CalLite Hands-On Training

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CalLite Workshop

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Outline

- Objective of the Training Scenarios
- Scenario Settings
  - Scenario 1 (Base Study)
  - Scenario 2 (Alternative Study)
- Analyzing results of Scenario 1 and Scenario 2

Training Scenarios

- Objectives:
  - Run Scenario 1: Base Study, which has D-1641 regulations
  - Analyze CalLite results from Scenario 1.
  - Run Scenario 2: Alternative Study, which has two BO RPAs turned on.
  - Investigate impact of the two RPAs on project operations, river/Delta flows, and salinity

Scenario 1 Setup

- Scenario 1: Base Study settings
  - Simulation period – (WY1922 – 2003)
  - Pre-Biological Opinion (D-1641 regulations only, no RPAs active)
  - Future Level of Development (2030 LOD)
  - No sea level rise
  - SWP SOD Demands: Full Table A
  - CVP SOD Demands: Full Contract
  - CVC wheeling, JPOD, and Intertie all on

Analyzing CalLite Results: Scenario 1

1) What is the Long-Term (1922 – 2003) Average Annual SWP Total Delivery (in taf)?
2) What were the minimum monthly Total SWP Deliveries during the 1929-34 Drought (in taf)?
3) Plot the exceedence curve of X2 position during February.
4) How much Annual CVP SOD Delivery can be expected at the 50% Non-Exceedence Level (probability of smaller than the given value) (in taf)? Here you will need to copy the data from a CalLite graph and paste it into Excel.

Scenario 2 Setup

- Scenario 2: Alternative Study, with same settings as Scenario 1, except that Fall X2 and OMR RPAs are turned on.
- Setup Directions:
  - Load Scenario 1
  - Turn on Fall X2 and OMR RPAs
  - Save As Scenario 2
  - Run

Comparing Scenarios 1 & 2

1) How does the average Annual CVP SOD Delivery change between the two scenarios (in taf)?
2) How much has the average Annual Total SWP Delivery been reduced in Scenario 2 (in taf)?
3) Plot the exceedence curve of Oroville's September Storage under the two scenarios
4) How much has average Annual Delta Outflow been increased in Scenario 2 (in taf)?
5) How does X2 position change in October and November of Wet years (Sac 40-30-30 Index)
6) How do minimum OMR flows change on average during Jan and Feb in Dry years (Sac 40-30-30 Index)?

Answers and Plots

Analyzing CalLite Results: Scenario 1

1) What is the Long-Term (1922 – 2003) Average Annual SWP Total Delivery (in taf)?

CalLite Results - Total SWP

Time Series | Summary - Scenario1_D1641_DV

SWP Total Deliveries (CFS) - Scenario1_D1641_DV.DSS

Year Group	Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	All (TAF)
All	Avg	3974	3732.9	3858.5	3162.8	4293.9	4780.5	4530.9	5362.5	6467.6	6502.8	6341.7	4652.5	3483.4

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Answer: 3483 TAF

Analyzing CalLite Results: Scenario 1

2) What was the minimum monthly Total SWP Deliveries during the 1929-34 Drought (in taf)?

