Land Management Plan

For

NEBRASKA PUBLIC POWER DISTRICT COTTONWOOD RANCH PROPERTY

Prepared for:

Platte River Recovery Implementation Program
Governance Committee

Planning Team:

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I. PROPERTY DESCRIPTION AND BACKGROUND

A. Purpose

The purpose of this plan is to outline the habitat improvements and maintenance that will occur at the Cottonwood Ranch property during the first increment of the Program and how those improvements are to be evaluated through the Adaptive Management Plan.

B. Tract Location and Size

The Nebraska Public Power District (NPPD) Cottonwood Ranch Wyoming Property (Property) is 2650 acres in size and is located in portions of Sections 2, 3,4,9,10,11, and 16, T-8N, R-19W. Figure A-1 (located in Appendix A) presents the Property boundary. The tract is located in the Overton to Elm Creek bridge segment and is contiguous with lands owned by the Platte River Whooping Crane Habitat Maintenance Trust (Trust) and The Nature Conservancy (TNC). Figure A-2 shows the property location within the bridge segment and its proximity to existing leased and owned conservation lands.

C. Land Interest

The Property is owned by Nebraska Public Power District (Owner) who will make available to the Platte River Recovery Implementation Program (Program) access to the property for target species habitat improvements and evaluation via a land Sponsorship Agreement for the term of the First Increment of the Program. This Plan constitutes Exhibit C of the aforementioned Sponsorship Agreement and is attached thereto. The Sponsorship Agreement provides the Program with the rights of access to improve, maintain, and evaluate habitat for whooping cranes, least terns, and piping plovers. Owner will maintain use rights for agriculture, recreation, water, and minerals including sand and gravel. While the owner maintains these use rights they will be coordinated with Program needs and objectives and may be administered by either the Owner or the Program. Use rights maintained by the Owner will not impact the value of habitat for the target species as determined by the Owner and the Program.

D. Communication and Coordination

1. Land Owners

Per the Sponsorship Agreement, the Owner and Program will jointly develop yearly Land Management Work Plans (Work Plans). A representative from the United States Fish and Wildlife Service, Nebraska Game and Parks, Program and the Central Nebraska Public Power and Irrigation District will participate in the Planning Team to develop annual Work Plans. In addition, the Program is responsible for submitting a yearly report showing actual work completed receipts and expenditures for the Property during the preceding fiscal year. The Owner and the Program will meet at least twice a year (typically fall and spring) to discuss completed work, future work, and estimated budgets. The Owner has the right to collect receipts from any leases, licenses, contacts, or permits issued or administered for the Property. Proceeds

from these agreements will be divided with the Program as outlined in the Sponsorship Agreement.

Each fall the Owner and Program will determine maintenance needs that will include habitat maintenance and noxious weed control, a grazing plan, fencing needs, and access will be considered and all determinations will be included in the annual Work Plan. Estimated budgets for each activity will be made. In addition each fall specific habitat enhancement activities will be identified by the Planning Team and included in the annual Work Plan. Estimated cost of each activity will be made for budgeting purposes.

Each spring the Owner and the Program will review the annual Work Plan to ensure it is still relevant. For all identified work the contracts will go through the Program procurement procedures. Oversight of the contracts to ensure work is completed in the agreed to manner will be done by the Owner and/or the Program. The party responsible for contract oversight will be addressed in the annual Work Plans. As per the Sponsorship Agreement the Owner has the right to stop all Program related work which they believe is not consistent with the work described in this plan or the annual Work Plan. Any need to stop will be immediately communicated to the Executive Directors office.

Any notices of noxious weed infestations given to the owner will be shared with the Program and plan for controlling the infestation will be jointly developed between the Owner and the Program. If an agreed to plan cannot be developed, the owner will hire the local weed control agency to implement control measures and bill the Program for reimbursement.

Any concerns expressed to the Owner or the Program regarding activities on the property will be conveyed to the other party and a joint decision will be made on how to address the concerns. Both the Owner and the Program agree to abide by the good neighbor policy in the Program Land Plan.

II. RESPONSIBILITIES

A. Restoration and Management Responsibilities

1. Planning

This Land Management Plan was written by representatives of the Planning Team and this group will be responsible for reviewing annual Work Plans and for providing input into management actions. Program Staff will be responsible for conducting or retaining contractors to plan, design, conduct and obtain permits required for specific activities to be carried out under this plan, unless a request is made to Owner to provide some of these services. Implementation of habitat improvements and management activities will be carried out by Program Staff or by contractors under the oversight of the Program or Owner.

2. Enforcement

Access for recreation is currently being managed by NPPD.

B. Budget and Invoicing

Program will be responsible for all habitat improvements. Program Staff will be responsible for budgeting and invoicing of activities on the property. No later than October 1 of each year during the term of the Land Sponsorship Agreement, a report showing receipts and expenditures for the property during the preceding fiscal year will be submitted to Owner. All proceeds collected from activities on the property must be dispersed per the Sponsorship Agreement by December 31 of each year.

C. Plan Authorization and Modifications

The Adaptive Management Working Group (AMWG), Land Advisory Committee (LAC) and Technical Advisory Committee (TAC) will provide comments on this Land Management Plan and the LAC will forward a recommendation to the Governance Committee (GC). The GC and Owner must authorize this Land Management Plan before it can be executed. In addition, the LAC and TAC will provide comments on the annual Work Plan and the LAC will forward a recommendation on the Annual Work Plan to the GC. The GC and Owner must approve the annual Work Plan before they can be executed.

Any revision to the Land Management Plan will undergo review by the Planning Team and be approved by the Program and Owner. This plan may be updated to reflect changes to the Program per the adaptive management strategy or in response to changing environmental conditions.

III. EXISTING LANDCOVER

A. Land Cover

Existing land cover/use on the Property was evaluated utilizing the updated 2005 land cover overlay developed in cooperation with the Whooping Crane Maintenance Trust Inc. (Crane Trust) and the United States Fish and Wildlife Service (USFWS). The land cover classifications from the overlay were compared to the most recent United States Department of Agriculture (USDA) Farm Service Agency (FSA) and Program aerial photography in order to identify any land use changes that have occurred since the development of that dataset. The land cover/use for this tract is summarized in Table 1. Several additional land cover/use related maps are located in Appendix A including:

- Figure A-3 – 2005 Land Cover/Use
- Figure A-4 – National Wetland Inventory
- Figure A-5 – 1938 Aerial Photography
- Figure A-6 – 1998 CIR Aerial Photography
- Figure A-7 – 2008 CIR Aerial Photography

Table 1 – Cottonwood Ranch Property 2005 Land Cover/Use Summary

Land Cover Classification	Acres	Percent of Tract
Ag	76.49	2.93%
Bareground/Sparse Veg	53.66	2.05%
Canal/Drainage	0.46	0.02%
Floodplain Marsh	21.36	0.82%
Mesic Wet Meadow	179.96	6.88%
Phragmites	28.84	1.10%
Riparian Shrubland	140.18	5.36%
Riparian Woodland	895.58	34.25%
River Channel	65.56	2.51%
River Early Successional	122.17	4.67%
River Shrubland	43.06	1.65%
Roads	17.17	0.66%
Rural Developed	7.74	0.30%
Sand Pit	0.20	0.01%
Unvegetated Sandbar	42.69	1.63%
Upland Woodland	6.55	0.25%
Warmwater Slough	33.78	1.29%
Xeric Wet Meadow	879.06	33.62%

B. Existing Land covers of Interest

1. Non-Riverine Surface Water

The property contains over 8 miles of enhanced or constructed linear wetlands (sloughs) and one palustrine wetland that at peak capacity is 22 acres. These features can be seen on the aerial image in Figure 7-A.

2. River Frontage and Active Channel Widths

There is one main channel on the property. The amount of average annual discharge in this channel relative to the total flow at the Overton Bridge 4 miles upstream has varied over time (Table 2). Historic photos of the property show many channels and even as late as 2001 there were two channels of nearly equal flow with one of those being split for over a mile of its length. In addition, Spring Creek flows into an old channel on the north side of the property and a ground water drain flows into an old channel on the south side of the property. The Property includes approximately 15,840 feet of river length on the northernmost and main channels, and approximately 10,560 feet of the southernmost and south secondary channel. Active channel width as measured on June 2008 color infrared photography at 400 meter intervals beginning at the west property boundary range from 75m (250ft) to 165m (550ft) and average 115.5m (average 385ft) width include water and bare sand islands as determined by the observer calculating widths. None of the other channels have wetted widths that are deemed suitable for use by the target species.

Table 2. Percentage of total annual flow as measured at the Overton gauge (USGS) in the main channel at the NPPD Cottonwood Ranch Property gauge (USGS) for water years 2002 to 2007 covering the entire time period the Cottonwood Ranch gauge has been in place.

Year	Cottonwood Ranch Main Channel Average Annual Discharge CFS	Overton Total Flow Average Annual Discharge CFS	Percentage Of Total Flow
2002	481	692	70%
2003	309	440	70%
2004	245	320	76%
2005	410	481	85%
2006	341	375	91%
2007	691	787	88%

3. Island and Channel Bank Height

Maximum bank height on the Property ranges from four to six feet above the thalweg during summer flow conditions. Small islands and sandbars located within the active channels range from inches to two feet above water surface. LiDAR data will be provided when available.

4. Contiguous Sand Substrates

Currently there are 22 acres of islands at a flow of 1200 cfs that are maintained as bare sand.

5. Groundwater

Depth to groundwater on the accretion portion of the Property is typically less than three feet. Depth to groundwater on the pastureland south of the channel ranges between two and six feet based on Nebraska Department of Natural Resources well registration logs for several monitoring wells installed by the Central Platte Natural Resources District (CPNRD). A groundwater drain bisects section 16. The drain is approximately five feet deep and controls the groundwater elevation in the area.

6. Flooding in Non-Wetland Areas

Intermittent flooding occurs in non-wetland areas of the accretion ground during high flow events. Flooding and ponding of water also occurs on the grassland portion of the Property during rainfall events.

7. Power/Transmission Lines

There is a 34.5 kW transmission line running west to east on the on the north edge of section 16. The line is owned by Southern Public Power District.

C. Incompatible Uses and Environmental Concerns

The Property does not currently have land uses that are incompatible with target species habitat. There are no incompatible land uses on neighboring properties. There are no past or present uses of this or adjacent properties that raise potential environmental concerns.

IV. HABITAT IMPROVEMENTS AND MAINTENANCE

The entirety of the Property will be managed as complex habitat.

A. Goals and Objectives

All habitat improvements and maintenance carried out under this Management Plan will be implemented to achieve the following goals and objectives which will function as the benchmark for evaluation of ongoing activities.

1. Program Goals
    a. Improve and maintain migration habitat for whooping cranes and reproductive habitat for least terns and piping plovers.
    b. Reduce the likelihood of future listings of other species found in the area.
2. Program Objectives
    a. Protecting, restoring where appropriate, and maintaining 10,000 acres of habitat in the central Platte River area between Lexington and Chapman, Nebraska
3. Management Objectives
    a. Improve production of least terns and piping plovers from the central Platte River.
        i. Increase number of fledged tern and plover chicks
            1. Increase nesting pairs
            2. Increase fledge ratios
        ii. Reduce adult mortality
    b. Increase available habitat for whooping cranes during migration
        i. Indicator is response by increased use
    c. Within the overall objectives 3.a & 3.b, provide benefits to non-target listed species and non-listed species of concern and reduce the likelihood of future listing.

1. Property Maintenance Goals

- Goal 1a – Reestablish and Maintain Property Boundary
    - Objective 1a1 – Address any boundary identification and delineation needs of the Program.
    - Objective 1a2 – Establish and maintain permanent boundary fence as needed.
- Goal 1b – Protect Downstream Flow in all channels
    - Objective 1b1 – Ensure management actions do not alter flow splits beyond the property boundary.
- Goal 1c – Provide safe and reliable access to the north side of the main channel.
    - Objective 1c1 – Build a bridge with a capacity to allow farm equipment over the northern most channel at the Cottonwood Ranch Property without restricting channel width or flow.
- Goal 1d – Manage noxious weeds and in-channel Vegetation
    - Objective 1d1 – Increase whooping crane use and least tern and piping plover reproduction by managing existing stands of vegetation.
    - Objective 1c2 – Control noxious weeds.

2. Water and Sand Habitat Goals

- Goal 2a – Increase the amount of land cover types that are shown to be used by whooping cranes, and least terns and piping plovers.
    - Objective 2a1 – Create and maintain active channels that have a wetted width of at least 500 feet at 1200 cfs.
    - Objective 2a2 – Create and maintain an unobstructed view of 1200 feet with the active channel area contained within it.
    - Objective 2a3 - Create bare sand islands of at least 1.5 acres that are 1.5 feet above water in channels with a wetted width of at least 400 feet at a flow of 1200 cfs, with an overall unobstructed view of at least 200 feet from edge of island.
    - Objective 2a4 – Create off-channel tern and plover nesting habitat with 20 acres of sand and a 50/50 sand water ratio, that has at least 200 feet of unobstructed view from the edge of the nesting substrate.

3. Grassland and Wet Meadow Habitat Goals and Objectives

- Goal 6 – Manage grassland/wet meadow for the benefit of target species and/or species of concern.
    - Objective 6a1 – Provide 40 acres of historic channel area cleared of existing riparian woodlands to develop into a wet meadow and/or grassland. This effort will be guided by a working of definition of wet meadow verses grassland developed in the Adaptive Management Working Group and Technical Advisory Committee.
    - Objective 6a2 – Manage existing grasslands in varying degrees of vegetative stature as of March first in any given year to provide for use by species of concern (sandhill cranes and grassland nesting birds)

B. Implementation (Strategies, Methods, Areas, Timelines, Costs and Responsibilities)

This section provides the strategies and methods for achieving the goals and objectives outlined in the previous section. It also presents work areas and preliminary timelines and estimates of cost. Implementation activities will be delineated in greater detail in annual Work Plans that will be reviewed by the Program's Land Advisory Committee (LAC) and approved by the Program's Governance Committee (GC). These annual work plans will are shown in Appendix C of this Plan.

