Implementation of the Whooping Crane Monitoring Protocol
Fall 2014

FINAL REPORT

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

For
Committees of the
Platte River Recovery Implementation Program

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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 2014 migration season. Observations made during the survey period (October 9- November 10) along with a section describing the 2-day extended season are contained in this report. Two crane groups representing 5 individuals were identified by AIM personnel during systematic aerial surveys. A total of 5 unique individual cranes were located on the central Platte River during the fall 2014 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 2014 along with a two day extension due to known late migrating individuals still north of the Platte. Observations of Whooping Cranes outside the survey period are not included herein. Data sheets were provided by the Platte River Recovery Implementation Program (PRRIP) Executive Director's Office (EDO) and all data were entered into a web-based Microsoft SharePoint database being developed for the PRRIP by Riverside Technology, Inc.

Two air services were contracted and aerial surveys were conducted along specified routes near sunrise during the survey period 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 or when a pilot was not available. 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, on day one the survey began at Chapman, flew the river west (transect 0SE) to Minden then flew a primary targeted wetland return transect (PWRTE) back to Chapman then flew a secondary targeted wetland return transect (CSRT) 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 (WSRT) 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 0SW) west to Lexington then flew a primary targeted wetland return transect (PWRTW) 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 (ESRT) from Elm Creek to Minden. All primary and secondary targeted wetland transects were flown with observers looking out opposite sides of the aircraft. The fall 2014 survey was the third 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.

The air 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 EDO personnel 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 and use site characteristics were not recorded in fall 2014. This was the second season that profiles were not surveyed and use site characteristics were not measured in the field. Instead, EDO staff developed similar metrics at roost locations that were measured remotely via a Geographical Information System (Appendix A).

Due to mild weather conditions, the fall Whooping Crane migration was delayed. Consequently, EDO staff decided to extend the survey beyond November 10 since many radioed individuals were still north of the study area. A 2-day extension was undertaken with the understanding that only the aerial survey component was to be conducted (i.e. no ground monitoring was to be undertaken).

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.

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

ID # 2014FA	Use Site ID	Date	# of birds	UTMx	UTMy	Type of Sighting
1	1	10/15	2	483966	4501286	Systematic
2	2	11/10	3	532526	4510049	Systematic

Aerial Survey.--

CONFIRMED WHOOPING CRANE SIGHTINGS-

Two Whooping Crane groups totaling 5 individuals were located during aerial surveys. We could not determine if any of them were color-banded.

Of a possible 33 morning flights scheduled per leg, the East Leg (Chapman – Minden) completed 32 (97%) flights while the West Leg (Minden – Lexington) completed 27 (82%). Adverse weather and logistical problems resulted in flight cancellations or delayed start times. Of the 59 total flights, 6 flights were delayed 10-15 minutes, 10 flights were delayed 5-10 minutes, and the remaining 43 flights were not delayed.

INDEX OF USE-

We completed 164 (91%) out of 181 aerial survey transects scheduled (2 or 3 transects per flight depending on flight leg and origin). Two Whooping Crane group sightings were made on these transects (Table 2). Neither group was seen on more than one transect. This resulted in an index of use (frequency of occurrence) of 0.01 sightings per transect. The East Leg and West Leg had one sighting each.

Table 2. Whooping Crane index of use along aerial transects.

Transect	# scheduled	# completed	# WC sightings	Frequency
River	66	59	2	0.03
Primary return	66	59	0	0
Secondary return	49	46	0	0
Total	181	164	2	0.01

OPPORTUNISTIC FLIGHTS-

We conducted six opportunistic flights that totaled about 57 minutes. Two opportunistic Whooping Crane sightings occurred when the plane deviated from the primary return route to confirm the presence of Whooping Cranes. One sighting occurred on October 15 (ID#1) and the other on November 10 (ID#2). Two additional flights were deployed at other times of the day that totaled 43 minutes; one on October 15 and the second on October 20. We did not detect any Whooping Cranes on either flight.

Opportunistic Locates.—

AIM personnel did not receive any reports from the public this season.

Diurnal Movements, and Activity.--

DIURNAL USE LOCATIONS-

Whooping Crane movements did not range beyond the vicinity of their nocturnal roost sites. We documented 2 diurnal/nocturnal use locations during 2 days of observation (Figures 1-2, Table 3).