CalLite Results - Total SWP

Time Series | Monthly - Scenario1_D1641_DV | Summary - Scenario1_D1641_DV

SWP Total Deliveries (TAF) - Scenario1_D1641_DV.DSS

WY	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Ann (TAF)
1922	286.1	269.9	233.8	58	200.8	407.7	336.7	399.4	463.9	473.9	472.5	341.6	3944.3
1923	301.2	276.7	286.7	362.2	259.8	312	341.9	406.7	448.1	451.6	453.8	323.8	4224.5
1924	284.8	260.3	270.5	93.1	82.8	49.3	37.5	63.9	93.5	98.1	84.3	52.5	1470.6
1925	34.7	29.2	25.4	350.1	324.9	323.9	196.6	193.6	265.3	298.8	271	179.3	2492.8
1926	138	118.7	102.5	129.7	331.3	126.3	136.7	350.5	404.2	411.2	413.8	301.6	2964.5
1927	266.6	247.6	254.2	126	360	409.4	340.7	404	468.4	477.1	477.6	345.7	4177.3
1928	305.1	280.3	290.3	240.1	257.8	331.1	286.6	338.6	396.7	404.4	402.7	290	3823.8
1929	255	234.9	243	117.6	112.8	90.6	124.3	181.2	255.2	280.7	248.2	160.1	2303.4
1930	115.3	94.5	83.7	6.4	278.6	367.7	171	228	314.1	356.1	327.8	217.6	2560.8
1931	169.7	144.4	124.1	7.3	27	64.4	120.8	169.2	241.6	263.7	225.4	143.3	1701.1
1932	97.8	77.9	69.2	81.1	342.9	248	119.9	178.9	249.9	275.5	241.7	158.7	2141.6
1933	115.2	92.7	82.1	321.1	279.3	326.9	122.1	187.5	259.4	288.5	259.2	169.8	2503.8
1934	125.3	104.2	91.9	6.5	170	69.1	123.4	175.4	248.7	271.6	237.3	152.1	1775.5
1935	106.9	88.4	76.7	2.3	151.4	368.3	313.8	433.7	490.4	513.1	515.1	318.6	3378.7

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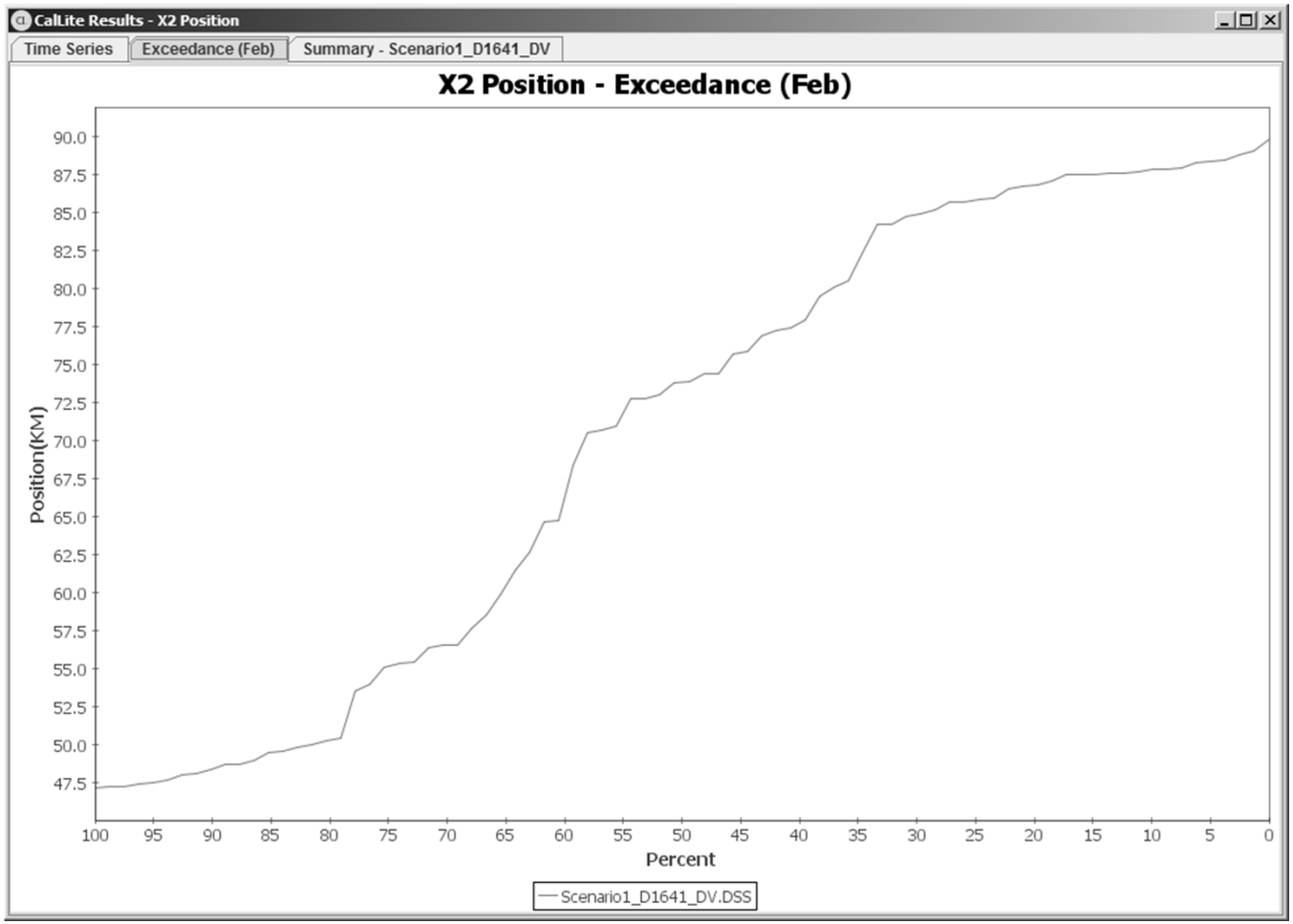
Answer: 6.4 TAF in January 1930

