have made a mistake.*
38 *This sheet shows 171,190.*

39 *MR. IVERSON: You calculated at 105,000. Shouldn't have been 100 or is that*
40 *105?*

1 MR. PHILLIPS [Attorney for the State]: You are talking about the total release.
2 He's looking at the second line at 2:00 o'clock.
3 MR. IVERSON: He calculated 105,000. Shouldn't have been calculating this one
4 up here? To show the difference.
5 THE MR. PHILLIPS: WITNESS: Are you asking should I have used the dam spill
6 number?
7 No, I think he's asking -- I think you're taking about different things. The 100,000 on
8 top. I have.
9 THE WITNESS: You're correct. I've should have been.
10 MR. IVERSON: That's been releasing for an hour.
11 THE WITNESS: **We assumed it has happened for two hours, and if the change**
12 **happened at 0200 [hours] I don't really know that for a fact. It may have changed**
13 **at 0100.**
14 BY MR. MANN: Q: Maybe you could just give us the formula. Why you don't
15 you give us the formula if you make the calculation.
16 Mr. IVERSON. What are we calculating now?
17 Mr. MANN: Is it just the --
18 BY MR. MANN: Q. **Could you tell us again, I think you've already done it but if**
19 **you tell us the formula?**
20 A. **Storage now minus storage two hours ago. That will give you have much the**
21 **lake went up in acre-feet. To that you need to add what was released in acre-feet**
22 **and to get what was released in acre-feet you take the cfs number, divided it by**
23 **12.1. I think I see my mistake. And in this case multiply by two because this is for a**
24 **two-hour period, not a one-hour period.** (Emphasis added)
25 MR. IVERSON: So, you multiply the acre-feet by two. Total cubic feet per
26 second.
27 THE WITNESS: The 12.1 takes that into account. One acre-foot in an hour is
28 equal to one over 12.1 cfs or about a 08.
29 MR. MANN: Q. In lay terms what is an acre-foot? An acre-foot is a volume of
30 water that would fill a surface area of one acre to a depth of one foot.
31 MR. REGAN [Plaintiffs' attorney]: **How is the dam spill calculated?**
32 THE WITNESS: Dam spill is -- **I believe is estimated by the spillway release**
33 **curve which is in here I think in Exhibit 319.** (Emphasis added)
34 A. Looking at the Table of Contents on Exhibit 319, page DWR 5306, chart under 19 is
35 the Spillway and Flood Control Outlet Rating Curve.
36 Q. So far, we've talked about how you calculate the inflow and how you calculate
37 dam spill. How are total releases calculated?
38 A. Dam spill plus whatever is going through the generators.

1 Q. How is the dam – now can you describe how the spill is calculated using the chart
2 number 19? Is basically opening of the – well, let me ask you this. The opening of the
3 spillway gate or gates?

4 A. I believe there are eight gates there, yes.

5 Q. And so, can you tell us how you use chart number 19 to calculate dam spill?

6 A. Chart number 19 I believe gives you the unregulated capability of the spillway
7 for various elevations. (Emphasis added)

8 Q. Is that assuming the gates are open all the way?

9 A. Yes. It gives you the maximum. Then you can calculate from your gate opening
10 anything smaller than that. (Emphasis added)

11 Q. So, this is a mathematical calculation that's done on the – based on the gate
12 opening? (Emphasis added)

13 A. I believe so.

14 Q. And that gives you in essence of the estimate of the amount of water that's
15 going down the spillway?

16 A. Correct.

17 Q. Do you happen to know of the degree of error in that calculation?

18 A. No, I don't.

19 Q. Can you say it's accurate to within plus or minus a certain amount or
20 percentage? (Emphasis added)

21 MR. PHILLIPS: I am going to object that. That calls for an expert for an expert
22 opinion and I am not going to let him answer that. So, don't answer that question.

23 MR MANN. Well, this is based on the witness' understanding and you're
24 presenting him as the person most knowledgeable regarding Oroville Operations.
25 Seems like a fair question to me. If he has an understanding, he should tell us.

26 MR. PHILLIPS: Well, he's not going to because I think you're asking him for
27 opinion of the margin of error and I don't think that -- I think that's a little different
28 than what he would knowledgeable about. (Emphasis added)

29 MR. MANN: Sherly could you please when you prepare the transcript, could
30 you for every question there is an instruction not to answer could you please type out
31 a question like in a separate page?

32 THE REPORTER: Yes. It will be in its own index.²⁰²

33
34

²⁰² Deposition of Larry Keith Gage, Chief, Division of Operation and Maintenance, Department of Water Resources, *Kevin McMahan et al v. State of California*, Reclamation District 784, and Does 1 through 10,000, Case No. CV 061561, pertaining to the January 1997 Floods along the Feather River.

1 **1986 and 1997 Flood Frequencies on Feather River Indicate Increased Risk at given**
2 **Design Flows.**

3
4 The following statements are excerpts from a flood report, published by the DWR in 2010.

5
6 *The recent flood [1997] again set new records on major Sierra rivers. When these are*
7 *plugged into a frequency determination, the amount at a given frequency or the risk*
8 *at given design levels will go up. **We'll [DWR] introduce a new round of charts and***
9 ***probably a bunch of determinations that the existing 100-year levels are not that***
10 ***anymore, but less, and a new round of project work will be needed to provide***
11 ***revised 100-year flood protection, some in areas which have just done a lot of work.***
12 ***This is one of the problems with working on statistic based on relatively short***
13 ***record. Maybe for major projects we should go back to the old standard project***
14 ***flood idea or justify to some level of historical storm. People are being misled by all***
15 *these numbers and risks, not realizing how tentative they are, and the rather large*
16 *uncertainty involved." [Emphasis added] (Exhibit *)*
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1 Graph 6: Data Provides Conditions at Oroville Reservoir from 5 Dec 1996 – 4 Jan 1997:

4/5/2021 OROVILLE DAM (ORO)

OROVILLE DAM (ORO)

Elevation: 900' · FEATHER R basin · Operator: CA Dept of Water Resources/O&M Oroville Field Division

Station comments:
 Outflow from Oroville includes all releases from the Oroville Dam (i.e.: Hyatt, spillway, low flow outlet), while River Release (RIV REL) pertains to the Oroville Complex as a whole which includes any releases from the Diversion Dam gates and Thermalito Afterbay River Outlet.

02/23/2017

Query executed Monday at 18:32:01

Provisional data, subject to change.
 Select a sensor type for a plot of data.

DAILY DATA

DATE / TIME (PST)	RES ELE FEET	STORAGE AF	RES CHG AF	OUTFLOW CFS	INFLOW CFS	EVAP CFS	FNF CFS	PPT INCHES
12/05/1996	844.16	2,730,781	24,386	6,444	18,714	90	21,821	0.24
12/06/1996	844.71	2,736,022	7,241	7,009	10,498	0	12,472	0.00
12/07/1996	845.67	2,750,692	12,670	1,847	8,257	9	8,982	0.20
12/08/1996	846.76	2,765,128	14,436	1,397	8,558	9	10,231	0.00
12/09/1996	848.15	2,783,614	16,486	8,577	18,225	4	22,557	1.00
12/10/1996	853.18	2,851,232	67,619	10,372	43,763	0	52,494	1.68
12/11/1996	854.93	2,875,026	23,794	23,018	34,994	10	41,737	0.20
12/12/1996	855.41	2,881,576	6,550	26,821	30,354	52	33,949	0.24
12/13/1996	855.08	2,877,072	-4,504	27,466	24,668	0	29,422	0.04
12/14/1996	853.43	2,854,623	-22,448	27,749	16,554	28	17,959	0.00
12/15/1996	851.17	2,824,075	-30,548	27,784	12,500	56	13,154	0.00
12/16/1996	849.37	2,799,909	-24,166	22,331	10,387	14	10,913	0.00
12/17/1996	848.42	2,787,214	-12,696	14,768	8,453	32	8,470	0.00
12/18/1996	847.20	2,770,970	-16,244	14,823	6,877	110	6,637	0.00
12/19/1996	846.06	2,755,851	-17,372	14,841	6,161	4	6,581	0.00
12/20/1996	844.78	2,738,945	-14,853	14,930	-9,999	5	7,036	0.40
12/21/1996	843.73	2,725,130	-13,815	14,770	-9,999	9	7,734	0.48
12/22/1996	842.69	2,711,495	-13,634	14,805	7,821	0	10,235	0.52
12/23/1996	841.75	2,699,213	-12,282	14,346	8,214	9	6,620	0.00
12/24/1996	840.79	2,686,709	-12,504	12,084	5,901	14	4,884	0.00
12/25/1996	840.26	2,679,824	-6,885	9,839	6,407	45	5,741	0.00
12/26/1996	840.87	2,687,750	7,926	11,223	15,305	54	18,589	2.80
12/27/1996	842.38	2,707,440	19,691	18,281	28,061	0	30,349	0.24
12/28/1996	840.72	2,685,798	-21,642	40,840	30,167	18	34,270	0.12
12/29/1996	839.69	2,672,417	-13,381	50,465	43,650	0	48,415	1.20
12/30/1996	845.02	2,742,109	69,692	50,814	85,653	0	98,999	1.12
12/31/1996	858.88	2,929,245	187,136	76,343	169,930	18	196,341	1.36
01/01/1997	879.65	3,226,289	297,044	125,606	274,267	0	317,234	3.40
01/02/1997	886.75	3,332,554	106,266	129,256	182,332	9	202,642	0.56
01/03/1997	885.58	3,314,870	-17,685	108,967	100,214	14	108,307	0.00
01/04/1997	880.30	3,235,896	-78,974	110,104	70,254	9	74,650	0.00

Showing 1 to 31 of 31 entries

<https://cdec.water.ca.gov/dynamicapp/QueryDaily?s=ORO&end=1997-01-04&span=30days>

1 **Graph 7: Data Provides Conditions at Oroville Reservoir from 4 Jan 3 Feb 1997:****OROVILLE DAM (ORO)**

Elevation: 900' · FEATHER R basin · Operator: CA Dept of Water Resources/O&M Oroville Field Division

Station comments:

02/23/1997 Outflow from Oroville includes all releases from the Oroville Dam (i.e.: Hyatt, spillway, low flow outlet), while River Release (RIV REL) pertains to the Oroville Complex as a whole which includes any releases from the Diversion Dam gates and Thermalito Afterbay River Outlet.

Query executed Monday at 18:33:22

Provisional data, subject to change.
Select a sensor type for a plot of data.

DAILY DATA

DATE / TIME (PST)	RES ELE FEET	STORAGE AF	RES CHG AF	OUTFLOW CFS	INFLOW CFS	EVAP CFS	FNW CFS	PPT ING INCHES
01/04/1997	880.30	3,235,896	-78,974	110,104	70,254	9	74,650	0.00
01/05/1997	873.63	3,138,097	-97,799	90,217	41,178	4	40,852	0.00
01/06/1997	866.71	3,038,848	-99,250	79,699	30,196	40	28,915	0.00
01/07/1997	860.83	2,956,276	-82,572	66,680	25,506	35	23,632	0.00
01/08/1997	856.56	2,897,314	-58,962	52,337	23,177	43	21,174	0.00
01/09/1997	852.82	2,846,355	-50,959	46,305	20,770	13	18,182	0.00
01/10/1997	849.68	2,804,061	-42,294	40,264	19,137	8	17,460	0.00
01/11/1997	847.56	2,775,756	-28,304	30,461	16,379	4	14,814	0.00
01/12/1997	846.30	2,759,029	-16,728	24,098	15,677	8	14,301	0.04
01/13/1997	845.14	2,743,692	-15,337	21,136	13,600	0	12,662	0.00
01/14/1997	843.87	2,726,969	-16,723	21,528	13,166	0	7,786	0.00
01/15/1997	842.89	2,714,114	-12,855	20,044	13,764	81	11,936	0.16
01/16/1997	842.14	2,704,304	-9,810	17,156	12,185	0	10,373	0.00
01/17/1997	841.74	2,699,082	-5,222	14,990	-9,999	12	9,749	0.00
01/18/1997	841.32	2,693,607	-5,475	13,455	-9,999	12	8,730	0.00
01/19/1997	840.97	2,689,050	-4,557	13,557	-9,999	16	8,278	0.00
01/20/1997	840.99	2,689,310	260	11,738	-9,999	4	10,198	0.60
01/21/1997	841.01	2,689,571	260	13,160	13,172	12	12,908	0.36
01/22/1997	843.08	2,716,603	27,032	25,318	26,076	32	40,486	3.60
01/23/1997	843.72	2,724,998	8,396	16,698	21,028	0	19,084	0.04
01/24/1997	842.15	2,704,435	-20,564	26,192	15,914	4	13,969	0.72
01/25/1997	844.90	2,740,526	36,092	18,756	36,307	4	40,502	2.44
01/26/1997	851.79	2,832,432	91,906	14,061	59,952	4	61,438	0.84
01/27/1997	854.74	2,872,436	40,004	20,161	40,231	0	41,094	0.12
01/28/1997	855.54	2,883,352	10,916	31,527	36,858	8	37,360	0.28
01/29/1997	855.48	2,882,533	-820	30,878	31,040	25	29,990	0.00
01/30/1997	854.92	2,874,890	-7,643	30,672	26,643	21	26,014	0.00
01/31/1997	853.82	2,859,918	-14,972	30,601	23,942	8	22,579	0.00
02/01/1997	852.45	2,841,348	-18,570	31,710	22,226	4	20,761	0.04
02/02/1997	850.99	2,821,652	-19,697	31,372	21,599	8	21,250	0.00
02/03/1997	849.20	2,797,635	-24,017	32,018	20,029	19	18,470	0.00

Showing 1 to 31 of 31 entries

<https://cdec.water.ca.gov/dynamicapp/QueryDaily?s=ORO&end=1997-02-03&span=30days>

- 2 Source: **The Great New Year's Flood of 1997 in Northern California**, Maurice Roos, Chief Hydrologist,
 3 CA Department of Water Resources, P.O. Box 219000, Sacramento, CA 95821-9000. Prepared at the
 4 Sierra College California Weather Symposium, June 28, 1997 in Rocklin, CA, page 7.

1 **Q: U.S. Army Corps of Engineers, for the SWP Oroville facilities, does it have the**
2 **authority to compel DWR to comply with the regulations? No!**
3

4 **However, there are articles and provisions contained in DWR's FERC License Project No.**
5 **2100 that does require DWR to comply with flood control rules and regulations; FRRA**
6 **should make this an issue in the motion to intervene.**

7 **Q: What are the predicted and inevitable consequences if the DWR's Fails to comply**
8 **with Adopted Flood Control Operational Criteria during a Maximum Probable Rain-**
9 **Storm event, which permits floodwater releases, at the State Water Project Oroville**
10 **Facilities of up to 250,000 c.f.s.?**
11

12 **A: According to a DWR report, it would result in the worst catastrophe in U.S. History!**

13 **Standard and Maximum Floodwater Control Release Criteria from Oroville Dam would be**
14 **Catastrophic²⁰³**

15
16 **Oroville Dam Spillway Standard Project Flood Criteria Established by the U.S. Army Corps of**
17 **Engineers**

18
19 **The maximum inflow, into Oroville Reservoir was 301,002 cubic-feet per second (c.f.s.) of water,**
20 **with a 72-hour volume of 1.2 million acre-feet, which occurred on January 1, 1997.²⁰⁴**

21 **Q: Has the Oroville Dam and Reservoir experienced a "Probable Maximum Rain Flood,**
22 **since it became operable? No!**
23

24 **A: No!**
25

26 ***A probable maximum rain flood on the Feather River above Oroville Dam, developed***
27 ***for spillway design purposes, has a peak flow of 720,000 c.f.s. and a 72-hour runoff***
28 ***value of 2,510,000 acre-feet, and results from a 72-hour storm depositing 21.1 inches***
29 ***of precipitation on the drainage area above Oroville Reservoir.²⁰⁵ [Emphasis added]***

²⁰³ California Department of Water Resources, *Central Valley Flood Protection Plan*, Update 2017
<https://water.ca.gov/Programs/Flood-Management/Flood-Planning-and-Studies/Central-Valley-Flood-Protection-Plan>

²⁰⁴ Ron MacAfee, Department of Water Resources Memo to Patrick Porgans, Re: Oroville Reservoir Bi-Hourly Computation Sheets for January 1997, 8 January 1997.

²⁰⁵ U.S. Army Corps of Engineers, Sacramento District, Oroville Dam and Reservoir, Feather River, California: Report on Reservoir Regulations for Flood Control, August 1970, p. 13.

3-06 PRINCIPAL REGULATION PROBLEMS

1
2
3 **a. The limitations of the downstream levees and potential for disaster were evident**
4 **during the 1986 Flood when a levee break occurred on the south bank of the Yuba**
5 **River at the town of Linda and Olivehurst, just above the Feather River Junction.**
6 [Emphasis added]

7
8 **There is in excess of 2,000,000 acre-feet of storage capacity in reservoirs upstream of**
9 **Lake Oroville in the Feather River Basin (See Section 4103). None of the storage is**
10 **dedicated to flood control and very little of it is under the control of either the State**
11 **of California or the Corps of Engineers. While this storage has at times provided**
12 **beneficial in attenuating inflow to Lake Oroville (for example, Lake Almanor has**
13 **never spilled), it is not operated as a system, nor is it operated specifically for the**
14 **purpose of controlling floods on the lower Feather River. Realtime operations data**
15 **for these reservoirs may be difficult to obtain or may not exist at all. This adds to the**
16 **difficulty of predicting inflow to Lake Oroville during rain floods.**²⁰⁶ [Emphasis added]

17 *(Exhibit No. XX.)
18

19 **Q: Is the Achilles' Heel to floodwater releases from the Oroville Dam tied to the limited**
20 **carrying and design capacity of the levee system along the Feather River system**
21 **downstream from the Oroville Dam? Yes!**

22
23 **Flows in the Feather River below Marysville and in the Sutter Bypass exceeded**
24 **channel design capacities, contributing to factors that caused two major levee**
25 **failures in those areas.**²⁰⁷ (Refer to Exhibit *)
26

27 **Note: A confidential report prepared by the DWR reveals that the allowable floodwater releases,**
28 **from Oroville Dam, though the Flood Control Spillway Outlet, under a "Standard Project Flood"**
29 **(SPF) or a "Maximum Probable Rain Flood" (MPRF), within the FRW would have disastrous and**
30 **irreconcilable effects.**
31
32

²⁰⁶ U.S. Army Corps of Engineers, Sacramento District, *Oroville Dam and Lake, Feather River, California, Water Control Manual, Appendix IV to Master Water Control Manual, Sacramento River Basin, California, Preliminary Subject to Revision*, August 1989, p. III-3.

²⁰⁷ Governor's Flood Emergency Action Team, Preliminary Report, February 1997, p. 1.

1 **Chronological Record of DWR’s Failures to Provide the Public of Advance Notice of**
2 **Floodwater Releases from Oroville Dam dating back to 1969:**

3
4 **Note: As early as 1969, public concerns were raised before the Butte County Board of Supervisors**
5 **regarding the adverse impacts attributable to the Department of Water Resources (DWR) failure**
6 **to alert downstream interests of floodwater releases from Oroville Dam and Reservoir.²⁰⁸ (Exhibit**
7 ***)**

8 Butte County Board of Supervisors, Minutes of the Boards’ meeting, Mr. Phil Johns, Oroville Field
9 Division Office, California Department of Water Resources, discussions regarding public concerns
10 about floodwater releases from the dam without warning being given to the public, 28 January 1969.
11

12 *On January 16, 1969, representatives of the U.S. Army Corps of Engineers and the*
13 *State Reclamation Board presented to the Butte County Board of Supervisors an*
14 *explanation of a report prepared by the Corps of Engineers dated June 1968, an*
15 *entitled, Flood Plain Information, Feather and Yuba Rivers, Marysville-Yuba City,*
16 *California.* (Emphasis added) (Exhibit *)

17
18 *Rex Bronson, Chief of the Flood Plain Management Section of the Corps gave the*
19 *major portion of the presentation and stressed the fact that although Oroville Dam*
20 *was now completed, there could be releases from the Dam up to 150,000 cfs, which*
21 *would be approximately equal to the magnitude of the flow of the 1964 flood, which*
22 *was approximately 158,000 cfs. The dam, at that time, was only partially completed.*
23 (Emphasis added) (Exhibit *)

24 **Floodwater Release Criteria Changed without Notice from 100,000 Cubic Feet Per**
25 **Second to Damaging Floodwater Releases from Oroville Reservoir to 150,000 Cubic Feet**
26 **Per Second:**

27
28 *It is our understanding that considerable damage occurred in Butte County in the*
29 *1964 flood along the left bank of the Feather River from Oroville to Honcut Creek as*
30 *a result of the flow of 158,000 cfs. It was indicated that under maximum releases*
31 *from the dam, similar flow conditions would exist as in 1964 and we could expect,*
32 *therefore, similar damages.* (Emphasis added) (Exhibit *)

33
34 *After the report had been presented, and during the question-and-answer period,*
35 *it was brought to our attention that the “feasibility report” for the Oroville Dam*
36 *submitted by the then Division of Water Resources to the legislature in 1951 stated*

²⁰⁸ Butte County Board of Supervisors , Minutes of the Boards’ meeting, Mr. Phil Johns, Oroville Field Division Office, California Department of Water Resources, discussions regarding public concerns about floodwater releases from the dam without warning being given to the public, 28 January 1969.

1 **that releases from the Oroville Dam would not exceed 100,000 cfs.** (Emphasis added)
2 (Exhibit *)

3 **It was also brought to our attention that the publication of the Department of Water**
4 **Resources entitled, "Floods of 1955" stated that studies of the Department of Water**
5 **Resources made it clear that releases from the Oroville Dam upon completion would**
6 **not exceed 100,000 cfs.**

7 **DWR Officials Could Not Explain Basis for Increasing Maximum Floodwater Release**
8 **Criteria from Reservoir!**

9
10 **Mr. Bronson was unable to answer the question as to when or why the maximum**
11 **releases criteria had been changed and suggested that questions of this nature be**
12 **directed to your Department [Water Resources]. May we, [Board of Supervisors]**
13 **therefore, respectfully request answers to these specific questions:** (Emphasis added)
14 (Exhibit *)

- 15
16 **1. When was the standard for releases from the Oroville Dam increased from 100,000**
17 **cfs to 150,000 cfs?**
- 18
19 **2. Why was the change made; that is, upon the basis of what study was the change**
20 **made? Is the State of California willingly to reconsider the standard for releases from**
21 **the Oroville Dam to determine whether releases can be controlled to non-damaging**
22 **releases?** (Emphasis added) (Exhibit)

23
24 **You can readily see why we are interested in the answers to these questions, not only**
25 **for the welfare of our individual citizens, but also for the protection of considerable**
26 **Butte County facilities in the area which we had hope would be free from flood**
27 **damage, but which, with 150,000 cfs release from the Oroville Dam, will be exposed**
28 **to substantial flood damage now that the Oroville Dam is completed.** (Emphasis
29 added) (Exhibit *)

30
31 **Thank you for an early reply to this regard.** ²⁰⁹ (Emphasis added) (Exhibit *)

32 **Legislative Hearing Regarding Floodwater Releases from Oroville Dam and Reservoir:**

33
34 **1971 Legislative Hearings to discuss Public Concerns Raised in 1969 regarding Floodwater Releases**
35 **from Oroville Dam and Reservoir:**

²⁰⁹ Letter from the Butte County Board of Supervisors, Chairman, Jack McKillop to Carl Werner, District Engineer, Department of Water Resources, State of California, Central District, Re: Oroville Dam Releases, 28 January 1969

1 The Senate Committee on Water Resources scheduled a public fact-finding
2 hearing for Thursday, March 18, 1971, in Sacramento, for purposes of receiving
3 testimony from interested parties **regarding the adequacy of the operating criteria**
4 **used in determining storage capacity and release schedules for Shasta and Oroville**
5 **Reservoirs.** [Emphasis added]

6
7 In the early part of 1970, some severe bank erosion and flooding occurred as a
8 result of large flow releases from these reservoirs. Senate Resolution No. 117,
9 authorized by Senator Fred Marler (Redding) and enacted during the 1970 Regular
10 Session, requested a study be made of the operating criteria used in determining
11 releases from Shasta and Oroville Reservoirs, and this scheduled fact-finding hearing is
12 part of that study.²¹⁰

13 **U.S. Army Corps of Engineers Instructions on Coordinated Operation of Flood Control**
14 **Systems and Water Releases – Testimony Provided Before CA Senate Water Committee**
15 **March 1971:**

16
17 In closing, brief comments on integrated operation of reservoirs maybe pertinent. **We**
18 **believe that coordinated and integrated operation of a system of reservoirs for flood**
19 **control on streams such as the Sacramento and Feather Rivers is vital.** [Emphasis
20 added]

21
22 In a flood control system consisting of hundreds of miles of levees and channels fed by
23 numerous streams, some uncontrolled and other controlled by reservoirs, **the job of**
24 **making proper releases from those reservoirs has been compared to juggling eggs**
25 **while riding a bicycle across a tight wire. Releases from each reservoir must be**
26 **carefully program to avoid downstream damage along the river or streams primarily**
27 **controlled, and individual reservoir releases must be adjusted so that they combine**
28 **with other releases and with any uncontrolled inflows so as to prevent or minimized**
29 **damaging flows at any point in the channel system further downstream.** The system
30 may include levee and unleveed reaches, flood diversions and bypasses, and inflows
31 may depend impart of releases from some reservoirs not operated for flood control.
32 Differences in rainfall and runoff intensities exists from one point to another, and much
33 be taken into account. Flood control operation requires and interment knowledge the
34 entire river system and the flood control network, as well as expeditious and positive
35 controls. **Moreover, in coordinated flood control operations minutes often count, and**
36 **a few hours may mean a difference between safety and disaster. If too much water**
37 **is sent on its way it cannot be called back and it may be too late to make**

²¹⁰ Senator Gordon Cologne, Chairman, California Legislature, Senate Committee on Water Resources, Notice of Hearing, March 3, 1971.

1 ***compensating corrections; and the result, transmitted down the entire system, could***
2 ***be very costly.*** Much progress has been made in coordinating the operation of
3 reservoirs with federally financed flood control space in the Central Valley. ***The flood***
4 ***control regulations prescribed for the Corps of Engineers are based on integrated***
5 ***operations, and close coordination is therefore essential. This coordination must be***
6 ***continued and intensified to meet the ever more critical conditions induced by***
7 ***increasing in the Valley.***²¹¹ (Emphasis added) (Exhibit *)

- 8
9 b. ***A coordinated reservoir plan for the entire Feather-Yuba-Bear system is essential to***
10 ***proper regional flood control. The flood control operation of Oroville Reservoir will***
11 ***ultimately be directly related to that of the other flood control reservoirs in the Feather-***
12 ***Yuba-Bear system. Of these, only New Bullards Bar reservoir has been constructed,***
13 ***however, in order to insure (sic) future coordination, the channel capacities in the***
14 ***Feather River below Yuba and Bear Rivers have been designed for controlled flows from***
15 ***these tributaries.*** (pp. 26 and 27) [Emphasis added]

16 **William R. Gianelli, Director, California Department of Water Resources Memorandum**
17 **to DWR Attorney P. A. Towner, Releases of Water from Oroville Reservoir:**

18
19 **William R. Gianelli, Director, California Department of Water Resources Memorandum to DWR**
20 **Attorney P. A. Towner, Releases of Water from Oroville Reservoir, March 11, 1971:**

21
22 *The Senate Committee on Water Resources is holding a public hearing at 3:30 p.m. on*
23 *March 18, 1971, in Room 2040, State Capitol Building, concerning **the adequacies of***
24 ***operating criteria and release schedules for Shasta and Oroville Reservoirs.*** Senator
25 *Cologne has requested testimony from our Department concerning the subject and has*
26 *requested the specific information outlined in the Committee's letter dated November*
27 *20, 1970, as well as any other information deemed appropriate.*

28
29 *In the letter of November 20, the Committee stated:*

30
31 ***"Specifically, we are interested in knowing the factors which influence the***
32 ***operating criteria of Oroville Reservoir, particularly during and proceeding periods of***
33 ***high run-off. Information on how the Oroville Reservoir operation is coordinated with***
34 ***other flood control agencies and the operation of other water storage and flood***
35 ***control projects would be most beneficial to the Committee. If major changes on how***
36 ***the operating criteria are foreseen for the future, a discussion of related downstream***
37 ***effects would also be an important item to cover in your testimony. In this regard your***

²¹¹ Statement of Sacramento District, Corps of Engineers, Fact Finding Hearing California Legislature, Senate Committee on Water Resources, Sacramento, CA 18 March 1971, pp. 15 and 16.

1 *views on the need for additional floodwater storage, bank protection, or channel*
2 *improvement projects in the northern Central Valley would be most welcomed.”²¹²*
3 [Emphasis added] (Refer to Exhibit *)

4 **The Flood of January 1980:**

5 **Events Leading up to the January 1980 Storm Conditions and Floodwater Releases and** 6 **Runoff in the Feather River Watershed:**

7 **Weather Report and Precipitation Briefing:**

8
9 *Friday, January 11, 1980 8-9:00 a.m. – In accordance with DWR’s procedure*
10 *Mr. W. A. Arvola, Meteorologist for the DWR. Gave his morning briefing to members*
11 *of the State Water Operation Control Center, Operation and Engineering Branch,*
12 *Flood Forecasting and Control Branch and others. (This weather briefing is a standard*
13 *procedure carrying out by the Department between May and November of each*
14 *years, during the rainy season.)*

15 **Storm Systems with Warm Moist Air on the Way:**

16
17 *Mr. Arvola explained that we could expect that a series of weather fronts*
18 *would be upon us which involved an upper-level wind flow pattern from the*
19 *southwest bring warm moist air masses into California from the Pacific Ocean region*
20 *just north of the Hawaiian Island. This Southwest flow was expected to bring repeated*
21 *periods of precipitation to Northern and Central California.²¹³ (It should be noted that*
22 *high intensity rain floods may occur in the Feather River Basin anytime from*
23 *November through April.)*

25 **National Weather Service Reports:**

26 Mr. Arvola’s forecast for precipitation is consistent with the National Weather Service’s (NWS) local
27 forecast issued at 6:00 a.m., PST, Friday, January 11, 1980.

