

Implementation of the Whooping Crane Monitoring Protocol

Spring 2006

FINAL REPORT

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Final Report Prepared by AIM Environmental Consulting

**For
Committee's of the
Platte River Cooperative Agreement**

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Assessment Inventory Monitoring Environmental Consulting (AIM) was awarded a contract to assist the Governance Committee and Technical Committee in implementing the *1997 Cooperative Agreement for Platte River Research and Other Efforts Relating to Endangered Species Habitats Along the Central Platte River, Nebraska* (Cooperative Agreement). Our specific task was to implement the protocol developed by the Technical Committee entitled *Monitoring Whooping Crane Migrational Habitat Use in the Central Platte River Valley* during the spring 2006 migration. The contract specified the implementation of the draft protocol dated 16 September 2005 along with guidelines presented in the *Request for Proposal*. We present the results of spring 2006 Whooping Crane migration pursuant to the *Work Order Agreement* dated 21 February 2006.

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. We hired and trained thirteen technicians and conducted field work from 21 March through 29 April 2006. A set of six data sheets was provided by the EDO and all data were entered into a Microsoft Access 2000 database template developed by the EDO.

Three air services were contracted and aerial surveys were conducted along specified routes near sunrise from 21 March through 29 April 2006 as weather permitted. Censuses were initiated no earlier than 30 minutes before sunrise and typically were completed within 2 hours. Start times were delayed up to 2 hours when weather/visibility conditions dictated. Flights were cancelled due to unsafe weather or mechanical problems. 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 census began flying upstream (east to west) along the south side of the main river channel with both observers looking out the passenger 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 began at Chapman, flew the river west to Minden then flew a predetermined route back to Chapman. Day two began at Wood River, flew the river to Minden, returned along a predetermined route back to Chapman, then flew the rest of the river transect from Chapman to Wood River. The start points for the west leg were Minden and Odessa bridges. When the initial portion of the river transect was completed, one of 7 possible return routes located along the centerline of the main channel and 1, 2, and 3 miles north and south of the river respectively was flown with observers looking out opposite sides of the aircraft.

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 air crew, the ground person nearest the sighting was contacted and immediately dispatched to the location in an effort to determine the identity of the white object. Each technician had a set of color infrared aerial photos of the river (photos were developed by WEST, Inc. and have been used since October 2001). The photos were inserted in polypropylene sheet protectors that enabled the observer to mark the roost location on the photo for later reference. Efforts were made to photograph Whooping Cranes while on the river from the air using digital cameras. In addition, a GPS reading of the roost location was taken by air crew.

If a Whooping Crane was located by ground personnel, habitat use and activity monitoring commenced. Time budget data were collected at 15-minute intervals and continued until the bird was either lost from view or went to roost for the night. Each Whooping Crane sighting was assigned a unique number and later compared with the U.S. Fish and Wildlife Service's sighting records in Grand Island. USFW's definition of a sighting (p. 3-3, Draft Baseline Report 5/30/2001) is:

“...the observation of a single whooping crane or a group of whooping cranes that are migrating together through the area. Confirmed sightings in the same general area (within a reasonable distance of daily crane activities) along the Platte and within one to several days of another sighting is assumed to be the same bird/bird group, unless: 1) the number of birds differs, 2) the bird(s) constitute a bird/bird group in addition to those already known to be in the general area, or 3) the original birds were observed to migrate from the valley or are known to have moved to a different area of the valley. This assumption is necessary because individual cranes cannot be distinguished; very few birds are marked, and continuous surveillance of a crane or crane group using the study area is not possible.”

Channel profiles were measured at Whooping Crane roost sites and three replications at three predetermined decoy locations on riverine sites using surveying equipment on loan from the Nebraska Public Power District and the Central Platte Natural Resources District. 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 crane or decoy location. Elevation measurements were taken about every 3m along each transect using a stadia transit and rod. End points were determined when an obstruction greater than 1.5m such that a crane could not be seen through was encountered. Stream flow data was collected from the U.S. Geological Survey at 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. Whooping Crane movements, behavior, and diurnal habitat use was recorded when possible. All monitoring activities followed U.S. Fish & Wildlife Service guidelines. Martha Tacha, USFWS Coordinator for the Cooperative Whooping Crane Tracking Project, kept our team apprised of the latest sighting reports and census results from the wintering grounds on a regular basis. Tom Stehn, refuge manager of Aransas National Wildlife Refuge in Texas, conducted weekly surveys on the wintering grounds and provided the results via email. Landowner permission was obtained prior to entering any property.

Whooping Crane decoys were placed at 15 randomly selected locations provided by the EDO (Table 1) for the purposes of determining survey detection rates. Five locations were off-river and the others were in the river channel. The air crew did not know when or where the decoys were placed. Observations of Whooping Crane decoys by the air crew were reported to the ground crew for confirmation.

The EDO established a toll-free telephone number for the public to report Whooping Crane sightings. The number was maintained and operated by the Platte River Whooping Crane Habitat Maintenance Trust. AIM personnel distributed flyers to prominent bird-watching centers notifying the public of this number. All Whooping Crane sightings reported to officials by the public were classified as opportunistic locates. Following a report, ground crew procedures were implemented as outlined above.

Results

Opportunistic Locates.—

On March 11 at 1445 CST, AIM received a report from one of our technicians of a single Whooping Crane in a cornfield southeast of the Gibbon Bridge in Buffalo County (2006SP49). Since this occurred prior to the initiation of our field work, the report was forwarded to Whooper Watch and no further action was taken by AIM personnel.

Robert Boardman, a local photographer, reported a single Whooping Crane to AIM personnel at 1505 CST on March 25. AIM personnel located and monitored the crane until dusk when it flew to the river to roost (2006SP05). He observed and photographed a single Whooping Crane on several occasions from March 23-April 8 (Robert Boardman, pers. com.).

On March 27, AIM received a report from USFWS of a single Whooping Crane observed in Adams County by a local conservation officer on March 26. AIM personnel were monitoring this individual crane at the time of the reported sighting (2006SP08).

On March 29, Whooper Watch received a report of a Whooping Crane southwest of the Alda bridge by TNC personnel. AIM personnel were monitoring this individual crane at the time of the reported sighting (2006SP14).

AIM personnel received a Whooping Crane report from Jim Jenniges with NPPD at 1224 CST on March 30 of a pair of Whooping Cranes in a cornfield located in the NE1/4 20-8-19 Phelps County. AIM personnel located the bird at 1020 CST and monitored the cranes until dusk (2006SP17).

On March 31 at about 1810 CST, AIM personnel received a report from Jim Jenniges of a pair of Whooping Cranes in a cornfield located in the NE1/4 20-8-19 Phelps County (2006SP50). AIM personnel located the birds from the air the following morning.

On the evening of April 1, AIM received a report from one of our pilots of three Whooping Cranes in a cornfield about 1 mile southwest of the U.S. 183 bridge (Elm Creek) in Buffalo County at 1600 CST (2006SP52). This information was passed on to the aerial survey crew who located the family group of Whooping Cranes the next morning from the air (Figure 1, Appendix A).

On April 2 at 1745 CDT, Jim Jenniges reported a family group of Whooping Cranes in a cornfield located in the SW1/4 25-8-18 Phelps County (2006SP51). AIM personnel located the birds from the air the following morning.

On April 3 at 1000 CDT, Whooper Watch reported a single Whooping Crane about 5 miles south of the Alda bridge in Hall County. AIM personnel located the bird at 1020 CDT and began monitoring the crane (2006SP34).

Six Whooping Cranes were seen in flight at a height of about 1000' migrating north near Juniata in Adams County on April 8 at 1530 CDT by Bill Worthing, one of our pilots from Abbott Aviation, while flying back to the Hastings airport. Evidently they continued migrated north past the Platte River since they were not seen on the river the following morning.

On the evening of April 11, 1 Whooping Crane was reported on the river from the Rowe Sanctuary blind (2006SP53). It was also observed on the "Crane Cam", a video camera setup on the river by the National Geographic Society. It departed north from the river with Sandhill Cranes and landed on secondary roost adjacent to the river. It was not observed again.

In summary, we received eleven Whooping Crane reports from Whooper Watch, USFWS, and/or the public that were considered confirmed or probable. One additional ground search effort was initiated as a result of a report to USFWS that was not confirmed.

Aerial Survey.--

CONFIRMED WHOOPING CRANE SIGHTINGS-

Of a possible 40 morning flights per leg, the West Leg completed 30 (75%) flights while the East Leg flew 28 (70%). Fog, low ceiling, precipitation, mechanical problems, and high winds were factors in cancellations. We recorded 28 confirmed or probable Whooping Crane sightings (Figures 1 and 2, Appendix A).

INDEX OF USE-

We completed 116 (73%) aerial survey transects out of a possible 160. Twenty-eight Whooping Crane sightings were made on these transects. This results in an index of use (frequency of occurrence) of 0.24 sightings per transect. All sightings were on riverine transects.

OPPORTUNISTIC FLIGHTS-

Aerial searches for possible Whooping Cranes were conducted following the regular surveys on 3 occasions. The first was on April 3 when the ground crew could not locate the family group of Whooping Cranes seen on the river east of the Elm Creek Bridge. The family group was spotted from the air in a cornfield and was not visible from the ground. On April 5 an effort was made to locate a single Whooping Crane near Prosser to no avail. A “white crane” was reported on the river 1/3 mile east of the Minden bridge. It was located in a cornfield later from the air and was confirmed as an albino Sandhill Crane.

OTHER WHITE OBJECT SIGHTINGS-

We conducted 3 on-ground follow-ups of a reported unidentified white crane by the air crews. Ground personnel were able to locate the object on 1 occasion (33% of the searches). The searches resulted in an albino Sandhill Crane.

Searcher Efficiency Trials.—

Whooping Crane decoys were placed at 15 locations between April 1- 26 (Table 1). The air observers detected a decoy at nine sites for an overall detectability rate of 60%. When broken down by strata, there was a 0% and 90% detectability rate for strata 0-3.5 and 0 respectively.

Table 1. Random locations of decoys for detectability trials.

ID	Strata	UTMX	UTMY	Date Placed	Detected?
1	0	460569	4503920	4/12/2006	yes
2	0	508440	4501940	4/12/2006	yes
3	0	440194	4507514	4/2/2006	yes
4	0	496668	4500572	4/8/2006	yes
5	0	541050	4512706	4/13/2006	yes
6	0	444014	4505451	4/2/2006	no
7	0	550917	4516172	4/9/2006	yes
8	0	546123	4514865.	4/11/2006	yes
9	0	473988	4503152	4/26/2006	yes
10	0	458739	4503622	4/5/2006	yes
11	0-3.5	499985	4502090	4/22/2006	no
12	0-3.5	441853	4506264	4/2/2006	no
13	0-3.5	451601	4504124	4/1/2006	no
14	0-3.5	449819	4504698	4/1/2006	no
15	0-3.5	548669	4516760	4/23/2006	no

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

FLOW-

Streamflow measured at the USGS gauging stations located near Grand Island, Kearney, and Overton was well below the median streamflow for each site throughout the study period (Figures 3-5). Note all flow data are provisional and subject to revision. Table 2 depicts the minimum and maximum values for unit (instantaneous) flows at each location during this study.

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

	Overton	Kearney	Grand Island
Minimum	150	213	372
Date	4/20	3/21	3/22
Maximum	2020	1700	1480
Date	3/30	3/22	3/31 & 4/1

The instantaneous streamflow when a Whooping Crane was observed on the river and when roost channel profiles were measured is shown in Table 3.

Table 3. Instantaneous streamflow during Whooping Crane use and channel profile measurements. (Discharge is at the nearest upstream gauging station).

