Exhibit BB
Other Information

Boardman to Hemingway Transmission Line Project

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Preliminary Application for Site Certificate

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TABLE OF CONTENTS

LIST OF TABLES

LIST OF ATTACHMENTS

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ACRONYMS AND ABBREVIATIONS

Note: Not all acronyms and abbreviations listed will appear in this Exhibit.

°C	degrees Celsius
4WD	4-wheel-drive
A	ampere
A/ph	amperes/phase
AC	alternating current
ACDP	Air Contaminant Discharge Permit
ACEC	Area of Critical Environmental Concern
ACSR	aluminum conductor steel reinforced
AIMP	Agricultural Impact Mitigation Plan
AMS	Analysis of the Management Situation
aMW	average megawatt
ANSI	American National Standards Institute
APE	Area of Potential Effect
APLIC	Avian Power Line Interaction Committee
ARPA	Archaeological Resource Protection Act
ASC	Application for Site Certificate
ASCE	American Society of Civil Engineers
ASP	Archaeological Survey Plan
AST	aboveground storage tank
ASTM	American Society of Testing and Materials
ATC	available transmission capacity
ATV	all-terrain vehicle
AUM	animal unit month
B2H	Boardman to Hemingway Transmission Line Project
BCCP	Baker County Comprehensive Plan
BCZSO	Baker County Zoning and Subdivision Ordinance
BLM	Bureau of Land Management
BMP	best management practice
BPA	Bonneville Power Administration
BOR	Bureau of Reclamation
C and D	construction and demolition
CAA	Clean Air Act
CadnaA	Computer-Aided Noise Abatement
CAFE	Corona and Field Effects
CAP	Community Advisory Process
CBM	capacity benefit margin
CFR	Code of Federal Regulations
CH	critical habitat
CIP	critical infrastructure protection
CL	centerline
cm	centimeter
cmil	circular mil
COA	Conservation Opportunity Area
CO_2e	carbon dioxide equivalent

COM Plan	Construction, Operations, and Maintenance Plan
CPCN	Certificate of Public Convenience and Necessity
cps	cycle per second
CRP	Conservation Reserve Program
CRT	cathode-ray tube
CRUP	Cultural Resource Use Permit
CSZ	Cascadia Subduction Zone
CTUIR	Confederated Tribes of the Umatilla Indian Reservation
CWA	*Clean Water Act of 1972*
CWR	Critical Winter Range
dB	decibel
dBA	A-weighted decibel
DC	direct current
DoD	Department of Defense
DOE	U.S. Department of Energy
DOGAMI	Oregon Department of Geology and Mineral Industries
DPS	Distinct Population Segment
DSL	Oregon Department of State Lands
EA	environmental assessment
EDRR	Early Detection and Rapid Response
EIS	Environmental Impact Statement (DEIS for Draft and FEIS for Final)
EFSC or Council	Energy Facility Siting Council
EFU	Exclusive Farm Use
EHS	extra high strength
EMF	electric and magnetic fields
EPA	Environmental Protection Agency
EPC	Engineer, Procure, Construct
EPM	environmental protection measure
EPRI	Electric Power Research Institute
ERO	Electric Reliability Organization
ERU	Exclusive Range Use
ESA	Endangered Species Act
ESCP	Erosion and Sediment Control Plan
ESU	Evolutionarily Significant Unit
EU	European Union
FAA	Federal Aviation Administration
FCC	Federal Communication Commission
FEMA	Federal Emergency Management Agency
FERC	Federal Energy Regulatory Commission
FFT	find, fix, track, and report
FLPMA	Federal Land Policy and Management Act
Forest Plan	Land and Resource Management Plan
FPA	Forest Practices Act
FSA	Farm Services Agency
FWS	U.S. Fish and Wildlife Service
G	gauss

GeoBOB	Geographic Biotic Observation
GF	Grazing Farm Zone
GHG	greenhouse gas
GHz	gigahertz
GIL	gas insulated transmission line
GIS	geographic information system
GPS	Global Positioning System
GRMW	Grande Ronde Model Watershed
GRP	Grassland Reserve Program
HAC	Historic Archaeological Cultural
HCNRA	Hells Canyon National Recreation Area
HPFF	high pressure fluid-filled
HPMP	Historic Properties Management Plan
HUC	Hydrologic Unit Code
Hz	hertz
I-84	Interstate 84
ICC	International Code Council
ICES	International Committee on Electromagnetic Safety
ICNIRP	International Commission on Non-Ionizing Radiation Protection
IDAPA	Idaho Administrative Procedures Act
IDEQ	Idaho Department of Environmental Quality
IDFG	Idaho Department of Fish and Game
IDWR	Idaho Department of Water Resources
ILS	intensive-level survey
IM	Instructional Memorandum
INHP	Idaho Natural Heritage Program
INRMP	Integrated Natural Resources Management Plan
IPC	Idaho Power Company
IPUC	Idaho Public Utilities Commission
IRP	integrated resource plan
IRPAC	IRP Advisory Council
ISDA	Idaho State Department of Agriculture
JPA	Joint Permit Application
KCM	thousand circular mils
kHz	kilohertz
km	kilometer
KOP	Key Observation Point
kV	kilovolt
kV/m	kilovolt per meter
kWh	kilowatt-hour
L_{dn}	day-night sound level
L_{eq}	equivalent sound level
lb	pound
LCDC	Land Conservation and Development Commission
LDMA	Lost Dutchman's Mining Association
LiDAR	light detection and ranging
LIT	Local Implementation Team

LMP	land management plan
LOLE	Loss of Load Expectation
LRMP	land and resource management plan
LUBA	Land Use Board of Appeals
LWD	large woody debris
m	meter
mA	milliampere
MA	Management Area
MAIFI	Momentary Average Interruption Frequency Index
MCC	Malheur County Code
MCCP	Morrow County Comprehensive Plan
MCE	Maximum Credible Earthquake
MCZO	Morrow County Zoning Ordinance
mG	milligauss
MHz	megahertz
mm	millimeter
MMI	Modified Mercalli Intensity
MP	milepost
MPE	maximum probable earthquake
MRI	magnetic resonance imaging
MVAR	megavolt ampere reactive
Mw	mean magnitude
MW	megawatt
µV/m	microvolt per meter
N_2O	nitrous oxide
NAIP	National Agriculture Imagery Program
NED	National Elevation Dataset
NEMS	National Energy Modeling System
NEPA	*National Environmental Policy Act of 1969*
NERC	North American Electric Reliability Corporation
NESC	National Electrical Safety Code
NF	National Forest
NFPA	National Fire Protection Association
NFS	National Forest System
NGDC	National Geophysical Data Center
NHD	National Hydrography Dataset
NHOTIC	National Historic Oregon Trail Interpretive Center
NHT	National Historic Trail
NIEHS	National Institute of Environmental Health Sciences
NIST	National Institute of Standards and Technology
NOAA	National Oceanic and Atmospheric Administration
NOAA Fisheries	National Oceanic and Atmospheric Administration Fisheries Division
NOI	Notice of Intent to File an Application for Site Certificate
NOV	Notice of Violation
NPDES	National Pollutant Discharge Elimination System
NRCS	Natural Resources Conservation Service

NRHP	National Register of Historic Places
NSR	noise sensitive receptor
NTTG	Northern Tier Transmission Group
NWGAP	Northwest Regional Gap Analysis Landcover Data
NWI	National Wetlands Inventory
NWPP	Northwest Power Pool
NWR	National Wildlife Refuge
NWSRS	National Wild and Scenic Rivers System
NWSTF	Naval Weapons Systems Training Facility
O_3	ozone
O&M	operation and maintenance
OAIN	Oregon Agricultural Information Network
OAR	Oregon Administrative Rules
OATT	Open Access Transmission Tariff
ODA	Oregon Department of Agriculture
ODEQ	Oregon Department of Environmental Quality
ODF	Oregon Department of Forestry
ODFW	Oregon Department of Fish and Wildlife
ODOE	Oregon Department of Energy
ODOT	Oregon Department of Transportation
OHGW	overhead ground wire
OHV	off-highway vehicle
OPGW	optical ground wire
OPRD	Oregon Parks and Recreation Department
OPS	U.S. Department of Transportation, Office of Pipeline Safety
OPUC	Public Utility Commission of Oregon
OR	Oregon (State) Highway
ORBIC	Oregon Biodiversity Information Center
ORS	Oregon Revised Statutes
ORWAP	Oregon Rapid Wetland Assessment Protocol
OS	Open Space
OSDAM	Oregon Streamflow Duration Assessment Methodology
OSHA	Occupational Safety and Health Administration
OSSC	Oregon Structural Specialty Code
OSWB	Oregon State Weed Board
OWC	Oregon Wetland Cover
P	Preservation
PA	Programmatic Agreement
pASC	Preliminary Application for Site Certificate
PAT	Project Advisory Team
PCE	Primary Constituent Element
PEM	palustrine emergent
PFO	palustrine forested
PGA	peak ground acceleration
PGE	Portland General Electric
PGH	Preliminary General Habitats
Pike	Pike Energy Solutions

PNSN	Pacific Northwest Seismic Network
POD	Plan of Development
POMU	Permit to Operate, Maintain and Use a State Highway Approach
PPH	Preliminary Priority Habitats
Project	Boardman to Hemingway Transmission Line Project
PSD	Prevention of Significant Deterioration
PSS	palustrine scrub-shrub
R	Retention
R-F	removal-fill
RCM	Reliability Centered Maintenance
RCRA	Resource Conservation and Recovery Act
ReGAP	Regional Gap Analysis Project
RFP	request for proposal
RLS	reconnaissance-level survey
RMP	resource management plan
ROD	Record of Decision
ROE	right of entry
RNA	research natural area
ROW	right-of-way
SAIDI	System Average Interruption Duration Index
SAIFI	System Average Interruption Frequency Index
SC	Sensitive Critical
SEORMP	Southeastern Oregon Resource Management Plan
SF6	sulfur hexafluoride
Shaw	Shaw Environmental and Infrastructure, Inc.
SHPO	State Historic Preservation Office
SLIDO	Statewide Landslide Inventory Database for Oregon
SMS	Scenery Management System
SMU	Species Management Unit
SPCC	Spill Prevention, Containment, and Countermeasures
SRMA	Special Recreation Management Area
SRSAM	Salmon Resources and Sensitive Area Mapping
SSURGO	Soil Survey Geographic Database
STATSGO	State Soil Geographic Database
SUP	special-use permit
SV	Sensitive Vulnerable
SWPPP	Stormwater Pollution Prevention Plan
T/A/Y	tons/acre/year
TDG	Total Dissolved Gas
TES	threatened, endangered, and sensitive (species)
TG	Timber Grazing
TMIP	Transmission Maintenance and Inspection Plan
TNC	The Nature Conservancy
tpy	tons per year
TSD	treatment, storage, and disposal
TV	television
TVES	Terrestrial Visual Encounter Surveys

TVMP	Transmission Vegetation Management Program
UBAR	Umatilla Basin Aquifer Restoration
UBWC	Umatilla Basin Water Commission
UCDC	Umatilla County Development Code
UCZPSO	Union County Zoning, Partition and Subdivision Ordinance
UDP	Unanticipated Discovery Plan
U.S.	United States
USACE	U.S. Army Corps of Engineers
U.S.C.	United States Code
USDA	U.S. Department of Agriculture
USFS	U.S. Department of Agriculture, Forest Service
USGS	U.S. Geological Survey
UWIN	Utah Wildlife in Need
V/C	volume to capacity
V	volt
VAHP	Visual Assessment of Historic Properties
VMS	Visual Management System
VQO	Visual Quality Objective
VRM	Visual Resource Management
WAGS	Washington ground squirrel
WCU	Wilderness Characteristic Unit
WECC	Western Electricity Coordinating Council
WHO	World Health Organization
WMA	Wildlife Management Area
WOS	waters of the state
WOUS	waters of the United States
WPCF	Water Pollution Control Facility
WR	winter range
WRCC	Western Regional Climate Center
WRD	(Oregon) Water Resources Division
WRP	Wetland Reserve Program
WWE	West-wide Energy
XLPE	cross-linked polyethylene

Exhibit BB
Other Information

1.0 INTRODUCTION

Exhibit BB provides information regarding greenhouse gas (GHG) emissions, compliance with the Oregon Forest Practices Act (FPA), issues raised by the Confederated Tribes of the Umatilla Indian Reservation (CTUIR), and undergrounding the transmission line as part of the construction and operation of the Project. This information is provided pursuant to the submittal requirements of Oregon Administrative Rule (OAR) 345-021-0010(1)(bb):

> *Any other information that the Department requests in the project order or in a notification regarding expedited review.*

Specifically, the Project Order requests the following:

> *To the extent that the following issues were not addressed in other exhibits, include information in Exhibit BB related to:*
>
> *(1) The evidence and analysis discussed in Section II(f) of this project order related to the use of equipment that emits sulfur hexafluoride or other greenhouse gases that might trigger the application of the "Tailoring Rule" to one or more components of the proposed facility.*
>
> *(2) The proposed project will require the removal of trees in forested areas, and such removal could be classified as a commercial operation. As discussed in Section I, provide evidence and analysis in Exhibit BB for a determination of whether the construction of the proposed facility is a commercial operation and subject to the requirements of the Oregon Forest Practices Act. If the Act applies, the applicant should consult with ODF to ensure that the application for site certificate contains adequate evidence for the Council to find that construction of the project will meet the requirements of the Oregon Forest Practices Act. Evidence could be provided in the form of written plans developed in consultation with ODF.*
>
> *(3) As stated in Section III of this Order, if a concern expressed by the CTUIR is under Council jurisdiction and not elsewhere addressed in the application for site certificate, the applicant may address the issue in Exhibit BB.*

The Project Order did not specifically request information on the possibility of undergrounding sections of the Project. However, comments were received from the public regarding the option to place the Project's 500-kV transmission line underground. Therefore, information on options and constraints for undergrounding 500-kV transmission lines has been included in Section 5 of this exhibit.

2.0 GREENHOUSE GAS EMISSIONS

Section II(f) of the Project Order includes the following discussion:

> *On May 13, 2010 the US Environmental Protection Agency (EPA) issued the greenhouse gas (GHG) "Tailoring Rule." The rule is being phased in steps. As of July 1, 2011, the Tailoring Rule applies to facilities that are otherwise minor for criteria pollutants, but which would have GHG emissions above certain thresholds, and Title V permits or PSD permits could be required.*

The NOI states that the project will emit no pollutants during operation and does not require permits from the ODEQ, the need for which are based on emissions of criteria pollutants. However, the Department understands that sulfur hexafluoride may be used at substations as a gaseous dielectric for high-voltage power applications. The Tailoring Rule could require facilities to obtain an air quality permit based solely on GHG emissions. Since sulfur hexafluoride has a high global warming potential (23,900 carbon dioxide equivalents), permitting thresholds may be exceeded. If the applicant believes that emissions of greenhouse gases from facility components will not exceed permitting thresholds, include that discussion in Exhibit E.

EPA has delegated authority to ODEQ to administer the air quality Title V permit program. In accordance with OAR 345-021-0000(7), if a PSD permit is required by ODEQ for emissions from the proposed facility, the applicant must submit to the Department one copy of the air permit application, or provide a schedule of the date by which the applicant intends to submit the application. Note that the Department will not be able to deem the application for site certificate complete before receiving a copy of the air permit application and a response letter from the ODEQ, if such an application is required.

The applicant may incorporate this information into Exhibit Y of the site certificate application. See further discussion in Section VI(y) of this project order. Although the Council does not have jurisdiction over the federally-delegated permits, the Council may rely on the determinations of compliance and the conditions in the federally-delegated permit in making its determination about whether other standards and requirements under the Council's jurisdiction are met.

The Project does not include a base load gas plant, a non-base load power plant, and is not a nongenerating energy facility that emits carbon dioxide as defined by Oregon Revised Statutes (ORS) 469.300. As a result, preparation of Exhibit Y is not a required portion this Application for Site Certificate (ASC). Therefore, to alleviate any confusion, the discussion on GHG emissions in response to the Project Order has been included in Exhibit BB instead of Exhibit Y.