Analyzing CalLite Results: Scenario 1

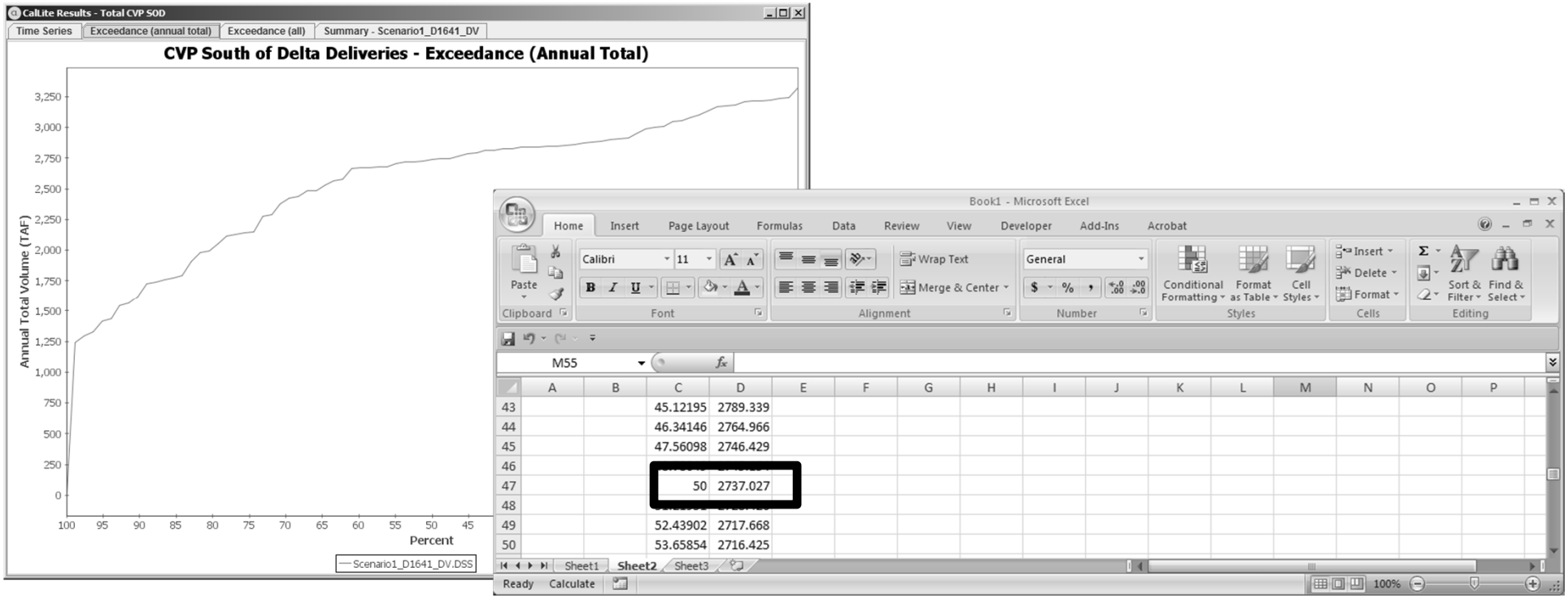
3) Plot the exceedence curve of X2 position during Feb.



