

# Implementation of the Whooping Crane Monitoring Protocol Fall 2013



## FINAL REPORT

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# **Implementation of the Whooping Crane Monitoring Protocol Fall 2013**

**Prepared by  
AIM Environmental Consultants and  
Western Ecosystems Technology, Inc.**

**For  
Committees of the  
Platte River Recovery Implementation Program**

**18 March 2014**

## **Summary**

The team of Western Ecosystems Technology, Inc. (WEST) and AIM Environmental Consultants (AIM) implemented the *Whooping Crane Monitoring Protocol - Migrational Habitat Use in the Central Platte River Valley* (version dated 10 September 2013) during the fall 2013 migration season. Only observations made during the survey period (October 9- November 10) are contained in this report. Three crane groups representing 3 individuals were identified during systematic aerial surveys; some of these groups may represent the same individual cranes located on different days. A total of 3 unique individual cranes were located on the central Platte River during the fall 2013 monitoring period. Following are the detailed methods and results of the seasonal study.

## **Study Area and Methods**

The study area was the Platte River reach between U.S. Highway 283 (near Lexington) and Chapman, Nebraska. This reach was about 90 miles long and included an area extending 3.5 miles either side of the outermost banks of the Platte River. Field work and aerial surveys were conducted from 9 October through 10 November 2013. Observations of Whooping Cranes outside the survey period are not included herein. Data sheets were provided by the PRRIP Executive Director's Office and all data were entered into a web-based Microsoft SharePoint database being developed for the PRRIP by Riverside Technology, Inc.

Three air services were contracted and aerial surveys were conducted along specified routes near sunrise as weather permitted. Flights were initiated no earlier than 30 minutes before sunrise and typically were completed within 2 hours. Start times were delayed for up to 2 hours when weather/visibility conditions dictated. Flights were cancelled due to unsafe weather. Cessna 172's were equipped with GPS units and each had two observers to conduct the surveys. Waypoints for each survey route were programmed into the GPS units onboard the aircraft. Surveys were flown at an altitude of 750' and at a speed of about 100 mph.

The study area was divided into two legs. The east leg surveyed the Platte River reach between Chapman and the Minden (Highway 10) bridges and the west leg surveyed from the Minden to the Lexington (Highway 283) bridges. Each survey began flying upstream (east to west) along the south side of the main river channel with both observers looking out the right side of the aircraft. This provided optimum light conditions such that observers looked away from the rising sun thereby minimizing glare off reflective surfaces. Start points were alternated for each leg to address the concern that one end of the river transect would always be flown earlier than the other end. On the east leg, day one the survey began at Chapman, flew the river west (transect 0RE) to Minden then flew a primary targeted wetland return transect (PWRT) back to Chapman then flew a secondary targeted wetland return transect (SWRT) from Chapman to Highway 34. Day two began at Wood River, flew the river to Minden, returned along a primary targeted wetland return transect back to Chapman, then flew the rest of the river transect from Chapman to Wood River, then flew a secondary targeted wetland return transect from Wood River to Highway 34. The start points for the west leg were Minden and Odessa bridges. Day one began at Minden, flew the river (transect 0RW) west to Lexington then flew a primary targeted wetland return transect (PWRT) back to Minden. Day two began at Odessa, flew the river to Lexington, returned along a primary targeted wetland return transect back to Minden, then flew the rest of the river transect from Minden to Odessa, then flew a secondary targeted wetland return transect (SWRT) from Elm Creek to Minden. All primary and secondary targeted wetland transects were flown with observers looking out opposite sides of the aircraft. Fall 2013 surveys were the first season where primary and secondary return transects were flown instead of the seven fixed return transects at 1, 2, and 3 miles north and south of the main channel as well as one directly over the main channel.

Prior to the flight, the air crew was notified when Whooping Cranes were reported by the public to be within the survey area. The observers recorded whether they were aware or not aware of the presence of Whooping Cranes beforehand on the aerial observations form. Four ground observers were stationed along the survey routes. Communication between the ground observers and the aircraft was accomplished through the use of two-way radios. In the event of a possible Whooping Crane sighting by the aircrew, the ground person nearest the sighting was contacted and immediately dispatched to the location in an effort to confirm the identity of the white object. Efforts were made to photograph Whooping Cranes from the air using Nikon D90 digital cameras. In addition, a GPS reading of the location was taken by the air crew.

If a Whooping Crane was located by ground personnel, habitat use and activity monitoring commenced. Activity monitoring of the Whooping Crane or of a “focus” bird when more than one individual was present, was recorded every 15 minutes as one of the following categories: courtship, preening, defensive, feeding, alert, resting, or other activity as defined by the observer. These observations were continuous until the group was either lost from view or went to roost for the night. If a group was lost, observers spent a minimum of 2 hours attempting to re-locate the group. After the two hours of searching the ground personnel coordinated with the EDO to determine if additional ground or air searching was warranted. Each Whooping Crane sighting was assigned a unique number and later compared with the U.S. Fish and Wildlife Service’s (USFWS) sighting records in Grand Island.

Whooping Crane movements, behavior, and diurnal habitat use were recorded when possible. All monitoring activities followed USFWS and Nebraska Game & Parks Commission guidelines to avoid disturbing the cranes. Landowner permission was obtained prior to entering any private property.

