RECOVERY OUTLINE
for the
Salt Creek tiger beetle
(*Cicindela nevadica lincolniana*)

Nebraska Ecological Services Field Office
February 2009

I. INTRODUCTION

This document provides a basic background about the Salt Creek tiger beetle (*Cicindela nevadica lincolniana*) and a preliminary course of actions to achieve recovery of the insect. It serves to guide recovery efforts, consultation, land use planning, and permitting activities until a comprehensive recovery plan for the Salt Creek tiger beetle is finalized and approved.

- Listing and Contact Information:

Scientific Name:	*Cicindela nevadica lincolniana*
Common Name:	Salt Creek tiger beetle
Listing Classification:	Endangered rangewide
Effective Listing Date:	November 7, 2005 (50 FR 58335, October 6, 2005)
Lead Agency, Region:	U.S. Fish and Wildlife Service, Region 6
Lead Field Office:	Nebraska Field Office
Contact Biologist:	Robert Harms, 308-382-6468, ext 17; Robert_Harms @fws.gov

II. RECOVERY STATUS ASSESSMENT

A. BIOLOGICAL ASSESSMENT

1) Taxonomy: The Salt Creek tiger beetle is a member of the family Cicindelidae, genus *Cicindela*. Eighty-five species and more than 200 subspecies of tiger beetles in the genus Cicindela are known from the United States (Boyd et al. 1982, Freitag 1999). The Salt Creek tiger beetle was originally described by Casey (1916) as a separate species, *C. lincolniana*. Willis (1970) identified *C. n. lincolniana* as a subspecies of *C. nevadica* which evolved from *C. n. knausii.* This sub-species' distinctiveness from other central Great Plains populations of *C. nevadica* was recently confirmed (Busby 2003).

2) Description, Habitat, and Life History: The Salt Creek tiger beetle is metallic brown to dark olive green above, with a metallic dark green underside, and measures 1.3 centimeters (cm) (0.5 inch (in.)) in total length. It is distinguished from other tiger beetles by its distinctive form and the color pattern on its dorsal and ventral surfaces. The elytra (wing covers) are metallic brown or dark olive green, and the head and pronotum (body segment behind the head) are dark brown (Carter 1989).

The Salt Creek tiger beetle has very specific habitat requirements and occurs in saline wetlands—on exposed saline mud flats or along mud banks of streams and seeps that contain salt deposits and are sparsely vegetated (Carter 1989; Spomer and Higley 1993; LaGrange 1997; Spomer et al. 2004a). Larvae have been found only on moist salt flats and salt-encrusted banks of Little Salt Creek in northern Lancaster County (Spomer et al. 2004a) and saline wetlands associated with Rock Creek in the southern margin of Saunders County. Salt Creek tiger beetles require open, barren salt flat areas for construction of larval burrows, thermoregulation, foraging, and as dispersal corridors (Spomer and Higley 1993; L. Higley, University of Nebraska-Lincoln (UNL), pers. comm. 2002; S. Spomer, pers. comm. 2005). The Salt Creek tiger beetle is adapted to brief periods of high water inundation and highly saline conditions (Spomer and Higley 1993).

Adults are first observed as early as the end of May or as late as mid-June. Their numbers peak about 2 weeks after the first individuals appear and begin to feed and mate. After mating, the male rides atop the female, presumably preventing her from re-mating (a phenomenon known as mate-guarding). Females lay their eggs along sloping banks of creeks in areas where the salt layer is exposed in the soil horizon, on barren salt flats of saline wetlands, or along saline stream edges that are found in close association with water, near a seep or stream. It is believed that, during the night, female Salt Creek tiger beetles lay about 50 eggs (Farrar 2003). Adult populations begin to disappear in late July, and by August, almost all of the adults have died (Spomer et al. 2004a).

The Salt Creek tiger beetle has a 2-year life cycle (Allgeier et al. 2004; Spomer et al. 2004a). Spomer and Higley (1993) and Spomer et al. (2004a) provide a detailed description of the life cycle of the Salt Creek tiger beetle including the egg, larval, and adult stages.