2.1 Permitting Thresholds

In 2010, the Environmental Protection Agency (EPA) issued the Tailoring Rule, which set threshold levels of GHG emissions that trigger permitting obligations under the PSD and Title V programs of the CAA.[1] The Tailoring Rule defines "greenhouse gases" as "the aggregate group of six greenhouse gases," which includes sulfur hexafluoride ("SF6").[2] The Tailoring Rule was implemented in two phases with the second phase going into effect on July 1, 2011.

The Tailoring Rule establishes permitting thresholds for GHG emissions under the Title V and Prevention of Significant Deterioration (PSD) program. These thresholds have been adopted by the Oregon Department of Environmental Quality (ODEQ) into its rules and currently both the federal and the Oregon requirements apply to sources located within the state. The EPA and the ODEQ have defined thresholds for GHGs other than carbon dioxide in terms of their carbon dioxide equivalent or CO_2e (40 CFR § 52.21(b)(49)(i) and OAR 340-200-0020). "Carbon dioxide equivalent" refers to the number of tons of CO2 emissions with the same global warming potential as one ton of another GHG. For example, one ton of methane has the same global

[1] Prevention of Significant Deterioration and Title V Greenhouse Gas Tailoring Rule, Fed. Reg. 31,514 (June 3, 2010) (codified at 40 CFR parts 51, 52, 70, and 71).
[2] *See, e.g.*, 40 CFR § 51.166(b)(48)(i).

warming potential as 21 tons of CO_2; therefore, 1 ton of methane emissions by mass is equal to 21 tons CO_2e.

The GHG PSD threshold currently in effect under the Tailoring Rule for sources such as substations consists of a two-part test. First, the source must have the potential to emit 250 tons per year or more of GHGs on a mass basis (e.g., not CO_2e). Second, the source must have the potential to emit 100,000 tons per year GHGs CO_2e, and at an existing source the proposed change must result in an emissions increase of 75,000 tons per year or more CO_2e. If a source does not have the potential to emit 250 tons per year or more of GHG on a mass basis then it is not subject to PSD review under state or federal law (OAR 340-200-0020(55)). As this is the more restrictive of the two thresholds, it is used below to evaluate whether PSD is triggered for GHGs.

The GHG Title V threshold currently in effect under the Tailoring Rule for sources such as substations consists of a similar two-part test. First, the source must have the potential to emit 100 tons per year or more of GHGs on a mass basis (e.g., not CO_2e). Second, the source must have the potential to emit 100,000 tons per year GHGs CO_2e. If a source does not have the potential to emit 100 tons per year or more of GHG on a mass basis then it is not subject to Title V permitting under state or federal law (OAR 340-200-0020(72)(b)(C)). As this is the more restrictive of the two thresholds, it is used below to evaluate whether PSD is triggered for GHGs.

Oregon's Tailoring Rule implementation rules also impose requirements for certain sources of GHGs beyond what is required by federal law. Sources with the potential to emit 100,000 tons per year or more CO_2e of GHGs must obtain an Air Contaminant Discharge Permit (ACDP) even if PSD and Title V are not triggered (OAR 340-216-0020). PSD and Title V applicability is determined on a source specific basis. When the PSD rules were first adopted, the question arose whether individual emission sources along a longline operation such as a gas pipeline would all be considered one source. EPA confirmed that they would not, stating:

> *EPA has stated in the past and now confirms that it does not intend 'source' to encompass activities that would be miles apart along a longline operation. For instance, EPA would not treat all of the pumping stations along a multistate pipeline as one "source."* (45 Federal Register 52694-95)

This interpretation would equally apply to substations as it does to gas pipeline compressor stations. IPC plans to develop one substation expansion or substation in the Boardman, Oregon area. No substation would be subject to PSD or Title V permitting if it lacks the potential to emit 100 tons per year or more (mass basis) of GHGs. No substation would be subject to ACDP permitting unless it has the potential to emit 100,000 tons per year CO_2e of GHGs.

2.2 Potential Sources of Greenhouse Gases

There are two sources of GHGs to be installed in the Project:

- SF6-filled power circuit breakers, and
- Propane standby generators.

The following discussion addresses each potential source of GHGs in turn.

2.3 Potential Emission of Sulfur Hexafluoride (SF6)

SF6 is an inorganic, colorless, odorless, non-toxic and non-flammable gas, approximately six times heavier than air. It is nonconductive, and reacts with only a few other substances. SF6 is

used for many industrial purposes, but the most common use of SF6 is as a gaseous dielectric medium for high-voltage circuit breakers, switchgear and other electrical equipment, replacing oil-based dielectric media. Used under pressure, SF6 has a high dielectric strength to prevent electrical arcing, making it possible to significantly reduce the size of electrical equipment. SF6 is a GHG, with a global warming potential of approximately 23,900 carbon dioxide equivalents. The ACDP permitting threshold for 100,000 tons per year CO_2e is equivalent to 4.18 tons (8,368 pounds) per year of SF6.

2.3.1 SF6 Presence in Project Equipment

SF6 on the Project would be used only in circuit breakers located at the new or expanded substation. SF6 will not be used in transformers.

IPC expects to install either two or six circuit breakers in conjunction with the Project, depending on which substation in the Boardman area is ultimately selected for development. The SF6 power circuit breakers will be located in the Boardman area terminus of the Project (Proposed Grassland Substation Expansion, Alternate Horn Butte Substation, or Alternate Longhorn Substation Expansion). Assuming that IPC constructs one of the proposed or alternate substation expansions (Grassland or Longhorn), the Project would involve a single bay that would contain two SF6 power circuit breakers. If IPC ultimately constructs the Alternate Horn Butte Substation (rather than expanding an existing substation), it will be required to construct three line terminals using a total of six breakers.

IPC will purchase circuit breakers warranted to release or leak “less than 1% per year.” The breakers would hold approximately 1,600 pounds (lb) each of SF6. No other GHG-emitting equipment would be used in the terminus of the Project. Thus, the Project’s northern terminus will include either 3,200 pounds of SF6 in two circuit breakers or 9,600 pounds of SF6 in six circuit breakers.

2.3.2 Potential SF6 Leakage Amount

Substation circuit breakers are not designed to be an emission unit intended to release SF6 emissions, however, each 1,600 pound circuit breaker may release up to 16 pounds of SF6 per year under normal operating conditions. Thus, assuming the worst-case leakage per year (1%/yr) and two breakers per line terminal, the SF6 loss would be ([1600 X .01] X 2) or 32 lb SF6/year per line terminal. If IPC is required to construct a substation (rather than expanding an existing substation), it will construct three line terminals for a total of six breakers and a maximum of 96 pounds of SF6 emissions per year.

2.3.3 Conversion to CO_2 Equivalent

The maximum annual leakage amounts described in the previous section were converted to CO_2e for comparison to CO_2e-based thresholds. The potential emission of 96 lb/yr of SF6 is equivalent to 2,294,400 lb/yr of CO2, or 1,147 tons CO_2e/yr.

2.4 Propane Standby Generators

The standby propane generators will be installed at each of the eight communications sites. These will each be a 47-kilowatt standby generator (maximum). Each generator will be run once per month for a 1-hour test. In the event of a power outage from the local utility, the standby generator would provide power to the facility. Such outages typically happen much less than once per year and rarely exceed more than a few hours in duration. Emissions data for GHG for these generators are based upon EPA’s emission factors for CH4, CO2 and N2O found in 40 CFR §98. While actual usage is significantly less, it is commonly accepted that the potential to

emit (PTE) emission rate for standby generators to be based upon 500 hours per year. Using this assumed rate of emission, the total potential GHG emission from this source would be as follows:

PTE CO_2e (tpy) = [8 generators] x [500 hrs/(yr-generator)] x [6.0 gal propane/hr] x [0.091 mmBtu/gal propane] x [61.71 kg CO_2e/mmBtu] x [1 ton/907.18kg] = 148.56 tons CO_2e/yr

2.5 Conclusion Regarding Potential GHG Emission

The sum of total GHG potential emissions from these two Project sources (circuit breakers and standby generators) is approximately 1,295.6 tons per year of CO_2e. The mass emission rate is 0.1 percent of the total potential to emit necessary for the Project to be subject to PSD or Title V permitting. The CO_2e PTE rate is equivalent to approximately 0.1 percent of the 100,000-ton CO_2e ACDP permitting threshold. The SF6 PTE rate from Project breakers is consequently far below the threshold for which air quality permitting would be required. Based on this information, GHG emissions from the Project will not require a Title V, PSD, or Air Contaminant Discharge permit.

Assuming the Project emits no other gases that comprise GHG, the Project would need to emit over 4 tpy of SF6 before threshold levels of GHG emissions for PSD or Title V are met. Even if IPC is required to construct three line terminals, the maximum level of SF6 emissions is 96 lb/yr, well below the 4 tpy necessary to trigger CAA obligations. Furthermore, the Project would not be subject to ACDP permitting because it will not emit 100,000 tpy CO_2e of GHGs.

3.0 OREGON FOREST PRACTICES ACT

The Project Order requires IPC to "provide evidence and analysis in Exhibit BB for a determination of whether the construction of the proposed facility is a commercial operation and subject to the requirements of the Oregon Forest Practices Act." The FPA is found at ORS 527.610 to 527.770, 527.990 (1) and 527.992, and the administrative rules in OAR Chapter 629.

Construction of the Project will require vegetation removal, including the removal of trees within portions of the Site Boundary. This requirement is based on assuring system reliability, and is described in detail in the mandatory system reliability standards developed by the North American Electric Reliability Corporation (NERC), especially standard FAC-003-1 "Transmission Vegetation Management Program"(NERC 2006).

As described in this section, removal of trees from the Site Boundary falls within the scope of the FPA and consequently must meet certain FPA notification and plan requirements. IPC seeks the Energy Facility Siting Council's (EFSC) determination of compliance with the FPA in accordance with ORS 469.401(3). See Exhibit E, Section 3.2. Specifically, IPC requests that EFSC conclude that the Project will comply with the applicable FPA statutory and administrative rule provisions identified in the Project Order, in consultation with the Oregon Department of Forestry as a reviewing agency.

3.1 Applicability of the Forest Practices Act

The Oregon Department of Forestry (ODF) has provided guidance (ODF 2011) to determine the applicability of the FPA, using the following checklist.

"(1) Is the activity one of those exempted from being an operation under FPA jurisdiction?"

ORS 527.620(12) exempts the following seven activities from FPA jurisdiction:

a) the planting, management or harvesting of Christmas trees;

b) the planting, management and harvest of trees managed intensively for the production of wood fiber;

c) the establishment, management or harvest of agricultural crop trees (i.e. fruits, nuts, and nursery stock);

d) the establishment, management or harvest of street, park, or ornamental trees;

e) the harvesting of juniper trees in units of less than 120 acres;

f) the establishment or management of trees used to mitigate the effects of agricultural practices, such as windbreaks or riparian filter strips; and

g) the development of an approved land use change after timber harvest activities have been completed and land use conversion activities have commenced."

The final exemption in subsection (g) is for approved land use changes. ODF provides additional guidance regarding this exemption:

"This provision establishes a point in approved land use change operations when FPA resource protection jurisdiction ends, except for completion and maintenance of the land use change. The phrase "after timber harvest activities have been completed" should usually be interpreted as the completion of yarding. The commencement of 'land use conversion activities' occurs with the beginning of any activity that is not a forest practice. The definition reads 'and' so both conditions must be present before the site is no longer an operation subject to forest practice rules."

The clearing of trees from forested portions of Site Boundary does not appear to be an exempt activity under any of these provisions.

"(2) Is the activity on 'forestland'?"

"Forestland" is defined in ORS 527.620(7) as: "land that is used for the growing and harvesting of forest tree species, regardless of how the land is zoned or taxed or how any state or local statutes, ordinances, rules or regulations are applied." The Project will require removal of trees from State and private lands that are used for "the growing and harvesting of forest tree species" and which would therefore be considered forestland under the definition stated. Specifically, the Project would cross portions of the Wallowa-Whitman National Forest and private timber lands located primarily in the Blue Mountains. If the Alternate Longhorn Substation Expansion is ultimately selected for development, the Project would likely also impact private lands used for growing poplar trees.

"(3) Does the activity relate to the 'establishment, management, or harvesting' of forest tree species?"

"Forest tree species" is defined in ORS 527.620(6) as: "any tree species capable of producing logs, fiber or other wood materials suitable for the production of lumber, sheeting, pulp, firewood or other commercial forest products except trees grown to be Christmas trees as defined in ORS 571.505 on land used solely for the production of Christmas trees." Clearing the right-of-way will relate to the "establishment, management, or harvesting of forest tree species." The State and private timber lands which would be crossed by the Project are managed for the production of "lumber, sheeting, pulp... and other commercial forest products." During the establishment of the transmission line, these trees would necessarily be harvested.

"(4) Is the activity 'commercial'?

OAR 629-600-0100(11) defines "commercial" as:

> "... *of or pertaining to the exchange or buying and selling of commodities or services. This includes any activity undertaken with the intent of generating income or profit; any activity in which a landowner, operator or timber owner receives payment from a purchaser of forest products; any activity in which an operator or timber owner receives payment or barter from a landowner for services that require notification under OAR 629-605-0140; or any activity in which the landowner, operator, or timber owner barters or exchanges forest products for goods or services. This does not include firewood cutting or timber milling for personal use.*"

IPC or the landowner will contract with a timber operator to undertake timber removal. Because payment will be received for services that would require notification under OAR 629-05-0140, clearing of the Project right-of-way would be considered commercial activity.

The Project would involve conversion of forestland to a non-forest use. However this does not impact the determination as to whether the Project would constitute a commercial operation. ODF notes in its guidance document that "[i]t is a commercial operation to cut and clear trees, whether they are sold or not, from existing forestland in order to clear the land for conversion to a non-forest use [OAR 629-605-0140(e)]."

"(5) Is the activity an 'operation'?"

ORS 527.620(12) defines "operation" as: "any commercial activity relating to the establishment, management or harvest of forest tree species except as provided by the following: [exemptions (a) through (g), as discussed above]." As described above, the proposed activities involve the harvesting of forest tree species for a commercial benefit. Accordingly, the proposed activities would fall within the statutory definition of an "operation."

3.2 Requirements of the Forest Practices Act

The Project Order states that:

> *"If the Act applies, the applicant should consult with ODF to ensure that the application for site certificate contains adequate evidence for the Council to find that construction of the project will meet the requirements of the Oregon Forest Practices Act. Evidence could be provided in the form of written plans developed in consultation with ODF."*

This Section discusses the requirements of the FPA and IPC's plans to meet those requirements.

3.2.1 Notice to the State Forester

OAR 629-605-0140, under the provisions of ORS 527.670, requires notification to the State Forester for the following types of operations which may be conducted during timber clearing for the Project:

> *(a) Harvesting of forest tree species including, but not limited to, felling, bucking, yarding, decking, loading or hauling.*
>
> *(b) Construction, reconstruction and improvement of roads, including reconstruction or*
>
> *replacement of crossing structures of any streams.*
>
> * * * * *

(e) Clearing forestland for conversion to any non-forest use.

(f) Disposal or treatment of slash.

Project construction will require clearing portions of the Site Boundary through some State and private forest lands. Because clearing activities will involve timber harvest, construction of roads and disposal of slash; notification of the State Forester will be required under OAR 629-605-0140.

IPC, through its timber operator, will provide notification to the State Forester no less than 15 days prior to beginning operations, as required by the FPA (OAR 629-605-0150). On state and private land, IPC plans to contract with a qualified timber operator to perform timber removal as needed for the Project. IPC will either issue the required notice to ODF itself or will ensure that the timber operator selected to perform the timber removal provides the notice. On federal land, the U.S. Department of Agriculture, Forest Service has indicated that it will manage timber removal and notification to ODF.

