Appendix 4H

Attachment 4b: X2 Results (CalSim 3)

Appendix 4H

Attachment 4b: X2 Results (CalSim 3)

The following results of the CalSim 3 model are included for X2 position conditions for the following scenarios:

- Baseline Conditions – 2022 Hydrology and 15 centimeters (cm) Sea Level Rise (082824)
- Proposed Project plus CVP Proposed Action, Sacramento and Feather River VAs – 2022 Hydrology and 15 cm Sea Level Rise (091324)
- Proposed Project plus Cumulative Projects – 2022 Hydrology and 15 cm Sea Level Rise (091324)

Title	Model Parameter	Table Numbers	Figure Numbers
X2 Position	X2_PRV[1]	4H-4-1-1a to 4H-4-1-2c	4H-4-1a to 4H-4-1r

Note:

[1] Parameter has been post-processed for the Proposed Project plus Cumulative Projects – 2022 Hydrology and 15 cm Sea Level Rise scenario.

Report formats:

- Monthly tables comparing two scenarios (exceedance values, long-term average, and average by water year type).
- Monthly pattern charts (long-term average and average by water year type) including all scenarios.
- Monthly exceedance charts (all months) including all scenarios.

Table 4H-4-1-1a. X2 Position, Baseline Conditions 2022 SLR15 082824, Monthly Distance (Km)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
10% Exceedance	93.7	92.6	90.6	86.2	79.9	77.4	78.9	82.4	85.4	89.7	91.9	93.0
20% Exceedance	92.6	92.1	89.0	84.9	74.3	72.3	74.6	78.7	82.7	86.1	90.0	92.4
30% Exceedance	92.3	91.3	87.5	79.9	68.0	66.5	71.0	77.4	81.5	85.7	89.4	91.7
40% Exceedance	91.7	90.3	86.5	73.4	64.9	64.6	67.3	75.0	81.0	84.8	88.4	91.1
50% Exceedance	90.6	87.3	82.1	68.5	62.3	62.3	65.5	71.7	80.0	82.5	86.4	89.7
60% Exceedance	80.1	85.8	75.5	64.4	58.3	59.2	62.7	68.7	79.0	81.1	84.0	80.1
70% Exceedance	80.0	85.1	69.3	58.9	54.8	56.5	60.3	66.3	77.5	79.7	83.0	80.0
80% Exceedance	80.0	83.9	62.8	55.1	53.4	54.1	57.3	62.3	73.8	79.2	82.7	80.0
90% Exceedance	79.9	78.5	56.2	52.9	52.2	52.9	55.1	58.8	68.9	78.1	82.4	80.0
Full Simulation Period Average[a]	86.4	86.1	77.2	69.4	63.8	63.3	66.2	71.2	78.4	82.8	86.5	86.5
Wet Water Years (29%)	84.3	80.7	63.6	55.8	53.7	55.4	58.0	63.1	72.0	77.7	82.2	79.3
Above Normal Water Years (12%)	86.2	87.7	79.4	63.9	57.2	56.5	60.4	66.9	76.1	79.8	83.2	80.0
Below Normal Water Years (18%)	85.9	87.8	81.9	71.2	64.6	62.9	64.9	69.5	78.8	82.4	86.4	89.7
Dry Water Years (22%)	86.2	87.0	81.9	77.0	68.7	68.0	71.4	76.0	81.5	85.8	89.4	91.8
Critical Water Years (19%)	90.6	90.9	86.9	82.8	76.8	74.6	77.4	82.2	85.8	89.2	91.8	93.0

Table 4H-4-1-1b. X2 Position, Proposed Project plus CVP PA Sac Feather VAs 2022 SLR15 091324, Monthly Distance (Km)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
10% Exceedance	93.8	92.6	90.5	86.1	79.3	75.9	79.2	82.8	85.7	89.9	92.0	93.1
20% Exceedance	92.6	92.1	89.4	84.7	74.1	70.2	74.7	78.9	83.1	86.2	90.2	92.5
30% Exceedance	92.4	91.3	87.4	79.5	67.5	65.6	70.5	78.1	82.1	85.6	89.5	92.0
40% Exceedance	91.7	89.9	86.7	73.3	64.8	64.2	67.6	76.1	81.2	84.8	88.6	91.0
50% Exceedance	90.4	87.3	81.8	68.3	62.0	61.7	65.7	72.8	80.3	82.7	86.3	90.0
60% Exceedance	80.1	85.8	75.3	64.1	57.8	59.0	62.6	70.5	79.1	81.1	83.7	80.1
70% Exceedance	80.0	85.2	68.4	58.9	54.8	56.5	60.8	66.6	77.7	80.0	83.2	80.0
80% Exceedance	80.0	83.9	62.3	55.1	53.4	54.0	56.9	61.7	73.7	79.4	83.0	80.0
90% Exceedance	79.9	78.6	56.1	52.9	52.2	52.9	55.0	59.0	68.9	78.1	82.7	79.9
Full Simulation Period Average[a]	86.4	86.1	77.2	69.2	63.5	62.9	66.0	71.9	78.6	82.9	86.6	86.6
Wet Water Years (29%)	84.2	80.5	63.1	55.7	53.7	55.4	58.2	63.8	72.0	77.9	82.6	79.4
Above Normal Water Years (12%)	86.2	87.6	79.2	63.8	57.1	56.3	59.9	66.6	75.9	79.7	83.0	80.0
Below Normal Water Years (18%)	85.8	87.7	82.0	71.1	64.4	62.2	64.6	70.7	79.1	82.5	86.2	89.9
Dry Water Years (22%)	86.2	87.1	81.9	77.0	68.7	67.2	70.6	76.6	81.9	85.7	89.5	91.9
Critical Water Years (19%)	90.8	90.9	87.2	82.3	75.9	74.3	77.8	83.2	86.4	89.5	91.9	93.0

Table 4H-4-1-1c. X2 Position, Proposed Project plus CVP PA Sac Feather VAs 2022 SLR15 091324 minus Baseline Conditions 2022 SLR15 082824, Monthly Distance (Km)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
10% Exceedance	0.1	0.0	-0.1	-0.1	-0.6	-1.4	0.3	0.4	0.3	0.1	0.1	0.0
20% Exceedance	0.0	0.0	0.4	-0.2	-0.2	-2.1	0.1	0.2	0.4	0.0	0.2	0.0
30% Exceedance	0.1	0.0	-0.1	-0.4	-0.4	-0.8	-0.5	0.6	0.6	-0.1	0.1	0.3
40% Exceedance	0.0	-0.4	0.1	-0.1	-0.1	-0.4	0.2	1.1	0.2	-0.1	0.1	-0.1
50% Exceedance	-0.2	-0.1	-0.2	-0.2	-0.3	-0.6	0.2	1.0	0.3	0.2	-0.1	0.3
60% Exceedance	0.0	0.0	-0.2	-0.3	-0.5	-0.2	0.0	1.8	0.1	-0.1	-0.3	0.0
70% Exceedance	0.0	0.0	-0.9	0.0	0.0	-0.1	0.5	0.4	0.2	0.2	0.2	0.0
80% Exceedance	0.0	0.1	-0.4	-0.1	0.0	-0.1	-0.4	-0.5	0.0	0.2	0.2	0.0
90% Exceedance	0.0	0.1	-0.1	0.0	0.0	0.0	0.0	0.2	0.0	-0.1	0.3	0.0
Full Simulation Period Average[a]	0.0	-0.1	-0.1	-0.2	-0.2	-0.4	-0.2	0.7	0.2	0.1	0.1	0.1
Wet Water Years (29%)	-0.1	-0.2	-0.5	-0.2	0.0	0.0	0.1	0.7	0.0	0.1	0.4	0.1
Above Normal Water Years (12%)	-0.1	-0.1	-0.2	-0.1	-0.1	-0.2	-0.5	-0.4	-0.2	-0.2	-0.1	0.0
Below Normal Water Years (18%)	-0.1	-0.1	0.1	-0.1	-0.2	-0.7	-0.3	1.2	0.3	0.1	-0.2	0.2
Dry Water Years (22%)	0.0	0.0	0.0	0.0	0.0	-0.8	-0.7	0.6	0.3	-0.1	0.1	0.1
Critical Water Years (19%)	0.1	0.1	0.3	-0.4	-0.9	-0.3	0.4	1.0	0.6	0.2	0.1	0.0

[a] Based on the 100-year simulation period.

* All scenarios are simulated at 2022 Median climate condition and 15 cm sea level rise.
* Water Year Types defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
* Water Year Types results are displayed with water year - year type sorting.

Table 4H-4-1-2a. X2 Position, Baseline Conditions 2022 SLR15 082824, Monthly Distance (Km)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
10% Exceedance	93.7	92.6	90.6	86.2	79.9	77.4	78.9	82.4	85.4	89.7	91.9	93.0
20% Exceedance	92.6	92.1	89.0	84.9	74.3	72.3	74.6	78.7	82.7	86.1	90.0	92.4
30% Exceedance	92.3	91.3	87.5	79.9	68.0	66.5	71.0	77.4	81.5	85.7	89.4	91.7
40% Exceedance	91.7	90.3	86.5	73.4	64.9	64.6	67.3	75.0	81.0	84.8	88.4	91.1
50% Exceedance	90.6	87.3	82.1	68.5	62.3	62.3	65.5	71.7	80.0	82.5	86.4	89.7
60% Exceedance	80.1	85.8	75.5	64.4	58.3	59.2	62.7	68.7	79.0	81.1	84.0	80.1
70% Exceedance	80.0	85.1	69.3	58.9	54.8	56.5	60.3	66.3	77.5	79.7	83.0	80.0
80% Exceedance	80.0	83.9	62.8	55.1	53.4	54.1	57.3	62.3	73.8	79.2	82.7	80.0
90% Exceedance	79.9	78.5	56.2	52.9	52.2	52.9	55.1	58.8	68.9	78.1	82.4	80.0
Full Simulation Period Average[a]	86.4	86.1	77.2	69.4	63.8	63.3	66.2	71.2	78.4	82.8	86.5	86.5
Wet Water Years (29%)	84.3	80.7	63.6	55.8	53.7	55.4	58.0	63.1	72.0	77.7	82.2	79.3
Above Normal Water Years (12%)	86.2	87.7	79.4	63.9	57.2	56.5	60.4	66.9	76.1	79.8	83.2	80.0
Below Normal Water Years (18%)	85.9	87.8	81.9	71.2	64.6	62.9	64.9	69.5	78.8	82.4	86.4	89.7
Dry Water Years (22%)	86.2	87.0	81.9	77.0	68.7	68.0	71.4	76.0	81.5	85.8	89.4	91.8
Critical Water Years (19%)	90.6	90.9	86.9	82.8	76.8	74.6	77.4	82.2	85.8	89.2	91.8	93.0