28
29 (Note: It is interesting to note that the snow level went from three thousand feet on Wednesday,
30 January 9th to between 3,000-4,000 feet on Tuesday the 10th and Friday 11th, rising to 5,000-6,000
31 feet on Saturday to above 7,000 feet on Sunday 13th.) Rain at this elevation causes additional snow
32 melt and accelerates runoff.) It was also confirmed by the NWS’ Friday evening report which states:

²¹²William R. Gianelli, Director, California Department of Water Resources Memorandum to DWR
Attorney P. A. Towner, *Releases of Water from Oroville Reservoir*, March 10, 1971.

²¹³ Information received in a conversation both Mr. Arvola and Clifford Gregory who are with the DWR Flood Control Center,
Tuesday, January 22, 1980.

1
2 *“Upper air mass for tonight show that strong westerly flow will continue across*
3 *California until mid-week and likely longer. The jet stream, however, will move*
4 *northward following a strong front across our area tomorrow. Another front should*
5 *reach us Monday followed by another mid-week. Rain, heavy at times until mid-day*
6 *tomorrow turning to scattered showers in the afternoon. With strong southerly winds*
7 *during the rainy season. Showers only in the foothills Sundays, then a weaker rain*
8 *front on Monday. Through the same cycle again with anther rain front mid-week.”*
9

10 (Refer to Appendix I, NWS Frost Cap and Agricultural Advisory, January 8 through 18, 1980.)

11 **Precipitation and Hydrological Conditions at Oroville Reservoir:**

12
13 *Between January 7 and 11, 1980 we received precipitation totaling 13.79*
14 *inches; between that period, we had over three million acre-feet of water stored in*
15 *the reservoir.*

16 Inflow into the reservoir on Friday, January 11, 1980 was 11,904 cubic feet per
17 second. Active water storage was 2,871,206 acre-feet, and the lake elevation was
18 854.65 feet. This reading was taken at midnight.²¹⁴ (Refer to Appendix K, Lake
19 Oroville Bi-hourly Inflow Report.)

20 **Oroville Reservoir Releases:**

21
22 It should be noted that outflow of water from the reservoir between January 7 and 11th was
23 3,700 cubic feet per second (c.f.s.). It was at 12:00 noon on Friday, January 11th when the DWR
24 releases 5,700 c.f.s. and at 8:00 p.m. it went to 8,000 c.f.s.²¹⁵

25
26 (Flow release was exceptionally low since the 7th of January, perhaps even before then, with all the
27 water in the reservoir, and this only being January, with at least three to four months before the
28 rainy season ends. Additional releases could have been made from the reservoir, up to 16,500
29 c.f.s., to generate electricity from the Oroville Dam Hyatt power generators.)

30
31 On Friday, January 11th, the allowable storage area in the reservoir according to the flood control
32 parameter computations were 2,965,500 acre-feet, and the space require for flood control was
33 575.5 feet. (Refer to A J, last column.)

²¹⁴ Information obtained from Mr. Phil John's, DWR, Field Office Patrick J. Porgans, Monday, January 21, 1980.

²¹⁵ Data acquired in a personal meeting between Patrick J. Porgans and Mr. Don McKillop, Chief of Operations, DWR, January 22, 1980.

Request for Notification of Reservoir Inflow and Storage-Ignored:

Mr. Don McKillop, Chief of Operations for the DWR, was present at the morning weather briefing as usual, and because of Mr. Arvola's weather report, and other factors (such as water storage and inflow into the reservoir) asked members of his staff to keep him informed through the night or any impending changes in the inflow of water into the reservoir and weather conditions affecting the reservoir.

Note: (This was the author's interpretation of Mr. McKillop's statement during an interview with him on Tuesday, January 22, 1980, at 10:00 a.m. As a matter of record the author asked permission from Mr. McKillop to record the content of the conversation to keep the record straight, but Mr. McKillop decline having the meeting taped. This is confirmed by his taped-recorded statements to that effect.)

DWR Exceeds Allowable Flood Storage Space in January 1980:

Between 12:01 a.m. and 6:00 a.m. on Saturday, January 12, 1980, inflow into the reservoir increased from 11,904 c.f.s. to 66,994 c.f.s. (An increase of 55,090 c.f.s.) At 8:00 a.m. it went to 91,223 c.f.s., a total increase of 79,318 c.f.s., in eight hours. It was at this point that DWR exceeded (encroached) into the flood storage space required by the Federal Government for flood control purposes.

Note: Encroaching into the space required for flood control would not have been a problem in and by itself, providing the DWR was making adequate releases from the reservoir. However, initially it failed to make adequate outflows (DWR had 91,223 c.f.s. coming in and only 8,000 c.f.s. going out of the reservoir.

Meeting with U.S. Corps of Engineers in January 1980:

According to Mr. G. Matlock, Reservoir Control Section, Hydrometeorological Data Acquisition, U.S. Army Corps of Engineers, Sacramento District, his office was office was not aware of DWR's high inflows coming into the Oroville Reservoir between midnight Friday, January 11th, and 6:00 a.m. Saturday, January 12, 1980, until around 10:00 a.m. Mr. Matlock stated that when he reviewed the DWR's 24-hour precipitation report, which is issued by that Department at 6:00 a.m., it became obvious that DWR exceeded the space required for flood control. (Emphasis added)

1 **In 1982 Corps of Engineers Reminds DWR of Its Obligation to Comply with Federal Flood**
2 **Control Rules at the Oroville Facilities – Formal Written Working Agreement:**

3
4 This agreement made and entered into this 5 day of May 1982 between the Department of Water
5 Resources and the Corps of Engineers.

6
7 Witnessed that:

8
9 WHEARAS, the State of California, acting through the Department of Water
10 Resources, represented by its Director, has constructed dams and reservoirs in the
11 State of California and is responsible for normal operation and structural safety of the
12 projects, and

13 WHEARAS, the Department of the Army, acting through the Corps of
14 Engineers, represented by its appropriate District and Division of Engineers, is
15 responsible for the flood control operation plans for the certain of said dams and
16 reservoirs in accordance with Section 7 of the 1944 Flood Control Act (33 U.S.C. 709)
17 and as promulgated in Code of federal Regulations, Title 33 Part 208.11. Said dams
18 and reservoirs of the State Water Project includes: Lake Oroville and Dam, Lake De
19 Valle and Dam, and Los Banos Detention reservoir and Dam, and

20 ***WHEARAS, there is a need for a working agreement to ensure a clear***
21 ***understanding of the flood control regulations and information exchange required***
22 ***for this project's operation.***

23 **NOW, THEREFORE, it is mutually understood and agreed by and between the**
24 **parties hereto that the State Water Project will be operated in accordance with the**
25 **following criteria:**

- 26 **(a) Conservation operation shall be in accordance with Department of Water Resources**
27 **criteria as determined by the Director or his designated representative.**
28 **(b) Storage space in the State water Project shall be made available and operated for flood**
29 **Control in accordance with the Flood Control Diagram currently in force.**
30 **(c) Emergency operation shall be in accordance with the procedure set forth on the**
31 **Emergency Spillway Release Diagram or procedures currently in force.**
32 **(d) The Director is responsible for the safety of the dam and appurtenant facilities and for**
33 **regulation of reservoirs in the State Water Project during surcharge storage utilization.**
34 **Emphasis upon the safety of the dam is especially important in the event surcharge**
35 **storage is utilized, which results when the total storage space reserved for flood**
36 **control is exceeded. Any assistance provided by the Corps of Engineers concerning**
37 **surcharge regulations is to be utilized at the discretion of the Director and does not**
38 **release the Director of the responsibility for safety of the dams in the State Water**
39 **Project.**

- 1 (e) Revisions of the Flood Control or Emergency Spillway Release Diagram and procedures
2 may be developed as necessary by parties of this agreement. Each such revision shall
3 be effective on the date specified.
- 4 (f) Except as necessary in order to comply with Emergency and Operation the procedures,
5 the flood control regulations shall not be construed to require dangerously rapid
6 changes in magnitude of changes. Releases will be made in a manner consistent with
7 requirements for protection of the dam, reservoirs, and appurtenances from major
8 damages.
- 9 (g) Any water impounded in the flood control spaced defined by the flood Control
10 Diagram shall be evacuated as rapidly as can be safely accomplished without causing
11 downstream flows to exceed the required releases, i.e., releases from the reservoir
12 shall be restricted insofar as practicable to quantities which, in conjunction with
13 uncontrolled runoff downstream of the dams, will not cause water levels to exceed the
14 controlling stages currently in force. Although conflicts may arise with other purposes,
15 such as hydropower, the plan of regulation may require releases to be completely
16 curtailed in the interest of flood control or safety of the project.
- 17 (h) The Director shall procure such current basic hydrologic data and make such current
18 determinations of required flood control space and releases at the reservoir as are
19 required to accomplish the flood control objectives.
- 20 (i) The Director shall keep the appropriate District Engineers of such reservoir operating
21 data as the respective District Engineer may request. The minimum data require is
22 reservoir storage, inflow, releases, and stream flow at control points designated by the
23 Flood Control Diagram on a daily basis.
- 24 (j) The flood control regulations are subject to temporary modifications by the Corps of
25 engineers if found necessary in times of emergency. Request for and action on such
26 modification may be made by the fastest means of communication available. The
27 action taken shall be confirmed in writing the same day to the office of the Director
28 and shall include justification for the action.
- 29 (k) Director may temporarily deviate from the flood control regulations in the event an
30 immediate short-term departure is deemed necessary for emergency reasons to
31 protect the safety of the dam, or to avoid other serious hazards. Such actions should be
32 immediately reported by the fastest means of communications available. Action shall
33 be confirmed in writing the same day to the Corps of Engineers and shall include
34 justification for the action. Continuation of the deviation will require the expressed
35 approval of the Division Engineer.
- 36 (l) The parties hereby recognize that the planning, use, and operations of the dams and
37 reservoirs subject to this agreement for flood control are under the authority and

1 jurisdiction of the United States, and, in performing all duties directed or prescribed
2 herein related to flood control, the Department shall be acting under the direction of
3 the United States.

4 IN WITNESS THEREOF, the parties hereto have caused this memorandum of
5 agreement to be executed as the day and date first above written.²¹⁶

6 The Flood of February 1986

7
8 *The major storm that devastated portions of northern and central California*
9 *in February 1986 was in some ways the greatest storm of record.*

10 *Flooding and heavy rains raged through the state for more than a week, from*
11 *California's north coast to the San Joaquin Valley, causing damage over more than*
12 *half the state. Much of California received more than half its normal year's supply of*
13 *rain during the 10-day storm. Bucks Lake in the Feather River Basin received 49.6*
14 *inches of rain.*

15 *The Governor proclaimed a state of emergency in 39 counties and damages*
16 *totaled more than \$500 million. More than 50,000 people were forced from their*
17 *homes, and at least 12 people died. An estimated 1,380 homes and 185 businesses were*
18 *destroyed, and more than 12,000 homes and 950 businesses were damaged... Without*
19 *the federal, state, and local reservoirs, the potential flood flows in the lower*
20 *Sacramento River system could have exceeded a million cubic feet per second, in a*
21 *system designed for 590,000 [cubic feet per second]. (Emphasis added) (Exhibit *)*

22 *At the flood peak in February 20, the Sacramento River system moved a record*
23 *650,000 cubic feet of water per second past Sacramento, a flow that would equal the*
24 *capacity of Lake Shasta in four days of Folsom Lake in less than 20 hours. ...Record flows*
25 *were measured on the Russian, Napa, Cosumnes and Mokelumne rivers. On the*
26 *Feather River on the night of February 17 were a record of 265,000 cfs, considerably*
27 *higher than the 1955 Feather River flows that devastated Marysville before Oroville*
28 *Dam was built. Oroville releases went as high as 150,000 cfs, breaking the previous*
29 *record release of 70,000 cfs but still within the design limits of the Oroville system.*
30 *(Emphasis added) (Exhibit *)*

31
32 Weather Events Producing the February 1986 Storm as forecasted by the NWS that alerted
33 federal, state, and local authorities, including DWR, regarding the predicted severity of the
34 storm events are included in (Exhibit *).

35 *The Rains, The rivers, and the Floods*

36
²¹⁶ Field Working Agreement Between State of California, Department of Water Resources and Department of the Army, Corps of Engineers for Flood Control Operation of State Water Project Dams and Reservoirs in California, Signatures, Homer Johnston, Division Engineer, South Pacific Division, Ronald R. Robie, P. A. Towner, Chief Counsel, Director, Department of Water Resources, 5 May 1982.

1
2 *Tuesday-Thursday, February 11-13. Cold arctic air reached northern California. National Weather*
3 *Service and DWR meteorologists monitored the storm patterns moving across the Pacific and*
4 *reported their progress to DWR's Flood Operations Center.*

5
6 *Thursday, February 13. Don Nuedeck, chief of flood operations, briefed the director's staff on the*
7 *storm system, and Director David Kennedy approved preparation for a full-scale flood fight.*

8
9 *Friday, February 14. The second in the series of storm systems blew ashore in the north San Francisco*
10 *Bay area. In this storm's first day, 6 to 8 inches of rain was reported un coastal areas, and several*
11 *hundred residents were evacuated in Petaluma when the Petaluma River flooded early in the*
12 *morning.*

13
14 *The DWR Flood Operation Center and the National Weather Service California-Nevada River Forecast*
15 *Center staff alerted federal, state, and local authorities to ready emergency manpower and*
16 *equipment for the crisis.*²¹⁷

17 **February 1986 DWR Director Prepares in Advance for Full-Scale Flood Fight – Fails to** 18 **Follow Up:**

19
20 Tuesday thru Thursday, February 11 thru 13, weather forecast for northern California. Cold arctic air
21 reached northern California. National Weather Service and DWR meteorologist monitored the storm
22 patterns moving across the Pacific and reported their progress to DWR's Flood Operation Center in
23 Sacramento, California.

24
25 Thursday, 13 February. Don Neudeck, Chief of Flood Operations, brief the DWR director's staff on
26 the storm system, and Director David Kennedy approved preparation for a full-scale flood fight.

27
28 Friday 14, February. The second in a series of storm systems blew ashore in the north San Francisco
29 Bay region. In this storm's first day, 6 to 9 inches of rain was reported in coastal areas and sever
30 hundred residents were evacuated in Petaluma when the Petaluma River flooded early in the
31 morning.

32
33 The DWR Flood Control Center and the National Weather Service California-Nevada River
34 Forecast Center staff alerted federal, state, and local authorities to ready emergency manpower and
35 equipment for the crisis.

36
37 Profile of Oroville Reservoir's Flood Storage and Encroachment into the Designated Flood Storage
38 Space Feb 14 – 18

39
40 The data contained in the DWR's "Reservoir Inflow Computation Sheets," show that it initially
41 encroached into the Designated Flood Storage Space at 0800 hours on February 15. At that time, it

²¹⁷ California Department of Water Resources, *The Flood of February 1986*, undated.

1 was only making power water releases of approximately 14,500 cubic feet per second (c.f.s.) through
2 the Hyatt power generating plants; these facilities are capable of releases 17,500 c.f.s. Inflow into
3 the reservoir was 70,000 c.f.s.

4
5 At 1600 hours DWR encroached into the Designated Flood Storage Space by 43,000 acre-feet of
6 water, occupying 5.8 percent of the flood storage space. At that time, DWR officials initiated a
7 modest increase of spill of 6,722 c.f.s., from the reservoir, along with the 14,500 c.f.s. from the power
8 plants, which totaled releases of 21,497 c.f.s.

9
10 Between 1600 hours on February 15 until 1400 hours on February 16 (24 hours later) DWR officials
11 made a marginal floodwater release of 10,000 c.f.s.; totaling 31,220 c.f.s. Inflow into the reservoir at
12 1400 hours was approximately 64,400 c.f.s., DWR had encroached into the Designated Flood Storage
13 Space by 116,000 acre-feet of water; occupying 15.4 percent of the flood storage space.

14
15 At 1600 hours on February 16, DWR increased outflow by another 10,000 c.f.s., to a total of 40,685
16 c.f.s. Inflow into the reservoir was 87,258 c.f.s., an encroached into the Designated Flood Storage
17 Space 123,732 acre-feet of water; occupying 16.5 percent of the designated flood storage space.

18
19 At 1000 hours on February 17, DWR increased floodwater releases discharges less than 10,000 c.f.s.,
20 to a total of 66,404 c.f.s. At that time, inflow into the reservoir was 175,540 c.f.s., DWR had
21 encroached into the DFSS by 215,539 c.f.s., occupying 31.0 percent of the DFSS.

22
23 At 1200 hours on February 17, DWR increased floodwater releases by 10,000 c.f.s., to a total of
24 77,044 c.f.s. A that time, inflow into the reservoir was 195,218 c.f.s., DWR was now encroached into
25 the DFSS by 253,111 acre-feet of water, occupying 33.0 percent of the DFSS.

26
27 At 1600 hours on February 17, DWR increase floodwater releases by 10,000 c.f.s., to a total of 87,286
28 c.f.s. At that time, inflow into the reservoir was 231,778 c.f.s., DWR was now encroached into the
29 DFSS by 299,895 acre-feet of water, occupying 40.0 percent of the DFSS.

30
31 At 1800 hours on February 17, DWR increase floodwater releases by 10,000 c.f.s., to a total 97,280
32 c.f.s., DWR was now encroached into the DFSS by 325,209 acre-feet, occupying 43 percent of the
33 DFSS.

34
35 At 2000 hours on February 17, DWR increase floodwater releases by 8,300 c.f.s., to a total discharge
36 from the reservoir 105,402 c.f.s., at that time, inflow into the reservoir was 266,453 c.f.s., DWR was
37 now encroached into the DFSS by 351,829 acre-feet of water, occupying 49 percent.

1 At 2200 hours on February 17, DWR increased floodwater releases by another 10,000 c.f.s., to a total
2 discharge of 115,450 c.f.s., DWR was now encroached into the DFSS by 376,276 acre-feet of water,
3 occupying 50 percent of the DFSS.

4
5 At 2400 hours on February 17, DWR increased floodwater releases by another 10,000 c.f.s., to a total
6 of 125,409 c.f.s., total water storage in the reservoir was 3,184,164 acre-feet, DWR was now
7 encroached into the DFSS by 396,164 acre-feet of water, occupying 53 percent of the DFSS.

8
9 *Saturday, February 15. The Russian River was rising toward record levels, and Rio Nido
10 was flooded. Guerneville, Monte Rio, Bohemian Grove, Duncan's Mills, and parts of
11 Jenner flooded. Approximately a thousand people were driven from their homes in
12 Guerneville, hundreds more in other Russian River towns.*

13
14 *Sunday, February 16. The onslaught of the next warm, Hawaii-born storm began. In
15 Marin County 80 homes on Corte Madera Creek were evacuated. Highway 116 to
16 Guerneville was closed by high water.*

17
18 *Monday, February 17. On the Feather River, releases from Lake Oroville were boosted
19 to 150,000 cfs, the highest since the dam was built but within the Corps of Engineers'
20 criteria for operating the dam.*

21
22 *Above Sacramento in the American River, releases from Nimbus Dam below Folsom
23 were increased to 115,000 cfs, the highest since 1964 floods.*²¹⁸

24 **Flood Control has Priority:**

25
26 ***Any shall be evacuated as rapidly as can be accomplished without causing flows to
27 exceed the required releases water impounded in the flood control space as defined
28 by the Flood Control Diagram, i.e., from the reservoir shall be restricted insofar as
29 practicable to quantities which in conjunction with uncontrolled runoff downstream of
30 the dam, which will not cause water levels to exceed controlling stages currently in
31 force. Although conflicts may arise with other purposes, such as hydropower, the plan
32 of regulations may require releases to be completely curtailed in the interest of flood
33 control or safety of the project.***²¹⁹

²¹⁸ California Department of Water Resources, *The Flood of February 1986*, undated, p.6.

²¹⁹ *Field Working Agreement Between State of California, Department of Water Resources and Department of the Army, Corps of Engineers for Flood Control Operation of State Water Project Dams and Reservoirs in California*, Signatures, Homer Johnston, Division Engineer, South Pacific Division, Ronald R. Robie, P. A. Towner, Chief Counsel, Director, Department of Water Resources, 5 May 1982.

1 **Department of Water Resources Repeatedly Failed to Comply with Federal and State**
2 **Flood Control Regulations:**

3
4 ***The amount of storage space in Lake Oroville which is utilized for flood control***
5 ***varies between 375,000 and 750,000 acre-feet. The amount of storage required***
6 ***between these limits depends on the 60-day antecedent “basin means precipitation.”***
7 ***Reservation of storage space for flood control begins on September 15 and ends on***
8 ***June 15 of the following year. Between these dates, the reservoir must be drawn***
9 ***down to capacity indicated by the flood control diagram and the antecedent rainfall.***
10 ***Flood flows entering the reservoir may be stored temporarily above the flood control***
11 ***reservation but must be evacuated down to the required level as quickly as possible***
12 ***within the constraints previously described.***²²⁰ [Emphasis added]

13 DWR officials' initial decisions to limit the amount of floodwaters releases from the onset of the
14 series of warm storms, forecasted by the National Weather Service (NWS), beginning on February
15 11 and 12, 1986, and the antecedent conditions (wetness index), within the Feather River
16 Watershed, DWR's gamble to hold back on allowable releases, set the stage for the higher sustained
17 floodwater releases from Oroville Reservoir. This decision led up to floodwater releases from Oroville
18 Reservoir around 150,000 cfs!

19
20 As provided for in the Flood Control Manual, and in accordance with the Flood Control Diagram,
21 DWR is permitted to increase floodwater releases in increments of 10,000 c.f.s. every two hours. The
22 data indicates DWR officials willfully held back on amount of floodwater it could have released.
23 Unfortunately, DWR's decision played a major role in the significant level of flood damages that
24 occurred downstream from the Oroville Dam. In essence, from 0800 on February 15 through 1600
25 hours on February 16, 32 hours later, DWR officials made a marginal release of floodwaters from the
26 reservoir of 25,000 c.f.s. Between 0200 hours on February 17 to 2400 hours on February 17, DWR
27 increased floodwater discharges by 65,000 c.f.s.

The following is a Reservoir Inflow Computation Sheet (**RICS**), typed up, for several days in the month
of February 1986, which led up to the massive flood damages downstream from Oroville Dam. All of
the other **RICS** the author obtained, going back to 1969 thru 1997, are in longhand. Also, this data is
taken in real-time, yet it states, "Subject to Revision"- revising data based on de facto guestimates!

²²⁰ William R. Oroville Dam and Lake Oroville, Presented before the Senate Committee on Water Resources
at Sacramento, California 18 March 1971. Gianelli, Director, Department of Water Resources, The Resources
Agency, State of California, Flood Control Operation

Lake Proville

OPERATIONAL DATA
Subject to Revision

FIGURE 4 Page 39
Page 1 of 5

DIVISION OF OPERATIONS AND MAINTENANCE
OPERATIONS CONTROL BRANCH

DATE	PRECIP (INCHES)	TIME	ELEVATION FEET	TOTAL STORAGE A.F.	STORAGE CHANGE A.F.	STORAGE CHANGE C.F.S.	Hyatt REEFERS C.F.S.	Spill + Palermo C.F.S.	INFL. ON C.F.S.
2/14/86		0200							
		0400							
		0600							
		0800							
		1000							
		1200							
		1400		2,697,645					51,651
		1600		2,707,176					71,531
		1800		2,718,041					80,822
		2000		2,730,515					89,672
		2200		2,741,842					82,771
		2400		2,752,805			14,650	2	80,957
2/15/86		0200		2,765,390			15,068	2	91,229
		0400		2,774,690			14,084	2	70,351
		0600		2,784,677			14,278	2	74,701
		0800		2,794,690			14,392	2	74,974
		1000		2,804,862			14,090	2	75,633
		1200		2,814,120			14,193	2	70,206
		1400		2,823,264			14,405	2	69,728
		1600		2,831,755			14,775	6,722	72,867
		1800		2,839,858			14,520	11,102	74,655
		2000		2,847,300			14,520	16,002	75,556
		2200		2,855,298			14,484	16,502	79,574
		2400		2,863,177			14,520	17,002	79,190
2/16/86		0200		2,870,253			14,496	17,382	74,656
		0400		2,876,933			14,344	17,032	71,791
		0600		2,882,666			14,308	17,032	66,525
		0800		2,887,724			14,750	17,002	62,352
		1000		2,892,926			14,300	17,002	62,749
		1200		2,898,545			14,300	17,002	65,227
		1400		2,904,034			14,218	17,002	64,228
		1600		2,911,732			14,683	26,002	74,755
		1800		2,918,892			14,374	36,002	93,602
		2000		2,927,999			14,520	35,502	105,119
		2200		2,938,232			14,520	34,502	110,932
		2400		2,947,381			14,181	44,502	114,034

1 Note: The bi-hourly "estimates" are based on reservoir elevations, in real-time, absent
 2 of stream gages, handwritten data in stamped: Preliminary: Subject to Revision!

3
 4 A: The inflow is measured by changes of storage. The exact point of the location
 5 of the staff gauge I do not know.

1 **Q: In other words, there is nothing out there in any part of the rivers or creeks**
2 **or what have you leading into the reservoir that is gauging it? You are gauging your**
3 **inflow by the change in elevation in the lake, itself?**

4 **A: Yes, by a computation of inflow/outflow and change in storage. There are**
5 **gauges up there, but they are not used too much for this process.**²²¹ (Emphasis added)
6 (Exhibit *)

7 **DWR's' Chief of the Division of Operation and Maintenance Testimony before State**
8 **Reclamation Board Re: The operation of the Oroville flood control facilities during the**
9 **February 1986 flood-Patrick Porgans provided Testimony revealing DWR has**
10 **consistently violated federal flood control laws while operating the Oroville flood**
11 **control facilities and has not been held accountable:**

12
13 MR. MC CORMACK: Thank you.

14 Anybody else?

15 MR. PORGANS: You don't have to get a heart attack. I am not going to read it
16 all, verbatim.

17 My name is Patrick Porgans, I am a Water Resource Specialist, with Red Tape
18 Abatement, Ltd.; and I am not here representing anyone other than myself.

19 Briefly, I've taken a look at the operation of the Oroville Dam since day one; and
20 I've completed about 15 reports independent and for clients in that area, and there are
21 a couple of things that I am concerned about there.

22 Number One, Oroville Dam is a section 7 reservoir; and under the Federal flood
23 control rules and regulations, the State Department of Water Resources had to operate
24 that facility in accordance with Federal law.

25 Now, I've gone back and looked at the operation; and I have found that the
26 Department of Water resources is constantly violating Federal flood control law. Now,
27 this is not my information. This is information from the army Corps of Engineers.

28 For example, we find that that 750,000 acre-feet of reservoir space that is
29 required for flood control during the critical time of year, that in 1982, in February on
30 the 22nd, the Department was encroached by one-hundred and five thousand acre-feet.

²²¹ In the Superior Court of the State of California, in and for the County of Butte, *Robinson Construction Company vs. State of California*, No. 71957, Deposition of Donald H. McKillop, Chief, Operation Control Branch, Division of Operation and Maintenance, California Department of Water Resources, Appearances: for the Plaintiffs, Leonard & Lyde, by Daniel v. Blackstock, Esq., For the Defendant: George Deukmejian, , Attorney General of the State of California, Prepared by: Barbara M. Franks, CSR #1510, Shellooe, King & Associates, May 12, 1982, pp. 51-52.

1 *In 1981, on December 22nd they were encroached by one hundred and seventy-*
2 *five thousand acre-feet.*

3 *In 1981, in March they were encroached by 242,000 acre-feet, it goes on.*

4 *Now, quite frankly, when we take a look at what's been going on at the reservoir*
5 *and downstream from the reservoir, we understand based on reports that were*
6 *conducted jointly by the Department and USGS, that the geometry of the stream was*
7 *changed as the result of the flow regime which was pointed out previous to my speech.*

8 *Now, I, myself, feel that the Department has done an adequate job in operating*
9 *those flood control facilities; but at times, they have, in fact, compounded preexisting*
10 *problems.*

11 *Now, the way the federal flood control law is set up, there are no enforcement*
12 *provisions. In essence, if the Department of Water Resources are in violation, the Army*
13 *Corps of Engineers gives them a telephone call and says, "Maybe you should get out of*
14 *there."*

15 *If that doesn't work, then they will send them a letter, stating that you should*
16 *get out. I have all those letters, showing where to get out. I have my own Reservoir*
17 *Watch Program, watching the watchers; and I have had agencies such as the*
18 *Department cited for violating the law.*

19 *I have heard the Department of Fish and Game speak here about his concerns*
20 *relevant to the gravel recruitment downstream [from Oroville Dam].*

21 *Now, back in the 60's, this Bord issued a permit under Section 8710 of the Water*
22 *Code to the Department of Water resources or the Department of Fish and Game – for*
23 *that training dike they're talking about.*

24 *In 1973, I came before this Board, and I explained to them that we were having*
25 *problems with that training dike. Now, contrary to what the Department of Fish and*
26 *Game just said, it not hurting anybody but their own resources. That is not true.*

27 *In essence, under the Federal Power License 2100, Article 45, the Department of*
28 *Water Resources and the Department of Fish and Game are required to maintain that*
29 *training dike to reduce the impacts associated with these flood-flow releases and the*
30 *sediment that are getting into the Oroville Wildlife Area and the fish entrapment*
31 *problem that result from the high flood-flow releases.*

32 *Now, I came to the Board with you – Mr. Allen's here. He knows. I have a*
33 *complete chronological history of my involvement in this. I've given the Department 10*
34 *years to do something about it. I'm not going to give them no more time.*

1 *I'm going to the Federal Government. They're going to fix that training dike.*
2 *They're going to operate that facility [Oroville Dam] in accordance with Federal flood*
3 *control laws, or they're going to be in trouble.*

4 *Now, I don't feel that the Department or any other agency can be absolved of*
5 *the right to protect the interests of the people or to the resources. That's what they're*
6 *responsible for.*

7 *So, in essence, I don't have enough time to go into all the details with you. I have*
8 *everything documented. If anyone want to see out reports, we'll be more than happy to*
9 *make them available to you.*

10 *But the bottom line is, we're going to have to watch these agencies a little more*
11 *carefully. And that's what my job is.*

12 *So, if you have any questions, I'll be more than happy to answer them.*

13 *MR. FAYE: Could I have your name again?*

14 *MR. PORGANS: Yes. It's Patrick Porgans. That's "P" as in Patrick, o-r-g-a-*
15 *n-s.*

16 *MR. JANZEN: Patrick, you had a solution? You read out in a book that*
17 *they were encroached in the flood part; and do you have a solution for that?*

18 *Mr. Porgans: Most definitely; most definitely.*

19 *MR. JENZEN: Thank you –*

20 *MR. PORGANS: The solution is simple. See if you go back to the Water Supply*
21 *Contracts which were put together in 1963 between the State of California and its*
22 *water contracting agencies, the Department of Water Resources sold more water than*
23 *the project developed. This is one of the reasons why we have major problems in*
24 *California right now over water issues.*

25 *I'm saying now that the Department of Water Resources had a firm yield of 2.3*
26 *million acre-feet for the State water Project; and if they're having problems meeting*
27 *their firm yield [4.2 million acre-feet contained in the contracts], then I suggest we*
28 *renegotiate the contracts which there are provisions in the water supply contracts to do*
29 *that.*

30 *And then, we may, along the way resolve some of the State's water conflicts.*

31 *MR. MC CORMACK:*

32 *MR. BARSCH: Patrick, does the Department of Water Resources have copies of*
33 *those reports already?*

34 *MR. PORGANS: I've gave the Department just about everything. They don't have*
35 *this one here because now, I don't mean anything personal. I was told by Mr.*

1 *Cunningham, who was the former Deputy Director, that everything that I wrote about*
2 *he already knew.*

3 *I had personally question him and asked him if he had read my reports to make*
4 *that kind of statement; because in order to understand something, you have to read it.*
5 *He hadn't.*

6 *So, at that particular point in time, I stopped giving my reports to the*
7 *Department.*

8 *They issued a press release that anything I have to say is totally wrong. So, does*
9 *that answer your question?*

10 *MR. BARSCH: I didn't see it personally.*

11 *MR. PORGANS: Well, I get you a copy.*

12 *MR. MC CORMACK:*

13 *MR. PORGANS: You're welcome.²²²*

14 *MR. MC CORMACK: Thank you.*

15 **Weather Events Leading Up to the February 1986 Flood within the Feather River** 16 **Watershed:**

17
18 Weather events producing the February 1986 Storm forecasted by the NWS alerted federal, state,
19 and local authorities, including DWR, regarding the predicted severity of the storm events, are
20 included in (Exhibit *).