3) Distribution, Abundance, and Trends: The Salt Creek tiger beetle has one of the most restricted ranges of any insect in the United States (Spomer and Higley 1993; Spomer et al. 2004a). Intensive visual surveys conducted by UNL entomologists since 1991 have documented Salt Creek tiger beetles at 13 sites in northern Lancaster County and the southern margin of Saunders County; although beetles were not found, nor were surveys conducted, at all sites in all years (Spomer et al. 2002, 2004a, 2004b).

We have determined these 13 sites can be grouped into 6 discrete populations of Salt Creek tiger beetles (70 FR 58335, October 6, 2005). Half of these populations have been extirpated since annual surveys began in 1991 (a population is considered extirpated after 2 consecutive years of negative survey results). Table 1 presents visual survey results for each of these six populations from 1991 to 2008. The text that follows below described each of the populations in order of abundance.

Table 1: Adult Salt Creek Tiger Beetles Visual Survey Results 1991 to 2008.

	'91	**'92**	**'93**	**'94**	**'95**	**'96**	**'97**	**'98**	**'99**	**'00**	**'01**	**'02**	**'03**	**'04**	**'05**	**'06**	**'07**	**'08**
Little Salt Creek/Arbor Lake Population	171	94	62	376	459	437	406	254	208	225	434	511	583	392	115	345	197	109
Little Salt Creek/Roper Population	-	-	-	54	161	151	144	45	55	80	85	258	162	154	22	97	32	17
Upper Little Salt Creek-North Population	24	32	48	35	14	41	0	4	8	4	0	8	0	12	16	97	33	39
Upper Little Salt Creek-South Population	7	5	4	8	3	0	0	0	0	0	0	0	0	0	-	-	-	-
Jack Sinn WMA Population	15	11	1	0	0	1	-	1	0	-	0	0	0	0	-	-	-	-
Capital Beach Population	12	8	-	-	0	-	-	4	0	-	0	0	0	0	-	-	-	-
Totals	**229**	**150**	**115**	**473**	**637**	**630**	**550**	**308**	**271**	**309**	**519**	**777**	**745**	**558**	**153**	**539**	**262**	**165**

"-" indicates no surveys for that population that year. *Note*: Visual counts have limitations (Horn 1976), but if they are conducted in a similar manner every year, they can provide relative population estimates and a good estimate of the health and stability of the populations surveyed (Allgeier et al. 2003). In addition, a mark/recapture study conducted in 2002 estimated that the population size was approximately 970 adult Salt Creek tiger beetles, with 95 percent confidence (an estimate of precision) that the true population is between 704 and 1,606 adults (Allgeier et al. 2003).

a) Little Salt Creek-Arbor Lake Population: The Little Salt Creek-Arbor Lake population contains the largest number of Salt Creek tiger beetles. This population occurs across a large, relatively intact saline wetland complex. The Little Salt Creek-Arbor Lake population is located approximately 1.6 kilometer (km) (1 mile (mi)) north of the Interstate 80 and North 27th Street Interchange on the northern city limits of Lincoln, Nebraska. It exists along the saline stream edge of Little Salt Creek and on the barren salt flats of an adjacent saline wetland. This population was monitored at a maximum of three survey sites. The population averaged 299 individuals per year over that 18-year period.

b) Little Salt Creek-Roper Population: The Little Salt Creek-Roper population is the second largest remaining population of Salt Creek tiger beetles. This population is located immediately south of the Interstate 80 and North 27th Street Interchange, and approximately 1.6 km (1 mi) downstream of the Little Salt Creek-Arbor Lake population. Similar to the Little Salt Creek-Arbor Lake population, this population is associated with a saline wetland and stream complex located along Little Salt Creek. Visual surveys were conducted at a maximum of four survey sites. The population averaged 101 adult beetles during the 15-year survey period.