1. Goal 1a, Objectives 1a1 & 1a2 - Reestablish and maintain property Boundary

- **Strategy** – The Program Executive Director's Office (ED Office) will determine where additional boundary fence is needed to protect the Programs interest. Where needed NPPD and the ED Office will establish and maintain permanent boundary fence. All boundary discussion will be based on the survey completed by Tagge Engineering on June 19, 1992. This official survey has been provided to the Program.
- **Methods –**The Program's Land Manager will identify any fencing needs and communicate those to NPPD. NPPD shall have a representative present at any meetings between the Program and neighboring landowners that concerns boundaries, land use practices, NPPD activities, or Program Activities on the Cottonwood Ranch Property. Program identified property boundary discrepancies will be reviewed by the Owner

before any actions are taken. All surveys (if needed) will be performed by a Professional Surveyor licensed in the State of Nebraska. Permanent perimeter fencing will be adequate for livestock containment and contain provisions for temporary fencing of active channels. Woody vegetation within twenty (20) feet of the permanent fencing will be removed and this area will be maintained free of such vegetation. The Owner and ED Office will work with neighboring landowners when possible to do likewise on their property. Permanent fencing will be inspected and repaired as necessary each spring.

- **Area –** As deemed necessary permanent fencing will be established on the entirety or any portion of the property boundary outside of active channels.
- **Timeline** – Identification of any fencing needs will occur in 2009. Fencing activities if needed will proceed in the spring of 2010 if no boundary disputes occur.
- **Costs** – Woody vegetation removal and repair/construction of permanent fencing is expected to cost less than $10,000. Annual fence maintenance is expected to cost less than $1,000.
- **Responsibilities** – The Program's Land Manager is responsible for identifying to NPPD any areas that currently do not have fence but believe it is needed. NPPD and the Program Land Specialist will then jointly meet with the neighboring landowners to explain the need for the fence. The Owner is responsible for coordinating with the Program for fence construction and repair. The Owner and Program are responsible for fencing costs as per the Sponsorship Agreement.

2. Goal 1b, Objective 1b1 – Protect Downstream Flow in all Channels

- **Strategy –** Before any management actions are undertaken that may directly affect flow distribution in any channels, continuous monitoring of flow in all affected channels will occur for at least one year.
- **Methods –** Monitoring methods will be established by the Program's Water Advisory Committee (WAC) and Technical Advisory Committee (TAC). Flow split preservation or restoration methods will be identified as necessary and approved by the GC under advisement from the WAC.
- **Area –** Flow consolidation proposed by the Platte River Environmental Impact Statement team can be seen on Figure 8.
- **Timeline –** Monitoring needs and methodologies will be developed in 2009.
- **Costs –** Unknown
- **Responsibilities –** The Program's Adaptive Management Working Group (AMWG) will define the need for consolidation. Once it is desired and agreed to by the Owner, Program staff or contractors will be responsible for designing channel blocks and return structures. All activities will be reviewed by the WAC and Program's Technical Advisory Committee (TAC) to determine if flows are protected and identify any additional data needs. Final approval will be by the GC.

3. Goal 1c, Objective 1c1 – Bridge North Channel

- **Strategy** – Construct and maintain a bridge.
- **Methods** – Contract design and construction.
- **Area** –North channel
- **Timeline –** Designed 2009 build as soon as approved.

- **Cost** – $250,000
- **Responsibilities –** Program Staff will be responsible for hiring an engineering firm to design the bridge, final design will be approved by a NPPD civil engineer. Program will contract construction with final approval of construction being done by an NPPD engineer.

4. Goal 1d, Objective 1d1 – Manage Vegetation in channel areas

- **Strategy** – Maintain a an area of unobstructed view with less than 1 meter tall vegetation over widths of at least 1200 feet for the entirety of the area. The active channel will be contained within this area of unobstructed view
- **Methods** – Grazing will be used to maintain herbaceous vegetation at less than 1 meter. Woody vegetation occurring in cleared areas will be managed on a 3 year rotation using fire, mechanical and/or herbicides. This was last performed in 2008. Areas of the channel that are desired to be mobile will be disked as needed to remove annual vegetation. As a part of certain adaptive management experiments, the AMWG may identify areas that will not receive biological or mechanical vegetation modification in order to test theories of hydraulic vegetation control. However, the primary methods of vegetation management on Cottonwood Ranch will consist of biological and mechanical means.
- **Area** – Vegetation control will be conducted in current and future active channel areas and the 1200 foot wide unobstructed view area that has been created by past management efforts.
- **Timeline** – Annual vegetation maintenance will be ongoing throughout the life of the agreement. Experimental hydraulic methods will need to be designed in 2009 and 2010 to implement in later years.
- **Cost** – Annual costs will be identified in the annual Work Plans and are expected to be less than $15,000.
- **Responsibilities** – Owner and Program Staff are responsible for identifying needs and infestations and planning/coordinating control efforts. Control activities will be carried out by contractors.

5. Goal 1d, Objective 1d2 – Control noxious weeds

- **Strategy –** Infestations of noxious weeds will be eliminated (to the extent possible) annually. Noxious weeds will be controlled mostly by implementing comprehensive management plans to promote healthy vegetative communities. Noxious weed control will be coordinated with the local weed control authorities and/or Platte Valley Weed Management Associations.
- **Methods –** Herbicide, mechanical and biological control will be integrated to achieve effective control.
- **Area –** Noxious weed control will be conducted on the entirety of the property.
- **Timeline –** Noxious weed control activities will be conducted annually.
- **Cost –** Annual costs will be identified in the annual Work Plans and are expected to be less than $20,000.

- **Responsibilities –** Owner and/or Program Staff are responsible for identifying infestations and planning/coordinating control efforts. Control activities will be carried out by contractors or Program Staff as appropriate and overseen by owner.

6. Goal 2a, Objective 2a1& 2a2 – Increase the amount of land cover types that are shown to be used by whooping cranes least terns and piping plovers. Active Channel

- **Strategy –** Mechanically widen the main channel area that is less than 500 feet wide to minimum of 500 feet of wetted width at 1200 cfs. Some areas of the channel will be expanded to 750 feet at 1200 cfs.
- **Methods –** Mechanical modification of channels has already occurred on much of the property and the above described conditions exist in many areas. However, future modifications are also expected to be mechanical with most of the material being pushed into the existing active channel areas. Such mechanical actions will require a 404 permit. The Program will be responsible for attaining this permit, unless they request NPPD to obtain the permit to expedite management in 2009 and 2010. Sediment will not be added in amounts that exceed the previous year's modeled shortages for the Cottonwood Ranch Property when using Veg/Sed or other models accepted by the Program or 50,000 cubic yards annually. Sediment will be added in a manner that does not raise the bed to a point that causes water at flows of 1200 cfs or less to flow out of the main channel and flow down channels that are not being managed. Sediment will not be added in a manner that would back water up on or change the slope of the bed on neighboring properties. Vegetation control to maintain unobstructed view was addressed number 3. Activities include clearing 30 acres of trees and moving approximately 250,000 cubic yards of material.
- **Area –** 2.5 miles of channel starting 0.5 miles upstream from the east boundary line on the main channel.
- **Timeline –** Planning, design and permitting and construction will occur in 2009 and proceed as field conditions dictate. Tree clearing will occur in 2009 and channel widening will occur on a schedule that will allow the sediment to be added to the active channel as stated above. All work should be completed by 2013. Schedules will be addressed in annual work plans attached as Appendix C.
- **Cost –** Planning, design and permitting is expected to cost approximately $30,000. Construction is expected to cost approximately $650,000 ($750/acre for clearing, $2.40/yard for sediment movement)
- **Responsibilities –** Program Staff and/or contractors in coordination with Owner will be responsible for planning, design and permitting. Review of all activities will be done by the AMWG. Contractors will perform the construction and maintenance work. Program will hire contractors and Owner/Program Staff will oversee the contractors during construction activities.

7. Objective 4b – Goal 2a, Objective 2a3 – Increase the amount of land cover types that are shown to be used by whooping cranes least terns and piping plovers. Bare Sand Islands

- **Strategy –** Mid-channel islands of at least 1.5 acres in size and 1.5 feet above water, in channels with at least 400 feet of wetted at 1200 cfs and an unobstructed view of at least 750 feet will be mechanically created. Surveys will also be done to see if islands form

naturally as a result of FSM that meet these criteria. Mechanically created islands will be maintained by annual application of preemergent herbicide. All islands will be fenced to keep cattle off during the nesting season

- **Methods –** There are two current islands totaling 22 acres. Additional islands will be formed in the process of mechanically widening active channels.
- **Area –** 2.5 miles of channel starting 0.5 miles upstream from the east boundary line on the main channel.
- **Timeline -** Planning, design and permitting will occur in 2009.
- **Cost –** Annual maintenance (mechanical, herbicide, and fencing) is expected to be approximately $10,000.
- **Responsibilities –** AMWG will determine the need for more islands of potentially different sizes to help determine what constitutes nesting habitat for least terns and piping plovers. Program Staff and Owner in coordination with the AMWG will be responsible for planning, design and permitting. Contractors will be hired by the Program and perform the construction and maintenance work. Contract oversight will be conducted by the Owner/Program Staff.

8. Objective 4b – Goal 2a, Objective 2a4 – Increase the amount of land cover types that are shown to be used by whooping cranes, least terns and piping plovers. Off Channel

- **Strategy –** Off-channel tern and plover nesting habitat will be created in the forested floodplain by removing the vegetation and excavating/moving existing sand/sediment to create a nesting peninsula of approximately 20 acres in size with approximately 20 acres of water surrounding the peninsula. Water will vary in depth from 0 depth at 1200cfs to 6 feet depth at 1200 cfs with a minimum of 10 feet wide being 6 feet deep in the middle of the water. The access point will be protected by electrified predator fencing and the island will be maintained free of vegetation
- **Methods –** The peninsula will be created by pushing and excavating material from the area that will be water. The peninsula will be maintained free of vegetation through the annual application of pre-emergent herbicide.
- **Area –** The approximate area is presented in Appendix C.
- **Timeline -** Planning, design and permitting will occur in 2009. Construction will be completed in 2010 or 2011.
- **Cost –** Planning, design and permitting is expected to cost approximately $30,000. Construction is expected to cost approximately $600,000 ($2.40/cubic yard of material moved). Annual maintenance (mechanical and herbicide) is expected to be approximately $3,000.
- **Responsibilities –** Program Staff and/or contractors in coordination with Owner will be responsible for planning, design and permitting. Review of all activities will be done by the AMWG. Contractors will perform the construction and maintenance work. Program will hire contractors and Owner/Program Staff will oversee the contractors during construction activities.

9. Goal 6. Objective 6a1 & 6a2 Manage grassland/wet meadow for benefit of target species and/or species of concern.

- **Strategy –**Existing grasslands will be managed to provide a diverse mixture of vegetative structure as of March 1 in all years. This will include short structure for crane use (primarily sandhill crane) and taller standing dead vegetation for certain grassland nesting birds. In addition to the existing 1060 acres of grassland, 40 acres of riparian woodland will be cleared and an attempt will be made to create a riparian grassland/wet meadow. In conjunction with this process the AMWG will set objectives to measure the success or failure of this effort.
- **Methods –** Grazing, mowing and fire will be used to manage existing grasslands. Methods for developing a grassland/wet meadow out of riparian forest will be developed by the AMWG.
- **Area –** All existing grasslands and an additional 40 acres identified in Appendix C.
- **Timeline –** Clearing of additional acres will occur in 2009 or 2010. Management of existing grasslands/wet meadow will be ongoing for the entire first increment.
- **Cost –** Clear 40 acres $ 30,000 ($750/acre), seeding cost range from $70-300/acre dependent on seed mixture and technique. Management through grazing, fire, and mowing should pay for itself through grazing leases.
- **Responsibilities –** Program Staff and Owners in coordination with the AMWG and will be responsible for planning, design and permitting. Contractors will perform the construction and maintenance work. Contractors will be hired by the Program and perform the construction and maintenance work. Contract oversight will be conducted by the Owner/Program Staff. Grazing leases will be held by NPPD and revenues will be split with the Program as described in the Land Sponsorship Agreement.

V. MONITORING AND RESEARCH

A. Monitoring

A variety of monitoring and research activities will be conducted on the Property as part of the system-wide investigations conducted under the Integrated Monitoring and Research Plan (IMRP). Parcel-specific monitoring and research will also be needed to look at cause and effect of management actions. Monitoring and research unique to this parcel at this time are:

1. Flow monitoring main channel

- **Objective –**
  - Obtain real time flow data from all channels that receive habitat improvements. Data will allow all other research and monitoring to be tied to real-time local flow data.
- **Timeline –** Flow monitoring is ongoing.
- **Responsibilities –** USGS with partnership of Program
- **Hypothesis Tested –** all hypothesis related to flow or must be tested at a relative discharge

2. Channel cross section surveys

- **Objectives –**
  - Determine sediment shortage or lack there of at west property line.
  - Determine bed aggredation or degradation throughout property.
- **Timeline –** Transects should be resurveyed at least annually and more often if management actions or flow events dictate.
- **Responsibilities –** Planning and implementation of the cross section surveys will be carried out by contractors under the IMRP. Existing cross-sections are shown in Figure 9.
- **Hypothesis Tested –** S1a, all hypothesis related to sediment,

3. Biological Monitoring

- **Objective**
  - Document whooping crane use of the Property
  - Document least terns and piping plover nesting pairs
  - Document least terns and piping plovers fledging success
- **Timeline** – Annually as per the monitoring protocols
- **Responsibilities** – Contractors or Cooperators
- **Hypothesis Tested** – TP1-5, WC1-3

4. Aerial Photography and

- **Objective**

    - Document channel widths before and after improvements
    - Estimate total volume of island sand that was eroded or moved to the channel areas.
    - Document areas cleared of woodlands.
- **Timeline** – Annually as per the monitoring protocols
- **Responsibilities** – Contractors or Cooperators
- **Hypothesis Tested** – TP 5, Sediment 3

B. Research

Monitoring will provide the basic trends in the parameters of discharge, flow spits, sediment budget, whooping crane use, and least tern and piping plover reproductive output. This plan also includes the paired design of having in channel islands and off channel nesting habitat, and is anticipated to be one of 5 such replications. To evaluate the difference between mechanical and FSM portions of the Adaptive Management Plan will require additional research. The Cottonwood Ranch Property will offer the possibility of research on.