Use Site	Use Date	Use Time	Measured Date	Discharge (cfs)	
				Use	Measured
1	3/30	0620	4/4	486	319
2	3/31, 4/1	0633, 0607	4/4	492, 475	319
3	4/3	0702	4/6	348	333
4	4/2	0717	4/6	363	891
5	3/23, 4/4	0629, 0713	4/22	567, 364	246
6	3/24, 4/1	0732, 0713	4/15	1280, 1080	283
7	3/28	0610, 0726	4/14	1150, 1280	332
8	4/4	0703	4/9	319	324
9	3/14	1730	4/9	520+	1070
10	4/8	0655	4/22	897	264
11	3/26, 3/28, 3/29, 3/31, 4/1, 4/6	0728, 0610, 0658, 0618, 0713, 0704	4/22	1170, 1150, 1230, 951, 1080, 312	343
12	3/31, 4/9	0618, 0649	4/22	951, 655	297
13	4/3	0743	4/14	420	343

RIVERINE USE SITES-

We collected riverine channel profile data at 13 Whooping Crane use locations (Figures 6-18) and 3 decoy locations with 3 replications each (data entered into Microsoft Access database). Use Site 1 and Decoy 10 were the same site (see Table 4 for Use Site locations). Twenty-two roost locations were recorded and these were lumped into 13 Use Sites due to their close proximity to one another (Table 3). Use Site 9 was documented on March 14, prior to the initiation of this survey; however, AIM surveyed the site at the request of the USFWS. A total of 1691 stations (3 readings at each station) from 21 profiles were surveyed. Some of these were removed due to errors. Photographs depicting the habitat used were taken at each use site (Appendix A).

DISTANCE TO VISUAL OBSTRUCTION, SUBSTRATE, AND WATER DEPTH-

Visual obstructions from Whooping Crane riverine use sites are given in Table 4. Substrate was characterized primarily as fine to coarse sand. The average water depth at the roost locations was -0.0696 ± 0.169 m. The values reflect lower flows at the time measurements were taken than those during use (Table 3).

Table 4. Visual obstruction distance (m), substrate, and roost site depth (m) at 13 Whooping Crane riverine use sites.

Use Site ID	UTM X	UTM Y	VO Upstream Distance	VO Right Distance	VO Downstream Distance	VO Left Distance	Fine Sand %	Coarse Sand %	Small Gravel %	Mgmt Practices	Roost Depth
1	458739	4503622	124	65	85	51	20	80		cleared	-.03
2	458123	4503686	110	60	101	43	20	80		cleared	.01
3	468088	4503535	73	35	70	72	20	80		none	-.13
4	469632	4503692	200	100	132	95	10	75	15	cleared	-.12
5	543593	4513801	268	92	182	175	30	50	20	disked	-.02
6	541989	4512910	160	180	56	218	60	20	20	cleared	.25
7	529826	4508501	132	212	100	102	75	25		disked	.002
8	472039	4503738	71	215	60	28		35	65	disked	-.30
9	544303	4514408	500	180	350	340	35	50	15	disked	.11
10	544934	4514408	500	312	389	220	40	40	20	disked	-.30
11	540893	4512480	240	500	500	300	90	10		disked	-.32
12	540447	4512198	312	226	500	108	90	8	2	none	.06
13	539541	4511421	400	78	262	246	85	15		disked	-.12

UNOBSTRUCTED WIDTH-

Table 5 depicts the average unobstructed width of the three profiles measured at each riverine use location.

Table 5. Unobstructed channel width at riverine use sites (units in m).

Use Site ID	Avg Of Obstr Width	Standard Deviation
1	117	17.1
2	115	23.5
3	128	40.4
4	204	81.4
5	253	8.3
6	189	12.6
7	241	6.2
8	256	5.4
9	324	18.4
10	411	0.9
11	463	36.3
12	333	31.4
13	452	25.2

DIURNAL USE SITES-

Diurnal movements and activity data was collected when possible. We documented 49 diurnal use locations in 23 sections during 13 days of observation (Figures 19-21, Appendix A). Whooping Cranes were seen up to 7 miles from the river, well beyond the study area boundaries (Figure 22). We believe prolonged heavy snow cover forced the birds to forage farther from the river than usual.

CRANE-USE DAYS

Crane-Use days were calculated by multiplying the number of Whooping Cranes by the number of days present. Whooping Cranes were known to be present in the study area 20 (March 21-April 9) of the 40 days of the survey. A minimum of 7 individual Whooping Cranes in 3-4 groups were observed. A maximum of 4 groups comprising 7 individuals were recorded on April 1. A minimum of 54 crane-use days occurred (Table 6).

Table 6. Whooping Crane dates of occurrence and crane-use days.

Crane Group	Number of Cranes	Dates of Occurrence	Crane-Use Days
Individual A (Alda)	1	March 21- April 3	14
Individual B (Alda)	1	March 21 – April 9	20
Cottonwood Pair	2	March 29- April 1	8
Elm Creek Family	3	April 1-4	12
TOTAL	7		54

LAND-COVER CLASS-

Wetted Channel, Ag-Corn, Ag-Soybeans, Upland Grasses, Lowland Grasses were the cover-types Whooping Cranes were observed using. Thirty-five of the 49 (71%) diurnal locations were in Ag-Corn, 4 (8%) in Ag-Soybean, 1 (2%) in Lowland Grasses, 1 (2%) in Upland Grasses, and 8 (16%) were in Wetted Channel. All 28 (100%) of the nocturnal roost locations were in Wetted Channel.

ACTIVITY-

A total of 101 hours of continuous and instantaneous use data of Whooping Cranes was collected by ground personnel during 13 days of observation. Of this total, 80 hours were in Ag-Corn, 9 hours in Wetted Channel, 8.75 hours in Ag-Soybeans, 2.75 hours in Upland Grasses, and 0.5 hours in Lowland Grasses. All observations were in diurnal use locations. Four hundred four data points of activity (time budget) were recorded. Feeding (76%) was the most frequently observed activity followed by resting (11%) and alert (7%) (Table 7).

Twenty inches of snowfall blanketed the study area on the morning of March 21 resulting the cancellation of our survey flights. This heavy snowcover delayed Whooping Crane roost departures as follows: 3-23: 11:24 CST; 3-24: 9:58 & 10:22+CST; and 3-26: 8:45+CST. Most

of the snow melted by the end of March and roost departure times followed a more typical pattern as follows: 4-5: 7:10 CDT; 4-8: 8:50 CDT (note the change to daylight savings time).

Table 7. Number of instantaneous use observations by habitat.

	Feeding	Resting	Alert	Defensive	Preening	Courtship
Corn	252 (79%)	26 (8%)	26 (8%)	4 (1%)	10 (3%)	2 (<1%)
Wetted Channel	15 (42%)	14 (39%)	2 (6%)	3 (8%)	2 (6%)	0
Soybeans	31 (88%)	3 (9%)	0	1 (3%)	0	0
Upland Grasses	10 (91%)	0	0	0	1 (9%)	0
Lowland Grasses	1 (50%)	0	0	0	1 (50%)	0
Combined	309 (76%)	43 (11%)	28 (7%)	8 (2%)	14 (3%)	2 (<1%)

MARKED AND BANDED CRANE OBSERVATIONS-

A photograph of a Whooping Crane taken by Robert Boardman on March 24 (Sec 36-9-11 Hall Co.), revealed some rust-colored feathers on the distal secondary coverts of both wings and on the distal secondaries on the left wing typical of juvenal plumage (Appendix A-1). This coloration enabled us to distinguish this individual on occasion. Further inquiry suggested that this individual was possibly a third-year bird (Tom Stehn, pers. com.).

On April 4, we confirmed that the larger member of the family group (2006SP38) had a green color-band on his left leg and it appeared to have an aluminum USFWS band on his right leg. The family group was observed in South Dakota the next morning and the bands were confirmed. This male was banded as a chick in 1988 making him 18 years old. During his lifetime, he initiated 13 nests at Wood Buffalo National Park and has brought 8 chicks to Aransas National Wildlife Refuge (Tom Stehn, pers. com.).

Search Effort.--

Ground searches were initiated on 56 occasions. A total of 93.75 hours was expended in this effort. In addition, 2064 miles were driven. Search duration extended from <1 to 11.25 hours. Searches occurred primarily in the morning hours and were generally terminated when the object was found and/or the 2-hour period was reached.

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

The U.S. Fish & Wildlife Service classified Program sightings (200SP01-15, 19, 25-28, 33-36, 39-46, and 49) as 06A-01 or -02, Program sightings (2006SP16-18, 20-24, 48, and 50) as 06A-03, Program sightings (2006SP29-32, 37, 38, 47, 51-52) as 06A-05, and Program sighting 2006SP53 as 06A-12 in the USFWS database (Martha Tacha, personal communication). Table 8 compares the Program numbering system with the USFWS database.

Table 8. Comparison of Crane Group ID between Program and USFWS during spring 2006.

Program Crane ID	USFWS Crane ID	Date of Occurrence	# of birds
2006SP01	06A-01 or -02	23-Mar	1
2006SP02	06A-01 or -02	23-Mar	1
2006SP03	06A-01 or -02	24-Mar	2
2006SP04	06A-01 or -02	25-Mar	1
2006SP05	06A-01 or -02	25-Mar	1
2006SP06	06A-01 or -02	25-Mar	1
2006SP07	06A-01 or -02	26-Mar	1
2006SP08	06A-01 or -02	26-Mar	1
2006SP09	06A-01 or -02	28-Mar	1
2006SP10	06A-01 or -02	28-Mar	1
2006SP11	06A-01 or -02	28-Mar	1
2006SP12	06A-01 or -02	28-Mar	1
2006SP13	06A-01 or -02	29-Mar	2
2006SP14	06A-01 or -02	29-Mar	1
2006SP15	06A-01 or -02	29-Mar	1
2006SP16	06A-03	30-Mar	2
2006SP17	06A-03	30-Mar	2
2006SP18	06A-01 or -02	30-Mar	2
2006SP19	06A-01 or -02	31-Mar	2
2006SP20	06A-03	31-Mar	2
2006SP21	06A-03	31-Mar	2
2006SP22	06A-01 or -02	31-Mar	1
2006SP23	06A-03	1-Apr	2
2006SP24	06A-03	1-Apr	2
2006SP25	06A-01 or -02	1-Apr	1
2006SP26	06A-01 or -02	1-Apr	1
2006SP27	06A-01 or -02	1-Apr	1
2006SP28	06A-01 or -02	1-Apr	1
2006SP29	06A-05	2-Apr	3
2006SP30	06A-05	2-Apr	3
2006SP31	06A-05	3-Apr	3
2006SP32	06A-05	3-Apr	3
2006SP33	06A-01 or -02	3-Apr	1
2006SP34	06A-01 or -02	3-Apr	1
2006SP35	06A-01 or -02	4-Apr	1
2006SP36	06A-01 or -02	4-Apr	1
2006SP37	06A-05	4-Apr	3
2006SP38	06A-05	4-Apr	3
2006SP39	06A-01 or -02	5-Apr	1
2006SP40	06A-01 or -02	6-Apr	1
2006SP41	06A-01 or -02	8-Apr	1
2006SP42	06A-01 or -02	8-Apr	1
2006SP43	06A-01 or -02	9-Apr	1
2006SP44	06A-01 or -02	1-Apr	1
2006SP45	06A-01 or -02	31-Mar	1
2006SP46	06A-01 or -02	26-Mar	1
2006SP47	06A-05	3-Apr	3
2006SP48	06A-01 or -02	30-Mar	1
2006SP49	06A-01 or -02	14-Mar	1
2006SP50	06A-03	31-Mar	2
2006SP51	06A-05	2-Apr	3
2006SP52	06A-05	1-Apr	3
2006SP53	06A-12	11-Apr	1

Discussion and Recommendations

This spring hosted more Whooping Cranes on the Platte River than during any previous spring migration on record in terms of crane-use days. The number of confirmed Whooping Crane sightings in Nebraska was 9 including those contained herein (Martha Tacha, personal communication). As of 14 July 2006, there were 23 confirmed sightings in the United States as follows: Nebraska- 9; North Dakota- 9; South Dakota- 3; Kansas- 1; and Oklahoma- 1. A record 220 Whooping Cranes were counted on their wintering grounds in the vicinity of Aransas National Wildlife Refuge in Texas. Of these, 6 died during the winter leaving a total of 214 Whooping Cranes in the Aransas-Wood Buffalo flock prior to the 2006 nesting season.

