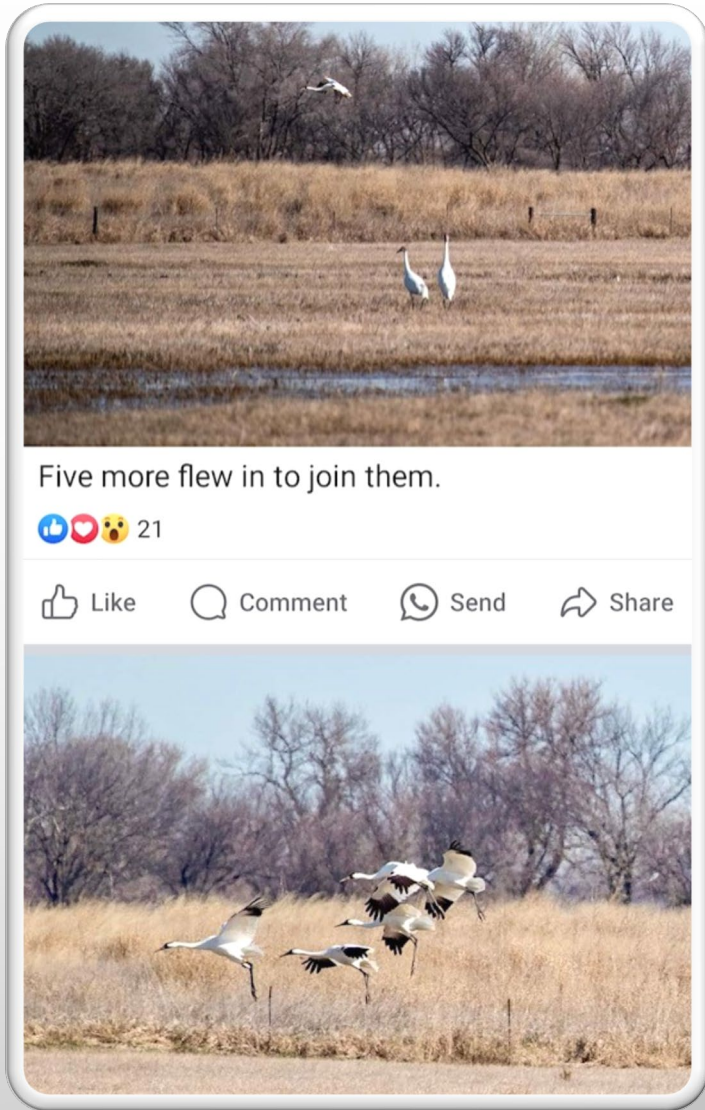


A background image showing several whooping cranes in a shallow, dark body of water. The cranes are mostly in silhouette, with their long legs and necks visible. One crane in the center foreground is slightly more illuminated, showing its white feathers and a distinctive red patch on its head. Numerous translucent, realistic-looking bubbles of various sizes are scattered across the image, particularly in the upper and lower right areas, adding a whimsical or ethereal quality to the scene.

