Figure 2. Excess Flows To Mexico, Comparison of Basin States Alternative to Baseline Conditions for Modeled Year 2016

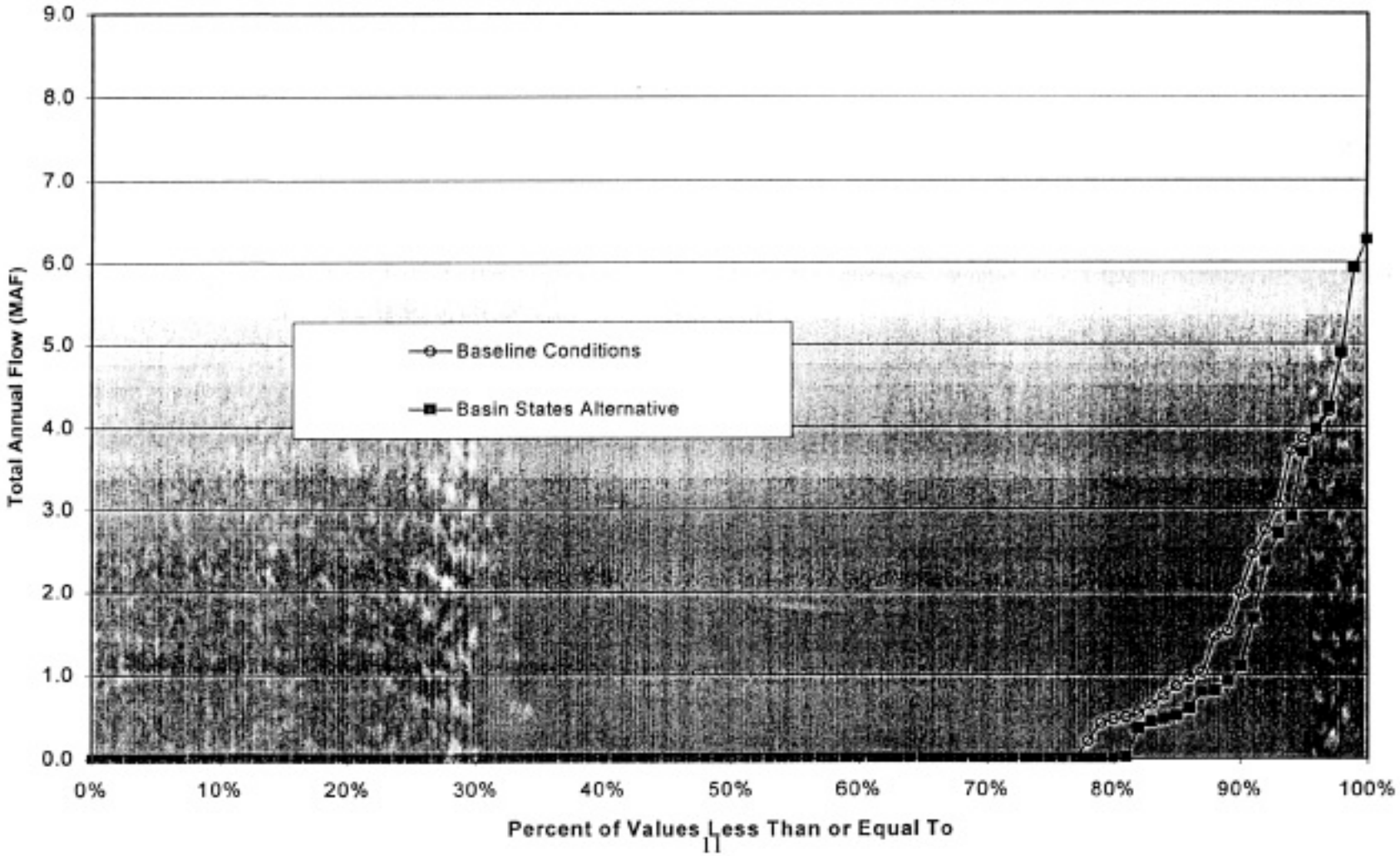


Figure 3. Excess Flows to Mexico. Comparison of Basin States Alternative to Baseline Conditions for Modeled Year 2050