21 **The Rains, The Rivers, and the Floods**

22
23 ***Tuesday-Thursday, February 11-13. Cold arctic air reached northern California.***
24 ***National Weather Service and DWR meteorologists monitored the storm patterns***
25 ***moving across the Pacific and reported their progress to DWR's Flood Operations***
26 ***Center.***

27
28

²²² California State Reclamation Board, Transcript of the Meeting, John Eaton, Chief of Operations, Division of Operation and Maintenance of the Department of Water Resources, Testimony Re: ***DWR's operation of the State Water Project's Oroville Dam and Reservoir flood control operation, during the February 1986 flood and Patrick Porgans, Testimony Re: DWR's consistent violation of federal flood control laws while operating the Oroville flood control facilities***, 16 May 1986, pp. 34-38.

1 **February 1986 DWR Director Prepares in Advance for Full-Scale Flood Fight – Failed to**
 2 **Follow Up:**

3
 4 **Thursday, February 13. Don Nuedeck, chief of flood operations, briefed the director's**
 5 **staff on the storm system, and Director David Kennedy approved preparation for a**
 6 **full-scale flood fight.** (Emphasis added)

7
 8 **Friday, February 14. The second in the series of storm systems blew ashore in the**
 9 **north San Francisco Bay area. In this storm's first day, 6 to 8 inches of rain was**
 10 **reported un coastal areas, and several hundred residents were evacuated in**
 11 **Petaluma when the Petaluma River flooded early in the morning.** (Emphasis added)

12
 13 **The DWR Flood Control Center and the National Weather Service California-Nevada**
 14 **River Forecast Center staff alerted federal, state, and local authorities to ready**
 15 **emergency manpower and equipment for the crisis.** [Emphasis added]

16
 17 *Friday 14, February. The second in a series of storm systems blew ashore in the north*
 18 *San Francisco Bay region. In this storm's first day, 6 to 9 inches of rain was reported in*
 19 *coastal areas, and several hundred residents were evacuated in Petaluma when the*
 20 *Petaluma River flooded early in the morning.*²²³(Refer to Exhibit *)@

21 **National Weather Service computer model confirmed fears of an extraordinary rainfall**
 22 **event in February 1986 similar to the December 1964 catastrophic flood event:**

23
 24 Satellite photo, taken February 16th



34

On Friday, February 14, the computer model predictions for Saturday afternoon through Monday (February 16-17) became very alarming. An extraordinary strong, deep flow of warm moist air from Hawaii was depicted, and the jet stream was predicted to work northward from Santa Maria on February 15 to the Bay area on February 16. This pattern would put the heaviest precipitation across the Bay area into central and northern Sierra. **The precipitation regime was similar to December 1964 except it was displaced a couple of hundred miles south.** Rainfall rates exceeding

35 **those of the week's two previous storms were predicted for most drainage basins from midday**
 36 **Sunday through all of Monday, February 17. The computer model on Saturday confirmed fears of**
 37 **a really extraordinary rainfall event.** (Emphasis added)

38
 223 *Ibid.* The California Department of Water Resources, *The Flood of February 1986*, undated.

1 **On Sunday morning, February 16, weather satellite pictures showed explosive**
 2 **development of clouds and precipitation along the jet stream between Hawaii and**
 3 **California.**²²⁴ (Emphasis added)

4 [Report on the February 1986 Floods: Northern California ...](#) ✓

5
 6 *Report on the February 1986 Floods: Northern California and Northwestern Nevada. The*
 7 *District, 1987 - Floods - 86 pages. 0 Reviews. From inside the book . What people are saying -*
 8 *Write a review. We haven't found any reviews in the usual places. Common terms and*
 9 *phrases.*

10
 11 [February 11-21, 1986: Oroville Reservoir Bi-Hourly Inflow and Floodwater Releases](#)

12
 13 **Oroville-Feather River, Peak Bi-Hourly Inflow 266,450 c.f.s – Releases 150,00 c.f.s.**²²⁵

14 [Profile of Oroville Reservoir's Flood Storage-Encroachment into Designated Flood](#)
 15 [Storage Space Feb 14–18, 1986:](#)

16
 17 **The following data was extrapolated from the DWR's "Reservoir Inflow Computation**
 18 **Sheets," indicate it initially encroached into the Designated Flood Storage Space**
 19 **(DFSS) at 0800 hours on February 15, 1986, reservoir storage was 2,794.690 acre=feet**
 20 **of water.** (One acre-foot of water is enough water to cover one acre of land in one foot
 21 of water.) Inflow into the reservoir was 74,974 cubic feet per second (c.f.s.).²²⁶ At that
 22 time, it was only making power water releases of approximately 14,392 c.f.s. through
 23 the Hyatt power generating plants; these facilities are capable of a total release of
 24 16,950 c.f.s.²²⁷ (Exhibit *)

25
 26 **At 1600 hours** DWR encroached into the Designated Flood Storage Space by 43,000
 27 acre-feet of water, occupying 5.8 percent of the flood storage space. At that time, DWR
 28 officials initiated a modest increase of spill of 6,722 c.f.s., from the reservoir, along with
 29 the 14,500 c.f.s. from the power plants, which totaled releases of 21,497 c.f.s.²²⁸

224 U.S. Army Corps of Engineers, *Report on the February 1986 Floods, Northern California and Northwestern Nevada, published in January 1987.*

225 California Department of Water Resources, *The Floods of February 1986*, p. 22.

226 California Department of Water Resources, *Reservoir Inflow Computation Sheets*, February 1986.

227 California Department of Water Resources, *Bulletin 132-13, Management of the California State Water Project, Chapter 10, Power Resources, Table 1-4, Power Plant Characteristics, by Type and Facility*, April 2015, p. 55.

228 Ibid. *DWR's Reservoir Inflow Computation Sheets*

1 **Between 1600 hours on February 15 until 1400 hours on February 16 (24 hours later)**
2 **DWR officials made a marginal floodwater release of 10,000 c.f.s.; totaling 31,220**
3 **c.f.s.** Inflow into the reservoir at 1400 hours was approximately 64,400 c.f.s., DWR had
4 encroached into the Designated Flood Storage Space by 116,000 acre-feet of water;
5 occupying 15.4 percent of the flood storage space.

6
7 **At 1600 hours on February 16, DWR increased outflow by another 10,000 c.f.s., to a**
8 **total of 40,685 c.f.s.** Inflow into the reservoir was 87,258 c.f.s., an encroached into
9 **the Designated Flood Storage Space 123,732 acre-feet of water; occupying 16.5**
10 **percent of the designated flood storage space.**

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12 **At 1000 hours on February 17, DWR increased floodwater releases discharges less**
13 **than 10,000 c.f.s., to a total of 66,404 c.f.s.. At that time, inflow into the reservoir**
14 **was 175,540 c.f.s., DWR had encroached into the DFSS by 215,539 c.f.s., occupying**
15 **31.0 percent of the DFSS.**

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17 **At 1200 hours on February 17, DWR increased floodwater releases by 10,000 c.f.s.,**
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19 **DWR was now encroached into the DFSS by 253,111 acre-feet of water, occupying**
20 **33.0 percent of the DFSS.**

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22 **At 1600 hours on February 17, DWR increase floodwater releases by 10,000 c.f.s., to**
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25 **percent of the DFSS.**

26 **At 1800 hours on February 17, DWR increase floodwater releases by 10,000 c.f.s., to**
27 **a total 97,280 c.f.s., DWR was now encroached into the DFSS by 325,209 acre-feet,**
28 **occupying 43 percent of the DFSS.**

29
30 **At 2000 hours on February 17, DWR increase floodwater releases by 8,300 c.f.s., to a**
31 **total discharge from the reservoir 105,402 c.f.s., at that time, inflow into the**
32 **reservoir was 266,453 c.f.s., DWR was now encroached into the DFSS by 351,829**
33 **acre-feet of water, occupying 49 percent.**

34
35 **At 2200 hours on February 17, DWR increased floodwater releases by another 10,000**
36 **c.f.s., to a total discharge of 115,450 c.f.s., DWR was now encroached into the DFSS**
37 **by 376,276 acre-feet of water, occupying 50 percent of the DFSS.**

38
39 **At 2400 hours on February 17, DWR increased floodwater releases by another 10,000**
40 **c.f.s., to a total of 125,409 c.f.s., total water storage in the reservoir was 3,184,164**

1 acre-feet, DWR was now encroached into the DFSS by 396,164 acre-feet of water,
2 occupying 53 percent of the DFSS.²²⁹

3
4 **Note: DWR's gambled and initially held back on allowable floodwater releases, setting the stage**
5 **for higher sustained floodwater releases from Oroville Reservoir, as the predicted weather**
6 **conditions persisted. This decision led up to floodwater releases from Oroville Reservoir around**
7 **150,000 cfs!** Keeping in mind, that the flood of February 1986, within the Feather River Watershed,
8 did not meet the Flood Control Manual's criteria for what constitutes a Standard Project Flood.

9
10 As provided for in the Flood Control Manual, and in accordance with the Flood Control Diagram,
11 DWR were permitted to increase floodwater releases in increments of 10,000 c.f.s., every two hours.
12 The data indicates DWR officials willfully held back on amount of floodwater it could have made.
13 **Unfortunately, DWR's decision played a major role in the significant level of flood damages that**
14 **occurred downstream from the Oroville Dam. In essence, from 0800 on February 15 through 1600**
15 **hours on February 16, 32 hours later, DWR officials made a marginal release of floodwaters from**
16 **the reservoir of 25,000 c.f.s. Between 0200 hours on February 17 to 2400 hours on February 17,**
17 **DWR increased floodwater discharges by 65,000 c.f.s.**

18 **Documents Reveal DWR officials Panicked During Several Major Flood Disaster They** 19 **Caused:**

20
21 **On several flood emergency events, DWR officials failed to notify the public of the impending flood**
22 **disaster resulting from the operation of the SWP Oroville facilities which they were held Liable.**

23
24 A: Public records attest that DWR's historical decision-making actions, and failure to act, exacerbated
25 downstream flood damages and loss of life. Documents reveal during the 1997 New Year's Day flood
26 event DWR was negligent in advising the Office of Emergency Services of the need to attend a
27 meeting to provide instructions to evacuate City of Oroville and downstream residents; it panic, an
28 evacuation order was given less than 24-hours!

29 **1997 New Year's Day Flood Feather River Watershed:**

30 **1997 National Weather Service forecast as much as 40-Inches of Rain in Feather River**
31 **Basin above Oroville Dam: Office of Emergency Services' Communications 1 January**
32 **1997:**

33
34 **0930 Call from Cindy Matthews at Flood Control Center. Possible uncontrolled**
35 **releases from Oroville Dam by 0400 tomorrow! Inflows now at 400,000 CFS+. Expect**
36 **uncontrolled releases at 240,000 CFS to 400,000 CFS through Oroville. This**
37 **information is not for public release at this time. A printed forecast will follow.**

²²⁹ Ibid., DWR's "Reservoir Inflow Computation Sheets

1 **0945** *Called Operations at Oroville Dam asking for Rolland Williams. He was not*
2 *available. Talked with Operations Duty Officer. He said that the predictions are true.*
3 *Inflow as high as 600,000 CFS are now coming in. The lake is coming up 1.5' to 2' per*
4 *hour. May go uncontrolled as early as 0100 tomorrow. Call back for more info. Asked*
5 *what will be going through Oroville if the Dam goes uncontrolled. Answer: Whatever*
6 *comes in.*

7
8 **1005** *Called NWS in Sacramento. Stated that we may get as much as 40 inches of*
9 *rain in watershed over next two days. Said "Good Luck!"*

10
11 **1115** *Called Oroville Dam. Was told by operations that inflow is still over 400,000*
12 *CFS. Lake coming up fast. Asked if uncontrolled release is still a possibility. Answer:*
13 *"Plan on it!"*

14
15 **1208** *Called Oroville Dam. Told that all information must now go through Sacramento.*

16
17 **1210** *Called Flood Control Center [Sacramento]. Told that a public release was soon*
18 *to be released. Wait for fax.*

19
20 **1300** *Called Flood Control Center about fax! Told that a briefing meeting was taking*
21 *place. Stand by for fax.*

22
23 **1318** *Conference call with State OES [Office of Emergency Services] and DWR. Told*
24 *to go to planning meeting in Marysville at 1430.*

25
26 **1430** *Meeting in Marysville. OES waited and then said that DWR wouldn't even*
27 *return priority phone call requests. Meeting with OES finished without any DWR*
28 *input. Kelly Purdum showed me a fax from DWR that he rec'd about 1200 that stated*
29 *flows through Oroville may exceed 283,000 CFS. This was never faxed to Butte*
30 *County. [Emphasis added]*

31
32 **1730** *Rec'd fax from DWR (See attachment)²³⁰ [Emphasis added] (Exhibit *)*

33 **Is there a pattern to DWR's Impromptu Evacuation Notification to other Government**
34 **Agencies and the Public during the 2017 partial collapse of the Spillway Outlet and**
35 **subsequent flooding? Yes!**
36

37 Q: Was the February 2017 spillway incident and the chaos associated with the haphazard manner in
38 which DWR reacted to the crisis, such as the last-minute evacuation notification order of 188,000

²³⁰ Michael Pyeatt, General Services Director, J. Michael Madden, Emergency Services Officer, Office of Emergency Services, General Services Administration, County of Butte, Oroville, CA, Subject: *DWR Communications 1/1/1997*.

1 people and holding back on floodwater releases when the Feather River Watershed was
2 experiencing weather conditions similar to the 1955, 1964, 1980, 1986 and 1997 flood event an
3 anomaly or is there evidence that its practices are repetitive placing people at risk?
4

5 A: According to the aforementioned public records failure to provide adequate evacuation
6 notification is DWR's standard modus operandi!
7

8 *When operators of Oroville Dam suddenly ordered evacuations on Sunday, it focused a*
9 *big spotlight on a crucial piece of California's flood-control infrastructure-spillways.*

10 *At Oroville, the tallest dam in the United States, the concrete-lined spillway worked*
11 *properly for 48 years – until it didn't. On Feb. 7, after heavy flow down the spillway,*
12 *water managers noticed that the water had dug a hole in the structure, tossing chunks*
13 *of concrete into the air.*

14 *To relieve pressure on the main spillway, Oroville's operator, the California Department*
15 *of Water Resources, decided to let the reservoir rise until water spilled over the concrete*
16 *lip of the emergency spillway, also known as the "auxiliary spillway.:* ***The dam's***
17 ***operators had never used this spillway, an earthen hillside. When they did, it caused***
18 ***quick erosion-so much so that DWR officials feared the structure could fail entirely,***
19 ***unleashing a torrent of water. At that point, they ordered a mass evacuation***
20 ***downstream.***

21 *DWR officials had previously been warned that the emergency spillway was*
22 *unreliable, but apparently they never imagined a scenario where they would be*
23 *forced to use it. Now, with more storms approaching, DWR is left three compromised*
24 *options to get water out of Lake Oroville – the main spillway, the emergency spillway*
25 *and the dam's hydroelectric generators. "All of three of those are unreliable," said*
26 *Lund.*

27 [Jay] *Lund, the UC Davis engineer, said the 1997 flood demonstrates how dam*
28 *spillways and the channels below them must be designed in unison.*
29

30 *Climate change poses another challenge for dam operators and their spillways. Many*
31 *of these dams are decades old and were not designed with outlets capable of*
32 *handling the expected mega-storms of the future. Operators of these dams are stuck*
33 *between competing demands to maximize water storage and also save space for*
34 *flood control. They work under operating manuals that don't account for recent*
35
36
37
38

1 **trends, such as Sierra snowpack melting earlier in the year.** ²³¹ (Emphasis added)
2 (Exhibit *)

3 **Engineers have known for decades that Oroville’s backup spillway was unreliable:**

4 **Engineers have known for decades that if water ever spilled onto Lake Oroville’s**
5 **unpaved auxiliary spillway, it would cause serious erosion, possibly compromising**
6 **the earthen structure that holds back the reservoir and threatening communities**
7 **downstream.**

8 **But California water districts that helped pay for Oroville resisted calls to armor the**
9 **backup spillway, which would have required construction outlays in the tens of**
10 **millions of dollars. Environmentalists, meanwhile, opposed an earlier proposal to**
11 **install gates atop the structure to raise the dam’s elevation and prevent water from**
12 **topping it during a flood.** (Emphasis added) (Exhibit *)

13 *The resulting stalemate contributed to Oroville’s near catastrophe on Sunday, when nearly*
14 *200,000 people were ordered to evacuate after officials detected erosion on the unlined*
15 *hillside.*

16 *Congressional representatives said Monday they were stunned to learn that Oroville did*
17 *not have a backup spillway paved with concrete that could be safely used if the main one*
18 *was damaged.*

19 **“When I think about the fact that the (auxiliary) spillway at Oroville did not even**
20 **have concrete lining on it, I’m just really surprised,” said Rep. Doris Matsui, a**
21 **Democrat from Sacramento. “I would think that would be the first thing you could**
22 **do.”**

23 *“Some hard questions have to be answered about why this facility was apparently*
24 *neglected in a way that left it vulnerable to these problems,” said Rep. Jared Huffman of*
25 *San Rafael, the top Democrat on the House subcommittee with oversight over dams.*
26 **“Clearly there were warning signs, there were people saying, ‘we need to fix this.’ ”**

27 *With the tallest dam in the United States, Lake Oroville is the major water source for the*
28 *State Water Project, which provides water for 23 million people and farmers in the San*
29 *Joaquin Valley. It was financed with a \$1.75 billion bond that California voters approved in*
30 *1960. Some 34 laborers died during its construction.*

31 **The dam was designed with a main spillway, which was gated and lined with**
32 **concrete. The ungated auxiliary spillway was added to handle a flood so big that “no**
33 **one could imagine it,” said Joe Countryman, a former engineer with the U.S. Army**

²³¹ The Sacramento Bee, By Stuart Leavenworth, Oroville puts focus on dam spillways – aging and some never tested, February 15, 2017, <https://www.sacbee.com/news/nation-world/article132992819.html>

1 **Corps of Engineers. As a result, he said, California and the water contractors “didn’t**
2 **want to put a lot of extra resources” into lining that spillway, which is basically an**
3 **earthen hillside.**

4 **Many groups knew that, if the reservoir were ever hit by a major flood, water**
5 **toppling over the emergency spillway would cause serious erosion. In 2002, the**
6 **Yuba County Water Agency – which owns transmission lines and other**
7 **infrastructure in the area – highlighted these concerns in a technical memorandum.**

8 **“The discharge area below the emergency spillway is not armored, and extensive**
9 **erosion would take place if the emergency spillway were used,” the [memo stated](#).**
10 **“The spillway road and possibly high voltage transmission towers would be impacted.”**
11 **(Emphasis added)**

12 **In 2003 through 2005, three environmental groups – Friends of the River, the South Yuba**
13 **Citizens League, and the Sierra Club – urged the federal government to require the lining of**
14 **the auxiliary spillway as part of the dam’s licensing process.²³²**

15

²³² The Sacramento Bee, McClatchy Washington Bureau, By Stuart Leavenworth, Sean Cockerham and Ryan Sabalow, *Engineers have known for decades that Oroville’s backup spillway was unreliable*, February 13, 2017, <https://www.sacbee.com/news/nation-world/article132527714.html>

1 **FERC Required Emergency Action Plan Not Available to Public During 2017 Partial**
2 **Collapse of Oroville Dam Spillway Outlet:**

3 **Q: Is DWR required by the Federal Energy Regulatory Agency (FERC) to have an adopted**
4 **“Emergency Action Plan” (EAP) for the SWP’s Oroville Dam and Reservoir to respond to**
5 **an event such as the 7 February 2017 partial collapse of the Flood Control Spillway**
6 **Outlet? Yes!**

7 **A: DWR submitted an Emergency Action Plan (EAP) to the Federal Energy Regulatory**
8 **Commission, which was approved in 2015. [EN]**

9 **Q: Is the DWR’S FERC Approved Emergency Action Plan (EAP) readily available for**
10 **public review? No! FERC Refused FOIA Request to Release EAP and DWR officials stated**
11 **release of the EAP would be a breach of National Security!**

12 **A: No! While public officials flounder, assuring residents there was no need for concern,**
13 **then, abruptly ordered the evacuation of 188,000 people, reporters failed to ask the**
14 **quintessential question, where was the DWR’s EAP for the Oroville Dam facilities,**
15 **required by the FERC that includes the Flood Control Spillway Outlet and Emergency**
16 **Spillway.**

17 **PorgansAssociates made formal contact with FERC’s External Affairs office to obtain a**
18 **copy of the EAP-FERC’s response they would run it by their and DWR attorneys, and if**
19 **they consented to release the EAP, we would be required to sign a “confidentiality non-**
20 **disclosure form” agreeing we would not share it with anyone!**

21
22 **Note: PorgansAssociates (PIA) made contact with FERC personnel, in Washington, D.C. to obtain a**
23 **copy of the latest EAP filed with them by the DWR for the Oroville facilities. FERC’s Office of External**
24 **Affairs stated, it is a Freedom of Information Act (FOIA) request, which could take 30 to 60 days or**
25 **more to receive a response. Furthermore, FERC’s attorneys would review the nature of the FOIA**
26 **request and discuss the release of the EAP with the DWR’s attorneys to get their input before**
27 **considering releasing the Plan. If the Plan were released, PIA would have to sign a Non-Disclosure**
28 **form stating the EAP is not to be shared with anyone. When questioned about the absence of the**
29 **EAP, DWR officials stated release of the EAP would be a breach of National Security!**

30 **Shortly after Oroville Dam Spillway Collapse California Governor approved Senate Bill**
31 **92 to keep the Dam Emergency Plans Secret:**

32 Fresh off the Oroville Dam crisis, California lawmakers on Thursday voted to make
33 dam-safety plans secret through language that was quietly inserted into a budget-
34 related bill.

1 The legislation, which requires Gov. Jerry Brown’s signature before becoming law,
2 says emergency action plans at dams would be kept confidential to “protect public
3 safety.”

4 Assemblyman James Gallagher, R-Yuba City, said slipping the language into a budget-
5 related bill, [Senate Bill 92](#), without debate was “kind of insulting, really” to the
6 188,000 evacuees such as him who were forced to flee their homes for two days after
7 the near-failure of Oroville’s emergency spillway.

8 David Snyder, executive director of the First Amendment Coalition, said the
9 legislation achieved “anti-transparency language in an anti-transparency way.”

10 “None of this language went through any sort of committee process. No one had the
11 opportunity to discuss the pros and cons” of the proposal, he said, describing it as a
12 “blanket confidentiality provision.” “The health of the dams in this state ... is an issue
13 of intense public concern.”

14 The additional layer of secrecy comes as the state Department of Water Resources
15 already files its emergency plans for Oroville Dam with federal regulators under seal,
16 through a provision that makes secret “critical energy infrastructure information.”

17 The 109-page legislation touches on dozens of state programs. Midway through, it
18 strikes the state’s existing dam-flood “inundation map” requirements and replaces it
19 with new rules requiring emergency action plans. ***Dam owners, for example, would***
20 ***have to conduct annual emergency exercises.***

21 On the legislation’s second-to-last page, it says the required emergency action plans
22 would be kept confidential to “protect public safety.”

23 “An emergency action plan contains a blueprint for emergency response following an
24 incident involving a dam and details various failure scenarios of a dam and its related
25 critical infrastructure,” the bill reads.

26 Oroville Dam’s main flood control spillway cracked in two Feb. 7, leaving an
27 enormous chasm that hindered water releases and eventually triggered the
28 evacuations.

29 Gallagher, the Republican assemblyman who represents the Oroville area, said the
30 crisis showed why safety plans need to be open to the public. He said state dam
31 managers seemed unsure of what to do, and it ended up being the Butte County
32 sheriff who made the “critical decision” to order an evacuation.

1 “So, there’s clearly problems with the emergency action plan at the dam that we
2 need to improve and change,” Gallagher said, “But they’re going shield it from public
3 review and criticism.”²³³

4 **Q: Has government’s efforts to effectively reconcile the threat of historical flood events
5 within the upper and lower regions of the Feather River watershed been successful?
6 Data Indicate DWR, FERC, and Corps of Engineers actions and failure to act, have
7 exacerbated flooding throughout the Feather River Watershed: No!**

8 **A: In fact, the data indicate, DWR, FERC, and Corps of Engineers actions and failure to
9 act, have exacerbated flooding throughout the Feather River Watershed:**

10 **Q: What are DWR’s responsibilities? A: Operate and Maintain SWP, Dam Safety, Flood
11 Protection:**

12
13 *DWR is responsible for managing and protecting California’s water resources and works
14 with others to benefit the State’s people and to protect, restore, and enhance the
15 natural and human environments. **DWR operates and maintains the State Water
16 Project, oversees dam safety, provides flood protection, helps in emergency response,
17 assists regional and local water agencies, promotes water conservation and safety,
18 and plans integrated watershed management – in all to advance water resources
19 sustainability.**²³⁴ (Emphasis added) (Refer to Exhibit *)*

20 **How Reliable is the Data DWR provides to the Corps of Engineers and FERC regarding
21 the operation of Oroville Dam and Reservoir to Validate compliance with federal and
22 state flood control rules and regulation-Data is unreliable and at times based on pure
23 estimates:**

24 **Flood Control has Priority:**

25
26 *Any water impounded in the flood control space as defined by the Flood Control
27 Diagram shall be evacuated as rapidly as can be accomplished without causing flows
28 to exceed the required releases, i.e., from the reservoir shall be restricted insofar as
29 practicable to quantities which in conjunction with uncontrolled runoff downstream
30 of the dam, which will not cause water levels to exceed controlling stages currently
31 in force. Although conflicts may arise with other purposes, such as hydropower, the
32 plan of regulations may require releases to be completely curtailed in the interest of
33 flood control or safety of the project.* (Emphasis added) (Exhibit *)

²³³ [The Sacramento Bee](#) | *California Legislature votes to keep dam-safety plans secret*, June 15, 2017.

²³⁴ DWR, Water News <https://water.ca.gov/news/>

33. Limitations on Storage

Operational limitations on storage in Oroville Reservoir are specified on the flood control diagram which accompanies the draft regulations given in Appendix A of this report.