Table 3. Whooping Crane diurnal use locations.

Use Date	Crane Group ID	Use Site ID	UTMx	UTMy	Habitat
10/15/2014	2014FA01	1	483966	4501286	Wetted Channel
11/10/2014	2014FA02	2	532526	4510049	Wetted Channel

LAND-COVER CLASS-

Wetted Channel was the only cover-type used by Whooping Cranes during the day. All nocturnal roost locations were in Wetted Channel.

ACTIVITY-

About 1.5 hours of continuous and instantaneous use (time budget) data of Whooping Cranes was collected by ground personnel during 1 day of observation. All of the observations were in Wetted Channel. We recorded 6 data points of activity (time budget). The breakdown of activity within each habitat type is depicted in Table 4. Feeding was the most common activity observed.

Table 4. Whooping Crane activity by habitat.

Habitat	Activity	# of Instant Points	Total Instant Points	Percent
Wetted Channel	Feeding	4	6	66%
Wetted Channel	Preening	1	6	33%
Wetted Channel	Resting	1	6	33%

Streamflow.—

Streamflow measured at the USGS gauging stations located near Grand Island, Kearney, and Overton was generally higher than the median streamflow for each site during the first half of the survey and lower the second half (Figures 3-5). Note all flow data are provisional and subject to revision. Table 5 depicts the minimum and maximum values for unit (instantaneous) flows at each station during the survey period.

Table 5. Discharge values (cfs) at USGS gauging stations (provisional data).

	Overton	**Kearney**	**Grand Island**
Minimum	235	273	390
Date	10/23	11/10	11/10
Maximum	2220	1750	1730
Date	10/17	10/18	10/19

The streamflow when Whooping Cranes were observed on the river are shown in Table 6.

Table 6. Flow conditions when Whooping Cranes were observed. (Discharge recorded at the Platte River gauging station near Grand Island).

Use Site ID	Date	Discharge
1	15-Oct	1700
2	10-Nov	542

Search Effort.--

Ground searches were initiated on 1 occasion. A total of 1.2 hours was expended in this effort and 34 miles were driven. No Whooping Cranes were found.

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 4 (12%) of the 33 days of the survey. We documented the presence of 2 Whooping Crane groups that contained 5 (4:1) individuals. Ten crane-use days were recorded (Table 7). Again these data reflect use only during the survey period of October 9 through November 10.

Table 7. 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
2014FA01	2:0	October 14-15	2	4
2014FA02	2:1	November 9-10	2	6
TOTAL	4:1		4	10

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

Table 8 compares the Program numbering system with the USFWS database (Martha Tacha, personal communication). Two groups of Whooping Cranes were present in the study area during the survey.

Table 8. Comparison of Program Crane ID and USFWS Crane ID.

Program Crane ID (Prefix 2014FA)	Program Name	USFWS Crane ID	Dates of Occurrence	# of cranes
01	Odessa pair	14B-03	10/14-15	2:0
02	Wood River family	14B-32	11/10	2:1

Radio-marked Whooping Cranes and Platte River Use.—

Twenty-five GPS radios attached to Whooping Cranes were active during the 2014 fall migration (Whooping Crane Tracking Partnership 2013 Winter and 2014 Spring Migration Season Report). AIM personnel could not determine if any of the Whooping Cranes observed were radio-marked.

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 population estimates prior to winter 2010-2011. Table 9 depicts an estimate of the percent of the population observed stopping within the study area on the Platte River.

Table 9. A comparison of the Whooping Crane population change and the percent of that population stopping on the Platte River.

	FALL 2014	
WC Pop January 2014	# Platte	% Using Platte
304*	5	1.6

*Current population estimate was not known at the time of this writing.

Searcher Efficiency Trials.—

Whooping Crane decoys were placed at 40 locations between October 16 and November 8 (Table 10). The air observers detected a decoy at 6 (60%) riverine, 2 (20%) corn, 1 (10%) grassland site, and 4 (40%) wetland sites for an overall detectability rate of 32%.

Table 10. Random locations of decoys for detectability trials.