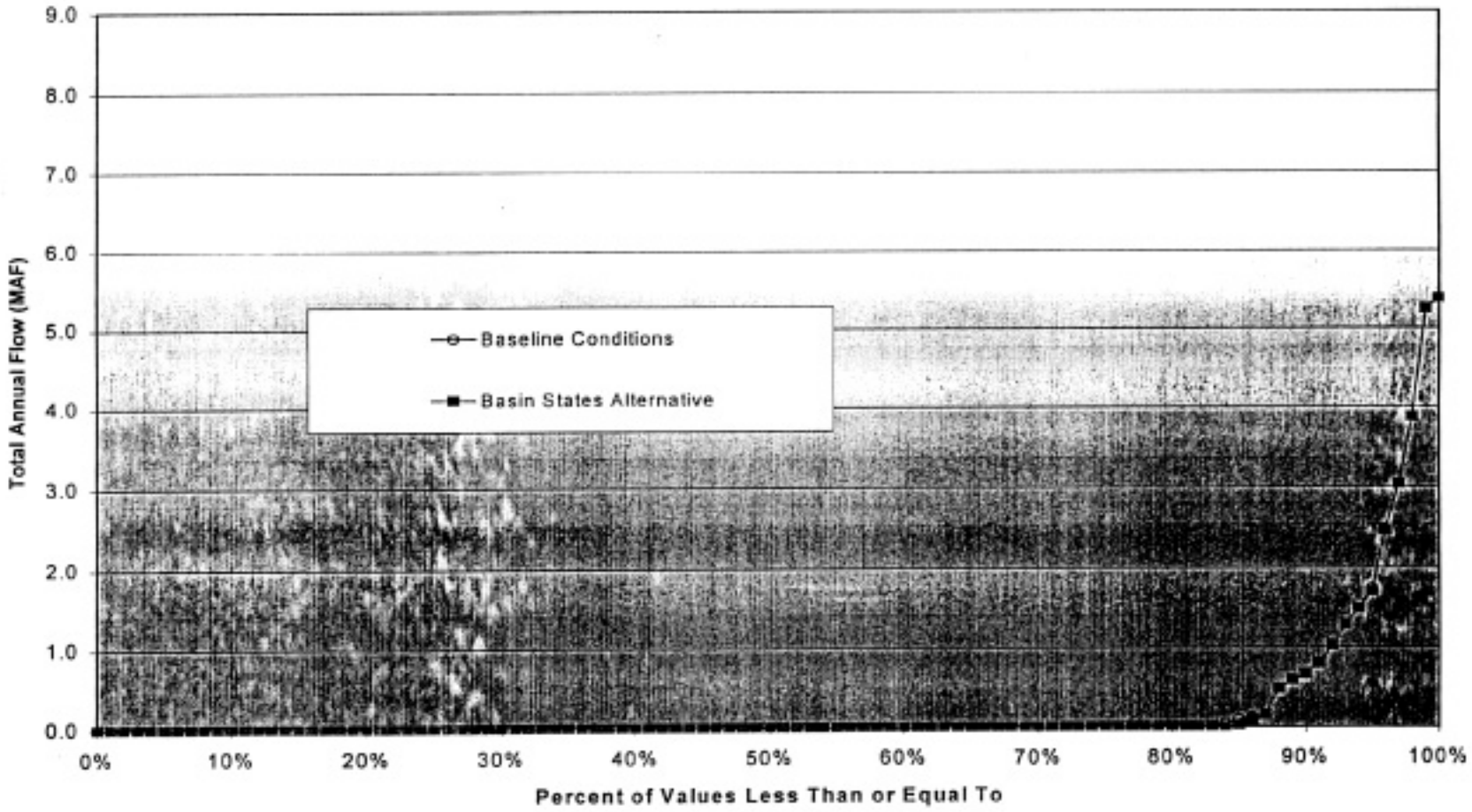


Figure 4. Excess