34. Limitations on Releases

Whenever water is stored in the flood control space it should be released as rapidly as possible in accordance with the flood control diagram, chart A-1. Feather River flows should not exceed 150,000 c.f.s. at Oroville, nor 180,000 c.f.s. and 300,000 c.f.s. above and below the mouth of the Yuba River, respectively. Insofar as possible, the Feather River below Bear River should be limited to 320,000 c.f.s. (Emphasis added)

*Releases from Oroville Dam are not to be increased more than 10,000 c.f.s. nor decreased more than 5,000 c.f.s. in any 2-hour period.*²³⁵(Emphasis added) (Exhibit *)

DWR repeatedly violated limitations on floodwater increases and decreases:

Note: DWR's records also reveal that on a number of occasions, during the January 1997 flood event, it increased flood water releases in 20,000 c.f.s. increments within a 2-hour period. [FN] In addition, under the condition that prevailed during the 1997 flood event, DWR officials exceeded the maximum allowable floodwater release of 150,000 c.f.s. to 163,000 c.f.s. The 150,000 c.f.s. is a level of floodwater release permitted in flood events with conditions consistent with the criteria referred to as a "Standard Project Flood." (Exhibit *)

U.S. Army Corps of Engineers Prescribe Regulations for the Operation of Oroville Dam and Reservoir:

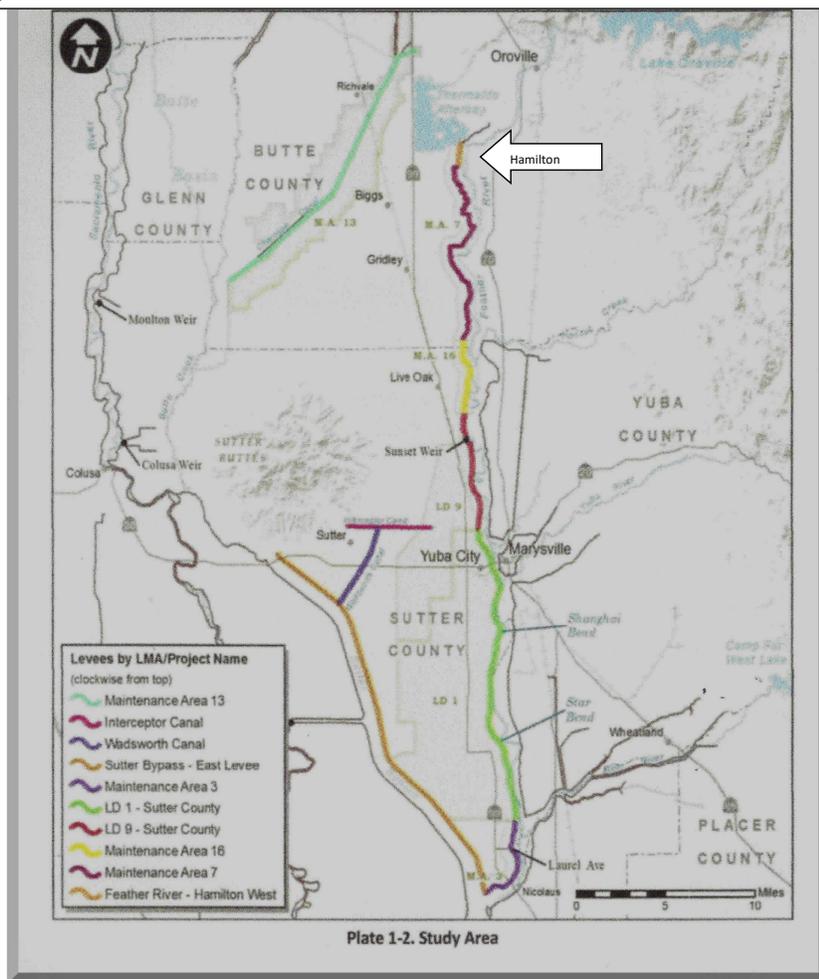
Under authorization of the 1944 Flood Control Act, the Secretary of the Army, acting through the Corps of Engineers, prescribe regulations for the operation of space allocated to flood control in reservoirs constructed wholly or in part with federal funds.

As part of its delegated responsibilities, the Corps of Engineers may advise and assist in determining the actual flood control operations necessary to comply with the prescribed regulations and recommend or approve deviations from the regulations if necessary in times of flood emergency. Thus, the adequacy of the criteria is under

²³⁵ U.S. Army Corps of Engineers, Sacramento District, Oroville Dam and Reservoir, Feather River, California: Report on Reservoir Regulations for Flood Control, August 1970, p. 28.

1 *constant surveillance of the Corps and necessary changes can be proposed by either the*
 2 *Corps or the operating agency.*²³⁶ (Refer to Exhibit *)
 3

Source of Map: U.S. Army Corps of Engineers, Sacramento District, Planning Division, Sutter Basin Pilot Feasibility Study, Environmental Impact Report/Supplemental Environmental Impact Statement, Final Report, October 2013.



²³⁶ Statement of Sacramento District, Corps of Engineers, Fact Finding Hearing, Senate Committee on Water Resources, Sacramento, CA, 18 March 1971, pp. 1 and 5.

1 **Q: Has Oroville Dam Experienced a Probable Maximum Rain Flood Established by the**
2 **Army Corps of Engineers? No!**
3

4 **A probable maximum rain flood on the Feather River above Oroville Dam, developed**
5 **for spillway design purposes, has a peak flow of 720,000 c.f.s. and a 72-hour runoff**
6 **value of 2,510,000 acre-feet, and results from a 72-hour storm depositing 21.1 inches**
7 **of precipitation on the drainage area above Oroville Reservoir.²³⁷ [Emphasis added]**
8

9 **Note:** When such a rain flood occurs, floodwater releases from Oroville Reservoir, through the Flood
10 Control Spillway Outlet, is designed to release up to 250,000 c.f.s.! This volume of floodwater
11 releases would lead to a catastrophic disaster that the experts claim would be the worst catastrophe
12 in U.S. History! As documented in this report, floodwater release from Oroville Reservoir at 150,000
13 c.f.s. resulted in billions of dollars of property damages and loss of lives. A floodwater release of
14 250,000 c.f.s. would cause widespread levee failures all along the Feather River, flood flows of this
15 velocity, in combination with floodwater releases from New Bullards Bar Dam, the American River
16 and **Sacramento River would overwhelm the carrying capacity of the Sacramento River Flood**
17 **Control System, which has a capacity to conduct a flow of 590,000 c.f.s.** (Emphasis added) (Exhibit
18 *)
19

20 Therefore, unless fundamental changes are made, by the responsible federal and state entities,
21 forthwith, the aftermath of such a catastrophic event, will destroy the billions of dollars in
22 infrastructure, private property, wipeout the fragile Sacramento-San Joaquin Delta Levee system,
23 cutoff state, and federal water deliveries, to central and Southern California, and the shipping
24 industry clear out to the Golden Gate Bridge.
25

26 **Without the federal, state, and local reservoirs, the potential flood flows in the lower**
27 **Sacramento River system could have exceeded a million cubic feet per second, in a**
28 **system designed for 590,000 [cubic feet per second].** (Emphasis added) (Exhibit *)
29

30 *At the flood peak in February 20, the Sacramento River system moved a record 650,000*
31 *cubic feet of water per second past Sacramento, a flow that would equal the capacity*
32 *of Lake Shasta in four days of Folsom Lake in less than 20 hours. ...Record flows were*
33 *measured on the Russian, Napa, Cosumnes and Mokelumne rivers. **On the Feather***
34 ***River on the night of February 17 [1986] were a record of 265,000 cfs, considerably***
35 ***higher than the 1955 Feather River flows that devastated Marysville before Oroville***
36 ***Dam was built. Oroville releases went as high as 150,000 cfs, breaking the previous***
37 ***record release of 70,000 cfs but still within the design limits of the Oroville system.²³⁸***

²³⁷ U.S. Army Corps of Engineers, Sacramento District, Oroville Dam and Reservoir, Feather River, California: Report on Reservoir Regulations for Flood Control, August 1970, p. 13.

²³⁸ California Department of Water Resources, *The Flood of February 1986*, undated.

1 **Q: Has Flood Protections Funded by the Taxpayers and Property Owners Cost Effective?**
2 **Apparently Not!**

3
4 A: Damages attributed to those floods were estimated to be in excess of two-billion dollars; includes
5 interest payments, paid by the taxpayers from the U.S. Treasury and Californians who are required
6 to repay the cost for litigation and damages from the State's General Fund, or flood lawsuits, wherein
7 DWR was held at fault. Neither DWR nor the State Water Project Contractors pay for these costs,
8 although they are the major beneficiaries when DWR official unlawfully store floodwater in the
9 Designated Flood Storage Space, at Oroville Reservoir, in excess of what the regulations allow.
10 However, those figures do not include the billions-of-dollars in flood damages attributable to the
11 February 2017 flood event, e.g., cost just to repair the improperly constructed and negligent
12 maintenance of the partial collapse of the SWP's Oroville Dam and Reservoir's Gated Flood Control
13 Spillway Outlet Chute is \$1.1 billion, which does not include interest payments. As of January 31,
14 2021, FEMA has awarded the State a total of [\\$530 million](#)²³⁹ for the repairs of the improperly
15 maintained partial collapse of the Spillway.

16 **Q: Was DWR and Other State and Federal Entities Responsible for the Collapse of the**
17 **Oroville Dam Spillway? Yes!**

18
19 **A: Documentation Supports Assertions Design, Construction, Deferred Maintenance and**
20 **Operation of the Oroville Flood Control Spillway Outlet Chute a Dam Disaster Waiting to**
21 **Happen!**

22
23 <https://www.usdams.org/our-news/oroville-dam-spillway-incident-independent-forensic-team-final-report/>
24 <https://www.usdams.org/our-news/oroville-dam-spillway-incident-independent-forensic-team-final-report/>
25 Independent Forensic Team Report Final, 5 January 2018
26 <https://www.usdams.org/our-news/oroville-dam-spillway-incident-independent-forensic-team-final-report/>

27 **(FERC) required the California DWR to engage an Independent Forensic Team (IFT)**
28 **Report Regarding Causation of Oroville Dam Flood Control Spillway Failure:**

29
30 *The Oroville Dam spillway incident was caused by a **long-term systemic failure** of*
31 *the California Department of Water Resources (DWR), regulatory, and general*
32 *industry practices to recognize and address inherent spillway design and*
33 *construction weaknesses, poor bedrock quality, and deteriorated service spillway*
34 *chute conditions. The incident cannot reasonably be "blamed" mainly on any one*
35 *individual, group, or organization.* [Emphasis added]

²³⁹ Sierra Sun Times <https://goldrushcam.com/sierrasuntimes/index.php/news/local-news/27871-congressman-kevin-mccarthy-commends-fema-making-307-8m-award-to-the-state-of-california-for-repairs-at-oroville-dam>

1 ***During service spillway operation on February 7, 2017, water injection through both***
2 ***cracks and joints in the chute slab resulted in uplift forces beneath the slab that***
3 ***exceeded the uplift capacity and structural strength of the slab, at a location along***
4 ***the steep section of the chute. The uplifted slab section exposed the underlying poor***
5 ***quality foundation rock at that location to unexpected severe erosion, resulting in***
6 ***removal of additional slab sections and more erosion. [Emphasis added]***

7
8 ***Responding to the damage to the service spillway chute necessitated difficult risk***
9 ***tradeoffs while the lake continued to rise. The resulting decisions, made without a***
10 ***full understanding of relative uncertainties and consequences, allowed the reservoir***
11 ***level to rise above the emergency spillway weir for the first time in the project's***
12 ***history, leading to severe and rapid erosion downstream of the weir and,***
13 ***ultimately, the evacuation order.²⁴⁰ [Emphasis added]***

14 1.0 INTRODUCTION

15 1.1 Team Formation and Authorization:

16
17 *After the Oroville Dam spillway incident in February 2017, the Federal Energy*
18 *Regulatory Commission (FERC) required the California Department of Water Resources*
19 *(DWR) to engage an Independent Forensic Team (IFT) to develop findings and opinions*
20 *on the causes of the incident. [Emphasis added]*

21 Purpose of the Investigation:

22
23 *Before beginning its work, the IFT developed the following statement of purpose for the*
24 *investigation:*

25
26 *To complete a thorough review of available information to develop findings and*
27 *opinions on the chain of conditions, actions, and inactions that caused the damage to*
28 *the service spillway and emergency spillway, and why opportunities for intervention in*
29 *the chain of conditions, actions, or inactions may not have been realized. Evaluations of*
30 *actions, inactions, and decisions for the various stages of the project (pre-design,*
31 *design, construction, operations, and maintenance) will consider the states of practice*
32 *applicable to the various time periods involved.*

240 Independent Forensic Team Report Final, *Summary*, 5 January 2018, p. S-1
<https://www.ussdams.org/our-news/oroville-dam-spillway-incident-independent-forensic-team-final-report/>

2.0 SCOPE AND METHODOLOGY OF THE INVESTIGATION

2.1 Focus and Limitations of the Investigation

The IFT's efforts were focused on the Oroville Dam service spillway chute and the emergency spillway, both of which suffered damage in the February 2017 incident. **The IFT did not delve into issues related to the embankment dam, the service spillway headgate structure, or any other components of the Oroville facility.** As the IFT reviewed the FERC-mandated Part 12D inspection reports and other documents, it noted that there have been some issues of concern raised related to the embankment dam and the service spillway headgate structure, but those issues are beyond the scope of the IFT's mission. (Emphasis added)

Independent Forensic Team's investigation confined to activation of emergency spillway – detailed review of the emergency management process beyond the scope of IFT's mission:

The IFT considered the emergency management of the incident only to the degree that it affected the activation of the emergency spillway. Detailed review of the emergency management process was again beyond the scope of the IFT's mission. The IFT based the opinions and findings presented in this report in large part on information that was made available to the IFT during the investigation. As noted in Section 2.2 and Appendix J, the IFT attempted to cast a broad net to obtain pertinent information, but the amount of information available for Oroville Dam is very large, and the IFT cannot be certain that all pertinent information has been compiled.²⁴¹ (Emphasis added) [Exhibit*IFT, p. S-1]

About the Oroville Dam Safety Comprehensive Needs Assessment (CNA):

The Oroville Dam Safety Comprehensive Needs Assessment (CNA) has identified priorities and appropriate solutions to bolster the integrity and resiliency of the Oroville Dam complex to ensure public safety. The CNA considered changes to the Dam and its existing appurtenances, additional appurtenant structures, flood control operations, and other dam safety measures.²⁴² [Visit the Oroville Dam Safety CNA web page for information and to access the CNA Summary document.](#) [Exhibit *]

²⁴¹ Independent Forensic Team Report Final, **Summary**, 5 January 2018, pages S-1, S-2 and S-3. <https://www.ussdams.org/our-news/oroville-dam-spillway-incident-independent-forensic-team-final-report/>

²⁴² [Visit the Oroville Dam Safety CNA web page for information and to access the CNA Summary document.](#)

1 [Oroville Dam Safety Comprehensive Needs Assessment](https://water.ca.gov/Programs/State-Water-Project/...)

2 <https://water.ca.gov/Programs/State-Water-Project/...>

3
4 *In January 2018, DWR initiated the Oroville Dam Safety Comprehensive Needs*
5 *Assessment (CNA) and the report published in November 2020. The CNA process was*
6 *led by DWR as the owner of the Dam. As part of the process, an Independent Review*
7 *Board (IRB) of dam safety experts conducted independent technical reviews of key*
8 *deliverables and documented ...*

9 [DWR Releases Oroville Dam Comprehensive Needs Assessment ...](https://water.ca.gov/News/News-Releases/2020/Nov...)

10 <https://water.ca.gov/News/News-Releases/2020/Nov...>

11
12 *Nov 09, 2020 · The summary report is available online on the Oroville Dam Safety*
13 *Comprehensive Needs Assessment website. DWR will continue to work with the*
14 *Oroville Citizens Advisory Commission to seek input and coordinate future Oroville*
15 *Dam activities related to construction, operations, maintenance, flood management,*
16 *and public safety .²⁴³*

17 [\[PDF\] Oroville Dam Safety Comprehensive Needs Assessment \(CNA\):](#)

18
19 *Final Product of CNA. A report documenting an Existing Conditions Assessment that*
20 *identifies current Dam Safety risks at the Oroville Dam complex, opportunities to*
21 *reduce risk, and a set of Alternative Plans that DWR could consider for future*
22 *implementation for risk reduction.²⁴⁴*

23 **DWR officials' motive for negating state and federal flood control mandates enables**
24 **them release water slowly to generate more electrical power and increase water supply**
25 **to meet its overcommitted SWP Contractors entitlements:**

26
27 **Note:** DWR's actions are extremely beneficial to the Contractors, as it reduces costs, while increasing
28 water supply, sale of surplus power; albeit DWR's actions are at the expense and to the demise of
29 downstream property owners.

30
31 Public records prove that DWR's unauthorized storage of flood waters in the "Designated Flood
32 Storage Space" at the SWP Oroville facilities during the 1980, 1986, and 1997 flood events
33 necessitated exceedances of bi-hourly 10,000 c.f.s. release limitations and exceeded the 150,000

²⁴³ <https://water.ca.gov/News/News-Releases/2020/Nov-20/Oroville-CNA-Assessment-Summary-Report>

²⁴⁴ https://cwc.ca.gov/-/media/CWC-website/Files/Documents/2019/09_September/September2019_Item_11_Attach_2_CNAPowerPoint.pdf?la=en&hash=7B76F31E048D98994E08FDF3B9231A4099FFF5A7

1 c.f.s floodwater release limitations. Failure to inspect downstream levees was a major factor for
2 damages sustained to private property, levees, and loss of lives downstream of Oroville Dam.²⁴⁵

3
4 The amount of water DWR can commit to provide SWP contractors is dependent on a number of
5 factors. For example, in wet-years when the state receives above-normal rainfall and there are
6 surplus flows in the Delta, DWR can provide SWP contractors with the following amount of water:

7
8 ***“In 75 percent of the years, annual SWP water delivery is estimated to be at or above
9 2.14 million acre-feet (m.a.f.) per year (52 percent of 4.1 m.a.f.).²⁴⁶***

10
11 **In below normal and dry water years, it provides less water. Essentially, DWR committed to deliver
12 4.1 m.a.f. to SWP contractors, which is more water than the SWP can provide.**

13 **Q: How much water does the Feather River provide the SWP? Majority is from Feather
14 River Watershed.**

15
16 ***A: The majority of the water provided to SWP contractors originates from the Feather
17 River watershed. Most of the water exported by the SWP depends on water rights
18 derived from Lake Oroville storage; however, the SWP can also divert water
19 considered in excess in the Delta.***

20
21 ***The 2009 State Water Project (SWP) Delivery Reliability Report is a bi-annual report
22 on the current and future for SWP water supply conditions, if no significant
23 improvements are made to convey water past the Delta or to store the more-variable
24 run-off that is expected with climate change.***

25
26 ***The report shows a continuing erosion of the ability of the SWP to deliver water.²⁴⁷***

27 **How much do the State Water Project Contractors pay for the water per se from Feather
28 River - No charge for water!**

29 **Does the State of California make money off of selling water out of Oroville Dam? No!**

30

²⁴⁵ Department of Water Resources, Oroville Reservoir Bi-Hourly Data Sheets, February 1986, January 1997, February 2017.

²⁴⁶ DWR, Bulletin 132-12, *Management of the California State Water Project, Chapter 7: Water Supply Development & Reliability*, August 2014, p. 121.

²⁴⁷ California Department of Water Resources, *State Water Project Delivery Reliability Report*, Draft 2009, p. 4.

1 **Does the State of California make money off of selling water from the State Water**
 2 **Project? No!**²⁴⁸ (Emphasis added)

3 **Q: What level of annual income does water from the SWP generate?**

4
 5 **The State Water Project (SWP) is the nation's largest state-built water and power**
 6 **development conveyance system.** *The primary purpose of the SWP is to provide a*
 7 *water supply and delivery system to distribute water across California. The SWP*
 8 *consists of 34 reservoirs and lakes, 701 miles of aqueducts, 5 power plants, and 24*
 9 *pumping plants. The SWP delivers water to 29 urban and agricultural water suppliers*
 10 *in California, providing water to over 25 million California residents and 750,000 acres*
 11 *of irrigated farmland, directly supporting two-thirds of California's \$2.8 trillion*
 12 *economy.*²⁴⁹

13 **Q: Do DWR and SWP contractors benefit from the taxpayer funded Project levees? Yes!**

14
 15 **A: Yes! The SWP contractors concede that the Feather River serves as a conveyance**
 16 **system to move water from Oroville Reservoir to the SWP Delta pumps, where it is**
 17 **conveyed via the SWP California Aqueduct.**²⁵⁰

18
 19 **De Cuir & Somach, Attorneys for Sutter County letter to the Secretary of the Army for**
 20 **Civil Works,, Washington, D.C. The Pentagon, Re: Sutter County – Flood Protection:**

21
 22 *As Mr. Somach set forth, Sutter County is concerned about the Corps of Engineers' (COE)*
 23 *completion of all levee related repair work prior to the 1997-1998 winter season in order to*
 24 *prevent a repeat of last winter's flooding within Sutter County and to protect the public*
 25 *health and safety. While Sutter County will continue to be vigilant in its review of all of the*
 26 *COE's actions in this regard, this constitutes Sutter County's notice to the COE of its intent to*
 27 *seek appropriate re-operation of Oroville Dam and Reservoir ("Oroville Reservoir") flood*
 28 *control operations, should COE's downstream levee repair effort prove to be untimely or*
 29 *otherwise inadequate.*

²⁴⁸ In the Superior Court of the State of California, in and for the County of Yuba, Plaintiffs: **Kevin McMahan, Staci Herman, Ernest I. Young, Gale M. Young, Jennifer D. Young, Patricia A. Young vs. Defendants; State of California**, Reclamation District 784, and Does 1 through 10,000. And Consolidated Class Action. Case No. CV 061561 – CV 062872, Deposition of Larry Keith Gage, Thursday, June 27, 2002, Volume I, Reported by: Sheryl Dirks, CSR No. 3513.

²⁴⁹ Coachella Valley Water District <https://cvwd.org/170/Californias-State-Water-Project>

²⁵⁰ State Water Project Contractor, Coachella Valley Water District <https://cvwd.org/170/Californias-State-Water-Project>

1 Where changed conditions affect flood control (and navigation), COE is obligated to revise
2 the Oroville Reservoir water control plan²⁵¹ and all associated documents. (Title 33 C>F>R>,
3 part 208, section 11 (d)(10).) The downstream channels currently have a reduced capacity as
4 a result of damages caused during last winter's flooding, as well as other related problems.
5 Unless they are promptly repaired, these changed conditions may require revisions to the
6 Oroville Reservoir water control plan and, specifically, may compel revisions to Oroville
7 Reservoir flood control operations.

8
9 Furthermore, the current flood control operation is suspect even absent the levee damage.
10 When Oroville Reservoir water control plan was devised, COE made certain assumptions that
11 have since proved to be erroneous. Consequently, reoperation of Oroville Reservoir may be
12 required irrespective of current levee conditions. For example, the flood control plan was
13 designed assuming construction of the Marysville Dam to control the Yuba River, a major
14 tributary to the Feather river. (Oroville flood control plan, (30 (1)...). Marysville Dam,
15 however, was never constructed. Thus, COE should already revisited the issue of flood control
16 operations of Oroville Reservoir to compensate for the absence of Marysville Dam.²⁵²

17 **De Cuir & Somach, Attorneys for Sutter County letter to David Kennedy, Director,**
18 **Department of Water Resources, Re: Sutter County – Flood Protection:**

19
20 I [Stuart L. Somach] represent Sutter County as Special Legal Counsel. I know that you are
21 aware of the flood-related problems that exist within Sutter County and, as a consequence,
22 will not belabor that point here. **I am not certain, however, that you fully understand the**
23 **dilemma that Sutter County currently faces. I have today forwarded the enclosed letter to**
24 **the Corps of Engineers ("COE"). The letter is fairly frank, and I can assure you that Sutter**
25 **County is very serious about exhausting every avenue available to obtain the level of relief**
26 **to which it is entitled.** Your continued assistance in moving the COE toward prompt and
27 responsible action would, of course, be welcome. (Emphasis added)

28
29 **I am concerned also about actions that are more directly-related to the Department of**
30 **Water Resources ("DWR") obligations. In the absence of COE relief, we believe that DWR is**
31 **obligated to re-operate Oroville Reservoir in a manner that will relieve the pressure on the**
32 **various levees that currently protect Sutter County. Assuming no action by the COE, this**
33 **letter constitutes Sutter County's notice to DWR that it expects this type of reoperation.**
34 We would be happy to meet with DWR to discuss how this can be accomplished. (we believe
35 that the United States Bureau of Reclamation ("USBR") is similarly obligated with respect to
36 Shasta Dam, and I have on this date forwarded a letter to Roger Patterson notifying him of

²⁵¹ The Oroville Reservoir flood control plan is formally titled, the *Oroville Dam and Reservoir, Feather River, California, Report on Reservoir regulations for Flood Control* (August 1970), including attachments.

²⁵² De Cuir & Somach, Attorneys at Law, letter sent via Facsimile and Federal Express to the Honorable Michael Davis, Deputy Assistant Secretary of the Army for Civil Works, Department of the Army, The Pentagon, Washington, D.C. *Re: Sutter County – Flood Protection*, September 12, 1997.

1 *our intention to ensure re-operation of Shasta Dam so that facility can also provide the level*
2 *of protection to which Sutter County is entitled.)*²⁵³ (Emphasis added)

3 **De Cuir & Somach, Attorneys for Sutter County follow up letter to David Kennedy,**
4 **Director, Department of Water Resources, Re: Sutter County – Flood Protection:**

5
6 This follows Stuart Somach’s August 28, 1997, letter regarding flood-related problems that currently
7 exist within Sutter County. Enclosed please find a copy of our most recent letter to the Corps of Engineers
8 (“COE”) regarding this matter.

9 Sutter County continues to be concerned about the COE’s failure to complete, and in most cases
10 begin, critical levee repair work. While Sutter County would like to avoid compelling revision of the Oroville
11 Dam and Reservoir (“Oroville Reservoir”) flood control operations and to avoid impact on water supply,
12 COE’s failure to act promptly and adequately will soon leave Sutter County with no other option. Your
13 continued assistance in moving COE toward prompt and responsible action is appreciated.

14 Please note as well that if flood control emergency occur again this winter, the Department of
15 Water Resources may need to make flood control operational decisions without COE’s input. **This would**
16 **include departing from the current inadequate, Oroville Reservoir flood control plan. (Title 33 C.F.R., part**
17 **208, section 11(d)(9)(vii))** Coe’s proper attention to Sutter County’s concerns, however, would significantly
18 reduce that possibility.²⁵⁴

19 **Yuba County Water Agency expressed concerns to Corps of Engineers how floodwater**
20 **releases were held back from New Bullards Bar Reservoir, not coordinated with**
21 **floodwater releases from Oroville Reservoir:**

22
23 *My Board of Directors is very concerned with the methods by which releases from*
24 *our New Bullards Bar Reservoir were handled. Therefore, they have requested that I*
25 *[Arthur N. Aseltine, P.E., Administrator] inquire into the reasons for not releasing more*
26 *water from the New Bullards Bar Reservoir sooner than you actually did.*

27 *We realize that in the past you normally made releases from Oroville Reservoir first*
28 *and then release from Bullards after the runoff from Oroville begins to slack off.*

29 *However, in the case of the heavy rain period of February 16–19, 1986 it has been*
30 *determined that:*

- 31
32 7. *At 0400 hours on February 17, 1986 Bullards’ water level reached its maximum winter-*
33 *time elevation of 1918 feet – 3500 cfs was being released through the powerhouse –*
34 *Inflows were approximately 35,000 cfs.*
35 8. *By 1800 hours on February 17, inflows had increased to approximately 83,500 cfs.*

²⁵³ Stuart L. Somach, Special Legal Counsel, County of Sutter, De Cuir & Somach, Attorney at Law, letter to David Kennedy, Director, CA Department of water Resources **Re: Sutter County – Flood Protection, Hand Delivered**, August 28, 1997.

²⁵⁴ Donald B. Gilbert, Attorney, De Cuir & Somach, Attorney at Law, letter to David Kennedy, Director, CA Department of water Resources **Re: Sutter County – Flood Protection, Via Hand Delivery**, September 12, 1997.

1 9. It wasn't until 1840 hours that you ordered us to release 5,000 cfs per hour until we
2 reached a release of 20,000 cfs.

3 10. By 2200 hours inflow reached approximately 93,300 cfs with a release of 10,000 cfs +
4 3,500 cfs.

5 11. The maximum water level in Bullards reached 1955.56, some 0.44 feet less than the
6 Gross Pool elevation.

7 12. It is our understanding that the peak flow from Oroville releases from Oroville would
8 not have arrived until at the Marysville/Yuba City area until around noon on February
9 18, 1986.

10 Therefore, was there not a 24-hour period between 0400 hours on February 17
11 and 0400 hours on February 18 that additional water could have been releases from
12 Bullards? In particular could not releases have been made as soon as 0400 hours on
13 February 17, and in a greater quantity that actually called for, and then reduced to
14 accommodate the Oroville release's peak as it approached Marysville/Yuba City area?

15 According to your spillway rating curve in 1918, we could have been releasing as
16 high as 15,000 cfs and easily could have continued to increase spills at 5,000 cfs per
17 hour.²⁵⁵ (Exhibit *)

18 **Yuba County Water Agency Met with Corps of Engineers to Discuss Why it Was Ordered**
19 **to Hold Back on Making Floodwater Releases from New Bullards Bar Reservoir that**
20 **Would have Reduced Exceeding Designed Flood Flow River Stages at the Confluence of**
21 **the Feather and Yuba Rivers:**
22

23 The Board of Directors of the Yuba County Water Agency would like a member
24 if your Reservoir Control section to be present at their next Board meeting on Tuesday,
25 April 15, 1986 at 9:00 a.m. to be held in the Supervisors Chambers, Yuba County
26 Courthouse, 215 Fifth Street, Marysville, CA.

27
28 The Board would like to discuss the overall picture of the operation of the
29 Feather/Sacramento system.²⁵⁶ (Exhibit *)

30 **Red Tape Abatement (RTA) Filed a Formal Freedom of Information Act (FOIA) Request**
31 **with the Corps of Engineers to Obtain Public Records Pertaining to the February 1986**
32 **Flood Basis for Corps Order for the YCWA to Hold Back on Floodwater Releases from**
33 **New Bullards Bar Reservoir:**
34

35 Reference is made to your Freedom of Information Act request concerning the
36 above projects, which was received by this office on March 24, 1987. There is some

²⁵⁵ Arthur N. Aseltine, P.E., Administrator, Yuba County Water Agency, letter to District Engineer, Corps of Engineers, Sacramento District, February 25, 1986.

²⁵⁶ Arthur N. Aseltine, P.E., Administrator, Yuba County Water Agency, letter to District Engineer, Corps of Engineers, Sacramento District, Re: My letter of February 25, 1986.