c) Upper Little Salt Creek-North Population: The Upper Little Salt Creek-North population is the third and last extant (i.e., existing) population of Salt Creek tiger beetles. This population is located approximately 7.2 km (4.5 mi) upstream from the Little Salt Creek-Arbor Lake population, and exists only on the saline stream edges of Little Salt Creek. Although former saline wetlands (i.e., barren salt flats) exist adjacent to this population, these wetlands are degraded (drained because of the incisement of Little Salt Creek) and no longer provide suitable habitat for the Salt Creek tiger beetle. This population is comprised of four sites along Little Salt Creek. From 1991 to 1996, the number of adult beetles found in the Upper Little Salt Creek-North population averaged 32 individuals per year (Spomer and Higley 1993; Spomer et al. 1997). Since then, the number of adult beetles surveyed in the population has averaged 18 individuals per year.

d) Upper Little Salt Creek-South Population: The Upper Little Salt Creek-South population was located approximately 5 km (3 mi) upstream from the Little Salt Creek-Arbor Lake population. Degraded and non-functioning saline wetlands exist adjacent to Little Salt Creek. Although this site was once devoid of vegetation, saline stream edge habitats here are now vegetated. This population was surveyed at its only known site. The Upper Little Salt Creek-South population is considered to be extirpated; no Salt Creek tiger beetles have been found there since 1995.

e) Jack Sinn Wildlife Management Area Population: This population was made up of one survey site located on Rock Creek in southern Saunders and northern Lancaster Counties, approximately 20 km (10 mi) northeast of the

Little Salt Creek-Arbor Lake population. This population of Salt Creek tiger beetles was on property owned by the Nebraska Game and Parks Commission (NGPC). The Jack Sinn Wildlife Management Area Population is considered to be extirpated; no Salt Creek tiger beetles have been found there since 1998. Loss and fragmentation of barren salt flats and stream habitats likely resulted in the loss of this population (Spomer et al. 2004a).

f) Capitol Beach Population: Capitol Beach was once one of the largest saline wetland tracts in eastern Nebraska, with a size of approximately 162 hectares (ha) (400 acres (ac)) (Cunningham 1985). Although we do not have historic population estimates from this site, historic records indicate that Capitol Beach (i.e., Salt Basin) was once home to a large, sustainable population of Salt Creek tiger beetles. All that remains of suitable habitat at Capitol Beach now is a 10- to 20-meter (m) (40- to 50-foot (ft)) wide ditch that parallels Interstate 80 for approximately 0.8 km (0.5 mi), southwest of the Interstate 80 and Airport Interchange. No individuals have been found at Capitol Beach since 1998 (Spomer et al. 2002, 2004a, 2004b; Allgeier et al. 2003), leading us to conclude that this population is now extirpated.

B. THREATS ASSESSMENT

A comprehensive evaluation of threats can be found in the original listing determination (50 FR 58335, October 6, 2005). Below is a brief summary of the most significant threat factors.

The Salt Creek tiger beetle is threatened by the destruction of its saline wetland and stream habitats (Ratcliffe and Spomer 2002). The saline wetlands of eastern Nebraska and associated saline streams used by the Salt Creek tiger beetle have undergone extensive degradation and alteration for commercial, residential, transportation, and agricultural development since the late 1800s, and are the most restricted and imperiled natural habitat type in the State (Gersib and Steinauer 1991). Like many insects, the Salt Creek tiger beetle's close association with specific habitats—salt barrens and stream edges—leaves it particularly vulnerable to habitat destruction and alteration through direct and indirect means (Pyle et al. 1981).

Allgeier et al. (2004) concluded that a species-specific preference for specific salt and soil moisture regimes is important to habitat partitioning and reduction in competition between the Salt Creek tiger beetle and other tiger beetles. Hoback et al. (2000) also discovered that changes in salinity and hydrology may alter the abundance of prey and cause the loss of suitable larval habitat for saline wetland-dependent species of tiger beetles, including the Salt Creek tiger beetle. We believe that further degradation or loss of suitable habitats will further reduce the likelihood that Salt Creek tiger beetles will be able to move and recolonize other sites and establish additional populations.