The Whooping Crane pair was observed along with Sandhill Cranes at Use Site 1 the evening of March 30, returning to the same location they were observed that morning. At 12:57 A.M. the cranes were flushed from the river (M. Peyton pers. com.). The air crew detected the Whooping Cranes upstream $\frac{3}{4}$ mi at Use Site 2 the following morning. We believe the cranes were flushed by a predator because fresh coyote tracks were found on the sand near the roost the following morning. They were not observed at Use Site 1 the evening of March 31 (J. Jenniges pers. com.). They were located by the air crew at Use Site 2 the following morning. We believe they roosted at Use Site 2 the entire night.

In general, the spring survey is more difficult for observers to detect Whooping Cranes than the fall survey due to the presence of large numbers of Sandhill Cranes and Snow Geese along with several partial albino Sandhill Cranes. This year was especially difficult with nearly 100% snow cover plaguing us during the first ten days of the survey making it hard to spot a white crane against a white background. Significant snowmelt occurred by the early April. This prolonged snow cover forced the Sandhill Cranes to forage much farther from the river than previously recorded (G. Lingle pers. obs.). Sandhill Cranes were seen in fields near the Hastings City Limit about 10 miles south of the river. Likewise, the 2 Whooping Cranes that associated with Sandhill Cranes were observed farther from the river, up to 7 miles, than in past years using fields well outside of the study area.

Adverse weather conditions delayed Whooping Crane roost departure times in much the same way as it impacts Sandhill Cranes. The heavy snowfall of March 21 resulted in subsequent roost departure times as late as 11:26 CST on March 23.

We offer the following comments/suggestions to the Technical Committee as a result of this year's effort. Some of these suggestions have been implemented.

Data Sheets

- Add “discharge” at the nearest upstream and downstream gauging station to Aerial Observations sheet.
- Add “discharge” at the nearest upstream and downstream gauging station to Use Site Characteristics sheet.

- Change the name of the “....Ground Monitoring Observations” sheet to “.... Ground Search Effort”.
- Change the name of “..... Instantaneous and Continuous Use Site Monitoring” sheet to “.... Time Budget”.
- Add “walking” or “locomotion” as an activity to the “..... Instantaneous and Continuous Use Site Monitoring” sheet. “Feeding” is weighted more heavily than warranted because that is the only category that includes “walking”.

Microsoft Access Database

- Summarize “miles” driven and “hours” searched in a Table.
- Summarize activity data as a percentage by habitat in a Table.
- Summarize discharge during use and when measured including dates for both in a Table.
- Summarize amount of time in a particular habitat, with percentages, and total amount of time observed in a Table.
- Automate “instant point ids” in the Use Site Monitoring form so that they do not have to be inputted manually.

Methods

150 decoys have been placed since the inception of the whooping crane monitoring protocol. Consider whether it is necessary to continue collecting river profile information at decoy locations.

Eliminate transect 3 and possibly transect 2 from the aerial survey since no observations of Whooping Cranes have occurred on these transects to date and likelihood of observing Whooping Cranes on these transects is remote given the time of day the flights occur.

Expand the study area to 3.5 miles north and 7 miles south of the outermost channels of the Platte River based on the daily activity patterns observed this spring.

The results of all of the surveys should be published for the benefit of the scientific community as well as policy makers.

Spring 2006 Expenses

The cost of the field implementation of this project was about \$61,790. The estimated cost of Draft and Final Report preparation was \$9,244 and \$3,500 respectively. The total cost for the Spring 2006 effort was about \$75,650.

List of Appendices

Appendix A. Selected Photographs.

Supplements

Original Data Sheets, 270+pp.

CD containing the Microsoft Access database and MS Word Final Report files and photographs.

Figure 1. Whooping Crane Use Sites 5 (green), 6 (blue), 9 (red), 10 (yellow), 11 (dark green), 12 (orange), and 13 (light blue) in the vicinity of the Alda Bridge, Hall County above and Use Site 7 west of the Wood River Bridge below.

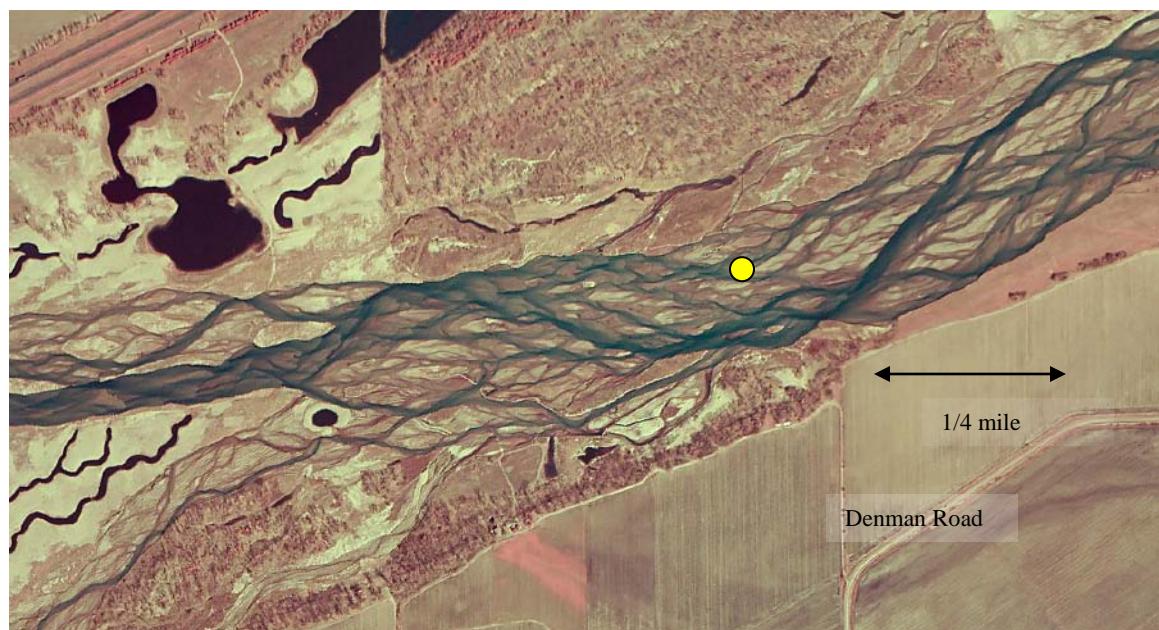
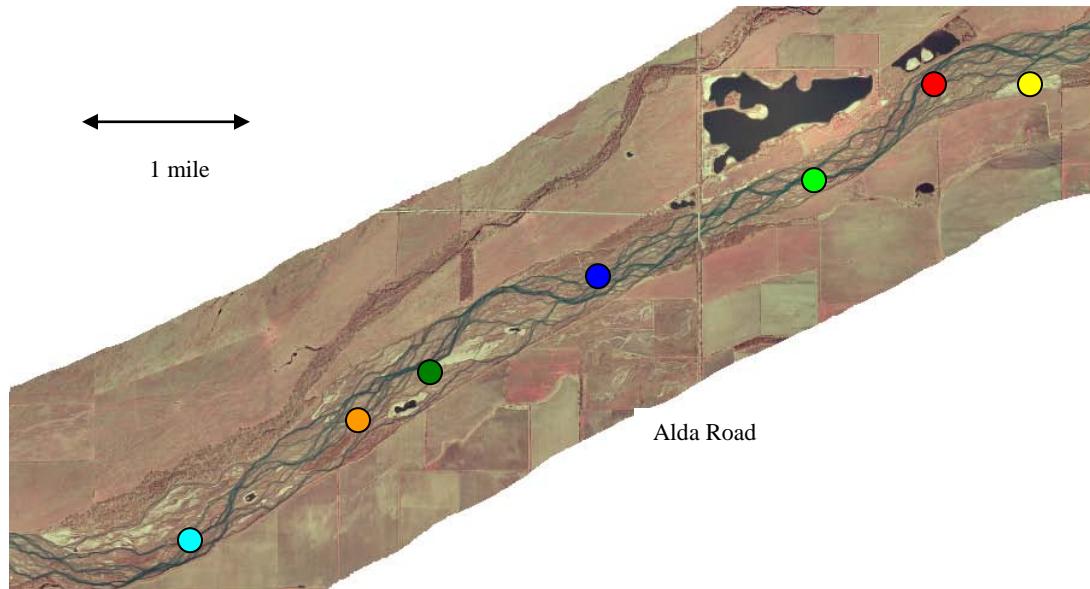


Figure 2. Whooping Crane Use Sites 1 (yellow) and 2 (red) at Cottonwood Ranch, Dawson County (above). Use Sites 3 (red), 4 (yellow), and 8 (blue) east of the Elm Creek Bridge, Buffalo County (below).

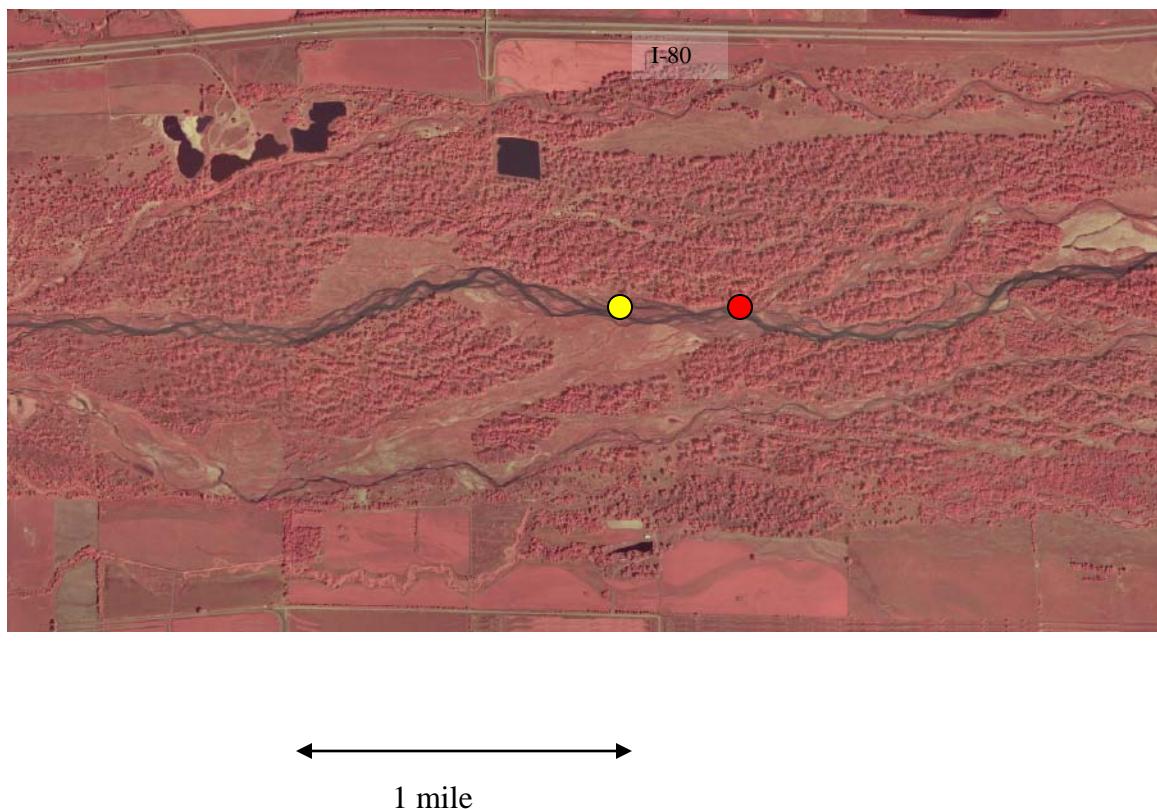


Figure 3. Platte River discharge (cfs) at Grand Island.