Decoy#	Date	X	Y	Detected	Habitat
1	10/14/2014	445416	4505644		Wetted Channel
2	10/15/2014	450781	4502972	Y	Wetted Channel
3	10/16/2014	542189	4513096	Y	Wetted Channel
4	10/17/2014	516440	4505079	Y	Wetted Channel
5	10/18/2014	537779	4511488	Y	Wetted Channel
6	10/21/2014	449895	4503170		Wetted Channel
7	10/24/2014	445293	4504066		Wetted Channel
8	10/29/2014	443148	4504818	Y	Wetted Channel
9	10/29/2014	505467	4501141	Y	Wetted Channel
10	11/4/2014	539936	4511922		Ag-Corn
11	10/17/2014	541073	4508972		Ag-Corn
12	10/20/2014	496517	4501566	Y	Ag-Corn
13	10/25/2014	466021	4500689		Ag-Corn
14	10/28/2014	448587	4499980		Ag-Corn
15	10/30/2014	558855	4516592		Ag-Corn
16	11/1/2014	472198	4508148		Ag-Corn
17	11/1/2014	547093	4511494		Ag-Corn
18	11/4/2014	516550	4504038	Y	Ag-Corn
19	11/5/2014	494936	4501789		Ag-Corn
20	11/6/2014	552081	4514935		Ag-Corn
21	10/10/2014	460213	4501074		Lowland Grassland
22	10/16/2014	523579	4504067		Lowland Grassland
23	10/18/2014	511813	4504668	Y	Lowland Grassland
24	10/19/2014	510512	4505798		Lowland Grassland
25	10/21/2014	458976	4501253		Lowland Grassland
26	10/24/2014	510468	4505574		Lowland Grassland
27	10/24/2014	487437	4503136		Lowland Grassland
28	10/30/2014	486714	4503469		Lowland Grassland
29	10/31/2014	518340	4504179		Lowland Grassland
30	11/5/2014	465667	4500560		Lowland Grassland
31	10/25/2014	510704	4505826		Palustrine Wetland
32	10/28/2014	487771	4503329	Y	Palustrine Wetland
33	10/28/2014	451815	4501306		Palustrine Wetland
34	10/29/2014	444389	4500678		Palustrine Wetland
35	10/31/2014	560314	4522616		Palustrine Wetland
36	11/2/2014	443167	4501261	Y	Palustrine Wetland
37	11/3/2014	486052	4503095		Palustrine Wetland
38	11/3/2014	535206	4512043		Palustrine Wetland
39	11/5/2014	543368	4515366	Y	Palustrine Wetland
40	11/6/2014	564943	4533630	Y	Palustrine Wetland

Extended Aerial Survey.—

The aerial survey was extended two days, November 11 and 12. The purpose was to identify Whooping Crane stopovers and roost locations. Both the east and west legs were flown and AIM personnel did not detect any Whooping Cranes. During that time, an Arctic air mass covered the region and the river began to rapidly freeze. Due to deteriorating conditions, flights were terminated prior to November 13. One Whooping Crane stopover was documented the morning of November 11 at 8:44 CST via satellite telemetry. The location was downstream of the Burlington Northern railroad bridge east of Grand Island (UTMs: 563200; 4528227). The number of birds in this group was not determined. By November 14, all of the radioed cranes were south of Nebraska.

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 personnel did not observe or engage in any activity that could be construed as "harassment" as defined by USFWS.

PUBLIC DISTURBANCE-

AIM personnel did not observe any incidents of public disturbance.

Supplements

QAQC of the database was completed by AIM.

Original Data Sheets

Figure 1. Whooping Crane Use Site 1 located 3.5 miles east of the Odessa bridge in Buffalo County. Crane Group 2014FA01 used this site.

Figure 2. Whooping Crane Use Site 2 about 1.6 miles west of the Wood River bridge in Hall County. Crane Group 2014FA02 used this site.