Based on 2004 population surveys and a review of U.S. Geological Survey topographic maps showing population distributions, 99 percent of the remaining Salt Creek tiger beetles are located within a 1.6-km (1-mi) radius of the Interstate 80 and

North 27th Street Interchange. This area continues to experience ongoing residential and commercial development. Excessive freshwater storm water runoff from nearby residential and commercial developments also can result in the dilution of existing saline wetlands and seeps and input of excess sediment, and it encourages establishment of invasive plants.

Construction of levees, reservoirs, and additional channelization of Salt Creek resulted in the degradation and loss of saline wetlands and seeps and entrenchment of associated tributaries (Murphy 1992). The greatest alteration of saline wetlands in the Little Salt Creek and Rock Creek drainages resulted from the channelization of Salt Creek (Farrar and Gersib 1991). Channelization of Salt Creek encouraged tributary streams (Little Salt Creek, Oak Creek, Rock Creek, and Middle Creek) to head-cut, carving deeper into their beds to adjust to the change in stream bed gradients. Straightening stream channels leads to a state of disequilibrium or instability, often causing stream entrenchment and corresponding changes in morphology and stability (Rosgen 1996). The lowering of tributary streambeds resulted in the degradation and loss of saline wetlands by draining and lowering the water table and diluting salt concentrations with freshwater, which led to vegetative encroachment (Wingfield et al. 1992).

Contaminated runoff can impact the Salt Creek tiger beetle through toxic effects to the beetle, its prey base, and/or its habitat. Specifically, fluids from vehicles and pesticides transported via stormwater runoff can result in the introduction of pesticides into adjacent saline wetlands and streams where the tiger beetle is found. Other potential pesticide exposure sources are related to control actions for agricultural pests, mosquitoes, grasshoppers, and pests in yards and gardens.

Agricultural land uses have the potential to impact the Salt Creek tiger beetle. Livestock grazing can destroy or substantially degrade habitats for adult and larval forms of the Salt Creek tiger beetle through trampling, which can destroy Salt Creek tiger beetle larvae burrows and the larvae that inhabit them. Cattle grazing also can compact soil and modify soil hydrology, gradually drying out a site and making it unsuitable for adults and larvae (which prefer moist, muddy sites with encrusted salt on soil surfaces). Row crop cultivation poses a threat to the Salt Creek tiger beetle through increasing sediment disturbance and deposition into suitable habitat.

Artificial lights also have an adverse affect on the Salt Creek tiger beetle. Allgeier et al. (2003) found that female Salt Creek tiger beetles oviposit at night and that outdoor light sources may reduce reproduction. It is thought that fewer eggs are deposited if artificial light sources draw females away from their breeding habitat.

Collection of the Salt Creek tiger beetle by amateur insect collectors could contribute to its decline as could disease, predation, and parasitism. Predation and parasitism of Salt Creek tiger beetle adults and larvae may account for significant mortality because of the small size of the remaining populations, limited distribution, reduced habitat, and close proximity of the two largest populations (L. Higley, pers. comm. 2002).

The remaining populations of Salt Creek tiger beetles are highly susceptible to

extinction as a result of naturally-occurring, stochastic, environmental, or demographic events because they occur at only three known locations, in small numbers, and are found in relatively close proximity to each other (Gilpin 1987; Murphy et al. 1990). As noted previously, three such populations have been lost in the last decade.

Furthermore, local extinctions caused by habitat deterioration and stochastic weather events are frequent for species such as the Salt Creek tiger beetle, whose life histories are characterized by short generation time, small body size, high rates of population increase, and high habitat specificity (Murphy et al. 1990; Ruggerio et al. 1994). Potential stochastic events of greatest concern may include: (1) heavy rain storms and severe flooding which drown and scour larvae away, dilute salinity, and result in sediment deposition; (2) accidental spillage of hazardous materials due to a nearby, up-slope traffic accident; (3) recently applied insecticide flowing into habitats occupied by the Salt Creek tiger beetle along Little Salt Creek; or (4) stream bank sloughing which buries larvae in their burrows. Other negative effects of habitat fragmentation and loss on the total number of individuals within a population include the Allee effect (the phenomenon where a population's density becomes so low that individuals fail find mates and reproductive success declines sharply) (Keitt et al. 2001) and the loss of genetic diversity (Lacy 1987). These risks are expected to increase as existing occupied habitats become reduced in size and degraded.