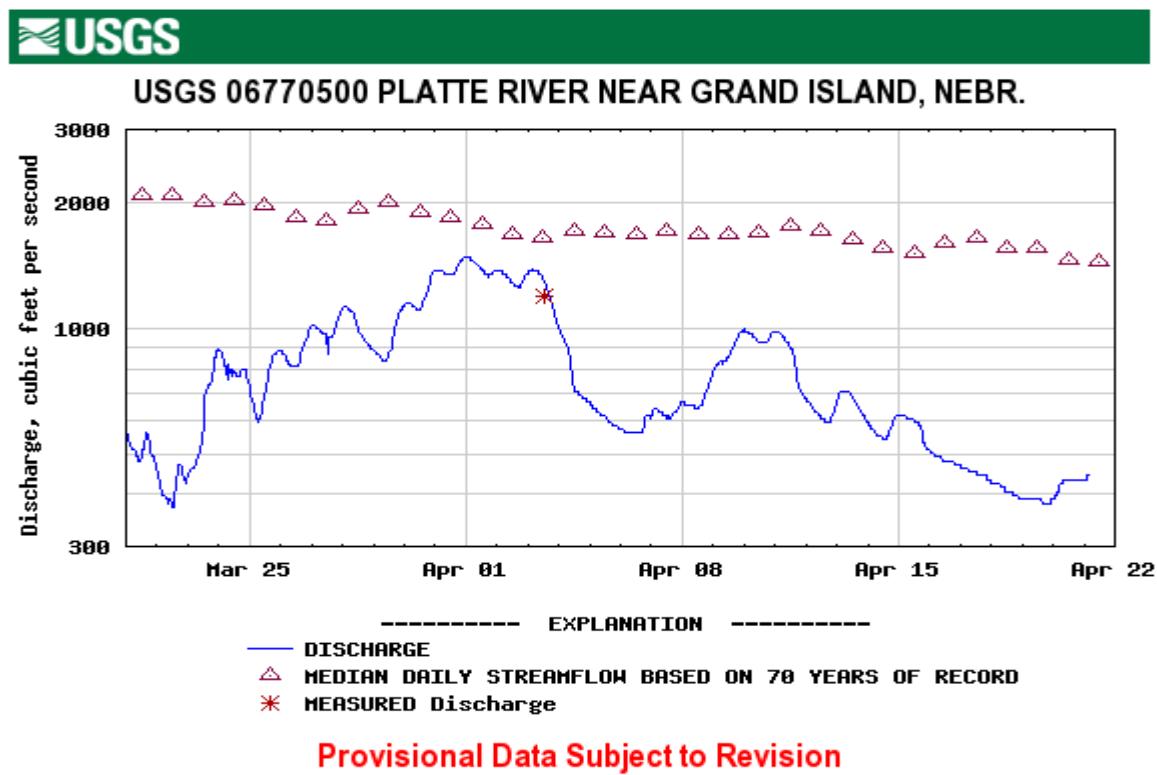


Figure 4. Platte River discharge (cfs) at Kearney.

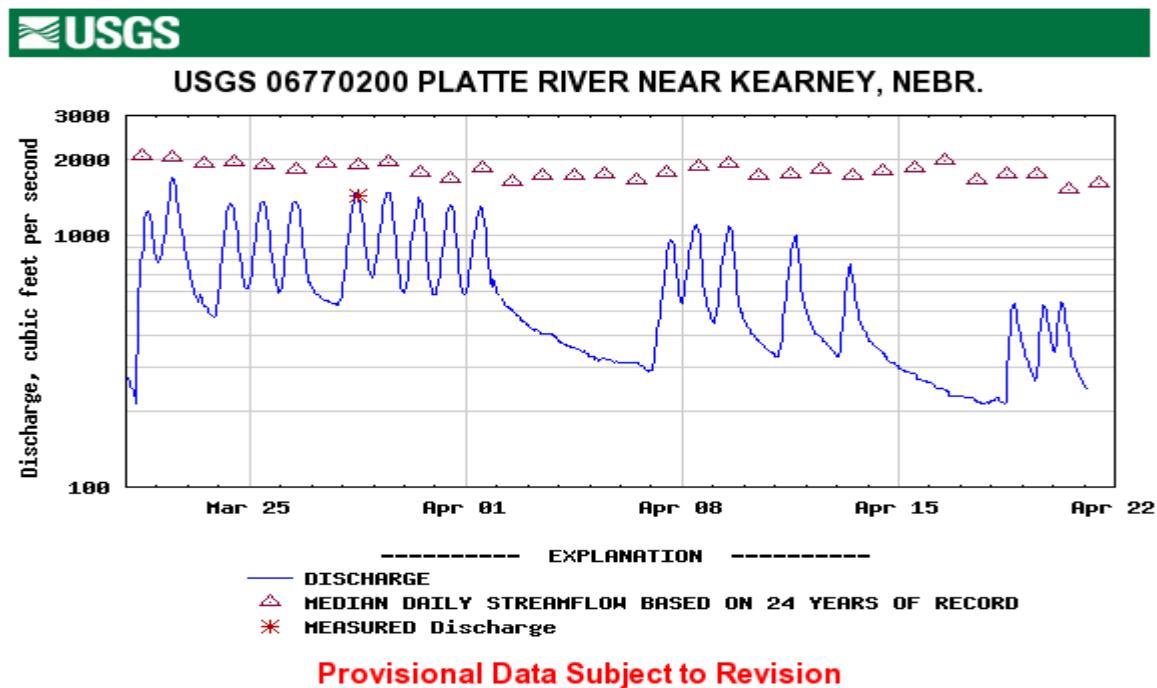


Figure 5. Platte River discharge (cfs) at Overton.

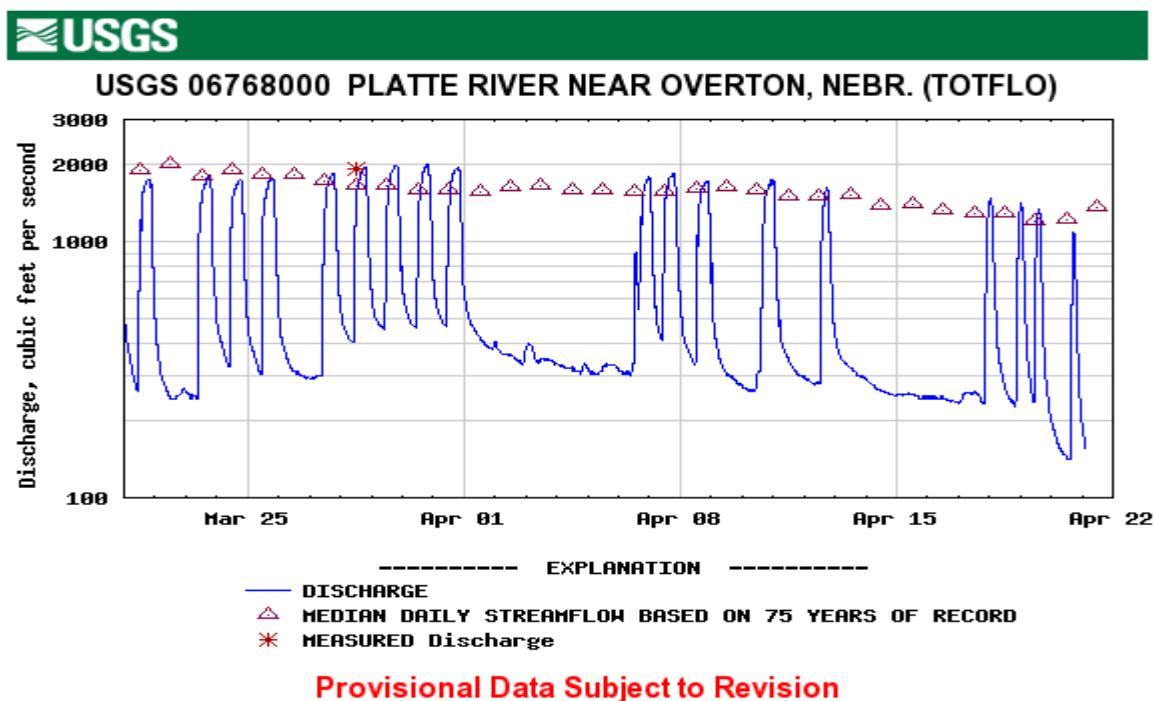


Figure 6. Roost channel profile for Use Site 7 (left to right bank). Arrow indicates roost location.

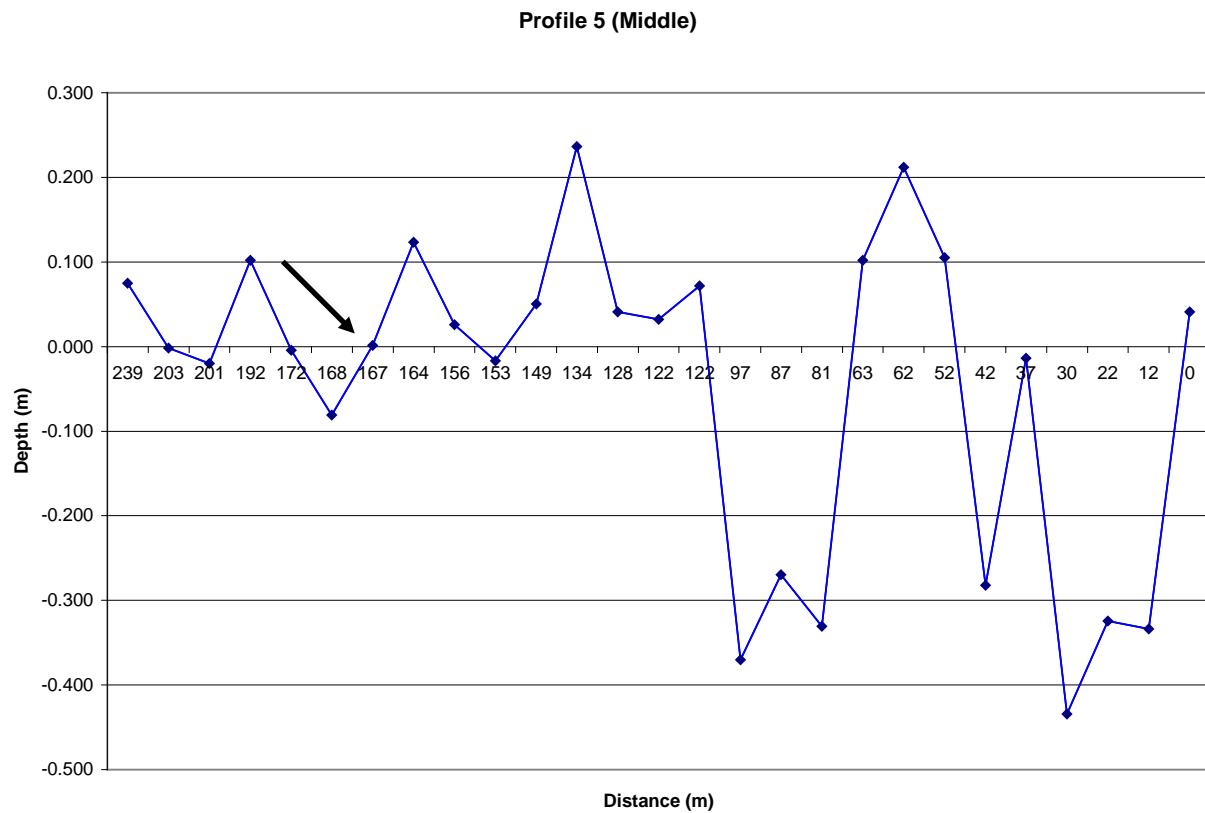


Figure 7. Roost channel profile for Use Site 13 (left to right bank). Arrow indicates roost location.

