SAN LUIS OBISPO COUNTY FLOOD CONTROL
AND
WATER CONSERVATION DISTRICT
ZONE 3
LOPEZ PROJECT

Interim Downstream Release Schedule

February 2, 2007

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and
Water Conservation District Zone 3 (Lopez Project)

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I. Executive Summary

The purpose of this Interim Downstream Release Schedule (IDRS) is to provide a plan for managing downstream releases from Lopez Dam prior to the approval of the project's Habitat Conservation Plan (HCP). Included in the IDRS is a Low Reservoir Response Plan (LRRP) consisting of a methodology to assess near-term reservoir levels and a set of actions that could be taken to mitigate the impacts of low reservoir levels.

The Lopez Project currently delivers an annual total of 8,934 acre feet of water for municipal, environmental, and agricultural uses. This amount exceeds the traditional safe annual yield of the reservoir by 204 acre feet/year. Analysis of stream flows suggests that reducing downstream releases during the wet season (January 1 through March 31) has the potential to increase storage in the reservoir by amounts that exceed 204 acre feet, without resulting in impacts to agricultural or environmental resources. However, to ensure that no impacts to federally listed species occurs, it is necessary to add two additional stream flow monitoring stations, improve the equipment used at the two existing stations, and establish additional visual monitoring points on the creek. In addition, the ability to affect increases in storage over the longer term may be enhanced by implementing in-stream fish passage barrier improvements, consistent with those envisioned by the draft Habitat Conservation Plan. Annual costs associated with increasing storage range from $410 to a low of $22 per acre foot, depending on the degree of effort needed to effectively monitor the stream and the actual amount of increased storage that is achieved.

Analysis of current release rates shows that, if these rates had been in place during the driest period on record since completion of the Lopez Dam, the project would be capable of meeting all current expectations (municipal, environmental, agricultural) without falling below 23,000 acre feet in storage, or approximately 46% of the capacity of the reservoir. However, a conservative approach to reservoir management is prudent due to the critical nature of the project in providing for municipal water supplies, as well as the variable nature of long term climate changes. Consequently, a Low Reservoir Response Plan (LRRP) has been developed in order to pre-plan a set of potential actions that could be taken if the reservoir were to fall below 20,000 acre feet in storage (two years of deliveries above minimum pool). Implementation of the LRRP would involve incremental reductions in both downstream releases and municipal deliveries. The degree of reductions would be dependent on the length of the drought event, reservoir levels, and long term climate predictions.

II. Purpose

The purpose of this Interim Downstream Release Schedule (IDRS) is to provide a plan for managing downstream releases from Lopez Dam prior to the approval of the project's Habitat Conservation Plan (HCP). Although the HCP contains a preferred alternative that includes a detailed downstream release schedule, certain elements of that schedule may result in incidental take of steelhead or other listed species during prolonged dry periods that result in low reservoir levels. Therefore, the HCP preferred alternative will not be proposed for implementation unless and until the necessary approvals have been granted pursuant to the federal Endangered Species Act. This Interim Downstream Release Schedule describes Zone 3's plan and approach to ensuring that interim releases into Arroyo Grande Creek continue without impacting environmental, agricultural or municipal water supplies.

III. Goals and Objectives

The Lopez Project, organized as Zone 3 of the San Luis Obispo County Flood Control and Water Conservation District, was constructed in the late 1960's to provide a reliable water supply for urban users in southern San Luis Obispo County. Municipal water contract deliveries total 4,530 acre feet per year (AFY). The project also makes downstream releases to Arroyo Grande Creek to ensure adequate recharge of riparian aquifers to support agricultural wells. Agricultural releases have historically averaged 2,335 AFY, although at the time the dam was constructed downstream releases were anticipated at 4,200 AFY. Flood Control Zone 3 also currently releases 4 million gallons per day (6.19 cfs) into Arroyo Grande Creek from the outlet works at Lopez Dam pursuant to informal agreements with state and federal resource agencies pending approval of the project's HCP. These annual downstream releases total 4,344 AFY. Additional summertime agricultural releases total 60 AFY. It should be noted that agricultural and habitat releases are conjunctive; therefore, during most months the habitat release is sufficient to supply agricultural needs.

Municipal contract obligations plus downstream releases total 8,934 AFY. However, the safe yield of the reservoir is established at 8,730 AFY. Current uses exceed the safe yield by 204 AFY. Given that the project has experienced dryer than normal periods lasting up to seven consecutive years, there is a concern that continuation of releases that exceed the safe yield may result in an inability for the project to meet its current and historic obligations, should a prolonged dry period develop.

Three key concepts support an approach that increases storage in the reservoir in order to meet annual demands:

1. The Lopez Project provides a significant percentage of the municipal water supply for Zone 3 entities; to the degree that reductions in deliveries

at this time could result in a substantial hardship to a number of residents. While efforts to enhance the amount of supply and the efficient use of current supplies are ongoing, those efforts have not yet matured to the point where reductions in deliveries from the Lopez Project could be absorbed into the communities' water budget.

2. The current "level" release rate of 4 million gallons per day (6.19cfs) into Arroyo Grande Creek was established to ensure that no "take" of steelhead would occur *under dry season conditions*. Closer monitoring of stream flows should provide opportunities to reduce releases to the stream without incurring impacts to sensitive species during periods when agricultural pumping is reduced and inflows to the creek from adjacent streamside aquifers is the greatest.

3. Continued operation of the system above safe yield could, in extreme situations, result in conditions where downstream releases could not be made without resulting in significant impacts to water users. Absent alternative municipal water sources, Zone 3 would be placed in an untenable situation. Further, avoidance of any condition that would result in severe impacts to sensitive species, municipal users, or agricultural interests prior to completion of the HCP process is key to successful completion of the HCP.