Although tiger beetles are mobile and can fly, the lack of suitable habitat along little Salt Creek within movement limits for the Salt Creek tiger beetle (distances of less than 805 m (2,640 ft)) prohibits recolonization of other suitable habitats on other stream segments. The loss of travel corridors along Little Salt Creek has occurred as a result of bank sloughing, establishment of invasive plants, and loss of mid-stream gravel bars. Such loss of travel corridors eliminates genetic interchange and the ability to repopulate after catastrophic events (Murphy et al. 1990; Fahrig and Merriam 1994; Ruggerio et al. 1994; Noss 2002).

III. PRELIMINARY RECOVERY STRATEGY

A. RECOVERY PRIORITY NUMBER WITH RATIONALE

Degree of Threat	Recovery Potential	Taxonomy	Priority	Conflict
High	**High**	Monotypic Genus	1	1C
		Species	2	2C
		Subspecies/DPS	**3**	**3C***
	Low	Monotypic Genus	4	4C
		Species	5	5C
		Subspecies/DPS	6	6C
Moderate	High	Monotypic Genus	7	7C
		Species	8	8C
		Subspecies/DPS	9	9C
	Low	Monotypic Genus	10	10C
		Species	11	11C
		Subspecies/DPS	12	12C
Low	High	Monotypic Genus	13	13C
		Species	14	14C
		Subspecies/DPS	15	15C
	Low	Monotypic Genus	16	16C
		Species	17	17C
		Subspecies/DPS	18	18C

The Salt Creek tiger beetle is assigned a recovery priority of 3C. This ranking indicates that: (1) the Salt Creek tiger beetle is a subspecies of *Cicindela nevadica*; (2) it faces a high degree of threat; (3) it has a high potential for recovery; and (4) it is in conflict with development activities or other forms of economic activities. The high degree of threat is linked to biological constraints that the species faces such as reduced number of individuals and abundance and distribution of populations, genetic diversity, ability to colonize unoccupied areas, as well as anthropomorphic threats, such as excessive freshwater intrusion and sedimentation, cattle-grazing, stream entrenchment, pesticide application, and wetland loss and degradation. A number of these threats are related to development activities or other forms of economic activities. The high potential for recovery is based on the likelihood that conservation can be achieved through known habitat protection and management techniques and research results that demonstrate the capability of captive rearing for reintroduction. This recovery priority number will be reviewed during the recovery planning process.

B. RECOVERY VISION

Recovery of the Salt Creek tiger beetle is currently envisioned as follows: multiple viable Salt Creek tiger beetle populations that persist on conserved habitat with connectivity between populations. The recovery outlook for the Salt Creek tiger beetle will likely depend on the success of reintroductions within other stream segments and focused restoration projects that provide Salt Creek tiger beetle microhabitat requirements. Because these microhabitats are not currently well understood, research will be required. These efforts should be coupled with continued annual surveys and monitoring and evaluation of the effectiveness of habitat restoration projects.

C. INITIAL ACTION PLAN

1) Listing and Critical Habitat: On November 7, 2005, we listed the Salt Creek tiger beetle as an endangered species. On December 12, 2007, we proposed the designation of critical habitat for the Salt Creek tiger beetle. We anticipate

publishing a final rule to federally designate critical habitat in 2009. Listing the Salt Creek tiger beetle as endangered and designating critical habitat enables Federal protection for this insect under sections 7 and 9 under the Endangered Species Act (ESA).

2) Protect Existing Populations: Use all authorities available to protect currently occupied Salt Creek tiger beetle habitat along Little Salt Creek (Figure 1). Recent declines in populations numbers and habitat quality and quantity must be arrested. Once ongoing declines are halted, habitat restoration should be used to expand these areas' ability to support large, viable populations. Conservation efforts should include both permanent habitat protections, such as fee title acquisition or easements, as well as protection of the ecosystem function through preservation or restoration of hydrology function.