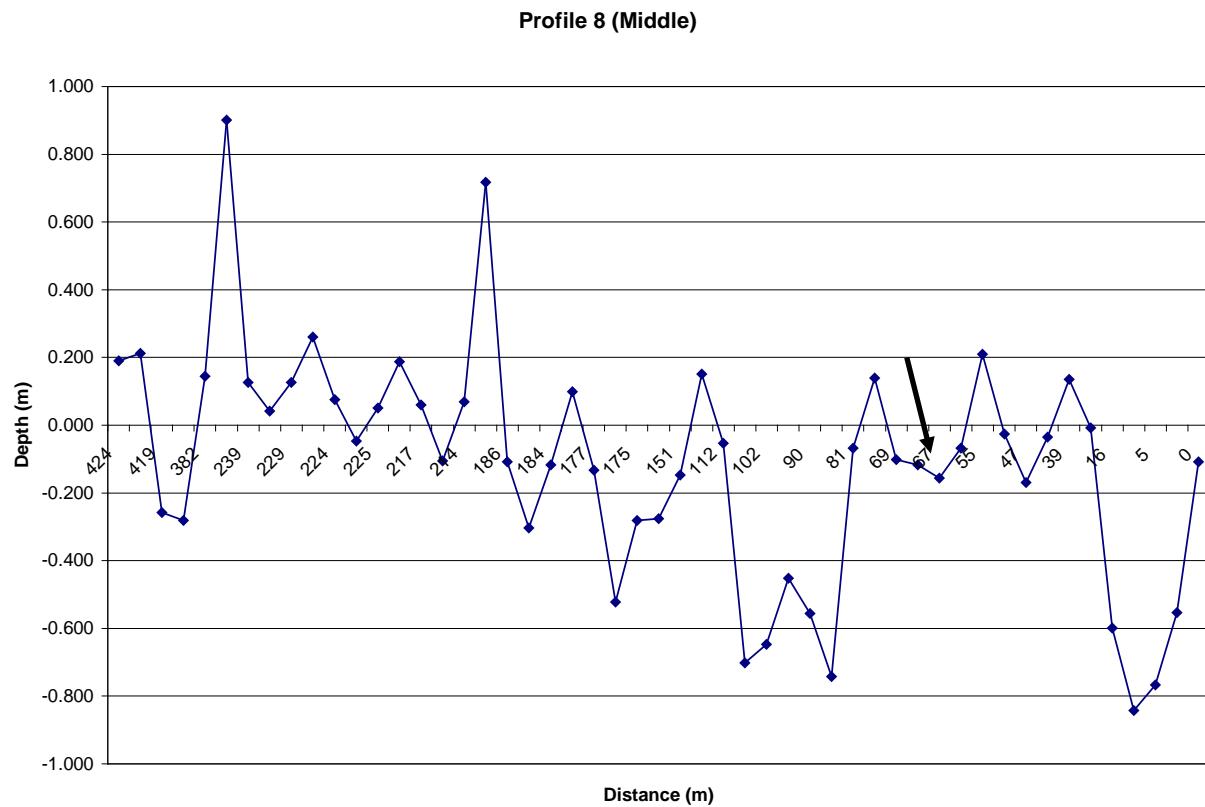


Figure 8. Roost channel profile for Use Site 8 (left to right bank). Arrow indicates roost location.

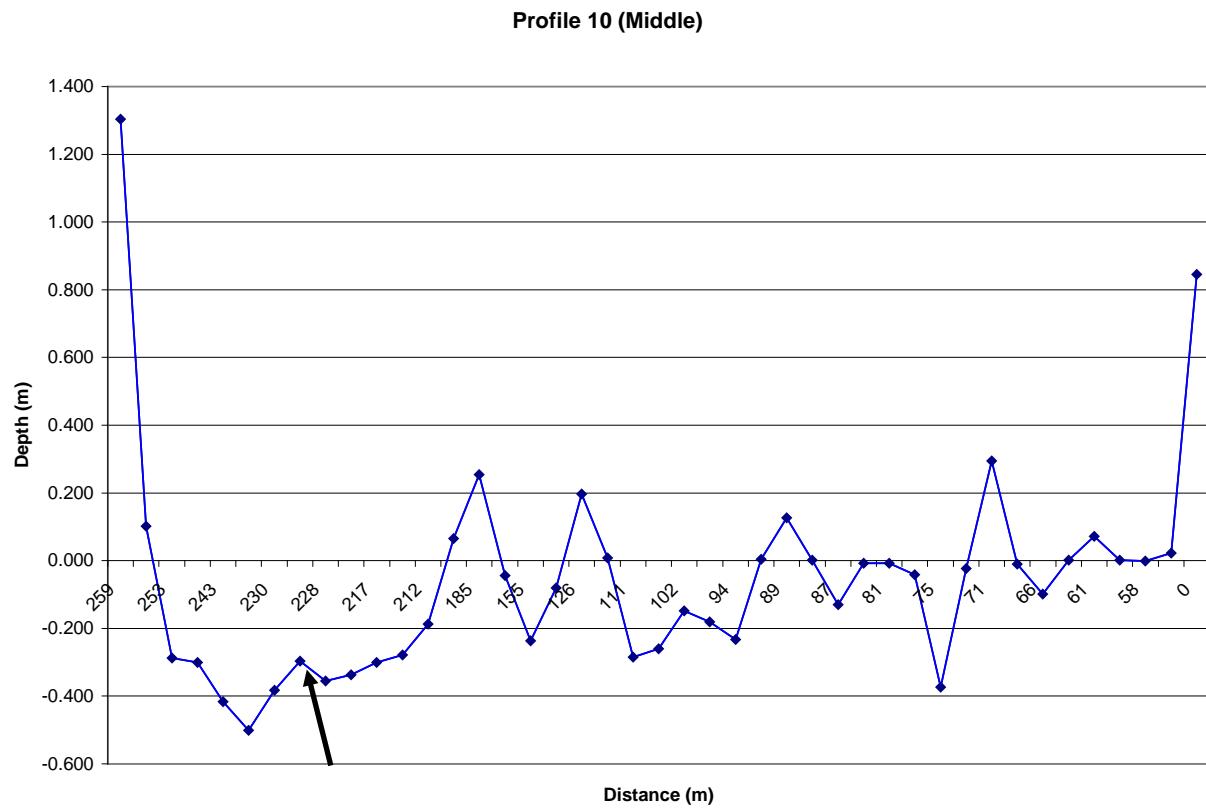


Figure 9. Roost channel profile for Use Site 1 (left to right bank). Arrow indicates approximate location of cranes.

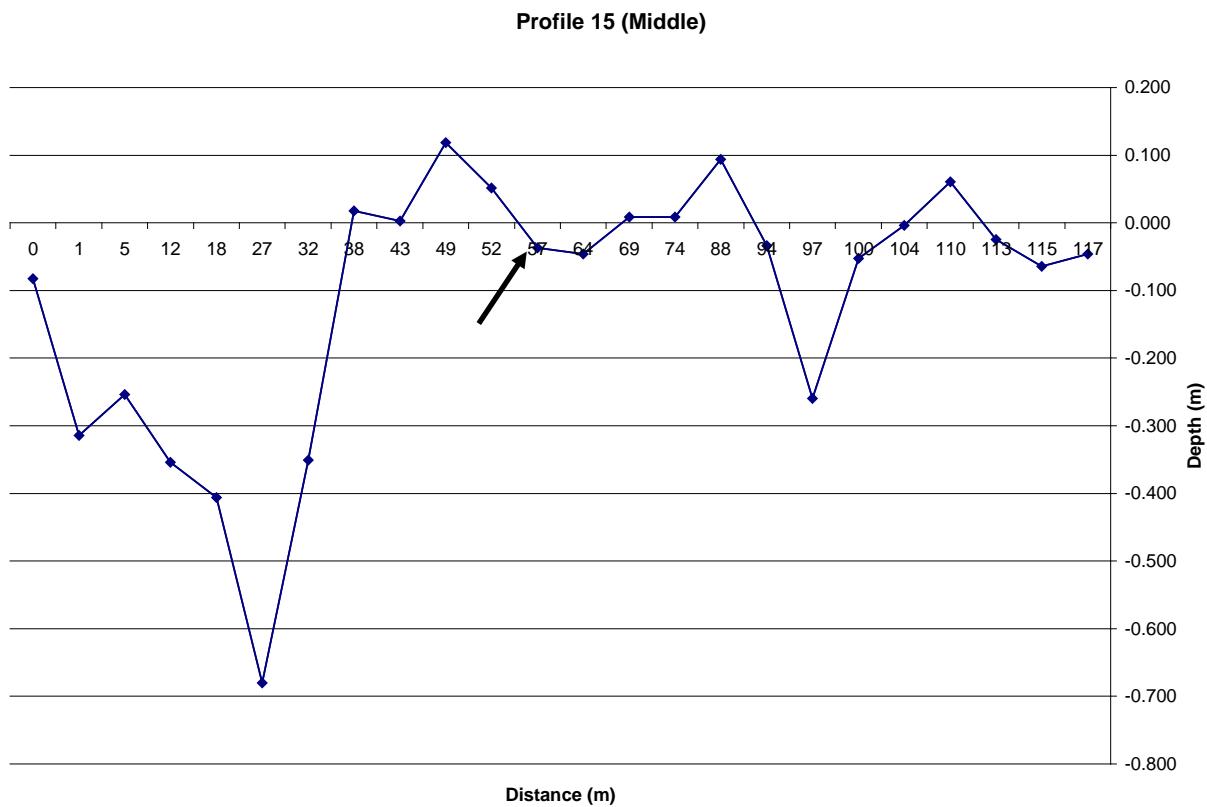


Figure 10. Roost channel profile for Use Site 2 (left to right bank). Arrow indicates roost location.

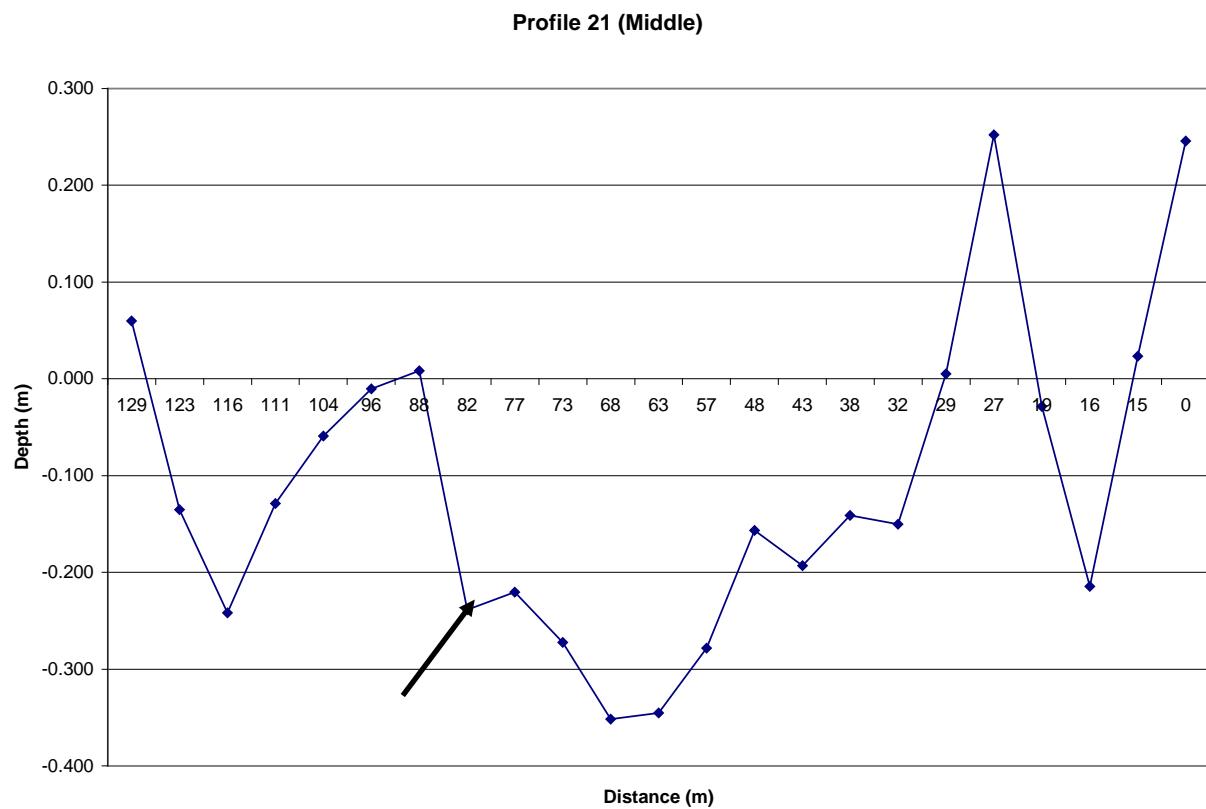


Figure 11. Roost channel profile for Use Site 3 (left to right bank). Arrow indicates approximate location of cranes.