SPRING 2024 WHOOPING CRANE MIGRATION ENVIRONMENTAL ACCOUNT RELEASE

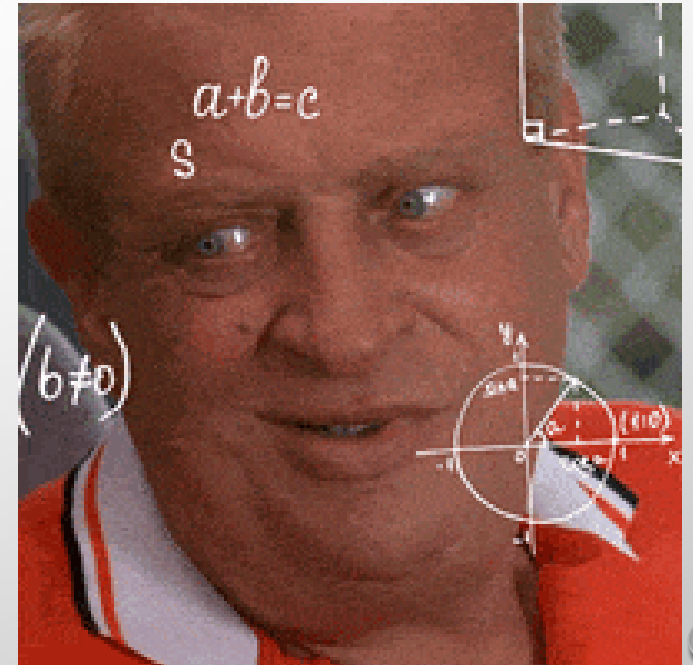
BACKGROUND AND HISTORICAL CONTEXT

- SPRING WC MIGRATION RELEASE LAST CONDUCTED IN 2021 (PARTIAL) AND 2018 (FULL)
- EA ACCOUNT CARRYOVER INTO WY24 HAD SUFFICIENT BALANCE TO CONDUCT GERMINATION SUPPRESSION RELEASE AND SPRING WC RELEASE
- HAD MULTIPLE LOW FLOW (LOCALLY NO FLOW) PERIODS DURING PAST MIGRATIONS
- CHANNEL CONDITIONS GOOD (SUITABLE UNVEGETATED WIDTHS)
- PLATTE BASIN HYDROLOGIC CONDITIONS SUITABLE



STAGE IS SET...

- USFWS DESIRE TO KEEP EA RELEASE MODERATE
- FOCUS ON DURATION (3-WEEK PEAK) AND MAGNITUDE (MODERATE BUT LOWER THAN 2400 CFS TARGET FLOW)
- DESIRE TO ELIMINATE LOW FLOW PERIODS DURING ENTIRE RELEASE, REDUCE CHANGES IN AMPLITUDE (CREST VS TROUGH)
- MET WITH CNPPID- DISCUSSED BASE FLOW CONDITIONS EA WATER ADD TO
- BUT WHAT ABOUT THE DAILY FLUCTUATIONS FROM HYDROCYCLING AND THE REQUIREMENTS OF THE HYDROCYCLING AGREEMENT?



WHY DO WE HAVE A HYDROCYCLING AGREEMENT?

- HYDROCYCLING AGREEMENT INTENDED TO PREVENT SUDDEN, LARGE STAGE INCREASES LIKELY TO FLUSH WHOOPING CRANES
 - WHOOPING CRANES FLUSHED UNDER ADVERSE FLIGHT CONDITIONS (LOW LIGHT, STORMS, ETC.) INCREASE RISK OF ADVERSE EFFECTS
 - FLYING BLIND=BAD