3) Species Reintroduction: At present, uncertainty exists about the suitability and recoverability of unoccupied sites to provide for the species' biological needs. The number of sites necessary to achieve recovery also is undetermined. Initial efforts to identify suitable habitat has located nine potential reintroduction areas including five potentially large recovery areas and four potential satellite recovery areas.

   Potential large reintroduction areas include the Upper Salt Creek, Rock Creek, Middle Creek, Lower Salt Creek, and Haines Branch recovery areas (see Figure 1). These recovery areas are believed to be of sufficient size that through habitat management, restoration, and protection, they could sustain source populations of the Salt Creek tiger beetle.

   Satellite populations include Roca, Hickman, Oak, and Ashland recovery areas (see Figure 1). Satellite populations are important to the conservation of the Salt Creek tiger beetle because they contribute to metapopulation longevity (Howe et al. 1991; Perkins et al. 2003), contribute genetically and morphologically distinct traits to central populations (such as the Little Salt Creek-Arbor Lake population) (Lesica and Allendorf 2004), and spread the risk so that unfavorable conditions in one or a few habitats do not threaten the entire species (Ehrlich 1988; Murphy et al. 1990).

   Reintroduction areas should be conserved as resources become available. As with existing populations, conservation efforts should include both permanent habitat protections, such as fee title acquisition or easements, as well as protection of the ecosystem function through preservation or restoration of hydrology function.

4) Establish Sustainable Populations: At present, we believe each viable Salt Creek tiger beetle population should be maintained a minimum of 500 to a 1,000 individuals (Hill and Knisley 1993, 1994; Lacy 1987; Thomas 1990). This minimum population goal is preliminary and could be revised if additional information indicates such a revision is necessary (see associated research need below).

5) Research:

   a) Monitor Salt Creek tiger beetle populations;

   b) Determine the specific role of groundwater in the conservation of the saline wetlands and streams;

   c) Evaluate microhabitat characteristics of larval habitat including salinity and hydrology to aid in reintroduction of the Salt Creek tiger beetle;

   d) Expand research on rearing and propagation methods to aid in reintroduction efforts;

   e) Conduct studies to determine the minimum sustainable population size for the Salt Creek tiger beetle and the amount and distribution of habitat necessary to preserve a population of this size; and

   f) Evaluate restoration practices to restore suitable Salt Creek tiger beetle habitat.

6) Outreach: Initiate efforts to educate the public, particularly landowners, about the recovery needs of the Salt Creek tiger beetle.

7) Land Use Planning: Evaluate potential conflicts between land development and identified locations of recovery areas to determine the feasibility of habitat restoration and Salt Creek tiger beetle reintroduction efforts. Some proposed recovery areas include areas of ongoing and proposed urbanization (namely, the occupied Little Salt Creek sites and the adjoining unoccupied Lower Salt Creek recovery area). Such urban development will present a unique challenge as reintroduction would subject the tiger beetle to potential urban impacts such as lighting and runoff. It also will create new species locations which will impact development and planning decisions of the local communities. Such recovery areas will need additional and special efforts of cooperation to best benefit all parties and mitigate impacts. Urban and future urban reintroduction sites should be treated as a second level of opportunity after more rural sites have been fully exploited.

IV. PREPLANNING DECISIONS

A. PLANNING APPROACH

A recovery plan will be prepared for the Salt Creek tiger beetle pursuant to section 4(f) of the ESA. The recovery plan should include objective, measurable criteria which, when met, will result in a determination that the species be removed from the Federal List of Endangered and Threatened Animals. Recovery criteria should address all threats meaningfully impacting the species. The recovery plan also should estimate the time required and the cost to carry out those measures needed to achieve the goal for recovery and delisting. The scope of the plan will be single species.

Plan preparation will be under the stewardship of the Nebraska Ecological Services Field Office. Currently, Robert Harms, Region 6, is the lead fish and wildlife biologist for the Salt Creek tiger beetle (see above contact information). Recovery planning efforts will be coordinated with the Region 6 Recovery Coordinator as planning proceeds.