Therefore, the objectives of the IDRS are to operate the dam in a manner that:

1. Allows the project to continue to meet its contractual responsibilities

2. Maximizes the potential for interim "surplus" water generation

3. Results in no discernable impacts to steelhead.

4. Meets agricultural needs

5. Generates data and information that can be used to supplement the HCP and/or assist in implementing the HCP once it's approved.

IV. Approach

This Interim Downstream Release Schedule approaches the task of matching project deliveries to safe yield by reducing the total annual downstream release. This will be accomplished by enhancing the ability to monitor stream flow at various points along the stream and reducing reservoir releases during and/or immediately following periods of heavy precipitation in the wet season. Should efforts to increase reservoir storage during winter months be successful, consideration will be given to reducing releases during spring and fall months.

Phase I focuses on reducing releases during the wettest period of the year to take advantage of both reduced agricultural pumping and inflows from both surface and subsurface sources.

Based on the level of success achieved by phase I efforts, reductions in fall and spring releases, consistent with the release calculations established in the HCP, may be implemented. "Success", with respect to phase I efforts, is based on:

1. A demonstrated ability to accurately predict stream response to release reductions,

2. Confidence that changes in the release rate can be made without incurring stream flow changes that negatively impact sensitive species, and

3. Increases in storage achieved in phase I result in a favorable cost/benefit ratio.

Based on direct observations of stream flow during the 2004/2005 wet season, and during the initial 2005/2006 wet season, it is evident that wet season flow volumes in Arroyo Grande Creek increase as the stream flows from Lopez Dam to the ocean at Oceano. From an initial flow of 6cfs at the outlet works, observed wet season stream flow typically exceeds 20cfs at the 22nd Street Bridge in Oceano, just upstream from the stream's ocean outlet. During storm events, flows at 22nd Street can increase by several magnitudes owing to the flow contributions from developed areas as well as from tributary streams. Given that flows at 22nd Street are influenced more by the watershed's response to winter rains than by releases from Lopez Dam, some degree of reductions in release from the dam could be made without resulting in more than minimal impacts on stream flow throughout the majority of the system.

According to the "Arroyo Grande Creek Permeability Study San Luis Obispo County, CA" prepared by Questa Engineering Corporation in April of 2001, the "critical" segment of the creek (from a flow maintenance perspective) is the reach from the dam to below Biddle Park near the Talley Bridge, a distance of approximately 2.5 miles. There are no significant tributary channels that feed into Arroyo Grande Creek in this segment, the watershed rocks adjacent to this reach are predominately poor to non-water bearing units, and groundwater inflow from the margins of the valley is limited. Flow and water depth in this reach of the creek are influenced primarily by releases from the dam except during heavy winter rains when agricultural water use is reduced and the small tributary watershed below the dam contributes to stream flow. Below this reach during the wet season the creek gains flow from tributaries and groundwater inflow, and the impacts of agricultural pumping are reduced or eliminated due to the effects of rainfall.

Phase I efforts will match the timing of reductions in reservoir releases to wet season storm events, using the 2.5 miles of stream below the dam as the key measurement segment. The volume of reductions will be based on the response of the initial stream segment to reduced releases. Ramping rates will be consistent with those established by the draft HCP, that is, changes in release rates will not exceed 1cfs/day.

The following table illustrates the current volumes of wet season downstream release compared to a range of modified release rates, averaged over the 90-day period from January 1 to April 1:

TABLE 1

Modified Release Rate Calculations 90-day Wet Season								
Rate/ % Reduction:	**Current**	**17%**	**19%**	**33%**	**47%**	**50%**	**67%**	**83%**
CFS:	6.00	5.00	4.86	4.00	3.20	3.00	2.00	1.00
Acre Feet/Day:	11.90	9.92	9.63	7.93	6.35	5.95	3.97	1.98
90 Day Total (AF):	1,071.07	892.56	867.07	714.05	571.07	535.54	357.02	178.51
Total Additional Storage:	0.00	178.51	204.00	357.02	500.00	535.53	714.05	892.56

As shown in table 1, the 204 average annual AFY increase in storage necessary to match reservoir demands to the safe yield could be accomplished by reducing wet season releases to an average of 4.86cfs, 19% below current levels, for a period of 90 days. Similarly, a 500 AFY reduction would require a 47% reduction in releases during the wet season, to 3.2cfs.

Implementation/Operation

Initial release reductions would begin in January after winter rains have saturated the valley and stream flow measurements show the stream to be gaining flow from the dam to the ocean. At that point a release reduction of 0.5cfs would be made, with any consequent effects on stream flow noted. Absent any substantial negative stream effects after 24 hours, additional reductions in 0.5cfs increments would be made, following the same measurement protocol (one step in each 24 hour period). If flow reductions reach 4.8cfs without negative stream effects, the release rate will be "held" for a period of at least five days, with ongoing stream monitoring, to ensure that the program remains in compliance with its stated objectives. Further release reductions would be similarly stepped down, dependent on monitoring results as well as on observed and predicted weather

patterns. It is not anticipated that release rates would fall below 3cfs in the first winter period, regardless of monitoring results. For comparison purposes, Exhibit 1 illustrates the IDRS release rates together with the current and HCP proposed rates.

Baring unusual weather patterns, at the end of the wet season (April 1) release rates would be stepped up in 1cfs/day increments to 6cfs. Analysis of data would continue through the summer season and necessary adjustments to the next winter's release rates would be made. Also, based on the results of the monitoring, decisions regarding the potential for spring/fall reductions consistent with the HCP preferred alternative would be made.