Table 4H-4-1-2b. X2 Position, Proposed Project plus Cumulative 2022 SLR15 091324, Monthly Distance (Km)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
10% Exceedance	93.8	92.6	90.5	86.1	79.4	74.8	77.4	82.1	85.3	89.7	92.0	93.1
20% Exceedance	92.6	92.2	89.4	84.7	74.0	69.3	72.4	78.1	82.7	86.0	90.1	92.4
30% Exceedance	92.4	91.2	87.5	79.6	67.5	64.7	68.7	77.3	82.0	85.5	89.5	91.9
40% Exceedance	91.7	89.9	86.7	73.3	64.8	63.5	65.4	75.3	80.9	84.7	88.3	90.9
50% Exceedance	90.3	87.2	82.1	68.5	62.0	61.0	64.1	72.0	80.1	82.6	86.1	89.9
60% Exceedance	80.1	85.8	75.3	64.1	57.8	58.2	61.4	69.9	78.9	80.9	83.8	80.1
70% Exceedance	80.0	85.2	68.4	58.9	54.8	55.9	59.4	66.1	77.3	79.9	83.2	80.0
80% Exceedance	80.0	84.0	62.7	55.1	53.4	53.6	56.3	61.2	73.6	79.4	82.9	79.9
90% Exceedance	79.9	78.6	56.3	52.9	52.2	52.7	54.5	58.9	68.9	78.0	82.7	79.9
Full Simulation Period Average[a]	86.4	86.1	77.2	69.2	63.6	62.2	64.6	71.2	78.4	82.8	86.5	86.6
Wet Water Years (29%)	84.2	80.6	63.2	55.7	53.7	55.0	57.4	63.5	71.9	77.8	82.6	79.4
Above Normal Water Years (12%)	86.2	87.6	79.3	63.9	57.1	55.9	58.8	66.0	75.7	79.5	83.0	79.9
Below Normal Water Years (18%)	85.8	87.7	82.0	71.1	64.4	61.6	63.1	69.9	78.9	82.4	86.1	89.8
Dry Water Years (22%)	86.2	87.1	82.0	77.1	68.8	66.1	68.6	75.7	81.7	85.7	89.4	91.9
Critical Water Years (19%)	90.8	90.9	87.2	82.3	75.9	73.3	76.1	82.4	86.0	89.3	91.8	93.0

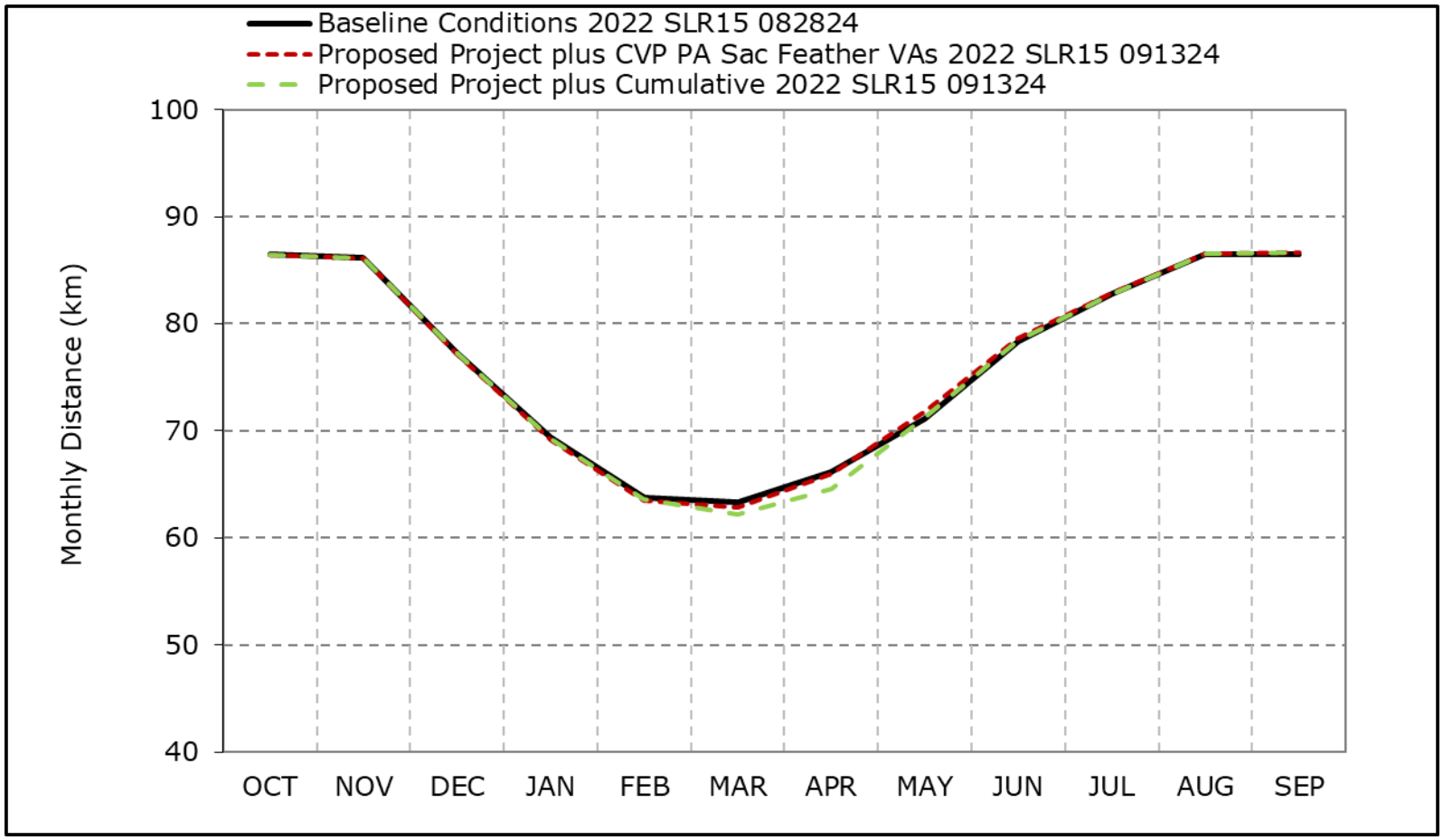
Table 4H-4-1-2c. X2 Position, Proposed Project plus Cumulative 2022 SLR15 091324 minus Baseline Conditions 2022 SLR15 082824, Monthly Distance (Km)

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
10% Exceedance	0.1	0.0	-0.1	-0.1	-0.4	-2.5	-1.5	-0.3	0.0	0.0	0.1	0.0
20% Exceedance	0.0	0.0	0.4	-0.2	-0.3	-3.0	-2.1	-0.6	0.1	-0.1	0.1	0.0
30% Exceedance	0.1	-0.1	0.0	-0.3	-0.5	-1.7	-2.3	-0.1	0.4	-0.2	0.0	0.2
40% Exceedance	0.0	-0.4	0.1	-0.1	-0.1	-1.1	-1.9	0.2	-0.1	-0.1	-0.1	-0.2
50% Exceedance	-0.3	-0.1	0.0	0.0	-0.3	-1.3	-1.4	0.3	0.1	0.1	-0.3	0.2
60% Exceedance	0.0	0.0	-0.1	-0.3	-0.5	-1.1	-1.3	1.1	-0.1	-0.3	-0.2	0.0
70% Exceedance	0.0	0.0	-0.9	0.0	0.0	-0.6	-0.9	-0.1	-0.2	0.1	0.1	-0.1
80% Exceedance	0.0	0.1	-0.1	-0.1	0.0	-0.5	-1.0	-1.0	-0.1	0.2	0.2	0.0
90% Exceedance	0.0	0.1	0.0	0.0	0.0	-0.2	-0.6	0.1	0.0	-0.1	0.3	0.0
Full Simulation Period Average[a]	0.0	0.0	0.0	-0.1	-0.2	-1.1	-1.6	0.1	0.0	0.0	0.0	0.1
Wet Water Years (29%)	0.0	-0.1	-0.4	-0.1	0.0	-0.4	-0.6	0.4	-0.1	0.1	0.3	0.1
Above Normal Water Years (12%)	-0.1	-0.1	-0.1	-0.1	-0.1	-0.7	-1.6	-0.9	-0.4	-0.3	-0.2	-0.1
Below Normal Water Years (18%)	-0.1	-0.1	0.1	-0.1	-0.2	-1.3	-1.8	0.4	0.1	0.0	-0.3	0.2
Dry Water Years (22%)	0.0	0.1	0.1	0.1	0.0	-1.8	-2.8	-0.3	0.1	-0.2	0.0	0.1
Critical Water Years (19%)	0.1	0.1	0.3	-0.5	-0.9	-1.3	-1.3	0.1	0.2	0.1	0.0	0.0

[a] Based on the 100-year simulation period.

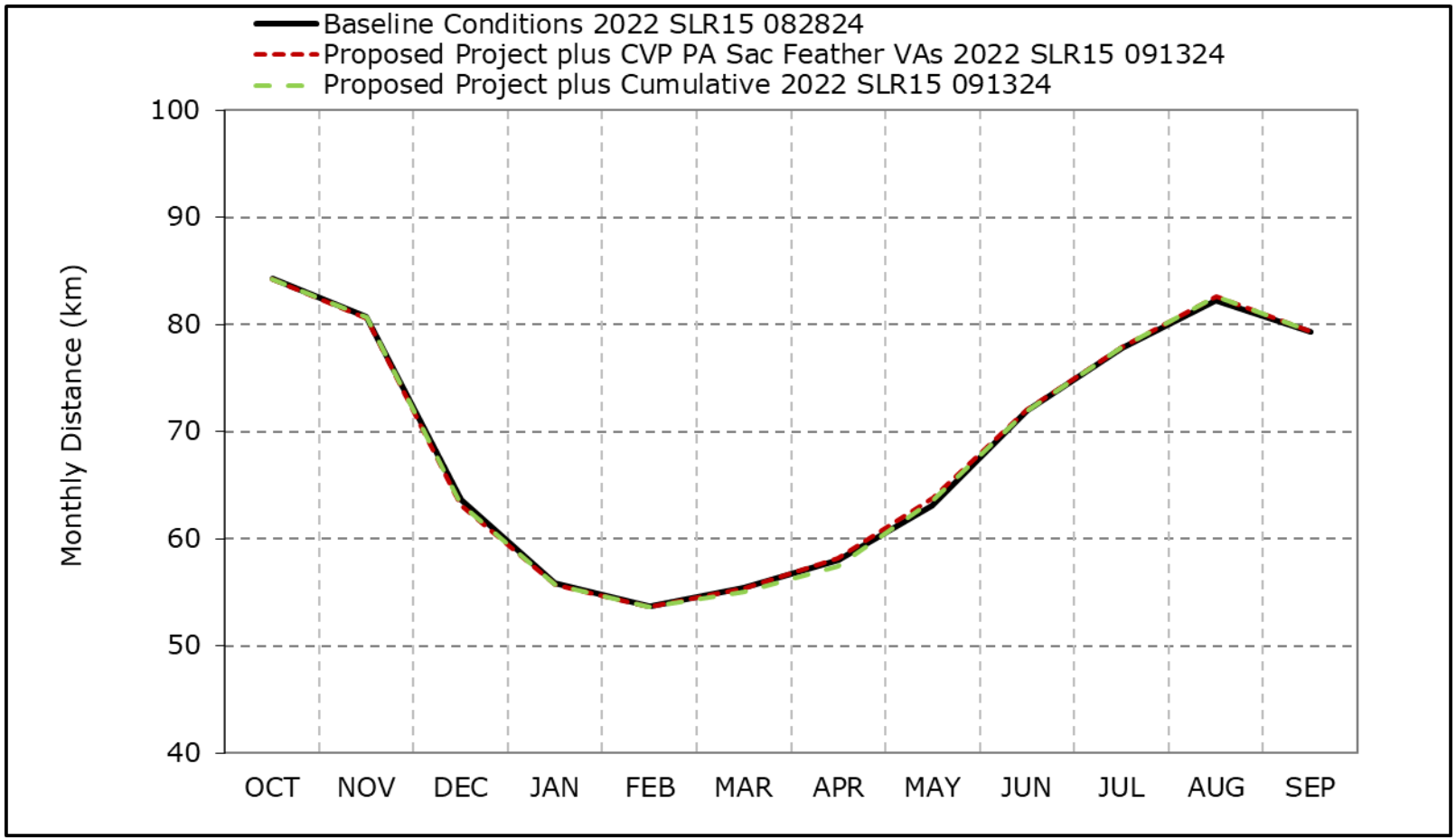
* All scenarios are simulated at 2022 Median climate condition and 15 cm sea level rise.
* Water Year Types defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
* Water Year Types results are displayed with water year - year type sorting.

