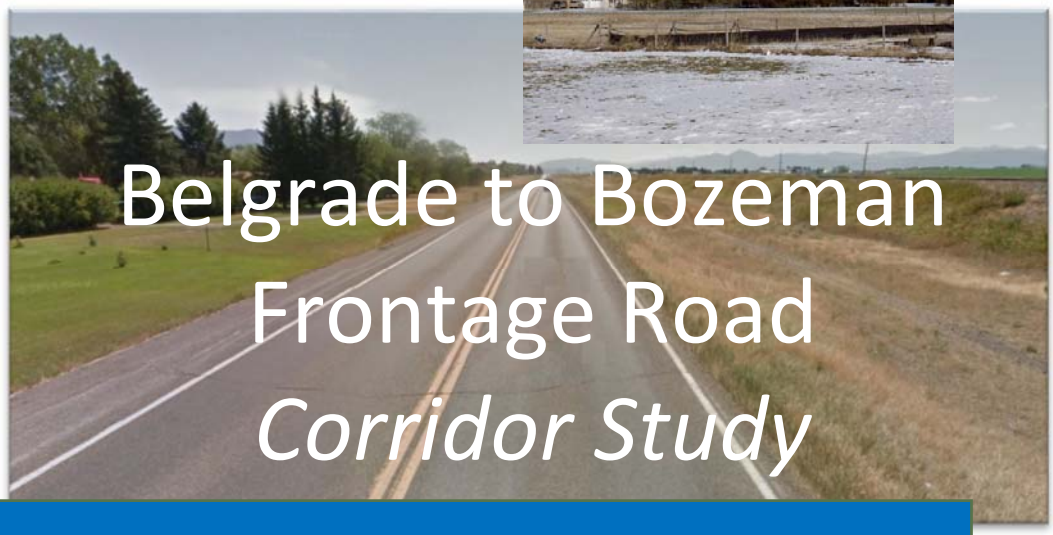
BELGRADE to BOZEMAN corridor
FRONTAGE ROAD study

Appendix 3

Environmental Scan Report



Belgrade to Bozeman Frontage Road *Corridor Study*

Environmental Scan Report

May 1, 2015

Prepared by:

MONTANA MDT DEPARTMENT OF TRANSPORTATION

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Contents

Figures

Tables

Attachments

Abbreviations and Acronyms

AASHTO	American Association of State Highway and Transportation Officials
ACS	American Community Survey
ARM	Administrative Rules of Montana
BOR	Bureau of Reclamation
CAPS	Crucial Areas Planning System
CEIC	Census and Economic Information Center
CFR	Code of Federal Regulations
CRABS	Cultural Resource Annotated Bibliography System
CRIS	Cultural Resource Information Systems
DEQ	Montana Department of Environmental Quality
DNRC	Montana Department of Natural Resources and Conservation
DOC	Montana Department of Commerce
DOLI	Montana Department of Labor and Industry
EO	Executive Order
eREMI	Regional Economic Models, Inc.
ESA	Endangered Species Act
FEMA	Federal Emergency Management Agency
FHWA	Federal Highway Administration
FIRM	Flood Insurance Rate Maps
FPPA	Farmland Protection Policy Act
FWP	Montana Department of Fish, Wildlife, and Parks
GIS	Geographic Information System
HUC	Hydrologic Unit Code
LID	Low Impact Development
LUST	Leaking Underground Storage Tank
LWCFA	Land and Water Conservation Fund Act
MBMG	Montana Bureau of Mines and Geology
MBOG	Montana Board of Oil and Gas
MBTA	Migratory Bird Treaty Act
MDT	Montana Department of Transportation
MEPA	Montana Environmental Policy Act
MFISH	Montana Fisheries Information System
MNHP	Montana Natural Heritage Program
MPDES	Montana Pollutant Discharge Elimination System
MPO	Metropolitan Planning Organization
MS4	Municipal Separate Storm Sewer System (MS4)
MSATs	Mobile Source Air Toxics
NAAQS	National Ambient Air Quality Standards
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NPL	National Priority List
NPMS	National Pipeline Mapping System
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
NRIS	Natural Resource Information System

Abbreviations and Acronyms, continued

NWI	National Wetlands Inventory
PESC	Permanent Erosion and Sediment Control
PM	Particulate Matter
RP	Reference Post
RM	River Mile
SFHA	Special Flood Hazard Area
SHPO	State Historic Preservation Office
SOC	Species of Concern
T&E	Threatened and Endangered
TEDD	Targeted Economic Development District
TIP	Transportation Improvements Plan
TMDL	Total Maximum Daily Load
UM	University of Montana
USACE	United States Army Corps of Engineers
USC	United States Code
USCB	United States Census Bureau
USDA	United States Department of Agriculture
USEPA	United States Environmental Protection Agency
USFS	United States Forest Service
USFWS	United States Fish and Wildlife Service
USNPS	United States National Park Services
UST	Underground Storage Tank
WQA	Water Quality Act

1.0 Introduction

The primary objective of this environmental scan report is to provide a planning-level overview of resources and determine potential constraints and opportunities for the Belgrade to Bozeman Frontage Road Corridor Planning Study. Information in this report was obtained from publically available reports, websites, and documentation. This scan is not a detailed environmental investigation.

If improvement options are forwarded from this study into project development, an analysis for compliance with the National and Montana Environmental Policy Acts (NEPA and MEPA) will be completed as part of the Montana Department of Transportation (MDT) project development process. Information provided in this report may be forwarded into the NEPA/MEPA process at that time.

1.1 Study Area

The Study is referred to as the Belgrade to Bozeman Frontage Road Corridor, but the stretch of roadway under examination is actually National Highway System (NHS) route N-205 for the first approximately 1.4 miles, Primary 205 (P-205) for approximately 5.9 miles, and Primary 118 (P-118) for approximately 4.0 miles. The route is commonly referred to as the Interstate 90 (I-90) Frontage Road. The Study also include a 700 foot stretch of the East Valley Center Spur Road underneath the I-90 overpass at approximately Route Post (RP) 25.5. The Study Area for this environmental scan includes a 200-foot buffer from centerline along both sides of the roadway (for a total buffer width of 400 feet) throughout the corridor.

The Belgrade to Bozeman Frontage Road Corridor is located in southwest Montana in Gallatin County. The Frontage Road connects the City of Belgrade with the City of Bozeman. The corridor parallels Montana Rail Link tracks for a large portion of the Study Area. According to the Natural Heritage database for Gallatin County, land use adjacent to the corridor varies. The corridor begins at Reference Post (RP) 19.7 on the west side of City of Belgrade at the intersection of Jackrabbit and Main Street and extends east through the urban area of Belgrade toward Bozeman. On the east outskirts of Belgrade, land use is primarily commercial with a few scattered residential areas. The Bozeman Yellowstone International Airport is located on the north side of the Frontage Road at approximately RP 21.1. The recently completed East Belgrade Interchange will allow direct access to the airport from Interstate 90.

Two of the largest commercial land interests along the route are gravel pits located immediately adjacent to the Study Area on south side of the Frontage Road at approximately RP 21.8 and RP 22.8. East of the gravel pits, the land use transforms to mostly low intensity residential scattered throughout agricultural land for the roughly seven miles to Bozeman. Reaching the east boundary of the Study Area, the land once again becomes an urban setting as Primary 118 turns and connects to North 7th Ave heading into Bozeman.

The corridor for this environmental scan report covers approximately 11 miles. Multiple maps have been prepared to illustrate resources present in the Study Area. For ease of reference, all exhibits are included in Attachment 1. Exhibit 1 is an illustration of the Study Area location, and Exhibit 2 is a topographic map of the Study Area.

1.2 Goals of Study

Substantial growth has occurred in the area in recent years, leading to increased traffic and congestion. Because of this growth, MDT has identified a need for a planning study to investigate potential capacity and safety improvements along the Belgrade to Bozeman Frontage Road Corridor.

The corridor study aims to reduce planning time while managing community and social issues, and minimize construction costs through the demonstration of feasible improvement opportunities. The study will seek to minimize the cost of any possible improvements while considering environmental and social concerns.

2.0 Physical Environment

2.1 Soil Resources and Prime Farmland

Soils information was reviewed to determine the presence of prime and unique farmland in the Study Area to demonstrate compliance with the Farmland Protection Policy Act (FPPA). The FPPA is intended "to minimize the extent to which federal programs contribute to the unnecessary and irreversible conversion of farmland to nonagricultural uses, and to assure that federal programs are administered in a manner that, to the extent practicable, will be compatible with State, unit of local government, and private programs and policies to protect farmland."

The term "farmland" refers to prime farmland; some prime if irrigated farmland; unique farmland; and farmland, other than prime or unique farmland, that is of statewide importance. Prime farmland soils are those that have the best combination of physical and chemical characteristics for producing food, feed, and forage; the area must also be available for these uses. Prime farmland can be either non-irrigated or lands that would be considered prime if irrigated. Farmland of statewide importance is land, in addition to prime and unique farmlands, that is of statewide importance for the production of food, feed, forage, and oilseed crops.

Soil surveys of the Study Area are available from the United States Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS). NRCS soil surveys indicate the presence of farmland of state or local importance, or prime farmland if irrigated within the Study Area. From approximately RP 22.5 to the east, the Study Area has a high percentage of farmland of state or local importance or prime farmland if irrigated. With this high amount of prime farmland, it is likely that some of the areas previously designated as prime farmland have been subsequently developed. Developed land previously designated as prime farmland is no longer subject to the FPPA, and will not be considered in impact analyses for future improvements forwarded from the Study (refer to Exhibit 3A and 3B in Attachment 1).

Any forwarded improvement options that require right-of-way within identified farmlands and are supported with federal funds will require a CPA-106 Farmland Conversion Impact Rating Form for Linear Projects completed by MDT and coordinated with NRCS. The NRCS uses information from the impact rating form to keep inventory of the prime and important farmlands within the state.

2.2 Geologic Resources

Information on the geology and seismicity in the Study Area came from several published sources. Geologic mapping was reviewed for rock types, the presence of unconsolidated material, and fault lines. The seismicity and potential seismic hazards were also reviewed. This geologic information can help determine potential design and construction issues related to embankments and road design. The following is a brief summary of the geologic and seismic conditions present in the Study Area. Exhibit 4 (in Attachment 1) presents the geologic formations and structures within the Study Area.

Geologic mapping indicates the roadway through this section is underlain by late Pleistocene alluvial deposits of the Belgrade braid plain, which typically consists of well-rounded, poorly graded boulder gravel and sand with some thin beds of clayey silt. This type of soil mix is typical for the area, which includes the gravel pits adjacent to the Study Area. The majority of soils along the corridor are sandy gravel with cobbles and minor amounts of clay and silt (AASHTO A-1 and A-2). Specific to the existing road alignment of the Frontage Road, the soils exhibit high corrosion potential for steel west of Aajker Creek, and variable (low to high) to the east. Corrosion potential for concrete is generally low throughout the Study Area. Frost susceptibility of these soil types is moderate. In addition, the organic clay soil that could be encountered during excavation will likely be moisture sensitive that can adversely affect construction as well as the long term viability of the roadway.