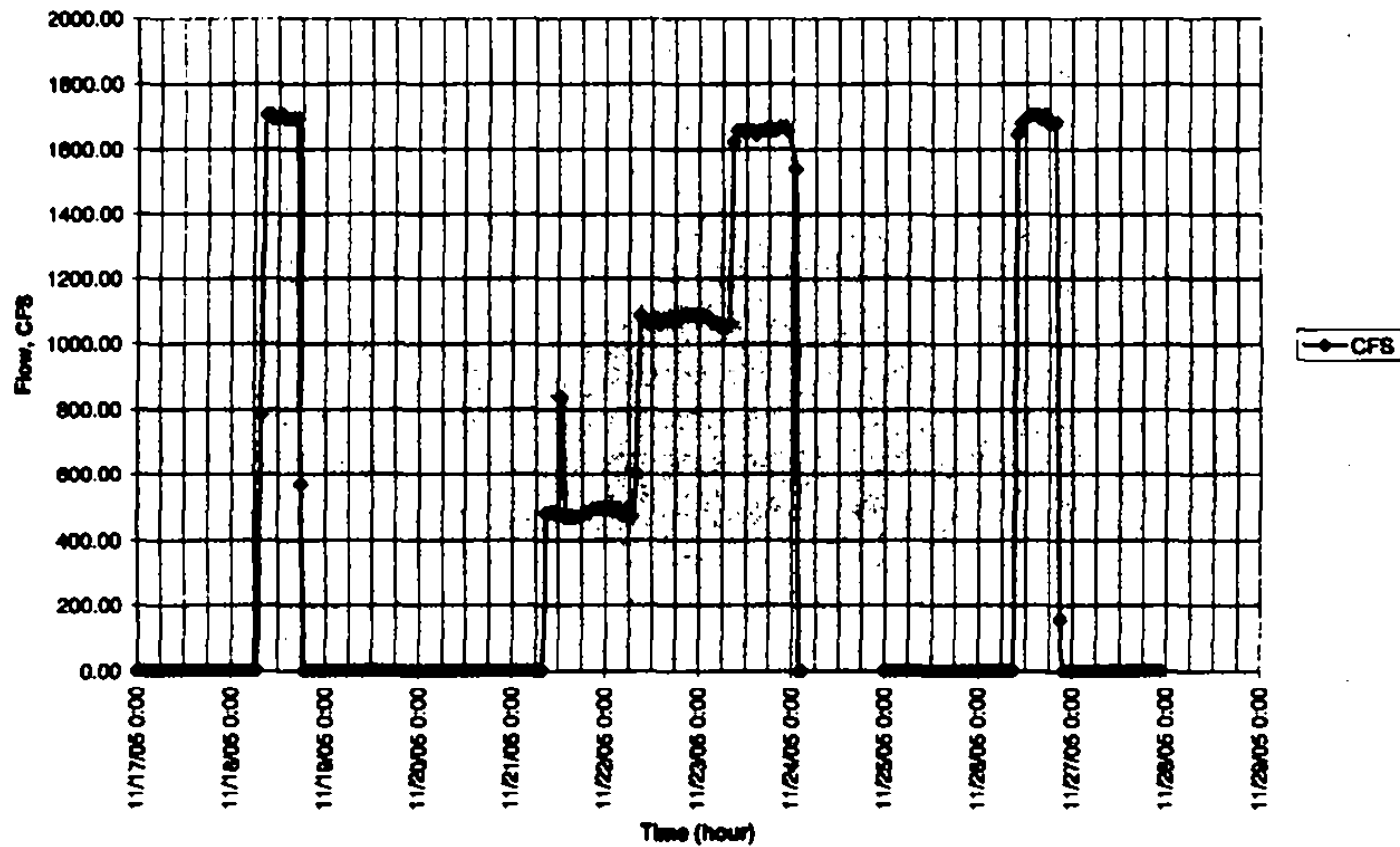
NORMAL HYDROCYCLING OPERATIONS

- OPERATIONAL CONSTRAINTS
 - NON-WC HYDROCYCLING- 0 CFS TO 1700 CFS=PEAK EFFICIENCY WHEN DAILY AVERAGE BELOW 1400 CFS
 - NO REQUIREMENTS RELATED TO STAGE INCREASES
 - CNPPID'S EQUIPMENT ALLOWS FOR RETURN FLOW RATES OF 0 CFS, 450 CFS, OR ANYWHERE FROM 1,050 CFS TO 2,100 CFS

