

Big Bear Watermaster

Twenty-Ninth Annual Report

For Calendar Year 2005



Photo showing Spillway Gate No. 1 during gate tests.

Big Bear Municipal Water District vs. North Fork Water District, et al
Case No. 165493 - County of San Bernardino



BEAR VALLEY MUTUAL WATER COMPANY



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BIG BEAR WATERMASTER

FOR

BIG BEAR MUNICIPAL WATER DISTRICT VS. NORTH FORK WATER CO. ET AL
CASE NO. 165493--COUNTY OF SAN BERNARDINO

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March 23, 2006

To: Clerk of the Superior Court of San Bernardino County and All Parties

Subject: Watermaster Report for Calendar Year 2005

Gentlemen:

We have the honor of submitting the Twenty-Ninth Annual Report of the Big Bear Watermaster for Calendar Year 2005.

Paragraph Twenty (20) of the Judgment requires that the Watermaster Report be submitted to the Court and the Parties before April 1 of each year on all significant Watermaster activities and provide an accounting of water deliveries for the preceding calendar year as set forth in Section VI, Physical Solution, of the Judgment.

We and each of us hereby certify that this is a true and correct report of the Watermaster work performed by us and under our supervision during 2005 pursuant to the requirements of the Judgment.

Respectfully submitted,

By: DE Evenson
Donald E. Evenson

By: Lawrence Libeu
Lawrence Libeu

By: Michael L. Huffstutler
Michael L. Huffstutler

TWENTY-NINTH ANNUAL REPORT BIG BEAR WATERMASTER CALENDAR YEAR 2005

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I. INTRODUCTION

The Big Bear Watermaster presents the Twenty-Ninth Annual Report of its activities for Calendar Year 2005. The Watermaster's activities ensure that the rights of all parties subject to the Judgment rendered in Case No. 165493 are protected. The Watermaster generally oversees watershed conditions that may affect the Judgment and attempts to improve the conditions to the benefit of all parties.

This report describes the 2005 activities of the Watermaster including the status of accounts and various tabulations as required by the Judgment.

In 2005, the Big Bear Watermaster Committee was composed of Donald E. Evenson, President, representing Big Bear Municipal Water District; Michael L. Huffstutler, representing Bear Valley Mutual Water Company; and Lawrence Libeu, Secretary, representing San Bernardino Valley Water Conservation District.

The Watermaster Committee met four times during 2005. These meetings were held on the following dates:

January 11, 2005

February 15, 2005

June 7, 2005

October 25, 2005

Appendix A contains the minutes of these meetings. Minutes of the meetings are also on file at the office of each of the representatives.

II. SUMMARY

2005 WATERMASTER ACCOUNTS

2005 was an above average hydrologic year. Annual precipitation at the three gages in the Big Bear Lake watershed averaged 36.69 inches, which is 154 percent of the average annual rainfall since 1977. Precipitation at Bear Valley Dam was 54.74 inches, which is 154 percent of the 96-year (1910-2005) average of 35.66 inches. Consequently, inflow to Big Bear Lake in 2005 was significantly above average. The 2005 calculated lake inflow was 39,600 acre-feet, which is 234 percent of the average inflow since 1977. The average inflow for the 29 years since the Judgment was rendered is 16,929 acre-feet per year. The lake inflow in 2005 was the fourth highest value since the Judgment was tendered in 1977.

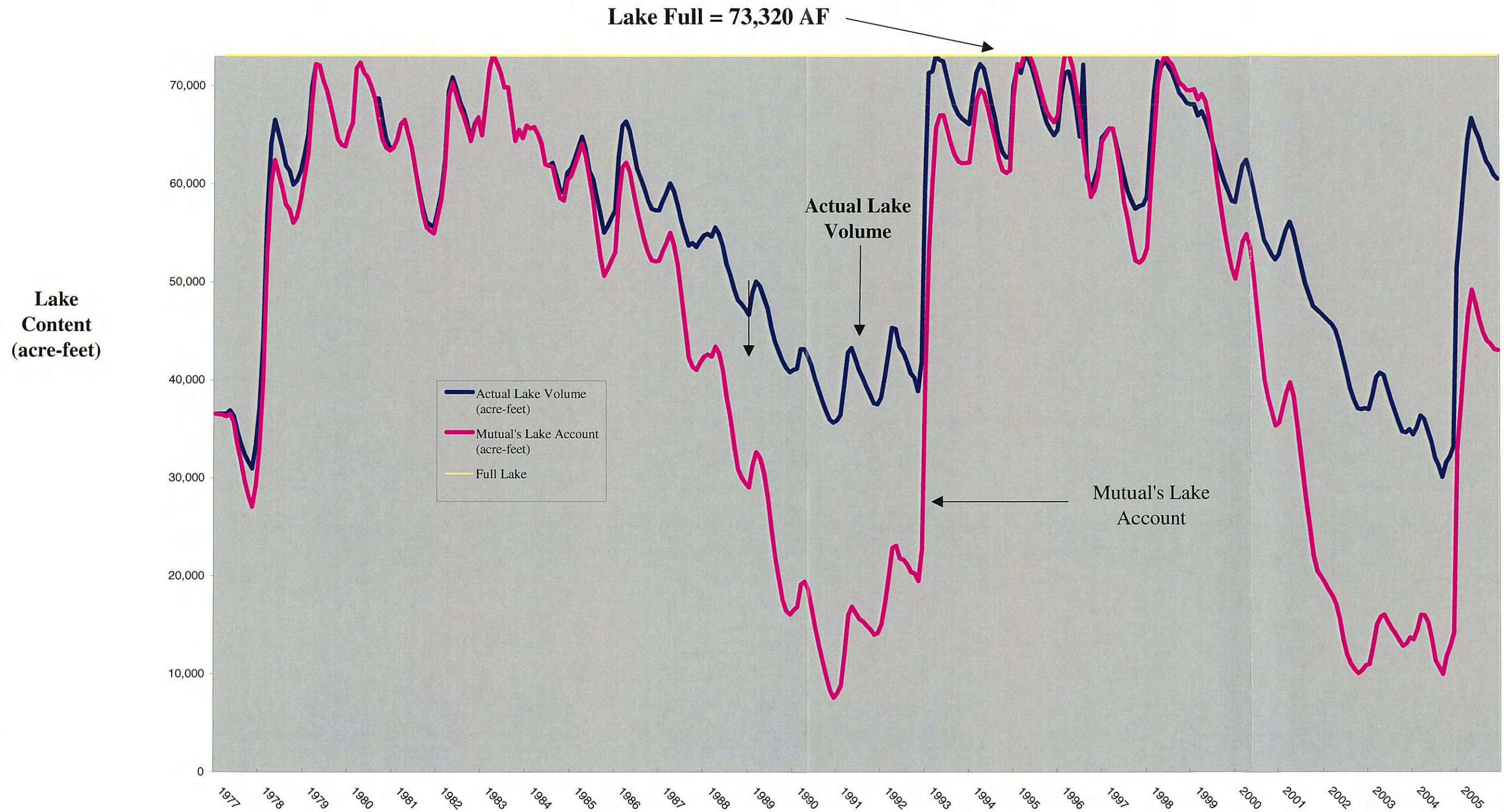
Actual lake levels rose 11.20 feet in 2005 and ended the year only 4.48 feet below the top of the dam. Accordingly, lake contents increased by 27,330 acre-feet during the year. On December 31, 2005, the lake contained 60,503 acre-feet of water. The lake holds 73,320 acre-feet when it is full. **Figure 1** shows the history of the actual lake contents since the Judgment was rendered in 1977.

Mutual's lake account held 43,041 acre-feet at the end of 2005. Their lake account increased by 28,841 acre-feet during the year. Figure 1 also shows the history of Mutual's lake account since 1977. Under a "Mutual Operation", where lake releases would be made to meet Mutual's water demands and their lake account is credited with the net wastewater exported from the Big Bear Lake watershed, the lake level would have ended the year 11.28 feet below the top of the dam or 6.80 feet lower than the actual year-end lake level. If Mutual had not been credited with the net wastewater exports, their lake account would have been 37,900 acre-feet and the lake would have been 13.48 feet below the top of dam, or 9.00 feet lower than it actually was.

In 2005, Mutual requested 2,218 acre-feet of water from Big Bear Lake. Big Bear MWD has the option to provide in-lieu supplies or to release water from the lake. In 2005, they provided in-lieu water. Also, Mutual was able to use 146 acre-feet of water released from Big Bear Lake for fish protection purposes as required under SWRCB Order No. 95-4.

At the beginning of the year, Big Bear MWD had 18,973 acre-feet in their lake account. By the end of the year, their lake account had decreased by 1,511 acre-feet to 17,462 acre-feet. Big Bear MWD's lake account is the difference between the actual lake contents and Mutual's lake account as shown on Figure 1.

FIGURE 1
Actual Lake Contents and Mutual's Lake Account 1977 - 2005



The Basin Compensation Account balance increased by 44 acre-feet in 2005. The Basin Compensation Account began the year with a balance of 23,985 acre-feet and ended the year with a balance of 24,029 acre-feet. The increase resulted from higher basin additions from lake releases made to meet the requirements of SWRCB Order 95-4 under a Big Bear MWD lake operation as compared to a Mutual Operation.

OTHER WATERMASTER ACTIVITIES

The Watermaster has the responsibility to undertake studies and investigations, collect and maintain data and records, and monitor related activities necessary to implement the physical solution contained in the Judgment. In 2005, the Watermaster was involved in monitoring and discussing two issues. These issues are:

- Impacts of Seven Oaks Dam,
- Issues related to Wild and Scenic Rivers System.

These issues are discussed in Chapter V.

III. BASIC DATA

BIG BEAR LAKE

Summary

The Watermaster conducts a water balance of Big Bear Lake for each month. This water balance is based on measurements of lake levels, releases, leakages and air temperature, as well as calculated values of spills, evaporation and inflows. For 2005, the overall water balance for the lake was:

Initial Storage (1-01-05)	33,173 acre-feet
Inflows	39,600 acre-feet
Evaporation	11,525 acre-feet
Releases for Mutual	-0- acre-feet
Releases & Leakage for SWRCB Order 95-4	420 acre-feet
Spills & Flood Control Releases	20 acre-feet
Net Snowmaking Withdrawal	305 acre-feet
Ending Storage (12-31-05)	60,503 acre-feet
Change-in-Storage	27,330 acre-feet

In 2005, the volume of water in Big Bear Lake increased by 27,330 acre-feet. The following subsections of this chapter describe each of the components in this water balance.

Lake Levels and Storage

Water levels in Big Bear Lake are measured continuously based on a reference mark located on the upstream side of the dam. In July 1998, Big Bear MWD completed installation of a continuous lake level recorder. The lake level recorder is a Global Water Model WL300 and is enclosed in a stilling well, which is attached to the upstream face of the dam. Lake level data is continuously transmitted by a remote telemetry unit (RTU) in the control building at the dam. From there, data are transmitted via radio to a central computer in the administrative offices of Big Bear MWD. The automatically recorded values have been used since July 1998. Unfortunately, the recorder can only record lake levels when the lake is less than 15 feet down (gage height = 57.33 feet). In 2005, the lake was down more than 15 feet for about the first nine days of the year. A major storm during the period January 9-11 increased the lake level almost

seven feet. The lake level was high enough the rest of the year for the lake level recorder to function.

The lake began the year at an estimated gage height of 56.65 feet and ended the year at a gage height of 67.85 feet. Over the year, the lake level rose 11.20 feet. The lowest recorded lake level was 56.65 feet or 15.68 below the top of the dam, and it occurred on January 1, 2005. The highest recorded lake level was 70.07 feet, which occurred on May 31, 2005. The lake is full at a gage height reading of 72.33 feet (6,743.20 feet above msl) and is empty at a zero reading.

The Watermaster uses an established gage height-lake capacity table to estimate the volume of water in the lake from the measured gage heights. At the beginning of the year, the lake contained 33,173 acre-feet of water. At the end of the year, there was 60,503 acre-feet of water in the lake. The lake content increased by 27,330 acre-feet during 2005. When full, the lake contains 73,320 acre-feet of water.

Lake Evaporation

The Watermaster calculates evaporation from the lake surface using the Blaney Criddle formula to estimate monthly evaporation rates. The 1977 Annual Watermaster report describes the formula as follows:

“The Blaney Criddle empirical formula, utilizing average temperatures and daylight hours, has been used. The constant K for each month was calculated based on float pan empirical data at Long Valley Reservoir in Mono County, California, which is at elevation 6,796 feet, compared to the elevation of Big Bear Lake which is 6,743 feet.”

Monthly lake evaporation is calculated using the estimated evaporation rate and the average surface area of the lake during the month. If a negative value for lake inflow is calculated, the monthly evaporation rate is increased to achieve a zero lake inflow. Evaporation rates were not adjusted in 2005. Total evaporation from the lake for 2005 was calculated to be 11,525 acre-feet. This amount is equivalent to an annual evaporation rate of 49.4 inches.

Precipitation

Precipitation in the Big Bear Lake watershed varies significantly from Bear Valley Dam to Big Bear City at the East End of the watershed. **Table III-1** shows the precipitation at Bear Valley Dam, Big Bear Lake Fire Department, and the Big Bear City Community Services District for 2005. 2005 precipitation at the three stations was 54.74, 35.76, and 19.56 inches, respectively. June and November were the driest months with no measurable precipitation. January was the wettest month with approximately 53 percent of the annual rainfall.

Table III-1 also compares the 2005 precipitation at the three stations with their corresponding averages for the twenty-nine years since the Judgment was rendered. At the Bear Valley Dam station, 2005 precipitation was 150 percent of its twenty-nine year average, while at the Big Bear Lake Fire Department station, precipitation was 176 percent of its twenty-nine year average. The Big Bear Community Services District station was 134 percent of its twenty-nine year average. For all three stations, 2005 precipitation averaged 154 percent of their twenty-nine year combined average. 2005 precipitation in the watershed was well above average for the twenty-nine years since the Judgment was rendered in 1977.

Table III-2 shows the annual precipitation for all three stations for the twenty-nine years since the Judgment was rendered. As shown in Table III-2, 2005 was a very wet year for precipitation. For the Bear Valley Dam station, precipitation was 154 percent of the 96-year (1910–2005) average of 35.66 inches.

Lake Inflow

Inflows to Big Bear Lake are not measured. Consequently, inflows naturally tributary to Big Bear Lake above Bear Valley Dam are calculated for each month using a water balance on the actual operation of the lake. This calculation, which utilizes observed basic data along with the calculated evaporation losses described previously, creates a water balance for each month to determine the amount of natural flow into the lake. The formula used is:

$$\text{Inflow} = \text{Evaporation} + \text{Releases} + \text{Spills} + \text{Leakage} + \\ \text{Net Withdrawals} - \text{Change in Storage}$$

If the calculated monthly inflow is a negative value, it is reset to zero, and the monthly evaporation rate is recalculated to achieve a lake water balance. Negative lake inflows did not occur in 2005.

TABLE III-1
MONTHLY PRECIPITATION FOR THREE STATIONS
IN BIG BEAR AREA

(inches)
 Calendar Year 2005 - Big Bear Watermaster

Month	Bear Valley Dam	Big Bear Lake Fire Department	Big Bear Community Services District
January	32.00	18.38	7.68
February	12.10	5.45	2.31
March	3.25	3.40	1.10
April	1.78	1.24	0.43
May	0.70	1.15	0.11
June	0.00	0.00	0.00
July	1.57	1.50	1.26
August	1.10	0.77	2.07
September	0.87	0.83	0.55
October	1.30	2.43	3.96
November	0.00	0.00	0.00
December	<u>0.07</u>	<u>0.61</u>	<u>0.09</u>
2005 Totals	54.74	35.76	19.56
1977-2005 29-yr average	36.41	20.29	14.60
2005 % of 29-yr average	150%	176%	134%

Average of the 29-year average for all three stations = 23.77 inches

Average of the 2005 totals for all three stations = 36.69 inches

2005 average as a percentage of 29-year average = 154.4% %

TABLE III-2
TWENTY-NINE YEARS OF PRECIPITATION FOR THREE STATIONS
IN THE BIG BEAR AREA

(inches)

Calendar Year 2005 – Big Bear Watermaster

Year	Bear Valley Dam	Big Bear Lake Fire Department*	Big Bear Community Services District
1977	31.95	18.46	13.35
1978	68.43	42.43	26.09
1979	34.87	21.00	15.84
1980	63.00	38.50	29.86
1981	16.67	8.60	8.42
1982	49.17	34.09	26.53
1983	56.97	31.20	24.29
1984	20.19	16.85	16.66
1985	22.40	13.78	14.11
1986	35.16	17.61	15.26
1987	27.49	19.79	12.52
1988	24.18	13.14	8.15
1989	17.32	7.76	6.85
1990	22.20	15.92	11.02
1991	38.47	29.31	19.81
1992	44.03	24.36	16.64
1993	73.81	29.62	19.45
1994	31.78	19.76	12.24
1995	49.00	27.65	15.89
1996	41.04	18.36	15.47
1997	27.00	15.30	12.92
1998	50.40	15.20	12.07
1999	13.22	4.53	6.06
2000	24.82	13.32	5.21
2001	30.62	12.26	9.10
2002	15.02	7.17	3.82
2003	32.44	18.43	12.70
2004	39.50	18.36	13.51
2005	<u>54.74</u>	<u>35.76</u>	<u>19.56</u>
29-Year Average	36.41	20.29	14.60
96-Year Average	35.66	N/A	N/A

* Big Bear Lake Fire Department began keeping records in June 2001, information provided to National Weather Service. Prior to the Big Bear Lake Fire Department keeping records, the Bear Valley Community Hospital performed this function.

Total annual inflow into the lake was calculated to be 39,600 acre-feet. The largest monthly inflow was 18,498 acre-feet, and it occurred in January. The long-term (1939-88) average annual inflow is 14,492 acre-feet. The average annual lake inflow for the 29 years since the Judgment was rendered (1977-2005) is 16,929 acre-feet. The median annual inflow for this same period is 10,569 acre-feet.

