

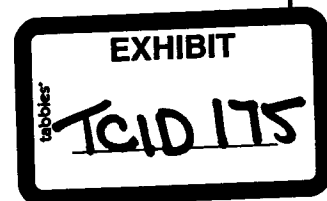
STATE WATER RESOURCES
CONTROL BOARD

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ENVIRONMENTAL SERVICES
SACRAMENTO

Exhibit 14

Truckee River Operations Model Lower Truckee Flow Regime Criteria



Memorandum

June 26, 2003

To: Mary Jo Elpers
Subject: Operation Model Incorporation of Lower Truckee
Flow Regime Criteria
From: Roderick L. Hall

The operation model uses criteria for selection of lower Truckee Flow Regimes provided by Stetson Engineers. It is my understanding that Stetson Engineers developed the criteria in consultation with the USFWS and others. This memorandum presents a brief summary of the criteria and the operation models use of the flow regime criteria.

Target flow regime criteria utilize March first Stampede Reservoir storage and the forecast of March-July runoff expected to be produced by the watershed located between Independence Lake and Stampede Reservoir. The operation model then manages Fish Water (federal project water) and Fish Credit Water to supply the selected target Pyramid Lake inflows while storing water that is surplus to such target inflows to Pyramid Lake.

Criteria are summarized in the following tables.

A "hydrologic year type" is selected based upon forecast of March-July Stampede inflow.

Criteria for Hydrologic Year Types

Basin between Independence Lake and Stampede Reservoir March - July Flow (acre-feet)	Hydrologic Year Type
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Greater than 150,000	Wet
Greater than 107,000 and less than 150,000	Above Average
Greater than 76,000 and less than 107,000	Average
Greater than 52,000 and less than 76,000	Below Average
Greater than 30,000 and less than 52,000	Dry
Less than 30,000	Critical

A Stampede “storage level” is selected based upon Stampede storage.

Stampede Reservoir Storage Levels

Stampede March 1 Fish Water and Fish Credit Storage (acre-feet)	Storage Level
Greater than 200,000	Full
Greater than 150,000 and less than 200,000	High
Greater than 100,000 and less than 150,000	Low
Less than 100,000	Critical

Utilizing selections of hydrologic year type and storage condition, a month’s flow regime is selected using relationships shown in the following table.

Flow Regime Selection Matrix

Storage Condition	Hydrologic Year Type					
	Wet	Above Average	Average	Below Average	Dry	Critical
Full	1	1	1	1	3	4
High	1	1	2	2	4	5
Low	1	2	3	4	6	6
Critical	2	3	5	6	6	6

As part of the model’s calculations, flow regimes are selected each month of March through August. The monthly selections are made as follows:

- Using the above flow regime selection matrix, the operation model makes a flow regime selection on March 1 using March 1 Stampede storage calculated by the operation model and the March 1 forecast of March-July Stampede inflow.
- On April 1, the forecast of March-July Stampede inflow is updated (based upon changes in hydrologic conditions during March) and a flow regime is selected that may or may not be different from the flow regime selected on March 1. The April 1 flow regime selection continues to use the March 1 Stampede storage.
- On May 1, the forecast March-July Stampede inflow is again updated and a flow regime is selected. Again, this continues to use the March 1 Stampede storage and the selected flow regime may or may not be the same as selected on April 1.
- On June 1, the procedure is repeated. The forecast March-July Stampede inflow is updated, the March 1 Stampede storage is used and a flow regime is selected.

- On July 1, the procedure is repeated. The forecast March-July Stampede inflow is updated, the March 1 Stampede storage is used and a flow regime is selected.
- On August 1, the March-July Stampede inflow is “known” by the operation model. A forecast is no longer necessary. Using the “known” March-July Stampede inflow and the March 1 Stampede storage, the flow regime is selected. The regime selected on August 1 is used for operation during the months of August through the following February.

Once a flow regime for the month being analyzed by the operation model has been selected, the operation model sets a target inflow to Pyramid Lake based upon the following:

Pyramid Inflow Targets for Each Flow Regime
(in cfs)

Month	Flow Regime No. 1	Flow Regime No. 2	Flow Regime No. 3	Flow Regime No. 4	Flow Regime No. 5	Flow Regime No. 6
January	160	150	120	110	100	90
February	160	150	120	110	100	90
March	290	220	200	160	160	140
April	590	490	420	350	300	200
May	1000	800	600	530	400	300
June	800	600	500	400	270	170
July	300	300	300	200	150	120
August	200	200	200	200	150	110
September	170	170	120	110	100	100
October	160	150	120	110	100	100
November	160	150	120	110	100	90
December	160	150	120	110	100	90

The above flow target criteria are modified for years with substantial spring runoff. In years when the May and June inflow to Pyramid Lake exceed 1000 cfs, the August and September target inflows are set to 300 cfs.

The operation model calculates the Pyramid inflow that will result from an operation that supplies California’s water demands and Orr Ditch Decree demands (Truckee Meadows diversion rights, Water Quality water rights, Newlands Project rights, etc.). If the resulting inflow to Pyramid Lake supplies the target flow, the operation model tries to withhold any surplus inflow (amount that such Pyramid inflow exceeds the target inflow) and accumulate such surplus in storage as either Fish Water (federal project water) or Fish Credit Water.

If the resulting inflow to Pyramid Lake is less than the target flow, first Fish Credit Water and then Fish Water (federal project water) is released from storage and delivered to Pyramid Lake. Such releases are increased until Pyramid Lake inflow equals the target or until there is no more Fish Credit or Fish Water left in storage.

There are numerous operational adjustments related to management of Fish Water and Fish Credit Water that are calculated by the operation model and that have not be described. However, the above discussion describes the basic approach used by the operation model to incorporate the six flow regimes into the model calculations of storage, release, and streamflow.