Analyzing CalLite Results: Scenario 1

4) How much Annual CVP SOD Delivery can be expected at the 50% Non-Exceedence Level (probability of smaller than the given value) (in taf)?

Answer: 2737 TAF



Analyzing CalLite Results: Scenario 1 & 2

Analyzing CalLite Results: Scenario 1 & 2

1) How does the average Annual CVP SOD Delivery change between the two scenarios (in taf)?

CalLite Results - Total CVP SOD

Comparison | Summary - Scenario1_D1641_DV

CVP South of Delta Deliveries (TAF) - Scenario1_D1641_DV.DSS

Year Group	Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	All (TAF)
All	Avg	174.8	103.1	83.2	98.6	118.5	142.9	174.9	266.6	381.3	434.8	363.2	219.9	2561.8

CVP South of Delta Deliveries (TAF) - Scenario1_twoRPAs_DV.DSS

Year Group	Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	All (TAF)
All	Avg	168.9	98.3	76.8	88.3	107.2	133.4	165.3	247.9	351.6	397.9	338.5	210.7	2384.8

Answer: It decreases from 2562 TAF to 2385 TAF

Analyzing CalLite Results: Scenario 1 & 2

2) How much has the average Annual Total SWP Delivery been reduced in Scenario 2 (in taf)?

CalLite Results - Total SWP

Difference | Summary - Scenario1_D1641_DV

SWP Total Deliveries - Difference from Scenario1_D1641_DV.DSS (TAF) - Scenario1_twoRPAs_DV.DSS

Year Group	Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	All (TAF)
All	Avg	-42.7	-41.6	-58.6	-73.6	-79.6	-111.5	-66.2	-62.4	-60.9	-45.7	-52	-4	-735.8

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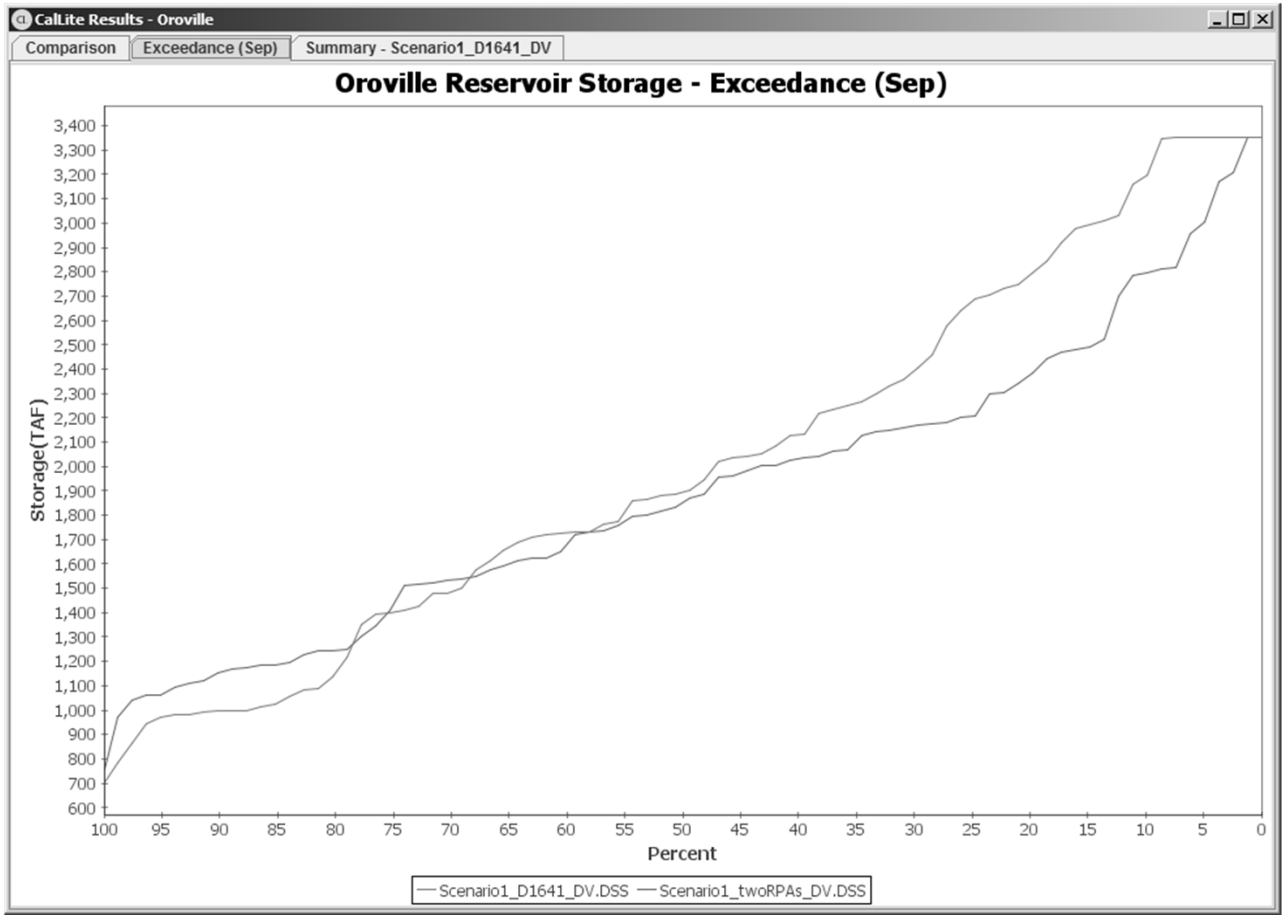
Answer: 736 TAF

