ATTACHMENT E

MINNESOTA PUBLIC UTILITIES COMMISSION
COMPLAINT HANDLING PROCEDURES FOR
PERMITTED ENERGY FACILITIES

A. Purpose

To establish a uniform and timely method of reporting complaints received by the permittee concerning permit conditions for site preparation, construction, cleanup and restoration, maintenance, operation, and resolution of such complaints.

B. Scope

This document describes complaint reporting procedures and frequency.

C. Applicability

The procedures shall be used for all complaints received by the permittee and all complaints received by the Minnesota Public Utilities Commission (Commission) under Minn. R. 7829.1500 or Minn. R. 7829.1700 relevant to this permit.

D. Definitions

Complaint: A verbal or written statement presented to the permittees by a person expressing dissatisfaction or concern regarding site preparation, cleanup or restoration or other route and associated facilities permit conditions. Complaints do not include requests, inquiries, questions or general comments.

Substantial Complaint: A written complaint alleging a violation of a specific permit condition that, if substantiated, could result in permit modification or suspension pursuant to the applicable regulations.

Unresolved Complaint: A complaint which, despite the good faith efforts of the permittee and a person, remains to both or one of the parties unresolved or unsatisfactorily resolved.

Person: An individual, partnership, joint venture, private or public corporation, association, firm, public service company, cooperative, political subdivision, municipal corporation, government agency, public utility district, or any other entity, public or private, however organized.

E. Complaint Documentation and Processing

1. The permittee shall designate an individual to summarize complaints for the Commission. This person's name, phone number and email address shall accompany all complaint submittals.

2. A person presenting the complaint should to the extent possible, include the following information in their communications:

    a. name, address, phone number, and email address;
    b. date of complaint;
    c. tract or parcel number; and
    d. whether the complaint relates to a permit matter or a compliance issue.

3. The permittee shall document all complaints by maintaining a record of all applicable information concerning the complaint, including the following:

    a. docket number and project name;
    b. name of complainant, address, phone number and email address;
    c. precise description of property or parcel number;
    d. name of permittee representative receiving complaint and date of receipt;
    e. nature of complaint and the applicable permit condition(s);
    f. activities undertaken to resolve the complaint; and
    g. final disposition of the complaint.

F. Reporting Requirements

The permittee shall commence complaint reporting at the beginning of project construction and continue through the term of the permit. The permittee shall report all complaints to the Commission according to the following schedule:

Immediate Reports: All substantial complaints shall be reported to the Commission the same day received, or on the following working day for complaints received after working hours. Such reports are to be directed to the Commission's Consumer Affairs Office at 1-800-657-3782 (voice messages are acceptable) or consumer.puc@state.mn.us. For e-mail reporting, the email subject line should read "PUC EFP Complaint" and include the appropriate project docket number.

Monthly Reports: During project construction and restoration, a summary of all complaints, including substantial complaints received or resolved during the preceding month, shall be filed by the 15th of each month to Daniel P. Wolf, Executive Secretary, Public Utilities Commission, using the eDockets system. The eDockets system is located at: https://www.edockets.state.mn.us/EFiling/home.jsp

If no complaints were received during the preceding month, the permittee shall file a summary indicating that no complaints were received.

G. Complaints Received by the Commission

Complaints received directly by the Commission from aggrieved persons regarding site preparation, construction, cleanup, restoration, operation and maintenance shall be promptly sent to the permittee.

H. Commission Process for Unresolved Complaints

Commission staff shall perform an initial evaluation of unresolved complaints submitted to the Commission. Complaints raising substantial permit issues shall be processed and resolved by the Commission. Staff shall notify the permittee and appropriate persons if it determines that the complaint is a substantial complaint. With respect to such complaints, each party shall submit a written summary of its position to the Commission no later than ten days after receipt of the staff notification. The complaint will be presented to the Commission for a decision as soon as practicable.

I. Permittee Contacts for Complaints and Complaint Reporting

Complaints may filed by mail or email to:

Jim Atkinson
Environmental Siting and Permitting Manager
Minnesota Power
30 West Superior Street
Duluth, Minnesota 55802
(218) 355-3561
jbatkinson@mnpower.com

This information shall be maintained current by informing the Commission of any changes as they become effective.

Complaint Report

This form is to be used to document and report complaints received by Minnesota Power concerning permit conditions for site preparation, construction, cleanup and restoration, maintenance, operation and resolution of such complaints. Complaints do not include requests, inquiries, questions or general comments.

Name		**Date**	
Mailing Address		**Tract or Parcel No.**	
City, State, Zip		**Permit Issue?**	Yes No
E-mail Address		**Compliance Issue?**	Yes No
Home Phone			
Mobile Phone			

Please provide details about your complaint and the action you would like taken:

Your complaint/inquiry will be reviewed in a timely manner. A representative from the Great Northern Transmission Line Project will get back to you within five (5) business days.

Visit us online: www.GreatNorthernTransmissionLine.com

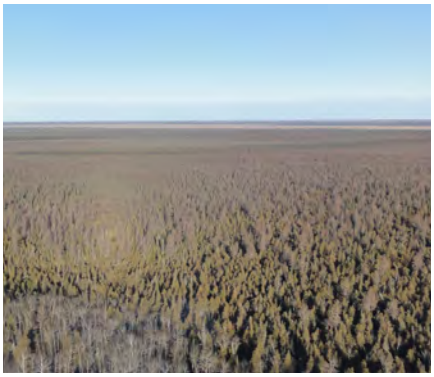
Call our toll-free hotline: 1-877-657-9934

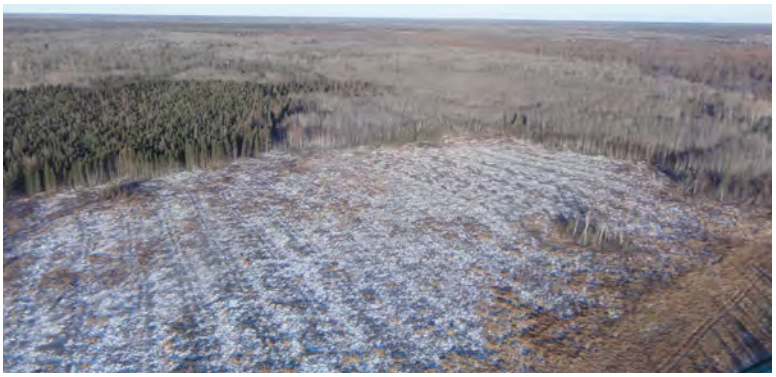
Email us: info@GreatNorthernTransmissionLine.com

minnesota power

AN ALLETE COMPANY

GREAT NORTHERN TRANSMISSION LINE





VEGETATION MANAGEMENT PLAN

OCTOBER 14, 2016

Minnesota Power | 30 West Superior Street | Duluth, MN 55802

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1.0 Introduction

This Vegetation Management Plan (Plan) outlines construction-related policies, regulations, procedures, minimization, and mitigation measures as they relate to the management of vegetation within the work areas of the Great Northern Transmission Line Project (Project). Minnesota Power, an operating division of ALLETE, Inc., (Minnesota Power) has developed this Plan in order to facilitate vegetation management activities in compliance with permit conditions included in the Department of Natural Resources (DNR) Licenses to Cross Public Lands and Waters, the Agricultural Impact Mitigation Plan, and the Public Utilities Commission (PUC) Route Permit.

The Vegetation Management Plan shall:

- → Identify measures taken to minimize the impact of vegetation and tree removal and minimize ground disturbance.
- → Identify a comprehensive revegetation/restoration plan for non-cropland areas.
- → Identify vegetation control methods to be used during the operation and maintenance of the high voltage transmission line (HVTL).
- → Identify measures to prevent the introduction of noxious weeds and invasive species on lands disturbed by construction activities.

Typical right-of-way (ROW) for the Project is 200-feet-wide, with an expanded ROW in select locations where required. For example, 'bump-out' areas at tangent and angle structures may extend outside of the 200 foot ROW.

2.0 Equipment Access

Generally, access to and on the ROW may be by overland travel using traditional construction equipment or with low ground pressure equipment (either large flotation tired or large tracked type) designed to minimize ground impacts. When soft ground conditions exist that don't allow for overland travel, matting will be used to provide for a smooth access way leading to or on the ROW, as well as in work areas that require a more stable travel or work surface. Matting of two types may be used on the Project:

- → **Wood timber matting** consists of a series of square timbers bolted together to generally form a surface 8 to 12 inches thick and 4 feet wide by 12 to 18 feet long. These mats are hauled to the area where they are to be used by means of flatbed trucks or truck-trailer rigs, unloaded and placed end to end or side by side as needed. The typical equipment required for placement is forklifts, small tracked crawlers with lift, and/or flatbed truck with a boom. In many instances a single layer of mats is all that is required to provide for a safe travel way or work area. If soil conditions are not adequate to support the equipment loads with single layers of matting, multiple layers of matting may be installed to increase the height above ground and/or widen the footprint of the travel surface and distribute the weight.

→ **Composite matting** is matting made of composite material that comes in sheets or panels typically 4 inches thick and 7 feet wide by 15 feet long. These mats are installed with equipment similar to timber matting. Composite mats are often interconnected together with a pin system that holds the matting in place, and as with timber matting, multiple layers of matting may be installed, as well as widening the overall footprint to reduce ground pressure.

Ice Roads -During winter seasons, cold weather construction techniques may be used for construction in peatlands, wetlands and other areas. A path within the ROW is cleared of all brush and debris in the fall or early winter, either manually or by using light tracked vehicles. An amphibious vehicle such as a Marsh Master may be used to breakdown tall grassy vegetation to enhance freezing. After the upper crust has frozen sufficiently, a light bulldozer, blade, snow blowers or other snow removal devices will push or remove the snow off the area that will serve as the road (see Figure 5). This snow plowing allows the frost to penetrate deep into the access road area. Care is taken not to pile snow where construction activities will occur, as this will prevent the frost line from advancing as deep as necessary to support heavy equipment. In specific areas, water may also be applied on the future road in an attempt to create a roadbed capable of supporting larger loads. In specific areas it may be necessary to make several trips over the roadway first with small equipment that breaks the crust to allow water to seep back into the track to make for a thicker layer of ice. This is repeated with heavier and heavier equipment until the intended equipment can travel over the ice road in a safe manner. At times this is accomplished by adding several layers of water to the travel way using water trucks or by pumping and manual spraying of water from adjacent wetlands. Water appropriation permits would be obtained as necessary for on-site pumping.

Access roads for tree clearing and construction have been identified for portions of the Project. The contractor will be the responsible party for all access roads and the repair of damage during operation of heavy equipment, both on and off ROW. Minnesota Power is negotiating access agreements with private landowners for access that crosses private land. Minnesota Power is also coordinating with the local governments (townships and counties) to develop agreements for use of public roads. Minnesota Power is also submitting access lease requests for DNR forestry roads and other access roads that cross DNR parcels. This request will outline road development and maintenance responsibilities. Minnesota Power anticipates that the DNR access leases will identify general and special provisions regarding access road use and maintenance.

3.0 Right Of Way Vegetation Management

3.1 General Clearing Practices

The following provides a list of general practices that Minnesota Power will follow during clearing and construction within the ROW to minimize vegetation impacts.

→ The ROW will be surveyed and marked in advance of tree clearing to identify the extent of Project activities.

- → Vegetation within the ROW will be cut at or slightly above the ground surface. Where applicable, rootstock will be left in place to stabilize existing soils and to regenerate vegetation after construction.
- → Merchantable timber typically is cut to standard log lengths and stacked along the ROW for removal.
- → To minimize the potential for damage to construction equipment, and to maintain a safe, level access path and structure installation area, stump removal may occur. Stumps that interfere with the placement of mats or movement of construction equipment will be ground down to a point at or slightly below ground level.
- → All work will comply with the Project Stormwater Pollution Prevention Plan (SWPPP) developed as part of the Project National Pollution Discharge Elimination System (NPDES) permit.
- → Best Management Practices (BMPs) will be used to minimize the potential for spills or leaks from equipment during construction, including frequent inspections of equipment, requiring portable spill containment kits for construction equipment, ensuring that equipment operators are present at the nozzle at all times when fueling is in progress. See Section 3.3 for spill control measures in wetlands and waterbodies.
- → Refueling of equipment in wetlands will be minimized when possible but if needed, BMPs will be used for refueling of equipment in wetlands. See section 3.3.
- → BMPs will be used to minimize the spread of invasive/noxious weeds. See section 5.
- → BMPs will be used to control fugitive dust during construction including: monitor dust generation; operate vehicles at reduced speeds; and use water and dust abatement methods in accordance with the Project SWPPP.
- → Minnesota Power will follow the DNR's guidelines for rutting during clearing and construction within the ROW to minimize vegetation impacts. Prior to reaching any of the levels of rutting described below, the contractor will take appropriate measures to reduce rutting so that the maximum extent of rutting is not reached.
    - o ROW and Access Roads through Wetlands – In any contiguous mile of ROW or access road, rutting greater than or equal to 6 inches deep shall not exceed a cumulative length of 300 feet.
    - o ROW and Access Roads through Uplands – In any contiguous mile of ROW or access road, rutting greater than or equal to 6 inches deep shall not exceed a cumulative length of 500 feet.
- → Avoid disturbing soils and excavating in steeply sloped areas, to extent practical.
- → Develop procedures for the proper storage and disposal of all hazardous and nonhazardous wastes generated during construction in accordance with the Project SWPPP.

- → Repair or replace fences, gates, and similar improvements that are removed or damaged during clearing activities.
- → Post signs during construction and clearing activities to provide residents and visitors with advance notice of what recreational activities may be affected by the Project.
- → Implement traffic control measures during clearing, which could include flag persons, barriers, and flashing lights as per Minnesota Department of Transportation (Mn/DOT) standards.
- → Temporary revegetation and restoration is to occur upon completion of localized Project activities, as directed by the Environmental Inspector (EI). See section7.

DNR has indicated that project BMPs should comply with the "Voluntary Site-Level Forest Management Guidelines". The Guidelines sections most pertinent to this project are related to access roads. MP anticipates that final BMP measures for tree clearing and access roads will be identified in the DNR license general and special provisions and the DNR lease agreements, and will be consistent with DNR Guidelines.

3.2 Clearing Off-ROW Work Areas

The following provides a list of additional practices that Minnesota Power will follow during clearing and construction of off-ROW work areas, including but not limited to; multipurpose yards, landings, staging areas, laydown yards, off-ROW access and other areas determined necessary for construction of the Project.

- → Off-ROW areas will be designed to the minimum size required.
- → Off-ROW facilities will be located on upland areas whenever practical.
- → Off-ROW areas will be located in previously disturbed areas whenever practical.
- → Off-ROW work areas will not be located on frozen, open-water wetlands/ponds/lakes.
- → Locate, design, construct, and maintain skid trails to minimize damage to the residual vegetation, minimize rutting, maintain surface and subsurface water flows in wetlands, and reduce erosion and sedimentation.
- → Use controlled staging areas for refueling and hazardous material loading/unloading when possible.

More detailed clearing protocols for off-ROW areas will be identified when locations have been finalized and a contractor has been selected.

3.3 Refueling, Fuel Storage and Spill Control Near Wetlands and Waterbodies

In certain instances, refueling may be unavoidable due to site-specific conditions or unique construction requirements. These locations must be approved in advance by the Environmental Inspector. Minnesota Power requires that the storage of petroleum products, refueling and lubricating operations take place in upland areas that are more than 100 feet from wetlands, streams, and waterbodies (including drainage ditches), and water supply wells where practical. In addition, the Contractor must store hazardous materials, chemicals, fuel and lubricating oils,

and perform concrete coating activities outside these areas. Auxiliary fuel tanks solidly attached to construction equipment or pumps are not considered storage and are acceptable. In addition to those practices described above, the following precautions will be taken when refueling within 100 feet of streams, wetlands or other waterbodies:

- → Operators will be present at the nozzle at all times when refueling is in progress.
- → Portable drip pans will be employed under the point of fueling.
- → Adequate amounts of absorbent materials and containment booms must be kept on hand by each construction crew to enable the rapid cleanup of any spill which may occur.

In addition to the above measures, the following conditions shall apply if a spill occurs near or into a stream, wetland or other waterbody, regardless of size:

- → If a spill should occur during refueling operations, STOP the operation until the spill can be controlled and the situation corrected.
- → For spills into streams, lakes or other waterbodies containing standing or flowing water, regardless of size, the Contractor Representative must apprise MP of the incident and notify the National Response Center immediately.
- → For spills in standing water, sorbent booms and pads shall be on hand and used by the Contractor to contain and recover released materials. In addition, other spill response materials and equipment shall be on hand as appropriate for each waterbody and used to contain and recover foreseeable spills. This may include containment booms, skimmer pumps, holding tanks, boats, and other equipment.
- → If necessary, for large spills in waterbodies, an Emergency Response Contractor must be secured to further contain and clean up the spill.
- → Contaminated soils in wetlands must be excavated and temporarily placed on plastic sheeting in a bermed area, a minimum of 100 feet away from the wetland. Contaminated soils shall be covered with plastic sheeting while being stored temporarily and properly disposed of as soon as possible.

3.4 Rare Species Surveys

Minnesota Power will work with the DNR Endangered Species Coordinator to address impact avoidance and minimization for new protected species locations identified during the 2016 biological surveys effort. Construction avoidance or minimization standards for each of these sites will be incorporated into the Vegetation Management Plan after consultation is complete.

4.0 Clearing Methods

4.1 ROW Structure Work Areas, Pull Sites and Temporary Work Areas

Structure work areas are the areas surrounding each structure, typically 200-foot by 200-foot. Pull Sites are the areas where activities for wire stringing would occur, typically 200-foot by

500-foot. Other temporary work areas may include fly yards, mat storage areas and similar sites. Other temporary work areas vary in size depending on the required use. All of these locations (structure work areas, pull sites and temporary work areas) require the removal of all woody vegetation. At structure locations, woody species with the potential to be tall growing will be removed in 'bump-out' areas that are 50 feet by 300 feet. Rootstock will be left in place unless it hinders structure or anchor placement. Stump removal may occur if they interfere with the placement of construction mats, anchor or structure locations, or pose a risk to construction tires and equipment. Structure sites and typical ROW clearing are illustrated in Figure 1.

4.2 Right-of-Way Clearing Between Structures

ROW clearing between the structure work areas will be conducted to minimize impacts to wetlands and wildlife habitat, consistent with Minnesota Power's permit commitments. The initial clearing will be contained within the ROW and notifications will be made to landowners in accord with landowner agreements. As illustrated in Figures 2 and 3, all woody vegetation within a center 70-foot strip will be cut and maintained to ground level. Along the outer 65 feet to each side of the ROW, trees and shrubs that are or have potential to be tall will be cleared; low growing woody vegetation and shrubs will be retained. Tall vegetation will not be allowed to persist along the outer 65 feet to each side of the ROW to ensure compliance with North American Electric Reliability Corporation (NERC) requirements and transmission line safety. Due to NERC safety requirements, there are no special practices to reduce the clearing extent that can be incorporated for lowland conifer old growth complexes.

In some circumstances, access paths may be outside of the center 70-foot strip. In these cases, all woody material will be removed from access paths, typically 16 to 20 feet wide.

Stump removal may occur if they interfere with the placement of construction mats or pose a risk to construction tires and equipment. Where removal is required for access, stumps will be ground to a point at or slightly below the ground surface.

Additionally, tall trees outside of the ROW that may impact the operation of the line (danger trees) may need to be removed and will be marked prior to their removal. Minnesota Power expects that there will be few instances of tree removal beyond the ROW. If this is required, Minnesota Power would complete notifications as required by landowner agreement and DNR license.

4.3 Clearing Near DNR Protected Waters and Wetlands

Special clearing set-backs are required when working near DNR Protected Waters/Streams (Figure 4) and Protected Wetlands. DNR protected streams have a 75-foot-wide buffer, to each side of the stream, where clearing and equipment use are restricted. In some circumstances, the Project will need to cross a DNR protected water. Minnesota Power will follow the notification requirements in accord with conditions of the license agreement prior to clearing. Figure 4 illustrates the typical buffer with an opening for the crossing.

4.4 Merchantable Timber on Private Lands

At the time of clearing, merchantable trees will be cut to standard logging lengths and stacked within the ROW where it was cut. The landowner will retain the title to all timber material. In areas where title to timber material is transferred to Minnesota Power, Minnesota Power and its contractor(s) will remove and utilize merchantable timber where practical. Generally, unmerchantable material, including trees, brush, and slash will be either lop and scattered, , chipped, or burned within the ROW as approved by property owner or local land management agency and in compliance with permit requirements. MP and the contractor will work with the DNR and/or local fire warden to secure burn permits should burning be identified as a necessary practice.

4.5 Merchantable Timber on DNR Lands

At the time of clearing, merchantable trees will be cut to standard logging lengths and stacked within the ROW where it was cut. Minnesota Power and its contractor(s) will remove and utilize merchantable timber where practical. Generally, merchantable timber includes the following:

- → 3 inches for Cordwood
- → 6 inches for bolts (spruce, pine, balsam fir, birch, basswood, oak, maple)
- → 6 inches for saw timber (conifers, aspen, balm of Gilead, birch)
- → 10 inches for saw timber (other hardwoods)

One of the primary wetland impact mitigation measures for the Project is to minimize the number of travel passes along the ROW. Therefore, the identification of merchantable timber will also consider the accessibility and density of timber stands, as well as the timber size and type listed above. In areas where access is difficult and/or where the stand density is insufficient to make timber removal economical, the Contractor will work with the Agency Inspector to determine merchantability of the resource.

4.6 Disposal of Vegetative Material

Cut vegetative material generated through clearing operations may be either left in place after clearing or removed from the ROW as described in the processes below.

4.6.1 Lop and Scatter

Lop and scatter method may be used in areas in either wetlands or uplands. Tree tops, branches, and non-merchantable trees are to be cut and scattered in place. The scattered material should be dispersed across the ground surface to permit natural regrowth of the existing vegetation. Generally, chips will not be spread deeper than 1 inch.

The purpose of this method is to limit the need for unnecessarily hauling and potentially disturbing existing ground or vegetation. Likely situations where this method will be used are in shrub and brush areas with limited numbers of trees.

Slash or woody vegetation that originates within the wetland can be left in place as long as it is widely scattered and does not modify the course or cross section of the wetland basin. Slash or woody vegetation that originates from outside wetlands is not to be left in wetlands as this is prohibited under the Project's wetland permits.

On DNR lands, Lop and Scatter will not occur within 200 yards of any public roads, trails, or other treadways.

4.6.2 Mowing/Hydro-ax

Mowing and hydro-ax operations are typically used on tall grasses, shrubs and non-merchantable woody materials. The residue of these operations is unevenly cut vegetative material spread along the right of way in a loose arrangement. The material will be placed so as not to impact natural regrowth of existing vegetation.

4.6.3 Mulching and Chipping

Chipping is a more refined process of vegetation removal whereby non-merchantable trees and slash are processed to create uniform residue size or chips of consistent size. If this process is used, chips will be scattered over the ROW such that the vegetation regrowth is not completely restricted. Generally, chips will not be spread deeper than 1 inch. Chipping in wetlands may occur as long as the chipped materials are evenly scattered so that existing herbaceous and shrub vegetation can regenerate. The use of mulching or chipping will be determined on a case by case basis in consultation with the Project Environmental Inspector (EI) and Contractor. Mulch can provide protection of potentially erodible soils. If the area is expected to require seeding, then the EI will determine if mulch should be excluded from the site.

4.6.4 Slash Burning

Slash burning will only occur within the new ROW where burn permits have been approved by the local authority, including DNR. A variance to the DNR burn permit may be requested for burn piles that do not fit into typical permit standards, i.e. size or timing restrictions.

If burning of slash is approved by appropriate agencies and landowners, brush will be burned in the center of the ROW in piles located away from forested areas. No burns are to occur on peat soils. Slash piles are not to be placed in or near waterways where fire debris has the potential to wash into adjacent streams and waterbodies.

Post-burn, the site will be restored using a temporary and/or permanent seeding method, in consultation with the EI.

5.0 Herbicides

Herbicides may be used within the ROW with exceptions described below. Herbicides will not be used if landowners prohibit their use. Herbicides must be used in accordance with manufacturer's specifications and all applicable federal and state regulations. Herbicides may be used to control the re-sprout of the stumps of tall-growing tree species or to control listed invasive or noxious weed species when permitted.

5.1 Wetland Use

Herbicides used in or near all wetlands and waterbodies must be designed for use in wet areas as designated by manufacturer's specifications and federal and state regulations. Cut stump or basal treatments are acceptable practices within the 75-foot vegetative buffer zone of DNR waterbody crossings.

5.2 State Lands

Herbicides may not be used on state lands managed by the DNR without a permit approved by the DNR.

6.0 Noxious Weeds and Invasive Species Control

6.1 Introduction

During all phases of Project activities including clearing, construction, operation and maintenance, the Project will minimize the introduction and spread of noxious weeds and invasive species (NWIS) along the ROW by conducting weed surveys, implementing BMPs that discourage the spread of identified species, and routine cleaning of equipment to remove dirt and plant debris. It is important to note that this Project will be constructed adjacent to existing utility corridors with established concentrations of invasive species of concern. While this does not preclude the Project from responsibility for managing, to the greatest extent possible, the spread of invasive species, this ability may be limited by pre-existing conditions.

There are 29 plant species regulated as noxious weeds under the Minnesota Noxious Weed Law, Minnesota Statutes Sections 18.75-18.91 (Table 1). The Minnesota Noxious Weed Law defines several categories of noxious weeds including;

- → Prohibited Eradicate – Must be eradicated by killing the above and belowground parts of the plant.
- → Prohibited Control – Must be controlled preventing the maturation and spread of propagating parts.
- → Restricted noxious Weeds – May not be sold, transported without a permit, or intentionally planted in Minnesota,
- → Specially Regulated Plants – Shall be handled, controlled or eradicated according to specified regulations as defined by Minnesota Department of Agriculture.

Table 1. Minnesota State Noxious Weeds

Common Name	Scientific Name	Designated List
Yellow starthistle	*Centaurea solstitialis*	Prohibited Eradicate
Grecian foxglove	*Digitalis lanata*	Prohibited Eradicate
Oriental bittersweet	*Celastrus orbiculatus*	Prohibited Eradicate
Japanese hops	*Humulus japonicas*	Prohibited Eradicate

Common Name	Scientific Name	Designated List
Dalmatian Toadflax	*Linaria dalmatica*	Prohibited Eradicate
Common teasel	*Dipsacus fullonum*	Prohibited Eradicate
Giant hogweed	*Heracleum mantegazzianum*	Prohibited Eradicate
Brown knapweed	*Centaurea jacea*	Prohibited Eradicate
Meadow knapweed	*Centaurea x mincktonii*	Prohibited Eradicate
Black swallow-wart	*Cynanchum louiseae*	Prohibited Eradicate
Palmer Amaranth	*Amaranthus palmeri*	Prohibited Eradicate
Plumeless thistle	*Carduus acanthoides*	Prohibited Control
Canada thistle	*Cirsium arvense*	Prohibited Control
Leafy spurge	*Euphorbia esula*	Prohibited Control
Purple loosestrife	*Lythrum salicaria*	Prohibited Control
Wild parsnip	*Pastinaca sativa*	Prohibited Control
Common Tansy	*Tanacetum vulgare*	Prohibited Control
Spotted Knapweed	*Centaurea stoebe*	Prohibited Control
Narrowleaf Bittercress	*Cardamine impatiens*	Prohibited Control
Common or European buckthorn	*Rhamnus cathartica*	Restricted Noxious Weed
Glossy buckthorn	*Frangula alnus*	Restricted Noxious Weed
Multiflora rose	*Rosa multiflora*	Restricted Noxious Weed
Common reed	*Phragmites australis*	Restricted Noxious Weed
Garlic mustard	*Alliaria petiolata*	Restricted Noxious Weed
Poison Ivy	*Toxicodendron radicans*	Specially Regulated Plant
Japanese knotweed	*Polygonum cuspidatum*	Specially Regulated Plant
Giant knotweed	*Polygonum sachalinense*	Specially Regulated Plant
Japanese barberry	*Berberis thunbergii*	Specially Regulated Plant

In addition to the species listed above, the project will also document areas of reed canary grass infestation so that BMPs will minimize spread of this species.

Early growing season surveys will be conducted prior to clearing and construction to assess NWIS infestations. Weed infestations within the ROW will be considered significant and controlled when any of the species listed by the state except for "prohibited eradicate" achieves a density greater than 20 percent of a 1,000 square foot area. Species listed as "prohibited eradicate", will be eradicated or eliminated upon discovery. Assessments will identify areas of infestations within the newly cleared ROW. Assessments will identify areas where equipment cleaning will be targeted and will document areas where the Project will be responsible for NWIS control.

6.2 Minnesota DNR Lands

The Minnesota DNR specifies operational procedures for the control of Invasive Species on DNR lands under Operational Order #113 (January 9, 2013). The Order provides guidance on the Department's policies regarding Invasive species setting forth procedures to "Prevent or limit the introduction, establishment and spread of invasive species" and to "Implement site-level management to limit the spread and impact of invasive species." The list of invasive species addressed in the order is periodically updated and may be more inclusive than the Minnesota State Noxious Weed list, included above. Minnesota Power will work with the DNR to identify other species that may be of concern.

6.3 Prevention and Control Measures

In order to prevent the introduction and spread of NWIS and reed canary grass into the Project area from off-site, equipment and matting will be cleaned prior to arrival at the Project. Visible dirt must be removed from all equipment and matting using high pressure compressed air blowers, brushing or pressure washing. Contractors must keep a cleaning log for each piece of equipment used onsite. Logs will be made available to the Agency Inspector upon request. In additional to the initial cleaning, equipment and mats will be cleaned each time they are moved from a site that has documented weed infestations and where weed seed has potential to be transported. Weed infestation locations may be identified by pre-construction surveys or by environmental inspectors in the field. Non-compliance with equipment cleaning requirements may cause a stop work order to be issued until non-compliant equipment has been removed from the site and adequately cleaned.

Major infestation areas identified will be treated with the recommended herbicides or by mechanical methods such as mowing or burning. The contractor will be required to obtain the necessary permits and/or certifications for the use of applicable herbicides, such as the Minnesota Aquatic Nuisance Control permit required when spraying within the boundaries of DNR Protected Waters. Contractors must keep proper documentation of location and timing of herbicide use and be prepared to provide documentation to the EI upon request.

6.4 Construction Practices

Tree clearing will occur, to the extent practical, during winter months in order to minimize the spread of NWIS. Ideally, packing snow over frozen ground limits direct contact between heavy equipment and soils, minimizing the potential for disturbed soils and spread of NWIS.

The EI will survey for and document NWIS infestations each growing season following clearing and during construction through Project completion. If Contractors identify an area of NWIS infestations it must be reported to the EI who will provide further instructions for control. The EI will report to the appropriate agencies regarding NWIS infestations. Where NWIS infestations are identified near a work area, equipment will require cleaning prior to relocation from the infested area as defined above. Documentation regarding equipment cleaning will be required and will be made available upon request of the EI.

6.5 Post Construction Measures

Revegetation in non-agricultural areas will be considered successful when the cover of acceptable vegetation is dominant and non-NWIS species density is less than or similar to surrounding lands that have not been affected by the Project. If monitoring indicates a higher density of NWIS, the Project will take appropriate measures to control NWIS.

6.6 Non-native Invasive Earthworms

Non-native, invasive earthworms are recognized in the Final Environmental Impact Statement (FEIS) as a major threat to the vegetation of forest floor plant communities. Equipment cleaning control measures implemented as part of the NWIS control plan will mitigate the potential for non-native invasive earth worm translocation. The EI may identify specific areas along the ROW where additional vehicle cleaning may be required in order to protect sensitive species.

7.0 Vegetation Restoration Plan

The Project will be required to meet all conditions as specified in the local, state, and federal permits and private landowner agreements for final restoration and clean up. Revegetation and restoration of disturbed areas associated with Project activities are intended to protect wetland and water resources from issues associated with sedimentation, to protect wildlife habitat, and reduce the movement of NWIS species within the ROW. The revegetation and restoration components of this Plan are derived from the permitting process and discussions with both the DNR and USACE. If it is found that any conditions or requirements of this plan are in violation of state or federal law or ordinance, the applicable law will take precedence, but not nullify other, unrelated portions of the Plan.

Minnesota Power proposes that in most situations, natural revegetation by the local seed bank is the preferred restoration method. Temporary cover crops would be used to minimize weed establishment. In some circumstances, such as large areas of vegetation removal with bare soil exposure, restoration using native seed/plant species would be required. Minnesota Power will consider the inclusion of pollinator species based on availability of local genotypes and appropriateness for the location/site.

7.1 Seed Specifications

Native vegetation establishment and enhancement protocols, and seed mixes from the Minnesota Board of Water and Soil are included in this plan. Additional seed mixes (not currently included) will be considered on a case-by-case basis, depending on local site characteristics and conditions.

Seed used will be purchased on a pure live seed (PLS) basis for seeding revegetation areas. Seed tags will identify:

- → Purity;
- → Germination;
- → Date tested;

- → Total weight and PLS weight;
- → Weed seed content; and
- → Seed supplier's name and business information.

Seed will be used within 12 months of testing as required by applicable state rules and regulations. Seed must come from state approved list of native seed providers.

Seed rates used on the Project will be based on PLS rate, not actual weight. The species components of individual mixes are subject to availability at the time of purchase. Species may be substituted with alternative native species subject to approval by the EI.

Seed tags must be collected by the contractor and provided to the EI during seeding activities.

The tags will be reviewed by the EI prior to use to ensure that the seed mix complies with this Plan's specifications.

Legume seed (where specified) will be treated with inoculants specific to the species and in accordance with the manufacturer's recommended rate, appropriate for the seeding method (broadcast, drill, or hydroseeding).

7.2 Temporary Stabilization

7.2.1 Temporary Seeding

Temporary revegetation is applied in order to quickly establish vegetative cover with the primary purposes of minimizing soil erosion and reducing the potential for the establishment of NWIS. Temporary seed mixes are considered a cover crop, and are made up of annual grasses, have rapid germination, and provide quick ground cover. These seed mixes are not intended to provide multi-year cover. Unless specifically requested by landowners or regulatory agencies, the Project will not establish temporary vegetation on cultivated land or in areas of open water. Temporary seed mixes 21-111 and 21-112 are included as Tables 2 and 3, respectively.

Table 2. Temporary Cover Crop Seed Mix (Planting Dates April 1- Aug 1)

Common Name	Scientific Name	Rate (kg/ha)	Rate (lb/ac)	% of Mix (% by wt)	Seeds/ sq. ft
Oats	*Avena sativa*	112	100	100%	45
	Totals:	112	100	100%	45

Table 3. Temporary Cover Crop Seed Mix (Planting Dates August 1 – September 30)

Common Name	Scientific Name	Rate (kg/ha)	Rate (lb/ac)	% of Mix (% by wt)	Seeds/ sq. ft
Winter wheat	*Triticum aestivum*	112	100	100%	26
	Totals:	112	100	100%	26

Temporary seeding of cover crop will occur in locations if unfrozen, bare soil surface conditions and ruts will not be permanently restored within 30 days of completion of active work.

Temporary restoration activities will include the repair of rutted surfaces and an even broadcast-seeding of the temporary cover-crop seed mix at a rate of 100 lbs/acre. No mulch is to be applied in wetland areas.

The EI may require contractors to install temporary vegetation earlier than 30 days in locations where concerns regarding sensitive species and/or soil erosion are present.

Temporary vegetation establishment may be expected to be successful between April 1 and September 30. Establishment of temporary vegetation is unlikely to be successful outside of this time window. Temporary use of mulch to stabilize soils should be applied outside of the April 1 through September 30 window.

7.2.2 Temporary Stabilization Using Mulch

Straw or wood chip mulch may be used to help stabilize areas of bare soils during the establishment of temporary vegetation or during the period between October 1 and April 1 (winter). The contractor will apply mulch during the establishment of temporary vegetation as requested by the landowner, specified in licenses or permits, or as requested by the EI.

Wood chip mulch, free of soil material and derived from on-site sources, may be used to protect areas where bare soils have been exposed due to tree clearing and construction activities. In winter situations, wood chips may be used to provide protection for bare soils exposed due to Project activities where out of season seeding is not applicable. Woodchip mulch derived from on-site locations may be spread up to 6 inches deep in upland areas to provide ground protection along access paths. Upon abandonment of access routes, woodchip mulch is to be spread evenly to a depth no greater than 1 inch. Wood chip mulch is not to be used within wetlands.

Straw mulch may be used outside of the seeding window as a temporary erosion control measure, followed by temporary or permanent seeding at the earliest possible time after the April 1 seeding date. Refer to Straw Mulch Specifications (below) for straw mulch requirements.

7.3 Permanent Restoration

Allowing for and encouraging native species to naturally re-establish temporarily disturbed area is a primary BMP for this Project. Appropriate vegetative cover of the ROW will be required along the entire length of the Project. Since this Project does not require major grading activities, in most cases natural revegetation by early successional native species following tree clearing is expected to occur. In areas where native species revegetate the corridor, active restoration may not be required. Monthly monitoring during the first growing season after completion of construction will be required to ensure that NWIS are controlled, that desirable native plant species become the dominant vegetation communities in natural areas, and that bare soils are quickly stabilized to reduce erosion. In areas of minimal disturbance, vegetation will be allowed to regenerate naturally.

Where standing water is not present and where surrounding vegetation is dominated by abundant native species, restoration of bare soils may be completed by using the temporary cover crop seed mix and allowing native species to revegetate the area. The EI will consult with

the appropriate agencies during the construction period to assess application of techniques in specific locations.

Permanent seed mixes for the Project include native seed varieties commonly found and/or available from local seed distributors. The permanent seed mixes are designed to augment the natural colonization of bare ground by local, native seed sources.

7.3.1 Uplands

Two upland seed mixes have been developed to provide rapid establishment of a permanent vegetative cover in upland areas. These mixes have been developed to establish vegetation appropriate to the pre-Project land use settings. All of the mixes are designed for areas that have been cleared of overhead canopy. Within existing forested areas, no seeding is proposed.

7.3.1.1 Native Vegetation Area Seed Mix

MnDOT seed mix 36-311, as shown in Table 4, is designed to provide permanent herbaceous cover in areas where forest has been cleared of canopy or along existing natural openings where native vegetation is present currently or is the desired condition. This mix will be used on all uplands on DNR lands where bare ground conditions exist, unless otherwise specified. This mix will also be used on uplands located on private lands adjacent to natural areas unless landowners request an alternate mix.

Table 4. Native Vegetation Area Seed Mix

Common Name	Scientific Name	Rate (kg/ha)*	Rate (lb/ac)*	% of Mix (% by wt)	Seeds/ sq ft
Fringed brome	*Bromus ciliatus*	2.24	2.00	16.04%	8.10
Bluejoint	*Calamagrostis canadensis*	0.11	0.10	0.78%	10.00
Poverty grass	*Danthonia spicata*	0.56	0.50	1.50%	4.60
Nodding wild rye	*Elymus canadensis*	1.68	1.50	11.99%	2.31
Slender wheatgrass	*Elymus trachycaulus*	1.40	1.25	3.73%	2.38
Fowl bluegrass	*Poa palustris*	0.73	0.65	5.19%	31.00
False Melic	*Schizachne purpurascens*	0.28	0.25	0.75%	2.90
	Total Grasses	5.04	4.50	35.96%	57.71
Common yarrow	*Achillea millefolium*	0.03	0.03	0.09%	2.00
Pearly everlasting	*Anaphalis margaritacea*	0.02	0.02	0.05%	1.30
Flat-topped aster	*Doellingeria umbellate*	0.04	0.04	0.12%	1.00
Tall cinquefoil	*Drymocallis arguta*	0.07	0.06	0.19%	5.30
Large-leaved aster	*Eurybia macrophylla*	0.02	0.02	0.05%	0.18
Stiff goldenrod	*Olegoneuron rigidum*	0.16	0.14	0.42%	2.10
Smooth wild rose	*Rosa blanda*	0.18	0.16	0.47%	0.15
Black-eyed susan	*Rudbeckia hirta*	0.29	0.26	0.77%	0.29

Common Name	Scientific Name	Rate (kg/ha)*	Rate (lb/ac)*	% of Mix (% by wt)	Seeds/ sq ft
Gray goldenrod	*Solidago nemoralis*	0.07	0.06	0.18%	6.80
Upland white aster	*Solidago ptarmicoides*	0.04	0.04	0.13%	1.00
Lindley's Aster	*Symphyotrichum ciliolatum*	0.03	0.03	0.10%	1.00
Smooth aster	*Symphyotrichum leave*	0.16	0.14	0.43%	2.90
American vetch	*Vicia americana*	0.56	0.50	1.50%	0.38
	Total Forbs	1.68	1.50	4.50%	32.81
Oats or winter wheat (see note at beginning of list for recommended dates)		28.02	25.00	74.63%	11.14
	Total Cover Crop	28.02	25.00	74.63%	11.14
	Totals:	37.55	33.50	100.00%	121.39

*Rates should be doubled for broadcast or hydroseed application methods.