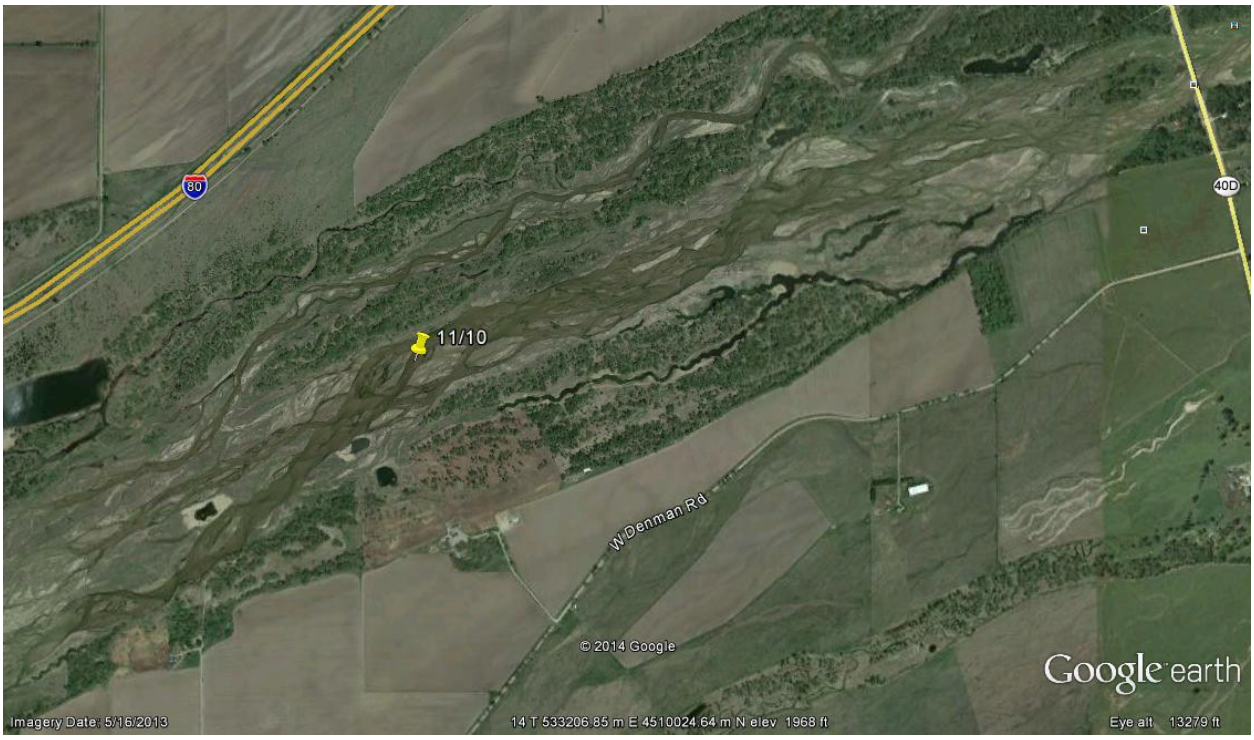