V. Low Reservoir Response Plan

This Low Reservoir Response Plan (LRRP) describes a set of actions that would be taken if the total volume of storage in the Lopez Reservoir were to fall below 20,000AF, as measured on April 1st of any given year. Because of the number of variables that could precipitate a low reservoir level, this LRRP does not establish specific release rates that would be adopted in the event of a low reservoir condition, rather, this LRRP provides a methodology that would be used to develop an appropriate release rate. Exhibit 2 is a flowchart that illustrates the implementation of the LRRP.

Since its construction in the late 1960's the most significant consecutive years of low reservoir inflow was in the 1987-1992 period (See Exhibit 3, Historical Lopez Reservoir Storage). Six consecutive below average inflow years reduced the reservoir storage to 16,500 acre-feet (measured on September 30), which is about 30 percent of the total storage capacity. During that same period, the annual average deliveries to municipal use was 5,426AFY, an average of 896 AFY above contract amounts, for a nine year total of 32,555 AF. Also during that same period, downstream releases were an average of 2,871 AFY, 1,473 AFY below current release levels, for a nine year total of 17,227 AF (Table 2).

When current municipal contract amounts (4530 AFY) and current downstream release amounts were "plugged in" to the data developed from 1987 to 1992, the results indicate that reservoir levels would have been higher than historic levels, and would have never fallen below 20,000 AF (Table 3). This analysis indicates that the potential to experience a critically low reservoir is low; never-the-less, given the importance of the reservoir to meeting environmental, agricultural, and municipal needs, it is considered appropriate to adopt a plan of action to respond to low reservoir levels.

TABLE 2

Recorded Reservoir Data, 1987-1992							
Year	**Inflow**	**Evap.**	**Rainfall**	**Municipal**	**Release**	**Change Storage**	**Total Storage**
1987	4965	2664	911	5544	2517	-4849	48463
1988	3779	2994	845	5265	2514	-6149	37465
1989	4176	2959	1057	6065	2812	-6603	30860
1990	3155	2533	478	5863	3673	-8436	22425
1991	6290	2016	798	4934	2761	-2623	19802
1992	6577	1846	823	4884	2950	-2280	17521

TABLE 3

Estimated Reservoir Data, 1987-1992, Using Current Release Rates							
Year	**Inflow**	**Evap.**	**Rainfall**	**Municipal**	**Release**	**Change Storage**	**Total Storage**
1	4965	2664	911	4530	4404	-4880	48463
2	3779	2994	845	4530	4404	-6000	42463
3	4176	2959	1057	4530	4404	-5815	36648
4	3155	2533	478	4530	4404	-6257	30391
5	6290	2016	798	4530	4404	-3442	26949
6	6577	1846	823	4530	4404	-3180	23769

20,000 AF was selected as the appropriate level to implement the LRRP because, at current release and municipal delivery rates, it provides a two year cushion above minimum pool, assuming worst case recorded rainfall and inflow (as experienced in the 1990 water year). Table 4 illustrates the "worst case" scenario, resetting the reservoir level at 20,000 AF and using the 1990 data and current municipal and downstream releases.

TABLE 4

Worst Case Reservoir Drawdown							
Year	**Inflow**	**Evap.**	**Rainfall**	**Municipal**	**Release**	**Change Storage**	**Total Storage**
0							20000
1	3155	2533	478	4530	4404	-6257	13743
2	3155	2533	478	4530	4404	-6257	7486
3	3155	2533	478	4530	4404	-6257	1229

Note that minimum pool (4,000AF) is reached sometime after year 2, assuming no change in release and municipal delivery rates. Table 5 shows the results of

reducing municipal deliveries by 10%, reducing habitat releases by 500AFY, and eliminating agricultural supplements above habitat releases:

TABLE 5

Sample Modified Reservoir Drawdown Scenario Municipal10% Reduction, Habitat 500AFY Reduction, No Agricultural Supplement Above Habitat Release							
Year	**Inflow**	**Evap.**	**Rainfall**	**Municipal**	**Release**	**Change Storage**	**Total Storage**
0							20000
1	3155	2533	478	4077	3844	-5244	14756
2	3155	2533	478	4077	3844	-5244	9512
3	3155	2533	478	4077	3844	-5244	4268

In the example shown in Table 5, minimum pool is reached after year 3. Using data collected since the construction of the reservoir, decisions about potential changes in release and municipal delivery rates when (and if) the reservoir falls to 20,000 AF on April 1 would be made using the methodology shown in Tables 4 and 5, following the steps shown in Exhibit 2. As shown in Exhibit 2, modifications to release rates and municipal deliveries would be made in concert with actions by each of the Zone 3 contractors to employ conservation steps and access alternative supplies, as detailed in each agency's Urban Water Management Plan.

VI. Monitoring

The ability to accurately monitor the stream flow response in Arroyo Grande Creek to increases and decreases in release rates at Lopez Dam during different climate and weather conditions is critical to the success of the IDRS. Current monitoring efforts consist of stream gages on Arroyo Grande Creek at Arroyo Grande (the Arroyo Grande gage) and at the Cecchetti Road crossing of Arroyo Grande Creek (the Cecchetti gage), along with the release rate flow monitors at the dam outlet works.

Modifications of the current stream monitoring system consist of:

- The addition of automated[1] stream gages on Arroyo Grande Creek at the Rodriguez Bridge (the first road crossing of the creek below Lopez dam) and at 22nd Street in Oceano (the last road crossing of the creek before it discharges into the ocean).

- Automation of the existing gages at Arroyo Grande and Cecchetti Road.

[1] "Automated" means that the information can be read remotely in real time, readings are taken and reported at not less than 1 hour intervals, and all information is electronically recorded and retrievable.

- Additional automation of release rate information at the dam outlet works.