3.2.2 Conversion to a Non-Forest Use

The FPA normally requires reforestation after harvest or other operations have been completed, and this would be incompatible with establishment of a power transmission line which requires permanent exclusion of trees from the area under the conductors. However, the FPA permits the conversion of forestland to a non-forest use under ORS 527.760, and such a conversion would provide an exemptionfrom reforestation requirements. Conversion to a non-forest use requires submittal of a Notice of Operation as required for other timber operations, and submittal of a Plan for an Alternate Practice (ODF 2009). The Plan for an Alternate Practice must include the following information:

- A description of the proposed land use change and why the proposed use requires removal of forest tree cover on all or part of the operation area.
- Requirements of the FPA the applicant feels need to be waived, exempted, or modified.
- A map showing the specific portion of the operation area necessary for the proposed land use change.
- Written approvals from any state, county or city agency with resource protection jurisdiction over the proposed non-forest use.

ODF guidance notes the following approvals that may be required as part of “written approvals from state, county or city agencies”:

- Exemption from Oregon’s reforestation rules must include written approvals from the city or county planning department and the county assessor’s office stating that the proposed land use change is authorized under local land use and zoning laws, and that within 12 months all construction permits and approvals required under all local, state and federal land use requirements will be obtained. IPC will obtain land use approval for the Project under ORS 469.504(1)(b) and OAR 345-022-0030, including a Goal 4 (Forest Land) exception to remove land from the protection of Goal 4, in consultation with the local jurisdictions designated as special advisory groups. Necessary proof to show compliance with the ODF land use compliance determination will be provided by the EFSC site certificate.
- Written approval from the Oregon Department of State Lands (ODSL) may be required when seeking to fill, excavate or alter a wetland during conversion activities or when forest activities are proposed on a navigable waterway. IPC is seeking a removal/fill

permit through the EFSC process, in coordination with DSL as a reviewing agency, and will address this requirement through the EFSC site certificate.

- Consultation with the Oregon Department of Fish and Wildlife (ODFW), when conversion is proposed for forestland which contains a "Specified Resource Site" defined in Oregon Administrative Rules 629-665-0000, is advised. Necessary consultation will occur through the EFSC process with ODFW as a reviewing agency.
- Written approval from the Oregon Parks and Recreation Department (OPRD) is required for any harvest or conversion activity within a quarter-mile of a state scenic waterway. Necessary consultation with OPRD will take place through the EFSC process as OPRD is a reviewing agency.

3.2.3 Standards for Forest Operations

OAR Chapter 629 sets forth the FPA rules (ODF 2010). These rules provide standards for the planning and design of forest operations, including reforestation, treatment of slash, use of chemicals and other petroleum products, road construction and maintenance, harvesting, water protection, and other topics. Responses to these requirements are incorporated in the draft Alternate Practice Plan included as Attachment BB-1. Prior to construction, IPC and its timber operator will submit a final plan for ODF approval in accordance with OAR 629-605-0140 and ODF guidance.

3.3 Evidence of Consultation with ODF

Attachment BB-2 includes records of IPC's consultation with ODF regarding the Project's compliance with requirements of the FPA.

4.0 CONFEDERATED TRIBES OF THE UMATILLA INDIAN RESERVATION CONCERNS

Section III of the Project Order includes the following discussion:

> *The CTUIR provided detailed written comments to the NOI regarding impacts to First Food resources, habitat fragmentation, introduction of weed species, effects to historic properties, insufficient noise and visual analysis in the application, cumulative impacts, cultural resource impacts, and Umatilla Indian Reservation impacts. If a concern expressed by the CTUIR is under Council jurisdiction and not elsewhere addressed in the application for site certificate, the applicant may address the issue in Exhibit BB.*

The Project will not directly impact the Umatilla Indian Reservation. No portion of the Project is located on CTUIR reservation lands. However, the mapped Site Boundary area of a single existing road that will be used for Project construction extends on to CTUIR reservation lands. No ground disturbance to CTUIR reservation lands will occur from the use of this existing road for Project construction. Exhibit C describes the location of the Project and its relating and supporting facilities. Attachment C-2 of Exhibit C provides detailed maps that show the location of the Project in relation to the Umatilla Indian Reservation.

The majority of the concerns expressed by the CTUIR are addressed in other exhibits within this application, as follows:

- Habitat fragmentation is addressed in Exhibit P in Section 3.3.6.
- The introduction of weed species is addressed in Exhibit P. Weed monitoring and treatment are addressed in Exhibit P, Attachment P-4, draft Reclamation and Revegetation Plan, and Attachment P-5, draft Vegetation Management Plan.

- Effects to historic properties are addressed in Exhibit S, Section 3.3.4.
- Noise is addressed in Exhibit X.
- Visual analysis is addressed in Exhibit R.
- Cultural resource impacts are addressed in Exhibit S.

The following issues raised by CTUIR are not addressed in IPC's preliminary Application for Site Certificate (pASC) because the resource or issue raised is not relevant to an EFSC siting standard:

- Cumulative impacts are not addressed in IPC's pASC because consideration of cumulative impacts of the Project is not required by the EFSC process. However, potential cumulative impacts caused by the Project will be fully analyzed in the Environmental Impact Statement prepared by the Bureau of Land Management.
- CTUIR First Foods are foods of cultural significance to the Umatilla Tribes and include but are not limited to salmon, wild game, roots, berries, and clear, pure water. Project impacts to First Food resources are not addressed in the pASC, except to the extent that such resources are addressed as resources protected by a particular EFSC standard (*e.g.* impacts to anadromous fish species, including salmonids, are analyzed in Exhibits P and Q). Project impacts on the First Foods are, however, fully addressed under the Section 106 of the National Historic Preservation Act compliance process that will be memorialized in a Programmatic Agreement for the Project.

5.0 OPTIONS FOR UNDERGROUNDING THE TRANSMISSION LINE

Several scoping comments were received requesting consideration for installing the transmission lines underground. In theory, burying transmission lines would eliminate many of the visual impacts of these lines and would reduce the susceptibility of the system to weather and fire hazards. However, because of the high cost of an underground line compared to overhead 500-kV lines, unproven technology over long distances for 500-kV, reliability and reactive compensation issues for long installations, and increased land disturbance, the alternative of placing the 500-kV line underground was not considered feasible for the Project.

5.1 Factors Making Undergrounding Impractical for the Project

While underground systems are relatively immune to weather conditions in comparison to overhead lines, they are vulnerable to washouts, seismic activity, and inadvertent excavation, all resulting in extensive and time-consuming repairs. From a visual perspective, reactive compensation stations, similar to a substation in appearance, would be required every 7 to 20 miles depending on the voltage level, terrain, and cable technology for 500-kV underground lines. Combined with the typical open-cut trench excavation required for the entire length of the transmission line route, the visual impacts would be noticeable, although substantially less than an overhead line.

IPC reports that while recent research is developing new techniques for manufacturing, design, construction, and maintenance of underground transmission lines, there are several important issues that make the technology for extra high voltage transmission lines impractical for long length installations as described below:

- Cost—One major reason that utilities do not normally install extra high voltage transmission lines underground is that the construction costs are increased by 12 to 17 times over an overhead counterpart (National Grid 2009). These additional costs must

be approved by the public utilities commission and are passed on to all the ratepayers, not just those near the area of underground installation.

- Reliability—While underground systems comparatively have fewer forced outages than overhead lines, damage to the cable or components often results in longer outage durations. When a failure does occur, overhead lines can be quickly visually inspected and repaired. In contrast, underground line cable failures cannot be visually diagnosed. The cable system must be tested with specialized equipment to locate the damaged sections of the cable. Excavation of the line could be required to repair or replace the faulty component or cable, resulting in longer outages than overhead transmission lines.
- Reactive Power Compensation—The capacitive characteristics of the underground cable insulating material and the close proximity of the cables to one another results in the cable system introducing high capacitive reactive loads onto the electrical system. These capacitive reactive loads would have to be offset with inductive compensation at above ground compensation stations located every 7 to 20 miles along the transmission line route.
- Environmental—While access road requirements are similar for both underground and overhead lines, underground transmission lines require a continuous excavation through all habitat types. This is in contrast to overhead lines, which result in a disturbance only at the structure locations. Repair of underground lines can result in extensive ground disturbance as areas are retrenched for access. Furthermore, the potential for fluid (dielectric oil) leaks and pipe corrosion creates additional environmental concerns.

5.2 Conclusion Regarding Undergrounding of the Project

Underground cable system installation has historically been justifiable in terms of cost and reliability only in urban or metropolitan areas, and for limited distances. Because of the high cost of an underground line compared to overhead 500-kV lines, unproven technology over long distances for 500-kV, reliability and reactive compensation issues for long installations, and increased land disturbance, the alternative of placing the 500-kV line underground was not considered feasible for the Project. For additional information that IPC considered when evaluationg the possibility of undergrounding the transmission line, see Attachment BB-3, Overview of Underground Technologies.

6.0 SUBMITTAL AND APPROVAL COMPLIANCE MATRICES

Table BB-1 provides cross references between the submittal requirements of OAR 345-021-0010(1) and and the requirements of the Project Order and where discussion can be found in the Exhibit.

Table BB-1. Submittal Requirements Matrix

Requirement	Location
OAR 345-021-0010(1)(bb)	
(bb) **Exhibit BB.** Any other information that the Department requests in the project order or in a notification regarding expedited review	Section 2.0, Section 3.0, Section 4.0
Project Order Section VI (bb) Comments	
The evidence and analysis discussed in Section II(f) of this project order related to the use of equipment that emits sulfur hexafluoride or other greenhouse gases that might trigger the application of the “Tailoring Rule” to one or more components of the proposed facility.	Section 2.0

Table BB-1. Submittal Requirements Matrix (continued)

Requirement	Location
The proposed project will require the removal of trees in forested areas, and such removal could be classified as a commercial operation. As discussed in Section I, provide evidence and analysis in Exhibit BB for a determination of whether the construction of the proposed facility is a commercial operation and subject to the requirements of the Oregon Forest Practices Act. If the Act applies, the applicant should consult with ODF to ensure that the application for site certificate contains adequate evidence for the Council to find that construction of the project will meet the requirements of the Oregon Forest Practices Act. Evidence could be provided in the form of written plans developed in consultation with ODF.	Section 3.0
As stated in Section III of this Order, if a concern expressed by the CTUIR is under Council jurisdiction and not elsewhere addressed in the application for site certificate, the applicant may address the issue in Exhibit BB.	Section 4.0

7.0 RESPONSE TO COMMENTS FROM REVIEWING AGENCIES AND THE PUBLIC

Where specifically directed to do so by ODOE, IPC has addressed comments received from reviewing agencies and the public. As explained in Section 1.0, ODOE's Project Order requested discussion of certain issues in Exhibit BB. The following Table BB-2 provides a cross reference to where relevant discussion can be found in the Exhibit BB.

Table BB-2. Reviewing Agency and Public Comments

Requirement	Location
Project Order Section VIII (bb) Comments	
The Project Order did not specifically request information on the possibility of undergrounding sections of the Project. However, comments were received from the public regarding the option to place the Project's 500-kV transmission line underground. Therefore, information on options and constraints for undergrounding 500 kV transmission lines has been included in Section 5 of this exhibit.	Section 5.0

8.0 REFERENCES

National Grid. 2009. Undergrounding High Voltage Electricity Transmission: The Technical Issues. August. Available online at: http://www.nationalgrid.com/uk/LandandDevelopment/SC/Undergrounding/

NERC (North American Electric Reliability Corporation). 2006. FAC-003-1 "Transmission Vegetation Management." Adopted February 7, 2006. Available online at: http://www.nerc.com/page.php?cid=2|20. Accessed April 2012.

ODF (Oregon Department of Forestry). 2009. Converting Oregon Forestland to Other Uses. September, 2009. Available online at: http://www.oregon.gov/ODF/PUBS/docs/Forest_Facts/ConversionFS.pdf (Accessed April 2012).

ODF. 2010. Forest Practices Act Rulebook. January. Available online at: http://www.oregon.gov/ODF/privateforests/docs/guidance/FPArulebk.pdf (Accessed April 2012).

ATTACHMENT BB-1
DRAFT PLAN FOR ALTERNATE PRACTICE

DRAFT

PLAN FOR ALTERNATE PRACTICE

Boardman to Hemingway Transmission Line Project

1221 West Idaho Street
Boise, Idaho 83702

February 2013

TABLE OF CONTENTS

LIST OF TABLES

1.0 INTRODUCTION

Idaho Power Company (IPC) is proposing to construct, operate, and maintain an approximately 306-mile-long electric transmission line between Boardman, Oregon, and the Hemingway Substation located in southwestern Idaho as an extension of IPC's electric transmission system. This length comprises approximately 282 miles in Oregon and 24 miles in Idaho. The Boardman to Hemingway Transmission Line Project (Project) is primarily a single-circuit 500-kilovolt (kV) electric transmission line, with 301 miles of single-circuit 500-kV electric transmission line, a 5-mile rebuild of existing 138-kV and 69-kV transmission lines onto double-circuit structures, and relocation of 0.3 mile of a 138-kV transmission line.

The construction of the Project will require removal of trees from federal and private lands that are used for "the growing and harvesting of forest tree species" and which would therefore be considered forestland as defined in Oregon Revised Statutes (ORS) 527.620(7). Tree removal is necessary to allow for the construction the transmission line; moreover, permanent exclusion of trees and other vegetation is required in order to assure system reliability for the operational life of the project. For that reason, the area harvested cannot be reforested after construction. Therefore, IPC is submitting to the Oregon Department of Forestry (ODF) this request for a conversion to a non-forest use, and submittal of a Plan for an Alternate Practice under Oregon Administrative Rule (OAR) 629-610-0090 that allows for an exemption from reforestation rules when a land use change occurs that is not compatible with the maintenance of a forested tree cover. A comprehensive Plan for an Alternate Practice will be provided once final Project design is completed.

2.0 PLANNED OPERATION

The Project will require the harvest of trees to clear the right-of-way (ROW) for the transmission line. This will require the removal of most trees within the ROW corridor for about 28 miles on private forest lands and 4.5 miles on U.S. Department of Agriculture, Forest Service (USFS) and Bureau of Land Management (BLM) lands. This is a land use change, as envisioned under OAR 629-605-0100(d). The transmission line will be owned by IPC. The ROW corridor will be under an easement/lease/permit to IPC and will be maintained in an altered vegetative condition by IPC over the life of the Project.

The harvest operation will be a linear clearcut on the power line ROW. Harvest will also occur along Project roads. Most of the harvesting will be done with skyline cable systems, high-lead cable systems for slopes greater than 30 percent, and with ground-based systems used on slopes less than 30 percent.

3.0 DESCRIPTION OF THE AREA

Specifically, the Project would cross portions of the Wallowa-Whitman National Forest, BLM-managed public lands and private timber lands located primarily in the Blue Mountains between McKay Creek, which is located to the east of Pilot Rock in Umatilla County and the town of North Powder in Union County, Oregon. Additionally, if the Alternate Longhorn Substation Expansion is ultimately selected for development, the Project would likely also impact private lands used for growing poplar trees.

IPC estimates that approximately 1,063 acres of forested lands would be cleared or harvested in Umatilla and Union counties (Tables 3-1 and 3-2). The operational area of interest for the acreage estimate is a 125-foot buffer on each side of the transmission line centerline (250-foot-wide corridor), the construction footprint of all Project features outside of the centerline corridor,

and a 15-foot buffer each side (30-foot width) of proposed new roads. If the Alternate Longhorn Substation Expansion is selected, development of the Longhorn Alternate Corridor Segment would require harvest of an estimated 20 acres of hybrid poplar trees in Morrow County.