Analyzing CalLite Results: Scenario 1 & 2

3) Plot the exceedence curve of Oroville's September Storage under the two scenarios



Analyzing CalLite Results: Scenario 1 & 2

4) How much has average Annual Delta Outflow been increased in Scenario 2 (in taf)?

CalLite Results - Outflow

Difference | Summary - Scenario1_D1641_DV

Delta Outflow - Difference from Scenario1_D1641_DV.DSS (CFS) - Scenario1_twoRPAs_DV.DSS

Year Group	Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	All (TAF)
All	Avg	997.3	2768.7	286.4	3335.8	1884.3	917	-772.5	-346	-273.9	221.5	90	4677.8	824.8

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Answer: 825 TAF

Analyzing CalLite Results: Scenario 1 & 2

5) How does X2 position change in October and November of Wet years (Sac 40-30-30 Index)

CalLite Results - X2 Position

Comparison | Summary - Scenario1_D1641_DV

X2 Position (KM) - Scenario1_D1641_DV.DSS

Year Group	Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	All (TAF)
All	Avg	87.9	88.8	86.7	79	70.3	62.8	61.7	64.6	68.8	74.8	80.5	85.8	76
Sac 40-30-30 (Wet)	Avg	85.8	86.1	82.4	65.7	55	50.9	52.2	55.1	58.5	65.6	74.7	83.1	67.9
Sac 40-30-30 (Above)	Avg	87.1	88.2	85.7	80.8	64.7	56.3	54.1	59.6	63.9	72.4	77.9	83.9	72.7
Sac 40-30-30 (Normal)	Avg	88.5	89.6	89.1	84.4	75.5	63	63.5	65.7	70.5	76.6	81.4	85.8	77.8
Sac 40-30-30 (Dry)	Avg	89.6	90.9	89.1	85.4	82	73.6	69	71.4	76.1	80.8	84.7	87.9	81.7
Sac 40-30-30 (Extreme)	Avg	90.1	91.1	90.9	89.8	85.5	79.7	76.7	78.3	83.5	86.3	88.2	90.2	85.9