Gallatin Valley consistently has an organic lean clay (AASHTO A-6 and A-8) layer, which can be problematic for construction and long-term stability if not taken into consideration during design. This organic clay layer ranges from zero to eight (0 to 8) feet thick. The organic clay soils as the topmost layer should help to promote quick revegetation. If an area lacking a topsoil layer is encountered, the sandy gravel layer will be exposed and extra care will be required to provide vegetative soil stabilization. Clay soil reacts in extremes to either the lack of or presence of moisture. The design of future projects forwarded from the study should consider including permanent erosion and sediment control (PESC) measures to the extent practicable to facilitate revegetation of disturbed areas.

MDT maintains the Montana Rockfall Hazard Rating System (RHRS) to manage rock slope assets along Montana highways. A 2003-2005 MDT research program evaluated rockfall history and behavior throughout the state. No rockfall hazards are located along the Study Area.

Montana is a seismically-active state. The Intermountain Seismic Belt is a regional zone of seismicity that that extends through western Montana from the northwest corner (Flathead Lake region) to Yellowstone National Park. No faults have been identified near or within the study area that have had offset in the past 15,000 years.

Improvements brought forward from the study will be subject to more detailed geotechnical analysis. Part of this detailed analysis may involve taking advance borings to evaluate soil characteristics at exact project locations.

2.3 Surface Waters

Topographic maps and geographic information system (GIS) data was reviewed to identify the location of surface water bodies such as rivers, streams, lakes, and reservoirs within the Study Area. Table 1 below lists the streams within the Study Area.

Table 1 Surface Waters

Named Stream	Location (Belgrade to Bozeman Frontage Road RP[1])	Stream Type	Stream Order[2]
Hyalite Creek	23.0	Perennial	4
Aajker/McDonald Creek	23.2	Perennial	2
Baxter Creek	23.2 to 24.1	Perennial	2
Mandeville Creek	2.5 (Primary 118)	Perennial	2
Unnamed	24.1.1 to 24.5 25.0 to 25.3 25.9 26.7	Intermittent/Ephemeral	1
Mammoth Ditch	19.8	Irrigation Ditch	N/A
Spain Ferris Fork Ditch	21.0	Irrigation Ditch	N/A
Dry Creek	22.3	Irrigation Ditch	N/A

[1]RP = Reference Post

[2]Stream Order classifies a stream 1 – 12 based on the size and strength of the waterway with 12 being largest.

A variety of additional surface waters, including unnamed streams, natural drainages, wetlands, and ponds are present in the Study Area. Impacts to these surface waters could occur from improvements such as culverts under the roadway, placement of fill, or rip rap armoring of banks. The United States Army Corps of Engineers (USACE), the Montana Department of Fish, Wildlife and Parks (FWP), and the Montana Department of Environmental Quality (DEQ) all regulate portions of work within surface waters. Coordination with federal, state, and local agencies would be necessary to determine the appropriate permits based on choice of improvement options forwarded from this study. Impacts should be avoided and minimized to the maximum extent practicable. Stream and wetland impacts may trigger compensatory mitigation requirements of the USACE. Exhibit 5 (in Attachment 1) contains two maps (5A and 5B) depicting surface waters found in the Study Area.

Total Maximum Daily Loads

The Study Area is located in the Upper Missouri Watershed and more specifically the Gallatin River hydrologic unit code (HUC) 10020008. A search of the DEQ website revealed two water bodies on the 303d/305b integrated list within the buffer zone of the corridor. These waterbodies are Hyalite Creek and Mandeville Creek, which are shown on Exhibit 5B in Attachment 1. Section 303 subsection “d” of the Clean Water Act requires the state of Montana to develop a list, subject to United States Environmental Protection Agency (USEPA) approval, of water bodies that do not meet water quality standards. When water quality fails to meet state water quality standards, DEQ determines the causes and sources of pollutants in a sub-basin assessment and sets maximum pollutant levels, called total maximum daily loads (TMDL).

TMDLs set by DEQ become the basis for implementation plans to restore water quality to a level that supports state designated beneficial water uses. The implementation plans identify and describe pollutant controls and management measures to be undertaken (such as best management practices), the mechanisms by which the selected measures would be put into action, and the individuals and entities responsible for implementation projects.

DEQ lists both Hyalite Creek (MT41H003_132) and Mandeville Creek (MT41H001_021) as having impairments in the Draft 2014 Integrated 303(d)/305(b) Water Quality Report for Montana (see Table 2 below). Both water bodies are Category 4A, defined as waters where one or more applicable beneficial uses are impaired or threatened, and a TMDL has been completed to address the factors causing the impairment or threat. For Hyalite Creek inside the Study Area, probable sources of impairment are irrigated crop production, leaking underground storage tanks, managed pasture grazing, and natural sources. Mandeville Creek probable sources of impairment are municipal point source discharges, municipal (urbanized high-density area), and residential districts. Currently the probable sources of impairments are not listed as being associated with road construction activities. That said, if improvement options are advanced, it will be necessary to reevaluate the 303(d)/305(b) integrated report for changes to listed impairments along with possible changes to TMDLs on a project level at that future time.

Table 2 303(d) Listed Streams in Study Area

Named Stream	Location (RM[1])	Use Class	TMDL Completed	Category	Possible Impairment	Beneficial Uses
Hyalite Creek MT43E001_010	23.0	B-1	Yes	4A	Low flow alterations, Nitrogen	Aquatic Life, Primary Contact, Recreation, Agricultural
Mandeville Creek MT41H001_021	2.5 (27.5)	B-1	Yes	4A	Nitrogen, Phosphorus	Drinking Water, Primary Contact, Recreation, Agricultural, Aquatic Life

Source: DEQ, 2015

Stormwater

Construction of forwarded improvement options may trigger the need to obtain coverage under the Montana Pollutant Discharge Elimination System (MPDES) General Permit for Storm Water Discharges Associated with Construction Activity.

The eastern end of corridor is located within the Bozeman Municipal Separate Storm Sewer System (MS4) area. Exhibit 6 depicts the boundary of the Bozeman MS4 set forth in Administrative Rules of Montana (ARM 17.30.1101; 17.30.1301; and 17.30.601). Current permit holders are the City of Bozeman, Montana State University, and MDT. Under the current Small MS4 General Permit, new development or redevelopment projects greater than or equal to one acre in size must implement, when practicable, low impact development (LID) practices that infiltrate, evapo-transpire, or capture for reuse the runoff generated from the first half-inch of rainfall from a 24-hour storm preceded by 48 hours of no measurable precipitation.

The City of Bozeman and MDT both manage MS4 programs that overlap the Study Area. Each program has specific requirements based on their individual Storm Water Management Plans.

Information on the MS4 programs including specific requirements for the individual programs can be located on the respective permit holder's stormwater website, which can found in the references section at the end this document. These and other MS4 issues will need to be further evaluated during any future project design. The current MS4 permit is in the process of being reissued and MDT has applied for an Individual MS4 permit. As such, it is likely the permit requirements will be slightly different in the future.

Wild and Scenic Rivers

The Wild and Scenic Rivers Act, created by Congress in 1968, provided for the protection of certain rivers, and their immediate environments, that possess outstandingly remarkable scenic, recreational, geologic, fish and wildlife, historic, or cultural resources, or other similar values. Based on a review of the United States National Park Service (USNPS) website, none of the waterways within the Study Area carry the wild and scenic designation.

2.4 Groundwater

According to the Montana Bureau of Mines and Geology (MBMG) Groundwater Information Center (GWIC), there are 16,770 wells on record in Gallatin County. A portion of these wells are located within the Study Area. The newest well on record is from April 9, 2015, and the oldest well on record is from January 1860. Approximately 60 percent (10,213) of wells within Gallatin County are at a depth of 0 to 99 feet. There are 77 statewide monitoring network wells in Gallatin County. The wells in Gallatin County have widely varying uses, with domestic wells (12,885) being the most common followed by irrigation wells (1,699).

Wells can be a costly item to mitigate if they are not avoided. Mitigation of a well usually involves drilling a new well for the owner in a new location that will not be impacted by the potential project. Well costs are based on per foot price; the deeper and higher volume needed results in a higher cost.

As mentioned above there are numerous private domestic wells located within the buffer zone of the Study Area. In addition to the private wells, seven public water supply wells are located inside the buffer zone. An extra item to consider with public water supply wells is they have a setback requirement from DEQ of a 100-foot isolation zone in which no source of pollutant can be located. Public water supply wells can also be deeper and require a higher volume of water to be discharged. This can translate into a more expensive well to replace, along with affecting larger number of users compared to a private well if impacted. The public water supply wells information is listed below in Table 3. A visual depiction of their approximate location can been seen in Exhibit 7A and7B (in Attachment 1) with DEQs buffer zone shown.

Table 3 Public Water Supply within Study Area

Owner	Approximate Location	Exhibit #
Beaumount Supper Club	Mile 19.8	7A
Everybodys Gym Southwest	Mile 20.2	7A
The Friendly Tavern	Mile 20.2	7A
Kid Kart Sunrise Medical	Mile 20.2	7A
City of Belgrade	Mile 20.4	7A
Blue Basket Market	Mile 27	7B
Pump N Pak	Mile 1.5	7B

Source: MDEQ 2015.

In any future roadway improvements on the corridor, MDT will take measures to avoid adverse impacts to Public Water Supply wells. Impacts to existing domestic wells will also be considered if improvement options are forwarded from the study.

2.5 Wetlands

The USACE defines wetlands as those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas.

United States Fish and Wildlife Service (USFWS) National Wetlands Inventory (NWI) mapping data is available for this area from the NWI website or the Montana Natural Resource Information System (NRIS) (see Exhibit 5 in Attachment 1). The potential wetland areas identified within the Study Area primarily occur within the riparian corridors along the perennial drainage, some irrigation facilities, and some intermittent drainages, as well as intermittently within the Study Area.

While some useful information can be ascertained from the NWI maps, these maps are based on the USFWS definition of wetlands, which does not follow the USACE definition that MDT uses in wetland determination and delineation. NWI maps are typically generated based on aerial and satellite imagery and are not sufficiently accurate or detailed for MDT project wetland determination and/or delineation.