Table III-3 lists the annual lake inflows for the period 1977-2005. This table also ranks the inflows from the lowest (1,717 acre-feet in 2002) to the highest (48,613 acre-feet in 1993). Inflow to the lake for 2005 was the fourth highest annual total in the 29 years since the judgment was rendered in 1977.

Leakage

Leakage occurs through the spillway gates, and through cracks in the upper arches in three of the bays (Nos. 5, 6 and 8). For 2005, the lake level was above the spillway crest (Elevation 6731.00 feet) beginning January 11 through the end of the year. The estimated monthly leakages are shown in **Table III-4**. The total leakage for 2005 was estimated to be 195.3 acre-feet.

Lake Releases

Water is released from the lake through an outlet works. These releases can be for flood control purposes, for Mutual, or for fishery protection in accordance with SWRCB Order No. 95-4. Releases are made either through a 36-inch outlet works or a 4-inch bypass pipeline that is connected to the 36-inch outlet works. A 36-inch butterfly valve is the primary control mechanism on the outlet works. Flows in the outlet works are measured by an in-line 36-inch flow meter that was installed on the outlet piping downstream of the butterfly valve in December 1993 to replace an older meter. The new meter is an Electromatic Flow Meter Model 655 manufactured by Sparling Instruments, Inc. Downstream of the flow meter the outlet works split into a 24-inch pipeline and a 14-inch pipeline. Flow through these two pipelines is controlled by two motorized sluice gates. The two sluice gates are 24-inch by 24-inch and 14-inch by 14-inch. The meter was calibrated with an accuracy of ± 0.5 percent between 7.07 and 212 cfs. When the sluice gates were fully opened and the lake was full, the meter measured a flow of 256 cfs, which is the maximum that can be discharged through the outlet works. The rate of flow and totalized flow are recorded at the flow meter and also at the control building.

Flow through the 4-inch bypass pipeline is also metered. Big Bear MWD installed a flow meter on this bypass pipeline in 2002. Additional calibration of the meter was performed in 2004. The

TABLE III-3
BIG BEAR LAKE INFLOWS
1977-2005

(acre-feet/year)

Calendar Year 2005 – Big Bear Watermaster

Year	Lake Inflows (AF/year)	Rank	Year	Lake Inflow (AF/year)
1977	7,103	1	2002	1,717
1978	40,743	2	1999	3,774
1979	25,318	3	1988	4,551
1980	42,336	4	1990	4,856
1981	6,529	5	1989	4,967
1982	25,310	6	1981	6,529
1983	35,072	7	2001	6,915
1984	10,569	8	2000	6,930
1985	9,497	9	1977	7,103
1986	13,812	10	1987	8,005
1987	8,005	11	2003	8,295
1988	4,551	12	2004	8,404
1989	4,967	13	1997	8,757
1990	4,856	14	1985	9,497
1991	11,658	15	1984	10,569
1992	15,543	16	1994	11,015
1993	48,613	17	1991	11,658
1994	11,015	18	1996	13,119
1995	33,340	19	1986	13,812
1996	13,119	20	1992	15,543
1997	8,757	21	1982	25,310
1998	34,600	22	1979	25,318
1999	3,774	23	1995	33,340
2000	6,930	24	1998	34,600
2001	6,915	25	1983	35,072
2002	1,717	26	2005	39,600
2003	8,295	27	1978	40,743
2004	8,404	28	1980	42,336
2005	39,600	29	1993	48,613
1977-2005				
Maximum	48,613		Median	10,569
Average	16,929			
Minimum	1,717			

TABLE III-4
ESTIMATES OF
MONTHLY DAM LEAKAGE
 (acre-feet)
 Calendar Year 2005
 Big Bear Watermaster

Month	Dam Leakage Estimates (AF)
January	2.7
February	10.4
March	20.6
April	28.2
May	30.7
June	27.2
July	22.4
August	16.7
September	10.7
October	8.6
November	8.3
December	8.6
Annual Total	195.3

flow meter on the 4-inch bypass pipeline covers a flow range of 0.1 to 1.0 cfs. The 4-inch valve that is used to control releases became inoperable in December 2005. It is scheduled to be replaced in spring of 2006.

There is also a 2-inch relief line and valve on the 36-inch outlet pipeline. During the winter months this valve is opened to allow a small amount of flow to pass through the 36-inch pipeline and prevent the water in it from freezing. Flow through the 2-inch relief line is unmeasured.

In 2005, releases were made through the 4-inch bypass line between January 1 and March 10. Leakage also occurred through the two sluice gates and there was some winter flow through the 2-inch relief line. Beginning on August 11, releases were made from the 2-inch relief line to assure compliance with the flow requirement at Station B. In addition, the 4-inch bypass pipeline was winterized and a small amount of flow was released beginning December 1. As mentioned earlier, it can no longer be operated.

In 2005, Big Bear MWD did not release any water from the lake for flood control purposes or to meet Mutual's request for lake water. All releases were made to comply with SWRCB Order No. 95-4. This Order requires a minimum flow of 0.3 cfs in Bear Creek just downstream of Bear Valley Dam (Station B) and a minimum average daily flows of 1.0 cfs just below the confluence with West Cub Creek (Station A), about 6,700 feet downstream of the dam. Station A also has a requirement to maintain a minimum 7-day running average flow of 1.20 cfs.

Table III-5 summarizes the monthly amounts of water from the outlet works (the 4-inch bypass pipeline, the 2-inch relief line, and the two sluice gates) in 2005. The total flow from the outlet works in 2005 was estimated to be 225.0 acre feet

Station A and Station B

On December 29, 2004, data transmission from Station A ceased. In January, major storms hit the Bear Creek watershed with significant snowfall. Consequently, Big Bear MWD staff could not access Station A until May. On their first visit to the site, they found the data transmission facilities destroyed, the stilling basin filled with sediment and the weir plate damaged. The staff estimated the flow in Bear Creek at this time to be in the range of 10 to 15 cfs, well above the 1.20 cfs requirement.

TABLE III-5
MONTHLY RELEASES FROM
BIG BEAR LAKE
 (acre-feet)
 Calendar Year 2005
 Big Bear Watermaster

Month	Flood Control Releases (AF)	Mutual Releases (AF)	SWRCB Releases (AF)	Total Releases (AF)
January	-0-	-0-	52.9*	52.9
February	-0-	-0-	22.9*	22.9
March	-0-	-0-	11.6*	11.6
April	-0-	-0-	4.8*	4.8
May	-0-	-0-	4.9*	4.9
June	-0-	-0-	4.8*	4.8
July	-0-	-0-	6.2*	6.2
August	-0-	-0-	18.3*	18.3
September	-0-	-0-	22.6*	22.6
October	-0-	-0-	22.1*	22.1
November	-0-	-0-	17.8*	17.8
December	-0-	-0-	<u>36.1*</u>	<u>36.1</u>
Total	-0-	-0-	225.0*	225.0

* These releases were also used to partially or wholly meet Mutual's needs for lake water.

Beginning in June, the staff visited the site every two weeks and made velocity and water depth measurements. From these measurements, they used two methods to estimate the flow at Station A. The last site visit was November 02, 2005. Flow estimates ranged between 11.8 cfs and 2.3 cfs. Consequently, Station A was well in compliance with the 1.20 cfs, seven-day flow requirement.

During the summer and fall, Big Bear MWD repaired the weir plate, cleaned out the stilling basin, and installed a battery operated, pressure transducer to record flow information during the winter and early spring months. In the following spring, when weather conditions permit, Big Bear MWD will retrieve the information and calculate the winter flows at Station A.

To measure the flow at Station B, Big Bear MWD, in mid-1998, installed a permanent weir structure. The weir plate is a compound weir with a v-notch section and a rectangular section. It is attached to a reinforced concrete structure in the riverbed. The v-notch section has a flow range of 0 to 0.44 cfs and the rectangular section has a flow range of 0.44 to 5.0 cfs. A water level transmitter and a temperature sensor are located in a stilling well just upstream of the weir structure. The water level and temperature data are transmitted to a remote telemetry unit (RTU) located in the control building at the dam. From there, data are transmitted to a central computer at the administrative offices of Big Bear MWD where average daily flow rates at Station B are calculated based on the rating curve of the weir plate. In 2005, Station B was out of service for two extended periods. The first period was August 17 to September 3. The second period was September 20 through December 1.

During 2005, Big Bear MWD, working with State Water Resources Control Board (SWRCB) and the State Department of Fish and Game, developed a proposed plan to keep Station A in compliance with both the 1.0 cfs average daily flow requirement and the 1.2 cfs seven-day average flow requirement. This proposed plan involves increasing the Station B flow requirements to insure the Station A requirements are met. The new Station B requirements vary by month and hydrologic year type. The hydrologic year type is based on year-to-date precipitation at Bear Valley Dam. Water years (October 1 to September 30) are used to determine hydrologic year type. The proposed plan is presented in the following table. The proposed plan will go before the SWRCB for approval in early 2006.

Starting in December, Big Bear MWD has been following the proposed flow requirements for Station B. Based on year-to-date precipitation on December 1, the hydrologic year type is "dry" and the proposed flow requirement at Station B is 0.85 cfs. Consequently, on December 1 the release from the 2-inch relief line was increased to achieve a flow rate of 0.85 cfs at Station B. Three other adjustments were made in early December to keep in compliance. On December 19,

2005, Big Bear MWD staff realized the flow recorder at Station B was out of calibration. It was reporting flows much higher than flows estimated based on observed water depths over the weir plate. At this time, releases from the 2-inch relief line were adjusted to maintain Station B flow at or above 0.85 cfs.

Leakage estimates and outlet works flows were confirmed by comparing the sum of leakage plus the amount released from the lake through the outlet works plus the spillway flows during the gate tests to the flow measured at Station B, which is 300 feet downstream of the dam. The differences can be either gains or losses. Although small, these differences illustrate the impacts of rainfall/snowfall and plant evapotranspiration between the dam and Station B. **Table III-6** shows this comparison.

The outlet works flows, dam leakage and the wet winter months kept both stations in compliance with the average daily flow requirements of SWRCB Order No. 95-4. The leakage and outlet works flows under SWRCB Order No. 95-4 totaled 420 acre-feet in 2005. Because Mutual had a need for water during portions of the time period when releases were being made, they were able to use 146 acre-feet of the water for irrigation and municipal purposes.

To handle the SWRCB Order No 95-4 lake release and in-lieu delivery conditions, the Watermaster Committee, in 2002, clarified the accounting procedures. In 2003, the Watermaster made further improvements to these procedures. In 2005, they made a further change to better reflect actual lake management. This change was to include leakage with the flows from the outlet works in the accounting for flows to meet SWRCB Order 95-4. For the lake accounts, the accounting procedures are:

1. The outlet works flows and dam leakage will be deducted from both Mutual's and BBMWD's lake accounts in proportion to the amount of water in their respective lake accounts on days when Mutual is not fully utilizing all the flow in the Santa Ana River at the point of diversion to the forebay of SCE Power Plant No. 1.
2. The outlet works flows and dam leakage releases will be deducted entirely from Mutual's lake account on days when
 - a) Mutual is fully utilizing all the flow in the Santa Ana River,
 - b) Mutual is requesting releases from the lake and BBMWD is releasing water from the lake or providing in-lieu supplies, and
 - c) Mutual is purchasing SWP.

The term "fully utilized" is defined as days when the "net amount" of water the SBVWCD diverted from the forebay of SCE Power Plant No. 3 is less than the amount of the fish release. The "net amount" of water diverted from the forebay is defined as the actual amount diverted by

TABLE III-6
COMPARISON OF FLOWS AT STATION B WITH
ESTIMATED LEAKAGE AND FLOWS FROM OUTLET WORKS
(acre-feet)
Calendar Year 2005
Big Bear Watermaster

Month	Dam Leakage Estimates (AF)	Outlet Works Estimated Releases (AF)	Spillway Gate Test + Leakage + Releases (AF)	Station B Measurements (AF)	Gain or (Loss) (AF)
January	2.7	52.9	-	94.2	38.6
February	10.4	22.9	-	42.8	9.5
March	20.6	11.6	-	45.2	13.0
April	28.2	4.8	-	51.2	18.2
May	30.7	4.9	-	47.4	11.8
June	27.2	4.8	-	30.8	(1.2)
July	22.4	6.1	-	38.0	9.5
August	16.7	18.3	-	40.7	5.7
September	10.7	22.6	-	31.1	(2.2)
October	8.6	22.1	-	31.8	1.1
November	8.3	17.8	20.0	46.2	0.1
December	<u>8.6</u>	<u>36.1</u>	<u>-</u>	<u>82.7</u>	<u>38.0</u>
Annual Total	195.3	225.0	20.0	582.1	141.80

SBVWCD for groundwater recharge less the amount of water delivered to the foreway by the Bear Valley Pick-up on the Santa Ana River below Seven Oaks Dam.

The input data and allocation of releases under SWRCB Order No. 95-4 in Table 2.C of Appendix B reflect the above procedures.

For the Basin Compensation Account, the accounting procedures are:

1. Under a Big Bear MWD operation, the actual fish releases used by Mutual under Item 2 above will be considered a "release actually made under District Operation (R_d)" and the actual releases under Item 1 above will be treated as "spills which actually occurred under District Operation (S_d)".
2. Under a Mutual operation, the fish releases used by Mutual under Item 2 above will be considered a "release which would have been made under a Mutual Operation (R_m)", and the releases allocated to Mutual under Item 1 above will be considered a "spill which would have occurred under a Mutual Operation (S_m)."

Tables 4.A and 4.B of Appendix B reflect these accounting procedures.

The Watermaster Committee will continue to work on these accounting procedures to make sure they will be accurate for all possible river flow and diversion conditions that could occur in future years.

Spills

Spills are flows that leave the lake over the spillway of the dam. They are calculated from lake gage height readings and spillway gate settings at the dam during the time of the spill. In 2005, Big Bear MWD released 20.0 acre-feet of water through the spillway gates. This release occurred on November 15 when Big Bear MWD tested the operation of the new spillway gates. The test began at 8 a.m. and was completed by noon. During the test, each spillway gate was opened and closed.

Lake Withdrawals for Snowmaking

Big Bear MWD sells water from Big Bear Lake for use in snowmaking and fire protection for ski areas within the watershed. In 2005, 580 acre-feet of water was withdrawn from the lake for these purposes. The withdrawals for snowmaking occurred in five winter months (January, February, March, November and December). The withdrawals for fire protection occurred in five summer months (May, June, July, August and September). The Watermaster estimates that half of the

monthly amount pumped from the lake for snowmaking in the winter months returns to the lake in the form of snowmelt during the same month. In the summer months, the water is stored in ponds for emergency fire purposes. These ponds have a storage capacity of 61.4 acre-feet. Fortunately, the water stored was not needed for this purpose. The Watermaster estimated evaporation losses from the ponds using the lake evaporation rates and assumed the balance in the ponds at the end of October was used for snowmaking in November and returned to the lake in December. In 2005, the withdrawal from the lake for snowmaking was 580 acre-feet and 275 acre-feet returned to the lake. The "net withdrawal" was 305 acre-feet.

Net Wastewater Exports

The Watermaster Committee calculates "net" wastewater exports as the difference between the wastewater that leaves the Big Bear Lake watershed and the water supply that is imported into the Big Bear Lake watershed from the Baldwin Lake watershed. The methodology used to make these calculations is documented in a report entitled "Development of a Methodology for Estimating Gross Sewage Export from Upper Bear Creek Watershed", prepared by James M. Montgomery, Consulting Engineers, Inc., in September 1989 for Big Bear Municipal Water District.

Wastewater is exported from the Big Bear Lake watershed to the Baldwin Lake watershed from the following three areas:

- City of Big Bear Lake
- San Bernardino County Service Area 53B
- Airport area served by Big Bear City CSD

Wastewater flows from the first two areas are measured by the Big Bear Area Regional Wastewater Authority (BBARWA). Wastewater flows from the airport area within the Big Bear Lake watershed are estimated based upon the number of connections in the area.

Water is imported into the Big Bear Lake watershed from the Baldwin Lake watershed by the following three activities:

- City of Big Bear Lake imports groundwater from the Baldwin Lake watershed.
- Big Bear City CSD provides water to the airport area from the Baldwin Lake watershed
- Big Bear City CSD occasionally provides emergency water to the City of Big Bear Lake

The City of Big Bear Lake imported supplies and emergency supplies are both metered, while the airport area supplies are estimated based on the number of service connections.

In 2005, the "net" wastewater exported from the Big Bear Lake watershed was 1,750 acre-feet. **Table III-7** contains the 2005 monthly net exports. 2005 net exports were greater than the 2004 net exports. The estimated inflow and infiltration (I&I) into the sewer system in 2005 was 763 acre-feet, which reflects the higher lake levels and above average runoff in 2005.

SANTA ANA RIVER

Bear Valley Mutual Water Company Water Needs

Mutual meets the water needs of its shareholders primarily by diverting water from the Santa Ana River. When river flow is inadequate to meet their needs, Mutual can call upon water stored in Big Bear Lake, pump ground water from the San Bernardino ground water basin, buy State Water Project (SWP) water from San Bernardino Valley MWD, or reduce the delivery rate to its shareholders.

In the January 11, 2005 and February 15, 2005 Watermaster meetings, Mutual reported they would need 2,000 acre-feet of water from Big Bear MWD and they would buy some SWP water from San Bernardino Valley MWD. They met their 2005 needs by in-lieu supplies from Big Bear MWD, diversions from the Santa Ana River, purchases of SWP water from San Bernardino Valley MWD, and local groundwater. Mutual also got water from the lake releases made for fish protection in Bear Creek.

Summary of Flows and Diversions at Mouth of the Santa Ana River Canyon

Exhibit D, Section 1(f) of the Judgment calls for data to be included in each Watermaster annual report summarizing the river flows at the mouth of the Santa Ana River Canyon and diversions at the mouth of the Santa Ana River Canyon. Specifically, it requests quantities of water diverted into the following facilities:

1. Bear Valley High Line
2. Redlands Canal
3. North Fork Canal
4. Edwards Canal
5. San Bernardino Valley Water Conservation District Spreading Grounds

TABLE III-7
NET WASTEWATER EXPORTS
 (acre-feet)
 Calendar Year 2005
 Big Bear Watermaster

Month	Net Wastewater Exports (acre-feet)
January	313.8
February	247.6
March	276.0
April	165.1
May	132.9
June	97.4
July	100.9
August	88.1
September	73.6
October	76.1
November	79.7
December	<u>98.4</u>
Total	1,749.6

Exhibit D also requires the annual report to estimate the amount of Santa Ana River flow not diverted for beneficial use. **Table III-8** contains this information for 2005.