- Sediment transport and modeling
- Hydraulic versus mechanical vegetation management
- Mechanical channel modification and island building
- Geomorphology

VI. ACCESS

Nebraska Public Power District will maintain ownership of all rights associated with access, while leasing to the Program the rights of access for habitat improvement and evaluation consistent with this plan and the Program document.

A. Education

Access for education, including non-Program research, will be allowed unless it conflicts with the uses of the property by the Program and as long as it is compatible with target species usage and does not negatively impact species habitat. Program Staff will be responsible for evaluating requests and Owner will be responsible for granting access permission. As a general rule, property keys will not be permanently provided to persons for educational purposes but will be available for temporary use.

B. Recreation

Access for recreation will be controlled by NPPD. Existing hunting leases expire in 2010. After 2010 the Owner and the Program will address access for recreation in the annual Work Plans. Issues to be addressed will be who controls access and who will be responsible for dealing with arising issues. The compatibility of specific types of recreation with target species use will be annually reviewed.

VII. ENVIRONMENTAL LAWS

A. Measures to Minimize or Eliminate Take of Least Tern and Piping Plover

Habitat improvement activities occurring on river channel or sandpits between April 15 and August 15 will only be conducted in the absence of nesting least terns and piping plovers. Owner and/or Program Staff will conduct a survey for these species in the area that will be disturbed within three days prior to the initiation of activities.

If least terns or piping plovers nest on the off-channel nesting complex, appropriate measures will be taken to control predation. At a minimum, any land connection to the nesting area for maintenance will be protected by electrified predator fencing. Other measures may be warranted and Service concurrence will be obtained before implementing additional measures.

B. Measures to Minimize or Eliminate Take of Whooping Crane

For habitat restoration and land management activities in or within 0.25 miles of the Platte River channel occurring between March 23 and May 10, or October 1 and November 15, construction shall only take place from one hour following sunrise to two hours prior to sunset unless otherwise approved by the Service's Coordinator of the Whooping Crane Migration Tracking Program. Program staff will notify the Service when Program habitat restoration work will be conducted during the above dates from the Highway #283 and Interstate 80 intersection near Lexington, Nebraska downstream to Chapman, Nebraska.

Construction or other work crews working in or within 0.25 miles of the channel during the above dates will check channel areas for the presence of whooping cranes prior to starting work each day, and report the presence of whooping cranes to Program staff. When whooping cranes are discovered in the Platte River valley, either by the Program monitoring crew or the above required check by construction or work crews, or are known to be in the valley through other sources, including via notification from the Service's Coordinator, Program staff will confer with the Service and will notify construction crews if it is necessary to temporarily halt construction activities.

Construction work should be completed as quickly as possible. Earth moving equipment will be moved from the river channel to an upland site located behind a tree line at the end of each work day if such features are available on the property. In the instance that such features are unavailable, equipment should be moved to a position at least 0.25 miles away from the channel.

C. Measures to Minimize or Eliminate Take of Pallid Sturgeon

Land management activities will not result in incidental take of pallid sturgeon.

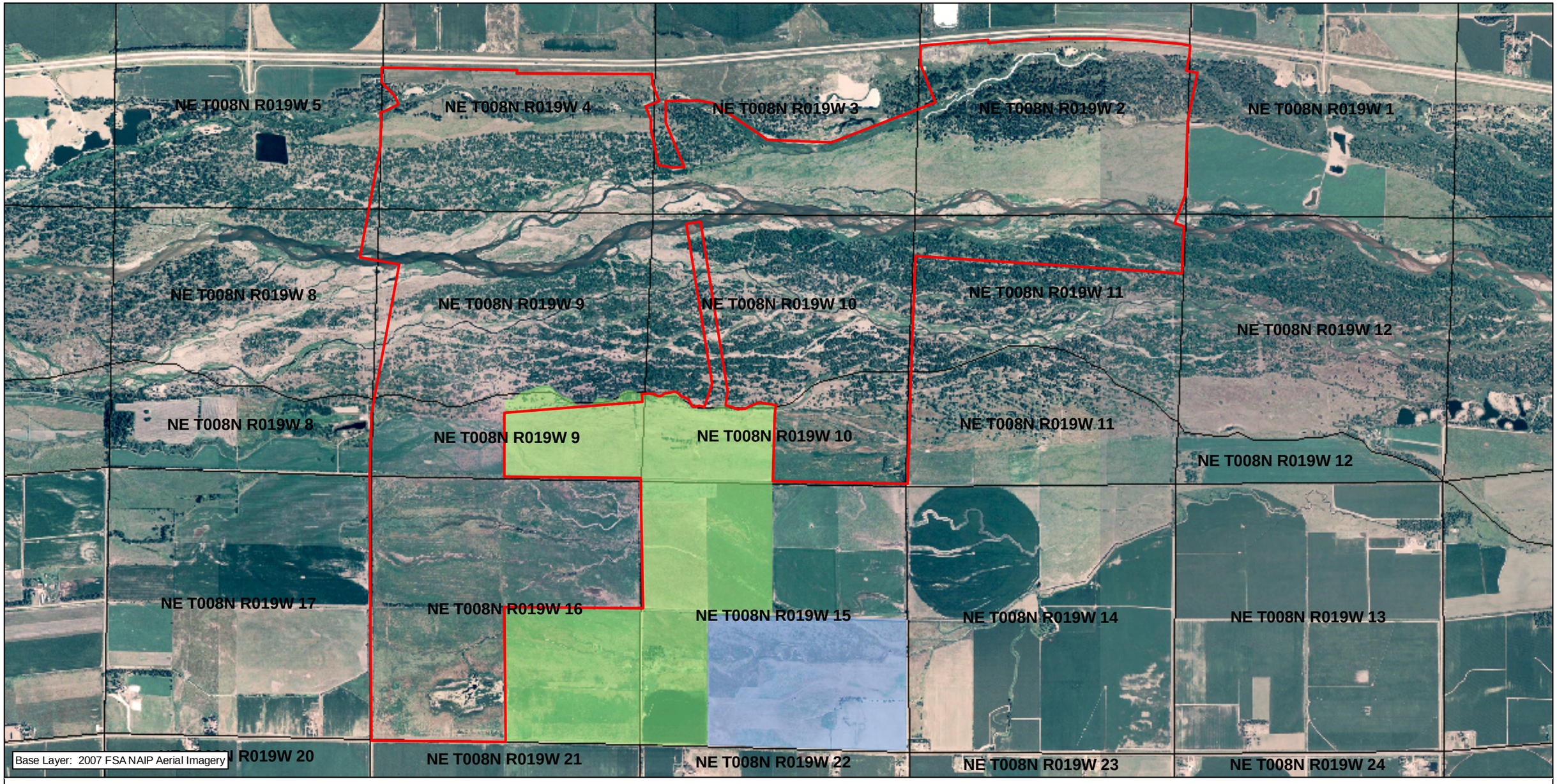
D. Migratory Bird Treaty Act

Land management that involves the cutting or mechanical removal of vegetation will not occur between April 15 and September 1 with out first doing surveys to insure that no occupied nest of migratory birds will be destroyed.

E. Bald Eagle Act

Eagle nests will not be disturbed and a quarter mile buffer will be maintained while occupied by adults or young. Known eagle roost trees will be left in place.