Table 3-1. Umatilla County Estimated Forest Clearing/Harvest

Habitat Type/Ownership/Stand DBH	Acres
Forested Wetland	8.6
Private	8.6
>21”	7.5
9” – 20.9”	1.1
Forested Other	3.5
Private	3.5
Clearcut/seedlings	3.5
Mixed Grand Fir/Douglas-Fir	211.8
Private	211.8
>21”	0.2
9” – 20.9”	92.5
1” – 8.9”	108.9
Clearcut/seedlings	10.2
Ponderosa Pine	111.2
Private	111.2
9” – 20.9”	102.0
1” – 8.9”	9.2
Grand Total Umatilla County	335

Table 3-2. Union County Estimated Forest Clearing/Harvest

Habitat Type/Ownership/Stand DBH	Acres
Forested Wetland	8.7
Private	7.8
>21”	3.4
9” – 20.9”	4.4
USFS	0.8
>21”	0.8
Mixed Grand Fir/Douglas-Fir	457.0
BLM	5.5
9” – 20.9”	0.1
1” – 8.9”	5.5
Private	394.1
>21”	17.7
9” – 20.9”	222.7
1” – 8.9”	144.9
Clearcut/seedlings	8.7
USFS	57.4
9” – 20.9”	57.2
1” – 8.9”	0.3
Ponderosa Pine	262.4
BLM	0.1
9” – 20.9”	0.1
Private	161.5
9” – 20.9”	84.7
1” – 8.9”	76.8
USFS	100.8
9” – 20.9”	97.8
1” – 8.9”	2.9
Grand Total Union County	728

BLM – Bureau of Land Management; USFS – U.S. Department of Agriculture, Forest Service

The riparian management area (RMA) vegetation over this large area varies greatly, ranging from shrub dominated communities to conifer dominated stands at higher elevations. Common shrub species found throughout RMAs include grey alder (*Alnus incana*), redoiser dogwood (*Cornus* sericea), chokecherry (*Prunus virginiana*), and snowberry (*Symphoricarpos albus*), and hawthorn (*Crataegus douglasii*). Conifers commonly found in riparian communities throughout the area include grand fir (*Abies grandis*), Engelmann spruce (*Picea engelmannii*), and Douglas-fir (*Pseudotsuga menziesii*). Quaking aspen (*Populus tremuloides*) is also found in RMAs within the power line corridor

Stream side and upland slopes range from nearly flat to over 45 percent.

4.0 REFORESTATION

The entire transmission line corridor is incompatible with maintenance of forest tree cover. The transmission line operations and safety dictate that no trees can be allowed to grow where they might contact the transmission line either as standing live trees or by uprooted trees. The entire corridor through forested areas is proposed for the change in land use, and would not be reforested. In addition, periodic activities that would remove any regeneration will be conducted to keep the corridor free of any trees which might grow tall enough to become an operational and safety issue.

This intended land use change is under consideration by local, state, and federal agencies. All permits and approvals are currently being sought and will be in place prior to the harvest operations. The appropriate county assessors and local planning departments will be notified in writing of the proposed change in land use. Transmission line construction will commence within 12 months of the completion of the harvest operations, and will be complete within 36 months of commencing. The transmission line corridor will be maintained in a non-forested condition to provide for safe operation of the Project.

5.0 STREAMSIDE VEGETATION HARVEST

5.1 Protected Resources

There are a large number of streams that transect the Project corridor. All stream types are present: F, D, and N.

Type F: Has fish, may also be used for domestic water
Type D: Used for domestic water, does not have fish
Type N: All other streams

5.2 List of Streams Affected

A list of streams including name, size, location, stream type, and RMA width will be provided prior to initiation of harvest activities.

The National Electrical Safety Code (NESC) requires a minimum clearance from various objects. The minimum clearance distances for vegetation management are identified in the Vegetation Management Plan (Exhibit P, Attachment P-5). As a result, most stream crossings will require that all trees and snags be felled to avoid undesirable arcing of electricity from the power line.

No road construction will occur as part of the harvest operations within the RMAs. Road construction may occur in the RMA as part of the power line activities. The length of each stream that is within the wire zone corridor will be harvested and a portion of the area from the edge of the wire zone to the right of way will be managed in accordance with the Vegetation Management Plan (Exhibit P, Attachment P-5).

5.3 Planned Resource Protection Measures

- Tree falling will be directional away from streams, unless requested otherwise by resource agencies.
- Any slash that enters a stream will be removed by hand, or yarded if too large to handle by hand.

- Operations near streams will be limited during periods of heavy rain to reduce potential impacts to the stream.
- Ground based systems will skid logs away from stream courses.
- Project roads will be used for harvest access wherever possible.
- No skid roads will be located in the RMAs.
- Cable systems will yard across streams where needed to reduce the number of cable settings.
- Full suspension in stream corridors will be required as possible on medium to large type N streams, and on all type F and D streams.
- One cable corridor will go through each RMA approximately in the middle of the right-of-way corridor. In some cases, two corridors will be needed and be located to efficiently harvest the corridor.
- One end suspension will be required on small type N streams; full suspension will be achieved where feasible.
- Where it is possible to leave live conifers, the edge of the 20 foot strip above average high water level will be flagged, as will the outer edge of the RMA.
- Understory vegetation within the RMA will be retained to provide shade and soil erosion protection.
- Any down logs that are currently in the RMA will remain in place.
- Slash piles in the RMA will be located at least 40 feet from the stream side and will be burned.

6.0 HARVEST UNIT SIZE

The Project ROW will be a continuous linear feature on the landscape, crossing numerous ownership boundaries. No one ownership is contiguous enough to exceed the 120-acre maximum harvest size. However, the entire length of the corridor on private land will exceed the 120-acre maximum.

ATTACHMENT BB-2
RECORDS OF CONSULTATION WITH OREGON DEPARTMENT OF FORESTRY

IDAHO POWER®
An IDACORP Company

16 January 2013

Rick Wagner
Oregon Department of Forestry
611 20th Street
La Grande, OR 97850

RE: Estimate of Forest Clearing or Harvesting for the Boardman to Hemingway Transmission Line Project

Dear Mr. Wagner:

Idaho Power Company (IPC) is proposing to construct, operate, and maintain an approximately 306-mile-long electric transmission line between Boardman, Oregon and the Hemingway Substation located in southwestern Idaho as an extension of IPC's electric transmission system. This length comprises approximately 282 miles in Oregon and 24 miles in Idaho. The Boardman to Hemingway Transmission Line Project (Project) is primarily a single-circuit 500-kilovolt (kV) electric transmission line, with 301 miles of single-circuit 500-kV electric transmission line, a 5-mile rebuild of existing 138-kV and 69-kV transmission lines onto double-circuit structures, and relocation of 0.3 mile of a 138-kV transmission line.

The purpose of the Project is to provide additional capacity connecting the Pacific Northwest and the Intermountain regions of southwestern Idaho to alleviate existing transmission constraints and ensure sufficient capacity to meet present and forecasted load requirements. Federal and state laws require IPC to plan for and meet load and transmission requirements. The Project has been selected by IPC as a critical component in an overall resource portfolio that best balances cost, risk, and environmental concerns. Based on IPC's assessment of siting, permitting, regulatory approvals, and needs of the parties electing to construct the line, a project in-service date prior to 2018 is unlikely. Construction would start in fall 2015 at the earliest.

Overview of Permitting Approach and Compliance with Forest Practices Act

The construction of the Project will require removal of trees from federal and private lands that are used for "the growing and harvesting of forest tree species" and which would therefore be considered forestland as defined in ORS 527.620(7). Specifically, the Project would cross portions of the Wallowa-Whitman National Forest and private timber lands located primarily in the Blue Mountains between McKay Creek that is located east of Pilot Rock in Umatilla County and the town of North Powder in Union County, Oregon. Additionally, if the Alternate Longhorn Substation Expansion is ultimately selected for development, the Project would likely also impact private lands used for growing poplar trees. IPC has concluded that the tree removal required for construction of the Project will be subject to the requirements of the Oregon Forest Practices Act.

IPC is currently seeking permits for the Project via Oregon's Department of Energy (ODOE), Energy Facilities Siting Council (EFSC). Accordingly, in its Preliminary Application for a Site Certificate, IPC intends to request that EFSC conclude that the Project will comply with the applicable FPA statutory and administrative rule provisions, in consultation with Oregon

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P.O. Box 70
Boise, ID 83707

Department of Forestry as a reviewing agency. As part of the EFSC permitting process, IPC intends to submit evidence to demonstrate that the Project will meet all applicable requirements of the Oregon Forest Practices Act for the portions of the project that require the clearing or harvesting of forest lands. In particular, IPC will demonstrate compliance as follows:

- **Submittal of Timber Harvest or ROW Clearing Plan.** To support its Application for Site Certificate, IPC intends to submit a timber harvest or right-of-way clearing plan describing how the Project will perform tree removal within the project right-of-way. IPC anticipates that ODF will provide ODOE with review and comment on that plan.

- **Conversion to a Nonforest Use.** As described above, removal is necessary in order to allow for the construction the Project; moreover, permanent exclusion of trees and other vegetation is required in order to assure system reliability for the operational life of the Project. For that reason, the area harvested cannot be reforested after construction. Therefore, IPC will be submitting to ODF a request for a Conversion to a non-forest use, and submittal of a Plan for an Alternate Practice under OAR 629-610-0090 which allows for the exemption from reforestation rules when a land use change occurs that is not compatible with the maintenance of a forested tree cover. This intended land use change is under consideration by local, state, and federal agencies. All permits and approvals are currently being sought and will be in place prior to the harvest operations. The appropriate county assessors and local planning departments will be notified in writing of the proposed change in land use. Project construction will commence within 12 months of the completion of the harvest operations, and will be complete within 36 months of commencing. The Project right-of-way will be maintained in a non-forested condition to provide for safe operation of the power line.

- **Notification of State Forester.** Because clearing activities will involve timber harvest, construction of roads, and disposal of slash, IPC will commit to providing notification of the State Forester as outlined in OAR 629-605-0140 under the provisions of ORS 527.670. IPC, through its timber operator, will provide notification to the State Forester no less than 15 days prior to beginning operations, as required by the FPA (OAR 629-605-0150). On State and private land, IPC plans to contract with a qualified timber operator to perform timber removal as needed for the Project. IPC will either issue the required notice to ODF itself or will ensure that the timber operator selected to perform the timber removal provides the notice. On federal land, the US Forest Service has indicated that it will manage timber removal and notification to ODF.

Estimate of Forest Clearing or Harvesting for the Boardman to Hemingway Transmission Line Project

IPC estimates that approximately 1,063 acres of forested lands would be cleared or harvested in Umatilla and Union counties (see Table 1.1, 1.2, and Attachment A). The operational area of interest for the acreage estimate is a 125-ft buffer on each side of the transmission line centerline (250-ft wide corridor), the construction footprint of all Project features outside of the centerline corridor, and a 15-ft buffer each side (30-ft width) of proposed new roads.

This exercise is preliminary in nature and is not meant to act as a forest inventory. The diameter at breast height (dbh) was determined during field surveys that collected information on representative trees within a stand and was not necessarily collected in a manner consistent with forestry practices used during timber cruising to estimate timber volume.

Table 1.1 Umatilla County Estimated Forest Clearing/Harvest

Habitat Type/Ownership/Stand DBH	Acres
Forested Wetland	**8.6**
Private	**8.6**
>21”	7.5
9” – 20.9”	1.1
Forested Other	3.5
Private	3.5
Clearcut/seedlings	3.5
Mixed Grand Fir/Douglas-Fir	**211.8**
Private	**211.8**
>21”	0.2
9” – 20.9”	92.5
1” – 8.9”	108.9
Clearcut/seedlings	10.2
Ponderosa Pine	**111.2**
Private	**111.2**
9” – 20.9”	102.0
1” – 8.9”	9.2
Grand Total Umatilla County	**335**

Table 1.2. Union County Estimated Forest Clearing/Harvest

Habitat Type/Ownership/Stand DBH	Acres
Forested Wetland	**8.7**
Private	**7.8**
>21”	3.4
9” – 20.9”	4.4
U.S. Forest Service	**0.8**
>21”	0.8
Mixed Grand Fir/Douglas-Fir	**457.0**
Bureau of Land Management	**5.5**
9” – 20.9”	0.1
1” – 8.9”	5.5
Private	**394.1**
>21”	17.7
9” – 20.9”	222.7
1” – 8.9”	144.9
Clearcut/seedlings	8.6
U.S. Forest Service	**57.4**
9” – 20.9”	57.2
1” – 8.9”	0.3

Ponderosa Pine	**262.4**
Bureau of Land Management	**0.1**
9" – 20.9"	**0.1**
Private	**161.5**
9" – 20.9"	84.8
1" – 8.9"	76.8
U.S. Forest Service	**100.8**
9" – 20.9"	97.8
1" – 8.9"	2.9
Grand Total Union County	**728**

This letter seeks to fulfill the EFSC requirement that IPC coordinate with the Oregon Department of Forestry regarding forest clearing and harvesting that will be required to allow construction and operation of the Project. IPC respectfully requests acknowledgment of this letter by Oregon Department of Forestry so that we may include it in our Application for Site Certificate to the ODOE.

We appreciate your attention to this matter. If you have questions or comments please contact us at your convenience.

Respectfully submitted,

Todd Adams
Project Manager

Attachments: Attachment A, 16 page map set

ESTIMATED FOREST DISTURBANCE

BOARDMAN TO HEMINGWAY
500kV TRANSMISSION LINE PROJECT
OREGON-IDAHO

JANUARY 2013

IDAHO POWER
An IDACORP Company

0 10 20 30 40 50
Miles

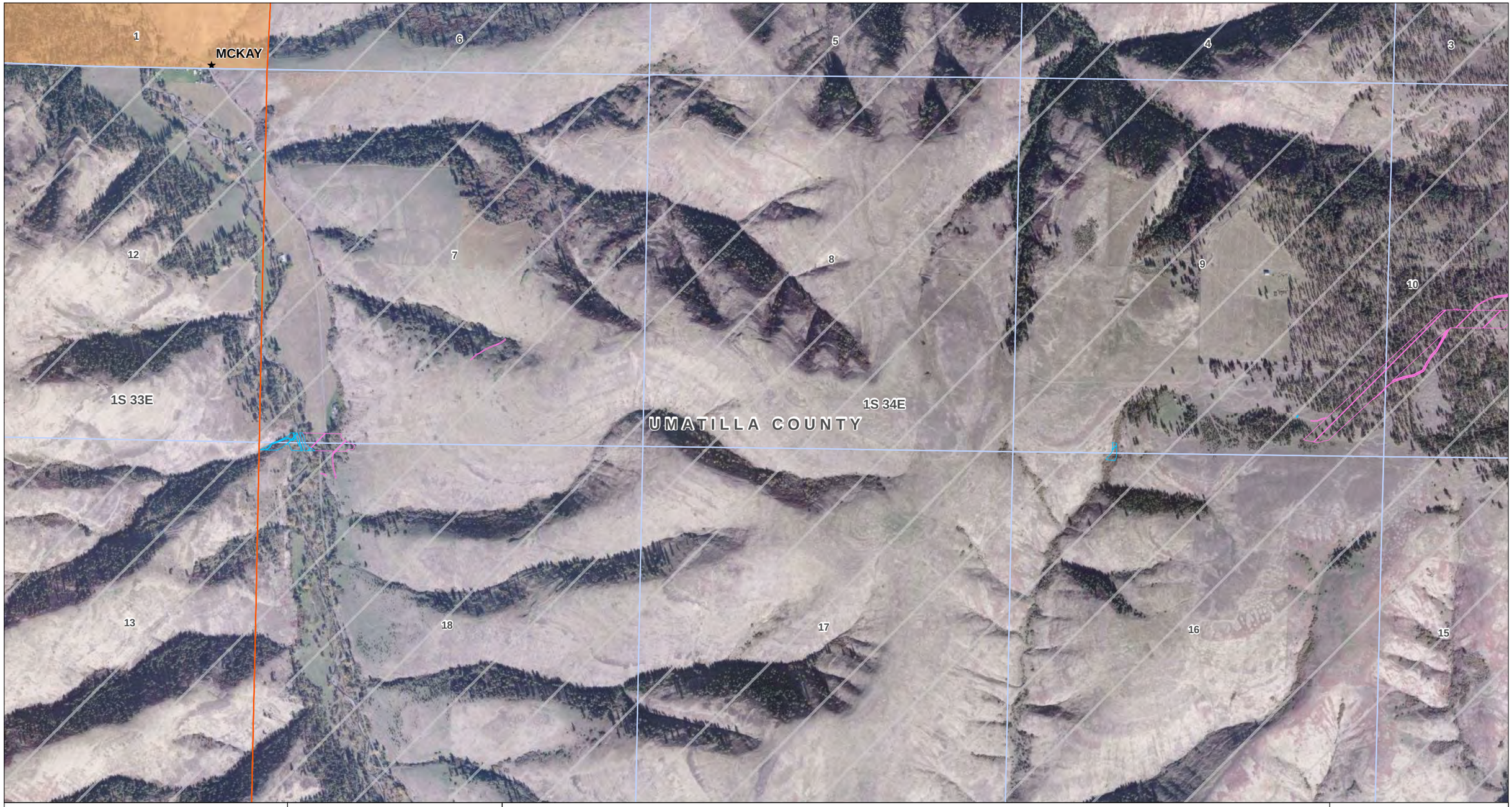
Project Features

- Existing Substation
- Proposed Substation
- Alternative Substation
- Proposed Transmission Line Route
- Alternative Transmission Line Route
- Mapbook Pages
- City/Town
- County Boundary
- State Boundary