Modifications to existing gages and the installation of the new gage at Rodriquez Bridge are programmed for the summer/fall of 2006, with installation of the new gage at 22nd Street scheduled for the summer of 2007, as shown in Table 6 below. The installation of remote reading capability at the dam outlet works is dependent on technical and cost considerations (which are as yet unknown), given that this information is already be remotely read and recorded at the treatment plant.

TABLE 6

Stream Monitoring Program Improvements Priority & Cost Estimate March 2006					
Priority	**Gage Name Proposed Changes**	**Item Cost**	**Site Costs**	**Cumulative Costs**	**Annual Costs**
1	Modify Arroyo Grande Gage				
	Add alert multi-module	2,211			
	Installation costs	1,000	3,211	3,211	
2	Modify Cecchetti Gage				
	Change to H-350XL Data Collector	2,350			
	H-264 Alert Serial Interface	1,105			
	Installation costs	1,000	4,455	7,666	
3	New Gage at Rodriquez Bridge				
	H-3611 Radar Gage Equipment	3,260			
	Sensor Housing	350			
	H-500XL data logger	1,395			
	H-264 Alert Transmitter	1,105			
	10-watt solar panel	350			
	Model 7154-2 Antenna	140			
	Model 720 Lightening Protect Device	95			**Year 1:**
	Installation costs	5,000	11,695	19,361	19,361
4	New Gage at 22nd Street Bridge				
	H-3611 Radar Gage Equipment	3,260			
	Sensor Housing	350			
	H-500XL data logger	1,395			
	H-264 Alert Transmitter	1,105			
	10-watt solar panel	350			
	Model 7154-2 Antenna	140			
	Model 720 Lightening Protect Device	95			**Year 2:**
	Installation costs	5,000	11,695	31,056	11,695
5	Transmit Discharge Rate to SLO				**Year 3:**
		1,000			1,000
		TOTAL	**COSTS:**	**$32,056.00**	

Automation of all gages, that is,

1. Installing equipment to provide that the information can be read remotely in real time

2. Readings are taken and reported at not less than 1 hour intervals, and

3. All information is electronically recorded and retrievable,

will ensure that changes in stream flow will be noted as they occur and that the results of changes in release rates can be analyzed and correlated in order to guide subsequent decision making.

Additionally, at least during the first season of implementation of the IDRS, visual monitoring points (including staff gages) will be established at the following locations:

- The “gravel pits” just below the dam (Arroyo Grande Creek)
- Biddle Park (Arroyo Grande Creek)
- Mill Road Bridge (Tar Springs Creek)
- Fair Oaks Avenue (Arroyo Grande Creek)
- Valley Road (Los Berros Creek)
- 22nd Street (Arroyo Grande Creek – year 1)

Visual observations will be recorded within 8 hours after changes in release rates are made, with subsequent observations made at 24 and 48 hour intervals after each “set point” is reached. Additional visual observations would be made dependent on weather conditions.

The system of stream gages and visual monitoring locations has been developed in order to provide a complete picture of the response of Arroyo Grande Creek, as follows:

1. ***Gravel Pits*** The visual monitoring point at the gravel pits will show flow levels in the initial reach of Arroyo Grande Creek, and ensure that strandings or trapping of fish in the gravel pits does not occur.

2. ***Rodriquez Bridge*** The new gage at the Rodriquez Bridge will reflect flow conditions in the reach of the Creek extending downstream to the Talley Bridge (per the Permeability Study).

3. ***Biddle Park*** The visual monitoring point at Biddle Park will verify the findings of the permeability study relative to the Rodriquez-Talley reach of Arroyo Grande Creek.

4. ***Cecchetti Road*** The existing gage at Cecchetti Road will show the condition of the creek at a point where it has already had substantial interaction with the streamside aquifer, providing inflow information for the reach above the gage.

5. ***Mill Road Bridge*** The visual monitoring point on Tar Springs Creek at the Mill Road Bridge will provide inflow information from tar Springs Creek.

6. ***Arroyo Grande*** The existing gage at Arroyo Grande will provide combined flow information for Arroyo Grande Creek , Tar Springs Creek, and the streamside aquifers above the City. It will also allow correlation of flow information with historical measurements at this location.

7. ***Fair Oaks Avenue*** The visual monitoring point at the Fair Oaks Avenue bridge will provide information about urban flows out of the City of Arroyo Grande plus show flows entering the flood control channel reach.

8. Valley Road The visual monitoring point at the Valley Road bridge will provide information about flows in Los Berros Creek before they enter Arroyo Grande Creek.

9. ***22nd Street*** A visual monitoring point in the first year with a gage installed in year two, flow monitoring at 22nd Street will provide information about the total discharge of Arroyo Grande Creek (Flow over the bar also includes contributions from Meadow Creek and the historic Los Berros Channel. Visual monitoring points may be added at these locations if conditions warrant.

All information gathered from gages and visual monitoring will be correlated in a single database, which will be made available to agencies and the public upon request.

VII. In-Stream Improvements

In-stream improvements conducted under this IDRS will be focused solely on improving fish passage past various partial barriers that currently exist in Arroyo Grande Creek. General habitat improvements as described in the HCP will be deferred until the HCP is approved. Because the goals of this IDRS include both an increase in storage in the reservoir and no impacts to steelhead, passage improvements that allow steelhead and other species to move naturally up and down the stream under lower stream flow conditions will be prioritized and implemented as budgets and regulatory requirements allow. The following list of

known barriers (From the Arroyo Grande Creek Watershed Management Plan, March 2005, CA Dept of Fish and Game & Central Coast Salmon Enhancement) will be the basis for the prioritization and implementation of improvements. This list is presented in no particular prioritization order:

1. ***Two Concrete Dams*** Identified in the Stream Inventory Report by the CCC. The dams seem to be nonfunctional as the creek flow has undermined the dams. A structure was identified in a 1972 Stream Survey from CDFG, which had the location at about ¼ mile downstream of the Fair Oaks Crossing. The CCC survey had placed the location of this structure at mile 2.88 from the confluence with the ocean and just over ½ mile downstream of the Fair Oaks Crossing.