1 question regarding the reliability of certain materials contained in the correspondence
2 file for the New Bullards Bar Reservoir. As such, your request has been forwarded to a
3 higher authority for action, as required by the Department of Army regulations.
4

5 With regard to the information that is being denied releasability, you will receive
6 a response from the U.S. Army Corps of Engineers Chief Counsel's office in the near
7 future. Any further inquiry involving this matter should be directed to: Commander,
8 HQUSACE, ATTN; DAEN-CCK, FOIA, Martin R. Cohen, Office of the Chief Counsel,
9 Washington, D.C. 20314-1000.²⁵⁷ (Exhibit *)

10 **RTA Filed an Appeal-Response from Office of Chief Counsel, U.S. Army Corps Denied Part**
11 **of FOIA Request, Release of Certain Public Records would have a "Chilling Effect" on the**
12 **Study and Review Process:**
13

14 This letter concerns your Freedom of information Act (FOIA) request for
15 documents concerning the New Bullards Bar Dam and Reservoir and the Narrows
16 Dam on the Yuba River. I [Martin R. Cohen, Assistant Chief Counsel] understand the
17 Sacramento District, Corps of Engineers, has offered to make most of the documents
18 available to you for inspection. The District has forwarded your request and several
19 other documents (see attached list) referenced by your request to me for a release
20 determination.

21 It is the policy of the Department of the Army to release the maximum amount
22 of information under the Freedom of Information Act (FOIA) unless the information is
23 exempt from release and a significant reason exists for non-disclosure.

24 I [Martin R. Cohen, Assistant Chief Counsel] have reviewed the documents
25 forwarded by the District and decided to withhold them under exemption 5 of FOIA, 5
26 U.S.C. s.552(b) (5). This provision governs the withholding of information which is part
27 of the agency's predecisional deliberative decisional-making process, and which is
28 "normally privileged in the civil discovery context." *N.L.R.B. v. Sears, Roebuck & Co.*,
29 421 U.S. at 151. See also *Coastal States Gas Corp. v. Doe*, 617 F. 2d 854, 866,132, 149
30 (1975). The purpose of the deliberative process privilege is to "prevent injury to the
31 quality of the agency decisions" by encouraging honest and frank discussions within
32 the agency *N.R.L.B. v. Sears*, 421 U.S.at 866, D.C. Cir. 1980). Finally, the exemption is
33 intended to protect against public confusion that might result from disclosure of
34 reason and rationale that were not in fact ultimately the grounds for an agency's
35 action, *Jordan v. Department of Justice*, 591 F. 2d 753, 772-773 (D.C. Cir. 1979).

²⁵⁷ Annette B. Kuz, Freedom of Information Act Officer, Department of the Army, Sacramento District, Corps of Engineers, Office of the Chief Counsel, Initial Response to RTA's, Patrick Porgans, March 24, 1987, FOIA Request: *Subject Freedom of Information Act Request; New Bullards Bar Dam and Reservoir; and Narrows Dam on the Yuba River*, April 6, 1987.

1 *The documents you seek are predecisional intra-agency memoranda, letters,*
2 *and file notes containing internal advice, opinions, and recommendations. In my*
3 *opinion, **release of the documents would have a chilling effect on the study and***
4 ***review process by discouraging candid comments by Corps employees.***²⁵⁸ (Emphasis
5 added) (Exhibit *)

6 **Some of the Documents Office of the Chief Counsel Refused to Release: Safety Inspection,**
7 **Meeting with Yuba County Water Agency; Marysville Lake Frequency Curves; ; Releases,**
8 **Complete List Attached:**
9 (Exhibit *)

10 **On the night of February 17, 1986, a flow of 265,000 cfs was recorded on the Feather**
11 **River, above the Dam, higher than flows that devastated Marysville in 1955:**
12

13 *On the Feather River on the night of February 17 were a record of 265,000 cfs,*
14 *considerably higher than the 1955 Feather River flows that devastated Marysville*
15 *before Oroville Dam was built. Oroville releases went as high as 150,000 cfs, breaking*
16 *the previous record release of 70,000 cfs but still within the design limits of the*
17 *Oroville system.*²⁵⁹ (Emphasis added) (Exhibit *)

18 **DWR Officials Continue to Make Fatal Mistakes and are not being Held Accountable:**
19

20 **Note:** During a joint presentation to the legislature, Director Kennedy, and Corps of
21 Engineers personnel informed members of the Committees (by oral and written testimony)
22 that the maximum peak flow in the Feather River, below Yuba River, was 318,000 cfs, which
23 exceeded the channel design capacity.²⁶⁰

24 **Note:** Suffice it to say, director Kennedy was apparently playing a numbers game, which
25 could have misled the public into believing that the DWR performed some sort of
26 miraculous feat, by containing floodwater releases from Oroville Reservoir to 160,000 cfs;
27 however, the maximum inflow into the reservoir was 302,000 cfs, which did not meet the
28 Standard Project Flood criteria.
29

²⁵⁸ Martin R. Cohen, Assistant Chief Counsel, Department of the Army, Office of the Chief Counsel, Washington, D.C. Response to Patrick Porgans, Red Tape Abatement's FOIA Appeal Request, Sacramento District, Corps of Engineers, Office of the Chief Counsel, March 24, 1987, FOIA Request: *Subject Freedom of Information Act Request; New Bullards Bar Dam and Reservoir; and Narrows Dam on the Yuba River*, April 15, 1987.

²⁵⁹ California Department of Water Resources, *The Flood of February 1986*, undated.

²⁶⁰ U.S. Army Corps of Engineers, Sacramento District, South Pacific Division, *The Floods of 1997, Reservoir Operations*, January 1997.

1 **Feather River flows should not exceed 150,000 c.f.s. at Oroville, nor 180,000 c.f.s. and**
2 **300,000 c.f.s. above and below the mouth of Yuba River, respectively.**²⁶¹ (Emphasis
3 added) (Exhibit *)
4

5 However, be assured, according to the flow numbers, that was not the case. The flood
6 control operational criteria in force for the Oroville facilities, is designed to handle inflow
7 into the reservoir of 1.52 million acre-feet of water with a peak inflow of 440,000 cfs, which
8 did not occur, and would have restricted floodwater releases to a maximum of 150,000 cfs!
9

10 **Note:** Under the prevailing conditions, which occurred during the January 1997 floods, there was
11 no legitimate reason to justify DWR's floodwater releases from Oroville Reservoir in excess of
12 150,000 cfs. Here again, DWR officials panicked after realizing that it held back too much water,
13 failing to make larger increments of floodwater releases early on, in conflict with the regulations
14 contained in the Flood Control Manual. Unfortunately, DWR's decision, resulted in the loss of lives
15 and more than a billion dollars in downstream flood damages. Albeit the record indicates that DWR
16 is not being held accountable for its actions, DWR Director Kennedy's numbers do not hold water.
17 He, along with other DWR personnel, made a series of fatal mistakes, and DWR needs to
18 acknowledge and accept those facts, which are confirmed by DWR's data!

19 **Corps of Engineers Testify the job of making proper releases from those reservoirs has**
20 **been compared to juggling eggs while riding a bicycle across a tight wire. Releases from**
21 **each reservoir must be carefully program to avoid downstream damage:**
22

23 *In a flood control system consisting of hundreds of miles of levees and channels fed by*
24 *numerous streams, some uncontrolled and other controlled by reservoirs, **the job of***
25 ***making proper releases from those reservoirs has been compared to juggling eggs***
26 ***while riding a bicycle across a tight wire. Releases from each reservoir must be***
27 ***carefully program to avoid downstream damage along the river or streams primarily***
28 ***controlled, and individual reservoir releases must be adjusted so that they combine***
29 ***with other releases and with any uncontrolled inflows so as to prevent or minimized***
30 ***damaging flows at any point in the channel system further downstream. ... Moreover,***
31 ***in coordinated flood control operations minutes often count, and a few hours may***
32 ***mean a difference between safety and disaster. If too much water is sent on its way***
33 ***it cannot be called back and it may be too late to make compensating corrections;***
34 ***and the result, transmitted down the entire system, could be very costly.***²⁶² (Emphasis
35 added) (Exhibit *)

²⁶¹ U.S. Army Corps of Engineers, Sacramento District, Oroville Dam and Reservoir, Feather River, California: Report on Reservoir Regulations for Flood Control, August 1970, p. 28.

²⁶² Statement of Sacramento District, Corps of Engineers, Fact Finding Hearing California Legislature, Senate Committee on Water Resources, Sacramento, CA 18 March 1971, pp. 15 and 16.

1

2 **Note:** Public records indicate that government officials did not comply with state and federal flood
3 control regulations, the record shows they failed to stagger floodwater releases from Oroville
4 Reservoir and New Bullards Bar Reservoir, which resulted in exceeding downstream channel
5 capacities on both the Feather and Yuba Rivers.

6 **Q: Has the Department of Water Resources insured proper maintenance of the Feather**
7 **River channel and levee systems downstream from Oroville Dam and to protect**
8 **critically listed salmon habitat. No!**

9 **DWR failed to Properly Inspect Downstream Levees to ensure that they were being maintained.**

10 *History of the Paterno Case. In 1904, Yuba County constructed a levee (the Linda levee)*
11 *mostly out of hydraulic mining debris. The levee was incorporated into the Sacramento*
12 *River Flood Control Project (SRFCP), a federal valley-wide flood control project. In*
13 *1953, the SRFCP, including the Linda levee, was turned over to the state, under the*
14 *jurisdiction of the state Reclamation Board. The agreement that transferred the*
15 *system to the state stipulated that the state would be responsible for operation and*
16 *maintenance of the system and would hold the federal government harmless from*
17 *any future liability claims. The state then turned over the levees (including the Linda*
18 *levee) to the local reclamation districts, with the agreement that the local*
19 *reclamation districts would maintain and operate the levees, but that the state would*
20 *remain responsible overall for the project.* [Emphasis added]

21 *The Paterno lawsuit stems from a flood on the Yuba River in 1986. In February of that*
22 *year, a 150-foot gap opened in the levee, allowing approximately 20,000-acre feet of*
23 *water to flood 7,000 acres of land in the communities of Linda and Olivehurst, in Yuba*
24 *County. As a result, hundreds of homes and a shopping center in the area were flooded.*

25 *Subsequently, approximately 2,600 affected parties filed suit against the local*
26 *reclamation district and the state. In 2001, a trial court ruled in favor of the state.*
27 *However, in 2003 the California Court of Appeal ruled that the state was liable (and*
28 *that the local reclamation district was not) and sent the case back to the trial court*
29 *to award damages. The state appealed to the California Supreme Court which*
30 *refused to hear the case.*²⁶³ (Emphasis added) (Exhibit No. *)

²⁶³ Legislative Analyst's Office, State of California, Analysis of the 2005-2006 Budget Bill, *Financing Flood Lawsuit Settlement with a Judgment Bond*, February 2005.

[Http://www.lao.ca.gov/analysis_2005/resources/res_13_3860_an105.htm](http://www.lao.ca.gov/analysis_2005/resources/res_13_3860_an105.htm)

https://lao.ca.gov/analysis_2005/resources/res_13_3860_an105.htm#_Toc95975089

1 **DWR Repeatedly Ignored or Downplayed Requests by Agencies to Remove Gravel and**
2 **Debris that Obstruct Flood Flows in the Feather River Channel and Exacerbate Levee**
3 **Damages and Endangered Species:**
4

5 **Note:** For decades, federal and state agencies requested the DWR to remove sand and aggregate
6 materials that have been displaced as a result of the geomorphologic changes, that occur since
7 completion of the Oroville Dam, which have exacerbated flooding damages to public and private
8 lands as well as destroying critically designated Endangered Species Act (ESA) salmon spawning
9 habitat, which DWR is required to protect under the terms and conditions of its FERC License Project.
10 No. 2100.

11 **Subject: Responsibility for Maintenance Materials Borrow Area:**

12 *Attached is a copy of an office memo from Phil Johns dated October 30, 1973,*
13 *requesting our interpretations of the agreement transferring control and possession of*
14 *the materials borrow area to the Department of Fish and Game. It appears that a*
15 *question has arisen regarding the responsibility for maintenance of training dikes upon*
16 *this property. It is our opinion that the Department of fish and Game has the full*
17 *responsibility for the operation and maintenance of the property covered by the August*
18 *12, 1968 agreement transferring control and possession to the Department of Fish and*
19 *Game.*

20 *Paragraph 4 of the agreement provides as follows: "Operation and maintenance of the*
21 *real property, designated herein, as a wildlife management area, including associated*
22 *recreation, shall be the sole responsibility of Fish and Game, ...". We believe that this*
23 *language clearly imposes the full responsibility of operation and maintenance upon the*
24 *Department of Fish and Game. The Department of Water Resources does reserve the*
25 *authority to utilize the property in connection with the construction, reconstruction,*
26 *repair or maintenance Oroville Division of the State Water Project as well as the right*
27 *to approve the sale or assignment of any interest in the property by the Department of*
28 *Fish and Game. Neither of these reservations would appear to impose any obligation*
29 *upon this department relating to the operation or maintenance of the property.*²⁶⁴

30 **Subject: Levee Deterioration Oroville Borrow Area for DWR to DFG:**

²⁶⁴ P. A. Towner, Attorney, California Department of Water Resources Memorandum to H. G. Dewey, California Department of Fish and Game, Subject: Subject: Responsibility for Maintenance Materials Borrow Area, December 30, 1973.

1 This memorandum is to inform you of the action that have occurred since
2 receipt of your Memorandum of November 18, 1974, about the eroded levee in the
3 Oroville borrow area.

In conjunction with an earlier notification by the Oroville Field Division of the deteriorating condition of the dike, this Department met with Messrs. E. Hosdon, R. Lassen, and H. Russo of the Fish and Game staff in March 1974. To discuss the problem. Although we had not been able to resolve the problem during the interim, several alternative courses of action are being explored as a result of our joint meeting Messrs. R. Lassen, T. Wright on January 9, 1975,

The most obvious course of action would be to simply repair the damaged training dike and attempt to strengthen the river slope to eliminate or minimize future erosion of that slope. However, the estimated cost of \$100,000 for that work will impose a very significant burden regardless of whether the works is necessary for the protection of the wildlife habitat development, protection of the existing stream channel, or a combination of both. It is also possible that maintaining the dike may be more detrimental than beneficial in the long run.

4 *Since our maintenance activities in the Oroville Reservoir have required*
5 *extensive drawdown which will probably preclude large stream releases this coming*
6 *spring, we have a few more months to work out the solution. However, a decision*
7 *should be made before next fall.*

8 *We believe that through continuing cooperation and efforts of both*
9 *departments, we will be jointly able to determine the best overall course of action.*²⁶⁵

10 **Subject: Damaged Levees – Oroville Wildlife Area:**

11 The Regional Manager has been in contact with the Department of Water Resources
12 regarding the repair of damaged levees along the Feather River next to our Oroville
13 Wildlife Area.

14 Department of Water Resources has indicated they are not planning any repairs. If the
15 levee breaks there could actually be some enhancement benefits for that portion of
16 the area.
17

18 With this in mind, work should be planned around the potential flood area to eliminate
19 the possible damage to equipment or development work.

²⁶⁵ Director of the Department of Water Resources letter to Director of the Department of Fish and Game, Subject: Levee Deterioration Oroville Borrow Area, Jan. 17, 1975.

1 **Were the Levee/Dike Ever Repaired? Yes! After the 1997 Flood at a Cost of \$1.2 Million:**

2 **Failure to repair the levee/dike constitutes a violation of DWR's FERC License No. 2100**
3 **and the Interagency Agreement between DWR and DFG:**

4
5 **@Note:** Additional information and documentation supporting this assertion is to be included
6 at the request of FRRR. It is important to note, that the ultimate responsibility for compliance
7 with the Endangered Species Act, as part of the relicensing of Project No. 2100, rest with FERC.

8 **Endangered Species Act Violations are ongoing due to the operation of the SWP Oroville**
9 **facilities – FERC is responsible to ensure DWR is compliant with ESA:**

10
11 Note: We have extensive documentation that proves DWR has consistently failed to comply
12 with the Articles contained in its existing FERC license to provide the required flows and water
13 temperatures necessary to protect ESA listed salmon species in the Feather River.
14 Furthermore, we have proof that the terms and conditions contained in the 2006 Settlement
15 Agreement scheduled to become effective once FERC approves DWR's pending license for the
16 Oroville facilities fails to provide the required assurance for the sustainability of salmonid
17 species. In addition, we have documentation that reveal FERC is aware that "unauthorized
18 take" of ESA listed species has and continues to occur as a result of DWR's failure to provide
19 adequate flows, temperature, and habitat replenishment, all required under the existing FERC
20 license. **ESA and recreation issues are critical factors that needs to be included in FRRR**
21 **petition to FERC.**

22 **Q: Is there a pattern to the Department of Water Resources Failure to Comply with**
23 **Federal and State Flood Control Regulations: Yes!**

24
25 A: Government documents reveal that in the aftermath of damages sustained from the 1980, 1986,
26 1997 and 2017 floods, along the Feather River, downstream from the SWP's Oroville Dam and
27 Reservoir facilities, were exacerbated by the DWR officials' failure to comply with state and federal
28 flood control rules and regulations.

29 **Q: Is there evidence that DWR provided the public it would implement measures to**
30 **ensure that it would take the necessary actions to avoid repeating the mistakes that**
31 **contributed to downstream damages? Yes! Unfortunately, by-and-large, DWR failed to**
32 **follow through on those promises:**

33
34 A: Yes! However, subsequent to each flood event, DWR provided flood victims with assurances that
35 corrective measures would be implemented to abate future mistakes too better manage floodwater
36 releases and limit downstream levee and property damages. Unfortunately, by-and-large, DWR
37 failed to follow through on its promises; the problems have become worse, causing a high-level of
38 concern and anxiety among people impacted by the Dam's operating criteria.
39

CHAPTER IX

Q: How effective have the historical methods of simulating and forecasting inflow above Oroville Reservoir and below the Dam? Apparently not!**11. Forecast of flood runoff.**

- a. *Since channel capacities of the Feather River far exceed maximum snowmelt flood flows, it is not considered necessary to forecast snowmelt runoff for flood control operation; however, to effectively operate Oroville Reservoir for flood control of rain floods it will be necessary to make frequent forecast of inflow to Oroville reservoir and of local inflow downstream from the reservoir.*
- a. *Reliable computerized methods of forecasting the inflow hydrograph to Oroville Reservoir and local inflow below the reservoir have been developed by the State of California-Federal River Forecast Center. These forecasting schemes are based upon an analysis of historical periods of precipitation and involve the combining of precomputed antecedent indexes (A1), base flow, antecedent and forecasted rainfall, and unitgraph ordinates.²⁶⁶ (Emphasis added) (Refer to Exhibit *)*

A: DWR's response to public concerns after the 1969 floodwater releases regarding notification and compliance with FERC License Project No. 2100 and U.S. Army Corps of Engineers flood control regulations, at Oroville Reservoir was to install new monitoring equipment in Feather River Watershed which would allow it to receive storm data instantaneously.

I am sure you realize that the flow releases which we [DWR officials] must make after a storm to the lower river are mandated by federal standards to protect the downstream river areas from disastrous flooding. If we [DWR] encroach on the flood storage reserve in Oroville Reservoir to control runoff from a storm, and not make this release, we could encounter a situation that the project could not control runoff and the areas below Oroville would be flooded with the loss of property and possibly lives. (Emphasis added)

Historically, our methods of estimating runoff from storms in the Feather River watershed were done over a period of several days before we started releases, this increased our needs to release large amounts of water into the lower river in a short period of time, therefore, creating problems with the fishery. We recently installed [1979] new equipment in the upper Feather River drainage area which will allow us to receive storm data instantaneously, as well as we also have developed a new model for our computers to estimate storm runoff. This faster prediction of runoff on

²⁶⁶ U.S. Army Engineers, Corps of Engineers, Sacramento, California, *Interim Instructions for Flood Control Operation Oroville Dam and Reservoir, Feather River, California*, December 1967, p. 5.

1 *a daily basis will allow us to stay closer to our operational criteria that we have in*
2 *our flood control agreement with the Federal Government. We hope this will*
3 *regiment future releases to the river, so they have a smoother transition and a lower*
4 *peak.* ²⁶⁷ (Emphasis added) (Exhibit*)

5 **Q: Was the DWR's Assurances that installation of the new monitoring equipment or the**
6 **updated model useful during the floodwater releases from Oroville Reservoir that**
7 **caused property damages in January 1980? No!**
8

9 **A: Public records reveal that DWR officials failed to provide advanced notification of the**
10 **floodwater releases, which began at 10:00 a.m., Saturday, 12 January 1980, to county**
11 **government agencies, downstream residents, businesses, and property owners. The decision to**
12 **inform the public of the floodwater releases was first officially made to the Butte County's**
13 **Sheriff Office around 11:30 a.m., Sunday, 13 January.**²⁶⁸ **The Civil Disaster Office did not receive**
14 **notification until 9:15 a.m., Monday, 14 January!**²⁶⁹ **Ironically, DWR's Chief of Operations, Don**
15 **McKillop, was present at the Friday, 11 January DWR "morning briefing" and because of the**
16 **weather report, predicting more rain in the Feather River watershed, and other factors, such as,**
17 **water storage and inflow into the reservoir, requested members of his staff to keep him**
18 **informed through the night of any impending changes of inflow of water and weather conditions**
19 **affecting the reservoir.**²⁷⁰
20

21 Chief McKillop's Request Ignored! According to the DWR's Dispatcher Daily Log, Mr. McKillop was
22 not informed of the impending situation until 9:04 a.m., on Saturday.²⁷¹

23 **Q: Was the installation of the new monitoring equipment or the updated model useful**
24 **during the floodwater releases from Oroville Reservoir that caused property damages**
25 **in February 1986? Apparently Not!**
26

27 **A: Apparently not!**

²⁶⁷ Lawrence A. Mullnix, Chief, Water Engineering Office, Division of Operation and Maintenance, California Department of Water Resources, correspondence to Bob Baiocchi, Vice-President, Conservation Chairman, Northern California Council of Fly-Fishing Clubs, cc: to Patrick Porgans, 18 Sept 1979.

²⁶⁸ Telephone conversation between Patrick Porgans, and Mr. Richard Stenberg, Dispatcher, Work Log, at 4:15 p.m., Thursday, 24 Feb. 1980.

²⁶⁹ Telephone conversation between Patrick Porgans and Mr. Tom Struthers, Civil Defense Office, Work Log, at 2:55 p.m., Thursday, 24 Feb. 1980.

²⁷⁰ Telephone conversation between Patrick Porgans and Mr. Don McKillop, DWR's Chief of Operations, Work Log, at 2:55 p.m., 22 January 1980.

²⁷¹ Patrick Porgans meeting with Don McKillop, at the DWR's Headquarters in Sacramento, CA, Notes from Meeting, on 22 January 1980.

The Flood of February 1986

The major storm that devastated portions of northern and central California in February 1986 was in some ways the greatest storm of record.

Flooding and heavy rains raged through the state for more than a week, from California's north coast to the San Joaquin Valley, causing damage over more than half the state. Much of California received more than half its normal year's supply of rain during the 10-day storm. Bucks Lake in the Feather River Basin received 49.6 inches of rain. [Emphasis added]

The Governor proclaimed a state of emergency in 39 counties and damages totaled more than \$500 million. More than 50,000 people were forced from their homes, and at least 12 people died. An estimated 1,380 homes and 185 businesses were destroyed, and more than 12,000 homes and 950 businesses were damaged... Without the federal, state, and local reservoirs, the potential flood flows in the lower Sacramento River system could have exceeded a million cubic feet per second, in a system designed for 590,000 [cubic feet per second]. (Emphasis added) (Exhibit *)

At the flood peak in February 20, [1986] the Sacramento River system moved a record 650,000 cubic feet of water per second past Sacramento, a flow that would equal the capacity of Lake Shasta in four days of Folsom Lake in less than 20 hours. ...Record flows were measured on the Russian, Napa, Cosumnes and Mokelumne rivers. On the Feather River on the night of February 17 were a record of 265,000 cfs, considerably higher than the 1955 Feather River flows that devastated Marysville before Oroville Dam was built. Oroville releases went as high as 150,000 cfs, breaking the previous record release of 70,000 cfs but still within the design limits of the Oroville system.²⁷² (Emphasis added) (Exhibit *)

1997 State embarks on study of how to fix flood control systems:

Sacramento-The Wilson Administration over the next four months will actively study controversial and costly plan to permanently fix California flood control system.

Among those proposals being debated are:

- *Directing the state Board of Reclamation to step in and use its authority to force mitigation or even block new development in flood-prone regions.*
- *Relaxing environmental rules for routine maintenance and seeking ways to dredge silt-choked channels.*
- ***Guaranteeing contractors less water out of Lake Oroville so there is more space available for flood control.*** (Emphasis added)

²⁷² California Department of Water Resources, *The Flood of February 1986*, undated.

1 ● **Seriously planning to build off-stream storage that can free space in Lake**
2 **Oroville and Lake Shasta for more flood control. A possibility is Sites Reservoir, west**
3 **of Colusa.** (Emphasis added)

4 ● **Conducting a comprehensive study of the entire flood protection system to**
5 **identify where impairs and improvements are needed.** (Emphasis added)

6 ● **Set aside about \$60,000 for the Department of Water Resources to install**
7 **the latest high-tech stream-flow gauging equipment were needed.**

8 ● **Establish a “levee rehabilitation unit” to assist the Army Corps of Engineers**
9 **in restoring levees to pre-flood conditions and to help locals develop emergency plans**
10 **to repair privately owned levees.**

11 ● **Direct the Office of Emergency Services to conduct workshops to help**
12 **educate local officials and the media “on procedures germane to emergency**
13 **response and notification.”**²⁷³ (Emphasis added)

14 NOAA’s Weather Conditions in California for Jan. thru Feb. 2017 Confirm Higher Rainfall 15 Runoff:

16 Weather Synopsis

17 January 18-23, 2017

18
19 *The overall pattern during this period was characterized by mean low pressure over*
20 *Alaska, high pressure anchored near Hawaii, and multiple shortwave troughs that*
21 *moved into the west coast. In addition, the upper jet was active over the NE Pacific,*
22 *with speeds exceeding 180 knots at times. Precipitation began to increase on the*
23 *north coast of CA on the night of the 17th as a moisture plume intersected the coast*
24 *ahead of a cold front and increased even more on the 18th as the cold front*
25 *approached. Some of the initial precipitation fell with snow levels around 9000-10000*
26 *feet, but the majority of the storm was accompanied by snow levels in the 4000- to*
27 *6000-foot range. Heavier precipitation affected the Sierra and coastal areas as the*
28 *cold front worked its way south through the morning of the 19th. After a relative*
29 *break for the remainder of the day, a quick-moving cold front brought another shot of*
30 *heavier precipitation to coastal areas from the night of the 19th into the*
31 *20th. Another lull in precipitation lasted through the 21st. ...*
32
33

²⁷³ Michael Gardner, ER-Sacramento Bureau, *State embarks on study of how to fix flood control systems*, Feb. 14, 1997.

February 2-12, 2017

The early-February stormy period featured fairly persistent low pressure aloft off the Washington/British Columbia coast and a strong subtropical jet stream that eventually stretched across the Pacific and penetrated well into the United States. The most significant moisture plume affected the region in two phases and brought very heavy precipitation the night of February 6 into February 7 with a round of heavy but less intense precipitation February 8. The overall focus of heavy precipitation in the February 2-12 time period was across northern and central CA.

Early on February 2, upper-level high pressure weakened near southeast Alaska, and shortly after, upper-level high pressure over western Alaska was undercut by low pressure to the south. This opened the door for the subtropical jet stream to expand eastward across the Pacific. Early on the 2nd, a slow-moving cold front approached the CA coast and eventually dissipated along the northern CA coast early on the 3rd. This system brought light precipitation to northern and central CA. As the front dissipated, moisture lingered and low- to mid-level flow became more onshore, helping to enhance precipitation rates. In addition, a band of locally heavy precipitation moved across the area early on the 3rd. A general lull in precipitation was noted on the 4th into the 5th.

A cold front brought a quick shot of locally-heavy precipitation to much of CA late afternoon on the 5th into the afternoon of the 6th. This was followed by the wettest system in the series later on the 6th into the 7th. This system featured an impressive moisture plume with PW values up to 1.3-1.4" reported by RAOBS. A surface low of 994 mb was located just off the far NW CA coast early morning on the 7th, and at this time, 850-mb winds peaked around 60 knots in central CA with 700-mb winds peaking around 75 knots into the northern Sierra. Heavy precipitation affected northern and central CA starting in the north later on the 6th and becoming more focused into central CA on the 7th. **The morning of the 7th saw a decent period of "spillover" precipitation onto the east side of the Sierra near the Lake Tahoe region. Snow levels in the Sierra were around 6000 ft late on the 6th and rose to around 9000 ft later on the night of the 6th as a warm front moved into the region. Precipitation rapidly declined the evening of the 7th as a cold front dissipated over northern CA.**

Moist, onshore flow brought precipitation mainly to northern CA on the 8th, heaviest in the northern Sierra. A more impressive moisture plume with an associated cold front brought more widespread heavy precipitation to northern and central CA on the 9th and 10th with lighter amounts in southern CA. Precipitation lingered into the 11th in southern CA. Snow levels were in the 8000- to 10000-foot range in the Sierra from the 8th through the 10th.

February 15-22, 2017

The second wet period in February featured persistent low pressure aloft over Alaska, persistent high pressure aloft over the tropical NE Pacific, and a few shortwave troughs and associated frontal systems moving into CA and the Pacific NW. Light precipitation began in northern CA on the 15th as a moisture plume intersected the area. Precipitation picked up heading into the overnight hours as a cold front neared the region. Heavy amounts were generally confined to NW CA and diminished on the 16th. Light precip made it as far south as southern CA.

Late night on the 16th and into the 17th, a secondary moisture plume reached the coast while a surface low deepened to 983 mb just off the central CA coast. ...

The area experienced a lull in precipitation on the 18th. A weak frontal system brought a bit more precip to portions of northern CA on the 19th. Precipitation began to increase late on the 19th into the 20th as a warm front moved into the region along with a moisture plume (PW 1.2" at KOAK). Precipitation increased more during the day on the 20th as a cold front neared and winds picked up. **Heaviest amounts were along the central CA coast and in the Sierra. Another system moved into the area later on the 20th and caused heavier precipitation to linger in northern and central CA until early on the 21st before precipitation became light again. Snow levels the 19th into the 21st were around 6000-9000 ft in the Sierra.** (Emphasis added)

Given the lower-latitude tropical source of the moisture plumes being entrained into the series of storms during January and February 2017, radiosonde locations across the area saw numerous precipitable water values recorded in the top 20 for each month. The historical record used for this summary goes back to 1948 and the top 20 rankings for each radiosonde location is available via the [January and February 2017 Radiosonde Perceptible Water](#) webpage compiled by the CNRFC, using two distinct sources of precipitable water information.

