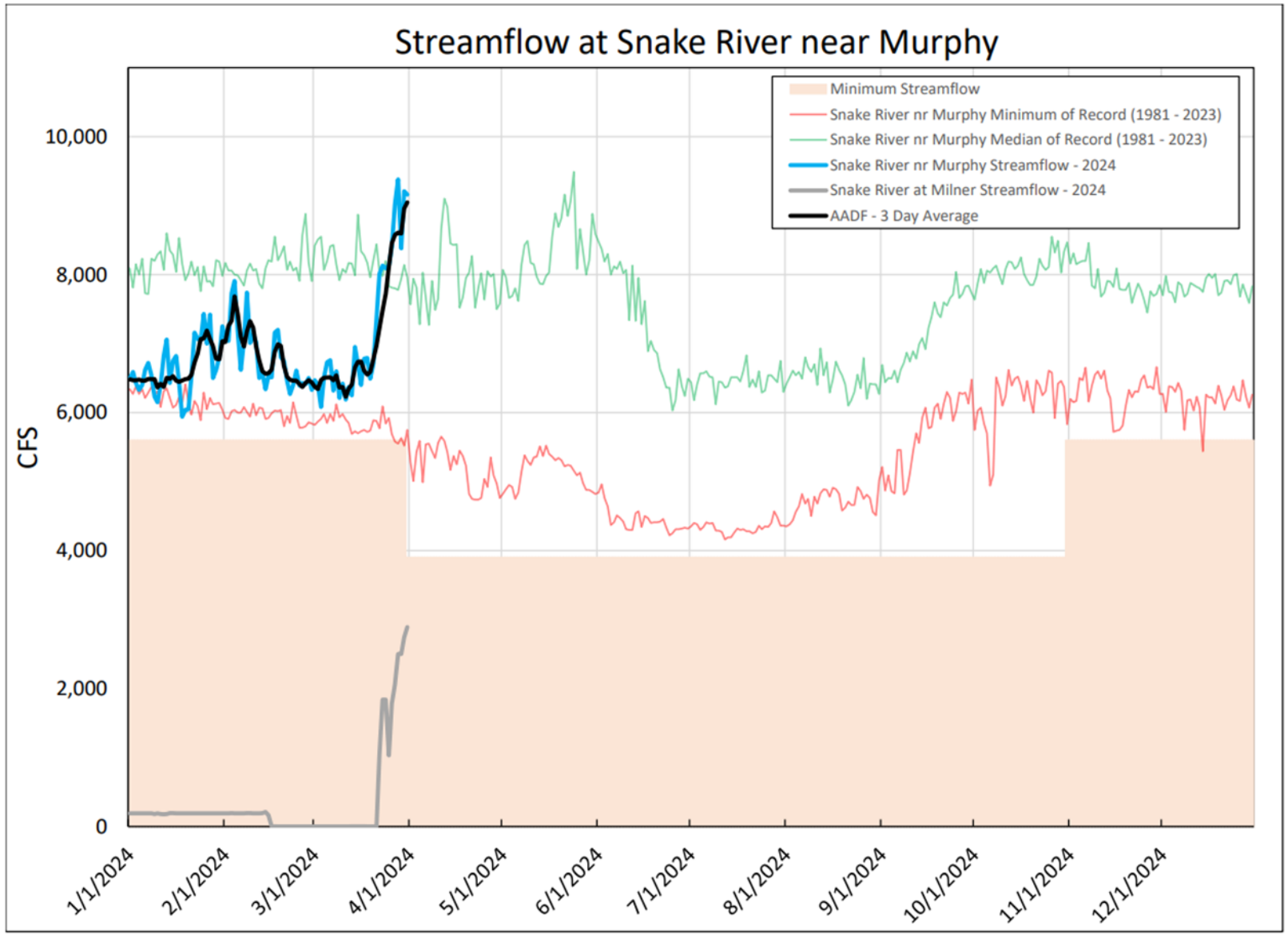
Hells Canyon Complex Operations

Water Supply Meeting

Jen Cuhaciyan

April 12, 2024

Snake River Flow Conditions



April USACE FRM

Summary of Columbia River Basin Flood Risk Management Requirements, 1-Apr **WY 2024**