Flows to Mexico Greater than 250 KAF

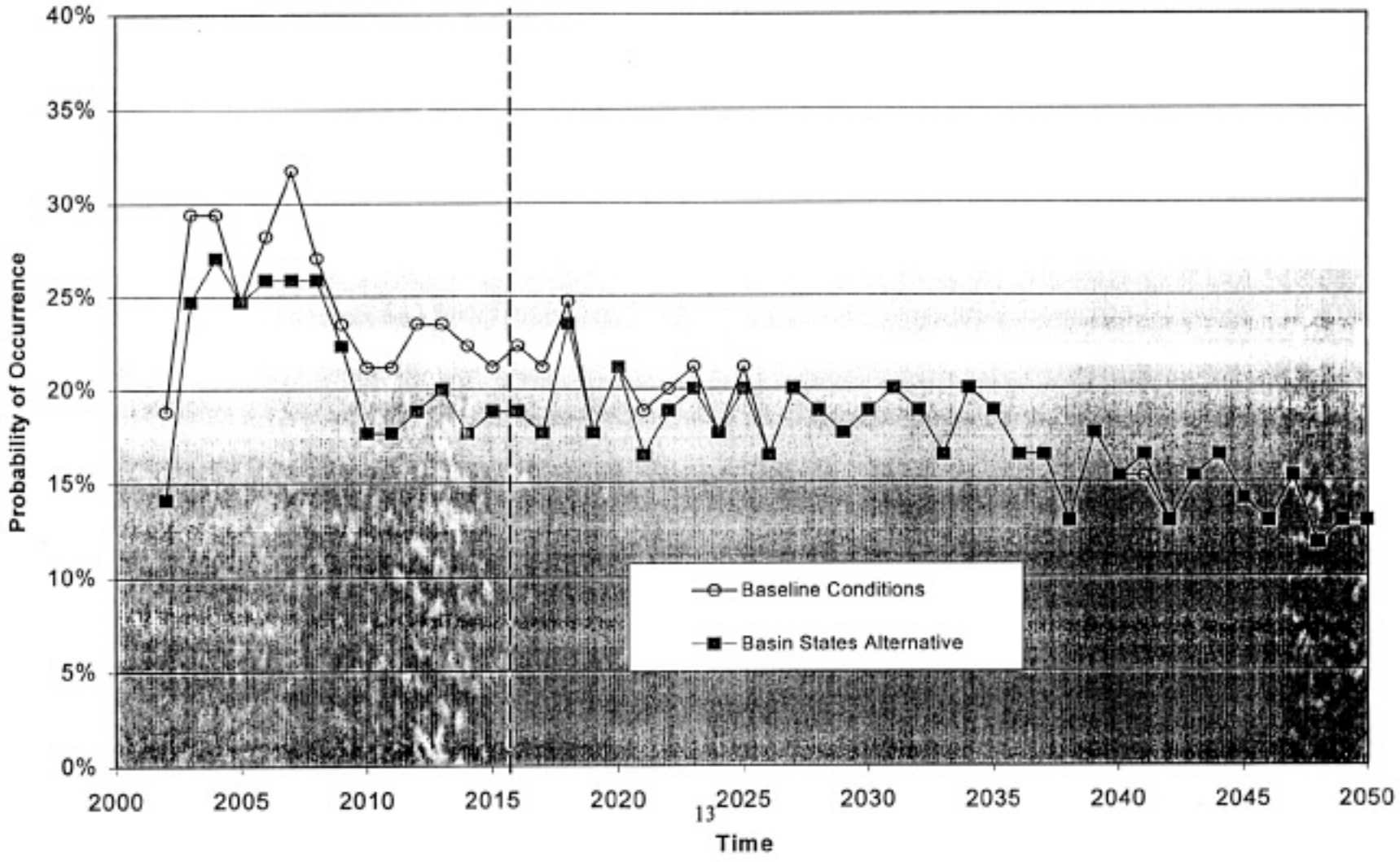
