Pine Ridge Area
Community Wildfire Protection Plan
Update 2013

West Ash Fire:
Wednesday August 29, 2012

Facilitated by:

Nebraska Forest Service

In cooperation with:

Region 23 Fire Protection Districts

Nebraska Fire Marshall's Office

District 23 Legislature

Dawes, Sioux Sheridan and Box Butte Co. Commissioners

Region 23 area City officials

Region 23 Emergency Management

County /City Attorneys

Nebraska National Forest and Grasslands

Nebraska Game and parks Commission

Nebraska Board of Educational Lands and Funds

Upper Niobrara White Natural Resource District

Natural Resource Conservation Service

Farm Service Agency

UNL Cooperative Extension

Chadron State College

The following plan has been mutually agr eed upon by the following entities:

(Original signatures on file)

Harrison Volunteer Fire Department

Name | 5-20-13 Date | Chief Title

Crawford Volunteer Fire Department

tS.

Name | 5/20/13 Date | Chief Title

Chadron Volunt eer Fire Department

Name | c,$•.2.::> - fl Date | Fire Chief Title

Hay Spr:'ngs Volunteer Fire Department

Name | 05/20/13 Date | Chief Tit le

Rushville Volunteer Fire Department

Name | 5-20-13 Date | Chief Tit le

Gordon Volunteer Fir e Department

Name | 5-20-13 Date | Chief Title

Hem ngford Volunt eer Fire Department

Name | Date | Chief Tit le

Alliance Volunteer Fire Department

Name | Date | Title

5-20-13 | FIRE CHIEF

Nebraska National Forest and Grasslands

t/Jrf3 | District Ranger

a 6 | Date | Title

Upper Niobrara White Natural resource District

(/ame | llk | t/4)3; | Chairman of Bd. UNWNRD

Date | Title

Region 23 Emergency Management

Name | Date | Title

06/17/13 | bllt Ckoal+<t!brc=

Nebraska Board of Educational Lands and Funds

BELF John E. Hunt Field Rep | 6-3-13 | Field Rep

Name | Date | Title

Nebraska Forest Service

Director NFS

Name | Date | Title

Nebraska Game and Parks Commission

Name | Date | Title

6/10/2013 | Deputy Director

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Community Wildfire Protection Plan (Update 2013)

The Pine Ridge

Introduction

In June 2003, Land Stewardship Associates LLC in collaboration with the Chadron Volunteer Fire Department (VFD), Crawford VFD, County, State and Federal agencies and local property owners worked together to produce the Wildland Fire and Fuel Management Plan for the Pine Ridge Planning area #1, (Appendix A). The purpose of this plan was to effectively manage fire and hazardous fuels within the forested Pine Ridge area.

The Healthy Forest Restoration Act (US Congress 2003) identifies only three requirements for a CWPP:

1. that it be developed collaboratively
2. that it identify and prioritize areas on federal and non federal land for fuels reduction and methods to reduce fuels on these areas
3. that it include recommendations regarding strategies to reduce structural ignitability [1].

This **CWPP Update** addresses all of these requirements and others identified by the stakeholders.

This **Community Wildfire Protection Plan (CWPP) Update 2013** expands the boundary of the original plan to include all the area within the Upper Niobrara White Natural Resource District (UNWNRD). This CWPP is modeled after previously successful and currently utilized CWPP's in other states.[2] The Rural Fire Protection District (RFPD) boundaries are used to describe the "Communities" within this updated plan. The RFPD communities are Harrison, Crawford, Chadron, Hay Springs, Rushville, Gordon, Hemingford and Alliance. This plan includes all of Box Butte, Dawes and Sheridan counties as well as the majority of Sioux county. Portions of the Heart of the Hills and the Mitchell RFPD's are within the UNWNRD boundary. Since the majority of these two districts are within the boundary of the North Platte Natural Resource District (NPNRD), they will be included in the CWPP update for the current Wildcat Hills CWPP.

The intent of this Update was not to replace the 2003 plan but to use that plan as a template to build and expand upon. The expanded boundary in this **CWPP Update** includes the entire pine forest escarpment in the northwest corner of Nebraska. It also includes large areas outside the forested

[1] Williams, J. B. (December, 2012). Community Wildfire Protection Planning: The Importance of Framing, Scale, and Building Sustainable Capacity. *Journal of Forestry*, 415-420.

[2] Resource Logic LLC. (2004). *Community Fire Mitigation Plans: Moffat County, Colorado.* Craig CO.

boundaries. The ability to identify and quantify the “at risk areas” both within and outside the forested areas further strengthens the usefulness and effectiveness of the Update.

The Pine Ridge area witnessed extreme fire behavior in 2006 and 2012. More than 14,000 people (greater than 50% of the population of the CWPP area) live in or near the forested Pine Ridge escarpment and are potentially “at risk” when these conditions exist. In 2006 the Spotted Tail fire threatened Chadron and much of the city had to be evacuated. In 2012 the West Ash fire forced an evacuation of Whitney which lies almost 10 miles north of the forested area. Intense suppression efforts kept this same fire from crossing US 385 and moving into the 2006 Spotted Tail burn area. Had these suppression efforts failed and the fire crossed US 385, it is likely Chadron would have again been threatened. A successful back fire was all that kept the 2012 Wellnitz fire from producing a similar situation for Hay Springs which lies almost 5 miles south of the forested area.

Managing the grass component of these forested areas is of great importance. These Ponderosa Pine ecosystems develop a heavy grass and shrub component which if not managed (grazed) appropriately create a significant fuels risk. Management must also be on a landscape basis. Fuels mitigation treatments are only as effective as their weakest link. Unmanaged islands among managed areas pose a significant risk to the managed lands.

The above scenarios have proven intense fire behavior can develop in the forested Pine Ridge, move aggressively into the surrounding non-forested agricultural land and threaten the population centers in and near the forested escarpment. For this reason the Nebraska Forest Service (NFS) has designated the entire Pine Ridge, the surrounding area and communities as Wildland Urban Interface (WUI). Treatment to mitigate fuels within the forested escarpment will serve to mitigate the risk of fire within the WUI. This expanded WUI will allow the NFS to utilize US Forest Service grant funding to cost share fuels mitigation treatments throughout the geographic Pine Ridge.

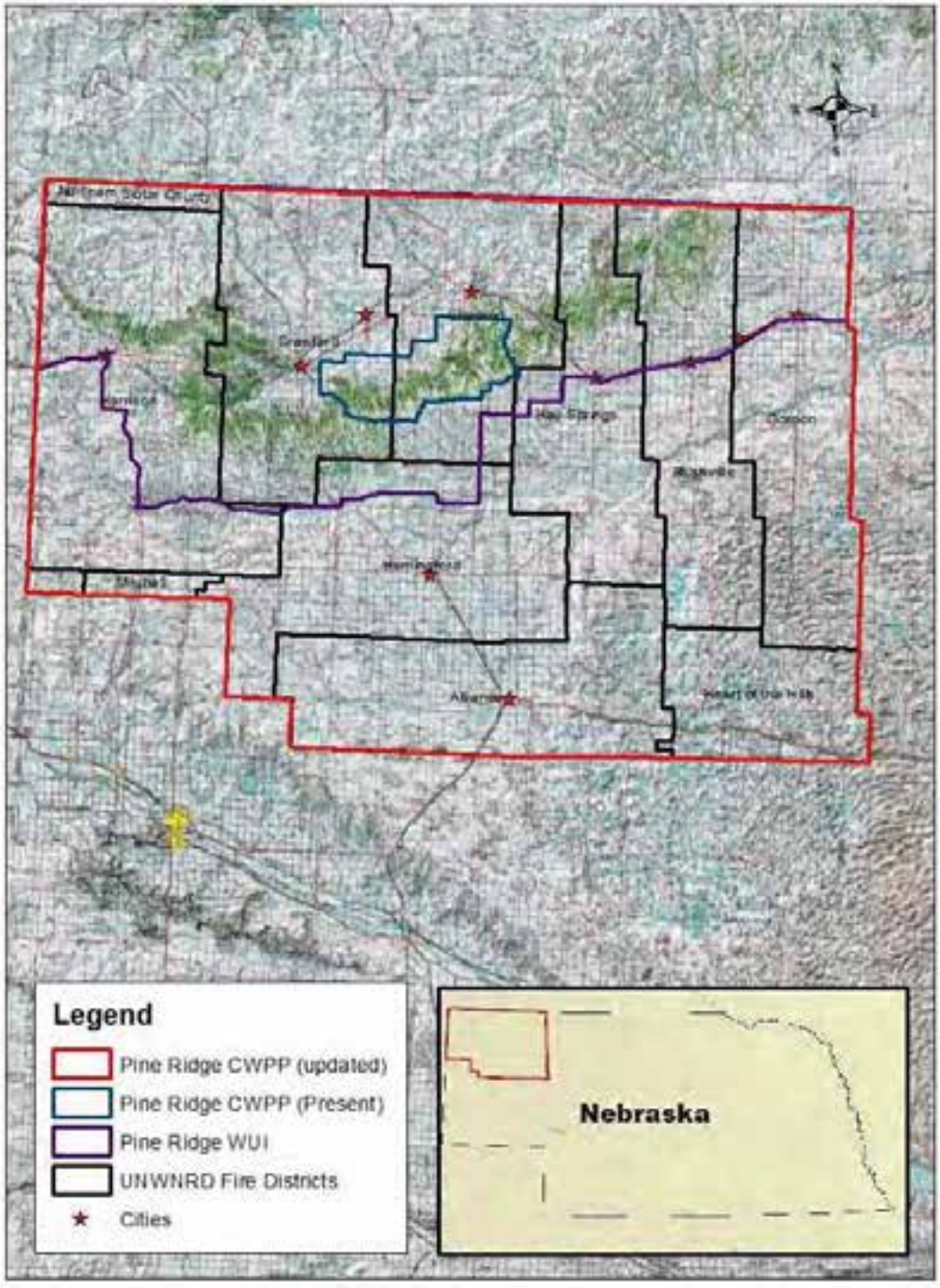
The first step in this process was to assemble and seek input from a core working group of stakeholders. This group included but was not limited to representatives from:

1) Representatives (fire chiefs) from each of the 8 Rural Fire Protection District(s)
2) Nebraska Fire Marshall’s office
3) Dist. 43 State Legislature / County Commissioner(s) from each of the 4 counties / City officials
4) Region 23 Emergency Management
5) County / city attorney(s)
6) Nebraska National Forest (NNF)
7) Nebraska Game and Parks Commission (NG&PC) and the Board of Educational Lands and Funds (BELF) aka School Lands
8) Upper Niobrara-White NRD (UNWNRD)
9) Natural Resource Conservation Service (NRCS)
10) Farm Service Agency (FSA)
11) UNL Cooperative Extension

12) Chadron State College
13) Nebraska Forest Service (NFS)

Input from each stakeholder was incorporated into the “draft” CWPP. This “draft” CWPP was presented at a public meeting held at Chadron State College on April 29, 2013, where the general public had the opportunity to submit input. Input was reviewed and where appropriate, incorporated into this publication.

Pine Ridge - Community Wildfire Protection Plan



Harrison Rural Fire Protection District
Community Fire Mitigation Plan

Community Profile

The Harrison Rural Fire Protection District (Community) is located in Sioux County NE. The city of Harrison, population 251, is the only incorporated city (Village) in the Community. The Community is crossed east/west by US Hwy 20. NE 2/71 crosses the SE corner of the district and NE 29 crosses the district north-south connecting with US 20 in Harrison. The now abandoned Chicago Northwestern railroad crosses the Community roughly paralleling US 20. The primary land use is agriculture and livestock operations. Recreation, on both public and privately owned property is rapidly becoming a significant land use in this community. The forested areas of the Pine Ridge escarpment occupy an area in the north and east portion of the Community. Land ownership is primarily private. The US Forest Service controls grassland in the north portion of the Community bordering Wyoming and South Dakota. NG&PC Wildlife Division administrates the Gilbert - Baker Wildlife Management Area within the boundaries of this Community. The National Park Service manages the Agate Fossil Beds National Monument which lies along the Niobrara River in the central portion of the Community. The Board of Educational Lands and Funds (BELF) aka School Lands administrates whole or partial sections throughout the Community.

Wildfire Risk Assessment

Fire History

From the time this area was settled by Europeans until 1989 wildfire activity was limited to small fires which were rapidly and effectively controlled. One exception was the Five Points fire which burned a portion of the forested Hat Creek watershed in the late 50's or early 60's. In 1989 the 49,000 acre Ft Robinson Fire burned in both the Crawford and Harrison Communities. In the early 1990's the Glen and Warbonnet fires burned primarily on privately owned land. In 2006 the Rudloff fire burned in both the Crawford and Harrison Communities. Also in 2006 the Thayer fire burned an area to the NE of the Village of Harrison. In June of 2012 the Little Cottonwood fire burned an area in the upper reaches of that watershed. In Aug/Sept of 2012 the Douthit (Region 23 Complex) fire burned 29,730 acres in the Cottonwood/Little Cottonwood watersheds. Appendix E, Historic Fires of the Pine Ridge, is an aerial photo showing the locations of most of the fires which have burned in the Pine Ridge area in the last four decades.

Fire Hazard

Exclusion of low intensity ground fire by Europeans, limited active forest management and prolific pine regeneration following recent timber harvest activities have contributed to the ever increasing fire danger in the forested areas within the Community. This in combination with the recent drought contributed to the explosive conditions in 2012 and the subsequent catastrophic wildfires the district experienced. The drought conditions have also contributed to high risk conditions in the grasslands of the district.

Wildfire Hazard is described in greater detail in the Wildfire section (pp. 54 – 59) in the Region 23 Multi Jurisdictional Hazard Mitigation Plan (January 2010). That portion of the plan is attached as Appendix C.

Wildland Urban Interface (WUI)

The Village of Harrison and the Agate Fossil Beds National Monument both lie within the boundaries of the WUI as defined by the NFS in the Introduction to this CWPP. The portions of the Community which lie outside of the WUI have their own fire risk variables; however the agricultural practices in these areas are not as fire prone as are those within the WUI.

Protection Capabilities and Infrastructure

Water Sources

Reliable water sources are limited within the community. The only developed water systems are in Harrison where the Harrison Volunteer Fire Department is located and at Agate Fossil Beds NM. Reservoirs, ponds and stock tanks are located throughout the Community. Because of the recent drought conditions many of the reservoirs and ponds are not reliable sources of water. With the exception of the Niobrara River, most of the watersheds have only intermittent flow and are not reliable water sources. With the drought conditions in 2012 the upper reaches of the Niobrara River ran dry.

Staging and Safety Zones

The Pine Ridge escarpment is a park – forest setting. There are abundant staging areas and safety zones both within and on the perimeter of the escarpment. Grazed pastures as well as fallow farmland all represent staging areas and safety zones away from the forested escarpment. Green alfalfa fields also represent potential staging areas.

Roads/Bridges

As described in the Community Profile, The Harrison Community is served by US 20, NE 2/71 and NE29. Roads maintained by Sioux county are shown on the attached community map. The 2012 Dawes – Sioux Counties Nebraska County Wide Directory is an attachment to this CWPP (Appendix D). County maintained roads as well as their 911 name designations are shown in detail in this publication. Restricted bridges and roads which could restrict truck/lowboy passage are identified in Appendix F. The timber harvest activity from 1990 to 2008 created a vast network of forest access roads on the private and to a lesser extent, on public land. These roads now serve as access for fire suppression and other emergency vehicles. There is presently no comprehensive mapping system for these logging roads.

Utilities/Phone service

This community is bisected by several high tension power lines. The rural electric service is provided by Northwest Rural Public Power District.

Structure analysis

Fire Risk Rating and Ignitability

"Firewise" and "Ready Set Go" offer excellent guidelines for reducing the loss from wildfire for urban and rural structures. The NFS "Living With Fire" series, for both prairie and woodland areas, are also valuable educational tools for the property owners. Involving the Village of Harrison and Agate Fossil Beds NM in these volunteer programs would increase the public awareness regarding structure risk mitigation. The opportunity for developing quantitative structure risk ratings would be under location specific CWPP's for Harrison and Agate. The balance of the Community is rural / agriculture with widely spaced home locations. This region has yet to experience the rural development seen in other forested areas in or outside the Pine Ridge. The opportunity to perform Firewise and Ready Set Go analysis and treatment to the rural residential and recreation home sites in forested settings would be while fuels mitigation treatments are being performed in the same area.

Much of this community is non - forested. Home sites in non-forested environments are still at risk from wildfire, especially those with shelterbelts near structures. Firewise and Ready Set Go guidelines apply to these home settings, also.

Mitigation Action Plan

Fuel Reduction Recommendations

Fuel Reduction in high risk forested settings

This community has experienced extreme fire behavior in the forested area over the last 3 decades. Much of the forested area has witnessed some level of fire during this time period. The severely burned areas are of equal or greater fire risk than the green forests. The fire killed trees represent a very heavy fuel load that will persist for decades after a fire. The potential for a re-burn of even greater intensity than the original burn is a reality. Where economically feasible, these burned areas should also receive fuels mitigation treatment. The NFS has developed prescription parameters (Appendix O) for addressing recently burned forests. Of high importance is protecting the unburned or lightly burned "green Islands or seed sources" within the burned areas from future high intensity reburns.

There are still many old slash piles left over from the timber harvesting this area experienced during the 1990's and early part of this century. These piles still represent a fuel risk. Disposing of these piles by either burning during appropriate winter conditions or grinding/chipping on site are acceptable means to mitigate this threat.

The attached prescription (Appendix O) represents the guidelines followed by NFS when cost-sharing fuels mitigation treatments in the ponderosa pine forest type. Presently there is little commercial market for the trees removed in these treatments. Costs range from less than $200.00/acre for lop and scatter treatments to greater than $1000.00/acre for mastication or in-woods chipping. NFS sometimes has access to USFS grant funding to cost-share with forest landowners to reduce the cost born by the landowner for these treatments.

Managing the grass component of these forested areas is of great importance. These Ponderosa Pine ecosystems develop a heavy grass and shrub component which if not managed (grazed) appropriately create a significant fuels risk. Management must also be on a landscape basis. Fuels mitigation treatments are only as effective as their weakest link. Unmanaged islands among managed areas pose a significant risk to the managed lands.

Fuel reduction in high risk non-forested settings

Most of the activities outside the forested areas will be to create defensible space around rural residential homes. The same Firewise rules that apply in forested settings will apply in the non-forested settings. Managing the grass component or the pasture land in these areas is of equal importance here as in the forested settings.

Monitoring and Evaluation

The objective of the fuel mitigation treatments in the forested settings is to reduce the stand density to stocking levels which will remain effective for 20 to 30 years. The NFS maintains a GIS data base quantifying the time and level of treatment performed on forested properties throughout the geographic Pine Ridge. With this data base, resource managers will be able to evaluate when and where resources for future fuel treatments should be directed.

The extreme fire behavior witnessed in 2012 tested many of the fuels mitigation treatments in this community as well as over much of the Pine Ridge area. These extreme fires have provided an educational tool to observe the effectiveness of various types and intensities of treatments. What we learn from the 2012 fire season will strengthen future fuel mitigation treatments.

Emergency Operations

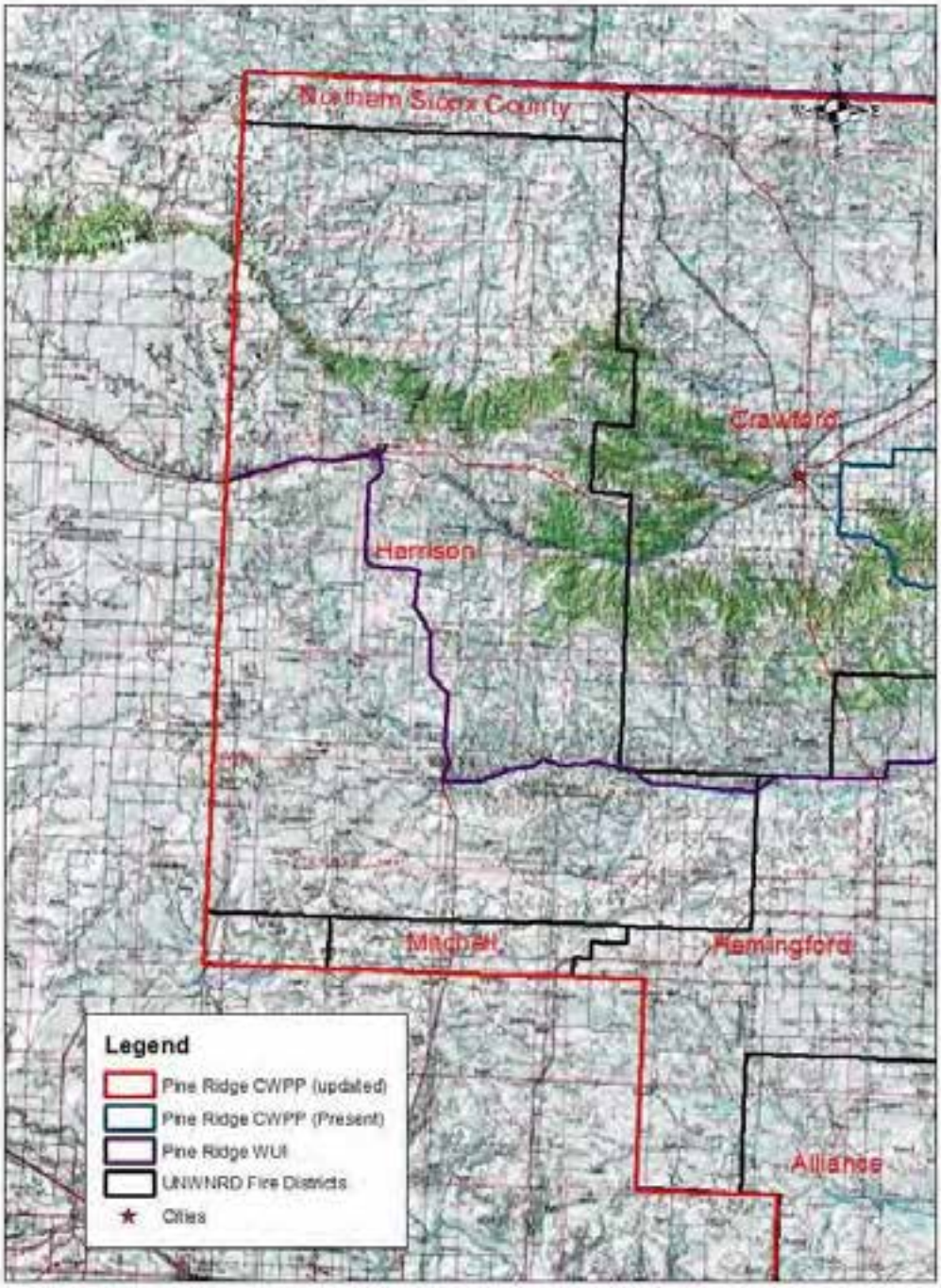
The Harrison Volunteer Fire Department is responsible for fire protection and other emergencies in this community / fire protection district. The US Forest Service will respond to fires on the forest and grassland they manage. The NE Game and Parks Commission (NG&PC) has firefighting capabilities. NG&PC maintains fire suppression resources at both the Wildlife division headquarters in Squaw Creek and at Fort Robinson State Park. The Dawes and Sioux County Sheriff's departments will also provide assistance if necessary.

The Rural Fire Protection Districts maintain a mutual aid agreement. A copy of this agreement is attached (Appendix B).

Recommendations for Improving Emergency Preparedness

This would be more appropriately addressed in location specific CWPP's or during establishment of Firewise communities in locations with higher population density (Harrison).

Harrison Rural Fire Protection District "Community"



Crawford Rural Fire Protection District
Community Fire Mitigation Plan

Community Profile

The Crawford Rural Fire Protection District (Crawford RFPD) is located in portions of both Sioux and Dawes Counties NE. The city of Crawford, population 997, is the only incorporated city in the Community. The village of Whitney (population 77) and unincorporated Belmont are located in this Community. The district is crossed east/west by US 20 and north/south by NE 2/71. The Burlington Northern Santa Fe (BNSF) railroad crosses the Community north/south. The Dakota Minnesota and Eastern railroad connects/terminates with the BNSF in Crawford and connects with Chadron and Rapid City SD etal. The primary land use is agriculture and livestock operations. Recreation, on both public and privately owned property is rapidly becoming a significant land use in this community. The forested areas of the Pine Ridge escarpment occupy southern and western portions of the Community. Land ownership is primarily private. The US Forest Service controls some land in the forested areas as well as grassland area in the north western portion of the Community. The Nebraska Game and Parks Commission (NG&PC) Parks Division operates Fort Robinson State Park in this Community. NG&PC Wildlife Division administrates the Fort Robinson, Peterson, Ponderosa and Bighorn Wildlife Management Areas within the boundaries of this Community. The Board of Educational Lands and Funds (BELF) aka School Lands administers whole or partial sections throughout the Community.

Wildfire Risk Assessment

Fire History

From the time this area was settled by Europeans until 1984 wildfire activity was limited to small fires which were rapidly and effectively controlled. The 1984 McIntosh fire burned an area on the east boundary of the district. In 1989 the Fort Robinson fire complex burned 49,000 acres. The fire was located within the Crawford RFPD and the Sioux County RFPD. In 1989 the railroad caused Belmont fire burned an area in the SE corner of the Community. In 2006 the Rudloff fire burned an area south of the White river in the western portion of the Community. In August / September 2012, the Region 23 Complex fires burned 29,730 acres in the Cottonwood /Little Cottonwood watersheds. The western portion of the 58,450 acre Ash Creek fire of 2012 was also in this fire protection Community. Appendix E, Historic Fires of the Pine Ridge, is an aerial photo showing locations of the fires which have burned in the Pine Ridge in the last four decades.

Fire Hazard

Exclusion of low intensity ground fire by Europeans, limited active forest management and prolific pine regeneration following recent timber harvest activities have contributed to the ever increasing fire danger in the forested areas within the Community. This in combination with the recent drought contributed to the explosive conditions in 2012 and the subsequent catastrophic wildfires the district experienced. The drought conditions have also contributed to high risk conditions in the grasslands of the district. The BNSF railroad corridor might be considered an "at risk" area as historically this and other forested rail corridors have and will continue to be vulnerable to railroad caused fires.

Wildfire Hazard is described in greater detail in the Wildfire section (pp. 54 – 59) in the Region 23 Multi Jurisdictional Hazard Mitigation Plan (January 2010). That portion of the plan is attached as Appendix C.

Wildland Urban Interface

The town of Crawford and historic Fort Robinson State Park both lie within the boundaries of the WUI as defined by the NFS in the introduction to this CWPP. Crow Butte Resources is a uranium mining operation in the Squaw Creek watershed. This mining operation sits near the forested Pine Ridge and also lies within the WUI. The portions of the Community which lie outside of the WUI have their own fire risk variables; however the agricultural practices in these areas are not as fire prone as are those within the WUI.

Protection Capabilities and Infrastructure

Water Sources

Reliable water sources are limited within the community. The only developed water systems are in Crawford where the Crawford Volunteer Fire Department is located and at Fort Robinson State Park. Reservoirs, ponds and stock tanks are located throughout the community. Because of the recent drought conditions many of the reservoirs and ponds are not reliable sources of water. Whitney Lake is an irrigation storage reservoir and is the largest storage reservoir in the district. With the exception of the White River, most of the watersheds have only intermittent flow and are not reliable water sources.

Staging and Safety Zones

The Pine Ridge escarpment is a park – forest setting. There are abundant staging areas and safety zones both within and on the perimeter of the escarpment. Grazed pastures as well as fallow farmland all represent staging areas and safety zones away from the forested escarpment. Green alfalfa fields also represent potential staging areas.

Roads/Bridges

The Crawford RFPD is served by US highway 20 and NE highway 71. Roads maintained by both Dawes and Sioux counties are shown on the attached community map. The 2012 Dawes – Sioux Counties Nebraska County Wide Directory is an attachment to this CWPP (Appendix D). County maintained roads as well as their 911 name designations are shown in detail in this publication. Restricted bridges and roads which could restrict truck/lowboy passage are identified in Appendix F. The timber harvest activity from 1990 to 2008 created a vast network of forest access roads on the private and to a lesser extent, on public land. These roads now serve as access for fire suppression and other emergency vehicles. There is presently no comprehensive mapping system for these logging roads.

Utilities/Phone service

This community is bisected by several high tension power lines. The rural electric service is provided by Northwest Rural Public Power District.

Structure analysis

Fire Risk Rating and Ignitability

"Firewise" and "Ready Set Go" offer excellent guidelines for reducing the loss from wildfire of urban and rural structures. The NFS "Living With Fire" series, for both prairie and woodland areas, are also valuable educational tools for the property owners. Involving the Village of Crawford and Fort Robinson State Park in these volunteer programs would increase the public awareness regarding structure risk mitigation. The opportunity for developing quantitative structure risk ratings would be under location specific CWPP's for Crawford and Fort Robinson. The balance of the community is rural / agriculture with widely spaced home locations. This region has yet to experience the WUI development seen in other forested areas in or outside the Pine Ridge. The opportunity to perform Firewise and Ready Set Go analysis and treatment to the rural residential and recreation home sites in forested settings would be while fuels mitigation treatments are being performed in the same area.

Much of this community is non-forested. Home sites in non-forested environments are still at risk from wildfire, especially those with shelterbelts near structures. Firewise and Ready Set Go guidelines apply to these home settings, also.

Mitigation Action Plan

Fuel Reduction Recommendations

Fuel Reduction in high risk forested settings

This community has experienced extreme fire behavior in the forested area over the last 3 decades. Much of the forested area has witnessed some level of fire during this time period. The severely burned areas are still of equal or greater fire risk than the green forests. The fire killed trees represent a very heavy fuel load that will persist for decades after a fire. The potential for a re-burn of even greater intensity than the original burn is a reality. Where economically feasible, these burned areas should also receive fuels mitigation treatment. The NFS has developed prescription parameters (Appendix O) for addressing recently burned forests. Of high importance is protecting the unburned or lightly burned "green islands or seed sources" within the burned areas from future high intensity reburns.

There are still many old slash piles left over from the timber harvesting this area experienced during the 1990's and early part of this century. These piles still represent a fuel risk. Disposing of these piles by either burning during appropriate winter conditions or grinding/chipping on site are acceptable means to mitigate this threat.

The attached prescription (Appendix O) represents the guidelines followed by NFS when cost-sharing fuels mitigation treatments in the ponderosa pine forest type. Presently there is little commercial market for the trees removed in these treatments. Costs range from less than $200.00/acre for lop and scatter treatments to greater than $1000.00/acre for mastication or in-woods chipping. NFS sometimes has access to USFS grant funding to cost-share with forest landowners to reduce the cost born by the landowner for these treatments.

Managing the grass component of these forested areas is of great importance. These Ponderosa Pine ecosystems develop a heavy grass and shrub component which if not managed (grazed) appropriately create a significant fuels risk. Management must also be on a landscape basis. Fuels mitigation treatments are only as effective as their weakest link. Unmanaged islands among managed areas pose a significant risk to the managed lands.

Fuel reduction in high risk non-forested settings

Most of the activities outside the forested areas will be to create defensible space around rural residential homes. The same Firewise rules that apply in forested settings will apply in the non-forested settings.

Monitoring and Evaluation

The objective of the fuel mitigation treatments in the forested settings is to reduce the stand density to stocking levels which will remain effective for 20 to 30 years. The NFS maintains a GIS data base quantifying the time and level of treatment performed on forested properties throughout the geographic Pine Ridge. With this data base, resource managers will be able to evaluate when and where resources for future fuel treatments should be directed.

The extreme fire behavior witnessed in 2012 tested many of the fuels mitigation treatments in this community as well as over much of the Pine Ridge area. These extreme fires have provided an educational tool to observe the effectiveness of various types and intensities of treatments. What we learn from the 2012 fire season will strengthen future fuel mitigation treatments.

Emergency Operations

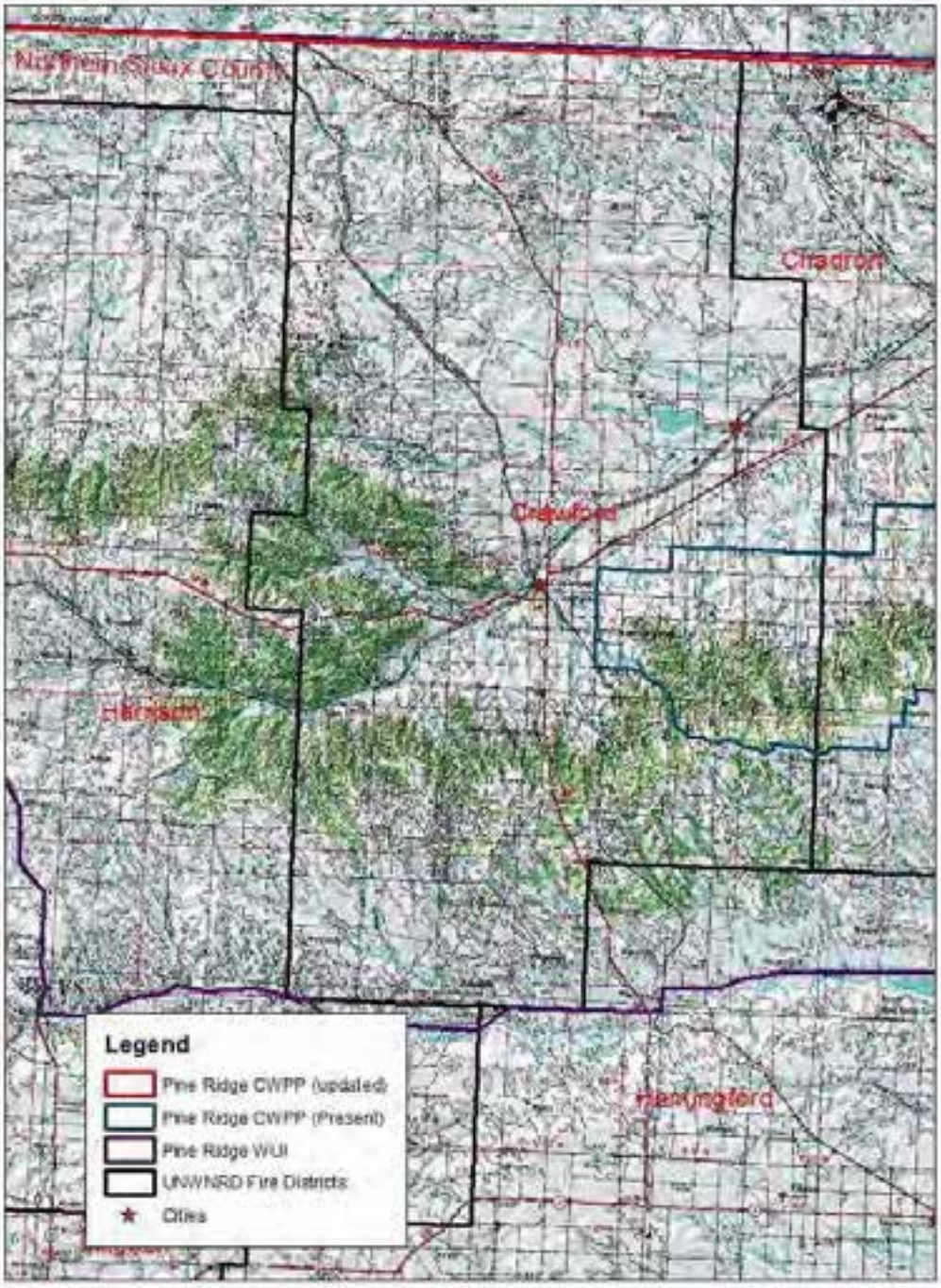
The Crawford Volunteer Fire Department is responsible for fire protection and other emergencies in this community / fire protection district. The US Forest Service will respond to fires on the forest and grassland they manage. The NE Game and Parks Commission (NG&PC) has firefighting capabilities. NG&PC maintains fire suppression resources at both the Wildlife division headquarters in Squaw Creek and at Fort Robinson State Park. The Dawes and Sioux County Sheriff's departments will also provide assistance if necessary.

The Rural Fire Protection Districts maintain a mutual aid agreement. A copy of this agreement is attached (Appendix B).

Recommendations for Improving Emergency Preparedness

This would be more appropriately addressed in location specific CWPP's or during establishment of Firewise communities in locations with higher population density (Crawford and Ft Robinson).

Crawford Rural Fire Protection District "Community"



Chadron Rural Fire Protection District
Community Fire Mitigation Plan

Community Profile

The Chadron Rural Fire Protection District (Chadron RFPD) is located in Dawes County NE. The city of Chadron, population 5851, is the only incorporated city in the Community. The US Forest Service operates the Pine Ridge Job Corps just south of Chadron in the forested area on top of the Pine Ridge escarpment. The Community is crossed east/west by US 20 and north/south by US 385. The Dakota Minnesota and Eastern (DM&E) railroad which connects with the BNSF in Crawford crosses the NW corner of the Community. The Nebraska Northwestern railroad connects with the DM&E at Dakota Junction and terminates just east of Chadron. The primary land use is agriculture and livestock. Recreation, on both public and privately owned property is rapidly becoming a significant land use in this community. The forested areas of the Pine Ridge escarpment occupy the central portions of the Community and lie south of Chadron. Land ownership is primarily private. The US Forest Service controls land in the forested areas of the Community. The Nebraska Game and Parks Commission (NG&PC) Parks Division operates Chadron State Park in this Community. NG&PC Wildlife Division administrates the Chadron Creek and Bordeaux Wildlife Management Areas within the boundaries of this Community. The Board of Educational Lands and Funds (BELF) aka School Lands administers whole or partial sections throughout the Community.

Wildfire Risk Assessment

Fire History

From the time this area was settled by Europeans until 1973 wildfire activity was limited to small fires which were rapidly and effectively controlled. The 1973 Deadhorse fire burned an area to the north of Chadron State Park on private and public land. The Cunningham Creek fire burned in the watershed bearing the same name. In 2006 Spotted Tail and Roberts Track fires burned significant areas of public and private land within the community. In Aug/Sept 2012 the West Ash Fire (Region 23 Complex) burned 58,450 acres in both the Crawford and Chadron Communities. Many of the areas previously burned (Cunningham, Roberts Track) were again burned, with great intensity in the West Ash Fire.

Fire Hazard

Exclusion of low intensity ground fire by Europeans, limited active forest management and prolific pine regeneration following recent timber harvest activities have contributed to the

ever increasing fire danger in the forested areas within the Community. This in combination with the recent drought contributed to the explosive conditions in 2012 and the subsequent catastrophic wildfires the district experienced. The drought conditions have also contributed to high risk conditions in the grasslands of the district.

Wildfire Hazard is described in greater detail in the Wildfire section (pp. 54 – 59) in the Region 23 Multi Jurisdictional Hazard Mitigation Plan (January 2010). That portion of the plan is attached as Appendix C.

Wildland Urban Interface

The city of Chadron lies within the boundaries of the WUI as defined by the NFS in the introduction to this CWPP. Most of the Chadron Community lies within the boundaries of the WUI. The portions of the Community which lie outside of the WUI have their own fire risk variables. The agricultural practices (higher % of irrigated crop) in these areas are not as fire prone as are those within the WUI.

Protection Capabilities and Infrastructure

Water Sources

Reliable water sources are limited within the community. The only developed water systems are in Chadron, Chadron State Park and the Pine Ridge Job Corps. The Chadron City Dam's located south of Chadron have served as a reliable source of water for fire suppression. Other reservoirs, ponds and stock tanks are located throughout the community. Because of the recent drought conditions many of the reservoirs and ponds are not reliable sources of water. With the exception of the White River, most of the watersheds have only intermittent flow and are not reliable water sources.

Staging and Safety Zones

The Pine Ridge escarpment is a park – forest setting. There are abundant staging areas and safety zones both within and on the perimeter of the escarpment. Grazed pastures as well as fallow farmland all represent staging areas and safety zones away from the forested escarpment. Green alfalfa fields also represent potential staging areas.

Roads/Bridges

The Chadron RFPD is served by US 20 and US 385. Roads maintained by Dawes County are shown on the attached community map. The 2012 Dawes – Sioux Counties Nebraska County Wide Directory is an attachment to this CWPP (Appendix D). County maintained roads as well

as their 911 name designations are shown in detail in this publication. Restricted bridges and roads which could restrict truck/lowboy passage are identified in Appendix F. The timber harvest activity from 1990 to 2008 created a vast network of forest access roads on the private and to a lesser extent, on public land. These roads now serve as access for fire suppression and other emergency vehicles. There is presently no comprehensive mapping system for these logging roads.

Utilities/Phone service
This community is bisected by several high tension power lines. The rural electric service is provided by Northwest Rural Public Power District.

Structure analysis

Fire Risk Rating and Ignitability

"Firewise" and "Ready Set Go" offer excellent guidelines for reducing the loss from wildfire for urban and rural structures. The NFS "Living With Fire" series, for both prairie and woodland areas, are also valuable educational tools for the property owners. Involving the City of Chadron, Chadron State Park, the USFS Pine Ridge Job Corps and the forested developments along the US 385 corridor south of Chadron in these volunteer programs would increase the public awareness regarding structure risk mitigation. The opportunity for developing quantitative structure risk ratings would be under location specific CWPP's for these more populated areas. The balance of the community is rural / agriculture with widely spaced home locations. This region has yet to experience the rural development seen in other forested areas outside the Pine Ridge. The opportunity to perform Firewise and Ready Set Go analysis and treatment to the rural residential and recreation home sites in forested settings would be while fuels mitigation treatments are being performed in the same area.

Much of this community is non - forested. Home sites in non-forested environments are still at risk from wildfire, especially those with shelterbelts near structures. Firewise and Ready Set Go guidelines apply to these home settings, also.

Mitigation Action Plan

Fuel Reduction Recommendations

Fuel Reduction in high risk forested settings

This community has experienced extreme fire behavior in the forested area over the last 3 decades. Much of the forested area has witnessed some level of fire during this time period. The severely burned areas are still of equal or greater fire risk than the green forests. The fire killed trees represent a very heavy fuel load that will persist for decades after a fire. The potential for a re-burn of even greater intensity than the original burn is a reality. Where economically feasible, these burned areas should also receive fuels mitigation treatment. The NFS has developed prescription parameters (Appendix O) for addressing recently burned forests. Of high importance is protecting the unburned or lightly burned "green islands or seed sources" within the burned areas from future high intensity reburns.

There are still many old slash piles left over from the timber harvesting this area experienced during the 1990's and early part of this century. These piles still represent a fuel risk. Disposing of these piles by either burning during appropriate winter conditions or grinding/chipping on site are acceptable means to mitigate this threat.

The attached prescription (Appendix O) represents the guidelines followed by NFS when cost-sharing fuels mitigation treatments in the ponderosa pine forest type. Presently there is little commercial market for the trees removed in these treatments. Costs range from less than $200.00/acre for lop and scatter treatments to greater than $1000.00/acre for mastication or in-woods chipping. NFS sometimes has access to USFS grant funding to cost-share with forest landowners to reduce the cost born by the landowner for these treatments.

Managing the grass component of these forested areas is of great importance. These Ponderosa Pine ecosystems develop a heavy grass and shrub component which if not managed (grazed) appropriately create a significant fuels risk. Management must also be on a landscape basis. Fuels mitigation treatments are only as effective as their weakest link. Unmanaged islands among managed areas pose a significant risk to the managed lands.

Fuel reduction in high risk non-forested settings

Most of the activities outside the forested areas will be to create defensible space around rural residential homes. The same Firewise rules that apply in forested settings will apply in the non-forested settings.

Monitoring and Evaluation

The objective of the fuel mitigation treatments in the forested settings is to reduce the stand density to stocking levels which will remain effective for 20 to 30 years. The NFS maintains a GIS data base quantifying the time and level of treatment performed on forested properties throughout the geographic Pine Ridge. With this data base, resource managers will be able to evaluate when and where resources for future fuel treatments should be directed.

The extreme fire behavior witnessed in 2012 tested many of the fuels mitigation treatments in this community as well as over much of the Pine Ridge area. These extreme fires have provided an educational tool to observe the effectiveness of various types and intensities of treatments. What we learn from the 2012 fire season will strengthen future fuel mitigation treatments.

Emergency Operations

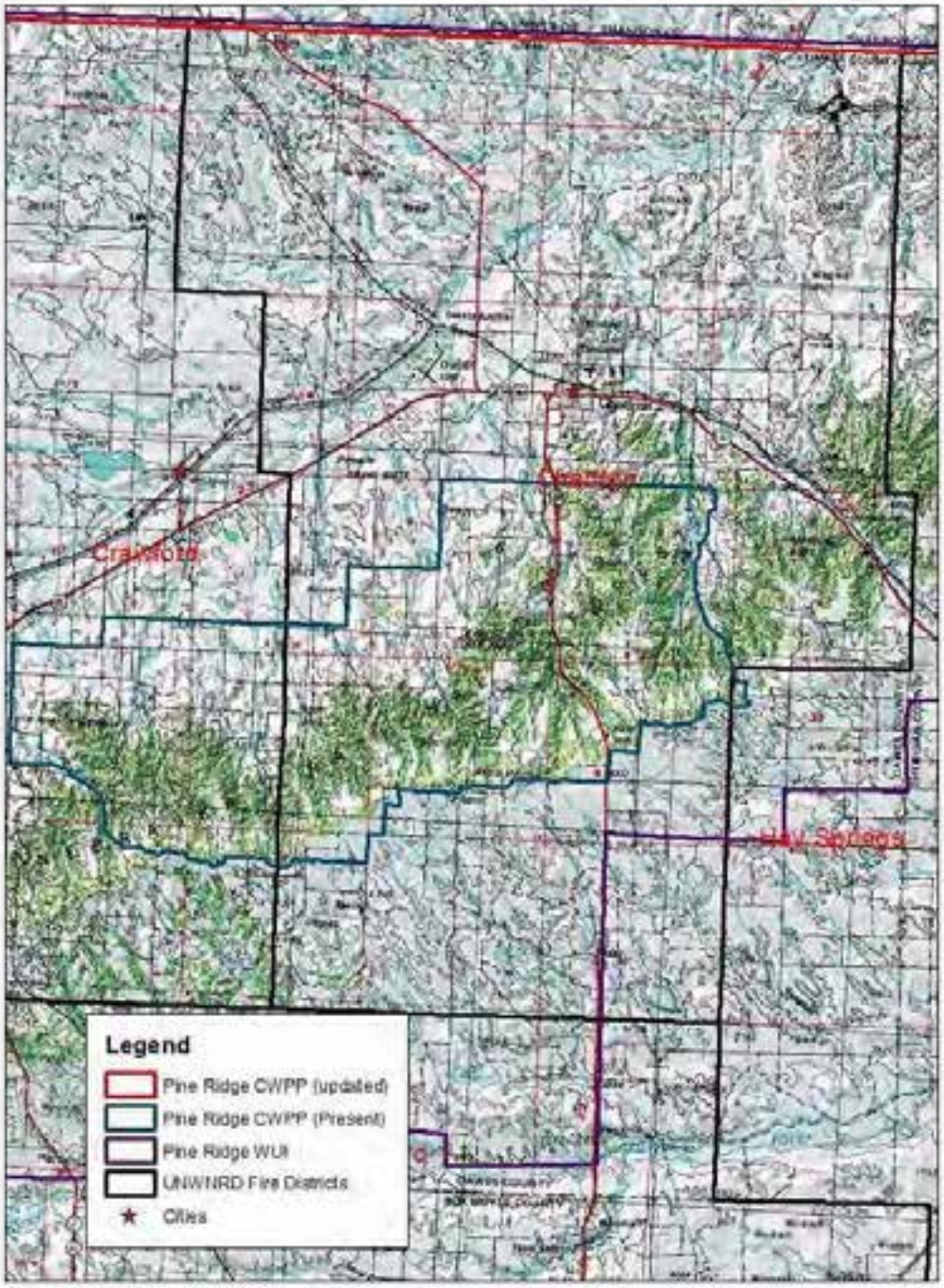
The Chadron Volunteer Fire Department is responsible for fire protection and other emergencies in this community / fire protection district. The US Forest Service will respond to fires on the forest and grassland they manage. The NE Game and Parks Commission (NG&PC) has firefighting capabilities. NG&PC maintains fire suppression resources at Chadron State Park. The Dawes County Sheriff's departments will also provide assistance if necessary.

The Rural Fire Protection Districts maintain a mutual aid agreement. This agreement is attached (Appendix B).

Recommendations for Improving Emergency Preparedness

This would be more appropriately addressed in location specific CWPP's or during establishment of Firewise communities in locations with higher population density (Chadron).

Chadron Rural Fire Protection District "Community"



Hay Springs Rural Fire Protection District
Community Fire Mitigation Plan

Community Profile

The Hay Springs Rural Fire Protection District (Hay Springs RFPD) is located in Sheridan County and the eastern edge of Dawes County. The Village of Hay Springs, population 570, is the only incorporated municipality in the Community. The Community is crossed east/west by US 20. NE 87 connects Hay Springs with Alliance to the south. The primary land use is agriculture and livestock. Recreation, on both public and privately owned property is rapidly becoming a significant land use in this community. The forested area of the Pine Ridge escarpment lies north of Hay Springs / US 20. Land ownership is primarily private. There is no USFS land within this Community. The Nebraska Game and Parks Commission (NG&PC) Wildlife Division oversees the Metcalf Wildlife Management area and the Walgren Lake Recreation area. The Board of Educational Lands and Funds (BELF) aka School Lands administers whole or partial sections throughout the Community. A large portion of the southern end of the Community is comprised of the Mirage Flats Irrigation Project.

Wildfire Risk Assessment

Fire History

From the time this area was settled by Europeans wildfire activity was limited to small fires which were rapidly and effectively controlled. In Aug/Sept 2012 the Wellnitz fire burned 77,684 acres in Nebraska and in South Dakota. 48,681 of these acres were in the Hay Springs and Rushville RFPD's. Appendix "E", Historic Fires of the Pine Ridge, is an aerial photo showing the locations of most of the fires which have burned in the Pine Ridge area in the last four decades.

Fire Hazard

Exclusion of low intensity ground fire by Europeans, limited active forest management and prolific pine regeneration following recent timber harvest activities have contributed to the ever increasing fire danger in the forested areas within the Community. This in combination with the recent drought contributed to the explosive conditions in 2012 and the subsequent catastrophic wildfire the district experienced. The drought conditions have also contributed to high risk conditions in the grasslands of the district.

Wildfire Hazard is described in greater detail in the Wildfire section (pp. 54 – 59) in the Region 23 Multi Jurisdictional Hazard Mitigation Plan (January 2010). That portion of the plan is attached as Appendix C.

Wildland Urban Interface

The Village of Hay Springs lies within the boundaries of the WUI as defined by the NFS in the introduction to this CWPP. All of the area north of US 20 lies within the boundaries of the WUI. The portions of the Community which lie outside of the WUI have their own fire risk variables. The agricultural practices (higher % of irrigated crop) in these areas are not as fire prone as are those within the WUI.

Protection Capabilities and Infrastructure

Water Sources

Reliable water sources are limited within the community. The only developed water systems are in Hay Springs. Walgren Lake located just south of Hay Springs is a reliable source of water. Other reservoirs, ponds and stock tanks are located throughout the community. Because of the recent drought conditions many of the reservoirs and ponds are not reliable sources of water. With the exception of the Niobrara River, most of the watersheds have only intermittent flow and are not reliable water sources.

Staging and Safety Zones

The Pine Ridge escarpment is a park – forest setting. There are abundant staging areas and safety zones both within and on the perimeter of the escarpment. Grazed pastures as well as fallow farmland all represent staging areas and safety zones away from the forested escarpment. Green alfalfa fields also represent potential staging areas.

Roads/Bridges

The Hay Springs RFPD is served by US 20 and NE 87. Roads maintained by Sheridan and Dawes counties are shown on the attached community map. The 2012 Sheridan County Nebraska County Wide Directory is an attachment to this CWPP (Appendix D). County maintained roads as well as their 911 name designations are shown in detail in this publication. Restricted bridges and roads which could restrict truck/lowboy passage are identified in Appendix F. The timber harvest activity from 1990 to 2008 created a vast network of forest access roads on the private and to a lesser extent, on public land. These roads now serve as access for fire

suppression and other emergency vehicles. There is presently no comprehensive mapping system for these logging roads.

Utilities/Phone service
This community is bisected by several high tension power lines. The rural electric service is provided by Northwest Rural Public Power District.

Structure analysis

Fire Risk Rating and Ignitability
"Firewise" and "Ready Set Go" offer excellent guidelines for reducing the loss from wildfire for urban and rural structures. The NFS "Living With Fire" series, for both prairie and woodland areas, are also valuable educational tools for the property owners. Involving the Village of Hay Springs in these volunteer programs would increase the public awareness regarding structure risk mitigation. The opportunity for developing quantitative structure risk ratings would be under location specific CWPP's for the more populated areas. The balance of the community is rural / agriculture with widely spaced home locations. This region has yet to experience the rural development seen in other forested and non-forested areas outside the Pine Ridge. The opportunity to perform Firewise and Ready Set Go analysis and treatment to the rural residential and recreation home sites in forested settings would be while fuels mitigation treatments are being performed in the same area.

Much of this community is non-forested. Home sites in non-forested environments are still at risk from wildfire, especially those with shelterbelts near structures. Firewise and Ready Set Go guidelines apply to these home settings, also.

Mitigation Action Plan

Fuel Reduction Recommendations

Fuel Reduction in high risk forested settings

This community has experienced extreme fire behavior in the forested area over the last 3 decades. Much of the forested area has witnessed some level of fire during this time period. The severely burned areas are still of equal or greater fire risk than the green forests. The fire killed trees represent a very heavy fuel load that will persist for decades after a fire. The potential for a re-burn of even greater intensity than the original burn is a reality. Where economically feasible, these burned areas should also receive fuels mitigation treatment. The NFS has developed prescription parameters (Appendix O) for addressing recently burned forests. Of high importance is protecting the unburned or lightly burned "green islands or seed sources" within the burned areas from future high intensity reburns.

There are still many old slash piles left over from the timber harvesting this area experienced during the 1990's and early part of this century. These piles still represent a fuel risk. Disposing of these piles by either burning during appropriate winter conditions or grinding/chipping on site are acceptable means to mitigate this threat.

The attached prescription (Appendix O) represents the guidelines followed by NFS when cost-sharing fuels mitigation treatments in the ponderosa pine forest type. Presently there is little commercial market for the trees removed in these treatments. Costs range from less than $200.00/acre for lop and scatter treatments to greater than $1000.00/acre for mastication or in-woods chipping. NFS sometimes has access to USFS grant funding to cost-share with forest landowners to reduce the cost born by the landowner for these treatments.

Managing the grass component of these forested areas is of great importance. These Ponderosa Pine ecosystems develop a heavy grass and shrub component which if not managed (grazed) appropriately create a significant fuels risk. Management must also be on a landscape basis. Fuels mitigation treatments are only as effective as their weakest link. Unmanaged islands among managed areas pose a significant risk to the managed lands.

Fuel reduction in high risk non-forested settings

Most of the activities outside the forested areas will be to create defensible space around rural residential homes. The same Firewise rules that apply in forested settings will apply in the non-forested settings.

Monitoring and Evaluation

The objective of the fuel mitigation treatments in the forested settings is to reduce the stand density to stocking levels which will remain effective for 20 to 30 years. The NFS maintains a GIS data base quantifying the time and level of treatment performed on forested properties throughout the geographic Pine Ridge. With this data base, resource managers will be able to evaluate when and where resources for future fuel treatments should be directed.

The extreme fire behavior witnessed in 2012 tested many of the fuels mitigation treatments in this community as well as over much of the Pine Ridge area. These extreme fires have provided an educational tool to observe the effectiveness of various types and intensities of treatments. What we learn from the 2012 fire season will strengthen future fuel mitigation treatments.

Emergency Operations

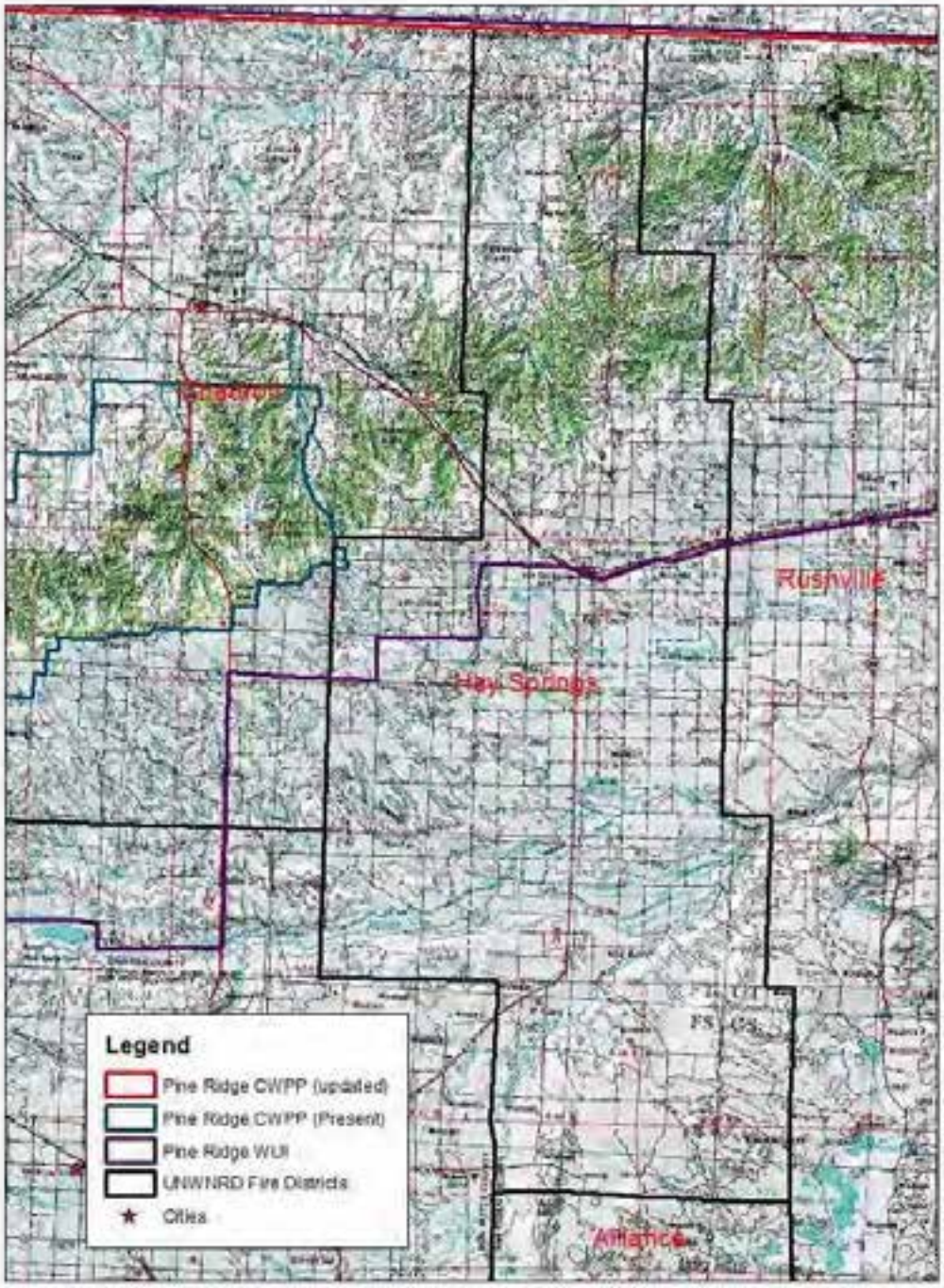
The Hay Springs Volunteer Fire Department is responsible for fire protection and other emergencies in this community / fire protection district. The NE Game and Parks Commission (NG&PC) has firefighting capabilities. NG&PC maintains fire suppression resources and will respond to fires on and near lands they manage. The Sheridan and Dawes County Sheriff's departments will also provide assistance if necessary.