Figure 4H-4-1a. X2 Position, Long-Term Average Distance



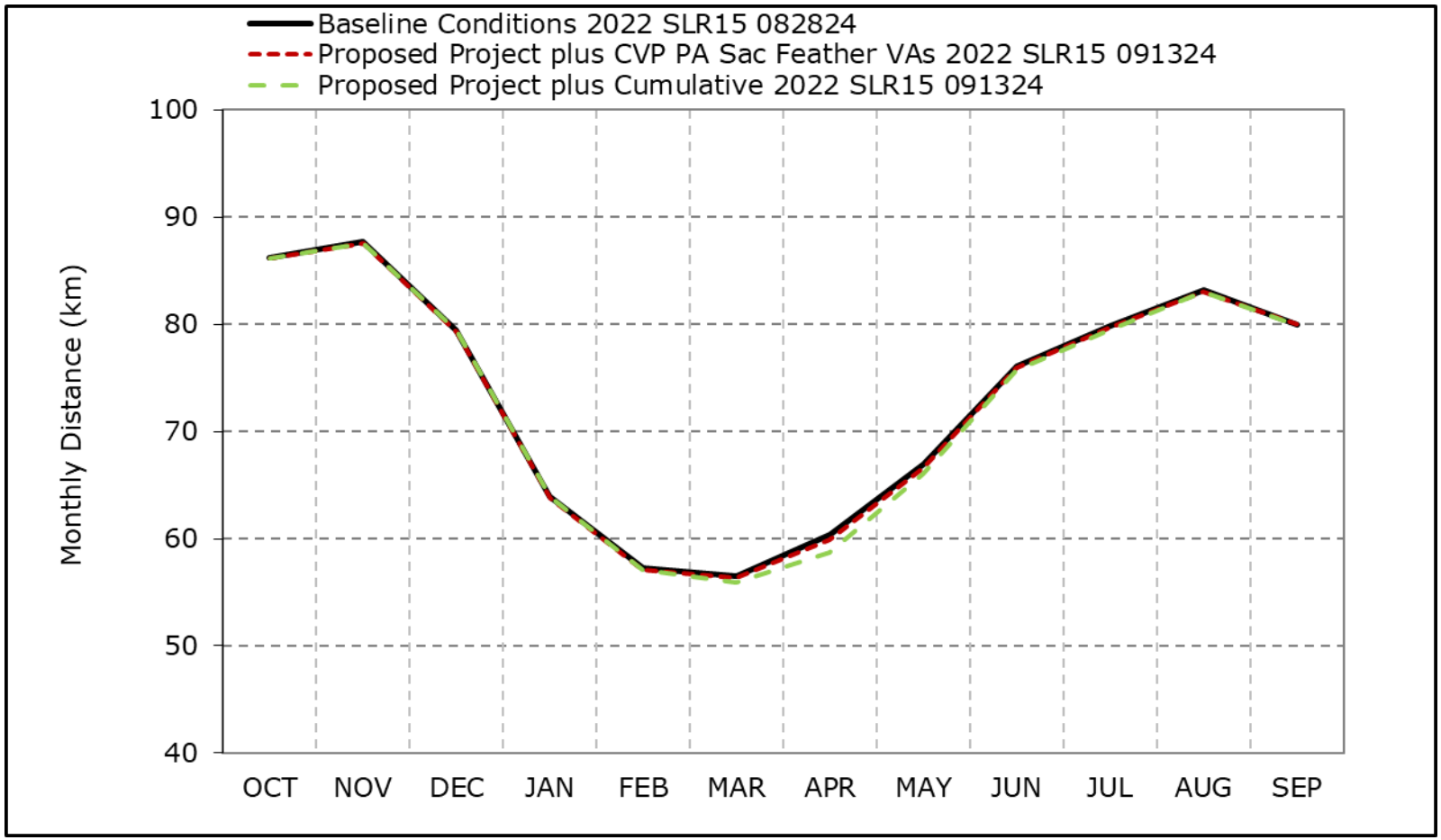
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with water year - year type sorting.
*All scenarios are simulated at 2022 Median climate condition and 15 cm sea level rise.

Figure 4H-4-1b. X2 Position, Wet Year Average Distance



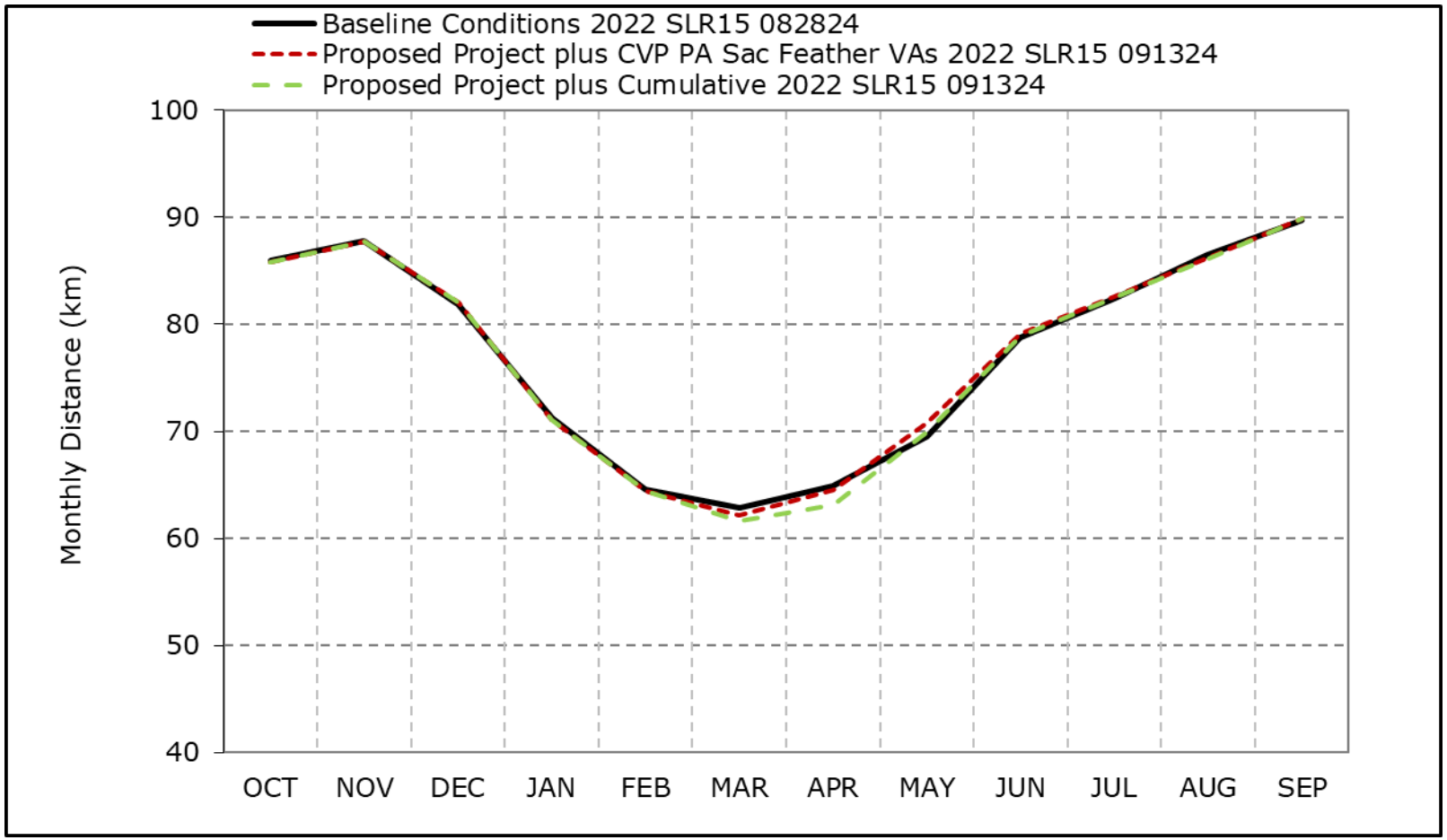
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with water year - year type sorting.
*All scenarios are simulated at 2022 Median climate condition and 15 cm sea level rise.