Land Ownership (Call Out Box Only)

- Bureau of Land Management
- Indian Reservation
- Private
- State
- U.S. Forest Service

LOCATION MAP



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OREGON-IDAHO

JANUARY 2013

IDAHO POWER
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0 0.25 0.5
Miles

Habitat Type

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- Mixed - Grand Fir/Douglas Fir
- Ponderosa Pine

- **Township Range Boundary**
- **Section Boundary**

- **City/Town**
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Land Ownership

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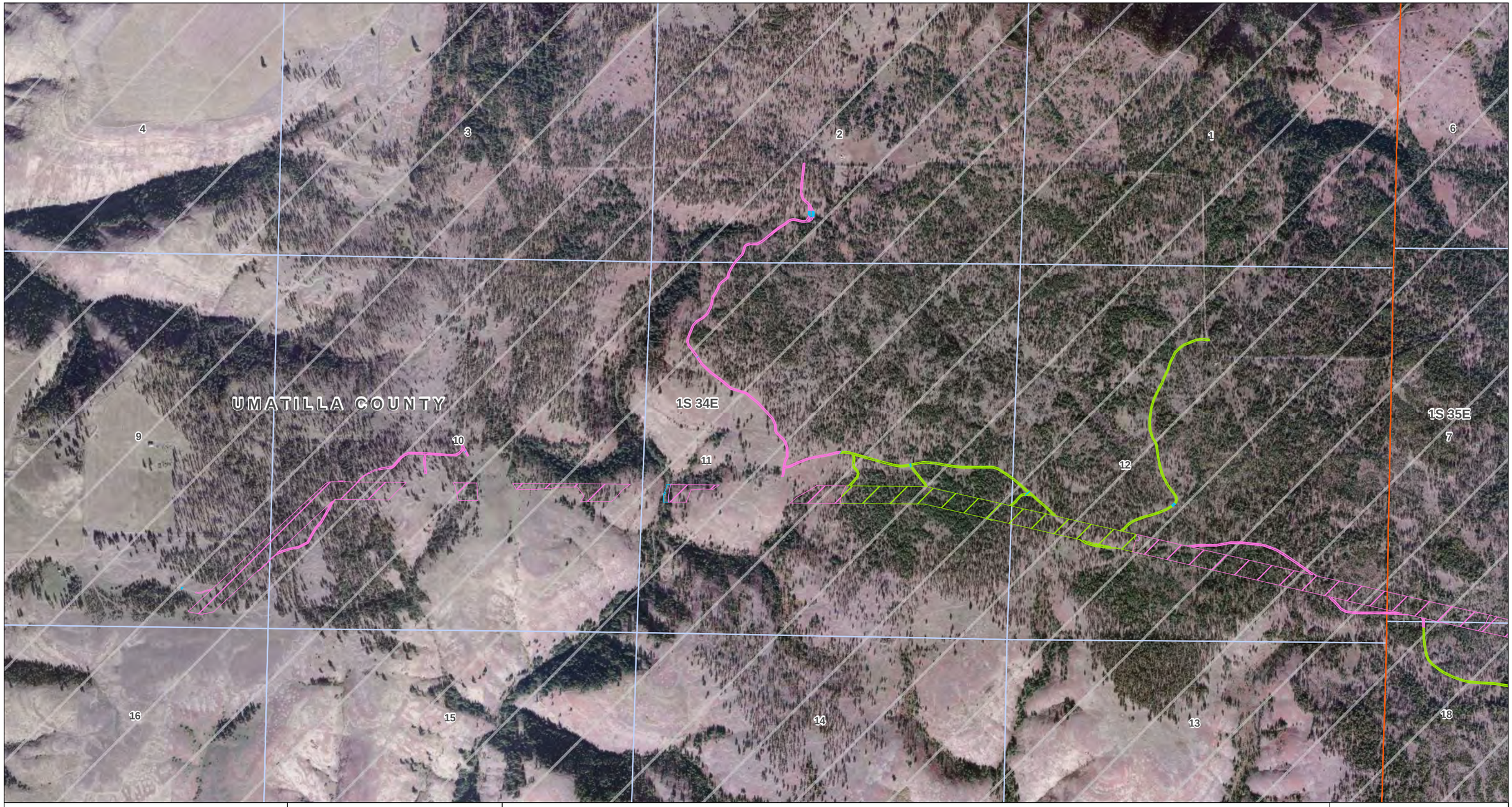

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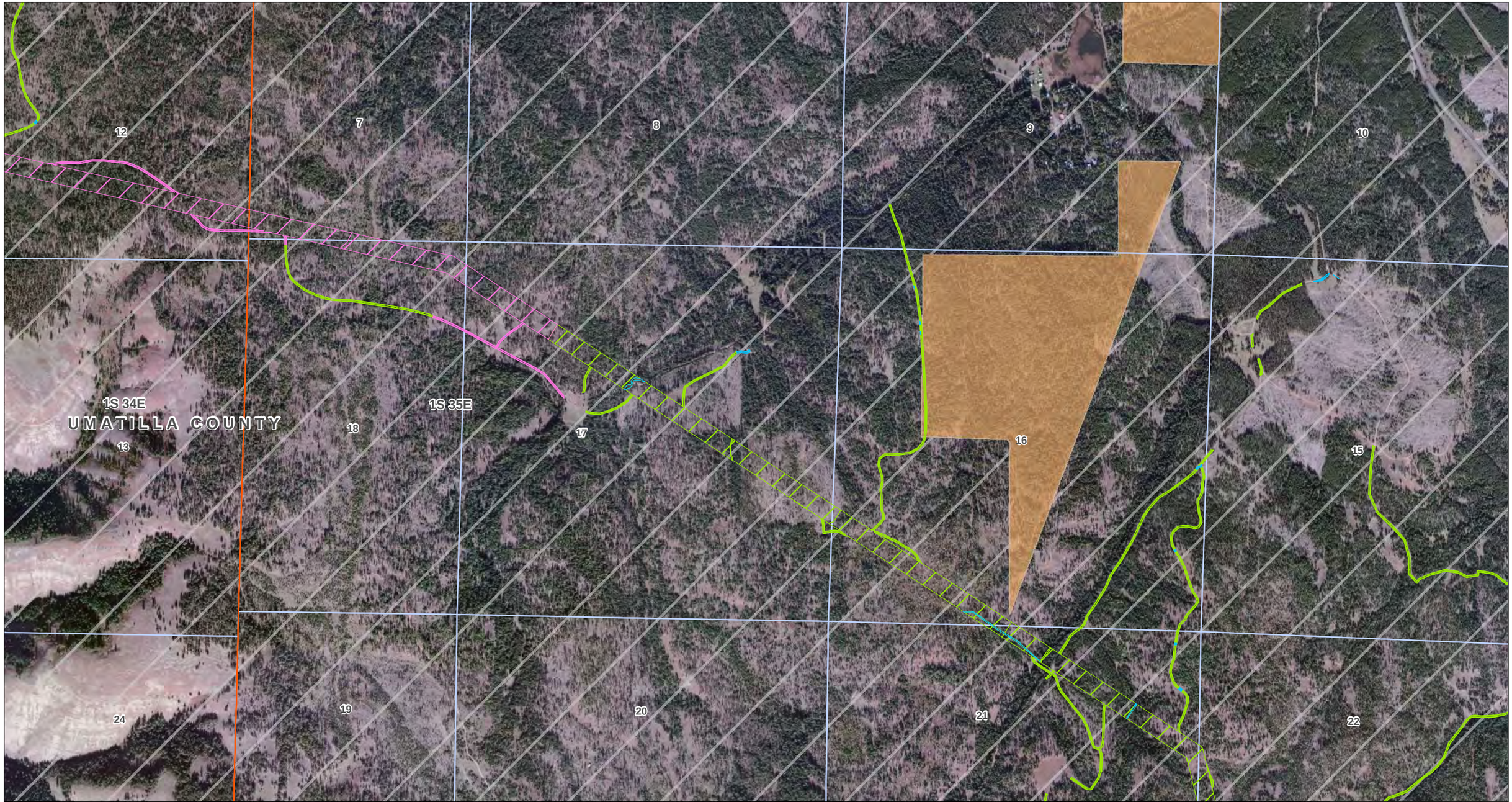

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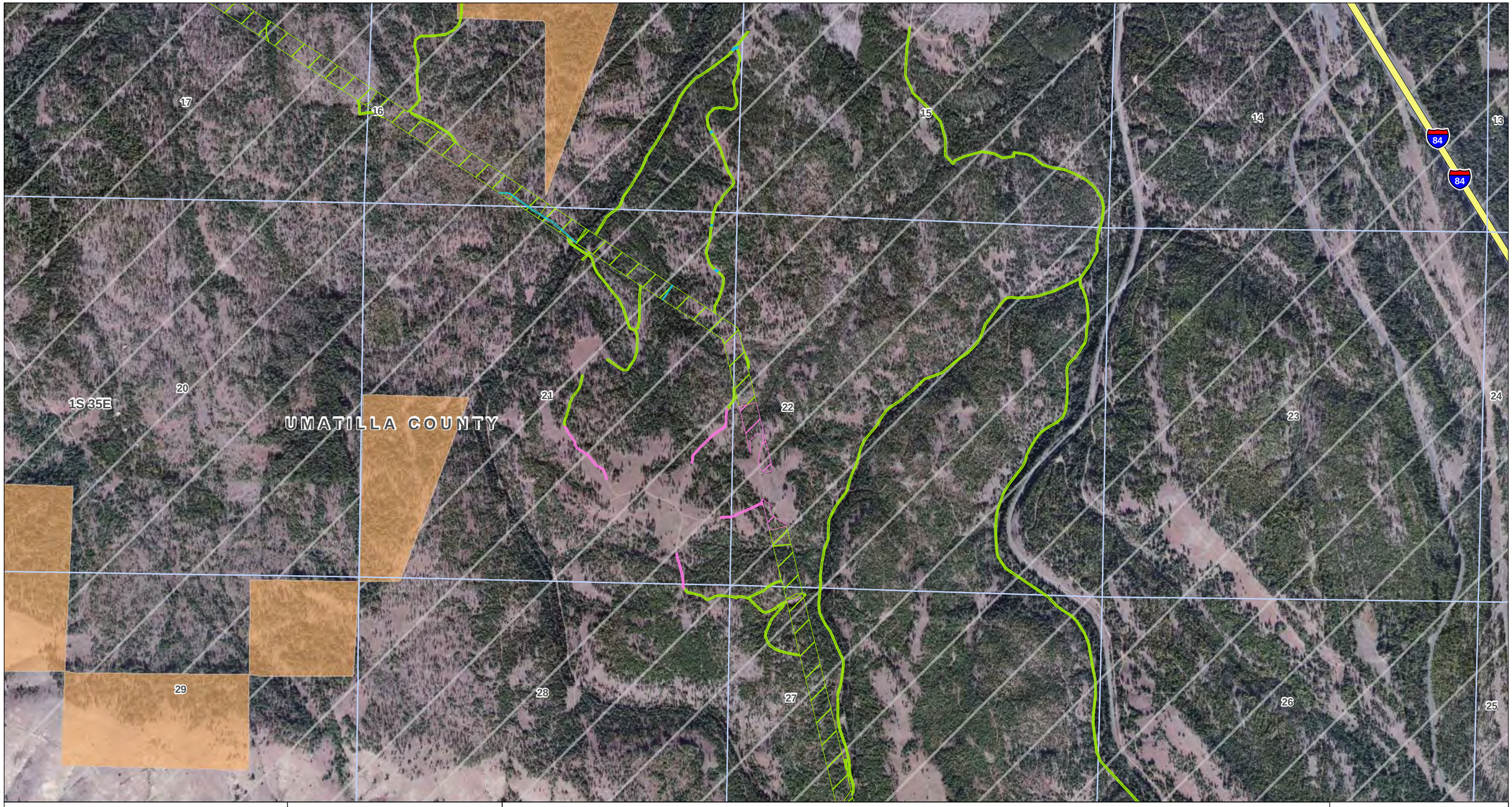

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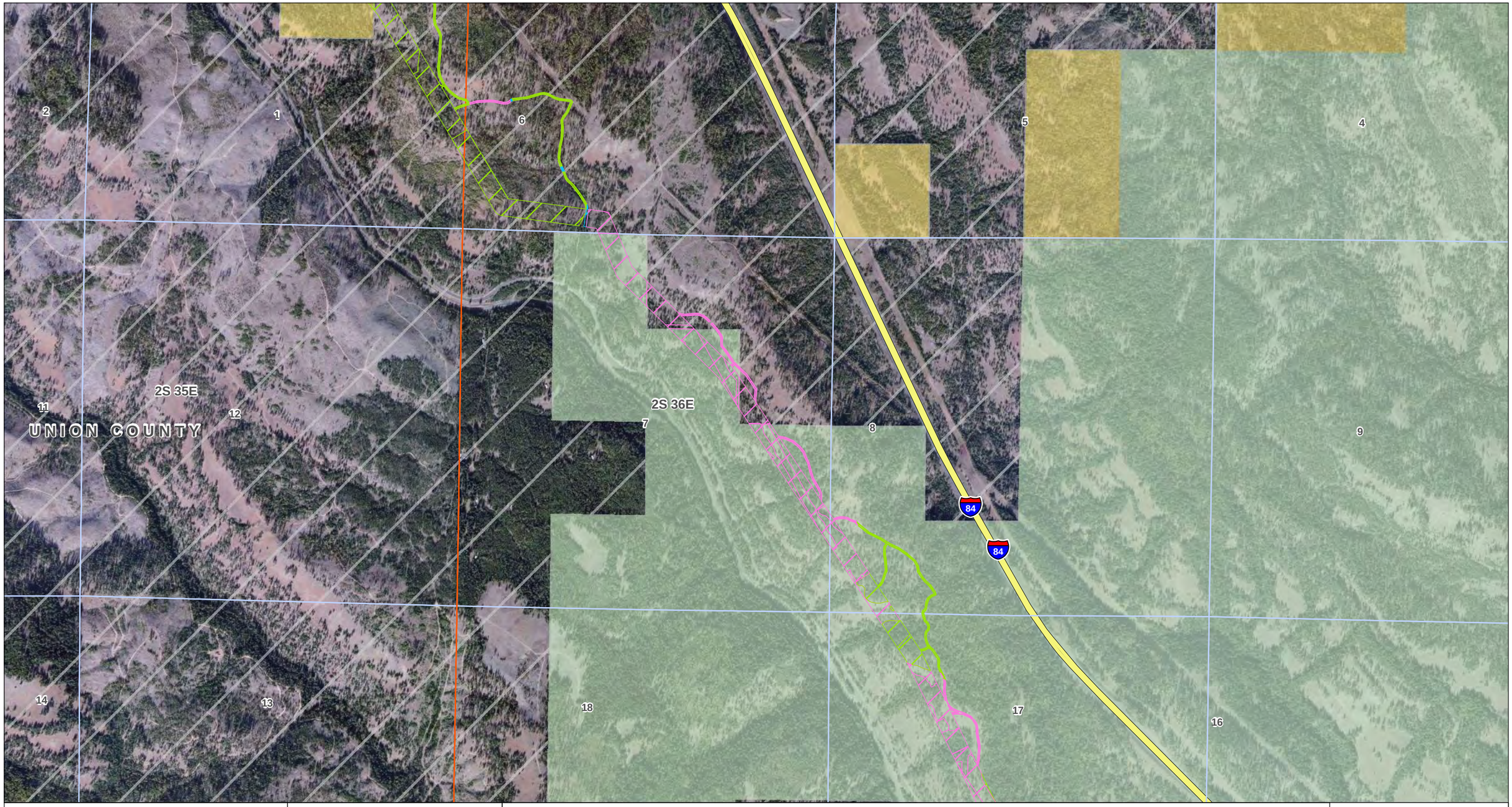