7.3.1.2 Residential Area Seed Mix

The residential seed mix, as shown in table 5, is intended for areas where landowners request the re-establishment of residential lawns or "turf" land cover.

Table 5. Residential Area Seed Mix

Seed Name	Scientific Name	Rate (PLS) (lb/ac)*	% of Mix (% by wt)
Kentucky Bluegrass	*Poa pratensis*	80	50.00%
Perennial ryegrass	*Lolium perenne*	33	20.625%
Creeping red fescue	*Restuca rubra*	33	20.625%
Annual ryegrass	*Lolium italicum*	10	8.75%
	Total	160	100%

*Rates should be doubled for broadcast or hydroseed application methods.

7.3.1.3 Agricultural Area Seeding

On private agricultural lands, the Project will work with landowners to develop appropriate measures for reseeding of disturbed lands. Unless requested by the landowner, the native area vegetation seed mix will be used.

7.3.2 Wetlands

The preferred method for revegetation of disturbed areas within wetland is reliance on revegetation by resident plant communities. The EI, in consultation with the appropriate regulatory agencies, will determine whether disturbed areas will require the use of the temporary cover crop only, or seeding with a wetland-specific mix.

In areas where the wetland plant community is dominated by native species with rhizomatous root systems that will likely recolonize areas of limited disturbance, bare soils are to be broadcast-seeded with the seasonally appropriate temporary cover-crop seed mix.

Large bare soil disturbance areas are defined as greater than 100 square feet of exposed soils that is greater than 2 feet wide. These areas are large enough to preclude revegetation from the local, native seed source. Large bare soil areas should be seeded using wetland seed mix (MnDOT seed mix 34-371); apply as shown in Table 6.

Table 6. Wetland Seed Mix

Common Name	Scientific Name	Rate* (kg/ha)	Rate* (lb/ac)	% of Mix (% by wt)	Seeds/ sq ft
Fringed brome	*Bromus ciliatus*	2.24	2.00	16.04%	8.10
Bluejoint	*Calamagrostis canadensis*	0.11	0.10	0.78%	10.00
Virginia wild rye	*Elymus virginicus*	1.68	1.50	11.99%	2.31
Tall manna grass	*Glyceria grandis*	0.28	0.25	1.96%	6.30
Fowl bluegrass	*Poa palustris*	0.73	0.65	5.19%	31.00
	Total Grasses	5.04	4.50	35.96%	57.71
Tussock sedge	*Carex stricta*	0.04	0.04	0.35%	0.85
Pointed broom sedge	*Carex scoparia*	0.06	0.05	0.39%	1.50
Dark green bulrush	*Scirpus atrovirens*	0.22	0.20	1.56%	33.00
Woolgrass	*Scirpus cyperinus*	0.07	0.06	0.51%	40.00
	Total Sedges and Rushes	0.39	0.35	2.81%	75.35
Canada anemone	*Anemone canadensis*	0.11	0.10	0.82%	0.30
Marsh milkweed	*Asclepias incarnata*	0.27	0.24	1.95%	0.43
Flat-topped aster	*Doellingeria umbellata*	0.11	0.10	0.81%	2.50
Common boneset	*Eupatorium perfoliatum*	0.10	0.09	0.68%	5.00
Grass-leaved goldenrod	*Euthamia graminifolia*	0.04	0.04	0.31%	5.00
Spotted Joe pye weed	*Eutrochium maculatum*	0.16	0.14	1.15%	5.00
Blue monkey flower	*Mimulus ringens*	0.03	0.03	0.24%	25.00
Giant goldenrod	*Solidago gigantea*	0.03	0.03	0.20%	2.30
Eastern panicled aster	*Symphyotrichum lanceolatum*	0.03	0.03	0.28%	2.00
	Total Forbs	0.90	0.80	6.44%	47.53
Oats or winter wheat (see note at beginning of list for recommended dates)		7.68	6.85	54.79%	3.05
	Total Cover Crop	7.68	6.85	54.79%	3.05
	Totals:	14.01	12.50	100.00%	183.64

*Rates should be doubled for broadcast or hydroseed application methods.

7.4 Seedbed Preparation

Seedbed preparation and seeding are to occur immediately following completion of construction activities and site cleanup in any given location. Where applicable, and in accordance with applicable permits, soil will be tilled to a minimum depth of 4 inches with a disc, field cultivator, or chisel plow to prepare the seedbed, breaking up large clumps and firming of the soil surface. Prior to seeding, prepared beds should be sufficiently soft to allow for seed penetration and mulch anchoring, while sufficiently firm to provide surface soil stability.

In order to minimize ground disturbance along the entire corridor, forested areas are being cleared, but roots and stumps are being left in place. Within areas of cleared forest, it may not be practical to access large areas of ground with seeding and seedbed preparation equipment. In these areas, smaller vehicles may be required to perform tasks such as smoothing ruts, preparing seedbeds with small rakes, and surface packing after seeding. The contractor will work with the EI to develop strategies to work around stumps.

Fertilizers and other soil amendments are not recommended and will only be applied as requested by and agreed to in ROW negotiations with individual landowners.

7.5 Seeding Methods

Seeding and mulching should occur parallel to ground contours as practical.

7.5.1 Seed Drilling

Seed drilling may be used in areas where stumps have been removed and a prepared seed bed can be created. These areas are expected to be infrequent and may not occur on the Project. Drilled seed will be sown at a depth of 0.25 inches. Seeding equipment will be able to accommodate and uniformly distribute different sizes of seed at the required depth. Feeding mechanisms will be able to evenly distribute different seed types at the rates specified. Seedbed soil is to be suitably firmed immediately following seed drilling.

7.5.2 Broadcast Seeding

Broadcast seeding may be used at all disturbed areas where bare soil is created.

Broadcast seeding will occur at **double the rate** specified in the seed mixes. Seed is to be uniformly distributed by a mechanical, hand-operated seeder; or in small seeding areas, by hand. Following seeding, the surface is to be raked with a cultipacker, harrow, or hand rake. The bed is to be firmed as appropriate to site conditions.

7.5.3 Hydroseeding

Hydroseeding may be used at all disturbed upland areas where bare soil is created. Hydroseeding is not approved in wetland locations as the method requires extra access by heavy vehicles.

Hydroseeding will occur at **double the rate** specified in the seed mixes. Seed will be applied in a broadcast, hydromulch slurry. The hydromulch seed mix will allow the contractor to see where application has taken place, ensuring uniform coverage of the seeding area. The

hydroseeder must provide for continuous agitation of slurry and provide for a uniform flow of slurry.

Hydroseed slurry is not to be held in the tank for more than one hour prior to application.

7.5.4 Dormant Seeding

Dormant seeding of the Permanent Seed Mix may be used after soil temperatures have fallen below 55 degrees Fahrenheit. Lower temperatures prevent seed from germinating. Winter broadcast seeding at the specified rate is required where winter activities have created bare ground conditions greater than 100 square feet in all non-agricultural upland areas of the ROW.

Cover Crop seeding is not required during dormant seeding.

Contractors are required to broadcast seed newly created bare soils immediately upon completion of work in a given area. Following seeding, the surface is to be raked with a cultipacker, harrow, or hand rake. The bed is to be firmed as appropriate to site conditions.

7.6 Timing

Seeding periods for application of the permanent seed mixes are limited to April 1 to June 30, during spring, or when soil temperatures have fallen below 55 degrees Fahrenheit in the fall. Outside of these time windows, temporary seed mixes, applied according to temporary cover-crop seed mix specifications, are to be used. Prior to installation of native seed mixes, the seedbed should be mowed and prepared for final seeding.

Seeding of the ROW is to occur within 7 days of final cleanup/grading activities during the growing season (April-September). Where seeding is not possible within 7 days, temporary stabilization using erosion control matting or mulch is required.

7.7 Straw Mulch Specifications

Weed-free straw mulch (from approved sources) will be applied to disturbed, non-cultivated upland areas if requested by landowners or land managers. Contractors will be responsible for acquiring weed-free straw mulch from approved sources and copies of applicable documentation must be provided to the EI. Mulch will be required on disturbed, exposed soils on all slopes greater than 5 percent, and on dry, sandy soils prone to erosion by wind or rain.

Straw mulch will be applied at a rate of 2 tons per acre in upland areas unless otherwise specified in permit conditions. Mulch will be uniformly distributed by mechanical blower or by hand in areas where vehicular access is limited. Mulch stalks are to be a minimum of 8 inches long in order to facilitate adequate anchoring. Mulch will be crimped to a depth of 2-3 inches using a mulch anchoring device where accessible. In areas where stumps and slash limit access by vehicles, mulch may be applied by hand at the specified rate and anchored in place by a liquid trackifier approved by the Project EI.

7.8 Performance Standards

The Project will be required to meet license and easement conditions and obligations on all lands and will continue to work, as appropriate, with landowners and land managing agencies during the construction process to achieve standards set forth in these agreements.

8.0 Monitoring

The Project Environmental Management and Monitoring Plan will be followed. The Project EI will be responsible for reviewing clearing and construction practices to make sure that they comply with this Vegetation Management Plan. The EI will monitor areas where seeding and erosion control measures have been implemented and specify the most appropriate practices necessary to provide long term stability and sustainable native plant communities. Vegetation monitoring will be conducted through the tree clearing and construction periods, and will continue as required by provisions identified in federal, state, and local permits. Minnesota Power anticipates that the NPDES permit will identify the timeframe for close-out of vegetation monitoring until revegetation has been adequately established.

9.0 Operation and Maintenance of the ROW

9.1 Routine Right-of-Way Clearing and Brushing

To conduct required aerial and visual inspection of the ROW, to maintain a safe and apparent corridor, and to allow access for maintenance activities or emergencies, Minnesota Power will periodically clear vegetation from the existing ROW. Clearing typically includes brushing equipment traveling down the ROW, which may consist of tracked or rubber-tired equipment to cut brush and trees, and hand-held brush saws or other manual methods. Small cuttings will be left in place, non-merchantable timber or slash will be disposed of where it originates, hauled off-site, or chipped and evenly spread on the ROW. If burning is proposed, Minnesota Power will consult with DNR and other authorities to obtain necessary authorization or permits.

Mitigation measures employed during operation and maintenance will include:

- → No herbicides will be used within state lands managed by the DNR unless authorized in writing, in advance, by the DNR.
- → Maintenance clearing equipment does not normally cause excessive soil disturbance in upland areas. For wetland areas, low ground-pressure equipment will be used or clearing will occur in winter when soils are frozen.
- → Steep slopes and slopes adjacent to waterbodies will be cleared by hand, leaving adequate herbaceous or low shrub cover to minimize potential erosion.

9.2 Extraordinary Activities (Emergencies)

In the event of an emergency along the transmission line, Minnesota Power is prepared to rapidly respond and coordinate with relevant agencies to protect public health and the environment. An emergency may include, but is not limited to, a component failure affecting

the normal operation of the transmission line such as a structure yielding during a storm event, broken insulators causing electrical flashover to the supporting structure, a broken conductor, overhead ground wire, or communication line; or any other symptom that may cause an imminent risk to human health or the environment.

9.3 Wetlands

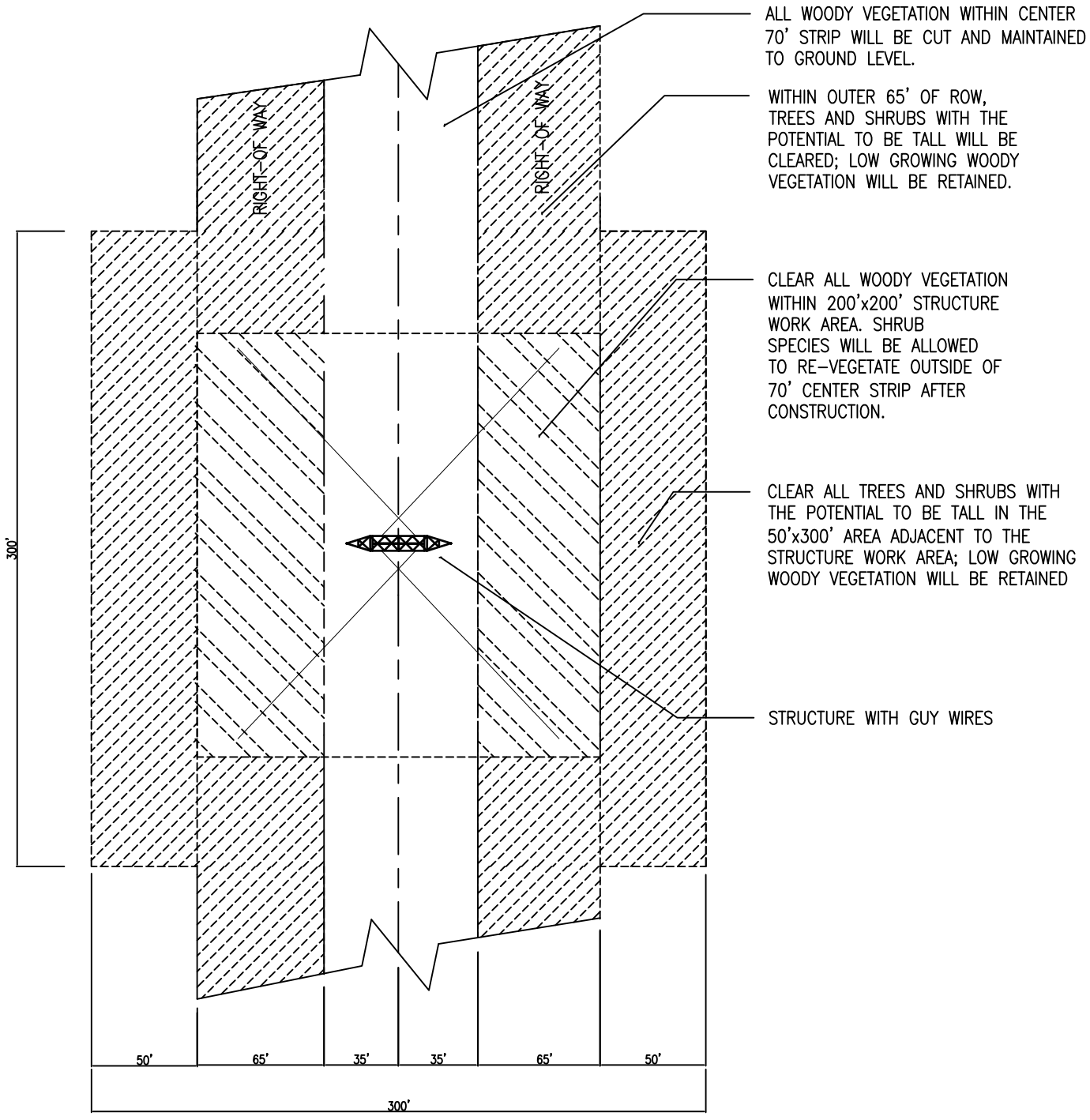
Due to the typically unstable nature of soils in wetlands, and to preserve wetland hydrology and function, special practices are necessary for operation and maintenance activities.

- → Within wetlands, if the ROW surface is stable enough to support equipment present, work can proceed as in upland areas.
- → If the surface is unstable such that rutting, soil compaction, or soil mixing may occur, low ground-pressure equipment will be used or maintenance equipment will be operated from mats or temporary timber rip-rap (which will be removed upon completion of the work). Ice roads may be utilized during frozen conditions.
- → Equipment passage through wetlands will be limited to only the amount necessary to complete the Operation and Maintenance activity.

Figures

Right of Way Clearing Plan

Typical Construction Drawings



minnesota power

AN ALLETE COMPANY

GREAT NORTHERN TRANSMISSION LINE

Figure 1

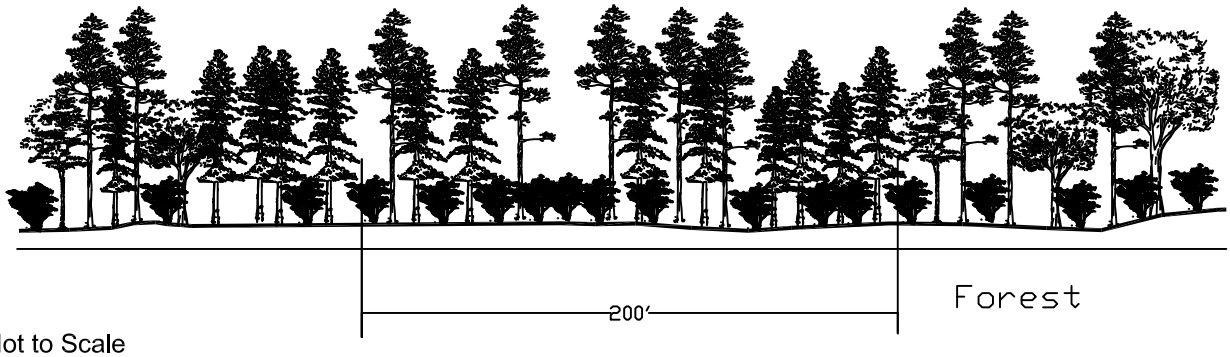
Date: 08/10/2016

Drawn By: AJRandazzo

Forest Clearing: Transmission Line

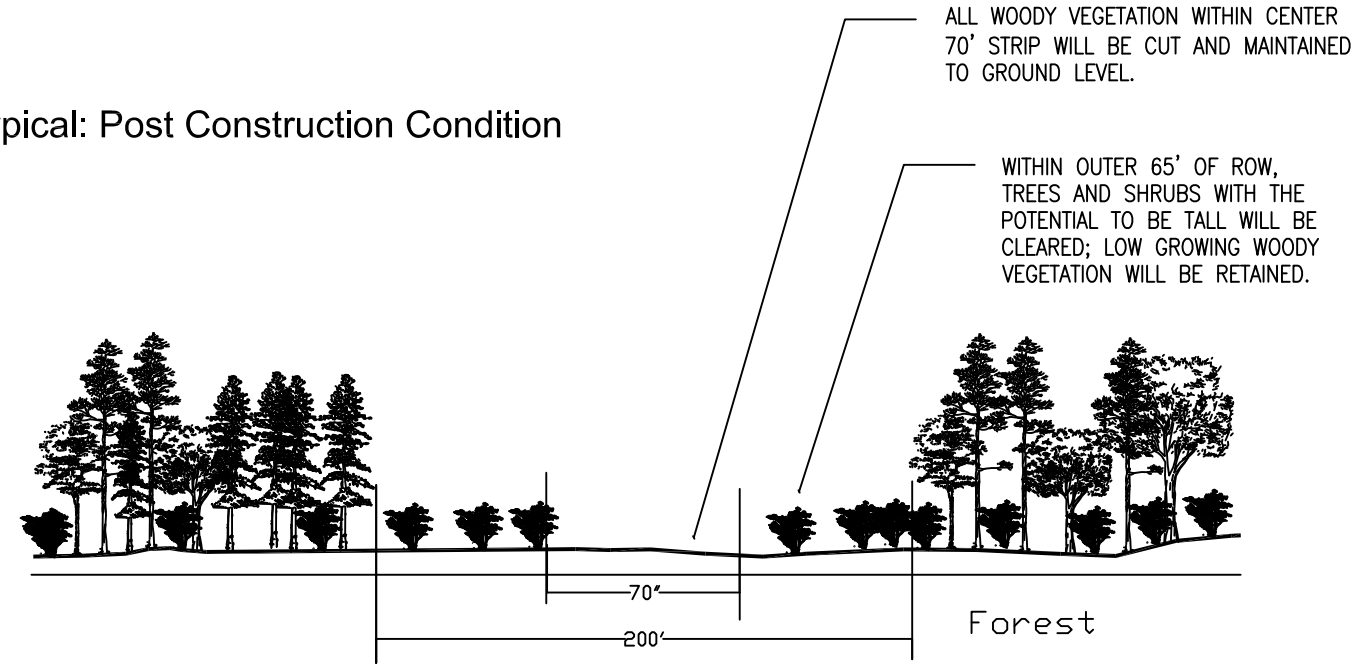
Typical Construction Drawing

Typical: Existing Condition



Not to Scale

Typical: Post Construction Condition



Not to Scale

New 500kV
Transmission Line

minnesota power
AN ALLETE COMPANY

GREAT NORTHERN
TRANSMISSION LINE

Figure 2A

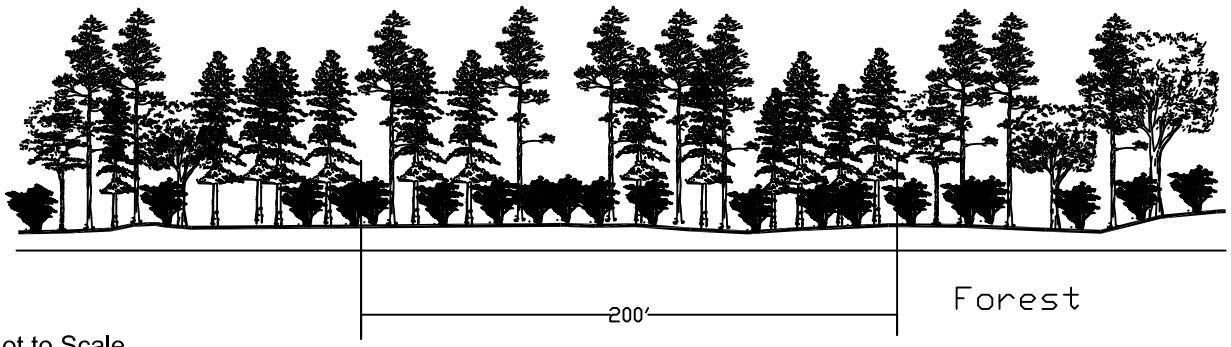
Date: 08/10/2016

Drawn By: AJRandazzo

Forest Clearing: At Structures

Typical Construction Drawing

Typical: Existing Condition



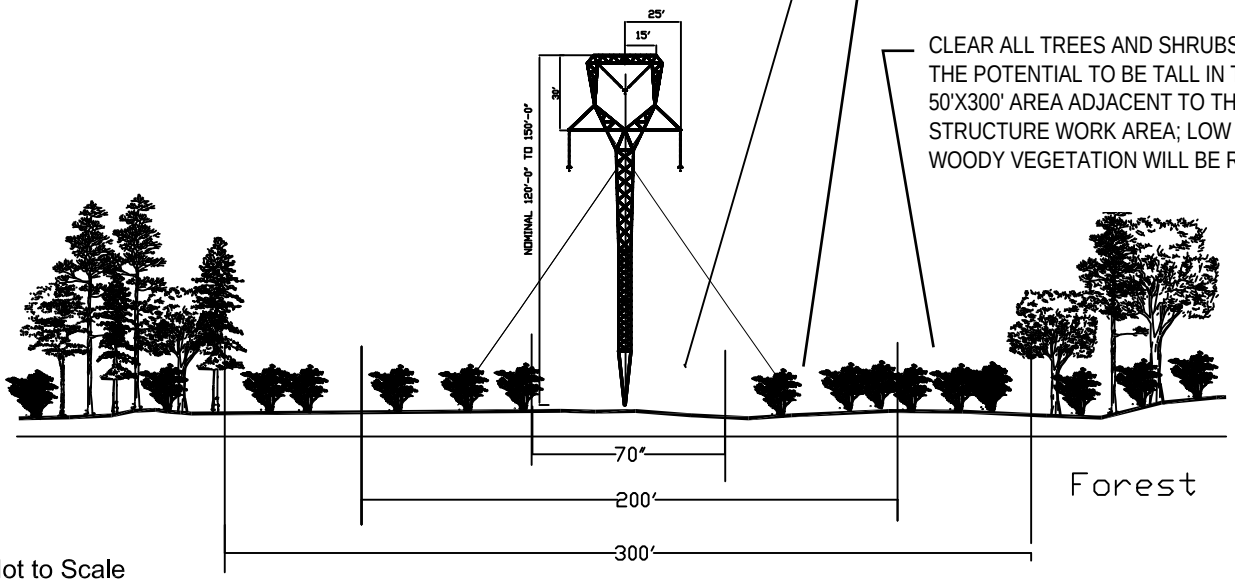
Not to Scale

Typical: Post Construction Condition

ALL WOODY VEGETATION WITHIN CENTER 70' STRIP WILL BE CUT AND MAINTAINED TO GROUND LEVEL.

CLEAR ALL WOODY VEGETATION WITHIN 200'X200' STRUCTURE WORK AREA. SHRUB SPECIES WILL BE ALLOWED TO RE-VEGETATE OUTSIDE OF 70' CENTER STRIP AFTER CONSTRUCTION.

CLEAR ALL TREES AND SHRUBS WITH THE POTENTIAL TO BE TALL IN THE 50'X300' AREA ADJACENT TO THE STRUCTURE WORK AREA; LOW GROWING WOODY VEGETATION WILL BE RETAINED.



Not to Scale

New 500kV
Transmission Line

minnesota power
AN ALLETE COMPANY

GREAT NORTHERN
TRANSMISSION LINE

Figure 2B

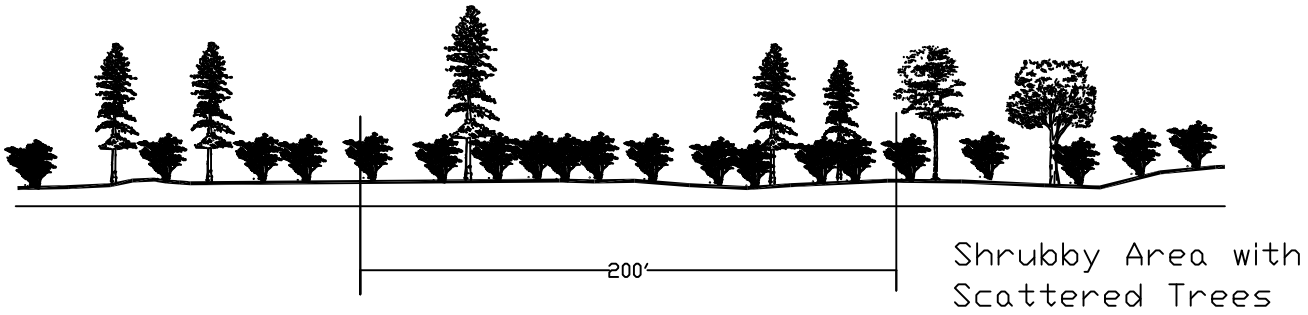
Date: 08/10/2016

Drawn By: AJRandazzo

Shrubby Area Clearing: Transmission Line

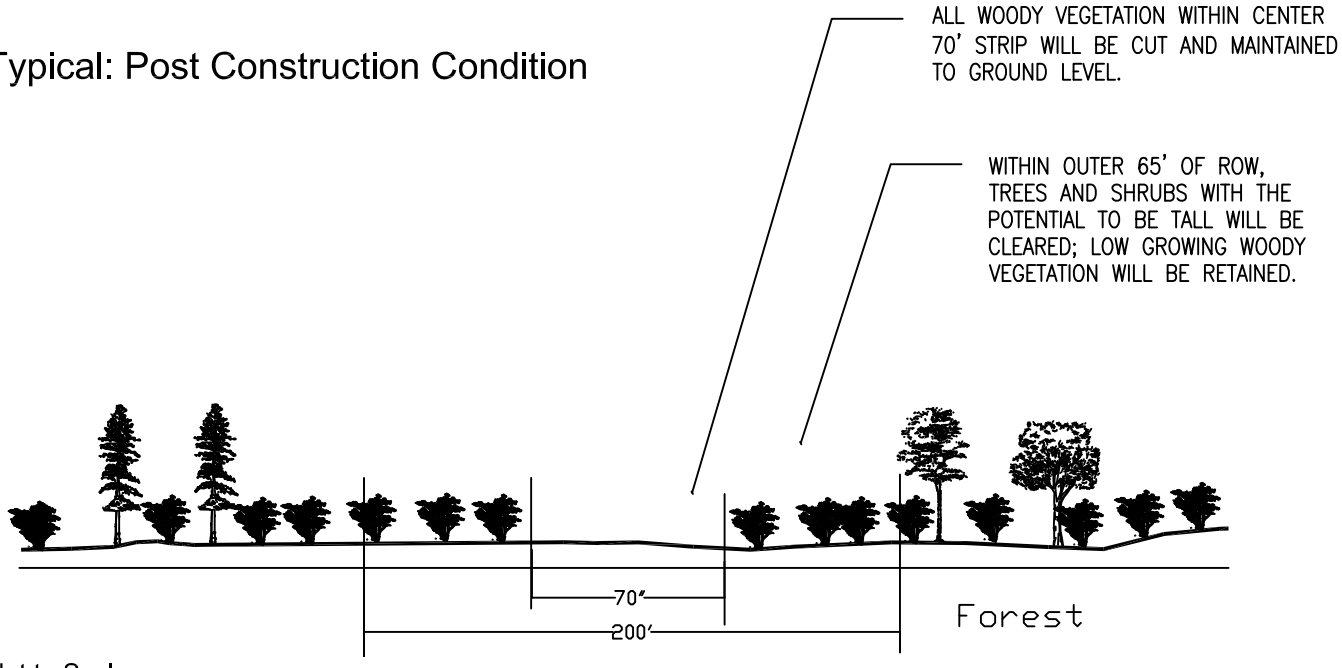
Typical Construction Drawings

Typical: Existing Condition



Not to Scale

Typical: Post Construction Condition



Not to Scale

New 500kV
Transmission Line

minnesota power
AN ALLETE COMPANY

GREAT NORTHERN
TRANSMISSION LINE

Figure 3A

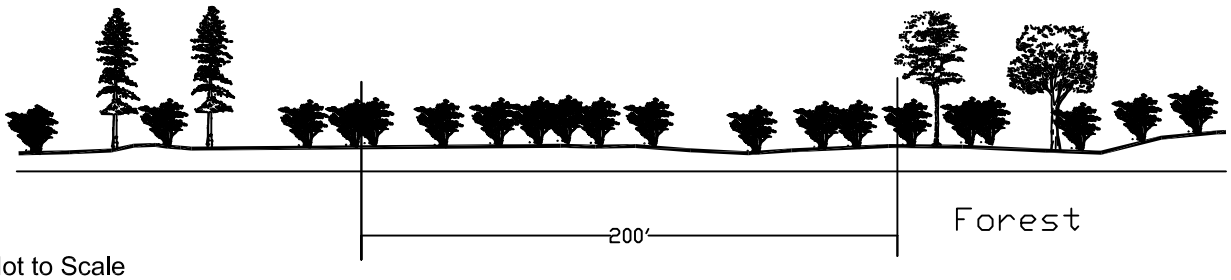
Date: 08/10/2016

Drawn By: AJRandazzo

Shrubby Area Clearing: At Structures

Typical Construction Drawing

Typical: Existing Condition



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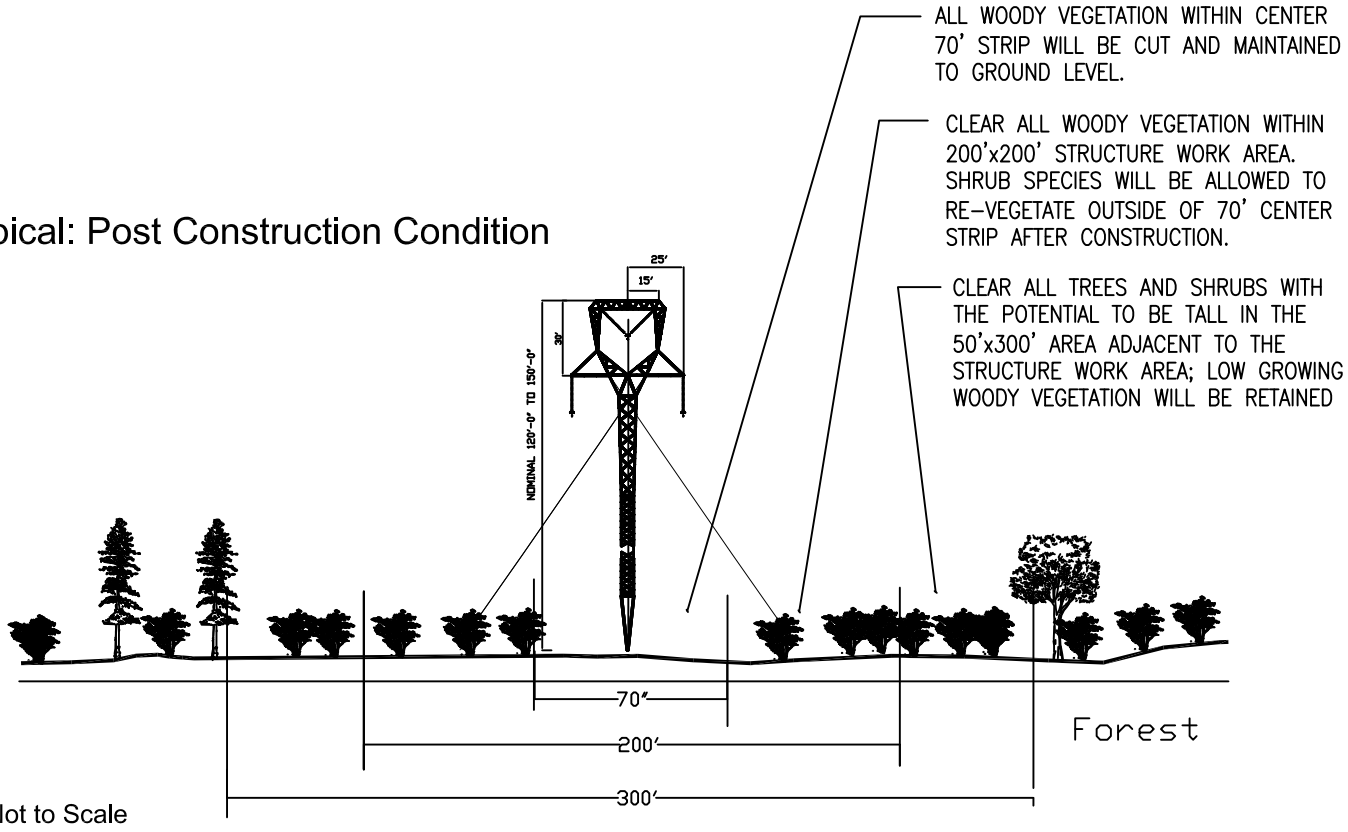
Typical: Post Construction Condition



Not to Scale

New 500kV
Transmission Line

minnesota power
AN ALLETE COMPANY

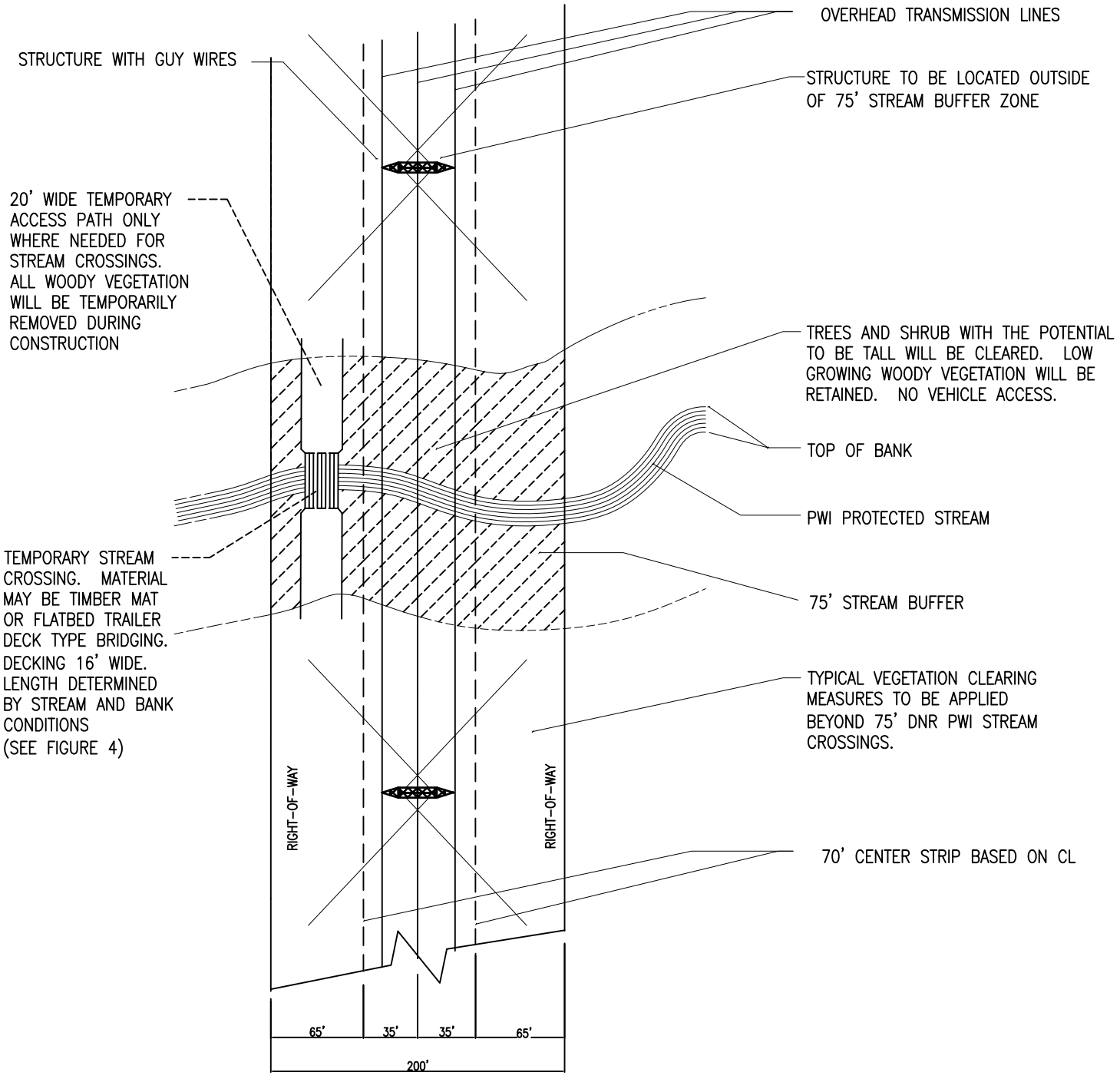
GREAT NORTHERN
TRANSMISSION LINE

Figure 3B

Date: 08/10/2016

Drawn By: AJRandazzo

DNR Public Water
Stream Buffer Plan
Typical Construction Drawings



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GREAT NORTHERN TRANSMISSION LINE

Figure 4

Date: 08/10/2016

Drawn By: AJRandazzo

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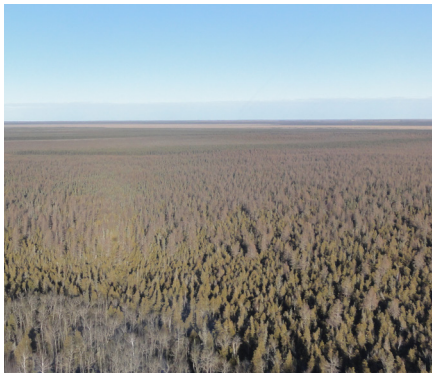
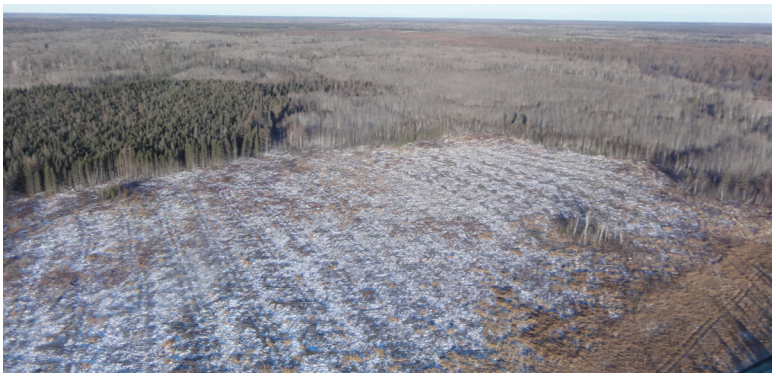
AN ALLETE COMPANY

GREAT NORTHERN TRANSMISSION LINE





ENVIRONMENTAL MONITORING PLAN

OCTOBER 14, 2016

Minnesota Power | 30 West Superior Street | Duluth, MN 55802

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Attachments

Attachment A Project Contact List
Attachment B Reporting Flowcharts
Attachment C Data Entry Form

1.0 Introduction

This Environmental Monitor Plan (Plan) addresses methods for monitoring and reporting to help maintain work activities meet applicable environmental permits, conditions, clearances, and stipulations during construction of Minnesota Power's, a division of ALLETE, Great Northern Transmission Line Project (Project).