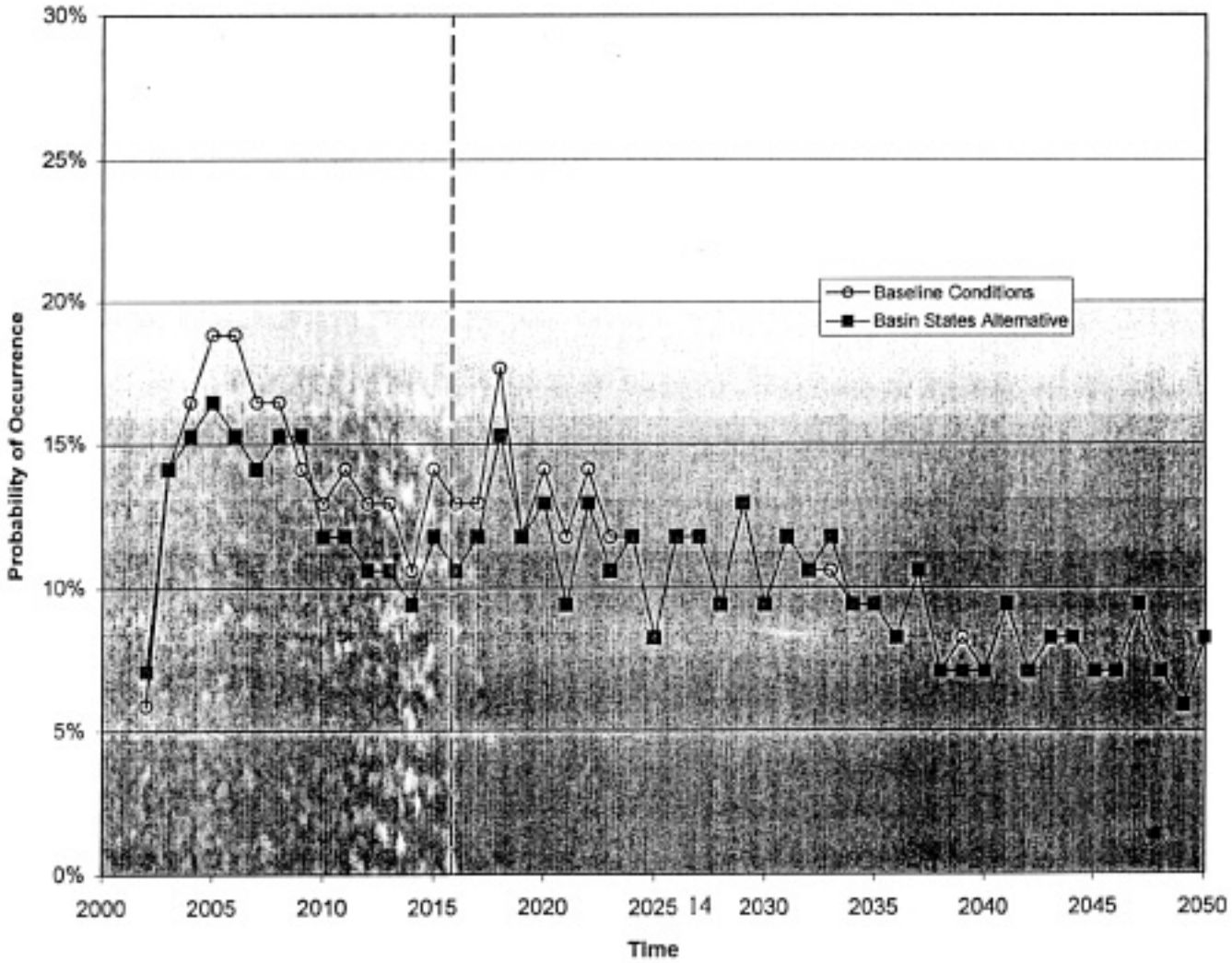