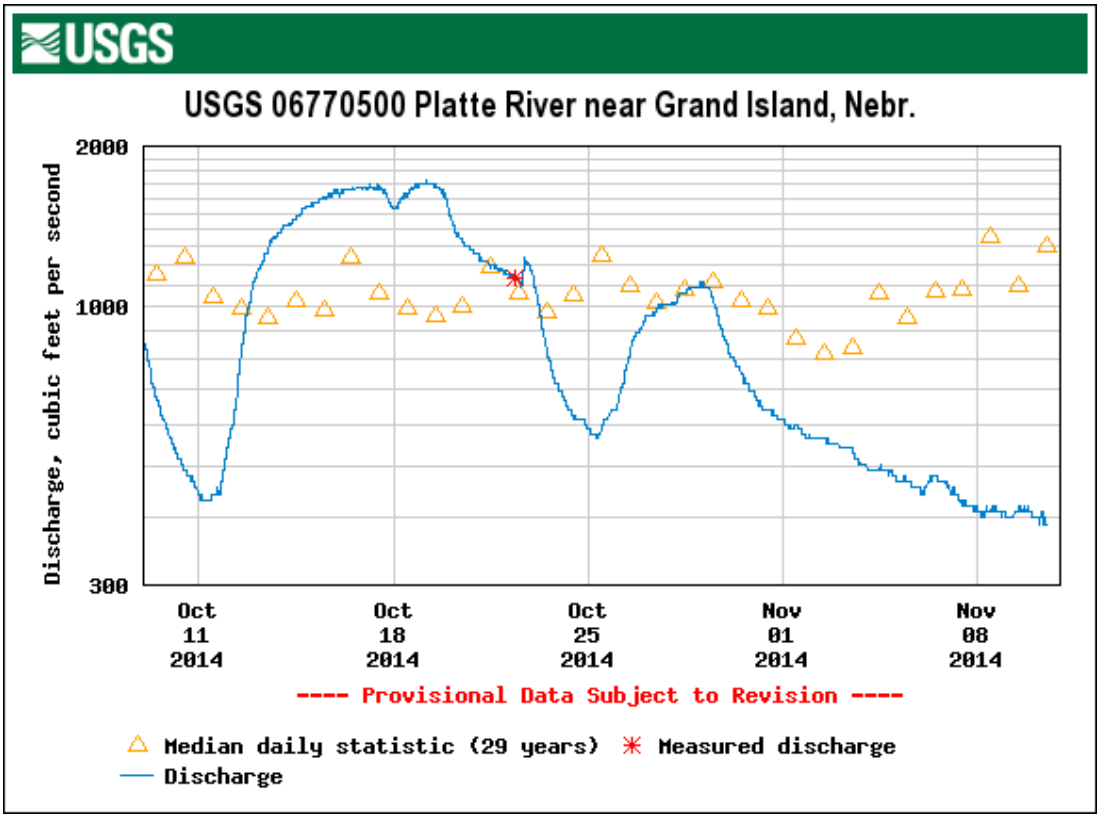