Issue Date: 05-Apr-2024

1-Apr Water Supply Forecast

Project >>	MCDB	ARDB	LIB	DCDB	HGH	GCL	BRN	DWR	TDA
Apr-Jul, kaf	-	-	-	-	-	-	5659	1865	-
Apr-Jul %-Normal (2)	-	-	-	-	-	-	110%	75%	-
Apr-Jul Change, kaf (1)	-	-	-	-	-	-	-157	-29	-
Apr-Aug, kaf	9469	18540	5036	1730	-	46750	-	-	71691
Apr-Aug %-Normal (2)	85%	84%	83%	85%	-	80%	-	-	80%
Apr-Aug Change, kaf (1)	-542	-1144	-225	-158	-	-1672	-	-	-2224
May-Sep, kaf	-	-	-	-	1279	-	-	-	-
May-Sep %-Normal (2)	-	-	-	-	72%	-	-	-	-
May-Sep Change, kaf (1)	-	-	-	-	-23	-	-	-	-

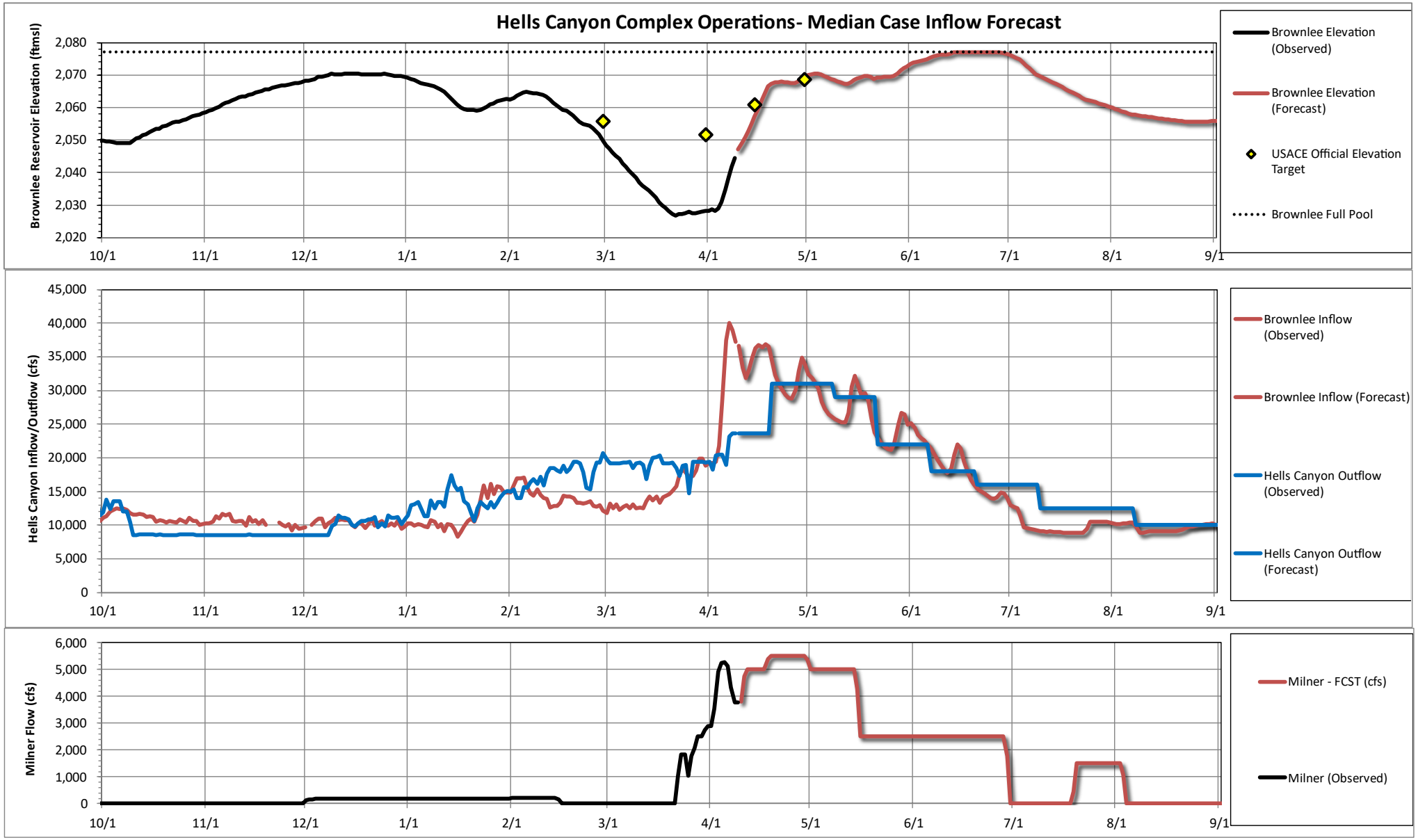
System Draft Requirements (5)