Future wetland delineations would be required if improvement options are forwarded from the study that could potentially impact wetlands. Future projects in the Study Area would need to incorporate project design features to avoid and minimize adverse impacts to wetlands to the maximum extent practicable. Unavoidable impacts to wetlands must be compensated through mitigation in accordance with the USACE regulatory requirements and/or requirements of Executive Order 11990. Currently MDT's closest mitigation sites are at East Bozeman Interchange in Bozeman, and Jack Creek Ranch in Ennis MT. Work within jurisdictional wetlands would require a Clean Water Act 404 permit from the USACE. The need for any stream or wetland mitigation should be identified and secured prior to the permitting process.

2.6 Floodplains and Floodways

Executive Order 11988, Floodplain Management, requires federal agencies to avoid to the extent possible, the long- and short-term adverse impacts associated with the occupancy and modification of floodplains, and to avoid direct and indirect support of floodplain development wherever there is a practicable alternative. In accomplishing this objective, "each agency shall provide leadership and shall take action to reduce the risk of flood loss, to minimize the impact of floods on human safety, health, and welfare, and to restore and preserve the natural and beneficial values served by floodplains in carrying out its responsibilities" for the following actions:

- acquiring, managing, and disposing of federal lands and facilities;
- providing federally-undertaken, financed, or assisted construction and improvements; and
- conducting federal activities and programs affecting land use, including but not limited to, water and related land resources planning, regulation, and licensing activities.

Federal-aid Policy Guide, 23 CFR 650, Bridges, Structures, and Hydraulics, provides "policies and procedures for the location and hydraulic design of highway encroachments on flood plains, including direct Federal highway projects administered by the [Federal Highway Administration (FHWA)]." This document defines "base flood" as the "flood or tide having a 1-percent chance of being exceeded in any given year" and "base flood plain" as the "area subject to flooding by the base flood."

Federal Emergency Management Agency (FEMA)-issued flood maps for Gallatin County indicate that flood plain zones existing within or adjacent to the Study Area. They are as follows:

Zone A: Special Flood Hazard Area (SFHA) – 100-Year Flood, Base Flood Elevations NOT Determined;
Zone AE: SFHA – 100-Year Flood, Base Flood Elevations Determined;
Zone AE: SFHA – 100-Year Flood, Base Flood Elevations Determined, Floodway Areas;
Zone X: Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood;
Zone X: Areas determined to be outside 500-Year Flood.

Only Zone X that is defined as areas determined to be outside the 500-year (0.2% annual chance) flood plain intersect with the Study Area. These locations are shown on the MDT-created flood plain maps in Exhibit 8.

If roadway improvements or developments could involve placement of fill within the regulatory flood plain then a flood plain permit would be required. Project development would then require coordination with Gallatin County to minimize flood plain impacts and obtain necessary floodplain permits for project construction. As only Zone X (outside 500-Year Flood) cross into the Study Area this should not impact possible improvements but should be reevaluated at time of project development for any changes.

2.7 Irrigation

Irrigated agriculture land exists in Gallatin County within the Study Area. Depending on the improvement option(s) proposed during the study, there is potential to impact irrigation facilities. Impacts to irrigation facilities should be avoided when practicable. Future modifications to existing irrigation canals, ditches, or pressurized systems could require redesigning and constructing in consultation with the owners to minimize impacts to agricultural operations. If there is impact to irrigation structures, there could be additional costs above typical project costs associated with the redesign, or moving of the irrigation structure(s). The available Water Resources Survey maps (Attachment 3) indicate that there is an abundance of water rights and agriculture land use throughout Study Area. As such, there is a large amount of irrigation structures not easily identified at the high-level review appropriate for this Study. A more in-depth review for irrigation structures should occur at the project development stage to identify possible impacts.

These irrigation structures are of a high importance to the areas surrounding the corridor and will need to be taken into consideration as part of the design process if MDT forwards projects in the corridor. Please refer to section 4.5 and Attachment 3 for historical information.

2.8 Air Quality

The USEPA has established National Ambient Air Quality Standards (NAAQS) for six criteria pollutants, including carbon monoxide, nitrogen dioxide, ozone, particulate matter (PM_{10} and $PM_{2.5}$), sulfur dioxide, and lead. The USEPA designates communities that do not meet NAAQS as "non-attainment areas." States are then required to develop a plan to control source emissions and ensure future attainment of NAAQS. The Study Area is not located in a non-attainment area for any of the criteria pollutants. Additionally, there are currently no non-attainment areas nearby. As a result, special design considerations will not be required in future project design to accommodate NAAQS non-attainment issues.

Depending on the scope of improvements considered in the Study Area, an evaluation of mobile source air toxics (MSATs) may be required. MSATs are compounds emitted from highway vehicles and off-road equipment, which are known or suspected to cause cancer or other serious health and environmental effects.

2.9 Hazardous Substances

The NRIS and Montana Board of Oil and Gas (MBOG) databases were searched for information on underground storage tank (UST) sites, leaking underground storage tank (LUST) sites, abandoned mine sites, remediation response sites, landfills, National Priority List (NPL) sites, hazardous waste, crude oil pipelines, and toxic release inventory sites. There were no abandoned mine sites, NPL sites, oil and gas production wells, or toxic release inventory sites identified within the Study Area. At this time, none of the hazardous substances sites discussed (Table 4 following page) below are expected to be "must avoid" locations or drivers of the ultimate project design.

Although it is unlikely that any of these sites will substantially impact projects forwarded from the study, if a project were to overlap one of these sites a soil investigation should occur. If contaminated soils are present, a special provision regarding handling contaminated soils is recommended to be included in project documentation. In addition, the contaminated soils could result in the need for remediation. A brief summary of the primary sites that fall within the Study Area that could overlap potential improvements follows below. Please see Exhibit 9A and 9B in Attachment 1 for approximate locations of the sites discussed below.

Underground Storage Tanks

There are five individual USTs located in or adjacent to the Study Area. Two are registered to a gas station at the intersection of West Griffin Drive and Primary 118 in Bozeman and three are registered to a gas station at the Frontage Road and Oregon Street in Belgrade. An additional four USTs exist just outside the northern Study Area buffer zone. One is in Belgrade approximately a half block north of Study Area between North Weaver Street and North Broadway Street. Three additional USTs are registered to a gas station at the intersection of the Frontage Road and Springhill Road/Reeves Road West. Numerous USTs are registered to an Exxon Fuel Terminal in Bozeman approximately 0.25 mile east of the southeastern extent of the Study Area.

An active UST site is a tank system that is currently in use and registered with the DEQ. These sites may include service stations, convenience stores, farms, or ranches. A closed UST site is no longer in use. It is likely that the tanks, piping, and pumps have been removed from the ground. It is unlikely that a closed UST site will affect project development. However, project activities occurring near an active UST site may warrant additional soil/groundwater investigations or special provisions. Additional investigation regarding the precise locations of the USTs may need to take place depending on what improvement options are forwarded from this study.

Leaking Underground Storage Tanks

There are nine active LUST sites and fifteen resolved LUST sites located in or adjacent to the Study Area. There are six inactive LUST sites within the project corridor. Three are in Belgrade near RP 20. One is immediately east of RP 21. Another is immediately east of RP 22. The third is immediately west of RP 23. Work at these sites would have a low potential for encountering hazardous materials, but a chance still exists.

There are two active LUST sites within the project area. One is in Belgrade, east of RP 20 at the intersection of Kennedy Street and the Frontage Road. The other is at RP 1.4 at West Griffin Drive and the Frontage Road. Both of these LUST sites would involve a high potential for encountering hazardous materials in the subsurface. Table 4 below lists details on these two active LUST sites.

A resolved LUST site has been characterized and cleaned up, and there is limited risk to human health and the environment. An active LUST site has petroleum hydrocarbon concentrations in soil or groundwater that exceed DEQ cleanup criteria. The responsible party, with oversight from DEQ, may be conducting soil and/or groundwater investigations or cleanup activities at an active LUST site. It is unlikely that a resolved LUST site will affect project development. If project activities occur in the vicinity of an active LUST site further investigation and possible remediation may be necessary. This could create additional costs associated with a forwarded improvement.

Table 4 Hazardous Substance Sites of Potential Concern

Site Name	UST or LUST	Approximate Location	Notes
Lust Site 1	LUST	RP 20, P-205 and Kennedy St	Petroleum impacts to soil and groundwater possible
Lust Site 2	LUST	RP 1.4, W. Griffin Dr. and P-118	Petroleum impacts to soil and groundwater possible
Crude Oil Pipeline	Petroleum Pipeline	RP 25.5(P-205) east to RP 2.8(P-118); crosses at RP 1.8 as well	No known impacts from pipeline, but potential hazard if not properly located
Hirsch Trucking Spill	Remediation Response Site	RP 26.6 (P-205)	125 gallon diesel fuel spill. Not an active site, but may have been delisted with petroleum impacts remaining underneath roadway.

Source: NRIS 2015

Crude Oil Pipeline

The NRIS database, National Pipeline Mapping System, and Montana State Library data indicate that a 10-inch Yellowstone Pipeline conveying crude enters the Study Area from the north at approximately RP 25.5. The pipeline travels along the corridor until approximately RP 2.8 where it crosses Primary 118 then crosses again at RP 1.8 of Primary 118. A natural gas pipeline also crosses the Study Area at approximately RP 26.7 of the Frontage Road and RP 1.8 of Primary 118. Due to legal protections regarding the terms of use and data sharing agreements up-to-date mapping data is not available. Data published in 1999 by Montana State Library for DEQ is available to be used as a general reference to find potential sources of contamination from refined products and crude oil pipelines. It shows the general location of the refined products and crude

oil pipelines in Montana from maps that were available at the time, and may not show all current pipelines. The two pipelines have been mapped using the historical data for reference purposes only (Exhibit 9A and 9C). If improvements are proposed in these areas, additional research and coordination with the owners will need to occur to identify if the pipelines currently exist at these locations and what, if any, potential conflicts exist with the pipelines.

Hazardous Waste Handling Facilities

Two hazardous waste handling facilities are shown on the DEQ data mapper within the Study Area. One is the facility in Belgrade at RP 20.1, which is identified as the Corbond Corporation, a conditionally exempt small quantity waste generator. The other facility is immediately south of the project area, at RP 21.6, but this facility is listed as inactive, with a most recent reporting year of 1995. It is unlikely that these facilities will impact project development.

Remediation Response Sites

The DEQ data mapper identifies a Remediation Response Site at RP 26.6 in the project area. This site is described as an inactive Water Quality Act (WQA) Site identified as Hirsch Trucking (HIRT), which was the site of a 125-gallon diesel fuel spill. This site was delisted from the WQA program in 1996 and is ranked as "No Further Action" with DEQ. It is possible that some residual petroleum contamination from this fuel spill that occurred in 1995 could be encountered underneath the roadway at this location. Work in this area could involve the need for possible soil remediation, which may elevate costs. Inclusion of MDT contaminated soils special provision is recommended for work in this area.