Whooping Crane decoys were placed at 10 riverine, 10 wetland, 10 cornfield, and 10 lowland grassland locations by personnel from the Executive Director’s Office for the purposes of determining aerial survey detection rates. The air crew did not know when or where the decoys were placed. Decoys were placed prior to the flights and only ground crew personnel were notified of their location. Observations of Whooping Crane decoys by the aircrew were reported to the ground crew for confirmation.

Topographic profiles were measured at Whooping Crane roost sites using a Trimble GeoXH6000 GPS. Three parallel transects 25m apart were established perpendicular to the general flow of the river at each site such that the middle transect crossed the defined crane use location. End points were determined when an obstruction greater than 1.5 m in height was encountered such that it formed a visual barrier to a crane. Photographs were taken from the roost site showing conditions upstream, downstream, left bank, and right bank. A laser level was used to obtain relative riverbed and water surface elevation data. Stream flow data were collected from the U.S. Geological Survey (USGS) gauging stations located at Overton, Kearney, and Grand Island. Leica laser rangefinders were used to measure the length of sandbars and distance to visual obstructions >1.5m above the water surface. If a crane group or groups used a roost site for multiple days, a single profile was collected to represent that site.

## Results

### *Summary of Observations*

Table 1 depicts AIM’s assigned crane group identification numbers along with the Use Site ID when applicable, date, number of cranes, location at the time of the initial sighting, and the type of sighting. Multiple identification numbers may represent a single crane group (see Table 9).

Table 1. Crane Group ID numbers and location of initial observations of each group.

ID #	Use Site	Date	# of birds	UTMx	UTMy	Type of Sighting
2013FA	ID					
1	1	11/3	2	537660	4511442	Systematic
2	2-3	11/4	2	529874	4508460	Systematic
3	4	11/10	1	540874	4512436	Systematic

## ***Aerial Survey.--***

### CONFIRMED WHOOPING CRANE SIGHTINGS-

A total of 3 Whooping Crane groups totaling 3 individuals was located during aerial surveys. These 3 crane groups were monitored for 3 days.

Of a possible 33 morning flights scheduled per leg, the East Leg (Chapman – Minden) completed 28 (85%) flights while the West Leg (Minden – Lexington) completed 29 (89%). Adverse weather resulted in flight cancellations or delayed start times. Of the 57 total flights, two flights were delayed 10-15 minutes, 12 flights were delayed 5-10 minutes, and the remaining 43 flights were not delayed.

### INDEX OF USE-

We completed 57 (86%) aerial survey transects out of 66 river transects (OR) scheduled (1 transect per flight). Three Whooping Crane sightings were made on these transects (note these consisted of 3 Whooping Crane groups). This resulted in an index of use (frequency of occurrence) of 0.053 sightings per river transect. Fifty-seven of 66 (86%) primary wetland return transects (PWRT) were flown with 1 Whooping Crane sighting. This resulted in an index of use of 0.018 sightings per primary return transect. Forty-two of 49 (86%) secondary wetland return transects (SWRT) were completed with 1 Whooping Crane sighting (index of use= 0.024 sightings per secondary return transect). All sightings occurred on the East Leg.

### OPPORTUNISTIC FLIGHTS-

We conducted three opportunistic flights that totaled about 14 minutes. Two opportunistic Whooping Crane sightings (ID# 01) occurred; one prior to the start of the systematic transect and the other when the plane deviated from the return route to confirm presence of Whooping Cranes. Both of the sightings occurred on November 3. On November 4, the plane deviated from the return transect to confirm Whooping Cranes but did not detect them. No additional flights were deployed at other times of the day.

## ***Opportunistic Locates.—***

Reports received from the public were forwarded to AIM for a follow-up. Those reports are summarized below.

On October 17, we received a report from Dave Baasch of 1 Whooping Crane on the Ducks Unlimited property near Elm Creek. We began a ground search which was terminated when it was realized that the sighting was of a decoy.

On November 3, Greg Wright received a report of 3 Whooping Cranes in flight near the Trust's headquarters east of the Alda Road. A ground search resulted in no findings.

At dusk on November 10, Greg Wright saw 1 Whooping Crane flying with Sandhill Cranes near the Crane Trust headquarters east of the Alda Bridge.

***Use-Site Characteristics, Diurnal Movements, and Activity.--***

**FLOW-**

Streamflow measured at the USGS gauging stations located near Grand Island, Kearney, and Overton was well above the median streamflow for each site during the survey (Figures 3-5). An unusual flood event occurred in late September which impacted flows at the initiation of this survey. Note all flow data are provisional and subject to revision. Table 2 depicts the minimum and maximum values for unit (instantaneous) flows at each station during the survey period.

Table 2. Discharge values (cfs) at USGS gauging stations (provisional data).

	<b>Overton</b>	<b>Kearney</b>	<b>Grand Island</b>
Minimum	330	434	331
Date	11/8	11/3	11/4
Maximum	3500	3690	2970
Date	10/9	10/9	10/9

The streamflow when Whooping Cranes were observed on the river and when roost channel profiles were measured are shown in Table 3. Note that Use Site 1 did not have a full channel profile completed but other channel characteristics were recorded as possible.

Table 3. Flow conditions during Whooping Crane use and channel profile measurements. (Discharge is at the Platte River gauging station near Kearney).