HYDROCYCLING AGREEMENT OPERATIONS

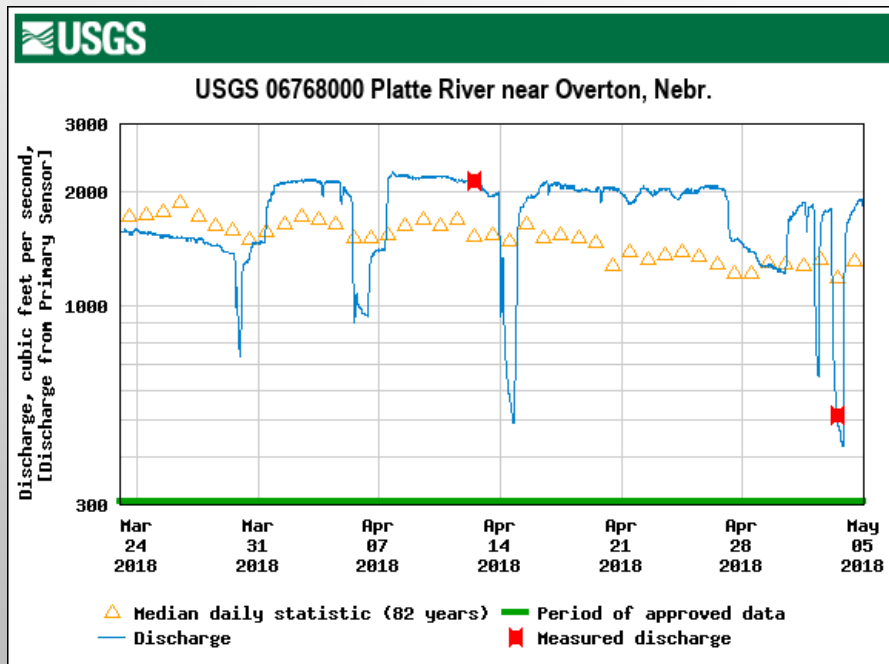
- HYDROCYCLING AGREEMENT/BO DURING WC SEASON
 - MARCH 18-APRIL 30 AND OCTOBER 17-NOVEMBER 10
 - CAN ADJUST DAILY J-2 RELEASES BETWEEN 5-10AM...
 - DAY 1 - FROM 0 CFS TO 450 CFS (25% WGP)
 - DAY 2- IF AT 450 CFS, FROM 450 CFS TO 1050 CFS (50% WGP)
 - IF AT 1050 CFS, FROM 1050 CFS TO ANYTHING UP TO 1750CFS (75% WGP)
 - NO MODIFICATION TO RATES OF DECLINE (E.G. 1750 CFS BACK DOWN TO 0 CFS)

WHAT DO THESE DIFFERENCES LOOK LIKE?

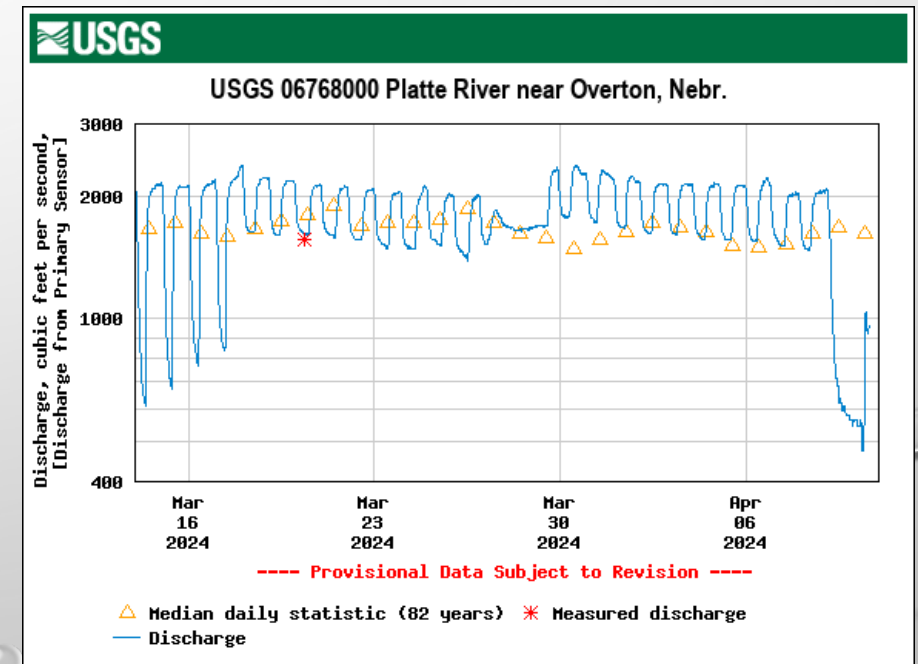


PROBLEM... MEET SOLUTION

- USFWS APPROACHED CNPPID
- CAN EA WATER COULD BE USED TO FILL IN THE GAPS ON THE LOW END?
 - OPERATE BETWEEN FLOW STAGES BELIEVED TO CONSISTENTLY CREATE HIGHLY SUITABLE WC HABITAT
 - CNPPID MODELED MULTIPLE RELEASE SCENARIOS FOR A 3-WEEK PERIOD
 - CONSENSUS ON OPERATING BETWEEN STEPS 2 AND 3 OF AGREEMENT (1050 CFS AND 1650 CFS)