Another three WQA sites are depicted near the northern extent of the Study Area at RP 20.1. However, it is believed that these sites are incorrectly located on DEQ's data mapper and are in fact outside of the Study Area. These three sites are listed as Gallatin Airfield Delta Airline (propylene glycol spill, delisted in 1997), Louisiana Pacific (unknown issue, listed as Class V injection well, referred in 1995) and TMC Inc. (support activities for mining, listed as failure to report monitoring and referred in 1997). None of these sites appear to have potential to impact project activities.

Several additional response sites exist west of the project area in Belgrade and east of the project area in Bozeman. The closest of these sites is a 2,700-gallon unleaded petroleum release that has impacted groundwater at the Exxon Fuel Terminal approximately 0.25 mile east of the Bozeman end of the Study Area. Based on the distance, it is unlikely that hazardous materials from those additional response sites will be encountered during project activities.

Mine Sites

The DEQ database identified three opencut mining sites (sand and gravel pits) immediately south of the project area between RP 21 and RP 24. Knife River – Belgrade Division owns two of the open cut permits and TMC Inc. owns the third. It is unlikely that possible improvements would impact these sites. If potential improvements were to impact it is unlikely that hazardous materials would be encountered from any of these sites.

3.0 Biological Resources

3.1 Vegetation

According to the Montana Natural Heritage Program (MNHP) Landcover Report, the dominate landcover types in the Study Area is a combination of high and light intensity residential development which is shown by Human Land use being 71% of landcover. The different landcovers with associated percentages by levels from broad (level 3) to detailed (level 2) are shown in Table 5 below. Typically, the drainages are lined with deciduous riparian vegetation and some wetlands. The majority of the different land types in the project area are either moderately or highly disturbed.

Table 5 Study Area Land Cover

Level 3 Landcover Class	Level 2 Landcover Category	Level 1 Ecological System
Human Land Use 71%	Agriculture 38%	Cultivated Crops 32%
		Pasture/Hay 5%
	Developed 32%	Commercial/Industrial 8%
		Developed/Open Space 7%
		Other Roads 7%
		Low Intensity Residential 6%
		Interstate 2%
		High Intensity Residential 1%
		Major Roads 1%
		Railroad 1%
	Mining and Resource Extraction 1%	Quarries, Strip Mines, Gravel Pits 1%
Grassland Systems 24%	Montane Grassland 24%	Rocky Mountain Lower Montane, Foothill, and Valley Grassland 23%
		Rocky Mountain Subalpine-Montane Mesic Meadow 1%
		Big Sagebrush Steppe 4%
Wetland and Riparian Systems 2%	Floodplain and Riparian 2%	Rocky Mountain Lower Montane-Foothill Riparian Woodland and Shrubland 2%
Forest and Woodland Systems <1%	Conifer Dominated <1%	Rocky Mountain Montane Douglas-fir Forest and Woodland < 1%
	Deciduous Dominated <1%	Aspen Forest and Woodland < 1%

Source: MNHP 2015

If improvement options are forwarded from the study, practices outlined in MDT standard specifications should be followed to minimize adverse impacts to vegetation and facilitate establishment of final stabilization of disturbed areas. Removal of mature trees and shrubs should be limited to the extent practicable.

Noxious Weeds

Noxious weeds can degrade native vegetative communities, damage riparian areas, compete with native plants, create fire hazards, degrade agricultural and recreational lands, pose threats to the viability of livestock, humans, and wildlife, and are expensive to manage. Areas with a history of disturbance, like highway rights-of-way, are at particular risk of weed encroachment.

The Invaders Database System lists 262 exotic plant species and 49 noxious weed species in Gallatin County, some of which may be present in the Study Area (See Appendix 2 for a detailed list). Gallatin County has weed management criteria in place that can be found on their website.

Reseeding of disturbed areas with desirable native plant species will help to reduce the spread and establishment of noxious weeds and to re-establish permanent vegetation. If improvements are forwarded from the study, field surveys for noxious weeds should take place prior to any ground disturbance and coordination with Gallatin County Weed Board should occur. Proposed projects should incorporate the practices outlined in MDT standard specifications to minimize adverse impacts.

3.2 General Wildlife Species

Fisheries

There are four perennial streams in the Study Area listed as providing suitable habitat for an array of cold-water species (see Exhibit 5 in Attachment 1). Table 6 below depicts fisheries information for the named streams within the Study Area. These are the most commonly occurring fish species according to the Montana Fish Information System (MFISH) database (report generated April 2015). Other unnamed stream crossings exist that could also support fish species within the study area. Permitting from regulatory agencies for any future Study Area improvements will require incorporation of design measures to facilitate aquatic species passage.

Table 6 Fisheries Data

Named Stream within Study Area	RP*	RM**	Fish Species Commonly Occurring within Study Area
Hyalite Creek	23.0	3.5	Brook trout, Brown trout, Longnose dace, Longnose sucker, Mottled sculpin, Mountain sucker, Mountain whitefish, Rainbow trout, White sucker
Aajker/McDonald Creek	23.2	0.8	Brown trout, Mottled sculpin
Baxter Creek	23.2 to 24.1	2.0	Brown trout, Mottled sculpin
Mandeville Creek	2.5 (27.5)	0.8	No data available

Source: FWP Montana Fisheries Information System (MFISH), 2015.
RP* Approximate reference post where Belgrade to Bozeman Frontage Road crosses the stream, or where the stream enters the study area if not actually crossed.
RM** Approximate river mile of crossing, or closest point to study area if not actually crossed.

Mammals

Wildlife species inhabiting or traversing the Study Area are typical of those that occur in moderately developed areas of southwest Montana. Since many species in this area are habituated to somewhat disturbed areas and are tolerant of moderate levels of development, species present in this area are predominately, though not exclusively, generalists. Some of the generalist wildlife species present in the Study Area but not limited to are white-tail and mule deer, coyote, red fox, porcupine, raccoon, striped skunk, badger, beaver, muskrat, Richardson's ground squirrel, deer mouse, vole species, and a variety of bat species. Black bear, bobcat, mountain lion, and wolf may also occur as transients through the project area on occasion. Moose may occasionally occur along the drainages and riparian areas in proximity to the study area. Exhibit 10 (in Attachment 1) indicates distributions of game species mapped by FWP.

Whitetail and mule deer are most prevalent in the study area, traversing between the riparian corridors and agricultural fields for daily resource needs, and as resident migrants. A review of the MDT Maintenance animal incident database between January 1, 2009, and December 31, 2013, indicates that a minimum of 27 animal carcasses were collected throughout the length of the Belgrade to Bozeman Frontage Road corridor (Primary 118 RP 0.0 to RP 3.0 and Primary 205 RP 20.0 to RP 27.0). Over half of the recorded carcasses were collected between RP 26.0 and RP 27.0, followed by RP 25.0 to RP 26.0. Five carcasses were recorded within 0.10-mile of RP 26.8. It appears that the reported carcasses were all deer, mostly whitetail deer and a few mule deer. Table 7 below summarizes by RP where carcasses were collected. Exhibit 11A and 11B in Attachment 1 illustrates the collection locations. If improvement options are forwarded from the study, the need for and viability of wildlife crossing mitigation measures should be explored during the project development process.

Table 7 Deer Carcasses Collected by Reference Post January 2009 - December 2013

Reference Post	Carcass Count	Carcass Count per mile	
22.3	1	22.0-23.0	3
22.5	1		
22.6	1		
24.6	1	24.0-25.0	2
24.9	1		
25.0	1	25.0-26.0	4
25.2	1		
25.5	1		
25.6	1		
26.0	1	26.0-27.0	15
26.1	2		
26.2	1		
26.3	2		
26.5	3		
26.6	1		
26.8	5		
1.5	1	1.0-2.0	3
1.9	2		
2.1	1	2.0 – 3.0	2
2.7	1		
Total	**29**		**29**

Source: MDT Maintenance animal incident database accessed March **2015**

Birds

The MNHP Natural Heritage Tracker database indicates a variety of birds have been documented with the potential to occur and nest in the Study Area. These species include representative songbirds, birds of prey, waterfowl, owls, and shorebirds. Exhibit 12A (Attachment 1) shows the species of concern bird distributions that are visible in the Study Area. The Gray (Hungarian) Partridge, Pheasant, and Sharp-tailed Grouse (Exhibit 10 in Attachment 1), are game birds with habitat present in the Study Area. The Study Area provides marginal habitat for migratory birds which may nest in the mature trees or move through the area as seasonal migrants. Please refer to MNHP for exact locations of other bird species occurring in the Study Area.

Migratory birds are protected under the Migratory Bird Treaty Act (MBTA). Under this strict liability law, it is unlawful to pursue, hunt, take, capture or kill; attempt to take, capture or kill;

possess, offer to or sell, barter, purchase, deliver or cause to be shipped, exported, imported, transported, carried or received any migratory bird, part, nest, egg or product, manufactured or not. Direct disturbance of a nest occupied with birds or eggs is prohibited under the law. The destruction of unoccupied nests of eagles; colonial nesters such as cormorants, herons, and pelicans; and some ground/cavity nesters such as burrowing owls or bank or cliff swallows may also be prohibited under the MBTA.

There are multiple bald eagle nests which occur within the general proximity of the corridor, but currently the half-mile buffer areas around these nests do not cross into the Study Area. The Study Area is not typical golden eagle habitat, so presence of golden eagle nests is unlikely. Bald and golden eagles are protected under the MBTA and managed under the Bald and Golden Eagle Protection Act, which prohibits anyone, without a permit issued by the Secretary of the Interior, from "taking" bald eagles, including their parts, nests, or eggs. The Act provides criminal penalties for persons who "take, possess, sell, purchase, barter, offer to sell, purchase or barter, transport, export or import, at any time or any manner, any bald eagle or golden eagle, alive or dead, or any part, nest, or egg thereof." The Act defines "take" as "pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, molest or disturb."

Any improvements forwarded from this study should consider potential constraints that may result from nesting/breeding periods of migratory birds and presence of unknown or future bald and golden eagles nests. Future projects that involve tree and shrub removal and/or structure replacement or rehabilitation must be conducted in compliance with Migratory Bird Treaty Act, which may entail a timing restriction between April 15 and August 15.

Amphibians and Reptiles

The presence of amphibians and reptiles in the study area is likely limited by lack of suitable habitat and level of development. Common species may occur in low numbers along irrigation facilities, drainages and within wetland areas. Any improvements forwarded from the study should take into consideration and minimize impacts to amphibian and reptile habitat where practicable.

Crucial Areas Planning System

The FWP Crucial Areas Planning System (CAPS) is a resource intended to provide non-regulatory information during early planning stages of projects, conservation opportunities, and environmental review. The finest data resolution within CAPS is at the square-mile section scale or water body. Use of these data layers at a more localized scale is not appropriate and may lead to inaccurate interpretations since the classification may or may not apply to the entire square-mile section. The CAPS system was consulted to provide a general overview of the Study Area which is summarized in the following paragraph.