Use Site	Use Dates	Measured Dates	Discharge (cfs) Use	Discharge (cfs) Measured
1	11/3	11/9	654	1420
2	11/4	11/9	1220	696
3	11/4	11/7	1250	1110
4	11/10	11/13	1500	1620

**RIVERINE USE SITES-**

Full river channel profiles were surveyed at 3 of the 4 Whooping Crane use sites (Figure 6) while only use site characteristics were collected at Use Site 1 due to lack of landowner permission. All sites measured were the result of aerial surveys completed as part of this monitoring (Figures 1-2). A total of 249 stations from 9 transects were surveyed.

DISTANCE TO VISUAL OBSTRUCTION, SUBSTRATE, AND WATER DEPTH-

Visual obstructions from Whooping Crane use sites are given in Table 4. Substrate was characterized as fine sand to small gravel. The average water depth at the Whooping Crane roost locations was  $4.9 \pm 6.8$  inches.

Table 4. Location, visual obstruction distance (yds), and substrate at the Whooping Crane use sites.

Use Site ID	UTMx	UTMy	VO Upstream Distance	VO Right Distance	VO Downstream Distance	VO Left Distance	Fine Sand (%)	Small Gravel (%)	Coarse Sand (%)	Large Gravel (%)
1	537660	4511442	94	82	96	117	40	30	20	10
2	529874	4508406	137	81	88	138	70	20	0	10
3	533784	4510668	160	180	157	117	10	0	90	0
4	540873	4512434	134	107	260	230	70	0	30	0

UNOBSTRUCTED WIDTH-

Table 5 depicts unobstructed width as measured along the middle transect at the riverine use sites.

Table 5. Unobstructed width at use sites (units in feet).

Use site	Profile location	Unobstructed width (ft)
1	Giddeon/Binfield (access denied)	594*
2	Mangelsen's	702
3	TNC	904
4	Shoemaker Island (Binfield)	1286
	mean	871
	STDEV	305

\*width measured with laser rangefinder

DIURNAL USE LOCATIONS-

Diurnal movements and activity data was collected when possible. Whooping Crane movements ranged within 3.5 miles of nocturnal roost sites. We documented diurnal use locations during 3 days of observation (Figures 1-2, Table 6). These locations were sites where activity data was collected or where the cranes were visible from the ground during daylight hours.

Table 6. Whooping Crane diurnal use locations.

Use Date	Crane Group ID	Use Site ID	UTMx	UTMy	Habitat
11/3/2013	2013FA01	1	537660	4511442	Wetted Channel
11/3/2013	2013FA01	1	537660	4511442	Wetted Channel
11/4/2013	2013FA02	2	529874	4508460	Wetted Channel
11/4/2013	2013FA02	3	533783	4510661	Wetted Channel
11/10/2013	2013FA03	4	540874	4512436	Wetted Channel
11/10/2013	2013FA03	4	540874	4512436	Wetted Channel
11/10/2013	2013FA03	NA	540102	4509173	Ag - Corn
11/10/2013	2013FA03	NA	539270	4512347	Grassland - Lowland
11/10/2013	2013FA03	NA	537422	4512347	Wetted Channel

LAND-COVER CLASS-

Wetted Channel, Lowland Grassland, and Ag-Corn were the cover-types used by Whooping Cranes during the day. All nocturnal roost locations were in Wetted Channel

ACTIVITY-

About 5.2 hours of continuous and instantaneous use (time budget) data of Whooping Cranes was collected by ground personnel during 3 days of observation. Sixty-three percent (3.0 hrs) of the observations were in wetted channel and 33% (2.2 hrs) were in lowland grassland (Table 7). The Whooping Crane in the cornfield was not visible to ground personnel due to topography but we knew it was in there after it was seen in flight. We recorded 29 data points of activity (time budget). The breakdown of activity within each habitat type is depicted in Table 8. Feeding was the most common activity observed in lowland grassland and resting was most common in wetted channel.

Table 7. Count of instant points by habitat.

	N	Hours	Percent
Ag - Corn	NA	0	0%
Grassland - Lowland	10	2.2	33%
Wetted Channel	19	3.0	63%



Table 8. Whooping Crane activity by habitat.

Habitat	Activity	# of Instant Points	Total Instant Points	Percent
Ag - Corn	NA	NA	NA	NA
Grassland - Lowland	Alert	3	10	30%
Grassland - Lowland	Feeding	4	10	40%
Grassland - Lowland	Preening	1	10	10%
Grassland - Lowland	Resting	2	10	20%
Wetted Channel	Alert	1	19	5%
Wetted Channel	Feeding	3	19	16%
Wetted Channel	NA	6	19	32%
Wetted Channel	Preening	1	19	5%
Wetted Channel	Resting	8	19	42%

***Search Effort.--***

Ground searches were initiated on 8 occasions. A total of 9.7 hours was expended in this effort and 209 miles were driven. Search duration extended from 0.1 to 2.25 hours. Whooping Cranes were found on 6 (75%) occasions.

***Crane-Use Days***

Crane-use days were calculated by multiplying the number of Whooping Cranes within a crane group by the number of days present. For this calculation, we assumed that a Whooping Crane observed during the morning aerial survey was present at some point the previous day (i.e. the cranes arrived in late afternoon/early evening of the previous day to roost within the study area). Whooping Cranes were believed to be present in the study area a minimum of 5 (15%) of the 33 days of the survey. We documented the presence of 3 Whooping Crane groups that contained a minimum of 3 individuals (3:0). A minimum of 8 crane-use days was recorded (Table 9). Again these data only reflect use during the survey period of October 9 through November 10.