Figure 4H-4-1c. X2 Position, Above Normal Year Average Distance



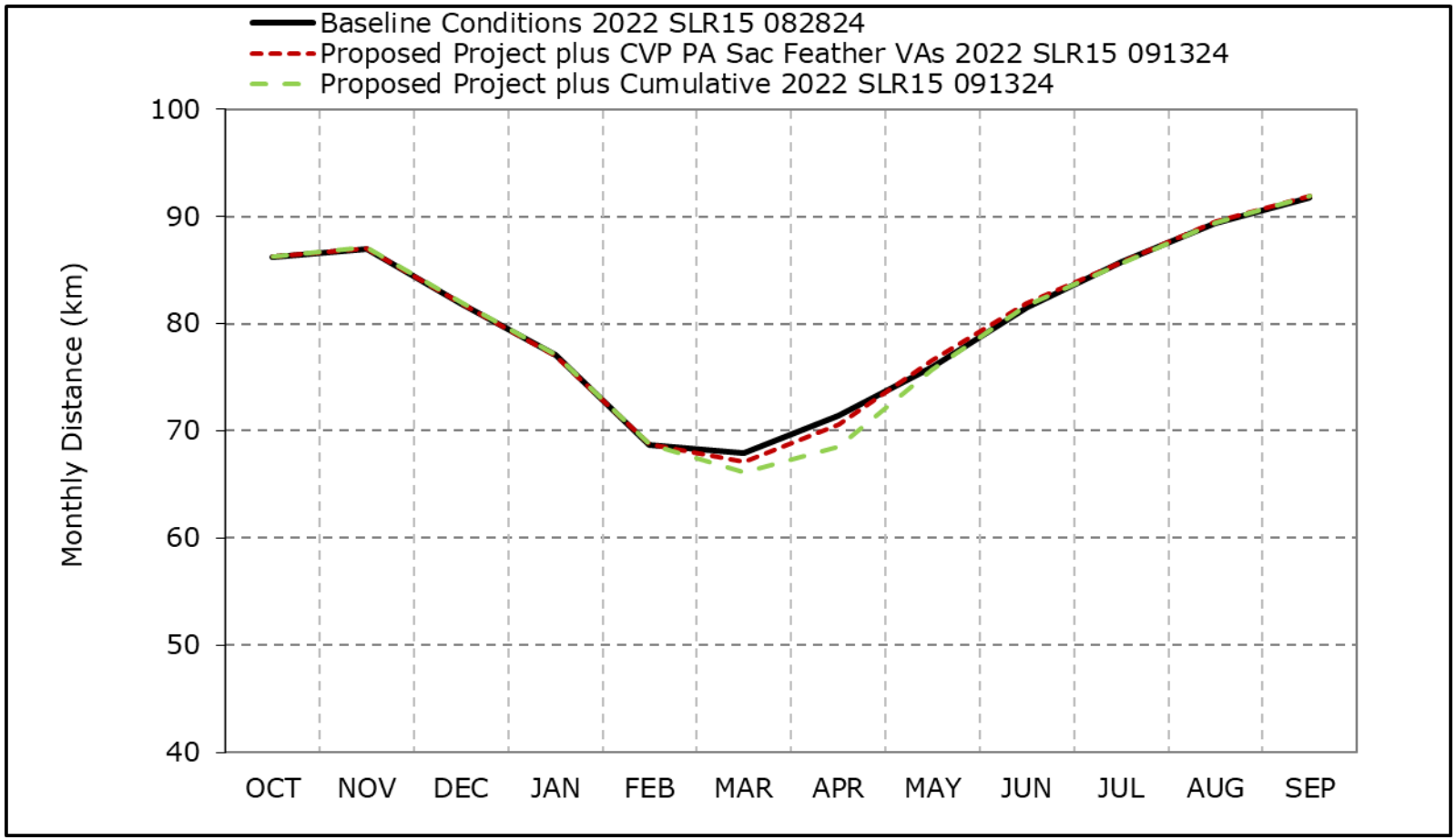
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with water year - year type sorting.
*All scenarios are simulated at 2022 Median climate condition and 15 cm sea level rise.

Figure 4H-4-1d. X2 Position, Below Normal Year Average Distance



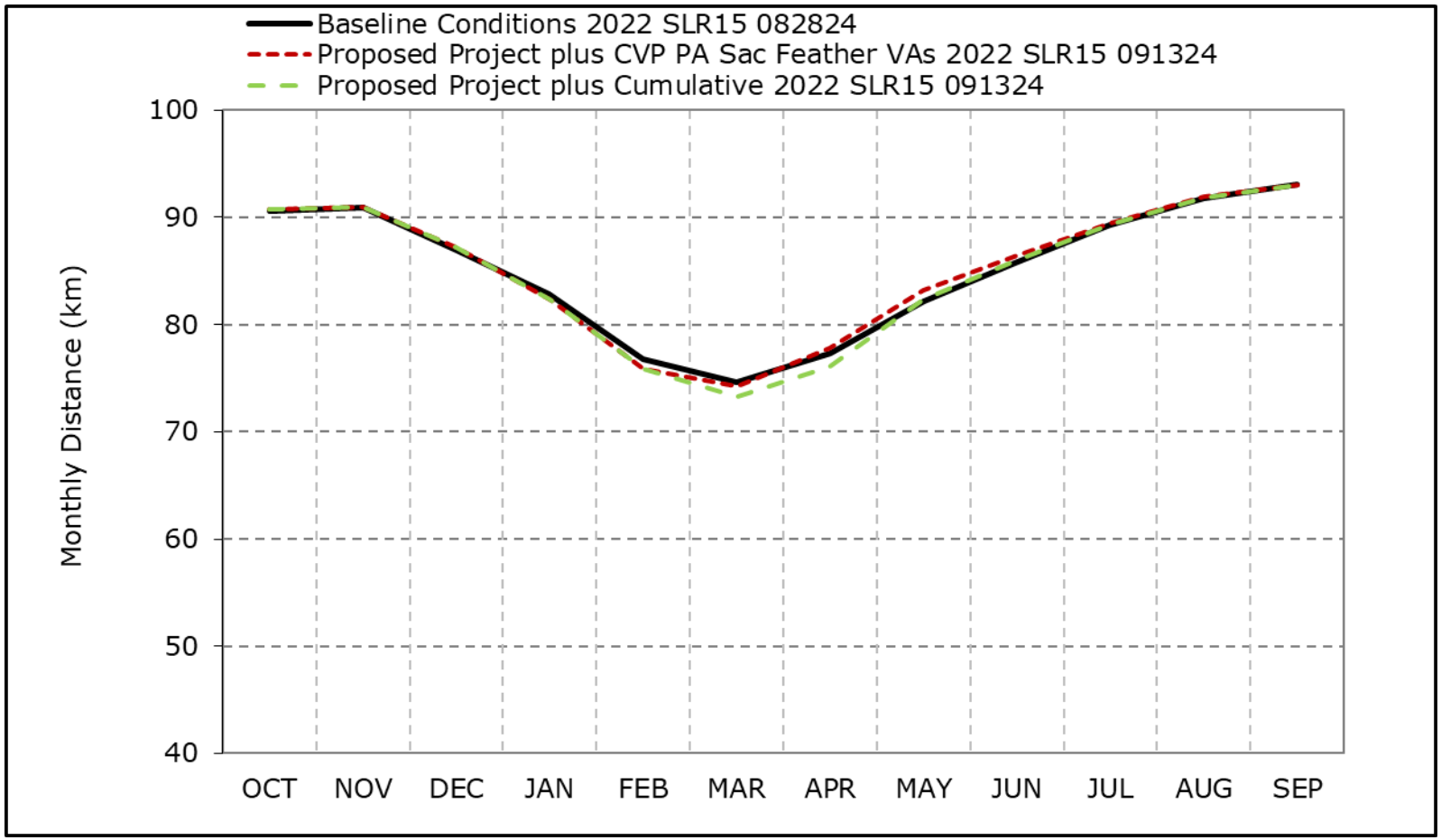
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with water year - year type sorting.
*All scenarios are simulated at 2022 Median climate condition and 15 cm sea level rise.

Figure 4H-4-1e. X2 Position, Dry Year Average Distance



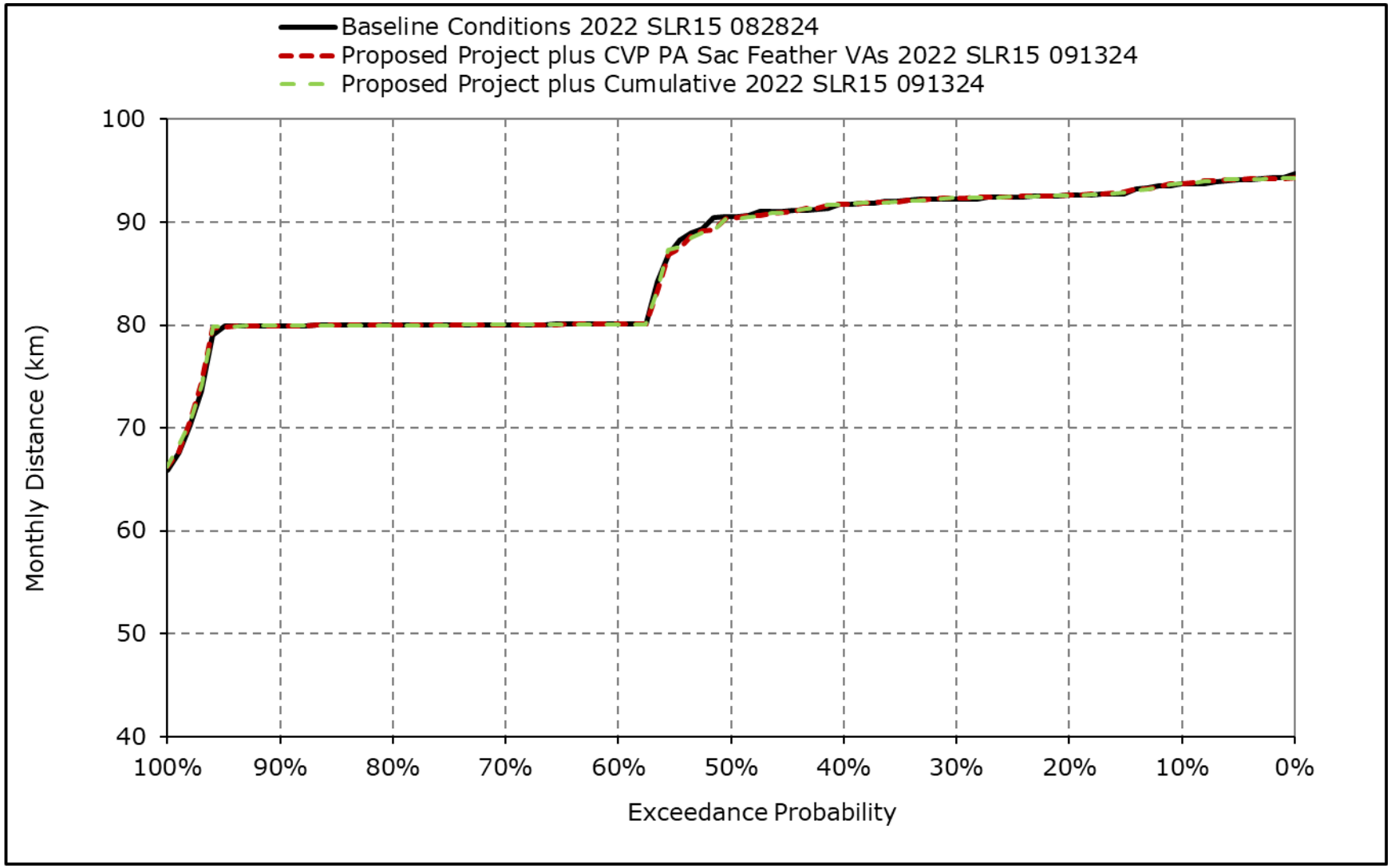
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with water year - year type sorting.
*All scenarios are simulated at 2022 Median climate condition and 15 cm sea level rise.