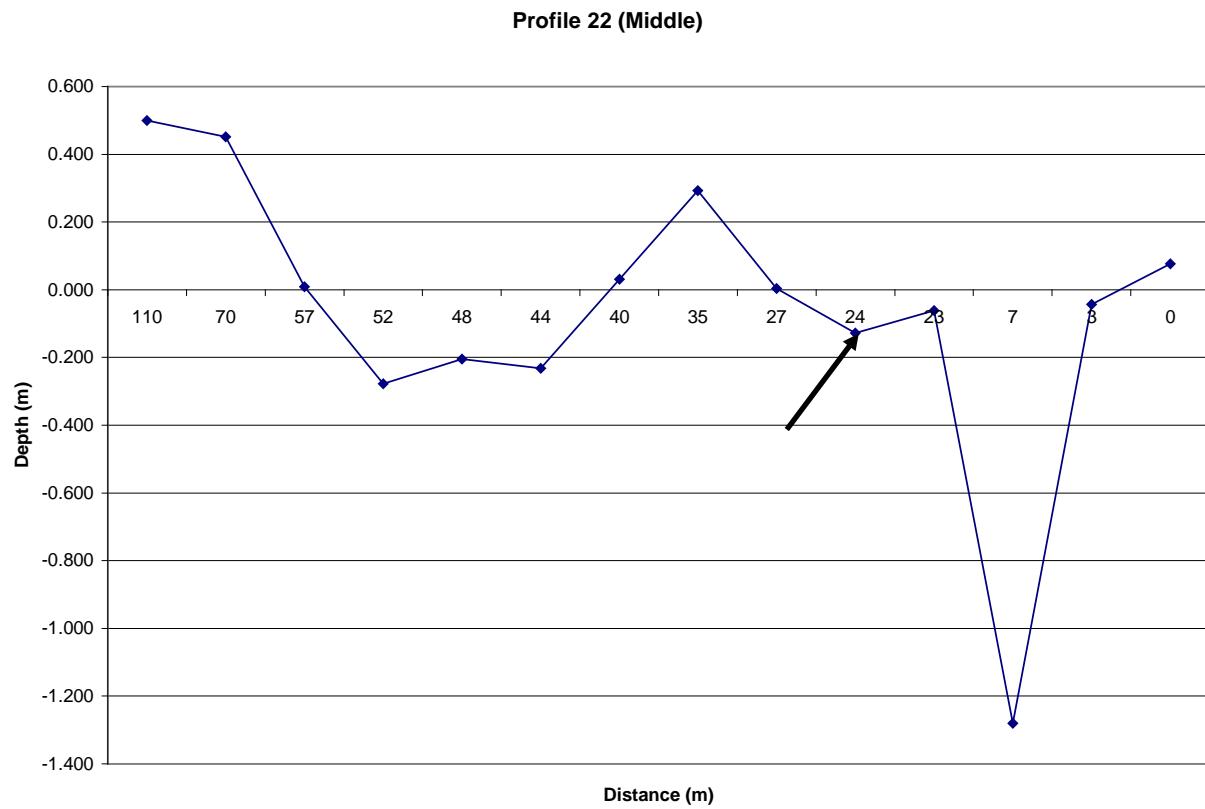


Figure 12. Roost channel profile for Use Site 4 (left to right bank). Arrow indicates approximate location of cranes

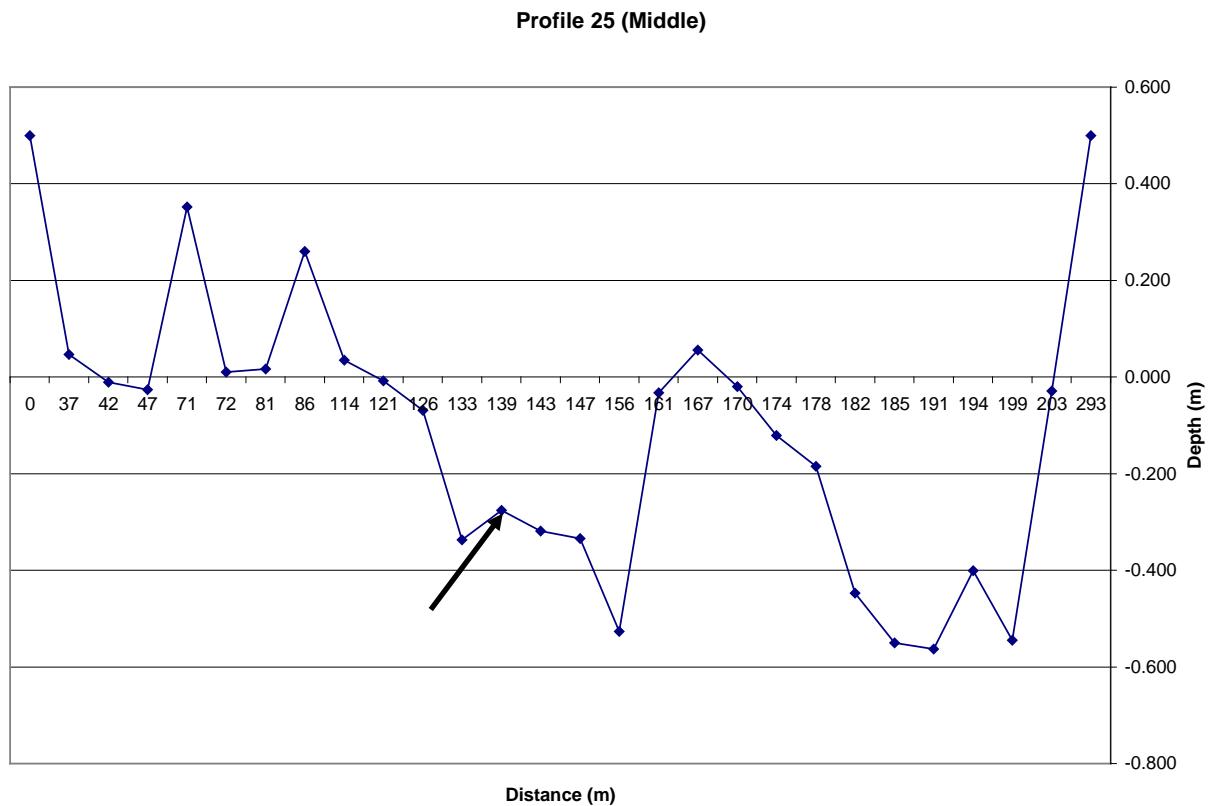


Figure 13. Roost channel profile for Use Site 5 (left to right bank). Arrow indicates roost location.

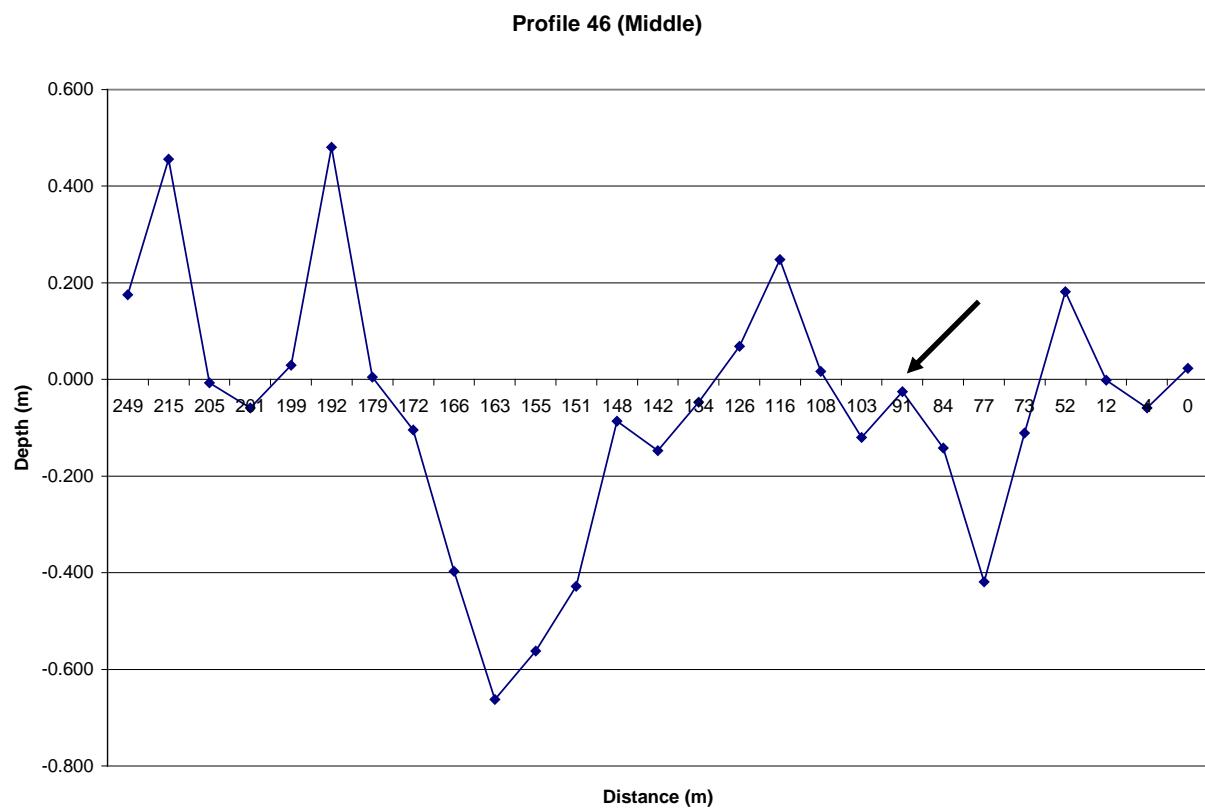


Figure 14. Roost channel profile for Use Site 6 (left to right bank). Arrow indicates roost location.