Table 9. Whooping Crane dates of occurrence and crane-use days.

Crane Group	Number of Cranes (ad:juv)	Dates of Occurrence	# of days present	Crane-Use Days
2013FA01-02	2:0	November 2-4	3	6
2013FA03	1:0	November 9-10	2	2
TOTAL	3:0		5	8

***Program ID and U.S. Fish & Wildlife Service ID Comparisons.--***

Table 10 compares the Program numbering system with the USFWS database (Martha Tacha, personal communication). Two unique groups of Whooping Cranes were present in the study area during the survey. Note that GPS locations were not assigned a USFWS Crane ID unless they were reported by the public.

Table 10. Comparison of Program Crane ID and USFWS Crane ID.

<b>Program Crane ID (Prefix 2013FA)</b>	<b>Program Name</b>	<b>USFWS Crane ID</b>	<b>Dates of Occurrence</b>	<b># of cranes</b>
01-02	Shoemaker I pair	13B-24	11/2-4	2:0
03	Shoemaker I single	13B-37	11/10	1:0

***Radio-marked Whooping Cranes and Platte River Use.—***

About 30 GPS radios attached to Whooping Cranes were active prior to the 2013 fall migration. None were documented as using the Platte River during the fall 2013 monitoring period.

Analyses of Whooping Crane survey data collected by U.S. Fish and Wildlife biologists at Aransas National Wildlife Refuge reported a population size of 304 individuals for winter 2013–2014 (<http://www.fws.gov/nwrs/threecolumn.aspx?id=2147544385>). These estimates were calculated from survey results from Whooping Crane abundance surveys involving survey methodology that may not be directly comparable to past population estimates. Table 11 depicts the percent of the population observed stopping within the study area on the Platte River.

Table 11. A comparison of the Whooping Crane population change and the percent of that population stopping on the Platte River.

	<b>FALL 2013</b>	
WC Pop January 2014	# Platte	% Using Platte
304	3	1.0

***Searcher Efficiency Trials.—***

Whooping Crane decoys were placed at 40 locations between October 16 and November 8 (Table 12). The air observers detected a decoy at 7 (70%) riverine, 3 (30%) corn, 1 (10%) grassland site, and 4 (40%) wetland sites for an overall detectability rate of 38%.

Table 12. Random locations of decoys for detectability trials.

Decoy	Date	Leg	X	Y	Detected	Habitat
1	16-Oct	E	534528	4511445	N	River
2	16-Oct	E	510995	4503039	Y	River
3	17-Oct	W	491306	4501140	N	River
4	18-Oct	W	442366	4506397	Y	River
5	18-Oct	W	459533	4503953	Y	River
6	23-Oct	W	472311	4503597	Y	River
7	25-Oct	E	559570	4522914	Y	River
8	26-Oct	E	565584	4530744	Y	River
9	31-Oct	W	485719	4501662	N	River
10	31-Oct	E	520525	4506789	Y	River
11	24-Oct	W	478187	4506399	Y	Corn
12	26-Oct	W	474368	4507707	N	Corn
13	1-Nov	E	540350	4508965	N	Corn
14	1-Nov	W	462338	4500368	N	Corn
15	3-Nov	E	559203	4519579	N	Corn
16	4-Nov	E	567608	4529436	N	Corn
17	4-Nov	E	569044	4536263	N	Corn
18	7-Nov	E	516623	4502589	Y	Corn
19	8-Nov	W	484502	4497582	N	Corn
20	8-Nov	W	446471	4500498	Y	Corn
21	16-Oct	E	546419	4516281	N	Grassland
22	18-Oct	W	460739	4500886	N	Grassland
23	20-Oct	W	487423	4503629	N	Grassland
24	20-Oct	W	500260	4502262	N	Grassland
25	22-Oct	E	539643	4512786	N	Grassland
26	23-Oct	W	441804	4503127	N	Grassland
27	24-Oct	W	458607	4501476	N	Grassland
28	25-Oct	E	522946	4504002	N	Grassland
29	31-Oct	E	510826	4505924	N	Grassland
30	1-Nov	E	508925	4500964	Y	Grassland
31	17-Oct	W	491861	4497198	N	Wetland
32	25-Oct	E	566808	4530971	N	Wetland
33	1-Nov	W	493467	4495774	N	Wetland
34	2-Nov	E	517067	4503188	Y	Wetland
35	2-Nov	W	450847	4499398	N	Wetland
36	2-Nov	E	531499	4506921	Y	Wetland
37	7-Nov	E	537297	4507381	N	Wetland
38	7-Nov	E	544717	4510568	Y	Wetland
39	7-Nov	W	484888	4495855	N	Wetland
40	8-Nov	W	474421	4503721	Y	Wetland

***Incidental Take.***—

The USFWS requested information and documentation of any human activity that occurred in the proximity of Whooping Cranes that could constitute “take” as defined by the Endangered Species Act i.e. “...to harass, harm, pursue, hunt, shoot, wound, kill, capture, or collect, or attempt to engage in any such conduct”. Because harassment interrupts essential feeding or sheltering behaviors, the definition includes disturbance of Whooping Cranes sufficient to result in cranes taking flight.