Flow of Santa Ana River at Mouth of Canyon

The United States Geological Survey (USGS) reports flow in the Santa Ana River at the mouth of the Santa Ana Canyon under Station No. 11051501. This station is the combination of flow records from three gages (USGS Station No. 11049500, 11051499, and 11051502). Flow in the flume between the afterbay of SCE Power House No. 1 (SCE Power House No. 2 was removed due to the construction of Seven Oaks Dam) and the forebay of SCE Power House No. 3 is estimated by USGS using the Daily Flow Report provided by the San Bernardino Valley Water Conservation District and verified by a new meter installed by SCE and reported as Station No. 11049500. Note that this derived estimate does include the overflow from the old SCE Powerhouse No. 3 forebay as reported on the Daily Flow Report. In addition, the USGS maintains two gauging stations near the mouth of the Santa Ana River Canyon below Seven Oaks Dam. Station No. 11051499 measures the flow in the main river channel while Station No. 11051502 measures river flow diverted into the afterbay of SCE Power House No. 3 through the Bear Valley River Pick-up. The records from these three sources are summarized and reported as the total flow in the Santa Ana River, USGS Station No. 11051501.

During 2005, the total river flow reported by the USGS, currently provisional, was 116,839 acre-feet. However, measurements at Station No. 11049500 include the amount of groundwater pumped by Mutual and discharged into the flume above the gage. Thus, to get the actual Santa Ana River Flow, the canyon well production must be deducted from the reported flows. In 2005, there was no canyon well production. The resulting river flow below Seven Oaks Dam was 116,839 acre-feet in 2005. This figure reflects storage change in the reservoir behind Seven Oaks Dam. In 2005, no water was stored behind the dam. Thus, the estimated flow of the Santa Ana River at the mouth of the canyon was 116,839 acre-feet in 2005.

Diversions by Bear Valley Mutual Water Company

Amounts diverted by Mutual and associated prior right companies are reported to the State Water Resources Control Board under Recordation Numbers 36-00021, 36-00022 and 36-00028. In 2005, Mutual's measured diversions were 13,615 acre-feet. The vast majority, 12,634 acre-feet, was water diverted from the Santa Ana River. No groundwater was pumped from their well located in the Santa Ana Canyon above the major points of diversion. 981 acre-feet of water was produced from the Redlands Tunnel. This diversion was used for agricultural and domestic

TABLE III-8

**SUMMARY OF DIVERTED FLOW AT MOUTH OF
SANTA ANA RIVER CANYON
(ACRE-FEET)
Calendar Year 2005
Big Bear Watermaster**

Flow Component		Amount (AF)
FLOW OF SANTA ANA RIVER AT MOUTH OF CANYON		
Flow Reported for U.S.G.S. Gage 11051501-provisional		116,839
BVMWC Canyon Well No. 1 Production		-0-
Santa Ana River Flow Below Seven Oaks Dam		116,839
Annual Storage Change in Seven Oaks Dam		-0-
Santa Ana River Flow at Mouth of Canyon		116,839
DIVERSIONS BY BEAR VALLEY MUTUAL WATER COMPANY		
Diversions:	Greenspot Metering Station	-0-
	Edwards Line	337
	North Fork Canal	3,411
	Bear Valley Highline	-0-
	Redlands Aqueduct (includes Redlands Tunnel)	9,775
	SBVMWD Morton Canyon Connector Deliveries	-0-
	Redlands Sandbox Spreading (observed)	92
		13,615
Adjustments:	Water pumped from BVMWC Canyon Well No. 1	-0-
	Redlands Tunnel Diversion	- 981
Total MUTUAL Diversions		12,634
DIVERSIONS BY SBVWCD		
Diversion by San Bernardino Valley Water Conservation District		27,516
SBVMWD Morton Canyon Connector Deliveries to SBVWCD		-0-
Total SBVWCD Diversions		27,516
TOTAL DIVERSIONS FROM THE SANTA ANA RIVER		
Total Diversions by Mutual and SBVWCD		40,150
AMOUNT NOT DIVERTED		
Santa Ana River Flow at Mouth of Canyon		116,839
Mutual and SBVWCD Diversions		- 40,150
Amount Diverted to Storage Behind Seven Oaks Dam		-0-
Estimated Not Diverted		76,689
Estimated Flow Downstream of Diversion*		75,308
Estimated Losses and Measurement Errors **		1,381 or 1.0%

* This value equals the amount observed at the Greenspot Road Bridge.

** See written text for explanation.

purposes. In 2005, domestic deliveries were made to the City of Redlands for their Horace P. Hinckley Water Treatment Plant and to East Valley Water District's water treatment plant were limited because of the poor quality of the water stored behind Seven Oaks Dam.

Diversions by San Bernardino Valley Water Conservation District

Water diverted by the San Bernardino Valley Water Conservation District for groundwater recharge is by virtue of licenses and pre-1914 rights; all diversions are reported to the State Water Resources Control Board. In 2005, they diverted 27,516 acre-feet of water for ground water recharge.

Amount Not Diverted

In years prior to 1996, the sum of the diversions mentioned above was subtracted from the total river flow, as reported by USGS Gage 11051501, to determine the "Amount Not Diverted". Since 1977, this difference has been reported as the "Amount Not Diverted", which is supposed to be the amount of water that flowed past the mouth of the Santa Ana River Canyon without being diverted for beneficial use.

Losses and Measurement Errors

During preparation of the 1996 report, the Watermaster Committee discovered significant discrepancies between the value for "Amount Not Diverted", as calculated by the method contained in previous Watermaster Reports, and observed flows in the Santa Ana River just downstream from the last diversion point. Since 1994, San Bernardino Valley Water Conservation District staff have been estimating the amount of water flowing past the Greenspot Road Bridge, which is just downstream from the mouth of the Santa Ana River Canyon, on a daily basis. In past years the difference between the estimated flows at the Greenspot Road Bridge and the "Amount Not Diverted" were significantly different. The Watermaster has conducted extensive research with regards to the discrepancy and provided the following five explanations:

1. Leakage Losses between Inflows and Outflows. The first explanation is unmeasured losses between the points where inflows and outflows are measured. These include:
 1. Leakage in the tailrace from SCE Power House No. 3 afterbay,
 2. Leakage in the Redlands Aqueduct between SCE Power House No. 3 afterbay and the Redlands Sandbox, and

3. Leakage around the Redlands Sandbox weir.
2. Unmeasured Diversions. The second explanation is that Mutual can divert water for spreading at the Redlands Sandbox without it being measured. San Bernardino Valley Water Conservation District staff observes and reports this diversion on a daily basis. These estimates are based on known flows delivered to the Redlands Sandbox and are fairly accurate.
3. USGS Gage Accuracy. The third possible explanation for the disparity is the accuracy of the USGS flow records. The USGS reports that this combined flow measurement of three gage stations is considered to have an accuracy rating of "fair". A "fair" rating means that 95 percent of the daily discharge measurements are within 15 percent of the true value. According to Jeffrey Agajanian of the USGS, this means the error band for the entire year should be within approximately 15 percent of the total measured flow. This value is a conservative estimate of the possible measurement errors and the flow is likely to be well within this error band, especially during the summer months when flows are generally constant and lower.
4. Water Delivery Flow Measuring Device Accuracy. A fourth reason for the difference could be inaccuracies in the diversion measuring devices, which should be less than +/- 10 percent at any given time. Most of these measurements are obtained through the use of stable, long-term weirs and parshall flumes, but small, though not insignificant, errors are possible. Some of the measurement devices provide daily readings and are equipped with totalizer equipment providing monthly data. The San Bernardino Valley Water Conservation District (SBVWCD) will continue to update totalizer equipment on any of the measurement devices that are not equipped with totalizer equipment. The SBVWCD is developing a program to maintain and verify the accuracy of the existing measuring devices. These activities will help minimize errors in diversion measurements.
5. Observed Flow at Greenspot Road Bridge. A fifth possible explanation is the accuracy of the flow estimates at the Greenspot Road Bridge. These estimates are based on daily flow measurements. Total flow quantities are difficult to determine because of the high degree of short-term variability in the river flows during storm events.

The construction of the Seven Oaks Dam required the reconstruction of the SCE flume between the old Power House No. 2 and No. 3. This eliminated any losses in the flume from the old Power House No. 2 and No. 3 and required the USGS to move Station No. 11049500 to the old forebay of Power House No. 3. Flow at this station is estimated by using the Daily Flow Report provided by the San Bernardino Valley Water Conservation District and is reported as Station No. 11049500. As of August 2001, SCE has installed a new meter in the forebay of Power

House No. 3. In addition, improved efforts were taken to monitor diverted water at the Redlands Sand Box for ground water recharge and observed flows at the Greenspot Road Bridge. The Watermaster has concluded that these efforts have reduced the losses and measurement inaccuracies such that the large errors that occurred in the past should no longer occur.

6. Storage Behind Seven Oaks Dam. There is, however, an additional factor that must be considered when the Watermaster Committee estimates the "amount not diverted". This factor is the amount of water that has been stored behind Seven Oaks Dam (SOD) and not released by year-end. This stored water is Santa Ana River flow that has not yet been measured by the two USGS stream gages below the dam. In addition, water stored behind the dam from inflow in the previous year and released in the current year must also be taken into account. The amount stored behind SOD at the end of 2005 was 135 acre-feet (water surface elevation of 2,177.5 feet). The amount stored behind SOD at the end of 2004 was 1,543 acre-feet (water surface elevation of 2,135.5 feet). The water stored behind the dam from inflow in the previous year and released in the current was 1,408 acre-feet. This amount has been accounted for in the USGS provisional value of 116,839 acre-feet.

2005 Estimate of Amount Not Diverted

In 2005, San Bernardino Valley Water Conservation District observed 75,308 acre-feet of river flow at the Greenspot Road Bridge. Therefore, the estimated amount not diverted was 75,308 acre-feet. The total river flow reported by USGS less the canyon well production was 116,839 acre-feet. The total diversion measured by Mutual and San Bernardino Valley Water Conservation District was 40,150 acre-feet. The difference between these two values is 76,689 acre-feet. Subtracting this difference from the amount not diverted, results in leakage losses and measurement errors of 1,381 acre-feet. These losses and errors are well within the probable error range of the measurement devices.

Lake Releases/In-Lieu Water Deliveries

Santa Ana River flows are often insufficient to meet Mutual's water needs; as a result, they frequently request lake releases from Big Bear MWD to meet their needs. Big Bear MWD has the choice of releasing water from the lake or providing an in-lieu supply. At their meeting on May 1, 1987, the Board of Directors of the Big Bear Municipal Water District voted unanimously to approve the following policy for providing in-lieu supplies.

"1. *Adopt the following 1987 in-lieu policy:*

- A. When the lake is in the top 4 feet, the irrigation demands from the lake will be met by releasing water from Big Bear Lake.*
- B. When the lake is between 4 feet and 6 feet down, the District intends to purchase in-lieu water between the months of May 1st and October 31st from either wells or the State Water Project; between November 1st and April 30, water required would be released from Big Bear Lake.*
- C. When the lake is between 6 and 7 feet down, the Board shall determine whether to release from the lake.*
- D. In the unlikely event that the lake is more than 7 feet down, the District intends to buy in-lieu water throughout the year.*
- E. The General Manager shall inform the Board each time water is released.*

In 2005, the lake level was more than 6 feet down until the first week of March. The lake level continued to rise and was less than 4 feet down by mid-April. It stayed less than 4 feet down until the end of October. It was between 4 feet and 6 feet down for the months of November and December. The lake level ended the year 4.48 feet down. Mutual requested 2,018 acre-feet of water from Big Bear MWD in 2005. The amount of water requested was to be just enough to reach 65,000 acre-feet in the past ten years. The balance of their deliveries from San Bernardino Valley MWD was purchased State Water Project water.

In accordance with its lake release policy, Big Bear MWD normally would have met this request by providing Mutual with a combination of in-lieu supplies and lake releases. However, this year Mutual's entire request was met by in-lieu deliveries. Mutual also received water from the lake as part of their use of the lake releases for fishery protection under SWRCB Order No. 95-4. **Table III-9** shows Big Bear MWD monthly water deliveries to Mutual during 2005. In total, Big Bear MWD provided 2,175 acre-feet of water to Mutual. This amount consists of 2,018 acre-feet of in-lieu supplies and 146 acre-feet of water they were able to use from the fish releases.

The amount of water Big Bear MWD is obligated to deliver to Mutual is limited by the Judgement. According to the Physical Solution Agreement, Article III.A.1.(b), Mutual has the right to:

TABLE III-9
WATER DELIVERIES TO MUTUAL BY
BIG BEAR MUNICIPAL WATER DISTRICT
 (acre-feet)
 Calendar Year 2005
 Big Bear Watermaster

Month	Releases from Big Bear Lake to Mutual	"In Lieu" from Wells	"In Lieu" State Water Project	Total Deliveries to Mutual
January	34.1*	-0-	-0-	34.1
February	16.2*	-0-	90.2	106.4
March	11.8*	-0-	-0-	11.8
April	-0-	-0-	146.6	146.6
May	-0-	-0-	-0-	-0-
June	-0-	-0-	567.7	567.7
July	-0-	-0-	1,143.6	1,143.6
August	27.1*	-0-	269.9	297.0
September	33.3*	-0-	-0-	33.3
October	18.8*	-0-	-0-	18.8
November	3.5*	-0-	-0-	3.5
December	1.6*	-0-	-0-	1.6
Total	146.3	-0-	2,218.0	2,364.3

* Also required to comply with SWRCB Order No. 95-4

"divert water, or cause water to be diverted, at such rate as may be reasonably necessary to meet the requirements of Mutual's stockholders, not exceeding 65,000 acre-feet in any ten (10) year period, as determined by the Board of Directors of Mutual in its sole discretion."

Table III-10 summarizes the deliveries to Mutual since the agreement went into effect. For the ten-year period ending with calendar year 2005, the amount of water delivered to Mutual by Big Bear MWD was 65,000 acre-feet. This figure shows Mutual achieved their goal of reaching the 65,000 acre-foot limit in 2005.

Mutual's Equivalent Water Diversions

Table III-11 shows the amount of water that Mutual would have diverted from the Santa Ana River Canyon if the Judgment had not been rendered. This figure is determined by adding the in-lieu water deliveries as reported in Table III-8 to the river diversions by Mutual and Mutual's groundwater production from their Canyon Wells No. 1 and 2, as shown in Table III-6. The value for river diversions includes the supply from the Redlands Tunnel. This equivalent diversion is the amount of water Mutual would have diverted if all their demands for water from Big Bear MWD had been met by lake releases. In 2005, Mutual's equivalent diversions were 15,833 acre-feet, which is the fifth lowest amount since the Judgment was rendered in 1977.

TABLE III-10
SUMMARY OF WATER DELIVERIES TO MUTUAL
1977-2005
(acre-feet)
Calendar Year 2005
Big Bear Watermaster

Calendar Year	Releases From Big Bear Lake	SWRCB Releases to Mutual	"In Lieu" from Wells	"In Lieu" SWP Purchases & Exchanges	"In Lieu" EVWD Exchange Water	"In Lieu" Delivery on BBMWD Owned Stock*	Total Deliveries to Mutual	Ten Year Totals
1977	868		4,412	0	0	0	5,280	N/A
1978	0		0	0	0	0	0	N/A
1979	0		0	0	0	0	0	N/A
1980	0		0	0	0	0	0	N/A
1981	2,250		0	672	0	0	2,922	N/A
1982	657		0	56	0	0	713	N/A
1983	0		0	0	0	0	0	N/A
1984	1,700		0	993	0	0	2,693	N/A
1985	2,466		842	2,994	0	0	6,302	N/A
1986	1,358		1,139	190	0	0	2,687	20,597
1987	0		3,301	4,762	0	84	8,147	23,464
1988	0		1,864	5,432	0	63	7,359	30,823
1989	0		1,593	8,555	0	0	10,148	40,971
1990	0		561	7,722	0	0	8,283	49,254
1991	79		0	0	151	0	230	46,562
1992	0		0	0	0	0	0	45,849
1993	0		0	0	0	0	0	45,849
1994	1,141		0	0	0	0	1,141	44,297
1995	88		0	0	0	0	88	38,083
1996	3,461		0	4,027	0	0	7,488	42,884
1997	364		0	6,780	0	0	7,144	41,881
1998	0		0	0	0	0	0	34,522
1999	124	147	0	10,436	0	0	10,706	35,080
2000	-0-	510	0	12,878	0	0	13,388	40,185
2001	46	493	48	14,212	0	0	14,799	54,754
2002	-0-	614	0	5,000	0	0	5,614	60,368
2003	-0-	484	0	0	0	0	484	60,853
2004	-0-	512	0	2,500	0	0	3,012	62,724
2005	-0-	146	0	2,218	0	0	2,364	65,000

N/A = Not Applicable

* Not Authorized After 1988

TABLE III-11
EQUIVALENT WATER DIVERSIONS BY MUTUAL
1977-2005
(acre-feet)
Calendar Year 2005
Big Bear Watermaster

Calendar Year	Net Santa Ana River Diversion by BVMWC*	Groundwater Production From Wells No. 1 & 2	Big Bear MWD In-Lieu Deliveries	Equivalent Total Water Diversions
1977	14,420	1,546	4,412	20,378
1978	16,809	282	-	17,373
1979	19,470	114	-	19,584
1980	20,479	188	-	20,667
1981	20,449	1,130	672	22,251
1982	18,565	246	56	18,867
1983	19,209	53	-	19,262
1984	23,392	739	993	25,124
1985	19,837	872	3,836	24,545
1986	23,160	894	1,329	25,383
1987	16,373	947	8,147	25,467
1988	14,170	612	7,359	21,141
1989	11,449	672	10,148	22,269
1990	11,242	1,576	8,283	21,101
1991	13,715	368	151	14,234
1992	16,840	97	-	16,937
1993	26,591	-	-	26,591
1994	23,819	594	-	24,413
1995	30,794	60	-	30,853
1996	19,529	1,131	4,027	24,687
1997	19,490	1,559	6,780	27,829
1998	26,625	105	-	26,730
1999	21,336	484	10,436	32,256
2000	17,171	322	12,878	30,371
2001	12,355	140	14,260	26,755
2002	8,007	58	5,000	13,065
2003	13,301	114	-	13,415
2004	11,815	67	2,500	14,382
2005	13,615	-	2,218	15,833

* Includes Redlands Tunnel Diversions

IV. DETERMINATIONS AND ACCOUNTS

ACCOUNTING REQUIREMENTS

In accordance with Article 29 of the Judgment, "Watermaster shall maintain three basic accounts, in accordance with Watermaster Operating Criteria, as follows:

- (a) District's Lake Water Operation. A detailed account to reflect actual operation of the Lake by District shall be maintained.*
- (b) Mutual's Lake Water Operations. In addition, a corollary account shall be maintained to simulate the effect of Mutual's operations with regard to Lake water under the In-Lieu Water operations.*
- (c) Basin Compensation Account. An account of District's annual and cumulative obligation for Basin Make-up Water shall also be maintained."*

In 1986, the Watermaster Committee developed a computer program for keeping these accounts. This program was designed to operate on an IBM (or IBM compatible) personal computer using Lotus 1-2-3. To standardize all years of operations under the Judgment, all past accounts were recalculated using the program and were included in the 1986 Annual Report.