Figure 5. Excess Flows to Mexico Greater than 1,000 kaf



COMPARISON OF THE BASIN STATES ALTERNATIVE TO THE BASELINE CONDITION

Figure 1 presented a graphical comparison of future frequency of excess flows of any magnitude to Mexico under the Basin States Alternative to those under the baseline conditions. The probability of excess flows of any magnitude to Mexico for the Basin States Alternative are compared to baseline conditions for selected years in Table 1. The Basin States Alternative shows slightly less probability of occurrence compared to the baseline through 2018. After 2018, the probability of occurrence of excess flows of any magnitude is essentially the same for the baseline and Basin States Alternative.

Table 1

Colorado River Flows to Mexico
Frequency of Occurrence of Excess Flows

Year	Baseline Conditions	Basin States Alternative
2002	20%	15%
2003	31%	26%
2004	33%	28%
2005	27%	25%
2006	31%	27%
2007	35%	27%
2008	28%	26%
2009	25%	22%
2010	24%	20%
2011	22%	21%
2012	25%	21%
2013	24%	22%
2014	25%	20%
2015	25%	21%
2016	22%	19%
2017	25%	22%
2018	25%	24%
2019	19%	19%
2020	24%	24%
2021	21%	20%
2022	24%	22%
2023	21%	21%
2024	20%	20%
2025	21%	20%
2026	19%	18%
2050	16%	15%

The potential magnitudes of excess flows for the surplus alternatives are compared to baseline conditions for the 75th and 90th percentiles as shown in Figure 6. The 75th percentile values also detailed for years 2002 through 2026 in Table 2 and the 90th percentile value is shown in Table 3. The 75th percentile flow is defined as the flow that would not be exceeded 75 percent of the time (i.e., the minimum flow that could be expected to occur 25 percent of the time). The 75th and 90th percentile values are illustrated to show two of the various probabilities. In general, the volume of flow is reduced somewhat with implementation of the Basin States Alternative, but not in amounts that are large enough to appear significant.

Figure 2 and Table 4 shows the probability of excess flows to Mexico that would exceed 250 kaf annually. This volume was selected for analysis because it is near the amount generally believed to be required to the scouring action needed for regeneration of riparian habitat in the river corridor in Mexico (Leucke, et al. 1999). This volume of flow would also be expected to reach the Sea of Cortez, with attendant benefits to the estuary at the mouth of the lower Colorado River. Flows exceeding 250 kaf annually are likely to go past Morelos Dam. As stated before, Mexico had complete discretion over use of the water once it reaches Morelos Dam. Mexico has the capacity to divert up to 200 kaf monthly above its normal water order. Therefore, lesser flows on an annual basis are expected to be diverted in their entirety, unless those flows exceed 200 kaf over the normal diversion. The volume of flow of 250 kaf annually was suggested by Luecke, et al., at four year intervals, apparently based on flows experienced over the past 20 years.

The data displayed in Figure 2 and table 4 for excess flows exceeding 250 kaf annually show the same trends as the probability of excess flow of any magnitude. That is, there would be a slightly less probability until 2018, from that point on the probabilities are essentially the same between the Basin States Alternative and the Baseline Conditions. The overall probability of flows exceeding 250 kaf until 2018 under the Basin States Plan is about once every five years. After 2018, the probability of flows exceeding 250 kaf is approximately once in every 6 years. The reduced probability after 2018 is a result of the Upper Basin States developing their Colorado River resources. These probabilities indicate periodic flows of 250 kaf will continue under the Basin States Plan at about the same expected recurrence level as currently experienced.