The Rural Fire Protection Districts maintain a mutual aid agreement. This agreement is attached (Appendix B).

Recommendations for Improving Emergency Preparedness

This would be more appropriately addressed in location specific CWPP's or during establishment of Firewise communities in locations with higher population density (Hay Springs).

Hay Springs Rural Fire Protection District "Community"



Rushville Rural Fire Protection District
Community Fire Mitigation Plan

Community Profile

The Rushville Rural Fire Protection District (Rushville RFPD) is located in Sheridan County. The City of Rushville, population 890, is the only incorporated municipality in the Community. Census-designated place (CDP) Whiteclay (population 14) lies on the SD border in the northern end of the Community. The Community is crossed east/west by US 20. NE 87 joins Rushville with Whiteclay at the SD border. NE 250 joins Rushville with NE 2 at Lakeside. The primary land use is agriculture and livestock. Recreation, on both public and privately owned property is rapidly becoming a significant land use in this community. The forested area of the Pine Ridge escarpment lies north of Rushville / US 20, primarily the northern portion of the Community. Land ownership is primarily private. There is no USFS land within this Community. NE Game and Parks Commission manages the Smith Lake WMA, 23 miles south of Rushville. The Board of Educational Lands and Funds (BELF) aka School Lands administers whole or partial sections throughout the Community. A large portion of the southern end of the Community is in the Sand Hills region.

Wildfire Risk Assessment

Fire History

From the time this area was settled by Europeans wildfire activity was limited to small fires which were rapidly and effectively controlled. In Aug/Sept 2012 the Wellnitz fire burned 77,684 acres in Nebraska and in South Dakota. 48,681 of these acres were in the Hay Springs and Rushville RFPD's.

Fire Hazard

Exclusion of low intensity ground fire by Europeans, limited active forest management and prolific pine regeneration following recent timber harvest activities have contributed to the ever increasing fire danger in the forested areas within the Community. The drought conditions have also contributed to high risk conditions in the grasslands of the district.

Wildfire Hazard is described in greater detail in the Wildfire section (pp. 54 – 59) in the Region 23 Multi Jurisdictional Hazard Mitigation Plan (January 2010). That portion of the plan is attached as appendix "C".

Wildland Urban Interface

The City of Rushville and CDP Whiteclay both lie within the boundaries of the WUI as defined by the NFS in the introduction to this CWPP. All of the area north of US 20 lies within the boundaries of the WUI. The portions of the Community which lie outside of the WUI (south of US 20) have their own fire risk variables. Eastern Red Cedar encroachment in pasture lands of southern Sheridan county are creating an ever increasing risk of extreme fire behavior in these areas.

Protection Capabilities and Infrastructure

Water Sources

Reliable water sources are limited within the community. The only developed water systems are in Rushville. Smith and other Sand Hills lakes located south of Rushville are reliable water sources. Other reservoirs, ponds and stock tanks are located throughout the community. Because of the recent drought conditions many of the reservoirs and ponds are not reliable sources of water. With the exception of the Niobrara River, most of the watersheds have only intermittent flow and are not reliable water sources.

Staging and Safety Zones

The Pine Ridge escarpment is a park – forest setting. There are abundant staging areas and safety zones both within and on the perimeter of the escarpment. Grazed pastures as well as fallow farmland all represent staging areas and safety zones away from the forested escarpment. Green alfalfa fields also represent potential staging areas.

Roads/Bridges

The Rushville RFPD is served by US 20, NE 250 and NE 87. Roads maintained by Sheridan County are shown on the attached map. The 2012 Sheridan County Nebraska County Wide Directory LLC is an attachment to this CWPP (appendix “D”). County maintained roads as well as their 911 name designations are shown in detail in this publication. Restricted bridges and roads which could restrict truck/lowboy passage are identified on this appendix. The timber harvest activity from 1990 to 2008 created a vast network of forest access roads on the private and to a lesser extent, on public land. These roads now serve as access for fire suppression and other emergency vehicles. There is presently no comprehensive mapping system for these logging roads. The southern Sand Hills portion of this community is very sparsely populated and has a very limited public road system.

Utilities/Phone service
This community is bisected by several high tension power lines. The rural electric service is provided by Northwest Rural Public Power District.

Structure analysis

Fire Risk Rating and Ignitability

"Firewise" and "Ready Set Go" offer excellent guidelines for reducing the loss from wildfire for urban and rural structures. The NFS "Living With Fire" series, for both prairie and woodland areas, are also valuable educational tools for the property owners. Involving the City of Rushville and CDP Whiteclay in these volunteer programs would increase the public awareness regarding structure risk mitigation. The opportunity for developing quantitative structure risk ratings would be under location specific CWPP's for the more populated areas. The balance of the community is rural / agriculture with widely spaced home locations. This region has yet to experience the rural development seen in other forested and non-forested areas outside the Pine Ridge. The opportunity to perform Firewise and Ready Set Go analysis and treatment to the rural residential and recreation home sites in forested settings would be while fuels mitigation treatments are being performed in the same area.

Much of this community is non - forested. Home sites in non-forested environments are still at risk from wildfire, especially those with shelterbelts near structures. Firewise and Ready Set Go guidelines apply to these home settings, also.

Mitigation Action Plan

Fuel Reduction Recommendations

Fuel Reduction in high risk forested settings

This community has experienced extreme fire behavior in the forested area over the last 3 decades. Much of the forested area has witnessed some level of fire during this time period. The severely burned areas are still of equal or greater fire risk than the green forests. The fire killed trees represent a very heavy fuel load that will persist for decades after a fire. The potential for a re-burn of even greater intensity than the original burn is a reality. Where

economically feasible, these burned areas should also receive fuels mitigation treatment. The NFS is presently developing prescription parameters (appendix “O”) for addressing recently burned forests. Of high importance will be protecting the unburned or lightly burned “green Islands or seed sources” within the burned areas from future high intensity reburns.

There are still many old slash piles left over from the timber harvesting this area experienced during the 1990’s and early part of this century. These piles still represent a fuel risk. Disposing of these piles by either burning during appropriate winter conditions or grinding/chipping on site are acceptable means to mitigate this threat.

The attached prescription (exhibit “O”) represents the guidelines followed by NFS when cost-sharing fuels mitigation treatments in the ponderosa pine forest type. Presently there is little commercial market for the trees removed in these treatments. Costs range from less than $200.00/acre for lop and scatter treatments to greater than $1000.00/acre for mastication or in-woods chipping. NFS sometimes has access to USFS grant funding to cost-share with forest landowners to reduce the cost born by the landowner for these treatments.

Managing the grass component of these forested areas is of great importance. These Ponderosa Pine ecosystems develop a heavy grass and shrub component which if not managed (grazed) appropriately create a significant fuels risk. Management must also be on a landscape basis. Fuels mitigation treatments are only as effective as their weakest link. Unmanaged islands among managed areas pose a significant risk to the managed lands.

Fuel reduction in high risk non-forested settings

Most of the activities outside the forested areas will be to create defensible space around rural residential homes. The same Firewise rules that apply in forested settings will apply in the non-forested settings. Managing the grass component or the pasture land in these areas is of equal importance here as in the forested settings.

Monitoring and Evaluation

The objective of the fuel mitigation treatments in the forested settings is to reduce the stand density to stocking levels which will remain effective for 20 to 30 years. The NFS maintains a GIS data base quantifying the time and level of treatment performed on forested properties throughout the geographic Pine Ridge. With this data base, resource managers will be able to evaluate when and where resources for future fuel treatments should be directed.

The extreme fire behavior witnessed in 2012 tested many of the fuels mitigation treatments in this community as well as over much of the Pine Ridge area. These extreme fires have provided an educational tool to observe the effectiveness of various types and intensities of treatments. What we learn from the 2012 fire season will strengthen future fuel mitigation treatments.

Emergency Operations

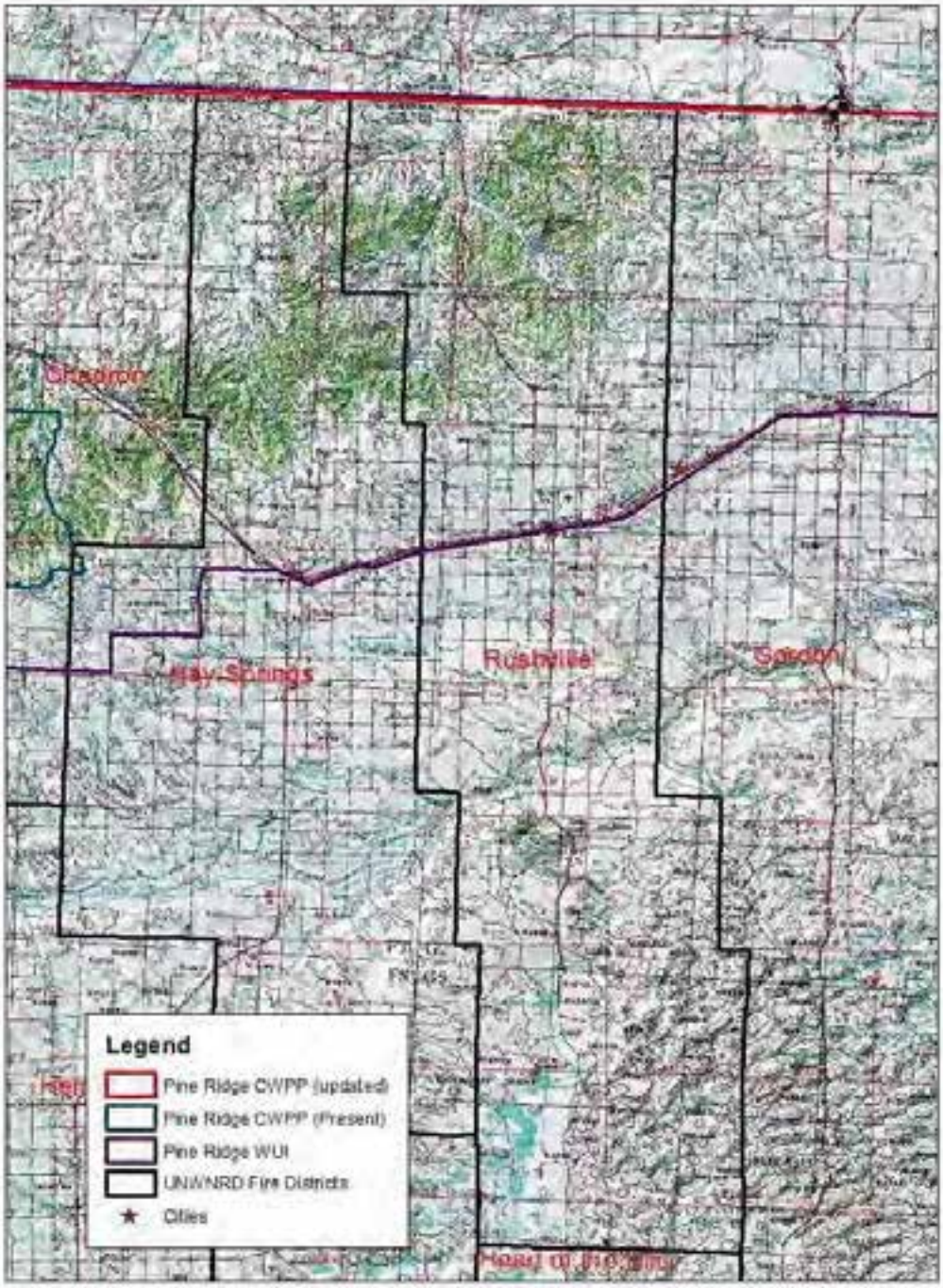
The Rushville Volunteer Fire Department is responsible for fire protection and other emergencies in this community / fire protection district. The NE Game and Parks Commission (NG&PC) has firefighting capabilities. NG&PC maintains fire suppression resources and will respond to fires on and near lands they manage. The Sheridan County Sheriff's department will also provide assistance if necessary.

The Rural Fire Protection Districts maintain a mutual aid agreement. This agreement is attached (appendix "B").

Recommendations for Improving Emergency Preparedness

This would be more appropriately addressed in location specific CWPP's or during establishment of Firewise communities in locations with higher population density (Rushville and Whiteclay).

Rushville Rural Fire Protection District "Community"



Gordon Rural Fire Protection District
Community Fire Mitigation Plan

Community Profile

The Gordon Rural Fire Protection District (Gordon RFPD) is located in Sheridan County. The City of Gordon, population 1612, is the only incorporated municipality in the Community. The Village of Clinton (population 41) lies on the western edge of the Community. The Community is crossed east/west by US 20. NE 27 crosses the entire Community from the South Dakota border south, eventually connecting with NE 2 at Ellsworth. The primary land use is agriculture and livestock. Recreation, on both public and privately owned property is rapidly becoming a significant land use in this community. The forested area of the Pine Ridge escarpment lies north of Gordon / US 20, primarily in the NW corner of the Community. Land ownership is primarily private. There is no USFS land within this Community. The Board of Educational Lands and Funds (BELF) aka School Lands administers whole or partial sections throughout the Community. A large portion of the southern end of the Community is in the Sand Hills region.

Wildfire Risk Assessment

Fire History

From the time this area was settled by Europeans wildfire activity was limited to small fires which were rapidly and effectively controlled. No large scale fires have burned in the forested portions of this Community.

Fire Hazard

Exclusion of low intensity ground fire by Europeans, limited active forest management and prolific pine regeneration following recent timber harvest activities have contributed to the ever increasing fire danger in the forested areas within the Community. The drought conditions have also contributed to high risk conditions in the grasslands of the district.

Wildfire Hazard is described in greater detail in the Wildfire section (pp. 54 – 59) in the Region 23 Multi Jurisdictional Hazard Mitigation Plan (January 2010). That portion of the plan is attached as Appendix C.

Wildland Urban Interface

The City of Gordon and the Village of Clinton both lie within the boundaries of the WUI as defined by the NFS in the introduction to this CWPP. All of the area north of US 20 lies within the boundaries of the WUI. The portions of the Community which lie outside of the WUI (south of US 20) have their own fire risk variables. Eastern Red Cedar encroachment in pasture lands of southern Sheridan County are creating an ever increasing risk of extreme fire behavior in these areas.

Protection Capabilities and Infrastructure

Water Sources

Reliable water sources are limited within the community. The only developed water system is in Gordon. Sand Hills lakes located south of Gordon are reliable water sources. Other reservoirs, ponds and stock tanks are located throughout the community. Because of the recent drought conditions many of the reservoirs and ponds are not reliable sources of water. With the exception of the Niobrara River, most of the watersheds have only intermittent flow and are not reliable water sources.

Staging and Safety Zones

The Pine Ridge escarpment is a park – forest setting. There are abundant staging areas and safety zones both within and on the perimeter of the escarpment. Grazed pastures as well as fallow farmland all represent staging areas and safety zones away from the forested escarpment. Green alfalfa fields also represent potential staging areas.

Roads/Bridges

The Gordon RFPD is served by US 20 and NE 27. Roads maintained by Sheridan County are shown on the attached map. The 2012 Sheridan County Nebraska County Wide Directory LLC is an attachment to this CWPP (Appendix D). County maintained roads as well as their 911 name designations are shown in detail in this publication. Restricted bridges and roads which could restrict truck/lowboy passage are identified in Appendix F. The timber harvest activity from 1990 to 2008 created a vast network of forest access roads on the private and to a lesser extent, on public land. These roads now serve as access for fire suppression and other emergency vehicles. There is presently no comprehensive mapping system for these logging roads. The southern Sand Hills portion of this community is very sparsely populated and has a very limited public road system.

Utilities/Phone service
This community is bisected by several high tension power lines. The rural electric service is provided by Northwest Rural Public Power District.

Structure analysis

Fire Risk Rating and Ignitability

"Firewise" and "Ready Set Go" offer excellent guidelines for reducing the loss from wildfire for urban and rural structures. The NFS "Living With Fire" series, for both prairie and woodland areas, are also valuable educational tools for the property owners. Involving the City of Gordon and Village of Clinton in these volunteer programs would increase the public awareness regarding structure risk mitigation. The opportunity for developing quantitative structure risk ratings would be under location specific CWPP's for the more populated area. The balance of the community is rural / agriculture with widely spaced home locations. This region has yet to experience the rural development seen in other forested and non-forested areas outside the Pine Ridge. The opportunity to perform Firewise and Ready Set Go analysis and treatment to the rural residential and recreation home sites in forested settings would be while fuels mitigation treatments are being performed in the same area.

Much of this community is non-forested. Home sites in non-forested environments are still at risk from wildfire, especially those with shelterbelts near structures. Firewise and Ready Set Go guidelines apply to these home settings, also.

Mitigation Action Plan

Fuel Reduction Recommendations

Fuel Reduction in high risk forested settings

This community has experienced extreme fire behavior in the forested area over the last 3 decades. Much of the forested area has witnessed some level of fire during this time period. The severely burned areas are still of equal or greater fire risk than the green forests. The fire killed trees represent a very heavy fuel load that will persist for decades after a fire. The potential for a re-burn of even greater intensity than the original burn is a reality. Where economically feasible, these burned areas should also receive fuels mitigation treatment. The

NFS has developed prescription parameters (Appendix O) for addressing recently burned forests. Of high importance is protecting the unburned or lightly burned “green islands or seed sources” within the burned areas from future high intensity reburns.

There are still many old slash piles left over from the timber harvesting this area experienced during the 1990’s and early part of this century. These piles still represent a fuel risk. Disposing of these piles by either burning during appropriate winter conditions or grinding/chipping on site are acceptable means to mitigate this threat.

The attached prescription (Appendix O) represents the guidelines followed by NFS when cost-sharing fuels mitigation treatments in the ponderosa pine forest type. Presently there is little commercial market for the trees removed in these treatments. Costs range from less than $200.00/acre for lop and scatter treatments to greater than $1000.00/acre for mastication or in-woods chipping. NFS sometimes has access to USFS grant funding to cost-share with forest landowners to reduce the cost born by the landowner for these treatments.

Managing the grass component of these forested areas is of great importance. These Ponderosa Pine ecosystems develop a heavy grass and shrub component which if not managed (grazed) appropriately create a significant fuels risk. Management must also be on a landscape basis. Fuels mitigation treatments are only as effective as their weakest link. Unmanaged islands among managed areas pose a significant risk to the managed lands.

Fuel reduction in high risk non-forested settings

Most of the activities outside the forested areas will be to create defensible space around rural residential homes. The same Firewise rules that apply in forested settings will apply in the non-forested settings.

Monitoring and Evaluation

The objective of the fuel mitigation treatments in the forested settings is to reduce the stand density to stocking levels which will remain effective for 20 to 30 years. The NFS maintains a GIS data base quantifying the time and level of treatment performed on forested properties throughout the geographic Pine Ridge. With this data base, resource managers will be able to evaluate when and where resources for future fuel treatments should be directed.

The extreme fire behavior witnessed in 2012 tested many of the fuels mitigation treatments in this community as well as over much of the Pine Ridge area. These extreme fires have provided an educational tool to observe the effectiveness of various types and intensities of treatments. What we learn from the 2012 fire season will strengthen future fuel mitigation treatments.

Emergency Operations

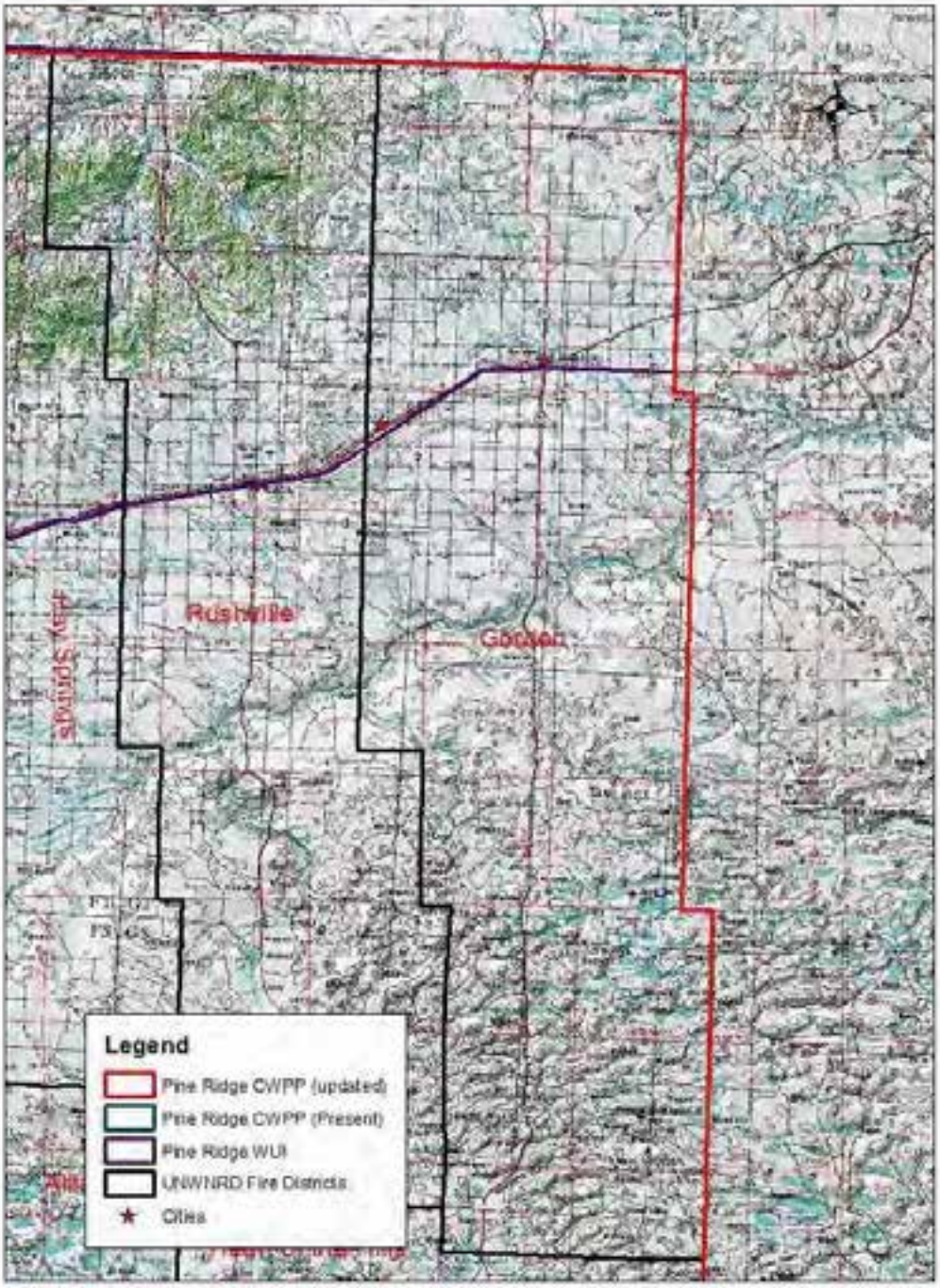
The Gordon Volunteer Fire Department is responsible for fire protection and other emergencies in this community / fire protection district. The Sheridan County Sheriff's department will also provide assistance if necessary.

The Rural Fire Protection Districts maintain a mutual aid agreement. This agreement is attached (Appendix B).

Recommendations for Improving Emergency Preparedness

This would be more appropriately addressed in location specific CWPP's or during establishment of Firewise communities in locations with higher population density (Gordon and Clinton).

Gordon Rural Fire Protection District "Community"



Hemingford Rural Fire Protection District
Community Fire Mitigation Plan

Community Profile

The Hemingford Rural Fire Protection District (Hemingford RFPD) is located in Box Butte, Southern Dawes and SE Sioux Counties. The Village of Hemingford, population 803, is the only municipality in the Community. Unincorporated Berea (population 50) lies between Hemingford and Alliance on the BNSF rail line. Grain loading facilities on the BNSF are located in Berea. Unincorporated Marsland lies in the NW corner of the Community on the Niobrara River and the BNSF. The Community is crossed by the busy BNSF rail line, which connects the Powder River basin coal fields in Wyoming and Montana to users in the Midwest and south. The Community is crossed east/west by NE 2 and north/south by US 385. The primary land use is agriculture and livestock. Recreation, on both public and privately owned property is rapidly becoming a significant land use in this community. A forested area south of the Pine Ridge escarpment lies in the northwest corner of the Community. This forested area is considered part of the Pine Ridge. It does however drain south into the Niobrara River rather than north into the White River. Land ownership is primarily private. There is no USFS land within this Community. The Nebraska Game and Parks Commission (NG&PC) administers Box Butte Reservoir State Recreation Area and Box Butte Reservoir Wildlife Management Area in this Community. The Board of Educational Lands and Funds (BELF) aka School Lands administers whole or partial sections throughout the Community.

Wildfire Risk Assessment

Fire History

From the time this area was settled by Europeans wildfire activity was limited to small fires which were rapidly and effectively controlled. The railroad caused Belmont burned a portion of the Pine Ridge area just off the NW corner of this community in 1989. This Community was threatened by the 2012 West Ash fire. Several smaller fires were extinguished in 2012. No large scale fires have burned in the forested portions of this Community.

Fire Hazard

Exclusion of low intensity ground fire by Europeans, limited active forest management and prolific pine regeneration following recent timber harvest activities have contributed to the ever increasing fire danger in the forested areas within the Community. The drought conditions have also contributed to high risk conditions in the grasslands of the district. The

BNSF rail corridor could be considered an “at risk” area due to ignition potential from the heavy rail traffic. The 1989 railroad caused Belmont fire is an example of this concern.

Wildfire Hazard is described in greater detail in the Wildfire section (pp. 54 – 59) in the Region 23 Multi Jurisdictional Hazard Mitigation Plan (January 2010). That portion of the plan is attached as appendix “C”.

Wildland Urban Interface

Unincorporated Marsland lies within the boundaries of the WUI as defined by the NFS in the introduction to this CWPP. The portions of the Community which lie outside of the WUI have their own fire risk variables; however the agricultural practices in these areas are not as fire prone as are those within the WUI.

Protection Capabilities and Infrastructure

Water Sources

Reliable water sources are limited within the community. The only developed water system is in Hemingford. Box Butte Reservoir is located in the northern portion of the Community near the Pine Ridge escarpment and is a reliable source of water. Other reservoirs, ponds and stock tanks are located throughout the community. Because of the recent drought conditions many of the reservoirs and ponds are not reliable sources of water. With the exception of the Niobrara River, most of the watersheds have only intermittent flow and are not reliable water sources.

Staging and Safety Zones

The Pine Ridge escarpment is a park – forest setting. There are abundant staging areas and safety zones both within and on the perimeter of the escarpment. Grazed pastures as well as fallow farmland all represent staging areas and safety zones away from the forested escarpment. Green alfalfa fields also represent potential staging areas.

Roads/Bridges

The Hemingford RFPD is served by US 385 and NE 2. Roads maintained by Box Butte, Sioux and Dawes counties are shown on the attached map. The 2012 Dawes-Sioux and Box Butte County Nebraska County Wide Directories are an attachment to this CWPP (appendix “D”). County maintained roads as well as their 911 name designations are shown in detail in this publication. Restricted bridges and roads which could restrict truck/lowboy passage are identified on this appendix. The timber harvest activity from 1990 to 2008 created a vast network of forest

access roads on the private and to a lesser extent, on public land. These roads now serve as access for fire suppression and other emergency vehicles. There is presently no comprehensive mapping system for these logging roads.

Utilities/Phone service
This community is bisected by several high tension power lines. The rural electric service is provided by Northwest Rural Public Power District.

Structure analysis

Fire Risk Rating and Ignitability

"Firewise" and "Ready Set Go" offer excellent guidelines for reducing the loss from wildfire for urban and rural structures. The NFS "Living With Fire" series, for both prairie and woodland areas, are also valuable educational tools for the property owners. Involving the Village of Hemingford, unincorporated Berea and Marsland in these volunteer programs would increase the public awareness regarding structure risk mitigation. The opportunity for developing quantitative structure risk ratings would be under location specific CWPP's for the more populated area. The balance of the community is rural / agriculture with widely spaced home locations. This region has yet to experience the rural development seen in other forested and non-forested areas outside the Pine Ridge. The opportunity to perform Firewise and Ready Set Go analysis and treatment to the rural residential and recreation home sites in forested settings would be while fuels mitigation treatments are being performed in the same area.

Much of this community is non - forested. Home sites in non-forested environments are still at risk from wildfire, especially those with shelterbelts near structures. Firewise and Ready Set Go guidelines apply to these home settings, also.

Mitigation Action Plan

Fuel Reduction Recommendations

Fuel Reduction in high risk forested settings

This community has experienced extreme fire behavior in the forested area over the last 3 decades. Much of the forested area has witnessed some level of fire during this time period.

The severely burned areas are still of equal or greater fire risk than the green forests. The fire killed trees represent a very heavy fuel load that will persist for decades after a fire. The potential for a re-burn of even greater intensity than the original burn is a reality. Where economically feasible, these burned areas should also receive fuels mitigation treatment. The NFS is presently developing prescription parameters (appendix "O") for addressing recently burned forests. Of high importance will be protecting the unburned or lightly burned "green Islands or seed sources" within the burned areas from future high intensity reburns.

There are still many old slash piles left over from the timber harvesting this area experienced during the 1990's and early part of this century. These piles still represent a fuel risk. Disposing of these piles by either burning during appropriate winter conditions or grinding/chipping on site are acceptable means to mitigate this threat.

The attached prescription (exhibit "O") represents the guidelines followed by NFS when cost-sharing fuels mitigation treatments in the ponderosa pine forest type. Presently there is little commercial market for the trees removed in these treatments. Costs range from less than $200.00/acre for lop and scatter treatments to greater than $1000.00/acre for mastication or in-woods chipping. NFS sometimes has access to USFS grant funding to cost-share with forest landowners to reduce the cost born by the landowner for these treatments.

Managing the grass component of these forested areas is of great importance. These Ponderosa Pine ecosystems develop a heavy grass and shrub component which if not managed (grazed) appropriately create a significant fuels risk. Management must also be on a landscape basis. Fuels mitigation treatments are only as effective as their weakest link. Unmanaged islands among managed areas pose a significant risk to the managed lands.

Fuel reduction in high risk non-forested settings

Most of the activities outside the forested areas will be to create defensible space around rural residential homes. The same Firewise rules that apply in forested settings will apply in the non-forested settings. Managing the grass component or the pasture land in these areas is of equal importance here as in the forested settings.

Monitoring and Evaluation

The objective of the fuel mitigation treatments in the forested settings is to reduce the stand density to stocking levels which will remain effective for 20 to 30 years. The NFS maintains a GIS data base quantifying the time and level of treatment performed on forested properties throughout the geographic Pine Ridge. With this data base, resource managers will be able to evaluate when and where resources for future fuel treatments should be directed.

The extreme fire behavior witnessed in 2012 tested many of the fuels mitigation treatments in this community as well as over much of the Pine Ridge area. These extreme fires have provided an educational tool to observe the effectiveness of various types and intensities of treatments. What we learn from the 2012 fire season will strengthen future fuel mitigation treatments.

Emergency Operations

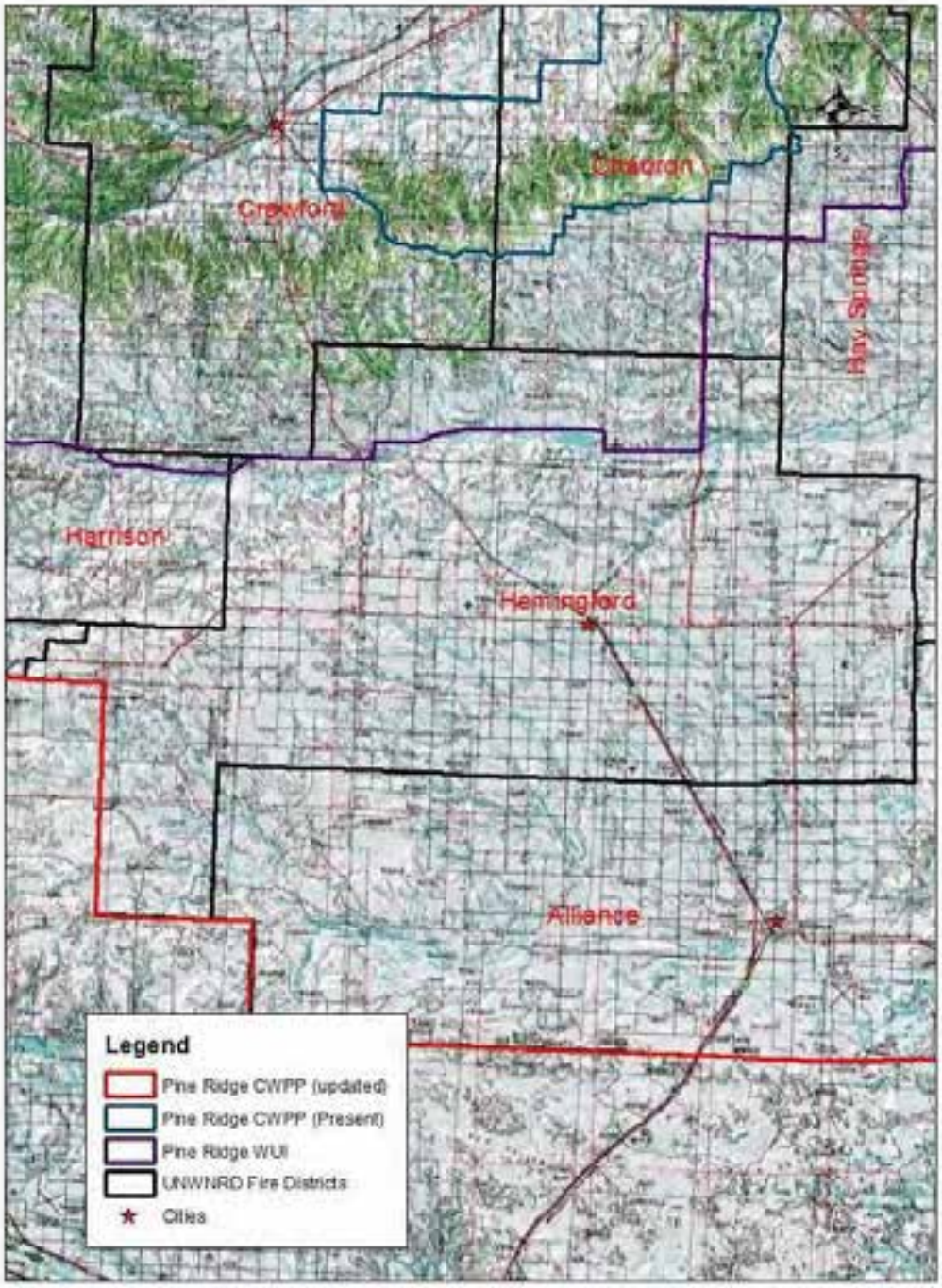
The Hemingford Volunteer Fire Department is responsible for fire protection and other emergencies in this Community / fire protection district. The Box Butte, Sioux and Dawes County Sheriff's departments will also provide assistance if necessary.

The Rural Fire Protection Districts maintain a mutual aid agreement. This agreement is attached (appendix "B").

Recommendations for Improving Emergency Preparedness

This would be more appropriately addressed in location specific CWPP's or during establishment of Firewise communities in locations with higher population density (Hemingford, Berea and Marsland).

Hemingford Rural Fire Protection District "Community"



Alliance Rural Fire Protection District
Community Fire Mitigation Plan

Community Profile

The Alliance Rural Fire Protection District (Alliance RFPD) is located in Box Butte and Southern Sheridan Counties. The City of Alliance, population 8491, is the only municipality in the Community. The Community is crossed by the busy BNSF rail line, which connects the Powder River basin coal fields in Wyoming and Montana to users in the Midwest and south. Alliance is a major repair and handling location for the BNSF. The Community is crossed east/west by NE 2. US 385 joins Alliance with Chadron to the north and Bridgeport to the south. The primary land use is agriculture and livestock. Recreation, on both public and privately owned property is rapidly becoming a significant land use in this community. Land ownership is primarily private. There is no USFS land within this Community. The Nebraska Game and Parks Commission (NG&PC) District 1 administrative office is located in Alliance. There are no NG&PC lands in this district. The Board of Educational Lands and Funds (BELF) aka School Lands administers whole or partial sections throughout the Community.

Wildfire Risk Assessment

Fire History

From the time this area was settled by Europeans wildfire activity was limited to small fires which were rapidly and effectively controlled. There are no natural pine forests in this Community.

Fire Hazard

The drought conditions have also contributed to high risk conditions in the grasslands of the district. The BNSF rail corridor could be considered an “at risk” area due to ignition potential from the heavy rail traffic. Pivot irrigation is an agricultural practice which involves a large percentage of the Community (west). These irrigated acres do not normally represent the fire risk associated with non-irrigated agricultural land. The eastern part of the Community is the western boundary of the Sand Hills.

Wildfire Hazard is described in greater detail in the Wildfire section (pp. 54 – 59) in the Region 23 Multi Jurisdictional Hazard Mitigation Plan (January 2010). That portion of the plan is attached as appendix “C”.

Wildland Urban Interface

The Community lies entirely outside the boundaries of the WUI as described in the introduction. These areas still have their own fire risk variables; however the agricultural practices in these areas are not as prone to wildfire as are those within the WUI.

Protection Capabilities and Infrastructure

Water Sources

Reliable water sources are limited within the community. The only developed water system is in Alliance. Kilpatric Reservoir is located in the western portion of the Community. There are numerous Sand Hill lakes in the eastern portion of the Community. Other reservoirs, ponds and stock tanks are located throughout the Community. Because of the recent drought conditions many of the reservoirs and ponds are not reliable sources of water. Most of the watersheds have only intermittent flow and are not reliable water sources.

Staging and Safety Zones

Grazed pastures as well as fallow farmland all represent staging areas and safety zones. Green alfalfa fields also represent potential staging areas.

Roads/Bridges

The Alliance RFPD is served by US 385 and NE 2. Roads maintained by Box Butte and Sioux counties are shown on the attached map. The 2012 Dawes-Sioux and Box Butte County Nebraska County Wide Directories LLC are an attachment to this CWPP (appendix “D”). County maintained roads as well as their 911 name designations are shown in detail in this publication. Restricted bridges and roads which could restrict truck/lowboy passage are identified on this appendix.

Utilities/Phone service

This community is bisected by several high tension power lines. The rural electric service is provided by Northwest Rural Public Power District.

Structure analysis

Fire Risk Rating and Ignitability

"Firewise" and "Ready Set Go" offer excellent guidelines for reducing the loss from wildfire for urban and rural structures. The NFS "Living With Fire" series, for both prairie and woodland areas, are also valuable educational tools for the property owners. Involving the City of Alliance in these volunteer programs would increase the public awareness regarding structure risk mitigation. The opportunity for developing quantitative structure risk ratings would be under location specific CWPP's for the more populated area. The balance of the community is rural / agriculture with widely spaced home locations. This region has yet to experience the rural development seen in other forested and non-forested areas outside the region.

Most of this community is non - forested. Home sites in non-forested environments are still at risk from wildfire, especially those with shelterbelts near structures. Firewise and Ready Set Go guidelines apply to these home settings, also.

Mitigation Action Plan

Fuel Reduction Recommendations

Fuel Reduction in high risk forested settings

There are no natural forested settings in this Community

Fuel reduction in high risk non-forested settings

Most of the activities outside the forested areas will be to create defensible space around rural residential homes. The same Firewise rules that apply in forested settings will apply in the non-forested settings. Managing the grass component or the pasture land in these areas is of equal importance here as in the forested settings.

Monitoring and Evaluation

The extreme fire behavior witnessed in 2012 tested many of the fuels mitigation treatments in this community as well as over much of the Pine Ridge area. These extreme fires have provided an educational tool to observe the effectiveness of various types and intensities of treatments. What we learn from the 2012 fire season will strengthen future fuel mitigation treatments.

Emergency Operations

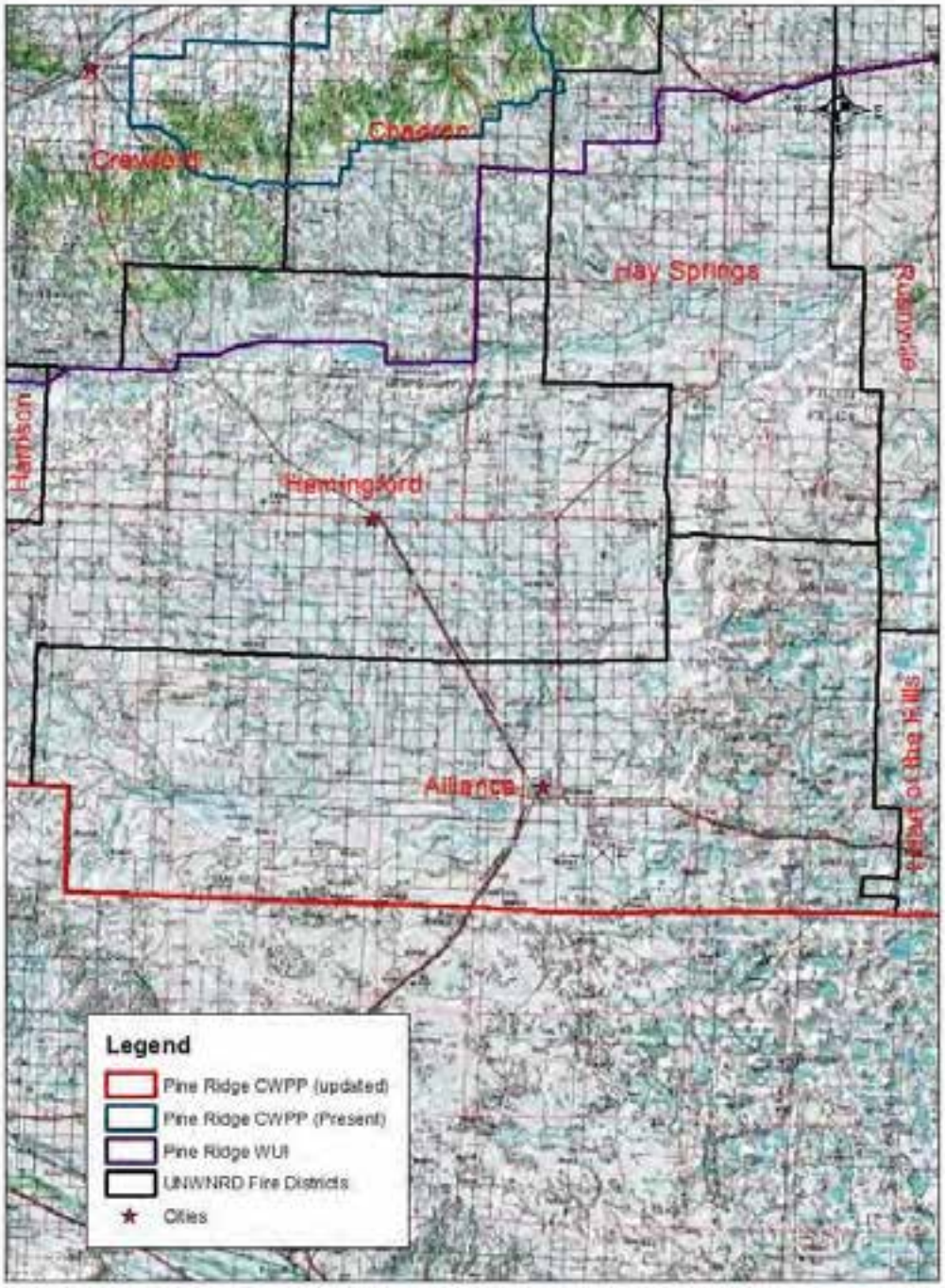
The Alliance Volunteer Fire Department is responsible for fire protection and other emergencies in this Community / fire protection district. The Box Butte and Sioux County Sheriff's departments will also provide assistance if necessary.

The Rural Fire Protection Districts maintain a mutual aid agreement. This agreement is attached (appendix "B").

Recommendations for Improving Emergency Preparedness

This would be more appropriately addressed in location specific CWPP's or during establishment of Firewise communities in locations with higher population density (Alliance).

Alliance Rural Fire Protection District "Community"



Community Wildfire Protection Plan (Update 2013)

List of Appendices

Appendix A: Wildland Fire and Fuel Management Plan for the Pine Ridge Planning Area #1, June 2003.

Appendix B: Highway 20 Mutual Aid Agreement

Appendix C: Region 23 Multi – Jurisdictional Hazard Mitigation Plan, January 2010, Wildfire Hazard section.

Appendix D: County Wide Atlas maps.

Note: The maps in Appendix D are only a portion of the County Wide Directories publication. For more information regarding this publication visit: www.CountyWideDirectories.com.

Appendix E: Historic Fires of the Pine Ridge map.

Appendix F: Restricted Roads and Bridges maps.

Appendix O: Nebraska Forest Service Thinning Prescription(s)

Appendix A

Wildland Fire and Fuel Management Plan
for the Pine Ridge Planning Area #1
June 2003

Pine Ridge Fire Planning Area #1

Wildland Fire and Fuel Management Plan

Land Stewardship Associates LLC

Table of Contents

I. INTRODUCTION

As with most of the West, the landscapes and vegetative patterns within the Pine Ridge area have been influenced more by fire than any other force. For thousands of years lightning fires occurred every summer creating a diverse mosaic of grass, shrub and forestland ecosystems that are present in different age classes.

However, during recent decades, the influence of fire has diminished because of effective wildfire control, limited use of prescribed fire and reduced levels of timber management and harvest. Consequently the vegetation or fuel has become more homogeneous and "filled in", which in turn has created a continuous vegetative cover that can carry wildfire for thousands of acres. When a wildfire occurs it can spread for miles and be difficult and expensive to control. These large wildfires can be damaging to ecosystems and watersheds and can perpetuate the establishment of vast acreages of the same vegetative type and age class.

The vegetative type in the Pine Ridge area is grass/forest mix dominated by ponderosa pine (often called Yellow Pine). Open grassland (parkland) areas are frequently found throughout the forested area. The ponderosa pine forestlands like all other ecosystems are in a state of flux, constantly changing to adapt to the forces of nature and, to some degree, the influences of man. Growing in association with grasslands and various kinds of shrubs, the tree-dominated forest lands appear to be increasing in density and expanding their range - probably the result of 90 years fire suppression.

A general description of vegetation found in the Pine Ridge area and how the common vegetation types respond to fire is presented in Appendices.

The purpose of this plan is to effectively manage fire and hazardous fuels within the forested Pine Ridge Fire Planning Area #1 toward a common vision shared by the Chadron and Crawford Volunteer Fire Departments (VFDs), the counties, the state and federal agencies as well as the property owners. The plan reflects the preferences expressed through discussions with County, State and Federal agencies and includes an assessment of conditions relevant to wildfire in the urban interface and recommendations that are compatible with the wildfire planning completed by federal and state land managing agencies. Collaboration and implementation according the character of the landscape rather than by individual efforts is encouraged.

Finally, the plan will provide the Chadron and Crawford VFDs and their cooperators the information and guidance necessary to assist in the suppression of wildfire and the management of fuel hazards on privately owned lands. It will also provide some recommendations for cooperating state and federal agencies involved with cooperative management of wildfires. **The safety of the public and firefighter personnel and equipment will remain the primary consideration in determining structure defensibility as well as the appropriate fire suppression response.**

This plan is consistent with the Nebraska National Forest fire management plan. This Forest Service document is tiered to the Federal Wildland Fire Management Policy and Program Review (December 1995) and the Wildland and Prescribed Fire Management Plan (August 1998). All fire management decisions conform to the guidelines outlined in these documents. Fire management activities comply with the policies identified in state regulations on wilderness, threatened and endangered species, and culture/historical preservation as well as federal and state regulations for air and water quality. Obviously, there will be environment impacts that are both positive and negative. Potential impacts will be considered and negative impacts will be mitigated, as much as is practical, during implementation of this plan.

Generally, the Forest Service suppression response policy is to aggressively suppress all wildfires within the Pine Ridge area. This includes the use of natural barriers and burning out when appropriate. Where appropriate, the use of prescribed fire and other fuel hazard treatment techniques are encouraged.

In areas where private and public lands are intermixed such as they are in Chadron Creek the Forest Service policy is to promptly treat logging and thinning slash to reduce potential burning intensity. Also it is policy to design projects for fire hazard reduction, or thinning or logging so that direct attack is possible in the event of a wildfire. Fuel treatments are prioritized on National Forest land where there are high adjoining land values and where there is interest from adjoining landowners to cooperate toward reducing fire hazards along mutual boundaries.

Instrumental in the development of this fire plan was guidance from the Chadron and Crawford VFDs and input from the Nebraska National Forest, Nebraska State Forest Service (NSFS), Nebraska Game and Parks Commission (Parks and Wildlife Divisions), Pine Ridge Mutual Aid Association, Dawes County Sheriff, and local county planning officials. This fire plan strives toward consistency across boundaries with all government agencies as well as private property owners.

Mission Statement

The fire and fuels program initiated by Chadron and Crawford Volunteer Fire Departments for the Pine Ridge Fire Planning Area #1 seeks to provide a common vision for achieving resource benefits and providing protection of property while reducing hazardous fuels in a manner consistent with firefighter and public safety. Restoration of historic resource conditions present under a natural fire regime would be sought through harvest of forest products, prescribed fire, and breaks in fuel continuity.

Goals

1. Protect private property investments, developments and values.

2. Protect ecological values, including vegetation, water quality and yield, wildlife, and air resources and social values including public safety, and historic values.

3. Reduce wildland fire hazards and restore the functions of the ecological communities.

4. Reduce risk from wildfire ignitions.

Objectives

Chadron and Crawford Volunteer Fire Departments will focus on six objectives for Pine Ridge Fire Planning Area #1 that will achieve the four general program goals discussed above:

1. Effectively and safely protect rural structures and properties from wildland fire damage.
2. Identify high value areas such as urban interface and vulnerable resources that need prescribed protection from wildfire.
3. Coordinate the planning and implementation of fuel treatments between land jurisdictions to enhance consistency, to reduce fire hazard and to restore ecological values.
4. Monitor, evaluate and manage the effects of fire management actions.
5. Provide current and accurate information regarding proposed wildfire and fuels management activities to the public and the cooperating agencies.
6. Improve cooperation with other agencies to provide interpretive and educational programs designed to enhance public understanding and awareness of wildfire danger and safety as well as fire ecology and wildland fire management.

II. FIRE HAZARD AND RISK ASSESSMENT

Description of Planning Area

The topography of the area is dominated by the Pine Ridge, an escarpment of sandstone bluffs that extends just beyond the border of Wyoming, through northwestern Nebraska, then into southwestern South Dakota. The Pine Ridge is characterized by extensive growth of ponderosa pine, with some small inclusions of quaking aspen. Within the Pine Ridge Fire Planning Area #1the elevations range between about 3,440 feet above sea level at Bordeaux Creek to 4,600 feet above sea level in the upper Squaw Creek area. Drainages flow mainly toward the north into the White River and from, west to east, include Squaw Creek, West Ash Creek, East Ash Creek, Cunningham Creek, Indian Creek, Trunk Butte Creek, Dead Horse Creek, Chadron Creek and Bordeaux Creek.

The vegetative type in the Pine Ridge Fire Planning Area #1 is grass/forest mix dominated by ponderosa pine. Areas of open coniferous forest/grassland (savannah) also makeup this geographic area. Open grassland (parkland) areas are frequently found throughout the forested area. Principle deciduous tree species are cottonwood, hackberry, box elder, and green ash. Other woody species that can be found locally abundant are snowberry, chokecherry, and wild plum. Most of the deciduous trees and shrubs are found in stringers and patches along the drainages and near the cooler more humid environments. In general, fuel continuity in the ponderosa pine/grassland areas is high.

The Pine Ridge area is a mix of ponderosa pine, grassland openings with some stringers of hardwood vegetation along some of the bottomlands. Note the fuel continuity within the ponderosa pine.

Chadron, the county seat, is located just north of Pine Ridge Fire Planning Area #1 where US Highways 385 and 20 intersect. Chadron has a population of approximately 6,000 people. The town of Crawford, population 1100 is a short distance northwest of the planning area. The planning area covers approximately 106,400 acres and is divided between the Chadron VFD area and the Crawford VFD area. About 30 percent is within the Crawford VFD area with about 70 percent in the Chadron VFD area. About 36 percent, or 38,230 acres, of the planning area is comprised of public land. The fire planning area has a population of over 600 people with a little less than half the population residing on small ranches and farms. About 60 percent of the people do not live on their forested property but they use their house or cabin or mobile home intermittently during vacation, weekends or seasonally. Major travel routes that lead into and out of the county intersect with one another in Chadron and Crawford.

Small home site development along US Highway 385

Fire History

Historically, small and medium sized fires occurred in the Pine Ridge country fairly frequently. Occasionally, the fires would burn large areas sometimes starting in the grassland type and moving into the timber type. At other times the fire would be ignited in the timber type during a mid-summer lightning storm and burn around the Pine Ridge country landscape for most of the summer. Sometimes these fires would burn hot and kill an entire stand and at other times it would creep along the ground not creating a lot of heat intensity. The result was usually a mosaic of age and size classes along with patterns of aspen, which, in some places, tends to proliferate within new forest openings.

Studies show that prior to 1900 surface fire occurred every 5 to 15 years but the reoccurrence was highly variable. Since the early 1900s with man's suppression efforts, fires on the same surface have occurred on an average of every 40 to 50 years. Prior to 1900 the forested areas were probably much more open, still dominated by ponderosa pine. Mature ponderosa pine trees have thick bark and a high tolerance of surface fire. Some of the creeks may have carried stronger and longer lasting flows of water into the early fall. The open grassland areas existing in this planning area, in the past, were larger and more connected. Because of the higher tree density in the present environment, many of the wildfires in the ponderosa pine type today burn into the forest canopy (crown fires). Because tree density since 1900 has probably increased, evapotranspiration (evaporation from leaf surfaces of moisture transpired there from the soil through the plants roots and vascular system) has probably increased thereby reducing stream flow from historic conditions where some of the creeks may have carried stronger and longer lasting flows of water into the early fall.

Pine Ridge landscape in 1912 (above). Surface fire return frequency was 5-15 yrs.

Pine Ridge landscape in 1999 (below). Fire has been limited from the ecosystem.

There are basically two kinds of fire. One is the destructive kind that burns with high intensity and with high mortality to the vegetation. It usually starts as a ground level fire and burns up into the tree crowns and, due to high heat intensity, causes damage to soil and watershed conditions, wildlife habitats, and sometimes homes and other facilities that people use. Because of the intense heat that results, trees not killed directly by this kind of fire are often weakened and become vulnerable for insect and disease epidemics. Usually we go all out to control this kind of fire.

The other kind of fire burns with less intensity, at the right time, and under the right conditions and serves as a catalyst for forest renewal. Most of the forest vegetation survives this kind of fire. Forest floor debris is consumed and as a result nitrogen, phosphorus, potassium and other nutrients are released into the soils stimulating fresh healthy vegetative growth. Small thickets are thinned or removed thus reducing inter-forest competition that often times stifles growth and diminishes forest health.

Prescribe Fire

Branches close to the ground are pruned from the larger trees allowing more sunlight to reach the forest floor benefiting ground level vegetation. Often times old decadent brush species are revitalized by fire. They will sprout new growth close to the ground that is valuable for wintering wildlife. Even under these conditions the fire may occasionally burn into the crowns in spots killing trees. Later these openings add to the mosaic effect of a more open forest environment. Man uses prescribed fire to achieve these results.

Annual wildland wildfire occurrence in the Pine Ridge Fire Planning Area #1 is generally low to moderate. According to the Forest Service and County records, there is an average of 20 to 25 wildfires per year. Lightning is the primary source of ignition for most wildfires although human activities are responsible for a few of the wildfire ignitions. During most years the majority of the fires are small and do not burn with high intensity because of rain and or quick suppression. However, every few year's medium sized and large fires occur and burn with high intensity.

Fire burning in August 2002 approximately 750 acres. Wind is from the NW.

At least once or twice every five years fire danger and fire behavior is very high and extreme. During these conditions, every one to five years, the Pine Ridge area has experienced two or more fires that are 500 to over 1000 acres and that are high intensity fires posing a threat to rural home areas and damage to major watersheds. Often the fires are wind driven from the SW or NW and they will burn across drainages at a rapid rate. This situation challenges fire suppression personnel and agency managers to remain vigilant monitoring the fire danger

ratings and indices, particularly the heavy fuel moisture (1000 hour time lag fuels), during the fire season. The medium or large size wildfires, which have burned with high intensity, do not readily regenerate for years afterward even with artificial reforestation efforts. The East Ash Creek Fire of 1976 and the Dead Horse Fire of 1973 are examples.

Dead Horse fire occurred in 1973 and has resisted at least three reforestation efforts.

Fuel continuity throughout the forested areas of this planning area and in some of the open grassland parks is very high to extreme. These areas also have a high rate of spread and in the timber a high resistance to control during very high and extreme fire danger.