Terrestrial conservation species depicts the cumulative expected occurrence of 85 of Montana's vertebrate species. The majority of the study area is rated a Class 3 for Terrestrial Conservation Species while the outskirts of Bozeman are rated a Class 2. Terrestrial species richness depicts all native land-based species in Montana, including amphibians, reptiles, birds, and mammals. Species included are found year round or breed in the state. The majority of the study area is rated a Class 4 for Terrestrial Species Richness, with the exception of the riparian corridors of Hyalite Creek, which is rated a Class 1. Terrestrial game quality depicts areas considered valuable to 12 native game species and their specific habitat requirements. The entire study area is rated a Class 2 for Terrestrial Game Quality. Hyalite Creek is the only waterbody within the study area

that is rated through CAPS. Hyalite Creek is rated marginally for Aquatic Connectivity, Native Species Richness, Game Fish Quality, and Game Fish Life History. Specific results and general recommendations for the study area can be located at http://fwp.mt.gov/gis/maps/caps/

The online CAPS mapping tool provides FWP general recommendations and recommendations specific to transportation projects for both terrestrial and aquatic species and habitat. These recommendations can be applied generically to possible future improvements carried forward from the study.

3.3 Threatened and Endangered Species

The USFWS maintains the federal list of threatened and endangered (T&E) species. Species on this list receive protection under the Endangered Species Act (ESA). An "endangered" species is in danger of extinction throughout all or a significant portion of its range. A "threatened" species is likely to become endangered in the foreseeable future. The USFWS also maintains a list of species that are candidates or proposed for possible addition to the federal list. According to the USFWS, six threatened, endangered, proposed, or candidate species are listed as occurring in Gallatin County (see Table 8 below).

Table 8 Threatened and Endangered Species in Gallatin County

Species	Status	Habitat
Greater Sage-Grouse	Candidate	Sagebrush
Sprague's Pipit	Candidate	Short-grass prairie
Whitebark Pine	Candidate	Subalpine forests
Grizzly Bear	Threatened	Variable-meadows, riparian zones, mixed shrub fields, closed timber, open timber, sidehill parks, snow chutes, and alpine slabrock habitats
Canada Lynx	Threatened, and Critical Habitat	Subalpine forests
Ute Ladies' Tresses	Threatened	Alkaline wetlands, swales and old meander channels often on the edge of a wetland or in areas that are dry by mid-summer. Habitat is limited to areas within major river drainages

Source: USFWS, 2015.

According to the MNHP - Map Viewer database, which records and maps documented observations of species in a known location, none of them overlap into the Study Area. Due to the lack of suitable habitat resulting from the level of development in the Study Area, density of roads and presence of the Interstate and railroad, it is not anticipated that any of the listed species occurring in Gallatin County would normally occur in the Study Area. It is anticipated that any project forwarded from this study would result in a "*no effect*" determination for listed species in Gallatin County.

If improvements are forwarded from the study, an evaluation of potential effects to T&E species will need to be completed during the project development process. As federal status of protected species changes over time, reevaluation of the listed status and afforded protection to each species should be completed prior to issuing a determination of effect relative to potential impacts.

3.4 Species of Concern

Montana species of concern (SOC) are native plants or native animals breeding in the state that are considered to be "at risk" due to declining population trends, threats to their habitats, and/or restricted distribution. Designation of a species as a Montana SOC is not a statutory or regulatory classification. Instead, these designations provide a basis for resource managers and decision-makers to direct limited resources to priority data collection needs and address conservation needs proactively. Each species is assigned a state rank that ranges from S1 (greatest concern) to S5 (least concern). Other state ranks include SU (unrankable due to insufficient information), SH (historically occurred), and SX (believed to be extinct). Modifiers, such as B (breeding) or N (non-breeding), may follow state ranks.

Table 9 Species of Concern

Class	Common Name	State Rank	Occurence Remarks	Exhibit
Mammal	Little Brown Myotis	S3	Documented presence in study area; found in variety of habitats including structures	12A
Bird	Bobolink	S3B	Historic record 1911; far western edge of range; tall grass specialist, "old" hay fields	12A
	Bald Eagle	S4	Four active nests located between 1.0 and 3.0 miles from study area	12A
	Great Blue Heron	S3	Cottonwood galleries in riparian corridors of rivers and lakes; urban wetlands	12A
	Pacific Wren	S3	Large uncut stands of old-growth and mature coniferous forests; riparian cottonwoods and aspens	12A
	Veery	S3B	Riparian forests with moderate disturbance and denser understory; willow thickets and cottonwood galleries along streams and lakes	12A
Insect	Hooked Snowfly	S2	Found along creeks and rivers; small winter stonefly; shredder-detritivore; 1977 last record	12A
Mussels/Clams	Western pearlshell mussel	S2	East Gallatin River north of Bozeman; cold running streams, low-mod gradient, stable sand or gravel substrates	12A
Plant	Small Dropseed	S1S2	Historic record 1941; dry packed soil at road crossing of railroad track in Belgrade area	12B
	Slender Wedgegrass	S3S4	Historic record unknown; prefers wet sites often in disturbance-prone settings	12B
	Rocky Mountain Twinpod	S3	Historic record 1899; sandstone ledges in Bozeman area	12B

Source: MNHP, 2015.

A search of the MNHP species of special concern database in March 2015, revealed eleven SOC in Gallatin County that have the potential to occur and breed in the Study Area based on presence

of suitable habitat. For more information and a map depicting distribution, please see Table 9 previous page and Exhibit 12A and 12B in Attachment 1.

A thorough field investigation for the presence and extent of these species should be conducted if improvement options are forwarded from this study. If present, special conditions that apply to the project design and/or during construction such as timing restrictions should be considered to avoid or minimize impacts to these species.

4.0 Social and Cultural Resources

4.1 Population Demographics and Economic Conditions

Under NEPA/MEPA and associated implementing regulations, state and federal agencies are required to assess potential social and economic impacts resulting from proposed actions. FHWA guidelines recommend consideration of impacts to neighborhoods and community cohesion, social groups including minority populations, and local and/or regional economies, as well as growth and development that may be induced by transportation improvements. Demographic and economic information presented in this section is intended to assist in identifying human populations that might be affected by improvements within the Study Area.

Title VI of the United States Civil Rights Act of 1964, as amended (USC 2000(d)) and EO 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, require that no minority, or, by extension, low-income person shall be disproportionately adversely impacted by any project receiving federal funds. For transportation projects, this means that no particular minority or low-income person may be disproportionately isolated, displaced, or otherwise subjected to adverse effects. If a project is forwarded from the improvement option(s), environmental justice will need to be further evaluated during the project development process.

Table 10 below summarizes 2013 population and demographic data for the two communities along the corridor, Gallatin County and includes Montana for comparison.

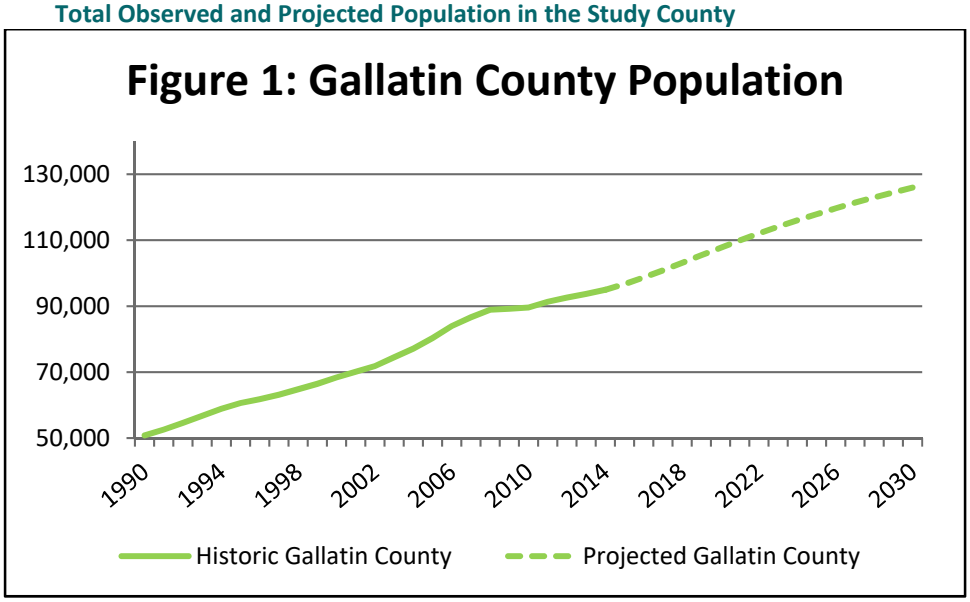
Table 10 2013 Census Demographics Data for Gallatin County

		Belgrade	Bozeman	Gallatin County	Montana
Population		7,620	39,860	94,720	1,014,864
Ethnic Characteristics	White	94.2%	93.6%	95.4%	89.5%
	Black or African American	0.4%	0.5%	0.4%	0.6%
	American Indian and Alaska Native	1.0%	1.1%	1.0%	6.5%
	Asian	0.5%	1.9%	1.3%	0.8%
	Hispanic or Latino	3.8%	2.9%	3.1%	3.3%

Source: U.S. Census Bureau, 2013.

The 2013 Census data indicates Gallatin County ranks 3rd out 56 for total county population in Montana. Half of the population in Gallatin County (50.1 percent) resides within the cities of Belgrade (8.0 percent) and Bozeman (42.1 percent). Gallatin counties population ethnicity is primarily White/Caucasian (95.4 percent). There are no American Indian Reservations within a short distance of Gallatin County, which could be an indicator for the lower American Indian population. Hispanic or Latino individuals comprise just over three percent of the population.