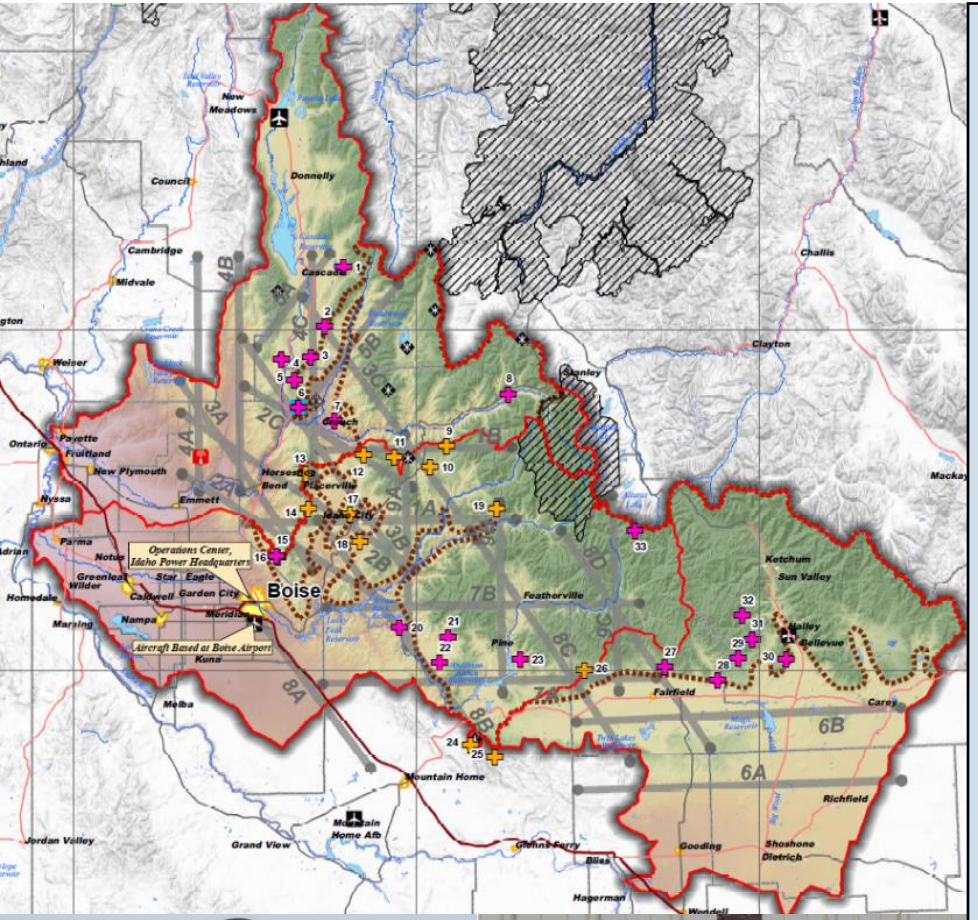
Project >>	MCDB	ARDB	LIB VarQ	DCDB	HGH VarQ	GCL	BRN	DWR Sys (3)
Jan. 31, kaf	915	1034	1757	782	211	0	0	715
Feb. 28/29, kaf	1241	1177	1547	1041	160	0	276	559
Mar. 15, kaf	-	-	-	1158	-	-	-	-
Mar. 31, kaf	2886	2554	1799	1158	148	537	322	458
Apr. 15, kaf	-	-	-	-	123	537	216	348
Apr. 30, kaf	2450	2145	1666	1000	105	541	116	348