The Chadron and Crawford VFDs have an agreement for "Cooperative Fire Protection" with other agencies that have land management and wildfire control responsibilities in the county. Also, annually a "Fire Operating Plan" is updated and agreed to by the same agencies. Both the agreement and annual operating plans prescribe mutual aid and coordination throughout the counties.

Most of the fires that occur are creeping or surface fires and are usually attacked directly keeping their size to something around 1-50 acres.

For fires of 50 acres or larger the most common type of attack is "indirect" where firefighters utilize existing fuel breaks to control the fires. The fire's ultimate control, shape and size is influenced most by connecting existing barriers in the area such as roads, sandy washes, rock outcrops, and other fuel breaks.

Workload and Resources Available

Chadron and Crawford VFD units along with the county, federal and state agencies have a moderate to high wildland fire load when compared with other areas. Between the two volunteer fire departments there are approximately 75 volunteer firefighters.

The following equipment is available for wildland wildfire suppression:

Chadron VFD
Four Type 6 Engines - three carry 250 gallons and one carries 180 gallons
Three Type 2 Engines – one carries 750 gallons and two carry 1200 gallons
Two portable 2500 gallons tanks with two portable pumps
One command vehicle
One rescue vehicle
Two ambulances
One 5000 gallon water tender (owned by the county road department)

Crawford VFD
Two Type 7 Engines – one carries 110 gallons and one carries 275 gallons
Three Type 6 Engines - all three carry 250 gallons
Three Type 2 Engines – one carries 500 gallons and two carry 1200 gallons
One Type 1 Engine – carries 1000 gallons
One command vehicle
One equipment vehicle
Two ambulances
One 6000 gallon water tender (owned by the county road department)

Forest Service (FS) is the primary responders on public lands to wildland wildfire occurrences although the volunteer's of Chadron and Crawford VFDs are often the first to respond to a fire during initial attack. Chadron and Crawford VFDs volunteers are the primary responders to all structure fires and to wildland fires that occur on privately owned lands. Cooperative Fire Protection agreements describing "mutual aid" provide a formal structure that encourages a cooperative approach between the volunteer fire departments and the state and federal agencies. The FS maintains an integrated fire management and suppression staff that has interagency responsibility for fire control in the area. Resources maintained by FS include one Type 6 Engine and one Type 7 Engine along with approximately 15 people with hand tools for initial attack. In addition the FS has a contract Heavy Air Tanker available from Rapid City and a Helicopter with a 5-6 person Helitack Crew available locally after July 1 for initial attack. Also, there are 35 or more firefighters with ground tools available with two hours notice for extended initial attack or for reinforcements.

Fuel and Fire Hazards

The primary fuels within the county are grassland and forested land. Fuel Models 2 and 10 probably best depict the ponderosa pine type as well as the other mixed timber fuel types depending on the amount of dead and down material intermingled, the canopy closure and age (size) class of the timber. Fuel Models 8 and 9 depict some of the deciduous stands in the summer and is indicative of fall burning conditions in these types. Fuel Model 1 is the best depiction of grasslands. Fuel Model 2 is the best indicator of fire behavior when the dry grass along with needles and dead and down stem wood is expected to carry the fire. The appendices includes a display of the expected fire behavior for each of the above Fuel Models under the conditions actually experienced on an average worst day with respect to fire weather.

Ponderosa pine vegetative type, which exemplifies Fuel Model 10

The primary concerns within the planning area where most of the private structures are located are with the ponderosa pine fuel continuity and the grassland fuel rate of spread. A very high to extreme fuel hazard exists where ponderosa pine has a dense canopy with ladder fuels below and /or debris underneath due to past insect mortality, blow-down or thinning operations. The ponderosa has a high resistance to control when the burning conditions are severe. When there are structures within or adjacent to a ponderosa pine wildfire during very high or extreme burning conditions the structures and all the area around the structures are going to be exposed to a “storm” of fire brands that can threaten the survival of buildings if there is any debris, pine needles, grass, duff, or combustible fuel in contact with the structure.

The ponderosa pine/grassland mix can be very volatile with a high rate of spread (see Appendices). Where grassland is intermingled with or adjacent to dense ponderosa pine a severe fire hazard exists. As a rule, whenever the flame lengths are over 4 feet the fire can easily move from the surface fuels to the crowns. When the relative humidity (RH) in pine fuels is 20% or lower the ignition of new spot fires will be prolific.

Therefore, the most common recommendations and proposals are focused on breaking fuel continuity in areas where values and investments are high and where public safety and firefighter safety are sometimes in jeopardy.

Ponderosa pine is aggressively reproducing in many of the openings creating more "fill in" of fuel continuity as well as vertical fire ladders of flammable forest fuels across the Pine Ridge landscapes.

Wildland Urban and Home Site Interface

In this planning area the wildland urban interface is comprised of six rural structural home developments and the wildland home site interface is comprised of over two hundred independent small ranch and/or rural homes that usually include an assortment of utility buildings within or near the forested areas. Some of the home developments are located in areas where wildland fire hazard is low. However, each is assessed. Some of the home developments are subdivisions where structure density is high while others are comprised of a few structures scattered over a large area. There are a total of over 870 buildings with a potential to construct or reconstruct another 200-400 buildings within the so-called wildland-urban interface.

The following is a site-specific fire hazard assessment for each wildland structure group or urban interface. The assessment considers natural fuels as well as the condition of the buildings and facilities including the construction materials, defensible space and access. Information from these rating sheets was used as a guide for the assessments and the rating of each area. The natural fuel types are delineated according to the Fuel Model they represent so that the fire behavior on a severe day can be visualized. See Appendices for these fire behavior predictions. Site-specific mitigation recommendations are included.

Based on the onsite assessment of factors that influence a rural development area or subdivision's vulnerability we recommend that the Chadron and Crawford VFDs ask their respective county governments to consider the following general recommendations regarding defensible space. Defensible space is a key word in all the "FireWise" guidelines and standards (see Appendices). It usually refers to the fuel hazard conditions in the area immediately around a structure. The intention is to develop enough defensible space to enable fire suppression crews to "defend" the structure in the event of a wildfire. Defensible space should also be thought of as space where firefighters can "safely" defend the structure. Please see Chadron and Crawford VFD Triage that should be used by firefighters doing suppression adjacent to a structure.

The county governments and the Chadron and Crawford VFDs should work together to acquire information that is critical for response to emergency calls. Part of this could include seeking cooperation from the developers and property owners who intend to construct roads, driveways, and dwellings. The following information or safeguards should be provided, as appropriate:

- Community fuel treatment standards with regard to the areas between building sites.
- Information to every lot and homebuyer with regard to "FireWise" building standards and defensible space.
- At least two access routes for ingress and egress to the subdivision.
- A certain road construction and maintenance standard that accommodates fire suppression equipment.

- Designated safety zones that are maintained in case of wildfire.
- GPS locations for new building sites.
- Designation of locations or facilities specific for fire suppression water needs.

In most forested areas during high and extreme fire danger, Chadron and Crawford VFDs may not be able to safely respond to emergency calls or effectively defend property and structures within the forested areas if this information is not available.

Following is a brief assessment with recommendations for each home site structural development area and community within the planning area:

Squaw Creek SC 1-17 (24 sites or separate groups of buildings)

General Description

The Squaw Creek drainage encompasses an area that is about 7 miles from north to south and about 6 miles from east to west. The area is in a wildfire hazard environment and is composed of a series of homes, cabins and vacant or historic structures off Squaw Creek Road, Table Road and the western portion of West Ash Creek Road. It is located south of US Highway 20 about 4 miles southeast of Crawford, NB. The area includes 24 home sites or groups of homes on privately owned land that are not structured as subdivisions. Structures include occupied homes with out buildings (barns, garages and etc), cabins that are occupied seasonally and vacant or historic structures that not maintained and may be ruins. All the sites are outside the national forest boundary.

The area includes the Ponderosa Wildlife Management Area managed by the Nebraska Department of Game and Parks and the Crow Butte Project owned and operated by Crow Butte Resources. The Crow Butte Project includes more than 40 metal buildings and several thousand wells that pump and re-inject water from a formation bearing uranium. Access to the site is sensitive and visitors are expected to register at the main office.

Natural Fire Hazards

Fuels

Heavy fuels in the area are predominately pure stands of ponderosa pine on the sides of ridges and on north slopes of the escarpment and canyons. Hardwood species including cottonwood, ash, box elder, plum and choke cherry that dominate the drainage bottoms develop considerable fuel in the form of dead branches and dry leaves. Anticipated fire behavior in these types would be similar to Fuel Model 9 or 10. In the most northerly and southerly portions open, rolling, open grasslands with stringers of ponderosa pine and hardwoods with a grass under story vegetation are prominent. Fire behavior in these areas would be classified as Fuel Model 1 for open grassland or Fuel Model 2 when the dry grass along with needles and dead and down stem wood is expected to carry the fire.

In the northern portion of the area some logging has been used to harvest ponderosa pine and to create a more open stand. Slash and tops have been piled in openings but most have not been burned.

Slope

Most of the homes in the area use Squaw Creek Road as their primary access. It is surfaced and is well maintained. The road maintains a slope of less than 5 percent while individual driveways may have short stretches that steeper. Driveways are usually not surfaced and vary considerably in slope and quality.

Home Site Development and Maintenance
The area and home site developments generally are low to moderate in their vulnerability to a wildfire. Most homes have composition or metal roofs with composition or wood siding. Some of the older structures had wooden roofs and weathered wood siding that would be highly vulnerable in a wildfire situation. Utilities were generally above ground except for the most recently constructed homes. Several propane tanks were located close to a structure or down slope from a structure. Some "FireWise" practices are being practiced but much more effort is needed. While road signs were usually present there was no consistent system of identifying home addresses and only a portion of the homes had numbers posted so they could be read from the road.

Water for fire suppression is available from Dodge reservoir one mile west of Squaw Creek Road in Section 12. Another source of water exists from the Crow Butte Project's water station (Mayfield Place) on the north side or Section 13. Squaw Creek also has water but residents anticipate reduced flows or no flow during the dry summer. Windmills are located throughout the area but are not a reliable source of water in the quantities that would be needed for fire suppression.

Risk
Risk is on the low side of moderate for most homes. Most structures have been constructed either in an open area or on the edge of clearings or naturally open grassland with woodland or forest as a backdrop. The forest canopy is usually discontinuous with large openings interspersed throughout. However the risk increases significantly for structures located in close proximity to dense stands of ponderosa pine where a crown fire would be difficult to control. Some homeowners exacerbate the risk by stacking firewood near their home.

Vulnerability
Generally the home site development area's vulnerability is in the low to moderate range. No evacuation plans are known to exist but large grassy areas provide safety areas for the firefighter as well as the residents and Squaw Creek Road provides easy access to exit the area either up the drainage or down. A bridge is out on the access road to SC3, which also results in no access to a large area between Squaw Creek and West Ash Creek.

Recommendations
1. Support the continuance of "FireWise" education and awareness.
2. Property owners should expand their defensible space and do fuel hazard reduction including thinning within 150 to 200 feet of their buildings.
3. Access driveways should be improved and graveled and provided with terminus turn around that has at least a 45-foot radius.
4. Roads and driveways should be marked and addressed for more efficient emergency access.
5. Prescribed burning and logging should be encouraged to create an open stand of ponderosa and fuel compartments especially along the road and where natural open areas can be linked together.
6. The access road to SC3 needs to have the bridge repaired or a large culvert installed.

A bridge is out on the access road to SC3 which also results in no access to a large area between Squaw Creek and West Ash Creek.SC 1A.

Example of great driveway access.

Saw Log Fire damage occurring in 2000 in west side of Squaw Creek

SC 6 Very good defensible space

West Ash Creek WA 1-19 (21 sites or separate groups of buildings)

General Description

The Squaw Creek drainage encompasses an area that is about 7 miles from north to south and about 5 miles from east to west. The area is in a wildfire hazard environment and is composed of a series of homes, cabins and vacant or historic structures off West Ash Creek Road, Table Road and Bethel Road. It is located south of US Highway 20 about 7 miles southeast of Crawford, NB. The area includes 22 home sites or groups of homes on privately owned land that are not structured as subdivisions. Structures include occupied homes with out buildings (barns, garages and etc), cabins that are occupied seasonally and vacant or historic structures that not maintained and may be ruins. Most of the sites are outside the national forest boundary.

Natural Fire Hazards

Fuels

Heavy fuels in the area are predominately pure stands of ponderosa pine on the sides of ridges and on north slopes of the escarpment and canyons. Hardwood species including cottonwood, ash, box elder, plum and chokecherry that dominate the drainage bottoms develop considerable fuel in the form of dead branches and dry leaves. Anticipated fire behavior in these types would be similar to Fuel Model 9 or 10. In the most northerly and southerly portions open, rolling, open grasslands with stringers of ponderosa pine and hardwoods with a grass under story vegetation are prominent. Fire behavior in these areas would be classified as Fuel Model 1 for open grassland or Fuel Model 2 when the dry grass along with needles and dead and down stem wood is expected to carry the fire.

In the northern portion of the area logging has been used to harvest ponderosa pine and to create a more open stand. Slash and tops have been piled in openings but most have not been burned. The resulting open stands of ponderosa pine are less vulnerable to a crown fine and forest health is improved

Slope

Most of the homes in the area use West Ash Creek Road as their primary access. It is not surfaced and the deep fine sand is subject to wind and water erosion. Road conditions following significant precipitation can be difficult as the roads in the area become soft. The road usually maintains a slope of less than 5 percent with short pitches that are 8 to 10 percent grade. as you travel up or down the drainage. Most driveways have some surfacing (gravel or rock) and those that are not surfaced are vulnerable to rutting in wet conditions.

Home Site Development and Maintenance

The area and home site developments generally are low to moderate in their vulnerability to a wildfire. Most homes had composition or metal roofs with composition or wood siding. Some of the older structures had wooden roofs and weathered siding that would be highly vulnerable in a wildfire situation. Utilities were generally above ground except for the most recently constructed homes. Several propane tanks were located too close to

structure or down slope from a structure. Some "FireWise" practices are being practiced but much more effort is needed. While road signs were usually present there was no consistent system of identifying home addresses and only a portion of the homes had numbers posted so they could be read from the road.

Water for fire suppression is available from Dodge reservoir one mile west of Squaw Creek Road in Section 12. Another source of water exists from the Crow Butte Project's water station (Mayfield Place) on the north side or Section 13. West Ash also has water, such as at WA 10, but residents anticipate reduced flows or no flow during the dry summer. Windmills are located throughout the area but are not a reliable source of water in the quantities that would be needed for fire suppression.

Risk

Risk is on the low side of moderate for most homes. Most structures have been constructed either in an open area or on the edge of clearings or naturally open grassland with woodland or forest as a backdrop. The forest canopy is usually discontinuous with large openings interspersed throughout. However the risk increases significantly for structures located in close proximity to dense stands of ponderosa pine where a crown fire would be difficult to control. Some homeowners exacerbate the risk by stacking firewood near their home.

Vulnerability

Generally the home site development area's vulnerability is in the low to moderate range. No evacuation plans are known to exist but large grassy areas provide safety areas for the firefighter as well as the residents. West Ash Creek Road provides the only way out of the area and it can be difficult to travel when the ground is wet. The driveway to the structure described as WA10 is about 0.8 miles long, narrow and has numerous soft stream crossings that make it impractical to access with a fire engine. Water for fire suppression is available from ponds on the site.

Recommendations

1. Support the continuance of "FireWise" education and awareness of the property owners.
2. Property owners should expand their defensible space and do fuel hazard reduction including thinning within 150 to 200 feet of their buildings.
3. West Ash Creek Road should be surfaced with a road base aggregate to provide a hard surface and improve it as an all weather access through the area.
4. All access driveways should be improved, graveled and provided with terminus turn around that has at least a 45-foot turning radius.
5. Roads and driveways should be marked and addressed for more efficient emergency access.
6. Prescribed burning and logging should be encouraged to create an open stand of ponderosa and fuel compartments especially along the road and where natural open areas can be linked together.

Open ponderosa pine forest recently logged. Slash will be burned in the near future. This is near WA 9.

WA 10 Home site with water at the end of sandy difficult to travel road.

Forested area near WA 11A. Fuel Model 10

East Ash Creek EA 1-14 (16 sites or separate groups of buildings)

General Description

The East Ash Creek drainage encompasses an area that is about 7.5 miles from north to south and about 2 miles from east to west. The southern 4 miles is within a forested environment with a wildfire hazard and is for the most part within the Nebraska National Forest. The northern 3.5 miles of the drainage within this planning area goes through agriculture lands with only spots of wildfire hazards. The development within the drainage is composed of a series of homes, cabins and vacant or historic structures off East Ash Creek Road, Table Road and Bethel Loop Road. The East Ash part of the fire planning area is located south of US Highway 20 about 11 miles southeast of Crawford, NB. The area includes 16 home sites or groups of homes on privately owned land that are not structured as subdivisions. Structures include occupied homes with out buildings (barns, garages and etc), cabins that are occupied seasonally and vacant or historic structures that are not maintained and may be in ruins. All of the sites are outside the national forest boundary. The forested segment of East Ash Road is surfaced with gravel.

Natural Fire Hazards

Fuels

Heavy fuels in the area are predominately pure stands of ponderosa pine on the sides of ridges and on north slopes of the escarpment and canyons. Hardwood species including cottonwood, ash, box elder, plum and chokecherry that dominate the drainage bottoms develop considerable fuel in the form of dead branches and dry leaves. Anticipated fire behavior in these types would be similar to Fuel Model 9 or 10. In the most northerly and southerly portions open, rolling, open grasslands with stringers of ponderosa pine and hardwoods with a grass under story vegetation are prominent. Fire behavior in these areas would be classified as Fuel Model 1 for open grassland or Fuel Model 2 when the dry grass along with needles and dead and down stem wood is expected to carry the fire.

In a small southern portion of the area at the top of Pine Ridge some thinning has been used to reduce fire hazard and open views and to create a more open stand. The resulting open stands of ponderosa pine are less vulnerable to a crown fine and forest health is improved.

Slope

Slope in and around this drainage varies from 5% up to55%. The steeper slopes are more frequent on the southern end just below the Pine Ridge geographic feature.

Most of the homeowners in the area use East Ash Creek, Bethal Loop or Table Roads as their primary access. The roads usually maintain a slope of less than 5 percent with short pitches that are 8 to 10 percent grade as you travel up or down the drainage. Most driveways have some surfacing (gravel or rock) and those that are not surfaced are vulnerable to rutting in wet conditions.

Home Site Development and Maintenance
The area and home site developments generally are low to moderate in their vulnerability to a wildfire. Most homes have composition or metal roofs with composition or wood siding. Some of the older structures have wooden roofs and weathered siding that would be highly vulnerable in a wildfire situation. Utilities were generally above ground. Some "FireWise" practices are being practiced but much more effort is needed. While road signs were usually present there was no consistent system of identifying home addresses and only a portion of the homes had numbers posted so they could be read from the road.

Water for fire suppression is available from Dodge Reservoir one mile west of Squaw Creek Road in Section 12. Another source of water exists from the Crow Butte Project's water station (Mayfield Place) on the north side or Section 13. East Ash also has water but residents anticipate reduced flows or no flow during the dry summer. Windmills are located throughout the area but are not a reliable source of water in the quantities that would be needed for fire suppression.

Risk
Risk is on the low side of moderate for most homes. Most structures have been constructed either in an open area or on the edge of clearings or naturally open grassland with agriculture land, woodland or forest as a backdrop. The forest canopy is usually discontinuous with large openings interspersed throughout. However the risk increases significantly for structures located in close proximity to dense stands of ponderosa pine where a crown fire would be difficult to control.

Vulnerability
Generally the home site development area's vulnerability is in the low to moderate range. No evacuation plans are known to exist but, with some burning out, large grassy areas provide safety areas for the firefighter as well as the residents. Within the National Forest East Ash Creek Road provides the only way out of the area. Water for fire suppression is available from ponds on the site.

Recommendations
1. Support the continuance of "FireWise" education and awareness of the property owners and introduce them to the cost share incentives offered by the Nebraska State Forest Service for individual as well as neighborhood "FireWise" practices.

2. Property owners should expand their defensible space and do fuel hazard reduction including thinning within 150 to 200 feet of their buildings.

3. Access driveways should be improved and graveled and provided with terminus turn around that has at least a 45-foot radius.

4. Driveways without turnaround or with steep slopes should be marked with a sign indicating limitations.

5. Roads and driveways should be marked and addressed for more efficient emergency access.

6. Treat fuels along strategic roads specifically the forested part of East Ash Creek Road.

7. Expand scale of fuel hazard treatments through interagency and property owner coordination.

8. Develop a multi-year multi-unit prescribed burning program for the entire area.

Logging and fuel hazard reduction at the head of East Ash Creek

EA 1 Evidence of fuel treatment work near the head of East Ash (acreage is small)

Cunningham/Indian Creek CI 1-9 (10 sites or separate groups of buildings)

General Description
This area is in a wildland fire hazard environment and is composed of a few small home sites around the headwaters of Cunningham and Indian Creek drainages. This area is located approximately 19 miles southwest of Chadron, Nebraska. Some of the ten building sites in this drainage are unoccupied and most are in open grassland and/or agriculture land.

Natural Fire Hazards
Fuels: In the most northerly and southerly portions open, rolling, grasslands with stringers of ponderosa pine and hardwoods and grass under story vegetation and/or agriculturally developed lands. Fire behavior in these areas would be classified as Fuel Model 1 when the dry grass is expected to carry the fire.

The central part of this area is heavily forested but not roaded very well and it has no occupied building sites. Much of it is within the Nebraska National Forest. The Fuel Models for this area is 9 or 10 with some 2.

Slope: Slopes vary from less than 5% up to 40%.

Home Site Development and Maintenance
The area includes ten home sites or groups of homes on privately owned land that are not structured as subdivisions. Structures include occupied homes with out buildings (barns, garages and etc), cabins that are occupied seasonally and vacant or historic structures that are not maintained and may be in ruins. Generally, some of the buildings are un-maintained and unoccupied while some are well kept but small and simple. Defensible space is fairly adequate. Fire equipment should have no trouble reaching most of the buildings and there would be no trouble turning around.

Risk
Risk is medium to very high due to the building site remoteness

Vulnerability
Generally, in the central and lower parts of the forested area the home site vulnerability is moderate to high depending on the grass fuels.

Recommendations
1. Support the continuance of "FireWise" education and awareness of the property owners and introduce them to the cost share incentives offered by the Nebraska State Forest Service for individual as well as neighborhood "FireWise" practices.

2. Roads and driveways should be marked and addressed for more efficient emergency access.

Trunk Butte Creek TB 1-4 (5 sites or separate groups of buildings)

General Description
This area is in a wildland fire hazard environment and is composed of a few small home sites around the headwaters of Trunk Butte Creek drainage. This area is located approximately 17 miles southwest of Chadron, Nebraska. Most of the five building sites in this drainage are unoccupied and most are in open grassland and agriculture land.

Natural Fire Hazards
Fuels: This area is predominantly open grassland and agriculturally developed lands with scattered pine and a few hardwoods. Fire behavior would be characterized as Fuel Model 1.

Slope: Slopes vary from less than 5% up to 40%.

Home Site Development and Maintenance
The area includes five home sites or groups of homes on privately owned land that are not structured as subdivisions. Structures include occupied homes with out buildings (barns, garages and etc), cabins that are occupied seasonally and vacant or historic structures that are not maintained and may be in ruins. Generally, some of the buildings are un-maintained and unoccupied while some are well kept but small and simple. Defensible space is fairly adequate. Fire equipment should have no trouble reaching most of the buildings and there would be no trouble turning
around.

Risk
Risk is medium to very high due to the building site remoteness

Vulnerability
Generally, in the central and lower parts of the forested area the home site vulnerability is moderate to high depending on the grass fuels.

Recommendations
1. Support the continuance of "FireWise" education and awareness of the property owners and introduce them to the cost share incentives offered by the Nebraska State Forest Service for individual as well as neighborhood "FireWise" practices.

2. Roads and driveways should be marked and addressed for more efficient emergency access.

Dead Horse Creek DH 1- 26 (27 sites or separate groups of buildings)

General Description

The Dead Horse Creek drainage encompasses an area that is about 7.5 miles from north to south and about 4.5 miles from east to west. The southern 4 miles is within a forested environment with a wildfire hazard. The northern 3.5 miles of the drainage within this planning area goes through agriculture lands with only spots of wildfire hazards. The development within the drainage is composed of a series of homes, cabins and vacant or historic structures off Dead Horse Creek Road and Table Road. There are 27 home site structural units within this drainage. Many appear to be older second homes or vacation homes. This area is located approximately 14 miles southwest of Chadron, Nebraska. All of the sites are outside the national forest boundary.

Natural Fire Hazards

Fuels

Heavy fuels in the area are predominately pure stands of ponderosa pine on the sides of ridges and on north slopes of the escarpment and canyons. Hardwood species including cottonwood, ash, box elder, plum and chokecherry that dominate the drainage bottoms develop considerable fuel in the form of dead branches and dry leaves. Anticipated fire behavior in these types would be similar to Fuel Model 9 or 10. In the most northerly and southerly portions open, rolling, grasslands with stringers of ponderosa pine and hardwoods with a grass under story vegetation are prominent. Fire behavior in these areas would be classified as Fuel Model 1 for open grassland or Fuel Model 2 when the dry grass along with needles and dead and down stem wood is expected to carry the fire.

In a small southern portion of the area at the top of Pine Ridge some thinning has been used to reduce fire hazard and open views and to create a more open stand. The resulting open stands of ponderosa pine are less vulnerable to a crown fine and forest health is improved. Generally, the natural fire hazards within Dead Horse Creek range from medium to very high.

Slope

Slope in and around this drainage varies from 5% up to55%. The steeper slopes are more frequent on the southern end just below the Pine Ridge geographic feature.

The roads usually maintain a slope of less than 5 percent with short pitches that are 8 to 10 percent grade as you travel up or down the drainage. Most of the driveways range from 5% up to 15% and have some surfacing (gravel or rock) and those that are not surfaced are vulnerable to rutting in wet conditions.

Home Site Development and Maintenance

The home site areas generally include occupied homes with out buildings (barns, garages and etc), cabins that are occupied seasonally and vacant or historic structures that are not maintained and may be in ruins. The area and home site developments within the forested environments generally are medium to very high in their vulnerability to a wildfire. Most homes have composition or metal roofs with composition or wood siding. Some of the

older structures have wooden roofs and weathered siding that would be highly vulnerable in a wildfire situation. Utilities were generally above ground. Some "FireWise" practices are being practiced but much more effort is needed. While road signs were usually present there is no consistent system of identifying home addresses and only a portion of the homes had numbers posted so they could be read from the road.

Home sites with long driveways into home sites have adequate turnarounds for fire equipment. However, some of the home sites near the road are short and do not have a good turnaround. Fire equipment should avoid using most of these driveways roads unless they can safely be backed in.

There is a home site adjacent to the road approximately 2 miles north of the intersection with Table Road that appears to very vulnerable to wildfire and very difficult if not hazardous to defend. Firefighters should insure the site is evacuation and be very cautious with their suppression efforts.

Water for fire suppression is available along the creek. This water may be limited during the late summer and only available at the pond sites. There is a substantial pond near home site number DH 12. Windmills are located throughout the area but are not a reliable source of water in the quantities that would be needed for fire suppression.

Risk

Risk is high and very high in the forested areas due to the fuel continuity coupled with the presence of a few home sites that are unattended and a couple that are extremely unkept with an abundance of flammable debris around the buildings. A crown fire would be difficult to control.

Vulnerability

Generally, in the central and lower parts of the forested area the home site vulnerability is high. No evacuation plans are known to exist but there are numerous openings and roadways that could provide safety areas for the firefighter as well as the residents.

Where structures have been constructed either in an open area or on the edge of clearings or naturally open grassland with agriculture land, woodland or forest as a backdrop vulnerability is low.

Recommendations

1. Support the continuance of "FireWise" education and awareness of the property owners and introduce them to the cost share incentives offered by the Nebraska State Forest Service for individual as well as neighborhood "FireWise" practices.

2. Property owners should expand their defensible space and do fuel hazard reduction including thinning within 150 to 200 feet of their buildings.

3. Access driveways should be improved and graveled and provided with terminus turn around that has at least a 45-foot radius.

4. Driveways without turnaround or with steep slopes should be marked with a sign indicating limitations.

5. Roads and driveways should be marked and addressed for more efficient emergency access.

6. Treat fuels along strategic roads specifically the forested segment of Dead Horse Creek Road.

7. Expand scale of fuel hazard treatments through interagency and property owner coordination.

8. Develop a multi-year multi-unit prescribed burning program for the forested part of the area.

Non-defendable home site within Dead Horse CK.

Defendable home site within Dead Horse CK.

DH 12 Easily defendable home site. Water is available.

DH 8 Turnaround is very tight and requires backing. Defendable space not developed

Chadron Creek CC 1-80 (200 sites or separate groups of buildings)

General Description

The Chadron Creek drainage encompasses an area that is about nine miles from north to south and about four miles from east to west. The area is in a wildfire hazard environment and is composed of several small home site developments including small subdivisions along both sides of US 385 along the Chadron Creek drainage. This area is located approximately 21 miles south of Chadron, Nebraska. The development in this area is composed of approximately 200 homes/facilities some that are new but many are older second homes or vacation homes. Most are located on private property but some are within Chadron State Park and are rented for short terms. This area includes subdivisions such as in Whispering Pines, Broken Plow, Parkview Terrace, and Pinedale Addition. Structures include occupied homes with out buildings (barns, garages and etc), cabins and modular homes that are occupied seasonally and vacant or historic structures that are not maintained and may be ruins.

Natural Fire Hazards

Fuels

Heavy fuels in the area are predominately pure stands of ponderosa pine intermingled with patches of open grassland on the sides of ridges and on north slopes of the tributary drainages. There are a few stringers of hardwood riparian including cottonwood, ash, box elder, plum and chokecherry. Along the drainage bottoms these species develop considerable fuel in the form of dead branches and dry leaves. Anticipated fire behavior in these forested types would be similar to Fuel Models 9 and 10. In the most northerly and southerly portions open, rolling, grasslands with stringers of ponderosa pine and hardwoods with a grass under story vegetation are prominent. Fire behavior in these areas would be classified as Fuel Model 1 for open grassland or Fuel Model 2 when the dry grass along with needles and dead and down stem wood is expected to carry the fire.

Throughout the drainage there has been a lot of small fuel hazard reduction projects implemented and there are several more planned. Apparently Chadron State Park has accomplished the most hazard reduction work within one contiguous area. Generally, the natural fire hazards within Chadron Creek range from low to very high.

Slope

Slope in and around this drainage varies from 5% up to55%. The steeper slopes are more frequent on the southern end just below the Pine Ridge geographic feature.

Most of the homeowners in the area use US Highway 385 as their primary access. It is paved and is well maintained. Slopes on the highway are less than 7%. while gravel roads and driveways in the subdivisions ranged from 5% up to 20%. Some roads are not surfaced and have ruts. Driveways are usually not surfaced and vary considerably in slope and quality.

All of the main travel ways within Chadron State Park are paved or surfaces with gravel.

Home Site Development and Maintenance
The home site development hazards range from low to very high. Generally, throughout the area there are home sites with inadequate defensible space intermingled with home sites with very good defensible space. Several homes are above steep forested slopes that increase their vulnerability. Some "FireWise" practices are being practiced but at a minimum level and much more effort is needed. Most homes have composition or metal roofs with composition or wood siding. Utilities were generally above ground except for the most recently constructed homes. Several propane tanks were located close to a structure or down slope from a structure. Most of the homes nearest US 385 or within a couple of subdivision circle drives have good defensible space. Several of the homes outside the circle and higher up on the terrain do not have adequate defensible space. Road signs are sometimes present but there was no consistent system of identifying home addresses and only a portion of the homes had numbers posted so they could be read from the road. Within the small subdivisions signage is almost non-existent, with only a few property numbers and street signs posted. Water source hydrants are available at the Job Corps, City Dam, and Country Club sites. Water is also available at a few other places along the creek and at the State Park. Roads into the home sites are generally dead-end with tight or inadequate turnarounds for fire equipment. Specifically, Camp Norwesca has a single lane driveway that connects the parking lot to the tent camping area. Fire equipment should avoid using this road due to its narrow width, no turnaround and an abundance of forest fuel adjacent to it.

Risk
Risk is on the low side of moderate for most homes. Most structures have been constructed either in an open area or on the edge of clearings or naturally open grassland with woodland or forest as a backdrop. The forest canopy is usually discontinuous with large openings interspersed throughout. However the risk increases significantly for structures located in close proximity to dense stands of ponderosa pine where a crown fire would be difficult to control.

Vulnerability
Generally the home site development area's vulnerability is in the low to moderate range until the early fall. Throughout the area there are several homes that are very vulnerable due to their location within the forested area or at the top of a steep forested slope. No evacuation plans are known to exist but the corridor along US Highway 385 along with a few open areas provide safety areas for the firefighter as well as the residents.

Water for fire suppression is available at the Job Corps, Chadron State Park, City Dam, and Country Club sites. Water is also available at a few other places along the creek and at the State Park.

Recommendations
1. Support the continuance of "FireWise" education and awareness of the property owners and introduce them to the cost share incentives offered by the Nebraska State Forest Service for individual as well as neighborhood "FireWise" practices.

2. Property owners should expand their defensible space and do fuel hazard reduction including thinning within 150 to 200 feet of their buildings.

3. Access driveways should be improved and graveled and provided with terminus turn around that has at least a 45-foot radius.

4. Driveways without turnaround or with steep slopes should be marked with a sign indicating limitations.

5. Roads and driveways should be marked and addressed for more efficient emergency access.

6. Improve emergency firefighter fire suppression access to the water from the large water tank on top of the hill.

7. Treat fuels along strategic roads within the forested areas.

8. Mark safety zones and helispots.

9. Expand scale of fuel hazard treatments through interagency and property owner coordination.

10. Develop a multi-year multi-unit prescribed burning program for the forested areas.

11. Each subdivision, Camp Norwesca, and Chadron State Park should develop evacuation plans that accommodate initial attack vehicles while safely evacuating the residents.

Fuel hazard reduction within Chadron State Park.

CC 15 Steep timbered slope behind Job Corps.

CC 25 Good defensible space

CC 21A Home site in Broken Plow. Marginally defendable.

Fuel Model 9 within Chadron Creek

Bordeaux Creek BC 1-16 (17 sites or separate groups of buildings)

General Description
The Bordeaux Creek drainage encompasses an area that is about nine miles from north to south and about three miles from east to west. The area is in a wildfire hazard environment and is composed of home-sites along both sides of Table and Bordeaux Roads, which follow the southern and eastern ridgelines of the Bordeaux Creek drainage. This area is located approximately 21 miles southeast of Chadron, Nebraska. The total acreage of all the home site development areas together is approximately fifty acres. The drainage includes seventeen home sites on privately owned land. Structures include occupied homes with out buildings (barns, garages and etc), cabins and modular homes; trailer homes and several appear vacant.

Natural Fire Hazards
Fuels
Heavy fuels in the area are predominately pure stands of ponderosa pine intermingled with patches of open grassland on the sides of ridges and on north slopes of the tributary drainages. There are a few stringers of hardwood riparian including cottonwood, ash, box elder, plum and chokecherry. Along the drainage bottoms these species develop considerable fuel in the form of dead branches and dry leaves. Anticipated fire behavior in these forested types would be similar to Fuel Models 9 and 10. In the most northerly and southerly portions open, rolling, grasslands with stringers of ponderosa pine and hardwoods with a grass under story vegetation are prominent. Fire behavior in these areas would be classified as Fuel Model 1 for open grassland or Fuel Model 2 when the dry grass along with needles and dead and down stem wood is expected to carry the fire.

Several of the landowners along Table Road have done forest management (logging, thinning) in the pine stands north of their property. Several of the properties have old logging road access to the north facing slopes of pine stands.

Slope
Slope in and around this drainage varies from 5% up to 60%. The steeper slopes are more frequent in the drainage itself. Slopes around the home-sites vary from 5% to 20%.

Access
All of the homeowners in the area use Table and Bordeaux roads as their primary access, which is, maintained gravel surface with slopes from 0% to 10%. The exception to this is #718/Hallstead Road, which is rutted and has a section near the intersection with Table Road with slope in excess of 20%. Driveways, which usually are not surfaced, ranged from 0% up to 10%.

Home Site Development and Maintenance
The home site development hazards range from low to moderate. Generally, throughout the area home sites have defensible space. Several homes could use some trimming or removal of trees right next to the home or buildings. Most homes have composition or metal roofs with an occasional wood roof on older buildings, and composition or

wood siding. Utilities were generally above ground except for the most recently constructed homes. Several propane tanks were located close to a structure or down slope from a structure. “FireWise” practices should be reviewed and applied where appropriate.

Road signs are lacking on Table Road. There was no consistent system of identifying home addresses and only a portion of the homes had numbers posted so they could be read from the road. Roads into the home sites are generally dead-end with several having tight or inadequate turnarounds for fire equipment. Several of the homes can be accessed directly from the road.

Several of the home-sites had excessive accumulations of flammable debris, which should be removed.

Risk

Risk is on the low side of moderate for most homes. Most structures have been constructed either in an open area or on the edge of clearings or naturally open grassland with woodland or forest as a backdrop. The forest canopy is usually discontinuous with large openings interspersed throughout. However the risk increases significantly for structures located in close proximity to dense stands of ponderosa pine where a crown fire would be difficult to control. Several of the home-sites have dense stands of trees within one hundred feet of the buildings.

Vulnerability

Generally the home site development area’s vulnerability is in the low to moderate range. No evacuation plans are known to exist.

Water for fire suppression is available at the Job Corps, City Dam, and Country Club sites.

Recommendations

1. Support the continuance of “FireWise” education and awareness of the property owners and introduce them to the cost share incentives offered by the Nebraska State Forest Service for individual as well as neighborhood “FireWise” practices.

2. Property owners should expand their defensible space and do fuel hazard reduction including thinning within 150 to 200 feet of their buildings.

3. Where appropriate, access driveways should be improved and graveled and provided with terminus turn around that has at least a 45-foot radius.

4. Roads and driveways should be marked and addressed for more efficient emergency access.

5. Treat fuels along strategic roads within the forested areas.

6. Mark safety zones and helispots.

7. Expand scale of fuel hazard treatments through interagency and property owner coordination.

8. Develop a multi-year multi-unit prescribed burning program for the forested areas.

Home sites within Bordeaux Creek

Pine Ridge Fire Planning Area #1 Issues

The following is a list of most of the issues with regard to fire hazard, fire risks, and vulnerability. These guide the mitigation planning processes.

- Heavy fuel continuity between grass and ponderosa pine fuels across the forested area coupled with a history of wind-driven difficult to control wildfires;
- Firefighter safety;
- Many home sites without defensible space;
- Intermittent "FireWise" adherence within home site areas;
- A shortage of road terminus turnarounds;
- A few unmaintained narrow and/or steep roads;
- Fuel treatment work being accomplished on private lands but on a small scale;
- Only a small amount of fuel treatment coordination being done between landowners;
- No evacuation plans where needed;
- No good subdivision maps;
- No system of addresses and street or road name signs;
- Many homeowners are intermittent residents;
- There is a fair amount of unoccupied or abandoned and possibly historic buildings within some areas.

III. PLAN FOR WILDFIRE AND FUEL HAZARDS

Fire Management Response

This plan is based on aggressive and full suppression of every wildfire.

This plan helps coordinate and communicate the strategies and tactics to be used to accomplish the Pine Ridge Fire Planning Area #1 goals and objectives as well as the public land agencies goals and objectives. This plan defines the extent that fire, along with other fuel management techniques, will be used throughout the county.

The Fire and Fuels Plan for Pine Ridge Fire Planning Area #1 does basically four things specific to the planning area as a whole but primarily the private land.

1. **It couples GPS location with "911" addresses and key Triage concerns for each site-specific structural unit or structural groups including subdivisions and adds some specific drainage and/or subdivision tactics and response actions that should be considered during initial attack.**

2. **It identifies specific strategies that will be considered and implemented by the Chadron and Crawford VFDs and their cooperators for the urban interface areas, as funds are available.**

3. **It identifies general fuel treatment needs to insure that the interface areas are more defensible and safe for firefighters during wildfire suppression. With property owners concurrence these will be implemented when funds are available.**

4. **It identifies opportunities to coordinate and cooperate between agencies.**

Site Specific Appropriate Wildland Fire Responses Within Pine Ridge Fire Planning Area #1

Fire Management Objective: Effectively and safely protect rural structures and properties from wildland fire damage.

Suppression Constraints/Considerations:

- Ensure structure protection equipment availability for all wildland fires within the Pine Ridge Fire Planning Area #1, particularly on the private forested lands.

Pine Ridge Fire Planning Area #1 categories (see Pine Ridge Fire Planning Area #1 Appropriate Response Map and individual home site development or subdivision maps)

These fire responses are consistent with the current response plans for the Nebraska National Forest and the State of Nebraska.

**** Note: The following appropriate response category pages with maps can be copied for firefighter use while traveling to initial attack.***

Pine Ridge Fire Planning Area #1

STRUCTURE TRIAGE

Triage is the determination of priorities for action during an emergency. This describes a concise decision making process that will be used if/when a wildfire threatens multiple structures simultaneously. It will be done rapidly and on the move. *This is a thought process that does not require completion of any paperwork.*

Structure:

Roof Type?	Siding?
Debris on Roof?	Fire Brand Traps?
Propane Tank?	Flammable Clutter?

Defensible Space:

Is There Any?	Adjacent Fuel Type ?
Water Supply?	Access?

Current & Expected Fire Behavior?

Available Firefighting Resources?

Firefighter Safety:

Escape Routes?	***Safety Zones?***

Quickly determine the status of each threatened structure and make decisions!

Clearly communicate the priorities and firefighter evacuation criteria!

Be ready to live with your decisions, they will be second-guessed after the threat is over.

Your first priority is to live to fight fire another day!!

Squaw Creek SC 1 through SC 17

Management Objective: Effectively and safely protect structures and properties from wildland fire damage.

Suppression Constraints/Considerations:

- Primary fuel is ponderosa pine with grassland and stringers of hardwood bottoms some of which has had some clean up and some has dense ladder fuel. They are Fuel Models 1, 2, 9 and 10. A small area has been logged and slash treated along the lower end of the forested part of the drainage.
- At SC 1 is the location for a radio tower and antenna site.
- The home sites at SC 1, 2, 3, 5, 8, 13, 15, and 16 appear to be vacant or in ruins.
- Home sites on north end SC11 through SC17 are within a non-forested agriculturally developed area.
- Structure protection equipment should be available for all wildfires within this drainage.
- Use Triage to determine which units can safely be defended. Watch for needle accumulations on or around structures and ladder fuels near homes.
- At SC 6B there is what appears to be a camp or complex of living quarters that may need evacuation assistance.
- Bridge is out for access to SC 2 and SC 3 two track but cross country access exists at the site by cutting a fence and going around.
- When safe, use foam or other means to protect individual structures.
- Implement evacuation up or down the Squaw Creek road.
- Prepare each threatened property for survival from firebrands by clearing duff from around structure.
- A few of the home site roads and driveways are narrow and do not have good turn a round. Turn a rounds can be made either off the road or by backing and turning within driveways terminus.
- Water available at some points within Squaw Creek and north of the forested area on the north end of the Crow Butte project (Mayfield Place), at Dodge Dam one mile west of Squaw Creek road in Section 12, and at some windmills and ranch facilities.
- Water for helicopter bucket refill available at Dodge Dam and by use of portable tank at selected locations.

PLANNED ACTIONS:

Full suppression response within drainage area

West Ash Creek WA 1 through WA 19

Management Objective: Effectively and safely protect structures and properties from wildland fire damage.

Suppression Constraints/Considerations:

- Primary fuel is ponderosa pine with grassland and stringers of hardwood bottoms some of which has had some clean up and some has dense ladder fuel. They are Fuel Models 1, 2, 9 and 10.
- The home site at WA 5 appears to be vacant.
- Home sites on north end WA 12 through WA 19 are within non-forested agriculturally developed area.
- Structure protection equipment should be available for all wildfires within this drainage.
- Use Triage to determine which units can safely be defended. Watch for needle accumulations on or around structures and ladder fuels near homes.
- When safe, use foam or other means to protect individual structures.
- Implement evacuation up or down the West Ash Creek road.
- Prepare each threatened property for survival from firebrands by clearing duff from around structure.
- A few of the home site roads and driveways are narrow and do not have good turn a round. Turn a rounds can be made either off the road or by backing and turning within driveways terminus.
- Water available at some points within West Ash Creek (WA 10) and north of the forested area on the north end of the Crow Butte project (Mayfield Place), at Dodge Dam west of Squaw Creek Road in Section 12, and at some windmills and ranch facilities.
- Water for helicopter bucket refill available at Dodge Dam and by use of portable tank at selected locations.

PLANNED ACTIONS:

Full suppression response within drainage area

East Ash Creek EA 1 through EA 14

Management Objective: Effectively and safely protect structures and properties from wildland fire damage.

Suppression Constraints/Considerations:

- Primary fuel is ponderosa pine with grassland and stringers of hardwood bottoms some of which has had some clean up and some has dense ladder fuel. They are Fuel Models 1, 2, 9 and 10. Ponderosa pine fuel continuity and laddering potential along forested part of East Ash Creek is heavy.
- The home sites at EA 3, 11, 13, and 14 appear to be vacant.
- Home sites on north end EA 5 through EA14 are within non-forested agriculturally developed area.
- Structure protection equipment should be available for all wildfires within this drainage.
- Use Triage to determine which units can safely be defended. Watch for needle accumulations on or around structures and ladder fuels near homes.
- At EA 2 there is an Elk ranch facility with high fences.
- When safe, use foam or other means to protect individual structures.
- Implement evacuation up or down the East Ash Creek road.
- Prepare each threatened property for survival from firebrands by clearing duff from around structure.
- Water available at some points within East Ash Creek and north of the forested area on the north end of the Crow Butte project (Mayfield Place), at Dodge Dam west of Squaw Creek Road in Section 12, and at some windmills and ranch facilities.
- Water for helicopter bucket refill available at Dodge Dam and by use of portable tank at selected locations.

PLANNED ACTIONS:

Full suppression response within drainage area

Cunningham Indian Creek CI 1 through CI 9

Management Objective: Effectively and safely protect structures and properties from wildland fire damage.

Suppression Constraints/Considerations:

- Primary fuel is grassland and stringers of hardwood bottoms, windbreak trees, and agriculturally developed land.
- The home sites at CI 2, CI 8, CI 8A appear to be vacant.
- At CI 3 is the location for an electronic tower and antenna site.
- All home sites are within non-forested agriculturally developed area.
- Structure protection equipment should be available for all wildfires within this drainage.
- Implement evacuation on Table road on the south and Bethal Loop road on the north.
- Water available at some windmills and ranch facilities.
- Water for helicopter bucket refill available at City Dam and by use of portable tank at selected locations.

PLANNED ACTIONS:

Full suppression response within drainage area

Trunk Butte Creek TB 1 through TB 4

Management Objective: Effectively and safely protect structures and properties from wildland fire damage.

Suppression Constraints/Considerations:

- Primary fuel is grassland and stringers of hardwood bottoms, windbreak vegetation and agriculturally developed land.
- The home sites at TB1, 2, 3 appear to be vacant.
- All home sites are within non-forested agriculturally developed area.
- Structure protection equipment should be available for all wildfires within this drainage.
- Implement evacuation north on Faulk road.
- Water available at some windmills and ranch facilities.
- Water for helicopter bucket refill available at City Dam and by use of portable tank at selected locations.

PLANNED ACTIONS:

Full suppression response within drainage area

Dead Horse Creek DH 1 through DH 26

Management Objective: Effectively and safely protect structures and properties from wildland fire damage.

Suppression Constraints/Considerations:

- Primary fuel is ponderosa pine with grassland and stringers of hardwood bottoms some of which has had some clean up and some has dense ladder fuel. They are Fuel Models 1, 2, 9 and 10.
- The home sites at DH 6, 8, 15, 16, 17, 24, and 26 appear to be vacant.
- Home sites on north end DH 13 through DH 26 are within non-forested agriculturally developed area.
- Structure protection equipment should be available for all wildfires within this drainage.
- Use Triage to determine which units can safely be defended. Watch for needle accumulations on or around structures and ladder fuels near homes.
- At DH 7 there is a very vulnerable vacant home site on the west side of the road and an occupied but impossible to defend (due to debris and litter) home site on the east side of the road.
- When safe, use foam or other means to protect individual structures.
- Implement evacuation up or down the Dead Horse Creek road.
- Prepare each threatened property for survival from firebrands by clearing duff from around structure.
- A few of the home site roads and driveways are narrow and do not have good turn a round. Turn a rounds can be made either off the road or by backing and turning within driveways terminus.
- Water available at some points within Dead Horse Creek such as at DH 12 and at some windmills.
- Water for helicopter bucket refill available at City Dam and by use of portable tank at selected locations.

PLANNED ACTIONS:

Full suppression response within drainage area

Chadron Creek Control Numbers CC 1 through 80.

Management Objective: Effectively and safely protect structures and properties from wildland fire damage.

Suppression Constraints/Considerations:

- Primary fuel is ponderosa pine with grassland and stringers of hardwood bottoms some of which has had some clean up and some has dense ladder fuel. They are Fuel Models 1, 2, 9 and 10. US 385 corridor provides a fuel break running north and south parallel with the drainage. There are five subdivision or subdivision-like home site structure units along both sides of US 385 near the Chadron State Park area.
- The home sites at CC 23, 24, and 26 appear to be vacant.
- Home sites on north and south ends CC 1 through 4 and CC 74 through 80 are within non-forested agriculturally developed area.
- Structure protection equipment should be available for all wildfires within this drainage.
- Use Triage to determine which units can safely be defended. Watch for needle accumulations on or around structures and ladder fuels near homes.
- When safe, use foam or other means to protect individual structures.
- Evacuation assistance may be needed at Camp Norwesca, Broken Plow, Chadron State Park, Parkview Terrace, Berryville, Whispering Pines, and Pinedale Addition & Parkview Cabins.
- Implement evacuation of area toward US Highway 385.
- Prepare each threatened property for survival from firebrands by clearing duff from around structure.
- A few of the home site roads and driveways are narrow and do not have good turn a round. Turn a rounds can be made either off the road or by backing and turning within driveways terminus.
- Water available at Job Corps Center, Chadron State Park, City Dam, and Country Club for engine refill. Floto pump would work best for engine refill at Chadron State park and City Dam.
- Water for helicopter bucket refill available at City Dam and by use of portable tank at the above locations.

PLANNED ACTIONS:

Full suppression response within drainage area

Turn-off locations for subdivision-like home site structure units located near US 385 (Location shown as North latitude and West longitude in degrees and minutes):

Whispering Pines **Lat. 42 41.884**
Long.103 0.236

This is a subdivision along the east side of US 385. It includes approximately 17 home sites located around a circular drive. Most of the homes within the circle and nearest US 385 have good defensible space. Several of the homes outside the circle and higher up on the terrain do not have adequate defensible space.

Parkway Cabins and Pinedale Addition **Lat. 42 41.914**
Long.103 0.257

This is a home site structure unit along the west side of US 385 with approximately 17 home sites including several modular and mobile homes. Defensible space adequacy is intermittent throughout the area.

Berryville **Lat 42 42.196**
Long 103 0.264

This is a home site structure unit located on the east side of US 385 with Approximately 13 home sites located along a couple dead end roads that run roughly east and west.

Cabins at CC 34 **Lat 42 42.271**
Long 103 0.285

A few home sites structures along an un-named driveway on the west side of US 385.

Parkview Terrace **Lat 42 42.329**
Long 103 0.290

This is a subdivision along the east side of US 385. It includes Approximately 18 home sites located around a circular drive. Most of the homes within the circle and nearest US 385 have good defensible space. Several of the homes outside the circle and higher up on the terrain do not have adequate defensible space.

Chadron State Park **Lat 42 42.518**
Long 103 0.404

This park is located on the west side of US 385 within over 640 acres of developed area. Primary roads are all paved. The park includes home sites, a small visitor center, recreation facilities, maintenance facilities, and an assortment of cabins for rental use, approximately 30 buildings. The park has accomplished and continues to accomplish a considerable amount of fuel hazard reduction throughout the entire area. Most structures have adequate defensible space.

Camp Norwesca road and associated home sites Lat 42 42.498
Long 103 0.449

The main access road connects with the Chadron State Park entrance near US 385 and runs north and south west of and parallel to US 385. It includes a few home sites and Camp Norwesca. The road ends at a gate 2 miles south of State Park entrance where home site structure unit CC 17 is located. Most of this area is within Fuel Model 9 and 8 dominated by hardwood and ponderosa pine litter.

Camp Norwesca Lat 42 41.885
Long 103 0.463

The camp, with approximately 16 buildings, is west of and above the Camp Norwesca road. It includes a central headquarters with several large building and good defensible space and a good turnaround within a parking lot. Beyond the parking lot to the west100 to 200 meters is an area with several camp cabins and tent sites located in heavy ponderosa pine timber. The access road is narrow and has no turn around. This area should be evacuated and defended from the central parking lot.

Broken Plow Lat 42 41.593
Long 103 0.468

Accessed from primary Camp Norwesca road. The turn is approximately 1.1 mile south of the State Park entrance and on the west side of the primary Camp Norwesca road. From the turn off it is approximately 1 mile to the home site area. The road is steep, up to 18%. There are approximately six home sites. One is abandoned. All of the home sites in this area are vulnerable as they are at the top a hill facing west within heavy grass and ponderosa pine fuels. No defensible space work appears to have been completed and the home ignition zones has a lot of debris. There is at least one road blocked with a locked cable gate.

Mann Road (south entrance) Lat 42 43.462
Long 103 0.673

Mann Road (north entrance at City Dam Lat 42 44.497
Long 103 0.449

Mann Road is east of US 385 and it has two entrances from US 385. There are several home site structure units along the road, which are parallel to US 385. The primary fuel is hardwood litter and grass and some of the area is developed for small-scale agriculture uses.

City Dam **Lat 42 44.506**
Long 103 0.456

The City Dam road runs east and west from US 385 and has a few home sites along it.

Country Club (south entrance) **Lat 42 44.853**
Long 103 0.400

Country Club (cut off from Hwy 385) **Lat 42 45.424**
Long 103 0.423

Country Club (north entrance) **Lat 42 47.992**
Long 103 01.062

Country Club road is on the west side of US 385 and has 8 home sites distributed along the SW side of the road. Access is easy and the home sites are all defendable.

Bordeaux Creek BC 1 through BC 16

Management Objective: Effectively and safely protect structures and properties from wildland fire damage.

Suppression Constraints/Considerations:

- Primary fuel is ponderosa pine with grassland and stringers of hardwood bottoms some of which has had some clean up and some has dense ladder fuel. They are Fuel Models 1, 2, 9 and 10.
- Most of the home sites along east side BC 8 through BC 16 are within non-forested agriculturally developed area.
- Structure protection equipment should be available for all wildfires within this drainage.
- Use Triage to determine which units can safely be defended. Watch for needle accumulations on or around structures and ladder fuels near homes.
- At BC 3 is the location for an electronic tower and antenna site.
- When safe, use foam or other means to protect individual structures.
- Implement evacuation up or down the Bordeaux Creek road.
- Prepare each threatened property for survival from firebrands by clearing duff from around structure.
- A few of the home site roads and driveways are narrow and do not have good turn a round. Turn a rounds can be made either off the road or by backing and turning within driveways terminus.
- Water available at some points within Bordeaux Creek and at some windmills.
- Water for helicopter bucket refill available at City Dam and by use of portable tank at selected locations.

PLANNED ACTIONS:

Full suppression response within drainage area

Wildland Urban Interface Mitigation Strategies

1) Primarily for firefighter safety, continue to work with the State and Federal agencies to develop a program to increase awareness of "FireWise" standards with regard to community defensibility. Take action to ensure defensibility of homes and the compact communities or designate, for firefighter safety, which homes and/or parts of communities are not defensible. Use **Triage** within Appendices.

2) Along with this introduce and expand the understanding of the "**Home Ignition Zone**" and emphasize how survivability depends on maintenance necessary to reduce and manage home ignition potential. See Appendices.

3) CVFD should work with the County to seek their cooperation and funds to collect and organize the below information and standards or suggested guidelines for encouraging developers or property owners who are seeking permission to construct roads, driveways and dwellings to provide the following:
    a. GPS location for each road, driveway and building site.
    b. Name for each road and address for each building site.
    c. Community fuel treatment standards with regard to the areas between building sites.
    d. Evidence that "FireWise" building standards and defensible space information has been provided to every lot and homebuyer or develop "FireWise" based requirements for new building construction standards.
    e. Develop road construction and maintenance standards that accommodate fire suppression equipment.
    f. A county policy insuring that at least two access routes for ingress and egress to the development areas or subdivisions.
    g. Designation of safety zones that are maintained in case of wildfire.
    h. Designation of locations of facilities specific for fire suppression water needs.

4) Develop accurate maps for the subdivisions and for the access roads to Broken Plow and Whispering Pines.

5) Seek funds for improving access facilities and turnarounds where firefighter safety and effectiveness will be greatly benefited. The following are a few recommendations:
    a. Cost share with property owner driveway turn-around improvements at some of the following locations in Chadron Creek 28, 31, 31A, 32B,C &D,37A, 42, 51, 57, and others.
    b. Cost share with the property owner road improvement work at Chadron Creek 40, 52A, 65, 70 and others.
    c. Purchase and install small signs at entrance to long driveways to inform firefighters if the driveways are narrow or steep with no turn around or tight turn arounds.
    d. Put a sign at entrance to Broken Plow road that the grade approaches 18% in steepness.

e. Repair the bridge in Squaw Creek near SC 2 and 3 as it is a County road and accesses forested country between Squaw Creek and West Ash.
f. Do some hazard reduction work on the longer forested driveways and access roads such as Broken Plow.
g. The lower segments of West Ash road surface, when dry, are soft and difficult to travel. These segments could even cause 2 wheel drive vehicles to become stuck. The West Ash Road should be surfaced with a road base aggregate to provide a hard surface and improve it as an all weather access through the area.