Figure 4H-4-1f. X2 Position, Critical Year Average Distance



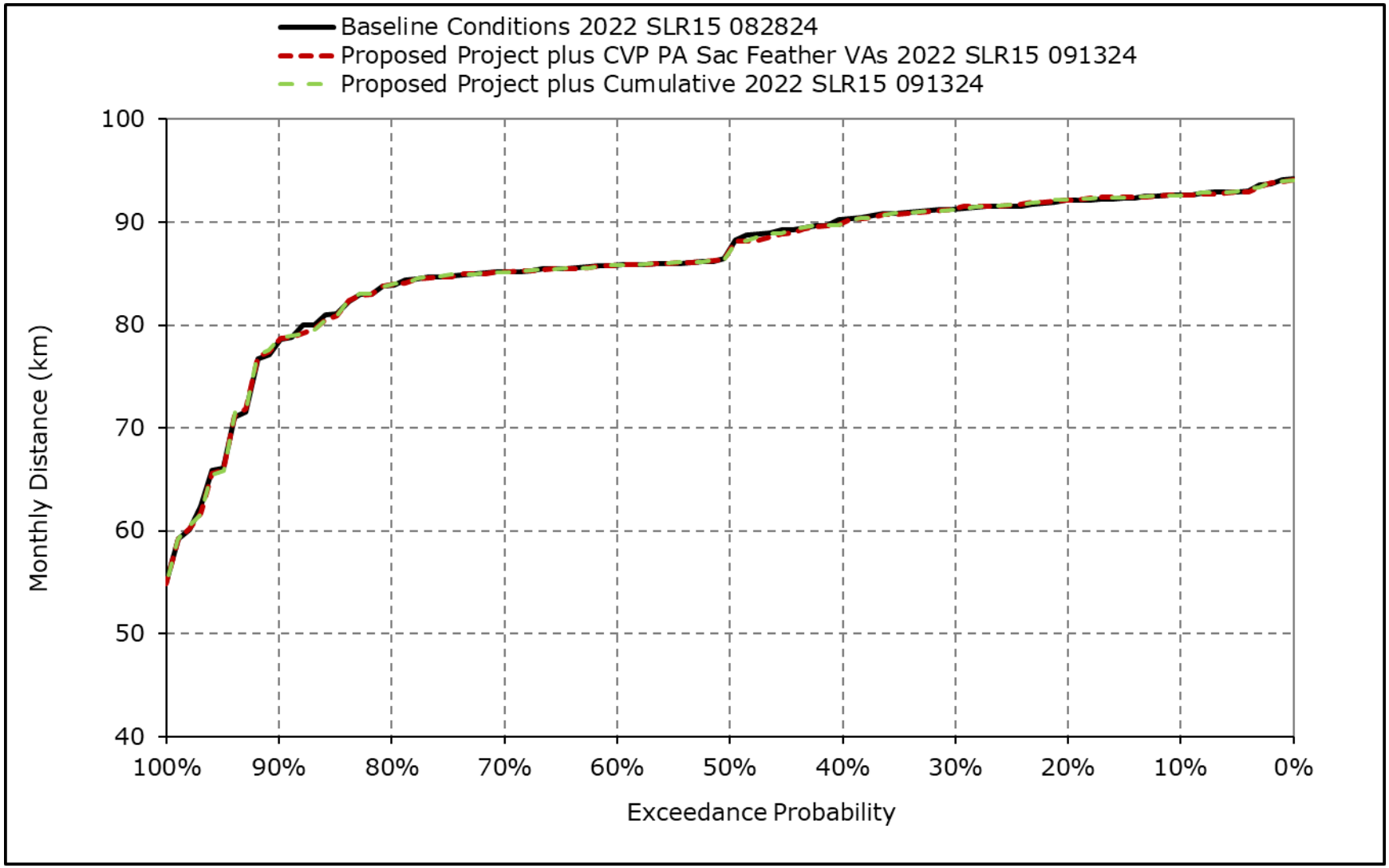
*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999).
*These results are displayed with water year - year type sorting.
*All scenarios are simulated at 2022 Median climate condition and 15 cm sea level rise.

Figure 4H-4-1g. X2 Position, October



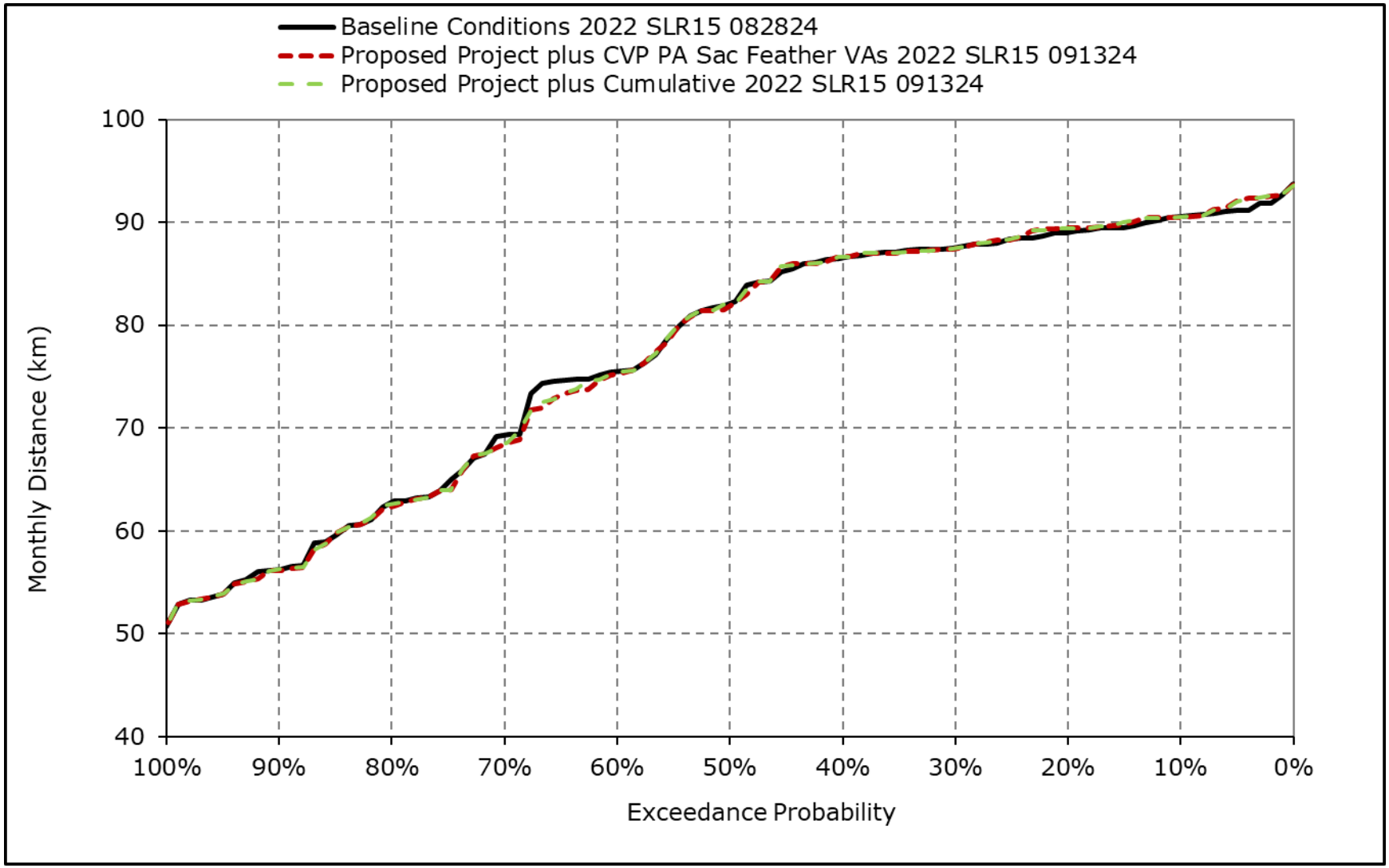
*All scenarios are simulated at 2022 Median climate condition and 15 cm sea level rise.

Figure 4H-4-1h. X2 Position, November



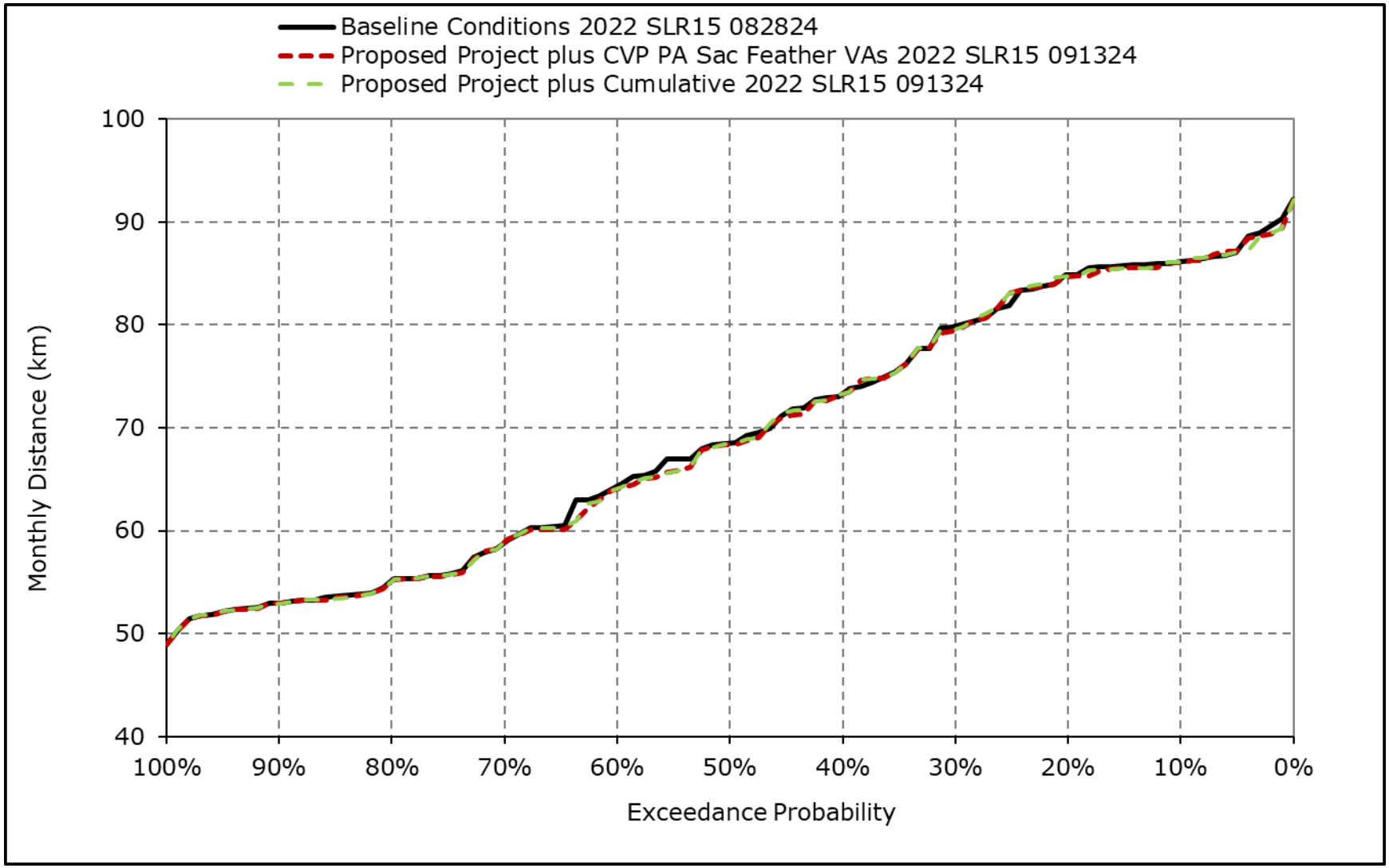
*All scenarios are simulated at 2022 Median climate condition and 15 cm sea level rise.