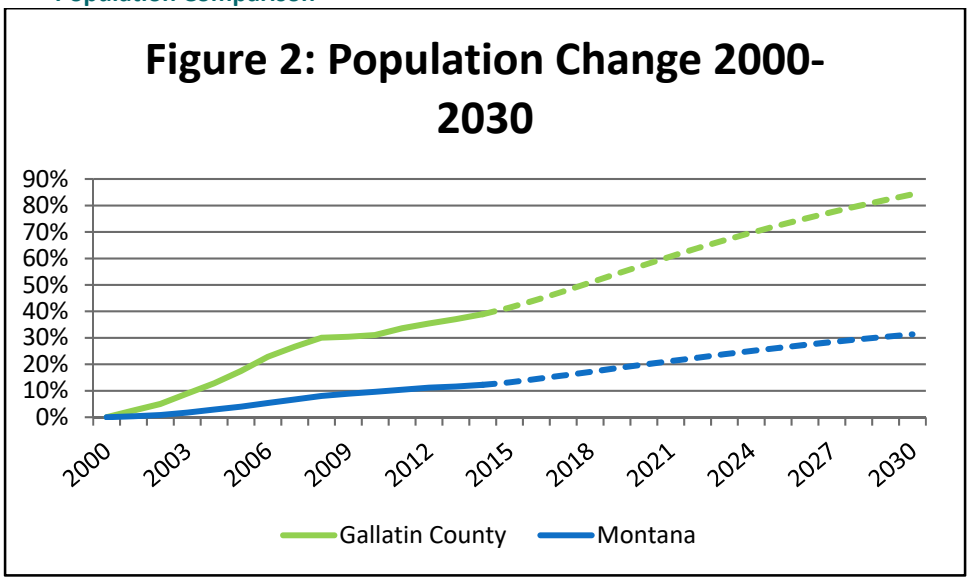
Figure 1 Total Observed and Projected Population in the Study County



Source: Montana Department of Commerce, eREMI data

According to the United States Census Bureau's estimate, Gallatin County had a population of 94,720 people in 2013, and was the 3rd most populous county in Montana. Bozeman, the 4th largest city in the state, had a population of 39,860, with Belgrade coming in 13th at 7,620. Figure 1 depicts historic and projected population (all population projections are based on Regional Economic Models, Inc. (eREMI) forecasts of net migration and natural growth) of Gallatin County.

Figure 2 Population Comparison



Source: Montana Department of Commerce, eREMI data

Over the last 25 years, Gallatin County has experienced large growth in population, from around 50,000 in 1990 to nearly 95,000 in 2015 and that trend is likely to continue. By 2030, Gallatin County's population is expected to be nearly double its year 2000 population as shown in Figure 1. Montana State University, Big Sky Resort, Yellowstone National Park, and a thriving high tech industry are the key drivers of population and economic growth in Gallatin County. Figure 2 shows that Gallatin County population growth as outpaced Montana over the last 15 years and that trend is projected to continue.

Table 11 Age Distribution

Age Distribution				
	Belgrade	Bozeman	Gallatin County	Montana
Under 18	27.5%	15.7%	20.7%	22.1%
18-64	23.0%	76.2%	68.5%	61.7%
65 and Over	49.5%	8.1%	10.8%	16.2%

Source: U.S. Census Bureau - ACS and 2010 Census

Gallatin County residents are younger on average than the average Montana resident. The median age of 32.8 years is relatively young, but this is explained in part by considering that Bozeman is home to Montana State University, and as a result, has a large population of 18 to 25 year olds. Bozeman has a median age of 27.3 years while Belgrade's median age is 28.6, both of which pull Gallatin County's average lower. Table 11 above illustrates the age distribution.

Table 12 below compares the Gallatin County, Montana, and national employment numbers as of December 2014. As seen in the table below, Gallatin County's labor market has shown strong performance as evidenced by its 3.2% unemployment rate. The county is one of many in Montana showing strong labor market conditions and low unemployment, especially as compared to the rest of the United States. High tech industry has made a solid appearance in the Gallatin County economy bringing with it many good paying jobs.

Table 12 Non – Seasonally Adjusted Employment Data

Location	Labor Force	Employed	Unemployed	Unemployment Rate
United States	155,521,000	147,190,000	8,331,000	5.4%
Montana	514,804	492,841	21,963	4.3%
Gallatin County	54,798	53,061	1,737	3.2%

Source: December 2014 data –MT Dept. of Labor and Industry

Table 13 following page displays employment for Gallatin County by industry, according to the US Census Bureau. As shown in Table 13, the tech industry accounts for 12.1% of employment in Gallatin County (under Professional, Scientific, Management, and Administrative) and is well above the Montana average of 8.3%.

The Retail trade and Arts, Entertainment, Recreation, and Accommodation Industries both employ a higher proportion of people in Gallatin County than in Montana. Retail and Entertainment tend to be more predominant in the urban population centers of Montana compared to the rural areas.

Table 13 County Employment by Industry (2009-2013)

Industry	Total Estimate			
	Gallatin County		Montana	
Agriculture, forestry, fishing, and hunting	2,092	4.2%	34,395	7.2%
Construction	4,195	8.4%	37,617	7.9%
Manufacturing	2,997	6.0%	22,278	4.7%
Wholesale trade	1,153	2.3%	11,647	2.4%
Retail trade	6,529	13.1%	57,294	12.0%
Transportation and warehousing, and utilities	1,508	3.0%	23,539	4.9%
Information	721	1.4%	8,771	1.8%
Finance and insurance, and real estate and rental and leasing	2,682	5.4%	26,771	5.6%
Professional, scientific, and management , and administrative and waste management services	6,049	12.1%	39,604	8.3%
Educational Services, health care and social assistance	11,379	22.7%	108,670	22.8%
Arts, entertainment, recreation, and accommodation and food services	6,827	13.6%	54,179	11.4%
Other services, except public administration	2,038	4.1%	21,844	4.6%
Public Administration	1,851	3.7%	30,406	6.4%
Civilian employed population (16 years and over)	**50,021**	**100%**	**477,015**	**100%**

Source: US Census Bureau, 2009-2013 5-Year American Community Survey.

Another factor for the high retail and entertainment numbers is the large amount of tourism and subsequent out-of-state dollars spent in the Gallatin Valley. As the largest urban center in southwestern Montana, Bozeman serves as a hub for people traveling to Yellowstone National Park as well as Big Sky Resort. Both Yellowstone and Big Sky attract many tourists each year in both winter and summer seasons whereas in many Montana destinations, tourism is largely a summer occurrence. Although it is not obvious by looking at the data in Table 13 above, a large part of Bozeman's economy is in some way related to Montana State University. Growth in enrollment is expected to continue and the economic effects are likely to increase in coming years.

Median household income for Gallatin County is $52,833, above the state average, but not as high as some other counties such as Lewis and Clark County and Richland County, both of which are in the high $50,000's. Bozeman proper has a median household income of $44,615 while Belgrade's median household income is $38,343, both lower than state averages. Bozeman's perceived high quality of life and college town labor market could play a role in this fact. The poverty level is 14.1% in Gallatin County, which is slightly lower than Montana. Bozeman, however, has a poverty rate of 21.2%, which is well above the Montana average, due in part to college students.

In summary, Gallatin County has one of the strongest economies in Montana and the outlook for future growth is positive. The development of the high tech sector has created many well-paying jobs and Montana State University continues to grow. Additionally, strong non-resident travel numbers have solidified Bozeman and Gallatin County as one of Montana's best performing

economies after the recession. Gallatin County's economy is predicted to remain strong in the coming years. Even though the Gallatin County median income is above the Montana average further investigation should take place to determine the possibility of low-income person(s) being disproportionately isolated, displaced, or otherwise subjected to adverse effects by any forwarded improvements on a project-by-project basis.

4.2 Planning Documents

The available growth and planning documents for the City of Belgrade, the City of Bozeman and Gallatin County were reviewed. Several items were noted in the Greater Bozeman Area Transportation Plan (2007 Update) that should be taken into consideration during the corridor study. Table 14 below lists the four transportation needs that fall into or are adjacent to the Study Area. Identified need MSN-17 made the top ten projects list of the plan.

As possible improvements are identified through the corridor study process, the continued validity of the needs identified in the local plans should be investigated. In addition, a review for updated planning documents should take place during potential design of projects.

Table 14 Greater Bozeman Area Transportation Plan

Location	Planning ID	Identified Needs
Nelson Road/ Frontage RD	TSM-15	1. Add left turn lane to Nelson Rd. 2. Traffic signal, roundabout, or other traffic control device should be added to intersection when warranted.
Sacajawea Peak/ Frontage RD	TSM-16	1. Left turn lanes be added to intersection. 2. Traffic signal, roundabout, or other traffic control device should be added to intersection when warranted.
Gallatin Field/ Frontage RD	TSM-17	1. Traffic signal, roundabout, or other traffic control device should be added to intersection when warranted.
Frontage RD (N. 7th to Belgrade)	MSN-17	1. Upgrade to a three-lane arterial, including one travel lane each direction with a two-way center turn lane. 2. Roadway shoulders widened to facilitate bicycle travel included in upgrade.

Source: Greater Bozeman Area Transportation Plan (2007 Update).

4.3 Land Ownership

Ownership of land in the Study Area is predominantly private, with some interspersed state and federal owners. The specific public landowners are the FWP, Montana State Trust lands, and MDT. The FWP land, which is on the east end of the Study Area, is a fishing access site. Directly across the Frontage Road from the FWP land is the Montana State Trust lands. The remainder of the state-owned land is MDT land, which is the roadway around which the corridor study area is structured. Much of the private land throughout the Study Area is residential or agricultural. Commercial land use is seen at a higher frequency near the cities of Belgrade and Bozeman. Gallatin Field – Bozeman Yellowstone International Airport has a sizable amount of land adjacent to the east side of Belgrade. Land ownership maps for the Study Area are provided in Exhibit 13A and 13B (in Attachment 1).

Mixed land use arises from the varied land ownership throughout the Study Area. These land uses include commercial, industrial, crop/pasture, and mixed urban (see Exhibit 13A and 13B in Attachment 1). Even though there is a large amount of privately owned land in the Study Area, the need to purchase right-of-way for possible improvements is minimal as most improvements

expected to be brought forward would not require additional right-of-way. In addition, the corridor parallels Montana Rail Link tracks for a large portion of the Study Area. The railroads have strict policies on working near or in their right-of-way, which could add time constraints to projects along with limiting the ability to acquire right-of-way on the south side of the Frontage Road. If improvements are forwarded from this study, land use at and adjacent to possible projects will need to be considered during design for determining overall project costs.

4.4 Recreational Resources

Gallatin County and the Belgrade/Bozeman area offer a variety of year round outdoor activities including fishing, hiking, hunting, boating, and swimming in the summer. In the winter, snowmobiling, ice-skating, downhill skiing, and cross-country skiing occur in the surrounding area. There are a collection of city parks within the confines of the city of Bozeman, but none of them are within the Study Area. The city of Belgrade has one city park within the confines of the Study Area.

Recreational resource information was gathered through review of FWP resource list for Gallatin County. Recreational areas may be protected under Section 4(f) of the U.S. Department of Transportation Act of 1966, which was enacted to protect publically owned parks, recreation areas, wildlife and waterfowl refuges, and public and private historic sites of local, state, and national significance. Federally funded transportation projects cannot impact Section 4(f)-protected properties unless there are no feasible and prudent avoidance alternatives and all possible planning to minimize harm has occurred. Prior to approving a project that "uses" a Section 4(f) resource, FHWA must find that there is no prudent or feasible alternative that completely avoids the 4(f) resource. "Use" can occur when land is permanently incorporated into a transportation facility or when there is a temporary occupancy of the land that is adverse to a Section 4(f) resource. Constructive "use" can also occur when a project's proximity impacts are so severe that the protected activities, features, or attributes that qualify a resource for protection under Section 4(f) are "substantially impacted." Potential effects on recreational use would need to be considered in accordance with Section 4(f) if improvements are forwarded from this study.