6) Subdivision residents should coordinate among themselves to improve defensibility of their whole subdivision. This could include connecting home site defensible space areas and /or fuel hazard reduction and thinning 150 and 200 feet from their buildings.

7) Where needed access driveways should be improved and graveled and provided with terminus turn around that has at least a 45-foot radius or a pull in and pull out facility.

8) Improve emergency firefighter fire suppression access to the water from the large water tank on top of the hill.

9) Treat fuels along strategic roads. The main drainage roads are the primary means for shifting fire suppression resources and efforts needed to stop fires. Because most of the fires are wind driven from the west these north/south roads are strategic routes within the forested areas. Fuel hazard reduction is needed along the forested segments within Dead Horse, East Ash, West Ash, and Squaw Creek drainages. Within Chadron Creek drainage the Norwesca primary road and Broken Plow roads also need fuel hazard reduction work along both sides of the roads. Fuel hazard reduction should be completed along most of the long driveways within the forested part of the planning area. Roadside fuel hazard reduction will also facilitate evacuation safety because there is only one-way in and out of the home site areas.

10) Expand scale of fuel treatments through interagency and property owner coordination. This could be accomplished by expanding onto other ownerships the fuel management work that has been accomplished within Chadron State Park and the work that is being planned within the Nebraska National Forest. See appendices for more information. Utilize the Forest Service "Good Neighbor" policy to seek support and funds.

11) The Chadron and Crawford VFDs, working with the Nebraska State Forest Service, should expand the State cost share program for thinning, pruning and removal of slash and dead material into an incentive program for hazard reduction and infrastructure improvement. Emphasize clean up of slash material to reduce and manage insect susceptibility.

12) Chadron and Crawford VFDs should seek funds to assist property owners with slash disposal. Possible approaches could be the following:

a) Facilitate grant allocation or funding for a private party or private enterprise to acquire and operate a tow able chipper to be used in home site development areas for slash disposal. This could be accomplished through long-term contract with private owner/operator.
b) Facilitate grant allocation or funding for a private party or private enterprise to acquire haul vehicle for removing slash and small logs to a central disposal area for burning and or commercial or public use i.e. compost or firewood use within the nearby communities. This also could be accomplished through long-term contract with private owner/operator.
c)CVFD should develop a connection between the need to dispose of slash and the demand for 12,800 pounds per hour of chips needed in the Chadron State College central boiler system.
d) Workshops could be utilized to raise the homeowner's awareness of prescribed fire techniques in disposing of slash piles.

13) Mark safety zones and helispots where ponderosa pine fuel continuity is dense and safety zones and helispots are not obvious.

14) Duplicate the "Firefighters Response Guide" for each engine including the engines operated by the federal and state agencies within Pine Ridge Fire Planning Area #1.

15) Seek funds for a coordinator or specialist (full time or part time) to do the following: design projects, prepare grant proposals, develop county standards for urban interface fire issues, set up and facilitate coordination meetings, coordinate with federal and state agencies to update fire and fuels plans, equipment acquisition, designing joint projects, obtaining the GPS coordinates for new home sites and ensures the follow up for the next four items.

16) CVFDs should seek County cooperation in developing and implementing a standard for signing roads and addressing and marking homes for more efficient emergency access.

17) Driveways without turnaround or with steep slopes should be marked with a sign indicating limitations.

18) Develop a seamless long-term multi-year multi-unit hazard reduction and prescribed burning program for the entire area. Workshops and demonstration burns could be done on the public lands and they could be utilized to raise the homeowner's awareness of prescribed fire techniques and increase all property owners interest in disposing of slash and hazards.

19) Initiate fire planning in other Pine Ridge areas benefiting from an assessment of this planning process that could result in improved cost-efficiency and effectiveness.

Interagency Cooperation and Coordination

Chadron and Crawford VFD leaders and officials already do an exceptional amount of coordinating and cooperating with the county, state and federal land and natural resource agencies. The following are opportunities specific to the fire and fuels management program. Some have already been mentioned in the previous section.

1) As suggested in the previous section, consider employing a fire coordinator to design projects, prepare grant proposals, develop county standards for urban interface fire issues, coordinate between land owners, and coordinate with federal and state agencies to update fire and fuels plans, equipment acquisition, and design joint projects.

2) Several of the urban interface fuel hazard reduction projects would be more effective if designed in cooperation with the Forest Service and Nebraska State Forest Service.

3) Support the expansion of the State's fuel reduction and thinning cost share program for private property owners.

4) Continue to work with the Nebraska State Forest Service to implement a countywide public education and awareness program for improving fuel hazard conditions within the urban interface areas.

5) The Chadron and Crawford VFDs should continue to participate with the other agencies to facilitate interagency wildland fire training.

6) Throughout Pine Ridge Fire Planning Area #1 initiate cooperation with other agencies and between property owners to develop long-term multi-unit, multi-year fuel hazard reduction projects. This should include prescribe burning.

7) Initiate VFD monitoring of the federal wildland fire weather system indices. Obtain receivers for RAWS (Remote Area Weather Station) or NFDRS (National Fire Danger Rating System) fire weather forecasts.

8) Duplicate the "Firefighters Response Guide" for each engine including the engines operated by the federal and state agencies within Pine Ridge Fire Planning Area #1.

9) Insure quick notification and involvement process for FEMA assessment and assistance on all fires within the Pine Ridge Fire Planning Area #1.

Fuel Treatment Priorities

To achieve healthy forestland and grassland ecosystems, property owners along with the government agencies must work together on a long-term basis to manage fuel hazards and fuel continuity. Keeping in mind that the most damaging wildfires are those that are wind driven and difficult to suppress, effective fuel treatment work on a broad scale should be a strategy or goal. Risk and vulnerability to home sites as well as watersheds can best be reduced through cooperation and agreement among most of the property owners and government agencies along with a seamless, long-term multi-year, multi-unit fuel hazard reduction and management approach. This should include a prescribed burning program for the area. For example to attain the best results the current fuel treatments that have been accomplished within Chadron State Park and the work that is being planned within the Nebraska National Forest should be expanded to fit the landscape and vegetative patterns rather than being limited to the jurisdictional boundaries. See attached maps.

To begin this process of working together workshops and demonstration burns could be done on the public lands and they could be utilized to raise the homeowner's awareness of prescribed fire techniques and increase all property owners interest in disposing of slash and hazards.

Assigning high priority to "seamless" projects, i.e. projects that may involve several landowners and or several agencies could be another action that would encourage the coordination process.

The projects should be a mix of various treatments that break up fuel continuity, minimize soil disturbance, and help create a diversity of cover, forage, and watershed vegetation that is resistant to the occurrences of very large and intense wildfires. Treatment methods include the use of prescribed fire (burning under carefully controlled conditions), mechanical (thinning, rotary chopping, dragging, logging), chemical (herbicides) and livestock grazing to break up fuel continuity. Fuel reduction projects can be undertaken individually or in cooperation with neighbors and land managing agencies. However, all project design should be coordinated toward a common vision within each drainage area.

Following are several specific fuel hazard reduction suggestions for the home site development areas within the Pine Ridge Fire Planning Area #1. For guidelines to consider within the timbered areas see Appendices. Generally, maintaining a crown density of less than 40 percent is the best guideline for any timber type where the goal is to minimize the risk of crown fire.

**Note: Slash disposal procedures should be implemented to avoid attracting Ips bark beetle to the project area.

Squaw Creek West Ash, East Ash, Dead Horse

- Accomplish fuel hazard reduction work along primary access roads. Thin to 40 % canopy cover where there are thickets, remove the pine reproduction and lower branches that facilitate fire laddering to the crowns, and cleanup all the dead wood within 200 to 250 of the road.

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- Do hazard reduction work along the forested segments of long driveways to insure safe evacuation and firefighter escape routes.

- Coordinate commercial thinning projects with the Nebraska National Forest to reduce canopy density and reduce bark beetle susceptibility.

- Support and coordinate with the Forest Service proposals to do fuel hazard reduction adjacent private lands.

Chadron Creek

- Accomplish fuel hazard reduction work along Camp Norwesca and Broken Bow access roads. Thin to 40 % canopy cover where there are thickets, remove the pine reproduction and lower branches that facilitate fire laddering to the crowns, and cleanup all the dead wood within 200 to 250 of the road.

- Do hazard reduction work along the forested segments of long driveways to insure safe evacuation and firefighter escape routes.

- Coordinate commercial thinning and prescribed burning projects with the Nebraska National Forest to reduce canopy density and the potential for wildfire momentum and to reduce bark beetle susceptibility.

- Support a Forest Service proposal to do fuel hazard reduction adjacent to the subdivisions and home site areas within Chadron Creek drainage. Subdivision residents should coordinate among themselves to improve defensibility of their whole subdivision. This could include connecting home site defensible space areas and /or fuel hazard reduction and thinning 150 and 200 feet from their buildings.

General

- The Chadron and Crawford VFDs, working with the Nebraska State Forest Service, should expand the State cost share program for thinning, pruning and removal of slash and dead material into an incentive program for hazard reduction and infrastructure improvement. Emphasize clean up of slash material to reduce and manage insect susceptibility.

Appendix B

Highway 20 Mutual Aid Agreement

PINE RIDGE MUTUAL AID ASSOCIATION
INTERLOCAL AGREEMENT

This interlocal agreement is entered into by and between the parties for the following purposes:

To cooperatively provide fire prevention, fire ex:tinguishment, volunteer rescue services, and disaster assistance within the territorial limits of the parties and to any municipality, rural or suburban fire protection district adjoining the territorial limits of the parties from which a request for assistance is received.

To cooperatively promote fire safety and public health.

To cooperatively provide training and other programs for the benefit of volunteer firemen and volunteer rescue providers.

To do all other things permitted by law and not prohibited by this agreement.

The duration of this agreement shall be perpetual until terminated as to all parties by majority vote of the parties at the time of termination, or until such time as only one party remains, whichever occurs first. All property held pursuant to this agreement shall be distributed in equal shares to the then parties upon termination.

A party may withdraw from this agreement by adoption of a resolution for withdrawal thereafter giving all other remaining parties to this agreement written notice of withdrawal at least thirty (30) days and one regular or special meeting prior to the date of withdrawal. No property shall be distributed to a withdrawing party upon withdrawal.

Additional parties may become bound hereby upon proper application, agreement to be bound by the terms of this agreement, and approval by the membership.

Pine Ridge Mutual Aid Association is created by this agreement. The Association shall be the agency of the parties with purpose of administering this agreement.

The Pine Ridge Mutual Aid Association may not acquire, hold, or dispose ofreal or personal property except upon the consent of all members.

No party to this agreement shall be required to render Mutual Aid Assistance, if requested, when in the sole judgment and discretion of the individual or his or her designee in charge of its operations determines that doing so is not feasible or will unduly impair the party's

ability to discharge its responsibilities within its boundaries.

The powers delegated but not relinquished to the Pine Ridge Mutual Aid Association are:

1. To determine upon a general fire protection program for the area served by parties to this agreement.

2. To manage and conduct the business affairs of the Association.

3. To perform generally all acts necessary to carry out the purposes of this Agreement.

In the event one or more powers stated above are not delegable by a party hereto, the exercise of any non-delegable power by the Association shall not be binding upon that party. That party nonetheless delegates such of the above powers as are delegable.

The organization and composition of the agency created hereby is as set forth in the By-laws of the Pine Ridge Mutual Aid Association attached. They are adopted and made a part hereby by this reference as attached and amended from time to time.

This agreement may be amended solely by written agreement of all parties to it. The By-laws of the Pine Ridge Mutual Aid Association may be amended a$ provided therein.

The Pine Ridge Mutual Aid Association shall be financed by dues assessed against the parties to this agreement in such amounts and in such manner as its membership determine up to the amount stated in the By-laws.

This agreement may be signed in counterparts and shall become effective as to the signatories upon execution by at least three-fourths (3/4ths) of the following parties.

This agreement shall for the Ardmore Fire Protection District and the rural fire protection districts of its adjoining counties parties hereto, be deemed an agreement pursuant to **Neb. Rev. Stat.** 35-518, (R.R.1984). Each party to this agreement shall retain control of their personal equipment during activities conducted pursuant to this agreement except for coordination and other overall incident management requirements as may be determined by the Association's Board of Directors.

Each party to this agreement shall be responsible for their own expenses during the conduct of operations pursuant to this agreement or otherwise.

Each party to this agreement may contract with any other party to this agreement for the

provision of fire prevention or fire suppression services on such terms and conditions as they may agree upon regardless of the terms and conditions ofthis agreement.

No party to this agreement shall without its written consent be individually or severally liable for debts incurred or the performance of agreements or contracts entered into in the name of the Association.

In witness of this agreement, and in consideration of the mutual covenants set forth herein, the parties pledge their assistance to each other in the use of fire equipment, emergency medical equipment, and other equipment and personnel necessary for the discharge of this agreement.

ALLIANCE RURAL FIRE PROTECTION DISTRICT

BY: _____
President

CITY OF ALLIANCE

BY: _____
Mayor

ARDMORE RURAL FIRE DISTRICT

BY: _____
Mayor

CHADRON RURAL FIRE PROTECTION DISTRICT

BY: _____
President

NORTH SIOUX RURAL FIRE PROTECTION DISTRICT

BY: _____
President

CITY OF CHADRON

BY: _____
Mayor

CRAWFORD RURAL FIRE PROTECTION DISTRICT

CITY OF CRAWFORD

BY: _____
Mayor

GORDON RURAL FIRE PROTECTION DISTRICT

BY: _____
President, Board of Directors

CITY OF GORDON

BY: _____
President, Board of Directors

HARRISON RURAL FIRE PROTECTION DISTRICT

BY: _____
President

VILLAGE OF HARRISON

BY: _____
Chairman, Board of Trustees

HAY SPRINGS RURAL FIRE PROTECTION DISTRICT

BY: _____
President

VILLAGE OF HAY SPRINGS

VILLAGE OF MERRIMAN

BY: _____
Chairman, Board of Trustees

VILLAGE OF HEMINGFORD

BY: _____
Chairman, Board of Trustees

RUSHVILLE RURAL FIRE PROTECTION DISTRICT

BY: _____
President

CITY OF RUSHVILLE

BY: _____
Mayor

Appendix C

Region 23 Multi-jurisdictional Hazard Mitigation Plan

January 2010

Wildfire Hazard Section

JEO

Engineering Architecture Surveying Planning

Region 23
Emergency Management
Multi-Jurisdictional Hazard Mitigation Plan
January 2010

JEO Consulting Group, Inc.
Lalit Jha, PE/CFM | 650 J Street, Suite 215 | Lincoln, Nebraska 68508
P: 402.435.3080 | F: 402.435.4110 | ljha@jeo.com

Lightning starts approximately 10,000 ***forest fires*** *each year, yet four out of every five*
forest fires are started by humans.

WILDFIRES

Hazard Background

Wildfires, also known as brushfires, forest fires, or wildland fires, are any uncontrolled fire that occurs in the countryside or wildland. Wildland areas may include, but are not limited to, grasslands, forests, woodlands, agricultural fields, and other vegetated areas. Wildfires differs from other fires by their extensive size, the speed at which they can spread out from the original source, their ability to change direction unexpectedly, and to jump gaps, such as roads, rivers and fire breaks. While some wildfires burn in remote forested regions, they can cause extensive destruction of homes and other property located in the wildland-urban interface, the zone of transition between developed areas and undeveloped wilderness.

Wildfires are a growing natural hazard in most regions of the United States, posing a threat to life and property, particularly where native ecosystems meet urban developed areas. Although fire is a natural and often beneficial process, fire suppression can lead to more severe fires due to the buildup of vegetation, which creates more fuel and increases the intensity and devastation of future fires.

According to FEMA, periods of drought and dry conditions throughout the year greatly increase the potential for wildland fires and contribute to extreme wildfires. During a severe drought, large wildfires are common with windy days and steep slopes, which can cause wildfires to spread rapidly and become out of control in a very short time period. Figure 17 below displays wildfires greater than 100 acres in Nebraska from 1980 to 2007.

Annually throughout the United States wildfires on average consume 4.3 million acres, with the federal government spending approximately $1 billion per year on fire suppression. Based on the Nebraska Forest Service's 'Wildfire by Cause' report, the most common causes of wildfires include lightning, debris burning, equipment use, and arson. Figures 18 and 19 illustrate the number of wildfires and acres burned by cause in Nebraska from 2004 to 2008.

FIGURE 17: WILDFIRES GREATER THAN 100 ACRES IN NEBRASKA FROM 1980 – 2007

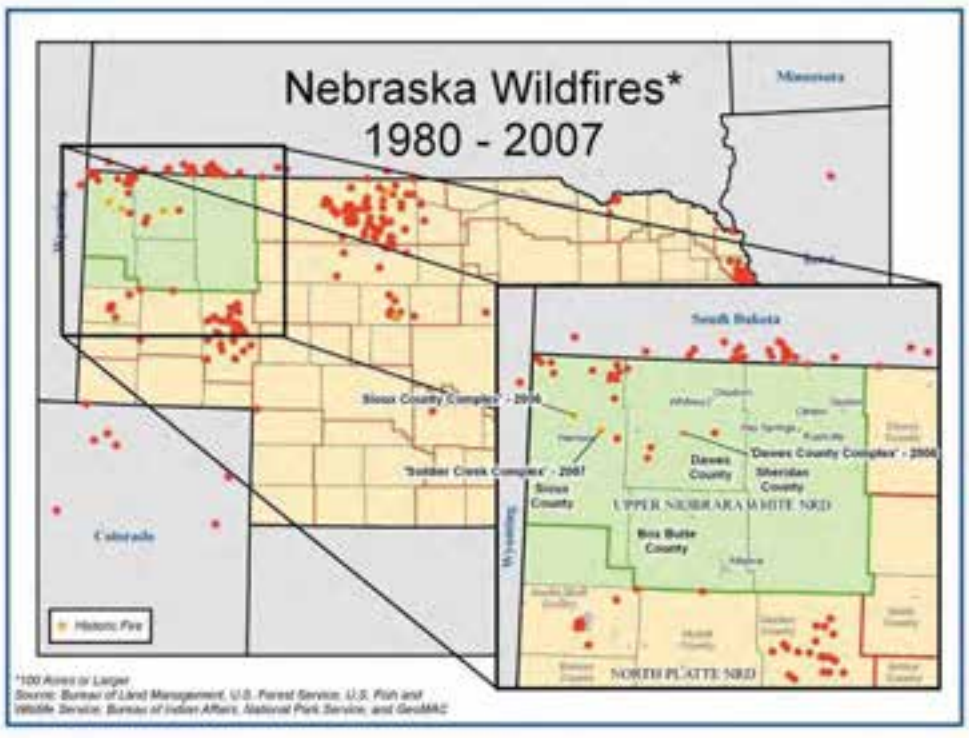
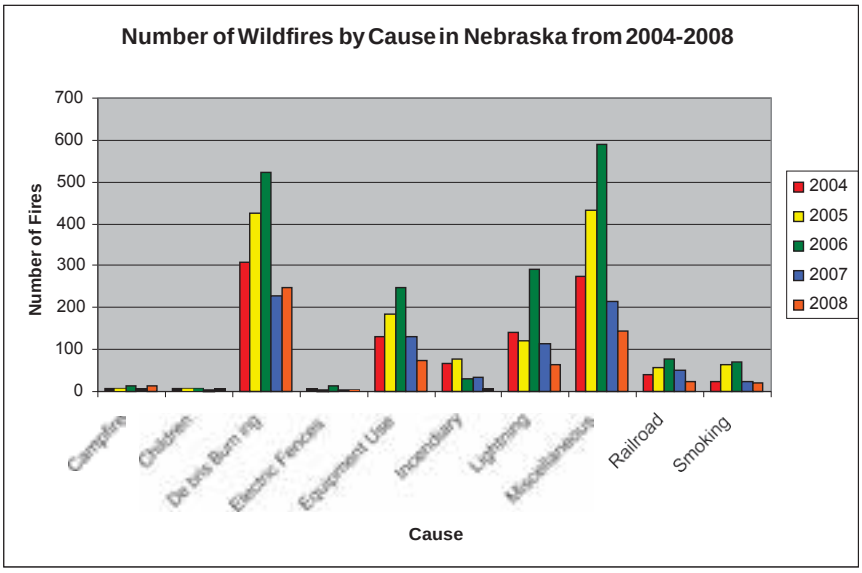
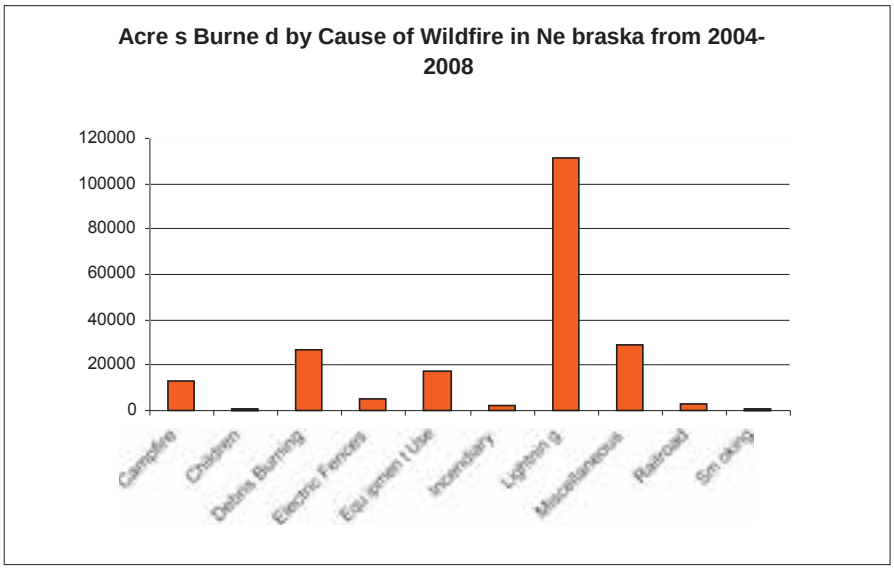


FIGURE 18: NUMBER OF WILDFIRES BY CAUSE IN NEBRASKA FROM 2004 – 2008



Source: Nebraska Forest Service

FIGURE 19: ACRES BURNED BY CAUSE IN NEBRASKA FROM 2004 – 2008



Source: Nebraska Forest Service

Wildfires are characterized in terms of their physical properties including topography, weather, and fuels. Wildfire behavior is often complex and variably dependent on factors such as fuel type, moisture content in the fuel, humidity, wind speed, topography, geographic location, ambient temperature, the effect of weather on the fire, and the cause of ignition. Fuel is the only physical property humans can control and is the target of most mitigation efforts.

Wildfires can cause extensive damage, both to property and human life. The damages caused by wildfires extend past the loss of building stock, recreation areas, timber, forage, wildlife habitat, and scenic views. In addition, the secondary effects of wildfires, including erosion, landslides, introduction of invasive species, and changes in water quality, all increase due to the exposure of bare ground and loss of vegetative cover following a wildfire, are often more disastrous than the fire itself.

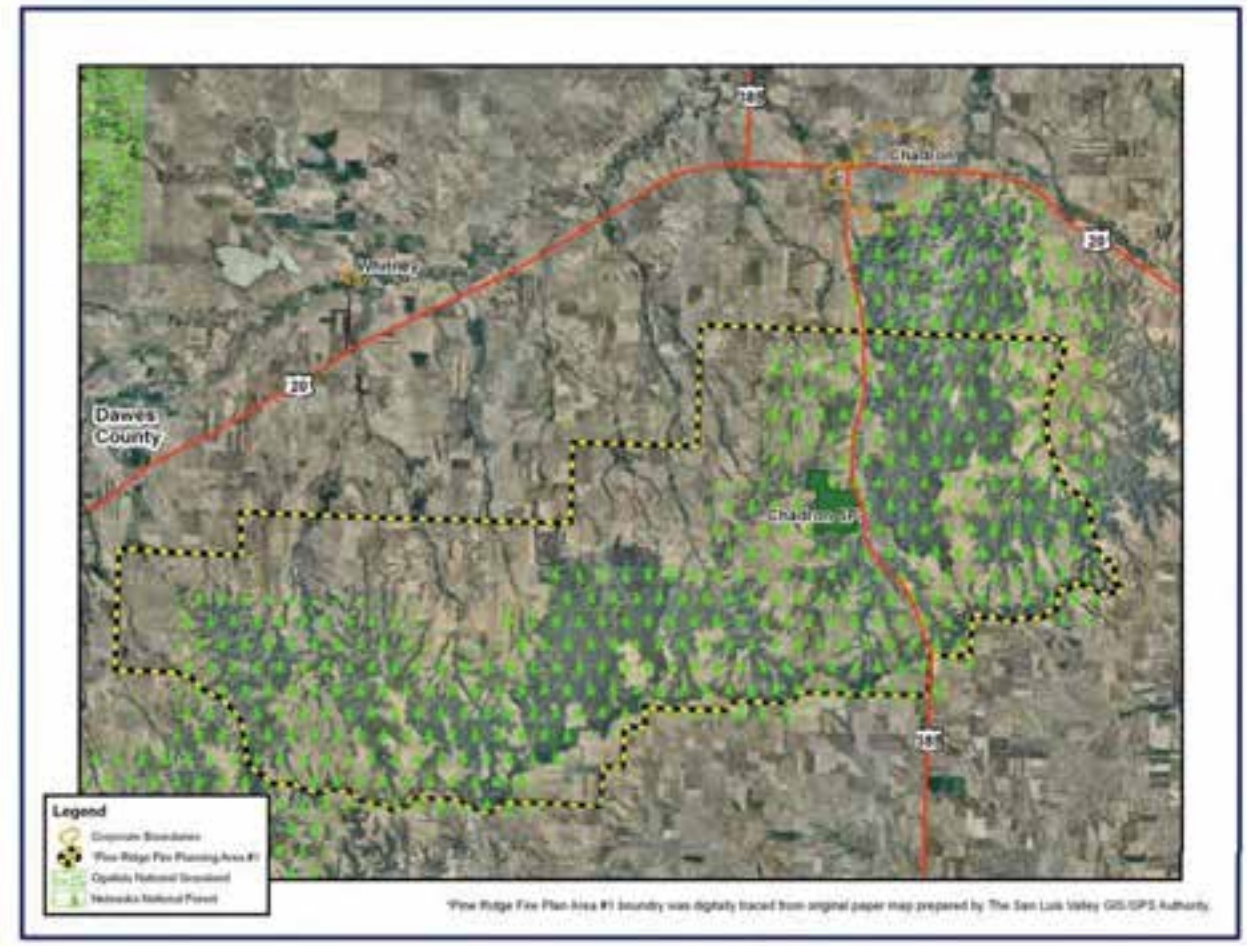
The state of Nebraska, especially the western portion, is vulnerable to wildfires. While prairie and grassland fires are often associated with the Great Plains region of the state, large timber fires are not uncommon in the Pine Ridge, Niobrara Valley, and Missouri River bluff areas, the national forests, and any other forested areas located throughout the state. In 2006, ten homes were consumed during the 'Big Rock Fire' in Valentine, NE, which was Nebraska's first documented loss of homes due to wildfire. The same year, Nebraska received three (the only three to date) presidential declarations of disaster for wildfire.

In recent decades, as the population of the United States has decentralized and residents have moved farther away from the center of villages and cities, the area known as the wildland urban interface (WUI) has developed significantly, in both terms of population and building stock. The WUI is defined as the zone of transition between developed areas and undeveloped wilderness, where structures and other human development meet wildland. The expansion of the WUI increases the likelihood that wildfires will threaten people and homes, making it the focus of the majority of wildfire mitigation efforts.

2003 Fire and Fuel Management Plan – Pine Ridge Fire Planning Area #1

In 2003 a Fire and Fuel Management Plan was completed to effectively manage fire and hazardous fuels within the forested Pine Ridge Fire Planning Area #1 and toward a common vision shared by the Chadron and Crawford Volunteer Fire Departments, Counties, state and federal agencies, and private property owners. The Chadron Creek, Squaw Creek, West Ash, East Ash, and Dead Horse watersheds make up the bulk of the planningarea which is seen in Figure 20 below.

FIGURE 20: PINE RIDGE FIRE PLANNING AREA ONE



The goals of the plan are as follows:

1. Protect private property investments, developments and values.
2. Protect ecological values, including vegetation, water quality and yield, wildlife, and air resources and social values including public safety, and historic values.
3. Reduce wildland fire hazards and restore the functions of the ecological communities.
4. Reduce risk from wildfire ignitions.

Historically, the annual wildfire occurrence in the Pine Ridge Fire Planning Area #1 is generally low to moderate. According to the Fire and Fuel Management Plan, there is an average of 20 to 25 wildfires per year. Every one to five years the Pine Ridge are experiences two or more fires that are 500 to over 1000 acres in size, high in intensity, and pose a major threat to rural homes and structures and to watersheds.

The primary fuels within the county are grassland and forested land. Where grassland intermingles or is adjacent with dense stands of ponderosa pine a severe fire hazard exists. The primary concerns within the planning area, where most of the private structures are located, are with the ponderosa pine fuel continuity and the grassland fuel rate of spread. In the Pine Ridge Fire Planning Area #1 the wildland urban interface is comprise of six rural structural home developments and over two hundred independent ranch and/or rural homes and associated utility buildings within or near the forested areas. The Fire and Fuel Management Plan should be consulted for a site-specific fire hazard assessment of each wildland structure group or urban interface. The plan identified the following information or safeguards, where appropriate:

- ξ Community fuel treatment standards with regard to the areas between building sites.
- ξ Information to every lot and homebuyer with regard to 'FireWise' building standards and defensible space.
- ξ At least two access routes for ingress and egress to the subdivision.
- ξ A certain road construction and maintenance standard that accommodates fire suppression equipment
- ξ Designated safety zones that are maintained in case of wildfire.
- ξ GPS locations for new building sites.
- ξ Designation of locations or facilities specific for fire suppression water needs

Historical Occurrences

The NCDC reported one wildfire event for the entire jurisdiction of the Region 23 plan area from January 1950 to July 31, 2008. The following event recorded no monetary damages.

③ On August 19, 1998 a fire, which was caused by lightning, burned ten acres of grass and small timber before being controlled by firefighters. (Chadron)

The following are summaries from reports found in the Northern Great Plains Joint Information Center and the Rapid City Journal.com (August 2007), NEMA Annual Report (2006), InciWeb, and Nebraska Forest Service.

③ On July 26th, 2006 a lightning storm moved across the region starting multiple wildfires. Three of the fires grew quickly and eventually threatened the City of Chadron and Chadron State College and forced the evacuation of parts of Chadron. The three large fires, named Dead Horse, Spotted Tail, and Robert's Tract, were merged under one management structure and became known as the 'Dawes County Complex'. The fire was eventually brought under control after consuming 27,954 acres.

③ A second complex of fires was started from the same lighting storm. The Thayer, Rudloff, and Oldaker fires, which were burning north of Harrison, became known collectively as the 'Sioux County Complex'. The Sioux County Complex burned 40,211 acres before being put out. The two complexes were responsible for the destruction of four homes, one commercial property, and several outbuildings.

③ On August 12th, 2007 lightning caused fires 12 miles west of Crawford, NE. The incident became known as the Soldier Creek Complex and was made up of the Boot, Fence Post, Rim Rock, and North Fork fires. Nearly 200 personnel assisted by aircraft, fire engines, and a dozer were required to fight the fire which burned over 3,150 acres before being contained.

The following wildfire events were reported by participants at the public meetings.

- ③ In 1973 a wild fire caused extensive damage to the National Forest ground and fences near the Chadron State Park in the Dead Horse area. (Dawes County)
- ③ In 1989 Fort Robinson/ Wood Rescue fires caused extensive damage to the National Forest and Soldier Creek areas. (Dawes County)
- ③ In 1989 a fire at Fort Robinson State Park, three miles west of town, prompted evacuations. Volunteer fire departments pulled employees away from businesses and taxed local fire department budget. FEMA was involved. (Crawford)
- ③ In the summer of 2006, prolonged drought and lightning storms combined to ignite numerous range fires in the northern portion of the County. The fires consumed thousands of acres of grasslands and timber. (Sheridan County)
- ③ In 2006 lightning caused fires that destroyed thousands of acres of trees, fences, windmills, and three homes in Chadron. Livestock feed was lost and there was a severe economic impact on the rural areas affected. (Dawes County)
- ③ In 2006, a 35,000 acre wildfire burned within one mile of the Village. Fire guards were built and evacuation was anticipated but never initiated. (Harrison)
- ③ In 2006 a wildfire approached campus and burned from the south up to the practice fields and parking lots. Damage was limited to grounds and burned 350 tons of wood chips. (Chadron State College)
- ③ In 2006, a wildfire damaged property and public facilities in the City, Power outages occurred and evacuations were mandated. The college and city water plant were threatened.

TABLE 38: WILDFIRES COMPOSITE HAZARD IDENTIFICATION

HAZARD TYPE Wildfires	PREVIOUS OCCURRENCE? Yes/No	LIKELY TO EXPERIENCE? Yes/No	PROBABILITY Highly Likely/ Likely/Possible/Unlikely	EXTENT Catastrophic/Severe/Limited/None
Box Butte County	Yes	Yes	Possible	Limited
Chadron	Yes	Yes	Highly Likely	Catastrophic
Chadron State College	Yes	Yes	Possible	Limited
Crawford	Yes	Yes	Highly Likely	Catastrophic
Dawes County	Yes	Yes	Highly Likely	Severe
Gordon	Yes	Yes	Highly Likely	Catastrophic
Harrison	Yes	Yes	Highly Likely	Catastrophic
Hay Springs	No	Yes	Possible	None
Hemingford	Yes	Yes	Highly Likely	Catastrophic
Region 23 EM	Yes	Yes	Highly Likely	Catastrophic
Rushville	No	Yes	Likely	None
Sheridan County	Yes	Yes	Highly Likely	Severe
Sioux County	Yes	Yes	Highly Likely	Catastrophic
UNWNRD	Yes	Yes	Highly Likely	Severe

Vulnerability Assessment

Based on Table 38 above and research of historical occurrences, wildfires have previously occurred in the Region 23 plan area and the probability of a wildfire occurring again is 'likely', with between a ten to 100 percent chance in the next year or at least once in the next ten years. The extent of damage from a wildfire would be 'limited' region-wide, causing zero to 25 percent damage throughout the planning area due to the highly rural nature of the landscape. On the local scale, wildfires can cause 'severe' damage, affecting 25 to 50 percent of the community. Figure 21 below displays the hazard boundaries for wildfires that have been determined by locations with higher risk fuel load, such as dense vegetation and heavily wooded areas.

The wildfire vulnerability map (Figures 21A and 21B) for Region 23 was created using a weighted overlay analysis technique in ArcGIS. Land use data, slope, and aspect (direction of slope) were overlaid to determine the most vulnerable areas. For example, areas that were determined to be coniferous forest on a steep slope that was facing to the south were classified as vulnerable areas for wildfires to occur. This vulnerability analysis did not take into account for the human factors that contribute to the occurrence of wildfires, such as unmaintained camp fires and discarded cigarettes. This analysis mainly determines if the land conditions are favorable for the occurrence of wildfires. This map should be used a reference for planning purposes only, as conditions that contribute to the cause of wildfires can change on an almost daily basis.

Potential Losses

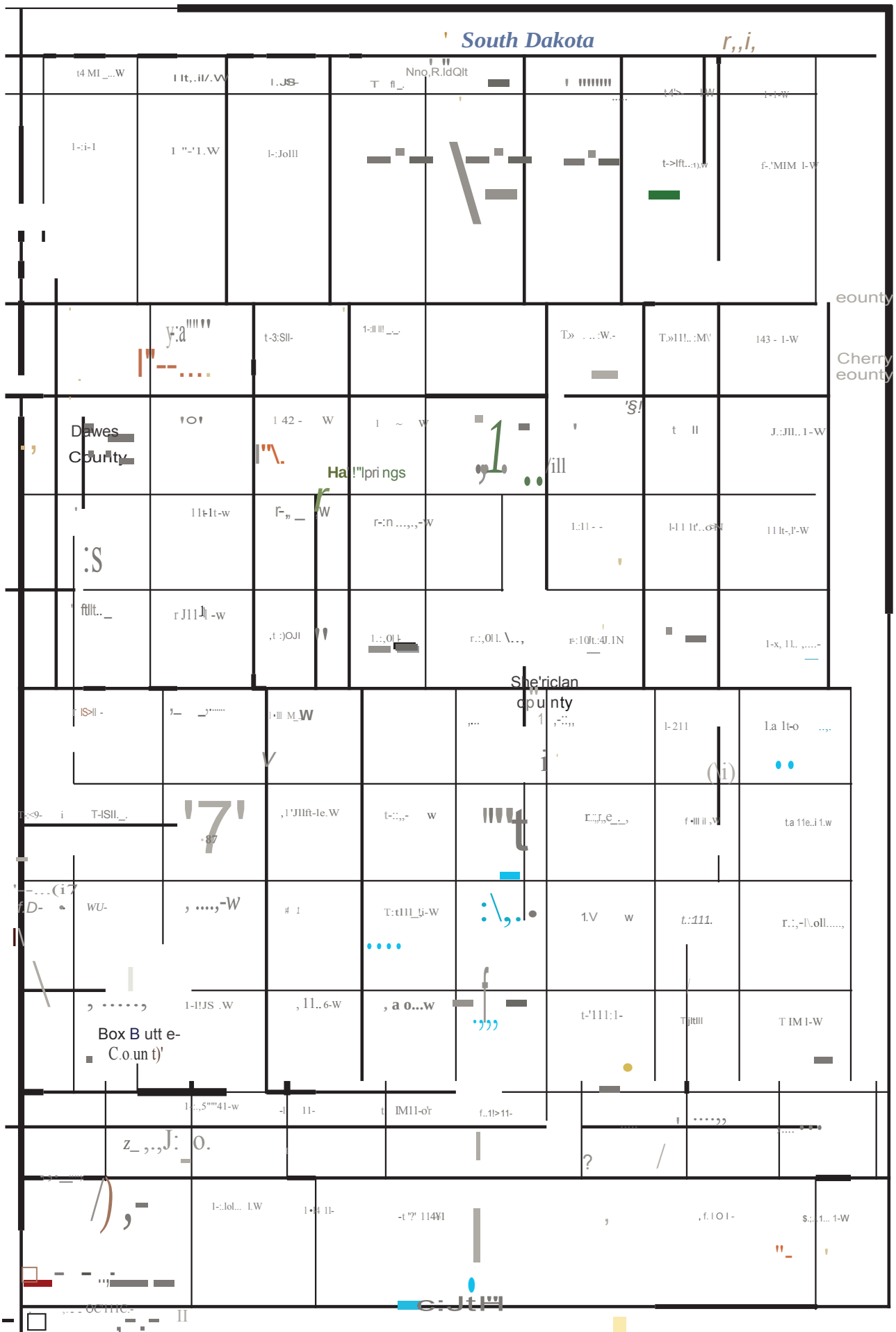
Wildfires vary greatly depending on the location and severity of the event. Wildfires in the Sandhills and Pine Ridge can cause extensive damage to both urban and rural building stock and properties including critical facilities and infrastructure, as well as crop and rangeland which support the local industry and economy. Wildfires can pose a significant threat to human life. Recreation areas, timber and forage land, wildlife habitat, and scenic views can also be threatened by wildfires.

The secondary effects of wildfires, including erosion, landslides, introduction of invasive species, and changes in water quality, all increase due to the exposure of bare ground and loss of vegetative cover following a wildfire. There are no monetary losses recorded in the historical occurrences, however potential losses could reach into the millions of dollars depending on the location and severity of the event. Due to a data gap, an estimated dollar value for potential losses from wildfires was not calculated, but may be considered for the five year plan update.

In addition, by directing the location of structures in relation to topography and fuels present as well as construction methods and materials, communities can guide growth and development to mitigate potential losses from wildfires.

Future Vulnerability and Losses

Any future development will be as vulnerable to losses from wildfires as is existing development, in particular development into the wildland urban interface.


South Dakota
eounty
Cherry
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Garden
County

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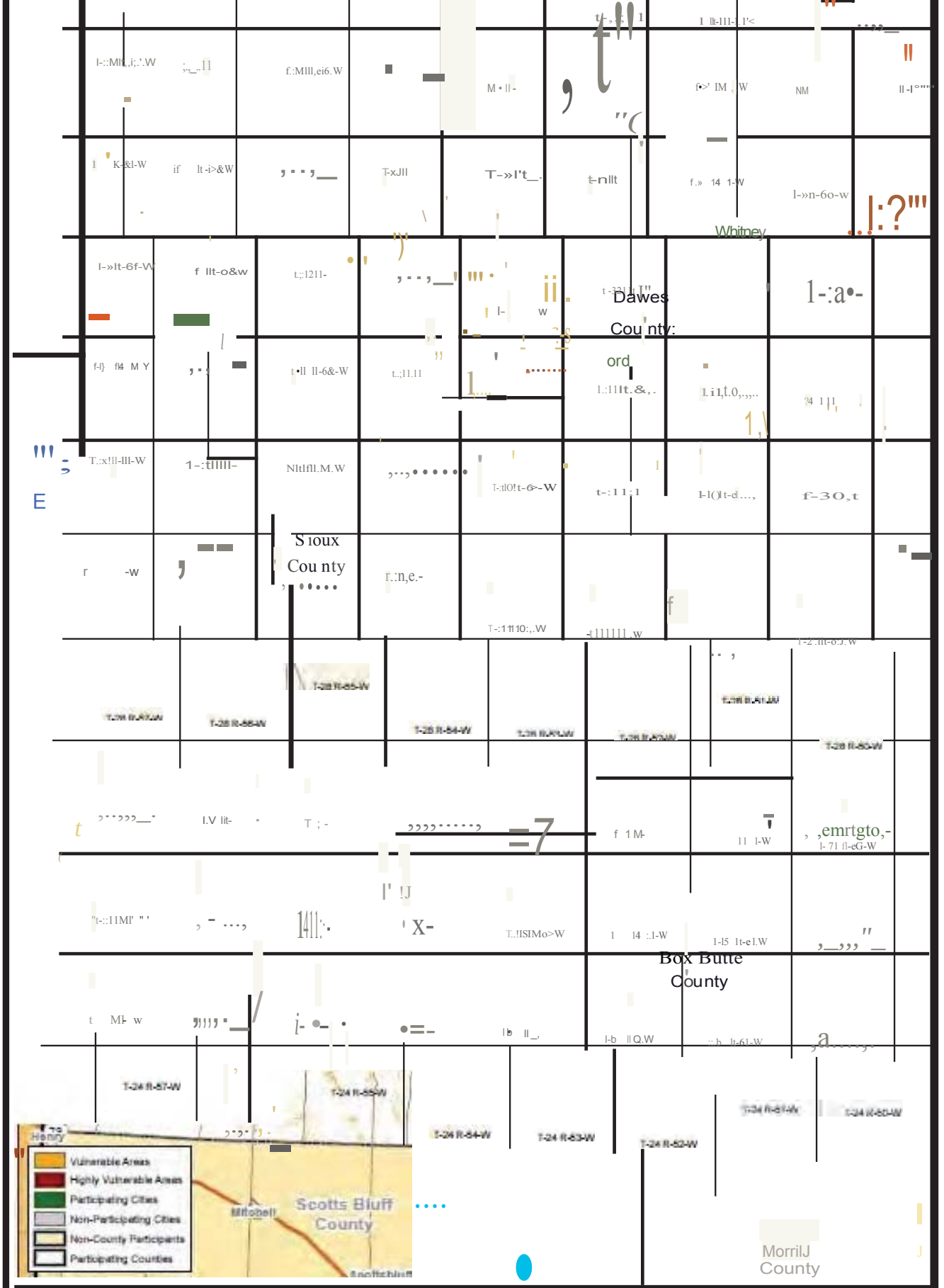


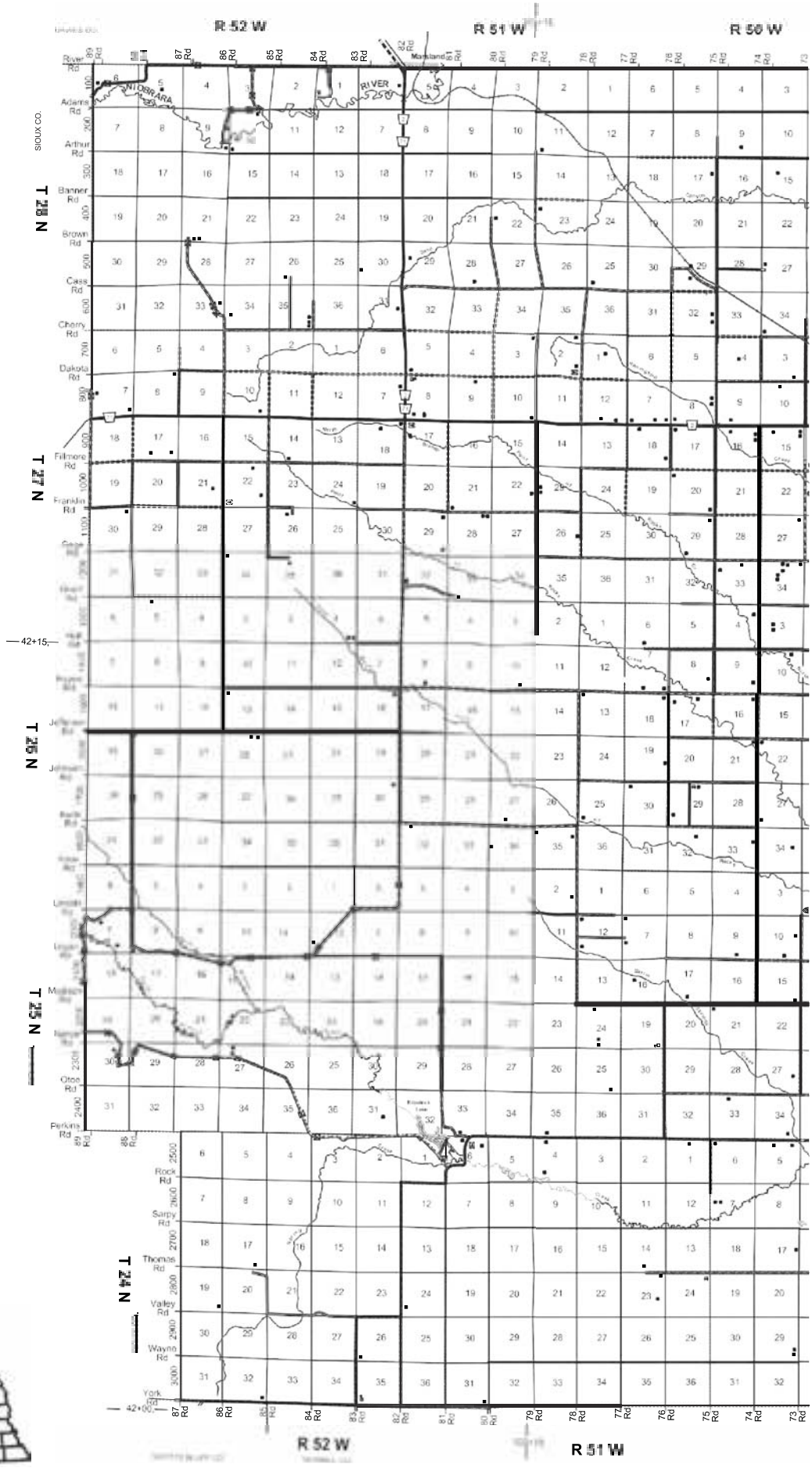
Figure 21a: Region 23 Emergency Management Multi-Jurisdictional Wildfire Vulnerability Areas

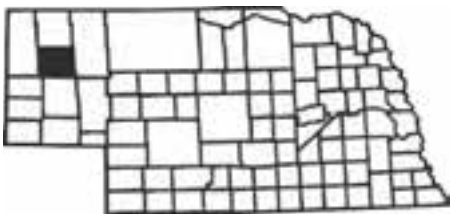
Appendix D

CountyWide Atlas Maps

Note: The maps in Appendix D are only a portion of the CountyWide directories publication.
For more information regarding this publication visit: www.CountryWideDirectories.com

Box Butte County





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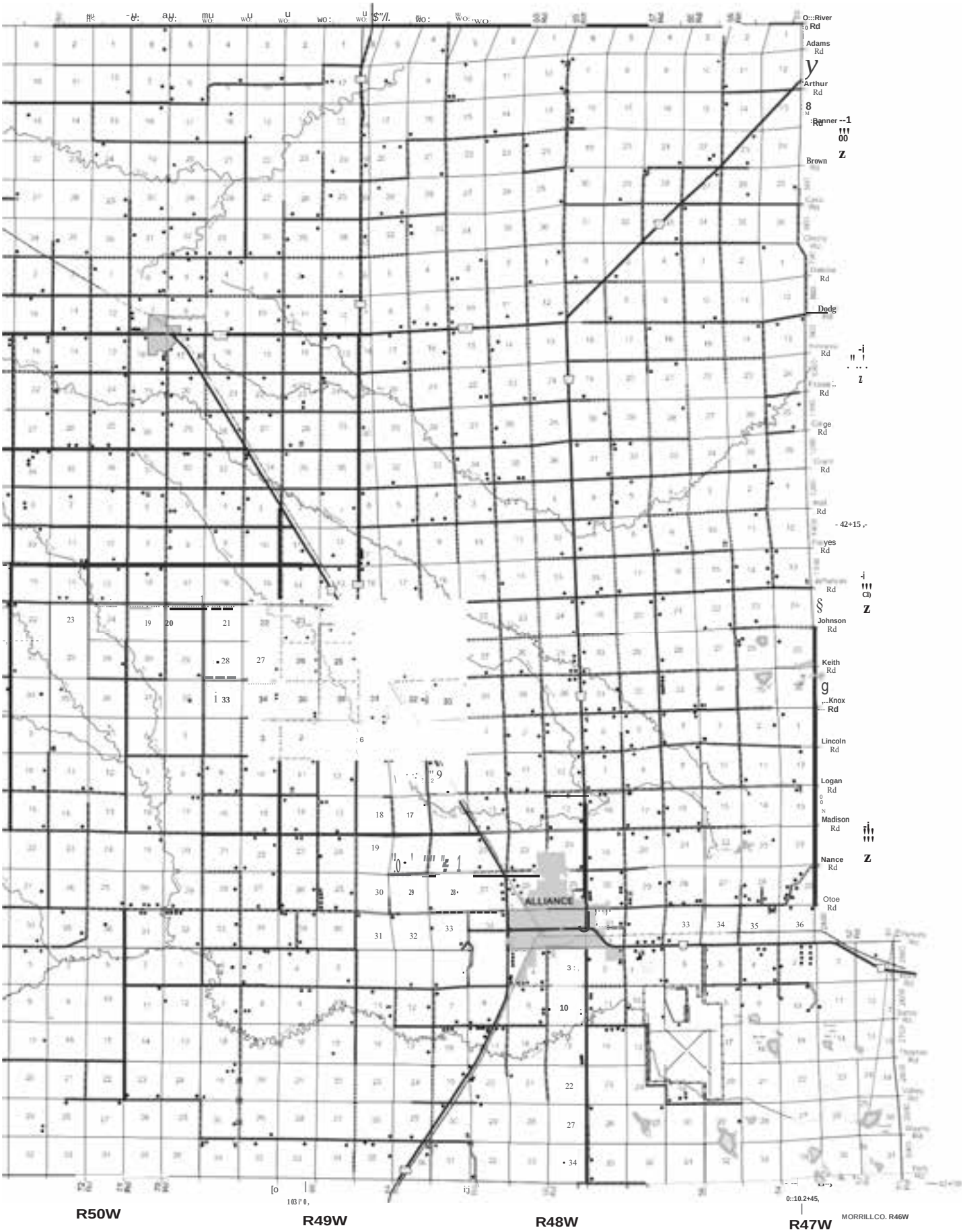
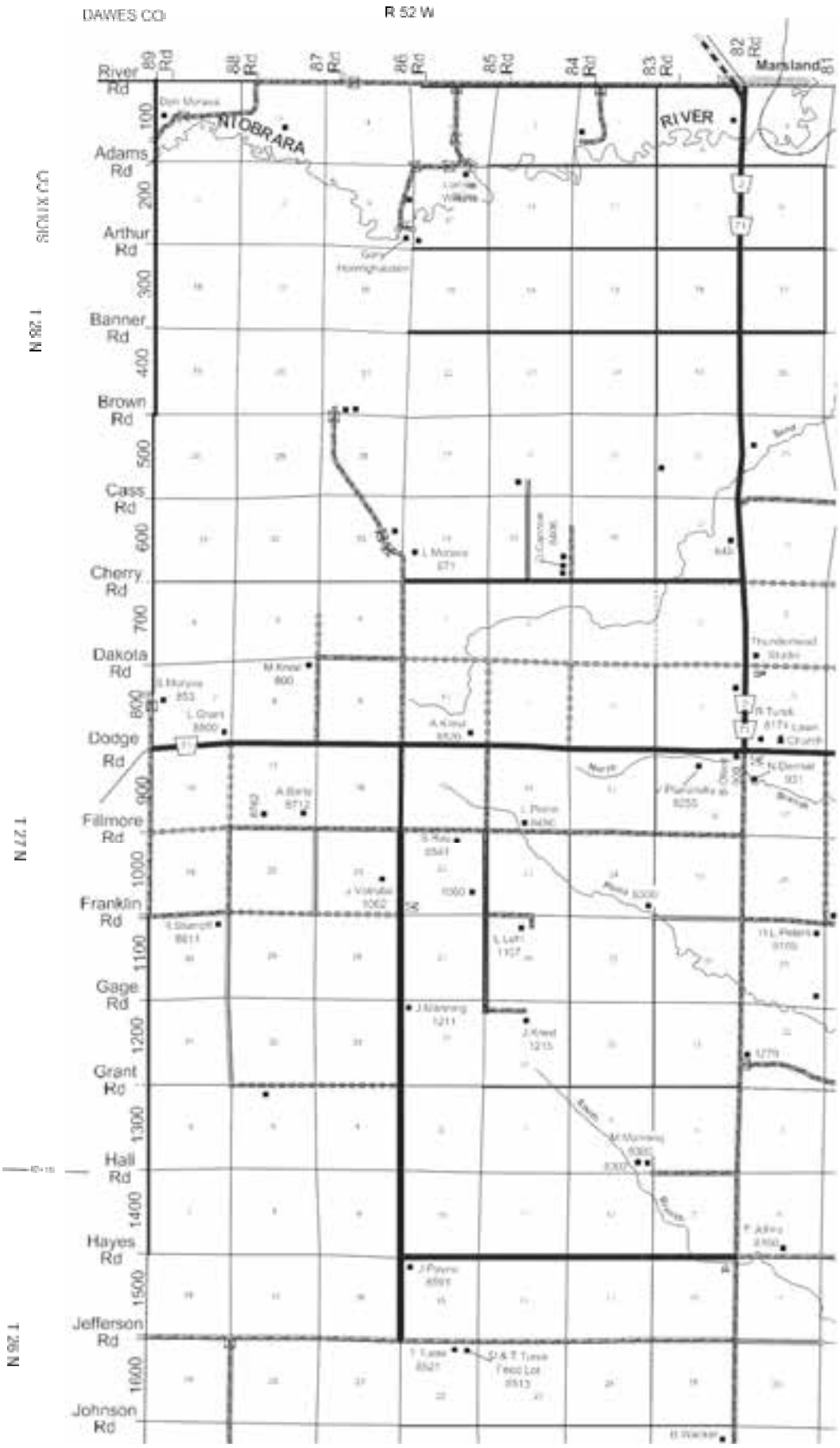

R50W
R49W
R48W
R47W
Rd
Adams
Arthur
Brown
Dodg
Johnson
Keith
Knox
Lincoln
Logan
Madison
Nance
Otoe
ALLIANCE
MORRILL CO. R46W

NORTHWEST Box Butte County

INSET A
1. B.Engel - 7071
2. H.Frahm - 7060
3. W.Knote - 7072
4. 7080
5. 7092
6. D.Minich - 851
7. C.&S.Minich - 85



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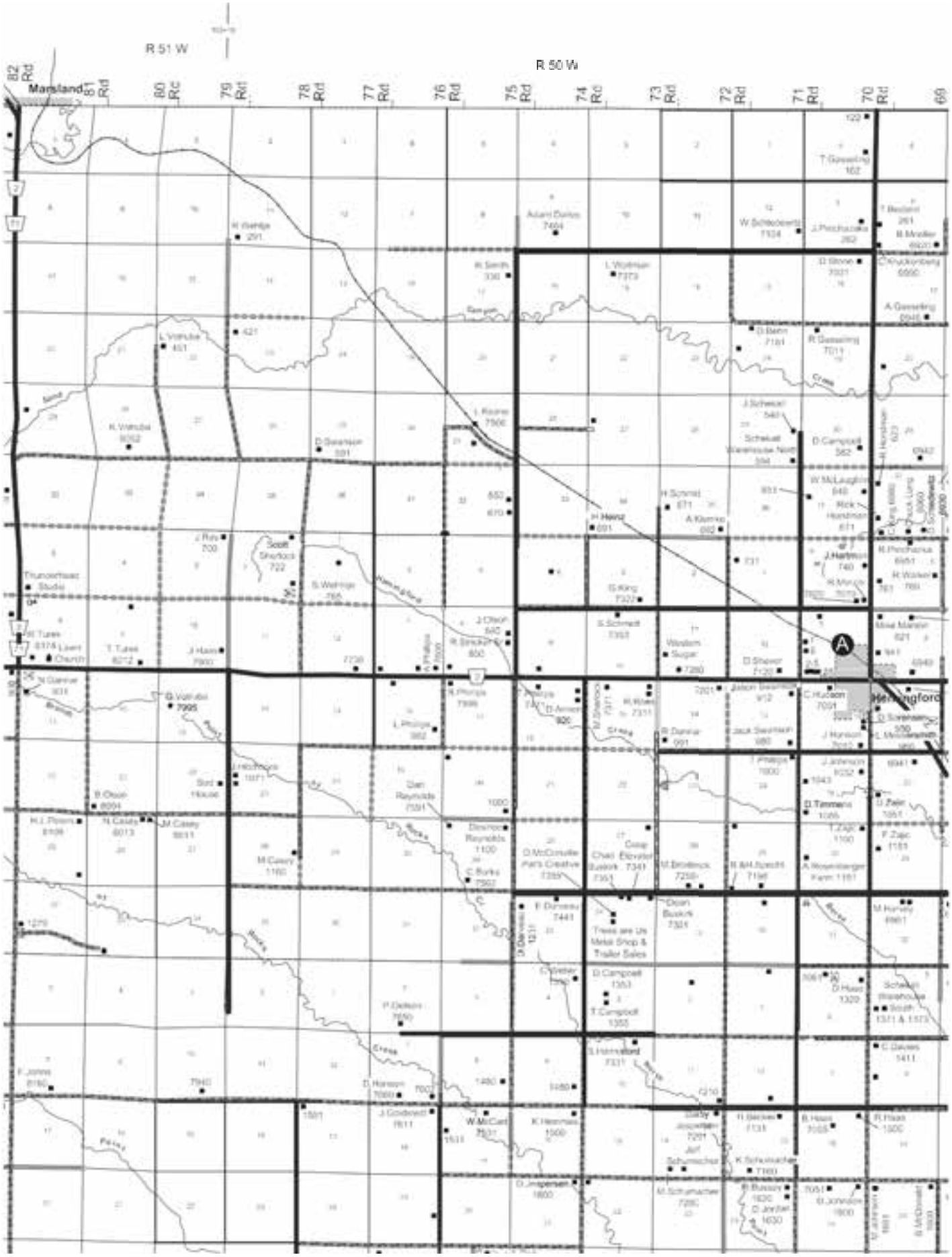