The Project team will verify that necessary environmental permits or approvals are obtained prior to the related construction activity in the areas where construction is occurring. Relevant local (township and county), state, and federal regulatory requirements and other Project- and agency-specific requirements have been or will be addressed prior to or during construction. Provisions for environmental standards have been included in construction contract-related documents.

An Environmental Compliance Monitor(s) (ECM) from HDR Engineering, Inc. (HDR) will be designated to this Project and the ECM's primary responsibility will be to facilitate and document monitoring with the Project's permits and approvals. Note that there will be one or two EIs per spread depending on spread length, spread access, and construction work activity within the spread. In addition, the Project will sponsor an Agency Inspector (AI) who will report to agency contacts. The ECM will work closely with Minnesota Power's Project Manager, Minnesota Power's Environmental Manager, Minnesota Power's Construction Manager, the Construction Contractor's Supervisors and Inspectors, AI, and Agency Representatives. A contact list for the Project team is located in Attachment A.

2.0 Environmental Compliance Program

The environmental compliance program includes the following key elements:

- ECM employed throughout construction
- AI employed, as required
- Environmental Monitor Plan for the Project that will summarize the environmental compliance items, training information, the role and responsibilities of the ECM and the AI, environmental resources that will require monitoring, variances, and a communication chart
- Environmental Permit Book that will contain copies of the Project's permits and commitments
- ECM Safety Plan
- Environmental Awareness Training for Project personnel. Personnel are required to attend the training. The training can be tailored to the trainees role on the Project. Hard hat stickers will be provided for those who have completed the training. Initially, the training will be provided by the Environmental Manager to contractor supervisor personnel. Subsequent trainings will be provided by the ECM. The training would provide a summary of the Project's regulatory compliance requirements, and would include the following subjects:
    - Minnesota Power right-of-way policy
    - Biological resources (native vegetation, endangered species, etc.)
    - Cultural resources (archaeological and architectural; compliance with Programmatic Agreement)
    - Water resources (sediment and erosion control, floodplains, wetlands)
    - Spill prevention
    - Vegetation Management Plan
    - Agriculture Mitigation Plan
    - Avian Conservation Plan
- An abbreviated environmental training will be provided by the ECM, focused on:
    - Using only approved access roads, driving within the Project area, to minimize potential impacts to resources
    - Implementing appropriate BMPs in support of cultural, habitat and species protection

- Threatened and endangered or state-concern species that could be encountered, including rare wildlife and migratory birds, field procedures designed to protect these species, and prohibited activities
- The importance of environmental compliance to Minnesota Power and for the Project
- Field personnel will require signing-in to document their participation in the training program and their understanding of the requirements of the program. In addition to the training presented during preconstruction review meetings, ECMs will provide on-the-ground training for new construction personnel as they rotate into the construction Project.

3.0 Environmental Compliance Monitor Duties

The ECM will be responsible for observing and coordinating environmental (wetlands, water resources, biological and cultural) inspections and monitoring during construction on a daily basis. The ECM will work closely with Minnesota Power's construction contractor(s) and construction management personnel, right-of- way agents, inspectors, AI, and other personnel to maintain standards with the Project's environmental commitments and conditions.

The ECM will directly represent Minnesota Power and will have the authority to enforce the environmental requirements of the Project, including stopping construction if a Project-related activity may cause a significant negative impact on the environment or deviation from the Project's environmental requirements. For example, dumping fill material into a wetland, cultural resource identified, or work conducted outside the permitted and agreed right-of-way during construction, the ECM will immediately stop work at that area or activity and follow the process outlined in this Plan. Specific duties for the ECM include:

- → Meetings
  - o Participate in the daily morning contractor meeting [Plan of the Day meeting (POD)], and facilitate the environmental content of the meeting.
  - o Participate in six quality assurance field reviews with Minnesota Power's Environmental Manager.
- → Training
  - o Participate in thorough preconstruction environmental training for Project leaders and contractor supervisors at the Preconstruction Meeting and Training.
  - o As needed, provide on-the-ground training for new construction personnel or assist the contractor supervisors who will provide on-the-ground training for new construction personnel as they rotate into the construction project and maintain the environmental training roster.
  - o Attend Project safety training provided by Minnesota Power and/or contractor.
- → Permits and Environmental Review
  - o Review permits and Project route prior to construction to become familiar with environmental resources, paying particular attention to environmental and cultural sensitive areas (ESAs).
  - o Review correct placement of markings for streams, wetlands, restricted areas, access roads, and other features as requested by Minnesota Power. Notify contractor or Construction Manager if a marker needs repair or replacement.
    - ▪ Markers will be placed by the survey team
  - o Review correct placement of exclusion fencing for identified ESAs. Notify contractor or Construction Manager if a fence needs repair or replacement.

- Assist where possible with interpretation and clarification of environmental requirements that are inconsistent with field conditions.
- Maintain and distribute punch lists of environmental items that require attention.
- Coordinate and review boundaries of temporary easements and confirm that environmental and cultural resources reviews are complete.
- Coordinate with AI daily to discuss Project activities and resolve issues and concerns

→ Construction Practices

- Review the placement of temporary and permanent erosion and sediment control measures and make recommendations to the contractor or Construction Manager, if necessary.
- Seek to anticipate potential problems and work with field personnel to develop viable solutions.
- Continually monitor construction for adherence with environmental conditions and requirements, advise field personnel when construction activities do not meet Project and permit environmental standards, and provide recommendations for corrective action.
- Adjust monitoring activities as needed in response to construction progress, landowner complaints, problem areas, variances, and other applicable factors. Monitor site restoration following completion of construction activities.
- Provide advanced notification to Minnesota Power and Construction Manager when an on-call biological or cultural resources monitor will be needed.
- Monitor for sensitive/protected resources, and oversee avoidance and mitigation procedures specified by regulatory agencies, including:
  - Monitor sensitive cultural areas to maintain compliance with avoidance and minimization requirements
  - Coordinate and assist with additional archaeological surveys, should they be necessary and as time permits
  - Monitor for active migratory bird nests ahead of tree clearing contractor if tree clearing is conducted during the nesting season
  - Monitor active nests sites (grassland and stick nests) during construction to maintain compliance with Migratory Bird Treaty Act and Bald Eagle/Golden Eagle Protection Act if work is conducted during the nesting season
  - Oversee compliance with the Vegetation Management Plan

- Oversee compliance with the Agriculture Mitigation Plan
- Oversee compliance with the Cultural Resources Programmatic Agreement (Unanticipated Finds Plan)
- Oversee compliance with the Avian Compliance Plan

→ Communication and Reporting

- Document construction adherence with environmental requirements through detailed daily field notes and digital photo documentation.
- Prepare an electronic daily inspection report(s) with digital photos via the Project's Power360 site or by email, as directed by Minnesota Power.
- Provide advance construction-schedule notifications to Minnesota Power personnel as required by permit conditions and notify agency representatives.
- Interact as requested by Minnesota Power with agency representatives; document communications in the ECM daily reports.
- Document and report spills as required, and monitor clean-up.
  - Contractor personnel will do the clean-up, disposal of spill clean-up material and affected soils, and reporting filing and agency notification.
- Report any specific construction activity to the Construction Manager that is: (1) being conducted inconsistent with applicable legal and/or regulatory environmental requirements, and/or (2) causing, or will imminently cause, serious environmental degradation.
- Promptly report to Minnesota Power any instance of environmental problem areas or irreparable harm to the environment, follow-up on problem situations to confirm that corrective actions are completed, and document completion of corrective actions.

→ Post-construction Inspection and Reporting

- The ECM will inspect the Project site following construction for adherence with post-construction environmental permit and agency-specific stipulations. The ECM will keep records of post-construction inspections, including any observation of problem areas and the corrective actions taken to meet Project standards.
- Conduct a final inspection of the Project area and develop two lists: (1) areas that need additional work, and (2) areas that should be monitored closely following construction. Update list accordingly as different areas of the Project are completed.

4.0 Agency Inspector Duties

The Agency Inspector (AI) will be the agency contact, reporting directly to agencies any permit non-compliance issues that arise in the field. The AI will work with Minnesota Power, contractors, Construction Manager, and ECM to maintain compliance with the Project's environmental permits. They will participate in the daily plan of the day (POD) meetings, and conduct daily field monitoring of the Project for compliance with the Project's environmental requirements. Specifically, the AI will maintain a daily log of environmental compliance issues during the course of the Project's construction, including photo documentation as needed. These logs will be submitted to Power360, an Internet-based SharePoint site for review. Specific AI responsibilities include:

- Pre-construction
  - Read and be familiar with the conditions, requirements, and specifications of the Project's environmental permits; and
  - Review best management practices (BMPs) prior to construction activities to make sure that they are installed per design specification.
- Construction
  - Attend daily POD meetings with construction crews to review environmental issues and permit conditions;
  - Schedule and accompany regulatory agency personnel for on-site inspections as requested;
  - Review sensitive areas during construction to make sure they are properly avoided and construction contractors are abiding by work-around requirements;
  - Monitor construction activities and BMPs to identify potential problems and corrective actions; coordinating with ECM to implement corrective actions;
  - Document monitoring activities and corrective actions; providing daily reports to Power360;
  - Report permit non-compliance to relevant agency representatives, Minnesota Power Constuction Manager, ECM, and construction crews in order to assure corrective actions are performed in an appropriate and timely manner; and
  - Monitor the Project in accordance to the following plans and address questions:
    - Vegetation Management Plan
    - Agriculture Mitigation Plan
    - Cultural Resources Programmatic Agreement (Unanticipated Finds Plan)
    - Avian Conservation Plan
- Post-construction

- Conduct close-out monitoring and agency reporting;
- Identify clean-up activities and corrective actions; coordinating with agencies to inform appropriate clean-up has been completed; and
- Document close-out activities and provide documentation to relevant agencies.

5.0 Reporting and Documentation

5.1 Monthly Status Report

The Route Permit and Order requirement for monthly status reports will be provided to the Public Utilities Commission by the Project (refer to Section 4.3 – Periodic Status Reports).

5.2 ECM Reporting

Ongoing reporting from the ECM in the field will allow for consistent communication with Minnesota Power, Construction Manager, AI, and the Project team. Reporting and documentation during construction of the Project will be provided in the form of daily reports that will be uploaded to the Project's Power360 site or emailed (if requested). The Project will develop a reporting system capable of implementing the reporting and documentation requirements described below. An ECM reporting flow chart is located in Attachment B.

The ECM will submit one or more daily reports to Minnesota Power. The ECM report will document the nearest structure number (or township, range, and section of review area if outside the right-of-way (ROW), as applicable); the presence of sensitive species, waterbodies, and cultural or other sensitive resources; and include a brief description of the activities observed. When appropriate, relevant digital photographs will be taken and attached to the report(s).

The ECM report data will be entered using a standard data entry form (Attachment C) on a tablet (iPad or other tablet), which will be managed by a database. The database will store the reports and photos. The daily report(s) will include an output of the data entry form and include field photos from the daily activities.

Daily reports and relevant photo documentation will be completed by the ECM at the end of each work day. Once the daily reports are QCed by HDR, the final PDF will be posted to the Project's Power360 site for team review. When the reports are posted, Power360 will send an e-mail notification to the distribution list that they are available.

Each separate activity monitored and documented in a daily report will be assigned a report level. The report levels are described below.

- → Acceptable – An acceptable report will be issued when the activities observed adhere with the Project environmental requirements.
- → Incident – An incident report will be issued when an event occurs that would not be considered acceptable, but is accidental or unforeseeable and the response to the event is in adherence with the Project environmental requirements. An example of an incident is when a hydraulic hose breaks and the project personnel respond by stopping, containing, and cleaning up the spill in accordance with the Project environmental requirements.
- → Minor Problem – A minor problem report will be issued when there is a minor deviation from the Project environmental requirements. An example of a minor problem would be

if a small amount of soil or slash is observed off of the ROW, but has no effect on sensitive resources. If the minor problem is not corrected within an established timeframe or multiple occurrences of a similar nature continue, the situation will be elevated to a problem. The ECM will inform the crew foreman about a minor problem before issuing the problem report and note in the daily report the name of the foreman who was notified.

- Problem – A problem report will be issued when an activity is observed that may not meet the Project's environmental requirements and places resources at unnecessary risk. ECM will inform the Constructions Manager and Minnesota Power of the problem. Examples of problem issues include the failure to install or maintain required erosion control devices and Project-related activities conducted outside the approved ROW limits or approved temporary easements and access roads. If the problem is not corrected within the established timeframe stated in the problem report, the situation will be elevated to a serious problem. The ECM will inform the crew foreman about a problem activity before issuing the serious problem report and note in the daily report the name of the foreman who was notified.
- Non-Compliance – A non-compliance report will be issued when an activity causes harm or poses a serious threat to environmental or cultural resources. ECM will inform the Construction Manager and Minnesota Power of the non-compliance. Minnesota Power will notify the AI. An example of non-compliance would be the placement of construction materials within an exclusion zone for a sensitive resource. A non-compliance report requires that the ECM and the Construction Manager participate in a conference call or meeting with Minnesota Power, Project representatives, and the AI to discuss the non-compliance, the proper corrective actions, and follow-up enforcement actions that should be imposed.
- Communication Report – A communication report will be issued to document a discussion between the ECM and Minnesota Power, HDR, AI, or any Project personnel regarding construction activities or environmental issues. A communication report would be issued to document meetings between various field personnel to resolve issues that arise in the field, and to document an activity that the ECM determines is not consistent with the intent of a mitigation measure, but is not technically an incident or problem report. An example of such an activity would be if the contractor is broadcast seeding on an extremely windy day and much of the seed is blowing away.
- Monitor Report – A monitor report will be issued to document any monitoring that occurred during a construction activity. For example, if the ECM observed eagle activity or assisted a cultural monitor.
- Other – The reporting system will also contain one additional category, "other," to be used as necessary to document an activity that does not fall within any of the report levels discussed above. An example of an activity that would be documented in the daily report as "other" would be if an ECM inspects an area that is the subject of a

potential variance where no construction activities are occurring and there are no Project issues to document.

For non-compliance identified by the ECM and/or AI, and any permit questions issued to the Project by the AI or regulatory agencies, Minnesota Power will provide written response to the AI of the issue and related corrective actions, as necessary. Minnesota Power's Environmental Manager will work with the AI who will serve as the point person for notifying the appropriate state agency (or agencies). The ECM and AI will work with the appropriate construction and inspection personnel by providing additional environmental training, if necessary, and by developing a plan to correct the problem.

On a case by case determination, the appropriate agency will also be notified immediately by phone by Minnesota Power and the AI in the event of a non-compliance. Minnesota Power understands that the appropriate agency may choose to require additional corrective action.

5.3 AI Reporting

The Project can develop an AI report form otherwise, the AI will develop and use an agency report form to provide daily or weekly reports, depending on the level of construction activity and agency requirements. The AI will develop a list of agencies who want to receive the reports for the Power360 program. The AI reports can be completed on a tablet (iPad or other tablet) or paper hardcopy, whichever method is preferable to the agency. The AI will submit the reports to agencies via Power360 or other electronic means.

The AI report will include a summary of activities reviewed and have an assigned report level as described for the ECM reports, such as Acceptable, Incident, Minor Problem, etc. Field photos and communication summaries will also be part of the daily/weekly report.

6.0 Project Variances

During construction, unforeseen or unavoidable site conditions may arise that require the need for changes from approved mitigation measures and construction procedures. This includes the need for temporary off-ROW workspace, a route shift, or additional access roads may be identified. Similarly, changes to the project requirements (i.e., mitigation measures, specifications, etc.) may be needed to facilitate construction or to provide more effective protection of the resources on the Project. Changes to previously approved mitigation measures, construction procedures, and construction work areas will be handled appropriately by the contractors, Construction Manager, or Minnesota Power and if necessary reviewed and approved or denied by the ECM, AI, or appropriate local, state, or federal agency. If its an engineering issue, i.e. structure, conductor, material, etc, that most likely would not require ECM or AI review. However, changes to mitigation measures, construction procedures, and construction work areas would be reviewed by the Environmental Manager and ECM and discussed with the AI. The Project will develop a form to document variances.

7.0 On-Call Monitoring

Environmental and cultural monitors will be available on an "on-call" basis to observe construction and construction-related activities, document adherence to BMPs, and provide guidance or recommendations to minimize impacts. The ECM and AI will address environmental and cultural issues unless special expertise is required based on permit conditions, discussions with agencies, or at the request of Minnesota Power.

7.1 Environmental

An environmental scientist would be available for a biological and/or wetland review of temporary easements needed by the contractor, such as access roads and lay-down areas that the ECM would not be able to accomplish in a timely manner. In addition, an environmental monitor may be needed when construction is taking place across multiple spreads and the ECM would not be able to provide timely reviews or verify compliance with construction buffers or permits.

7.2 Cultural Resources

A cultural resource specialist may be necessary should the Project run into an unanticipated find or for work that goes outside of the original survey area. Foundation installation will occur in multiple locations and may require monitoring. The cultural resource monitor will deal with unforeseen issues in accordance with the Project commitments. A cultural resources unanticipated discovery plan is part of the Programmatic Agreement that will be provided to the ECM, AI, and Construction Manager.

Attachment A Project Contact List

Field Representative:

Matt Freudenrich

Minnesota Power

Construction Manager

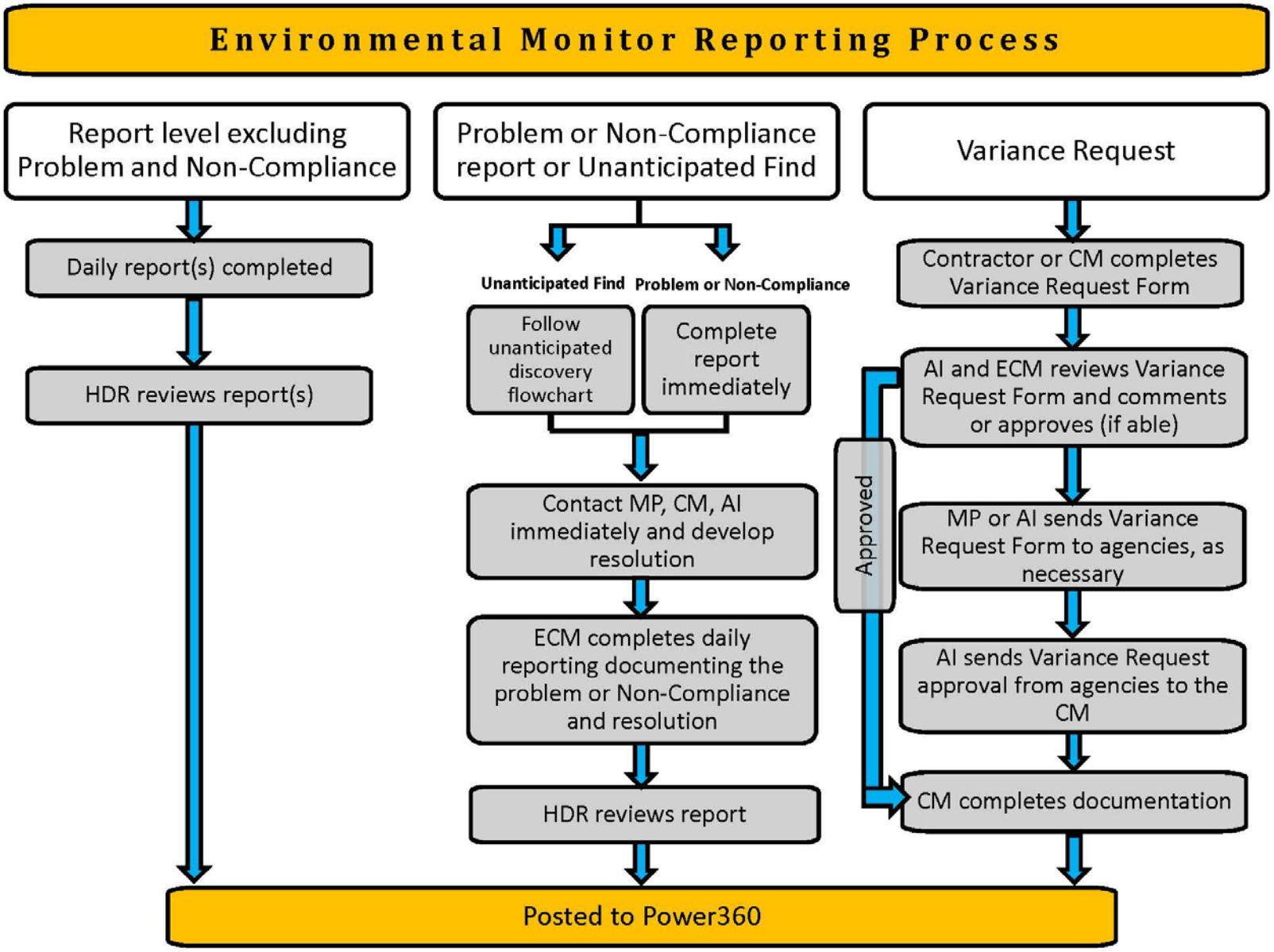
320-635-5033

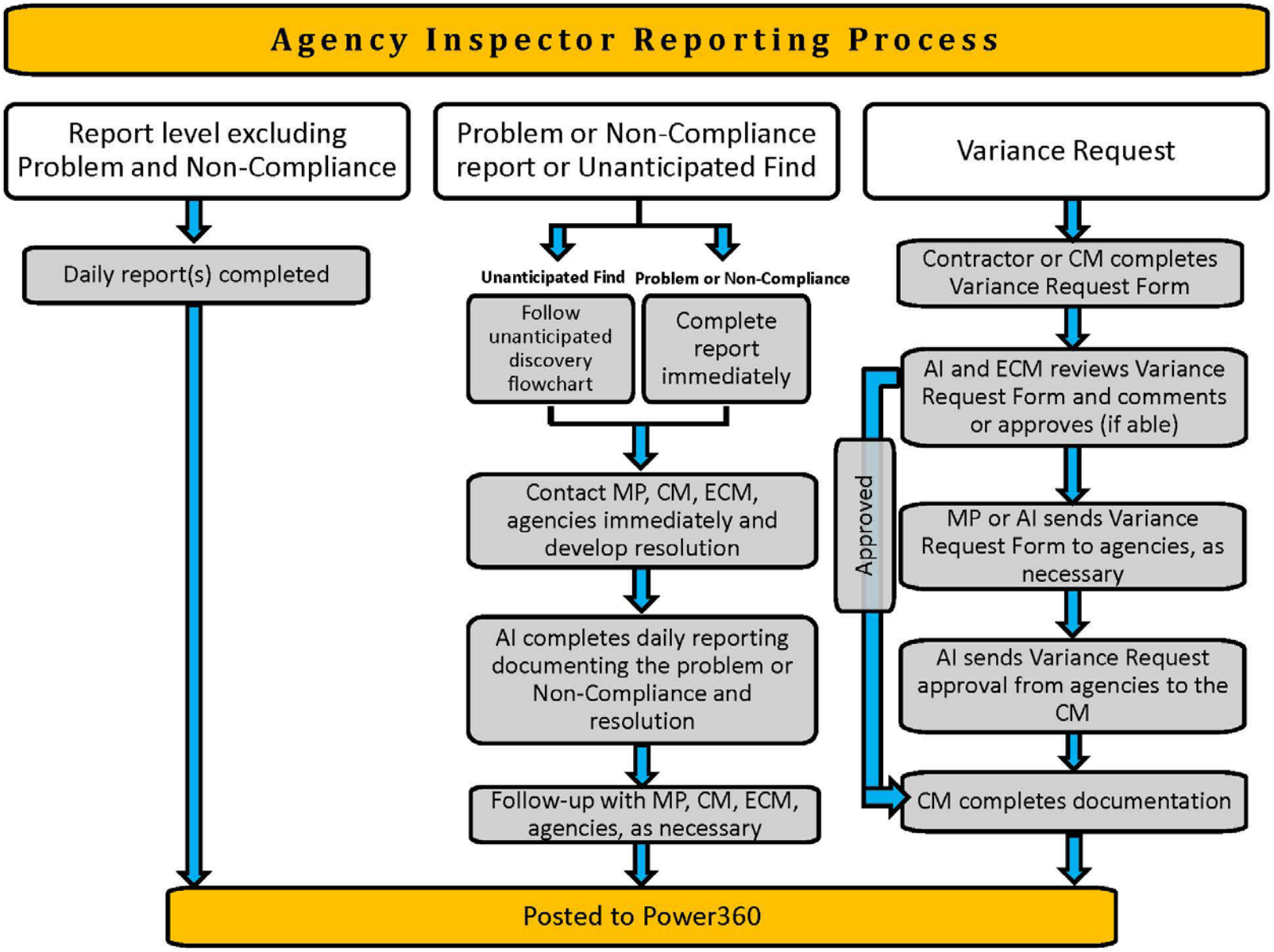
mfreudenrich@mnpower.com

GNTL Contact List

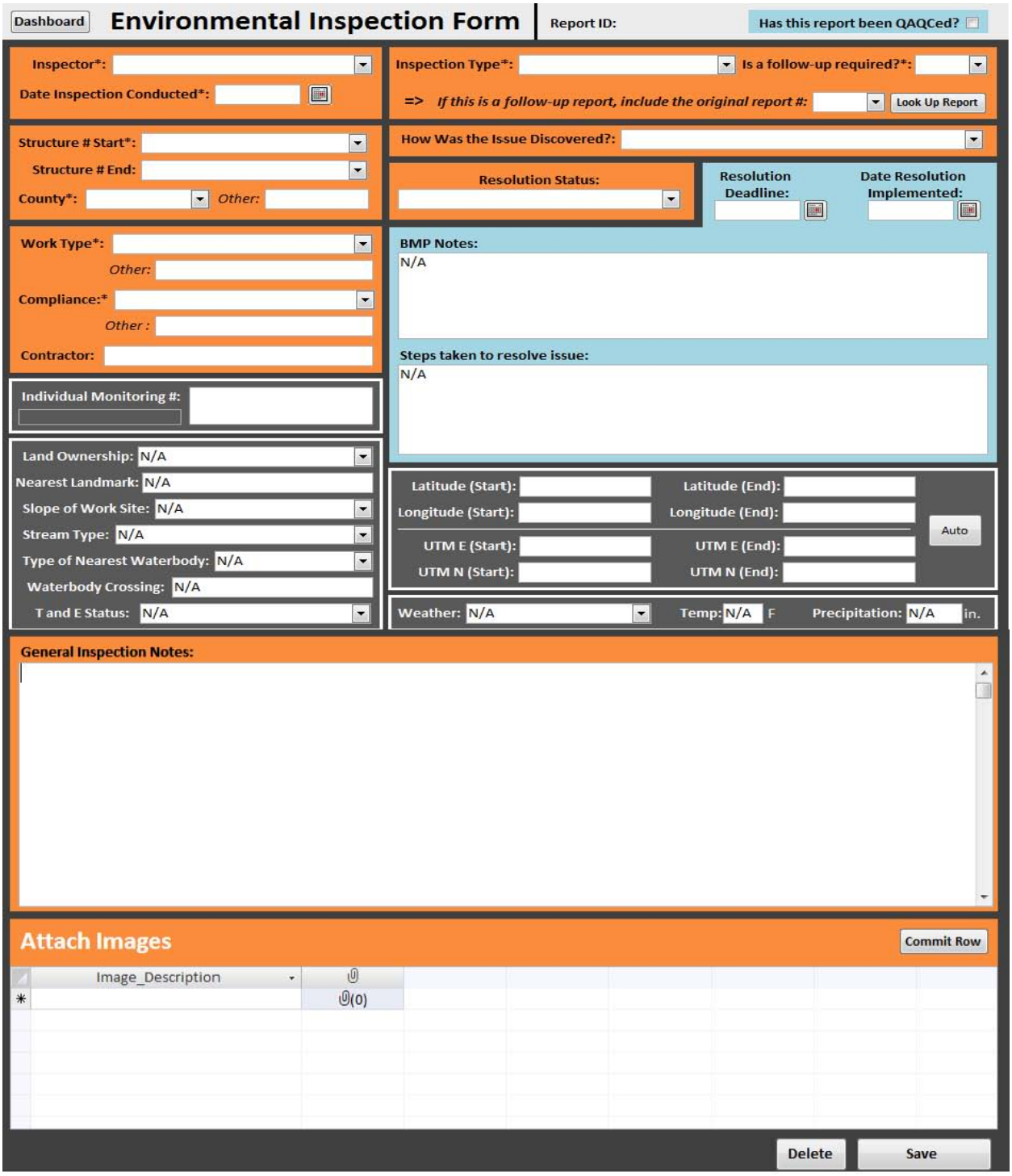
Organization	Role	Name	Email	Phone
HDR	Environmental Monitor			
HDR	Agency Inspector			
HDR	Environmental Project Manager	Michelle Bissonnette	Michelle.Bissonnette@hdrinc.com	763-278-5910
HDR	Environmental Assistant Project Manager	Brian Hunker	Brian.Hunker@hdrinc.com	763-278-5927
Minnesota Power	Project Manager	Tom Coughlin	tcouglin@mnpower.com	218-355-3549
Minnesota Power	Environmental Manager	Jim Atkinson	jbatkinson@mnpower.com	218-355-3561
Minnesota Power	Construction Manager (Field Representative)	Matt Freudenrich	mfreudenrich@mnpower.com	320-635-5033
Minnesota Power	Legal/Regulatory Affairs	David Moeller	dmoeller@allete.com	218-723-3963
Minnesota Power	Land Agent	Matt Hagelin	mhagelin@allete.com	218-355-3319
SHPO	Government Programs and Compliance	Sarah Beimers	sarah.beimers@mnhs.org	651-259-3456
DNR	Regional Operations Supervisor	Joe Rokala	joe.rokala@state.mn.us	218-328-8923
USFWS	Regional Energy Coordinator	Jeff Gosse	jeff_gosse@fws.gov	612-713-5138
USACE	Regulatory Section - Project Manager	Bill Baer	william.a.baer@usace.army.mil	651-290-5338
Roseau County Sheriff	Sheriff	Steve Gust	steve.gust@co.roseau.mn.us	218-463-1421
Koochiching County Sheriff	Sheriff	Perryn Hedlund	perryn.hedlund@co.koochiching.mn.us	218-283-1145
Lake of the Woods Sheriff	Sheriff	Gary Fish	gary_f@co.lake-of-the-woods.mn.us	218-634-1143
Itasca County Sheriff	Sheriff	Vic Williams	vic.williams@co.itasca.mn.us	218-327-7470
PCA	Stormwater Permit Compliance	Jim Dexter / Jeremy Sanoski	james.dexter@state.mn.us / jeremy.sanoski@state.mn.us	218-302-6632/ 218-316-3888
PUC	Energy Facility Planner	Michael Kaluzniak	mike.kaluzniak@state.mn.us	651-201-2257
DOC	Environmental Review Manager	Bill Storm	bill.storm@state.mn.us	651-538-1844
USDOE	Electricity Policy Analyst	Dr. Julie Ann Smith, PhD	JulieA.Smith@hq.doe.gov	202-586-7668

Attachment B Reporting Flowcharts


Environmental Monitor Reporting Process
Report level excluding Problem and Non-Compliance
Daily report(s) completed
HDR reviews report(s)
Problem or Non-Compliance report or Unanticipated Find
Unanticipated Find
Problem or Non-Compliance
Follow unanticipated discovery flowchart
Complete report immediately
Contact MP, CM, AI immediately and develop resolution
ECM completes daily reporting documenting the problem or Non-Compliance and resolution
HDR reviews report
Variance Request
Contractor or CM completes Variance Request Form
AI and ECM reviews Variance Request Form and comments or approves (if able)
Approved
MP or AI sends Variance Request Form to agencies, as necessary
AI sends Variance Request approval from agencies to the CM
CM completes documentation
Posted to Power360


Agency Inspector Reporting Process
Report level excluding Problem and Non-Compliance
Daily report(s) completed
Problem or Non-Compliance report or Unanticipated Find
Unanticipated Find
Problem or Non-Compliance
Follow unanticipated discovery flowchart
Complete report immediately
Contact MP, CM, ECM, agencies immediately and develop resolution
AI completes daily reporting documenting the problem or Non-Compliance and resolution
Follow-up with MP, CM, ECM, agencies, as necessary
Variance Request
Contractor or CM completes Variance Request Form
AI and ECM reviews Variance Request Form and comments or approves (if able)
Approved
MP or AI sends Variance Request Form to agencies, as necessary
AI sends Variance Request approval from agencies to the CM
CM completes documentation
Posted to Power360

Attachment C Data Entry Form



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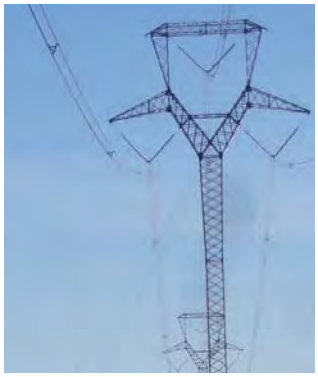
AN ALLETE COMPANY

GREAT NORTHERN TRANSMISSION LINE



AVIAN MITIGATION PLAN

October 14, 2016

Minnesota Power | 30 West Superior Street | Duluth, MN 55802

Note – Included in this submittal is the draft Avian Mitigation Plan (AMP) that was submitted to the MN DNR on July 27, 2016 for review. Minnesota Power received comment from MN DNR on October 12th, 2016. Minnesota Power is working with MN DNR to incorporate and address their comments and will provide a final copy of AMP once it becomes available. MN DNR's comments on the AMP are attached to this submittal as Attachment 1.

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List of Attachments

Attachment 1. MN DNR Comments on Draft Avian Mitigation Plan – Great Northern Transmission Line Project

1.0 Introduction

1.1 Background

Minnesota Power (MP) is constructing a 500 kV transmission line between the Canadian Border, northwest of Warroad, Minnesota, and the Blackberry Substation located northeast of Grand Rapids, Minnesota, (Great Northern Transmission Line or "the Project"). The line will be approximately 224 miles long.

It is widely recognized that construction and operation of transmission lines can result in direct and indirect impacts on avian wildlife. Direct impacts can include mortality from wildlife striking power lines and related infrastructure, electrocution from contact with overhead collector and transmission lines, and from loss of habitat.

The Public Utilities Commission, as part of their approval of the route permit, requires that MP develop this Avian Mitigation Plan (AMP) to outline how they will reduce the risk of avian impacts associated with the Project. This AMP complies with applicable laws, regulations, and permits that relate to avian species, and also includes a series of best mitigation practices that will be implemented to avoid or minimize the risk of impacting birds and their habitats. The AMP is intended to be periodically updated and improved as new information becomes available.

1.2 Applicable Regulations

There are three primary federal laws pertaining to the protection of birds in the United States: (1) the Migratory Bird Treaty Act (16 USC §§ 703-712), (2) the Bald and Golden Eagle Protection Act (16 USC § 668), and (3) the Endangered Species Act (16 USC § 1538). The State of Minnesota also regulates the protection of wildlife, primarily through the Minnesota Endangered Species Statute (Minn. Stat. § 84.0895), and laws regulating hunting and fishing.

The Migratory Bird Treaty Act (MBTA), which is administered by the U.S. Fish and Wildlife Service (USFWS), is the cornerstone of migratory bird mitigation and protection in the United States. Generally speaking, the MBTA protects all birds occurring in the U.S. in the wild except for house (English) sparrows, European starlings, rock doves (pigeons), any recently listed unprotected species in the federal register, and non migratory upland game birds. The Bald and Golden Eagle Protection Act (Eagle Act) provides additional legal protections specific to bald and golden eagles. Both the MBTA and the Eagle Act prohibit the "take" of protected species and specify possible penalties for doing so. The MBTA defines "take" as to "pursue, hunt, shoot, wound, kill, trap, capture, or collect, or attempt to pursue, hunt, shoot, wound, kill, trap, capture, or collect any … bird, or any part, nest or egg." Similarly, the Eagle Act defines "take" as to "pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, molest, or disturb a bald or golden eagle including any part, nest, or egg thereof…."

Species at risk of extinction are further protected under the federal Endangered Species Act (ESA). The ESA was passed by Congress in 1973 in recognition that many of our nation's native plants and animals were in danger of becoming extinct. The purpose of the ESA is to protect

these endangered and threatened species and to provide a means to conserve their ecosystems. "Take" under ESA is defined as "... to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or attempt to engage in any such conduct." "Harm" is an act which actually kills or injures the wildlife, which includes significant habitat modification or degradation; whereas "harass" is defined as an intentional or negligent act or omission that creates the likelihood of injury to wildlife by annoying it so as to significantly disrupt normal behavioral patterns such as breeding, feeding, or sheltering. The ESA authorizes the USFWS to permit an "incidental take," or a take resulting from an otherwise legal activity.

Minnesota has adopted the Minnesota State Endangered Species Act allowing the Department of Natural Resources (DNR) to identify species meeting the statutory definitions of "endangered," "threatened," or "special concern," and apply special regulations toward their management. Species listed as threatened or endangered may not be removed or harmed without prior approval by the DNR via a take permit.

1.3 Corporate Policy

MP is committed to siting, designing, constructing, and operating transmission facilities in a way that minimizes adverse environmental impacts, consistent with state and federal regulations. MP has developed and implemented this AMP to support their commitment to comply with key wildlife laws by following consistent procedures and practices to minimize adverse impacts on birds and their habitats.

2.0 Site and Route Suitability Assessments

MP has completed appropriate site and/or route studies to assess potential impacts of the Project on wildlife. The results of these studies were used to establish routes considered in the EIS which avoid sensitive avian resources to the greatest extent practicable. Studies included:

- → endangered, threatened, or other special status species present on or likely to use the proposed Project site/route;
- → species of birds that are likely to use a proposed Project site based on an assessment of site attributes;
- → critical areas of habitat along the Project's route where wildlife could congregate (e.g., maternity roosts, staging areas, winter ranges, nesting sites, migration stopovers or corridors, etc.).

3.0 Mitigation Practices

The following advanced Mitigation practices would reduce potential avian impacts. Use of these practices minimizes potential adverse impacts to most avian species and habitats present along the transmission line.

3.1 General Construction Practices

- → Minimize Construction Footprint – Construction footprints and staging areas will be the smallest possible to safely and efficiently complete construction. Construction work

areas will be sited to avoid and/or minimize impacts to sensitive avian habitats whenever practicable.

→ Minimize Construction Timeline – While the total line construction time will vary, the total time required for framing, setting, stringing, and clipping activities will likely average about one full day per structure. This will limit the time the area immediately surrounding transmission line structures will experience higher than normal levels of human activity. Additionally, the potential use of helicopters for setting structures greatly reduces the duration of construction activities at each structure site, as well as construction traffic.

→ Minimize Habitat Conversion – All tree species with potential to grow greater than 14 feet tall will be removed from the right-of-way (ROW) to comply with North American Electric Reliability Corporation (NERC) standards. Full clearing of woody vegetation will be conducted along a 70-foot-wide center path for the length of the ROW. Along the outside edges (65 feet to each side of the 70-foot cleared center path), shrub species that grow less than 14 feet tall will be retained in both wetland and upland areas to the extent practicable. This clearing plan is intended to increase the suitable habitat available for a number of migratory birds, and specifically for the yellow winged warbler.