Snow levels played a crucial role during the waves of heavy precipitation during January and February 2017. Given the tropical origins of the moisture entrained into these storms, snow levels ahead of each cold front were unseasonably high (8,000 to 10,000 feet), which caused high-elevation river basins to experience a greater areal percentage of rain instead of snow. This resulted in increased runoff, higher river levels, and even flooding in some instances. The table below provides links to imagery from vertically-pointed radars, used to determine the zone where frozen precipitation transitions to liquid precipitation (the bright band), which helps calculate the snow

1 *level*.²⁷⁴ (Emphasis added) (Exhibit * provides detailed account of NOAA's Weather
2 Summary)

3 **Sacramento River Basin, Includes Feather River Watershed as of 31 Jan. 2017 Received**
4 **180 Percent of the Average Seasonal Precipitation-Seven Days Before the Oroville Dam**
5 **Spillway Collapse:**
6

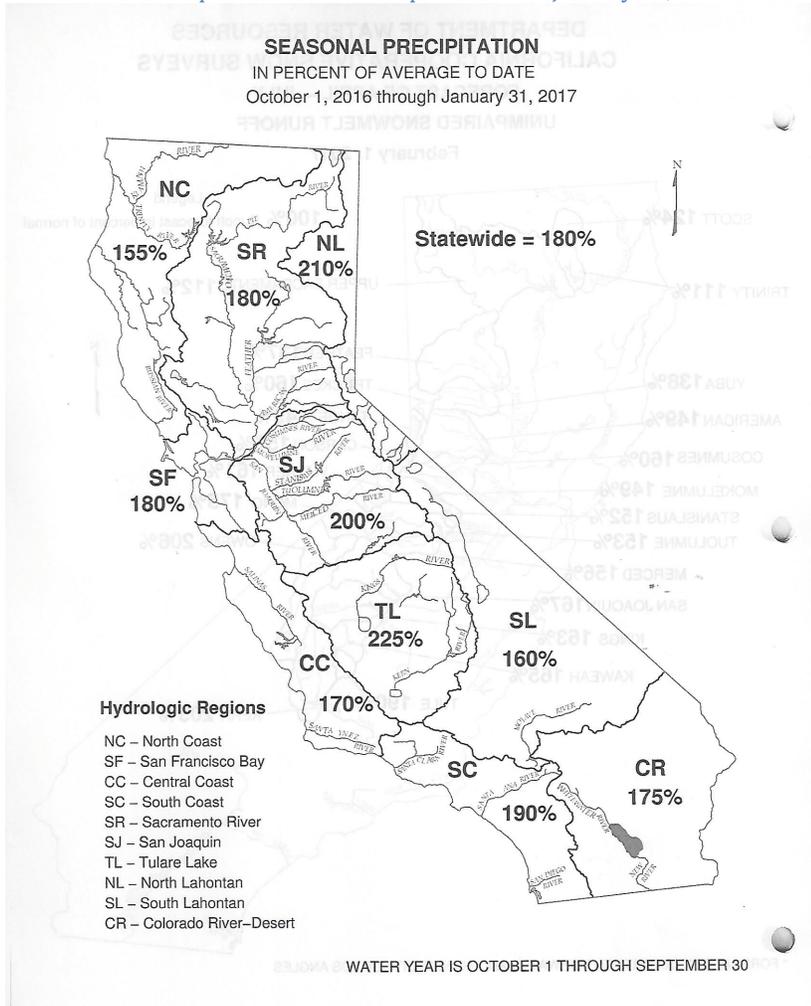
7 Note: As of January 31, 2017, according to the Department of Water Resources data, the Sacramento
8 River Basin, which includes the Feather River Watershed (FRW), had already received 180 percent of
9 the average seasonal precipitation. In addition, as of February 1, 2017, the FRW received 135 percent
10 of its annual snowmelt runoff; indicating ground saturation, refer to graphs 1 and 2.
11

12 Note: Ground wetness indices, and antecedent precipitation, indicated that the entire Feather River
13 Watershed was saturated, and the NWS and the DWR forecast acknowledged that there would be a
14 series of tropical-generated storm system that would produce rain at higher elevations and increased
15 flooding downstream.
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²⁷⁴ National Oceanic Atmospheric Administration (NOAA), California Nevada River Forecast Center, *Heavy Precipitation Events, California and Northern Nevada, January, and February 2017*
https://cnrfc.noaa.gov/storm_summaries/janfeb2017storms.php

1

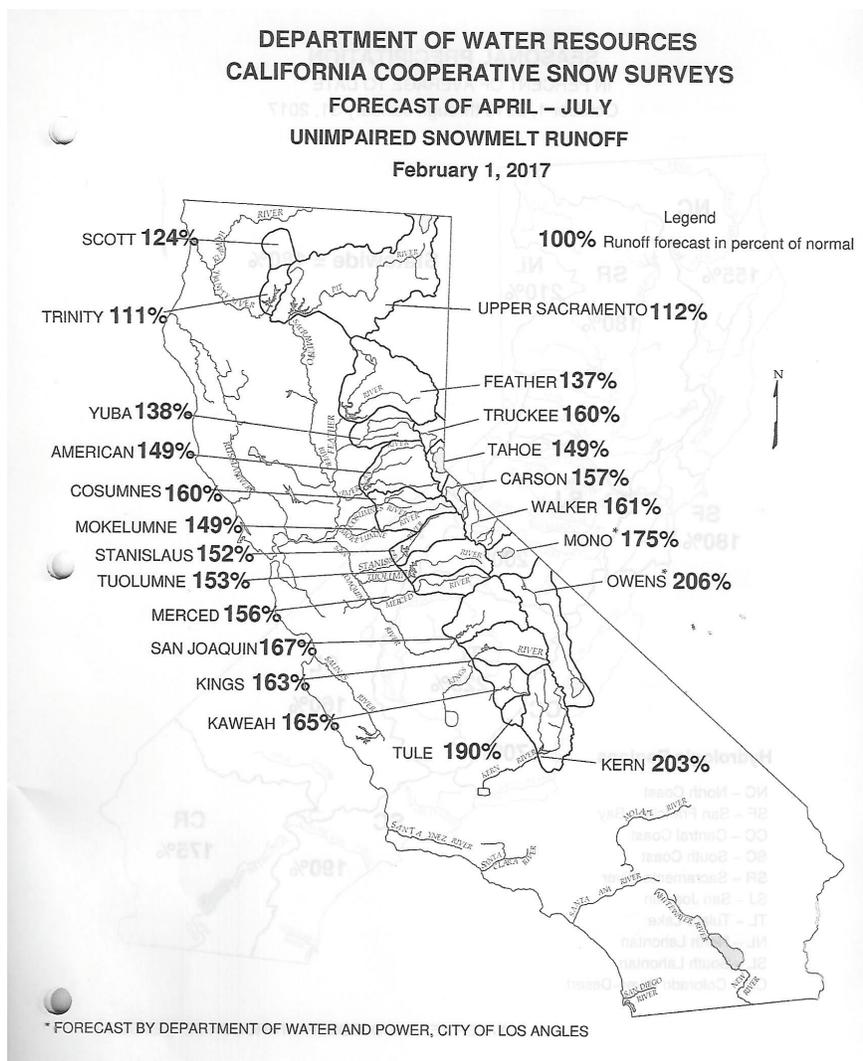
Graph 1: Seasonal Precipitation as of January 31, 2017



Footnote: Department of Water Resources, *Bulletin 120 1-17, Water Conditions in California. Report 1*, February 1, 2017, p.2.

1

Graph 2: Unimpaired Snowmelt Runoff as of February 1, 2017



Footnote: *Ibid.*, DWR, Bulletin 120, p. 3.

2

3

- 1 Note: The following data provides conditions the Feather River Watershed, Reservoir Stages, Inflows,
- 2 Floodwater Releases, Rainfall, and Levels of Encroachment, into the Designated Flood Storage
- 3 Space, at Oroville Reservoir. The data indicated that DWR should have been making additional
- 4 floodwater releases from the reservoir. **On 6 Feb. 2017, the author made contact with the Corps of**
- 5 **Engineers to express concerns that an apparent disaster was in the making at the State Water**
- 6 **Project Oroville facilities. Also, information regarding reservoir storage, inflow, and outflow not**
- 7 **available, DWR's website that provides this information is down. @FN email to COE**
- 8
- 9 Conditions at the SWP Oroville Reservoir for Jan. and Feb 2017 are listed in the [Graph 3](#).²⁷⁵
- 10 **Graph 3: Data Provides Conditions at Oroville Reservoir from 10 Jan. 2017 - 9 Feb. 2017:**

OROVILLE DAM (ORO)

Elevation: 900' - FEATHER R basin - Operator: CA Dept of Water Resources/O&M Oroville Field Division

Station comments:
 02/23/2017 Outflow from Oroville includes all releases from the Oroville Dam (i.e.: Hyatt, spillway, low flow outlet), while River Release (RIV_REL) pertains to the Oroville Complex as a whole which includes any releases from the Diversion Dam gates and Thermalito Afterbay River Outlet.

Query executed Thursday at 14:39:23

Provisional data, subject to change.
 Select a sensor type for a plot of data.

DAILY DATA

DATE / TIME	RES ELEV (FEET)	STORAGE	RES CHG	TOC STO	ABV TOC	OUTFLOW	INFLOW	EVAP	INF	PPT INC	RAIN	PPTINC1
(PST)		AF	AF	AF	AF	CFS	CFS	CFS	CFS	INCHES	INCHES	INCHES
01/10/2017	834.82	2,607,254	173,558	2,788,000	-180,748	1,599	89,198	38	98,552	1.76	24.24	0.84
01/11/2017	844.76	2,738,549	131,295	2,788,000	-49,451	3,317	69,631	60	74,909	0.00	24.24	1.48
01/12/2017	849.33	2,799,374	60,825	2,788,000	11,374	7,315	37,993	13	40,208	0.16	24.40	0.08
01/13/2017	851.31	2,825,960	26,587	2,788,000	37,960	15,521	20,001	9	29,024	0.00	24.40	0.08
01/14/2017	851.84	2,830,409	4,448	2,788,000	42,408	21,310	23,565	13	23,499	0.00	24.40	0.00
01/15/2017	851.34	2,828,365	-4,044	2,788,000	38,365	19,765	17,670	13	17,380	0.00	24.40	0.00
01/16/2017	850.75	2,818,423	-7,942	2,788,000	30,423	19,768	15,874	42	15,159	0.00	24.40	0.00
01/17/2017	849.86	2,806,473	-11,950	2,788,000	18,473	19,785	13,713	21	13,698	0.00	24.40	0.00
01/18/2017	849.66	2,803,792	-2,880	2,788,000	15,792	17,730	16,459	13	18,738	1.08	25.68	0.08
01/19/2017	850.56	2,815,869	12,076	2,788,000	27,869	14,333	20,379	25	21,057	0.28	25.76	1.20
01/20/2017	851.67	2,830,813	14,944	2,788,000	42,813	12,716	20,351	33	21,655	0.92	26.68	0.40
01/21/2017	852.76	2,845,543	14,730	2,788,000	57,543	11,081	18,452	13	18,455	0.32	27.00	0.60
01/22/2017	854.15	2,854,404	18,861	2,788,000	76,404	11,053	20,571	9	21,432	0.44	27.44	0.40
01/23/2017	855.05	2,876,683	12,259	2,788,000	88,663	11,031	17,241	30	17,122	0.00	27.44	0.36
01/24/2017	855.45	2,882,123	5,460	2,788,000	94,123	11,099	13,950	30	13,561	0.08	27.52	0.08
01/25/2017	855.36	2,880,894	-1,229	2,788,000	92,894	11,151	10,562	21	10,063	0.00	27.52	0.00
01/26/2017	855.36	2,880,894	0	2,788,000	92,894	11,331	11,430	30	10,986	0.00	27.52	0.00
01/27/2017	855.17	2,878,300	-2,594	2,788,000	90,300	11,117	9,627	25	8,969	0.00	27.52	0.00
01/28/2017	854.84	2,873,800	-4,500	2,788,000	85,800	11,366	9,191	25	8,169	0.00	27.52	0.00
01/29/2017	854.39	2,867,670	-6,130	2,788,000	79,670	11,417	8,420	25	7,632	0.00	27.52	0.00
01/30/2017	853.76	2,859,103	-8,567	2,788,000	71,103	13,079	8,862	34	7,744	0.00	27.52	0.00
01/31/2017	852.48	2,841,754	-17,349	2,788,000	53,754	17,077	8,300	38	8,160	0.00	27.52	0.00
02/01/2017	850.78	2,818,827	-22,927	2,788,000	30,827	20,187	8,644	17	8,244	0.00	27.52	0.00
02/02/2017	849.14	2,796,832	-21,995	2,788,000	9,832	20,463	9,381	8	9,088	0.48	28.00	0.04
02/03/2017	848.30	2,785,913	-11,219	2,788,000	-2,387	25,772	20,210	27	23,941	-	28.00	0.64
02/04/2017	849.20	2,797,635	12,022	2,788,000	9,635	30,014	36,027	19	39,077	0.12	28.12	0.36
02/05/2017	849.35	2,799,641	2,006	2,788,000	11,641	29,911	30,856	0	34,590	0.88	29.00	0.12
02/06/2017	850.85	2,819,768	20,127	2,788,000	31,768	38,741	48,795	42	55,286	1.48	30.48	1.00
02/07/2017	862.31	2,976,908	157,140	2,788,000	188,908	27,425	106,945	62	115,161	0.40	30.88	1.68
02/08/2017	874.84	3,155,684	178,777	2,788,000	367,684	11,687	101,841	24	116,554	1.12	32.00	0.20
02/09/2017	890.92	3,396,134	240,449	2,788,000	608,134	34,253	155,498	13	175,615	2.04	34.04	1.04

Showing 1 to 31 of 31 entries

BRT and ART signify discharge at stage below or above available rating table
 Warning! This data is preliminary and subject to revision.

Show ORO Map | Plot all ORO Sensors | 2 Month ORO Data | Real-Time ORO Data | ORO Info

²⁷⁵ California Department of Water Resources, CDEC, <https://cdec.water.ca.gov/dynamicapp/QueryDaily?s=ORO&end=2017-02-09&span=30days>

1 **Data Indicate DWR had Encroached into the Designated Flood Storage Space on 4**
2 **February 2017:**

3 Note: Data contained in the Daily Data reports for Oroville Reservoir indicate on 4 Feb. 2017, that
4 the DWR became slightly encroached into the Designated Flood Storage Space (DFSP), by 9,635 acre-
5 feet, inflow was 36,027 c.f.s. and outflow 30,014 c.f.s. By 7 Jan. DWR encroached into the DFSP by
6 188,908 acre-feet of water; inflow to the reservoir was 106,845 c.f.s., outflow 27,425 c.f.s. On 8 Feb.
7 encroached into DFSP 367,684 c.f.s., inflow 101,841 c.f.s. outflow 11,687 c.f.s., 9 Feb. encroached
8 into DFSP 608,134 c.f.s., inflow 155,498 c.f.s., outflow 34,253 c.f.s.²⁷⁶

Note: Encroachment into the Designated Flood Storage Space (DFSP) is allowed, however, it is the responsibility of the dam operator to consider all of the variables, required under the flood control operational criteria, when occupying this space, which in the first week of February 2017, the data indicate that DWR did not take all of the variables into account, especially the fact that the ground was saturated, and the weather forecast predicted heavy precipitation on the way.

9 *The amount of storage space in Lake Oroville which is utilized for flood control*
10 *varies between 375,000 and 750,000 acre-feet. The amount of storage required*
11 *between these limits depends on the 60-day antecedent "basin means precipitation."*
12 *Reservation of storage space for flood control begins on September 15 and ends on*
13 *June 15 of the following year. Between these dates, the reservoir must be drawn*
14 *down to capacity indicated by the flood control diagram and the antecedent rainfall.*
15 *Flood flows entering the reservoir may be stored temporarily above the flood control*
16 *reservation but must be evacuated down to the required level as quickly as possible*
17 *within the constraints previously described.*²⁷⁷ [Emphasis added]

Albeit DWR may not have anticipate the partial collapse of the Spillway Outlet, however, public records reveal that it knew several years earlier that certain feature of the Spillway were cracked and in need of repair, which it neglected to repair.

18 **February 2017 Weather, Reservoir Inflow, Wetness Index, Antecedent Precipitation:**

19

20 **Note:** Although the weather conditions had similar characteristics as those that occurred during
21 the 1955, 1964, 1986 and 1997, the February 2017; considering antecedent precipitation,
22 wetness index, and other pertinent factors, the data indicate that the maximum inflow into
23 Oroville Reservoir was only 190,000 c.f.s., about 35 to 40 percent of a 440,000 c.f.s. inflow of the
24 Standard Project Flood event!

²⁷⁶ <https://cdec.water.ca.gov/dynamicapp/QueryDaily?s=ORO&end=2017-02-09&span=30days>

²⁷⁷ William R. Oroville Dam and Lake Oroville, Presented before the Senate Committee on Water Resources at Sacramento, California 18 March 1971. Gianelli, Director, Department of Water Resources, The Resources Agency, State of California, Flood Control Operation

Weather Synopsis

February 2-12, 2017

The early-February stormy period featured fairly persistent low pressure aloft off the Washington/British Columbia coast and a strong subtropical jet stream that eventually stretched across the Pacific and penetrated well into the United States. The most significant moisture plume affected the region in two phases and brought very heavy precipitation the night of February 6 into February 7 with a round of heavy but less intense precipitation February 8. The overall focus of heavy precipitation in the February 2-12 time period was across northern and central CA.

Early on February 2, upper-level high pressure weakened near southeast Alaska, and shortly after, upper-level high pressure over western Alaska was undercut by low pressure to the south. This opened the door for the subtropical jet stream to expand eastward across the Pacific. Early on the 2nd, a slow-moving cold front approached the CA coast and eventually dissipated along the northern CA coast early on the 3rd. This system brought light precipitation to northern and central CA. As the front dissipated, moisture lingered and low- to mid-level flow became more onshore, helping to enhance precipitation rates. In addition, a band of locally heavy precipitation moved across the area early on the 3rd. A general lull in precipitation was noted on the 4th into the 5th.

A cold front brought a quick shot of locally-heavy precipitation to much of CA late afternoon on the 5th into the afternoon of the 6th. This was followed by the wettest system in the series later on the 6th into the 7th. This system featured an impressive moisture plume with PW values up to 1.3-1.4" reported by RAOBS. A surface low of 994 mb was located just off the far NW CA coast early morning on the 7th, and at this time, 850-mb winds peaked around 60 knots in central CA with 700-mb winds peaking around 75 knots into the northern Sierra. **Heavy precipitation affected northern and central CA starting in the north later on the 6th and becoming more focused into central CA on the 7th. The morning of the 7th saw a decent period of "spillover" precipitation onto the east side of the Sierra near the Lake Tahoe region. Snow levels in the Sierra were around 6000 ft late on the 6th and rose to around 9000 ft later on the night of the 6th as a warm front moved into the region. Precipitation rapidly declined the evening of the 7th as a cold front dissipated over northern CA.**

Moist, onshore flow brought precipitation mainly to northern CA on the 8th, heaviest in the northern Sierra. A more impressive moisture plume with an associated cold front brought more widespread heavy precipitation to northern and central CA on the 9th and 10th with lighter amounts in southern CA. Precipitation lingered into the

1 **11th in southern CA.** Snow levels were in the 8000- to 10000-foot range in the Sierra
2 from the 8th through the 10th.(Emphasis added)

3 **February 15-22, 2017**

4 *The second wet period in February featured persistent low pressure aloft over Alaska,*
5 *persistent high pressure aloft over the tropical NE Pacific, and a few shortwave troughs*
6 *and associated frontal systems moving into CA and the Pacific NW. **Light precipitation***
7 ***began in northern CA on the 15th as a moisture plume intersected the***
8 ***area. Precipitation picked up heading into the overnight hours as a cold front neared***
9 ***the region. Heavy amounts were generally confined to NW CA and diminished on the***
10 ***16th. Light precip made it as far south as southern CA.** (Emphasis added)*

11 *Late night on the 16th and into the 17th, a secondary moisture plume reached the coast*
12 *while a surface low deepened to 983 mb just off the central CA coast. A special 18 UTC*
13 *sounding at KVBG (Vandenberg AFB) just ahead of a cold front revealed PW values still*
14 *around 1.1 inches (similar to the 12 UTC value) as well as southerly 850 MB winds of 60*
15 *knots. This intense moisture flux brought widespread very heavy rainfall to the*
16 *transverse mountain ranges of southern CA, where 6-hour totals were 1.5 to 4 inches,*
17 *with local amounts to 5 inches the morning into the afternoon on the 17th. Similar*
18 *amounts were observed along the Big Sur coast as well, with generally lighter amounts*
19 *further north. Heavy rain shifted into the remainder of the southern CA coast by the*
20 *evening of the 18th as the moisture plume steadily moved across the region.*

21 *The area experienced a lull in precipitation on the 18th. A weak frontal system brought*
22 *a bit more precip to portions of northern CA on the 19th. Precipitation began to*
23 *increase late on the 19th into the 20th as a warm front moved into the region along*
24 *with a moisture plume (PW 1.2" at KOAK). Precipitation increased more during the day*
25 *on the 20th as a cold front neared and winds picked up. Heaviest amounts were along*
26 *the central CA coast and in the Sierra. Another system moved into the area later on the*
27 *20th and caused heavier precipitation to linger in northern and central CA until early*
28 *on the 21st before precipitation became light again. Snow levels the 19th into the 21st*
29 *were around 6000-9000 ft in the Sierra.²⁷⁸(Exhibit *)*

30
31

²⁷⁸ NOAA https://cnrfc.noaa.gov/storm_summaries/janfeb2017storms.php

DWR's Timeline of Events Pre-Post Partial Collapse of Oroville Dam Flood Control Spillway Outlet February 2017

Lake Oroville Incident*

The most prominent storyline during the January and February 2017 floods was the Lake Oroville Spillway incident that culminated in the evacuation of nearly 200,000 people living downstream of the lake (maximum storage 3,537,580 acre-feet according to the California Department of Water Resources) across portions of Butte, Sutter, and Yuba counties.

On February 7, with a significant precipitation event expected to impact the region over the next several days, the California Department of Water Resources (CA DWR) increased water releases to make room for the forecast water inflows into Lake Oroville. However, as water releases were increased, an anomaly with the water flow pattern down the flood-control spillway was noticed, and water releases were ceased for investigation of the cause. At this time, the engineers found a large area of concrete erosion on a part of the flood-control spillway.

Beginning the next day, discussions began between the CA DWR, Federal Energy Regulatory Commission (FERC), and other dam safety agencies. Also, a test was performed by once again increasing water flows down the flood-control spillway to see how much further erosion would take place. Preparations began for the possible use of the emergency spillway, which had never before been utilized in the structure's history.

With the forecasted precipitation coming to fruition, water inflows into Lake Oroville peaked late on February 9 near 190,000 cubic feet per second (cfs). Water flows released from the flood-control spillway were ramped up to 65,000 cfs in an attempt to accommodate the increased water inflows and prevent the lake from filling, including using the emergency spillway.

By February 11, water inflows continued to outpace releases from Lake Oroville, and the lake level surpassed 901 feet, which allowed water to flow freely over the emergency spillway for the first time ever.

Over the next 24 hours, expected erosion began downstream of the emergency spillway. However, erosion near the base of the structure was faster than anticipated. Around 5 PM on Sunday, February 12, the Butte County Sheriff (Kory Honea) and his office issued mandatory evacuations for the Oroville area along with other towns downstream as fears of the failure of the emergency spillway increased. Shortly after,

1 *the Yuba County and Sutter County Sheriffs and their offices ordered the evacuations*
2 *of communities around the Feather River, including Marysville, Yuba City, Live Oak,*
3 *and Nicolaus. In an attempt to slow the erosion at the base of the emergency*
4 *spillway, the CA DWR increased releases down the flood-control spillway to 100,000*
5 *cfs. With water inflows continuing to decrease with less precipitation over the area*
6 *and the increased water releases down the flood-control spillway, the Lake Oroville*
7 *water elevation dropped below 901 feet late on February 12, bringing an end to water*
8 *flows over the emergency spillway.*

9 *During the next week, inspections and work to repair and reinforce the emergency*
10 *spillway began. Mandatory evacuations were decreased to an evacuation warning on*
11 *February 14, allowing residents to return home. Water releases of 100,000 cfs down*
12 *the damaged flood-control spillway continued into February 16 to draw down the lake*
13 *level further. A target lake elevation of 850 feet was set. Once water releases were*
14 *ramped down after February 16, these were held steady between 50,000 and 60,000*
15 *cfs to maintain the lake level of 850 feet.*

16 *Through the rest of the winter season and spring snow melt, the lake saw only minor*
17 *rises with flows being regulated using the damaged flood-control spillway and the*
18 *Hyatt Powerplant facilities. Finally, on May 19, the CA DWR stopped water releases*
19 *down the flood-control spillway to begin a busy summer of work to repair the*
20 *structure for potential use during the 2017-2018 winter season. The goal of the CA*
21 *DWR was to fix the flood-control spillway to handle storms by November 1.*

22 *** Information / Data Source:** California Department of Water Resources - [Lake](#)
23 [Oroville Spillway Incident: Timeline of Major Events February 4-25](#)²⁷⁹

279 NOAA https://cnrfc.noaa.gov/storm_summaries/janfeb2017storms.php

1 Graph 4: Data Provides Conditions at Oroville Reservoir from 26 Jan. 25 Feb 2017:

OROVILLE DAM (ORO)

Elevation: 900' · FEATHER R basin · Operator: CA Dept of Water Resources/O&M Oroville Field Division

Station comments:

02/23/2017 Outflow from Oroville includes all releases from the Oroville Dam (i.e.: Hyatt, spillway, low flow outlet), while River Release (RIV REL) pertains to the Oroville Complex as a whole which includes any releases from the Diversion Dam gates and Thermalito Afterbay River Outlet.

Query executed Monday at 18:48:23

Provisional data, subject to change.
Select a sensor type for a plot of data.

DAILY DATA

DATE / TIME (PST)	RES ELE FEET	STORAGE AF	RES CHG AF	TOTG STO AF	ABVTOTG AF	OUTFLOW CFS	INFLOW CFS	EVAP CFS	FNF CFS	PPTING INCHES	RAIN INCHES	PPTING4 INCHES
01/26/2017	855.36	2,880,894	0	2,788,000	92,894	11,331	11,430	30	10,986	0.00	27.52	0.00
01/27/2017	855.17	2,878,300	-2,594	2,788,000	90,300	11,117	9,627	25	8,959	0.00	27.52	0.00
01/28/2017	854.84	2,873,800	-4,500	2,788,000	85,800	11,366	9,191	25	8,169	0.00	27.52	0.00
01/29/2017	854.39	2,867,870	-6,130	2,788,000	79,870	11,417	8,420	25	7,632	0.00	27.52	0.00
01/30/2017	853.76	2,859,103	-8,567	2,788,000	71,103	13,079	8,862	34	7,744	0.00	27.52	0.00
01/31/2017	852.48	2,841,754	-17,349	2,788,000	53,754	17,077	8,300	38	8,160	0.00	27.52	0.00
02/01/2017	850.78	2,818,827	-22,927	2,788,000	30,827	20,187	8,644	17	8,244	0.00	27.52	0.00
02/02/2017	849.14	2,796,832	-21,995	2,788,000	8,832	20,463	9,381	8	9,088	0.48	28.00	0.04
02/03/2017	848.30	2,785,613	-11,219	2,788,000	-2,387	25,772	20,210	27	23,941	--	28.00	0.64
02/04/2017	849.20	2,797,835	12,022	2,788,000	9,635	30,014	36,027	19	39,077	0.12	28.12	0.36
02/05/2017	849.35	2,799,841	2,006	2,788,000	11,641	29,911	30,856	0	34,590	0.88	29.00	0.12
02/06/2017	850.85	2,819,768	20,127	2,788,000	31,768	38,741	48,795	42	55,286	1.48	30.48	1.00
02/07/2017	862.31	2,976,908	157,140	2,788,000	189,908	27,425	106,845	62	115,181	0.40	30.88	1.68
02/08/2017	874.84	3,155,684	178,777	2,788,000	367,684	11,687	101,841	24	116,554	1.12	32.00	0.20
02/09/2017	890.92	3,396,134	240,449	2,788,000	608,134	34,253	155,498	13	175,615	2.04	34.04	1.04
02/10/2017	899.44	3,528,727	132,593	2,788,000	740,727	60,697	127,679	53	137,355	0.16	34.20	2.00
02/11/2017	902.57	3,578,367	49,640	2,788,000	790,367	59,472	84,437	23	89,622	0.00	34.20	0.00
02/12/2017	899.77	3,533,936	-44,431	2,788,000	745,936	69,131	69,167	36	48,216	0.00	34.20	0.00
02/13/2017	891.72	3,408,430	-125,506	2,788,000	620,430	99,999	14,441	36	39,257	0.00	34.20	0.00
02/14/2017	882.35	3,266,396	-142,034	2,788,000	478,396	99,999	28,388	0	30,855	0.00	34.20	0.00
02/15/2017	872.21	3,117,546	-148,849	2,788,000	329,546	99,999	25,032	13	24,062	0.00	34.20	0.00
02/16/2017	863.37	2,991,747	-125,800	2,788,000	203,747	89,999	26,535	33	25,738	0.52	34.72	0.08
02/17/2017	856.69	2,899,096	-92,650	2,788,000	111,096	76,040	29,364	36	30,411	1.44	36.16	0.52
02/18/2017	853.29	2,852,724	-46,373	2,788,000	64,724	62,499	39,131	12	39,105	0.52	36.68	1.52
02/19/2017	850.15	2,810,364	-42,360	2,788,000	22,364	57,083	35,733	8	34,605	0.40	37.08	0.36
02/20/2017	850.34	2,812,914	2,550	2,788,000	24,914	59,999	61,271	53	67,634	1.68	38.76	1.24
02/21/2017	852.83	2,846,490	33,577	2,788,000	58,490	59,999	76,938	12	80,578	0.00	38.76	0.84
02/22/2017	852.16	2,837,428	-9,063	2,788,000	49,428	59,999	55,568	70	55,920	0.00	38.76	0.00
02/23/2017	850.07	2,809,290	-28,138	2,788,000	21,290	55,416	41,276	46	38,764	0.00	38.76	0.00
02/24/2017	847.42	2,773,894	-35,396	2,788,000	-14,106	50,000	32,259	38	30,203	0.00	38.76	0.00
02/25/2017	843.96	2,728,152	-45,742	2,788,000	-59,848	50,000	26,893	23	25,137	0.00	38.76	0.00

Showing 1 to 31 of 31 entries

<https://cdec.water.ca.gov/dynamicapp/QueryDaily?s=ORO&end=2017-02-25&span=30days>

Note: Document states, Provisional data subject to Change!