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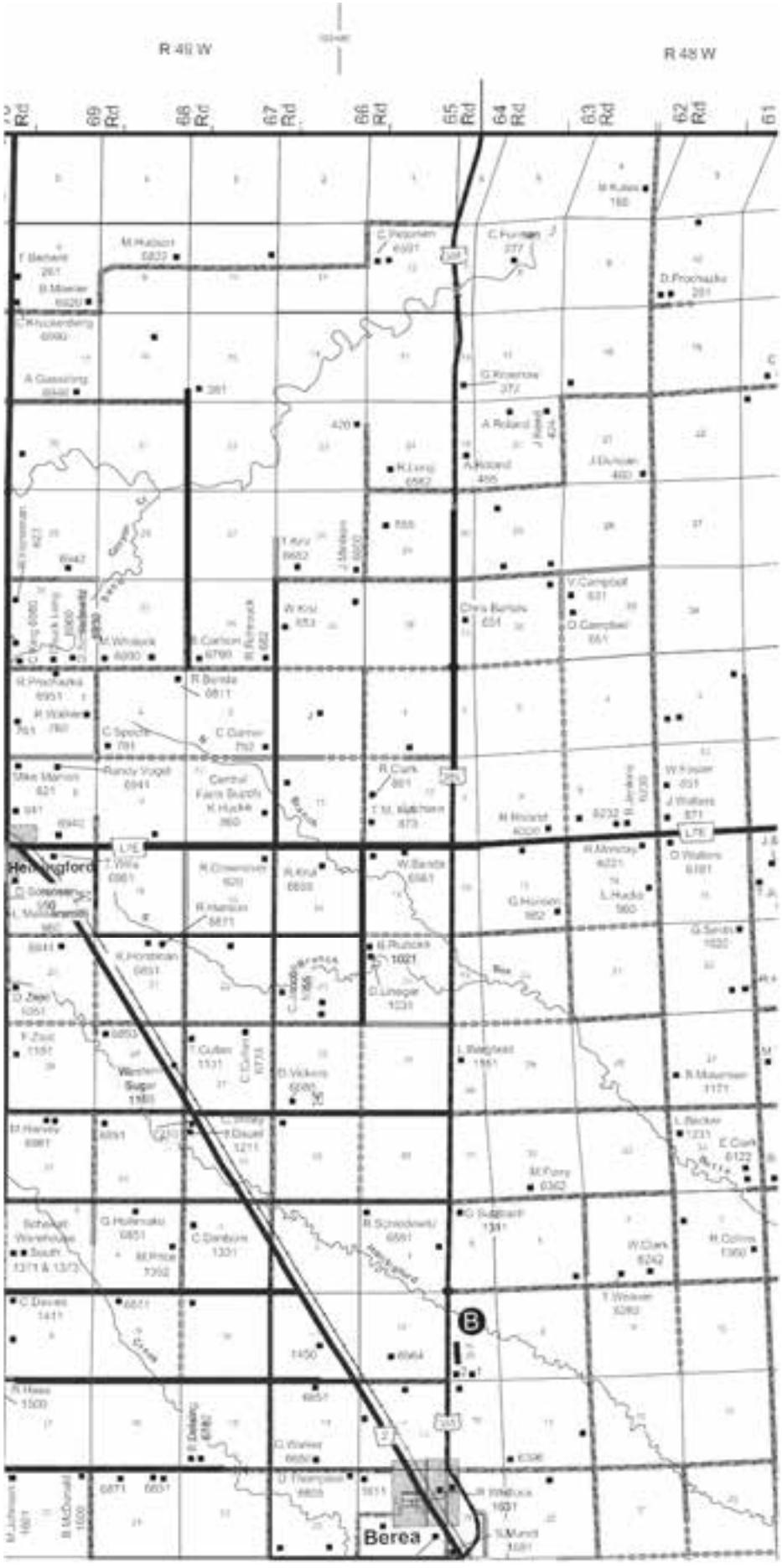
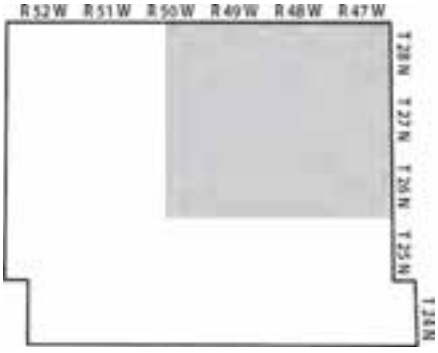
NORTHEAST Box Butte County

INSET B
1. T.Kreba - 6460
2. I.Quick - 6490
3. R.Krebs - 1461
4. M.Krebs - 1471
5. J.Eggers - 1473
6. R.Quick - 1481
7. J.Edwards - 1481





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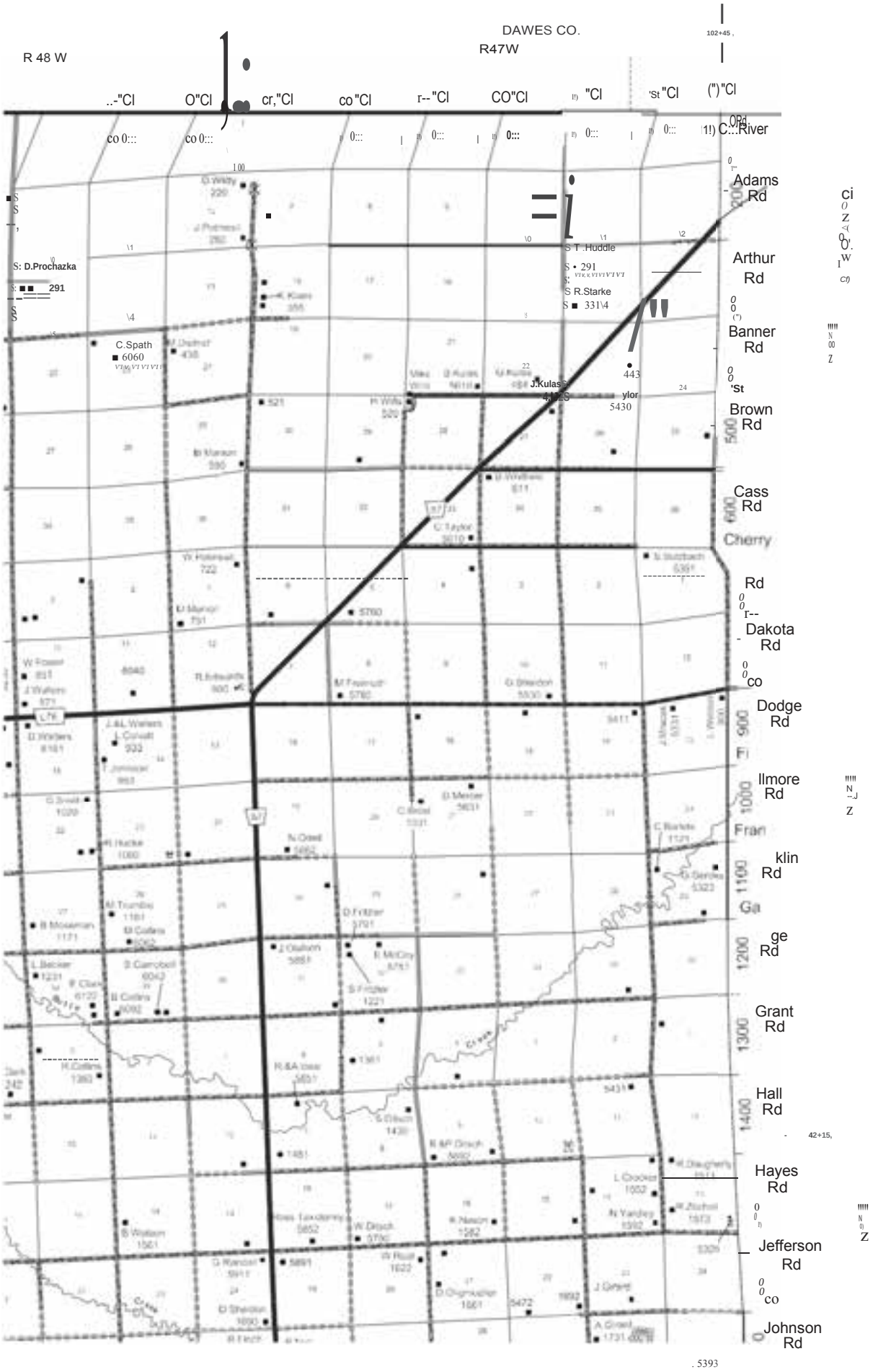

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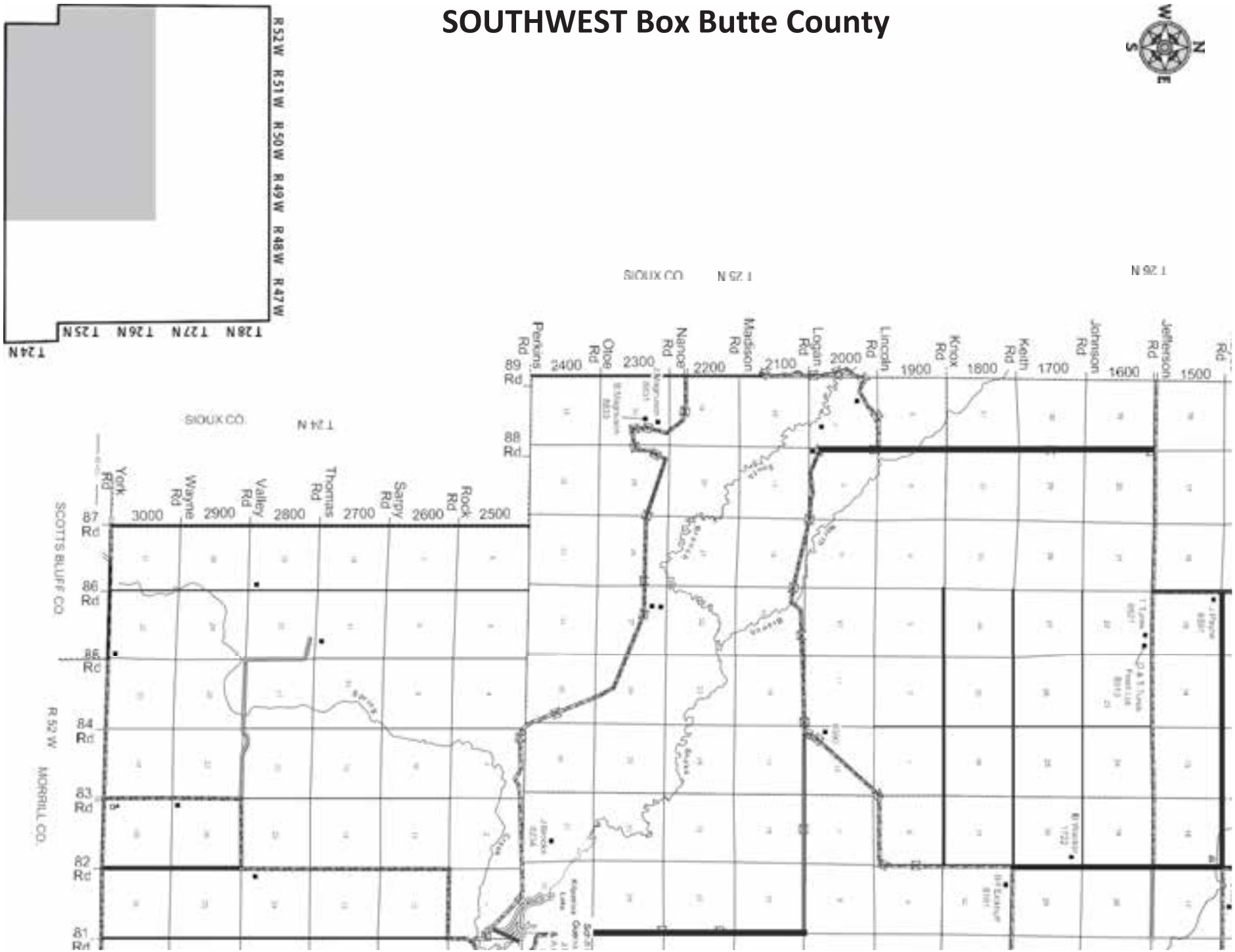
SOUTHWEST Box Butte County



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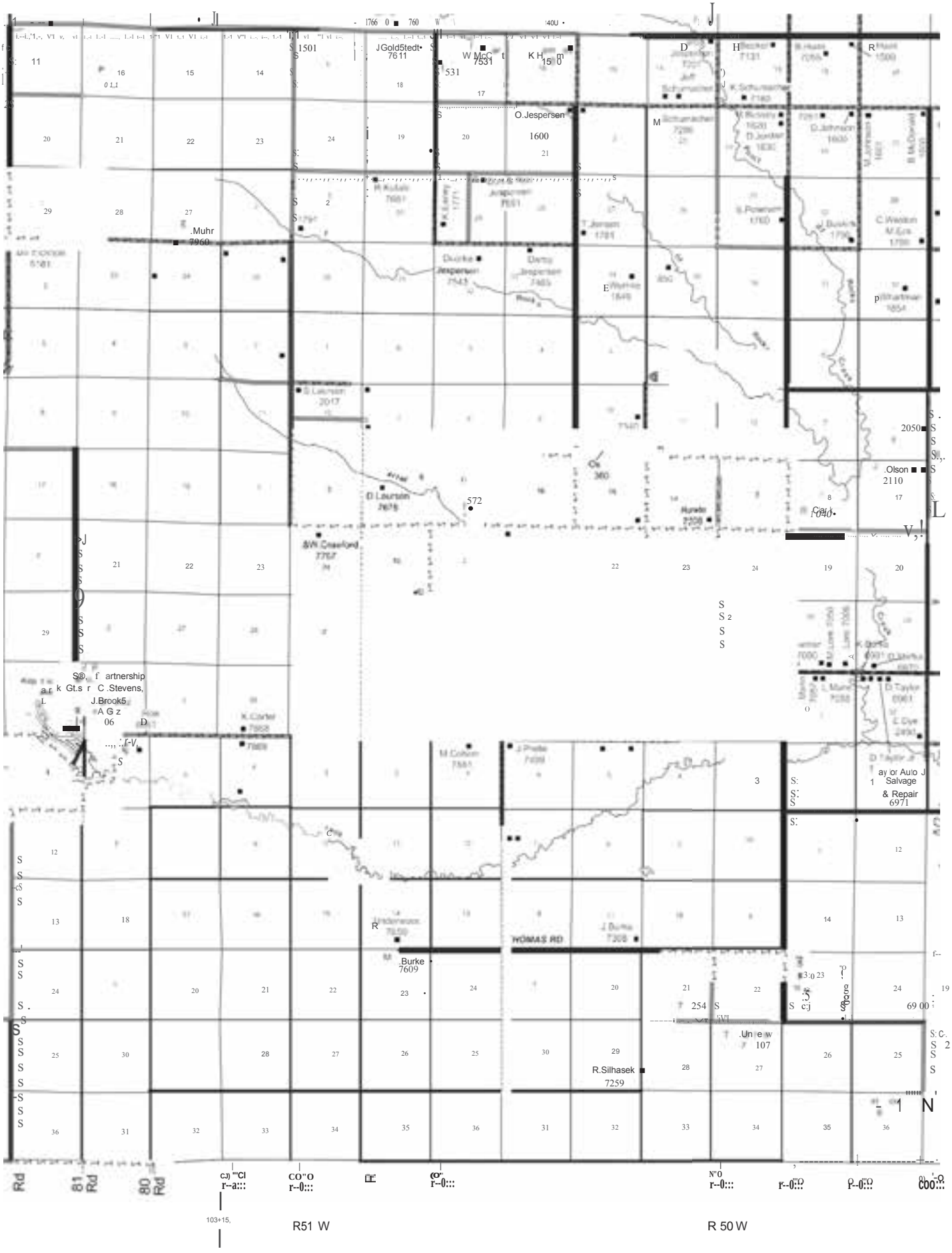

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SOUTHEAST Box Butte County

INSET C
1. M.Wooster - 2340
2. G.Hellscher - 6550
3. Dist #39 School
4. D.Chipperfield - 237
5. C.Sample - 2363
6. A.Munro - 2361

INSET D
1. J.Schnell - 234

INSET E
1. R.Nelson - 2310
2. Animal Center - 235
3. J.Furman - 2360
4. M.Essay- 1806
5. L.Wacker - 2371
6. 2363
7. D.Hill - 2361

INSET F
1. W.Seidler - 546
2. D.Seidler - 2351

INSET G
1. R.Bowers - 5361
2. A.Henderson & J.Cameron - 5371
3. J.Cox - 5365
4. S.Fielding - 537
5. T.McConville - 5360
6. F.Huddle & A.Loomis - 535

INSET H
1. T.Romick - 2492
2. 5753
3. 5762
4. R.Morad - 244

INSET I
1. H.Tagart - 2590
2. K.Schott - 6060
3. D.Miller - 6070
4. A.Gonzalez - 6050
5. V.Blakeman - 609
6. B.Grant - 2561
7. R.Gomez - 2571
8. C.Barthel - 2541
9. G.Leeper - 2531
10. S.Waldron - 2511

INSET J
1. H.Schnell - 5781
2. D.Skrdlant - 573
3. T.Schnell - 2510

INSET K
1. J.Sampson - 5321
EAST POINT ACRES
2. R.Decker - 2505
3. B.Stephenson - 251
4. R.Nollette - 2515
5. T.Kees - 2523
6. J.Stegall - 2525
7. 2531

INSET L
1. P.Przymus - 2652
2. R.Stegeman - 2662
3. 2692
4. M.Johnson - 2671
5. C.Krantz - 2641

INSET M
1. 6221 Sarpy
2. R.Bakkehaug - 617
3. 6161 (#1) Sarpy
4. M.Stanton - 6151
5. 2710
6. B.Fowler - 2720
7. J.Meng - 6111
8. F.West - 6109

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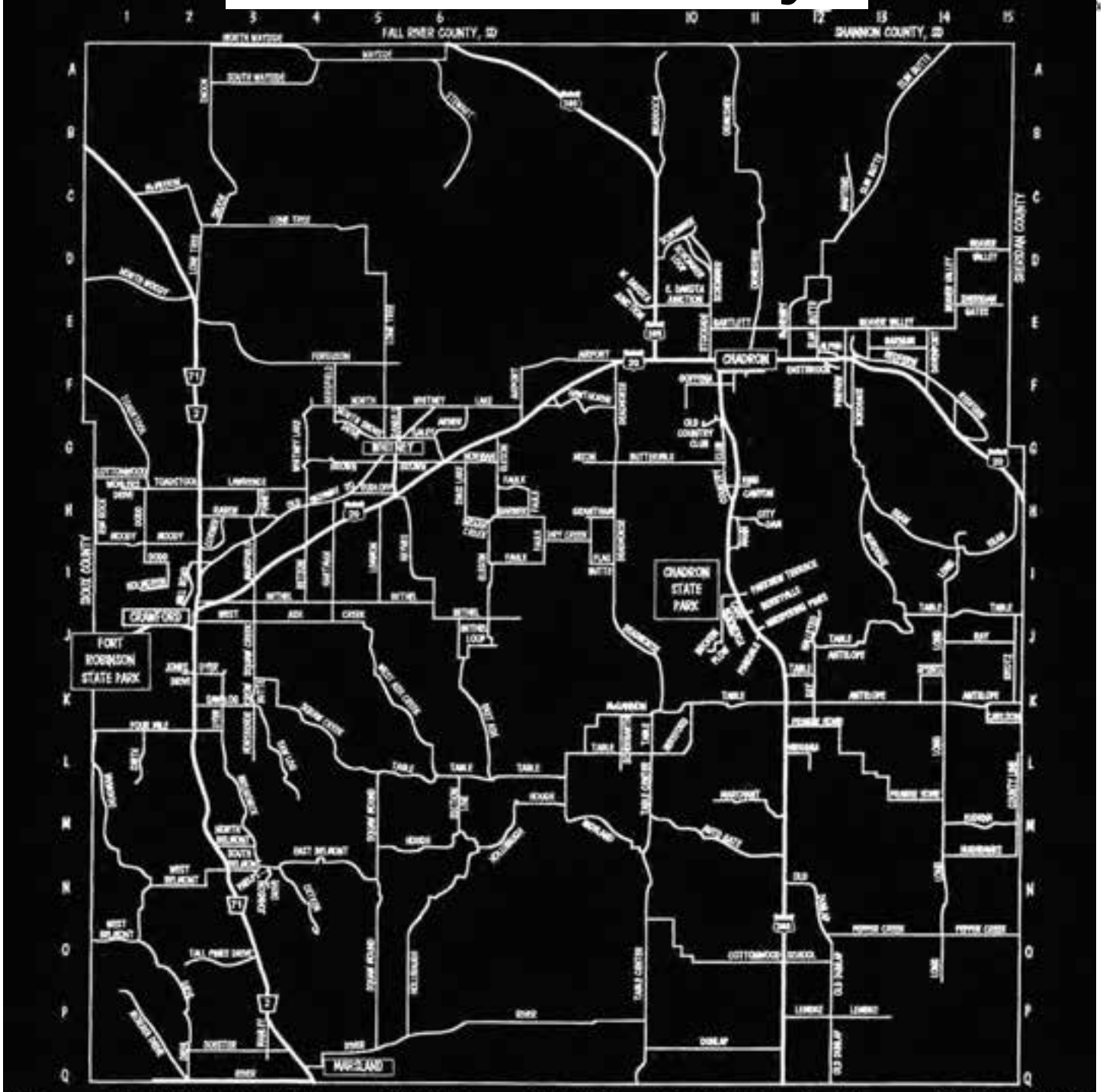
North and East = Even
South and West = Odd

Dawes County



Alpha	E12	Browken Plow	L3	Diehl	P2	Hartman	I4	Lawrence	H3	North Moody	D1	River	P7	Table Center	O9
Antelope	K13	Brown	G5	Dodd	H1	Hawthrone	F8	Lembke	P12	N. Shore Drive	F5	Rudloff	H5	Table Road	L7
Arner	F6	Buttermilk	G9	Dry Creek	H8	Haynes	I5	Lemmon	I5	N. Whitney Lake	F6	Saw Log	K3	Tall Pines Dr.	O2
Auto Gate	M11	C. Norwesca	J11	Dunlap	P11	Hereford	K10	Long Tree Road	F5	Oetken	N4	Schertserth	K9	Toadstool	G2
Barber	H7	Carlson	K15	Dyer	J3	Highland	M9	Mann	H11	Old Hwy. 20	H4	Schommer	D10	Virginia	L12
Barnum	E13	Comer	H3	East Ash	K7	Hollibaugh	N6	Manley	P3	Ormesher	C11	Section Line	L8	Wayside	A5
Bartlett	E10	Cottonwood	G1	Eastbrook	F12	Holmgren	J1	Mansfield	I3	P. View Terrace	I11	Sheridan Gates	E15	Wash Creek	J5
Beaver Valley	E13	Cottonwood		Egan	H14	Horseshoe	K3	Marchant	L11	Pepper Creek	O13	Slim Butte	C13	West Ash Creek	K5
Belmont	N3	School	O11	Eleston	H7	Hough	M8	Martens	C12	Phelps	N3	Smith	L1	Whisp Pines	I11
Bergfield	F4	Country Club	F11	Faulk	H7	Hughbanks	M15	McGannon	K9	Pinedale	J11	Snook	B2	Whitney Lake	G3
Berryville	I11	County Line	L15	Ferguson	E4	Indian Creek	H6	McHenry	E11	Pineview	F12	Snus Lake	G6	Wohlers Drive	G1
Bethel	I5	Crow Butte	K3	Flag Butte	I9	Johnson Drive	N3	McMeekin	C2	Pinney	H3	Soester	P3		
Bethel Loop	J7	Dak Junction	E9	Four Mile	K1	Jones Drive	J2	Mill Road	I2	Prairie Home	L14	Speirs	J14		
Betson	I4	Daniels	F5	Galey	F6	Kay	K12	Moody	H1	Raben	H3	Squaw Creek	K3		
Bordeaux	G13	Davenport	E14	Goffena	F10	King Canyon	G11	Morava Drive	P1	Ray	J15	Squaw Mound	N5		
Braddock	B10	Deadhorse	I9	Grantham	H8	Krotz	J15	Nixon	G8	Redfern	F14	Stewart	B6		
Breakneck	I3	Deadman	M1	Hallstead	J12	Kudrna	M15	Norman	G7	Rim Rock	H1	Stockade	E10		

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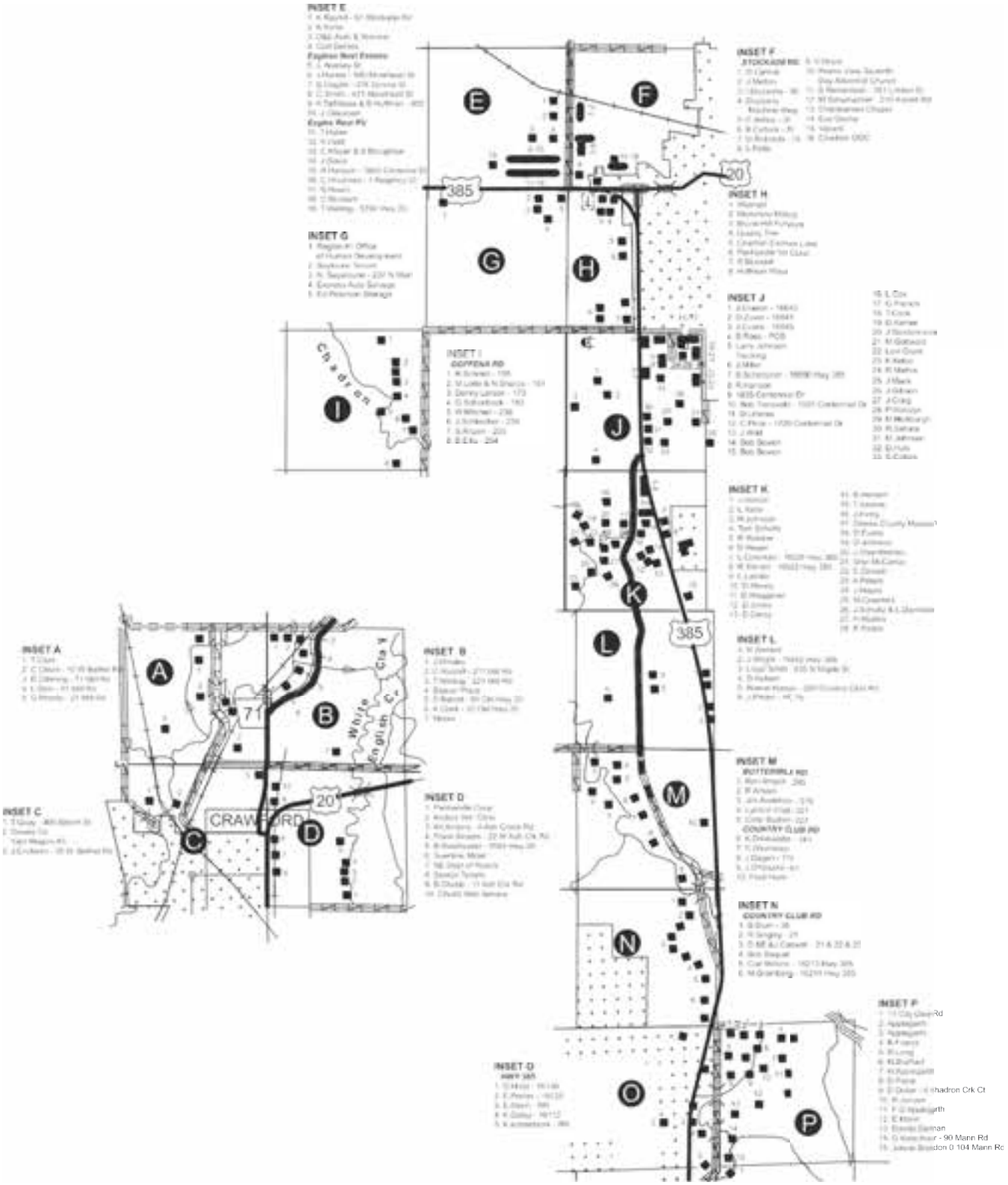
Dawes Map Insets



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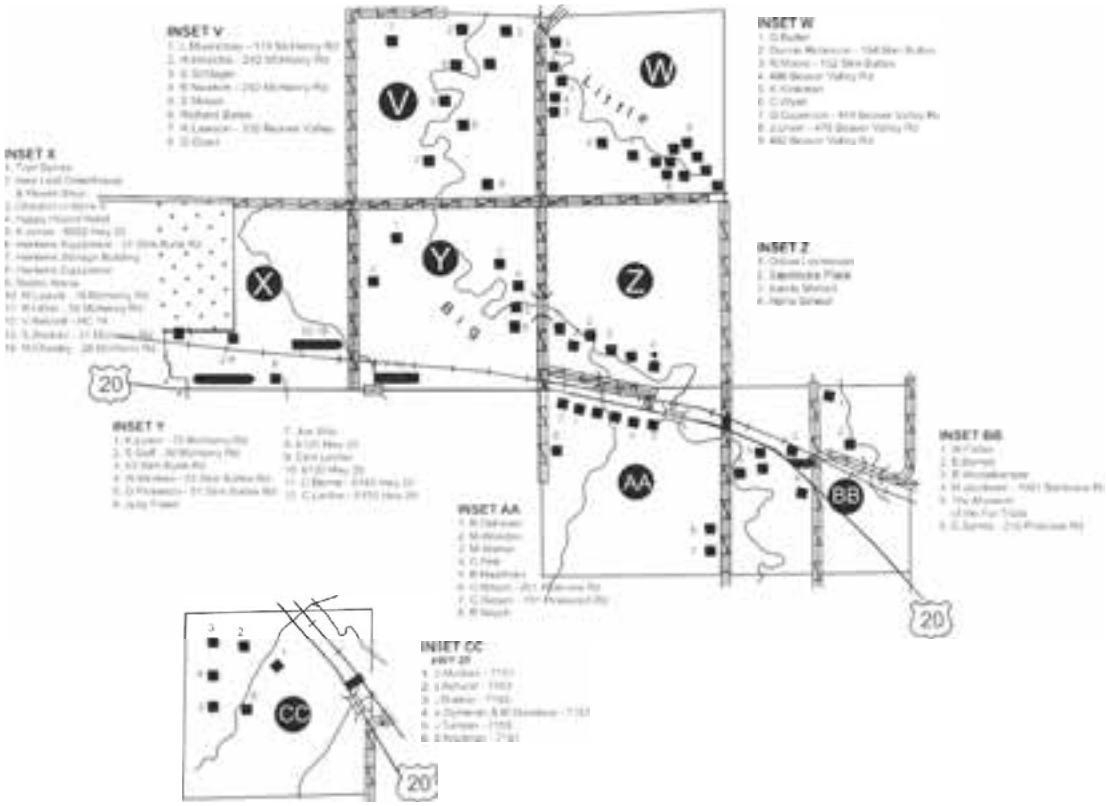
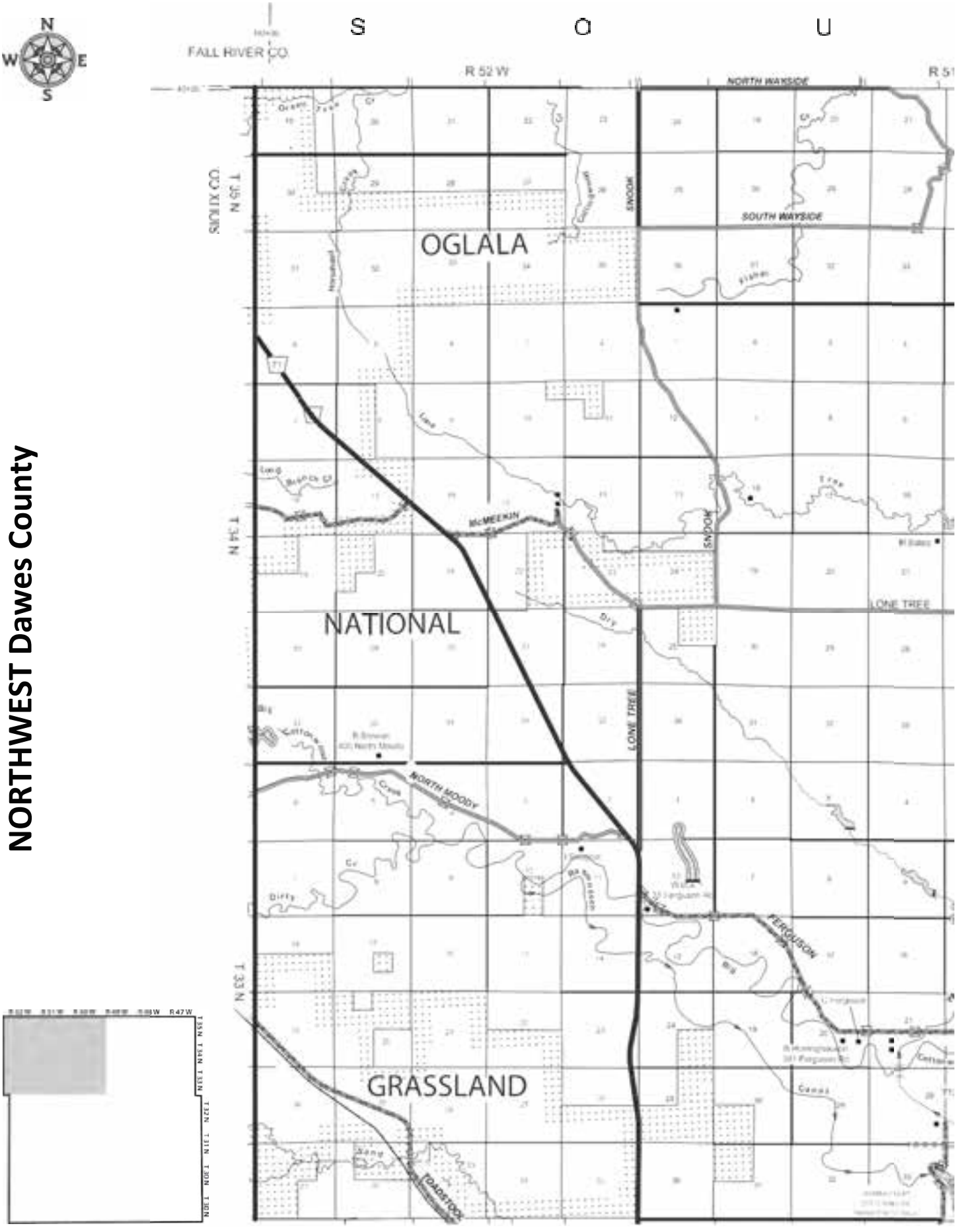
Dawes Map Insets



NORTHWEST Dawes County



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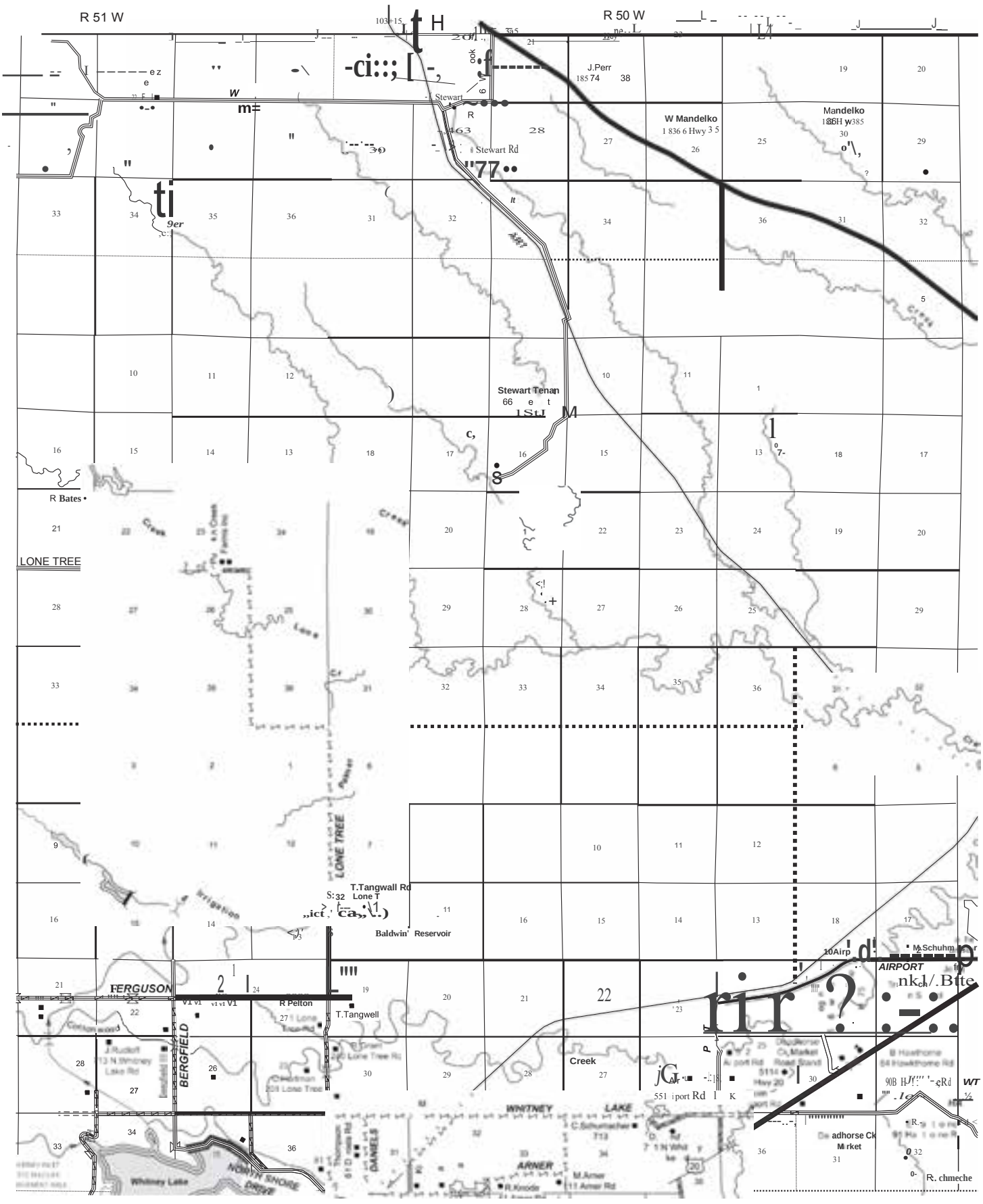

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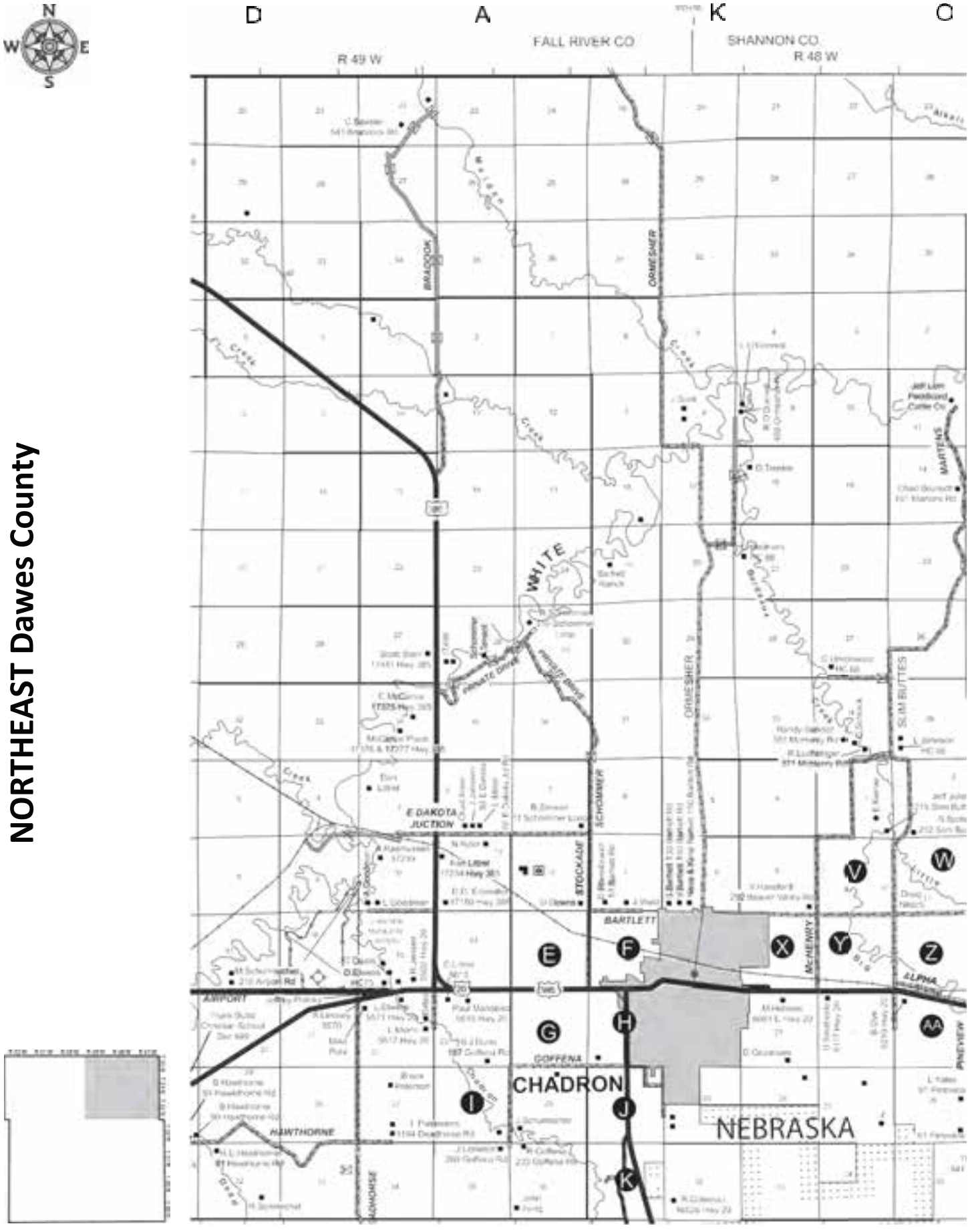

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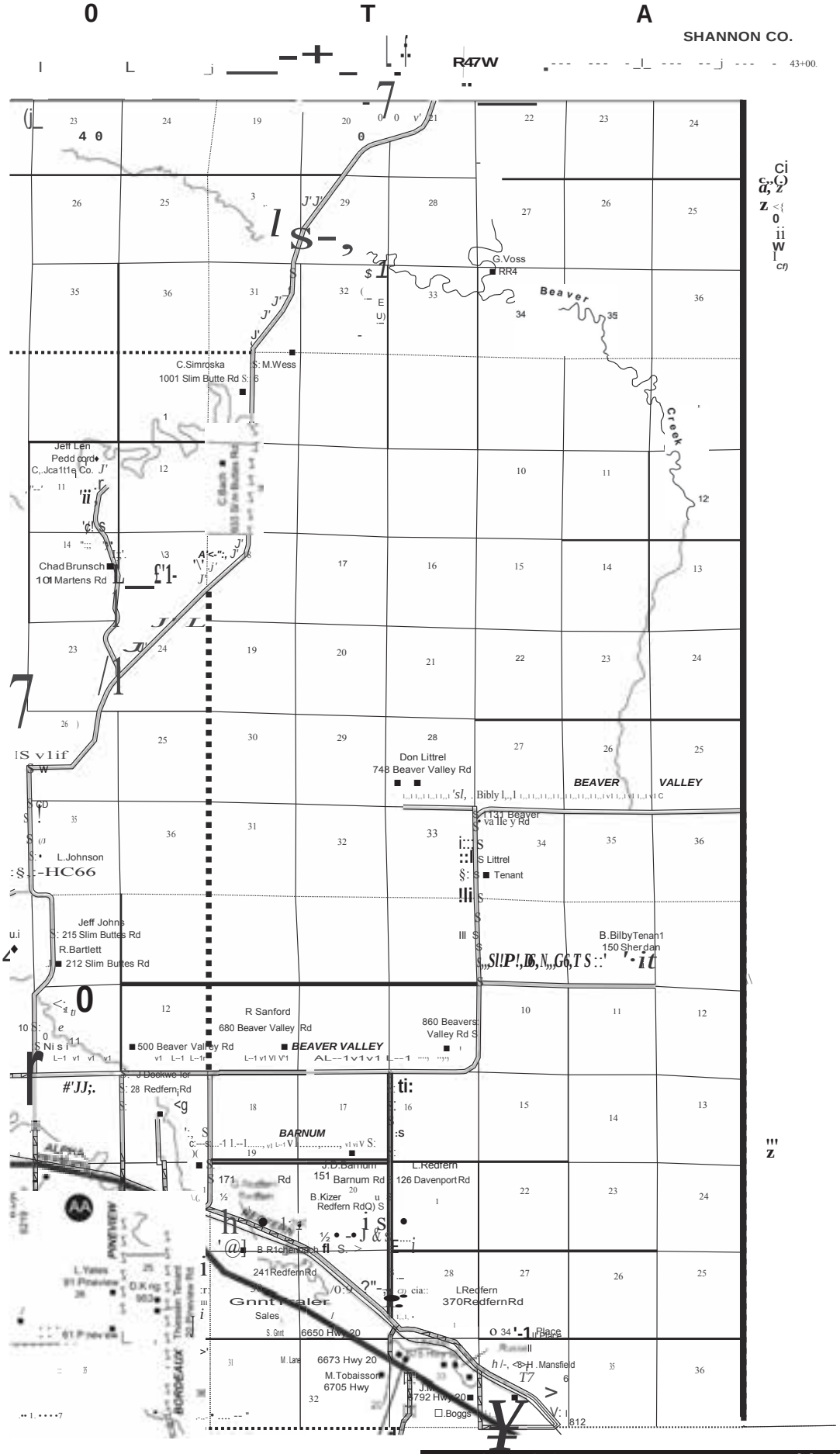

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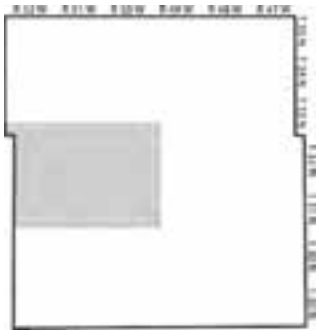
WEST CENTRAL Dawes County



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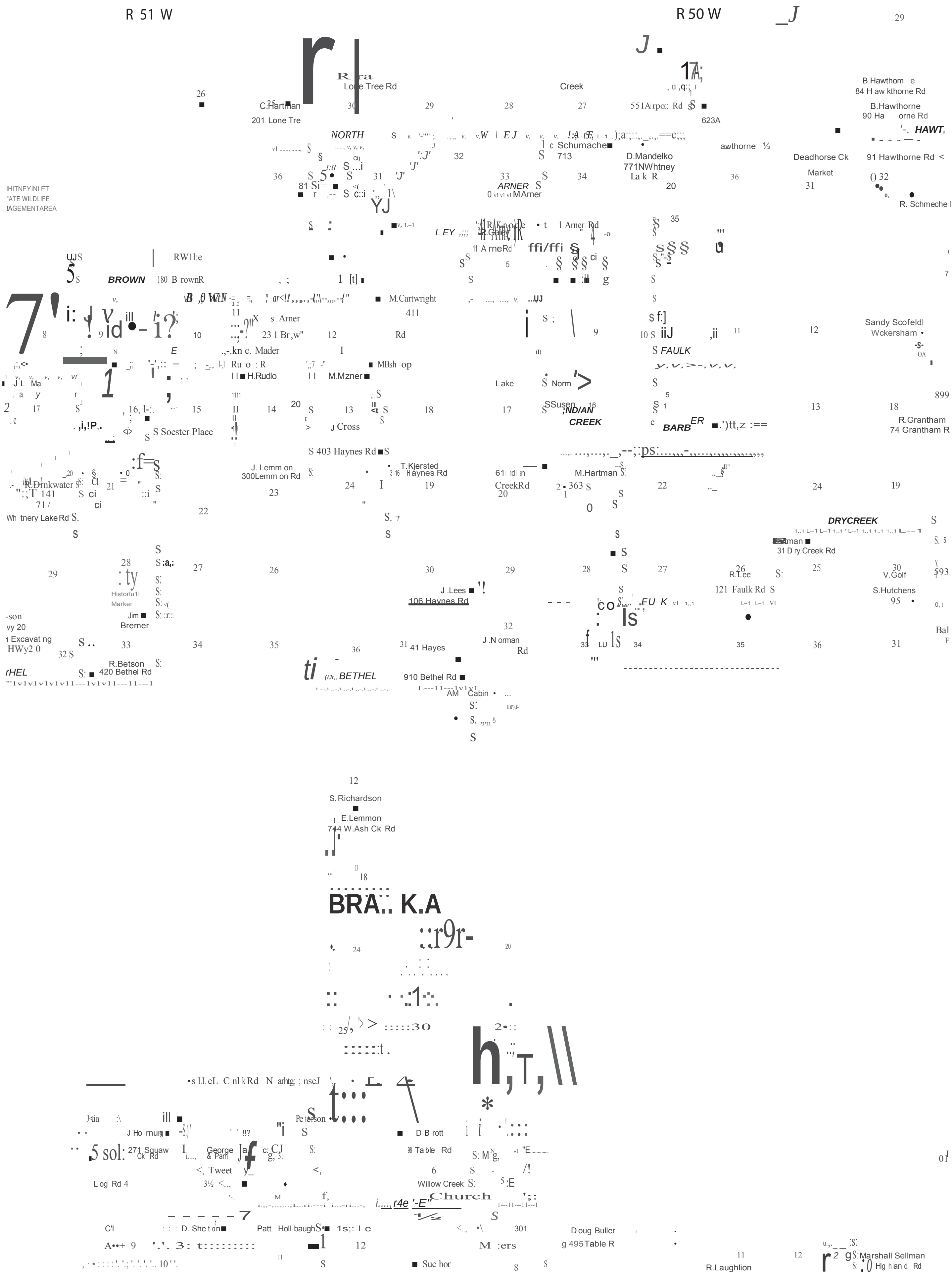
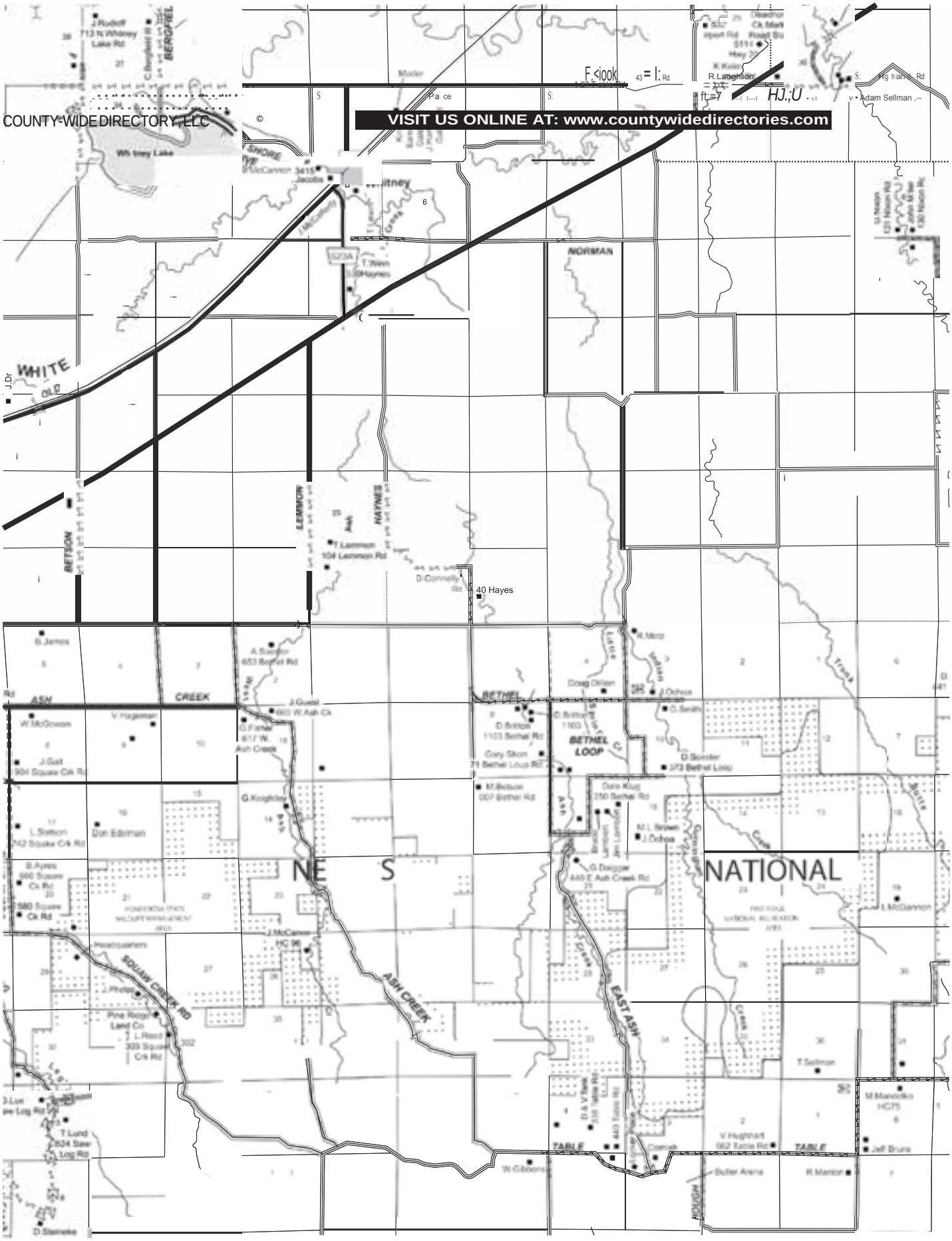

R 51 W
R 50 W
29
Lone Tree Rd
Creek
B.Hawthorne
84 Hawkthorne Rd
C.Hartman
201 Lone Tree
B.Hawthorne
90 Hawthorne Rd
623A
NORTH
Schumacher
713
D.Mandelko
771 N Whitney
Lake Rd
Deadhorse Ck
91 Hawthorne Rd
Market
WHITNEY INLET
STATE WILDLIFE
MANAGEMENT AREA
ARNER
M.Arner
R. Schmeche
1 Arner Rd
R.Galey
Arner Rd
BROWN
180 Brown Rd
M.Cartwright
Sandy Scofeld
Wickersham
S. Arner
FAULK
Mader
MBishop
H.Rudlo
M.Mzner
Lake
Norm
SSusen
INDIAN
CREEK
BARBER
R.Grantham
74 Grantham Rd
S Soester Place
J Cross
S 403 Haynes Rd
J. Lemmon
300 Lemmon Rd
T.Kjersted
316 Haynes Rd
M.Hartman
R.Drinkwater
141
Whitney Lake Rd
DRYCREEK
31 Dry Creek Rd
J. Lees
106 Haynes Rd
R.Lee
121 Faulk Rd
V.Golf
S.Hutchens
Historical
Marker
Jim
Bremer
Excavating
HWy 20
J. Norman
Rd
41 Hayes
R.Betson
420 Bethel Rd
BETHEL
910 Bethel Rd
Cabin
S.Richardson
E.Lemmon
744 W.Ash Ck Rd
BRA.. K.A
J Hornung
Peterson
D B rott
271 Squaw Ck Rd
George & Pam
98 Table Rd
Tweet
Log Rd
Willow Creek
Church
D. Shelton
Patt Hollbaugh
301
Doug Buller
495 Table Rd
Myers
Sucher
Marshall Sellman
Highland Rd
R.Laughlion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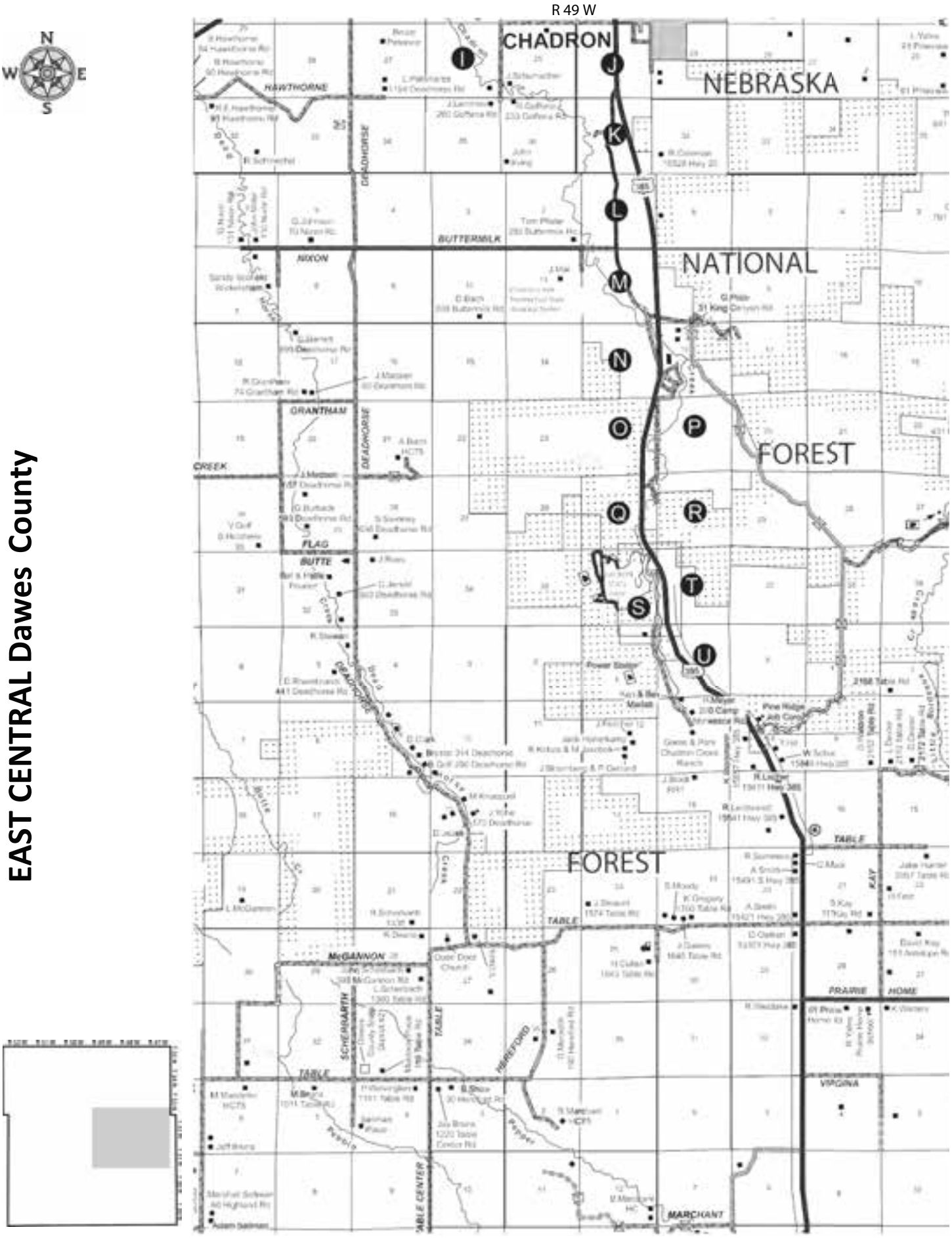
NORMAN
WHITE
BETSON
LEMMON
HAYNES
40 Hayes
ASH CREEK
BETHEL
BETHEL LOOP
SQUAW CREEK RD
EAST ASH
TABLE
NATIONAL