X2 Position (KM) - Scenario1_twoRPAs_DV.DSS

Year Group	Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	All (TAF)
All	Avg	83.6	84.1	82.4	76.5	67.6	60.9	60.9	64.6	69.1	75.2	80.4	85.6	74.2
Sac 40-30-30 (Wet)	Avg	80.7	80.6	77.1	63.3	53.6	50.4	52.2	55.4	58.9	65.7	74.4	82.9	66.3
Sac 40-30-30 (Above)	Avg	83.2	83.8	81	77.3	61.6	55.1	53.6	60	64.6	73.4	78	83.6	71.1
Sac 40-30-30 (Normal)	Avg	84.3	85	84.9	81.8	72.1	61	63.2	66.1	70.8	77.2	81.3	85.5	76.1
Sac 40-30-30 (Dry)	Avg	84.4	85.3	85.2	83	77.9	70	67.1	71	76.1	81.1	84.9	87.6	79.5
Sac 40-30-30 (Extreme)	Avg	88.1	88.8	88.4	88	82.9	76.5	75.2	77.8	83.1	86.3	88.2	90.1	84.4

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Answer: October goes from 85.8 to 80.7 km. November goes from 86.1 to 80.6 km.

Analyzing CalLite Results: Scenario 1 & 2

6) How do minimum OMR flows change on average during Jan and Feb in Dry years (Sac 40-30-30 Index)?

CalLite Results - Old/Middle River

Comparison | Summary - Scenario1_D1641_DV

Old and Middle River (CFS) - Scenario1_D1641_DV.DSS														
Year Group	Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	All (TAF)
All	Min	-10376.7	-10428.6	-9928.8	-10104.8	-9940.3	-9915.2	-3921.8	-3250.6	-8137.8	-11417.4	-10886.5	-10333.6	-6148.5
Sac 40-30-30 (Wet)	Min	-10287	-10428.6	-9928.8	-9886.2	-9882.9	-8271.5	-3090.1	-2522.1	-8137.8	-11062.5	-10807.1	-10333.6	-6148.5
Sac 40-30-30 (Above)	Min	-10368.9	-10261.2	-9741.9	-10090.7	-9940.3	-9424.1	-3152.9	-2406.7	-6789.9	-11095	-10774.2	-10132	-5951
Sac 40-30-30 (Normal)	Min	-10376.7	-10283.6	-9720.1	-9961.5	-8910.4	-9570.5	-2875.2	-3200.9	-7185.7	-11277.5	-10886.5	-10324.3	-5851.2
Sac 40-30-30 (Dry)	Min	-10192.6	-10176.2	-9880.1	-10001.4	-9748.6	-9915.2	-3921.8	-3250.6	-7438.3	-11417.4	-10868.7	-9837	-5452.7
Sac 40-30-30 (Extreme)	Min	-10021.5	-10140.5	-9862.4	[illegible]	[illegible]	-9036.7	-2393.4	-2516.7	-6376.9	-11365.3	-6984.7	-6506.4	-5162.8

Old and Middle River (CFS) - Scenario1_twoRPAs_DV.DSS														
Year Group	Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	All (TAF)
All	Min	-10352.9	-10492.9	-9995.1	-5000	-5000	-5000	-4247.5	-3020.3	-5000	-11434.7	-10953.1	-10313.9	-4726.8
Sac 40-30-30 (Wet)	Min	-10352.9	-10492.9	-9730.9	-5000	-5000	-5000	-3310.4	-2959	-5000	-11075.3	-10796.3	-10308.4	-4726.8
Sac 40-30-30 (Above)	Min	-8941.2	-10239.7	-9634.5	-5000	-5000	-5000	-4247.5	-2875.4	-5000	-11220.6	-10779.8	-10143	-4714.1
Sac 40-30-30 (Normal)	Min	-8151.7	-10233.3	-9735.2	-5000	-5000	-5000	-3299.7	-2852.4	-5000	-11288	-10893.4	-10313.9	-4525.1
Sac 40-30-30 (Dry)	Min	-8218.1	-9916	-9892.1	-5000	-5000	-5000	-3966	-3020.3	-5000	-11434.7	-10953.1	-9516.7	-4488.5
Sac 40-30-30 (Extreme)	Min	-8237.5	-6597	-9995.1	-5000	-5000	-4516.1	-2750.4	-2306.6	-3161.5	-11399.2	-10936.7	-7805.8	-4026.3

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Answer: Jan goes from -10,001 to -5000 cfs. Feb goes from -9,749 to -5000 cfs.