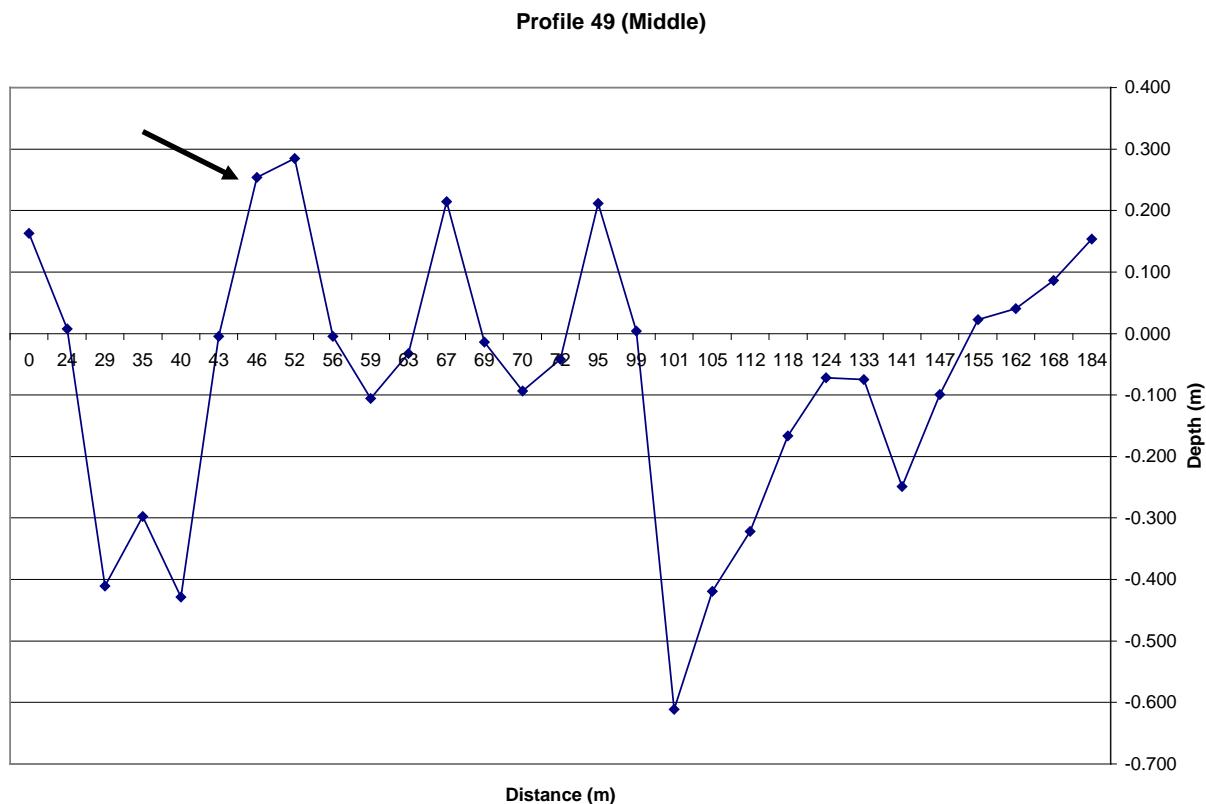


Figure 15. Roost channel profile for Use Site 9 (left to right bank). Arrow indicates roost location.

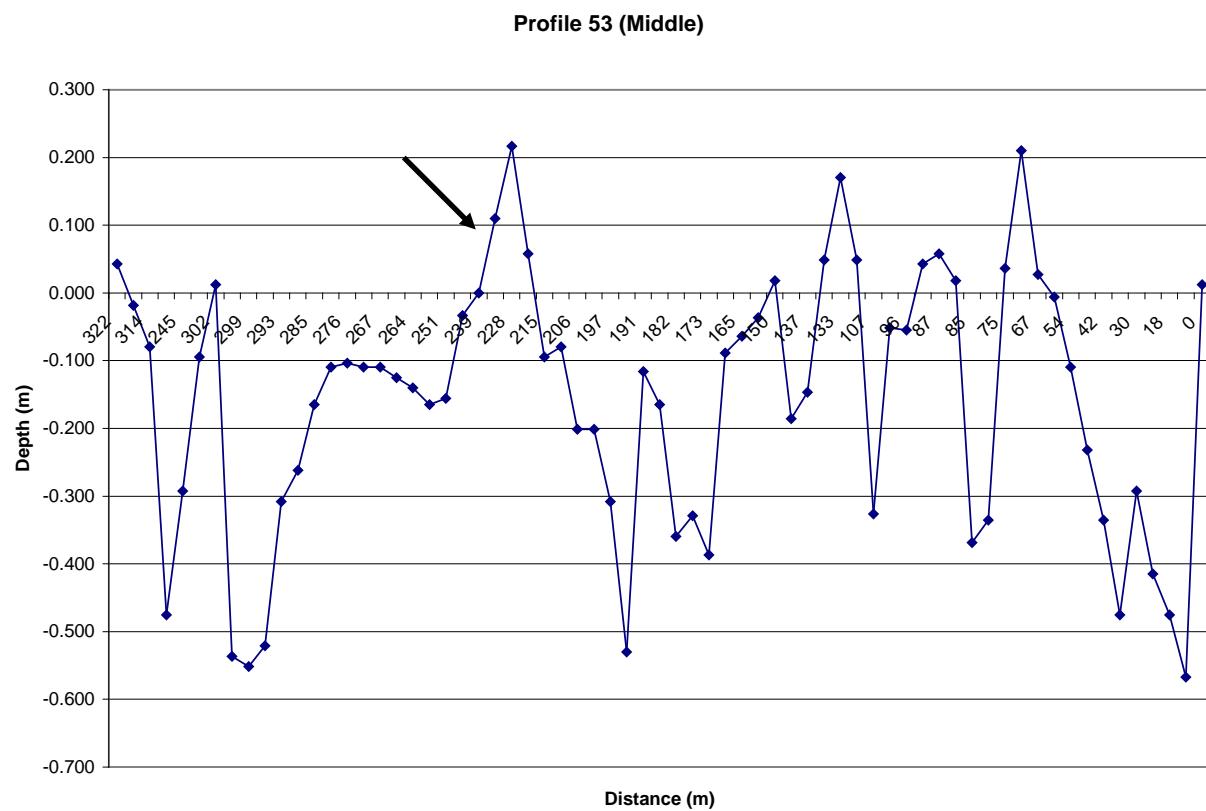


Figure 16. Roost channel profile for Use Site 11 (left to right bank). Arrow indicates roost location.

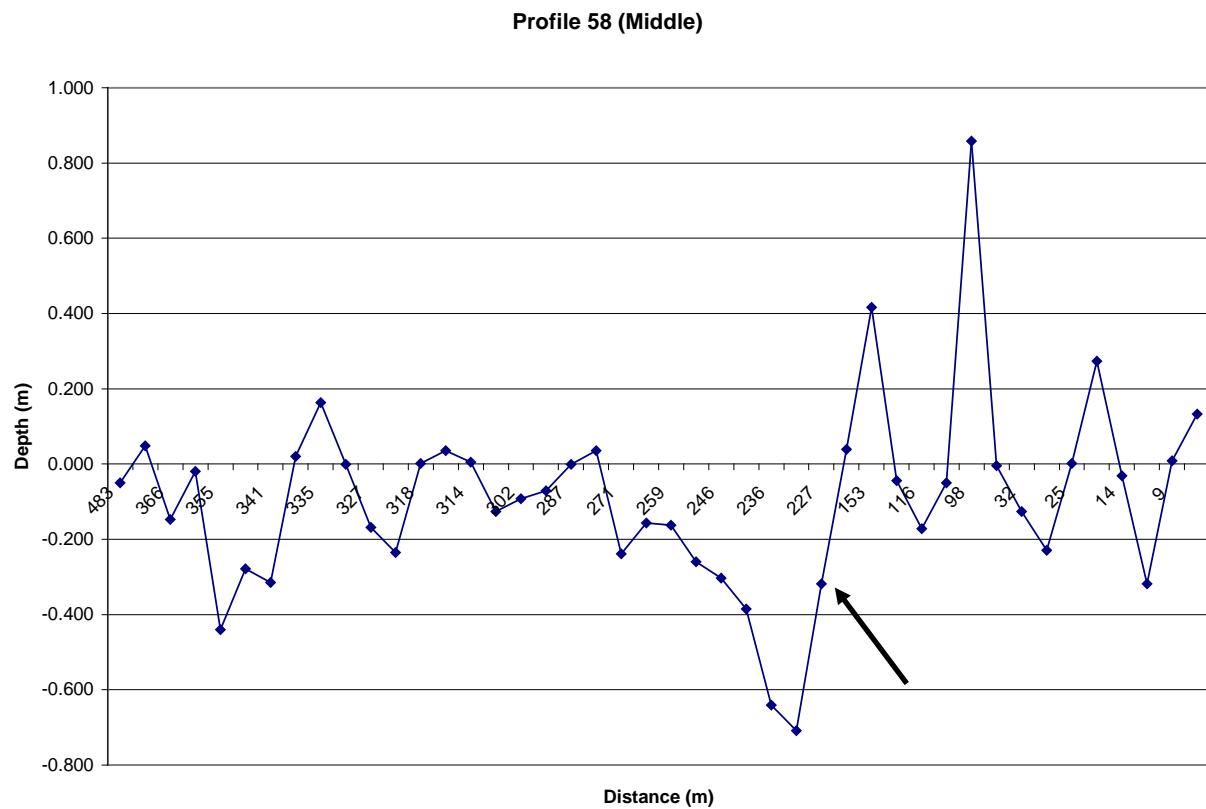


Figure 17. Roost channel profile for Use Site 10 (left to right bank). Arrow indicates roost location.

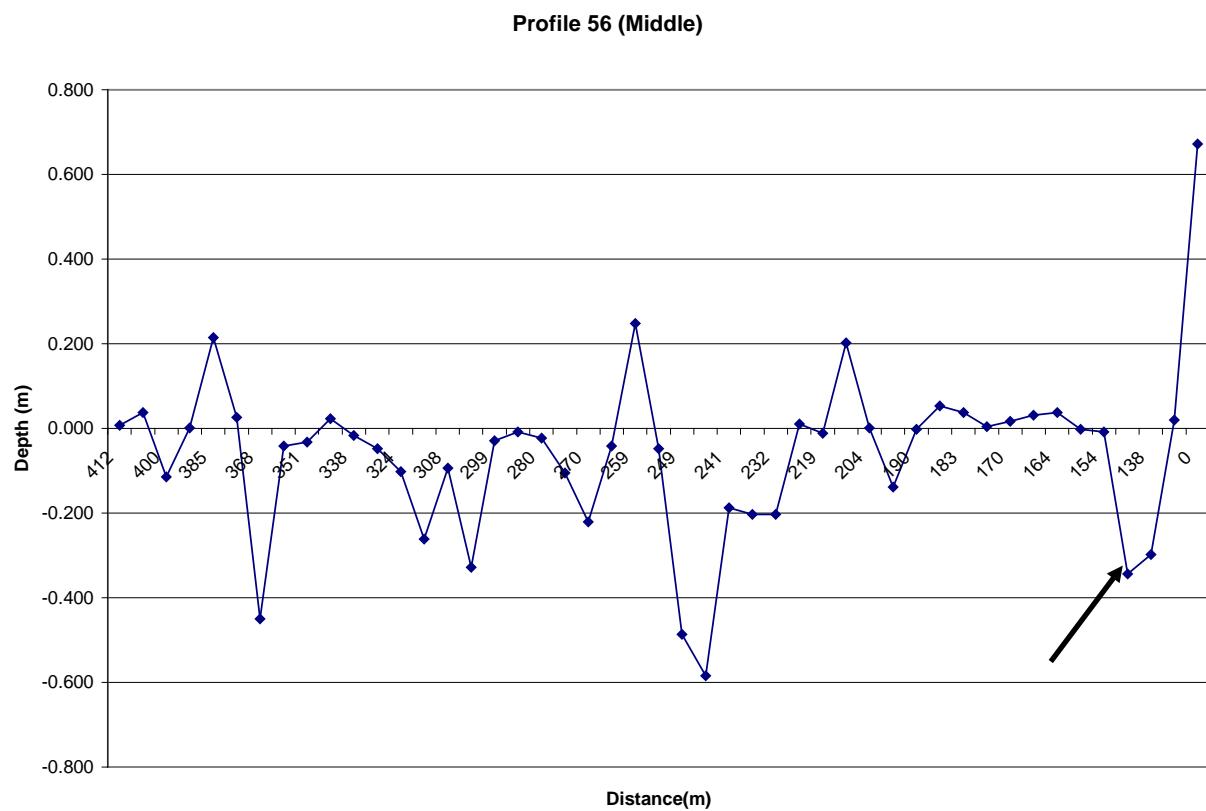


Figure 18. Roost channel profile for Use Site 12 (left to right bank). Arrow indicates roost location.