EAST CENTRAL Dawes County



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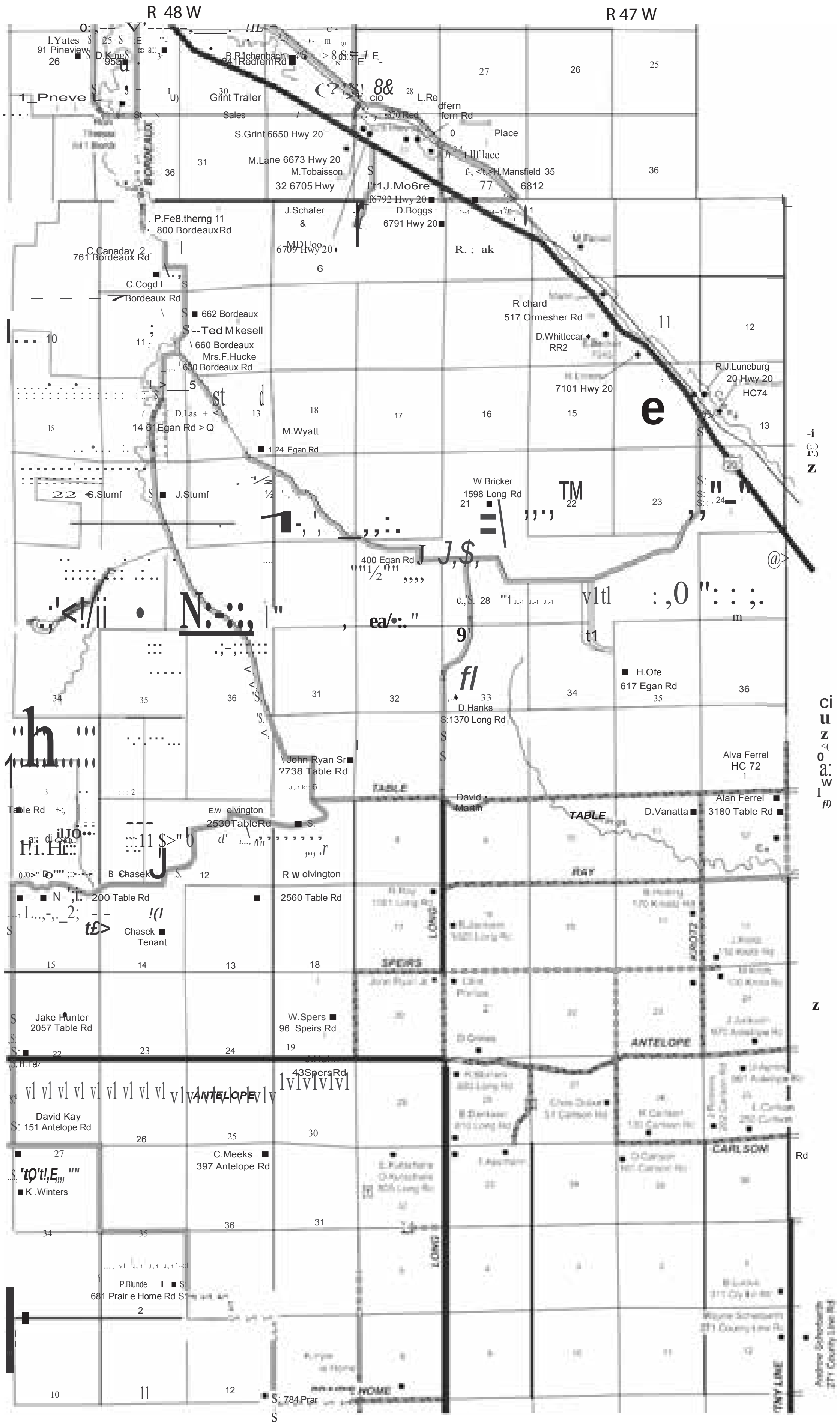
R 48 W
R 47 W
I.Yates
91 Pineview
Grint Trailer
Sales
S.Grint 6650 Hwy 20
M.Lane 6673 Hwy 20
M.Tobaisson
32 6705 Hwy
6792 Hwy 20
D.Boggs
6791 Hwy 20
H.Mansfield
6812
P.Fe8.therng
800 Bordeaux Rd
J.Schafer
6709 Hwy 20
C.Canaday
761 Bordeaux Rd
C.Cogd
Bordeaux Rd
662 Bordeaux
Ted Mikesell
660 Bordeaux
Mrs.F.Hucke
630 Bordeaux Rd
R chard
517 Ormesher Rd
D.Whittecar
RR2
7101 Hwy 20
R.J.Luneburg
20 Hwy 20
HC74
Egan Rd
M.Wyatt
24 Egan Rd
G.Stumf
J.Stumf
W Bricker
1598 Long Rd
400 Egan Rd
H.Ofe
617 Egan Rd
D.Hanks
1370 Long Rd
John Ryan Sr
Table Rd
Alva Ferrel
HC 72
Alan Ferrel
3180 Table Rd
D.Vanatta
David
Martin
TABLE
Table Rd
2530TableRd
Chasek
R W olvington
200 Table Rd
2560 Table Rd
Chasek
Tenant
RAY
SPEIRS
LONG
Jake Hunter
2057 Table Rd
W.Spers
96 Speirs Rd
43SpersRd
ANTELOPE
David Kay
151 Antelope Rd
C.Meeks
397 Antelope Rd
K .Winters
CARLSON
Rd
P.Blunde
681 Prair e Home Rd
784 Prar
HOME

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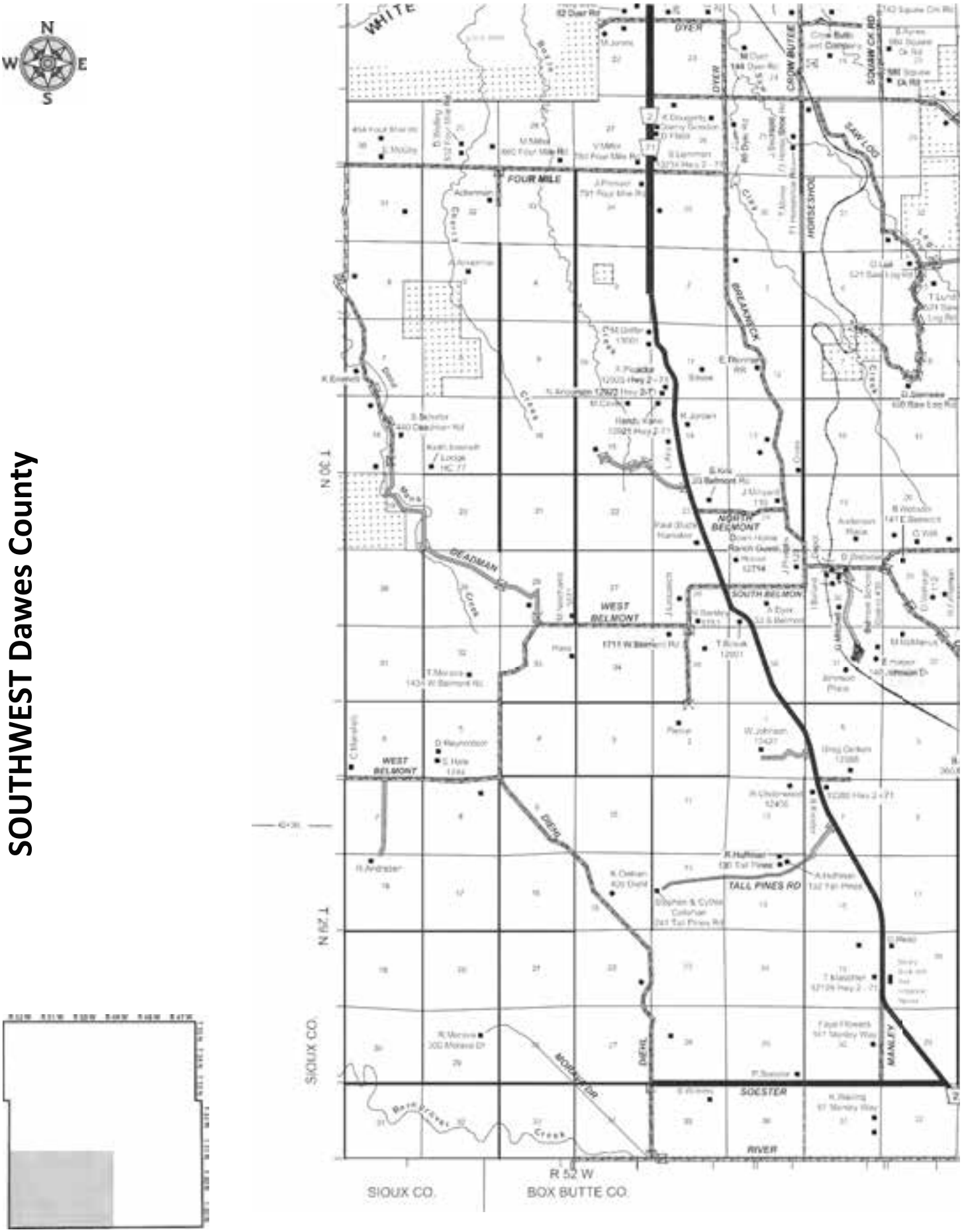

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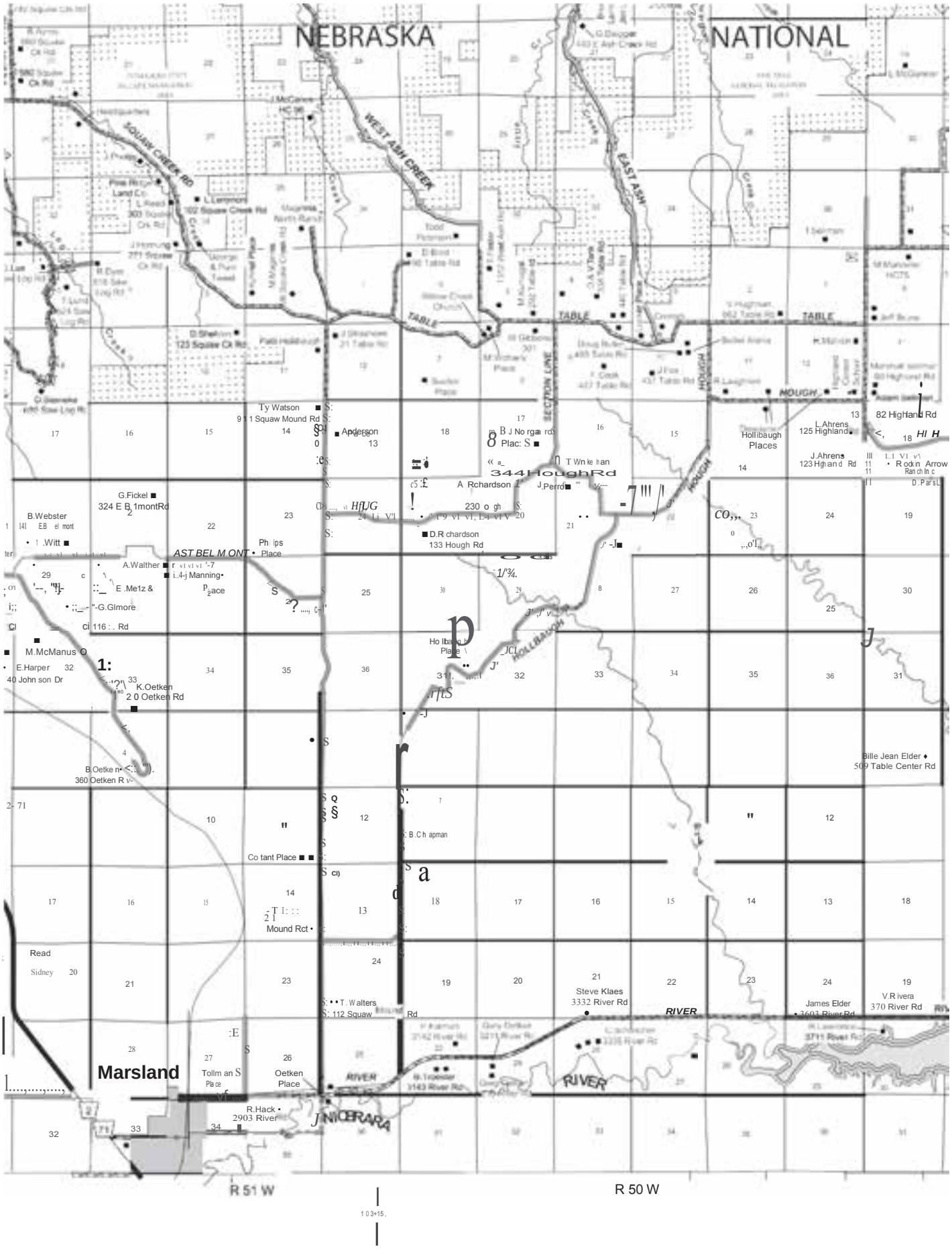

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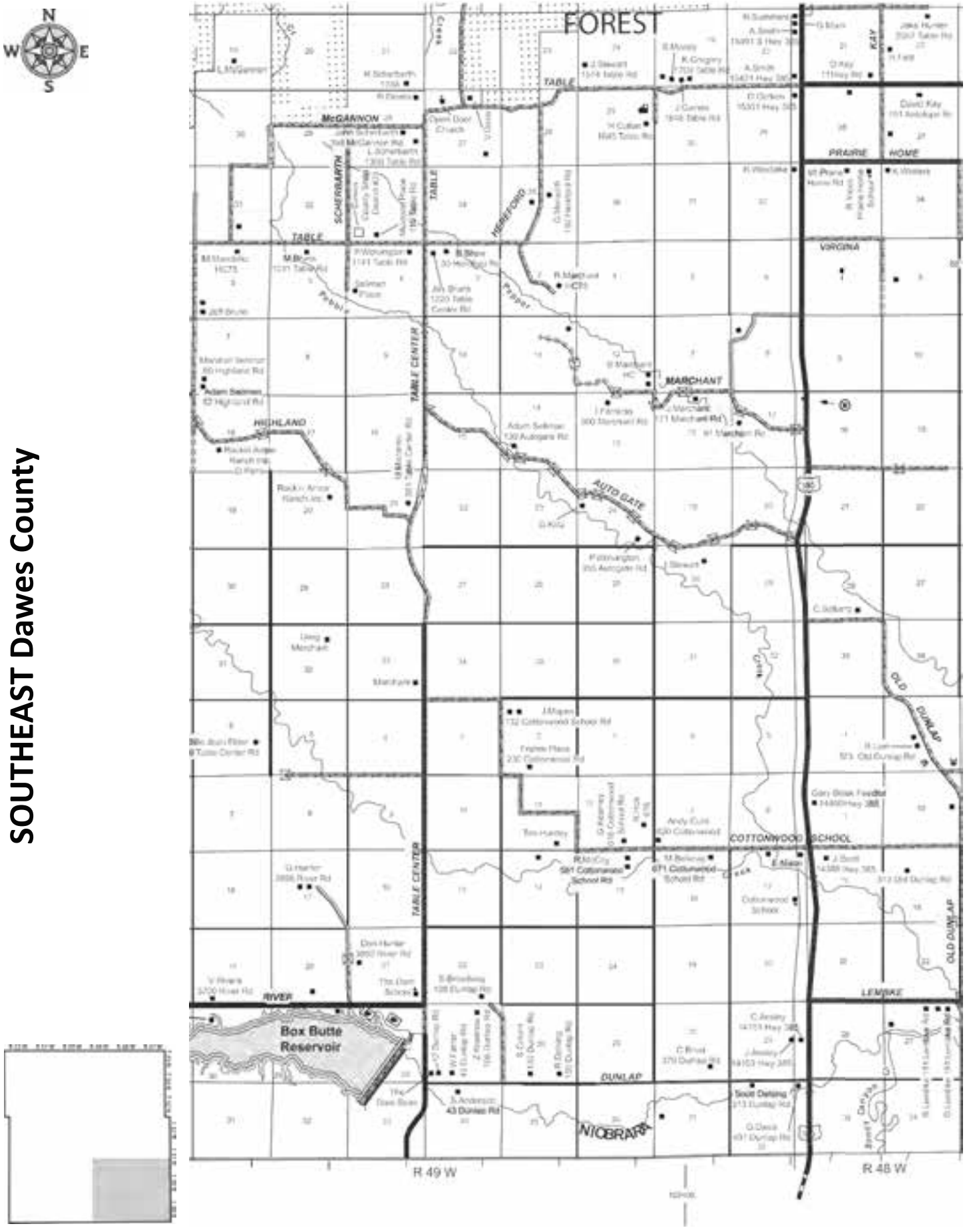
SOUTHEAST Dawes County



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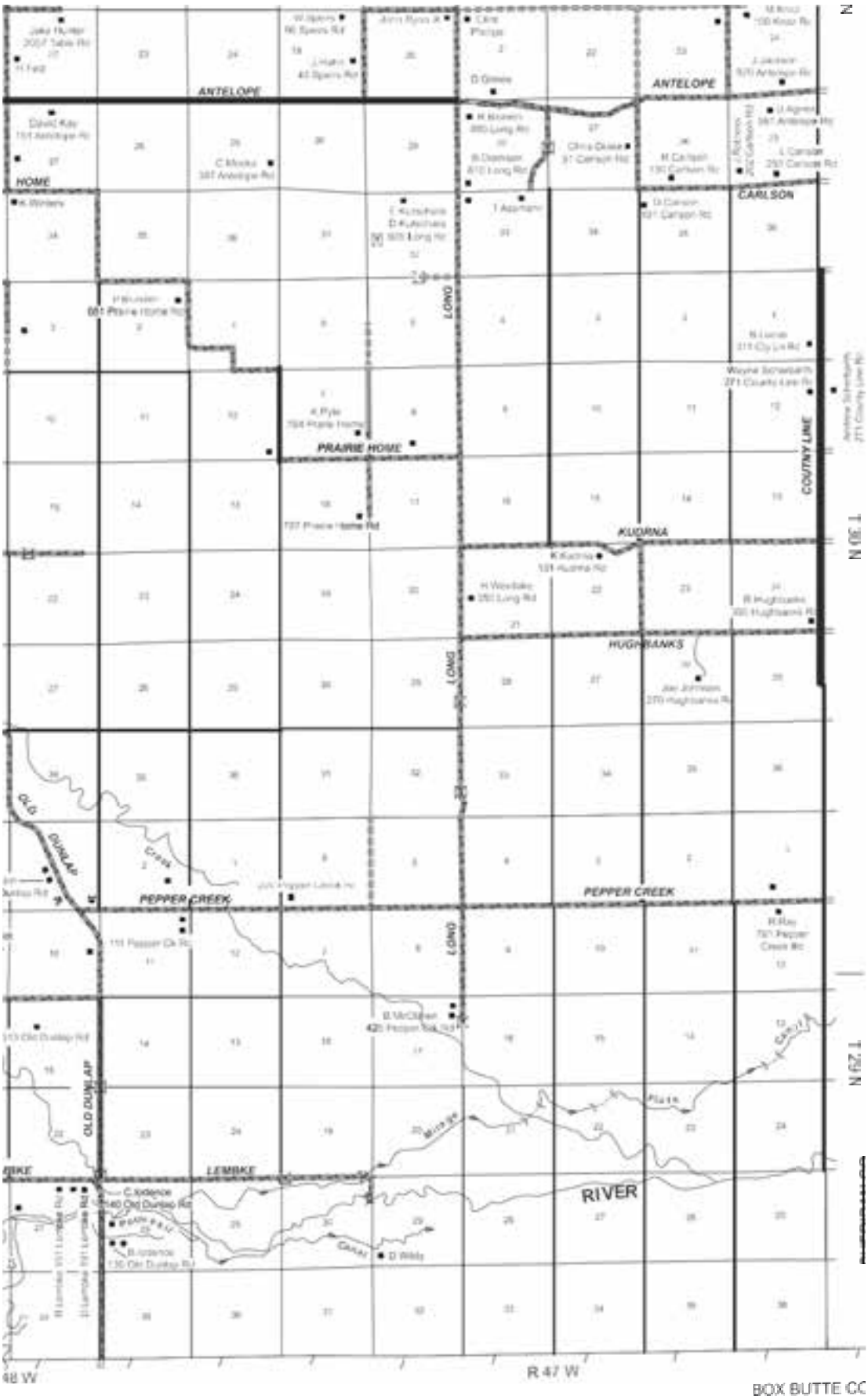
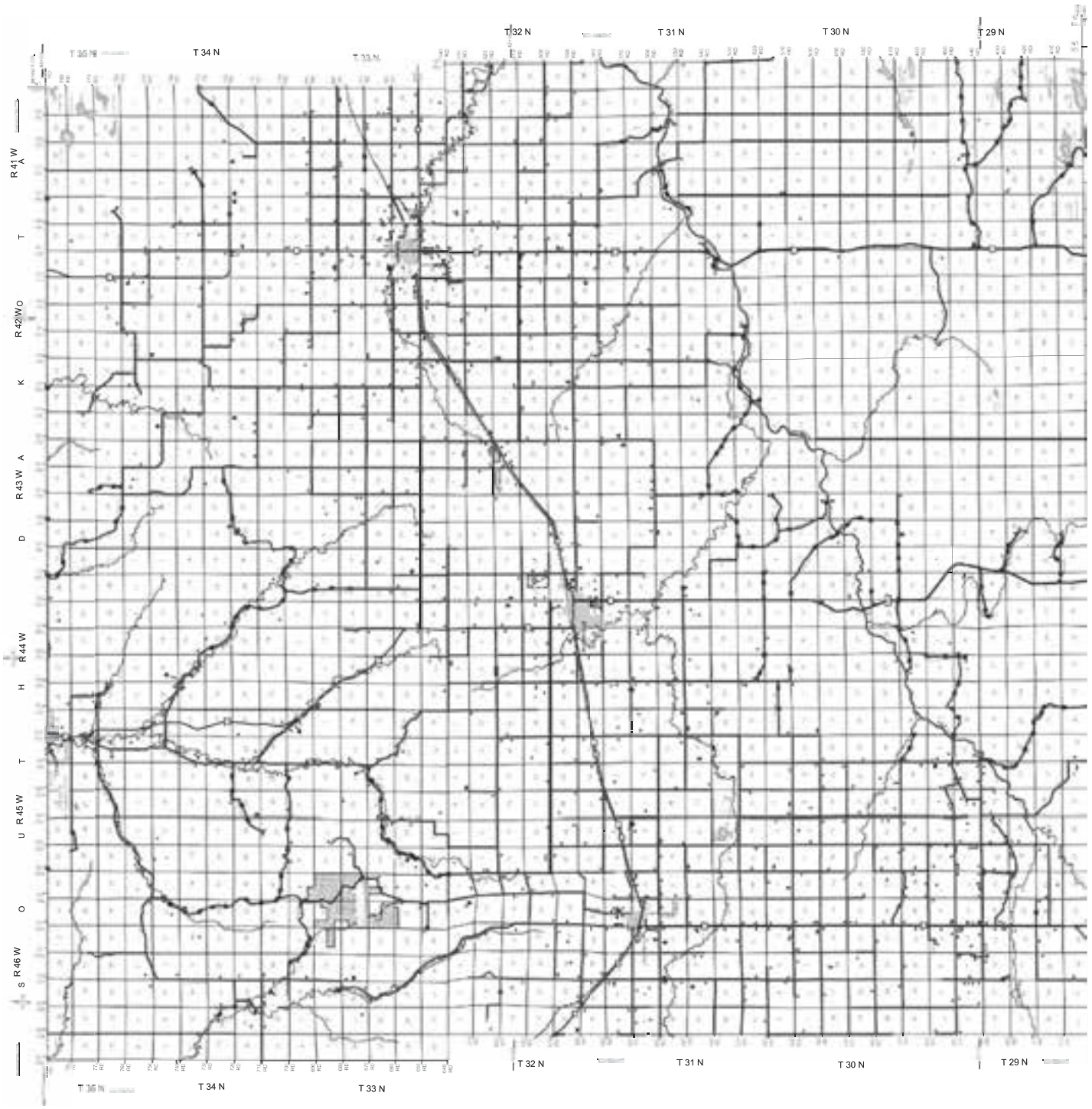

ANTELOPE
ANTELOPE
HOME
CARLSON
LONG
PRAIRIE HOME
COUTNY LINE
KUDRNA
T 30 N
HUGHBANKS
LONG
OLD DUNLAP
PEPPER CREEK
PEPPER CREEK
LONG
OLD DUNLAP
T 29 N
LEMBKE
RIVER
R 48 W
R 47 W
BOX BUTTE CO

Sheridan



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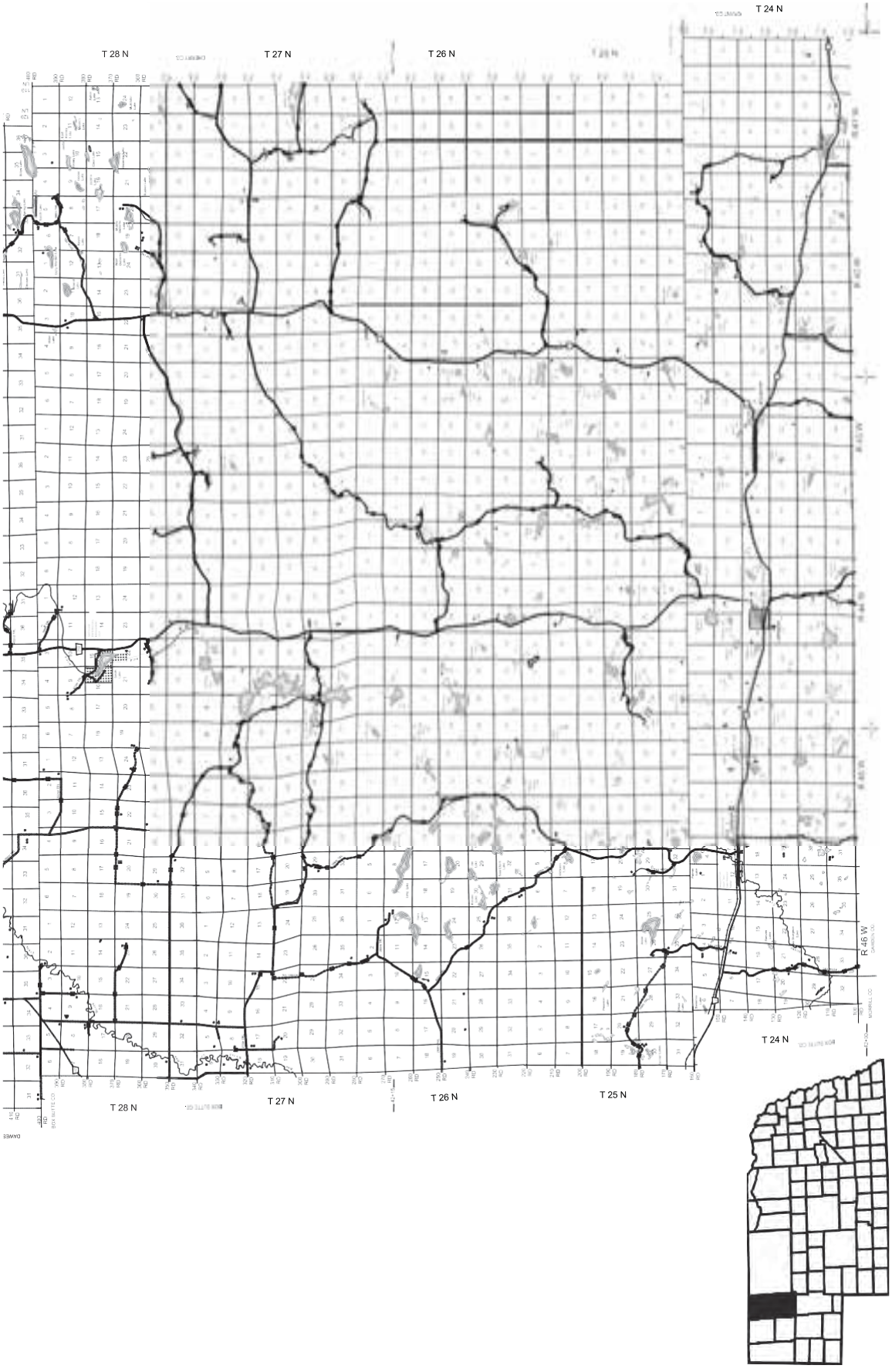
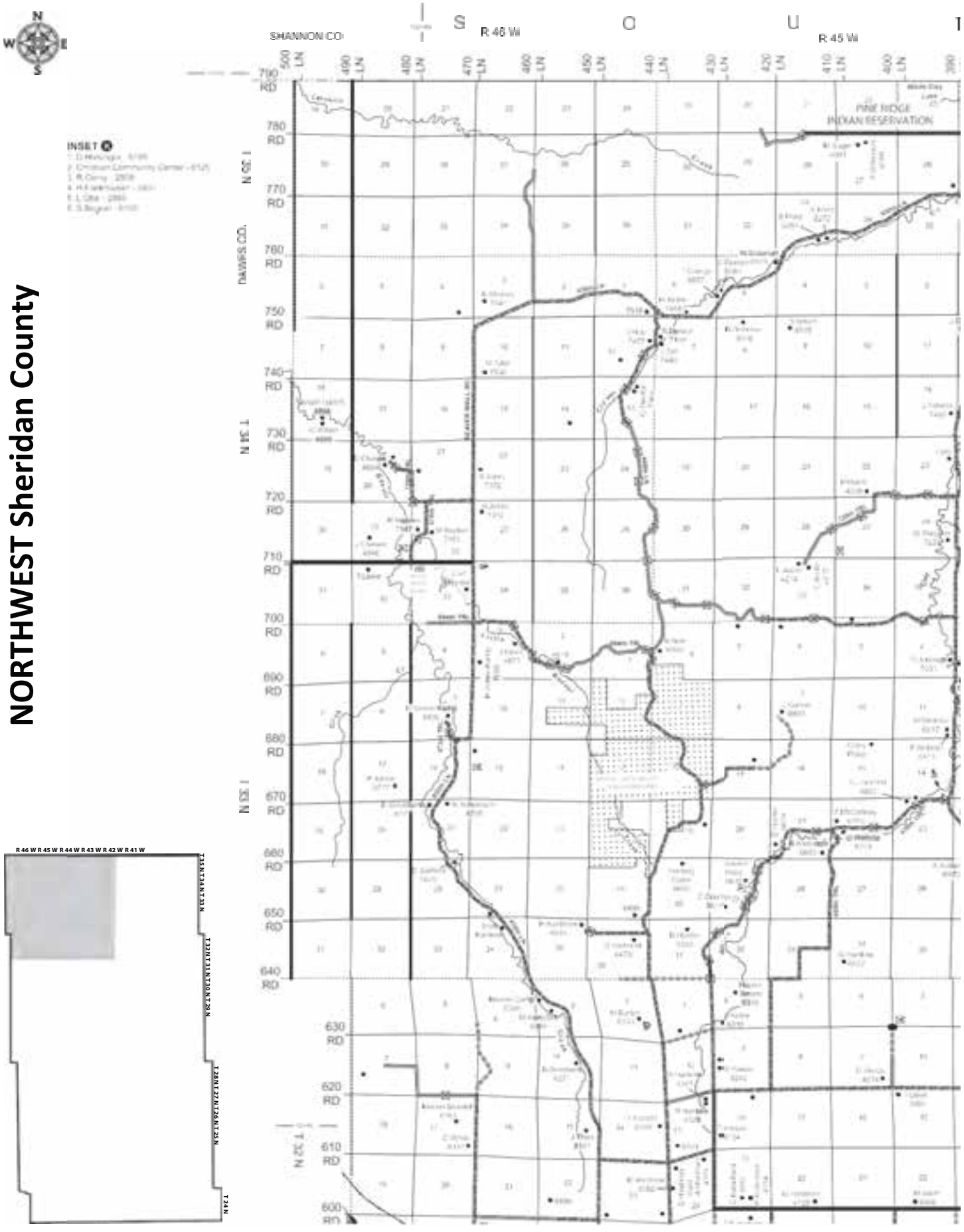
County



NORTHWEST Sheridan County



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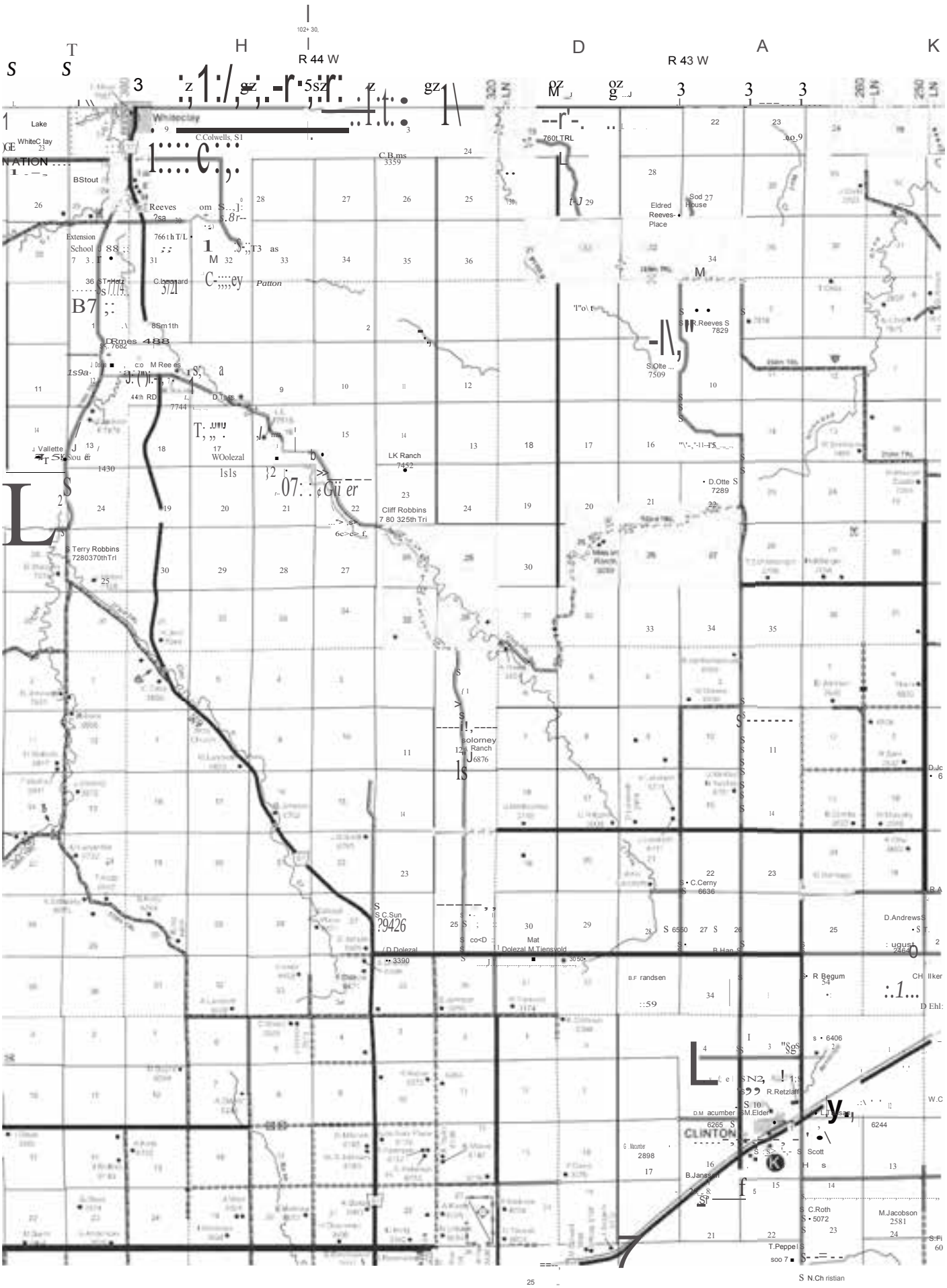

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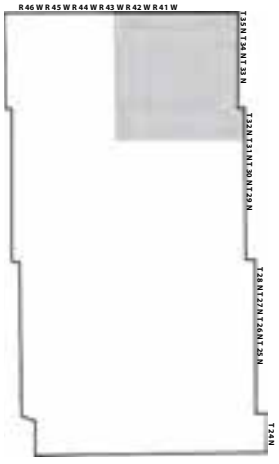

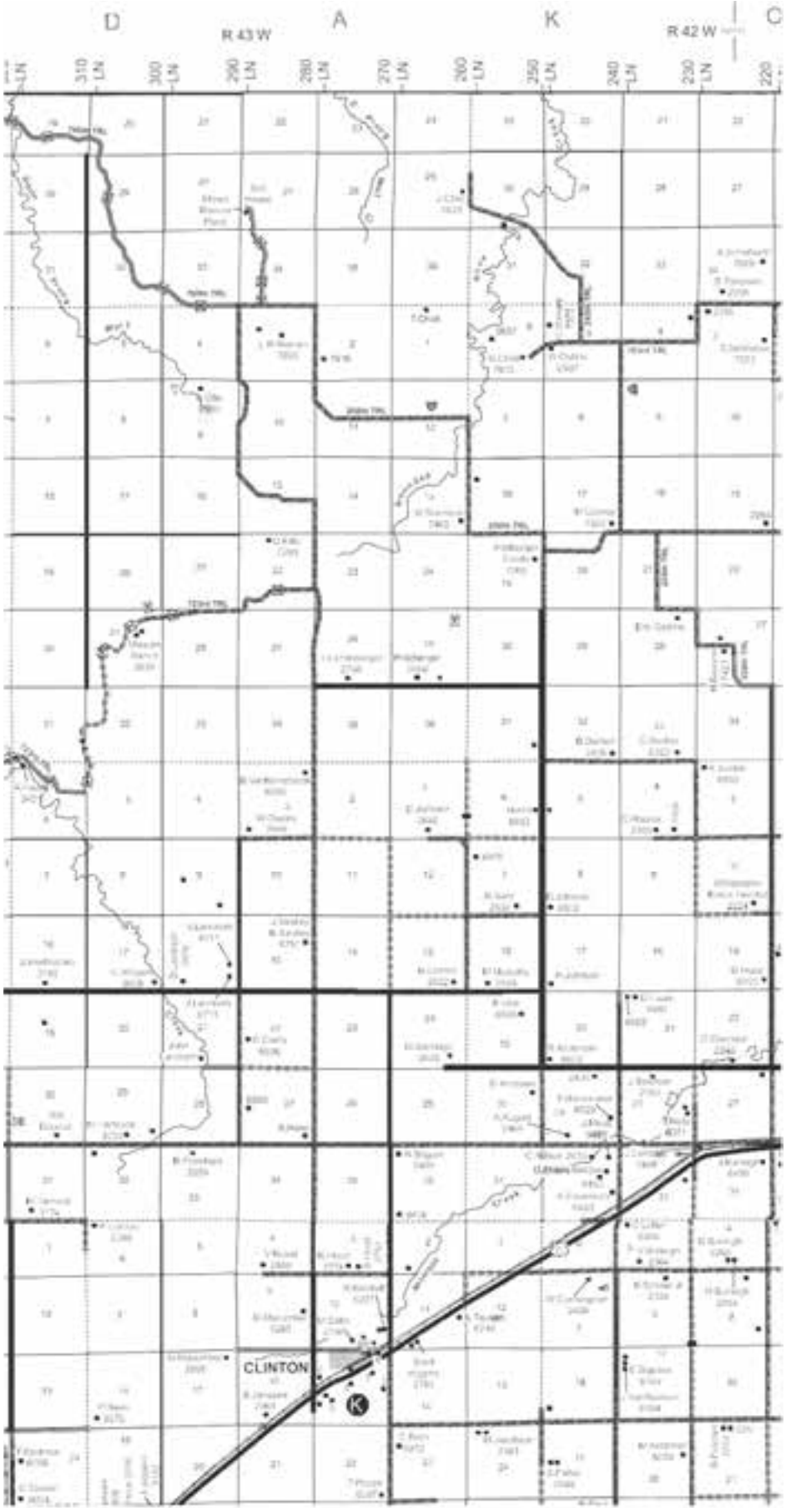

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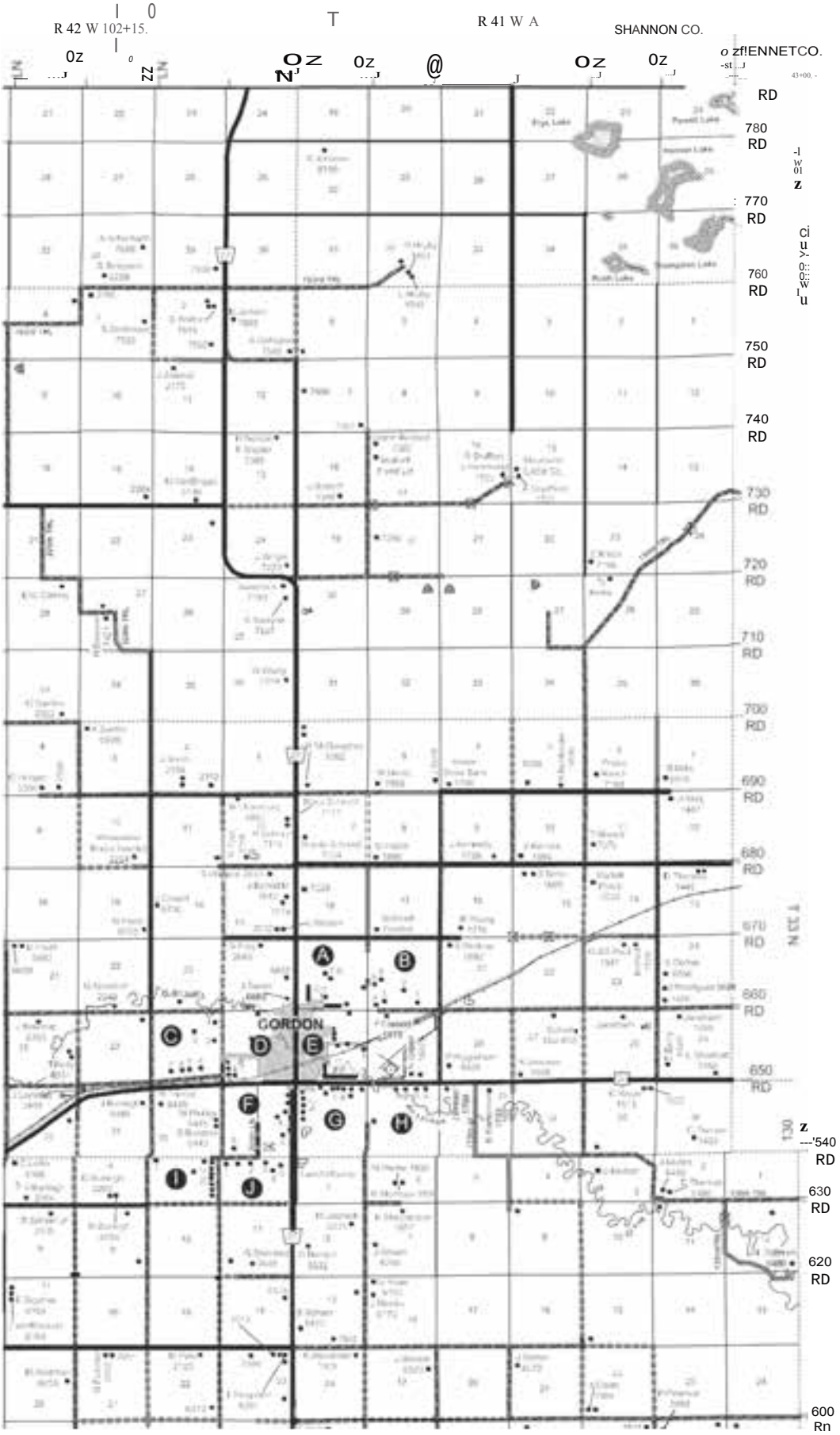


INSET()
1. B.Conway- 1930
2. D.Downing - 1964
3. R.Edgecomb- 1968
4. 1961
5. 1964
6. Ken Hardin• 1962
7. B.Calkins • 6649
8. D.Lee - 6648

INSET(I)
1. B.Rose-1838
2. C.Skanadore • 1850
3. V.Faulk • 1882
4. I.Bailey- 1890
5. W.Bailey • 6636
6. Bailey Place • 6638

INSET{!t
1. I.Edwards • 6595
2. B.Mathis - 6551
3. T.McGinley • 6565
4. M.Felton - 2120
5. W.Ginkens - 2132
6. Nola Ibach - 2148
7. S.Hardin - 2178

INSETG,
1. R.Ehlers • 2040
2. B.Ferguson • 6502
3. T.Green • 6510
4. Schwarting• 6516

INSET C)
1. G.Swanson - 6533
2. L.Haller- 1906
3. E.Reeves - 1912
4. S.Boldon - 1920
5. D.Anderson - 1924
6. D.Dunbar- 1932
7. J.Holeman - 1948
8. 1960
9. L.Harris - 1967

INSET4)
1. F.Petersen• 320
2. S.Petersen • 6721
3. Chris Witt - 6715
4. L.Thompson - 6709
5. V.Hare - 2080

INSET 0
1. B.Ka yton - 1955
2. Scott Wallace - 1933
3. L.Lissolo • 1911
4. D.Otte • 6493
5. 6715
6. Glassgow • 6724
7. S.Miller • 6736

INSET
1. D.Bitner 1867
2. F.Schmidt 1851
3. R.Gatewood - 1815
4. F.Cano - 1805

INSET0
1. 6382
2. K.Risse • 6387
3. R.Fiscus • 6385
4. H.Ebsen • 6393
5. L.Hiliker - 6313
6. D.Bishop • 6379
7. 6371
8. M.Reed • 6319
9. R.Fiscuss • 6313
10. K.Hooper • 6305

INSET0
1. 2081
2. Gary Rose - 2055
3. Gary Waugh• 6649
4. W.Janssen - 6653
5. 6641

INSET(t
1. D.Holsinger • 6199
2. Christian Community Center - 6129
3. R.Cerny • 2809
4. H.Fankhauser - 2831
5. L.Otte - 2869
6. S.Beguin • 6150

NORTHWEST CENTRAL Sheridan County

INSET L
1. R.Gilbert - 5846
2. H.Hatch - 5829
3. D.Petersen - 5833
4. E.Hemingway - 6111
5. B.Mayfield - 6103
6. B.Jansen - 5828

INSET M
1. J.Krebs - 3255
2. L.Christianson - 3228
3. G.Snyder - 3251
4. C.Cox - 5115
5. D.Jaggers - 5116

INSET N
1. L.McKamey - 5774
2. E.Buettner - 5750
3. N.Davis - 5748
4. 5757
5. R.McKay - 5704
6. W.Reed - 5719
7. H.Taylor - 5720
8. H.Taylor - 5737

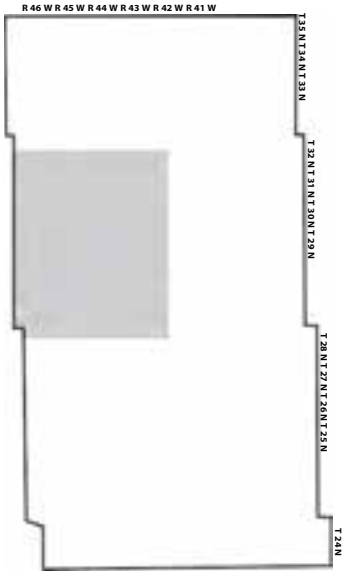
INSET O
1. J.Dahlgren - 5660
2. Peter Pluta - 5647
3. J.Fetter - 5639
4. Young - 5627
5. Young's Repair - 563

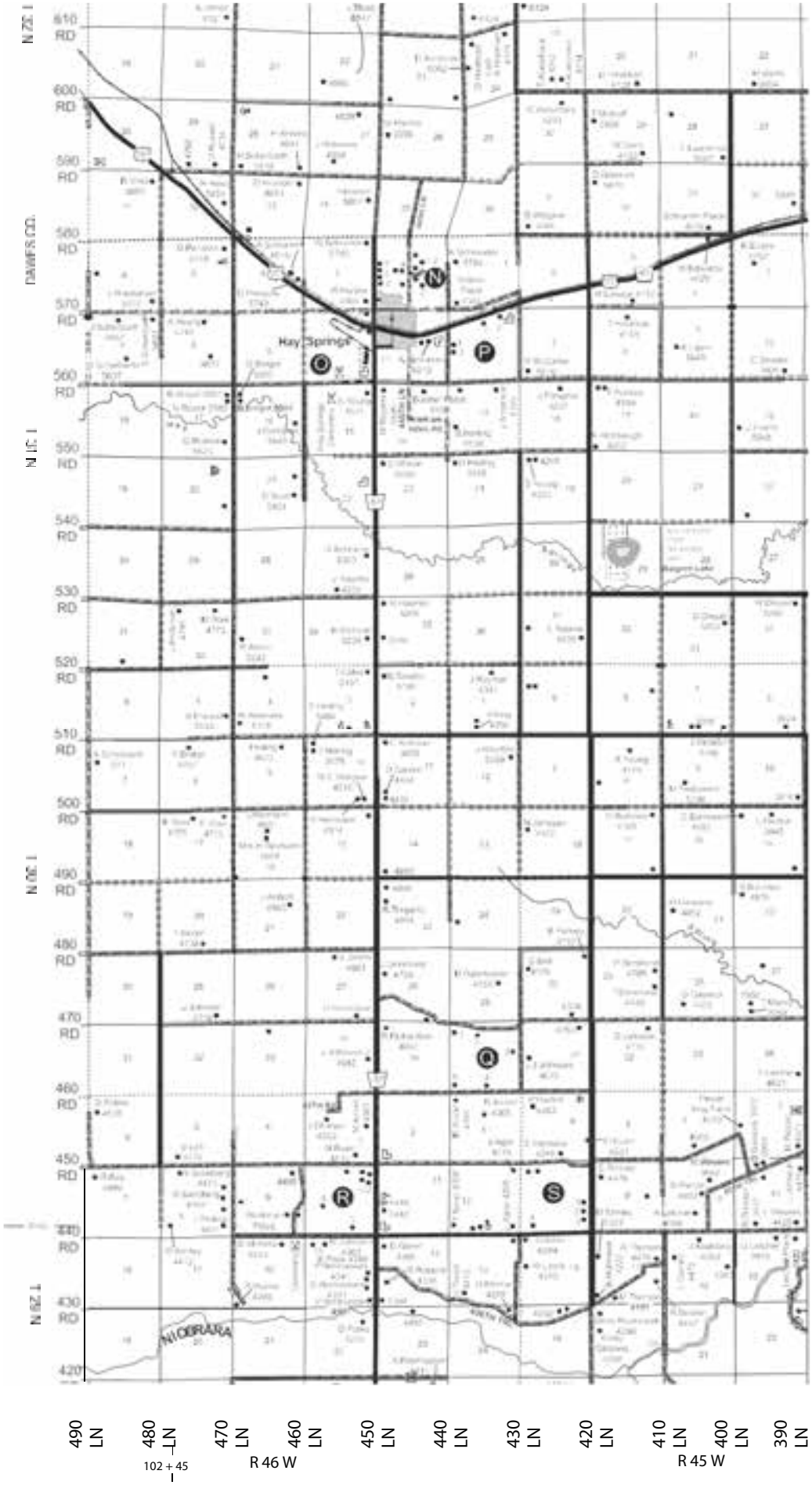
INSET P
1. D.Tuthill - 4003
2. 4001
3. P.V.Rouse - 3650
4. E.Buettner - 3606

INSET Q
1. R.Lee - 4413
2. 4388
3. B.Johnson - 4857
4. J.Dahlgren - 4348
5. 4392

INSET R
1. K.Johnson - 4493
2. C.Waddach - 4405
3. 4485
4. K.Johnson - 4528
5. G.Schanz - 4412

INSET S
1. W.Christiansen - 4443
2. M.Dirk - 4429
3. G.Houch - 4403
4. 4388





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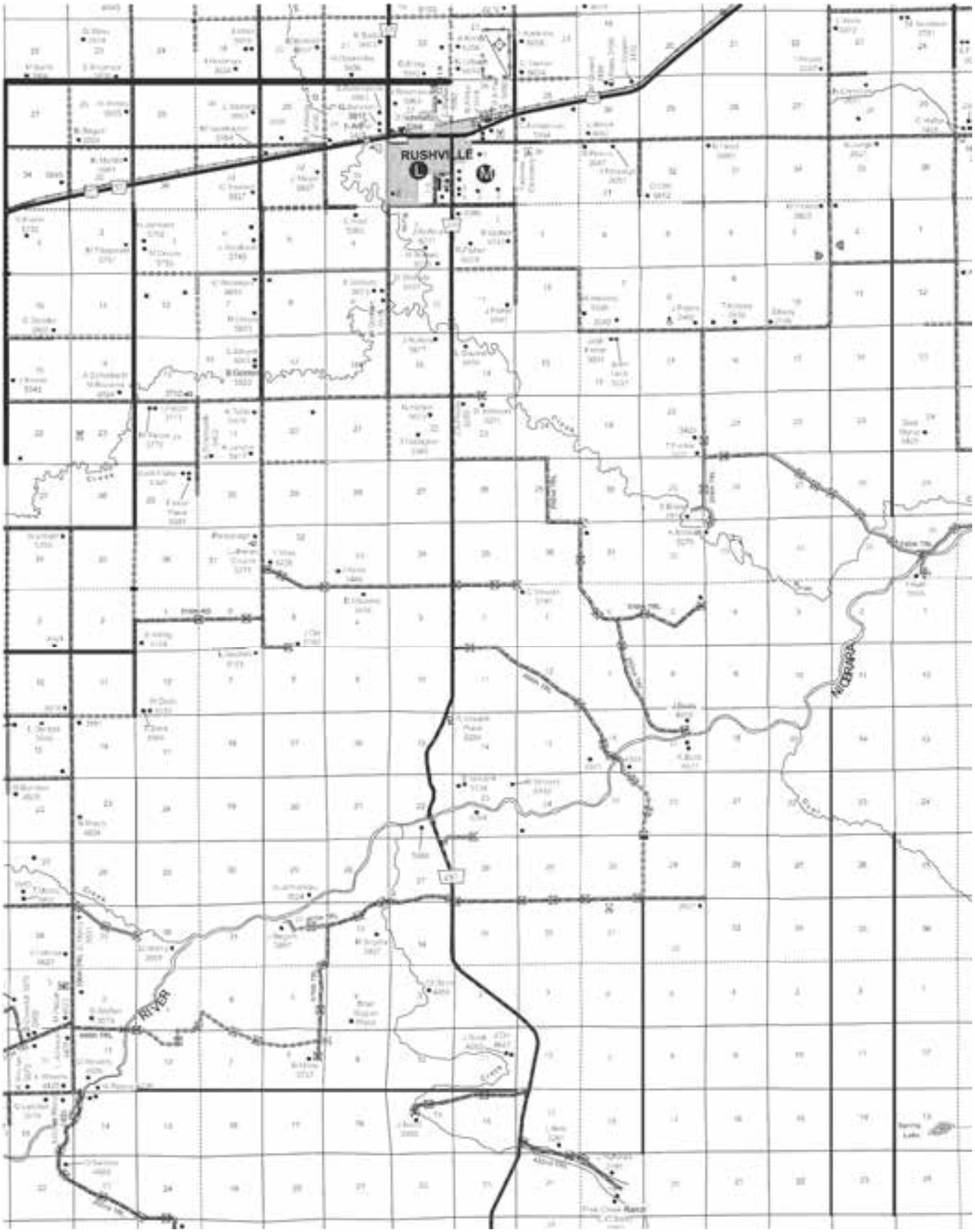