→ Minimize Habitat Fragmentation – Where practicable, the transmission line has been located adjacent to existing, managed utility ROWs to reduce the amount of forest fragmentation the Project would generate.

→ Minimize Breeding Season Tree Clearing – Tree and brush clearing will be completed to the extent practicable outside of the migratory bird breeding season. This is partly dependent on the Project's ability to get all regulatory permits in a timely manner.

→ Sensitive Species Avoidance

- Bald eagles – Bald eagle nests are widespread in the region of the Project. Known nesting locations were used to establish routes considered in the EIS which avoided these areas. Aerial surveys for bald eagle nests were conducted during March of 2016 to ensure eagle nests will be avoided by the Project. No nests were located within 660 feet of the centerline. Should a nest become established within the Project ROW before or during construction, MP will work with the USFWS to minimize and avoid impacts to bald eagles to comply with the Eagle Act.
- Northern goshawk – Tree removal and construction activities will not take place within 1,640 feet (500 meters) of a known northern goshawk nest during the breeding season. Currently, no known nests are located within this distance of the Project's ROW. If a new nest location is found within 1,640 feet of tree removal or construction activities, the DNR (via the on-site Agency Inspector and/or Construction Management) will be consulted prior to conducting the activity.
- Colonial nesting sites – No colonial nest sites or rookeries are known to be present along the ROW. If a site is located or becomes established prior to

construction, MP will consider minimizing impacts by conducting construction outside of the breeding season. MP would consult with the DNR via the on-site Agency Inspector and/or Construction Management to come to an agreed-upon resolution for potential impacts to colonial nest sites.

3.2 Transmission Line Design Standards

The Project design will incorporate provisions of APLIC's current standards in *Suggested Practices for Avian Protection on Power Lines, the State of the Art in 2006*, as summarized below. The APLIC document is available from APLIC at http://www.aplic.org/.

General Design Standards – The Project's design will comply with the following standards:

- → Minimum separation of 60 inches (150 centimeters) between phase conductors, and between phase conductor and grounded hardware;
- → Where such separation is not feasible, insulation will be used to prevent electrocution. These design standards will minimize the potential for avian electrocution for all species identified within the Project area, including bald eagles and other large birds.
- → Flight diverters will be installed and maintained on the shield wire spans where the transmission line will cross potential flight corridors. Flight corridors in the Project area are mostly associated with waterways, waterbodies and wetland complexes with shallow open water habitat.
- → Therefore, flight diverters will generally be placed on spans which cross DNR Public Water Inventory (PWI) Streams and Rivers, and on spans which are within 1,500 feet (average span distance for the Project) of DNR Shallow Water Lakes, or DNR Wild Rice Lakes. These lakes have been identified by the DNR as providing important habitat for waterfowl or as containing wild rice beds, an important avian food resource.
- → In addition, spans which are within 1,500 feet of PWI basins, and spans which have greater than 10 acres of shallow open water (visible on aerial imagery) within 1,500 feet, will be considered for flight diverter placement, depending on the vegetation characteristics of the surrounding landscape. In these cases, flight diverters will be placed on spans that have low-growing vegetation, such as emergent wetlands and shrublands, which leave the transmission line most exposed as an aerial obstacle for large birds accessing these areas. See Detailed Figures (attached) for locations of spans selected for flight diverter placement.
- → MP will place yellow, coiled-PVC flight diverters at roughly 50 foot (15 meters) intervals, along spans meeting the above criteria. Flight diverters will be placed on both shield wires at roughly 100 foot (30 meters) intervals, but would be evenly staggered to appear as 50 feet apart when viewed by oncoming birds.

4.0 Line Marking Plan

The line marking plan was developed by incorporating *Reducing Avian Collisions with Power Lines: the State of the Art in 2012*, available from APLIC at http://www.aplic.org/.

A review of aerial images, PWI watercourses and waterbodies, DNR shallow lakes, and DNR wild rice lakes within 1,500 feet of the centerline, and observations made during field surveys conducted during the Fall of 2015 and Spring and Summer of 2016, indicate that line marking is appropriate in many locations along the route.

The locations recommended for line marking are listed in Tables 4-1 through 4-4. Annual aerial inspections of the transmission line may also identify other locations where flight diverters may be appropriate. Forty-three segments have been identified as appropriate for flight diverter placement, which make up approximately 19.5 (may differ slightly than totals listed in tables due to rounding) miles of the 224 mile long transmission line.

Table 4-1. Proposed Avian Flight Diverter Placement Locations along Segment 1

Marking Location	Draft Tower Numbers[a]	Avian Features Present	Figure Reference
Sprague Creek	A40 – A41	Stream Crossing / Flight Corridor	1
Lost River and Hay Creek Impoundment	A61 – A 64	River Crossing/Flight Corridor/Waterbird Use Area	2
Unnamed Shallow Water Lake	A121 – A123	Flight Corridor/Waterbird Use Area	3
West Branch Warroad River	A133 – A134	River Crossing/Flight Corridor/Waterbird Use Area	4
East Branch Warroad River	A157 – A158	River Crossing/Flight Corridor/Waterbird Use Area	6
Unnamed Wetland, Greater than 10 acres Shallow Open Water	A197– A 199	Flight Corridor/Waterbird Use Area	7
Winter Road River	A207 – A 208	Flight Corridor/Waterbird Use Area	8
Unnamed Wetland, Greater than 10 acres Shallow Open Water	A215 – A218	Flight Corridor/Waterbird Use Area	9
Peppermint Creek	A234 – A236	Stream Crossing/Flight Corridor/Waterbird Use Area	11
West Fork Baudette River	A261-A262	River Crossing/Flight Corridor	12
Total Length of Line Marking (mi), Segment 1			***4.6***

[a] **Tower numbers are based on drawing file: Power360 Centerline Rev. F, created 7/21/2016.**

The span between towers A137-A139 crosses an unnamed PWI watercourse (figure page 5), but was not recommended for line marking, because no stream channel is present on aerial imagery in this location.

An emergent wetland complex with open water is present between A228-A231 (figure page 10), but was not selected for line marking because less than 10 acres of open water is present.

Table 4-2. Proposed Avian Flight Diverter Placement Locations along Segment 2

Marking Location	Tower Numbers[a]	Avian Features Present	Figure Reference
Baudette River	B267 – B268	River Crossing/Flight Corridor	13
Rapid River	B300 – B301	River Crossing/Flight Corridor	14
East Branch Rapid River	B304 – B305	River Crossing/Flight Corridor	15
Black River	B384 – B387	River Crossing/Flight Corridor	17
Unnamed Stream	B408 – B410	Stream Crossing/Flight Corridor/Waterbird Use Area	18
Unnamed Stream	B420 – B423	Stream Crossing/Flight Corridor/Waterbird Use Area	19
Unnamed Stream	B428 – B430	Stream Crossing/Flight Corridor/Waterbird Use Area	20
Big Fork River	B445 – B446	River Crossing/Flight Corridor	21
Total Length of Line Marking (mi), Segment 2			***3.9***

[a] **Tower numbers are based on drawing file: Power360 Centerline Rev. F, created 7/21/2016.**

The span between B340 and B341 crosses McCloud Creek (figure page 16), a PWI watercourse, but was not recommended for line marking, because the stream channel occupies a narrow forested riparian corridor within an agricultural field, which is less likely to serve as a flight corridor than larger streams and rivers in the area.

Table 4-3. Proposed Avian Flight Diverter Placement Locations along Segment 3

Marking Location	Tower Numbers[a]	Avian Features Present	Figure Reference
Reilly Creek	C517 – C518	Stream Crossing/Flight Corridor/Waterbird Use Area	22
Unnamed Stream	C537 – C539	Stream Crossing/ Flight Corridor/Waterbird Use Area	23
Unnamed Wetland, Greater than 10 acres Shallow Open Water	C560 – C561	Flight Corridor/Waterbird Use Area	24
Unnamed Wetland, Greater than 10 acres Shallow Open Water	C571 – C572	Flight Corridor/Waterbird Use Area	25

Marking Location	Tower Numbers[a]	Avian Features Present	Figure Reference
Unnamed Wetland, Greater than 10 acres Shallow Open Water	C581 – C582	Waterbird Use Area	26
Unnamed Wetland, Greater than 10 acres Shallow Open Water	C586 – C588	Flight Corridor/Waterbird Use Area	27
Unnamed Wetland, Greater than 10 acres Shallow Open Water	C596 – C597	Flight Corridor/Waterbird Use Area	28
Unnamed Wetland, Greater than 10 acres Shallow Open Water	C602 – C603	Flight Corridor/Waterbird Use Area	29
Valley River	C607 – C608	River Crossing/Flight Corridor	30
Total Length of Line Marking (mi), Segment 3			***3.2***

[a] **Tower numbers are based on drawing file: Power360 Centerline Rev. F, created 7/21/2016.**

Table 4-4. Proposed Avian Flight Diverter Placement Locations along Segment 4

Marking Location	Tower Numbers[a]	Avian Features Present	Figure Reference
Bear River	D651 – D652	River Crossing/Flight Corridor	31
Unnamed Stream	D660 – D661	Flight Corridor/Waterbird Use Area	32
Unnamed Wetland, Greater than 10 acres Shallow Open Water	D662 – D664	Flight Corridor/Waterbird Use Area	32
Unnamed Stream	D667 – D668	Flight Corridor/Waterbird Use Area	33
Prairie River	D684 – D685	River Crossing/Flight Corridor	34
Day Brook	D691 – D692	River Crossing/Flight Corridor	35
East River	D704 – D705	River Crossing/Flight Corridor	36
Grass Lake	D724 – D725	Flight Corridor/Waterbird Use Area	37
Trestle Lake, Bray Lake, Unnamed Stream	D727 – D730	Flight Corridor/Waterbird Use Area	38

Marking Location	Tower Numbers[a]	Avian Features Present	Figure Reference
Unnamed Stream	D732 – D733	Flight Corridor/Waterbird Use Area	39
Unnamed Lake	D736 – D737	Flight Corridor/Waterbird Use Area	40
Unnamed Stream, Unnamed Wetland Complex with Shallow Open Water	D744 – D746	Flight Corridor/Waterbird Use Area	41
Unnamed Stream, Unnamed Wetland Complex with Shallow Open Water	D748 – D750	Flight Corridor/Waterbird Use Area	42
Sucker Brook, Unnamed Stream	D754 – D755	Stream Crossings/Flight Corridor	43
Big Diamond Lake, Little Diamond Lake	D768 – D770	Flight Corridor/Waterbird Use Area	44
Swan River, Holman Lake, Twin Lakes	D778 – D781	River Crossing/Flight Corridor/Waterbird Use Area	45
Total Length of Line Marking (mi), Segment 3			***6.8***

[a] **Tower numbers are based on drawing file: Power360 Centerline Rev. F, created 7/21/2016.**

Several segments along this portion of the line are located within 1,500 feet of PWI basins, which are not recommended for line marking. In most cases, this is due to the presence of mature forest between the shoreline and the proposed route.

5.0 Operational Practices

After construction is complete, MP will implement operational practices to reduce the potential for the Project to adversely impact wildlife.

- → Regular Site Inspection – MP typically inspects transmission lines on an annual basis and more frequently as reliability issues warrant. The entire transmission line length will be electronically monitored on a continuous basis for electrical faults, including location identification and reporting of all line faults. Operational staff will be trained to identify, record, and respond to avian issues. Annual inspections will likely be conducted via aerial survey; ground surveys are not anticipated to be a normal occurrence because of the wet terrain and remoteness of the line.
- → Avian Issues Reporting – Operational staff will be trained to record and respond to dead or injured avian species found along the Project. An avian incident report will be completed to track injuries and mortalities. The report will include location of the incident, probable cause of the incident, and the type of bird involved. Reports involving bald eagle mortality will be immediately submitted to the USFWS (via

birdreport.fws.gov); otherwise, avian incident reports will be forwarded to MP's Senior Environmental Compliance Specialist (or designee) for compilation into an annual report for submission to the USFWS and DNR. This report will summarize the avian mortality that occurred in addition to any related observations or recommendations.

- → Nest Management – Where avian species are likely to nest in human-made structures at locations that interfere with the operation or maintenance of the structures or jeopardize their own safety, the structures may be equipped with either (1) devices engineered to discourage birds from building nests, or (2) nesting platforms that safely accommodate nests without interfering with structure performance. Potential nesting activity will be identified during annual inspections of the transmission line. If nest construction is apparent, MP will work with the appropriate federal and/or state agency to permanently remove the nest material and develop an alternative nest site, as appropriate. Nests will only be moved or removed if permitted by applicable laws and regulations.
- → Adaptive Management – Through the course of operating the transmission line and gathering information related to avian incidents, MP will respond to reduce impacts on birds, as appropriate. For example, additional flight diverters may be needed to mark transmission lines and or structure guy wires if high levels of mortality are observed in particular areas or facilities. MP will consult with the appropriate state and/or federal agencies if particular issues of concern become evident.

6.0 Permit Compliance

MP will obtain and comply with all avian-specific permits associated with construction and operation of the Project. This may include incidental take permits, nest relocation, and scientific collection. The results of this AMP will be incorporated into Project-specific training and operational practices, as necessary.

7.0 Training

MP will prepare a worker environmental training program to ensure construction and operation personnel clearly understand all environmental permit requirements and the commitments MP has made as a part of a permit application and this AMP. The training program will include an electronic presentation that will be available at appropriate facilities. Contractors and/or vendors working at facilities operated by MP for extended periods will also be required to review the training materials. MP will monitor construction and operation staff to ensure compliance with environmental requirements.

8.0 Key Contacts

For questions regarding this AMP and other environmental/permitting issues, please contact:

Minnesota Power/
ALLETE, Inc.:
Jim Atkinson
Supervisor, Environmental.
Siting and Permitting
30 W Superior Street
Duluth, MN 55802
Phone: (218) 355-3561
jbatkinson@allete.com

Federal contacts for federally listed threatened and endangered species and federally protected eagles:

U.S. Fish and Wildlife Service:
Margaret Rheude
Ecological Services
4101 E. 80th Street
Bloomington, MN 55425-1665
(612) 725-3548
Margaret_Rheude@fws.gov

State contact for issues regarding general wildlife and state-listed threatened or endangered species is:

Minnesota Department of Natural Resources:
Rich Baker
Ecological Services
500 Lafayette Rd
St Paul, MN 551554025
651-259-5073
richard.baker@state.mn.us

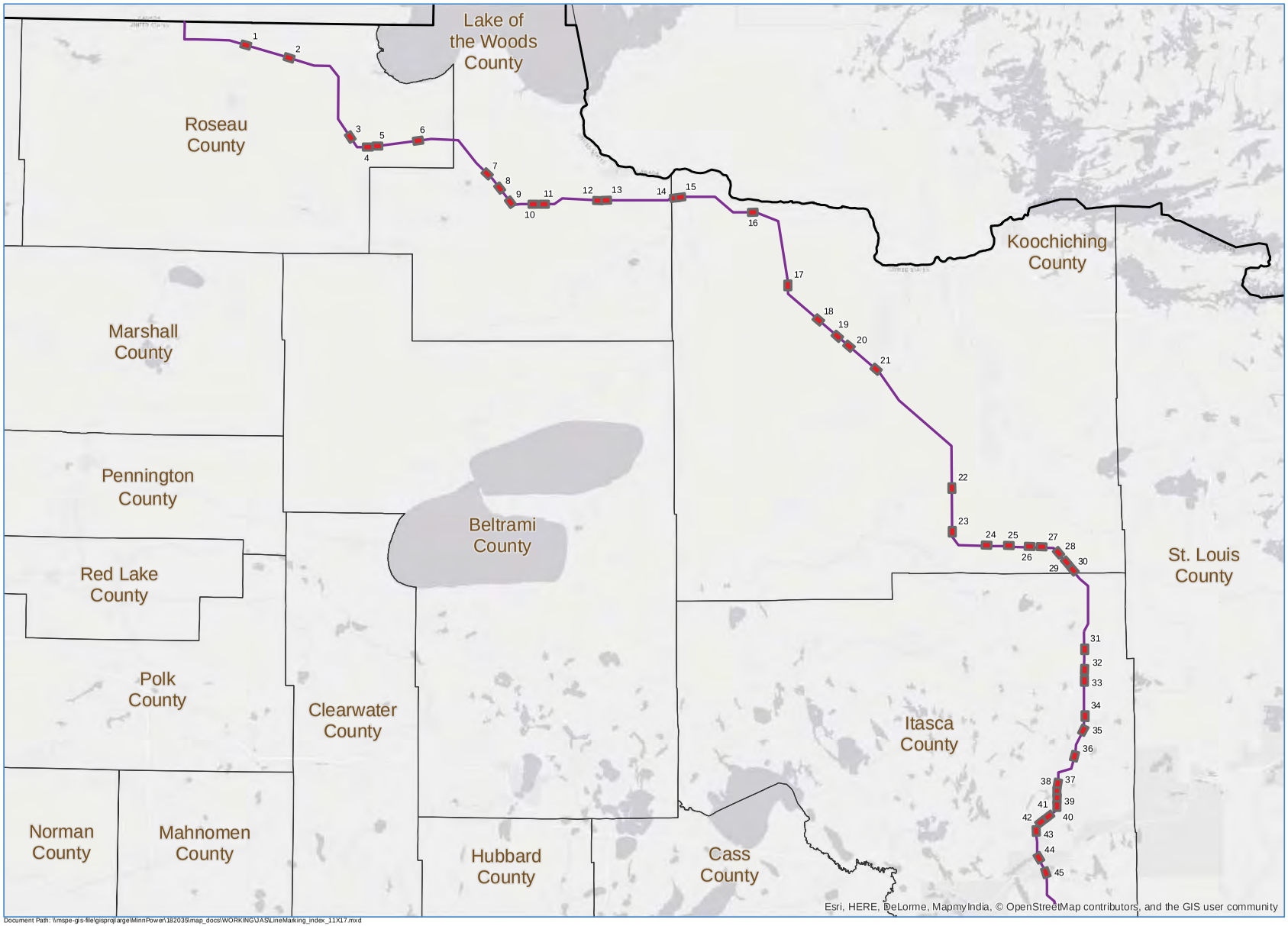
MP will also maintain internal files that include documents such as the AMP, reporting forms, Project permits, and any other relevant information.

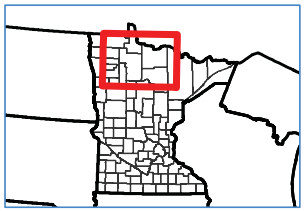
9.0 Works Cited

Avian Power Line Interaction Committee (APLIC). (2006). *Suggested Practices For Avian Protection on Power Lines: The State of the Art in 2006.* Washington, D.C.: Edison Electric Institute and APLIC.

Figure

Index of Segments Proposed for Line Marking





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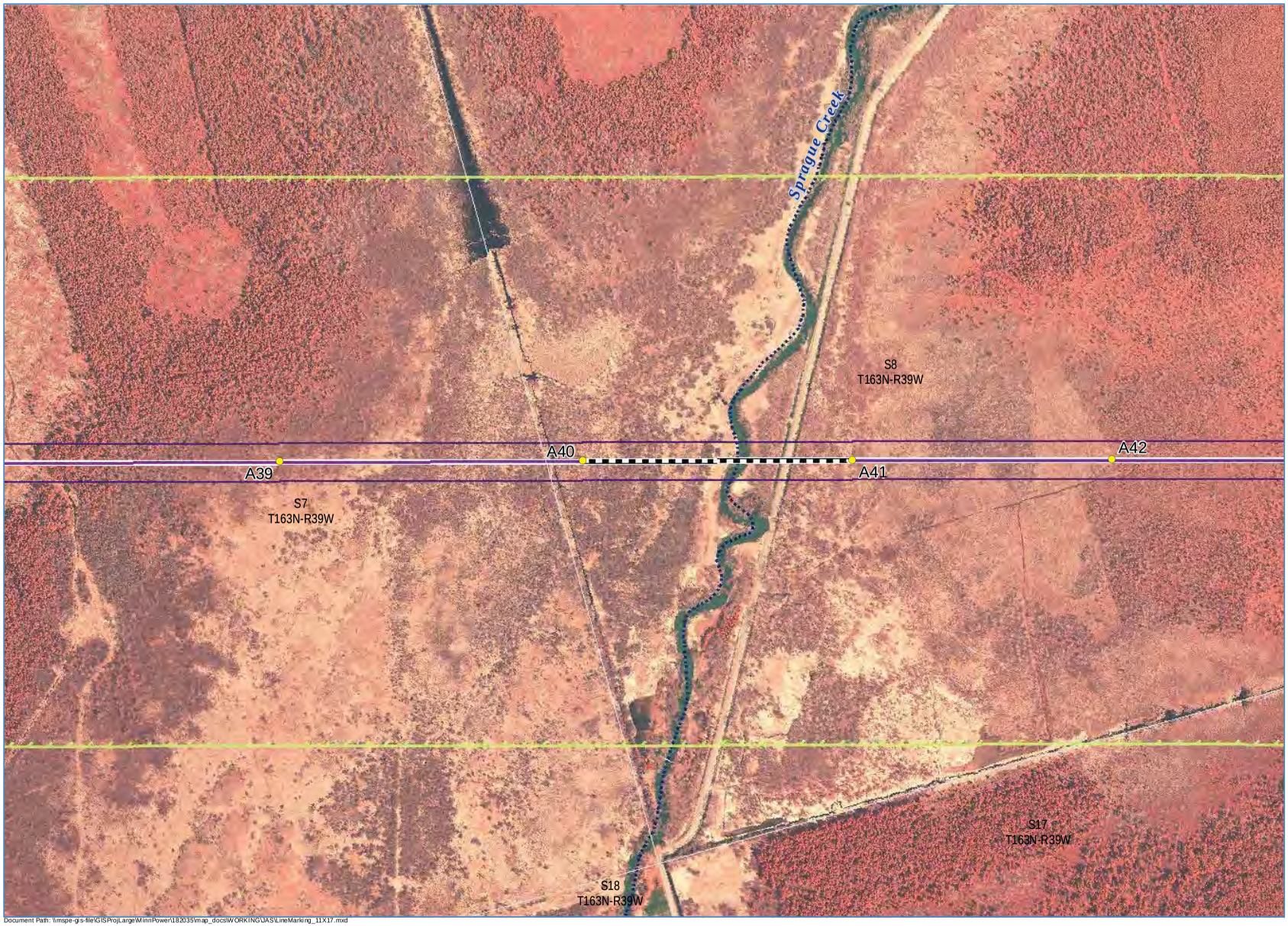

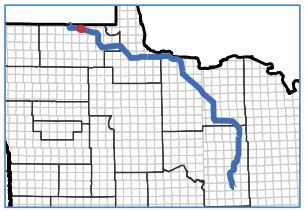

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- Line Marking Proposed
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- ROW
- 1,500' Centerline Buffer
- Section Line
- DNR Wild Rice Lake
- DNR Shallow Lake
- PWI Basins
- PWI Watercourses

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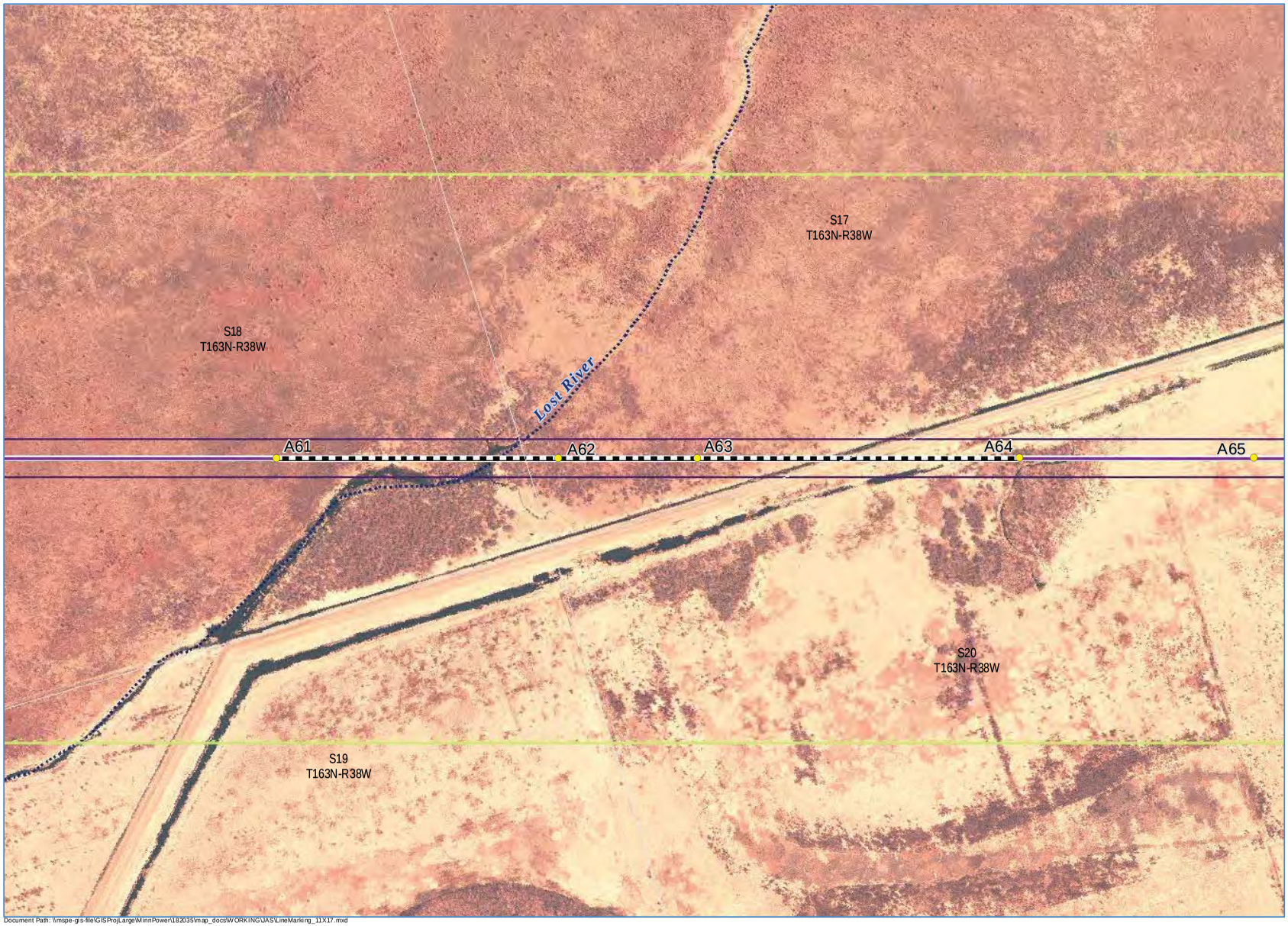

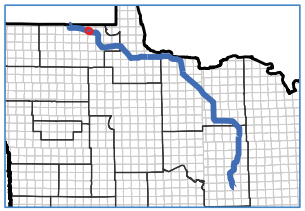

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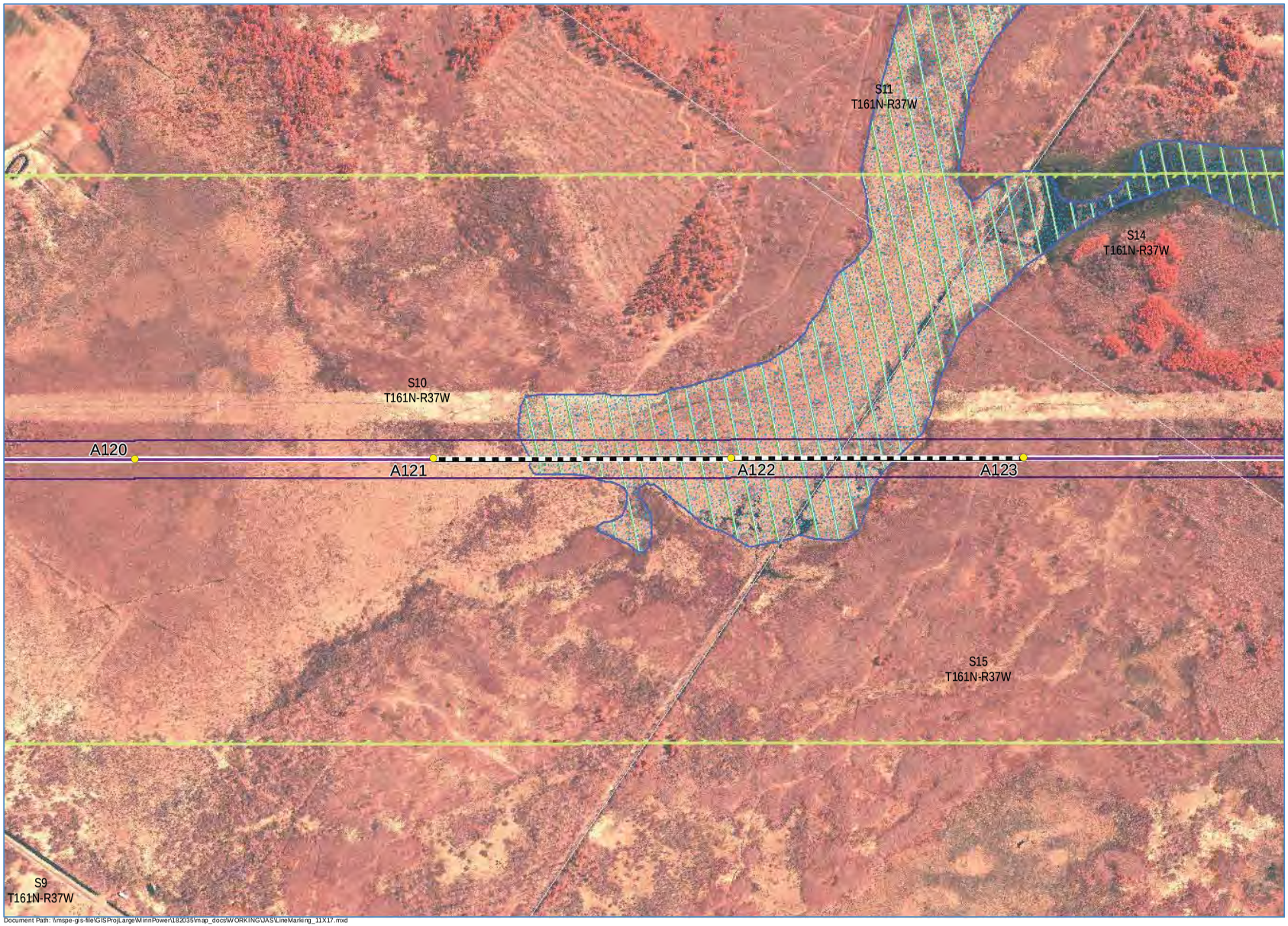

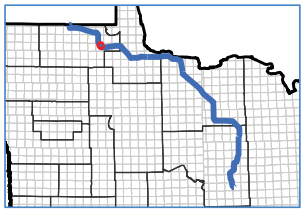

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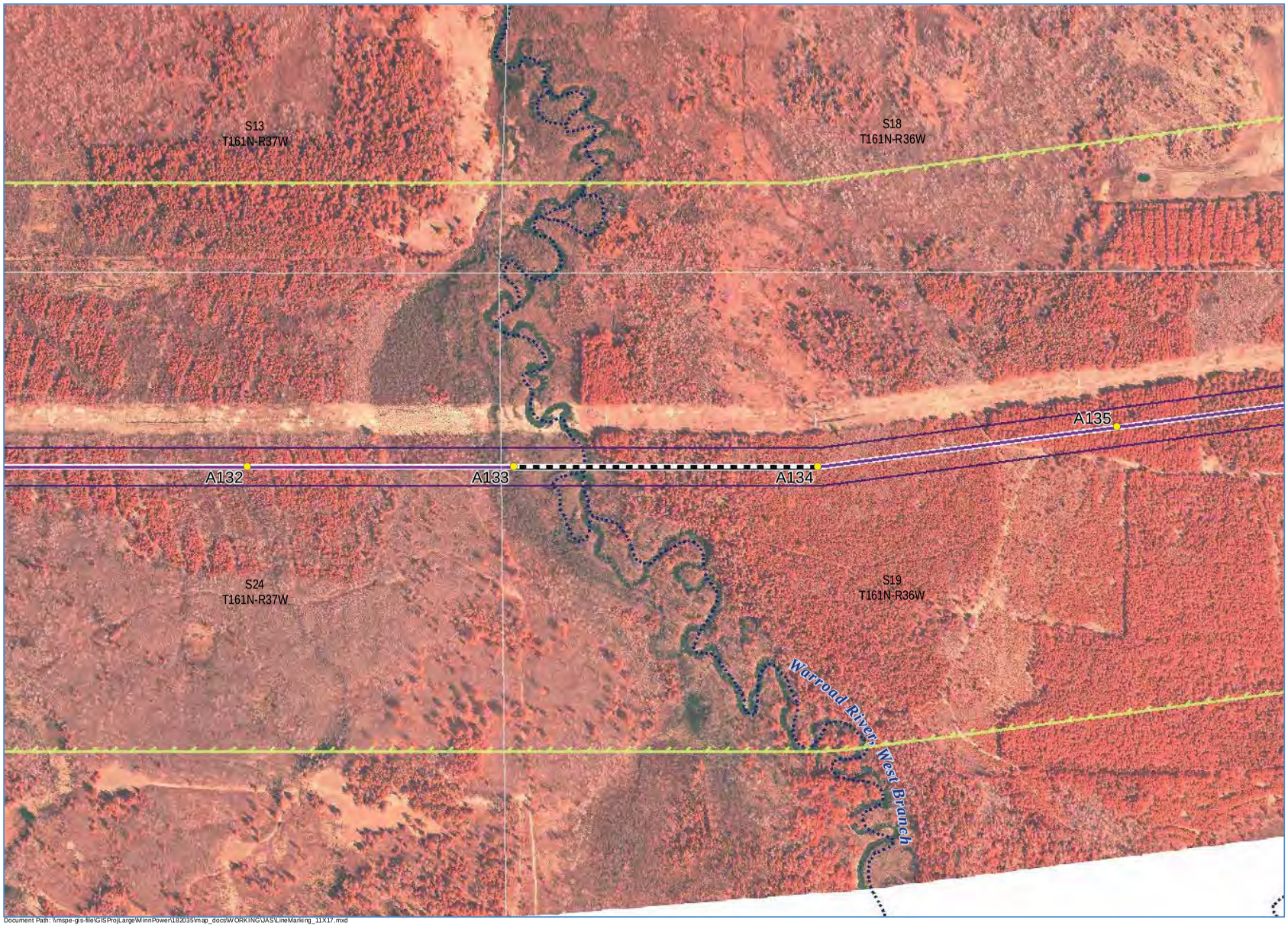

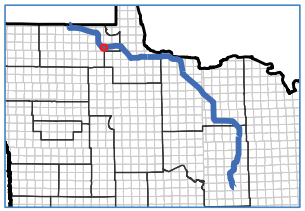

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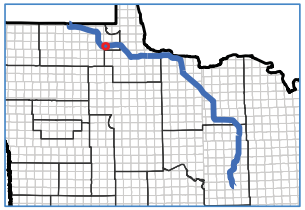

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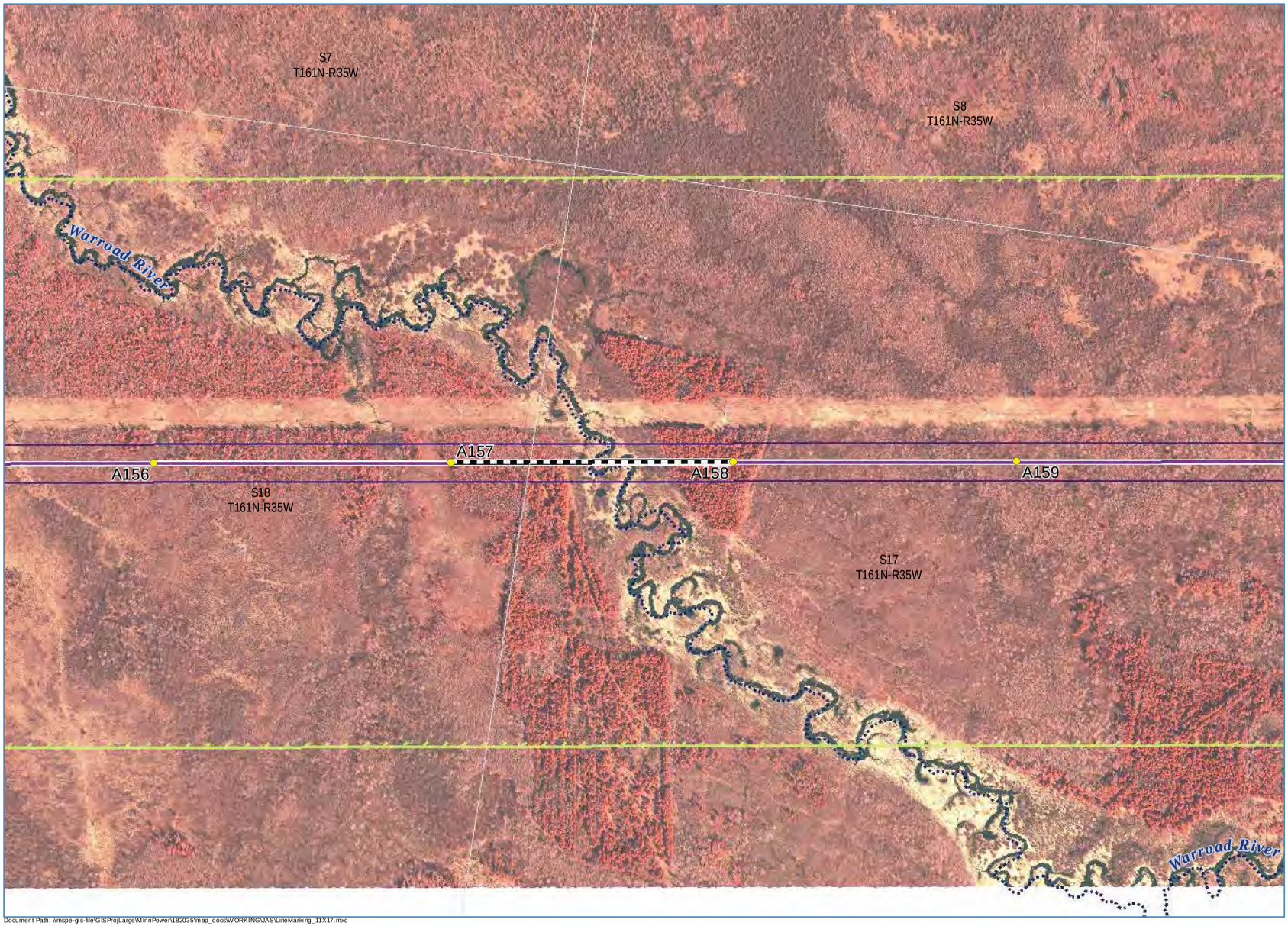