Figure 3. Platte River discharge (cfs) and gage height at Grand Island.



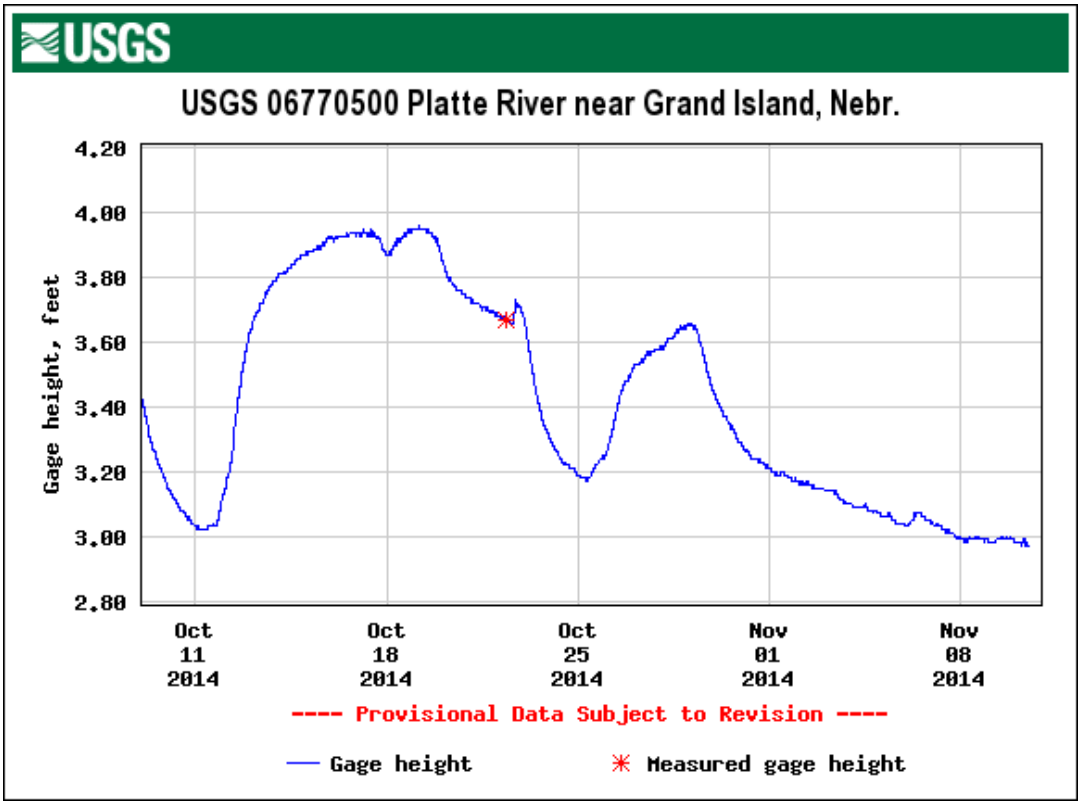
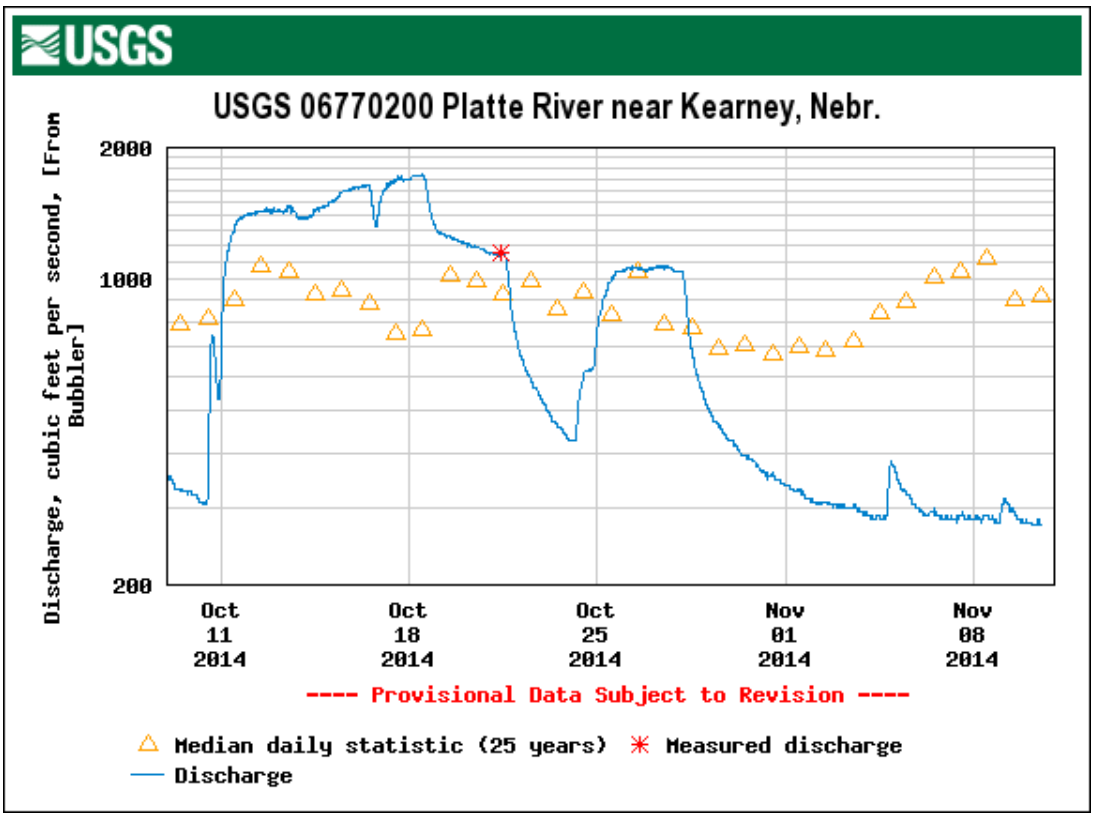


Figure 4. Platte River discharge (cfs) at Kearney.