2. ***Arroyo Grande Stream Gage*** Identified in numerous reports as probably the most significant barrier downstream of Lopez Dam in the watershed. It is identified in the California Fish Passage Assessment Database as I.D.# 8409. During the CCC stream survey, the structure was measured to be 34.2' wide x 17.5' thick x 4.7' high. It is located at stream mile 4.98 from the confluence with the ocean. There is a low-flow notch in the structure but it may add to the intensity of the barriers by not only being a height barrier but also a velocity barrier. This structure poses a complete barrier for juvenile steelhead as they have been seen jumping at the base of the structure. Adults should be able to pass the structure during migration periods, when there is more water coming over the spillway and back-flooding of the pool downstream of the gage. The pool below the gage is over 5 feet deep and will aid in the migratory effort to pass the gage.

3. ***Rip-Rap Dam*** Identified in the Stream Inventory Report by the CCC. This dam is located about 2000 feet upstream of the stream gage at mile 5.35 from the confluence with the ocean. The structure is 14' wide x 2' thick x 1' high.

4. ***Concrete Dam*** Identified in the Stream Inventory Report by the CCC. This dam is located at stream mile 5.82 from the confluence. The structure is 23' wide x 4' thick x 4.5' high. There is no low flow notch so the water sheets across the top. There is a significant plunge pool below the dam but unless there is enough flow, negotiating the sheet flow could limit fish. It is a barrier to juveniles migrating upstream.

5. ***Cecchetti Road Culvert*** This crossing is identified in numerous reports. It is identified in the California Fish Passage Assessment Database as I.D.# 142. The structure was designed as an Arizona type crossing with a 5-foot Corrugated Metal Pipe (CMP) culvert. It is designed to overtop the crossing during high flows and has swept cars into the creek. This structure might pose a velocity barrier during heightened flows and passage might be an issue on the upstream side where sediment has

been deposited. A thin steep channel is cut as the creek approaches the culvert.

6. ***"S" Rip-Rap Dam*** Identified in the Stream Inventory Report by the CCC. The dam is located at stream mile 9.31 from the confluence with the ocean. The structure is a dam shaped in a form of an "S". It is 17' wide x 13' thick x 1' high.

7. ***Abandoned Dam/Diversion Footings*** Identified in numerous reports and also identified in the California Fish Passage Assessment Database as I.D.# 141 and located at stream mile 11.22 from the confluence with the ocean. This structure appears to be an old flash-board dam footing. Wood slats could be placed spanning the channel to impound water for irrigation or municipal use. The structure has not been used in many years and is one structure with three steps. The flow over the structure is sheet in form and does not allow for a plunge or scour pool to form. The structure is 48' wide x 10' thick x 2.2' high with two tiers. The middle section is filled with gravel and this structure is a very important grade control structure now. Modification rather than removal might be the best option to aid in fish passage for both adults and juveniles.

8. ***Concrete Grade Control Weir*** Identified by CCSE staff, this structure is located at a water-monitoring site and is located at stream mile 13.29, the Rodriguez Road crossing. It may be a partial barrier to juvenile fish but there is good flow since it is in proximity to Lopez Dam. There is a deep plunge pool, so with good acceleration, passage could be achieved. There is some sheet flow across the structure but it is semi-concentrated over half the structure. The structure is 20' wide x 5' thick x 2' high. Removal for uninterrupted passage is not an option as it encases the primary water supply line from Lopez Dam.

VIII. Costs

Funding for new gage installation, stream monitoring, and data management and analysis will be provided by Zone 3. The capital costs of the modification of existing gages and installation of two new gages is projected to cost $19,361 in year 1, $11,695 in year two and $1,000 in year 3, as shown in Table 6. Operation of the dam (i.e., manipulating flows) is contained within existing operational costs. Monitoring costs, consisting of reading remotely transmitted data, visiting visual observation points, and recording data and observations is expected to range between $10,000 - $15,000 for the 90-day period between January 1 and April 1. Costs related to passage barrier removal projects are estimated at $25,000 annually, beginning in year 3. Assuming the IDRS increased storage by between 100 and 500 acre feet each year, long-term acre foot costs range from a high of $410 to a low of $72, as shown in Table 7 (Exhibit 4 provides additional cost calculations]. Note that without implementing passage

barrier removal projects annual long-term costs drop to between $22 and $160 per acre foot annually. These costs do not include staff costs related to developing the IDRS, reporting to Zone 3, or reporting the results of IDRS monitoring to resources agencies (if required). These additional costs are accounted for in the HCP budget.

TABLE 7

Per Acre Foot Cost Comparisons (With Ranges, 2006 Dollars))			
	Year 1	**Year 2**	**Year 3 - - -**
Passage Barrier Removal Cost			25,000
Monitoring Effort Capital Cost	19,361	11,695	1,000
Operational (Low)	10,000	10,000	10,000
Operational (High)	15,000	15,000	15,000
Additional Storage - Range	100 - 500 AFY	100 - 500 AFY	100 - 500 AFY
Cost/Acre Foot - Range	$59 - $344	$44 - $267	$72 - $410
Cost/Acre Foot – W/O Barrier Removal			$22 - $160

IX. Schedule

Table 8 identifies the key IDRS milestones. The overall goal is to have all actions necessary to implement the IDRS in time to take advantage of the 2007 wet season (January – March).