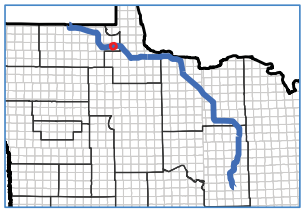

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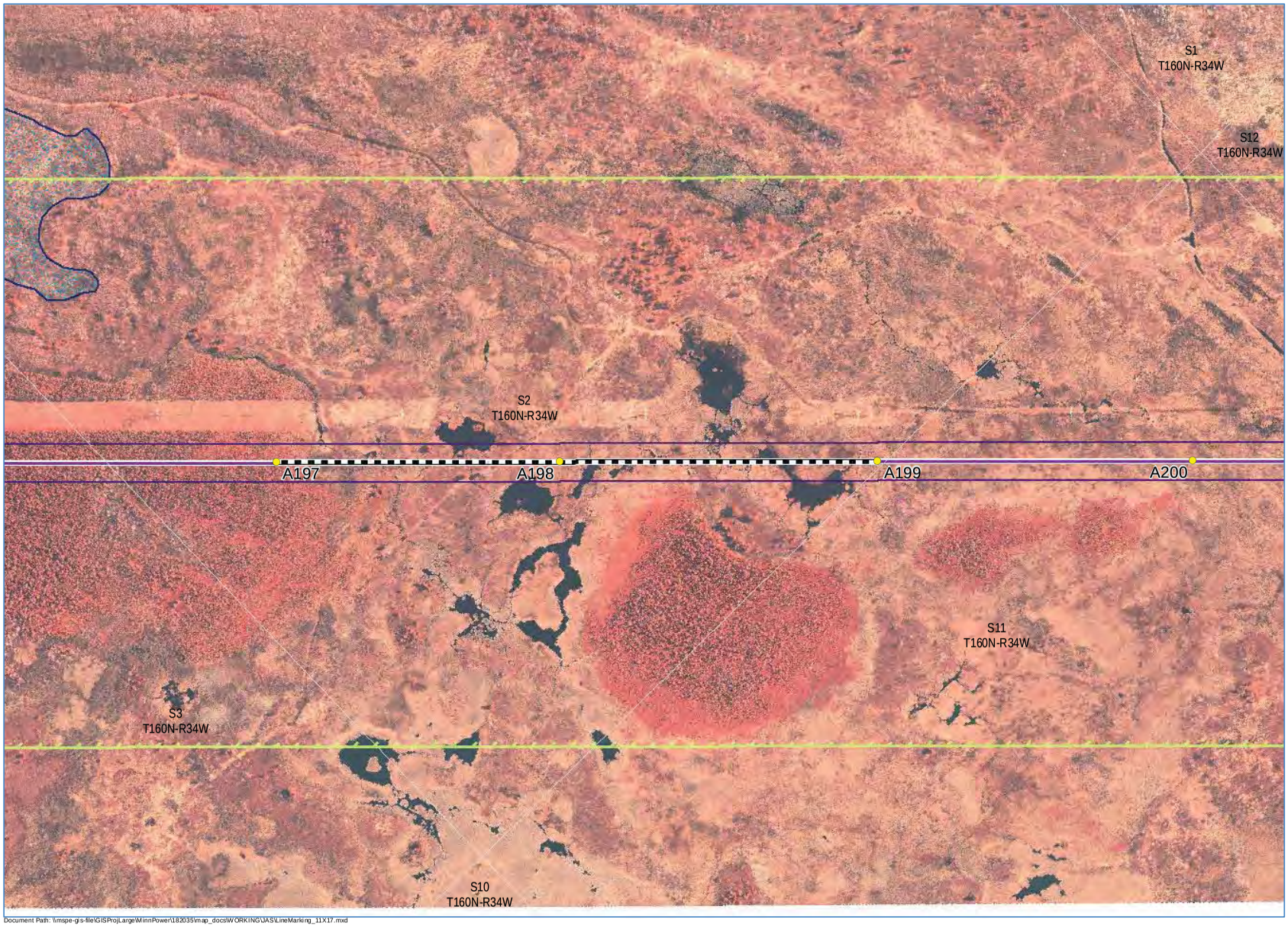

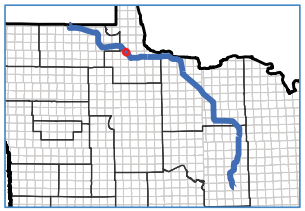

Legend

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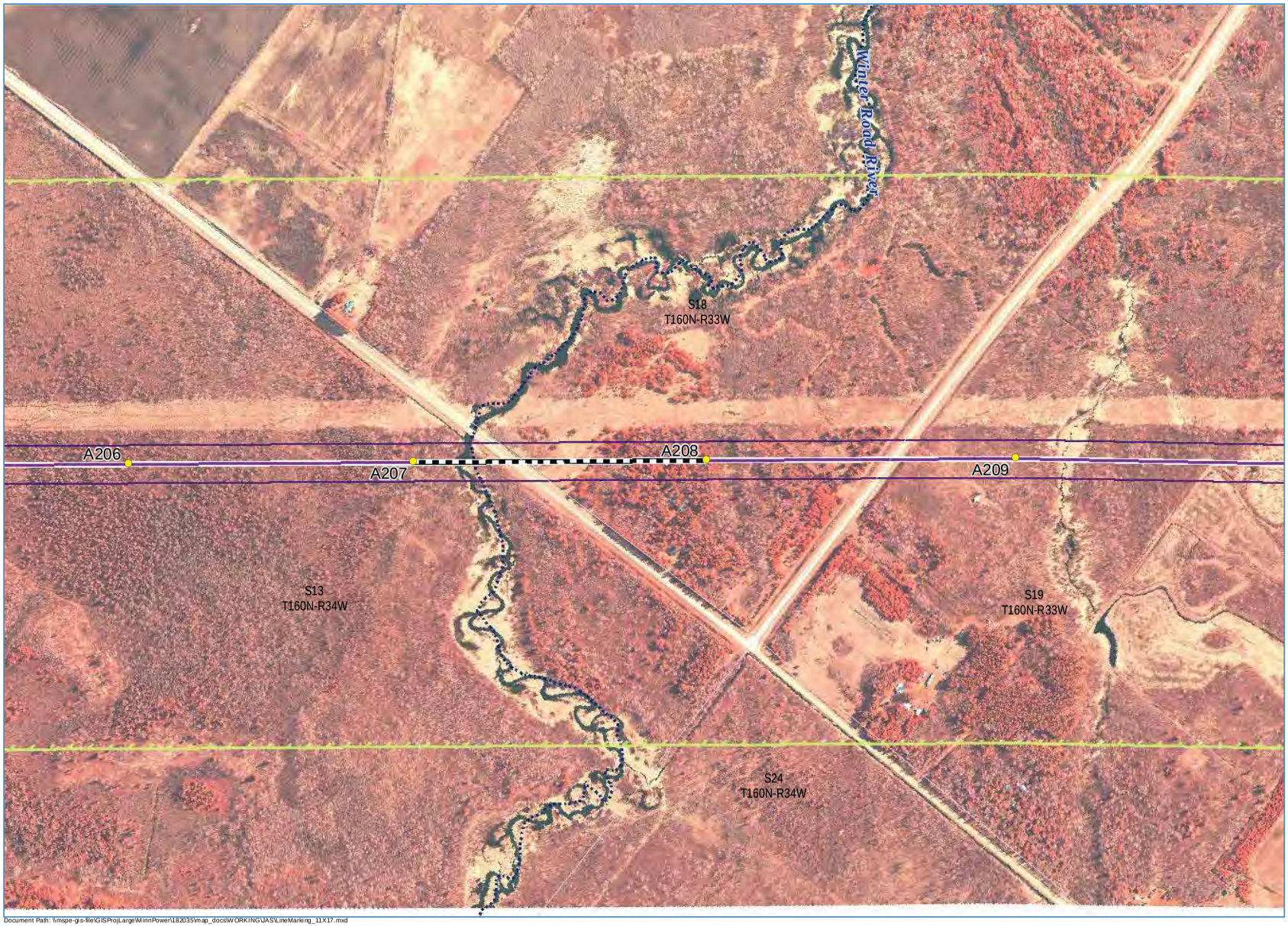

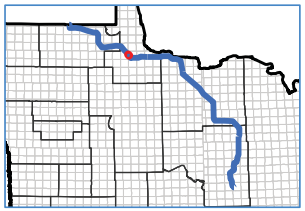

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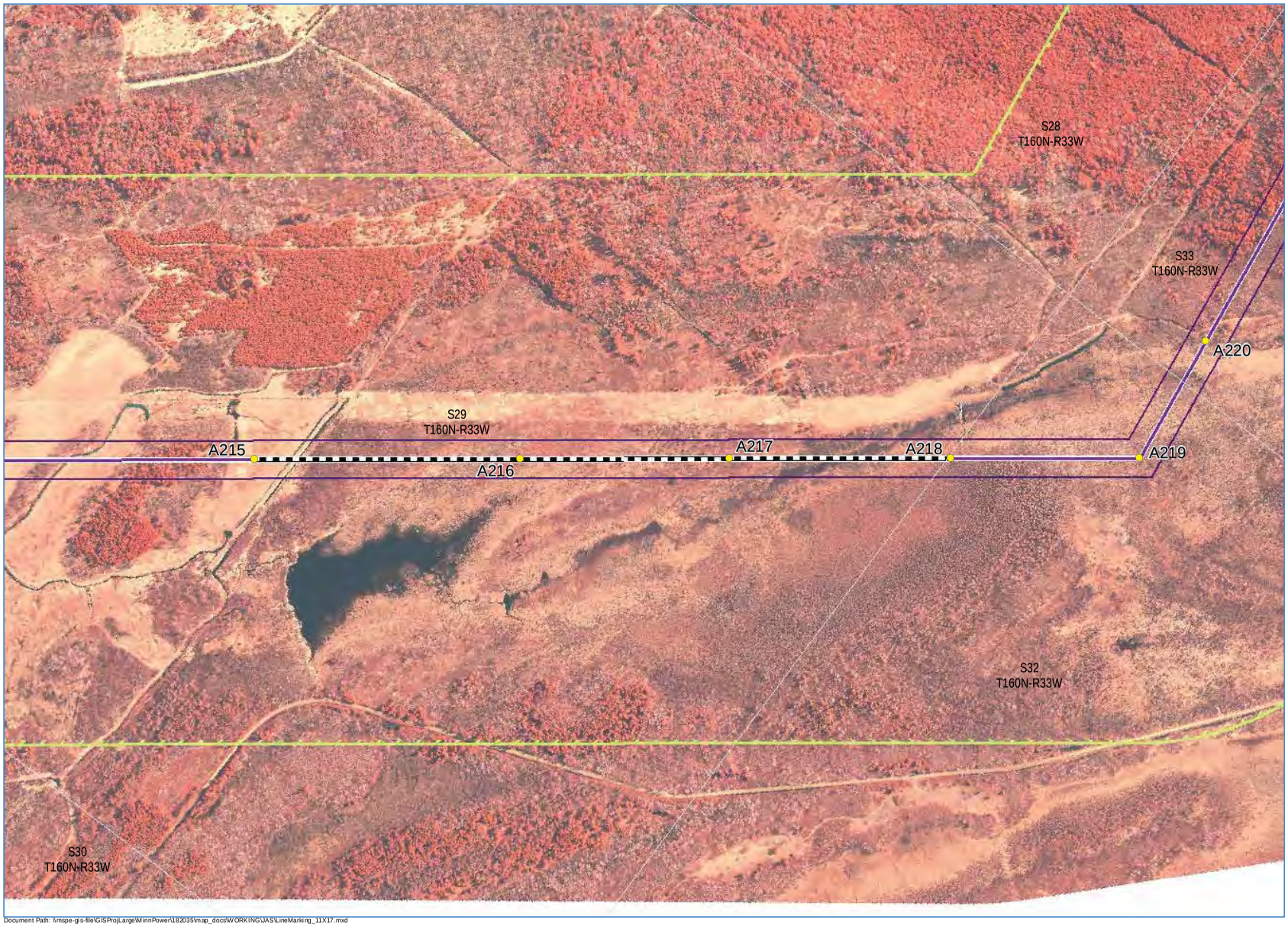

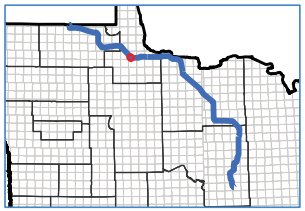

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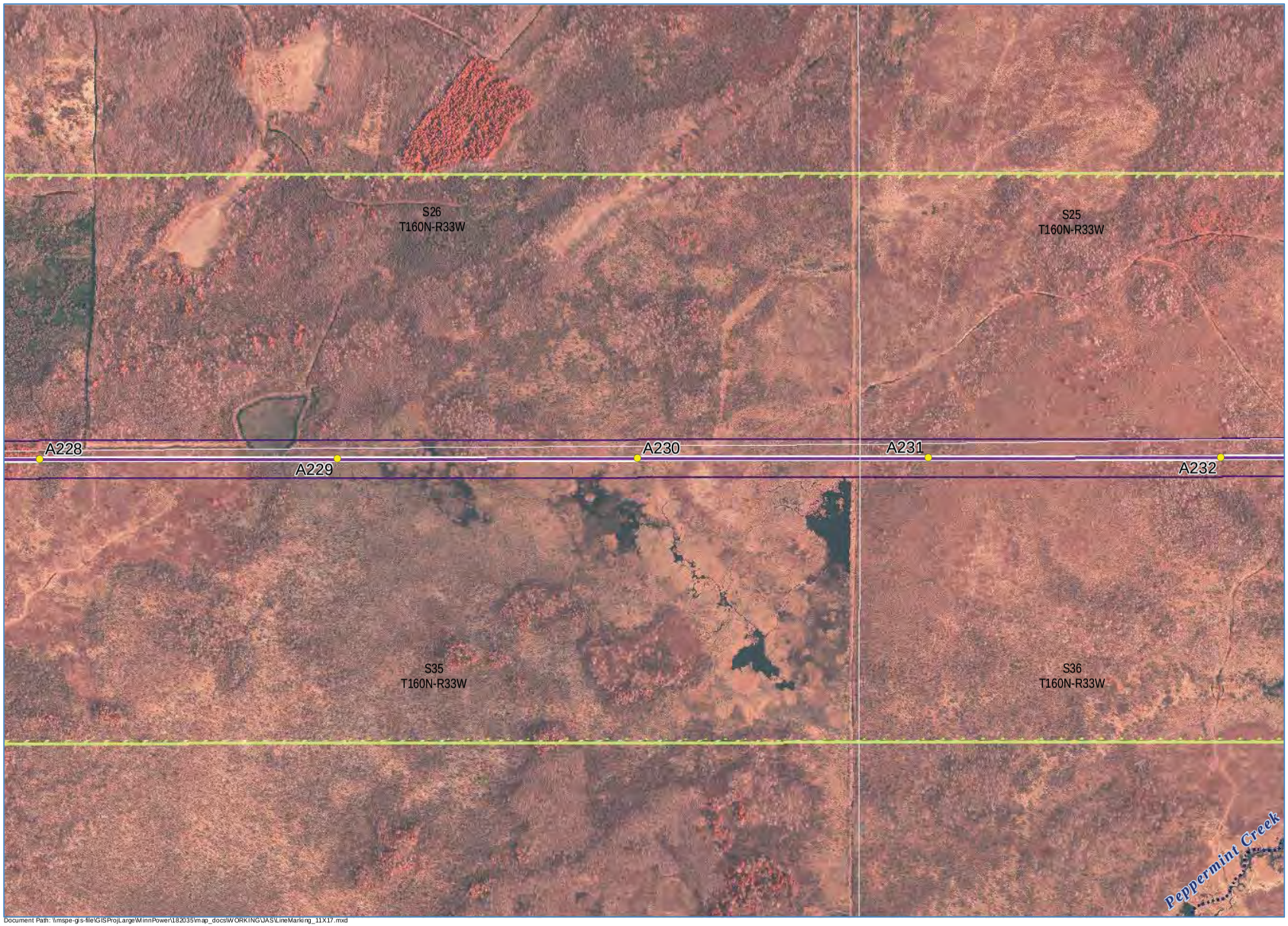

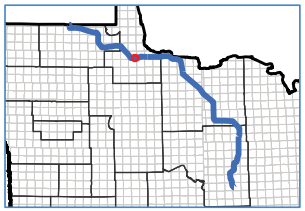

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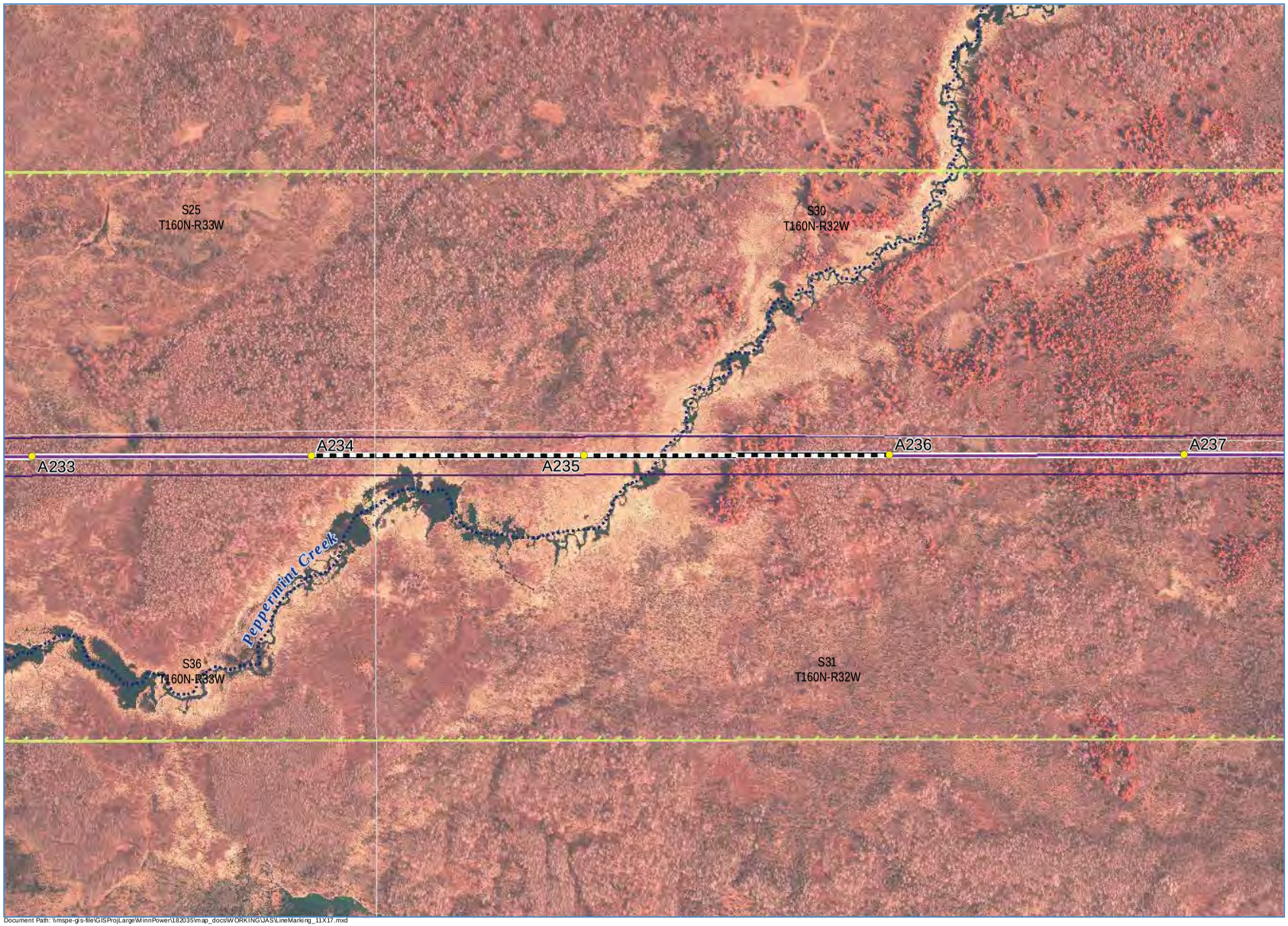

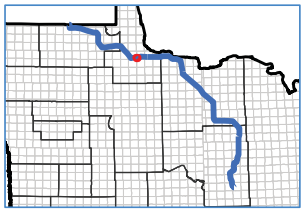

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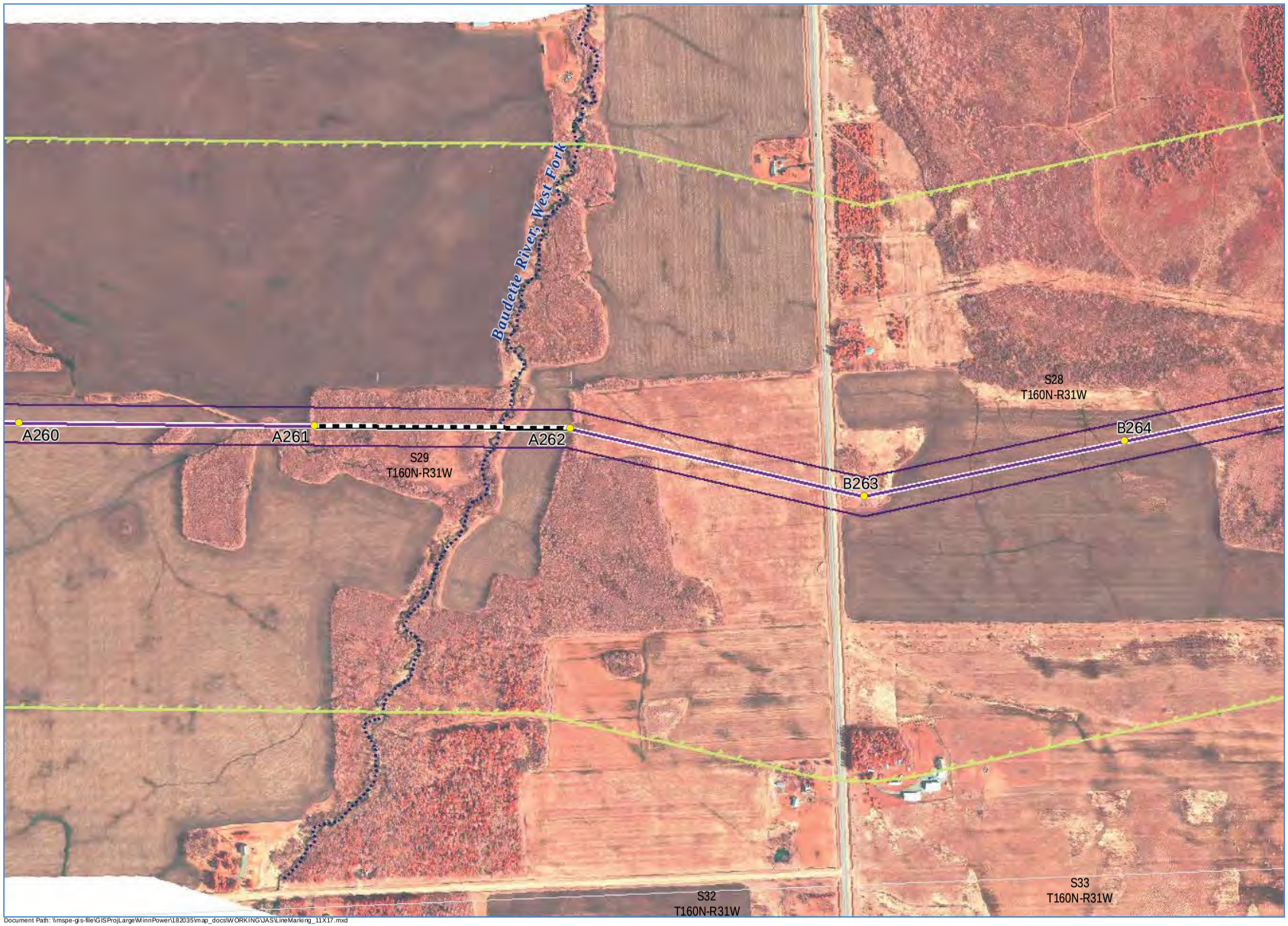

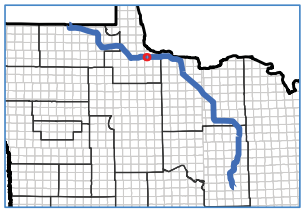

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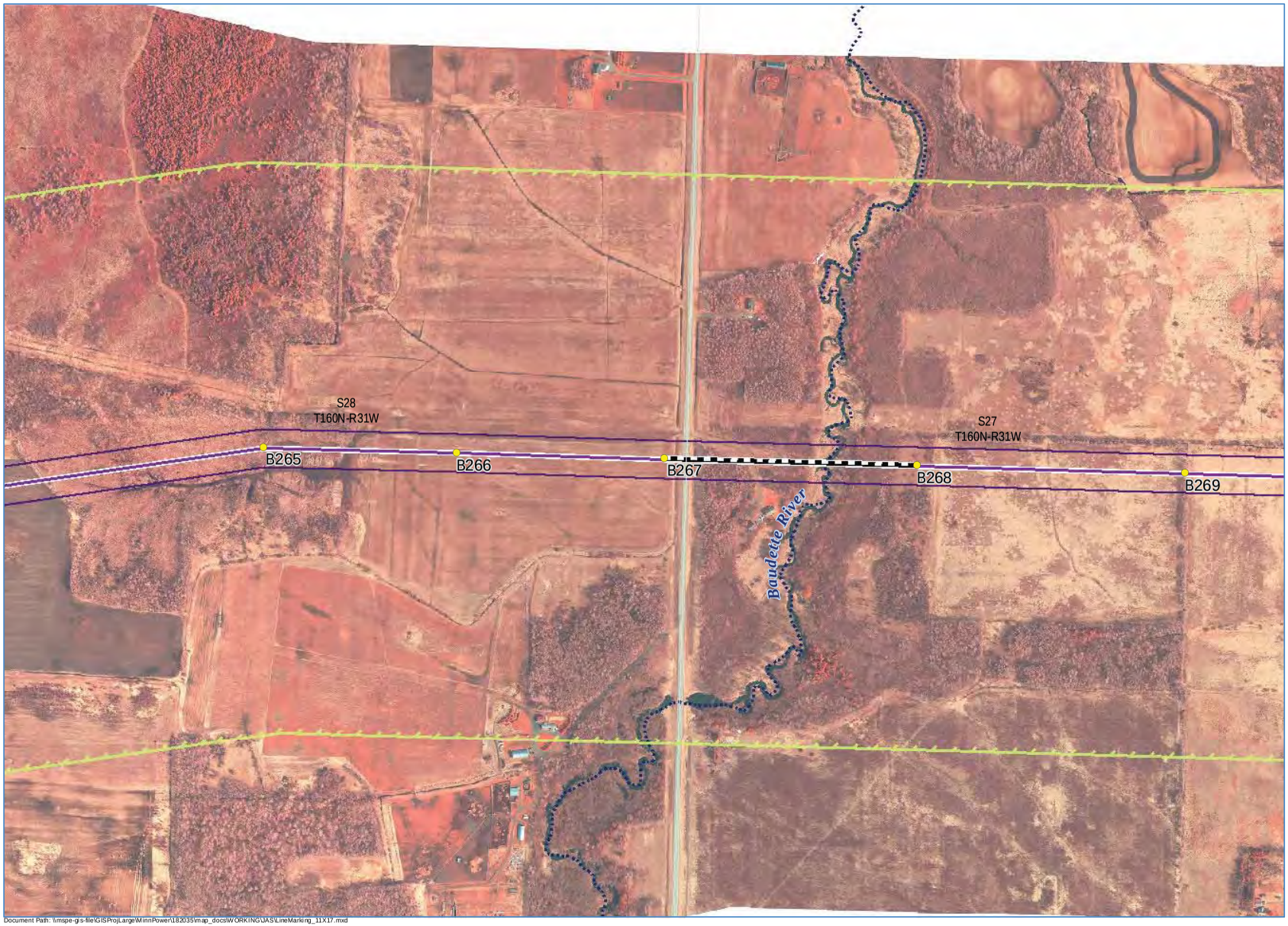

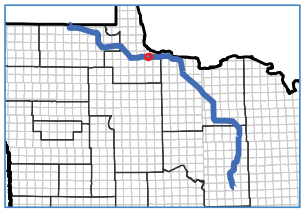

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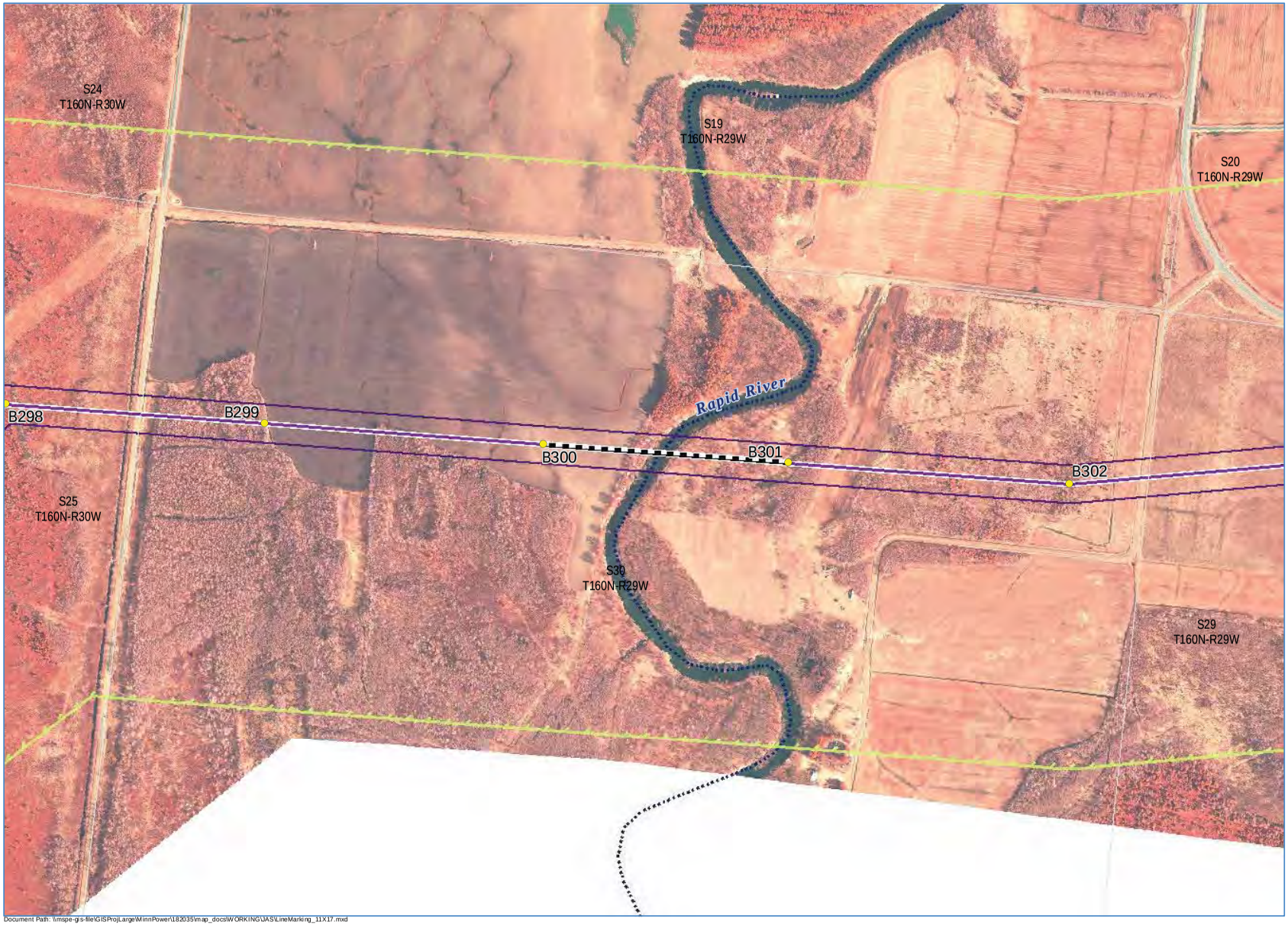

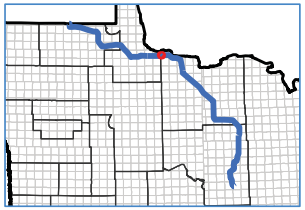

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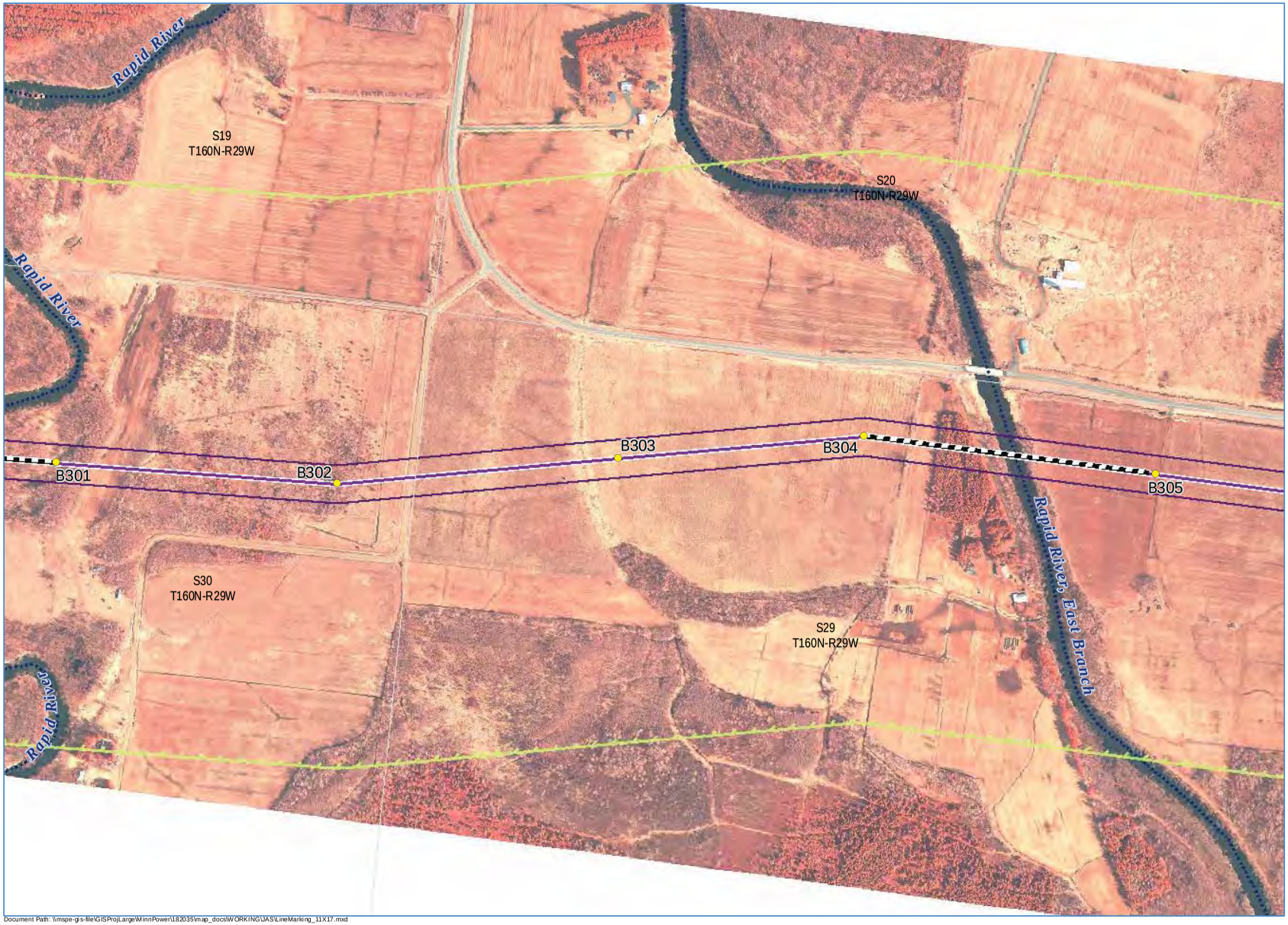

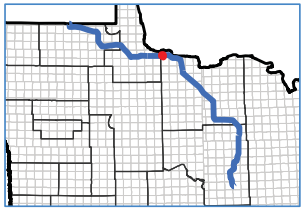

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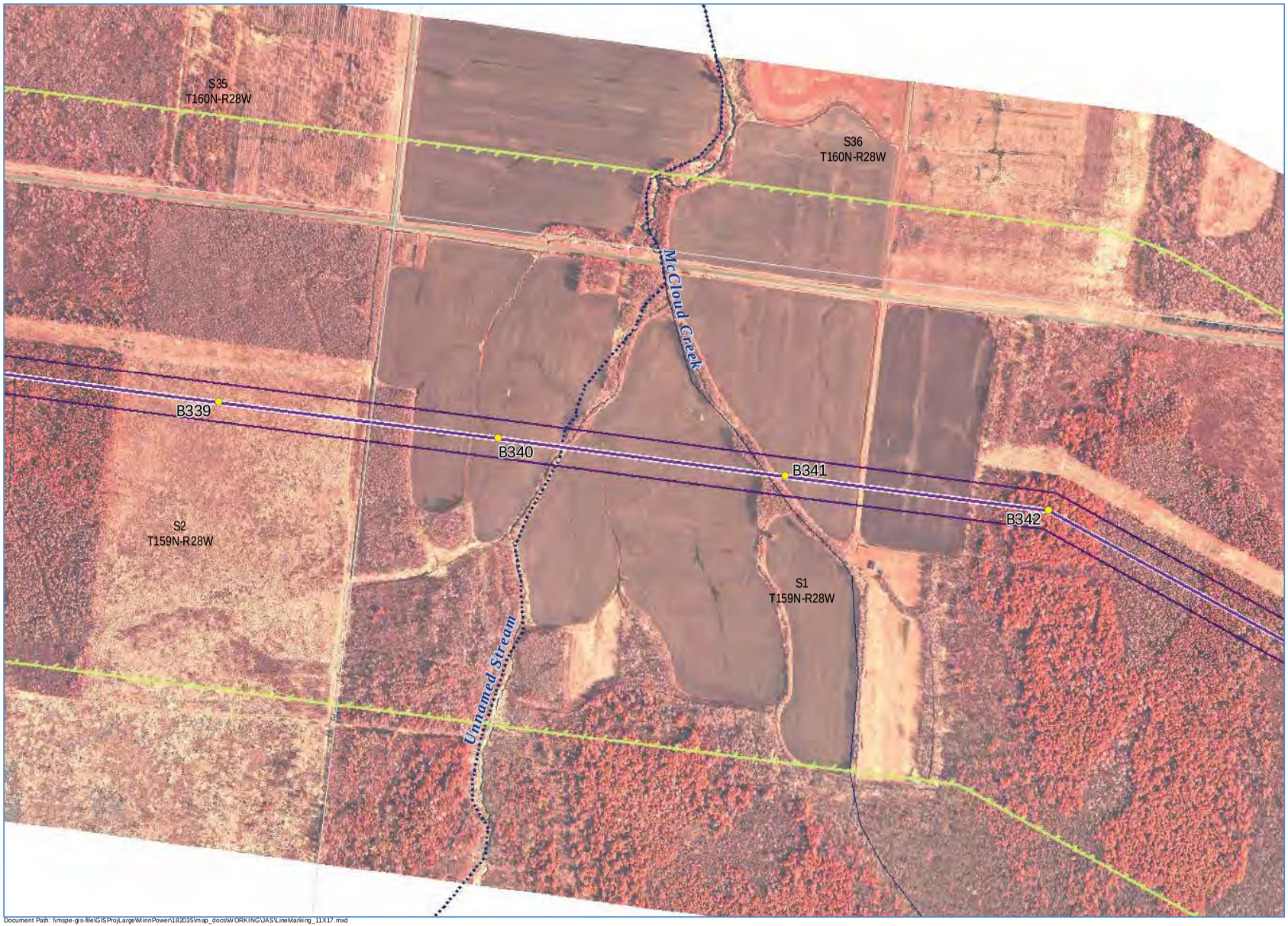