System Elevation Requirements (5)

Project >>	MCDB	ARDB	LIB VarQ	DCDB	HGH VarQ	GCL	BRN	DWR Sys (3)
Jan. 31, ft	-	1435.9	2417.6	1844.4	3550.9	1290.0	2077.0	1557.2
Feb. 28/29, ft	-	1434.7	2423.0	1826.2	3553.2	1290.0	2055.7	1567.6
Mar. 15, ft	-	-	-	1817.2	-	-	-	-
Mar. 31, ft	-	1423.3	2416.4	1817.2	3553.7	1283.3	2051.6	1574.0
Apr. 15, ft	-	-	-	-	3554.8	1283.3	2060.8	1580.6
Apr. 30, ft	-	1426.8	2419.9	1829.3	3555.6	1283.3	2068.7	1580.6

WY24 Hells Canyon Complex Operations





WY 2024
Idaho Collaborative Cloud Seeding Program

Central Mountains

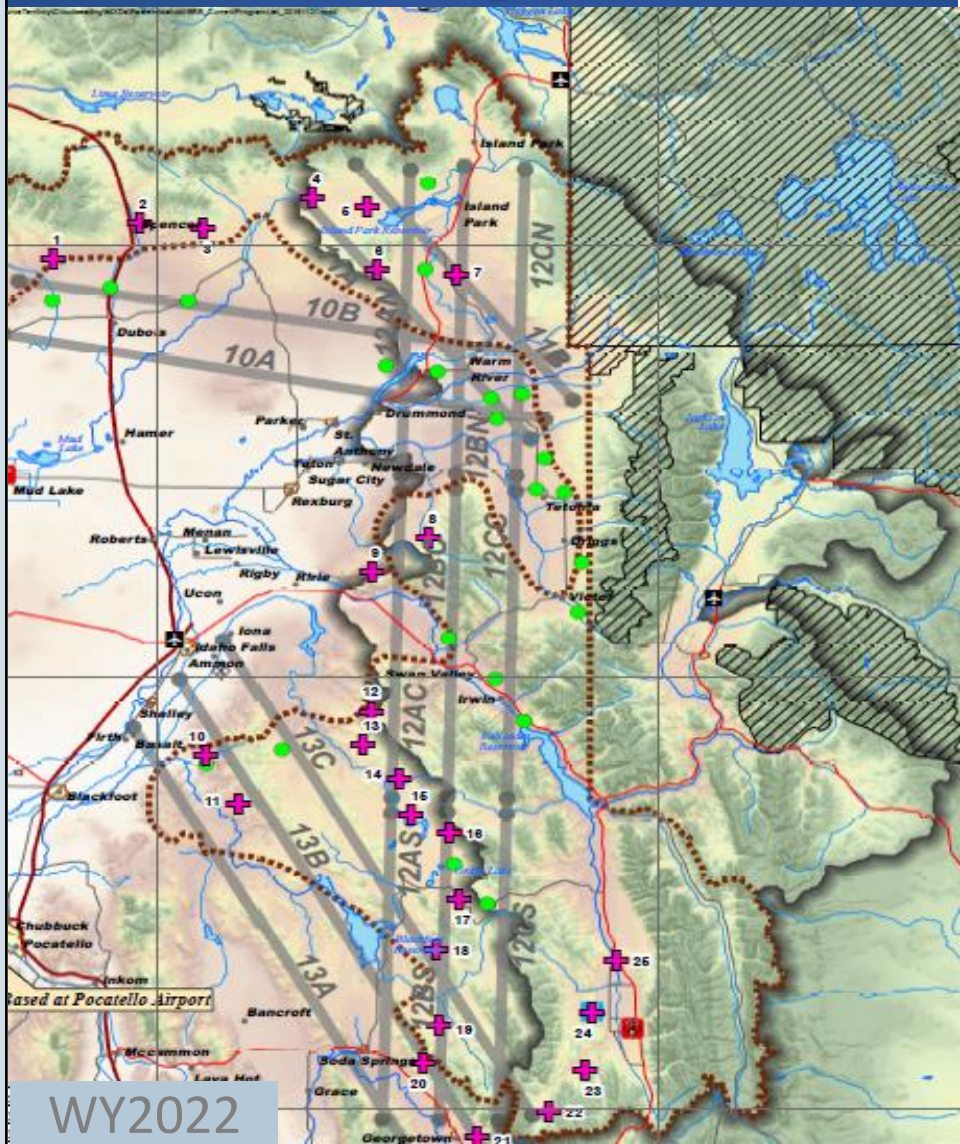
- 32 IPC Remote Ground Generators
- 7 IPC Liquid Propane Generators
- 2 Aircraft