Table 2
Excess Flows To Mexico

75th Percentile Values

Year	Baseline Conditions (kaf)	Basin States Alternative (kaf)
2002	0	0
2003	406	109
2004	645	536
2005	153	0
2006	534	500
2007	545	386
2008	318	282
2009	0	0
2010	0	0
2011	0	0
2012	0	0
2013	0	0
2014	0	0
2015	0	0
2016	0	0
2017	0	0
2018	0	0
2019	0	0
2020	0	0
2021	0	0
2022	0	0
2023	0	0
2024	0	0
2025	0	0
2026	0	0

Table 3
Excess Flows To Mexico

90th Percentile Values

Year	Baseline Conditions (kaf)	Basin States Alternative (kaf)
2002	870	429
2003	2510	2068
2004	2112	2550
2005	2560	2274
2006	2918	2481
2007	2495	2489
2008	2157	2227
2009	2230	2175
2010	1641	1583
2011	1458	1881
2012	1378	1438
2013	1680	1049
2014	1368	857
2015	1464	1611
2016	1999	1114
2017	2034	1957
2018	1492	1201
2019	1630	1358
2020	1276	1032
2021	1167	876
2022	1136	1112
2023	1130	981
2024	1338	1338
2025	823	823
2026	1422	1422

Figure 6. Excess Flows to Mexico. Comparison of Basin States Alternative to Baseline Conditions 90th and 75th Percentile Values.