Figure 4H-4-1i. X2 Position, December



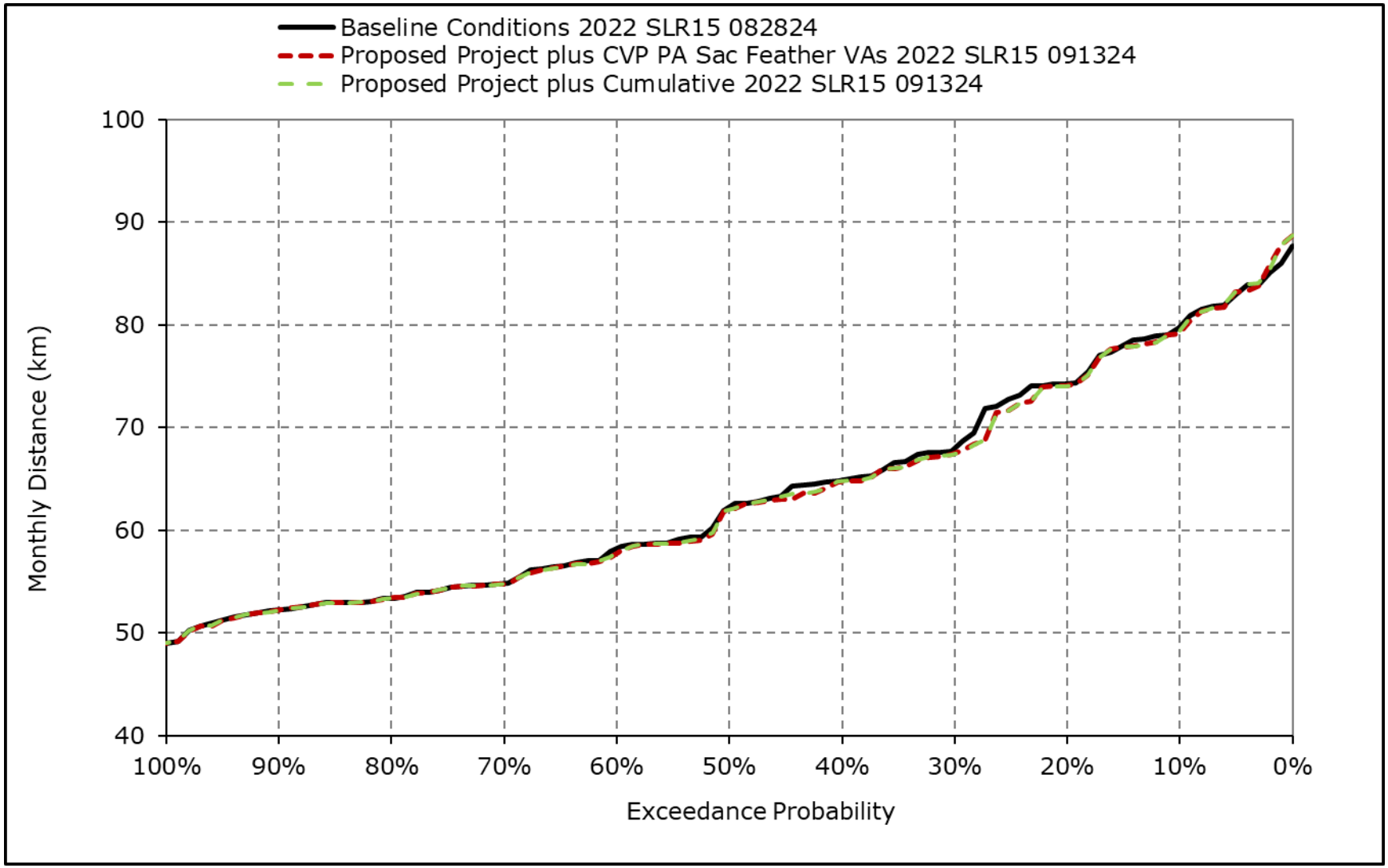
*All scenarios are simulated at 2022 Median climate condition and 15 cm sea level rise.

Figure 4H-4-1j. X2 Position, January



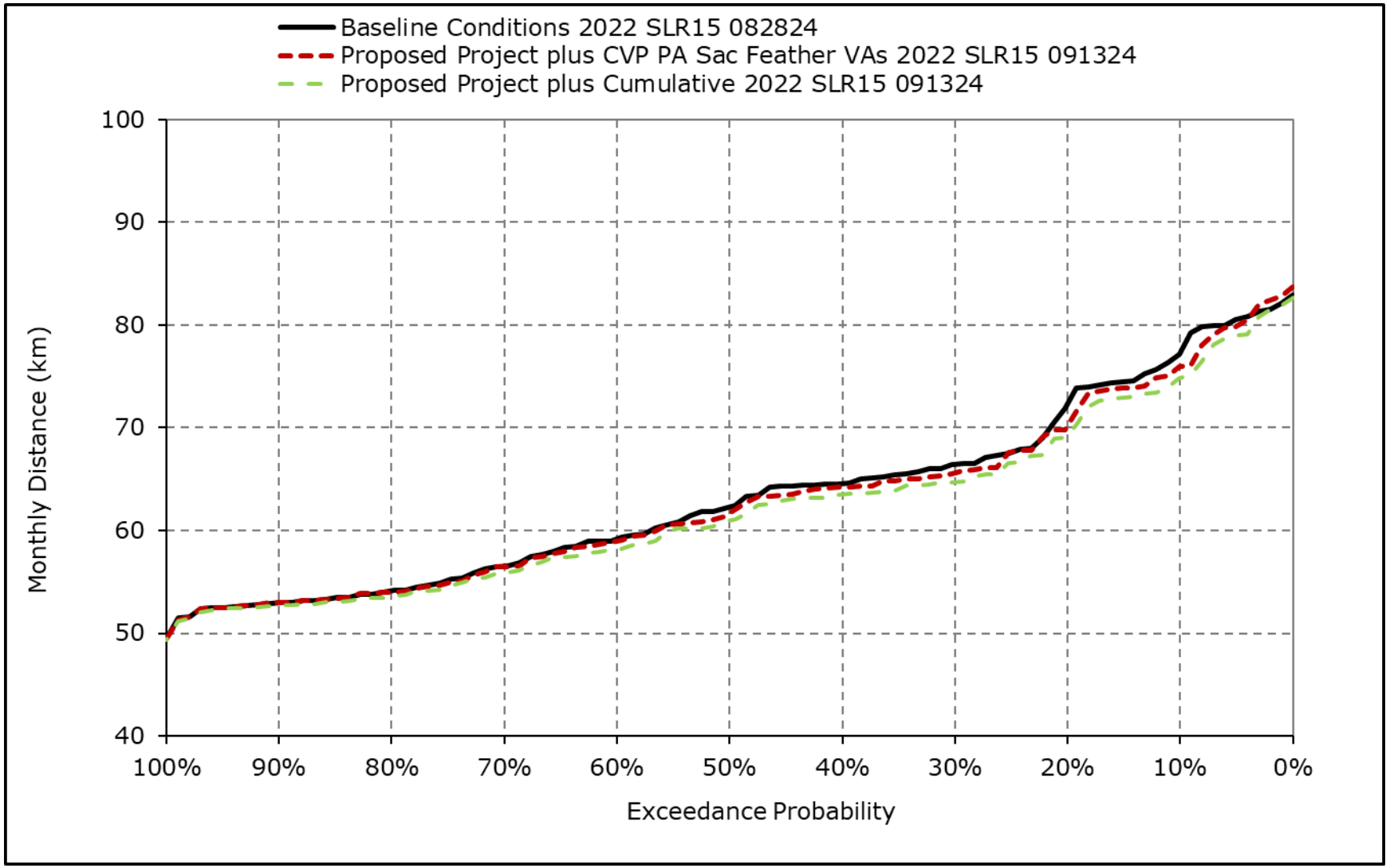
*All scenarios are simulated at 2022 Median climate condition and 15 cm sea level rise.

Figure 4H-4-1k. X2 Position, February



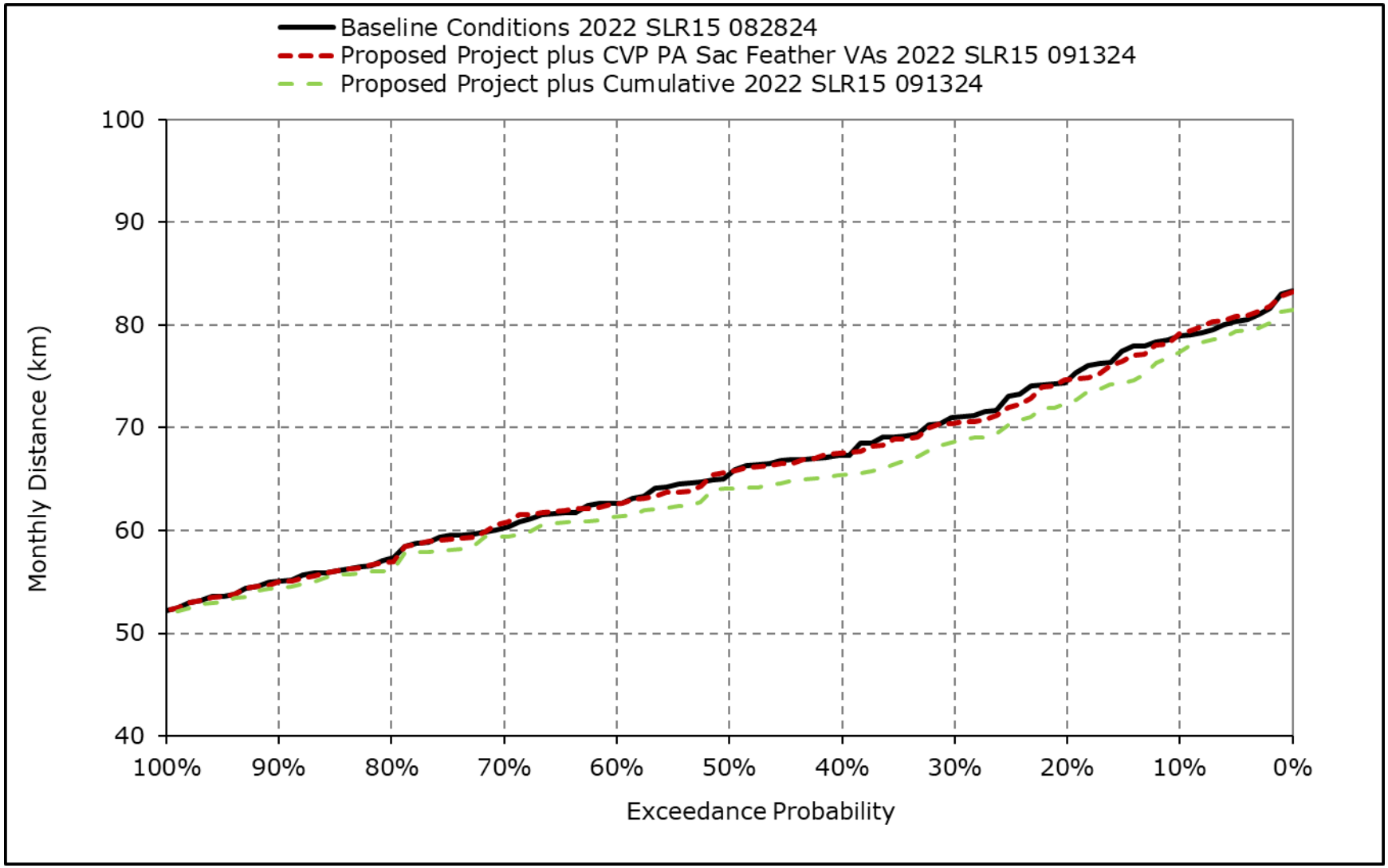
*All scenarios are simulated at 2022 Median climate condition and 15 cm sea level rise.