Upper Snake

- 25 IPC Remote Ground Generators
- 1 Aircraft
- 25 Let It Snow Manual Ground Generators

Across the Program

- High Resolution WRF Weather Model
- WRF-WxMod Module
- High Resolution weather instrumentation



WY2022

Cloud Seeding Operations WY 2024

	8 Years of Operation (WY2016-23) Nov-Mar			WY2024 Nov-Mar
	Max	Mean	Min	
Central Mountains				
Number of Generator Hours	5043	2360	417	1590
Number of Flight Hours	268	135	44	80
Number of BIPs	1542	645	119	204
Number of EJs	9535	3954	353	1297
Number of Total Days Where Seeding Occurred	77	48	23	29
Number of Days That Ground Seeding Occurred	66	37	13	21
Number of Days That Airborne Seeding Occurred	50	27	12	16

	8 Years of Operation (WY2016-23) Nov-Mar			WY2024 Nov-Mar
	Max	Mean	Min	
Upper Snake				
Number of Generator Hours	3414	1594	445	1577
Number of Flight Hours	121	55	13	25
Number of BIPs	707	262	13	73
Number of EJs	2391	941	0	520
Number of Total Days Where Seeding Occurred	65	38	18	27
Number of Days That Ground Seeding Occurred	57	33	14	22
Number of Days That Airborne Seeding Occurred	36	19	5	6

Key Points

- Slow start to the seeding season in Nov-Dec has improved during the second half of the WY
- Ground seeding
  - **Below average** in Central Mountains
  - **Around average** in Upper Snake
- Airborne Seeding
  - **Below average** regionwide

Cloud Seeding Operations March 2024

	8 Years of Operation (WY2016-23)			WY2024
	Mar			Mar
	Max	Mean	Min	
Central Mountains				
Number of Generator Hours	657	275	0	273
Number of Flight Hours	34	11	2	10
Number of BIPs	209	52	0	16
Number of EJs	829	206	0	0
Number of Total Days Where Seeding Occurred	9	6	3	6
Number of Days That Ground Seeding Occurred	8	5	0	5
Number of Days That Airborne Seeding Occurred	6	3	1	2

	8 Years of Operation (WY2016-23)			
	Mar			Mar
	Max	Mean	Min	
Upper Snake				
Number of Generator Hours	649	201	4	381
Number of Flight Hours	10	4	0	0
Number of BIPs	24	8	0	0
Number of EJs	17	2	0	0
Number of Total Days Where Seeding Occurred	10	6	1	7
Number of Days That Ground Seeding Occurred	10	5	1	7
Number of Days That Airborne Seeding Occurred	4	2	0	0

Key Points

- Continued active pattern during March
- Ground seeding
  - **Around average** in Central Mountains
  - **Slightly above average** in Upper Snake
- Airborne Seeding
  - **Below average** due to periods of unfavorable flying conditions

Questions?