**LETHAL OR CRIPPLING TAKE-**

AIM’s monitoring effort did not result in any crippling or lethal take of Whooping Cranes this season.

**HARASSMENT-**

AIM and Program personnel did not observe or engage in any activity that could be construed as “harassment” as defined by USFWS.

**PUBLIC DISTURBANCE-**

AIM personnel observed 1 incident of public disturbance of Whooping Cranes this season. On November 10 at 10:00 AM, a pick-up drove into a cornfield flushing a number of Sandhill Cranes including 1 Whooping Crane. Distances could not be determined because the Whooping Crane was not in view at the time.

**Supplements**

QAQC of the database was completed by AIM.

Original Data Sheets

Figure 1. Whooping Crane Use Sites 1 and 4 located south of Shoemaker Island in Hall County. Red line indicates where river profiles were surveyed. Crane Groups 2013FA01 and 04 used these sites respectively.

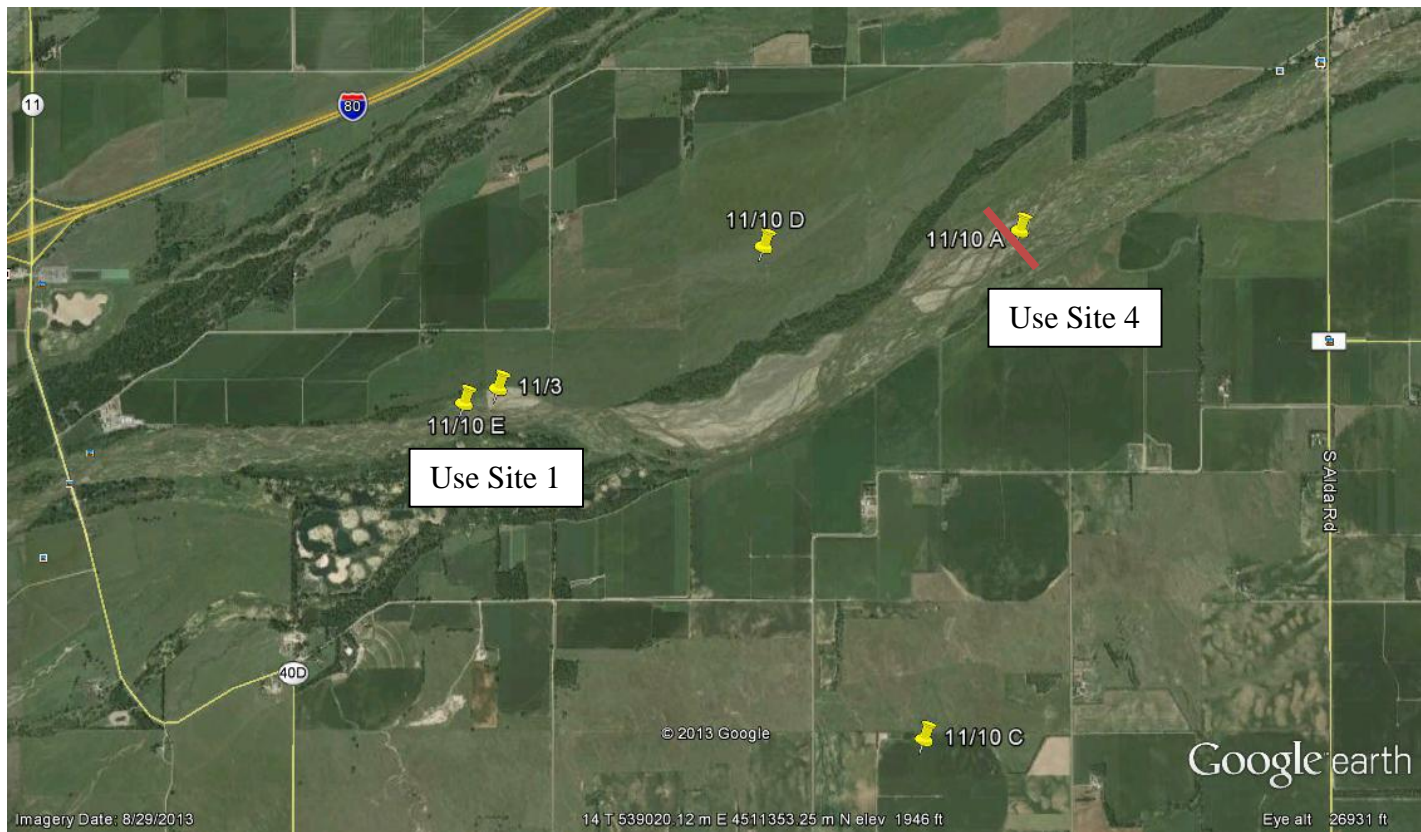


Figure 2. Whooping Crane Use Sites 2-3 west of the Wood River bridge in Hall County. Red lines indicate where river profiles were surveyed. Crane Groups 2013FA02 used these sites. Use Site 3 was a diurnal use area only.



Figure 3. Platte River discharge (cfs) and gage height at Grand Island.