Figure 4H-4-1l. X2 Position, March



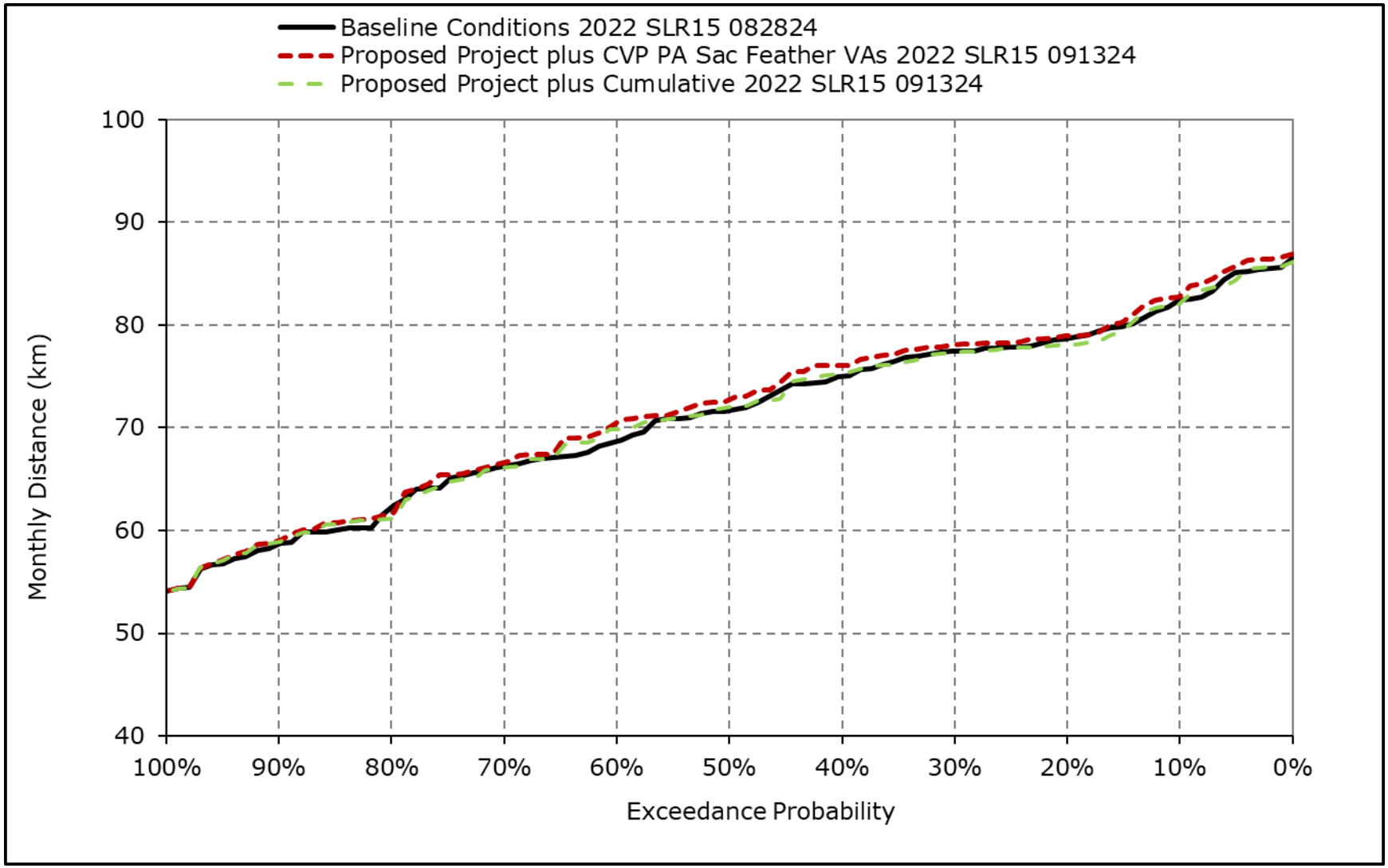
*All scenarios are simulated at 2022 Median climate condition and 15 cm sea level rise.

Figure 4H-4-1m. X2 Position, April



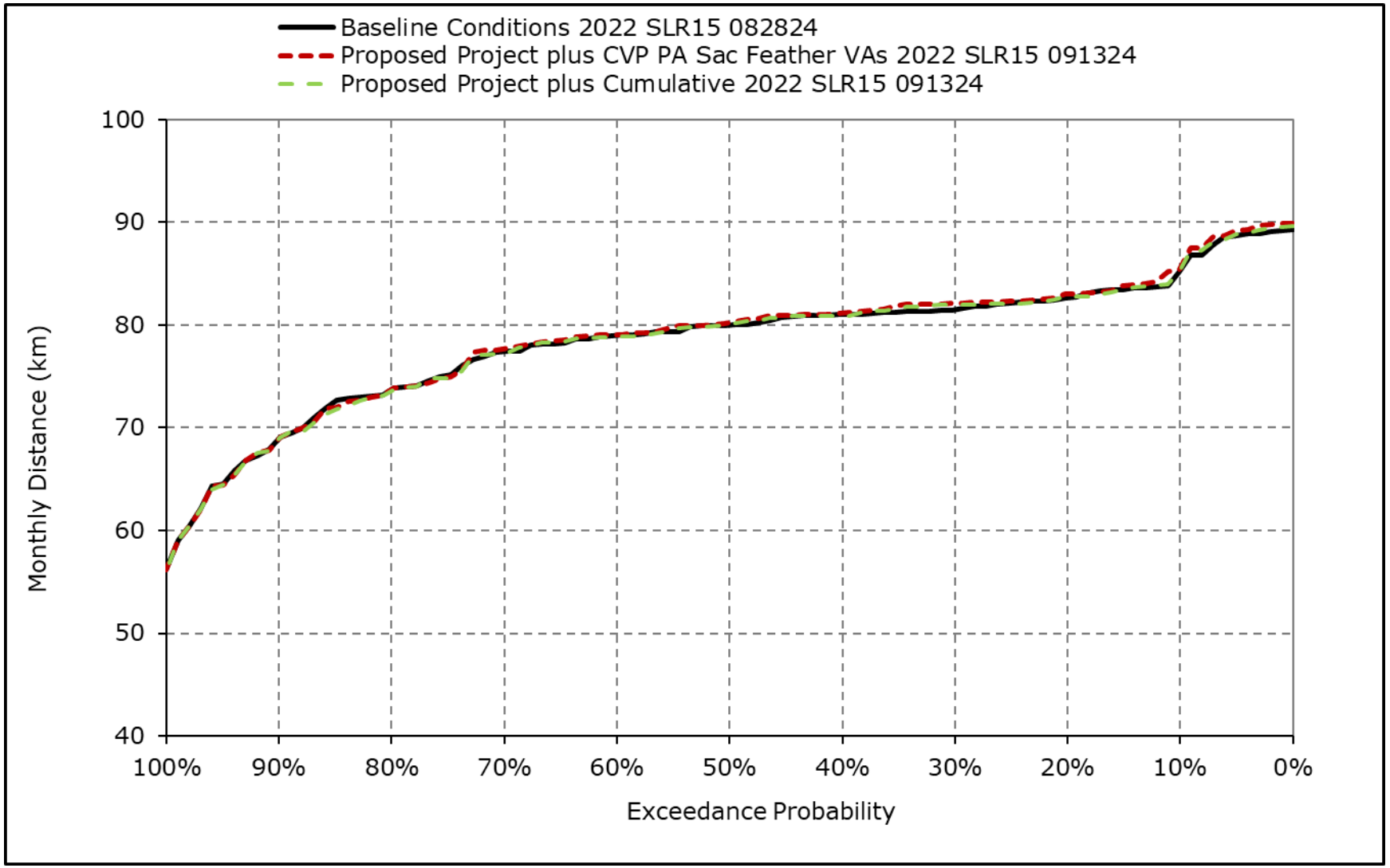
*All scenarios are simulated at 2022 Median climate condition and 15 cm sea level rise.