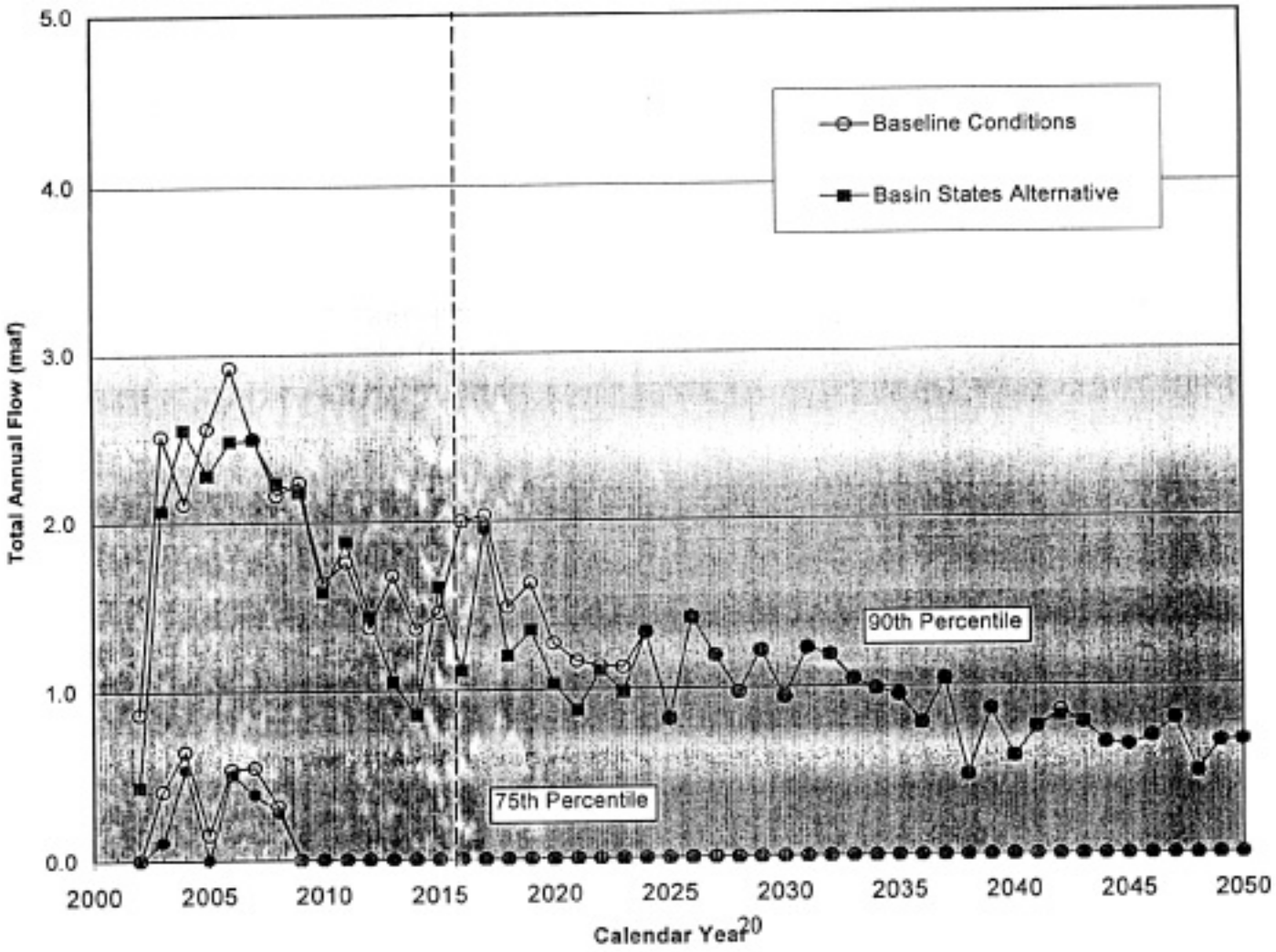


Table 4
Probability of Occurrence of Excess Flows to Mexico
Greater than 250 KAF

Year	Baseline	Proposed Action	Year	Baseline	Proposed Action
2002	19%	14%	2027	20%	20%
2003	29%	25%	2028	16%	19%
2004	29%	27%	2029	18%	18%
2005	25%	25%	2030	18%	19%
2006	28%	26%	2031	19%	20%
2007	32%	26%	2032	16%	19%
2008	27%	26%	2033	16%	16%
2009	24%	22%	2034	18%	20%
2010	21%	18%	2035	16%	19%
2011	21%	18%	2036	16%	16%
2012	24%	19%	2037	16%	16%
2013	24%	20%	2038	13%	13%
2014	22%	18%	2039	14%	18%
2015	21%	19%	2040	15%	15%
2016	22%	19%	2041	14%	16%
2017	20%	18%	2042	13%	13%
2018	24%	24%	2043	14%	15%
2019	18%	18%	2044	16%	16%
2020	20%	21%	2045	12%	14%
2021	16%	16%	2046	13%	13%
2022	18%	19%	2047	15%	15%
2023	20%	20%	2048	12%	12%
2024	18%	18%	2049	13%	13%
2025	19%	20%	2050	13%	13%
2026	16%	16%			

In summary, there are only minor differences in the potential magnitudes and potential frequencies of excess flows between baseline conditions and the Basin States Alternative. These differences are not expected to be significant. Probable frequency of beneficial flows exceeding 250 kaf under the Basin States Alternative are one year in five through 2017 and after that are one year in six from 2018 through 2050 (Figure 5 and Table 4). This compares to a probable frequency of 250 kaf or greater flows for the baseline condition of one in four through 2017 and one in 5 through 2050.

The above probabilities indicate conditions below Morelos Dam would be similar to those presumed to be beneficial. Leucke, et al, 1999 states it is not yet possible to quantify with certainty the required volume and frequency of these high flows. While the probable frequency of once in four years under the baseline would change to a probable frequency of once in five years under the Basin States Alternative, the

change in benefits to species and habitat would likely be insignificant. The riparian vegetation existing along the Colorado River corridor in Mexico is extremely resilient.

Mexico has complete discretion over the use of water entering that country. As stated before, excess flows are generally diverted when possible and used for other than species and habitat. It is only when the amount of water arriving at Mexico is in excess of what can be diverted can benefits to species and habitat be realized.