APPENDIX A – FIGURES



PLATTE RIVER
RECOVERY IMPLEMENTATION PROGRAM

Legend

- Cottonwood_boundary
- TNC
- PRWCT
- Section

N

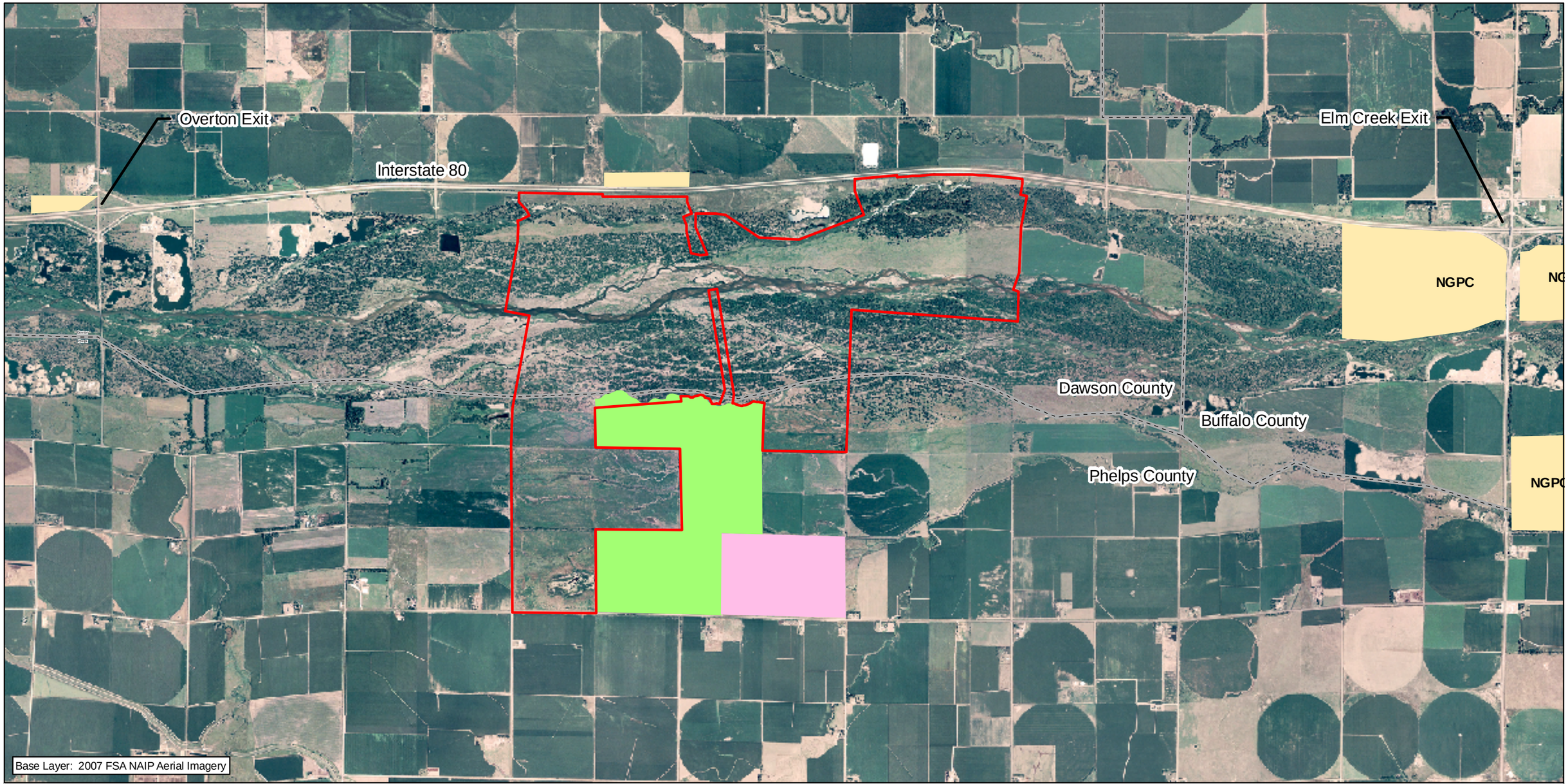
Miles

1

COTTONWOOD RANCH
LOCATION MAP

Management Plan
Date: 01/14/09
By: JDB

Figure A-1



PLATTE RIVER
RECOVERY IMPLEMENTATION PROGRAM

Legend

- Cottonwood_boundary
- TNC
- NGPC
- PRWCT
- County

N

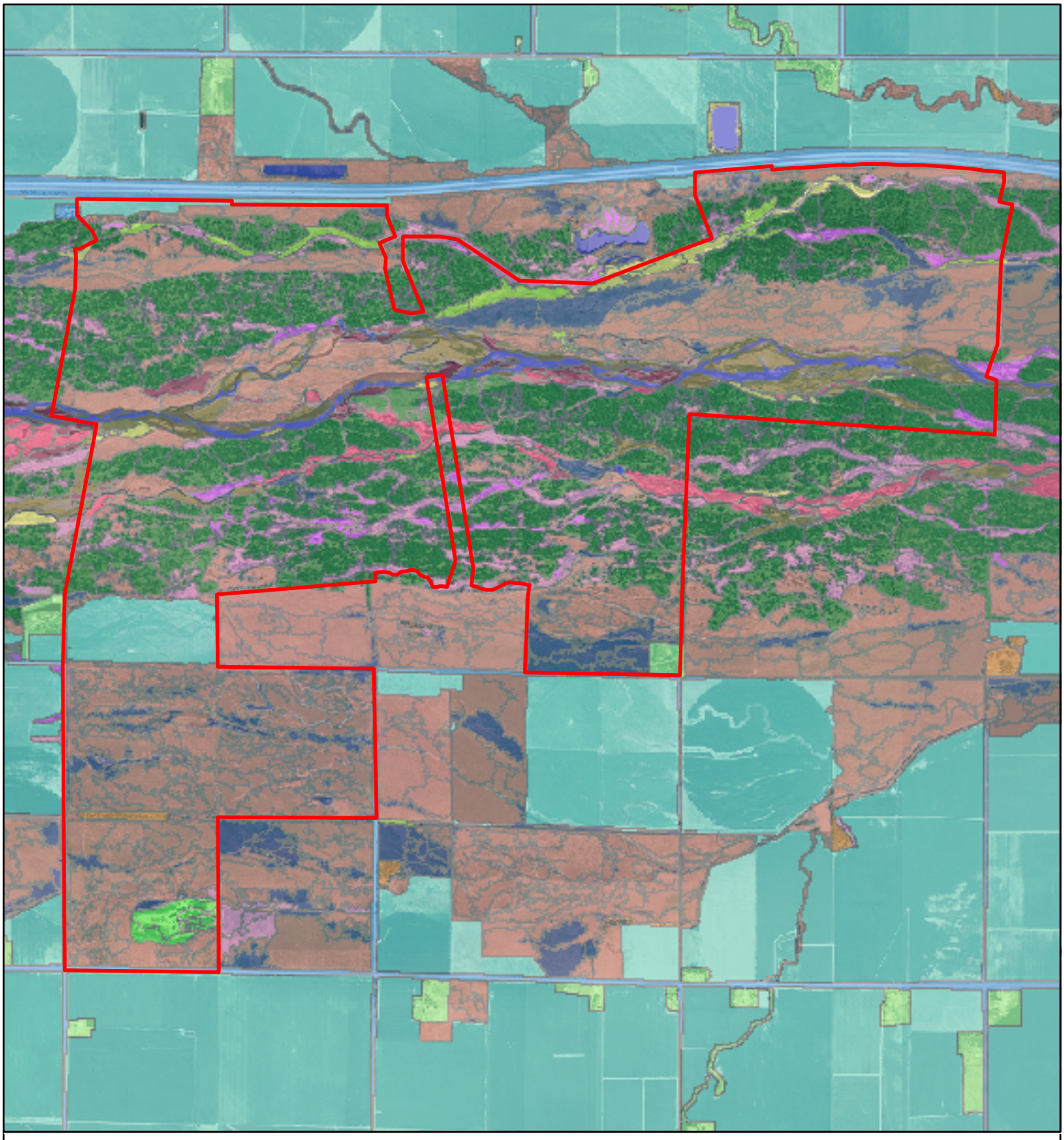
Miles

1

COTTONWOOD RANCH
LOCATION MAP

Management Plan
Date: 01/14/09
By: JDB

Figure A-2



PLATTE RIVER
RECOVERY IMPLEMENTATION PROGRAM

Legend

- Tract Boundary
- Ag
- Bareground/Sparse Veg
- Canal/Drainage
- Floodplain Marsh
- Mesic Wet Meadow
- Phragmites
- Riparian Shrubland
- Riparian Woodland
- River Channel
- River Early Successional
- River Shrubland
- Roads
- Rural Developed
- Sand Pit
- Undisturbed Grassland
- Unvegetated Sandbar
- Upland Woodland
- Warmwater Slough
- Xeric Wet Meadow

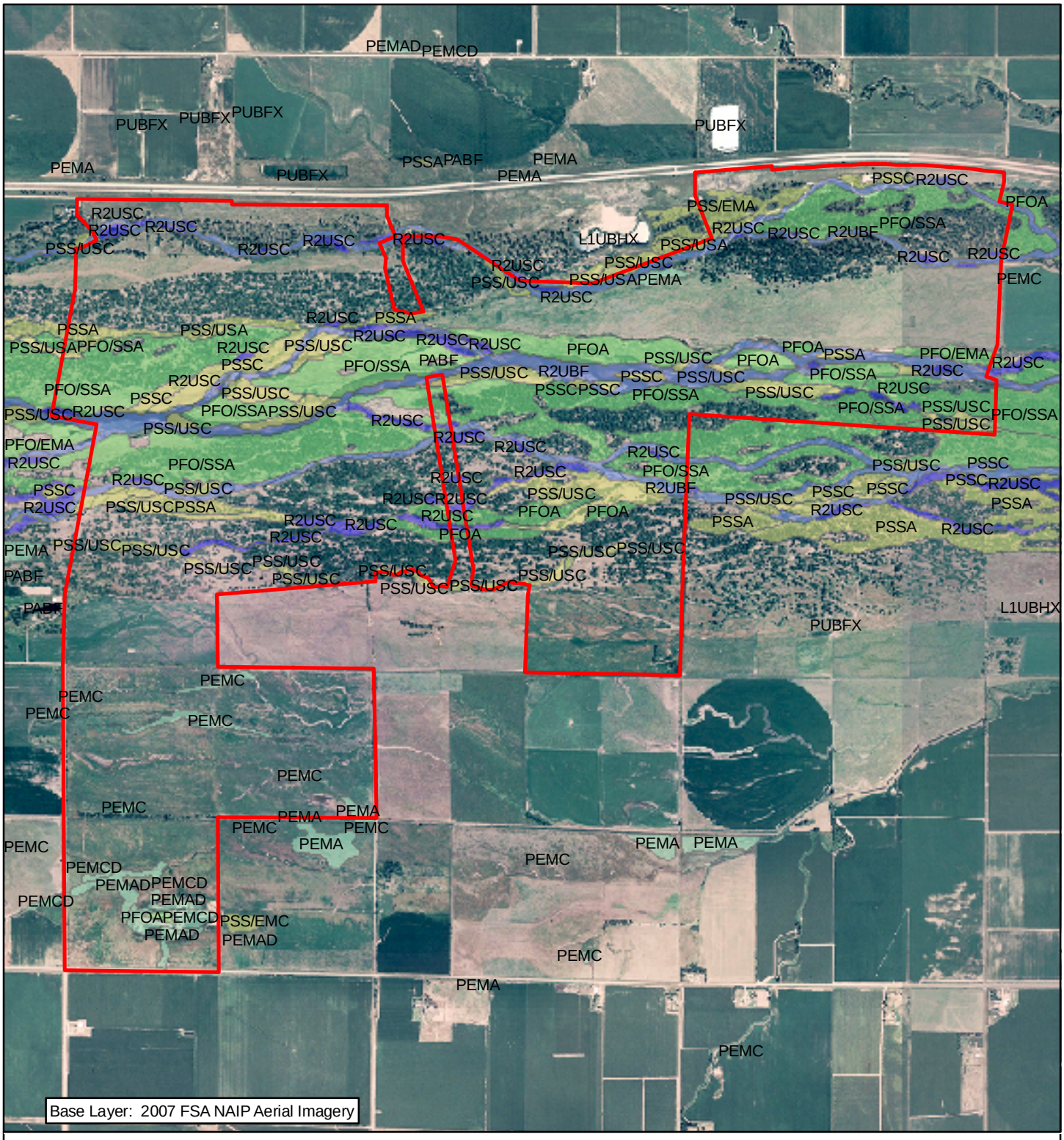
N

0.5 Miles

COTTONWOOD RANCH
2005 LAND COVER/USE

Management Plan
Date: 10/30/08
By: JDB

Figure A-3



PLATTE RIVER
RECOVERY IMPLEMENTATION PROGRAM

Legend

- Evaluation Tract
- Palustrine Emergent (PE)
- Palustrine Forested (PF)
- Palustrine Scrub-Shrub (PSS)
- Riverine Unconsolidated Bottom (PUB)
- Riverine Unconsolidated Shore (RUS)
- Riverine Streambed (RS)