400 LN 390 LN 380 LN 370 LN 360 LN 350 LN 340 LN 330 LN 320 LN 310 LN 300 LN 290 LN 280 LN 270 LN 260 LN 250 LN

102 + 30 R 44 W

R 43 W

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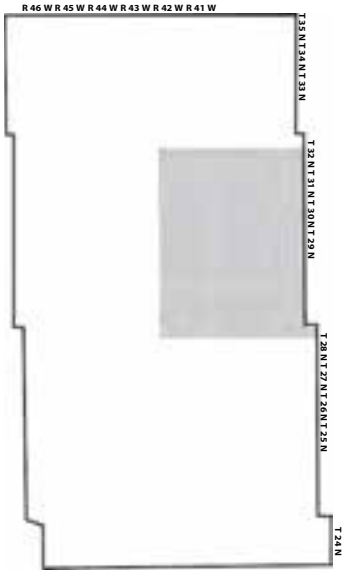

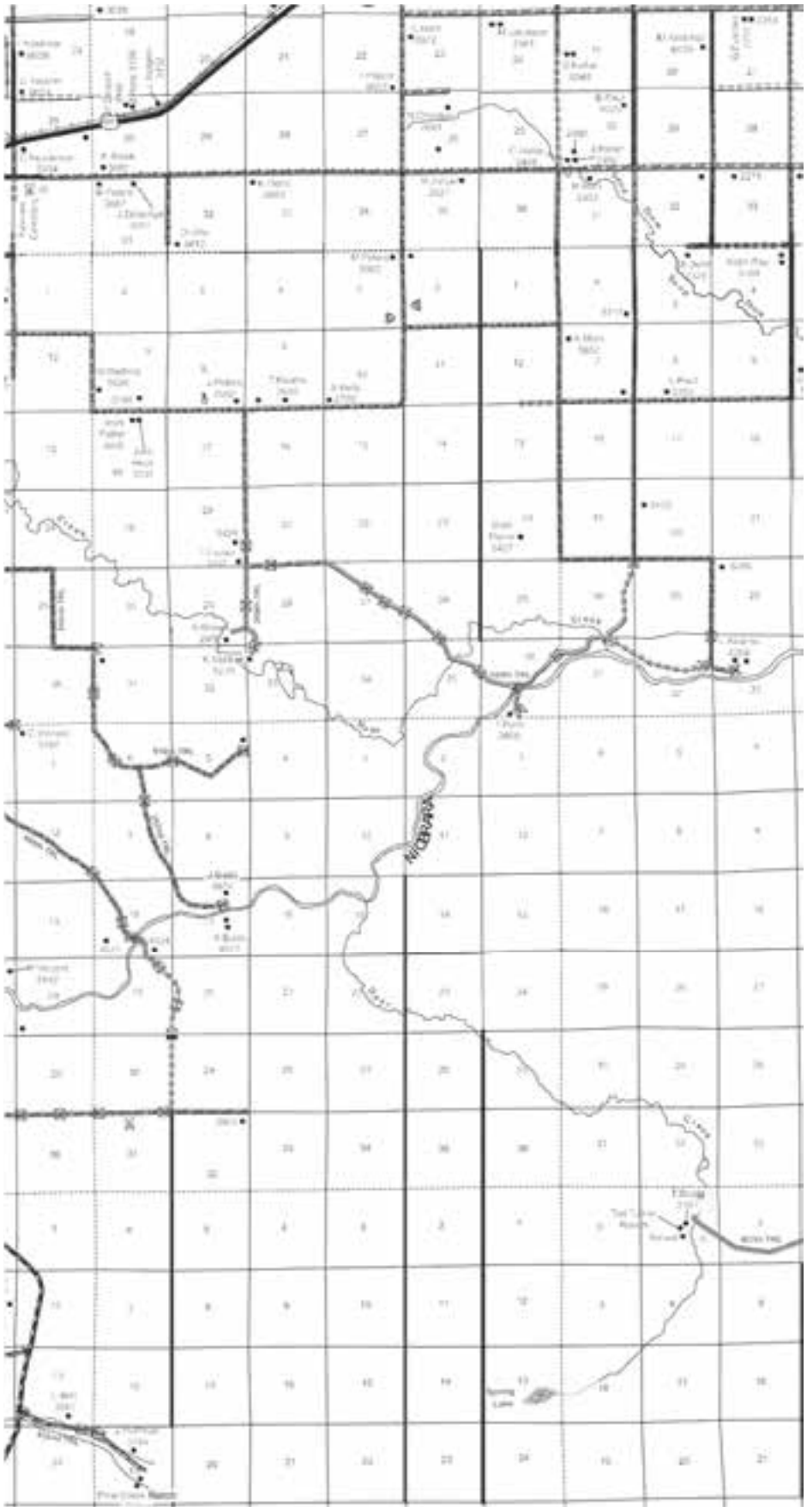

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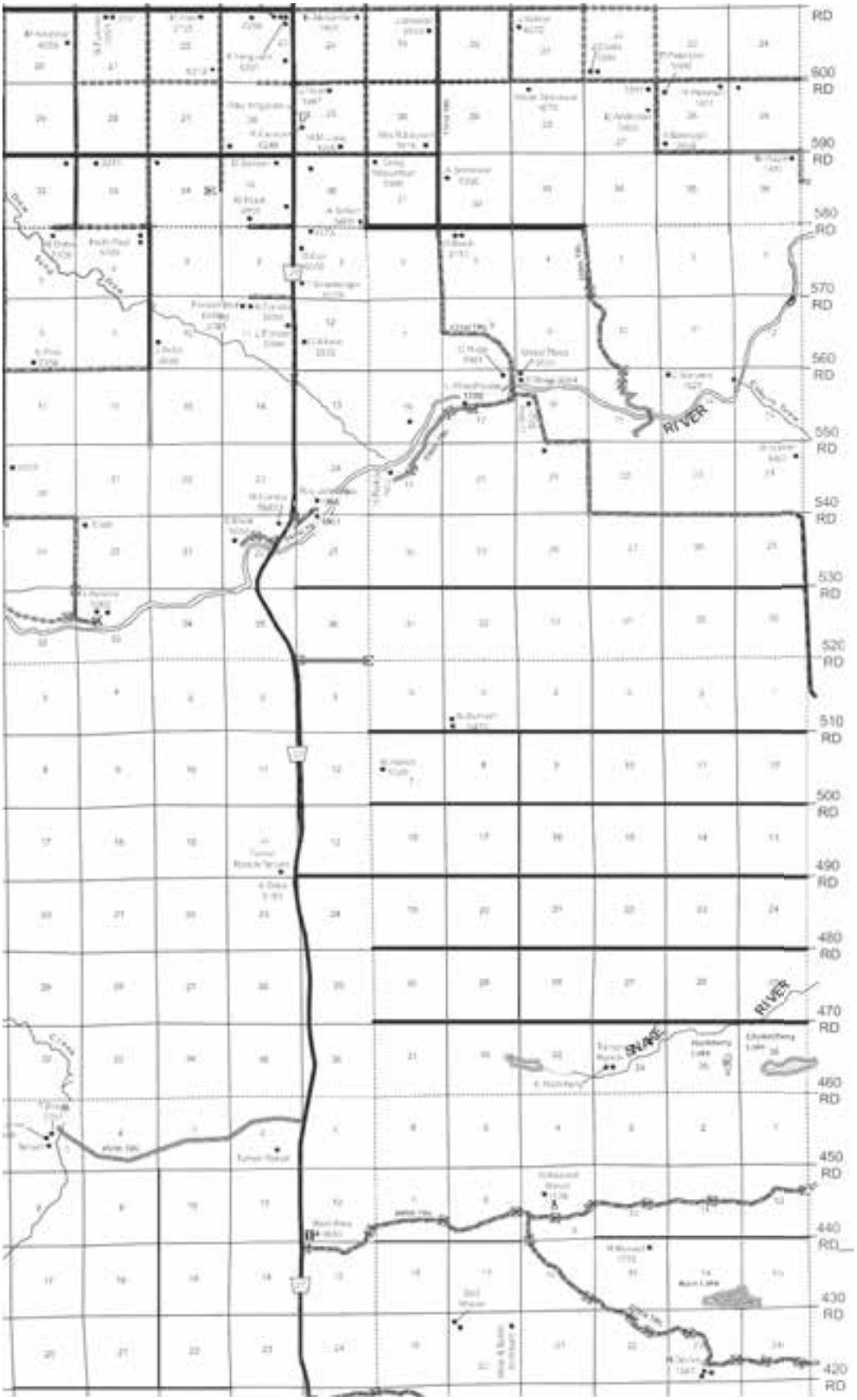

240 LN | 230 LN | 220 LN | 210 LN | 200 LN | 190 LN | 180 LN | 170 LN | 160 LN | 150 LN | 140 LN | 130 LN

R 42 W | 102 + 15 | R 41 W

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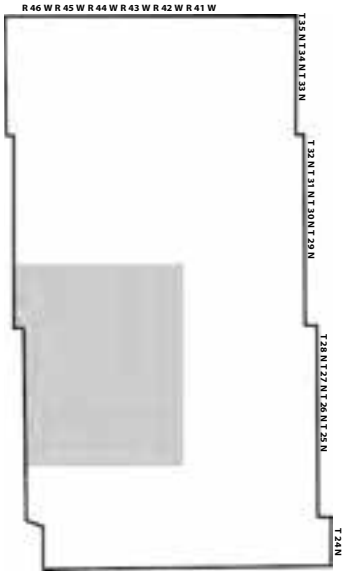
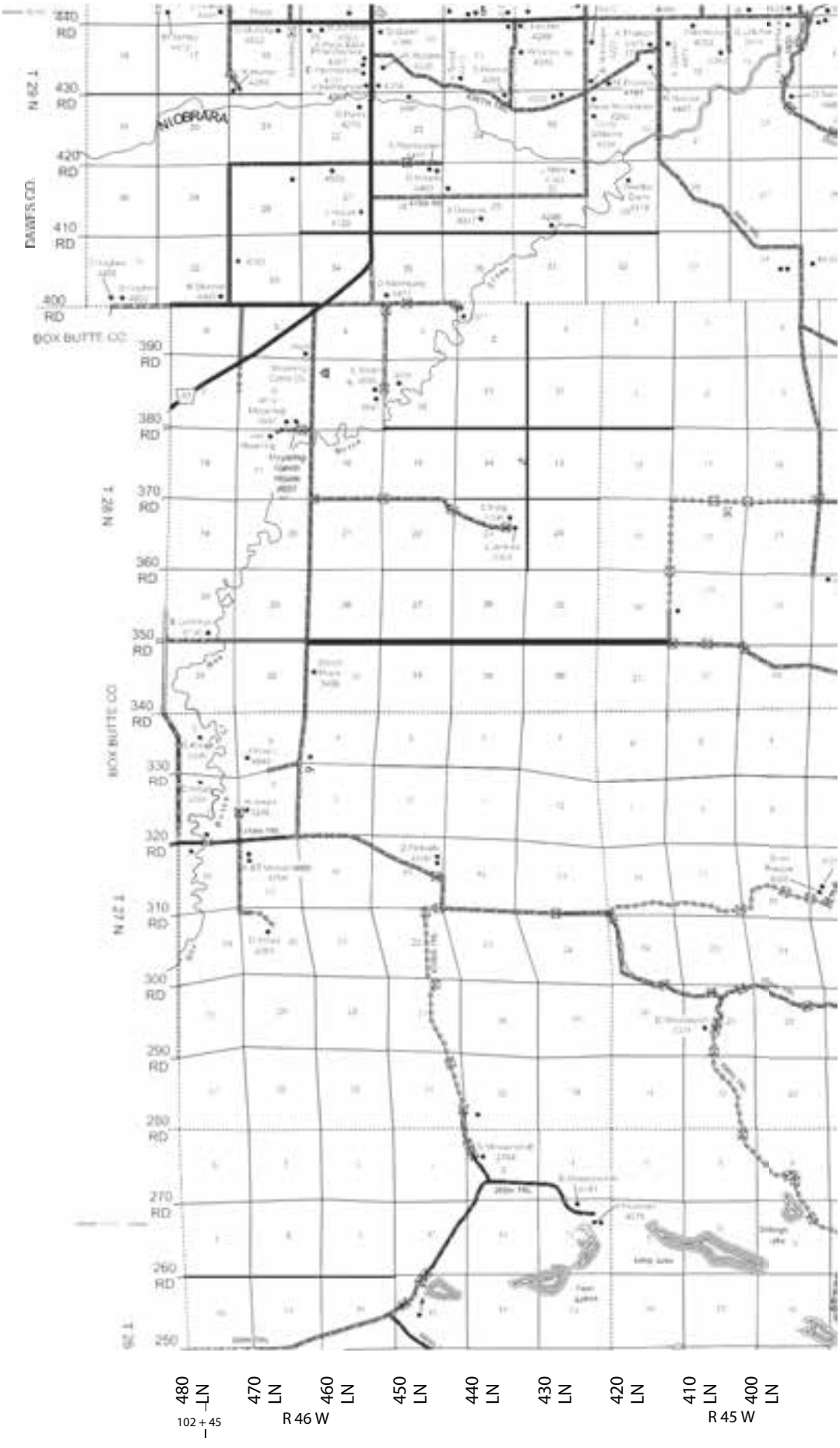
SOUTHWEST CENTRAL Sheridan County





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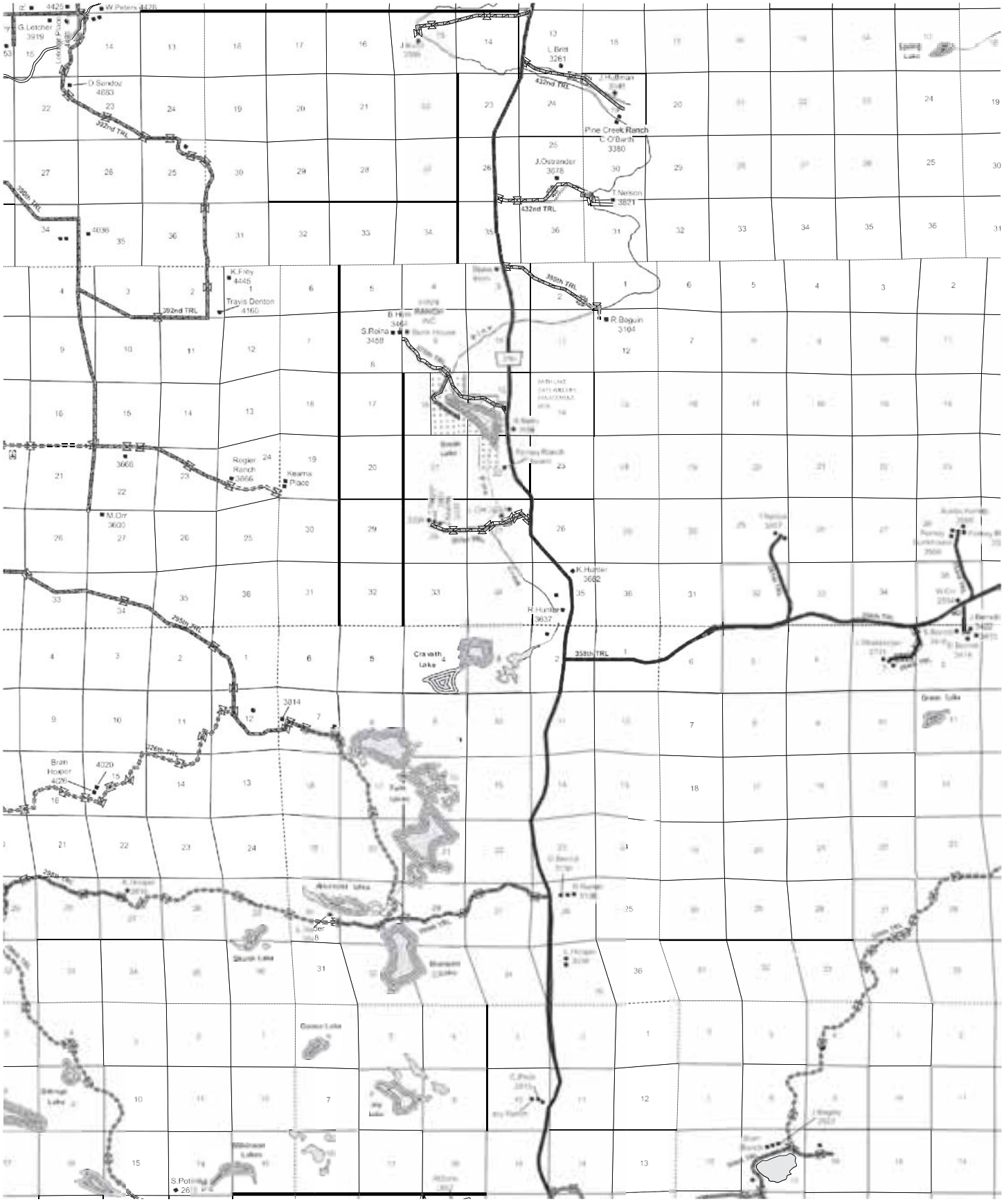

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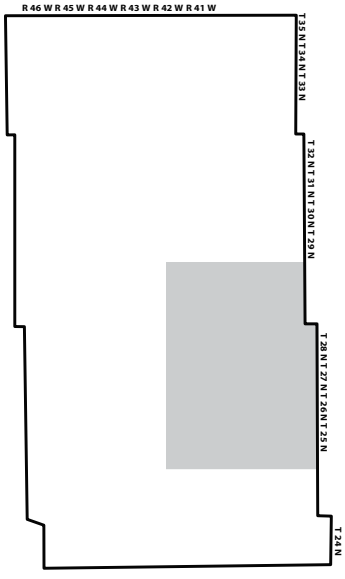
SOUTHEAST CENTRAL Sheridan County



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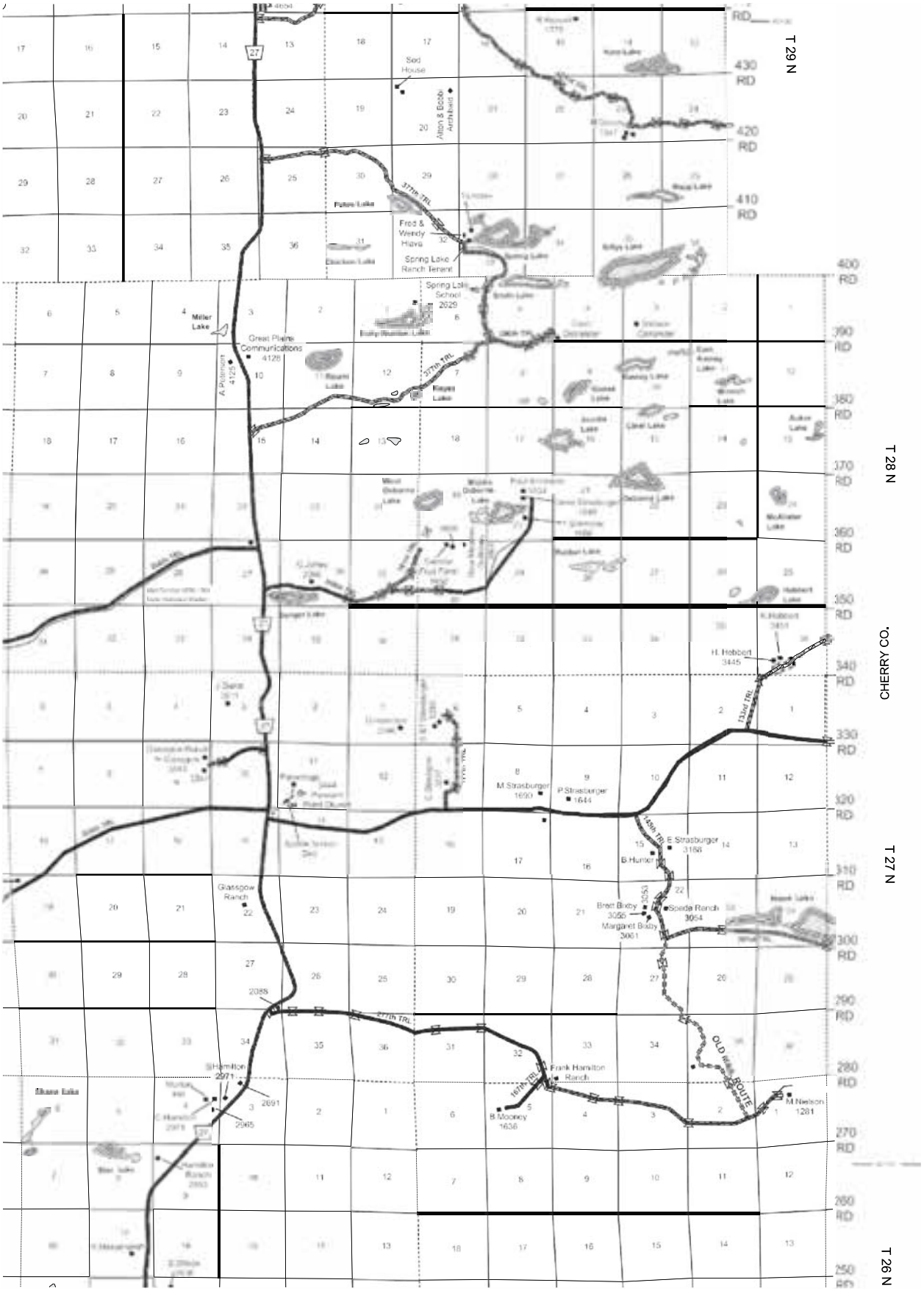

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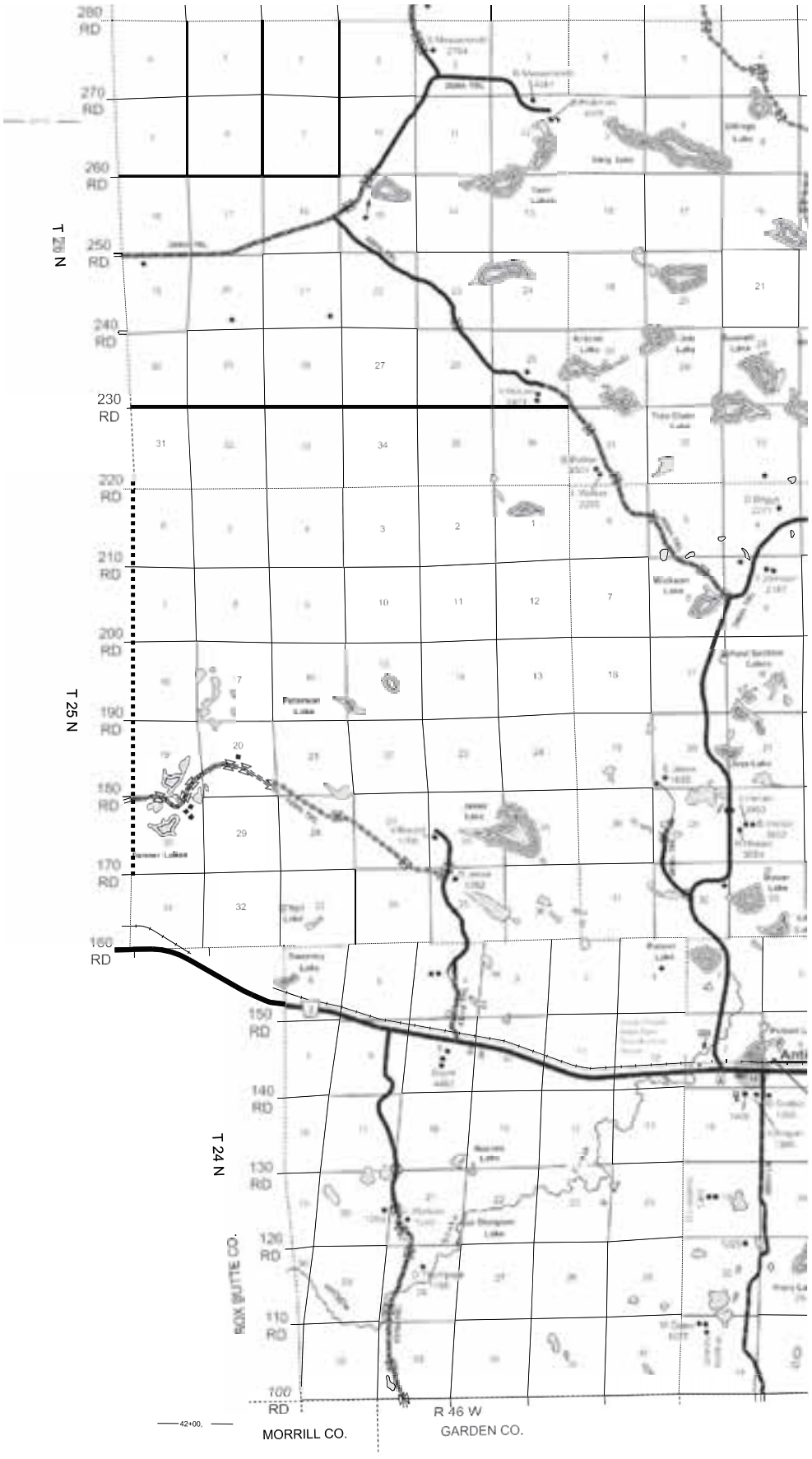
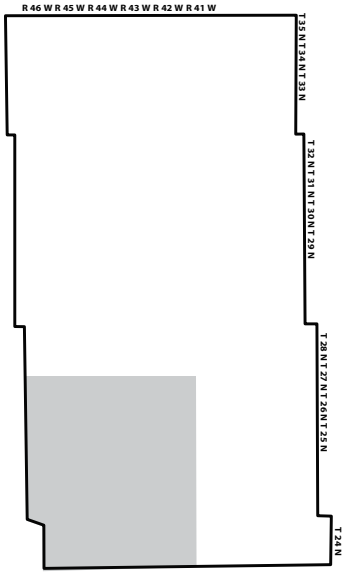
SOUTHWEST Sheridan County





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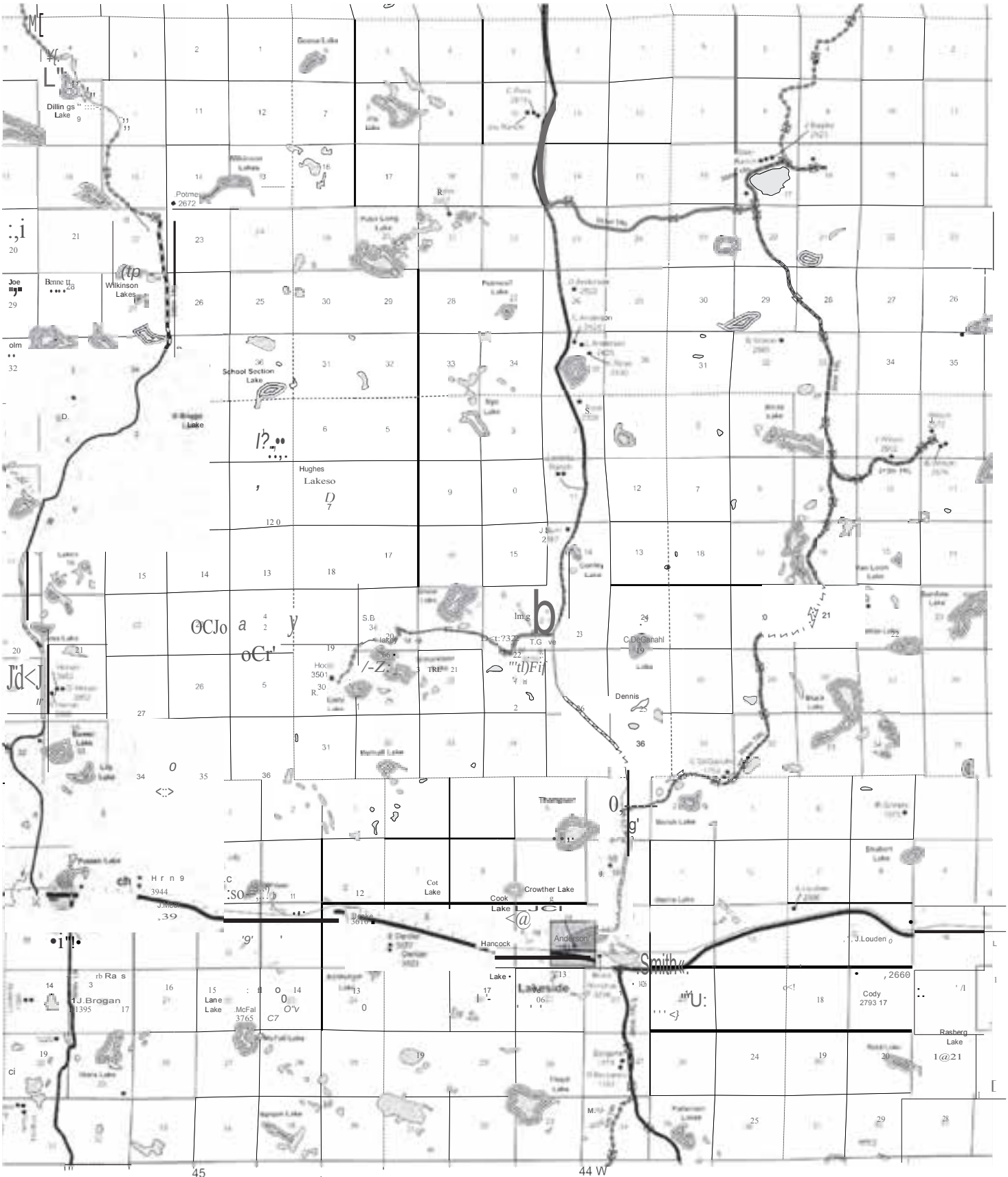
Dillin gs
Lake
Potmer
2672
Joe
Benne tt
28
Wilkinson
Lakes
olm
32
School Section
Lake
Hughes
Lakeso
D
7
Dennis
36
Cot
Lake
Crowther Lake
Cook
Lake
Hancock
Anderson/
Lake
Lane
Lake
McFal
3765
Cody
2793 17
Rasberg
Lake
1@21
45
44 W
R W
R
R 43 V'

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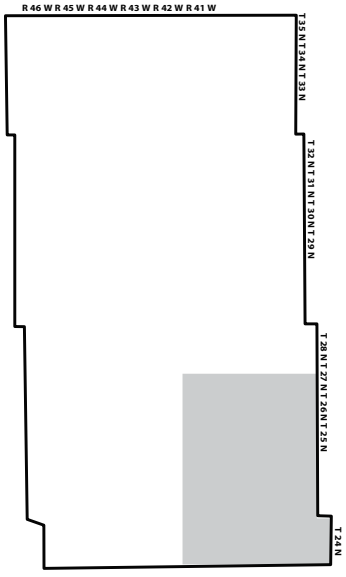
SOUTHEAST Sheridan County



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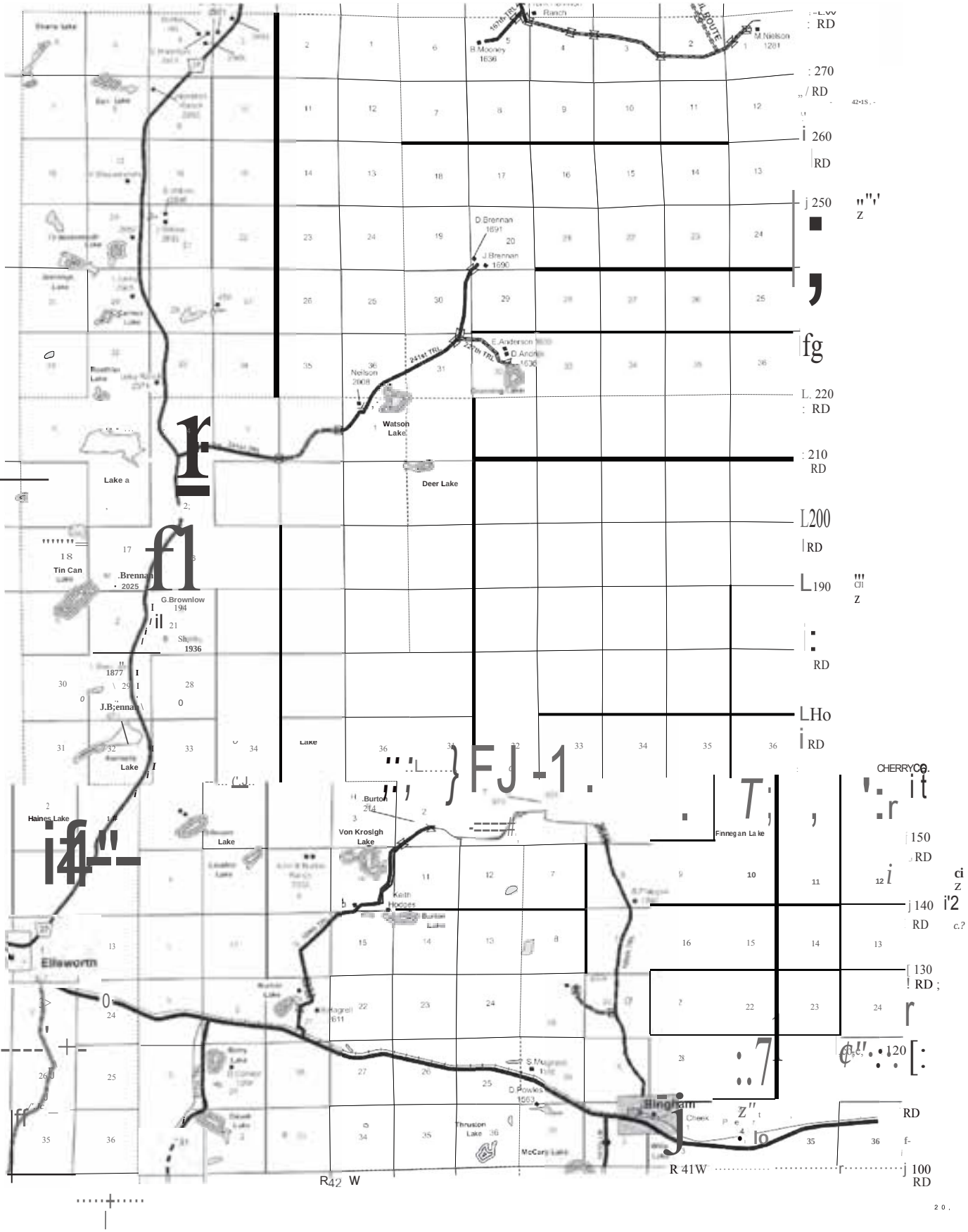

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Sioux County

SIOUX COUNTY

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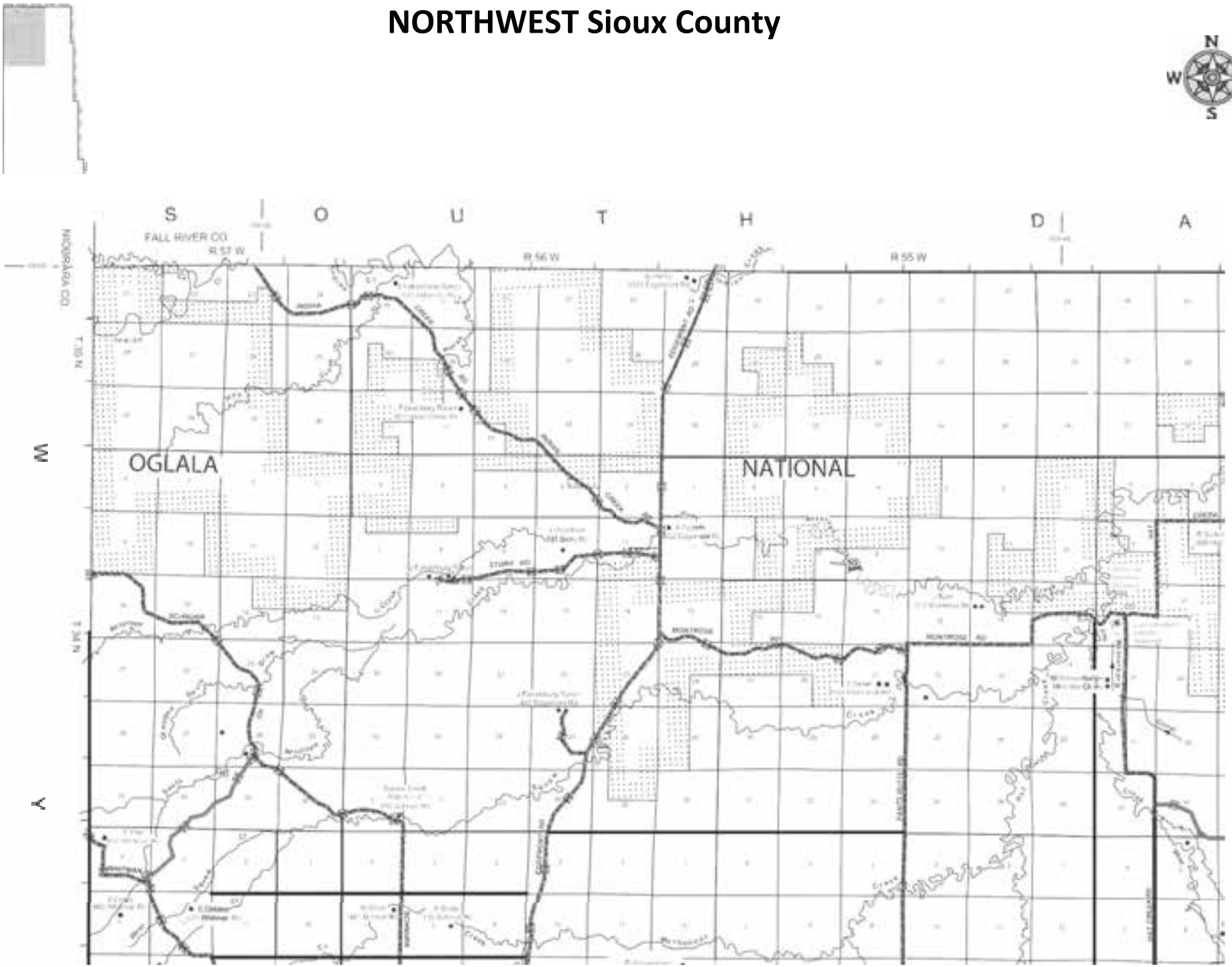
NORTHWEST Sioux County



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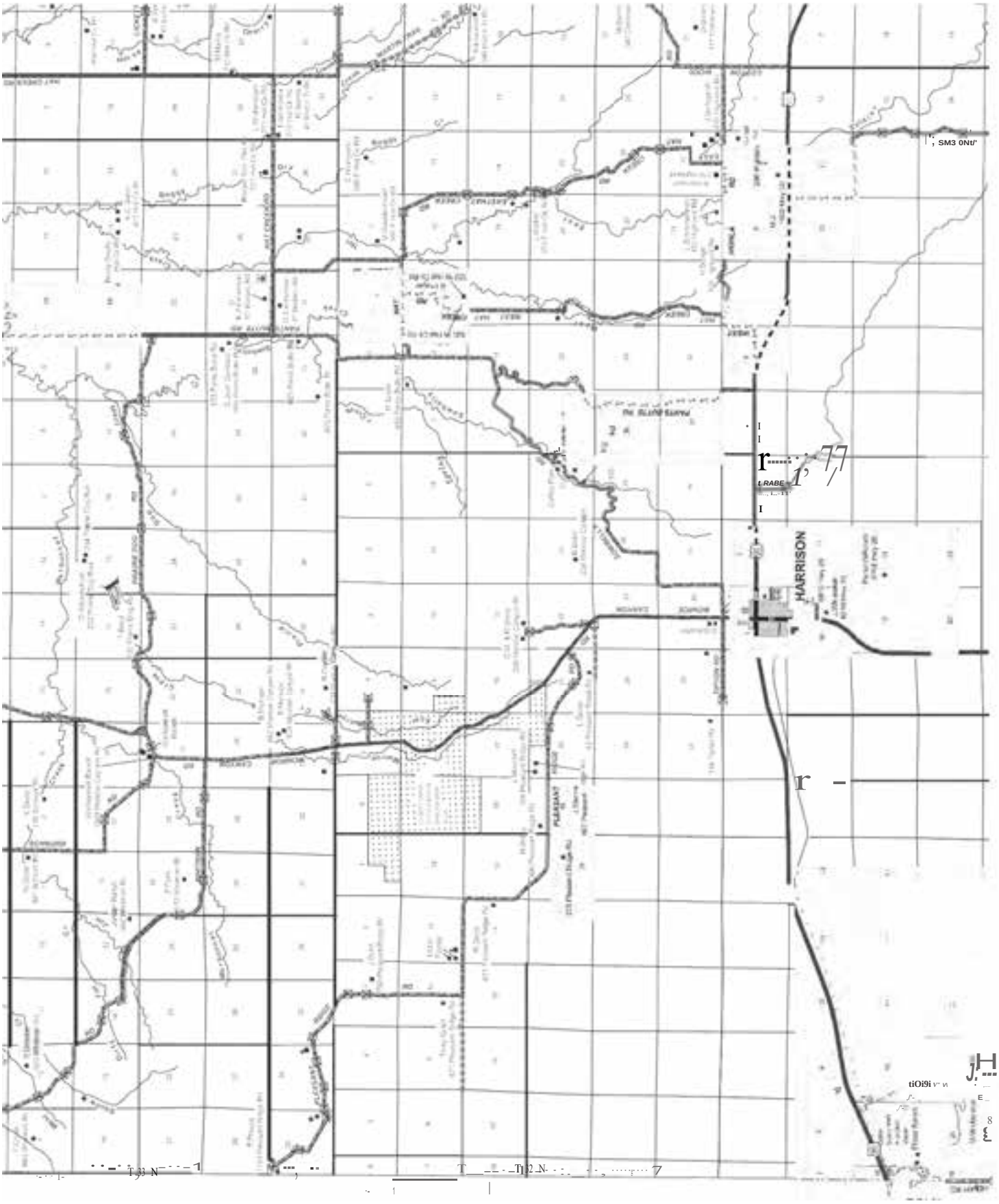

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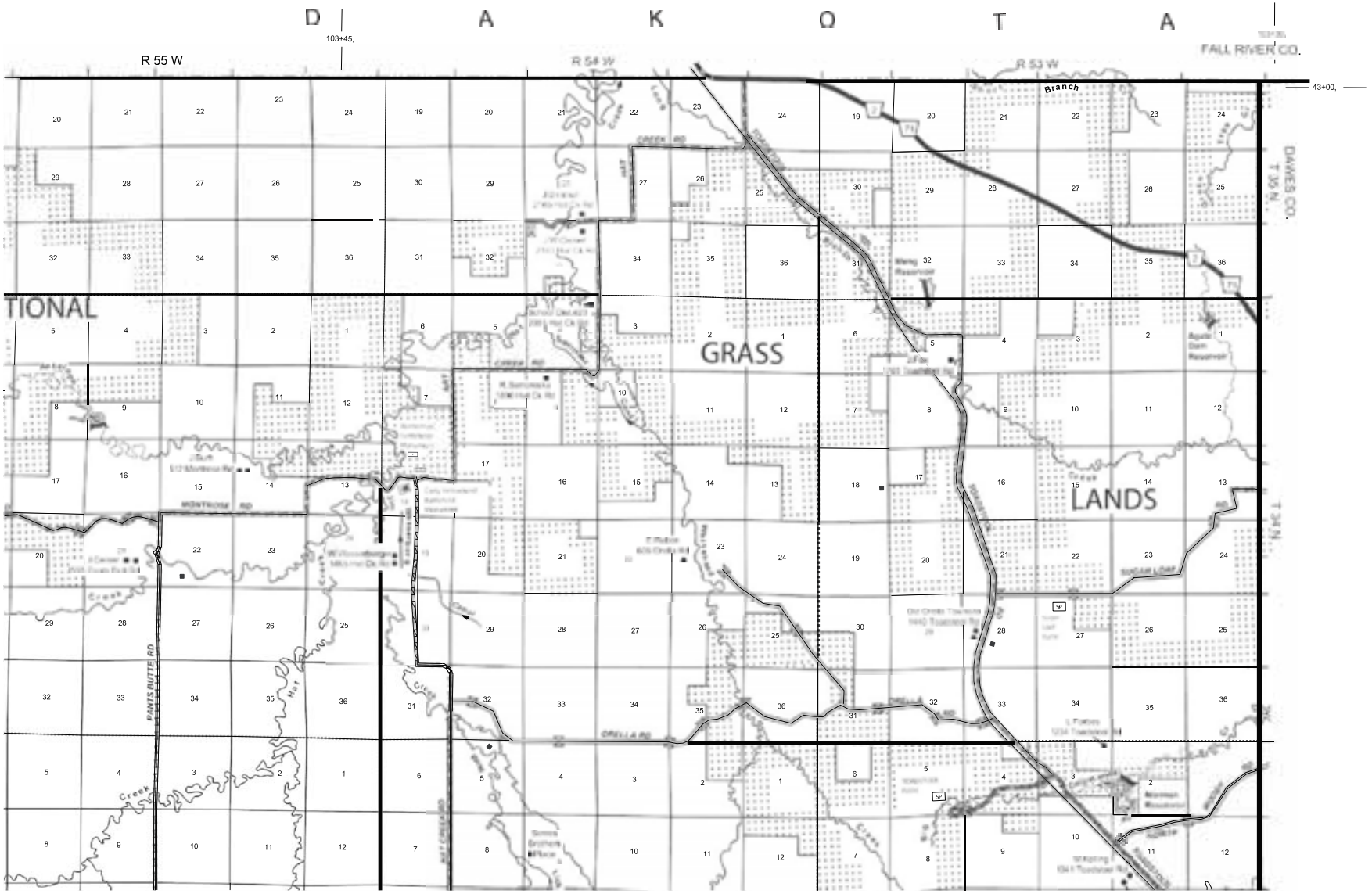
NORTHEAST Sioux County



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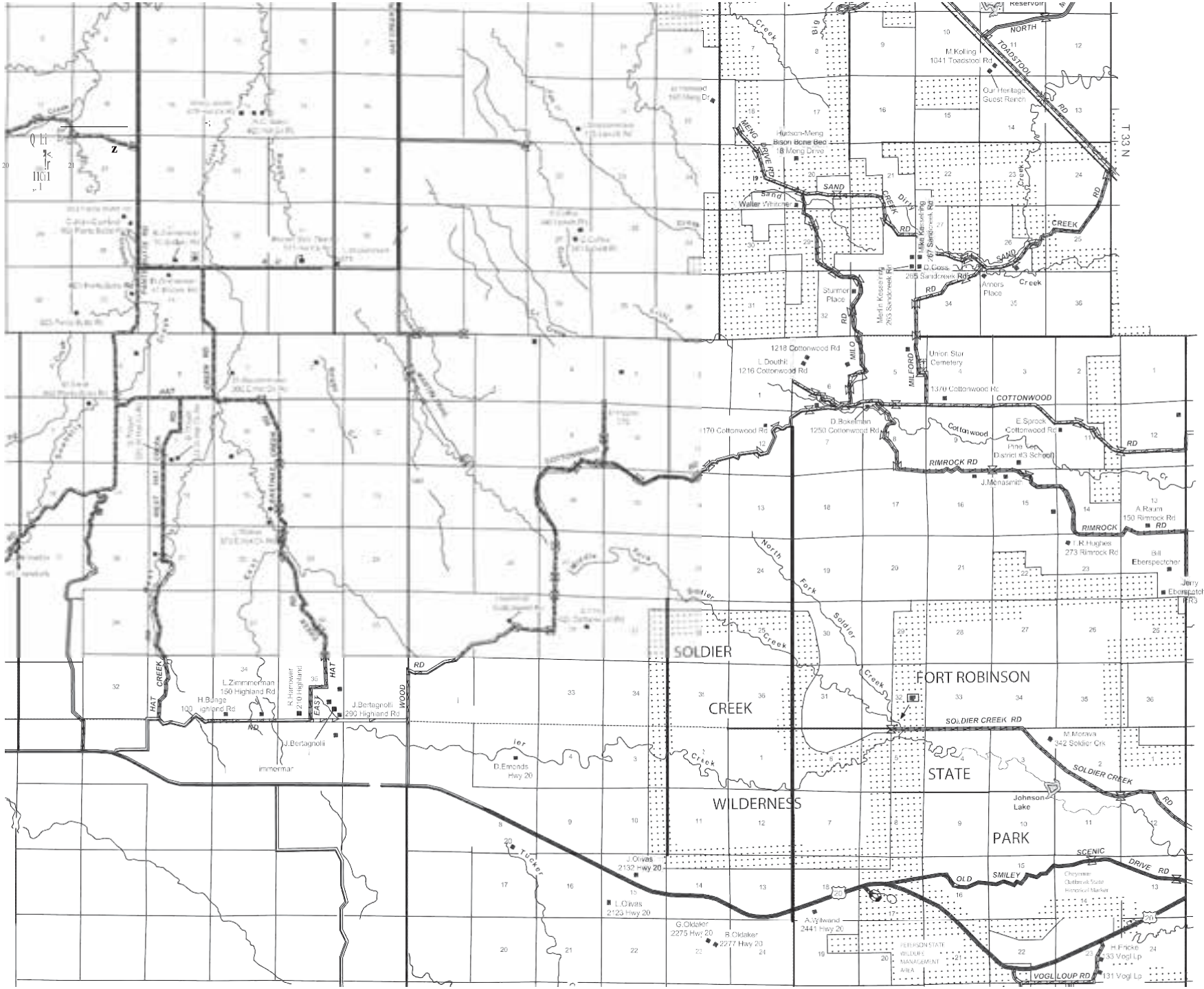
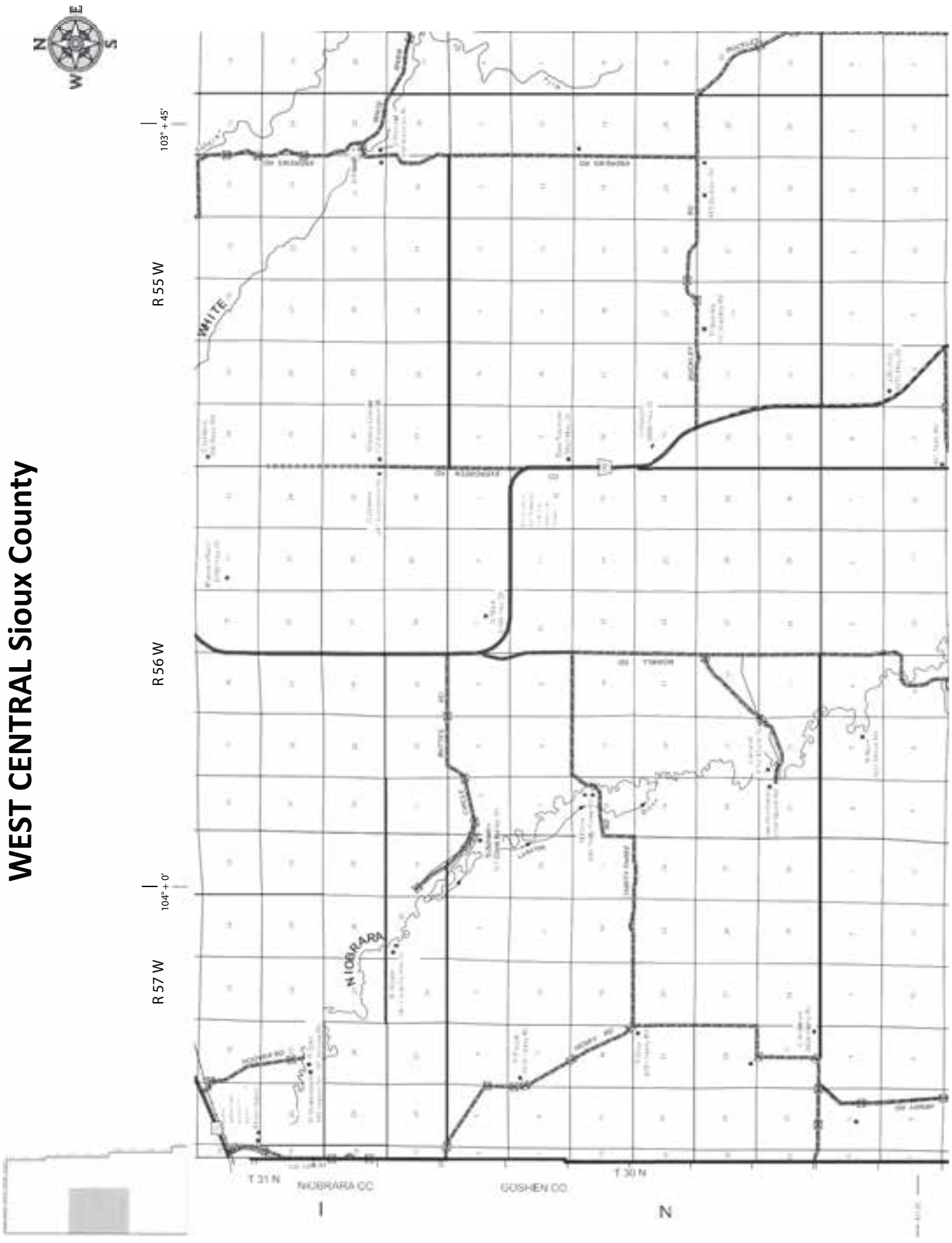

T 33 N
Reservoir
NORTH
TOADSTOOL
RD
M.Kolling
1041 Toadstool Rd
Our Heritage
Guest Ranch
Big
Creek
Hudson-Meng
Bison Bone Bed
18 Meng Drive
MENG DRIVE RD
SAND
CREEK
RD
Sand
Waller Whitmer
Dirty
Mike Kesselring
267 Sandcreek Rd
CREEK
D.Goss
265 Sandcreek Rd
Amers
Place
Creek
SAND
RD
Sturmer
Place
RD
Merlin Kesselring
263 Sandcreek Rd
1218 Cottonwood Rd
L.Douthit
1216 Cottonwood Rd
MILO
MILFORD
Union Star
Cemetery
1370 Cottonwood Rd
COTTONWOOD
D.Bokelman
1250 Cottonwood Rd
1170 Cottonwood Rd
Cottonwood
E.Sprock
Cottonwood Rd
RD
Pine
District #3 School
RIMROCK RD
J.Menasmith
A.Raum
150 Rimrock Rd
RIMROCK
RD
T.R.Hughes
273 Rimrock Rd
Bill
Eberspetcher
Jerry
Eberspetcher
RR3
North
Fork
Soldier
Creek
SOLDIER
CREEK
FORT ROBINSON
SOLDIER CREEK RD
M.Morava
342 Soldier Crk
STATE
WILDERNESS
PARK
Johnson
Lake
SCENIC
DRIVE RD
SMILEY
OLD
Chevenne
Outbreak Scale
Historical Marker
J.Olivas
2132 Hwy 20
L.Olivas
2123 Hwy 20
G.Oldaker
2275 Hwy 20
B.Oldaker
2277 Hwy 20
A.Yttiwand
2441 Hwy 20
PETERSON STATE
WILDLIFE
MANAGEMENT
AREA
H.Fricke
133 Vogl Lp
VOGL LOUP RD
131 Vogl Lp
D.Emonds
Hwy 20
Tucker
HAT
CREEK
WEST HAT CREEK RD
EAST HAT CREEK RD
L.Zimmerman
150 Highland Rd
H.Bolage
100 Highland Rd
R.Hamwer
210 Highland
J.Bertagnolli
290 Highland Rd
J.Bertagnolli
WOOD
RD
immerman

WEST CENTRAL Sioux County



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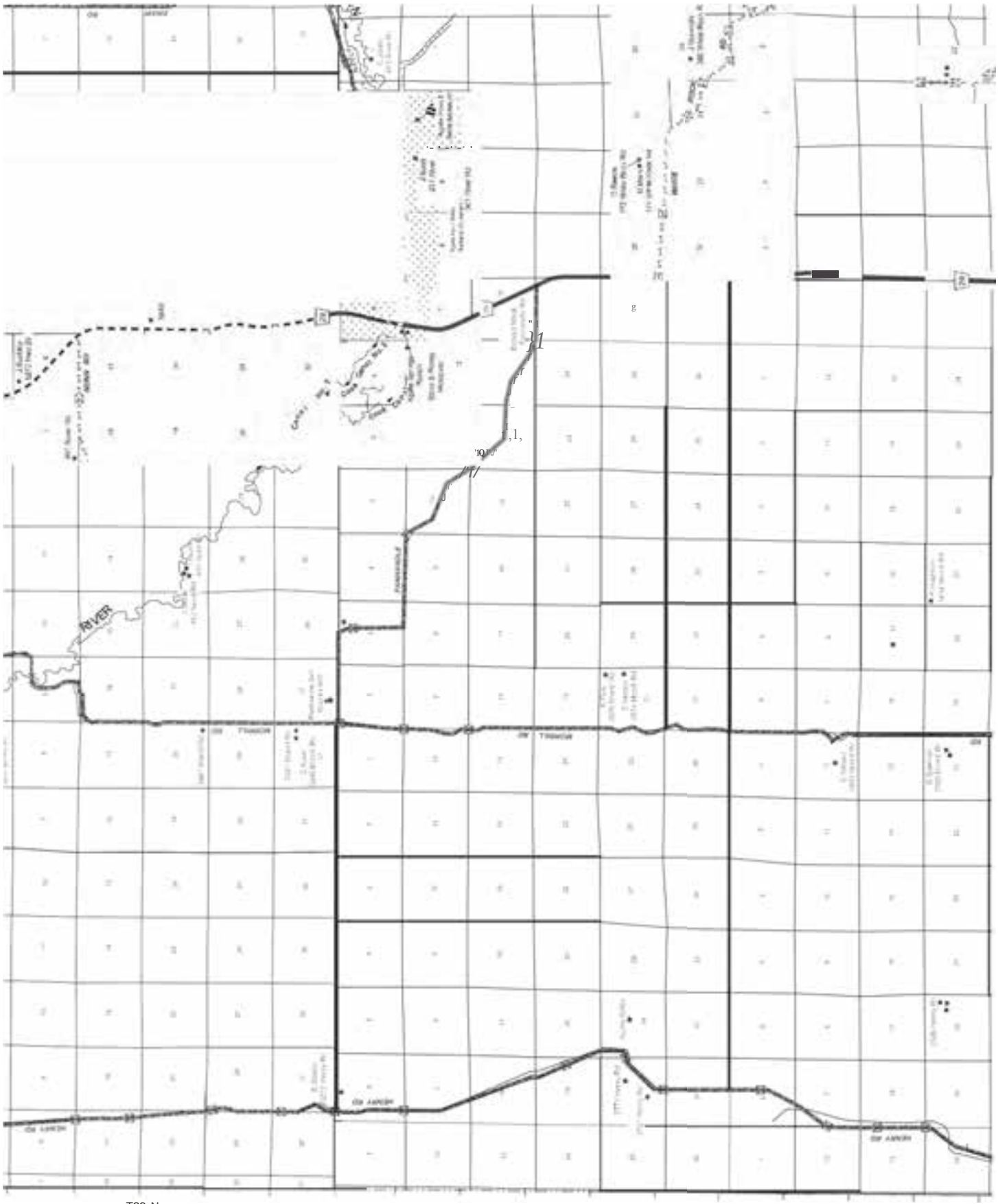