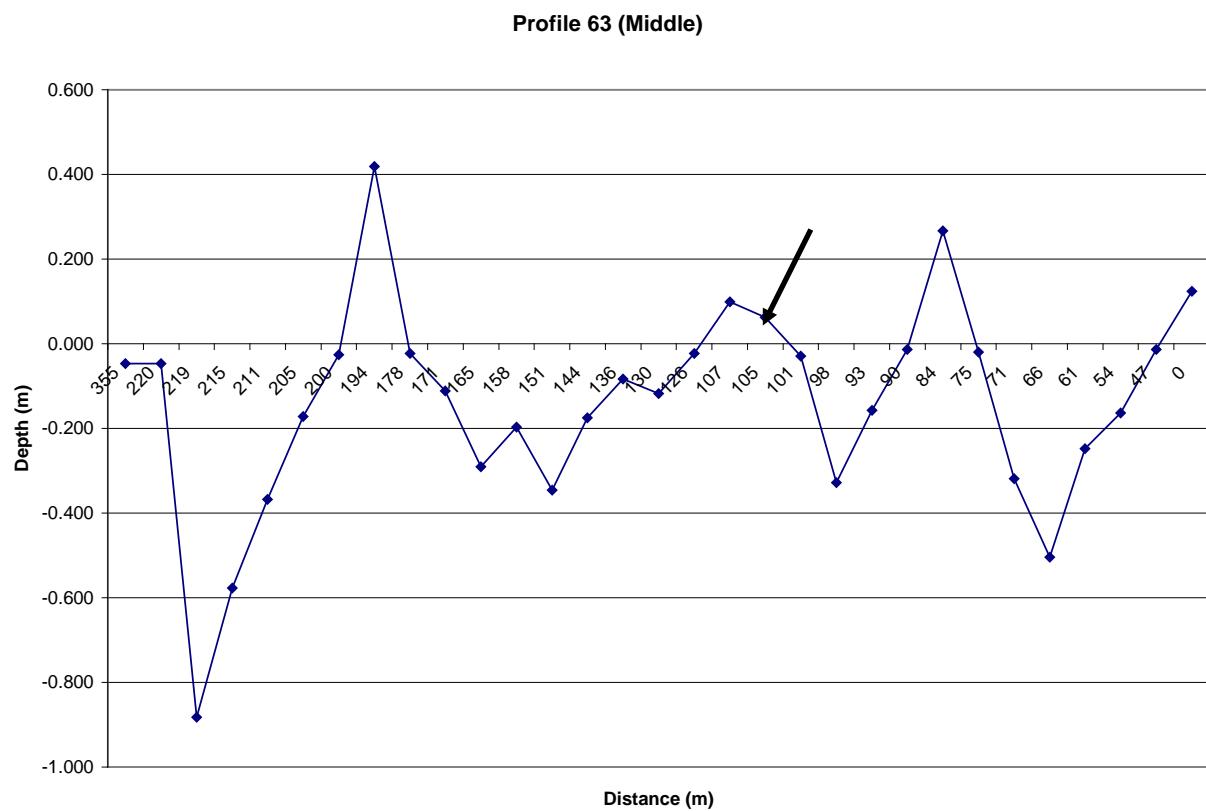


Figure 19. Diurnal use locations (yellow) and riverine roosts (red) in the vicinity of the Alda Bridge, Hall County.

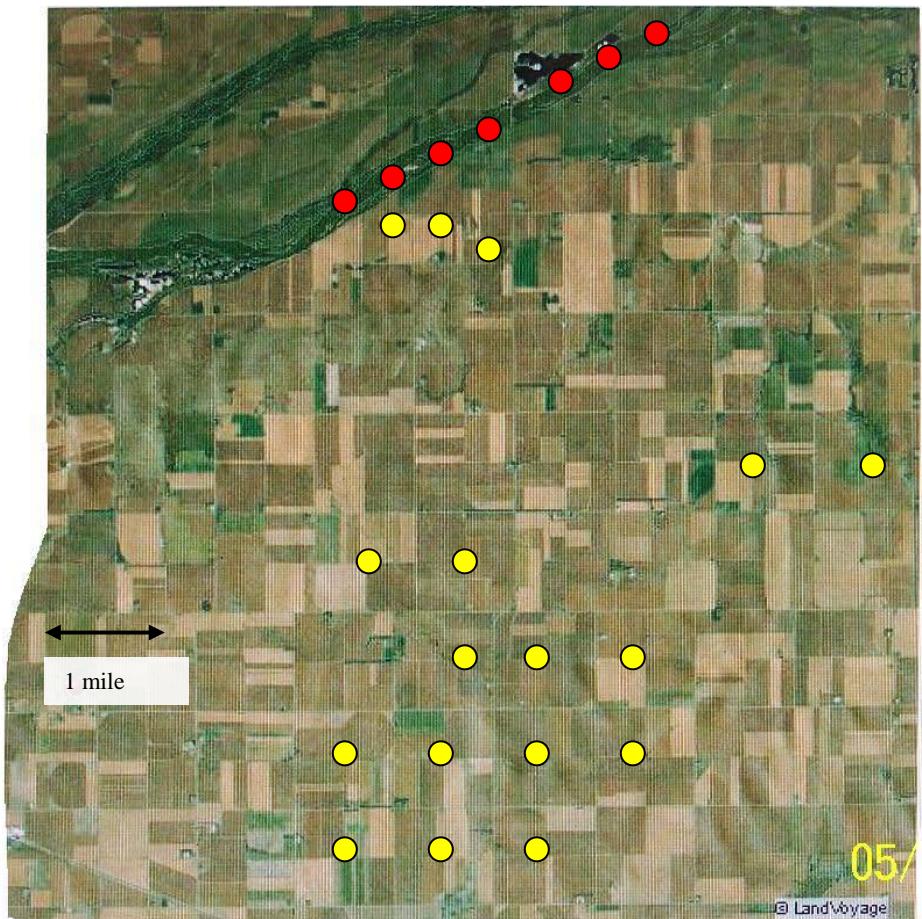


Figure 20. Diurnal use locations (yellow) and riverine roosts (red) in the vicinity of the Elm Creek bridge, Buffalo County.

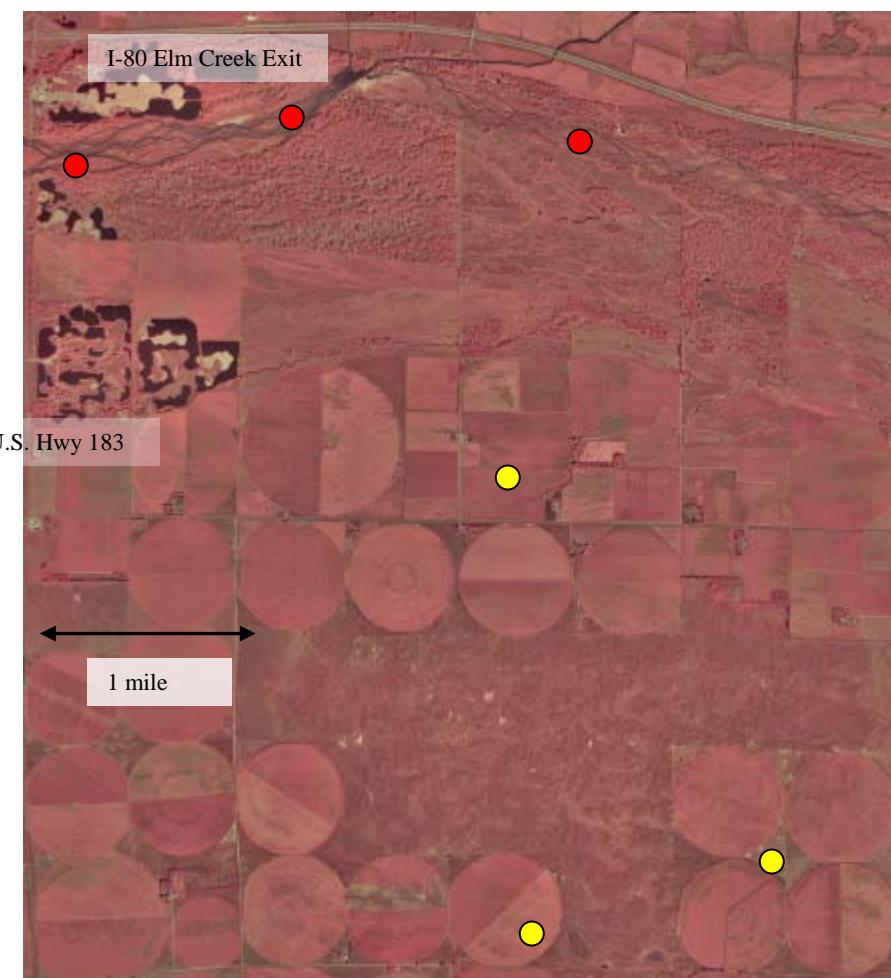


Figure 21. Diurnal use locations (yellow) and riverine roosts (red) in the vicinity of the Cottonwood Ranch, Dawson and Phelps County.

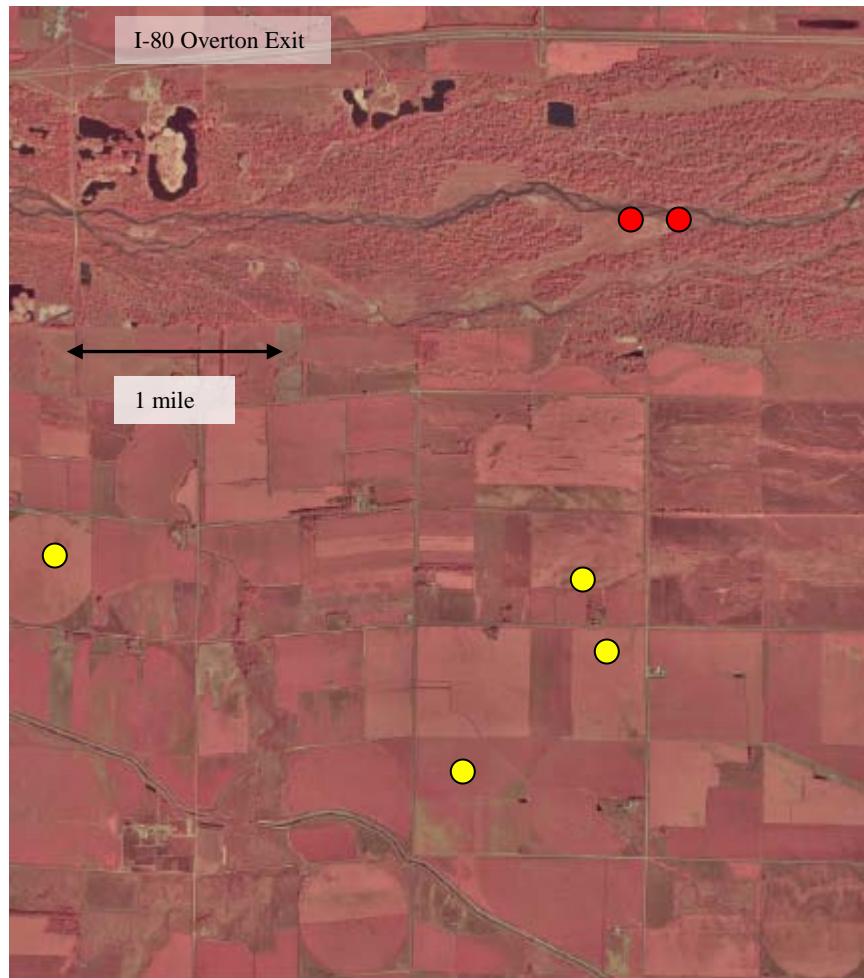


Figure 22. Whooping Crane use locations (green) in the vicinity of the Alda bridge, Hall and Adams County showing those outside of the study area.