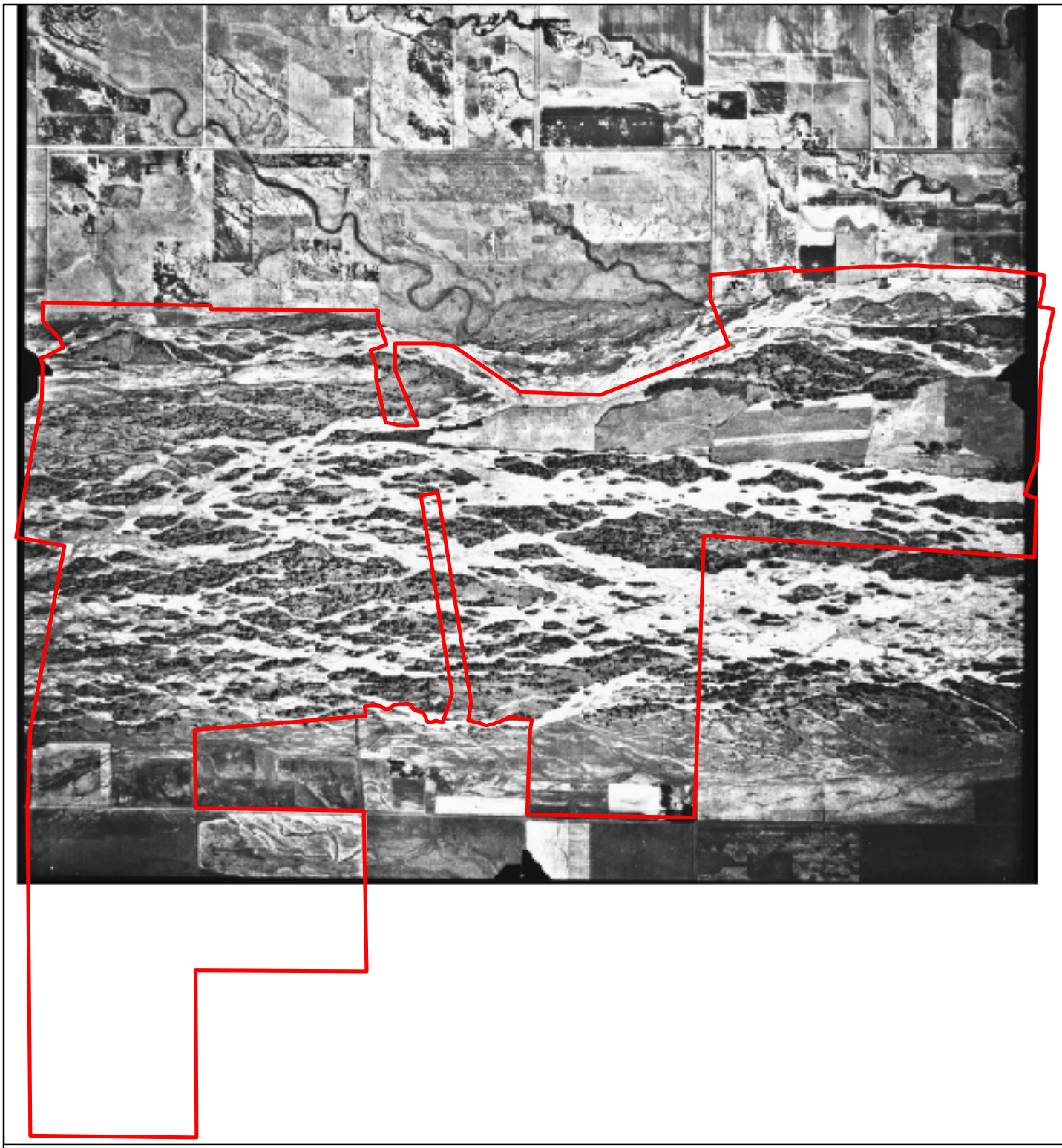
N

0.5 Miles

COTTONWOOD RANCH NWI MAP

Management Plan
Date: 10/30/08
By: JDB

Figure A-4



PLATTE RIVER
RECOVERY IMPLEMENTATION PROGRAM

Legend

Tract Boundary

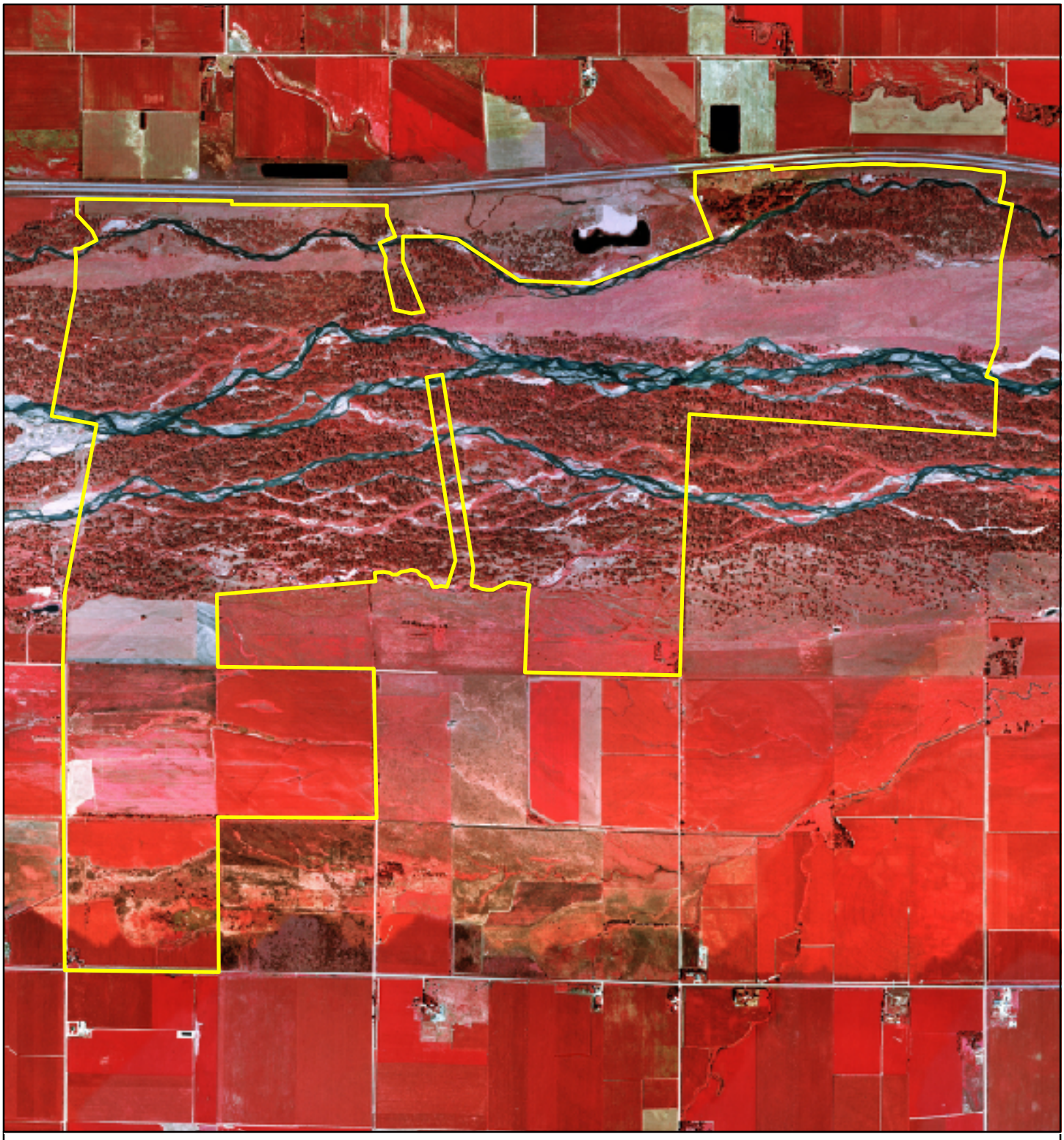
N

0.5 Miles

COTTONWOOD RANCH
1938 IMAGERY

Management Plan
Date: 10/30/08
By: JDB

Figure A-5



PLATTE RIVER
RECOVERY IMPLEMENTATION PROGRAM

Legend

Tract Boundary

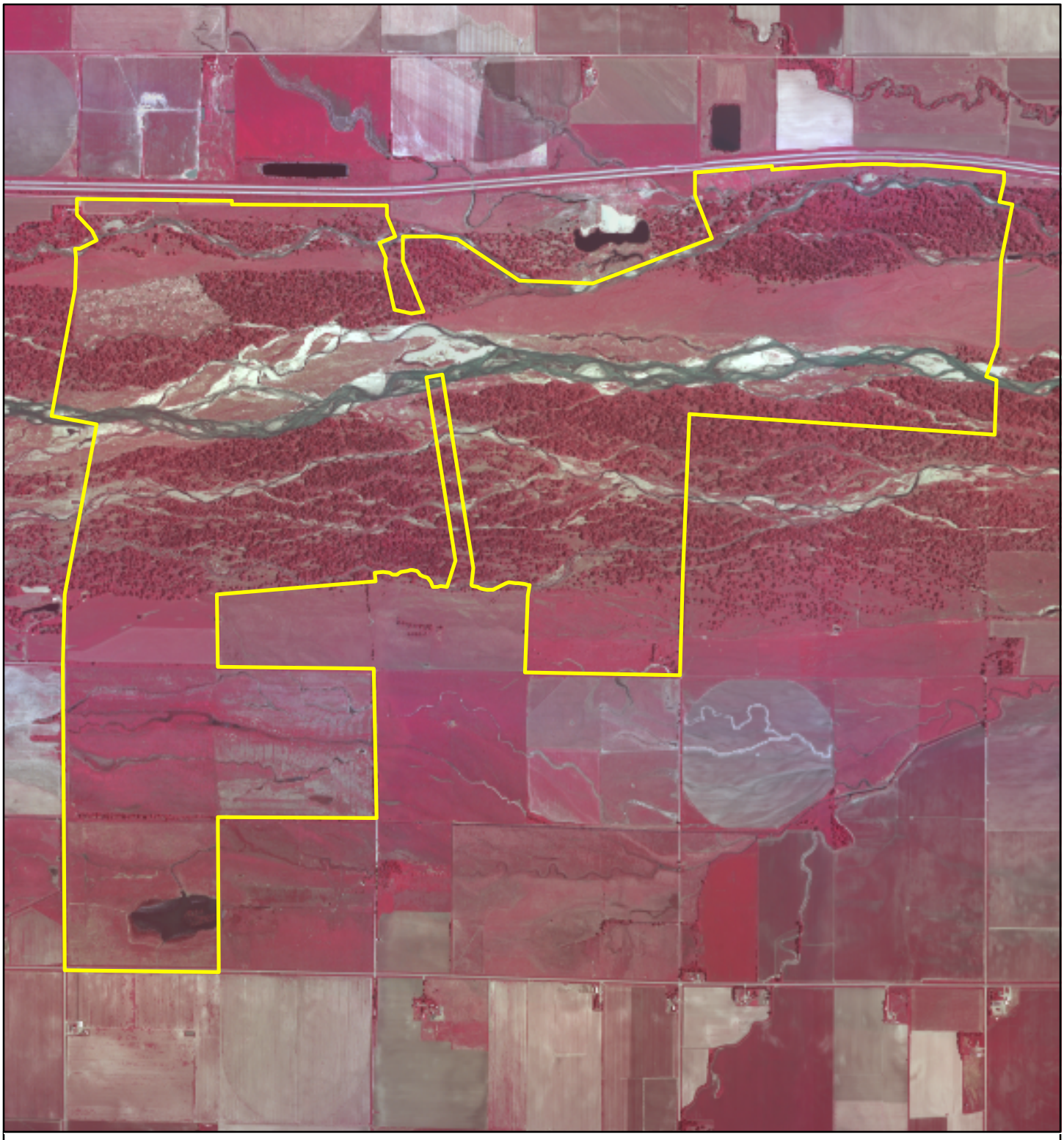
N

0.5 Miles

COTTONWOOD RANCH
1998 CIR IMAGERY

Management Plan
Date: 10/30/08
By: JDB

Figure A-6



PLATTE RIVER
RECOVERY IMPLEMENTATION PROGRAM

Legend

Tract Boundary

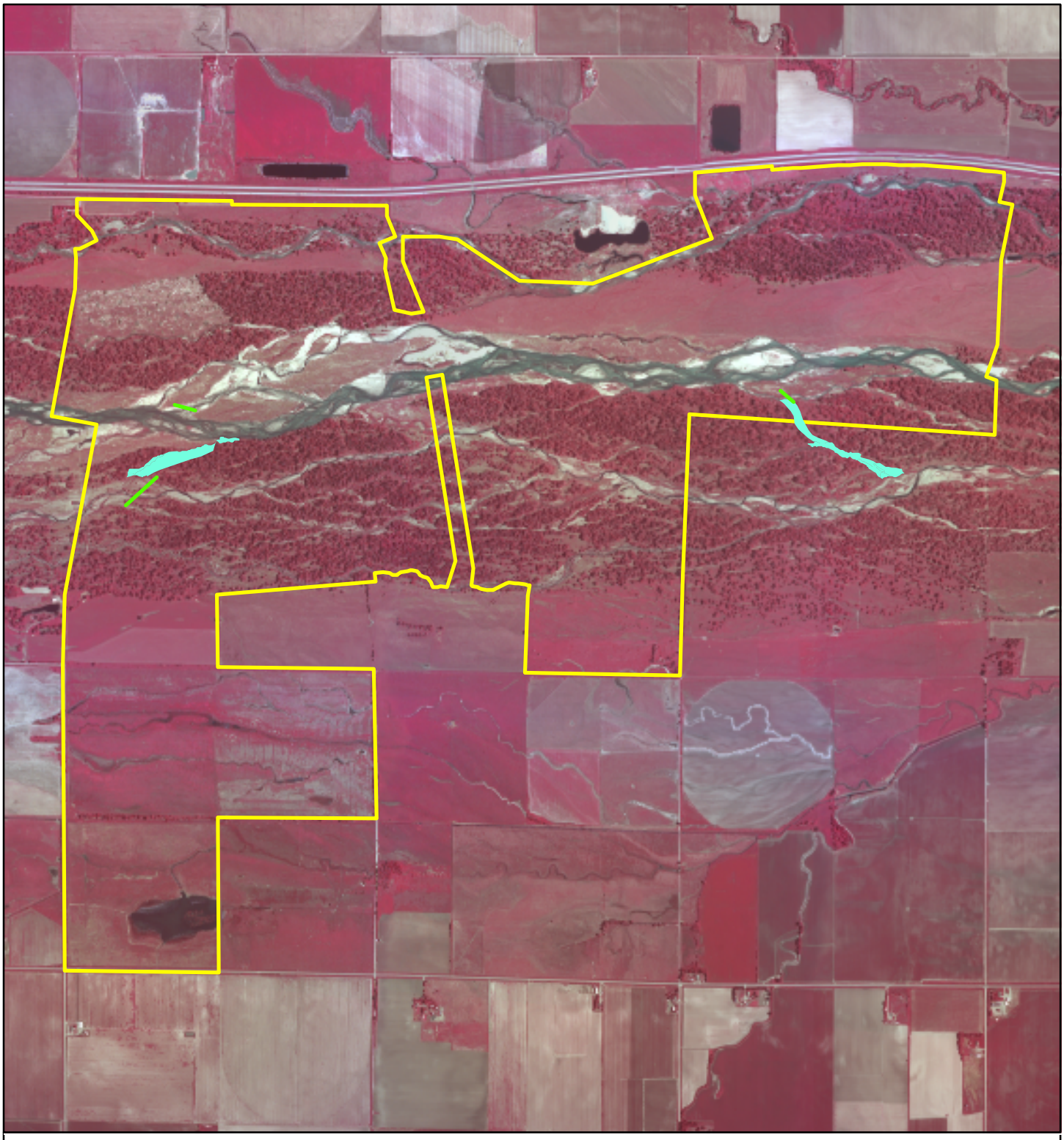
N

0.5 Miles

COTTONWOOD RANCH
2008 CIR IMAGERY

Management Plan
Date: 10/30/08
By: JDB

Figure A-7



PLATTE RIVER
RECOVERY IMPLEMENTATION PROGRAM

Legend

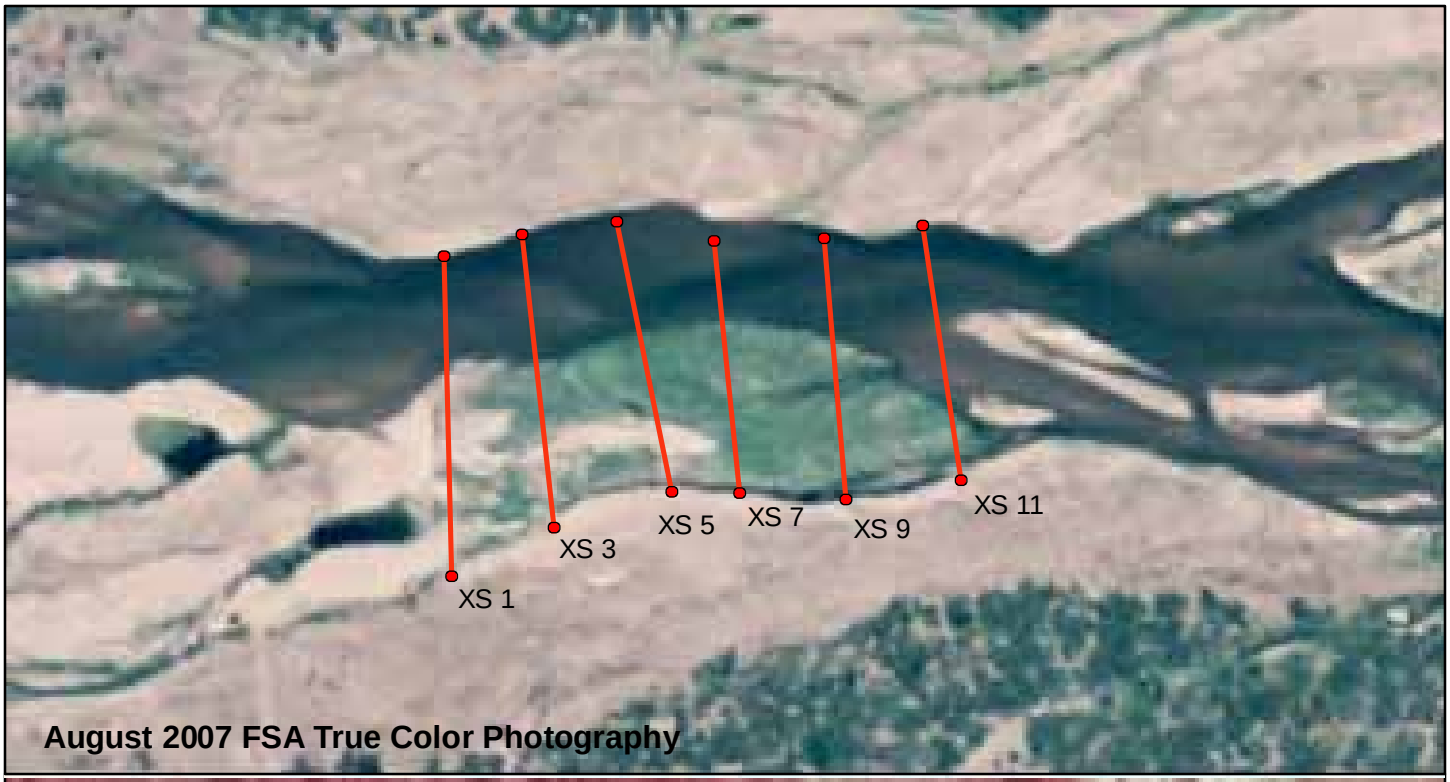
- Tract Boundary
- seg11_blocks
- seg11_diversion