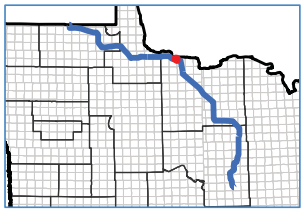

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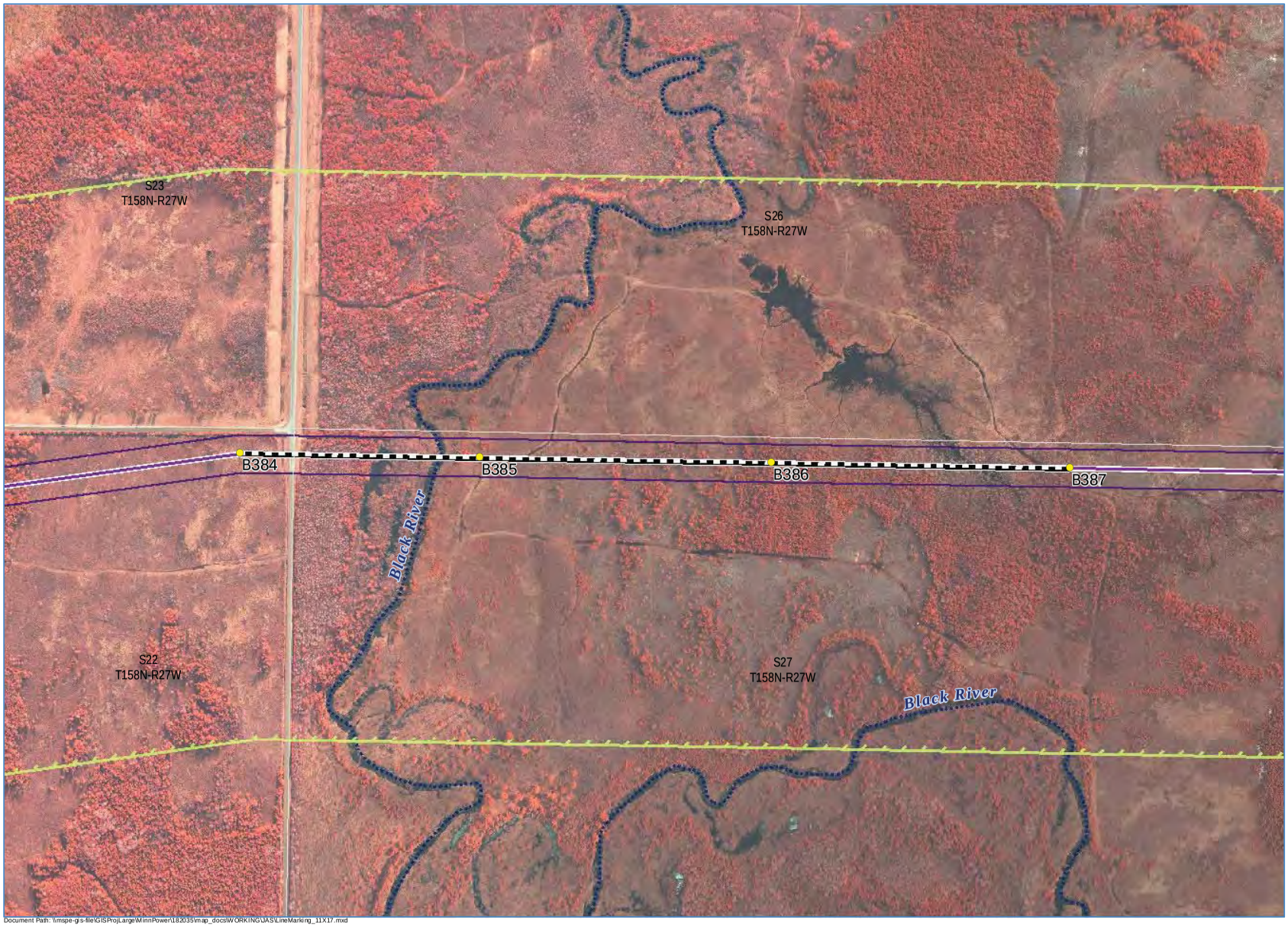

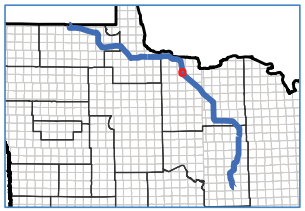

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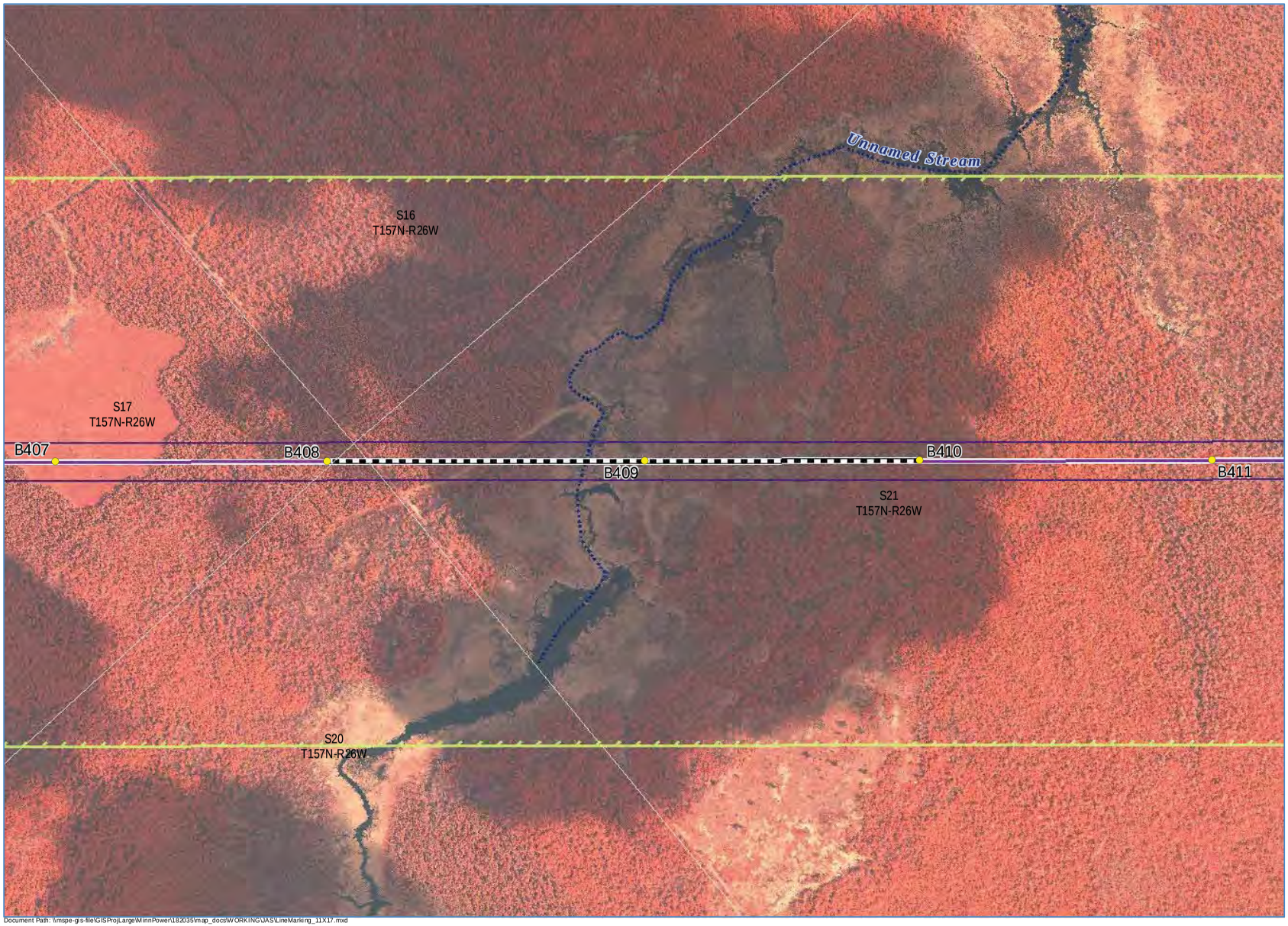

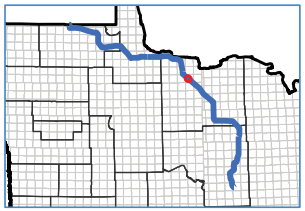

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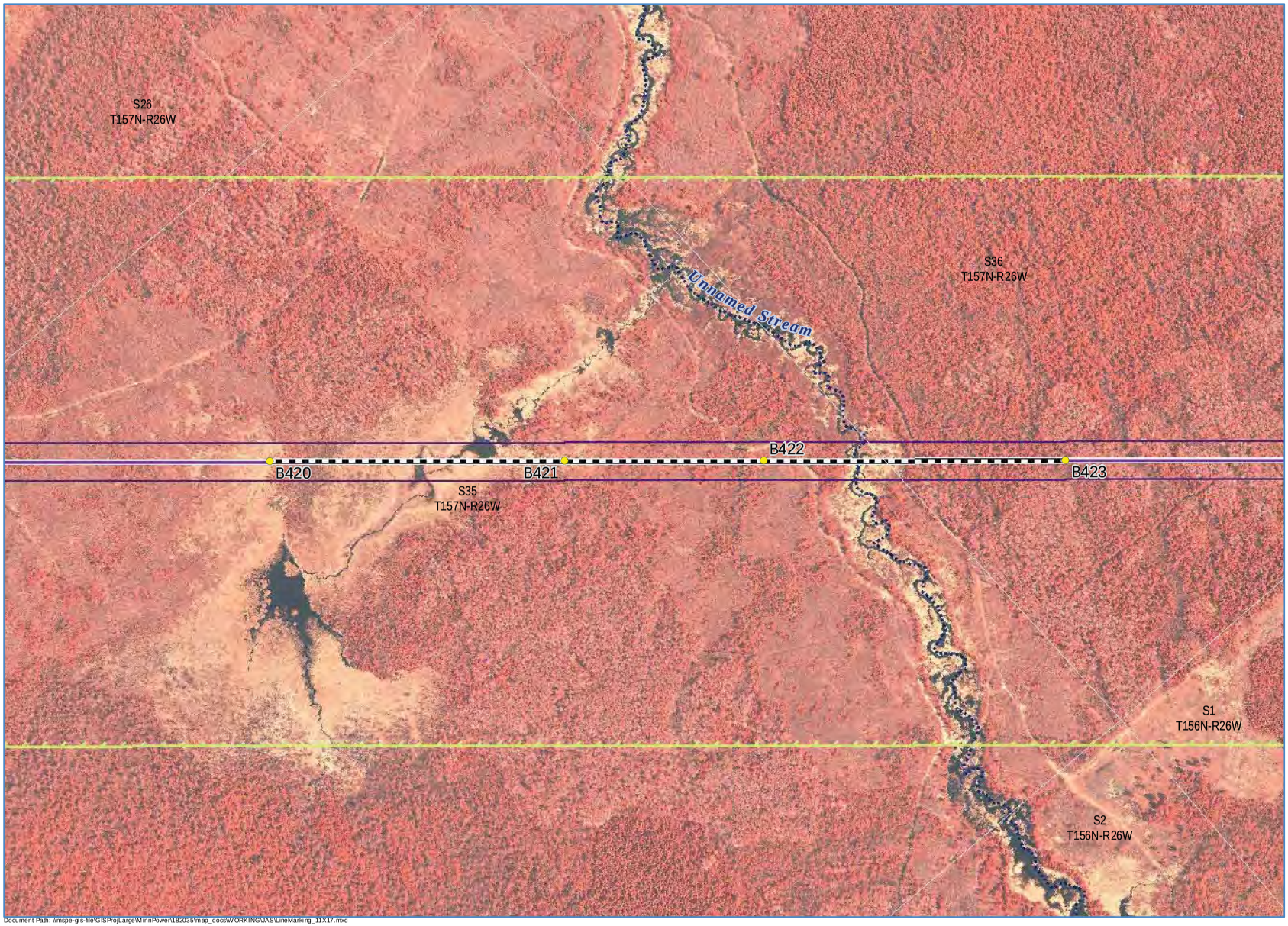

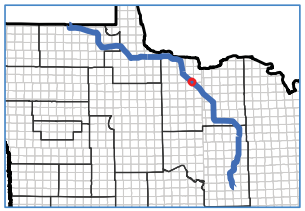

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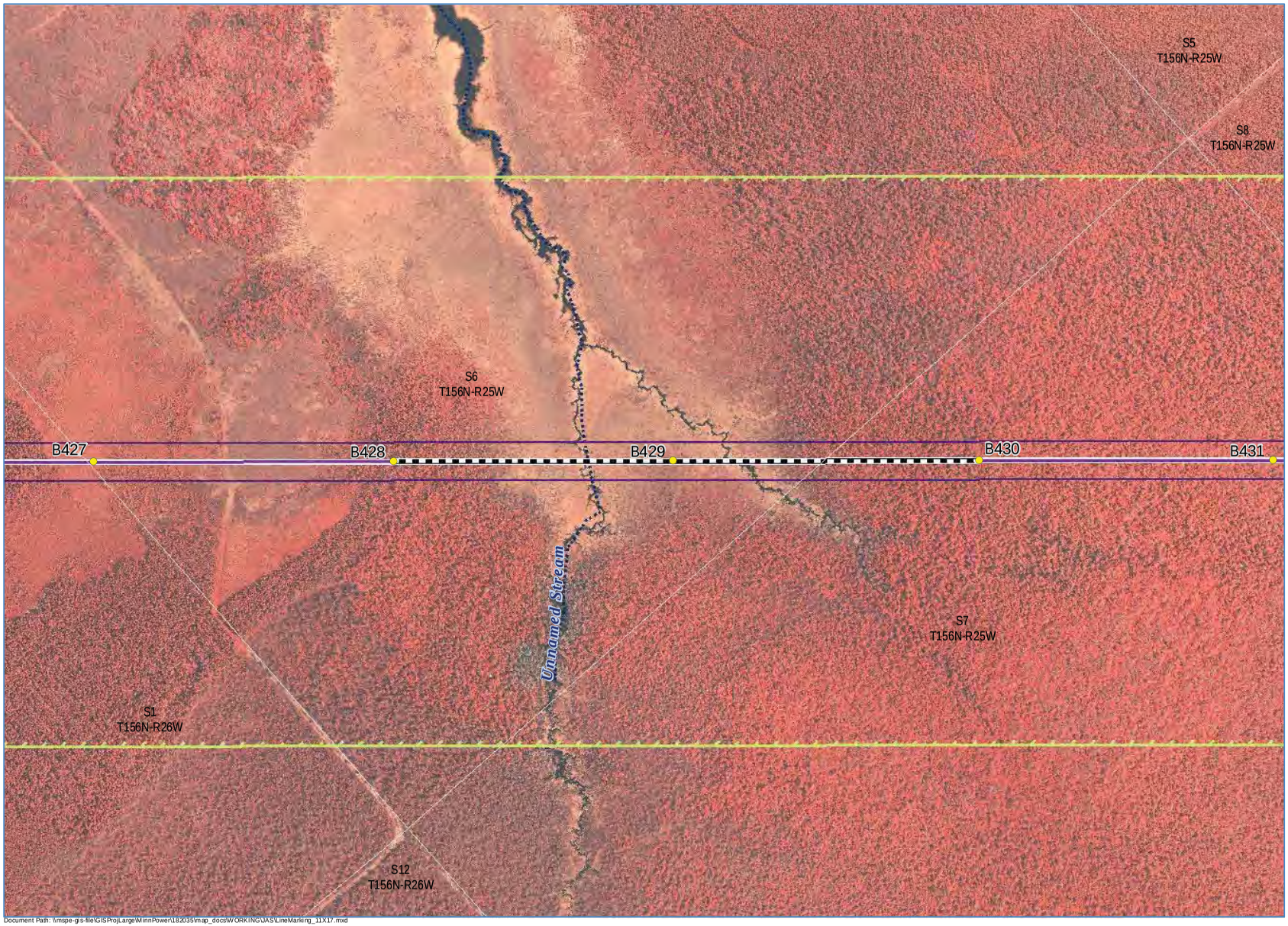

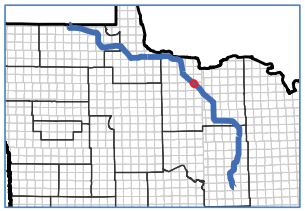

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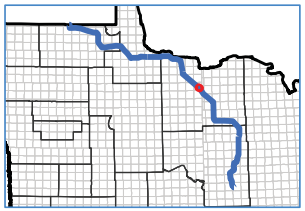

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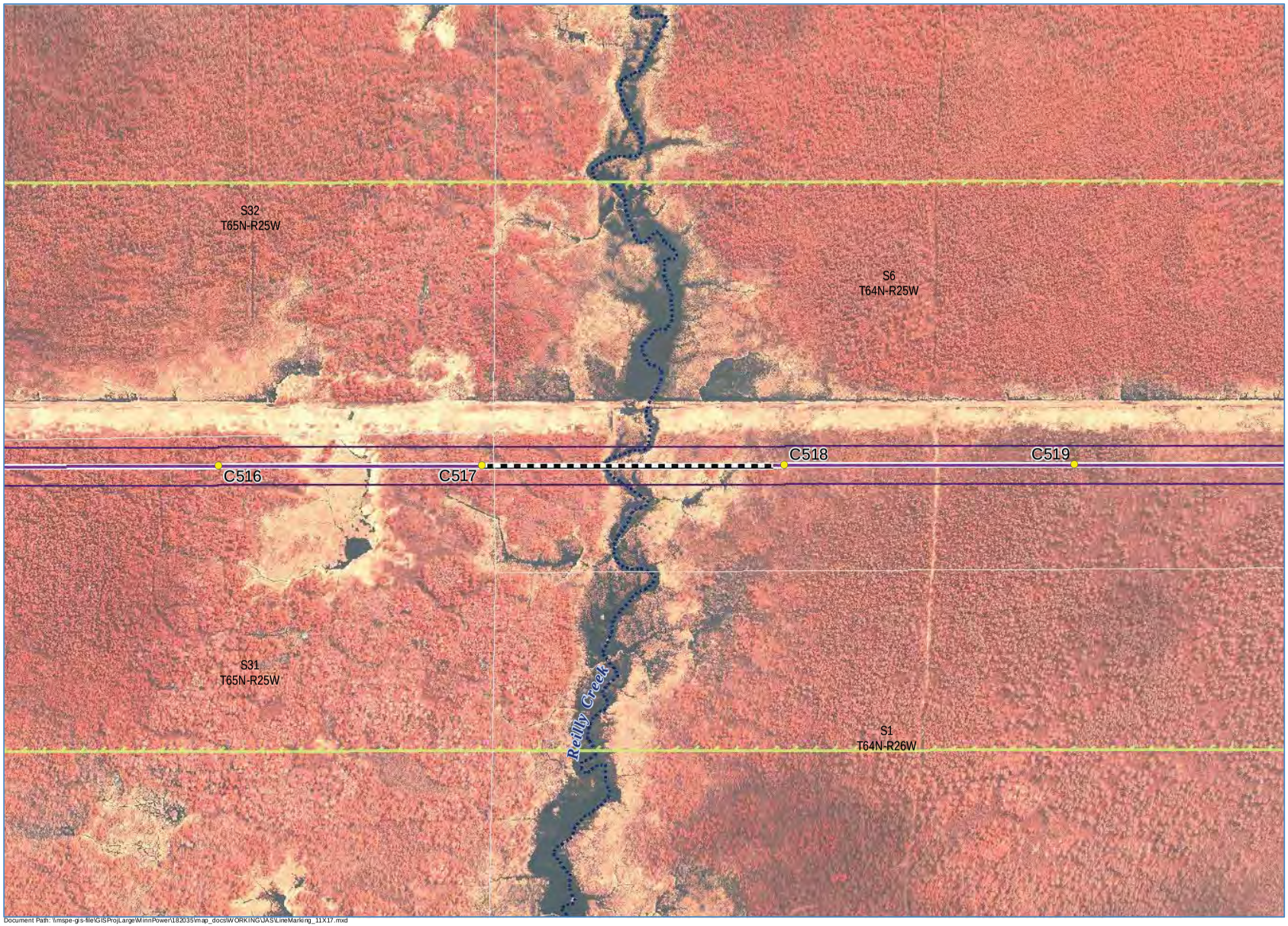

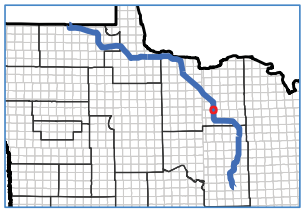

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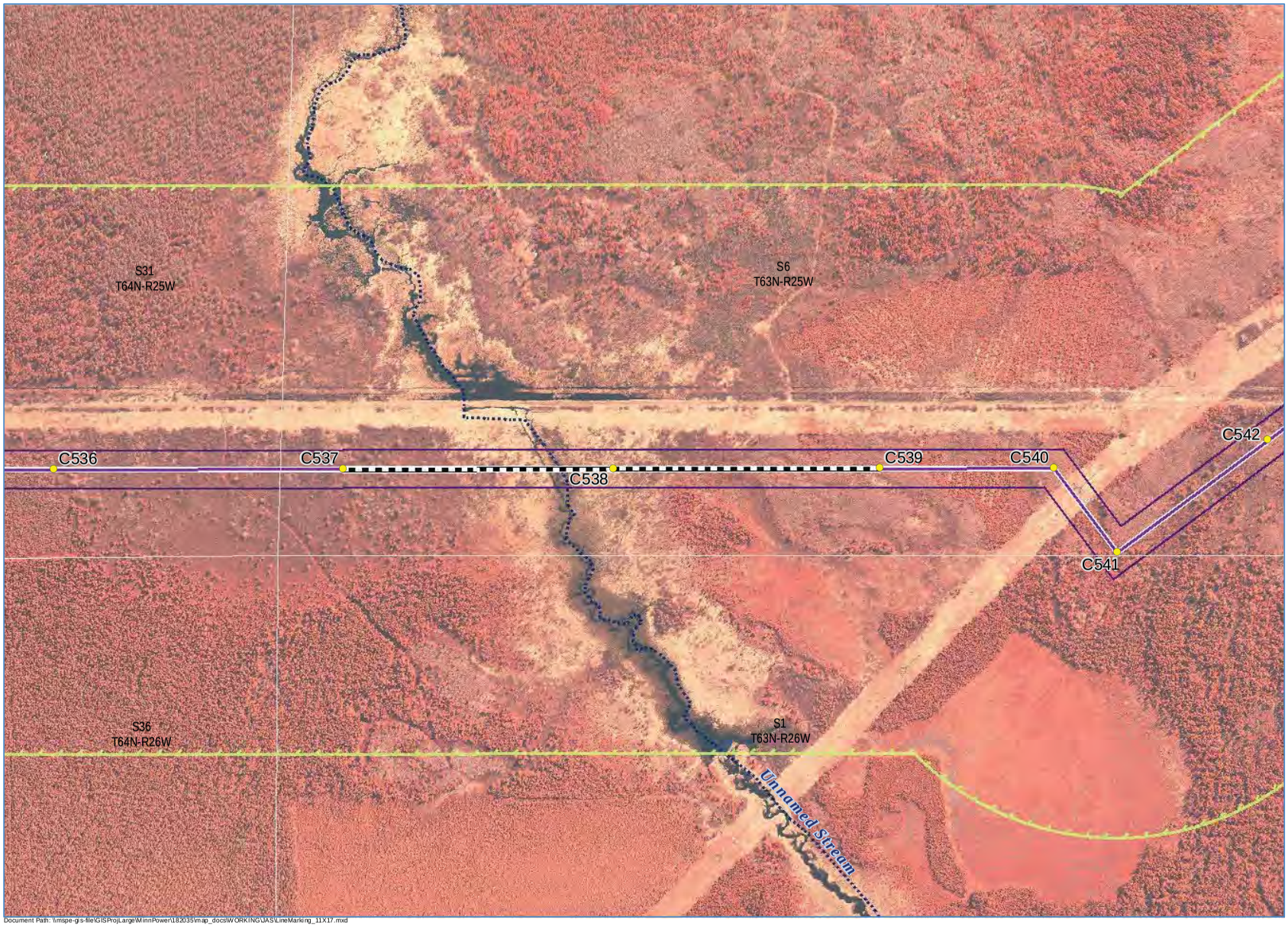

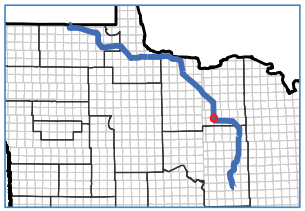

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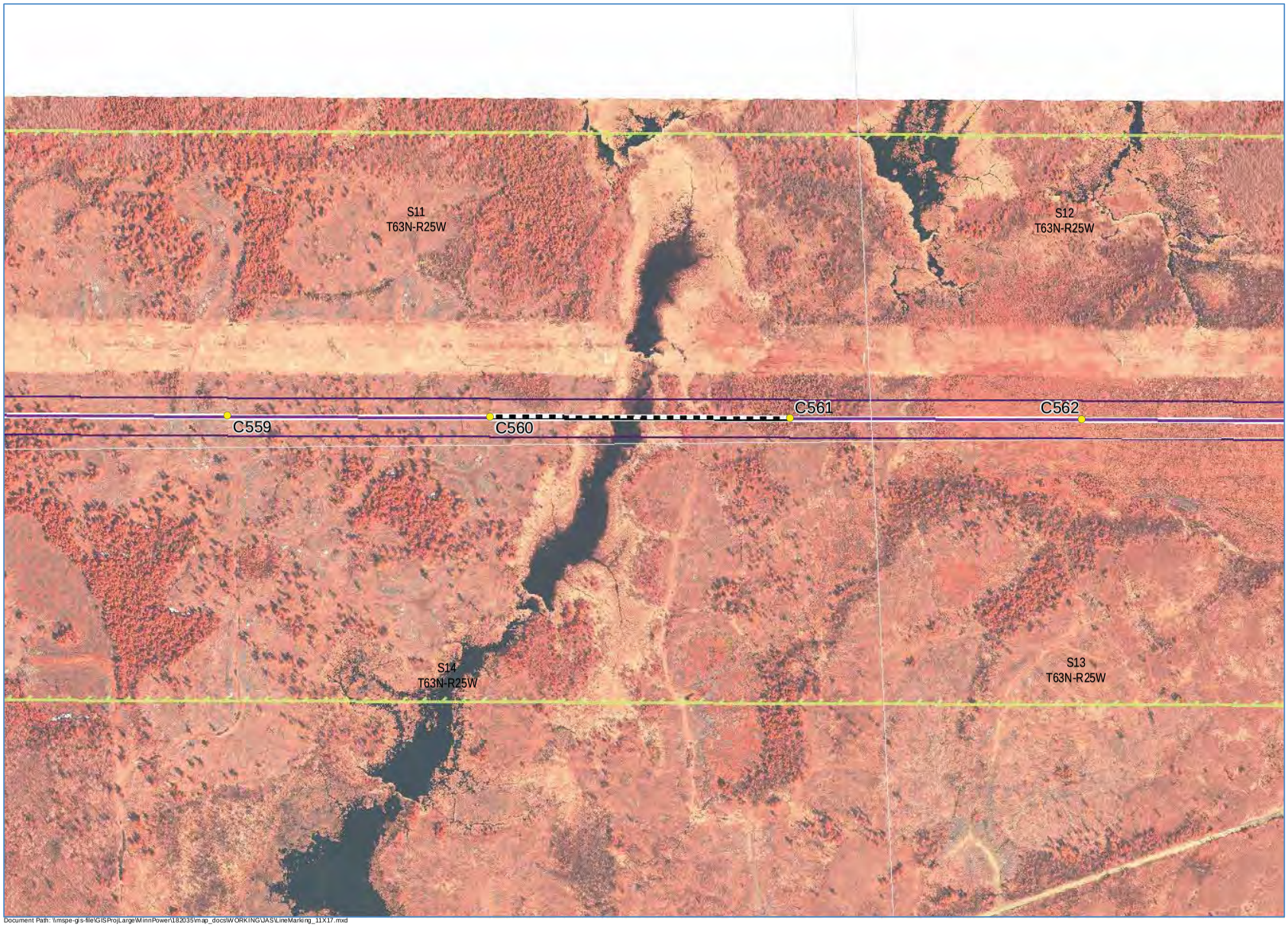

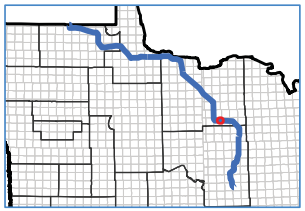

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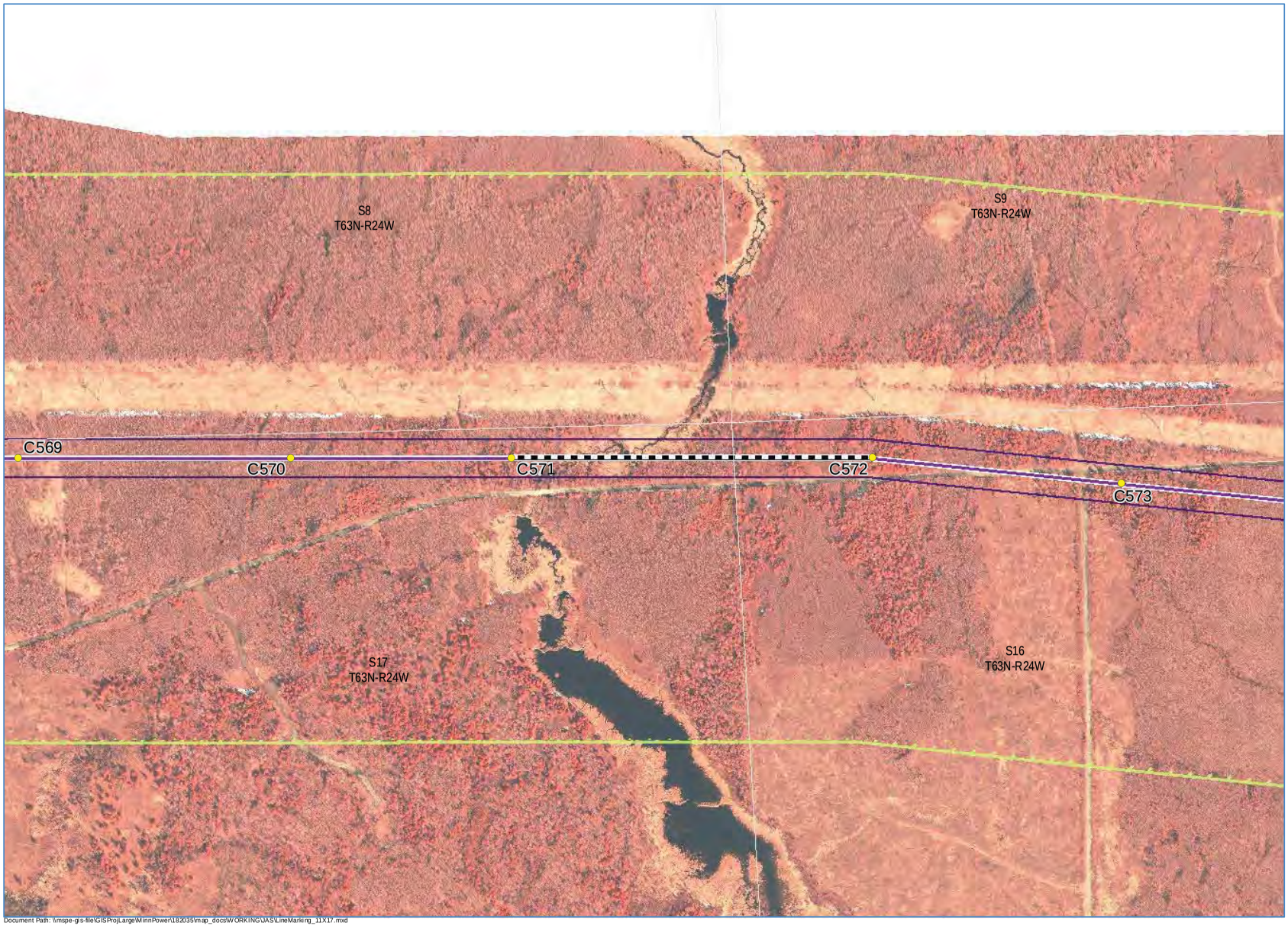

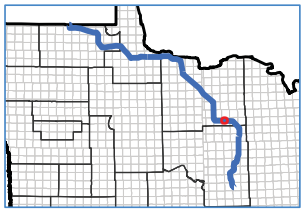

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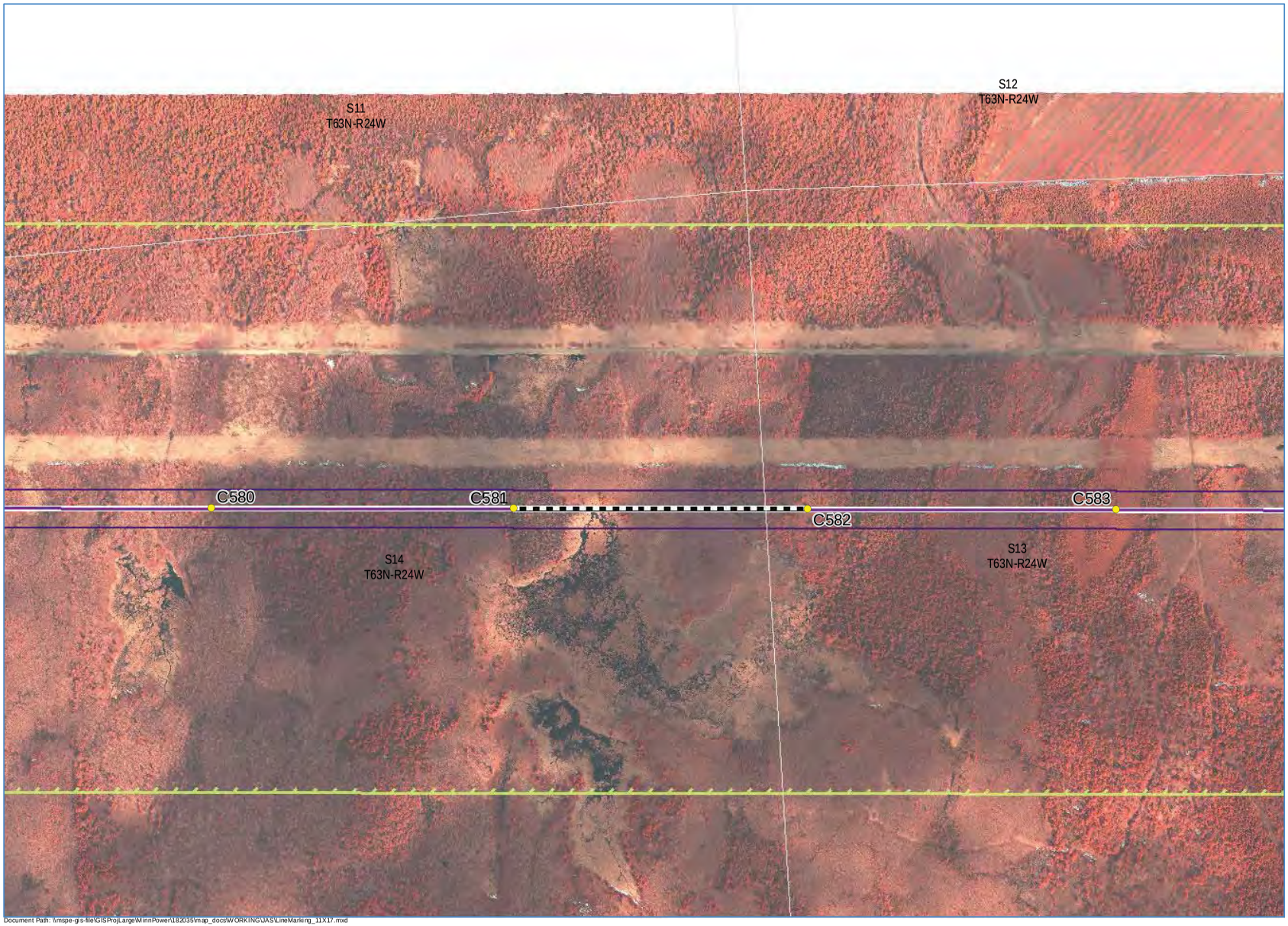

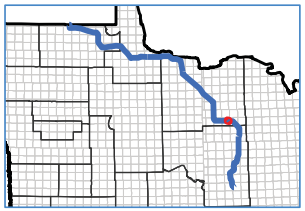

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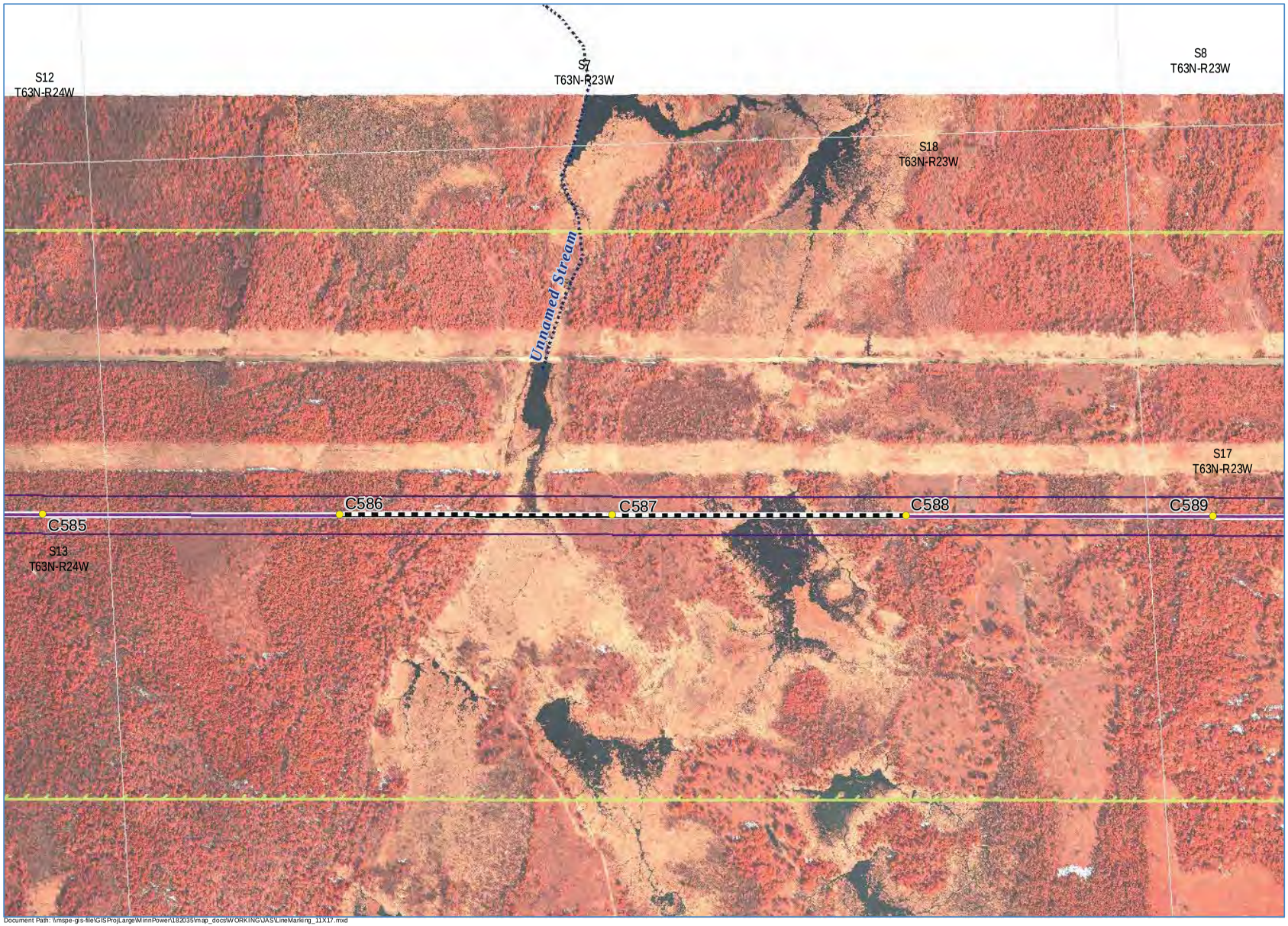