Figure 4H-4-1n. X2 Position, May



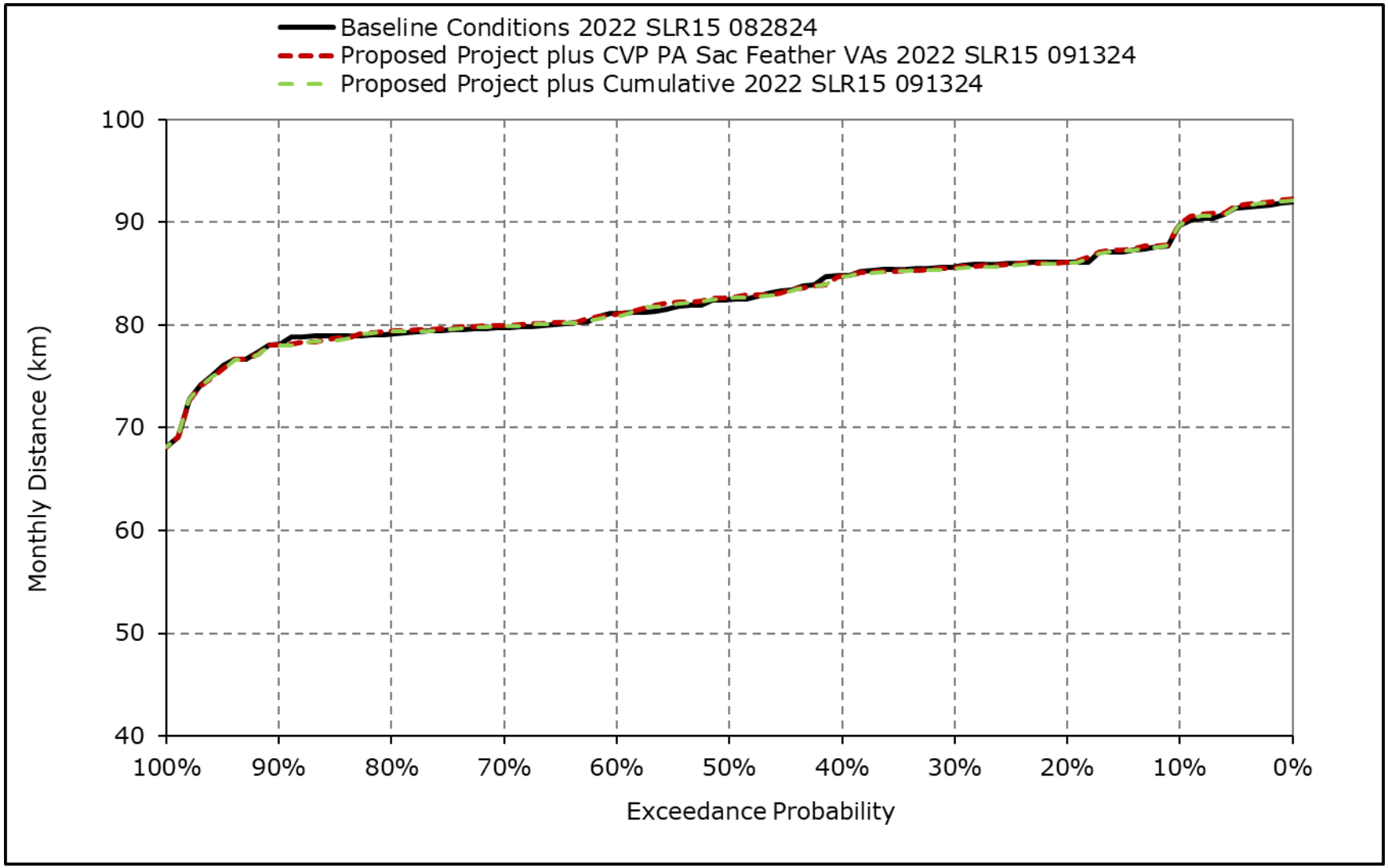
*All scenarios are simulated at 2022 Median climate condition and 15 cm sea level rise.

Figure 4H-4-1o. X2 Position, June



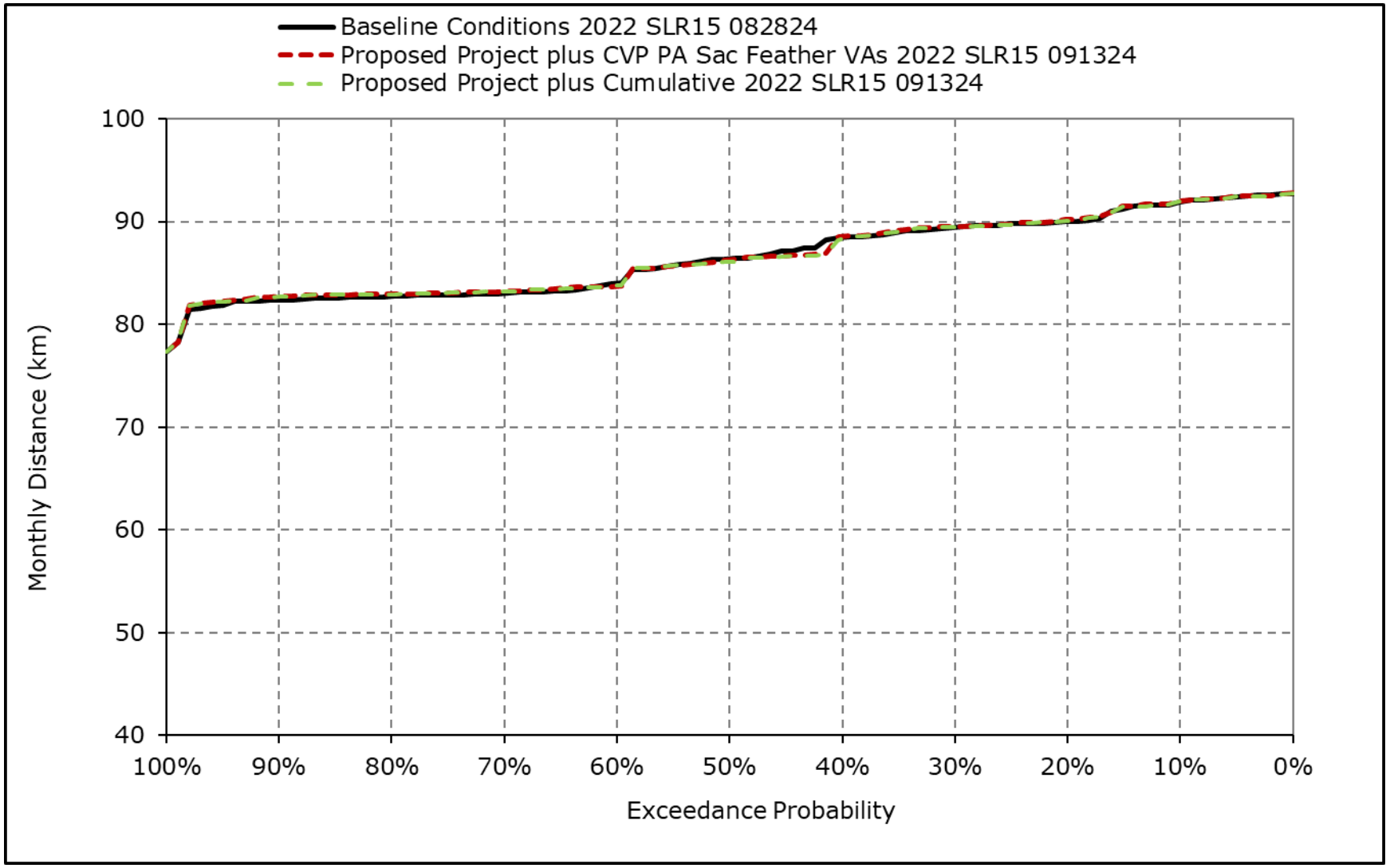
*All scenarios are simulated at 2022 Median climate condition and 15 cm sea level rise.

Figure 4H-4-1p. X2 Position, July



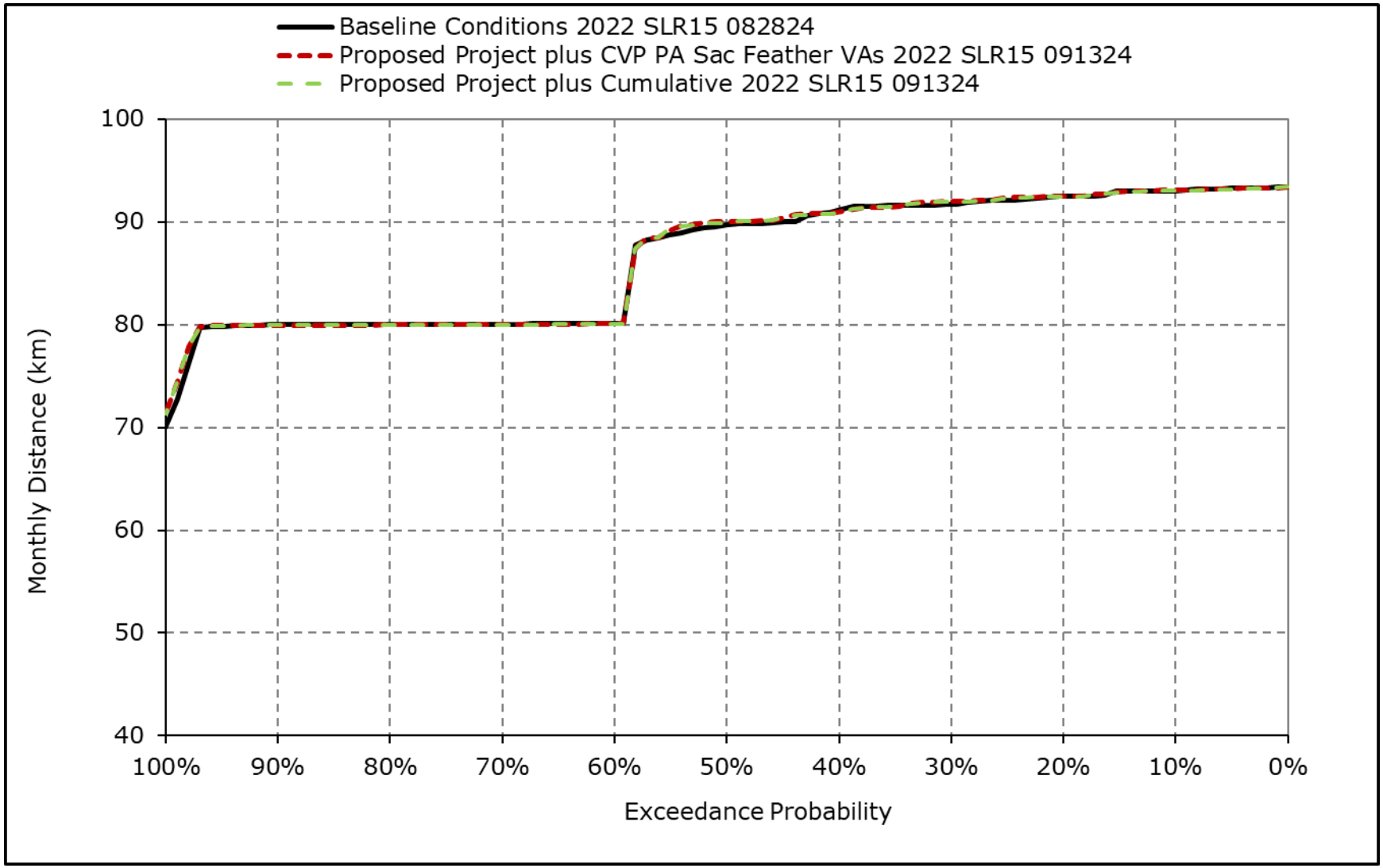
*All scenarios are simulated at 2022 Median climate condition and 15 cm sea level rise.

Figure 4H-4-1q. X2 Position, August



*All scenarios are simulated at 2022 Median climate condition and 15 cm sea level rise.

Figure 4H-4-1r. X2 Position, September



*All scenarios are simulated at 2022 Median climate condition and 15 cm sea level rise.