In 1990, the Watermaster Committee decided how to account for wastewater exports from the Big Bear Lake watershed and delivery of water on Mutual stock owned by Big Bear MWD. Only the Basin Compensation Account was affected by these decisions. Consequently, the 1990 Watermaster Report contained revised tables for the Basin Compensation Accounts for calendar years 1986, 1987, 1988 and 1989, as well as the status of all the 1990 accounts.

For the 1994 report, the Watermaster Committee updated the accounting procedures to reflect 1994 Watermaster decisions and to clarify the reports.

In 1995, the Watermaster made several additional revisions to the accounting procedures. However, in preparing the 1996 accounts, the Watermaster Committee discovered some errors in the changes made in 1995. These errors were corrected and, as a result, the 1995 accounts were recomputed and were included in the 1996 Annual Watermaster Report.

2004 ACCOUNT BALANCES

Appendix B contains the 2005 accounts. The first four pages of the appendix present the input data used to calculate the various accounts. The fifth page summarizes the status of the various accounts. The remaining pages of Appendix B are the detailed monthly tables of the accounts.

Actual Lake Account

Figure 2 illustrates the water balance for the actual operation of Big Bear Lake in 2005. **Table 1** of Appendix B provides additional detail. This information shows that:

- 1) the lake level rose 11.20 feet, from a gage height of 56.65 feet to 67.85 feet; 72.33 feet is full;
- 2) lake storage increased by 27,330 acre-feet, it began the year with 33,173 acre-feet and ended the year with 60,503 acre-feet; when the lake is full, it contains 73,320 acre-feet of water;
- 3) evaporation was 11,525 acre-feet;
- 4) lake inflow was 39,600 acre-feet, which is well above the median inflow of 10,569 acre-feet since the Judgment was rendered in 1977;
- 5) the total of spills, releases, leakage and net lake withdrawals was 745 acre-feet.

Tables 1A through 1D provide additional details to support Table 1.

Mutual's Lake Account

Figure 3 illustrates the water balance for Mutual's synthesized operation of Big Bear Lake in 2005. Mutual's operation shows what would have happened if:

- 1) Mutual had owned the lake,
- 2) the in-lieu program was not in place, and
- 3) the net wastewater exported from Big Bear Lake watershed entered the lake as supplemental inflow.

Figure 2
Water Balance for 2005 Actual Lake Operations

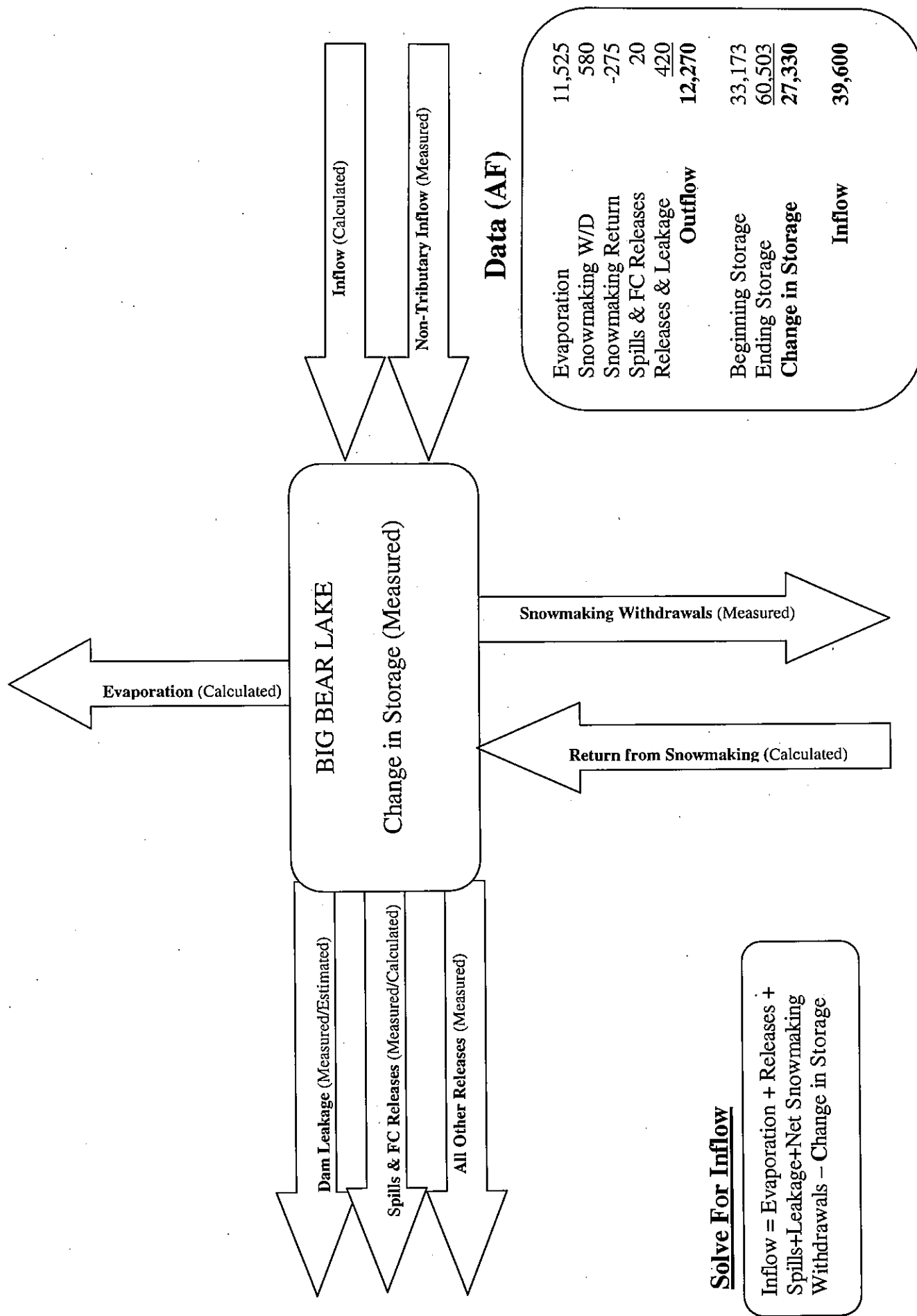
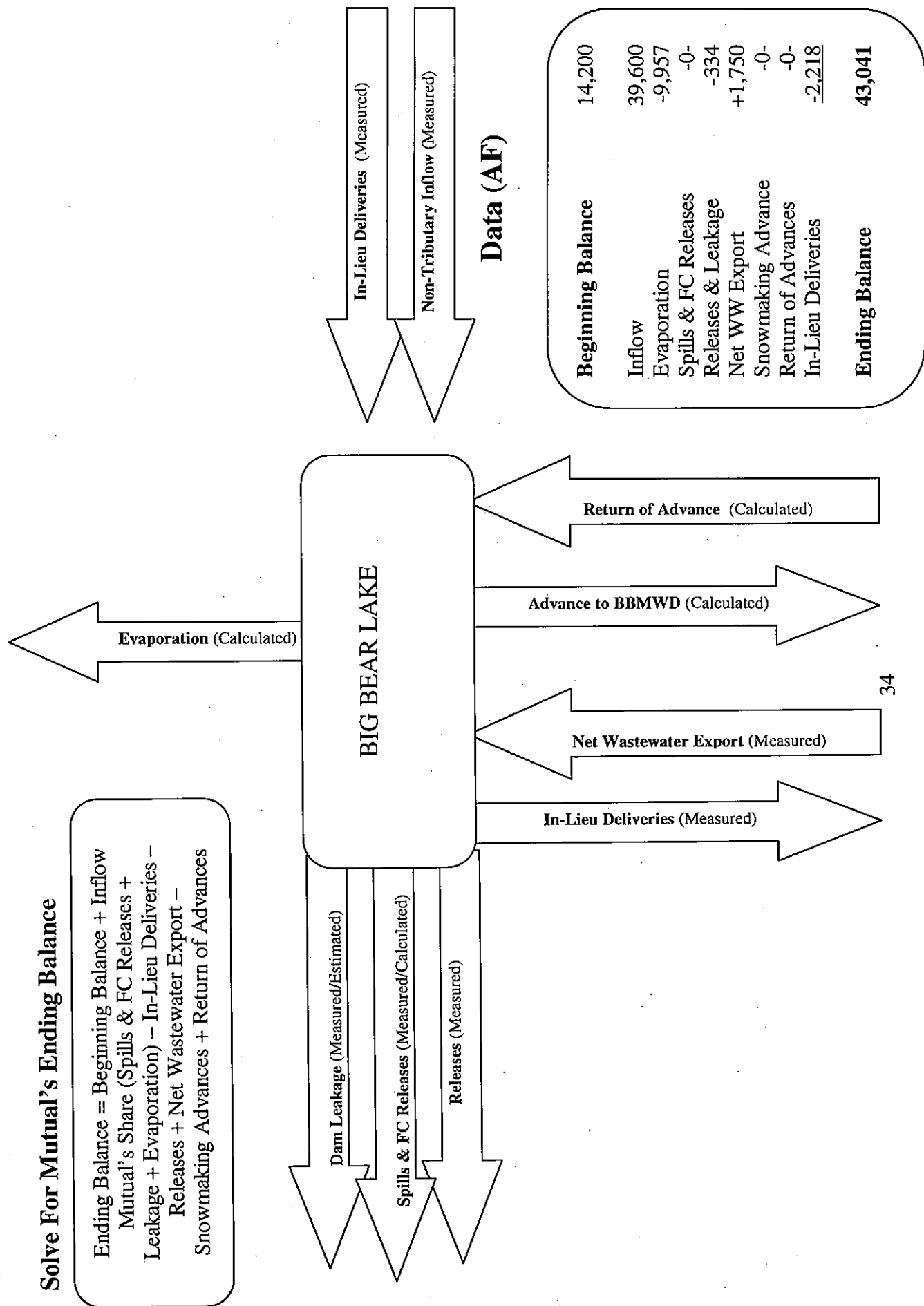


Figure 3
Water Balance for 2005 Mutual's Lake Operation
 (Synthesized Conditions)



In this synthesized case, Mutual's demands for lake water would have been met entirely from lake releases.

Figure 3 and Table 2 of Appendix B show that Mutual had 43,041 acre-feet in its lake account at the end of 2005. This account balance is 28,841 acre-feet more than was in their lake account at the end of 2004. Table 2 also shows that in 2005 Mutual's lake account was credited with all the lake inflow (39,600 acre-feet), and the total of their releases, spills, leakage and in-lieu deliveries would have been 2,552 acre-feet. Supplemental inflow added to Mutual's Lake Account for net wastewater exported from the basin was 1,750 acre-feet. In 2005, there were no advances to Big Bear MWD for snowmaking within the watershed. Evaporation that would have taken place under a Mutual operation was 9,957 acre-feet. The cumulative effect of changes in lake releases and supplemental inflows that would have taken place since 1977 under a "Mutual Operation" would be a lake level that would have been 61.05 feet at the end of 2005 or 11.28 feet below the top of the dam. This synthesized lake level is 6.80 feet lower than it actually was. This lower lake level reflects the impact of what Mutual's lake withdrawals would have been without the in-lieu program and with the credits they receive from the net wastewater exports. Tables 2A through 2C provide additional details to support Table 2.

Article 4.(b) of the Watermaster Operating Criteria (Exhibit "D" of the Judgment discusses how to handle the export of wastewater from and the import of water to the Upper Bear Creek Watershed. Specifically, it says:

In the event gross export from Upper Bear Creek Watershed to any area not tributary to the Santa Ana River Watershed within Upper Bear Creek Watershed, calculated inflow to the Lake shall be increased each year, beginning with the calendar year 1986 by the amount by which such gross export exceeds imports. If gross import exceeds gross export, said excess shall be credited against District's Basin Make-up Water obligation.

In 1986, the Watermaster Committee decided to handle the net wastewater exports (gross exports-gross imports) entirely in the District's Basin Make-up water obligations. This decision was contingent upon implementation of a wastewater reclamation project in the Upper Bear Creek Watershed by December 31, 1994. A reclamation project was not implemented by that date so the Watermaster Committee, in 1994, decided to add the net wastewater credits to the calculated lake inflows effective January 1990. This decision adds the net wastewater credits to Mutuals lake account. Essentially, it transfers the amount of the credit from Big Bear MWD's lake account to Mutual's lake account.

Table IV-1 shows the impacts of crediting Mutual's lake account (and debiting Big Bear MWD's lake account) with the net wastewater exports. Since 1990, Mutual has been credited with 22,246 acre-feet of net wastewater exports. After 17 years of getting these credits, Mutual's lake account has 5,141 acre-feet more water than it would have had if it hadn't received the credits. This additional increase raised their simulated lake level by 2.20 feet. In other words, without the credits, Mutual's lake level would have been 2.20 feet lower than reported in the lake account tables.

There are two primary reasons why the increase in their lake account (5,141 acre-feet) is less than the cumulative credits they have received (22,246 acre-feet). The first reason is spills. When the lake fills, Big Bear MWD's water spills first, and then Mutual's water spills. The credits they receive will spill during very wet years, like 1998. The second reason is evaporation. Mutual's lake level increases with the credits. With higher lake levels, their share of the evaporation losses increases. The end result is that at the end of 2005 Mutual's lake account had 5,141 acre-feet more and Big Bear MWD's lake account had 5,141 acre-feet more re-feet less as a consequence of the net wastewater export credits.

Big Bear MWD's Lake Account

Section 3(b), District's Water in Storage, of the Watermaster Operating Criteria of the Judgment describes the procedure to determine Big Bear MWD's storage account as follows:

"Any water actually in storage in excess of Mutual's water in Storage, as calculated above, shall be for the account of District. So long as District has water in storage, all spills from the Lake shall be deemed District Water."

Figure 4 illustrates the water balance for Big Bear MWD's lake account in 2005. Table 3 of Appendix B summarizes the results. This information shows the water actually in storage (from Table 1 of Appendix B), Mutual's water in storage (from Table 2 of Appendix B), and the difference between the two, which is the amount in Big Bear MWD's account. In 2005, Big Bear MWD's account balance began with 18,973 acre-feet and ended the year with 17,462 acre-feet. The decrease in their account was 1,511 acre-feet. This decrease is a result of the evaporation losses, net snowmaking withdrawals and net wastewater exports in excess of the in-lieu deliveries made to Mutual during the year.