1 Graph 5: Data Provides Conditions at Oroville Reservoir from 9 Feb 29 – 11 March 2017:

OROVILLE DAM (ORO)

Elevation: 900' · FEATHER R basin · Operator: CA Dept of Water Resources/O&M Oroville Field Division

Station comments:

02/23/2017 Outflow from Oroville includes all releases from the Oroville Dam (i.e.: Hyatt, spillway, low flow outlet), while River Release (RIV REL) pertains to the Oroville Complex as a whole which includes any releases from the Diversion Dam gates and Thermalito Afterbay River Outlet.

Query executed Thursday at 14:41:23

Provisional data, subject to change.
Select a sensor type for a plot of data.

DAILY DATA

DATE / TIME (PST)	RES ELE FEET	STORAGE AF	RES CHG AF	TOC STO AF	ABV TOC AF	OUTFLOW CFS	INFLOW CFS	EVAP CFS	FNFCFS	PPTINC INCHES	RAIN INCHES	PPTINC4 INCHES
02/09/2017	890.92	3,396,134	240,449	2,788,000	608,134	34,253	155,498	13	175,615	2.04	34.04	1.04
02/10/2017	899.44	3,528,727	132,593	2,788,000	740,727	60,697	127,679	53	137,355	0.16	34.20	2.00
02/11/2017	902.57	3,578,367	49,640	2,788,000	790,367	59,472	84,437	23	89,622	0.00	34.20	0.16
02/12/2017	899.77	3,533,936	-44,431	2,788,000	745,936	69,131	69,167	36	48,216	0.00	34.20	0.00
02/13/2017	891.72	3,408,430	-125,506	2,788,000	620,430	99,999	14,441	36	39,257	0.00	34.20	0.00
02/14/2017	882.35	3,266,396	-142,034	2,788,000	478,396	99,999	28,388	0	30,855	0.00	34.20	0.00
02/15/2017	872.21	3,117,546	-148,849	2,788,000	329,546	99,999	25,032	13	24,062	0.00	34.20	0.00
02/16/2017	863.37	2,991,747	-125,800	2,788,000	203,747	89,999	26,535	33	25,738	0.52	34.72	0.08
02/17/2017	856.69	2,899,096	-92,650	2,788,000	111,096	76,040	29,364	36	30,411	1.44	36.16	0.52
02/18/2017	853.29	2,852,724	-46,373	2,788,000	64,724	62,499	39,131	12	39,105	0.52	36.68	1.52
02/19/2017	850.15	2,810,364	-42,360	2,788,000	22,364	57,083	35,733	8	34,605	0.40	37.08	0.36
02/20/2017	850.34	2,812,914	2,550	2,788,000	24,914	59,999	61,271	53	67,634	1.68	38.76	1.24
02/21/2017	852.83	2,846,490	33,577	2,788,000	58,490	59,999	76,938	12	80,578	0.00	38.76	0.84
02/22/2017	852.16	2,837,428	-9,063	2,788,000	49,428	59,999	55,568	70	55,920	0.00	38.76	0.00
02/23/2017	850.07	2,809,290	-28,138	2,788,000	21,290	55,416	41,276	46	38,764	0.00	38.76	0.00
02/24/2017	847.42	2,773,894	-35,396	2,788,000	-14,106	50,000	32,259	38	30,203	0.00	38.76	0.00
02/25/2017	843.96	2,728,152	-45,742	2,788,000	-59,848	50,000	26,893	23	25,137	0.00	38.76	0.00
02/26/2017	839.83	2,674,233	-53,919	2,788,000	-113,767	50,000	22,843	23	21,452	0.00	38.76	0.00
02/27/2017	839.27	2,666,977	-7,256	2,788,000	-121,023	23,541	19,884	67	17,467	0.00	38.76	0.00
02/28/2017	842.27	2,706,003	39,026	2,788,000	-81,997	0	19,700	30	17,635	0.00	38.76	0.00
03/01/2017	844.98	2,741,581	35,578	2,788,000	-46,419	0	17,893	23	16,732	0.00	38.76	0.00
03/02/2017	847.52	2,775,224	33,644	2,788,000	-12,776	0	17,060	32	14,298	0.00	38.76	0.00
03/03/2017	849.79	2,805,535	30,310	2,788,000	17,535	1,347	16,739	43	13,960	0.00	38.76	0.00
03/04/2017	852.06	2,836,077	30,542	2,788,000	48,077	965	16,333	37	15,330	0.12	38.88	0.00
03/05/2017	854.61	2,870,665	34,588	2,788,000	82,665	436	17,903	29	15,792	0.04	38.92	0.12
03/06/2017	856.49	2,896,354	25,689	2,788,000	108,354	2,165	15,139	22	12,810	0.00	38.92	0.04
03/07/2017	858.28	2,920,964	24,610	2,788,000	132,964	3,963	16,476	37	14,125	0.00	38.92	0.00
03/08/2017	859.41	2,936,574	15,610	2,788,000	148,574	6,953	14,773	19	12,289	0.00	38.92	0.00
03/09/2017	860.03	2,945,165	8,591	2,788,000	157,165	10,551	14,942	60	12,627	0.00	38.92	0.00
03/10/2017	860.37	2,949,883	4,718	2,788,000	161,883	12,929	15,353	45	12,994	0.00	38.92	0.00
03/11/2017	860.80	2,955,858	5,975	2,788,000	167,858	12,908	15,888	38	13,591	0.00	38.92	0.00

Showing 1 to 31 of 31 entries

BRT and ART signify discharge at stage below or above available rating table

Warning! This data is preliminary and subject to revision.

[Show ORO Map](#) | [Plot all ORO Sensors](#) | [2 Month ORO Data](#) | [Real-Time ORO Data](#) | [ORO Info](#)

Note: Document states, “Warning: This data is preliminary and subject to change.” This warning is somewhat disconcerting, in particular, data is preliminary and subject to change. The data computations are purportedly prefaced on reservoir elevation, inflow and outflow at the precise time and day they are logged in; raising questions as to how and why this information, after years have passed, is still regarded as preliminary! Keep in mind, the source of all this data was generated by DWR personnel.

1 January 1997 Floods:

2 Hydrological Summary

3
4 The New Year's Day flood of 1997 was probably the largest in the 90 year—
5 northern California measured record which began in 1906. It was notable in the
6 sustained intensity of rainfall, the volume of floodwater, and the areal extent—from the
7 Oregon border down to the southern end of the Sierra. New flood records were set on
8 many of the Central Valley rivers.

9 Over the 3-day period centered on New Year's Day, warm moist winds from the
10 southwest blowing over the Sierra Nevada poured more than 30 inches of rain onto
11 watersheds that were already saturated by one of the wettest Decembers on record.

12 On December 23, 1996, a very cold snowstorm produced heavy snows to low
13 elevations (5 inches of water content at Blue Canyon). The big storm then dropped over
14 30 inches of rain in some locations, melting the existing snowpack at relatively low
15 elevations. The middle and high elevations snowpack remained, the percolated through
16 the pack, and little snow was lost. This contrast with the public's impression that the
17 melting snow caused the floods . Snowmelt from lower elevations only added about 15
18 percent to the runoff. The bulk of the runoff was simply caused by too much rain, which
19 in a normal year would have been snow, and held in "cold storage" instead of flowing
20 into the rivers.

21 Rainfall was relatively light after January 3, allowing the flood control system to
22 drain and restoring reservoir flood control space in most Sacramento River system
23 reservoirs. In late January, another siege of heavy rain occurred. This was not as heavy
24 as the December-January storms (about two-thirds as much) and, although warmer than
25 normal, snow levels were about 2,000 feet lower, which helped hold more water on the
26 mountains. Even so, runoffs were large with high peaks on a few streams which caused
27 considerable concern where levees previously had been breached or damaged.

28 The Sacramento River region reservoir flood control space was restored before
29 the second storm. Flood releases were kept lower (with the concurrence of the U.S.
30 Army Corps of Engineers) than usual to avoid overtopping the partly completed levee
31 repairs on the Sutter Bypass and along the Feather river south of Marysville.

32 The magnitude and duration of the 1997 floods will affect the calculation of
33 return periods for all the affected basins. The Corps used previously computed statistics
34 to estimate the return period frequencies of the 1997 flood. Some of the statistics are
35 more than 15 years old and incorporating data from the 1997 flood will change the
36 statistics. The resulting new statistics will change the size of flood events at all return
37 frequencies (including the 100-year frequency which is used as a flood insurance and
38 zoning benchmark). Incorporating the 1997. The resulting new statistics will change data
39 will also decrease the apparent frequency of the 1997 event. A comparison of the return
40 estimates is shown in Table IV-1, "Estimated Water Year 1997 Rainflood Frequency."

1

Final Report of the Flood Emergency Action Team

Table IV-1
Estimated Water Year 1997 Rainflood Frequency¹
Source: U.S. Army Corps of Engineers

River and Dam	Latest Update of Frequency Statistics	1997 Peak Flows (cfs) and Return Period (years)	
		One Day ²	Three Day ²
Sacramento River Region			
Sacramento - Shasta	1977	216,000 - 75 year	168,000 - 125 year
Feather - Oroville	1987	298,000 - 100 year	234,000 - 120 year
Yuba - New Bullards Bar	1991	88,000 - 75 year	67,000 - 120 year
American - Folsom	1987	249,000 - 70 year	164,000 - 65 year
Stony - Black Butte	1987	30,000 - 10 year	22,000 - 10 year
Cache - Indian Valley	1975	12,300 - 20 year	7,100 - 20 year
San Joaquin River Region			
		One Day	Three Day

B. Damage Assessment:

This section summarizes the damage and financial loss estimates for agriculture, public facilities and infrastructure, residential property, and businesses. Flooding forced more than 120,000 people from their homes. Over 55,000 people were housed in 107 shelters; it was the largest sheltering operation in California's history. An estimated 30,000 residential and 2,000

business properties were damaged or destroyed. Loss tax revenues due to reduced economic activity caused by flooding are not tallied, nor is the increase economic activity from construction, services, and sales associated with damage repair.

Overall Damage:

The magnitude of total damage:

Total flood damages are nearly \$2 billion, with estimated costs to public infrastructure exceeding \$1 billion. These infrastructure costs include \$206 million in damages to various public facilities, \$300 million in damage to flood control facilities, and nearly \$500 million in highway and other infrastructure damage. Nearly \$300 square miles were flooded in January of which 80,000 acres had to be pumped out with State assistance.

Almost 1,200 claims for disaster unemployment assistance were filed with and approved by the State Employment Development department. As of mid-April, \$690,000 in benefits have been issued.²⁸⁰

1989 Department of Water Resources made a request to Army Corps of Engineers to reduce flood storage reservation space at Oroville Reservoir to increase State Water Project supply-author assisted federal fisheries agencies and deterred DWR's request:

An obscure plan to send more water from Oroville Dam to southern California will undergo environmental review by the U.S. Army Corps of Engineers.

A one-page initial review of the plan's environmental consequences received scant official attention from wildlife agencies, but drew fire from a local conservation group, a private consultant and from some of the Corps environmental specialist.

²⁸⁰ *Governor's Flood Emergency Action Team, Final Report*, May 10, 1997, Chapter IV, pp. 25, 26, 27 and 29.

1 District Engineer, Col. Jack Le Cuyer said Friday he will order his staff to conduct
2 a supplement to the environment assessment to give agencies and public another
3 chance to comment.

4 “By and large, the world has been silent,” Le Cuyer said, “but I think the
5 absence of written comment is uncharacteristic in the kind of business we are in
6 around here.”

7 The state Department of Water Resources, which operates the Oroville
8 Reservoir as part of the State Water Project, has asked the Corps to approve an easing
9 of the dam’s flood-control requirements.

10 Corps officials in San Francisco last week approved the state’s analysis that the
11 reservoir begin filing two weeks earlier each March without significantly diminishing
12 the flood protection to downstream cities, including Marysville, Yuba City and
13 Sacramento.

14 But officials there also questioned whether enough environmental review had
15 been done. The decision was left with Le Cuyer whether to reopen the plan to the
16 public.

17 “Finally, said Bob Baiocchi, executive director of the California Sportfishing
18 Alliance. It will give the opportunity to provide some comments.

19 **Patrick Porgans, a private consultant, and a frequent critic of water projects**
20 **said he believes the plan may significantly reduce the flood protection provided by**
21 **Oroville Dam.** (Emphasis added)

22 Porgans also questioned whether the state’s water customers [SWP
23 contractors] will repay the federal government a portion of the \$85 million it
24 contributed for the flood-control aspects of the project.

25 “Who benefits from the money part of this?” Porgans asked. “Where do the
26 proceeds go? To the environment? To farmers? Back to the U.S.?”

27 **The change would increase the yield if the reservoir by 25,000 acre-feet in dry**
28 **years to 160,000 acre-feet in wetter years. In wet years, that is enough water for**
29 **more than 300,000 Southern California households.**²⁸¹ (Emphasis added)

30 **Senator Hayden Questions Flood Control Plan:**

31 Building in low-lying lands needs rethinking, he said.

32 California needs to decide whether the benefits in building homes in low-lying
33 areas out-weighs the risks of death, destruction and escalating costs of flood control,
34 state Senator Tom Hayden said at a committee hearing yesterday.
35
36

²⁸¹ Jim Mayer, staff reporter, The Sacramento Bee, State News, *Plan to tap ,ore from Oroville Dam gets second look*, Tuesday, June 26, 1990.

1 *Hayden, a Los Angeles democrats and outspoken environmentalist, told his*
2 *colleagues on the Senate Natural Resources and Wildlife Committee that he hopes to*
3 *begin a much-need dialogue on the development of flood plains and whether lands*
4 *should be returned to open space to absorb river overflow.*

5 *“No one is opposed to flood control systems, but where is the balance?” asked*
6 *Hayden, who chairs the committee. “We need to break the cycle of development of*
7 *areas of high risk from floods (or fire and quakes), which is followed by predicted*
8 *disaster and death, after which we apply for more taxpayer bailouts and then like*
9 *lemmings rebuild in the same doomed areas.”*

10 *The hearing comes in the wake of serious winter storm early this month that*
11 *wreaked havoc over much of California, especially along the Russian River and*
12 *developed flood plains such as Rio Linda and parts of Roseville.*

13 *Twelve people died, and others became sick or were injured. Damage to*
14 *private homes, public buildings and roadways is estimated at\$735 million, and that*
15 *figure may climb.*

16 *Although many victims were insured not all especially losses were covered.*
17 *Others simply had no insurance. In both cases, federal and state officials are helping*
18 *by offering tax breaks, emergency grants, shelter, food, and loans.*

19 *Several officials urged the committee yesterday to rethink California’s strategy*
20 *on flood control and perhaps move residents out of the low-lying flood plain instead*
21 *of risking the threat of loss of life and property.*

22 ***“We should never lose sight of the fact that those of us that reside here in***
23 ***California, Great Central Valley have taken up residence in what was once an inland***
24 ***sea,” flood researcher Patrick Porgans said in a prepared statement, “Will building***
25 ***more flood control facilities (bigger dams and higher levees) provide us with more***
26 ***protection or will it merely lure us into a false sense of security that will have***
27 ***devastating consequences to both human and natural resources.”***

28 *Porgans says the answer is “very simple. We should limit additional growth*
29 *in low-lying flood-plains and generate revenue to buy (existing residents and*
30 *businesses) out of there.”*

31 ***Hayden thinks Porgans has a good idea.** (Emphasis added)*
32 *California needs to “alter its narrow flood control mentality” and follow the*
33 *lead of the federal government, which is using part of the disaster relief funds from*
34 *the 1993 Mississippi flood to relocate residents out of riverbanks-farm lands, Hayden*
35 *said.²⁸²*

²⁸² Fred Wilson, Chronicle Sacramento Bureau, *Hayden Questions Flood Control Plan, building in low-lying lands needs rethinking*, he says, Wed., January 25, 1995.

Section III: DWR's Conflicting Roles Pre-Post State Water Project

Q: Are DWR officials conflicting role as a water purveyor and their failure to comply with federal-state flood control rules and regulations placing the public at an unreasonable level of risk to loss of life and property downstream from the State Water Project Oroville Dam and Reservoir facilities? Yes!

A: The records attest that DWR officials repeatedly made fatal, costly, and conflicting decisions, during critical flood events by the unauthorized storage of water designated for flood control space at Oroville Reservoir.

*During flood season, flood control takes precedent over all other purposes and uses of the Oroville facilities, i.e., power generation, recreation, water storage, etc.*²⁸³
[Emphasis added] (Exhibit *)

Note: DWR officials' motive for negating state and federal flood control mandates enables them release water slowly to generate more electrical power and increase water supply to meet its overcommitted SWP Contractors entitlements. DWR's actions are extremely beneficial to the Contractors, as it reduces costs, while increasing water supply, sale of surplus power; albeit DWR's actions are at the expense and to the demise of downstream property owners.

DWR Acknowledged Benefits Due to Noncompliance with Federal and State Flood Control Regulations:

The operation of reservoirs for flood control are not without problems and occasionally the reservoirs are not operated according to the published rule curve requirements. The use of flood control space for other purposes served by the reservoir such as power generation or conservation storage negates the benefits derived for flood control. When heavy storm runoff fills the reservoir's flood control space, it is tempting to release water slowly through the power turbines rather than to quickly evacuate the space by additional controlled releases which may be called for by the standard

²⁸³ U.S. Army Corps of Engineers, Sacramento District, *Oroville Dam and Lake, Feather River, California, Water Control Manual, Appendix IV to Master Water Control Manual, Sacramento River Basin, California, Preliminary Subject to Revision, Exhibit C: Field Working agreement Between State of California, Department of Water Resources and Department of the Army, Corps of Engineers for Flood Control Operation of the State Water Project Dams and Reservoirs in California*, August 1989, p 2. A *Field Working Agreement Between State of California, Department of Water Resources and Department of the Army, Corps of Engineers for the agreement was initiated to ensure that there exists a clear understanding of the flood control regulation and information exchange required for the project operation.*

1 **operating procedures. This practice could defeat the flood control operation.**²⁸⁴
 2 [Emphasis added] (Exhibit *)

3 **California Little Hoover Commission Conducted an Investigative Hearing on DWR's**
 4 **Conflicting Roles:**

5
 6 **DWR's Conflicts of Interest Subject of a [Little Hoover Commission](#) Hearing:**²⁸⁵ The following
 7 comments were provided by Roger Paterson, Assistance General Manager, Metropolitan Water
 8 District of Southern California (MWD), and held by the state's Little Hoover Commission on State
 9 Water Governance. Mr. Paterson's, former position, was the Regional Director of the federal Central
 10 Valley Project. In his position he was required to work closely with the DWR, as required under the
 11 Coordinating Operation Agreement ([COA](#)) for the joint operation of the SWP and the federal Central
 12 Valley Project (CVP).²⁸⁶ (Exhibit *)

13 **The SWP is plagued with a wide variety of problems and challenges, some of which are**
 14 **endemic and others of which are interagency in nature. Without exhausting the list, I**
 15 **shall mention a few:**

16
 17 ***Conflicting Roles in Operation of the State Water Project and statewide***
 18 ***responsibilities: The internal structure of DWR coupled with the varied activities of***
 19 ***several agencies on water management have placed an increasing burden on DWR's***
 20 ***ability to balance its function as the operator and manager of the state water project***
 21 ***facilities with its statutory statewide Delta Levee, water planning, flood control, and***
 22 ***power purchasing obligations. This places DWR's contractual obligations to secure***
 23 ***and deliver water to its water customers in potential conflict with its broader***
 24 ***resources responsibilities. This has the potential to compromise sound infrastructure***
 25 ***decisions in the interest of the water system in order to accommodate the demands***
 26 ***of other interests (or at least to give such appearance). Conceivably, the interests***

²⁸⁴ Department of Water Resources, State of California, *Bulletin 199, California Flood Management: an evaluation of Flood Damage Prevention Programs, Final Review Copy*, October 1979, p. 4-6.

²⁸⁵ The [Little Hoover Commission](#), formally known as the Milton Marks "Little Hoover" Commission on California State Government Organization and Economy, is an independent state oversight agency created in 1862. The Commission's mission is to investigate state government operations and policy, - through reports and legislative proposals - make recommendations to the Governor and Legislature to promote economy, efficiency and improve service in state operations. In addition, the Commission has a statutory obligation to review and make recommendations on all proposed government reorganization plans.

²⁸⁶ [Agreement reached on Coordinated Operation Agreement for ...](#)

<https://mavensnotebook.com/2018/12/14/update...>

Dec 14, 2018 · The [Coordinated Operation Agreement \(COA\)](#) was originally signed in 1986 and defines how the state and federal water projects share water quality and environmental flow obligations imposed by regulatory agencies. The agreement calls for periodic review to determine whether updates are needed in light of changed conditions.

1 **being accommodated may not be the same as the one bearing the risk and cost**
2 **consequences of decisions made.**²⁸⁷ [Emphasis added] (Exhibit *)
3

4 **Note: Public records prove that DWR’s unauthorized storage of flood waters, in the “Designated**
5 **Flood Storage Space” at the SWP Oroville facilities, during the 1980, 1986, and 1997 flood events,**
6 **exceeded bi-hourly 10,000 c.f.s. release limitations; exceeded the 150,000 c.f.s floodwater release**
7 **limitations, failure to inspect downstream levees that was a major factor for damages sustained**
8 **to private property, levees, and loss of lives, downstream from Oroville Dam.**²⁸⁸ (Exhibit *)
9 However, the Feather River, at Gridley flow-monitoring gage, recorded a peak flow of approximately
10 150,000 cfs on February 1986, as compared to the past peak flow of 90,100 cfs on January 15,
11 1980.²⁸⁹ (Exhibit *)
12

13 *In volume, this flood [January 1997] exceeded the previous record of the 1986 by quite*
14 *a margin, perhaps 25 percent. **At one point on January 1, we [DWR] thought the inflow***
15 *would be so much that the Lake would fill and spill – perhaps 250,000 cfs worth.*
16 *People were evacuated from Oroville downstream. **Happily, the rain ceased a little***
17 *sooner than expected and the dam contained this runoff.* [Emphasis added] (Exhibit
18 *)

19 **Note: The 250,000 cfs worth is the amount of floodwater that would have been released from**
20 **Oroville Dam!**
21

22 *The overall Sacramento River region flood control system performed well, greatly*
23 *reducing the peak flows on the Sacramento River system. **Even so, total flows at the***
24 *latitude of Sacramento in the river and in Yolo bypass was estimated at 600,000 cfs*
25 *which is nearly half of the combined Missouri and Mississippi River flow of 1.3 million*
26 *cfs at St. Louis in the great flood of 1993. There were two serious levee breaks in the*
27 *Sacramento Valley, one on the Feather River south of Marysville, the other on Sutter*
28 *bypass west of Yuba City.*²⁹⁰ [Emphasis added] (Exhibit *)
29

²⁸⁷ *Testimony of Roger K. Patterson*, assistant general manager, Metropolitan Water District of Southern California, presented to Little Hoover Commission Hearing on State Water Governance, June 25, 2009, pp. 3 and 4.

²⁸⁸ Department of Water Resources, Oroville Reservoir Bi-Hourly Data Sheets, February 1986, January 1997, February 2017.

²⁸⁹ U.S. Army Corps of Engineers, Sacramento District, *Report on the February 1986 Floods, Northern California and Northwestern Nevada, Chapter IV – Effects of Projects, January 1987.*

²⁹⁰ *The Great New Year's Flood of 1997 in Northern California*, Maurice Roos, Chief Hydrologist, CA Department of Water Resources, P.O. Box 219000, Sacramento, CA 95821-9000. Prepared at the Sierra College California Weather Symposium, June 28, 1997 in Rocklin, CA, page 5 and page 8.

1 ***The basin storm total since last Thursday in the Feather is 23.9 with 2.9 inches***
2 ***expected in the 24 hours ending 4 AM Friday. The wettest locations in the Feather***
3 ***basin received over 30 inches of rain the past 4 days. Inflow into Oroville Reservoir***
4 ***peaked last night at 302,000 cubic feet per second, a new record which superseded***
5 ***the Feb 1986 storm.***²⁹¹ [Emphasis added] (Exhibit *)

6 **FERC's Licensing Responsibilities for Hydropower – Dam Safety and Inspections:**

7
8 *Hydropower is one of the project types in which FERC regulates both the construction*
9 *and operational phase of a project. Dam safety is a critical part of the Commission's*
10 *hydropower program and receives top priority. Before projects are constructed, the*
11 *Commission staff reviews and approves the design, plans, and specifications of dams,*
12 *powerhouses, and other structures. During construction, **Commission staff engineers***
13 ***frequently inspect a project, and once construction is complete, Commission***
14 ***engineers continues to inspect it on a regular basis.***²⁹² (Emphasis added) (Exhibit *)
15

16 **FPA Part I: Hydropower Licensing**

17
18 *FERC licenses the construction and operation of nonfederal hydropower projects*
19 *under Part I of the FPA. "Nonfederal hydropower" refers to any hydropower project*
20 *not owned by the federal government, regardless of location.*

21 **Licensing Authority**

22
23 *Section 4(e) (16 U.S.C. § 797(e)) authorizes FERC to issue hydropower licenses and sets*
24 *forth some basic parameters for the application and review process, including a*
25 *requirement that the Chief of Engineers and the Secretary of the Army approve plans*
26 *for any hydropower project "affecting the navigable capacity of any navigable waters*
27 *of the United States" prior to issuance of the license. Section 4(e) also provides that*
28 *when deciding on a license, the commission should not only "consider the power and*
29 *development purposes for which licenses are issued," but also "give equal*
30 *consideration to the purposes of energy conservation, the protection, mitigation of*

²⁹¹ From Bill Mork, State Climatologist, Hydrology and Flood Operations, California State Department of Water Resources, **Subject: Rains Past 24 Hours; Relief in Sight.** mork@water.ca.gov Date: Thu. 02 Jan 1997.