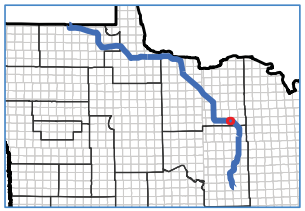

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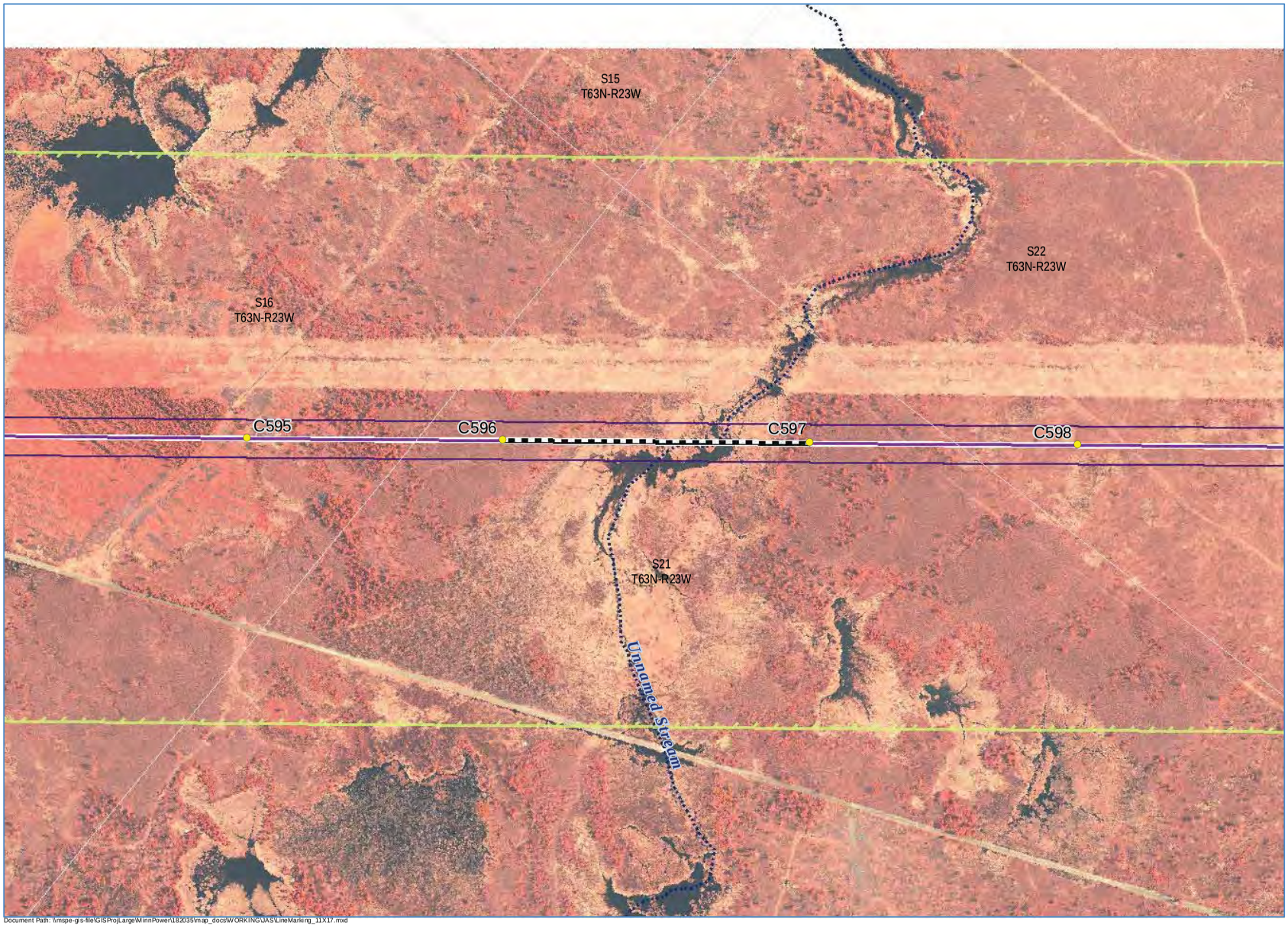

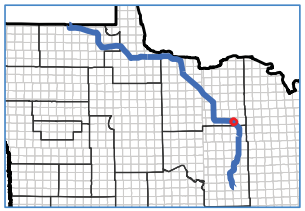

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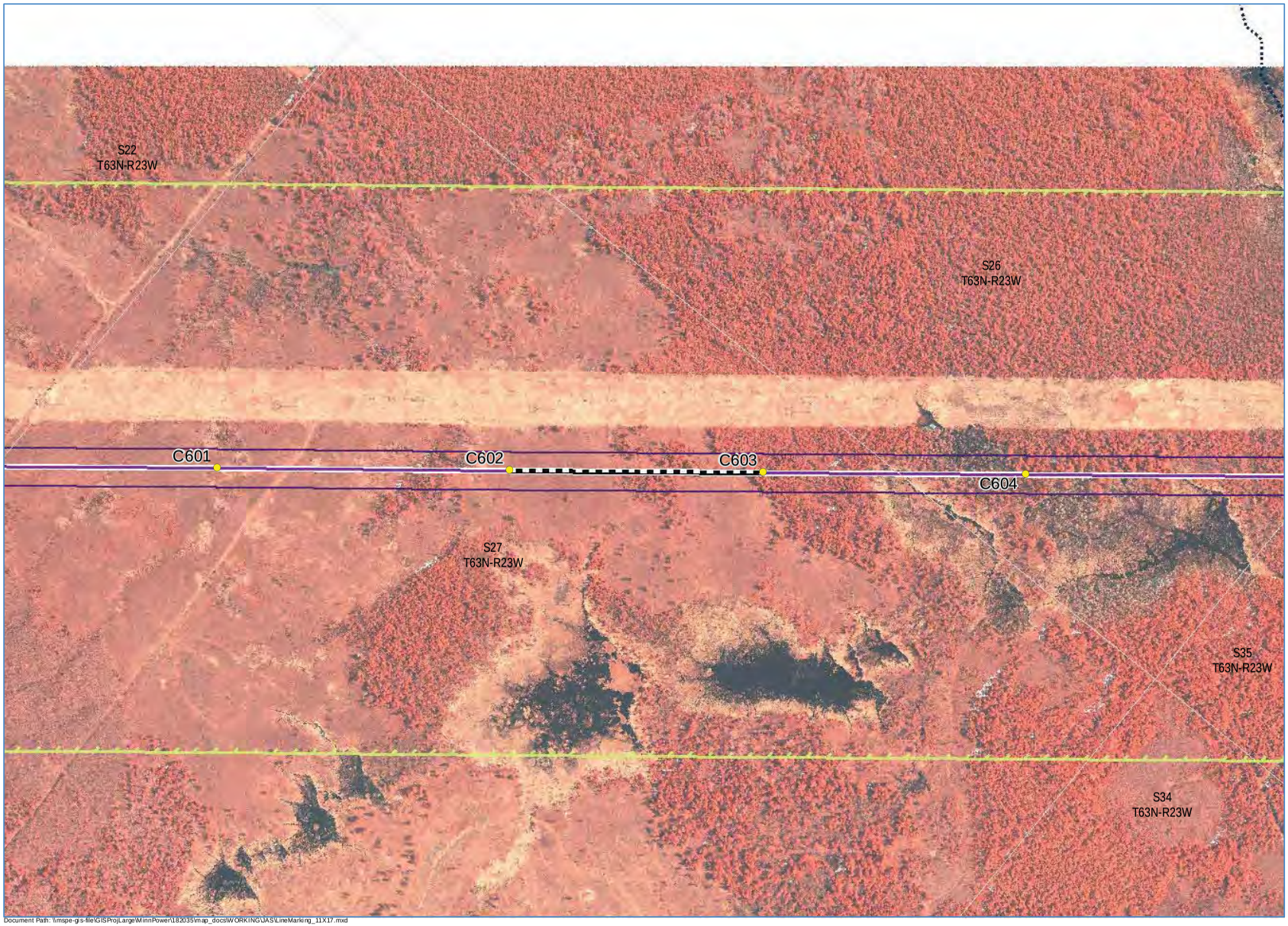

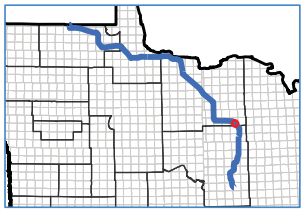

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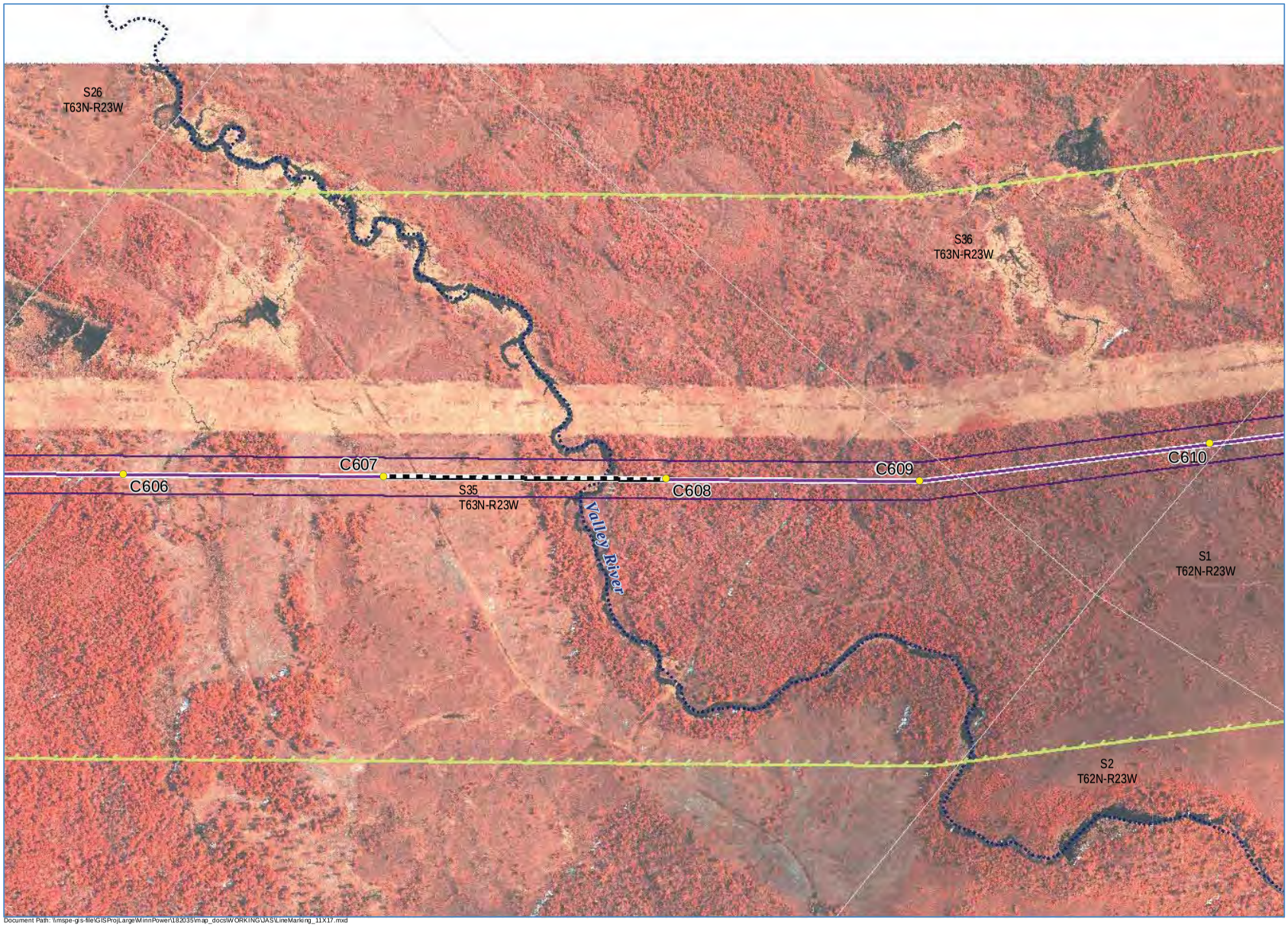

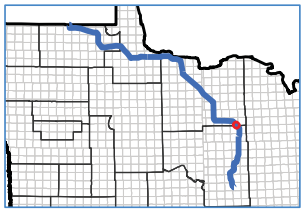

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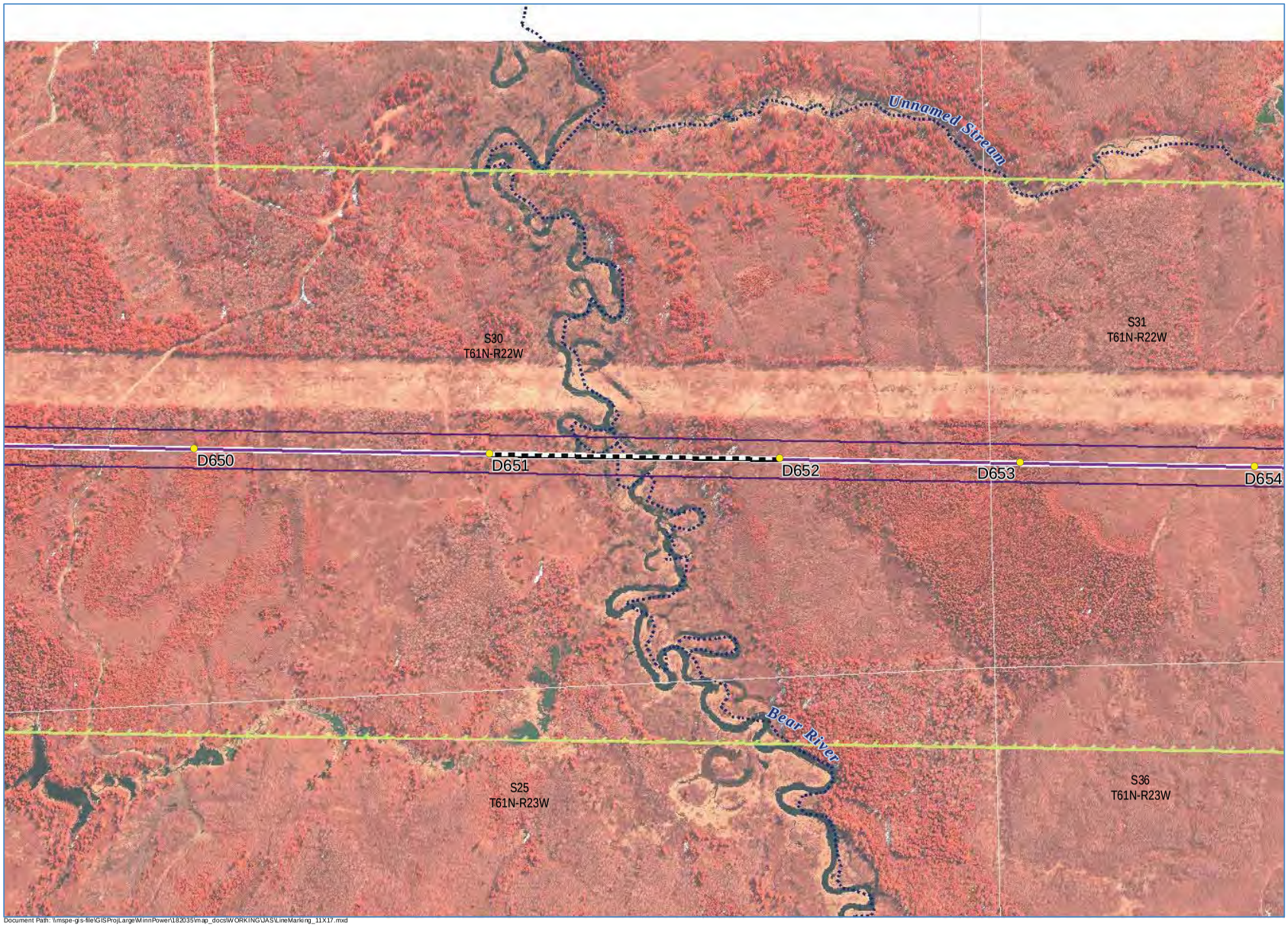

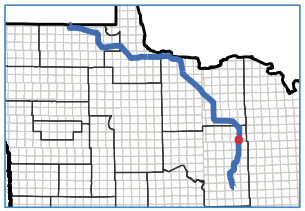

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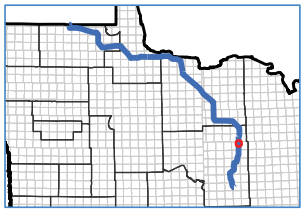

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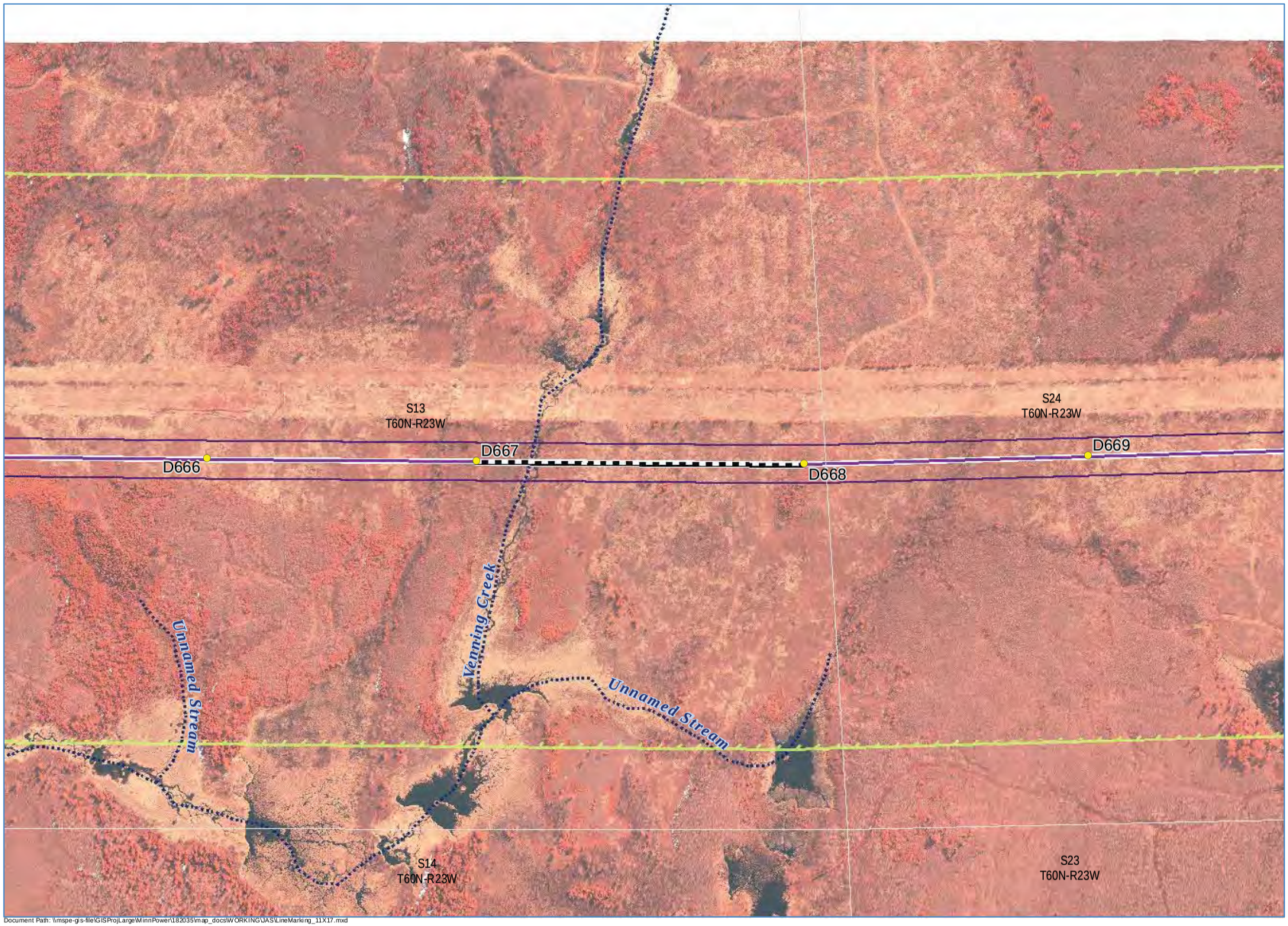

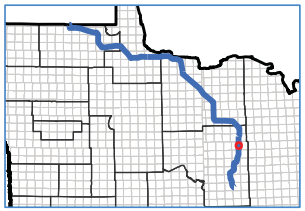

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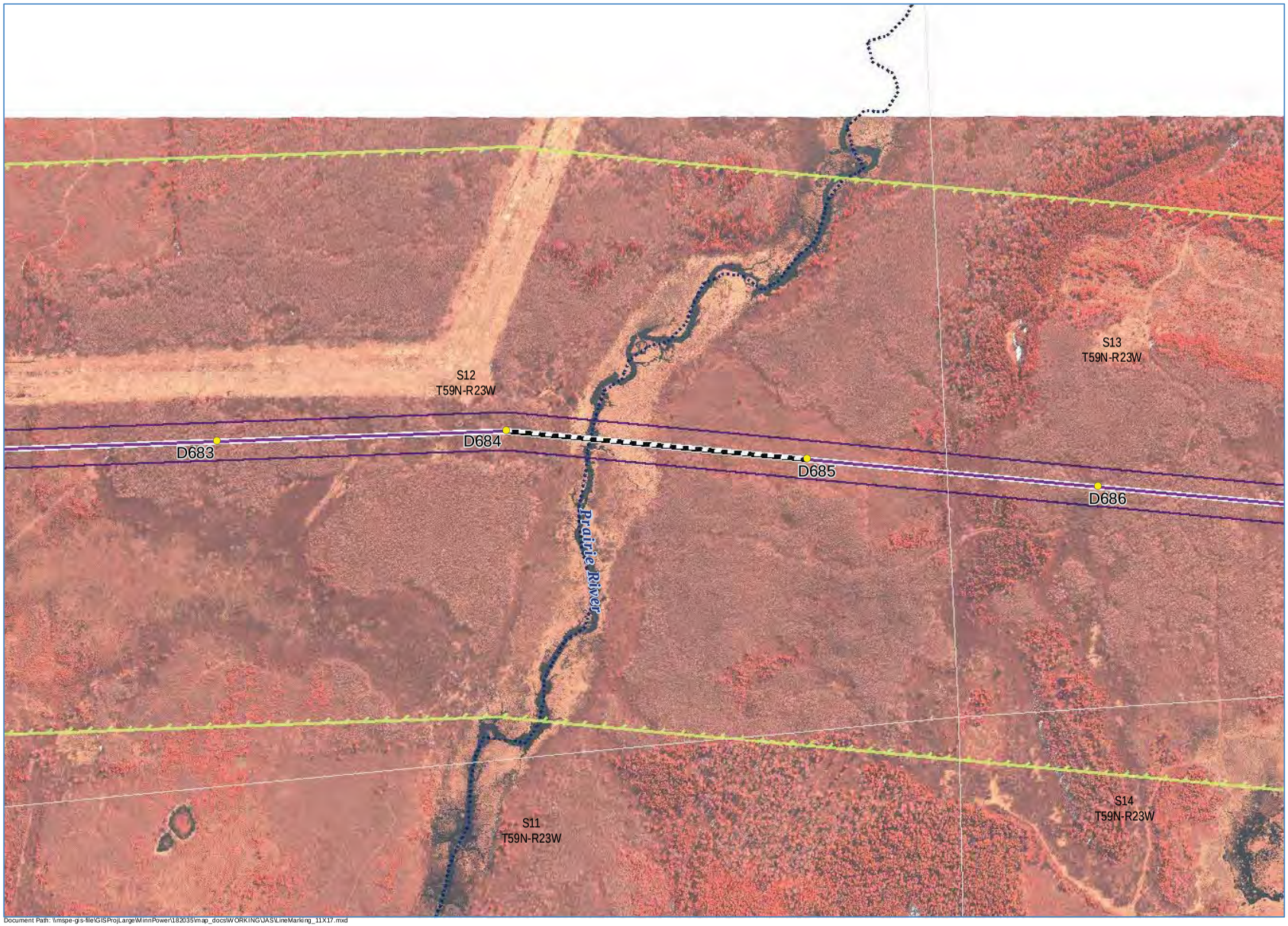

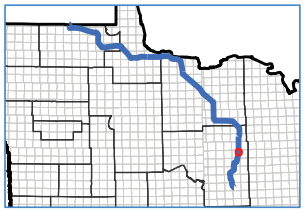

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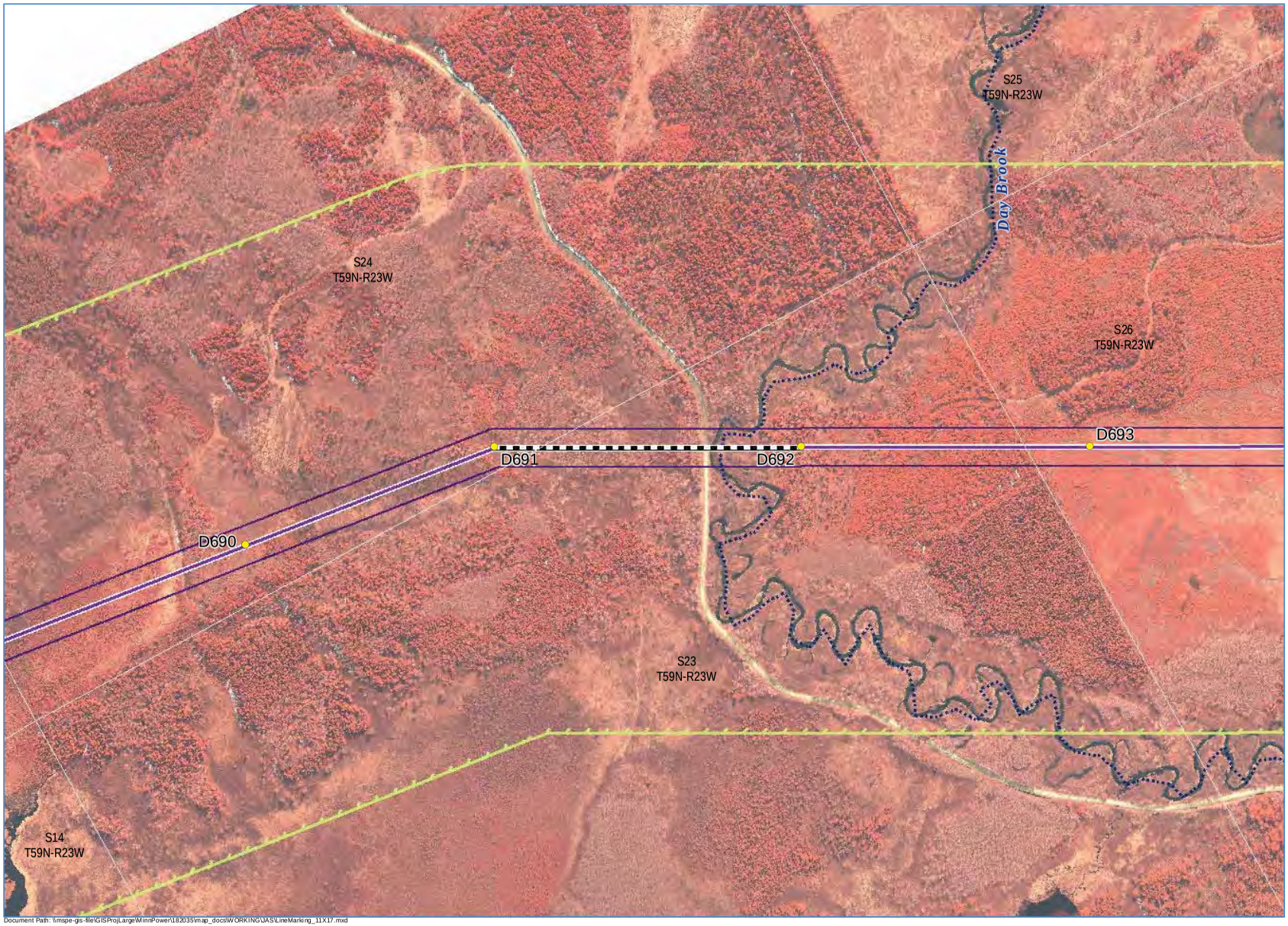

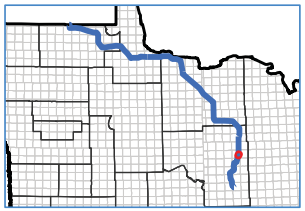

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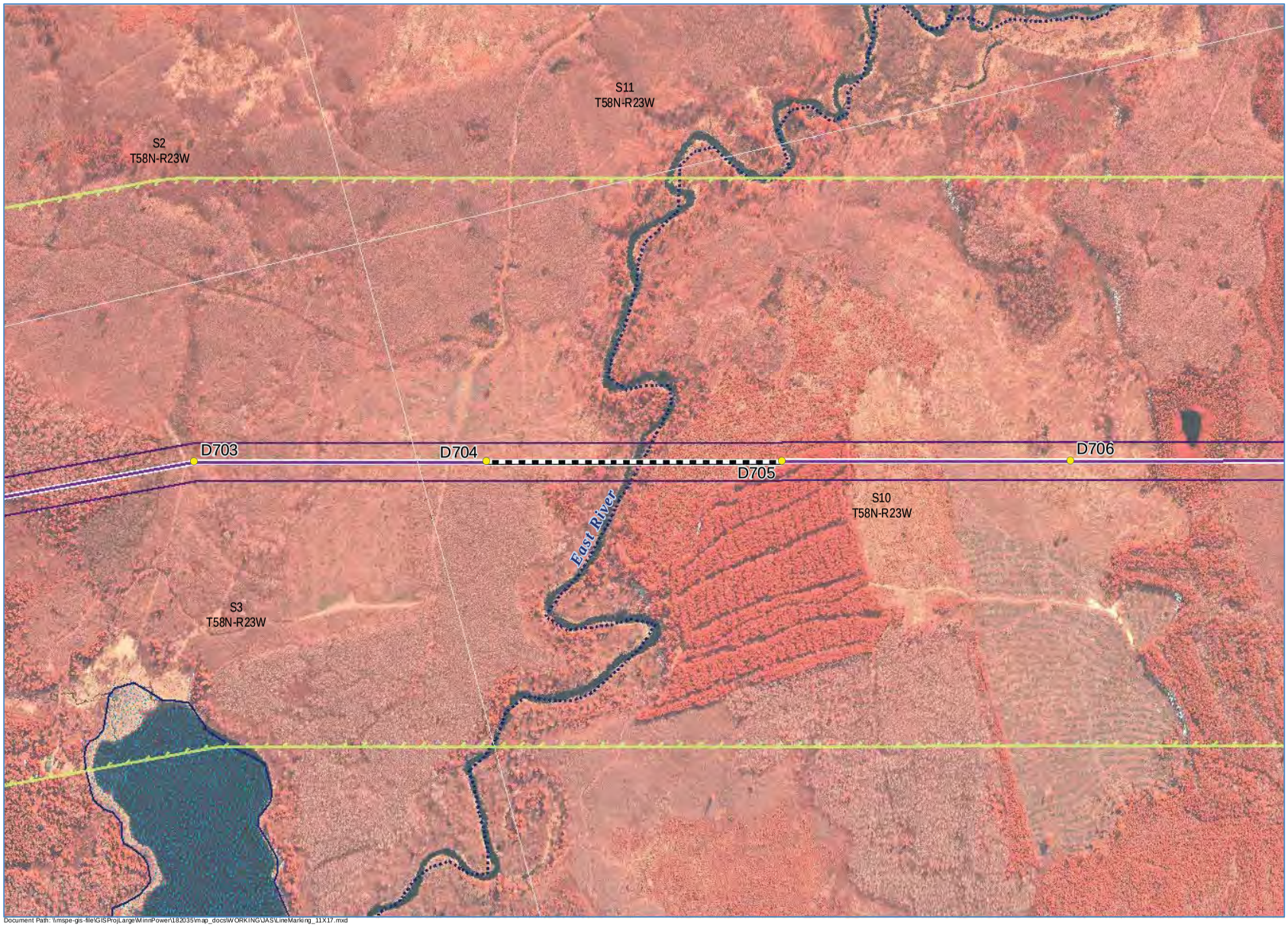

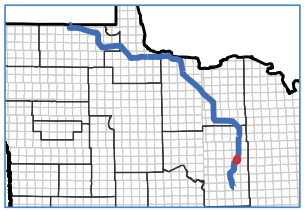

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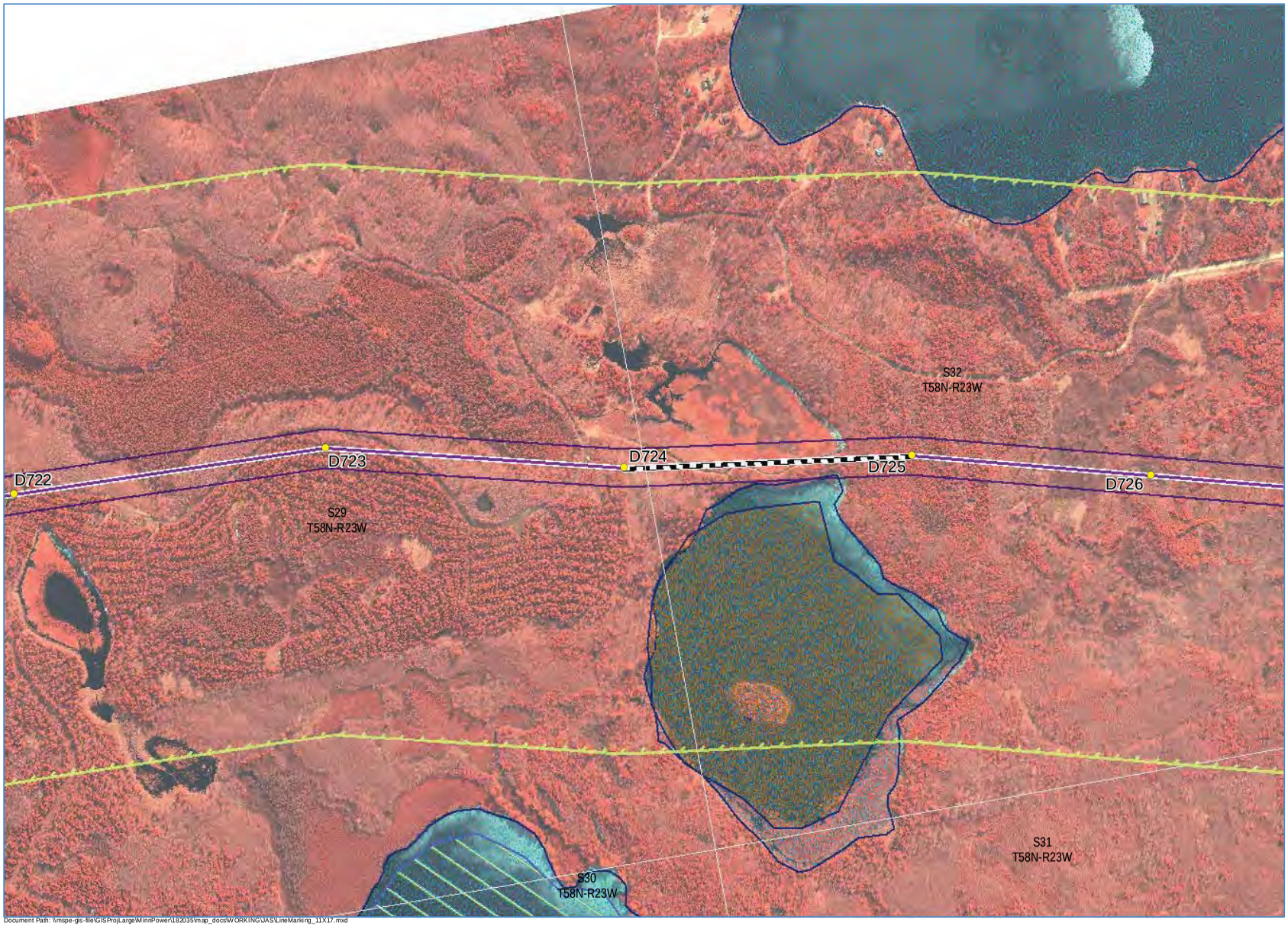

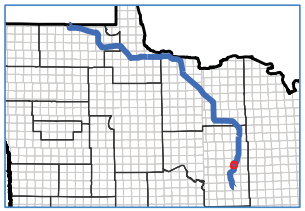

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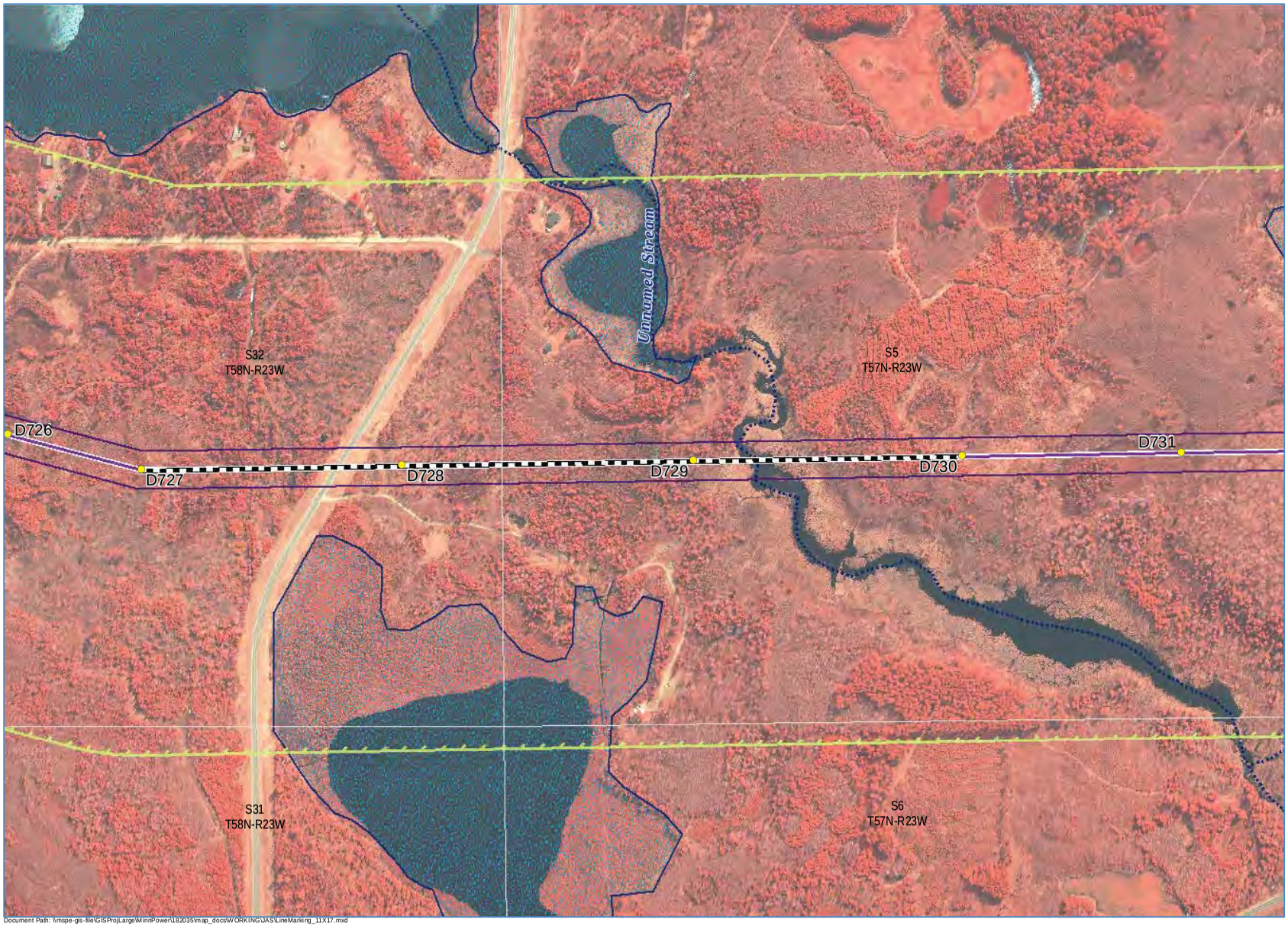