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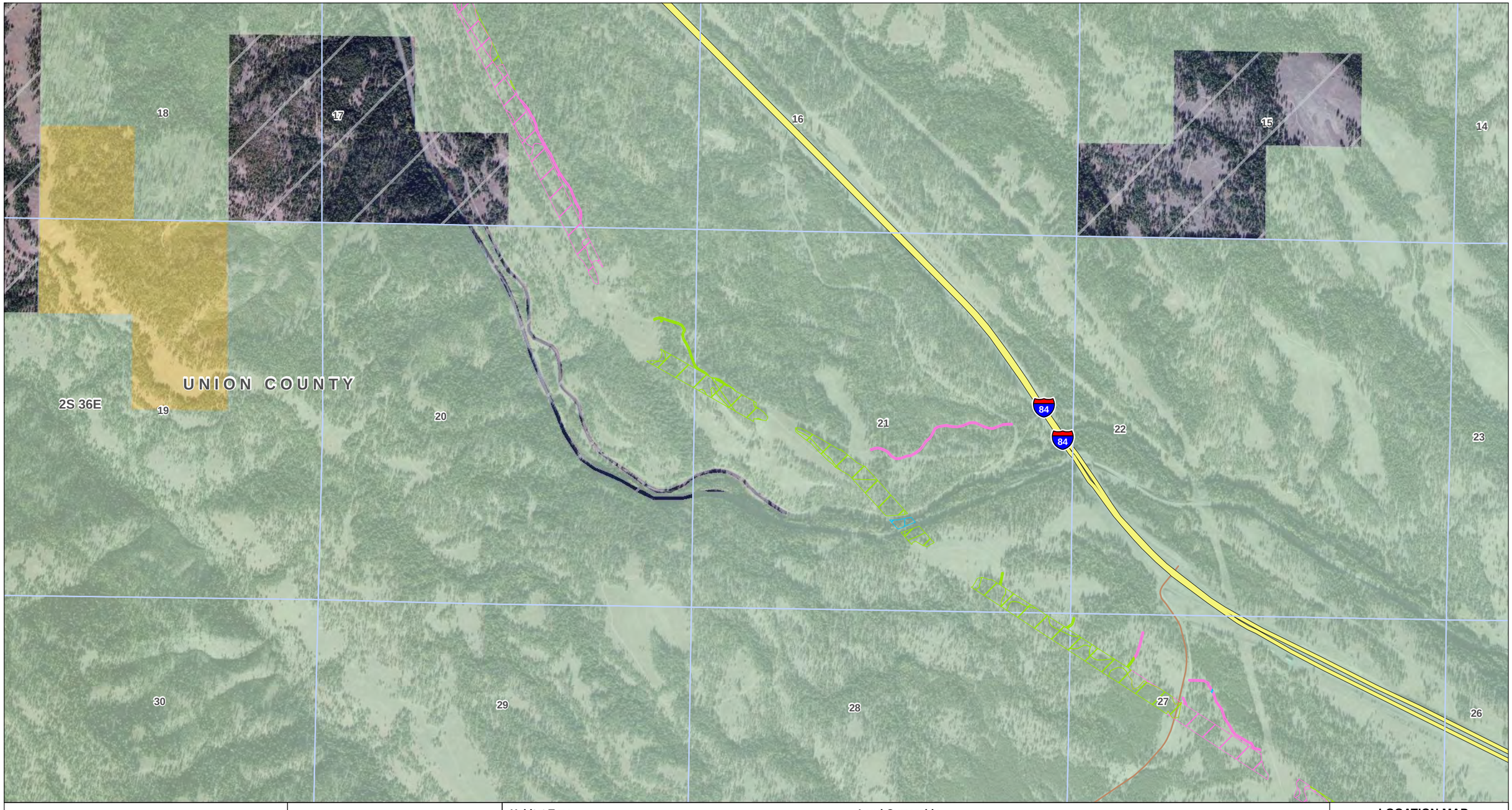

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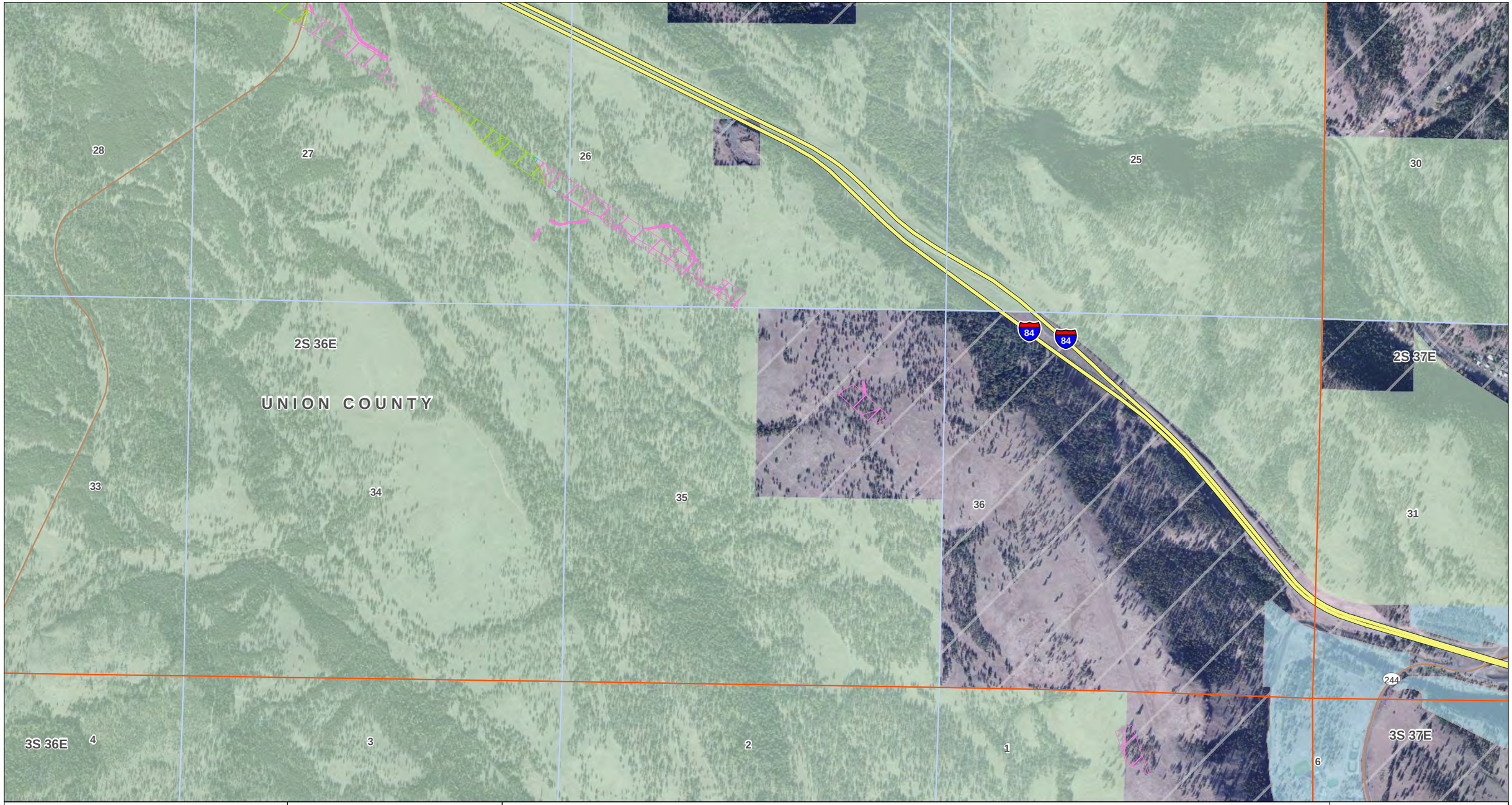

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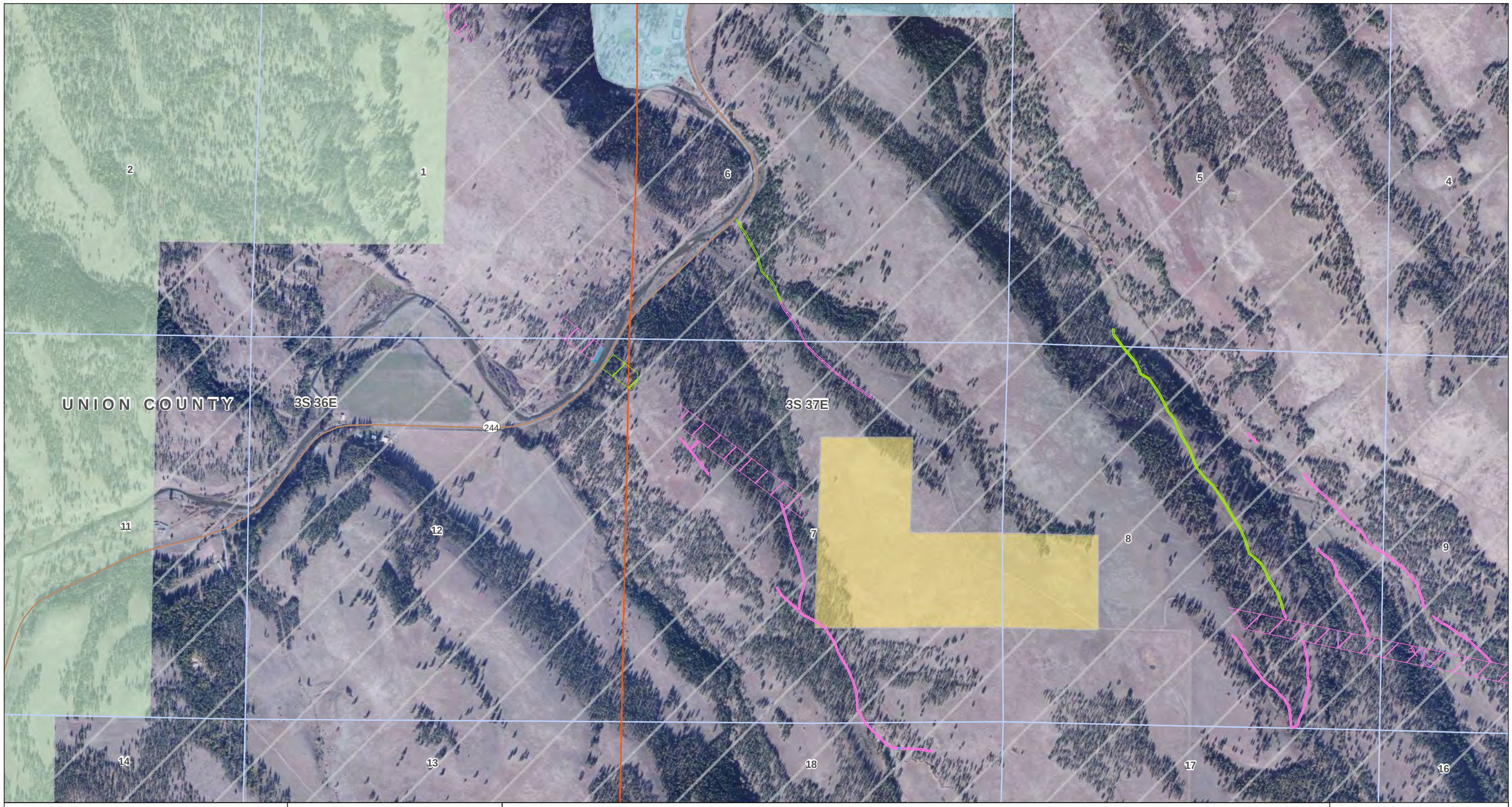

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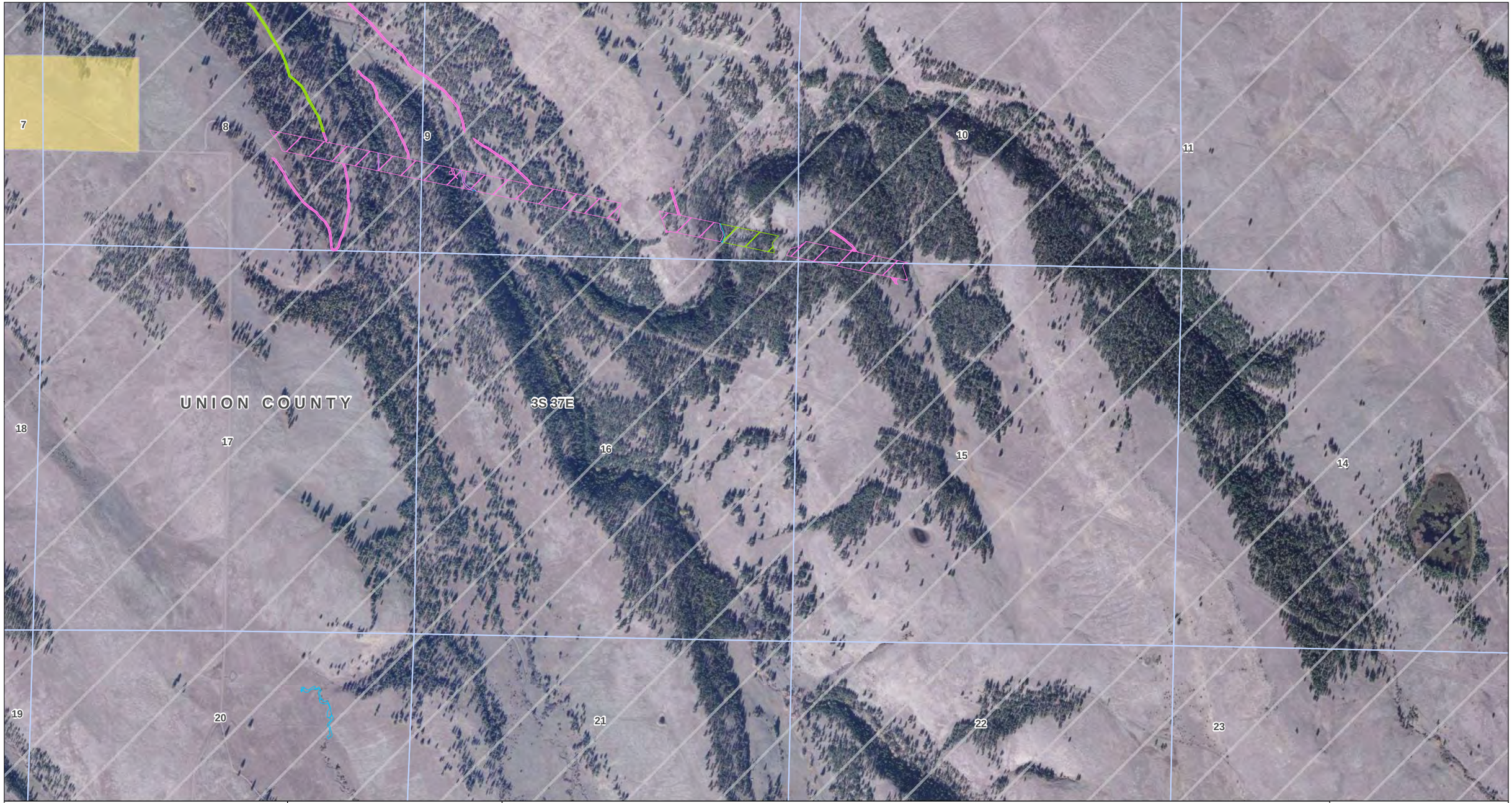