N

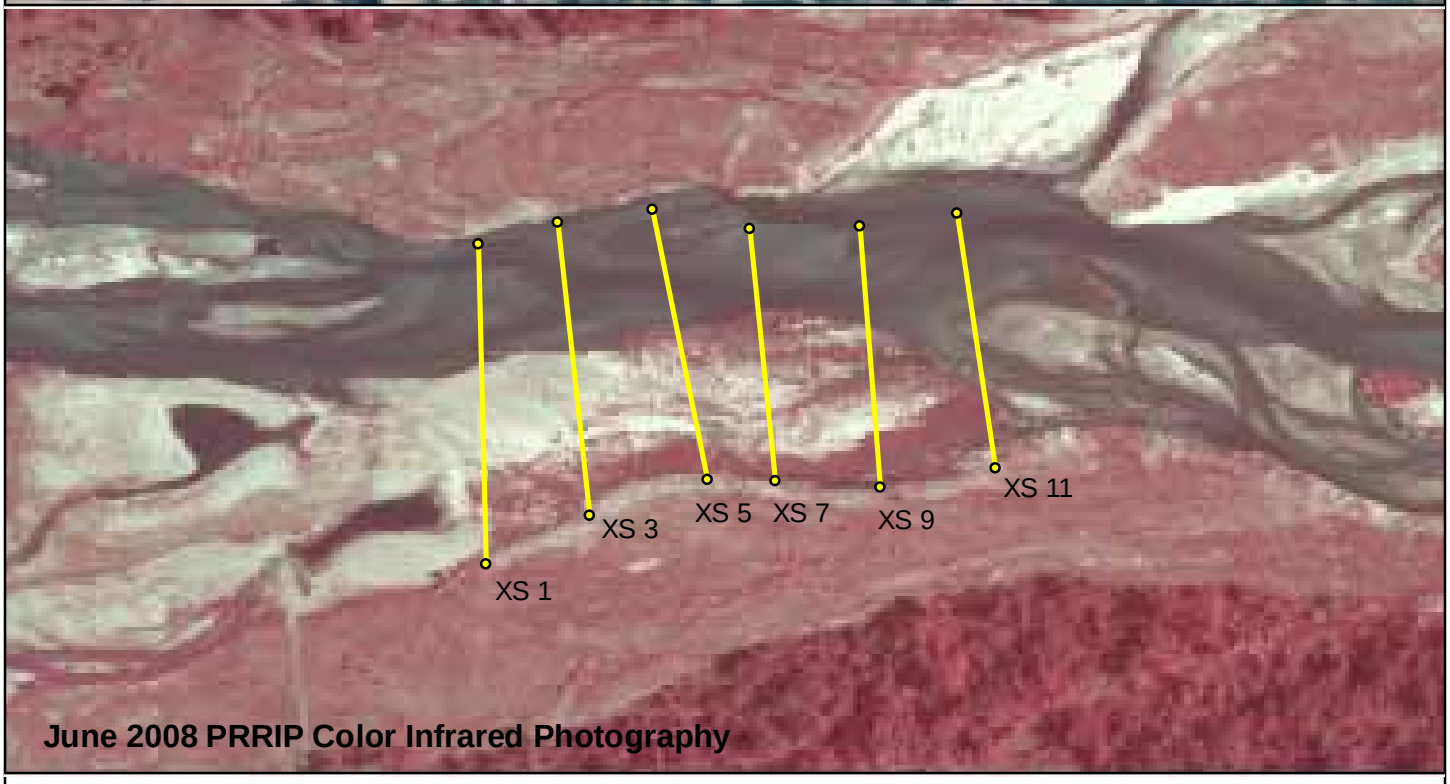
0.5 Miles

COTTONWOOD RANCH
EIS Channel Blocks &
Flow Consolidation
Management Plan
Date: 01/14/09
By: JDB

Figure A-8

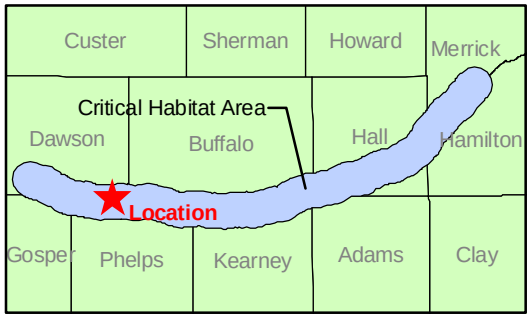


August 2007 FSA True Color Photography



June 2008 PRRIP Color Infrared Photography

PLATTE RIVER
RECOVERY IMPLEMENTATION PROGRAM



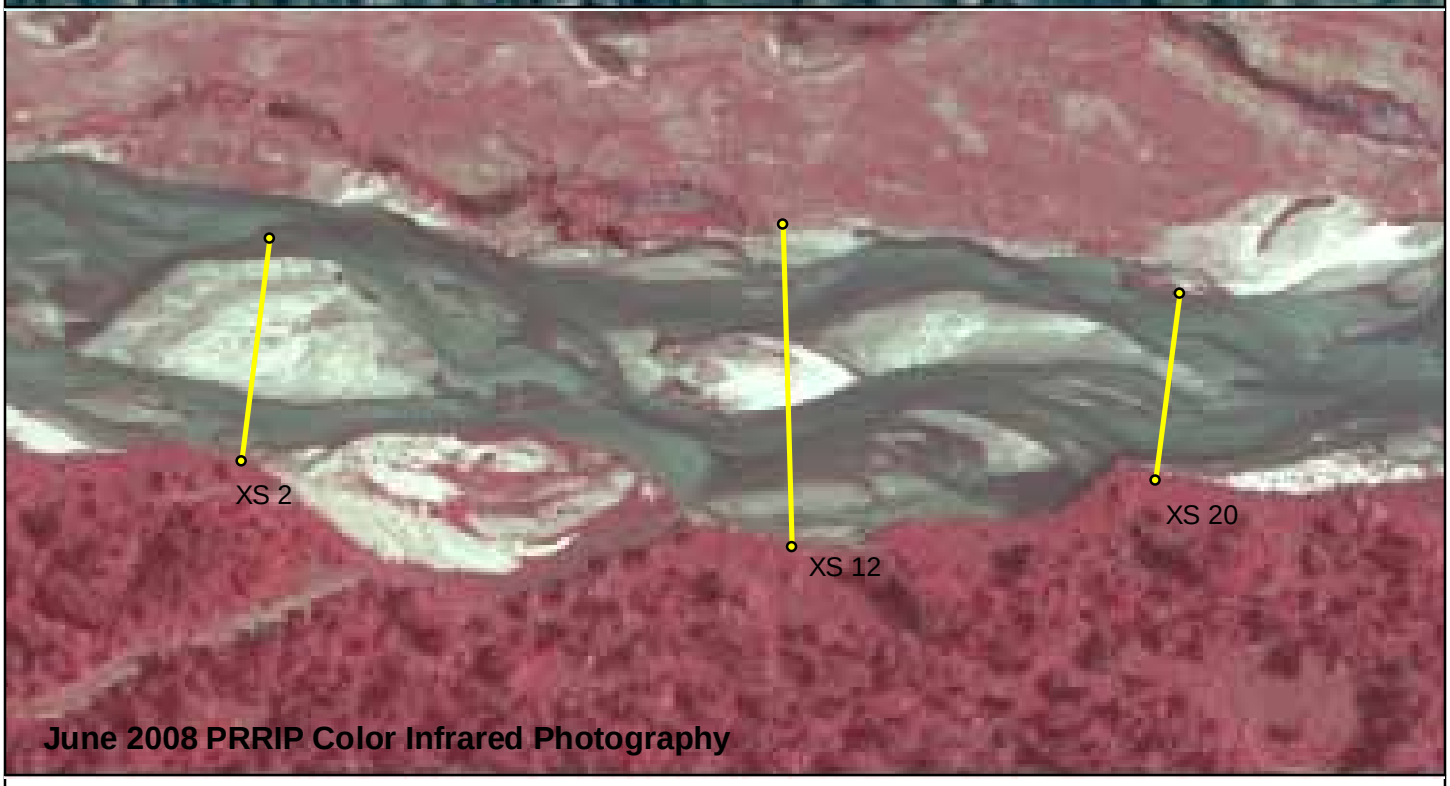
N

Meters
100

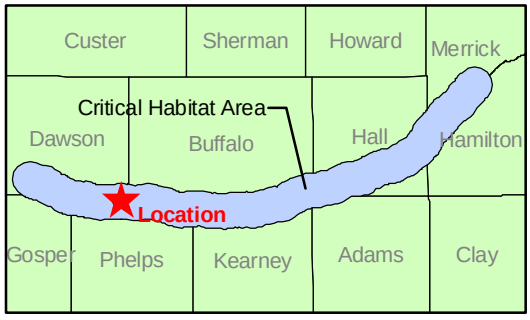
COTTONWOOD RANCH
INPUT REACH
TRANSECT LOCATIONS