TABLE IV-1
EFFECT OF WASTEWATER EXPORT CREDITS
ON MUTUAL'S LAKE ACCOUNT

Calendar Year 2005
Big Bear Watermaster

End Of Calendar Year	Net Wastewater Export Credit (AF)	w/Wastewater Credits		w/o Wastewater Credits		Differences	
		Storage Account (AF)	Lake Level (Feet)	Storage Account (AF)	Lake Level (Feet)	Storage Account (AF)	Lake Level (Feet)
1989	-	16,905	47.00	16,905	47.00	-	-
1990	857	7,627	40.30	6,864	39.50	763	
1991	940	14,226	45.75	12,772	44.65	1,454	1.10
1992	723	22,787	51.15	20,886	50.05	1,901	1.10
1993	2,223	62,165	68.40	58,271	67.00	3,894	1.40
1994	1,397	61,407	68.15	56,451	66.35	4,956	1.80
1995	2,012	66,308	69.90	65,019	69.45	1,289	0.45
1996	1,540	60,875	67.95	58,229	67.00	2,646	0.95
1997	1,427	52,407	64.80	48,663	63.35	3,744	1.45
1998	2,427	69,566	71.00	68,282	70.60	1,284	0.40
1999	1,339	51,390	64.40	48,922	63.45	2,468	0.95
2000	1,337	35,335	57.65	31,900	56.00	3,435	1.65
2001	1,317	19,898	49.45	15,732	46.75	4,166	2.70
2002	889	10,856	43.15	6,897	39.55	3,959	3.60
2003	1,044	13,718	45.35	9,695	42.20	4,023	3.15
2004	1,024	14,200	45.70	10,233	42.65	3,967	3.05
2005	1,750	43,041	61.05	37,900	58.85	5,141	2.20
Total	22,246						

Figure 4
Water Balance for 2005 BBMWD's Lake Operation
 (Synthesized Conditions)

Solve For BBMWD's Ending Balance

Ending Balance = Beginning Balance + In-Lieu Deliveries - BBMWD's Share (Spills & FC Releases + Leakage + Evaporation + Releases)
 - Net Wastewater Export + Snowmaking Withdrawal + Return Flow from Snowmelt

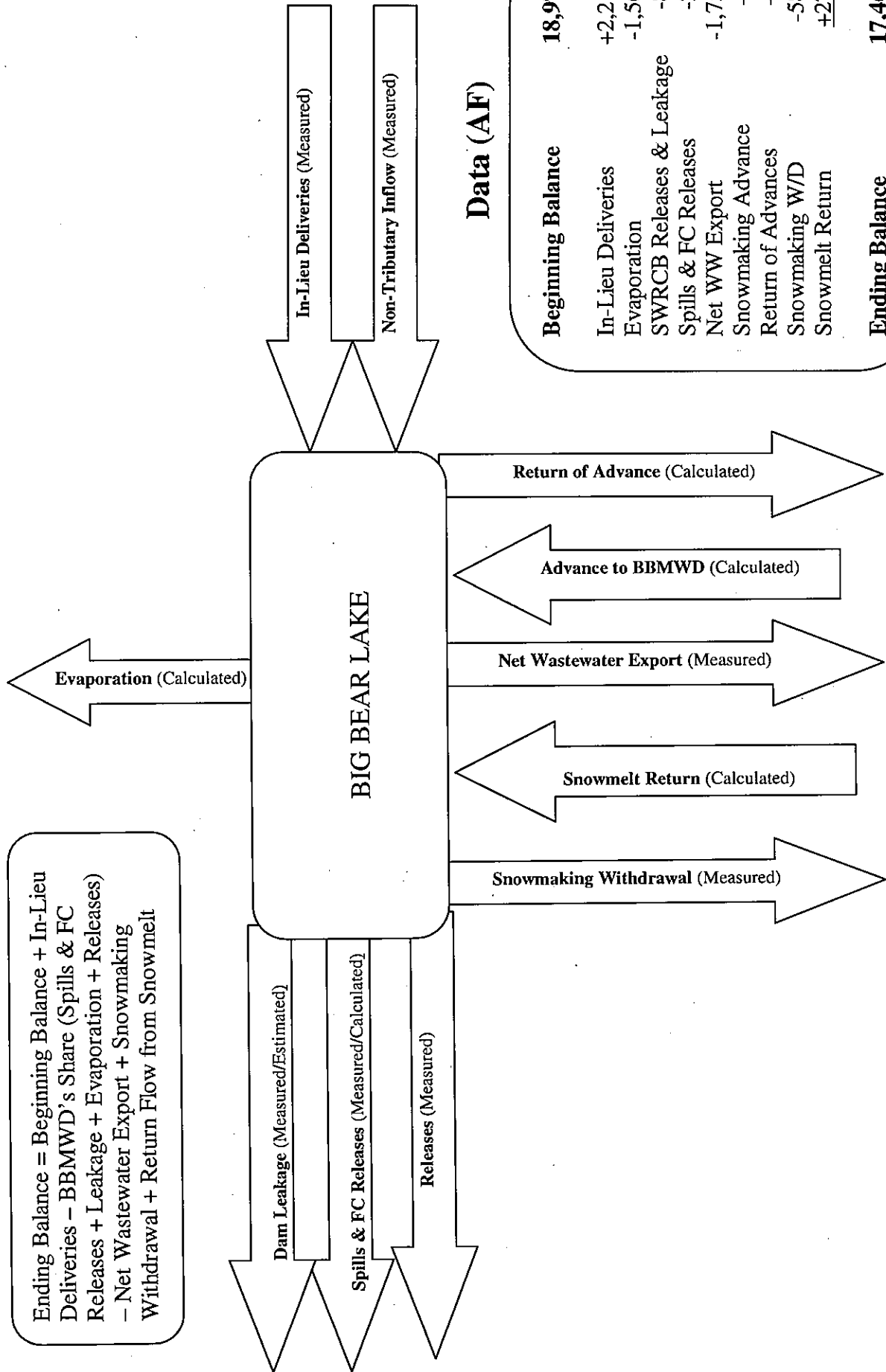


Table 3 of Appendix B also shows the status of Big Bear MWD's "Advance Account". This account represents the net amount of water Big Bear MWD has "borrowed" from Mutual for snowmaking in the Big Bear Lake watershed. In 2005, Big Bear MWD's advance account was zero throughout the year.

Tables 3.A and 3.B of Appendix B provide supporting information to Table 3.

Basin Compensation Account

Exhibit D of the Judgment contains a formula to be used for determination of the amount of Basin Make-up Water, if any, that is needed to offset deficiencies in the recharge supply to the San Bernardino Groundwater Basin. Tables 4, 4A, 4B and 4C in Appendix B follow the formula presented in the Judgment for calculating the credit or deficiency in the Basin Compensation Account. The formula contained in the Judgment is:

Deficiency or Credit =

$$[(.50) (R_d) + (.51) (S_d) + (.50) (P_d)] - [(.50) (R_m) + (.51) (S_m)]$$

wherein:

R_d = Releases actually made under District Operation.

S_d = Spills which actually occurred under District Operation.

P_d = In lieu water purchased by District from San Bernardino Valley MWD or the Management Committee of the Mill Creek Exchange and delivered under District Operation to Mutual for service area requirements.

R_m = Releases which would have been made under a Mutual Operation.

S_m = Spills which would have occurred under a Mutual Operation.

The first three terms in the equation represent the recharge that occurs under Big Bear MWD's lake operation. These are referred to as the "Big Bear's Basin Additions" in Table 4. Table 4.A shows the details of the calculations for these three terms.

The last two terms in the equation represent the recharge that would have occurred if Mutual had owned and operated the lake and met its supplemental water needs from lake releases. Collectively these terms are referred to as "Mutual's Basin Additions" in Table 4. Table 4.B shows the detailed calculations for these two terms.

The fish flows that Mutual used in 2005 (146 acre-feet) were included in both the releases made under District Operation (R_d) and the releases made under a Mutual Operation (R_m). The amount of fish releases that Mutual was not able to use (274 acre-feet) was treated as a spill under a District Operation (S_d). The portion that was allocated to Mutual (188 acre-feet) was treated as a spill under a Mutual Operation (S_m). The differences in these spills resulted in an increase in the Basin Compensation Account of 44 acre-feet.

The monthly net credit or deficiency in recharge to the San Bernardino Basin is shown in Column 5 of Table 4. These calculations are in accordance with the formula in the Judgment.

The Judgment also requires Big Bear MWD to make-up for deficiencies in recharge that would occur as a result of their lake operations. Column 7 of Table 4 shows the amount of water recharged by Big Bear MWD in the San Bernardino Basin to correct (or prevent) deficiencies in recharge. Table 4.C presents details of the sources of water used to replenish the Basin Compensation Account.

Table 4 of Appendix B presents the status of the Basin Compensation Account for 2005. The account balance began the year with a balance of 23,985 acre-feet and ended the year with 24,029 acre-feet. There was a 44 acre-feet increase in the Basin Compensation Account in 2005.

V. OTHER WATERMASTER ACTIVITIES

IMPACTS OF SEVEN OAKS DAM

Previous Activities

Construction of Seven Oaks Dam by the U.S. Army Corps of Engineers (Corps) has been underway since 1990. The construction contract for the 550-foot high dam embankment was issued in 1994 and was completed in December 1998. Various clean up and other miscellaneous contracts were completed in late 1999.

The plunge pool by-pass pipeline, which routes low flows through the dam, around the plunge pool and back to the river channel was completed in 2001. The low flows will be diverted for beneficial use by either Mutual through its "River Pick-up" or by SBVWCD at its main river diversion.

Subsequent to authorizing the project and beginning construction, the U.S. Fish and Wildlife Service (Service) listed the Slender Horned Spine Flower and the San Bernardino Merriam's kangaroo rat as endangered species. This action generated new official biological mitigation consultations with the Service, as required by Section 7 of the Federal Endangered Species Act. A biological assessment by the Corps was expected to be presented to the Service in April 2000 and a biological opinion by the Service was to be returned by the end of the year 2000.

There are two features of Seven Oaks Dam that could affect future Watermaster activities. The first is that Seven Oaks Dam will prevent natural, subsurface flow of groundwater from leaving the Santa Ana River Canyon and will cause all groundwater coming from upstream of the dam to rise to the surface. This subsurface flow will then pass through the dam outlet structure. The plunge pool by-pass line will help to overcome the loss of these subsurface flows.

The second feature is related to impounding storm flows behind the dam. The San Bernardino Valley MWD and Western Municipal Water District of Riverside County provided funding to the Corps for a water conservation study, which began in November 1993, and, if approved, will authorize Seven Oaks Dam to be a dual use structure for flood control and water conservation (see discussion below). The Corps issued a Draft Environmental Impact Statement (DEIS) and responded to comments; however, the Corps has yet to publish a Final EIS and Record of Decision. The Corps and Service will not initiate Section 7 consultations on mitigation

requirements for the water conservation aspect of Seven Oaks Dam until after the biological mitigation issues related to operating the dam as a flood control project are resolved. Then, the Corps will publish the Final EIS and Record of Decision.

In 1995, the San Bernardino Valley MWD and Western Municipal Water District of Riverside County filed a petition to revise the Declaration that the Santa Ana River Stream System is Fully Appropriated and an application to Appropriate Water By Permit with the State Water Resources Control Board. The petition and application, if approved, would give the two local agencies the right to impound water behind Seven Oaks Dam, subject to the operational directions of the dam for flood control.

The possible impoundment of waters of the Santa Ana River for other than flood control raises a number of water rights issues that are yet to be resolved. Several diversion points for SBVWCD, North Fork Water Company, Mutual, and Redlands Water Company ("Below the Dam Diverters") are downstream of Seven Oaks Dam, and the operation of these historical diversion points will be altered by the dam. During 1998 and 1999, discussions between the water rights holders and the San Bernardino Valley MWD began with an attempt to understand what and how much water would be impounded at various times of the year, along with the manner in which releases of storm flows from Seven Oaks Dam would be made.

It was the intent of the "below the dam diverters" to have releases from Seven Oaks Dam approximate average annual natural flows, recognizing that flood control release flows are expected to have less silt than previous flows and may be more evenly distributed. Their request is to have the amount of water to be impounded behind Seven Oaks Dam for other than flood control determined after the combined needs have been met for (1) the water supply agencies to provide direct delivery water and (2) the integrity of the groundwater basin is stabilized by assuring groundwater levels are maintained within an appropriate operating range. These are the primary elements of discussion between the agencies. These discussions did not result in any agreement prior to the State Water Resources Control Board public hearing on the petition on December 7 and 8, 1999.

A Biological Assessment (BA) by the Corps was submitted to the Service in June 2000; however, in a November 2000 letter, the Service rejected the BA, and requested additional information, with particular emphasis on the Corps' position related to the future water conservation element that had not been addressed by the Service. It is the apparent position of the Service that the biological mitigation requirements for operating the dam as a flood control facility must be negotiated before any attempt to address the biological impacts of the water conservation element of Seven Oaks Dam.

On September 21, 2000, the State Water Resources Control Board (SWRCB) adopted Order WR2000-12 to allow for processing the application filed by the San Bernardino Valley MWD and Western Municipal Water District of Riverside County. SWRCB Order WR2000-12 also allowed for processing a water right application filed by Orange County Water District. The Chino Basin Water Conservation District filed a petition requesting the SWRCB to reconsider its decision, but in November 2000 the State Board denied the petition and upheld its September order. This decision meant that the applications for appropriation of the right to use water that will be impounded behind Seven Oaks Dam could be processed.

2001 Activities

The U.S. Army Corps of Engineers and U.S. Fish and Wildlife Service continued meeting during 2001, but most of their discussions were focused on flood control issues at Prado Dam. Neither the flood control nor biological issues related to Seven Oaks Dam had been resolved.

On March 21, 2001, the water rights application (AO31165) filed by San Bernardino Valley MWD and Western Municipal Water District of Riverside County was accepted for processing by the State Water Resources Control Board. On April 20, 2001, the water rights application (31174) filed by Orange County Water District was accepted.

In May and June 2001, respectively, the San Bernardino Valley MWD filed a second application, and the San Bernardino Valley Water Conservation District (SBVWCD) filed an application for the right to use Santa Ana River water that would initially be impounded behind Seven Oaks Dam, then released for downstream use. As with the prior applications, accompanying each of the new applications was a petition requesting the fully appropriated stream designation for the Santa Ana River be overturned. Combined with the petition and application received in September 2000 from the Chino Basin Watermaster, there were three additional petitions pending. The State Board indicated a preference to hold hearings on all of the water rights applications together.

2002 Activities

On January 11, 2002, the SWRCB noticed the water rights applications filed by San Bernardino Valley MWD - Western Municipal Water District of Riverside County and Orange County Water District (Applications 31165 and 31174, respectively), which triggered a 60-day protest period. However, on March 4 the SWRCB extended the protest period until a hearing was conducted on additional filings for water rights and accompanying petitions to revise the fully appropriated stream designation for the Santa Ana River.

On March 19, 2002, a Pre-Hearing Conference and Public Hearing was noticed for the water rights applications filed by the Chino Basin Watermaster, San Bernardino Valley MWD - Western Municipal Water District of Riverside County (second application), San Bernardino Valley Water Conservation District, and the City of Riverside. During the Pre-Hearing Conference on April 16, 2002, all parties agreed to accept the evidence, which resulted in Order WR 2000-12 revising the fully appropriated stream designation for the Santa Ana River, as evidence that they would have presented again in their petitions. Consequently, the SWRCB adopted WR 2002-6 during its Public Hearing on July 2, 2002. Following the hearing on July 2, the protest period for Applications 31165 and 31174 was closed on July 17. Several protests were submitted and responses provided, but no further action occurred.

Also on July 2, 2002, the SWRCB staff notified all parties (all 6 applications) by letter that it was the SWRCB's intent to process all the applications in a similar time frame and requested each party to provide a schedule for completing its environmental documents for its respective application. A hearing on all the applications will be scheduled when the environmental analyses are completed.

The Corps and Service continued meeting during 2002. On December 19, 2002, a Biological Opinion outlining the mitigation requirements for Seven Oaks Dam was finalized and accepted. Various agencies in the San Bernardino Valley were given an opportunity to review the final draft and submit comments before it was finalized. With the Biological Opinion finalized, the Corps could complete any required environmental analyses for operating Seven Oaks Dam as a flood control facility. When that work is completed, the issue of a conservation pool of water detained

behind Seven Oaks Dam can be reviewed, and any needed biological consultations can be initiated. The impacts that a conservation pool may have on water rights remain unknown.

2003 Activities

In 2003 the Corps and the Local Sponsors, (San Bernardino and Orange County Flood Control Districts) continued to operate the dam under the Interim Water Control Plan. When a storm event occurred, the gates were closed until the water behind the dam stabilized. At which time large volumes of water were released until the water level behind the dam reached the dead pool elevation. There were four events when large amounts of water were accumulated and released from the dam, one in February, two in March and one in April. All but 616 acre-feet of Santa Ana River water was diverted for beneficial use by Bear Valley Mutual Water Company and SBVWCD in 2003. The Corp and the Local Sponsors continued to operate the dam under the Interim Water Control Plan until December 30th, at which time they adopted the final plan and began to develop a debris pool. The dam will be operated in 2004 under the Water Control Manual for the Seven Oaks Dam & Reservoir.

The dam has been in operation for several years, the Watermaster has identified an issue with regards to the river flow data collection. All of the USGS gages are located downstream of the dam. The dam prevents the gages from recording the actual stream flow during a storm event. The Watermaster Committee has found it important enough to investigate the location of a stream flow gage upstream of the dam. This location will allow the Watermaster to correlate precipitation data with stream flow data and to estimate inflow to the reservoir. The gages downstream of the dam will provide the amount of water released from the dam. Watermaster Committee members have conducted a field trip to locate a gage upstream of the inundation pool and have initiated discussion with the USGS and the Corps for assistance.

The review of the water rights applications proceeded in 2003. As of the end of 2003, a hearing date had not been set and no environmental documents had been distributed for review. Parties continue to negotiate to find common ground and interest.

2004 Activities

2004 started with the Army Corp of Engineers (ACOE) and the Local Sponsors releasing a base flow of approximately 3 cfs. The Water Control Manual required that during the storm season (October to May) a debris pool (water surface elevation of 2,200 feet) be formed for the purposes of protecting the intake tower from sediment intrusion. As of the beginning of May, the debris pool elevation had reached 2,180 feet and contained approximately 1,700 acre-feet of water. At this time, the ACOE began releasing water from the debris pool so they could begin their maintenance activities. As raw water was released, two water treatment plants, one owned by East Valley Water District (EVWD) and the other owned by the City of Redlands (COR), began to receive water from the debris pool. It was quickly noted that the raw water discharged from Seven Oaks Dam (SOD) was of poor quality and adversely impacted the ability of EVWD and the COR to successfully treat this water at their respective plants. This poor quality water is related to releases of water from the debris pool. If the upstream flow is diverted around the debris pool, such as when the Edison Facility is operational, there are no adverse impacts at their respective plants.

Because of this difficulty to treat water from SOD, EVWD hired a consultant, Camp Dresser & McKee, to perform a study on the treatability of the SOD discharges at their Plant 134. The report looked at two periods when water was released from SOD, May and November of 2004. The report concluded that local source water quality in November of 2004 showed significant degradation when it passed through the debris pool as compared to historical water quality. The results showed turbidity increasing from 2 NTU to between 5 to 80 NTU. Similar affects were noted with an increase in color units, iron, manganese, and TOC. All of these are indicative of poorer quality water than historical Santa Ana River water quality conditions. Limited source water quality sampling by the COR confirmed some of these adverse water quality trends during a period in May 2004 when discharges were also made from the debris pool. The water agencies impacted by the degradation of the water quality of the debris pool are meeting and working closely with the ACOE and the Local Sponsors to find a solution to the problem.

At the end of November 2004, the ACOE and the Local Sponsors completed their maintenance activities and began building the debris pool for the upcoming storm season. By the end of

December 2004, the debris pool was at a water surface elevation of 2,165 and contained approximately 900 acre-feet.