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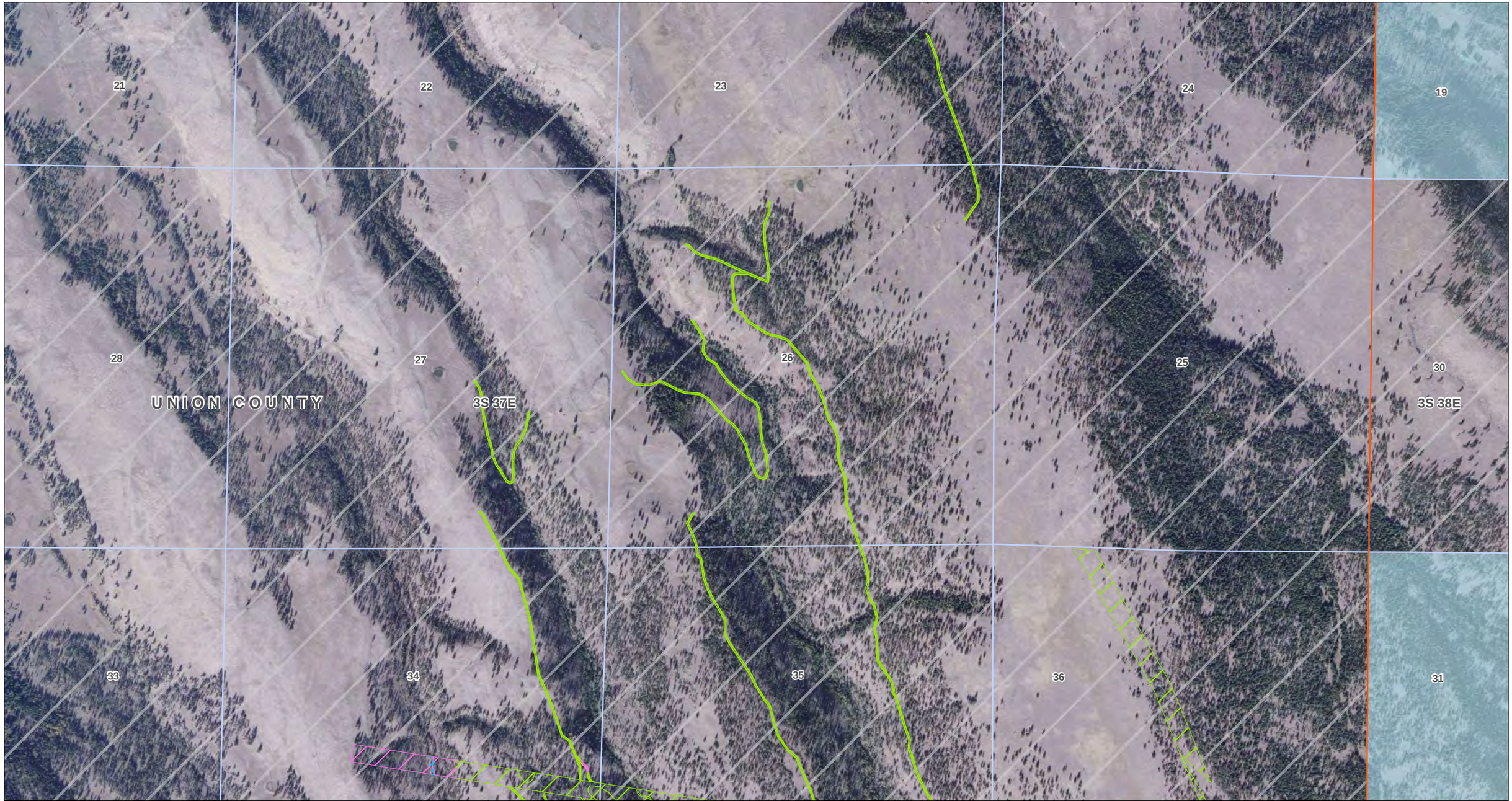

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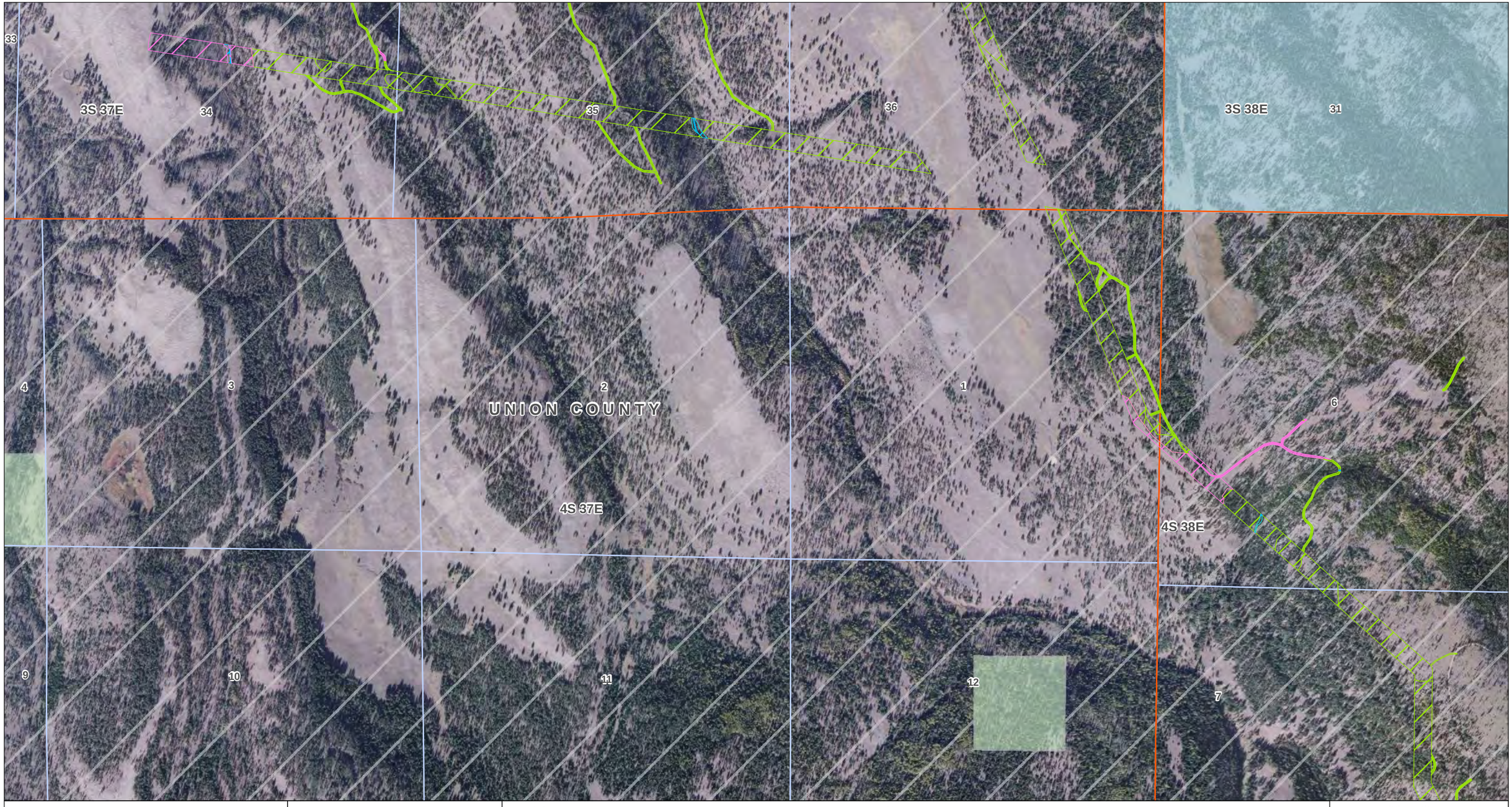

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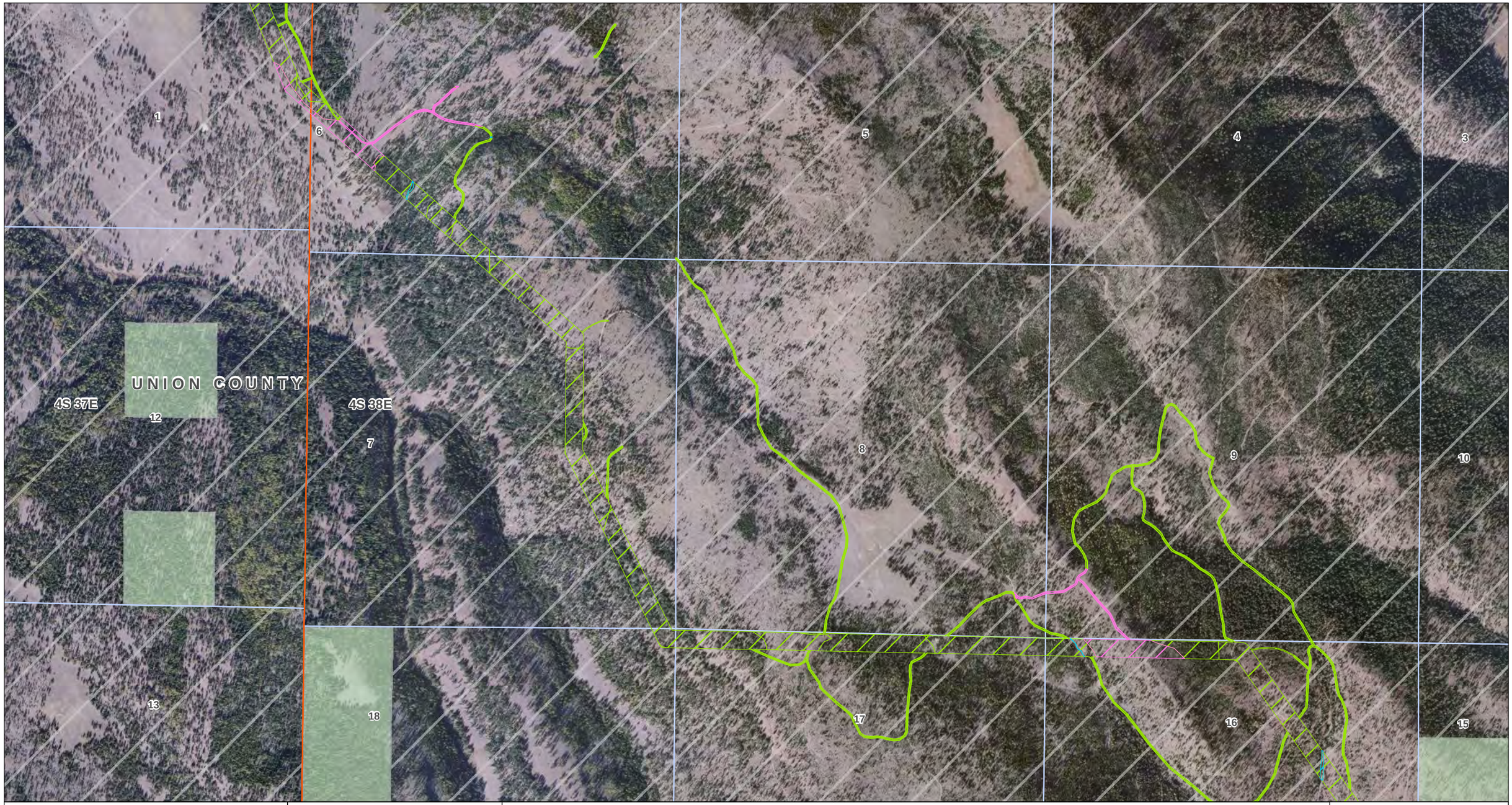

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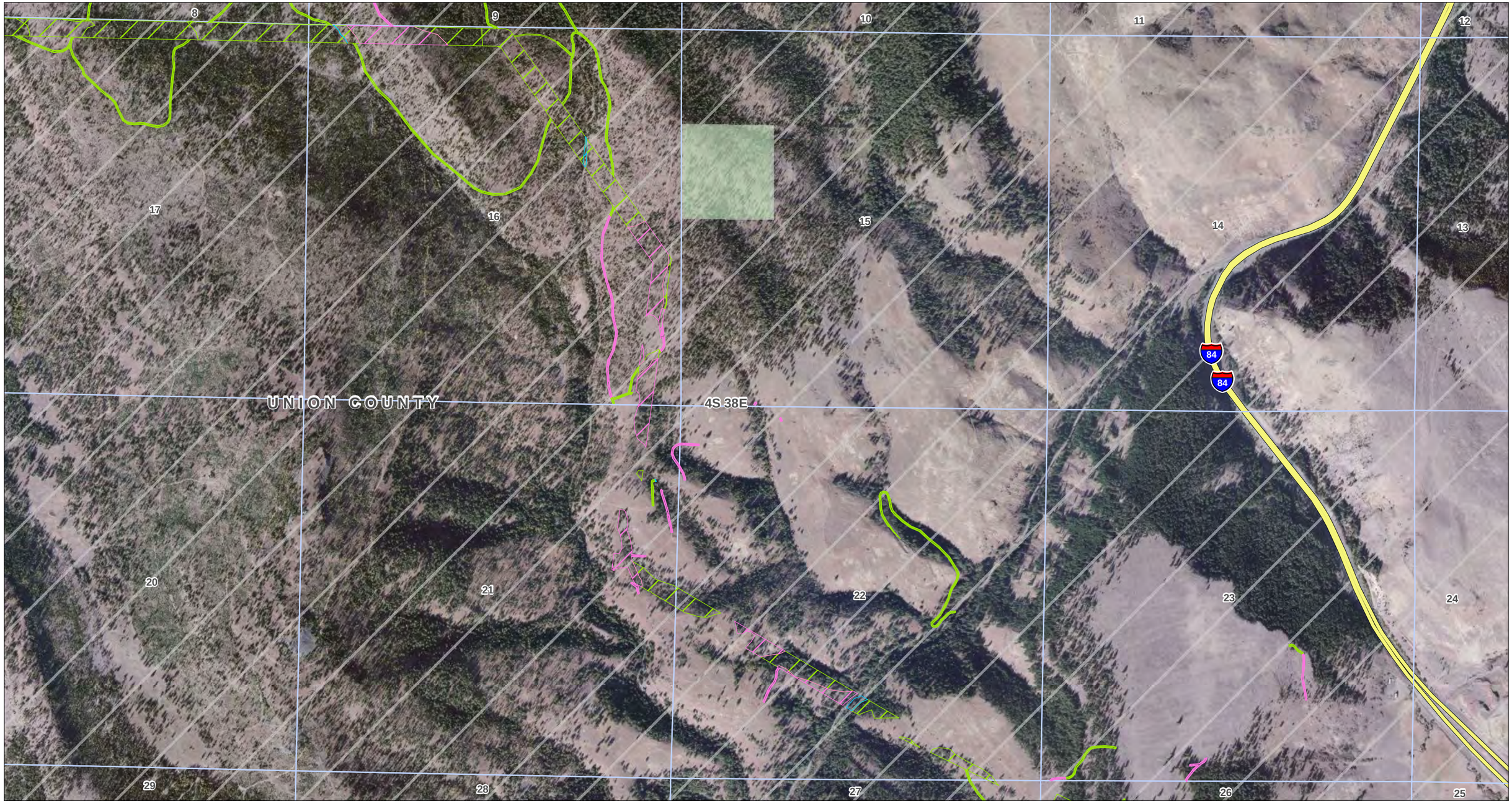