Date: 10/29/08
By: JMF

Figure C-1



PLATTE RIVER
RECOVERY IMPLEMENTATION PROGRAM



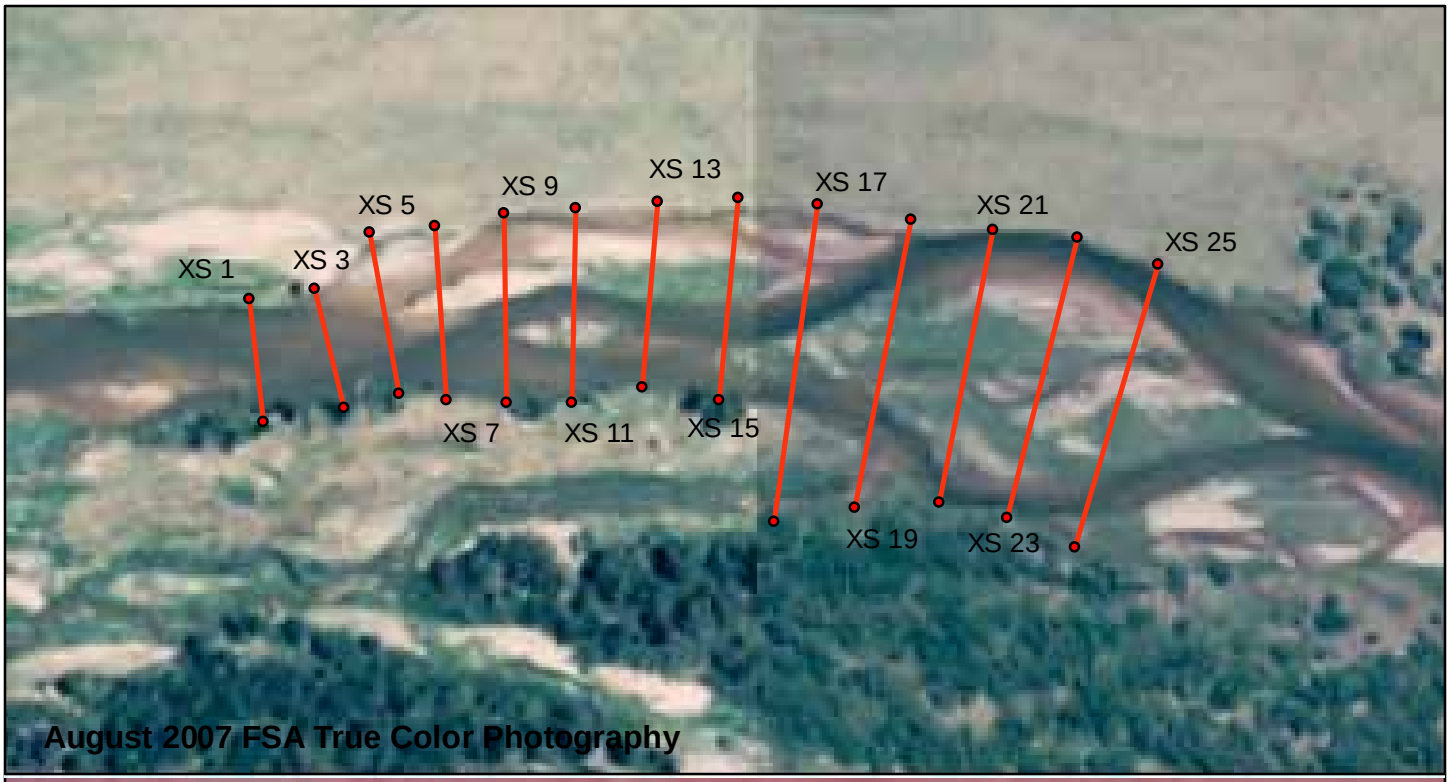
N

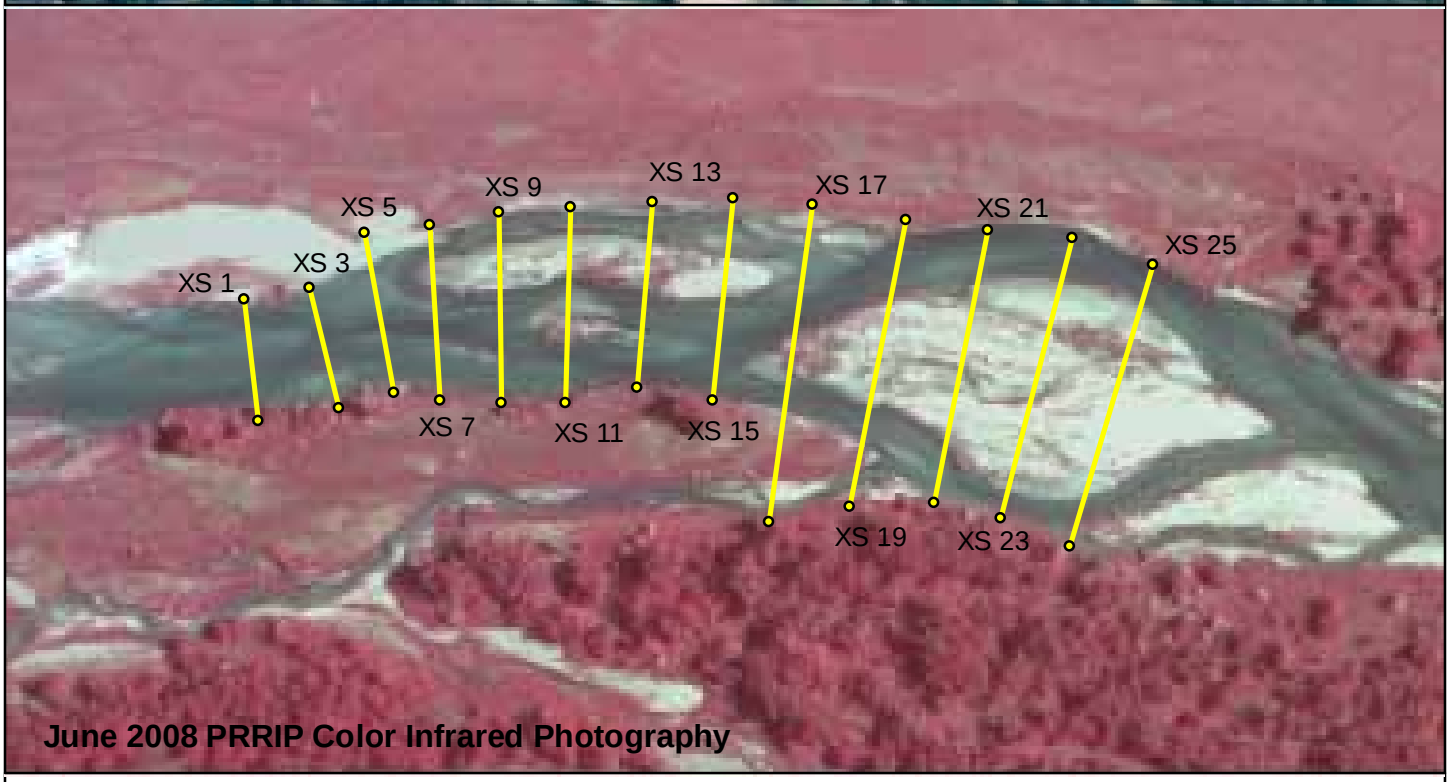
Meters
100

COTTONWOOD RANCH
MANAGED REACH
TRANSECT LOCATIONS

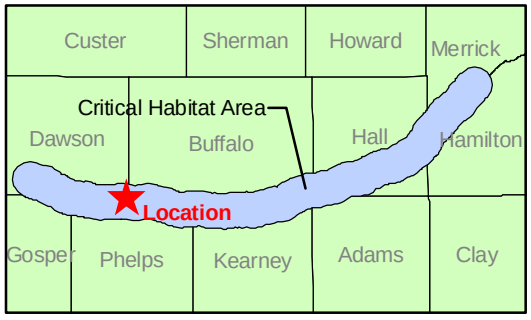
Date: 10/29/08
By: JMF

Figure C-2





PLATTE RIVER
RECOVERY IMPLEMENTATION PROGRAM



N

Meters
100

COTTONWOOD RANCH
OUTPUT REACH
TRANSECT LOCATIONS

Date: 10/29/08
By: JMF

Figure C-3

APPENDIX B – ANNUAL WORK PLANS

2009 Work Plan

Activity	Time Line	Responsibility	Estimated Cost	Management/ Maintenance
404 permit	January-August	NPPD individual Cottonwood Ranch Permit, 50,000 cubic yards per year five years total 250,000 cubic yards	NPPD Staff Time	Management
Clear 23 acres Figure 2009A	September - December	Contractor, hired by Program, overseen NPPD/Program	23 acres at $1200 is $27,600	Management
Improve Channel Width Figure 2009A	September to December	Contractor, hired by Program, overseen NPPD/Program	50000 cubic yards at $2.40/yard is $120,000	Management
Design Bridge North channel		Program Staff, NPPD approval of Design	$30,000	Maintenance/access
Fence Llyod Island Figure 2009A	June 15	Grazing lease holder	Material paid for out of grazing revenue, labor provided by lease	Management
Preemergent treatment of tern and plover nesting areas	March –April	Contractor, hired by Program, overseen NPPD/Program	$90/acre 22 acres is $2000	Maintenance
Fence tern and plover areas	April- May	Program/NPPD/Grazing Leasee	$5,000 fence for additional areas	Maintenance
Disk Channel Areas	September	Contractor, hired by Program, overseen NPPD/Program	$5,000	Maintenance
Noxious Weed control	April – September	Contractor, hired by Program, overseen NPPD/Program	$20,000	Maintenance
Boundary Fence	January-December	Program/NPPD		Maintenance

2010 Work Plan

Activity	Time Line	Responsibility	Estimated Cost	Management/Maintenance
Build Off channel tern and plover nesting area Figure 2010A	September - December	Contractor, hired by Program, overseen NPPD/Program	Move 250,000 cubic yards $2.40/yard $600,000	Management
Build Bridge North Channel	April to September	Contractor, hired by Program, overseen NPPD/Program	$250,000	Maintenance
Treat cleared areas with preemergent herbicide	March	Contractor, hired by Program, overseen NPPD/Program	70 acres at $90/acre is $6300	Management
Improve Channel Widen Figure 2010A	September to December	Contractor, hired by Program, overseen NPPD/Program	50000 cubic yards at $2.40/yard is $120,000	Management
Burn Llyod Island	March-May	Program Staff or contractor	$10000	Management
Fence Llyod Island	June 15	Grazing lease holder	labor provided by lease	Management
Preemergent treatment of tern and plover nesting areas	March –April	Contractor, hired by Program, overseen NPPD/Program	$90/acre 22 acres is $2000	Maintenance
Fence tern and plover areas	April- May	Program/NPPD/Grazing Lessee	$5,000 fence for additional areas	Maintenance
Disk Channel Areas	September	Contractor, hired by Program, overseen NPPD/Program	$5,000	Maintenance
Noxious Weed control	April – September	Contractor, hired by Program, overseen NPPD/Program	$20,000	Maintenance
Boundary Fence	January-December	Program/NPPD		Maintenance

2011 Work Plan

Activity	Time Line	Responsibility	Estimated Cost	Management/Maintenance
Widen channels,	September to December	Contractor, hired by Program, overseen NPPD/Program	50000 cubic yards at $2.40/yard is $120,000	Management
Burn NE ¼ Section 16	March-May	Program Staff or contractor	$2500	Management
Remove woody vegetation from cleared areas	September-December	Contractor, hired by Program, overseen NPPD/Program	$7500	Maintenance
Fence Llyod Island	June 15	Grazing lease holder	labor provided by lease	Management
Preemergent treatment of tern and plover nesting areas	March –April	Contractor, hired by Program, overseen NPPD/Program	$90/acre 22 acres is $2000	Maintenance
Fence tern and plover areas	April- May	Program/NPPD/Grazing Lessee	$5,000 fence for additional areas	Maintenance
Disk Channel Areas	September	Contractor, hired by Program, overseen NPPD/Program	$5,000	Maintenance
Noxious Weed control	April – September	Contractor, hired by Program, overseen NPPD/Program	$20,000	Maintenance
Boundary Fence	January-December	Program/NPPD		Maintenance

2012 Work Plan

Activity	Time Line	Responsibility	Estimated Cost	Management/Maintenance
Widen channels,	September to December	Contractor, hired by Program, overseen NPPD/Program	50000 cubic yards at $2.40/yard is $120,000	Management
Burn SW ¼ Section 16	March-May	Program Staff or contractor	$2500	Management
Preemergent treatment of tern and plover nesting areas	March –April	Contractor, hired by Program, overseen NPPD/Program	$90/acre 22 acres is $2000	Maintenance
Fence tern and plover areas	April- May	Program/NPPD/Grazing Lessee	$5,000 fence for additional areas	Maintenance
Disk Channel Areas	September	Contractor, hired by Program, overseen NPPD/Program	$5,000	Maintenance
Noxious Weed control	April – September	Contractor, hired by Program, overseen NPPD/Program	$20,000	Maintenance
Boundary Fence	January-December	Program/NPPD		Maintenance

2013 Work Plan

Activity	Time Line	Responsibility	Estimated Cost	Management/Maintenance
Widen channels,	September to December	Contractor, hired by Program, overseen NPPD/Program	50000 cubic yards at $2.40/yard is $120,000	Management
Burn NW ¼ Section 16	March-May	Program Staff or contractor	$2500	Management
Remove woody vegetation from cleared areas	September-December	Contractor, hired by Program, overseen NPPD/Program	$7500	Maintenance
Fence Llyod Island	June 15	Grazing lease holder	labor provided by lease	Management
Preemergent treatment of tern and plover nesting areas	March –April	Contractor, hired by Program, overseen NPPD/Program	$90/acre 22 acres is $2000	Maintenance
Fence tern and plover areas	April- May	Program/NPPD/Grazing Lessee	$5,000 fence for additional areas	Maintenance
Disk Channel Areas	September	Contractor, hired by Program, overseen NPPD/Program	$5,000	Maintenance
Noxious Weed control	April – September	Contractor, hired by Program, overseen NPPD/Program	$20,000	Maintenance
Boundary Fence	January-December	Program/NPPD		Maintenance

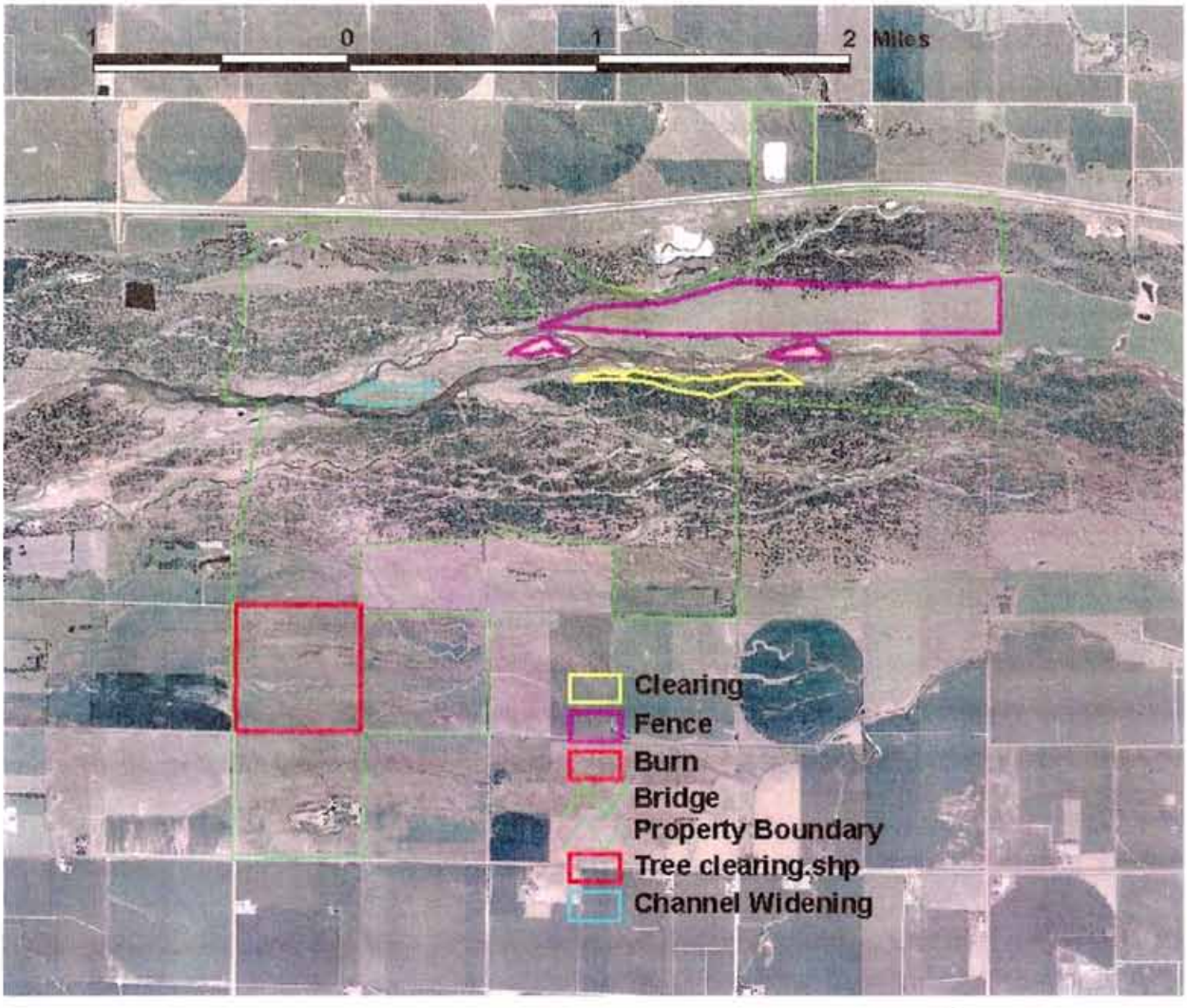


Figure 2009A. Channel widening area is 14 acres half of the material will be pushed into active channels. The other half will be left as tern and plover nesting areas.