2018 Before, During, After EA Release



2024 Before, During, After EA release

AMOUNT AND TIMING

- **USFWS, EDO, CNPPID, NPPD COLLABORATIVE EFFORT**
- DAILY AVERAGE OF ~700 CFS EA WATER NEEDED TO FLUCTUATE J-2 RELEASES BETWEEN 1050 CFS AND 1650 CFS (TEMPORARY INCREASE TO 900 CFS TO OFFSET CUTS FOR ELWOOD DIVERSION)
- NPPD OPERATIONAL FLEXIBILITY INCORPORATED
- ~35,700 AF OF EA USED DURING 3-WEEK PERIOD
 - AVERAGE DAILY RATE OF 667 CFS (INCLUDING RAMP UP/DOWN)
- INITIAL SCHEDULE MOVED UP TO ALIGN WITH PREDICTED WC MIGRATION PEAK
 - LAST TWO WEEKS OF MARCH, FIRST WEEK OF APRIL- MAJORITY OF EA WATER IN THE AHR

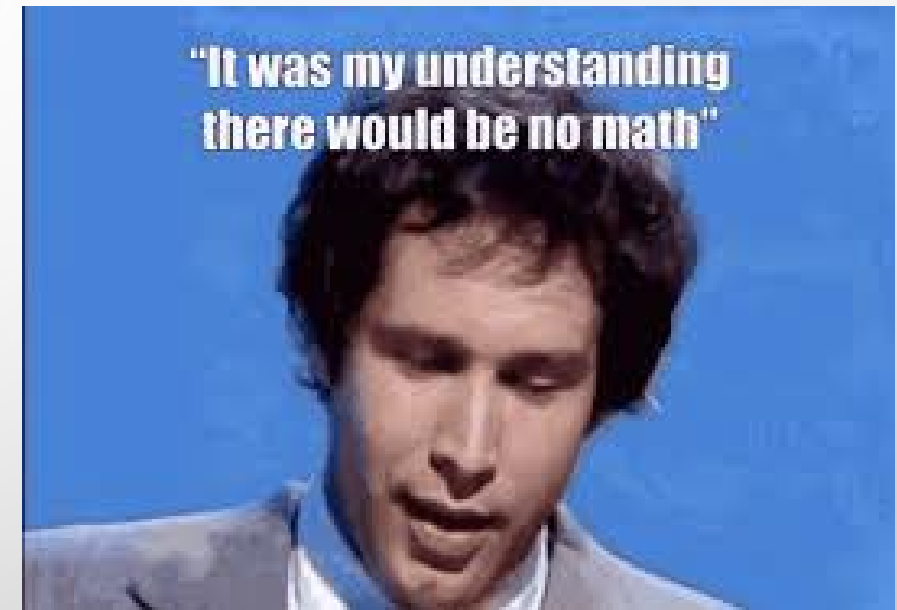
RESULTS?