Shortly after listing, an informal recovery team began preliminary recovery planning efforts. This team includes other Federal, State, and local agencies, City and County Planning Departments, and UNL personnel. Meetings among these parties will continue with the purpose of sharing information and ideas about advancing recovery of the Salt Creek tiger beetle. We hope to formalize this recovery team in the near future.

B. INFORMATION MANAGEMENT

1) General: All information relevant to recovery of the Salt Creek tiger beetle will be housed in administrative files found at our Nebraska Ecological Services Field Office in Grand Island, Nebraska. The lead biologist (Robert Harms) will be responsible for maintaining an official record for the recovery planning and implementation process for the species, and copies of new study findings, survey results, records of meetings, comments received, etc., should be forwarded to him.

2) Reporting Requirements: Information needed for annual accomplishment reports, the Recovery Report to Congress, expenditures reports, and implementation tracking should be forwarded by all individuals and offices involved in the Salt Creek tiger beetle recovery effort to Robert Harms. Copies of the completed reports can then be disseminated to all contributors upon request.

C. RECOVERY PLAN PRODUCTION SCHEDULE

Internal Review Draft:	March 2009
Public Review Draft:	October 2009
Public Comment Period:	November 2009
Final Plan:	May 2010

D. STAKEHOLDER INVOLVEMENT

1) Potential Stakeholders:

a) Private and State landowners with Salt Creek tiger beetle populations on their lands;

b) Public land managers with Salt Creek tiger beetle populations on their lands including representatives of the NGPC, Lower Platte South Natural Resources District, and City of Lincoln, Nebraska;

c) Town/county officials for Lancaster and Saunders counties in Nebraska;

d) Representatives of the NGPC;

e) Lincoln/Lancaster County Planning Department;

f) Academic researchers (UNL);

g) Urban developers;

h) Agricultural organizations; and

i) Saline Wetlands Conservation Partnership

2) Stakeholder Involvement Strategy: Landowners and land managers who may contribute to or be affected by the recovery of the Salt Creek tiger beetle will be invited to participate in the recovery planning process. A mailing list will be developed and maintained, and the Nebraska field office will foster open and ongoing communications with all interested parties. Field biologists will develop strong one-on-one working relationships with interested individuals.

Early in the recovery planning process, held meetings of Federal and State species experts, biologists, and hydrologists working with the Salt Creek tiger beetle to exchange status information and identify recovery issues. Concurrently, we held meetings with representatives from the City/County Planning Department to discuss land use plans into the future. The information emanating from these discussions provided the initial platform for proceeding with recovery planning. As we move forward, State and local officials will be asked to participate in an ongoing basis in the recovery effort, particularly with regard to monitoring and regulatory protection of the species.

As needed, additional meetings and/or conference calls will be held to discuss particular issues, and stakeholders will be invited to participate as warranted by the purposes of the meeting. Advantage will be taken of all opportunities to interact with stakeholders in a productive and meaningful way.

Stakeholders will be afforded an opportunity to review and comment on a draft of the recovery plan in conformance with the ESA. Stakeholders also may be asked to contribute directly in developing implementation strategies for planned actions. Strong, one-on-one working relationships with both experts and stakeholders will be developed over time.

Approved:

USFWS Regional Director

Deputy

Date: 2/20/2007

TABLE 1.

Existing Salt Creek Tiger Beetle Populations. Area estimates reflect all land within the population boundary. The private ownership column includes 221.4 ac of land owned or controlled by local governments (i.e., City of Lincoln, Lower Platte South Natural Resources District).