T29 N T28 N T 27 N

f G 8 N

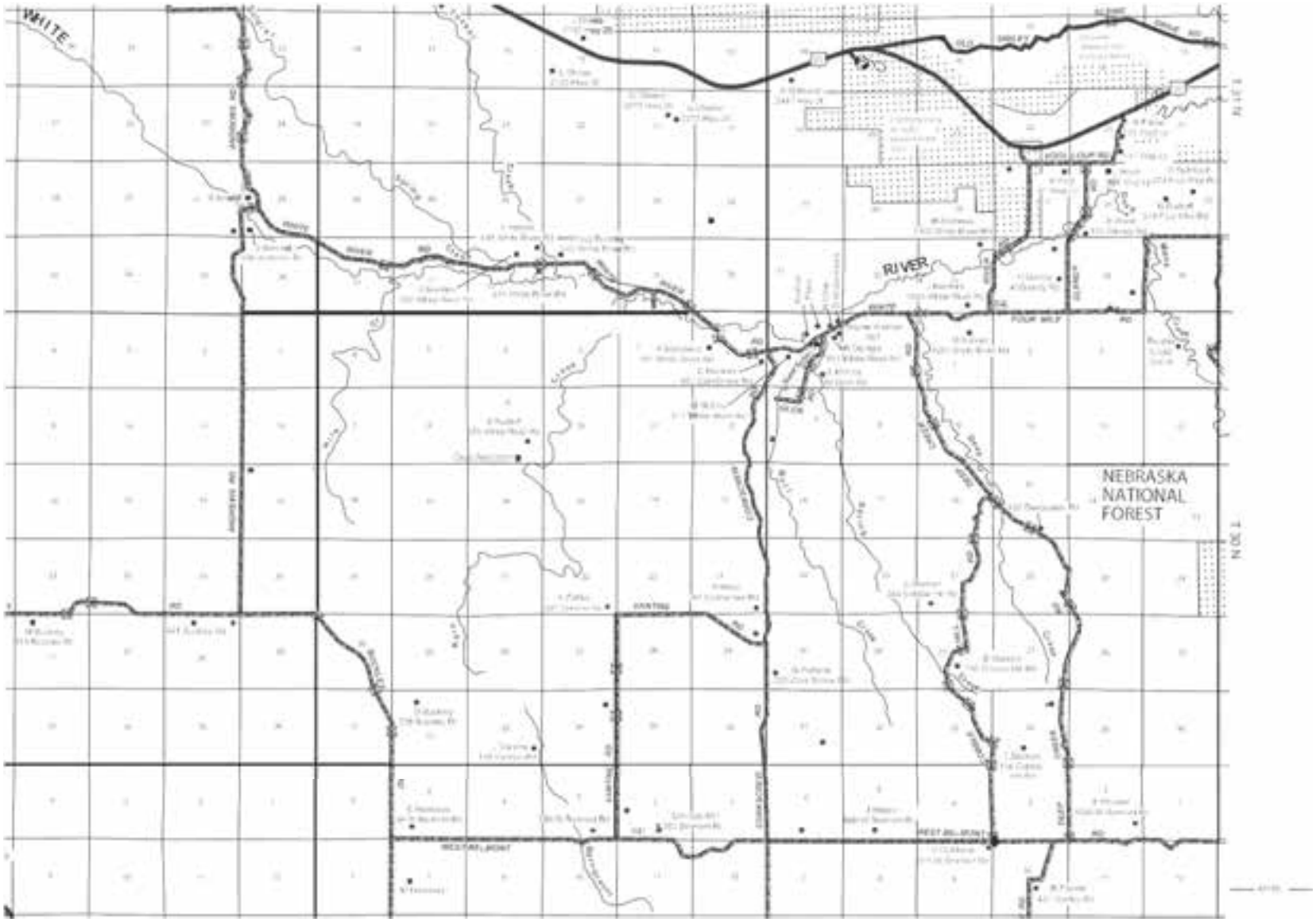
EAST CENTRAL Sioux County

R 55 W

103° + 45′

R 53 W

103° + 30′



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DAWES CO.
FRANKLIN RD
PINK HOUSE RD
WHITE ROCK RD
NIOBRARA RIVER
L Stansle
603 Pink School House Rd
T Stangle
601 Pink School House Rd
600 Pink School House Rd
D Keener
542 White Rock Rd
L Keener
540 White Rock Rd
Kenny Koerner
Skandal
380 White Rock Rd
G.Wheeler
759Wheeler Rd
K.Wheeler
57 Wheeler Rd
753 Wheeler Rd
755 Wheeler Rd
9070 Franklin Rd
Coyote Springs Creek

SOUTHWEST Sioux County

SECTION A
1. M.Scott
2. Dinklage Feed Yard
3. D.Henschfeldt
4. R.Carston
5. G.Oberg
6. J.Tawuski
7. Jackson Tenant

SECTION B
1. J.Trimble
2. A.Weinreck - 330
3. Dinklage Feed Yard
4. H.Schultzes
5. R.Mathiasen

SECTION C
1. H.Adams
2. T.Wilson
3. E.Wilson
4. E.Banta - 521 S5 Rd
5. B.Banta - 511 S5 Rd
6. F.Adams

SECTION D
1. M.Flock
2. L.Jacobsen
3. R.Svitak
4. R.Daniels

SECTION E
1. F.Forbes
2. B.Grote
3. D.Seier
4. R.Willems
5. B.Gall
6. B.Mueller
7. I.Beam

SECTION F
1. T.Case
2. R.Pfortmiller
3. C.Cooley
4. K.Dagon
5. J.Reihchmoon
6. M.Mehling

SECTION G
1. Reines Place
2. J.Siebert
3. T.Newman - 930 S-A Rd
4. R.Wharton - 140 Liberty Oil Rd
5. H.Kerbel - 170 Liberty Oil Rd

SECTION H
1. D.Hubbard
2. Hoffman Tenant
3. T.Hill
4. R.Tenant
5. K.Kirlin

SECTION I
1. G.Ruff
2. M.Lashley
3. R.Lashley - 1280
4. P.Preper
5. Perkins Tenant
6. M.Perkins
7. J.Perkins

SECTION J
1. J.Bove
2. Bove Office
3. T.Mauler
4. Schneider Place
5. M.Schneider

SECTION K
1. B.Black
2. C.Wilmot
3. C.Wiedeman
4. G.Harriet
5. B.Henderson
6. J.Henderson

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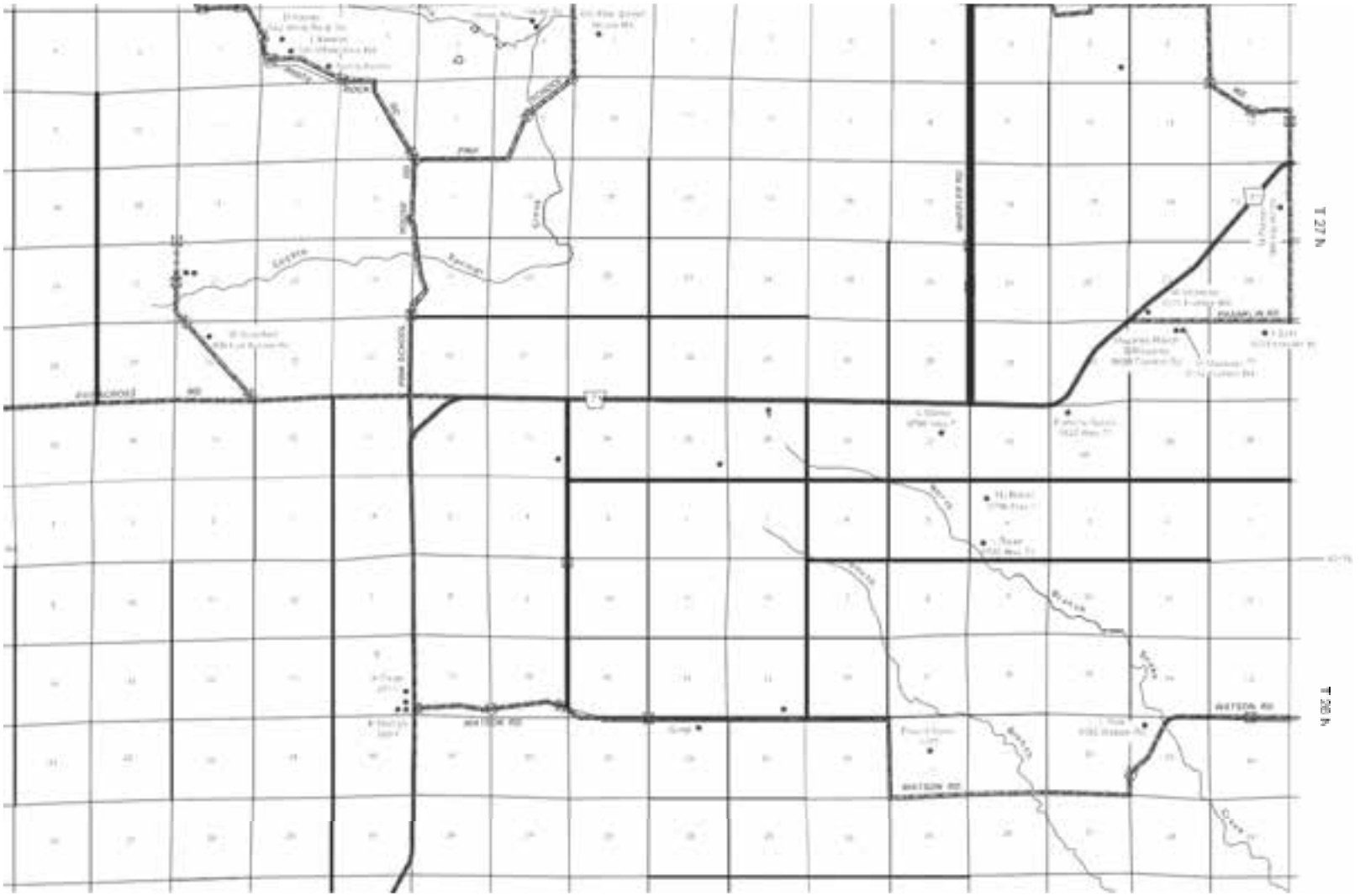
SOUTHEAST Sioux County



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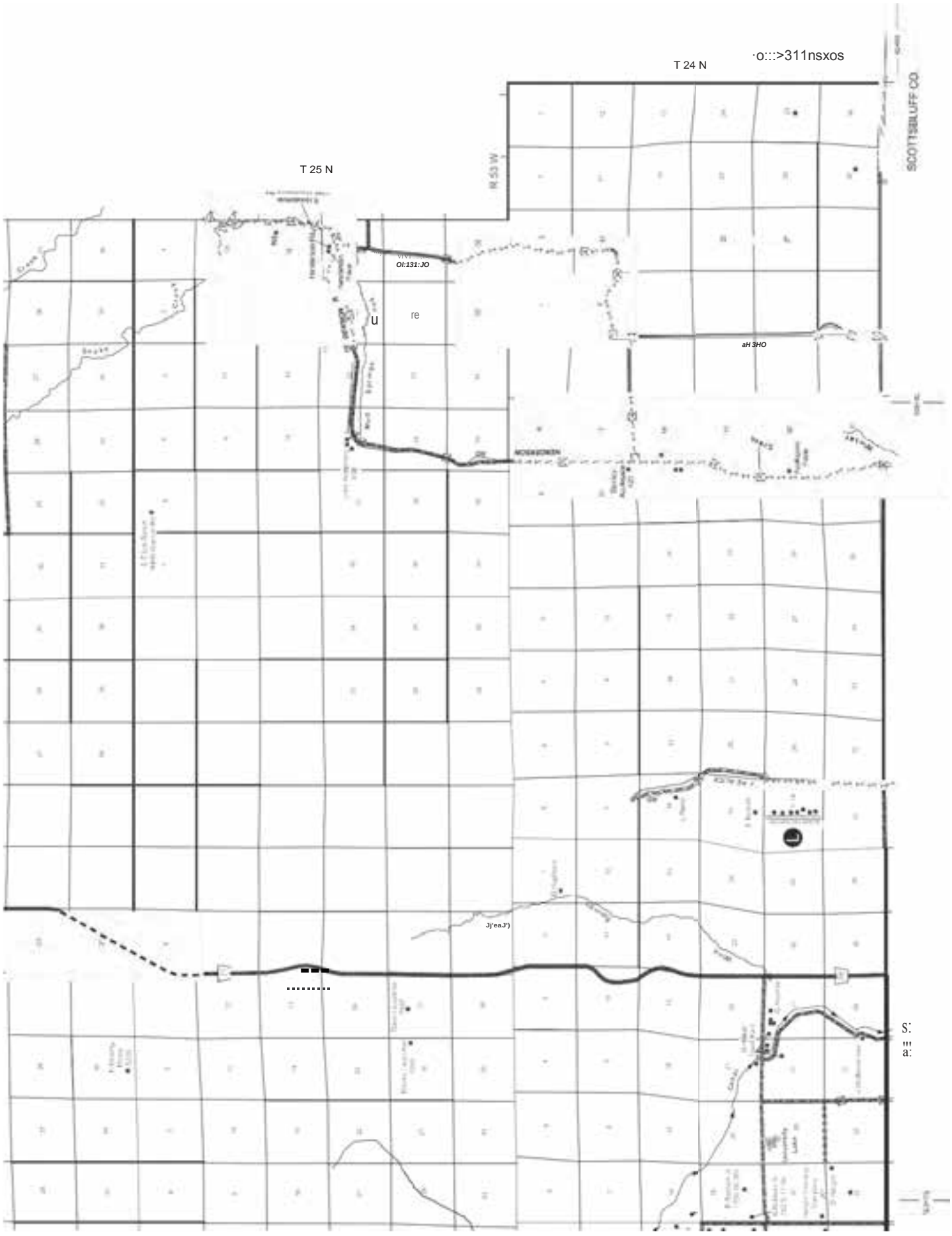

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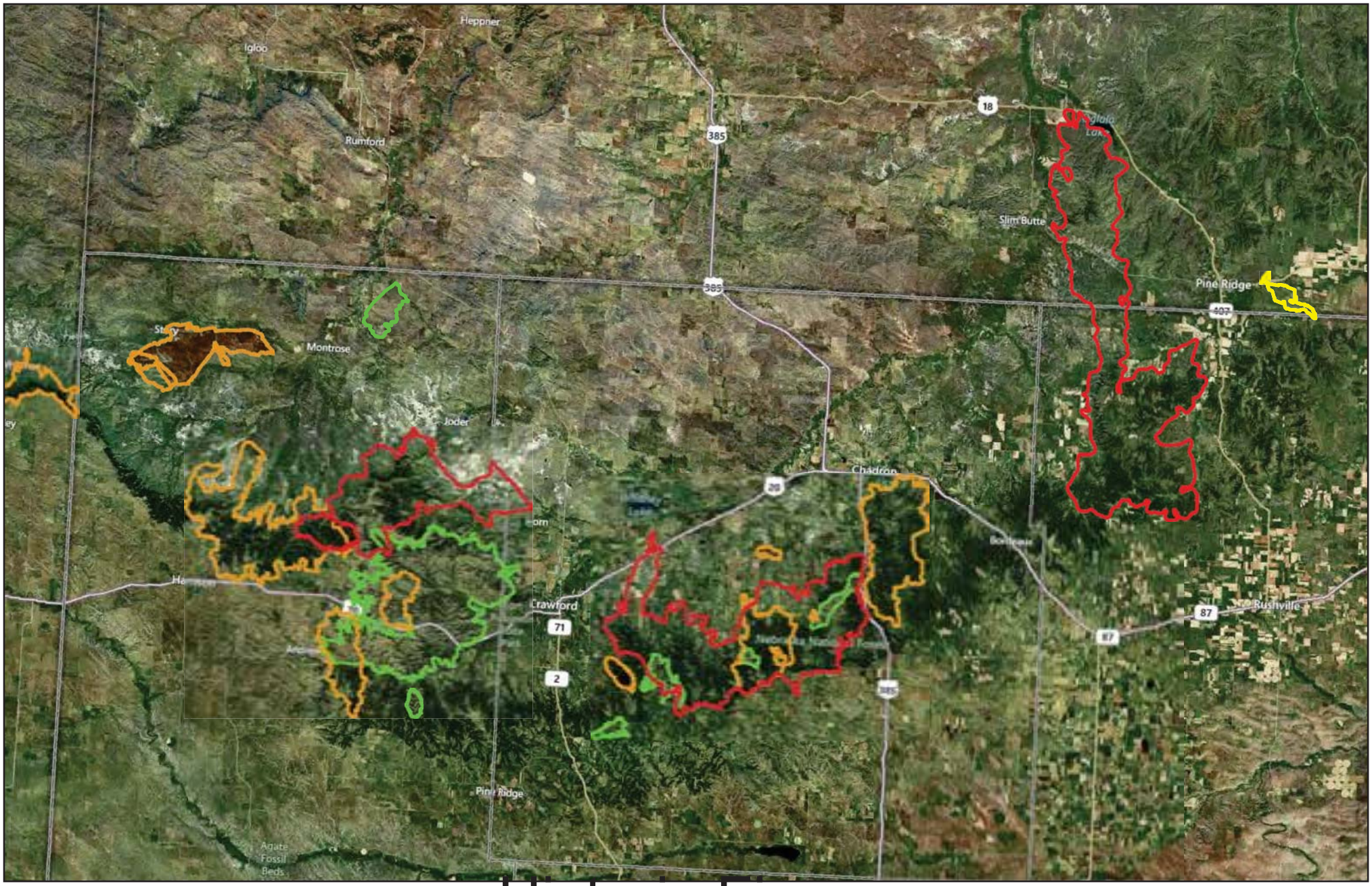
Appendix E

Map - Historic Fires of the Pine Ridge



Historic Fires

1:550,000

Miles

0 3 6 12 18 24

National Interagency Fire Center (NIFC)
Imagery: Bing 2012

Map Created: 11.26.2012
Fire Perimeter Data

Fire Occurence Year

2000 - 2009

2012

Provided By:
Nebraska Forest Service (NFS)
Monitoring Trends in Burn Severity (MTBS)

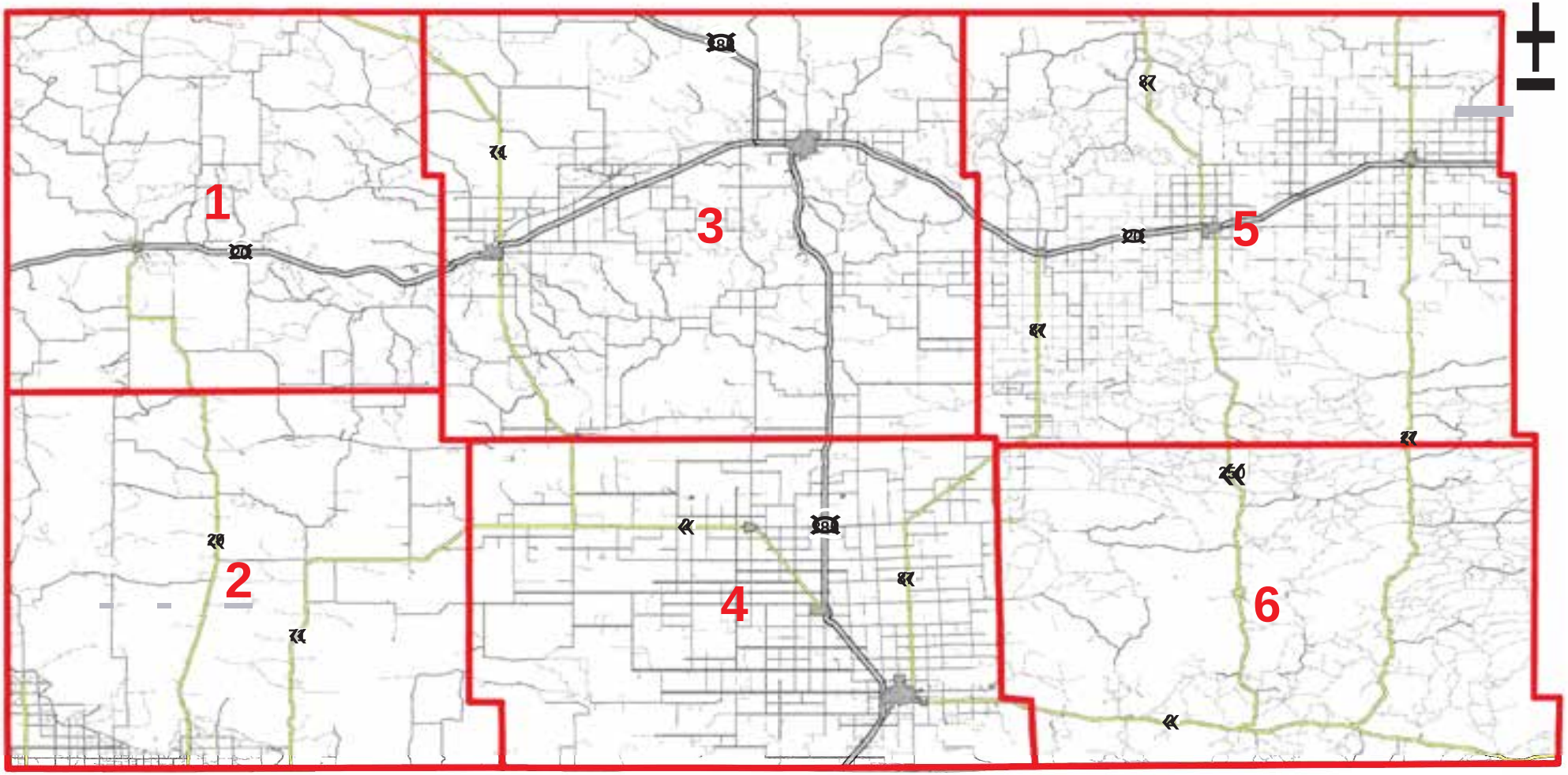
of the Pine Ridge

1973 - 1989

1990 - 1999

Appendix F

Maps - Restricted Roads and Bridges



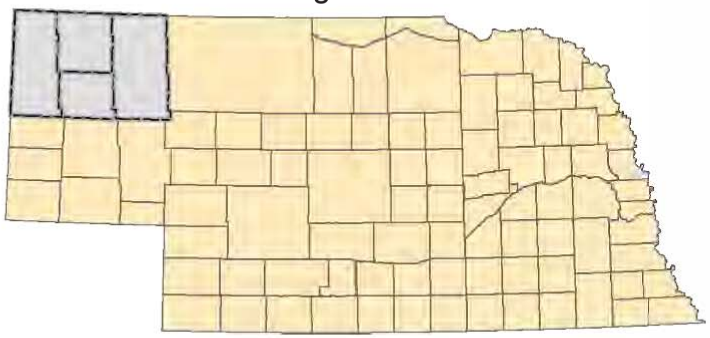
Pine Ridge CWPP Hazardous Roads Overview Map

Maps

1. North Sioux Co.
2. South Sioux Co.
3. Dawes Co.
4. Box Butte Co.
5. North Sheridan Co.
6. South Sheridan Co.

0 4.5 9 18 27 36 Miles

Pine Ridge CWPP Area



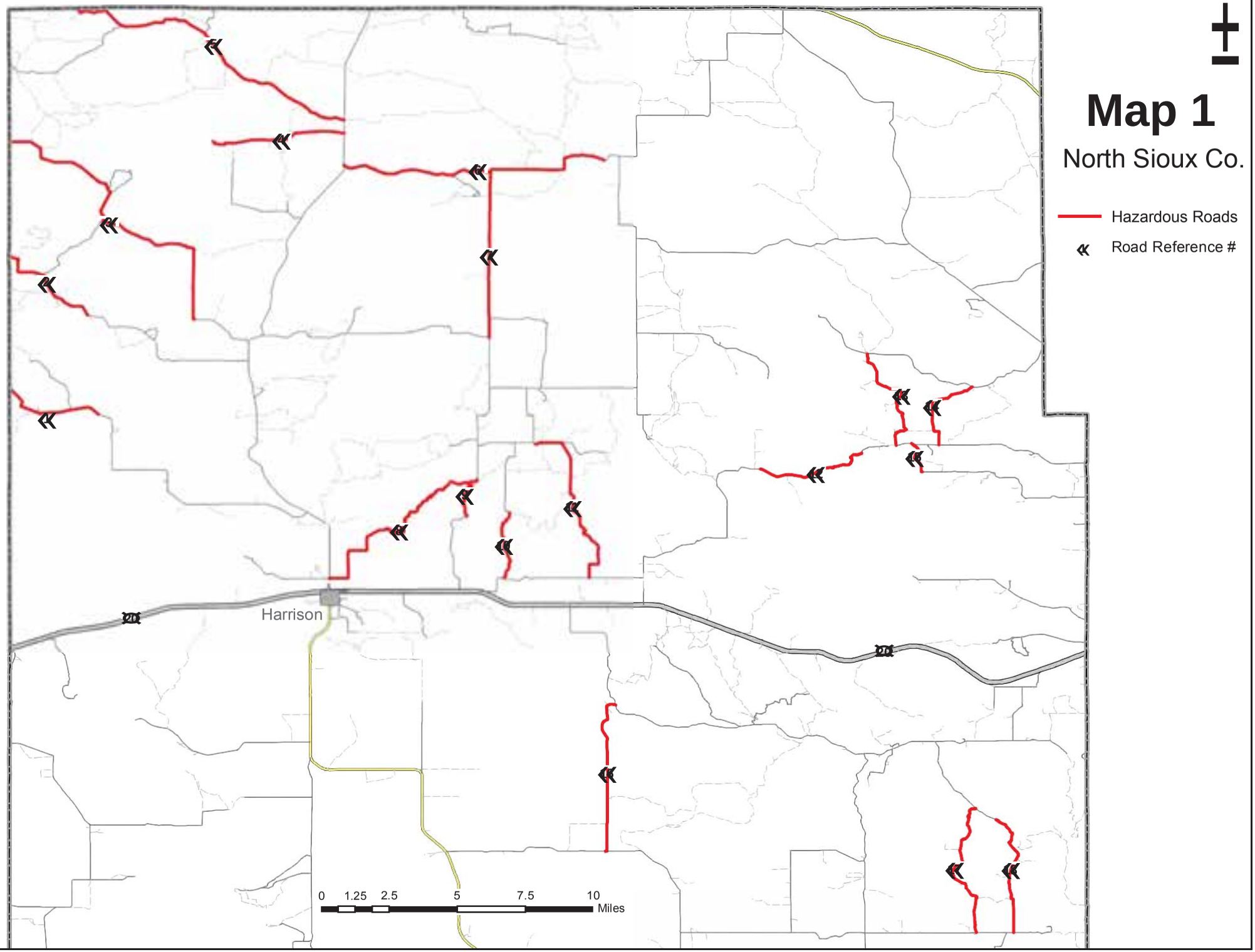
Sioux County Road Impasse/Travel Warnings

North of US Highway 20

1) Pleasant Ridge - Narrow sections
2) Whitman - Narrow sections
3) Schnurr - Narrow, minimal gravel, clay base
4) Story - Minimum maintenance, minimal gravel, clay base
5) Indian Creek - Minimum maintenance, minimal gravel, clay base
6) Montrose - Restricted bridge on East end, clay base
7) N. Pants Butte - Clay base, passable only when dry
8) Sowbelly - Steep, narrow and sandy
9) Pants Butte - Steep, tight turns
10) W. Hat Creek - Steep section, restricted bridge
11) E. Hat Creek - Narrow road, little gravel, restricted bridge
12) Cottonwood - Steep, tight turns, rock ledges
13) Milo - Narrow and sandy
14) Milford - Narrow, clay base, restricted bridge
15) Rimrock - Restricted bridge

South of US Highway 20

16) Andrews Rd - Minimum maintenance, no gravel, sandy
17) Cobble Hill Rd - Steep, tight turns
18) Deadman - Steep, tight turns
19) Carlson - Steep, no gravel, sandy
20) Cut Across - Steep, no gravel, sandy
21) Watson Rd - Steep, no gravel, sandy
22) Ore Rd - Low maintenance, no gravel, sandy
23) Murphy - Steep hills, low maintenance, no gravel, sandy


Map 1
North Sioux Co.
Hazardous Roads
Road Reference #
Harrison
0 1.25 2.5 5 7.5 10
Miles

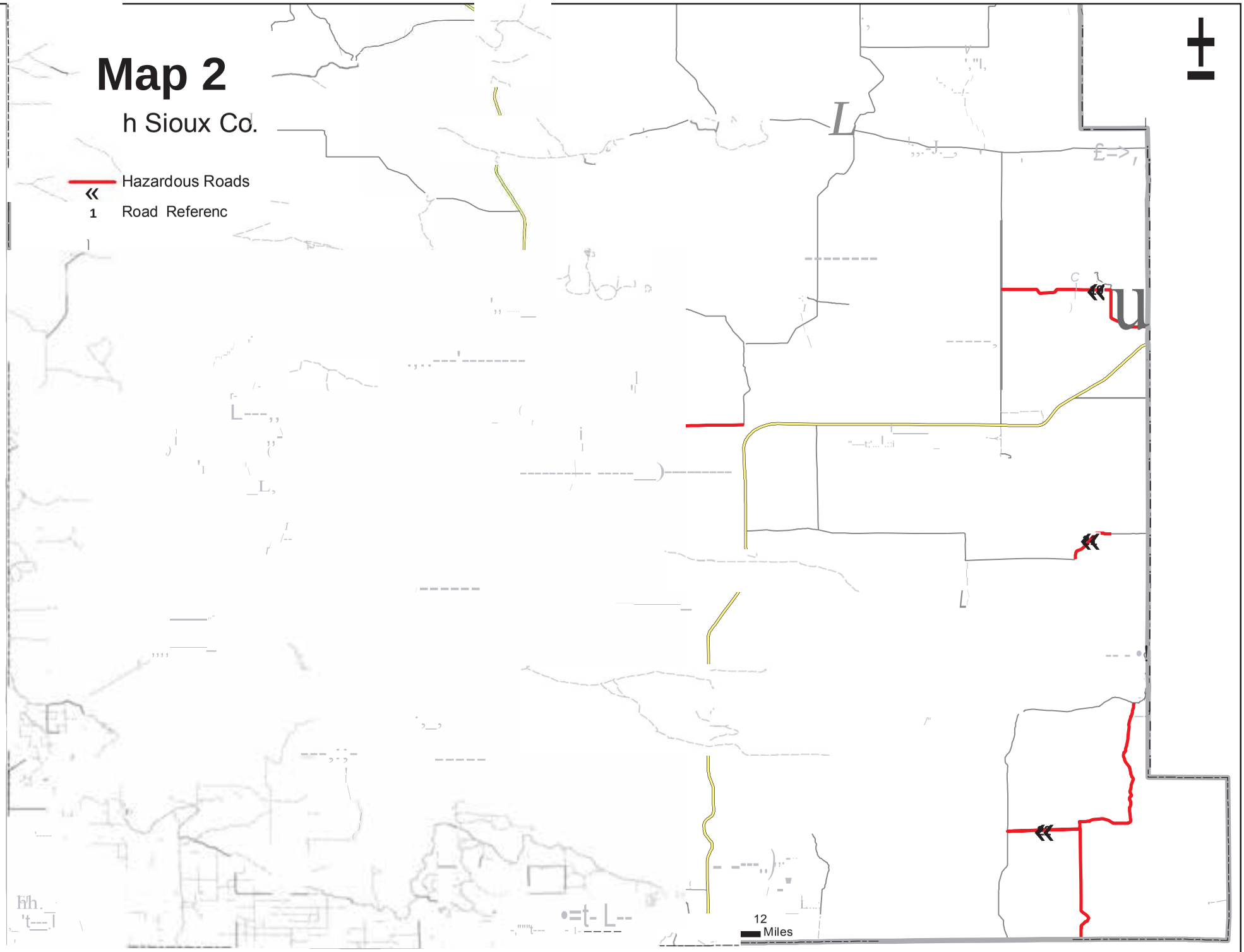
Map 2

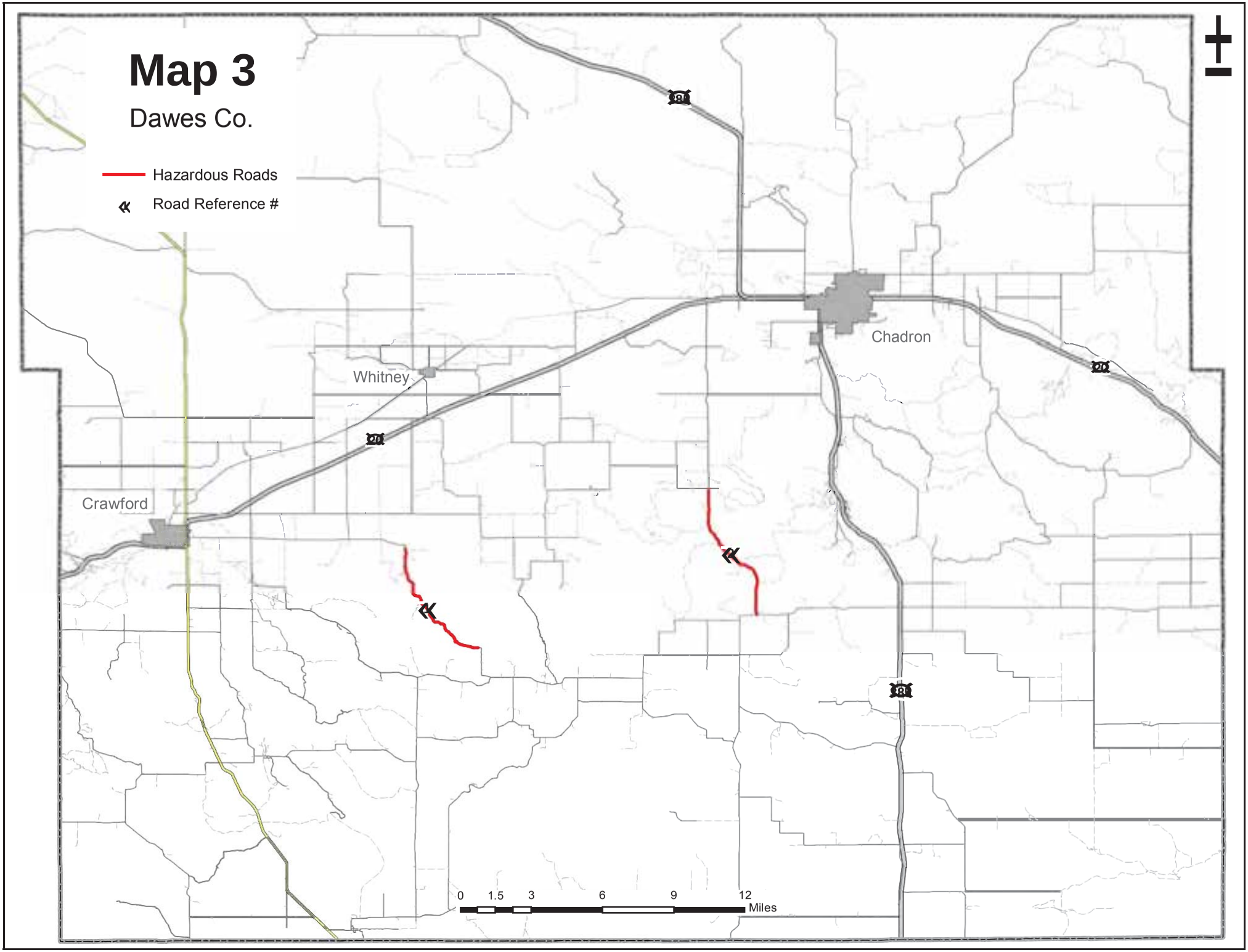
h Sioux Co.

Hazardous Roads

1 Road Referenc

12 Miles




Map 3
Dawes Co.
Hazardous Roads
Road Reference #
Chadron
Whitney
Crawford
0 1.5 3 6 9 12
Miles

Map 4

Box Butte Co.

Hazardous Roads

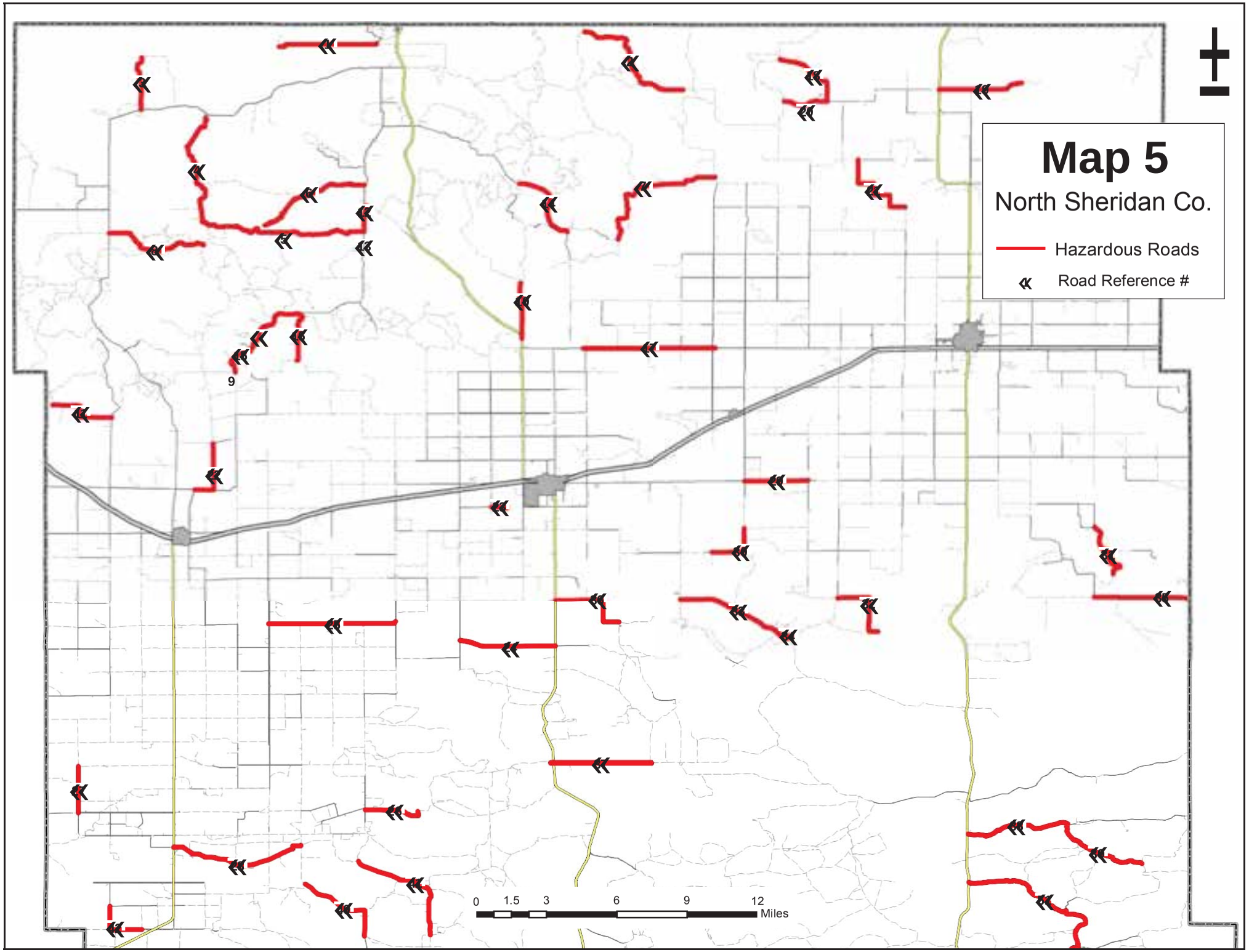
Road Reference #

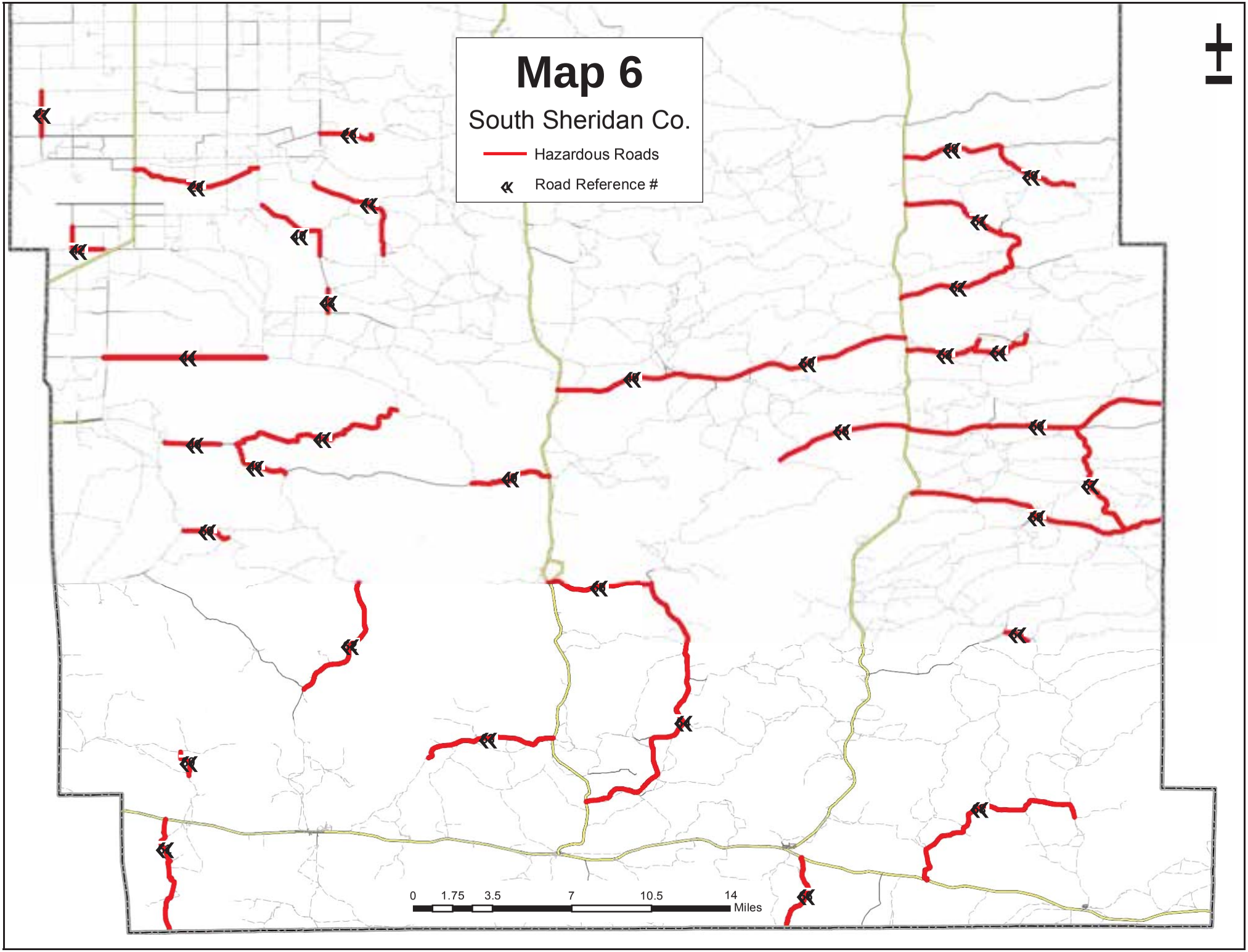

0 1.5 3 6 9 12
Miles

Sheridan County Road Impasse/Travel Warnings

1) 780 Road - Dead end, restricted bridge, 9 ton, wood deck
2) 760 TRL - Low water crossing(s), minimum maintenance, 20% grades
3) 460 Lane - Dead end
4) 440 Lane - Minimum maintenance, 15% grades
5) 700 TRL - Minimum maintenance, 30% grades
6) 720 TRL - Dead end
7) 723 TRL - Minimum maintenance, narrow auto gates
8) 694 TRL - Very narrow, sharp curves
9) 430 TRL - Minimum maintenance, low water crossing(s), Pine Hill 30% grade
10) 340 Lane - Dead end, minimum maintenance, 25% grade
11) 620 TRL - Minimum maintenance, sharp curves
12) - 40% grade
13) - 20% to 30% grade
14) - Long 25% grade
15) Pine Hill - 35% grade
16) Anderson Hill - Long 30% grade
17) Coulee Mtn. - Long 35% grade
18) 245 TRL - Dead end
19) -
20) 763 TRL - Dead end, narrow, 30% grade
21) 225 TRL - Trail road, (primitive)
22) 440/445 Lane - Minimum maintenance, rough
23) 590 Road - Dead end
24) 520 Road -
25) 530 Road - Minimum maintenance
26) 448 TRL - Narrow 2 ton bridge, wood deck, trail road
27) 480 Lane - Minimum maintenance
28) 436 TRL - Ditch road, minimum maintenance, narrow
29) 590 Road - Junge Hill, 25% grade
30) 270 Lane - Minimum maintenance, 20% grades
31) 550 TRL - 4 miles in, road is closed, 30% grades
32) 230 Lane - Dead end, narrow auto gates, 35% grades
33) 540 TRL - Minimum maintenance, long 30 to 35% grade
34) 540 TRL - Rath bridge, narrow 14 ton rating, wood deck
35) 131 TRL - Ends at county line

36) 292 TRL - 3.5 miles from highway is maintained
37) 470 TRL - Low maintenance, narrow old auto gates
38) 448 TRL - Minimum maintenance, narrow tight turns
39) 423 TRL - Minimum maintenance, very narrow old auto gates
40) 390 TRL - Long 20 to 30% grades, sandy. Dead end from 392 TRL
41) 392 TRL - Sandy, narrow, minimum maintenance, sharp turns. Long 35% grade
42) 470 Ln/400 Rd - Narrow curve on a 25% grade
43) 390 TRL - Dead end, very sandy
44) 495 TRL - Low maintenance, narrow, dead end 6 miles in
45) 358 TRL - Narrow, paved for light duty vehicles only
46) 310 TRL - Narrow, sandy, narrow auto gates
47) 326 TRL - Narrow, sandy, minimum maint., sharp turns, many short inclines
48) 398 TRL - Minimum maintenance, sandy, narrow, curves with inclines
49) 398 TRL - Minimum maintenance, narrow sharp curves, rough!
50) 358 TRL - Narrow, paved for light vehicles
51) 376 TRL - Narrow
52) - Sandy, minimum maint., steep inclines (35- 40 %), sharp curves
53) 365 TRL - Narrow
54) - Rough, sharp curves, dead end.
55) 320 TRL - Narrow, dead end
56) 330 TRL - Narrow, paved for light loads
57) 145 TRL - Minimum maintenance , 30% grades on curves, narrow, sandy, narrow auto gates
58) 277 TRL - Narrow, paved for 4 miles, (light traffic)
59) 269 TRL - Dead ends, narrow oil strip
60) 433 TRL - Dead ends, broken out narrow oil strip
61) 437 TRL - Narrow road with steep inclines
62) 396 TRL - Narrow road, dead end
63) 183 TRL - Dead end road on narrow sand/gravel trail
64) 304 TRL - Numerous auto gates and soft road
65) - Private road with numerous soft spots
66) 241 TRL - Auto gates and soft sand road
67) 241 TRL - Dead ends. Gravel covered oil road
68) 109 TRL - Middle portion of road turns into a sand trail road with numerous auto gates that can be narrow in width


Map 5
North Sheridan Co.
Hazardous Roads
Road Reference #
9
0 1.5 3 6 9 12
Miles


Map 6
South Sheridan Co.
Hazardous Roads
Road Reference #
0 1.75 3.5 7 10.5 14
Miles

Appendix O

Nebraska Forest Service Thinning Prescription(s)

Revised April 2013

Appendix O

THINNING PRESCRIPTION(S)

- Green & Black Forest -

Forest Fuel Treatment - Bark Beetle Control - Timber Stand Improvement

I. "Leave trees"

A. Silvicultural target is based on uneven-aged regeneration using a "hybrid" 2-step shelterwood (30 - 80 sq. ft. BA/AC) in combination with group seed tree selection (3 - 9 trees/group).

1. "Leave trees" in these groups will be no closer than 5' to any other "leave tree".

2. Crowns may touch within the group, but crown separation (25 - 100') will be maintained between individual groups of trees thru the stands.

3. Groups of understory trees must be at least 20' from the dripline of overstory leave trees.

B. Selection of the highest quality "leave trees" will be based on "what's left"……not "what's cut".

C. Thinning will cut all age & size classes of ponderosa pine in an effort to develop 3 - 5 age classes thru the forest over the long term.

D. Marked (blue flag &/or paint) and unmarked "leave trees" based on the following characteristics:

1. All deciduous & ponderosa pine trees as follows:

a. Dominant - Well developed crowns extending above the general level of the forest stand canopy, which are receiving full sunlight from above & partly from the sides.

b. Co-dominant - Crowns that form the general level of the forest stand canopy & receive full sunlight from above, but comparatively little from the sides; usually with medium sized crowns more or less crowded on the sides.

c. Foliage - Healthy, long needles dark green in color with a full crown over 1/3 or more of the tree.

d. Bole - Relatively straight bole/stem for at least 8'; not bent, broken or severely leaning.

e. Leader - Single terminal leader with no forked (split) top.

f. Physical - No physical damage from fire, animals or weather on more than ½ of the circumference of the bole or more than 3' in length of the bole.

g. Disease(s) - No disease damage such as western gall rust, peridermium canker & stalactiform rust. Symptoms of these diseases include gall formation on the branch/stem, canker on the bole/branch, elongated diamond-shaped canker & associated resinosis on the bole.

h. Insect(s) - No insect damage from bark beetles (mountain pine, turpentine, engraver). Symptoms include small, red to yellowish pitch tubes (less than 1/4 inch), boring dust in bark crevices/base of tree, dead tops & groups of dead trees without pitchout tubes.

i. Wildlife Trees - Live, standing trees (1 tree/AC) 10" DBH & larger damaged by lightning or other natural forces which have dried or pitchy sections for cavity nesting wildlife.

j. Snags - Dead, standing trees (1 tree/AC) 10" DBH & larger with visible signs &/or potential of cavity nesting activity.

k. Seedlings less than 2' tall.

II. "Cut trees" to be cut are unmarked trees based on the following characteristics:

A. All juniper & ponderosa pine trees as follows:

1. Suppressed - Crowns below the general level of the forest stand canopy which receive only partial sunlight either from above or from the sides; they include leaning trees as well as trees with lopsided crowns.

2. Foliage - Sparse, unhealthy needles that are yellow, reddish and stunted; holes/gaps occupy a crown that is 1/3 or less of the entire tree.

3. Bole - Severely bent, broken or deformed main stems so pronounced that a straight, 8' log cannot be cut from the trees.

4. Forked - Trees with 2 or more terminal leaders forming split tops.

5. Physical - Damage on ½ or more of the bole circumference & greater than 3' in length caused by equipment, falling trees, lightning, wind, snow, animals, etc.

6. Disease - Damage such as western gall rust, peridermium canker & stalactiform rust. Symptoms include gall formation on the branch/stem, canker on the bole/branch, elongated diamond-shaped canker & associated resinosis on the bole.

7. Insect - Damage from bark beetles (mountain pine, turpentine, engraver). Symptoms include red to yellowish pitch tubes (less than 1/4 inch), boring dust in bark crevices/base of tree, dead tops & groups of dead trees without pitchout tubes.
8. Dead - Standing trees 9.9" DBH & smaller down to 2' tall with red, brown &/or no needles in the crown.

III. Tree Size (Ponderosa Pine)

A. 0 - 45% slopes:

1. Live trees between 2' tall & an unlimited maximum DBH will be cut unless they are marked &/or selected "leave trees" needed to maintain the required spacing.
2. Dead trees 10' or less in height & 9.9" DBH or less will be cut; dead standing snags larger than this specification will not be cut or disturbed.
3. All trees (pine, juniper) 2' tall & larger within 25' of any deciduous tree (ash, box elder, cottonwood, willow, maple, oak, elm, hackberry, aspen) &/or deciduous tree/shrub stand in a meadow will be cut.

B. 46 - 60% slopes:

1. Live trees between 2' tall & 10" DBH will be cut.
2. Dead trees 10' or less in height & 9.9" DBH or less will be cut; dead standing snags larger than this specification will not be cut or disturbed.
3. All trees (pine, juniper) between 2' tall & 10" DBH within 25' of any broadleaf tree (ash, boxelder, cottonwood, willow, maple, oak, elm, hackberry, aspen) will be cut.

C. >61% slopes:

1. Inoperable, "no-cut" zones where tree size does not apply.

D. Three (3) slope parameters described above are operability guidelines to ensure safety in performing the treatment. Operability will vary with time of year, soil moisture/type & landscape (geographic &/or topographic) barriers.

IV. Tree Spacing (Ponderosa Pine)

A. In stands where a 2-step shelterwood cut is applicable (NW, N, NE, E facing slopes), spacing between "leave trees" determined by estimating average DBH in the stand plus 10 for average

distance in feet between trees. Spacing is a guide only & must be adjusted to leave the best trees with a stocking level of 30 - 80 square feet of basal area/AC.

B. Minimum allowable spacing between trees is 5'. No tree less than 10" DBH will be left closer than the minimum allowable spacing to any other tree.

V. Stump Height

A. Stumps shall be cut at a flat, 90 degree angle perpendicular to the tree trunk, not to exceed 8" in height on the uphill side.

B. Trees shall be completely severed from the stump & cut below the bottom green branches.

VI. Slash Treatment

A. 0 - 45% slopes:

1. 4" - unlimited maximum DBH

a. All whole trees & slash (green & brown needles) resulting from the thinning operation, prior timber harvest, past storm damage & insect/disease mortality will be skidded & piled along roadside landings, in-woods openings & meadows.

b. Old slash (gray, punky, lose bark & without needles) composed of dead/down trees from past storm damage &/or insect/disease mortality will be left in place; it will be driven over, crushed & reduced onto the soil surface via skidding operations.

c. Favorable (downhill) skidding may allow this treatment on slopes 45% & greater.

2. 2' tall - 3.9" DBH

a. All slash (green & brown needles) resulting from the thinning operation, prior timber harvest, past storm damage & insect/disease mortality will be "reduced" via chainsaw (conventional - lop/scatter) &/or logging equipment (mechanical - roller chop &/or mastication) to 18" or less above the ground.

b. Excessive tillage &/or incorporation of the slash into the soil will not be allowed.

B. 46 - 60% slopes:

1. All whole trees & slash (green/brown needles & gray/punky without needles) resulting from the thinning operation, prior timber harvest, past storm damage & insect/disease mortality shall be lopped & scattered to 18" or less above the ground.

C. >61% slopes:

1. Inoperable for mechanized (rubber tire skidder) operation.

2. Designated as "no cut" zones & off limits to any/all thinning activities.

D. Three (3) slope parameters described above are operability guidelines to ensure safety in performing the treatment. Operability will vary with time of year, soil moisture/type & landscape (geographic &/or topographic) barriers.

E. All trees cut during thinning operations shall be felled so they lie on the ground

1. No hang-ups or “jack strawing” will be allowed.

2. No slash will be left up against "leave trees".

VII. Firebreaks (Roads, Pasture/Rangeland, Meadows &/or Cropland)

A. Minimum width = 50 yards from centerline & 100 yards total width (roads); 100 yards from edge (pasture/rangeland, meadows, cropland).

A. “Leave trees” with branch foliage (green &/or brown) will be pruned up (removal of side branches &/or trimming back low hanging branches) to 6' above ground. Pruning of branches 6' or less above ground will have stubs no longer than ½" remaining.

B. All whole trees 4" thru unlimited maximum DBH & slash (green/brown needles & gray/punky without needles) resulting from the thinning operation, prior timber harvest, past storm damage & insect/disease mortality shall be piled (hand &/or mechanically). Refer to **VI-A-2** above for treatment of all other slash.

C. Where applicable along county/state roads with a fenced right-of-way (ROW):

1. All trees (live/dead ponderosa pine & juniper) 2' tall thru unlimited maximum DBH will be cut inside both ROW fencelines.

2. Slash will be piled (hand &/or mechanical) outside both ROW fencelines.

3. Broadleaf trees/shrubs will not be cut unless their removal is warranted for travel safety.

X. Ladder Fuels (Meadows)

A. Meadow defined as an opening in the pine forest canopy of ¼ acre or larger.

B. Along all meadow edges, "leave trees" with branch foliage (green &/or brown) will be pruned up (removal of side branches &/or trimming back low hanging branches) to 6' above ground.

C. Branches that originate higher than 6' above ground with foliage (green &/or brown) 6' or less above ground will have that foliage cut from the branches.

D. Pruning of branches 6' or less above ground will have stubs no longer than ½" remaining.

IX. Wildfire Defensible Space (Zones 1 & 2)

A. Highest priority fuel reduction zones nearest the home &/or structure; 100 yards minimum & 200 yards maximum radius with home/structure in the center.

B. "Leave trees" with branch foliage (green &/or brown) will be pruned up (removal of side branches &/or trimming back low hanging branches) to 6' above ground. Pruning of branches 6' or less above ground will have stubs no longer than ½" remaining.

C. All whole trees 2' tall thru unlimited maximum DBH & slash (green/brown needles & gray/punky without needles) resulting from the thinning operation, prior timber harvest, past storm damage & insect/disease mortality shall be piled (hand &/or mechanically).

X. Seed Tree Retention/Protection (Black/Burned Forest)

A. Live/viable seed trees defined as:

1. Minimum live/green crown = 25% of total live crown (before fire)

2. No visible evidence of bark beetles &/or sap on bark or scorched cambium.

3. Totally black (torched) &/or brown needled (scorched) trees don't qualify

B. Seed tree groups ("islands" of live/green trees)

1. Must contain minimum of three (3) green/live trees no greater than 30' apart.

2. Maximum distance between groups = 300'.

3. Forest fuel "buffer" = 300' width/radius around groups with all fire killed trees/slash (standing &/or down trees) within the buffer treated as per section **VI.**