2005 Activities

The 2005 year began with abnormal rainfall. Late rains in 2004 had begun to fill the debris pool behind the dam. By the first of the year, the debris pool had reached elevation 2,165. Heavy rains in January and February more than filled the debris pool and by the end of March there was approximately 40,000 acre-feet of water stored behind the dam. The flood pool was at an elevation of approximately 2,390. In accord with operational guidelines, the Corps and local sponsors began to make releases at a rate of approximately 500 cfs. As happened in 2004, the water quality was unsuitable for surface diversion to the two local water treatment facilities. The NTU's were in excess of 400 and the water had the look of liquid milk chocolate. The Edison facilities were off line due to the storms. Surface water diverters were again faced with unusable water for domestic treatment purposes. The Conservation District initially diverted some of the degraded water for groundwater percolation but ultimately had to greatly reduce diversions due to the excessive turbidity and poor water quality.

A group was formed by the Upper Santa Ana River Water Resources Association to take another look at the water quality situation. East Valley Water District engaged the services of Camp Dresser & McKee (CDM) to prepare a detailed report addressing the problem as well as identifying potential solutions. Representatives from the Basin met with Congressman Jerry Lewis to describe the situation and seek Federal assistance to solve the problem. Congress has appropriated \$1,000,000 to study the issue. By the end of 2005, CDM and the working committee from the Upper Santa Ana River Basin had completed their study. The study has been distributed to the Corps, Local Sponsors and to Congressman Lewis' office.

Because of the large body of water contained behind the SOD, the Corps decided to test the operating valves for flood releases in mid-spring. During the test period when high velocity releases were taking place, a portion of the outlet tunnel failed and the tests were terminated. For the balance of the spring, summer and fall seasons the releases from the SOD were minimal and averaged between 3 and 80 cfs, until the debris pool was emptied. The repairs to the tunnel were completed in November and it was anticipated that in early 2006, testing would again be resumed.

However, mother nature has not been very cooperative and, since March of 2005, there has been no measurable rainfall in the watershed above the SOD.

Water quality remains a priority concern. While 2005 was one of the wettest years on record, local diverters, who normally rely on the flows from the Santa Ana River for their source of treatable water for domestic purposes, had to purchase State Water Project water. The saving grace for the local water users is that Edison was able to repair all their upstream facilities by early fall. Their diversions by-pass SOD and they were able to deliver good quality water to the two local water treatment facilities. . However, by the end of 2004 the debris pool was non-existent and slowly beginning to rise. Water quality again became poor.

WILD AND SCENIC RIVERS ISSUE

2004 Activities

In mid-2004, the Watermaster Committee became aware of the U.S. Forest Service's Draft Land Management Plan for Southern California National Forests ("Forest Plan"). The Forest Plan proposes to designate Bear Creek from below Bear Valley Dam to its confluence with the Santa Ana River and three stretches of the Santa Ana River as "eligible" for addition to the Wild & Scenic Rivers System. Comments on the Forest Plan were due on August 11, 2004.

The Watermaster responded on August 9, 2004. The response outlined the responsibilities of the Watermaster Committee and requested a 180-day extension of the comment period to obtain, review and comment on the "Forest Plan." The Forest Plan is a large, complex document and the additional time was needed to determine what impacts the proposed action would have on the administration of the Rights and Physical Solution stipulated in the Judgment of the Superior Court.

By the end of 2004, the U.S. Forest Service has not responded to the Watermaster Committee's request.

2005 Activities

On September 20, 2005, the U.S. Forest Service issued the Revised Land and Resource Management Plans (Forest Plans) and accompanying Final Environmental Impact Statement (FEIS) and Records of Decision for the Angeles, Cleveland, Los Padres, and San Bernardino National Forests. The U.S. Forest Service selected Alternative 4a for implementation. This alternative recommends for designation a few wild and scenic rivers but none are in the San Bernardino National Forest.

The FEIS includes Appendix E, Wild and Scenic Rivers, that describes the efforts completed related to suitability for a river to be designated as a "wild and scenic river (WSR)." These efforts require determinations to be made regarding a river's eligibility, classification and suitability.

In the Santa Ana River watershed, two rivers were found "eligible" to be classified as a WSR. They are 1) 8.9 miles of Bear Creek below Bear Valley Dam, and 2) 19.8 miles of the Santa Ana River above the confluence with Bear Creek. According to Appendix E *"Eligibility is an evaluation of whether a river is free-flowing and possesses one or more outstandingly remarkable values (ORVs) including scenery, recreation, geology, fish and wildlife, history, cultural (prehistoric), or similar values."*

If a river is found "eligible," it is to be placed into one or more of three classes: wild, scenic or recreational. In the case of the rivers in the Santa Ana Watershed, the classifications are as follows.

River	Length (miles)	Description	Classification
Bear Creek	8.9	Big Bear Dam to private land near Santa Santa Ana River	Wild
Santa Ana River	2.4	South Fork Meadows to Wilderness Boundary	Wild
	13.9	Big Meadows to Filaree Flat	Recreational
	3.5	Filaree Flat to Confluence w/Bear Creek	Scenic
	19.8		

The final step is to determine if the "eligible" rivers are "suitable" to be recommended to be part of the National Wild and Scenic River System. This determination is made through completion of "suitability studies." The FEIS stated that the suitability study phase for the eligible rivers will be initiated at a later date.

In summary, the U.S. Forest Service has found major portions of both Bear Creek and the Santa Ana River "eligible" to become designated as a "wild and scenic river" and a suitability study will be initiated at a future time.

MINUTES OF WATERMASTER MEETINGS

APPENDIX A

Dates

January 11, 2005

February 15, 2005

June 7, 2005

October 25, 2005

BIG BEAR WATERMASTER
MINUTES OF THE MEETING OF JANUARY 11, 2005

PLACE: San Bernardino Valley Water Conservation District
1630 W. Redlands Blvd., Ste. A
Redlands, CA 92373

PRESENT:	<u>Watermaster Committee</u>	<u>Representing</u>
	Donald E. Evenson	Big Bear MWD, Chair
	Michael L. Huffstutler	Bear Valley Mutual Water Company
	Lawrence M. Libeu	SBV Water Conservation District
	<u>Others</u>	
	Tom Crowley	SBV Water Conservation District

1. WELCOME AND CALL TO ORDER

The Big Bear Watermaster meeting was called to order by Donald Evenson at 1:30 p.m.

2. APPROVAL OF MINUTES

The minutes from the November 16, 2004 meeting were reviewed. It was moved by Larry Libeu and seconded by Michael Huffstutler to approve the minutes as presented. The motion carried.

3. LAKE AND BEAR CREEK STATUS

The Lake and Bear Creek status was discussed. It was reported that the lake had risen 6' within the last five days, and 3' within the last 24 hours, and was still rising. It is 9'6" down from 17'5" in October. Flows at Station A and B were reported to be higher than the SWRCB requirements.

4. SANTA ANA RIVER STATUS

Tom Crowley distributed and discussed the Santa Ana River flow report. He said that due to the heavy rains, the report did not reflect the true activity of the flow upstream of the Seven Oaks Dam compared to the flow downstream. He presented slides of the pool behind the dam, noting that the pool was about 200' in depth and rising at a rate of 3' an hour. There were additional slides of the debris flow at the mouth of the Santa Ana River, and slides of Mill Creek.

5. MUTUAL'S PROJECT OF NEEDS

Mike Huffstutler stated that he had pre-ordered 3,000 acre-feet of water from the San Bernardino Valley Municipal Water District (Muni), and noted that if the heavy rainfall continued, there would not be a need to call for any more water.

6. REVIEW ASSIGNMENTS OF 2004 ANNUAL REPORT

Don Evenson discussed the assignment list for the 2004 Annual Report. He said the list included an assignment schedule, which would be reviewed at the next meeting on February 15. A draft report would be prepared the week after the meeting, and would then be distributed to members.

7. OTHER TOPICS

a. Water Rights Application(s) Status

Larry Libeu indicated there was nothing new to report on the water rights application at this time. Mr. Evenson discussed Muni's EIR and the impacts of a water rights judgment on the Big Bear Watermaster. He suggested drafting a letter to Muni voicing the Watermaster's concerns, and ask them to address these concerns in their EIR. He agreed to have a draft of the letter ready by January 11, as the due date for inquiries on the EIR was Friday, January 14, 2005.

b. Seven Oaks Dam Operations

This topic was previously covered.

8. DATE FOR NEXT MEETING

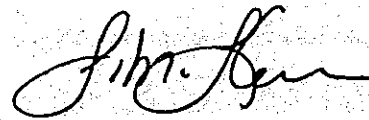
The next meeting was scheduled for February 15, 2005, at 1:30 p.m., at the San Bernardino Valley Water Conservation District.

9. ADJOURN

There being no further business, the meeting was adjourned at 2:20 p.m.


Donald E. Evenson


Michael L. Huffstutler


Lawrence M. Libeu

BIG BEAR WATERMASTER
MINUTES OF THE MEETING OF FEBRUARY 15, 2005

PLACE: San Bernardino Valley Water Conservation District
1630 W. Redlands Blvd., Ste. A
Redlands, CA 92373

PRESENT: <u>Watermaster Committee</u> Donald E. Evenson Michael L. Huffstutler	<u>Representing</u> Big Bear MWD, Chair Bear Valley Mutual Water Company
<u>Others</u> Sheila Hamilton Bob Ludecke Skip Suhdy Tom Crowley	 Big Bear MWD Big Bear MWD Big Bear MWD SBV Water Conservation District

1. WELCOME AND CALL TO ORDER

The Big Bear Watermaster (BBWM) meeting was called to order by Donald Evenson at 1:30 p.m.

2. APPROVAL OF MINUTES

The minutes from the January 11, 2005 meeting were deferred until the next meeting scheduled April 12, 2005. Don Evenson requested signed versions of the 2004 minutes for inclusion in the annual report.

3. LAKE AND BEAR CREEK STATUS

Sheila Hamilton reported that the lake was 7'3" below full and rising daily; a 10 ft. increase since October. Releases to Bear Creek were stopped. In January, 32 inches of rain fell, the fourth highest rainfall since 1884. Don Evenson said that there is a chance that the lake could fill this year. A discussion ensued about releases and levels for flood control purposes.

4. SANTA ANA RIVER STATUS

Tom Crowley distributed and discussed the Santa Ana River flow report. The flow in the Santa Ana River downstream of the SOD is currently 49 cfs. He said the Southern California Edison (SCE) system is non-operational due to damage from the storms and inaccessibility to their facilities for inspection and maintenance. Michael Huffstutler mentioned that the access road to the confluence of Bear Creek and Santa Ana River was damaged by the storms. In addition, SCE is not diverting water at their river pickup at Powerhouse No. 1 due to damaged to the river pickup diversion. The only water flowing

at the mouth of the Santa Ana canyon is what is being released from the SOD. The level of the debris pool is climbing continually because the releases are set to what the San Bernardino Valley Water Conservation District (Conservation District) is willing to accept at this time. The level of debris pool elevation is at 2,362. There is approximately 33,000-acre ft of water behind the dam. In-flow was a little less than 200 cfs. The Army Corp of Engineers (ACOE) is allowing the level of debris pool to rise to test their outlet valves and will try implementing their water control manual to draw down to the debris pool at a later date.

There are 92 cfs of clean water that the District is picking up from Mill Creek. Discussion continued.

5. MUTUAL'S PROJECT OF NEEDS

Michael Huffstutler led a discussion regarding Southern California Edison (SCE) being off-line and whether there are any options to repair the problems. Meetings have transpired with Supervisor Hansberger's office; Congressman Jerry Lewis' office has also been contacted. Don Evenson queried whether or not the water is adequate for agricultural purposes. Tom Crowley replied that the storm flows stored in the debris pool are high in turbidity causing the pristine water that flows into the SOD reservoir to be unsuitable for use. This water when released from the SOD creates problems for the water treatment plants and groundwater recharge. Michael Huffstutler reported the high turbidity water stored in SOD is unsuitable for drip irrigation systems and water treatment plants. Discussion continued.

6. REVIEW ASSIGNMENTS OF 2004 ANNUAL REPORT

Don Evenson distributed a copy of the cover of the BBWM Annual Report and the watermaster accounts. The cover features a photo of the old dam. He reviewed discussions from the last meeting regarding estimated releases and flows at Station A & B. Don Evenson requested comments to be submitted to him within the next two weeks.

7. OTHER TOPICS

a. Water Rights Application(s) Status

Tom Crowley indicated that the Conservation District has submitted comments for the San Bernardino Valley Municipal Water District (Muni) draft EIR, and that the Muni comment period is closed. State Board comments addressed water quality issues and baseline flows. There was nothing new to report on the water rights application at this time. The Boards from Conservation District, Muni, and Western Municipal Water District (WMWD) are in the process of negotiating water rights.

b. Seven Oaks Dam Operations

Tom Crowley discussed the impact of the January storms and the building of the debris pool. Discussions continued regarding the debris pool and water quality issues.

8. DATE FOR NEXT MEETING

The next meeting was scheduled for April 12, 2005, at 1:30 p.m., at the Conservation District.

9. ADJOURN

There being no further business, the meeting was adjourned at 2:30 p.m.

DE Evenson
Donald E. Evenson

Michael L. Huffstutler
Michael L. Huffstutler

Lawrence M. Libeu
Lawrence M. Libeu

BIG BEAR WATERMASTER
MINUTES OF THE MEETING OF JUNE 7, 2005

PLACE: San Bernardino Valley Water Conservation District
1630 W. Redlands Blvd., Ste. A
Redlands, CA 92373

PRESENT: Watermaster Committee
Donald E. Evenson
Michael L. Huffstutler
Larry Libeu

Representing
Big Bear MWD, Chair
Bear Valley Mutual Water Company
SBV Water Conservation District

Others

Sheila Hamilton
Bob Ludecke
Skip Suhay
Tom Crowley

Big Bear MWD
Big Bear MWD
Big Bear MWD
SBV Water Conservation District

1. WELCOME AND CALL TO ORDER

The Big Bear Watermaster (BBWM) meeting was called to order by Donald Evenson at 1:30 p.m.

Sheila Hamilton requested that an item, "LAFCO Consolidation," be included under "Other Topics" on the agenda.

2. APPROVAL OF MINUTES

The minutes from the January 11, 2005 meeting were discussed. Under the "Lake and Bear Creek Status," station D should be changed to station B. Regarding the minutes for February 15, 2005 meeting, several changes were discussed. Minutes were approved with recommended changes.

3. LAKE AND BEAR CREEK STATUS

Sheila Hamilton reported that the lake was 2'2" full prior to the read, and was very clear water. Bear Creek was at .5cfs, with no leakage. Station A at Bear Creek was gone, and a letter to the State Board indicated the inability to measure flows for this reason. The pool was 18" deep, well above the requirements. Station A had sufficient flow released throughout the temporary meter and continues to record. Other alternatives would be to go to the Santa Ana river monitor; six years of data have shown the flows work. There is no altering of typography because of these flows. Station B would be able to get Station A at the right level. Station B would need 1cfs to get 1.2 down below; releases are at .6 - .8 during the driest months. Station B could be 0 and Station A would be fine; however, Station B has to be .3.

4. SANTA ANA RIVER STATUS

Tom Crowley discussed the Santa Ana river status. He said Southern California Edison (SCE) has been operational for several weeks, is currently at 88cfs. The Seven Oaks Dam is releasing 100cfs, the reservoir lowered three feet over the previous 24 hours. The reservoir elevation was at 2,134 feet. The water quality is ok, 65cfs is being allowed to flow down the river, meeting up with flows from Mill Creek. The Conservation District is diverting 45cfs of Mill Creek water into their Mill Creek Spreading grounds.

5. MUTUAL'S PROJECT OF NEEDS

Mr. Huffstutler indicated there was no change from the previous meeting. Discussion ensued as to the impact of water quality. Because Edison was back online, there was no impact. Mr. Huffstutler said that his demands in September would be less than 50cfs, and Edison is not fond of taking poor quality water through their turbines. A suggestion was made of meeting with San Bernardino Valley Municipal Water District (Muni) and SCE in July at the Dam site.

6. OTHER TOPICS

a. Water Rights Application(s) Status

Mr. Libeu indicated that negotiations were continuing, and there was nothing new to report at this time.

b. Seven Oaks Dam Operations

Mr. Crowley reported there was little to report at this time; the debris pool was fully released and the reservoir was at the dead pool elevation.

c. Seven Oaks Dam Water Quality

Mr. Crowley discussed water quality issues, and indicated a meeting had been held regarding the matter on May 19th with Bear Valley, East Valley Water District, City of Redlands, Muni, and the Conservation District, where options had been discussed to improve water quality. Another meeting was scheduled for June 9th to continue discussions with all agencies that have been impacted. A meeting with the Army Corp of Engineers (ACOE) is being arranged.

d. Status of SAR Stream Gauge

Mr. Crowley led a brief discussion regarding the SAR stream gauge.

e. LAFCO Consolidation

Mr. Evenson inquired as to the possibility of a consolidation of the Conservation District with Muni. Mr. Libeu summarized the events thus far leading up to this possibility. He indicated there would be a LAFCO hearing in August regarding the matter.

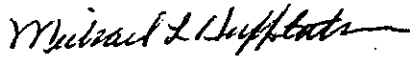
7. DATE FOR NEXT MEETING

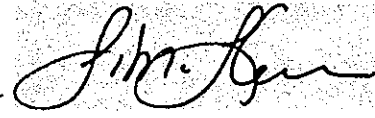
The next meeting was scheduled for October 4, 2005, at 1:30 p.m., at the Conservation District.

8. ADJOURN

There being no further business, the meeting was adjourned at 2:50 p.m.


Donald E. Evenson


Michael L. Huffstutler


Lawrence M. Libeu

BIG BEAR WATERMASTER
MINUTES OF THE MEETING OF OCTOBER 25, 2005

PLACE: San Bernardino Valley Water Conservation District
1630 W. Redlands Blvd., Ste. A
Redlands, CA 92373

PRESENT: <u>Watermaster Committee</u> Donald E. Evenson Michael L. Huffstutler Larry Libeu	<u>Representing</u> Big Bear MWD, Chair Bear Valley Mutual Water Company SBV Water Conservation District
<u>Others</u> Sheila Hamilton Bob Ludecke Skip Suhay Tom Crowley	 Big Bear MWD Big Bear MWD Big Bear MWD SBV Water Conservation District

1. WELCOME AND CALL TO ORDER

The Big Bear Watermaster (BBWM) meeting was called to order by Donald Evenson at 1:30 p.m.