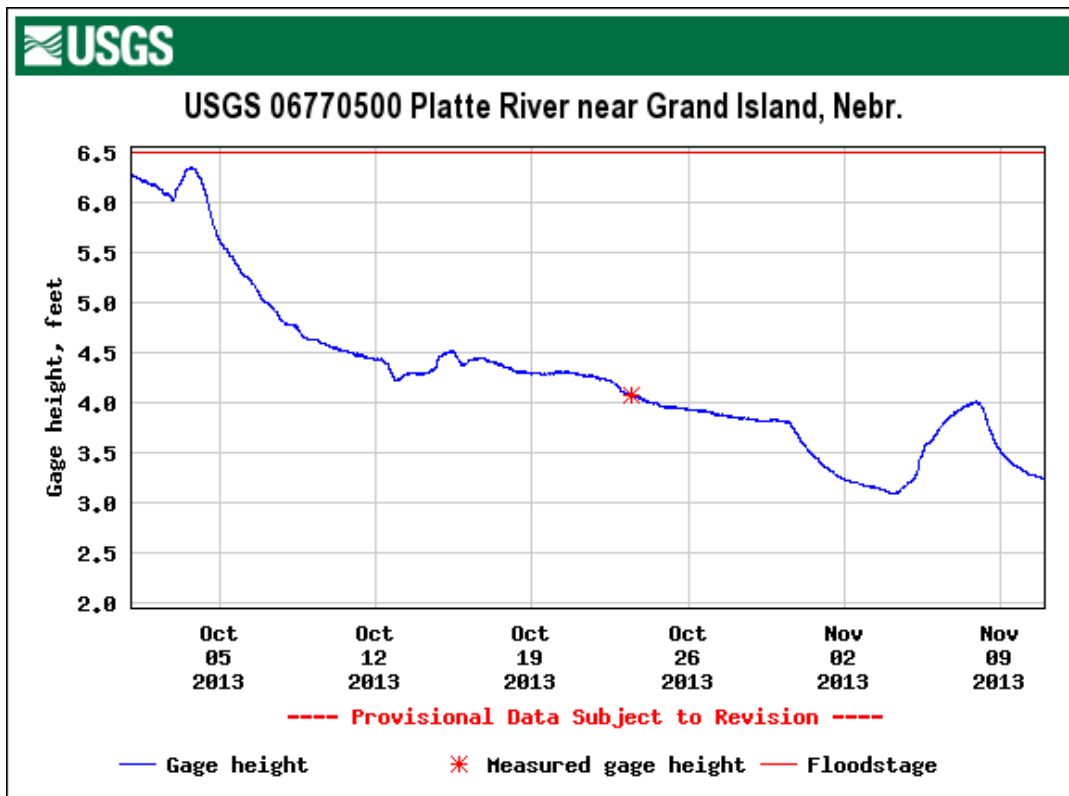
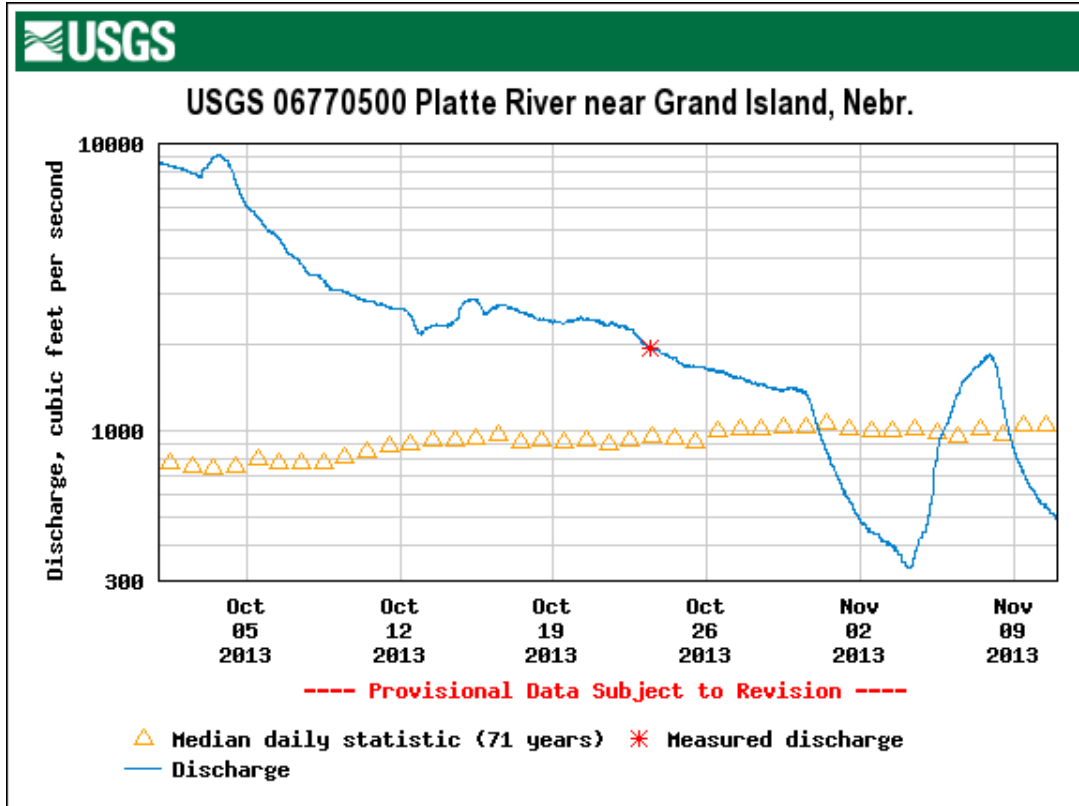


Figure 4. Platte River discharge (cfs) at Kearney.