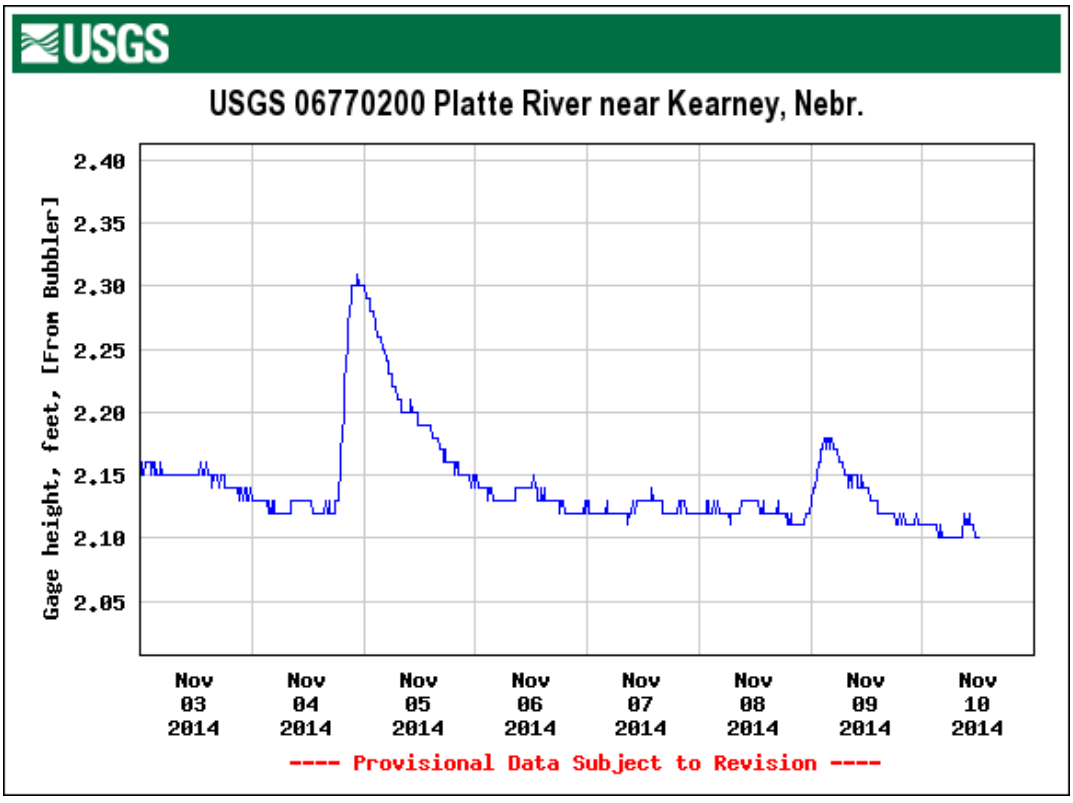
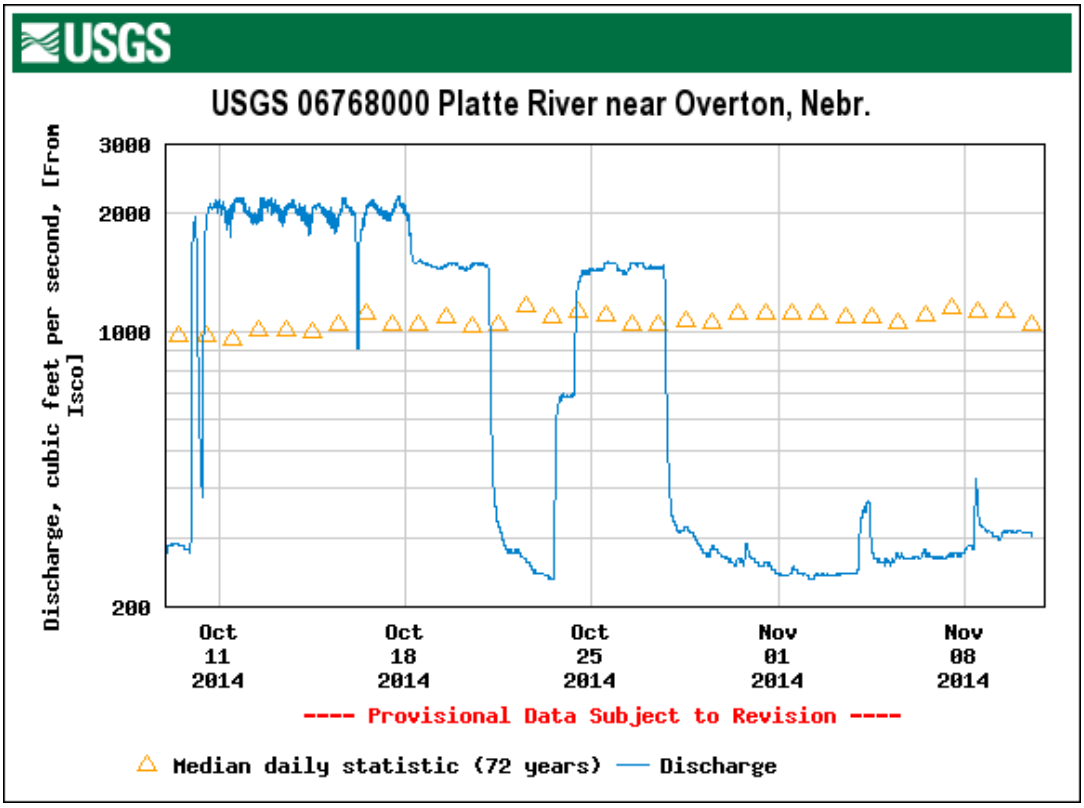
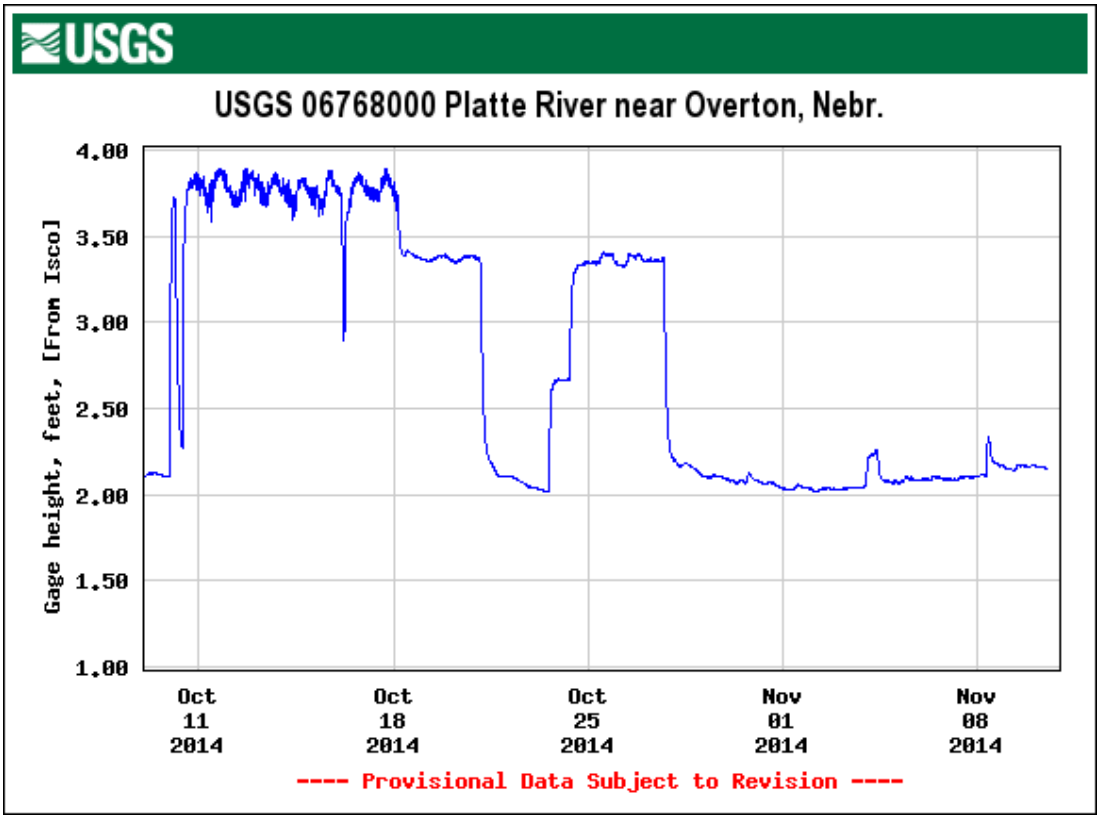


Figure 5. Platte River discharge (cfs) at Overton.





APPENDIX A

FA 2014 Whooping Crane Roost Locations

ID #	UTMx	UTMy	Unforested Width (ft)	Nearest Forest (ft)	Unvegetated Width (ft)	Nearest Vegetation (ft)
2014FA-01	483966	4501286	850	280	595	197
2014FA-02	532526	4510049	895	307	671	210
2014FA-NA	563200	4528227	518	219	304	151