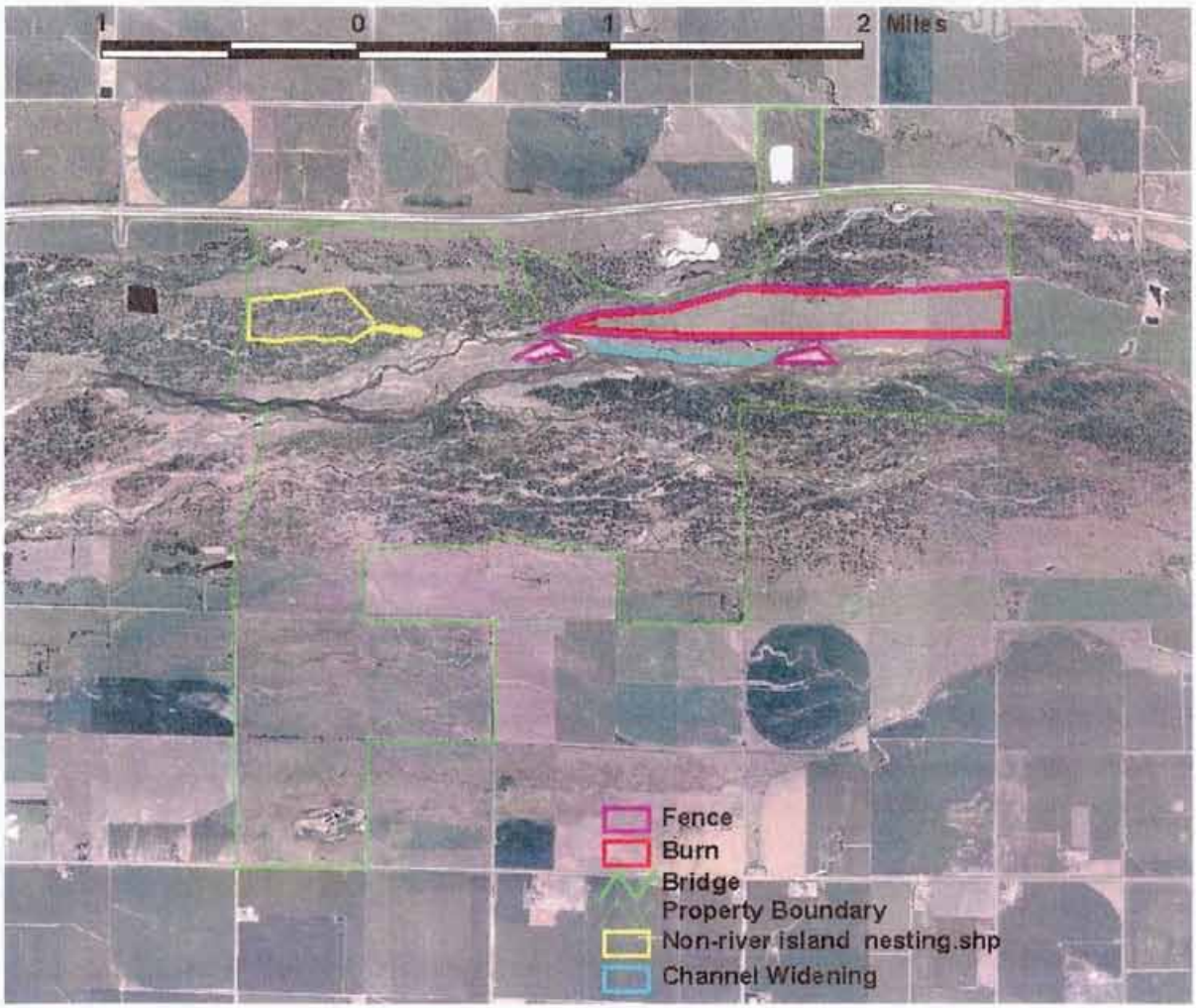


Figure 2010A. Off channel nesting area will be 20 acres of excavation, depth better defined with LiDAR. Channel widening 57 feet wide.

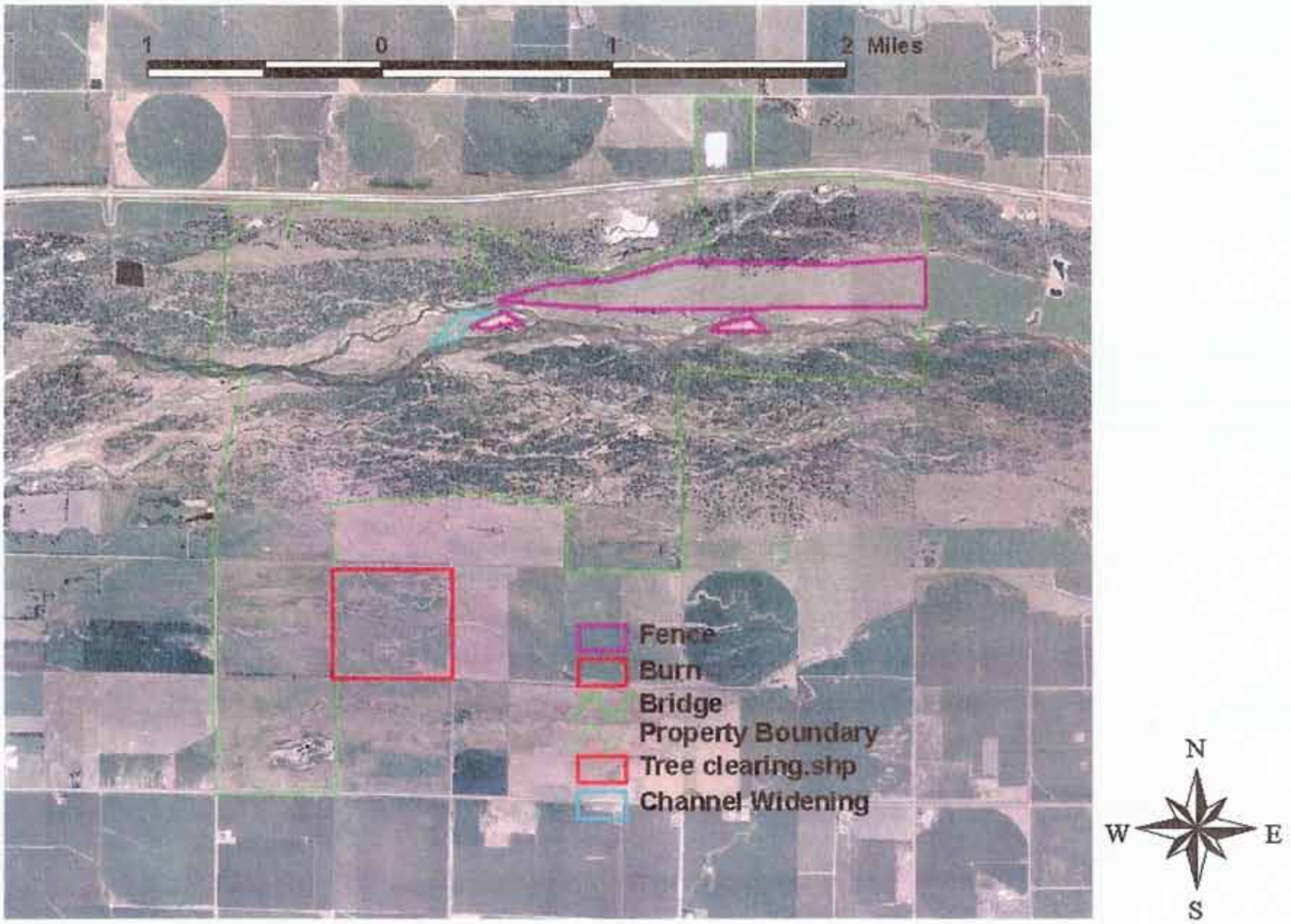


Figure 2011A. Actvitites for year 20011.

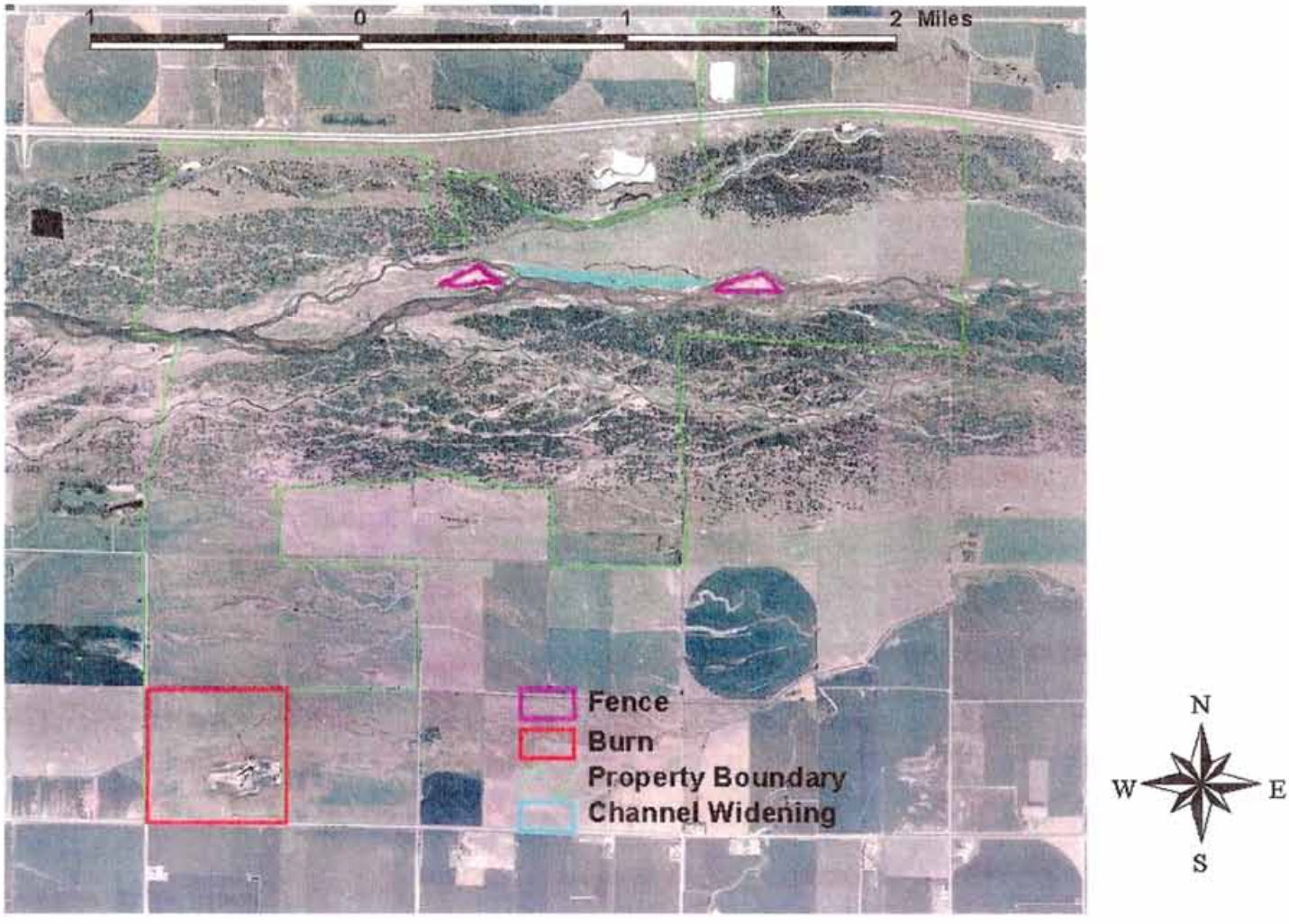


Figure 2012A. Channel widening approximately 60 feet wide. Fences on nesting aeas.

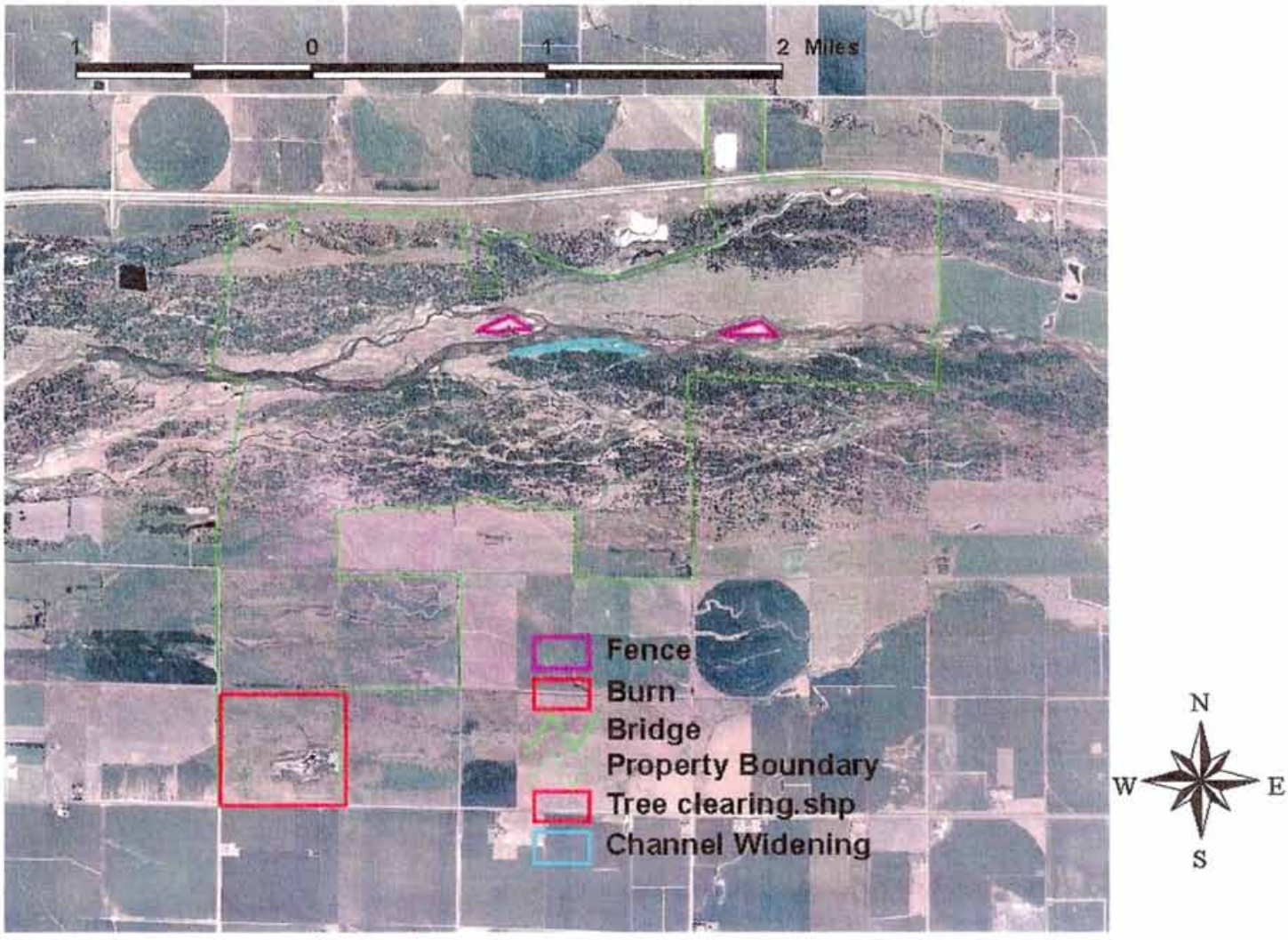


Figure 2013A. Actvities for 2013.