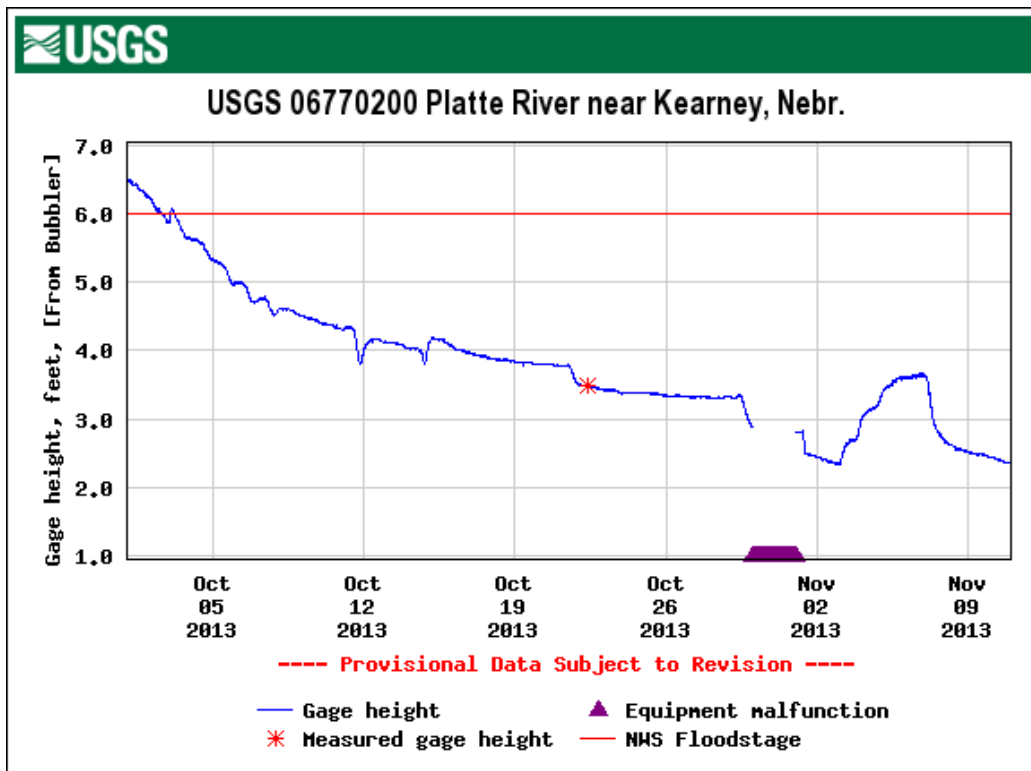
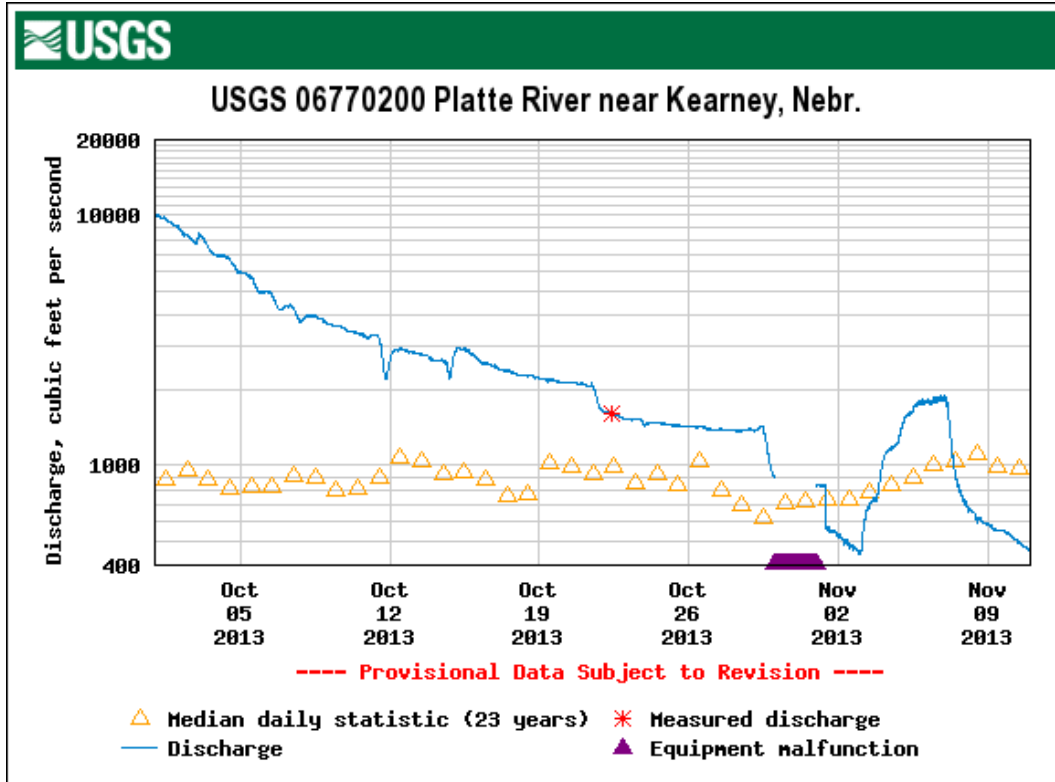




Figure 5. Platte River discharge (cfs) at Overton.