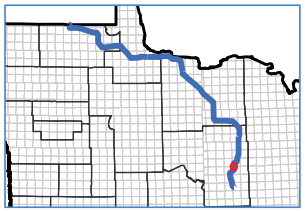

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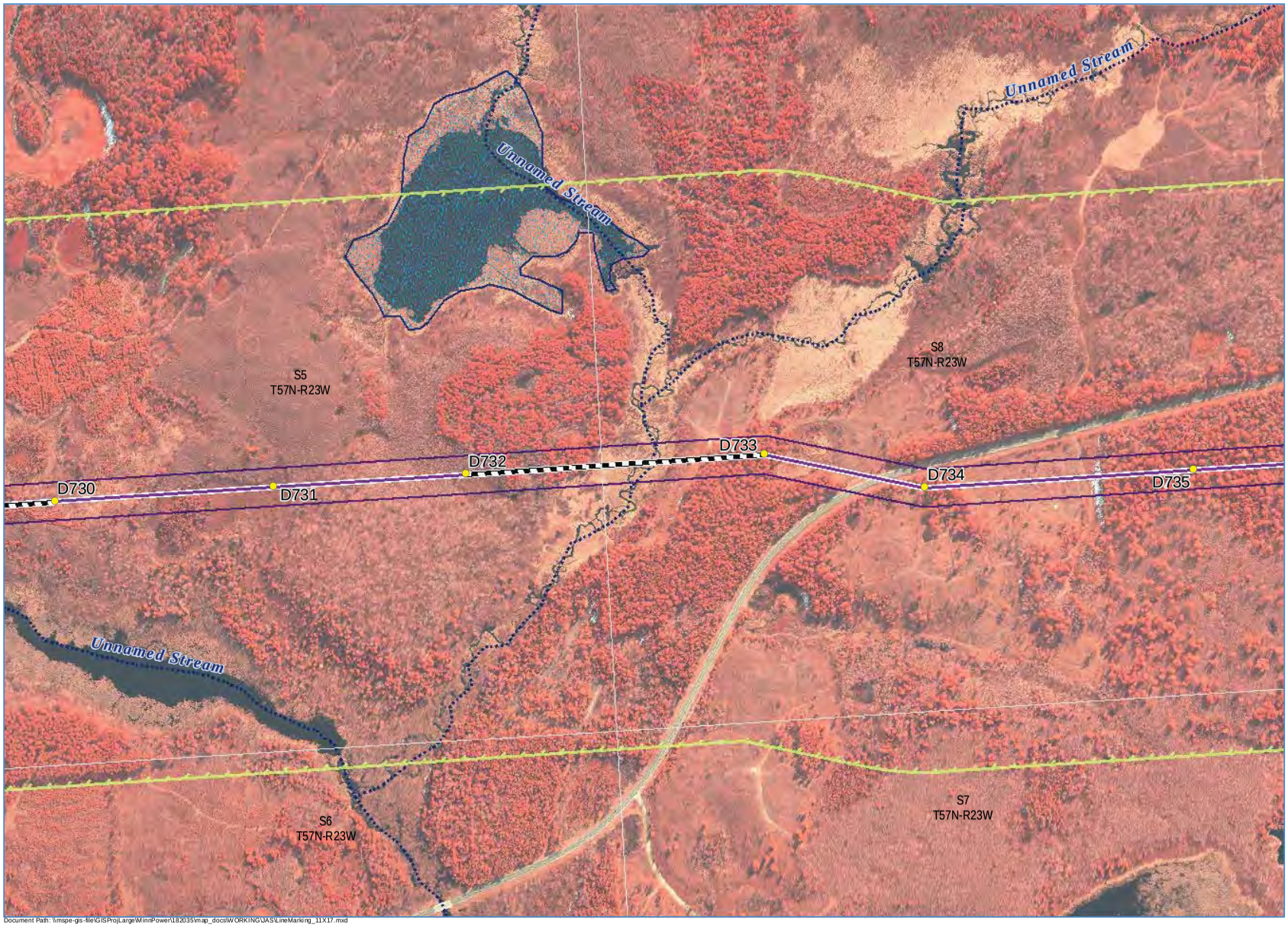

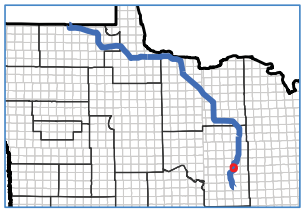

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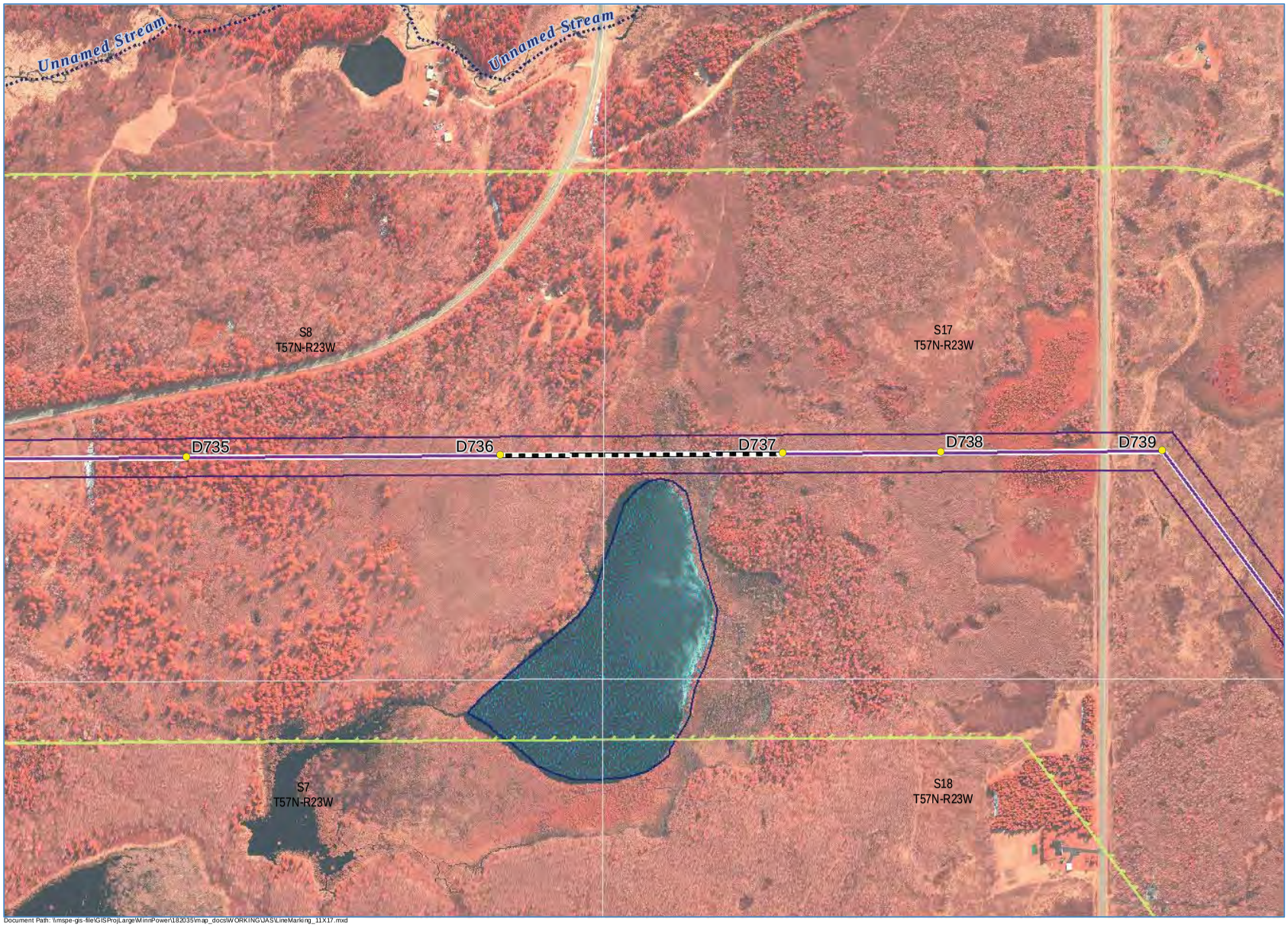

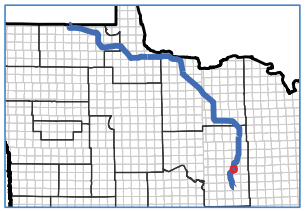

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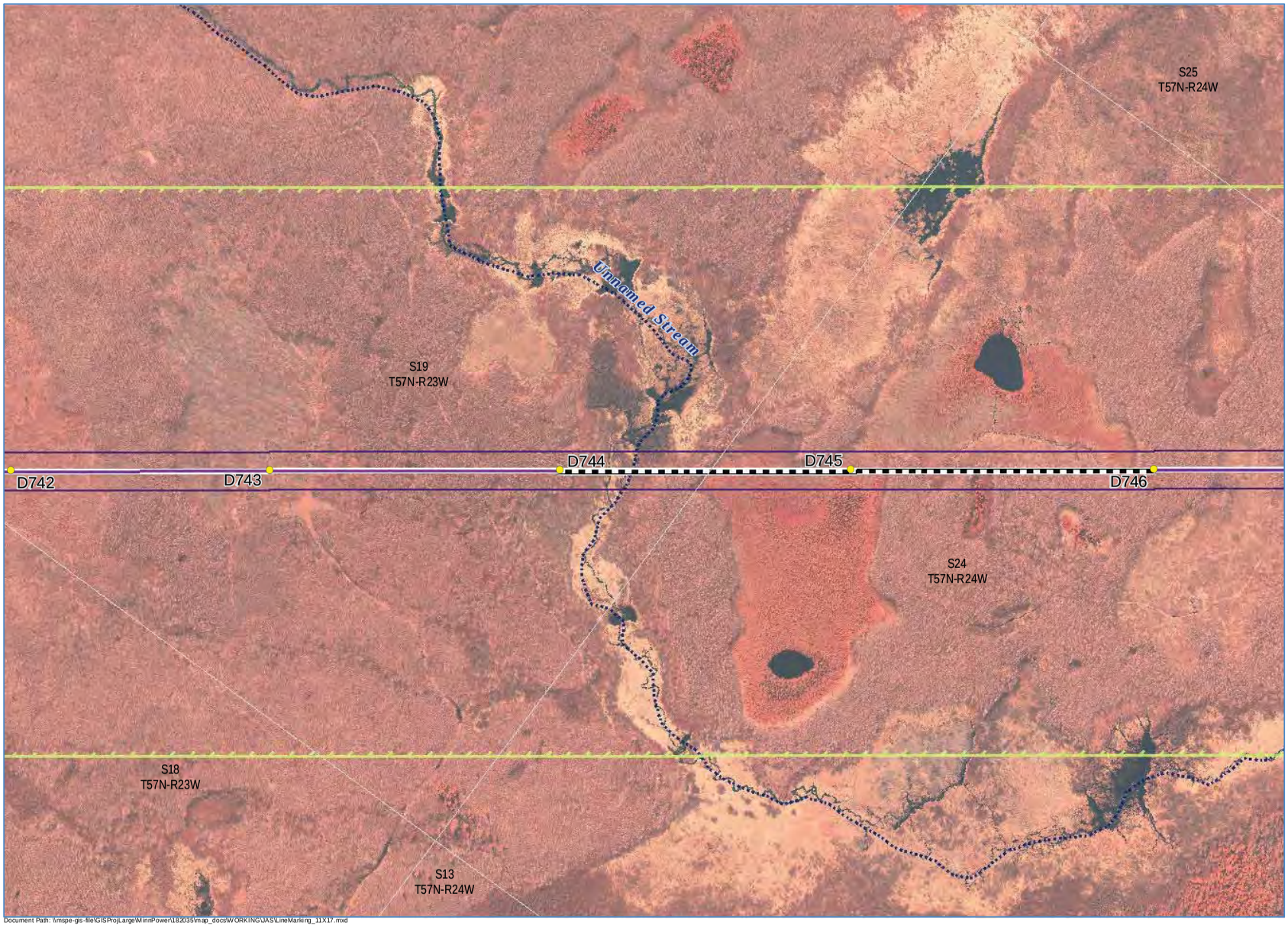

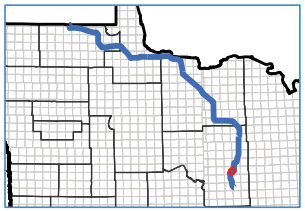

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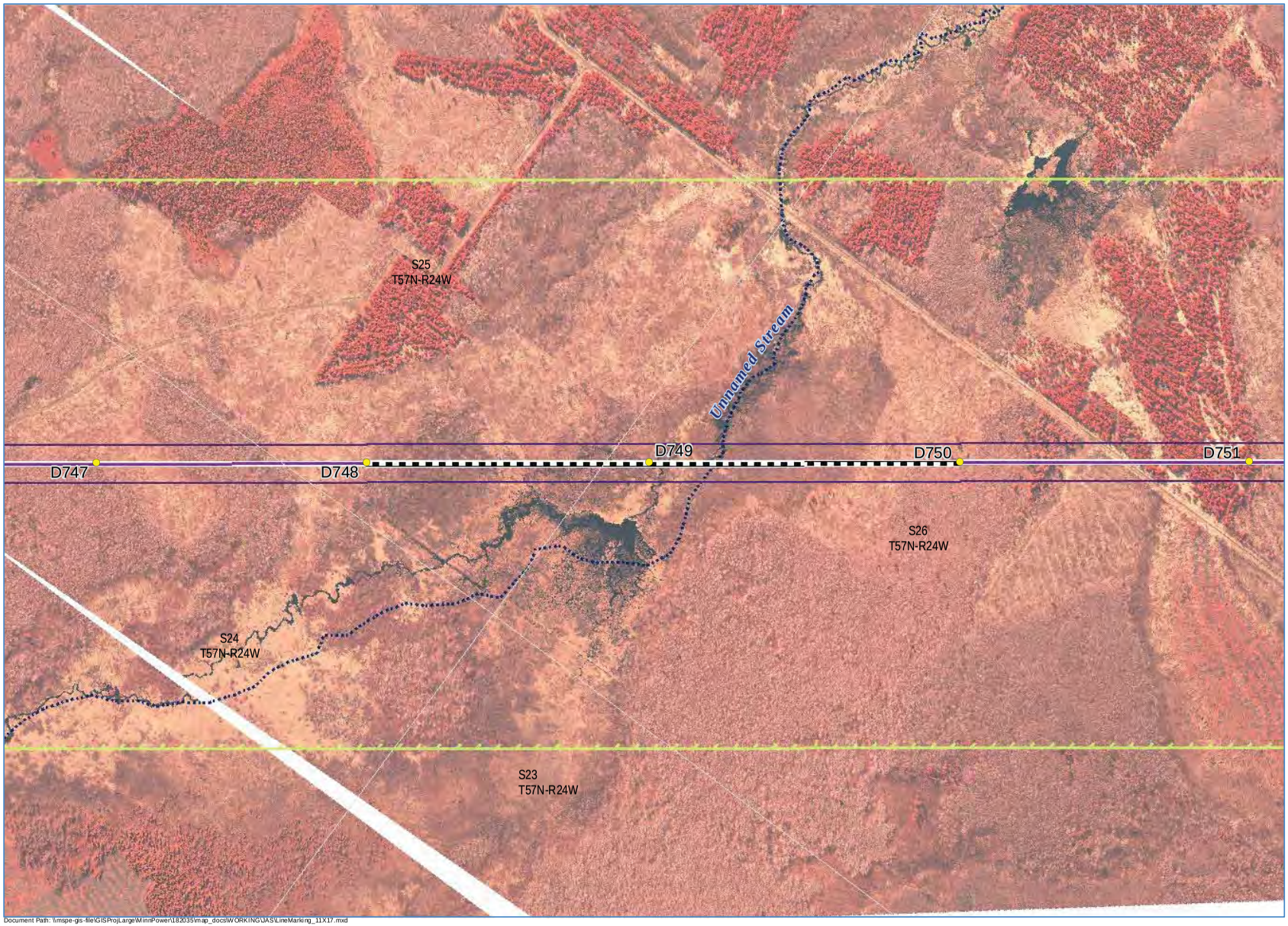

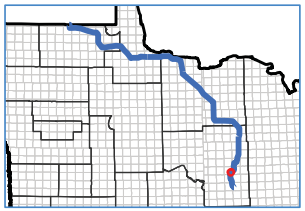

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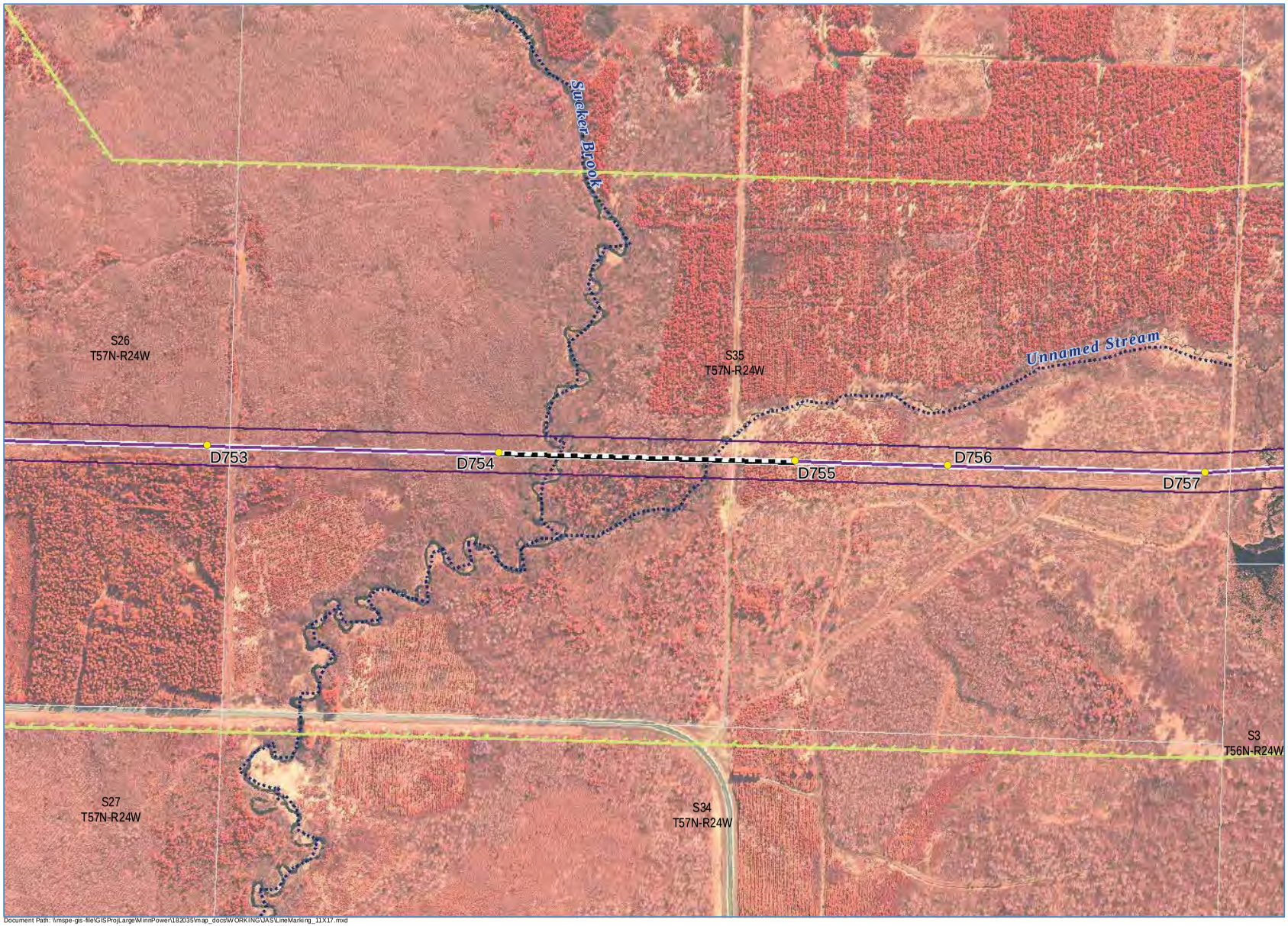

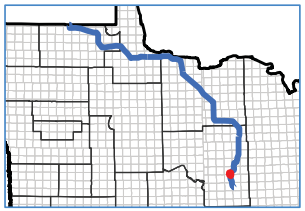

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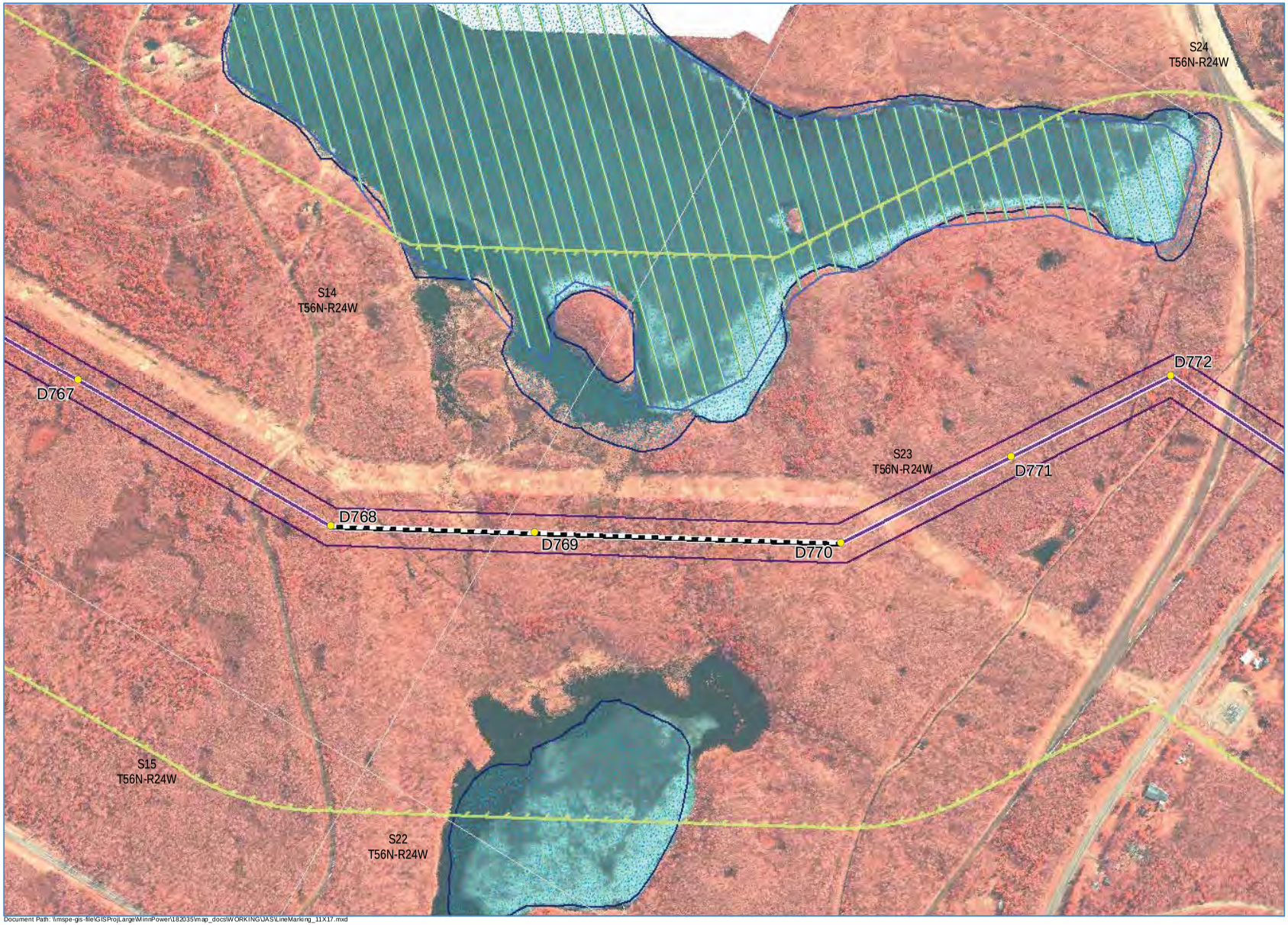

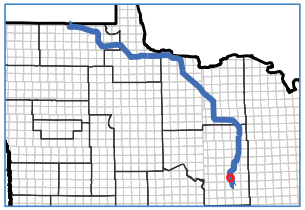

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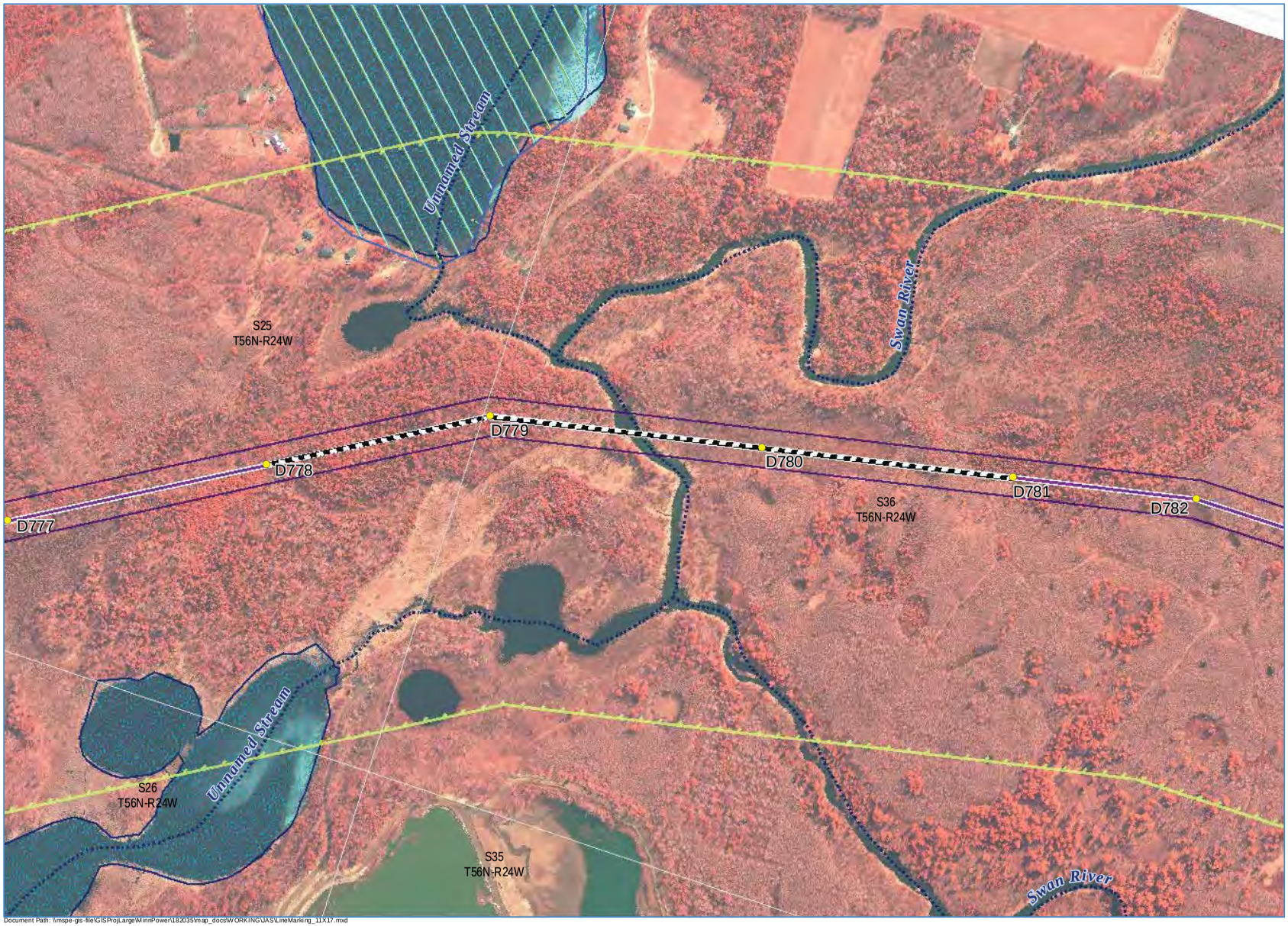

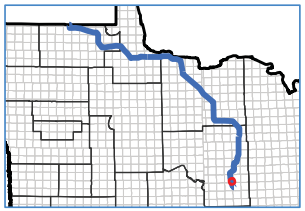

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Attachment

MINNESOTA DEPARTMENT OF NATURAL RESOURCES
CENTRAL OFFICE
500 LAFAYETTE ROAD
SAINT PAUL, MN 55155
651-296-6157
888-646-6367

October 12, 2016

Lydia Nelson, Environmental Scientist
HDR
701 Xenia Avenue South, Suite 600
Minneapolis, MN 55416
lydia.nelson@hdrinc.com

Re: Draft Avian Conversation Plan – Great Northern Transmission Line Project

Dear Ms. Nelson:

The Minnesota Department of Natural Resources (DNR) has reviewed the Great Northern Transmission Line (GNTL) Project Draft Avian Conservation Plan (ACP) submitted to the DNR July 27, 2016. Please consider the following revisions to the document.

General Comments on Potential Effects of the Construction and Operation of the GNTL:

The Avian Conservation Plan should accurately document the acreage of total forest clearing that will occur for constructing the GNTL. This accounting was included in the GNTL Final Environmental Impact Statement (FEIS) in the Climate Change Section, where the topic was well summarized. As noted in the FEIS, the proposed Project:

> "will require the removal of all forested areas within the anticipated 200-foot ROW. The Proposed Blue Route would require the removal of approximately 4,829 acres of forest in the anticipated 200-foot ROW….The Proposed Orange Route would require the removal of approximately 4,883 acres of forest in the anticipated 200-foot ROW (FEIS Section 5.2.1.3, page 95)."

The loss of nearly 5,000 acres and additional fragmentation within the northern Minnesota forest complex caused by the GNTL will contribute additional stress on the breeding bird communities that normally would occupy these habitats during the growing season. The quantification of lost forest habitat should be included in the ACP.

Also no attempt is made to estimate bird deaths due to the GNTL project's 224 mile transmission line. A recent USA study estimated that from 23.2 birds per kilometer (km) to 29.6 birds per km were killed annually along transmission lines in the United States; using median values provided in Table 3, Loss et.al 2014[1], the 224 mile GNTL would approximate between 8,315 – 10,609 birds deaths annually. Similarly, a Canadian transmission line review estimated the range of bird fatalities was 10.8 bird fatalities per km to 110.4 bird fatalities/km., which translates to 3,835 to 39,567 fatalities for a

[1] Loss, Scott R. T. Will and P.P. Marra. 2014. Refining estimates of bird collision and electrocution mortality at power lines in the United States. PLOS ONE 9(7)1-10. www.plosone.org

224 mile line (Rioux et.al, 2013[2]). In addition the Loss *et.al* (2014) study estimated a factor of 0.03 bird electrocution/distribution pole.

New Information Available on Conservation of Wildlife Resources:

The ACP lacks a bird species list of resident and potential migratory species affected by the project and the discussion only includes eagles, hawks, and a few others. A complete listing of birds potentially affected should be included in the ACP. An avian species list species would provide a useful subset of species that would be potentially affected by the project. It would be good to include a listing of potential species of birds affected, noting their conservation status, state and federal listing as threatened and endangered, whether a species of greatest conservation need (SGCN), or common. Information should be collected and provided to the state and federal wildlife agencies.

Approximately 16 percent (346) of the over 2000 native wildlife species of Minnesota are identified as Species in Greatest Conservation Need (SGCN) in Minnesota's Wildlife Action Plan (SWAP) (2015) because they are rare, their populations are declining, or they face serious threats that may cause them to decline. The SWAP identified an additional 136 species included in SGCN that were not listed as federal or state threatened and endangered (T&E) species. The recently released SGCN data were not incorporated in the environmental review for the GNTL, as indicated in the FEIS. The new document was recently posted online (see below). The plan identifies two approaches for wildlife conservation, the habitat approach and the species approach. The habitat approach focuses on prioritizing conservation within a mapped as quality habitats throughout the state into selected Wildlife Action Network (WAN) areas. The SWAP species approach focuses on implementing conservation actions for individual species that specifically address the causes of decline.

Several areas along the GNTL corridor have been identified as priority areas. Please evaluate whether bird diverters have been included for the segments that cross the Wildlife Action Network areas identified in the 2015 SWAP; if not, bird diverters should be added for these segments. We consider them important areas that should be maintained or enhanced for SGCN. It is likely that many of these species are protected under the Migratory Bird Treaty Act (see the link below).

For example, for the Connecticut Warbler (a SGCN), habitat loss and fragmentation are affecting the species. Be sure to incorporate recent SGCN analysis into management actions prescribed in the ACP, such as: limited plant management during summer months when the ground is soft; limited use of herbicides/pesticides etc. The DNR staff could help develop better mitigation protocol for addressing the occurrence of SGCN in the project area. Please coordinate with DNR staff to identify the potential of SGCN in the project area.

https://www.fws.gov/migratorybirds/pdf/policies-and-regulations/MBTAListofBirdsFinalRule.pdf

http://files.dnr.state.mn.us/assistance/nrplanning/bigpicture/cwcs/wildlife-action-plan-2015-2025.pdf

http://www.dnr.state.mn.us/mnwap/index.html

[2] Rioux, S., J.-P. L. Savard, and A. A. Gerick. 2013. Avian mortalities due to transmission line collisions: a review of current estimates and field methods with an emphasis on applications to the Canadian electric network. Avian Conservation and Ecology 8(2): 7. http://dx.doi.org/10.5751/ACE-00614-080207

The Minnesota Biological Survey staff are working on completing the initial survey of several northern tier of counties, as this link demonstrates: http://www.dnr.state.mn.us/eco/mcbs/outcomes/map.html. It is inevitable that new findings on species and habitats that are relevant to the GNTL project management will be forthcoming. We request that ongoing coordination be established, possibly on an annual basis, to distribute the additional findings that would be important for the management of the transmission line.

Because of the deficiency in information available on this region, the DNR requests that a concerted effort be made by Minnesota Power to observe/evaluate the activities of avian species in/around the transmission corridor beyond the surveys included in the draft ACP. Additional expertise should be provided by the company to conduct bird surveys along the powerline during the migratory and nesting seasons. Specifically focus on state and federal T&E species and MN SGCN. The survey might highlight those species that are or have the potential to be rare, particularly because we have so little data in that part of the state. In addition to forest birds, there are some open country birds that could be negatively affected by the powerline. Knowing which species are present would be a great first step.

During bird surveys, also include SGCN species, based on the latest approved SGCN plan.

See the following report, also new that you should use for the context of the Avian Conservation Plan: http://www.fs.fed.us/nrs/pubs/gtr/gtr_nrs159.pdf?

New Technology Available for Mitigating for Environmental Effects of Project on Avian Species

This dialogue fits best with Section 5 – page 9, Adaptive Management. The FEIS noted that proposed wildlife mitigation would include incorporating the industry's best practices that are consistent with Avian Power Line Interaction Committee's (APLIC) 2012 guidelines. This reference should be used where the 2012 guidelines supersede APLIC's 2006 guidelines.

Additional surveys and testing may indicate the mitigation has been successful; if not, additional mitigation strategies might be necessary. Although it is premature to recommend that bird strike indicators be placed on the powerline in selected locations at this time, this may be an efficient way to determine the potential bird loss due to the GNTL. As noted in the 2012 AFLIC Report, Bird Strike Indicators could serve as an efficient mechanism for determining bird mortality along the GNTL. Although this technology is quite new, the devices could provide cost effective means for identifying high and low bird strike areas and the effectiveness of line marking devices. As this technology becomes more available, it should be applied to ascertain the number of bird kills that occur along the GNTL. This technology should be considered for future use along the GNTL to help ascertain bird losses.

Unmanned aerial vehicles technologies, i.e. Lobermeier (2015[3]), are showing utility for retrofitting transmission lines with bird strike monitoring and mitigation devices. A 90 percent cost savings is

[3] Lobermeier, Scott, M. Moldenhauer, C.M. Peter, L. Slominski, R.A. Tedesco, M. Ver Meer, J.F. Dwyer, R.E. Harness, and A.H. Stewart. 2015. J. Unmanned Veh. Syst. 3: 1–7 (2015) dx.doi.org/10.1139/juvs-2015-0009. Published at www.nrcresearchpress.com/juvs on 16 October 2015.

possible and human safety and health is improved by not having to operate helicopters in close proximity to the transmission cable.

Specific Comments:

Page 2, Section 1.2, 3rd paragraph - Recommend including ongoing coordination with USFWS and DNR on issues addressing avian conservation.

Page 2, Section 2.0 - Recommend listing these groups of species, their status if applicable, and the critical areas of wildlife habitat along the Project's route. Also third arrow should indicate wetland crossings.

Page 2, Section 3.1 - Managing invasive species with pesticides is reasonable and possibly preferred as long as the pesticide is applied as a spot treatment. See list of banned pesticides on DNR lands. However, the DNR does not support using pesticides for managing woody vegetation within the ROW and would hope this would be the choice for the entire ROW. Not using pesticides for vegetation height management would allow forbs and low shrubs such as blueberry to remain in the open portion of the ROW. Best management practices are recommended to prevent the spread of invasive species when conducting avian conservation work.

Page 3, Section 3.1 - Minnesota Power is planning on managing a portion of the ROW in short woody vegetation. Having woody cover in a portion of the ROW will produce a more gradual edge that will provide habitat for early succession species as GWW, Ruffed Grouse, and Woodcock. This type of ROW will most likely support fruiting shrubs that will provide food for a variety of wildlife particularly Black Bear. This style of ROW management also makes it easier for small forest species such as American Pine Marten and Snowshoe Hare to cross the ROW and not be predated by avian predators.

Page 3, Section 3.1 - Minnesota Power states that it will only allow low growing shrubs and not allow trees that have a potential to be tall to grow in the outer portions of the ROW. The ACP should include a better definition of low growing shrubs and trees that have a potential to be tall in terms of height. Will the woody vegetation be allowed to grow 4, 10, or 20 ft tall? The vegetation height transition should begin at the forest edge, with vegetation growing to the allowable height of 20 feet for a distance of one-half the width of the shrub zone, then the height could be gradually reduced to its lowest form at the edge of the managed portion.

Page 3, Section 3.1 – The Yellow Winged Warbler reference ought to be listed as the Golden Winged Warbler (GWW). While having younger/shrubby habitat may benefit this species, new research is showing that this young habitat needs to be in proximity to older, mature habitats for use as soon as the young fledge. The American Bird Conservancy has been working hard to create GWW habitat, but they have not been monitoring before/after actions.

Monitoring for the GWW would be a beneficial addition to the ACP. It would be beneficial to document before and after populations of GWW along the corridor to see if in fact the powerline has a positive effect on the species. The ACP should include protocol for monitoring any created habitat for use along the corridor. The ACP should include language regarding border zone/wire zone vegetation management for the GWW.

Page 3, Section 3.1 - Under minimize breeding season tree clearing, for lowland forests, tree removal on frozen ground is preferred to avoid disturbances during the breeding season and because of the tendency for rutting and compaction that occurs when using machinery on wet ground.

Page 4, Section 3.2 - Information on the model/size of the diverter should be provided to the DNR so spacing can be applied correctly. For example, the "swan flight" model recommends 15 foot spacing, not the 50 foot spacing they are recommending. Instructions caution the use of diverters with voltages greater than 230kV because of corona effects. Since this line is 500kV we want to be sure that the suggested product will work for this project. A recent study found closer spacing or glow-in-the-dark markers were more effective (Murphy 2016[4]).

Page 4, Section 3.2 - Roseau Lake would not trigger a need for the use of flight diverters. Neither would the Roseau Bog Owl Management Unit. Both should have flight diversion technology applied due to their prominence for migratory species at certain times of the year.

Section 4.0, page 4 –

Recommend that DNR observe placement of flight diverters and have a chance to comment on placement during the permitting process.

The Proposer should evaluate the addition of diverters wherever wetlands are crossed by the GNTP. With the additional movement of birds in wetland areas, diverter placement would likely be a suitable mitigation strategy. Once the length of segments crossing wetlands is known, the DNR should be contacted to collaborate on this issue.

If the GNTL crosses Pine Creek just south of the international border, this crossing should be outfitted with flight diverters.

Diverters should be extended at least 500 ft into the upland, although this depends on proposed configuration. In many cases this requirement is already met. The following changes to the diverter placement/configuration is based on the habitat near the proposed line:

- Consider extending A197 to A199 to A200, because of all of the openings in the bog, birds are likely to move among them;
- Line C517 to C518 should be extended to C516 b/c of the open area to the west;
- Line D724 to D725 should be extended from D723 to D726, given the large waterbodies to the east and west of the powerline and given the appearance of good waterfowl habitat;
- Consider extending D768 to D770 from D766 to D772 given the lakes in the area and their orientation; and
- Extend D778 to D781 to D777 to D781 for similar reasons as above.

Sandhill Cranes and Trumpeter Swans are increasingly using agricultural fields for foraging. These locations are recommended for diverters but these areas should at least be monitored closely for strikes

[4] Murphy, R., et al, 2016. Reactions of sandhill cranes approaching a marked transmission power line. J. Fish & Wildlife Manage. Online Early Copy.

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by these species. Contact Scott Laudenslager and Larry Peterson who have firsthand knowledge of field use by these species in this area:

- A260 through A264
- B265 through B269
- B302 through B306

Thank you for your coordination regarding the Draft Avian Conservation Plan (ACP) for the Great Northern Transmission Line Project. Please contact me with any questions.

Sincerely,

Ronald Wieland
Environmental Review Planner
Minnesota Department of Natural Resources
651-259-5157

cc: Mike Kaluzniak, Minnesota Public Utilities Commission
Bill Storm, Minnesota Department of Commerce