TABLE 8

IDRS KEY MILESTONES	
Milestone	**Date**
TAC Approves IDRS:	May 2006
Advisory Committee Approves IDRS:	May 2006
Zone 3 Agencies Approve Contract Amendments:	September 2006
Board of Supervisors Approves IDRS:	September 2006
Year 1 Gage Work Completed:	November 2006
Year 1 IDRS Implementation:	January 2007
Year 2 Gage Work Completed:	September 2007
Year 2 IDRS Implementation:	January 2008

X. Environmental Requirements

Actions and projects that have the potential to impact sensitive wildlife species or that effect waterways in California may require approvals from several different

regulatory agencies pursuant to several different State and Federal environmental statutes, as described below.

CEQA

In general, the California Environmental Quality Act (CEQA) applies to all discretionary actions taken by a public agency. However, the State CEQA Guidelines, section 15261 provides an exemption for ongoing projects as follows:

> (a) If a project being carried out by a public agency was approved prior to November 23, 1970, the project shall be exempt from CEQA unless either of the following conditions exists:
>
> > (1) A substantial portion of public funds allocated for the project have not been spent, and it is still feasible to modify the project to mitigate potentially adverse environmental effects, or to choose feasible alternatives to the project, including the alternative of 'no project' or halting the project ....
> >
> > (2) A public agency proposes to modify the project in such a way that the project might have a new significant effect on the environment.

Based on the California Appellate Court's decision regarding the operation of dams in similar situations, implementation of the IDRS qualifies as a "normal, intrinsic part of the ongoing operation of the reservoir project which does not constitute any modification thereof."[2] Consequently, it is exempt from environmental review under CEQA as described in section 15261.

Endangered Species Act

Although the Lopez Project has prepared an HCP and is currently working with the National Marine Fisheries Service and the US Fish and Wildlife Service to perfect that document, no permits to "take"[3], "harm"[4], or "harass"[5] any federally

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[2] Nacimiento Regional Water Management Advisory Com. v. Monterey County Water Resources Agency (1993) 15 Cal.App.4th 200 , 19 Cal.Rptr.2d 1

[3] "Take", as defined in the Federal Endangered Species Act means to "harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct."

[4] "Harm" is defined in Fish and Wildlife regulations as: "To perform an act that kills or injures wildlife; may include significant habitat modification or degradation when it kills or injures wildlife by significantly impairing essential behavioral patterns including breeding, feeding, or sheltering."

[5] "Harass", as defined in the Federal Endangered Species Act, means "**"**To intentionally or negligently, through act or omission, create the likelihood of injury to wildlife by annoying it to such an extent as to significantly disrupt normal behavior patterns such as breeding, feeding, and sheltering."

listed species have been granted. Further, prior to approval of the HCP, no such authorization can be granted by either federal agency. Therefore, it is incumbent on Zone 3 to ensure that implementation of this IDRS does not result in "take" in any form.

California Fish and Game Code

Implementation of the IDRS does not constitute "substantial modification of a river, stream, or lake"; therefore, authorization from the California Department of Fish and game pursuant to section 1602 of the California Fish and Game Code is not required.

Fish Passage Improvement Projects

Depending on the details of a particular project, implementation of fish passage improvement projects may require authorization by several state and federal resource agencies, as indicated in Table 9 below:

TABLE 9

Passage Improvement Project Regulatory Requirements	
Regulatory Requirement	**Agency**
CA Environmental Quality Act (CEQA)	County of San Luis Obispo
National Environmental Policy Act (NEPA)	US Army Corps of Engineers
Section 404 Clean Water Act	US Army Corps of Engineers
Section 401 Clean Water Act	Regional Water Quality Control Board
Endangered Species Act (Steelhead)	National Marine Fisheries Service
Endangered Species Act (Other Species)	US Fish and Wildlife Service
Section 1600 CA Fish and Game Code	California Department of Fish and Game
California Coastal Act	County of San Luis Obispo
California Coastal Act (Original Jurisdiction)	California Coastal Commission

Exhibit 5 illustrates the typical regulatory permit process for passage improvement projects.

XI. Exhibits

1. Lopez Project: Comparative Release Rates
2. LRRP Flowchart
3. Historical Lopez Reservoir Storage
4. Per Acre Foot Cost Comparisons
5. Typical Regulatory Permit Process for Passage Improvement Projects