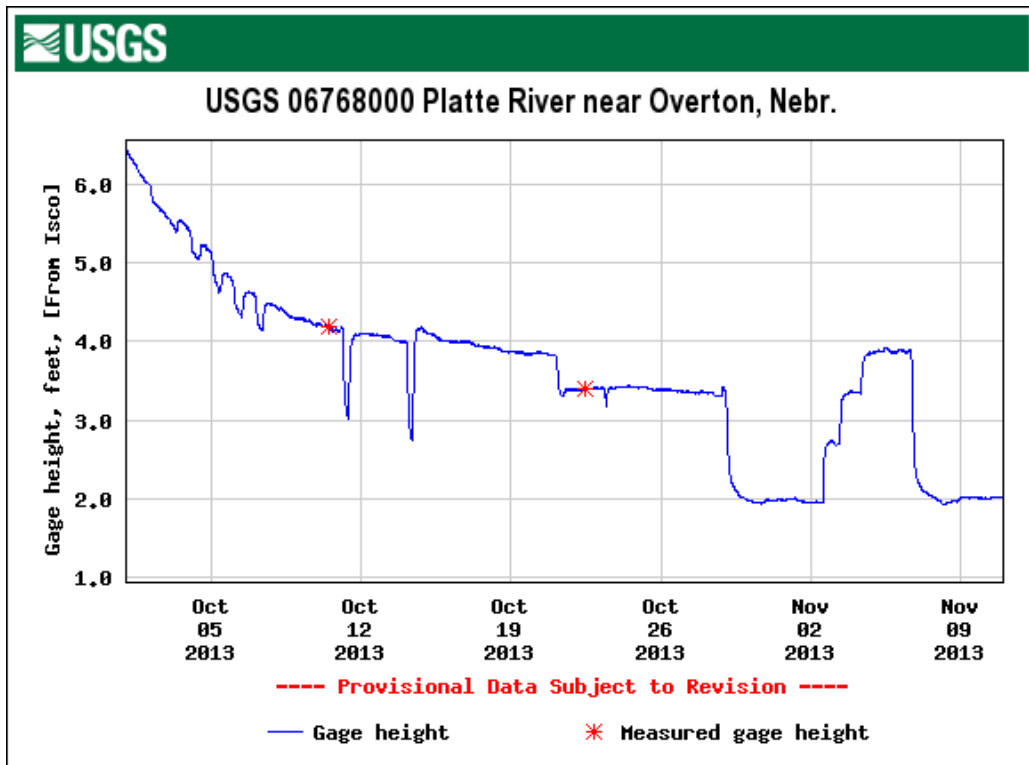
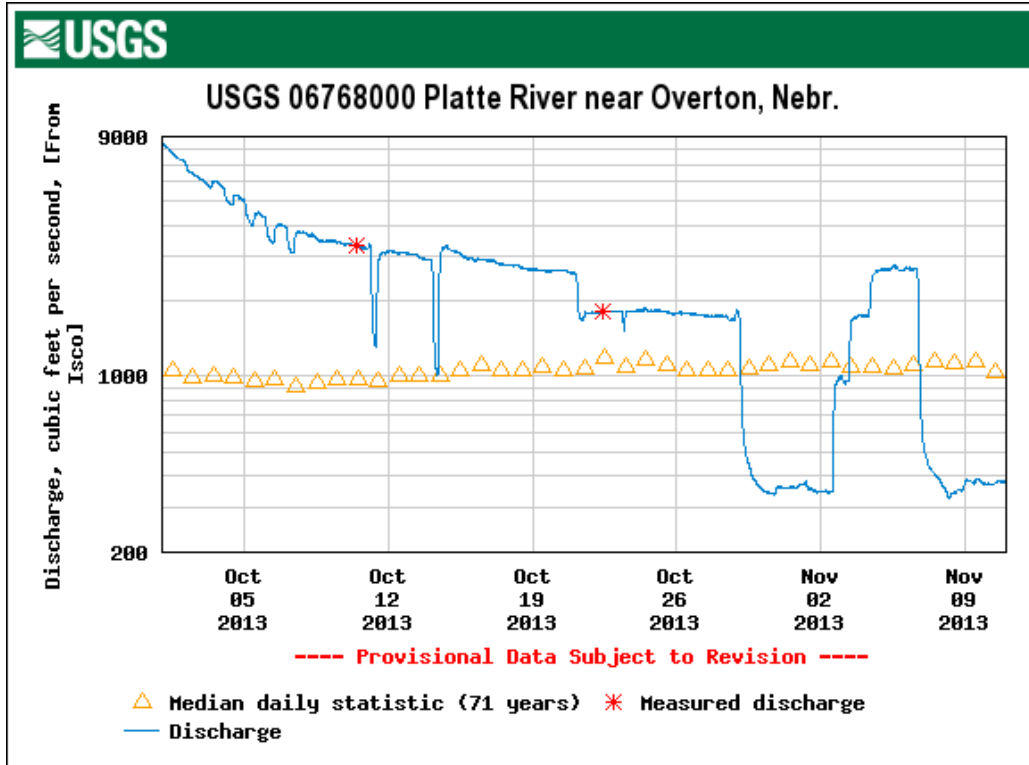


Figure 6. Whooping Crane Use Sites 2-4 (left to right bank). Use Site 3 was day use only. Units are in feet.