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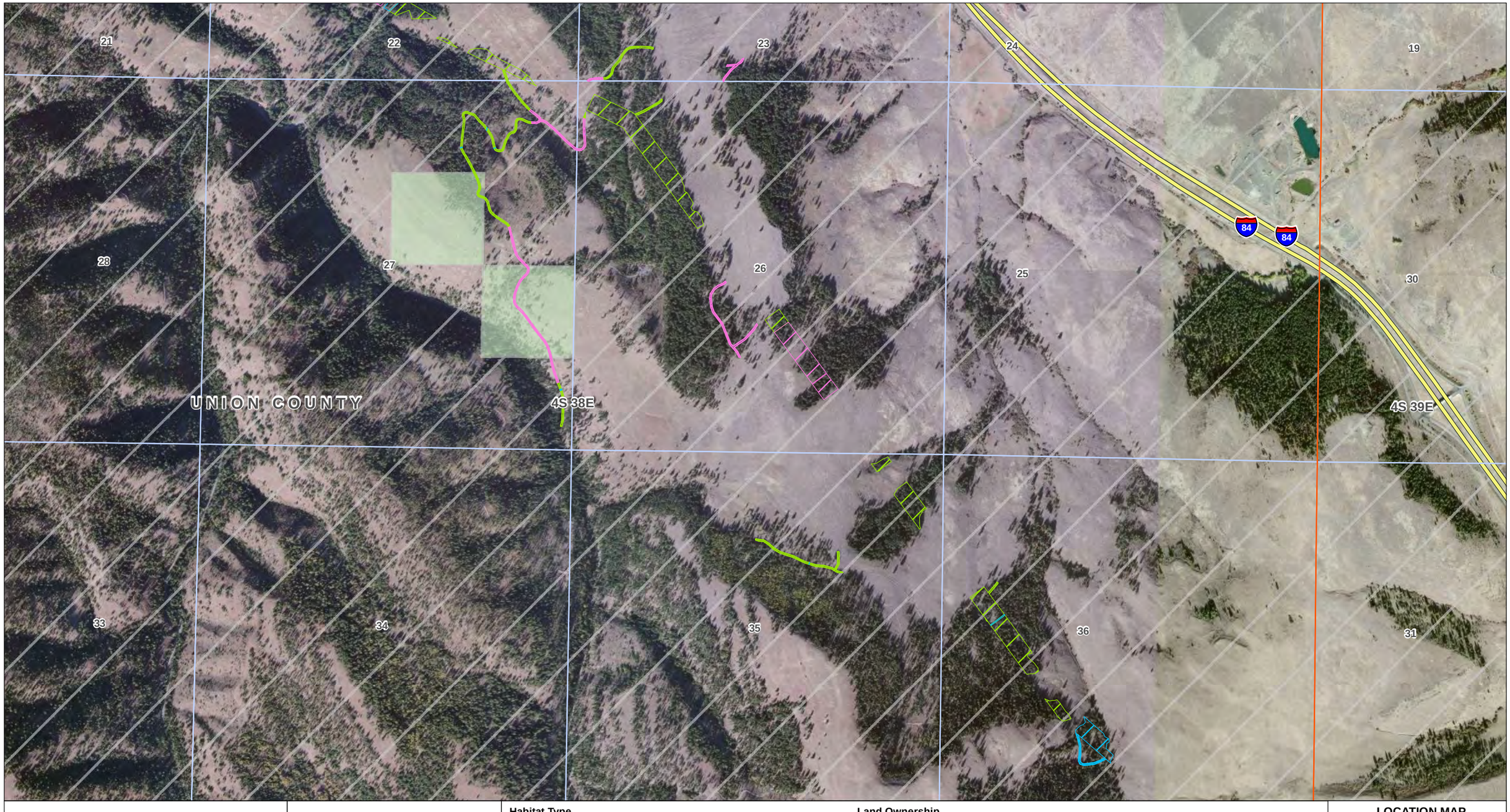

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LOCATION MAP

ATTACHMENT BB-3
OVERVIEW OF UNDERGROUND TECHNOLOGIES

OVERVIEW OF UNDERGROUND TECHNOLOGIES

For 500-kV AC underground lines, a number of cable technologies exist. While some have long running track records of high reliability, others are relatively new and untested. At the 500-kV voltage level, only a number of underground installations exist, namely in Japan and China. Within the U.S., 500-kV underground installations are limited to test sections. Alberta Electric Systems Operations is conducting a Feasibility Study to place approximately 12 miles underground on the Heartland Transmission Project (AESO 2010).

There are five basic technologies to consider for 500-kV AC underground circuits:

1. Solid Dielectric (Cross-Linked Polyethylene [XLPE]);
2. Gas Insulated transmission Line (GIL);
3. Pipe-type (High Pressure Fluid-Filled [HPFF]);
4. Self-Contained Fluid Filled (SCFF); and
5. Superconducting Cables.

Solid Dielectric Cable—Considered only for distances of up to a few miles at the 500-kV voltage level, solid dielectric insulation or XLPE cable construction has been used only in special situations. While the technology is progressively emerging, lack of practical experience results in major reliability concerns for operating larger scale 500-kV underground systems.

Gas Insulated Transmission Line—GIL technology at the 500-kV voltage level has been implemented primarily within substations and not for longer transmission lines. GIL has been incorporated into substation designs with the length typically limited to distances less than 1,000 feet. However, the high cost and lack of experience with longer underground transmission lines, as well as questions of reliability, are more of a concern than with the other more prominent cable technologies.

High Pressure Fluid-Filled Cable—HPFF cable systems are a pipe-type system in which three single-phase cables are located within a single steel pipe (Figure BB-1). HPFF cables use Kraft paper insulation or a laminated polypropylene paper insulation that is impregnated with dielectric fluid to minimize the insulation breakdown under electrical stress. Since the system requires a continuous high pressure, pumping plants are required every 7 to 10 miles along the route, assuming relatively flat topography. The pumping plants are responsible for maintaining a constant pressure on the system, but must have large reserve tanks to facilitate the expansion and contraction of the dielectric fluid as the system undergoes thermal cycling. To maintain an operable pipe-type system, cathodic protection must be applied to the cable pipes to mitigate corrosion. This in turn helps prevent fluid leaks, which pose both an operational and an environmental concern. Using an HPFF system does provide high reliability but it also requires additional equipment, resulting in additional opportunity for component failure, while specially trained personnel are required to maintain these systems. Industry sponsored testing has proven that this technology can operate at the 500-kV voltage level; however, there are no 500-kV HPFF pipe-type systems currently installed within the U.S. and few installations can be found throughout the world. That being said, of the available cable technologies, an HPFF cable system may be considered the most logical for a 500-kV system.

Figure BB-1. Typical HPFF Pipe Installation

Self-Contained Fluid Filled Cable—SCFF cable systems are similar to the HPFF systems. The cable is typically constructed around a hollow tube, used for fluid circulation, and uses the same Kraft paper or laminated polypropylene paper insulation materials. Because the fluid system is "self-contained," the volume of fluid required is less; however, the same distribution of pumping plants would be required. While SCFF cable systems have the longest running history at the extra high voltage levels, their use is typically restrained to long submarine cable installations. This technology has been implemented on inland applications with high reliability at 500-kV voltage levels.

Superconducting Cables—Research is currently underway in the advancement of high-temperature superconductors. Utilizing a unique cable design where all three phases are centered concentrically on a single core, the cables are capable of displaying low electric losses with the same power transfer capabilities as a standard non-superconducting cable. The core, filled with a cryogenic fluid, such as liquid nitrogen, super-cools the conducting material resulting in extremely low losses and high electrical power transfer capacities. Most high temperature superconductor systems are located adjacent to large metropolitan areas, where they are capable of transferring large quantities of power a few thousand feet, at the distribution level. However, technological advances in the last few years have seen the first 138-kV AC system installed in Long Island, New York, in early 2008. Because high-temperature superconductor systems have neither been established at the 500-kV voltage levels nor over long distances, superconducting cable will not be a technology option to consider for the Project.

Design of Cable Systems

The following are key considerations for underground transmission line design for 500-kV cable systems:

- A 500-kV cable system would consist of multiple cables per phase to achieve the target power transfer requirements and to provide redundancy in the case of a cable failure.

- Concrete encased duct banks would be installed at a minimum cover depth of 3 feet, or as required by routing design, and would be backfilled with specially engineered thermally favorable backfill to assist in heat dissipation.
- To obtain further redundancy, multiple duct banks per circuit can be utilized to minimize common mode failures of the cable installation.
- Depending upon installation location, a permanent access road approximately 14 feet wide may be required to perform operation and maintenance procedures.
- The total construction surface impact of the underground cable system is at a minimum approximately 30 feet wide, and includes any permanent access roads.
- Splicing of the cable would be required approximately every 1,500 to 2,000 feet. Splicing would be performed inside large underground vault structures. Vault dimensions would be approximately 12 feet wide by 28 to 40 feet long by 8 to 9 feet deep depending upon the cable manufacturer splice and cable racking requirements.
- Depending on the terrain characteristics, burial depths may need to be increased to avoid heating the soil and changing the conditions of the vegetation and wildlife habitat above the duct bank or pipe type cables.
- Underground to overhead transition stations would be required at each end of the underground transmission line, and at each intermediate reactive compensation and pumping stations. Requiring 2 to 4 acres, each site would consist of pedestal-type termination structures, reactors (similar to a large power transformer in appearance), and pumping plants, dependent upon cable system. In addition to these structures, A-frame dead-end structures, approximately 80 feet tall, would be required at each end of the system.
- Pumping plants would be required every 7 to 10 miles along the route, for either HPFF or SCFF cable systems.
- Reactive compensation would be required every 7 to 20 miles along the route to offset the capacitive reactance of the cable system, depending on the cable technology employed and electrical system requirements.

Reliability and Maintenance

Long-term reliability of underground cable systems is a major concern. Underground 500-kV lines are largely an unproven technology, as they have been implemented in a limited number of circumstances. In conjunction with their limited use, all installations to date have been relatively short compared to the Project, raising concern about the reliability of an extensive cross-country cable system. A catastrophic failure of any portion of the system—underground cable, splices, terminations, or fluid systems—could result in the cable system being inoperable and out of service.

Basic maintenance of the cable systems consists of a thorough yearly inspection, while any fluid systems must be inspected and tested monthly. Inspections include all terminations and splices, all bonding systems, as well as all valves, gauges, switches, and alarms within the pumping plant. Cathodic protection systems are monitored as an ongoing process.

Construction Process

Large open trench installation or the more costly trenchless technologies are utilized to place the cables underground. Construction includes, but may not be limited to clearing of the ROW, trenching, installation of duct banks or pipe networks, installation of vaults, cable splicing and terminating, and termination structure construction.

Trenching—Generally the most common technique for placing underground lines, open cut trenching utilizes a large surface excavation to place the required infrastructure. The typical trench dimensions vary by cable type, voltage level, and required power transfer, but in all cases require a minimum cover depth of 3 feet (see Figure BB-2). While a number of cable arrangements can be achieved, soil characteristics and existing infrastructure often play the largest role of how the installations are designed. Trenching operations are typically staged such that a maximum of 300 to 500 feet of trench is open at any one time. Steel plating may be positioned over the open trench to minimize surface disruptions, while traffic controls alleviate congestion through the project area. Emergency vehicle and local access must be coordinated with local jurisdictions as necessary.

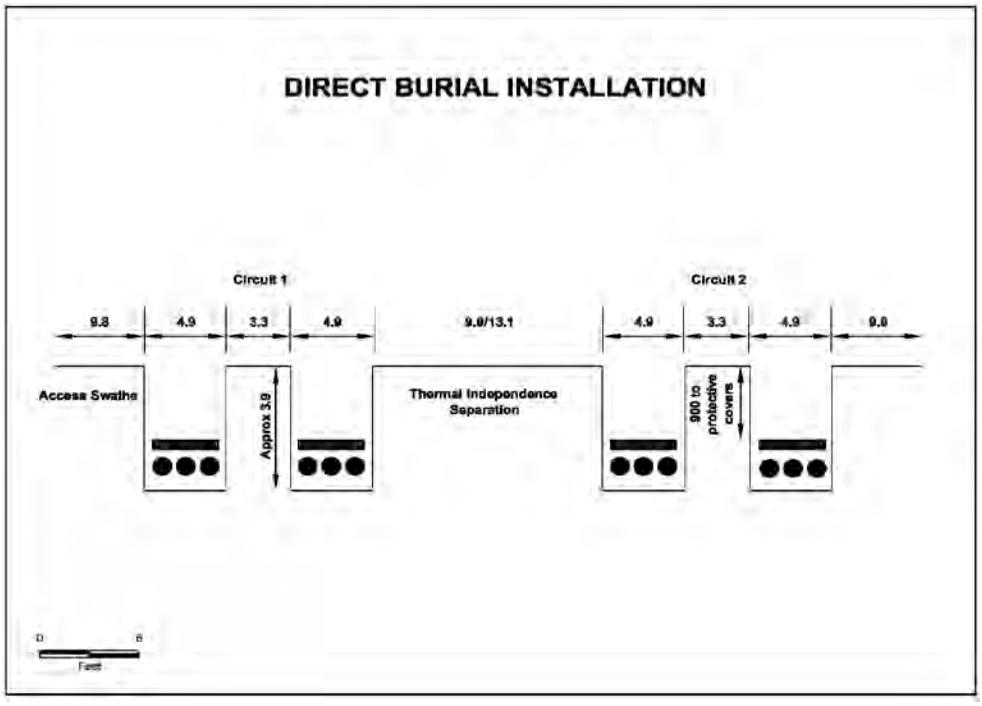

Figure BB-2. Typical Direct Burial Installation

Installation—Single- and double-circuit solid dielectric cable systems are often installed in duct bank configurations. Another method is duct burial. Figure BB-3 illustrates the space requirements. Figure BB-3 shows a cable construction ROW.

Figure BB-3. Typical Cable Construction ROW with Single Cable Trench Open

Pipe-type cable systems use steel pipes to encase each set of cables. Pipe-type cable systems can be utilized at the 500-kV level.

Vault Installation—In a vault installation (Figure BB-4), preformed concrete splice vaults are placed at approximately 1,500- to 2,000-foot intervals depending on the maximum cable per reel length. The vaults, initially used to install the cables into the conduits, are primarily used to house the splice assemblies, and to provide access for yearly inspections of the system. The vaults are used to sectionalize segments of cable in the event of a failure to locate the faulted cable and repair the required section. The typical installation time frame of each vault is approximately one week beginning with excavation, placement, compaction, and finally resurfacing of the excavated area.

Figure BB-4. Typical XLPE Vault Installation

Cable Pulling, Splicing, and Termination—Upon completion of the civil construction, cables are installed within the duct banks or steel pipes. Each cable segment is installed, spliced at each of the vaults along the route, and terminated at the transition sites where the cable connects to overhead conductors. To install the cable, a reel of cable is positioned at one end of a cable section, while a pulling rig is located at the other end. Using wire rope, each section of cable is installed into its respective conduit/steel pipe, while workers apply either water-based lubricant for solid dielectric cable or dielectric fluid for pipe type cable, to the cable jacket to minimize the frictional forces placed on the cables. Before termination or splicing operations begin, the cables are trained into the correct position using heat blankets. This process removes the curvature of the cable from being on the reel while also relieving any longitudinal strain exerted on the cable during pulling operations.

Termination Structure Construction—Because of the large size of cable equipment required for 500-kV lines, large transition sites are the only option. Figure BB-5 shows a typical transition station.

Figure BB-5. Typical Overhead to Underground Transition Station

Special Construction Methods—In locations where open trench construction is not feasible, such as water crossings, airports, railway crossings, large roadway interchanges, etc., methods of trenchless installation must be utilized. Three main types of trenchless technologies exist. These are:

- Jack and Bore Tunneling
- Horizontal Directional Drilling
- Microtunneling

Jack and Bore Tunneling—Jack and bore tunneling is an auguring operation that simultaneously jacks or pushes a steel casing into the excavated cavity (Figure BB-6). As the equipment progresses forward, subsequent casing segments are added, while the spoils are removed through the center of the casing. Upon completing the crossing, the duct system is positioned inside of the steel casing using specially designed spacers, and the entire casing is then backfilled with thermally designed grout. The grout not only solidifies the installation from

any movement, but also helps dissipate heat away from the cable system. For pipe-type cable systems, the jacked casing can double as the cable pipe and may be welded to the trenched cable pipe.

Figure BB-6. Typical Jack and Bore Casing Installation

Horizontal Directional Drilling—The horizontal directional drilling method uses a steerable cutting head to create a pilot hole along a predetermined route. Using progressively larger reamers, the hole is enlarged to the intended diameter. A product casing is then pulled through the hole and duct work, using specially designed spacers, and is positioned within the casing. Grout is pumped into the voids within the casing to secure the installation and assist with the thermal transfer of heat away from the cable system. As with the jack and bore method, the casing can be used as the cable pipe in a pipe type cable system.

Microtunneling—Microtunneling resembles the jack and bore method; however, the casing diameters and distances can typically be increased. Microtunneling uses a remotely operated tunneling machine to create the desired diameter hole. A casing is then placed into the excavated hole and duct work is positioned within the casing. As before, the casing is filled with grout, or the casing can be used as the product pipe in a pipe-type cable system.

Construction Time

Installing large segments of underground transmission lines can require as much as twice the construction time of overhead lines, if not more, due to the extensive excavation required to complete the trenching and installation of the cable system infrastructure, cable splicing, and construction of transition stations.