²⁹² Federal Energy Regulatory Commission (FERC): Hydropower – **Dam Safety and Inspections, Updated, 23 February 2017.** <https://www.ferc.gov/industries/hydropower/safety.asp>

1 *damage to, and enhancement of, fish and wildlife ..., the protection of recreational*
2 *opportunities, and other aspects of environmental quality.”*²⁹³

3 **License Conditions**

4
5 *FPA Section 10 establishes several conditions applicable to all hydropower licenses*
6 *issued pursuant to the FPA. Notably, Section 10(a) (16 U.S.C. § 803) requires FERC to*
7 *give “equal consideration” to purposes other than power generation, including the*
8 *environmental and recreational concerns listed in Section 4(e). Section 10 also*
9 *requires licensees to refrain from substantial alterations to their facilities without*
10 *approval from FERC, **maintain and repair the facilities as necessary**, pay certain fees*
11 *and charges to the United States and to other hydropower licensees from whom they*
12 *derive a benefit, and adhere to other conditions FERC deems appropriate, including*
13 *those intended to protect fish and wildlife. (Emphasis added)*
14

15 **Navigation Facilities and Fish Passage**

16
17 *FPA Section 18 (16 U.S.C. § 811) specifically addresses a hydropower licensee’s*
18 *obligation to construct, maintain, and operate “such lights and signals as may be*
19 *required by the Secretary of the Department in which the Coast Guard is operating”*
20 *and “such fishways as may be prescribed by the Secretary of the Interior or the*
21 *Secretary of Commerce, as appropriate.” While Section 10 references such obligations*
22 *among others, Section 18 establishes them with specificity, and obliges the licensee to*
23 *provide them at its own expense. FERC incorporates these requirements in licenses or*
24 *reserves the right to mandate them as prescribed by the Department of the Interior at*
25 *a later date.*

26 **Compliance**

27
28 *FPA Section 31(a) (16 U.S.C. § 823b) details FERC’s investigation and enforcement*
29 *authority over hydropower facilities. **The agency is empowered to investigate and***
30 ***monitor hydropower facilities for compliance with license conditions.** (Emphasis*
31 *added)*
32

33 **FPA Part II: Regulation of Electric Utilities**

34 **Scope of Applicability**

35
36

²⁹³ Congressional Research Service, Informing the Legislative Debate since 1914, Adam Vann, Legislative Attorney
<https://crsreports.congress.gov> The Legal Framework of the Federal Power Act, January 22, 2020.
<https://crsreports.congress.gov/product/pdf/IF/IF11411>

1 *FERC's jurisdiction over the electric power industry as set forth in Part II of the FPA is*
2 *limited. Pursuant to Section 201, Part II applies only to "the transmission of electric*
3 *energy in interstate commerce and to the sale of electric energy at wholesale in*
4 *interstate commerce." (16 U.S.C. § 824(b)). The FPA defines "wholesale" as sale for*
5 *resale. (16 U.S.C. § 824(d). Intrastate transmission and distribution of electricity, as*
6 *well as intrastate and/or retail sales of electricity, are largely regulated by state*
7 *agencies.*

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15 *resale. (16 U.S.C. § 824(d). Intrastate transmission and distribution of electricity, as*
16 *well as intrastate and/or retail sales of electricity, are largely regulated by state*
17 *agencies. (Emphasis added)*

20 **FPA Part III: Recordkeeping and Administrative Rules**

21 *FPA Part III includes several procedural, accounting, and recordkeeping requirements.*
22 *For example, Section 301 (16 U.S.C. § 825) requires all licensees and public utilities*
23 *to keep accounts and records to the extent required by FERC regulations, and*
24 *Section 307 grants FERC broad enforcement authority to investigate potential*
25 *violations of the FPA, aid in enforcing or promulgating regulations under the FPA, or*
26 *obtain information to serve as the basis for legislative recommendations.²⁹⁴*
27 *(Emphasis added)*

29 **Q: Did FERC's Engineers Carryout the Required Inspections of the Oroville Facilities with** 30 **Due Diligence? Apparently Not!**

31 Over decades, there were many opportunities for DWR, DSOD [California Division
32 Safety of Dams], *and FERC to recognize and investigate serious issues that could
33 have led to effective remedial measures. Evidence ^{ee} documented in this Root
34 Causes Analysis Investigation (Appendix B) reveals the significant extent in decades
35

²⁹⁴ Congressional Research Service, Informing the Legislative Debate since 1914, Adam Vann, Legislative Attorney <https://crsreports.congress.gov> *The Legal Framework of the Federal Power Act*, January 22, 2020. <https://crsreports.congress.gov/product/pdf/IF/IF11411>

1 **of missed opportunities for DWR, DSOD, and FERC to detect and investigate severe**
2 **anomalies.** (Emphasis added)

3
4 **The lack of recognition of the significance of the severe issues revealed in Appendix**
5 **B, from the beginning of the construction of the spillway to present, reveals the**
6 **long-term systematic failures of DWR, DSOD, and FERC to identify and rectify**
7 **critical components of the Oroville Dam Gated Spillway to the required level of the**
8 **Operating Standard of Care: thus, “Negligent.”**⁹

9
10 **These egregious long-term repeated failures violated the First Principle of Civil Law:**
11 **“imposing Risks on people if and only if it is reasonable to assume they have**
12 **consented to accept those Risks.” Risk control is a central goal of Civil Law**¹⁰²⁹⁵
13 [Emphasis added] (Exhibit *)

14
15 **Q: Did DWR officials’ negligence and failure to properly construct, operate and maintain**
16 **the flood control facilities result in the extensive damage to the Oroville Dam flood**
17 **control spillway outlet and downstream flood damages? Yes!**

18
19 **A: Two independent forensic reports revealed the February 2017 near-catastrophic spillway**
20 **disaster was a result of the spillway outlet not being properly constructed or maintained and was**
21 **“managed to fail.”**²⁹⁶ ²⁹⁷

22 **Q: Has development of flood control projects been consistent with federal and state**
23 **policies, mandates, rules, and regulations? No!**

24 **A: Is there evidence to support the fact that government knowingly constructed projects**
25 **that would exacerbate flood damages within the FRW, as a means to protect pre-existing**
26 **flood control projects beyond the confines of the FRW? Yes!**

27 **Floodwater Discharges (Outflows) from the Oroville Dam During the February 2017**
28 **Spillway Failure:**

29

²⁹⁵ Robert G. Bea, Emeritus Professor, Department of Civil & Environmental Engineering Advisor, Center for Catastrophic Risk Management, Oroville Dam Advisory Group, University of California Berkeley, *Root Causes Analyses of the Oroville Dam Gated Spillway Failures and other Developments* report, 17 April 2017.

²⁹⁶ Robert G. Bea, Emeritus Professor, Department of Civil & Environmental Engineering Advisor, Center for Catastrophic Risk Management, Oroville Dam Advisory Group, University of California Berkeley, *Root Causes Analyses of the Oroville Dam Gated Spillway Failures and other Developments* report, 17 April 2017, p. 6.

²⁹⁷ [Independent Forensic Team Report-Oroville Dam Spillway Incident 5 January 2018.](#)

1 The spillway and two small outlets have a total maximum discharge capacity of about **30,000 cfs**.
2 During the crisis at Oroville, operators were sending water rushing down its damaged primary
3 spillway at more than 100,000 cfs.

4 **What is the maximum discharge capacity of the Oroville Dam spillway? 250,000 CFS –**
5 **Serious Downstream damages occur floodwater releases at 150, 000 CFS:**

6
7 Water flow onto the main spillway is controlled by eight radial (Tainter) gates that
8 have a combined maximum [discharge capacity](#) of 250,000 cu ft/s (7,600 m³/s) when
9 the lake elevation is 905 feet. Since the sill elevation of the spillway is 813.6 ft (248.0
10 m), it can only be used at lake elevations above that level.²⁹⁸

11
12 (5) *The watershed above Oroville Dam drains 3,611 square miles and includes mountain*
13 *crests over 8,000 feet high, mountain valleys at elevations as high as 5,000 feet above*
14 *sea level, deep canyons, and rolling foothills. Elevations range from 10,644 feet at Mt.*
15 *Lassen Peak to 900 feet at the dam site.*²⁹⁹ (pp. 3 and 4) [Emphasis added]

16
17 ***The system of levees gives partial protection to the entire Feather River flood plain,***
18 ***with exception of the left bank area above Honcut creek, the Simmerly Slough area,***
19 ***and the areas between the levees.**** [Emphasis added]

20 **36. EMERGENCY OPERATION OF GATED SPILLWAY**

21
22 ***a. Whenever water is stored in the flood control space and the reservoir is rising***
23 ***rapidly because of flood inflow, the necessity for emergency spillway releases should***
24 ***be determined. The emergency spillway release diagram (chart 2) accompanying the***
25 ***attached draft of regulations, indicates the release considered necessary to avoid***
26 ***endangering the structure without releasing quantities in excess of natural runoff.***
27 [Emphasis added]

28
29 ***b. The diagram is derived in accordance with procedures outlined in EM 1110-2-***
30 ***3600 and is based on computations of outflow required to limit storage to the capacity***
31 ***available, when only reservoir elevations and rate of rise are known, and remaining***
32 ***inflow volume is estimated on the basis that inflow peak in past and that recession of***
33 ***flow will be somewhat steeper than the average observed in past floods. The diagram***

²⁹⁸

https://www.bing.com/search?q=discharge+capacity+of+the+Oroville+Dam+flood+control+Spillway+outlet++chute&src=IE-SearchBox&FORM=IESR4S&pc=EUPP_UE10

²⁹⁹ Department of the Army, Sacramento District, Corps of Engineers, Oroville Dam and Reservoir, Feather River, California, Report on Reservoir Regulation for Flood Control, August 1970, pp. 1, 2 and 3.

1 ***is thus designed to defer increases in emergency releases until it is certain that larger***
2 ***releases will be necessary. Accordingly, when such releases are indicated by the***
3 ***diagram, it is essential that they be made immediately in order that it will not***
4 ***subsequently become necessary to make larger releases. For this reason, the reservoir***
5 ***operators at the dam should be thoroughly familiar with the emergency spillway***
6 ***release diagram and should be supplied with standing instructions to initiate use of the***
7 ***diagram, if required, when communications with the Division of Operation and***
8 ***Maintenance, Department of Water Resources, State of California, is disrupted.***
9 [Emphasis added]
10

11 **Failure to Comply with Flood Control Manuals – Exceeded Downstream Flow** 12 **Limitations:**

13
14 According to official records, certain flood control facilities were not operated in compliance with state and
15 federal flood control rules and regulations. For example, DWR officials apparently failed to operate the SWP
16 Oroville flood control facilities in accordance with the floodwater releases required in the Oroville
17 Dam Flood Control Manual; flood water releases were at rates higher than permitted in the Manual.
18 Porgans/Associates (P/A) obtained government documents, via FOIA and the California Public
19 Records Act that confirm that DWR officials have repeatedly failed to comply with the required flood
20 control rules and regulations which have exacerbated downstream flood control damages.

21
22 ***“Releases from Oroville Dam are not to be increased more than 10,000 c.f.s. or***
23 ***decreased more than 5,000 c.f.s. in any 2-hours.”***³⁰⁰ [Emphasis added]
24

25 **Preliminary Finding of Facts:** Oroville Dam, Lake Oroville, and related facilities are part of the
26 California Water Project and are operated by the Department of Water Resources.

27
28 ***Oroville Dam was completed in November 1967. The Oroville facilities were***
29 ***operated for essentially the first full year in 1969 for all its multiple purposes of flood***
30 ***control, water conservation, power generation, recreation, and fish and wildlife***
31 ***enhancement. Melt from the near record snowpack in late spring and early summer of***
32 ***1969 filled the lake, for the first time, to its near full capacity of about 3-1/2 million***
33 ***acre-feet.*** [Emphasis added]
34

35 ***The Federal Government, through the U.S. Army Corps of Engineers, has***
36 ***authorized utilization of Oroville Dam and Reservoir for flood control and is paying***
37 ***the costs of the dam and reservoir that are allocated to flood control purposes. As***

³⁰⁰ Department of the Army, Sacramento District, Corps of Engineers, *Oroville Dam and Reservoir, Feather River, California, Report on Reservoir Regulation for Flood Control*, August 1970.

1 authorized by the Flood Control Act of 1958, a contract was executed in March 1962 in
2 which the Federal Government agreed to contribute 22 percent of the construction
3 costs of Oroville dam and Lake Oroville, exclusive of the power features, for protection
4 of the downstream area from flood flows originating in the Feather River. [Emphasis
5 added]

6
7 The flood control allocation in our contract with the Federal Government is
8 based upon studies by the Corps of Engineers of the operating criteria needed to control
9 the floods of the Feather River. The Corps' studies included detailed analyses of
10 potential storm and flood runoff conditions of the Feather River Basin and capabilities
11 of the downstream leveed channels. These studies were completed in December 1958,
12 and a report prepared in which the required flood control operating criteria were
13 defined. **Under the criteria developed, the Standard Project Flood with an inflow to
14 Lake Oroville of 440,000 second feet can be controlled by the reservoir so as not to
15 exceed the downstream design channel capacities.** The criteria developed by the Corps
16 were considered in the design of Oroville Dam, including its spillway and outlet works,
17 and under the terms of the contract the State agreed to operate the Oroville facilities
18 in accordance with the established criteria. [Emphasis added]

19 **Has Flood Protections Provided by Taxpayers been cost-effective as required by law?**

20 **Floodwater Releases from Oroville Dam**

21
22
23 **Q: Has the SPF or the Maximum Rain Flood Occurred on the Feather River since construction of**
24 **the Project Levee System or Oroville Dam?**

25
26 **A: No! The maximum inflow, into Oroville Reservoir was 301,002 cubic-feet per second (c.f.s.) of**
27 **water, with a 72-hour volume of 1.2 million acre-feet, which occurred on January 1, 1997.** ³⁰¹

28
29 This report was prepared by Patrick Porgans, Bio-Elemental-Terrestrial Solutionist, for the Feather
30 River Recovery Alliance (FRRA), to provide factual documentation in support of FRRA's effort to file
31 a **Motion of Intervention (MOI)** to the Federal Energy Regulatory Commission's (FERC) pending
32 review of the DWR's request for approval of its pending relicensing of FERC Project-2100 for the SWP
33 Oroville facilities.

34
35

³⁰¹ Ron MacAfee, Department of Water Resources Memo to Patrick Porgans, Re: Oroville Reservoir Bi-Hourly Computation Sheets for January 1997, 8 January 1997.

Relicensing of P-2100:

On February 11, 1957, the Department of Water Resources (DWR) was issued a 50-year license to construct and operate the Oroville facilities (P-2100). The original license expired on January 31, 2007, and P-2100 is currently operating under an annual license that automatically renews each year until a new license is issued. During relicensing, a diverse group of agencies and stakeholders scoped issues, designed a \$27 million suite of studies, reviewed reports, proposed measures, and discussed potential solutions for project impacts. Using relevant information from this effort, DWR filed an Application for New License with supporting environmental documentation on January 26, 2005. On March 26, 2006, DWR and an overwhelming majority of stakeholders successfully concluded negotiations and signed a Settlement Agreement that has been estimated to provide approximately \$1 billion in environmental, recreational, cultural, and other benefits over a proposed 50-year new license term.

In 2006, DWR and more than 50 other stakeholders signed a Settlement Agreement that resolves all relicensing issues that had been raised by the signatories or that may arise in the issuance of permits necessary for relicensing. The Settlement Agreement proposes license conditions, including Protection, Mitigation, and Enhancement Measures to be included in new license. DWR submitted the Settlement Agreement to FERC as DWR's preferred alternative for FERC's Environmental Impact Statement. DWR, as lead agency under California Environmental Quality Act, followed with an Environmental Impact Report (EIR) that evaluated the Settlement Agreement as DWR's proposed project. A summary of additional key activities and documents from relicensing are presented below.³⁰² [Appendix *]

Fundamental Differences between FERC's Alternative Licensing Procedure (ALP) and the Traditional Procedure:

The fundamental differences between an ALP and the traditional process are (1) in an ALP, the NEPA process begins early in the application preparation process. In the traditional process, the NEPA process does not begin until after the application has been filed and accepted, and all necessary studies are complete. (2) A license application prepared under an ALP contains a preliminary draft NEPA document which is largely the product of stakeholder collaboration instead of an exhibit containing the results of environmental studies prepared solely by the applicant. (3) **Commission staff are involved in advising the collaborative team throughout the**

³⁰² California Department of Water Resources, Oroville Facilities, Project No. 2100, <https://water.ca.gov/Programs/State-Water-Project/SWP-Facilities/Oroville/HLPCO-Oroville-Facilities-Project-2100>

1 **ALP prefilng activities.** In the traditional process, Commission staff are very rarely
2 involved in prefilng consultation. [Emphasis added]
3 .

4 Under the alternative procedures, if the participants can agree on what
5 information must be developed for the record and on deadlines for steps such as the
6 completion of studies and the filing of comments and proposed conditions, the pre-
7 filing consultation and environmental review processes can be integrated and
8 proceed concurrently. In such cases, the processing time for an application can be
9 dramatically shortened. Moreover, if the participants begin building consensus early
10 in the relicensing process, there is a much greater chance that they can reach
11 agreement on substantive issues, and perhaps settle the entire matter. While the
12 Commission strongly supports use of the alternative approach and has made its
13 technical and legal staff available to assist in the process, it is ultimately for the
14 participants to determine whether the approach is appropriate in any given
15 proceeding.^{303 304} [Appendix *]

16 **Dam Experts Claim Failure of Oroville Dam Would be the Worst Disaster in U.S. History:**

17 *First, rigorous state and federal guidelines exist for the risk-based management of*
18 *dams. Some of them were issued by President Carter following the Teton Dam failure*
19 *in Idaho in 1976 [which killed eleven people and caused massive property damage]. But*
20 *they're simply being ignored. Dams should be viewed like nuclear power plants or jet*
21 *airliners. With both nuclear plants and passenger jets, there is tremendous emphasis*
22 *on managing and minimizing risks, and that's appropriate. But dams are treated like*
23 *inert piles of dirt or concrete that have no potential for catastrophic failure, and that's*
24 *simply not the case. **Oroville isn't just a big dirt plug with a bunch of cows and corn***
25 ***downstream. If it failed, it would be the worst disaster in the history of the United***
26 ***States. The people at DWR are not bad human beings, but it's apparent to me that***
27 ***they're not up to the risk management challenges they're facing.***³⁰⁵ [Emphasis added]
28

³⁰³ In one recent case, the Commission declined to approve a licensee's request to use the ALP where it did not appear that there is sufficient support for the process from critical participants. In that case, the Commission is providing limited support by assigning separated technical and legal staff to assist stakeholders, but who are not active participants in the prefilng consultation.

³⁰⁴ Federal Energy Regulatory Commission (FERC): Hydropower – Dam Safety and Inspections, Updated, 23 February 2017, pp. 28, and 29. <https://www.ferc.gov/industries/hydropower/safety.asp>

³⁰⁵ Preliminary Root Causes Analysis of Failures of Oroville Dam Gated Spillway, Design Defects and Flaws, Construction Defects and Flaws, R. G. Bea, Center for Catastrophic Risk Management, University of California, 17 April 2017, p. 1.

<https://www.documentcloud.org/documents/3676605-Robert-Bea-Oroville-Spillway-Failure-Root-Cause.html>

1 **Oroville Dam Was Initial Approved as a Concrete Structure in FERC License 2100 –**
2 **Changed by DWR Financial Shortcoming of State Water Project Financing – Tallest Dam**
3 **in the United States:**
4

5 **(1)Oroville Dam, of concrete gravity section, about 730 feet above streambed, across**
6 **Feather River immediately upstream from State Highway No. 24 crossing of Feather**
7 **River, about 5.5 miles upstream from Oroville: two auxiliary dams, at low points in**
8 **the periphery of the reservoir, described as Bidwell Canyon Dam with a maximum**
9 **height of about 35 feet above natural ground, and Parish Camp Dam with a maximum**
10 **height of about 15 feet above natural ground: Oroville Reservoir, formed by the**
11 **above three dams, with a storage capacity of 3,500,000 acre-feet at normal water**
12 **surface elevation 900.0 (U.S.G.S. datum).³⁰⁶**
13

14 *Application was filed on April 17, 1962, under Section 6 of the Federal Power Act, by*
15 *Department of Water Resources of the State of California, license for Project No. 2100,*
16 *designated in the application as “Oroville Division, State Water Facilities,” for*
17 *amendment of its license for the project, currently under construction on the Feather*
18 *River and its tributaries near Oroville, California, and affecting lands of the United*
19 *States within the Plumas and Lassen National Forests and lands held in trust by the*
20 *United States for Indians in the County of Butte, California. [2] This April 17, 1962*
21 *application supersedes in its entirety as application for amendments filed by the*
22 *licensee on December 18, 1959.*
23

24 *The April 17, 1962 application, which was filed as a result of further studies and*
25 *investigations by the licensee to obtain a more economical design of the project*
26 *structures and their installation would change: the type for the Oroville development*
27 *from concrete gravity to a zoned filled-type with normal elevation remaining at*
28 *elevation 900 feet and the conventional type powerhouse to an underground*
29 *powerhouse with an installation of 440,000 kilowatts to 612,000 kilowatts of which*
30 *261,000 kilowatts are pump-turbine:³⁰⁷*
31

³⁰⁶ Federal Power Commission: Jerome K. Kuykendall, Chairman; Seaborn L. Digby, Frederick Stueck and William R. Connole. Department of Water Resources of the State of California, Project No. 2100, Order Issue License (Major), Issued February 11, 1957. (p.263)

³⁰⁷ Federal Power Commission: Joseph C. Swindler, Chairman, L. J. O'Connor, Jr., Charles R. Ross, Harold C. Woodward, and David S. Black. Department of Water Resources of the State of California, Project No. 2100, Order Amending License (Major), Issued January 22, 1964. (p.163)

1 **DWR's amendment from a concrete dam to a zoned filled-type came about to cost the**
 2 **cost for the dam's construction happened because the SWP was knowingly**
 3 **underfinanced from its inception:**
 4

5 Note: The State Water Project was knowingly underfinanced and contractually overcommitted since
 6 its inception. In November 1960, Governor Edmund "Pat" Brown, Sr., falsely told the voters that the
 7 SWP would cost \$1.75 billion, and that it "would pay-for-itself"; i.e., the recipients of the water and
 8 power would pay, which was never true.³⁰⁸ P/A completed a series of fact-finding reports, forensic
 9 accounting,³⁰⁹ of the SWP financing and repayment obligations, which served as the basis for a series
 10 of Senate hearings³¹⁰ that substantiated the fact that the SWP has not, nor will it ever pay for itself
 11 as promised.³¹¹ Furthermore, the facts revealed that although DWR officials and Governor Edmund
 12 "Pat" Brown, Sr. assured the public the SWP would cost \$1.75 billion that was never true, which
 13 former Governor Ronald Reagan acknowledge during his term in office.³¹² The capital cost on the
 14 SWP has exceeded \$6.5 billion. Although there is no definitive cost estimate to "complete" the SWP,
 15 estimates exceed \$50 billion (includes principal and interest). Then, as is now, the government
 16 misinformed the public of the real cost of the SWP.

17 **Flood Flow Criteria Releases from Oroville Reservoir for Feather River Channel Capacity**
 18 **Based on 1907-1909 Floods:**
 19

20 ***3.27 Functional Design: Based upon a reanalysis of the 1907 (187,000 c.f.s. at***
 21 ***Oroville) and 1909 flood flows in U.S.G.S. Water Supply Paper 298, 1912 (Bailey. P.***
 22 ***13, 14) and as a result of additional hydraulic studies, project capacity to confine***
 23 ***those flows were adopted as follows (S.D. 323, p. 45): Feather River above Marysville***
 24 ***180,000 c.f.s.³¹³ (Emphasis added) (Exhibit *)***

³⁰⁸ Patrick Porgans, Red Tape Abatement, *The State of The State Water Project, Report No. 1: Who's Financing It? Is it Paying for Itself?*, March 1879.

³⁰⁹ Patrick Porgans, Regulatory Specialist, *State of the State Water Project, Report No. 2: The State Water Project has been Underfinanced Since its Inception; The Project is Unable to Meet its Contractual Obligations; The Peripheral Canal and other Facilities in Senate Bill 200 were Approved and Funded in the 1960s; the Money was Spent, and the Facilities were never Built*, March 1982.

³¹⁰ Patrick Porgans, Regulatory Specialist, *State of the State Water Project, Supply, Demand, Financing and Management*, Prepared for the California Senate Committee on Agriculture and Water Resources, (pro bono) 1994.

³¹¹ Patrick Porgans, Red-Tape Abatement, *State of the State Water Project, Taped-Recorded and Transcribed Interviews with Mr. Donald Sandison, Comptroller, California Department of Water Resources*, 26 March 1982, and 23 April 1982.

³¹² California Senate Committee on Agriculture and Water Resources, *State Water Project Financing: Progress Report to the Legislature*, 1958, Regular Session, Report No. 2.

³¹³ Frank Kochis, Consulting Engineer, History of Development of the Sacramento River Flood Control Project, undated.

1 **FERC License 2100 Requires DWR to Operate SWP Oroville Facilities for the Protection**
2 **of Fisheries and Prevent the Oroville Borrows (Wildlife Area) from Siltation during**
3 **Floods:**
4

5 **Article 46. The Licensee shall prevent damage to fish and wildlife resulting from the**
6 **construction or operation of the project. Special provisions shall be taken to: (a)**
7 **prevent discharges of silt, petroleum products, and any other harmful substances or**
8 **debris into the Feather River, (b) prevent loss, removal, disturbance, and compaction**
9 **or shifting of gravel of the Feather River channel downstream from Thermalito**
10 **diversion dam except as may be appropriate for protection or improvement of fish**
11 **habitat, and (c) prevent the project borrow areas from becoming sources of silt or**
12 **other fines during floods or serving to dissipate stream maintenance flows or serving**
13 **to trap anadromous fish.** ³¹⁴ (p. 170)
14

15 ***A breach at Oroville would send a wall of water down the Feather River, through the***
16 ***Sacramento Valley, and ultimately into the Sacramento/San Joaquin Delta. It would***
17 ***destroy towns along the Feather and Sacramento Rivers, flood major portions of***
18 ***Sacramento, and blow out levees throughout the Delta, permanently flooding much***
19 ***of the region. The huge government pumps near Tracy that send water to Southern***
20 ***California cities and farms would be incapacitated. There would be tremendous loss***
21 ***of life and property, and it would be years before a permanent water delivery system***
22 ***to the south state could be reestablished.*** [Emphasis added] [Appendix *]
23

24 In the Superior Court of the State of California, in and for the County of Butte. Robinson
25 Construction Company, a Corporation, and Robinson & Sons, a co-partnership,
26 Plaintiffs vs. State of California, No. 71957, **Deposition of Donald A. McKillop**,
27 Appearances: For Plaintiffs: Leonard & Lyde, by Daniel V. Blackstock, Esq., For
28 Defendants: George Deukmejian, Attorney General of the State of California, May 12,
29 1982, page 53, lines 1 through 16.
30

31 **FERC'S Requirement to be Compliant with The Federal Endangered Species Act:**
32

33 ***Under this act, the Commission must ensure that its actions do not jeopardize***
34 ***protected species or their habitat and must consult with the U.S. Fish and Wildlife***
35 ***Service or the National Marine Fisheries Service (NMFS) when determining what***
36 ***protection measures to take. A project that would pose such jeopardy could not be***

³¹⁴ Federal Power Commission: Joseph C. Swindler, Chairman, L. J. O'Connor, Jr., Charles R. Ross, Harold C. Woodward, and David S. Black. Department of Water Resources of the State of California, Project No. 2100, Order Amending License (Major), Issued January 22, 1964. (p.170)

1 **authorized.** *In one recent case, NMFS issued a jeopardy opinion with respect to a*
2 *project the Commission had previously licensed (but not yet constructed). The*
3 *Commission disagreed that the project would pose such jeopardy but was compelled*
4 *to rescind the license.*^{315 316} (Emphasis added)
5

61. [GAO-01-921T Licensing Hydropower Projects: Better Time and ...](#)

7 <https://www.gao.gov/new.items/d01921t.pdf>

8 2 Report on Hydroelectric Licensing Policies, Procedures, and Regulations: Comprehensive Review and Recommendations Pursuant to Section 603 of the Energy Act of
9 2000, prepared by FERC staff (May 8, 2001).

102. [Hydropower Licenses and Alternative Licensing Conditions ...](#)

11 The 106 the Congress directed FERC to conduct a comprehensive review of the policies,
12 procedures, and regulations guiding the licensing process and report to Congress (§603 of the
13 Energy Act of 2000, P.L.106-469). FERC responded in May 2001, with recommendations on how to
14 reduce the length and expense of obtaining a new license. In addition ...[PDF]

15 [Re: An Open Letter on FERC's New Policy and Procedural ...](#)

16 3 Federal Energy Regulatory Commission, "Report on Hydroelectric Licensing Policies,
17 Procedures, and Regulations—Comprehensive Review and Recommendations Pursuant to
18 Section 603 of the Energy Act of 2000."
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³¹⁵ See *P.U.D. No. 1 of Okanogan County, WA*, 88 FERC ¶ 61,040 (1999), order rescinding license, 90 FERC ¶ 61, 169 (2000).

³¹⁶ *Report on Hydroelectric Licensing Policies, Procedures, and Regulations Comprehensive Review and Recommendations Pursuant to Section 603 of the Energy Act of 2000*, prepared by the Staff of the Federal Energy Regulatory Commission, May 2001, REPORT Submitted to the United States Congress, p. 17.

1 **Conclusions-Recommendations:**

2
3 The documentation contained in this Summary Report provides a wealth of valuable information
4 that supports FRRRA's assertions that the current operational criteria and managerial practices and
5 procedures employed by the Department of Water Resources, at the State Water Project's Oroville
6 Dam and Reservoir flood control facilities, has and will continue to present an unacceptable level of
7 risk to the lives and properties of Californians living downstream from the dam. Unless DWR
8 personnel are required to make essential adjustments in their historical operational criteria and
9 managerial-decision-making processes, in their own words, one million downstream residents and
10 \$80 billion in infrastructure will remain at risk, which inevitably will result in the worst catastrophic
11 disaster in U.S. History, which will occur with climate change and the perfect storm.

12
13 The author respectfully suggest, that FRRRA, in alliance with Butte, Plumas, Yuba, Sutter, Sacramento
14 Counties, and the reclamation districts throughout the Sacramento-San Joaquin Delta, join forces
15 and establish a proactive **Plan of Action (POA)** to develop the means to place a surcharge on water
16 originating in the Feather River watershed, delivered to Central and Southern SWP contractor
17 (including power generation). Presently, the SWP contractors pay nothing for the water itself. The
18 author established such a **POA** for clients in the Delta, wherein they received \$120 million. The funds
19 were used to improve and maintain private levees that were eroding as a result of DWR's transfer of
20 water through the Delta.

21
22 Surcharge funds can be used to offset ongoing damages and losses sustained from floodwater
23 releases from the SWP Oroville facilities, compensate for loss of recreational revenue, and offset
24 damages to public trust resources.

25
26 The author is prepared to assist in participating in such an endeavor, however, it will not do it at his
27 own expense, as was the case in preparing this report.

28
29 FRRRA paid a total sum of \$10,000 to the author, to prepare this Fact-Finding Report, when taking
30 into account the number of hours expended, worked out to about \$15 an hour, the remaining sum
31 went toward expenses, overhead and related costs.

32
33 The compendium of information contained in this report has been obtained by the author over a
34 period of 50 years. Many of the documents referenced in the 300 footnotes are contained in the
35 authors archives and may no longer be available in government files. The only reason the author
36 committed himself to provide this report was to right an injustice perpetrated by self-serving
37 unaccountable government officials that placed innocent people at an unacceptable level of risk.

Endnotes

¹ CAL Alumni Association, UC Berkeley, California Magazine,

<https://alumni.berkeley.edu/california-magazine/just-in/2017-07-27/bob-bea-takes-us-deep-dive-through-his-dire-oroville-report>

² Robert G. Bea, Emeritus Professor, Department of Civil & Environmental Engineering Advisor, Center for Catastrophic Risk Management, Oroville Dam Advisory Group, University of California Berkeley, *Root Causes Analyses of the Oroville Dam Gated Spillway Failures and other Developments* report, 17 April 2017, p. 6.

³ *Analysis Cites Flawed Management in Oroville Dam Failures* By *Ben DuBose* on 10/2/2017 12:22 PM

<http://www.materialperformance.com/articles/material-selection-design/2017/10/analysis-cites-flawed-management-in-oroville-dam-failures>

“The gated spillway was managed and regulated to failure,” Bea says, referring to both the California Department of Water Resources (DWR) (Sacramento, California) and the U.S. Federal Energy Regulatory Commission (Washington, DC).

⁴ *Paterno v. State of California* (1999) 74 Cal. App. 4th Rptr. 2d 7540

⁵ Email from Ted Thomas, Public Information Officer, California Department of Water Resources to Patrick Porgans, Subject: Paterno settlement, Wed., 12 November 2012, 3:57 PM.

⁶ U.S. Army Corps of Engineers, Sacramento District, Oroville Dam and Reservoir, Feather River, Report on Reservoir Regulations for Flood Control, August 1970, p. 36.