- WHAT MOST ARE NOW REFERRING TO AS “THE GOAT” OF EA RELEASES

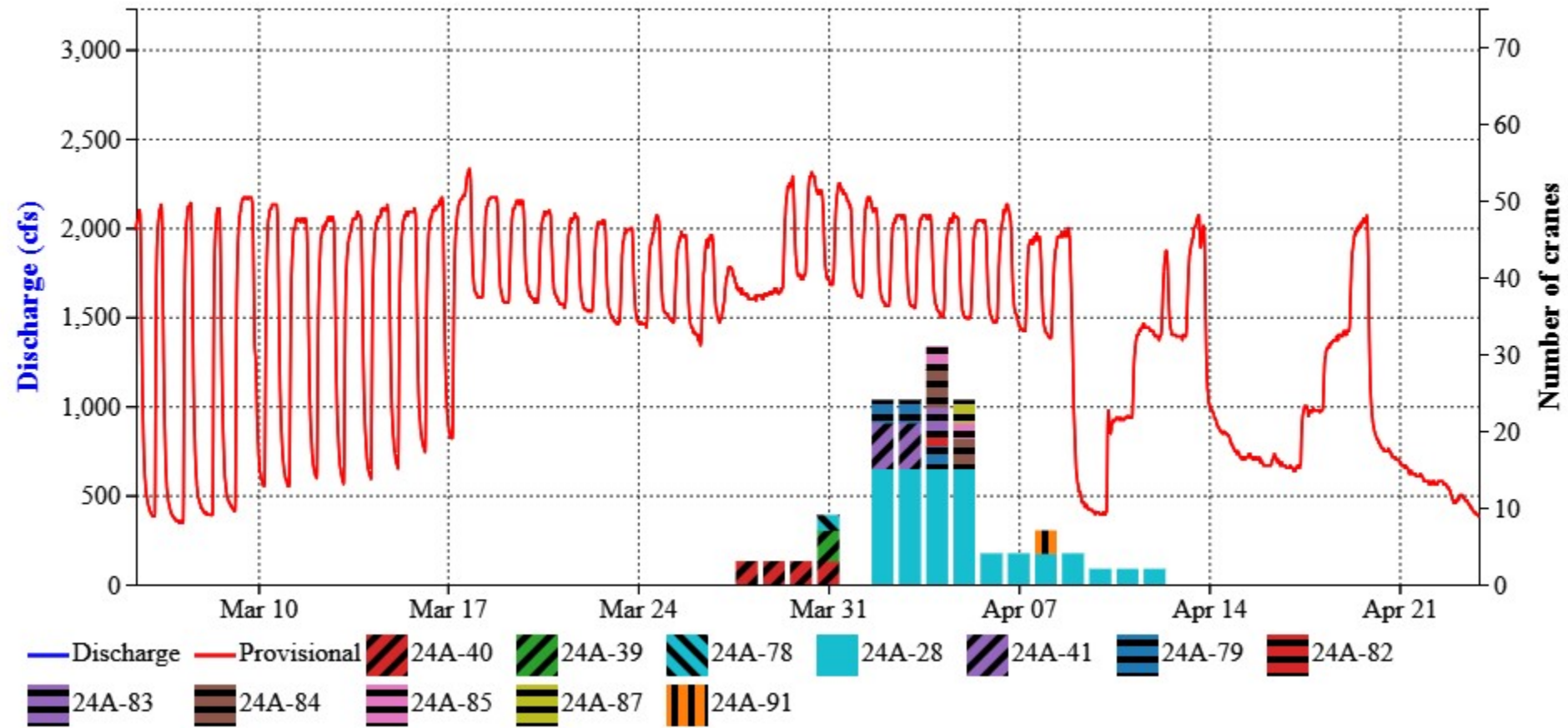


THE DATA

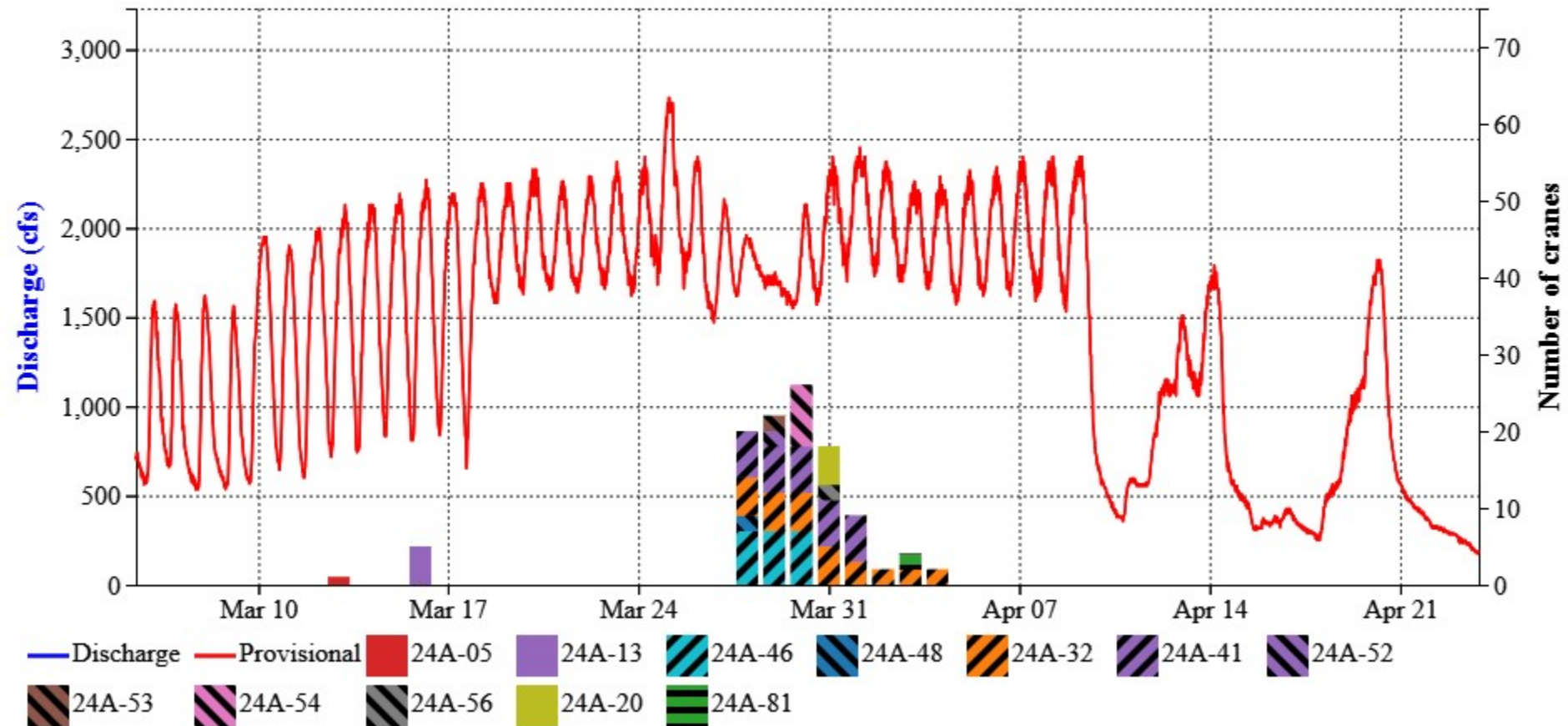
- WEATHER AND SOUTH PLATTE FLOWS COOPERATED
- TIMED PEAK MIGRATION PERFECTLY
- NEW SINGLE SEASON RECORD FOR PLATTE WC USE!!!
- ~NEARLY 200 WC'S, ~90% OF THEM DURING 3-WEEK EA RELEASE
- ABSOLUTE LOGISTICAL AND STATISTICAL NIGHTMARE FOR USFWS/EDO TRACKING WHOOPING CRANES...