POPULATION	STATE OWNERSHIP (ac / ha)	PRIVATE OWNERSHIP (ac / ha)	TOTAL (ac / ha)
1. Upper Little Salt Creek North	74 / 29.6	253 / 101.2	327 / 130.8
2. Little Salt Creek—Arbor Lake	0 / 0	232 / 92.8	232 / 92.8
3. Little Salt Creek—Roper	11 / 4.4	335 / 134.0	346 / 138.4
TOTAL	85 / 34	820 / 328	905 / 362

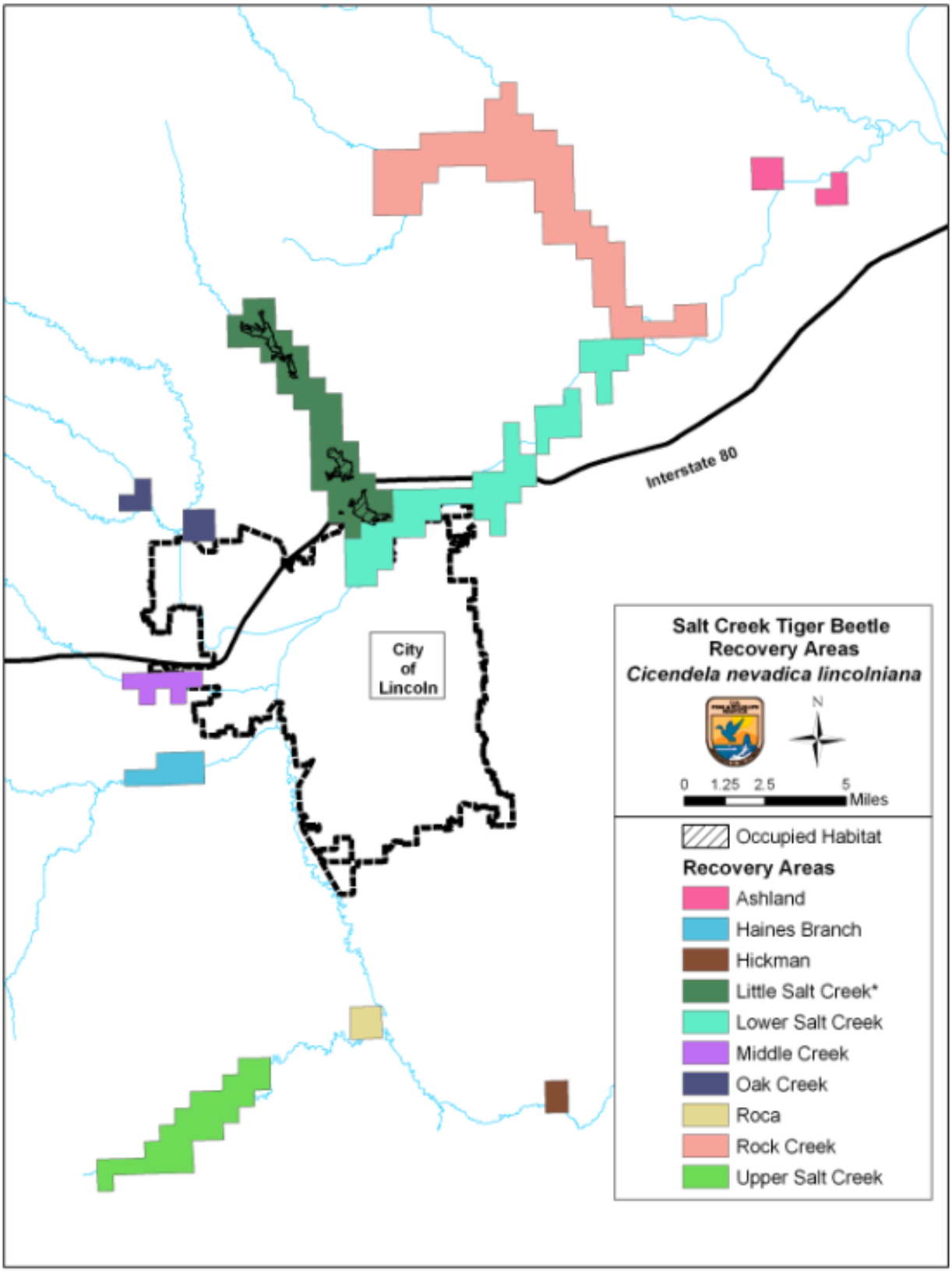

FIGURE 1. Salt Creek Tiger Beetle Recovery Areas.

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