From a high level evaluation there appears to be two recreational-related potential 4(f) resources that could potentially be impacted from possible improvements within the buffer of the Study Area. These are the Belgrade Lewis and Clark Park located at approximately RP 20.4 and Cherry River Fishing Access Sit located at approximately RP 2.25. In addition there is a linear parcel adjacent to the Las Campanas Subdivision along the northeast side of I-90 between Sunnyside Park and Alaska Road owned by the City of Belgrade. This parcel of land is currently used as a pedestrian path and dog trail. MDT has previously corresponded with officials with the City of Belgrade who agreed that this park was not significant; therefore, section 4(f) does not apply. There a several other potential 4(f) resources that are not within the Study Area, but are located nearby. The recreational resources potentially protected under Section 4(f) are shown on Exhibit 14A and 14B (in Attachment 1). Acquiring right-of-way from these potential 4(f) lands would need to go through the evaluation process described above which could add time and costs to a project. At the time potential future improvements are forwarded to a project, reevaluation of possible 4(f) resources should take place. If future 4(f) resources are discovered efforts should be made with projects advanced from the study to avoid adverse impacts to or right of way acquisitions from these community recreational resources.

The National Land and Water Conservation Fund Act (LWCFA), or Section 6(f), was enacted to preserve, develop, and assure the quality and quantity of outdoor recreation resources. Section

6(f) protection applies to all projects that impact recreational lands purchased or improved with LWCFA funds. The Secretary of the Interior must approve any conversion of LWCFA property to a use other than public, outdoor recreation. According to FWP LWCFA Sites by County, there are two Section 6(f) resources directly within the buffer or adjacent to the Study Area. The Cherry River fishing access site ($5156.75), and Belgrade Lewis and Clark Park ($17,850) have both received LWCF funds. If improvement options are forwarded from this corridor study, a reevaluation of Section 6(f) resources, including coordination with FWP, should take place to confirm the accuracy/completeness of the literature and determine if any new Section 6(f) resources are present. As general guidance, converting these resources to a non-recreational purpose can be a difficult and time-consuming task and should be avoided if practicable.

4.5 Cultural Resources

For federally funded transportation projects, a cultural resource survey must be conducted for the area of potential effect as specified in Section 106 of the National Historic Preservation Act (NHPA) (36 CFR 800). Section 106 requires federal agencies to "take into account the effects of their undertakings on historic properties." The purpose of the Section 106 process is to identify historic and archaeological properties that could be affected by the undertaking; assess the effects of the project; and investigate methods to avoid, minimize, or mitigate adverse effects on historic properties. These historic resources properties are also generally afforded protection under Section 4(f) of the Transportation Act.

With the main intent of the corridor study to identify potential projects along the Frontage Road, the cultural resource survey investigation needed only include historic-age properties facing onto the existing Frontage Road alignment. A file search of the proposed survey area through the Montana State Historic Preservation Office revealed two historic properties facing onto the existing -Frontage Road alignment (24GA1096 and 24GA0999). One of those properties, the Northern Pacific Railway's Low Line (24GA0999) has since been obliterated within the corridor and no longer exists. The other site, the Northern Pacific Railway (24GA1096), has been previously recorded and its NRHP status established. This property is listed in Table 15 and shown on Exhibit 15 in Attachment 1.

The corridor passes through land irrigated by irrigation companies and private individuals. An aerial reconnaissance of the corridor indicates that there are irrigation ditches within the corridor area. These historic ditches are also listed in Table 15.

Table 15 Known Cultural Resources and Historical Properties

Site	Site No.	Sec.	Tsp	Rge
Northern Pacific Railway	24GA1096	Parallels Belgrade to Bozeman Frontage Road on the south		
Farmers' Canal Co.	24GA0998	21, 22, 27	1S	5E
Spain-Ferris Ditch Co.	24GA0743	17, 7, 8	1S	5E
Mammoth Ditch Co.	24GA0741	17	1S	5E
Spain-Ferris Ditch Co.	24GA0743	1, 12	1S	4E
Mammoth Ditch Co.	24GA0741	12	1S	4E
Farmers' Canal Co.	24GA0998	1	2S	5E

Source: MSHPO 2015 and Montana Cadastral Survey 2015.

In addition to the known historic resources, other potentially historic resources exist in the Study Area. An examination of the Montana Cadastral Survey information for the designated corridor indicates that at least 39 historic-age properties face onto the Frontage Road. Twenty of the properties are residences and 19 are commercial businesses. It is likely, moreover, that an historic district potentially exists along Main Street in Belgrade.

In addition to the historic properties, there are two cemeteries located within the corridor study area. The Holy Cross Cemetery is located at the intersection of North Seventh Avenue and Mandeville Drive. The Sunset Memorial Gardens cemetery is located in Section 16, T1S, R5E.

Direct and indirect impacts (such as visual, noise, and access impacts) to eligible or listed properties would need to be considered if improvements options are carried forward. If a project is forwarded from the Corridor Study, a cultural resource survey for unrecorded historic and archaeological properties within the Area of Potential Effect will need to be completed during the project development process.

4.6 Noise

Evaluation of traffic noise may need to occur for any future improvements in the Study Area. Noise analysis is necessary for "Type I"-classified projects. A Type I project includes a substantial shift in the horizontal or vertical alignments, increasing the number of through lanes, providing passing lanes, or increasing traffic speed and volume.

Type I projects require a detailed noise analysis, consistent with FHWA requirements and MDT policy, which includes measuring ambient noise levels at selected receivers and modeling design year noise levels using projected traffic volumes. If noise levels approach or substantially exceed noise abatement criteria for the project, noise abatement measures may be necessary. A number of possible abatement measures available for consideration include but are not limited to the following:

- alternating the horizontal or vertical alignment;
- constructing noise barriers such as sound walls or earthen berms; and/or
- decreasing traffic speed limits.

Noise abatement measures must be considered reasonable and feasible prior to implementation and supported by the affected public.

Construction activities in the Study Area may cause localized, short-duration noise impacts. These impacts can be minimized by using standard MDT specifications for the control of noise sources during construction.

4.7 Visual Resources

The visual resources of an area include landforms, vegetation, water features, and physical modifications caused by human activities that give the landscape its visual character and aesthetic qualities. Visual resources are typically assessed based on the landscape character (what is seen), visual sensitivity (human preferences and values regarding what is seen), scenic integrity (degree of intactness and wholeness in landscape character), and landscape visibility (relative distance of seen areas) of a geographically defined view shed.

Gallatin County is located in southwest in Montana. The corridor is a highly used frontage road that connects the cities of Belgrade and Bozeman.

"BelgradeBridgers" by BelgradeBobcat

Throughout the city of Belgrade and Bozeman the Bridger Mountains are visible. The mountains provide a view for some and a place of recreation for others. At the base of the Bridger Mountains Gallatin Valley spreads out to the west providing a gently rolling landscape of fields and trees with several streams meandering through creating a tranquil place to visit or live. Future improvements forwarded from this study should take into consideration the impact to scenic views of the Bridger Mountains and surrounding Gallatin Valley.

Evaluation of the potential effects on visual resources would need to be conducted if improvement options are forwarded from this study.

5.0 Conclusion

This environmental scan report identifies physical, biological, social, and cultural resources within the Study Area that may be affected by potential future improvements in the Belgrade to Bozeman Frontage Road Corridor Study Area.

Project-level environmental analysis would be required for any improvements forwarded from this study. Information contained in this report may be used to support future NEPA/MEPA environmental documentation.

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"BelgradeBridgers" by BelgradeBobcat Licensed under Public Domain via Wikimedia Commons - http://commons.wikimedia.org/wiki/File:BelgradeBridgers.JPG#/media/File:BelgradeBridgers.JPG

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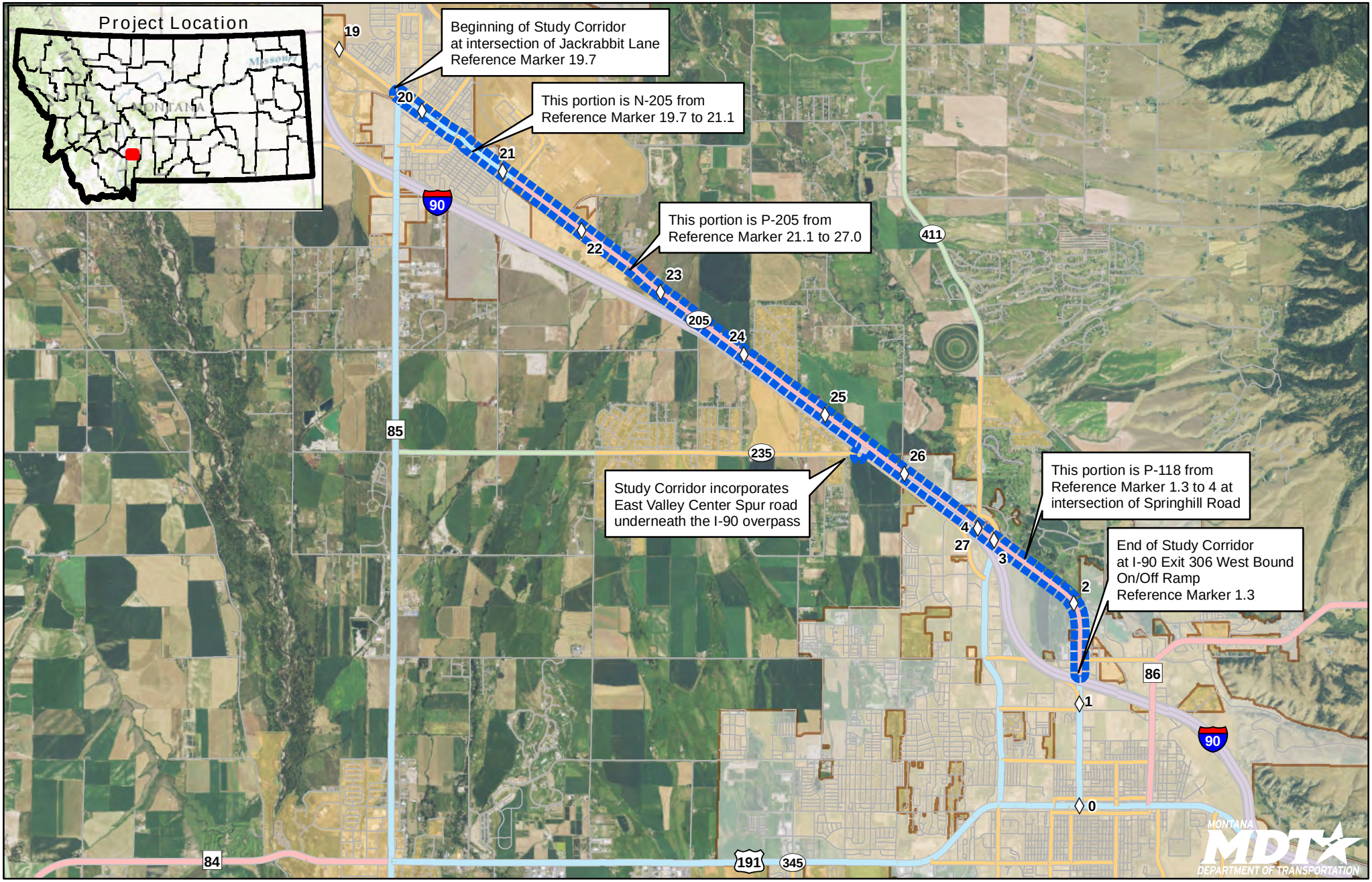
Attachment 1
Exhibits