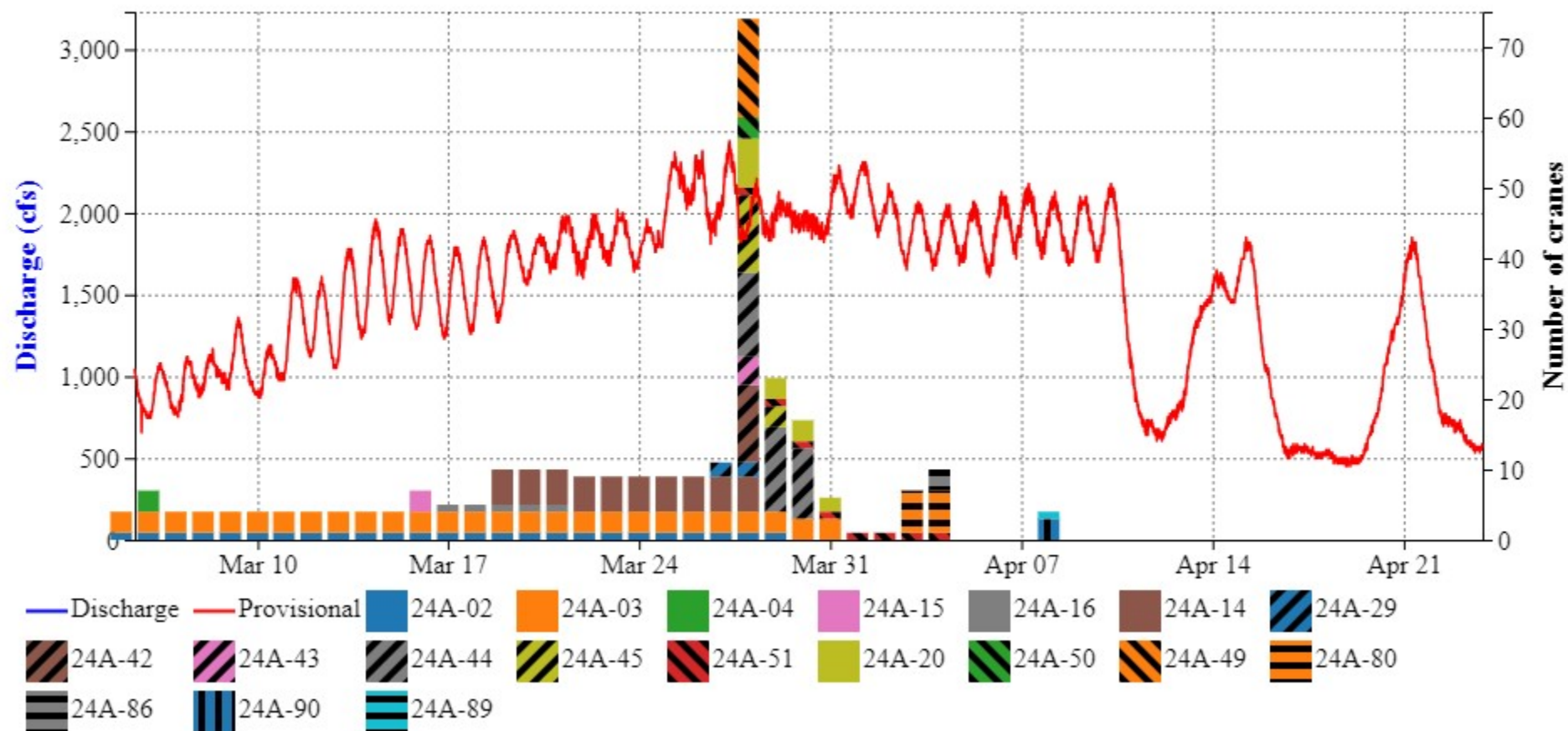
2024/SP Overton



2024/SP Kearney



2024/SP Grand Island



ADDITIONAL THOUGHTS

- SPRING WC EA RELEASE IN 2018 (FULL), AND 2021 (PARTIAL)
- PRIOR WC EA RELEASES FOCUSED ON ACHIEVING TARGET FLOW(2400 CFS) OVER LONGER MIGRATION WINDOW
 - PERIODS OF ZERO CFS J-2 RELEASES AND ENTIRE STAIRSTEP CYCLE
 - 2018 FULL EA RELEASE USED 52,300 AF
- 2024 EA PRIORITIZED REDUCING OVERALL MAGNITUDE OF FLUCTUATIONS AND REDUCING INSTANCES OF ZERO CFS RELEASES FROM J-2
 - J-2 RELEASE + BASE FLOWS CONSISTENTLY FLUCTUATED IN THE RANGE OF HIGHLY SUITABLE HABITAT (1600 CFS-2200 CFS IN AHR)
 - AVERAGE DAILY FLUCTUATIONS AT OVERTON ~600 CFS
 - MAXIMIZED EFFICIENCY IN AMOUNT AND TIMING (35 KAF DURING ~3-WEEK PEAK OF MIGRATION)



SPECIAL THANK YOU...

- CNPPID
- EXECUTIVE DIRECTOR'S OFFICE
- NPPD