2. APPROVAL OF MINUTES

The minutes from the June 7, 2005 meeting were discussed. Minor corrections were noted. Minutes were approved with recommended changes.

3. LAKE AND BEAR CREEK STATUS

Sheila Hamilton reported on the status of the lake. She said with 1.3" of precipitation the lake gained 2". Bear Creek Station A was buried in boulders, and they are working through the process with staff observing every two weeks. They will do one more monitoring in October and perhaps one in November. She discussed meetings with Fish and Game and the State Water Resources Control Board (SWRCB) regarding the way in which the flow is measured. She said Station B has had some issues and they had to do their measurements manually, but it is in the process of getting repaired. The TMDL workshop was held in Big Bear about 45 days ago, and the SWRCB was taken on a tour of the lake.

4. SANTA ANA RIVER STATUS

Tom Crowley discussed the Santa Ana River status. He said the Santa Ana River has a total of 88.2 cfs inflows, with a small portion going to Bear Valley. Mr. Huffstutler indicated that the Army Corp of Engineers (ACOE) was repairing the tunnel in the Seven

Oaks Dam that had been damaged last spring. Discussion ensued. The question raised was as the season progresses, when would water be released down stream. The water quality was not yet adequate for the surface water treatment plants.

Mr. Crowley said that by not building a debris pool, they are demonstrating that the water released is of a better quality. Once the pool is built with storm flows (dirty water), the water is not usable. Mr. Huffstutler indicated that a study on this issue would require \$3.5 million; Congressman Lewis did not fully understand the impact and allocated only \$1 million. They are trying to get him to rewrite so that it is all federal money and not shared with locals, as locals didn't have the problem before the Dam was built, so they shouldn't have to pay.

5. MUTUAL'S PROJECT OF NEEDS

Mr. Huffstutler indicated that they have used up all their "in lieu" water that they are entitled to, and have purchased another 7,000 acre-feet.

6. OTHER TOPICS

a. Water Rights Application(s) Status

Mr. Libeu said the application was still with the state, but that the District, Muni, and Western now have a settlement agreement, in which all have agreed to withdraw their protests of the water rights application. They are now working on an easement agreement so that Muni could use the District's recharge facilities. Mr. Huffstutler indicated that he had some problems with the settlement agreement with regards to the Seven Oaks Accord, and would not agree to it, and would discuss it at another time.

b. Seven Oaks Dam Operations

Mr. Crowley said that this item was previously discussed.

c. Seven Oaks Dam Water Quality

Mr. Crowley led a discussion on water quality issues, and indicated that the Upper Santa Ana Water Resources Association sub-committee was pursuing an impact study regarding short-term and long-term fixes.

d. Status of SAR Stream Gauge

Mr. Crowley led a brief discussion regarding the SAR stream gauge.

e. Conservation District's MSR with LAFCO

Mr. Libeu said that a committee had been formed through LAFCO regarding the consolidation issue, and the issue will be heard again in February 2006.

f. Spillway Gate Testing in November 2005

There was a discussion regarding the Spillway Gate Testing, and the indication was that this would take place in a day. About four feet of water could produce flows of 50 cfs or more. BBMWD are setting up a program for the test above the spillway crest; they want to make sure the water can be put to good use and not just go behind the Seven Oaks Dam. The target date for the spillway test is the middle of November.

Ms. Hamilton suggested a date of November 15 for the spillway test, with a conference the week before. About 50 acre-feet is planned to be released. Anyone that wishes to observe may do so.

g. Brief on Dam Assessment Report

Mr. Evenson made a report on this issue: (1) Three arches were not repaired in Phase 1; currently they are leaking "like a sieve." The structural reinforcement needs to be done. (2) It is possible automatic controls from the office could be included. A new spillway could be added in the three arches, or BBMWD could go ahead with a drawdown policy and decide what to do with the water. Discussion continued. It was noted that a big drawdown would be a problem in January-March because of the storm season. If the release is done in November-December, the water should be put to the best use and not let it flow into the debris pool. It was suggested that a workshop on this matter be conducted before the end of the year.

7. DATE FOR NEXT MEETING


The next meeting was scheduled for January 17, 2006, at 1:30 p.m., at the Conservation District.

8. ADJOURN

There being no further business, the meeting was adjourned at 2:50 p.m.


Donald E. Evenson


Michael L. Huffstutler


Lawrence M. Libeu

APPENDIX B

TABLE OF
ACCOUNTS OF OPERATION OF BIG BEAR LAKE

ACCOUNTS FOR
CALENDAR YEAR 2005

INPUT DATA	B-1 thru B-4
SUMMARY OF RESULTS	B-5
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1.A Summary Details	B-7
1.B Release Details	B-8
1.C Lake Withdrawal Details	B-9
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2. SYNTHESIZED MUTUAL OPERATION OF BIG BEAR LAKE	B-11
2.A Lake Outflow Details	B-12
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2.C Mutual's Leakage and Adjusted Spills	B-14
3. DETERMINATION OF BIG BEAR'S LAKE ACCOUNT STATUS	B-15
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4.A Big Bear's Basin Additions	B-19
4.B Mutual's Basin Additions	B-20
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INPUT DATA
BIG BEAR WATERMASTER REPORT
CALENDAR YEAR
2005

Calendar Year		2005	
Mutual's Lake Account Balance on Jan. 1	=	14,200	acre-feet
Basin Compensation Account Balance on Jan. 1	=	23,985	acre-feet
Account Balance for Mutual's Advances to BBMWWD	=	-	acre-feet
Repayment Premium for Mutual's Advances to BBMWWD	=	0%	
Recharge Factor for Lake Deliveries to Mutual	=	0.500	
Recharge Factor for Imported Water Deliveries to Mutual	=	0.500	
Recharge Factor for Lake Spills	=	0.510	
Snowmelt Return Factor	=	0.500	Jan, Feb, Mar, Apr, Nov, Dec
Snowmelt Return Factor	=	0.000	May, June, July, Aug, Sept, Oct
<u>Monthly Evaporation Rate Calculation Factors</u>		<u>C2</u>	<u>C3</u>
January		7.09	1,200
February		6.90	1,200
March		8.36	1,200
April		8.82	1,200
May		9.73	1,200
June		9.72	1,200
July		9.90	1,200
August		9.34	1,200
September		8.36	1,200
October		7.89	1,200
November		7.01	1,200
December		6.91	1,200
Evaporation rate (feet/month)	=	Average air temperature x C1 x C2 / C3	

INPUT DATA
BIG BEAR WATERMASTER REPORT
CALENDAR YEAR
2005
(continued)

Month	Gage* Height 1st of Month (feet)	Actual Mutual Shareholder Releases (acre-feet)	Mutual Other Releases (acre-feet)	Actual Flood Control Releases (acre-feet)	Actual Flood Spills (acre-feet)	Big Bear's Spreading Releases (acre-feet)	Big Bear's Other Releases (acre-feet)	Leakage (Not used, included in Fish Releases) (acre-feet)
January	56.65	-	-	-	-	-	-	-
February	64.46	-	-	-	-	-	-	-
March	66.04	-	-	-	-	-	-	-
April	67.73	-	-	-	-	-	-	-
May	69.27	-	-	-	-	-	-	-
June	70.05	-	-	-	-	-	-	-
July	69.66	-	-	-	-	-	-	-
August	69.33	-	-	-	-	-	-	-
September	68.91	-	-	-	-	-	-	-
October	68.52	-	-	-	-	-	-	-
November	68.29	-	-	-	-	-	20.00	-
December	68.02	-	-	-	-	-	-	-
	67.85	-	-	-	-	-	-	-

* Gage at Bear Valley Dam

INPUT DATA
BIG BEAR WATERMASTER REPORT
CALENDAR YEAR
2005
 (continued)

Month	Big Bear's Withdrawals for Snowmaking (acre-feet)	Summer Withdrawals Used for Snowmaking (acre-feet)	Big Bear's Withdrawals for Recharge (acre-feet)	Mutual Spills of Wastewater Exports (acre-feet)	In-Lieu Imported Supplies (SBVMWD) (acre-feet)	In Lieu Supplies from SBVMWD's Wells (acre-feet)	In Lieu Supplies from Mutual's Wells (acre-feet)	Other In Lieu Supplies (acre-feet)
January	117.36	-	-	-	-	-	-	-
February	62.01	-	-	-	90.16	-	-	-
March	26.14	-	-	-	-	-	-	-
April	-	-	-	-	146.63	-	-	-
May	2.02	-	-	-	-	-	-	-
June	12.81	-	-	-	567.68	-	-	-
July	18.35	-	-	-	1,143.60	-	-	-
August	19.13	-	-	-	269.93	-	-	-
September	36.92	-	-	-	-	-	-	-
October	-	-	-	-	-	-	-	-
November	65.31	-	-	-	-	-	-	-
December	220.04	60.00	-	-	-	-	-	-

INPUT DATA
BIG BEAR WATERMASTER REPORT
CALENDAR YEAR
2005
(continued)

Month	SWRCB Order 95-4 Releases & Leakage (acre-feet)	Mutual's Direct Use of Order 95-4 Releases (acre-feet)	Basin Replenishment from SBVMWD (acre-feet)	Basin Replenishment from Others (acre-feet)	2005 Net Wastewater Exports (acre-feet)	Average Air Temperature (degrees F)
January	55.60	34.08	-	-	313.83	28.72
February	33.35	16.17	-	-	247.54	33.19
March	32.21	11.77	-	-	276.00	38.43
April	32.99	-	-	-	165.14	44.13
May	35.65	-	-	-	132.88	52.74
June	31.92	-	-	-	97.36	58.15
July	28.58	-	-	-	100.94	67.10
August	35.06	27.06	-	-	88.12	64.57
September	33.34	33.34	-	-	73.58	57.23
October	30.68	18.84	-	-	76.14	49.17
November	26.18	3.49	-	-	79.65	43.72
December	44.70	1.55	-	-	98.42	38.42

**SUMMARY RESULTS
CALENDAR YEAR
2005**

LAKE ACCOUNTS (acre-feet)	Big Bear	Mutual	Actual
Initial Storage	18,973	14,200	33,173
Lake Inflows	0	39,600	39,600
In-Lieu Supplies to Mutual	2,218	(2,218)	0
Lake Releases (Mutual & BBMWWD)	(20)	0	(20)
Releases & Leakage (SWRCB 95-4)	(86)	(334)	(420)
Net Snowmaking Withdrawals from Lake	(305)	0	(305)
Lake Spills & Flood Control Releases	0	0	0
Leakage from Dam	0	0	0
Evaporation from Lake	(1,569)	(9,957)	(11,525)
Net Wastewater Exports	(1,750)	1,750	0
Advances & Repayment of Advances	0	0	0
Ending Storage	17,462	43,041	60,503
BASIN MAKE UP ACCOUNT (acre-feet)			
Beginning Balance	n.a.	n.a.	23,985
Recharge From Deliveries of Lake Water	73	1,182	(1,109)
Recharge From Deliveries of Imported Water	1,109	n.a.	1,109
Recharge from Spills & Releases	140	96	44
Account Credit (Debit)	1,322	1,278	44
Amount Replenished	0	n.a.	0
Ending Balance			24,029

CALENDAR YEAR
2005
BIG BEAR WATERMASTER

TABLE 1
ACTUAL OPERATION OF BIG BEAR LAKE

Month	1 Gage Height 1st of Month (Input Data) (feet)	2 Volume in Storage (ac-ft)	3 Change in Storage (ac-ft)	4 Lake Surface Area (acres)	5 Spills Releases Leakage Withdrawals (see Table 1.A) (feet)	6 Estimated Lake Evaporation (ac-ft)	7 Calc. Total Inflow (ac-ft)	8 Adjusted Lake Inflow * (ac-ft)	9 Adjusted Lake Evap * (ac-ft)	10 Adjusted Evap Rate * (feet/month)
January	56.65	33,173	18,218	2,053	114	166	18,498	18,498	166	0.071
February	64.46	51,391	4,214	2,598	64	252	4,530	4,530	252	0.095
March	66.04	55,605	4,623	2,676	45	538	5,207	5,207	538	0.198
April	67.73	60,228	4,188	2,758	33	788	5,009	5,009	788	0.282
May	69.27	64,416	2,272	2,826	38	1,240	3,550	3,550	1,240	0.436
June	70.05	66,688	(1,137)	2,861	45	1,478	385	385	1,478	0.518
July	69.66	65,551	(851)	2,843	47	1,774	970	970	1,774	0.626
August	69.33	64,700	(1,272)	2,830	54	1,729	511	511	1,729	0.613
September	68.91	63,428	(1,117)	2,810	70	1,396	349	349	1,396	0.498
October	68.52	62,311	(558)	2,792	31	1,099	572	572	1,099	0.394
November	68.29	61,753	(838)	2,783	79	759	(0)	0	759	0.273
December	68.02	60,915	(412)	2,770	125	306	19	19	306	0.111
TOTALS	67.85	60,503	27,330		745	11,525	39,600	39,600	11,525	4.117

* NOTE: Evaporation adjusted to eliminate negative inflow

CALENDAR YEAR
2005
BIG BEAR WATERMASTER

TABLE 1.A
ACTUAL OPERATION OF BIG BEAR LAKE
Summary Details

1 Month	2 Actual Lake Spills (Input Data) (ac-ft)	3 Actual Flood Control Releases (Input Data) (ac-ft)	4 Actual Lake Releases (see Table 1.B) (ac-ft)	5 Actual Estimated Leakage (Input Data) (ac-ft)	6 Estimated Net Lake Withdrawal (see Table 1.C) (ac-ft)	7	8	9 Total Spills Releases Leakage Withdrawals (ac-ft)
January	-	-	55.6	-	58.7			114.3
February	-	-	33.4	-	31.0			64.4
March	-	-	32.2	-	13.1			45.3
April	-	-	33.0	-	-			33.0
May	-	-	35.7	-	2.0			37.7
June	-	-	31.9	-	12.8			44.7
July	-	-	28.6	-	18.4			46.9
August	-	-	35.1	-	19.1			54.2
September	-	-	33.3	-	36.9			70.3
October	-	-	30.7	-	-			30.7
November	-	-	46.2	-	32.7			78.8
December	-	-	44.7	-	80.0			124.7
TOTALS	-	-	440.3	-	304.7			744.9

CALENDAR YEAR
2005
BIG BEAR WATERMASTER

TABLE 1.B
ACTUAL OPERATION OF BIG BEAR LAKE
Release Details

Month	1 Mutual's Shareholder Releases (Input Data) (ac-ft)	2 Mutual's Other Releases (Input Data) (ac-ft)	3 Mutual's Total Releases (Col.1 + Col.2) (ac-ft)	4	5 Big Bear's Spreading Releases (Input Data) (ac-ft)	6 Big Bear's Other Releases (Input Data) (ac-ft)	7 Big Bear's Total Releases (Col.5 + Col.6) (ac-ft)	8 SWRCB Order NO. 95-4 Releases (Input Data) (ac-ft)	9 Total Actual Releases (Cols.5+7+8) (ac-ft)
January	-	-	-	-	-	-	-	55.6	55.6
February	-	-	-	-	-	-	-	33.4	33.4
March	-	-	-	-	-	-	-	32.2	32.2
April	-	-	-	-	-	-	-	33.0	33.0
May	-	-	-	-	-	-	-	35.7	35.7
June	-	-	-	-	-	-	-	31.9	31.9
July	-	-	-	-	-	-	-	28.6	28.6
August	-	-	-	-	-	-	-	35.1	35.1
September	-	-	-	-	-	-	-	33.3	33.3
October	-	-	-	-	-	-	-	30.7	30.7
November	-	-	-	-	-	20.0	20.0	26.2	46.2
December	-	-	-	-	-	-	-	44.7	44.7
TOTALS	-	-	-	-	-	20.0	20.0	420.3	440.3

CALENDAR YEAR
2005
BIG BEAR WATERMASTER

TABLE 1.C
ACTUAL OPERATION OF BIG BEAR LAKE
Lake Withdrawal Details

1 Month	2 Snowmaking Withdrawals (Input Data) (ac-ft)	3 Recharge Withdrawals (Input Data) (ac-ft)	4	5 Total Lake Withdrawals (ac-ft)	6	7 Return from Snow melt @ 50.0% (ac-ft)	8	9 Estimated Net Lake Withdrawals (ac-ft)
January	117.4	-		117.4		58.7		58.7
February	62.0	-		62.0		31.0		31.0
March	26.1	-		26.1		13.1		13.1
April	-	-		-		-		-
May	2.0	-		2.0		-		2.0
June	12.8	-		12.8		-		12.8
July	18.4	-		18.4		-		18.4
August	19.1	-		19.1		-		19.1
September	36.9	-		36.9		-		36.9
October	-	-		-		-		-
November	65.3	-		65.3		32.7		32.7
December	220.0	-		220.0		140.0		80.0
TOTALS	580.1	-		580.1		275.4		304.7

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TABLE 1.D
ACTUAL OPERATION OF BIG BEAR LAKE
Evaporation Details

1 Month	2	3 Lake Surface Area (acres)	4 Average Lake Area (acres)	5 Average Air Temperature (Input Data) (deg F)	6 Calculated Evaporation Rate (feet/month)	7	8	9 Estimated Lake Evaporation (ac-ft)
January		2,053	2,326	28.72	0.071			165.7
February		2,598	2,637	33.19	0.095			251.6
March		2,676	2,717	38.43	0.198			538.3
April		2,758	2,792	44.13	0.282			787.9
May		2,826	2,844	52.74	0.436			1,240.3
June		2,861	2,852	58.15	0.518			1,477.7
July		2,843	2,837	67.10	0.626			1,774.3
August		2,830	2,820	64.57	0.613			1,729.0
September		2,810	2,801	57.23	0.498			1,396.0
October		2,792	2,788	49.17	0.394			1,099.4
November		2,783	2,777	43.72	0.273			758.7
December		2,770	2,767	38.42	0.111			306.0
TOTALS		2,763			4.117			11,525.0