Exhibit 1

Lopez Project: Comparative Release Rates

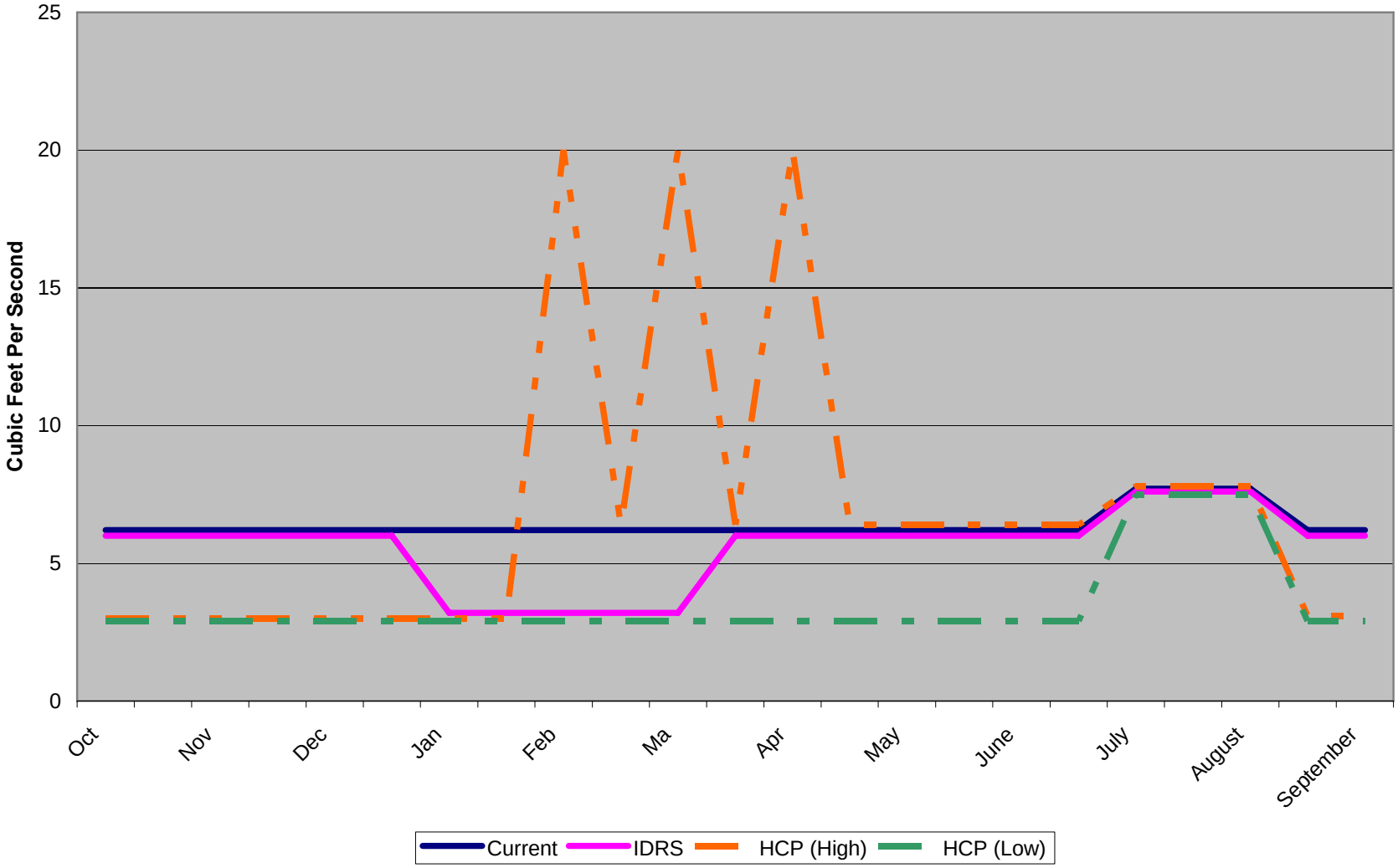

Exhibit 2
Low Reservoir Response Plan (LRRP)
Key Decision Flowchart

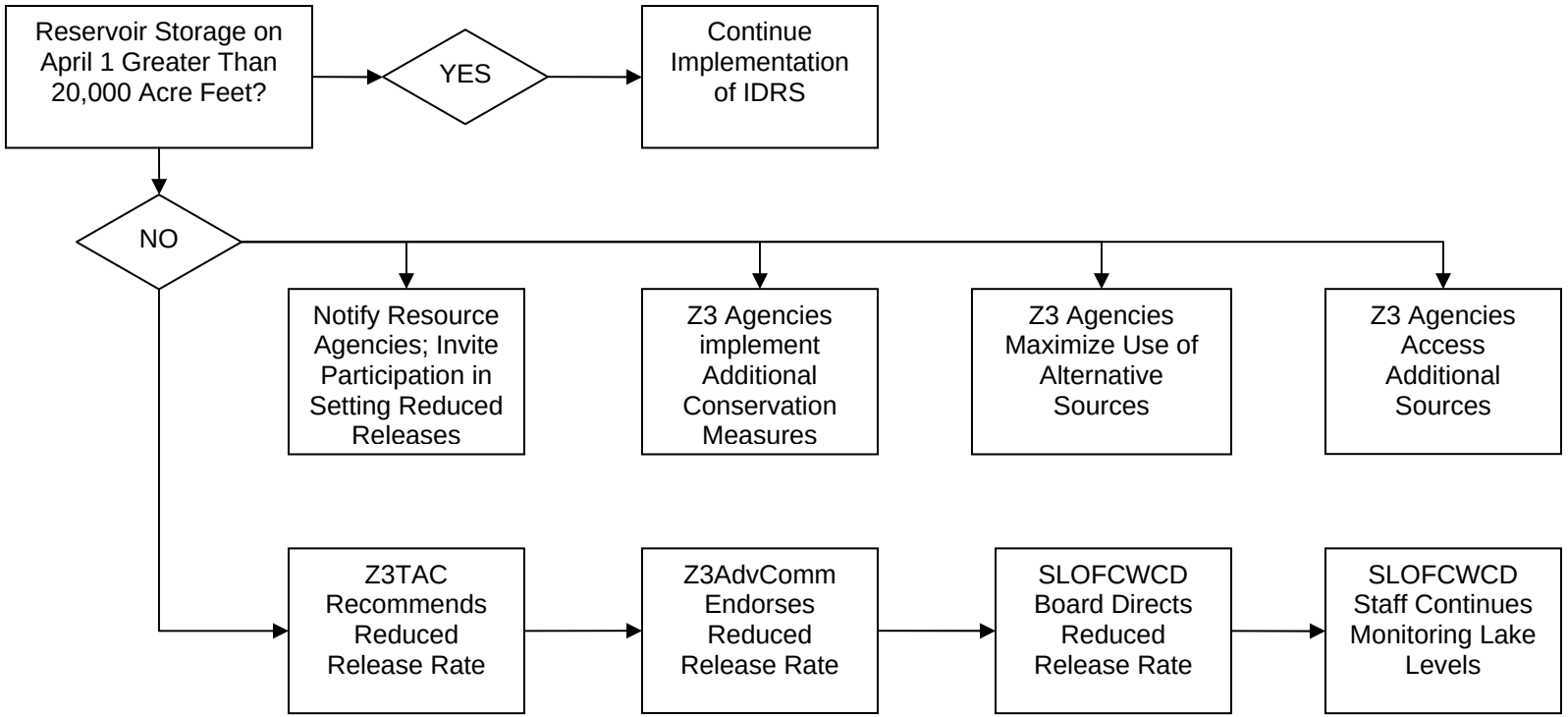

Exhibit 3
Historical Lopez Reservoir Storage

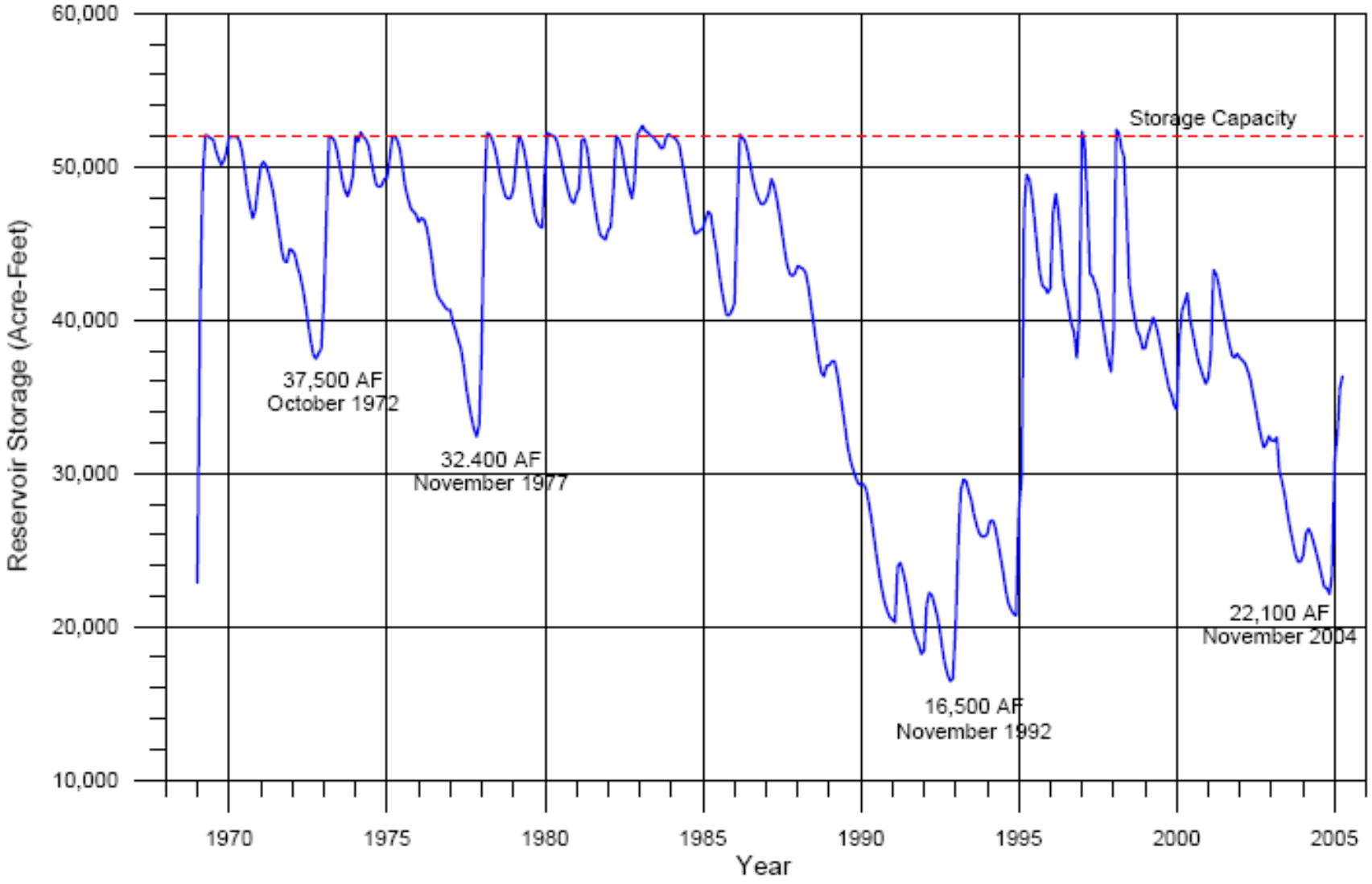

Exhibit 4 Per Acre Foot Cost Comparisons (With Ranges, 2006 Dollars))				
	Year 1	**Year 2**	**Year 3 ►►►**	
Passage Barrier Removal Cost	0	0	25,000	
Monitoring Effort Capital Cost	19,361	11,695	1,000	
Operational (Low)	10,000	10,000	10,000	
Operational (High)	15,000	15,000	15,000	
Example Storage Volumes:				
Additional Storage (Low)	100	100	100	
Additional Storage (Mod)	204	204	204	
Additional Storage (High)	500	500	500	
Annual Costs Per Acre Foot:			With Barrier Removal	W/O Barrier Removal
Low Ops/Low Storage	$293.61	$216.95	$360.00	$110.00
Low Ops/Moderate Storage	$143.93	$106.35	$176.47	$53.92
Low Ops/High Storage	$58.72	$43.39	$72.00	$22.00
High Ops/Low Storage	$343.61	$266.95	$410.00	$160.00
High Ops/Moderate Storage	$168.44	$130.86	$200.98	$78.43
High Ops/High Storage	$68.72	$53.39	$82.00	$32.00

Exhibit 5
Typical Stream Passage Improvement Project Permit Flowchart