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BIG BEAR WATERMASTER

TABLE 2
SYNTHESIZED MUTUAL OPERATION OF BIG BEAR LAKE

Month	1 Gauge Height 1st of Month (feet)	2 Mutual's Lake Account (ac-ft)	3 Change in Storage (*) (ac-ft)	4 Lake Surface Area (acres)	5 Mutual's Lake Inflow (see Table 1) (feet) (see Table 2.A)	6 Mutual's Net Wastewater Export Credit (ac-ft) (see Table 2.A)	7 Mutual's Lake Evap. (ac-ft) (see Table 2.B)	8 Mutual's Snowmaking Advances to Big Bear (ac-ft) (see Table 3)	9 Mutual's Credit for Return of Advances (ac-ft) (see Table 3)	10 Mutual's Releases Leakage Spills & In-lieu Del. (ac-ft) (see Table 2.A)
January	45.70	14,200	18,646	1,404	18,498.0	313.8	122.8	-	-	43.3
February	56.45	32,846	4,458	2,037	4,530.0	247.5	202.3	-	-	117.3
March	58.55	37,304	5,005	2,204	5,206.6	276.0	451.6	-	-	25.5
April	60.75	42,309	4,324	2,355	5,008.9	165.1	680.4	-	-	169.8
May	62.55	46,633	2,564	2,467	3,550.0	132.9	1,093.1	-	-	25.8
June	63.55	49,197	(1,415)	2,542	385.4	97.4	1,306.2	-	-	591.2
July	63.00	47,782	(1,642)	2,500	970.3	100.9	1,548.8	-	-	1,164.4
August	62.35	46,140	(1,196)	2,452	511.2	88.1	1,492.7	-	-	302.7
September	61.85	44,944	(810)	2,417	349.2	73.6	1,199.6	-	-	33.3
October	61.50	44,134	(323)	2,397	572.1	76.1	944.4	-	-	27.2
November	61.40	43,811	(592)	2,392	-	79.7	652.0	-	-	19.6
December	61.15	43,219	(178)	2,377	18.7	98.4	262.7	-	-	32.2
TOTALS	61.05	43,041	28,841	2,372	39,600.4	1,749.6	9,956.6	-	-	2,552.4

(*) Col. 3 = Col. 5 + Col. 6 - Col. 7 - Col. 8 + Col. 9 - Col. 10

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BIG BEAR WATERMASTER

TABLE 2.A
SYNTHESIZED MUTUAL OPERATION OF BIG BEAR LAKE
Lake Outflow Details

Month	1 Mutual's Spills & FC Releases from Table 2.C (ac-ft)	2 Mutual's Lake Releases from Table 1.B (ac-ft)	3 Mutual's Leakage from Table 2.C (ac-ft)	4 Mutual's Order No. 95-4 Releases from Table 2.C (ac-ft)	5 Big Bear's In-lieu Supply Deliveries (see Table 3.B) (ac-ft)	6 Mutual's Releases Leakage Spills & In-lieu Del. (to Table 2) (ac-ft)	7	8 Net Credit for Wastewater Exports (Input Data)	9 Spilled from Mutual's Lake Acct. (Input Data) (ac-ft)	10 Net Wastewater Export Credit (to Table 2) (ac-ft)
January	-	-	-	43.3	-	43.3		313.8	-	313.8
February	-	-	-	27.2	90.2	117.3		247.5	-	247.5
March	-	-	-	25.5	-	25.5		276.0	-	276.0
April	-	-	-	23.2	146.6	169.8		165.1	-	165.1
May	-	-	-	25.8	-	25.8		132.9	-	132.9
June	-	-	-	23.5	567.7	591.2		97.4	-	97.4
July	-	-	-	20.8	1,143.6	1,164.4		100.9	-	100.9
August	-	-	-	32.8	269.9	302.7		88.1	-	88.1
September	-	-	-	33.3	-	33.3		73.6	-	73.6
October	-	-	-	27.2	-	27.2		76.1	-	76.1
November	-	-	-	19.6	-	19.6		79.7	-	79.7
December	-	-	-	32.2	-	32.2		98.4	-	98.4
TOTALS	-	-	-	334.4	2,218.00	2,552.4		1,749.6	-	1,749.6

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BIG BEAR WATERMASTER

TABLE 2.B
SYNTHESIZED MUTUAL OPERATION OF BIG BEAR LAKE
Synthesized Evaporation Calculation

Month	1 Starting Volume (ac-ft)	2 Starting Area (acres)	3 Assumed Evap (ac-ft)	4 Estimated Ending Volume (ac-ft)	5 Estimated Ending Area (acres)	6 Average Area (acres)	7 Mutuals Lake Evap. (to Table 2) (ac-ft)	8 Big Bear's Lake Evap. (to Table 3.A) (ac-ft)	9 Revised Ending Volume Estimate (ac-ft)	10
January	14,200.0	1,404.0	100.1	32,868.5	2,041.0	1,722.5	122.8	42.9	32,845.8	
February	32,845.8	2,037.0	194.4	37,311.6	2,204.0	2,120.5	202.3	49.3	37,303.7	
March	37,303.7	2,204.0	436.7	42,324.1	2,355.0	2,279.5	451.6	86.7	42,309.1	
April	42,309.1	2,355.0	664.6	46,648.8	2,467.0	2,411.0	680.4	107.5	46,632.9	
May	46,632.9	2,467.0	1,076.1	49,213.9	2,545.0	2,506.0	1,093.1	147.2	49,196.9	
June	49,196.9	2,542.0	1,317.1	47,771.4	2,500.0	2,521.0	1,306.2	171.5	47,782.2	
July	47,782.2	2,500.0	1,563.8	46,125.1	2,452.0	2,476.0	1,548.8	225.5	46,140.2	
August	46,140.2	2,452.0	1,503.4	44,933.4	2,417.0	2,434.5	1,492.7	236.3	44,944.1	
September	44,944.1	2,417.0	1,204.6	44,129.0	2,397.0	2,407.0	1,199.6	196.4	44,134.0	
October	44,134.0	2,397.0	945.4	43,809.6	2,392.0	2,394.5	944.4	155.0	43,810.6	
November	43,810.6	2,392.0	654.0	43,216.7	2,377.0	2,384.5	652.0	107.2	43,218.7	
December	43,218.7	2,377.0	262.9	43,040.8	2,372.0	2,374.5	262.7	43.3	43,041.0	
TOTALS							9,956.6	1,568.9		

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BIG BEAR WATERMASTER

TABLE 2.C
SYNTHESIZED MUTUAL OPERATION OF BIG BEAR LAKE
Mutual's Leakage, Spills & FC Releases, and SWRCB Releases

Month	1 Total Leakage from Input Data (ac-ft)	2 Mutual's Leakage to Table 2.A (ac-ft)	3 Big Bear's Leakage to Table 3.B (ac-ft)	4 Actual Spills & FC Releases from Input Data (ac-ft)	5 Big Bear's Spills & FC Releases to Table 3.B (ac-ft)	6 Mutual's Spills & FC Releases to Table 2.A (ac-ft)	7 SWRCB Order 95-4 Releases from Input Data (ac-ft)	8 Mutual's Order 95-4 Releases from Input Data (ac-ft)	9 Mutual's Order 95-4 Releases to Table 2.A (ac-ft)	10 Big Bear's Order 95-4 Releases to Table 3.B (ac-ft)
January	-	-	-	-	-	-	55.6	34.08	43.3	12.3
February	-	-	-	-	-	-	33.4	16.17	27.2	6.2
March	-	-	-	-	-	-	32.2	11.77	25.5	6.7
April	-	-	-	-	-	-	33.0	0.00	23.2	9.8
May	-	-	-	-	-	-	35.7	0.00	25.8	9.8
June	-	-	-	-	-	-	31.9	0.00	23.5	8.4
July	-	-	-	-	-	-	28.6	0.00	20.8	7.7
August	-	-	-	-	-	-	35.1	27.06	32.8	2.3
September	-	-	-	-	-	-	33.3	33.34	33.3	-
October	-	-	-	-	-	-	30.7	18.84	27.2	3.5
November	-	-	-	-	-	-	26.2	3.49	19.6	6.6
December	-	-	-	-	-	-	44.7	1.55	32.2	12.5
TOTALS	-	-	-	-	-	-	420.26	146.30	334.4	85.9

CALENDAR YEAR
2005
BIG BEAR WATERMASTER

TABLE 3
DETERMINATION OF BIG BEAR'S LAKE ACCOUNT STATUS
Lake Account and Advance Account

Month	1 Actual Lake Account (see Table 1) (ac-ft)	2 Mutual's Lake Account (see Table 2) (ac-ft)	3 Big Bear's Lake Account (calc.) (ac-ft)	4 Change in Big Bear's Lake Account (calc.) (ac-ft)	5	6 Big Bear's Advances From Mutual (calc.) (ac-ft)	7 Big Bear's Payments Against Advances (calc.) (ac-ft)	8 Big Bear's Advance Account Balance (calc.) (ac-ft)	9 Big Bear's 0% Repayment Premium (calc.) (ac-ft)	10 Mutual's Credit for Return of Advances (to Table 2) (ac-ft)
January	33,173	14,200	18,973	(427.8)						
February	51,391	32,846	18,545	(243.9)						
March	55,605	37,304	18,301	(382.5)						
April	60,228	42,309	17,919	(135.8)						
May	64,416	46,633	17,783	(291.9)						
June	66,688	49,197	17,491	277.7						
July	65,551	47,782	17,769	791.0						
August	64,700	46,140	18,560	(76.0)						
September	63,428	44,944	18,484	(306.9)						
October	62,311	44,134	18,177	(234.6)						
November	61,753	43,811	17,942	(246.1)						
December	60,915	43,219	17,696	(234.3)						
TOTALS	60,503	43,041	17,462	(1,511.0)						

CALENDAR YEAR
2005
BIG BEAR WATERMASTER

TABLE 3.A
DETERMINATION OF BIG BEAR'S LAKE ACCOUNT STATUS
Lake Inflow Details

Month	1 In-lieu Water from SBVMWD (Input Data) (ac-ft)	2 In-lieu Water from Other's Wells (Input Data) (ac-ft)	3 In-lieu Supplies from Mutual's Wells (Input Data) (ac-ft)	4	5 Other Sources of In-lieu Supplies (Input Data) (ac-ft)	6 Big Bear's In-lieu Deliveries to Mutual (calc.) (ac-ft)	7	8 Big Bear's Advances From Mutual (from Table 3) (ac-ft)	9	10 Big Bear's Total Lake Inflows (calc.) (ac-ft)
January	-	-	-		-	-		-		-
February	90.2	-	-		-	90.2		-		90.2
March	-	-	-		-	-		-		-
April	146.6	-	-		-	146.6		-		146.6
May	-	-	-		-	-		-		-
June	567.7	-	-		-	567.7		-		567.7
July	1,143.6	-	-		-	1,143.6		-		1,143.6
August	269.9	-	-		-	269.9		-		269.9
September	-	-	-		-	-		-		-
October	-	-	-		-	-		-		-
November	-	-	-		-	-		-		-
December	-	-	-		-	-		-		-
TOTALS	2,218.0	-	-		-	2,218.0		-		2,218.0

CALENDAR YEAR
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BIG BEAR WATERMASTER

TABLE 3.B
DETERMINATION OF BIG BEAR'S LAKE ACCOUNT STATUS
Lake Outflow Details

Month	1 Big Bear's Snowmaking Withdrawals (Input Data) (ac-ft)	2 Big Bear's Recharge Withdrawals (Input Data) (ac-ft)	3 Return Flow from Snowmelt 50.0% (Table 1.C) (ac-ft)	4 Big Bear's Net Lake Withdrawal (calc.) (ac-ft)	5 Big Bear's Payments Against Advances (see Table 3) (ac-ft)	6 Big Bear's Spills & FC Releases from Table 2.C (ac-ft)	7 Big Bear's Leakage + SWRCB Rel. from Table 2.C (ac-ft)	8 Big Bear's Lake Evaporation from Table 2.B (ac-ft)	9 Net Wastewater Export Credit (from Table 2.A) (ac-ft)	10 Big Bear's Total Lake Outflows (calc.) (ac-ft)
January	117.4	-	58.7	58.7	-	-	12.3	42.9	313.8	427.8
February	62.0	-	31.0	31.0	-	-	6.2	49.3	247.5	334.1
March	26.1	-	13.1	13.1	-	-	6.7	86.7	276.0	382.5
April	-	-	-	-	-	-	9.8	107.5	165.1	282.4
May	2.0	-	-	2.0	-	-	9.8	147.2	132.9	291.9
June	12.8	-	-	12.8	-	-	8.4	171.5	97.4	290.0
July	18.4	-	-	18.4	-	-	7.7	225.5	100.9	352.6
August	19.1	-	-	19.1	-	-	2.3	236.3	88.1	345.9
September	36.9	-	-	36.9	-	-	-	196.4	73.6	306.9
October	-	-	-	-	-	-	3.5	155.0	76.1	234.6
November	65.3	-	32.7	32.7	-	-	6.6	107.2	79.7	226.1
December	220.0	-	140.0	80.0	-	-	12.5	43.3	98.4	234.3
TOTALS	580.1	-	275.4	304.7	-	-	85.9	1,568.9	1,749.6	3,709.0

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BIG BEAR WATERMASTER

TABLE 4
BASIN COMPENSATION ACCOUNT

Month	1 Big Bear's Basin Additions (see Table 4.A) (ac-ft)	2	3 Mutual's Basin Additions (see Table 4.B) (ac-ft)	4	5 Net Credit (Debit) (ac-ft)	6	7 Total Basin Replenishment (see Table 4.C) (ac-ft)	8	9 Basin Comp. Account Balance (ac-ft)
January	28.0		21.7		6.3		-		23,985
February	61.9		58.8		3.2		-		23,991
March	16.3		12.9		3.4		-		23,994
April	90.1		85.1		5.0		-		23,998
May	18.2		13.2		5.0		-		24,003
June	300.1		295.8		4.3		-		24,008
July	586.4		582.4		4.0		-		24,012
August	152.6		151.4		1.2		-		24,016
September	16.7		16.7		-		-		24,017
October	15.5		13.7		1.8		-		24,017
November	13.3		10.0		3.4		-		24,019
December	22.8		16.4		6.4		-		24,022
TOTALS	1,321.9		1,278.1		43.8		0.0		24,029

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BIG BEAR WATERMASTER

TABLE 4.A
BIG BEAR'S BASIN ADDITIONS

Month	SPILLS			LAKE RELEASES			IN LIEU SUPPLIES		
	1 Actual Spills & FC Releases (ac-ft)	2 Actual SWRCB 95-4 Releases (ac-ft)	3 Basin Addition @ 51.0% (ac-ft)	4 Lake Release for Mutual (ac-ft)	5 SWRCB 95-4 Releases for Mutual (ac-ft)	6 Basin Addition @ 50.0% (ac-ft)	7 Imported In Lieu Deliveries (ac-ft)	8 Basin Addition @ 50.0% (ac-ft)	9 Big Bear's Basin Additions (ac-ft)
January	-	21.5	11.0	-	34.1	17.0	-	-	28.0
February	-	17.2	8.8	-	16.2	8.1	90.2	45.1	61.9
March	-	20.4	10.4	-	11.8	5.9	-	-	16.3
April	-	33.0	16.8	-	-	-	146.6	73.3	90.1
May	-	35.7	18.2	-	-	-	-	-	18.2
June	-	31.9	16.3	-	-	-	567.7	283.8	300.1
July	-	28.6	14.6	-	-	-	1,143.6	571.8	586.4
August	-	8.0	4.1	-	27.1	13.5	269.9	135.0	152.6
September	-	-	-	-	33.3	16.7	-	-	16.7
October	-	11.8	6.0	-	18.8	9.4	-	-	15.5
November	-	22.7	11.6	-	3.5	1.7	-	-	13.3
December	-	43.2	22.0	-	1.6	0.8	-	-	22.8
TOTALS	0.0	274.0	139.7	0.0	146.3	73.2	2,218.0	1,109.0	1,321.9

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BIG BEAR WATERMASTER

TABLE 4.B
MUTUAL'S BASIN ADDITIONS

Month	SPILLS & FISH RELEASES			LAKE RELEASES			7 Total Basin Additions (ac-ft)
	1 Mutual's Spills (ac-ft)	2 Mutual's SWRCB 95-4 Releases (ac-ft)	3 Basin Addition @ 51.0% (ac-ft)	4 Mutual's Lake Demands (ac-ft)	5 SWRCB 95-4 Releases for Mutual (ac-ft)	6 Basin Addition @ 50.0% (ac-ft)	
January	-	9.2	4.7	-	34.1	17.0	21.7
February	-	11.0	5.6	90.2	16.2	53.2	58.8
March	-	13.7	7.0	-	11.8	5.9	12.9
April	-	23.2	11.8	146.6	0.0	73.3	85.1
May	-	25.8	13.2	-	0.0	-	13.2
June	-	23.5	12.0	567.7	0.0	283.8	295.8
July	-	20.8	10.6	1,143.6	0.0	571.8	582.4
August	-	5.7	2.9	269.9	27.1	148.5	151.4
September	-	-	-	-	33.3	16.7	16.7
October	-	8.4	4.3	-	18.8	9.4	13.7
November	-	16.1	8.2	-	3.5	1.7	10.0
December	-	30.6	15.6	-	1.6	0.8	16.4
TOTALS	0.0	188.1	95.9	2,218.0	146.3	1,182.2	1,278.1

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BIG BEAR WATERMASTER

TABLE 4.C
BASIN REPLENISHMENTS

1 Month	2 Amount Replenished From SBVMWD (ac-ft)	3	4	5 Amount Replenished From Releases (ac-ft)	6 Amount Replenished From Others (ac-ft)	7	8 Total Amount Replenished (ac-ft)	9
January	-			-	-		-	
February	-			-	-		-	
March	-			-	-		-	
April	-			-	-		-	
May	-			-	-		-	
June	-			-	-		-	
July	-			-	-		-	
August	-			-	-		-	
September	-			-	-		-	
October	-			-	-		-	
November	-			-	-		-	
December	-			-	-		-	
	0.0			0.0	0.0		0.0	