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N W E S

Projection: NAD 1983 StatePlane Montana FIPS 2500
Sources: Aerial Imagery - NAIP 2013

EXHIBIT 1 - STUDY AREA
BELGRADE TO BOZEMAN
CORRIDOR STUDY
GALLATIN COUNTY, MONTANA

- STUDY AREA
- REFERENCE MARKER
- CITY BOUNDARY
- 2010 URBANIZED AREA
- NHS INTERSTATE
- NHS NON-INTERSTATE
- PRIMARY
- SECONDARY
- URBAN
- OFF SYSTEM ROUTE

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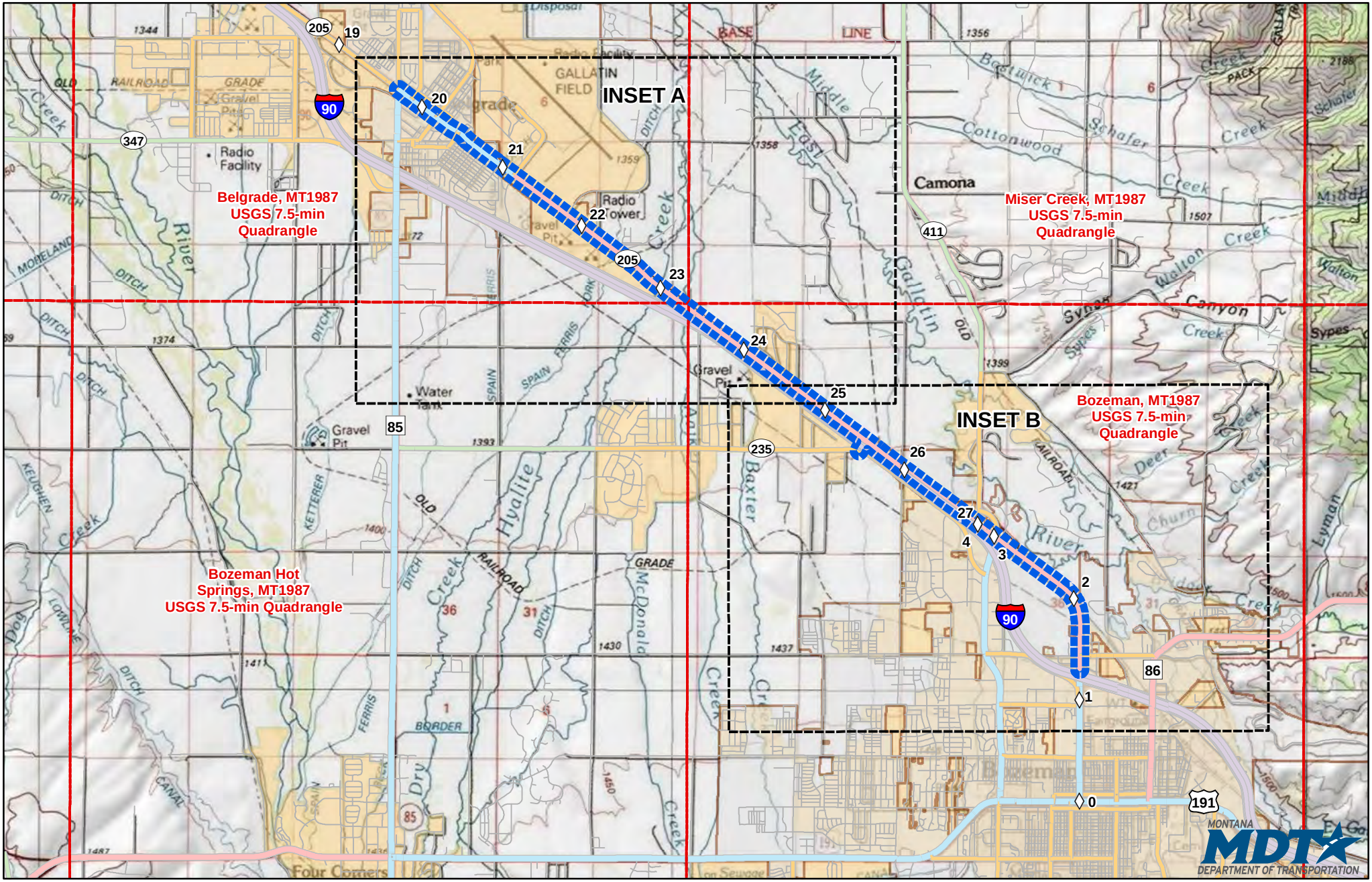

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N W E S

Projection: NAD 1983 StatePlane Montana FIPS 2500
Sources: USGS Topographic 7.5 - minute quadrangles

EXHIBIT 2 - TOPOGRAPHIC MAP OF STUDY AREA
BELGRADE TO BOZEMAN CORRIDOR STUDY
GALLATIN COUNTY, MONTANA

- STUDY AREA
- REFERENCE MARKER
- USGS 7.5-MIN QUADS
- CITY BOUNDARY
- 2010 URBANIZED AREA
- NHS INTERSTATE
- NHS NON-INTERSTATE
- PRIMARY
- SECONDARY
- URBAN
- OFF SYSTEM ROUTE

MONTANA MDT DEPARTMENT OF TRANSPORTATION

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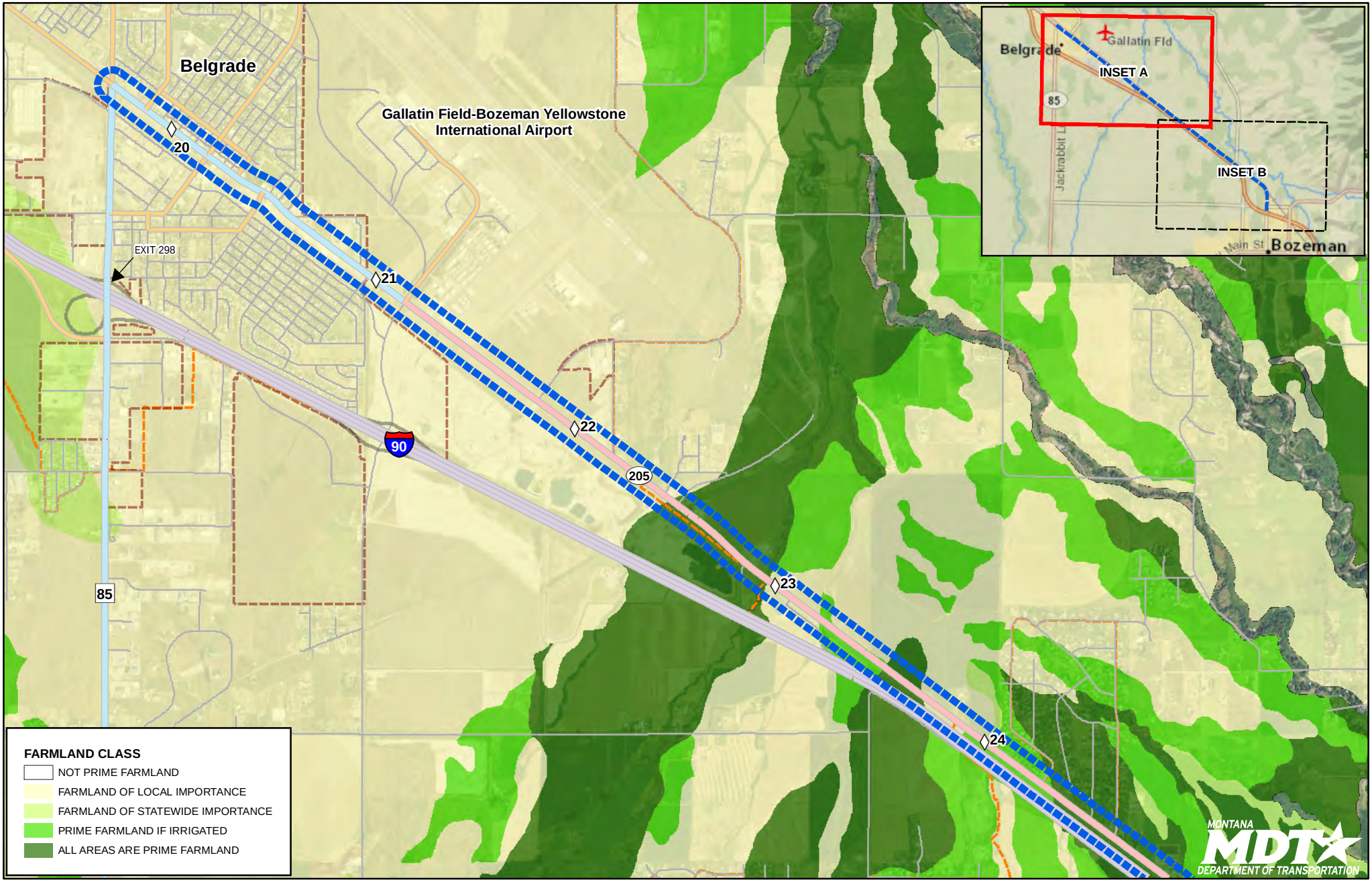

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N W E S

Projection: NAD 1983 StatePlane Montana FIPS 2500
Sources: NRCS SSURGO database for Gallatin County - 2015, Aerial Imagery - NAIP 2013

EXHIBIT 3A - PRIME FARMLANDS
BELGRADE TO BOZEMAN
CORRIDOR STUDY
GALLATIN COUNTY, MONTANA

- REFERENCE MARKER
- STUDY AREA
- CITY BOUNDARY
- 2010 URBANIZED AREA
- NHS INTERSTATE
- NHS NON-INTERSTATE
- PRIMARY
- URBAN
- INTERSTATE RAMP
- OFF SYSTEM ROUTE

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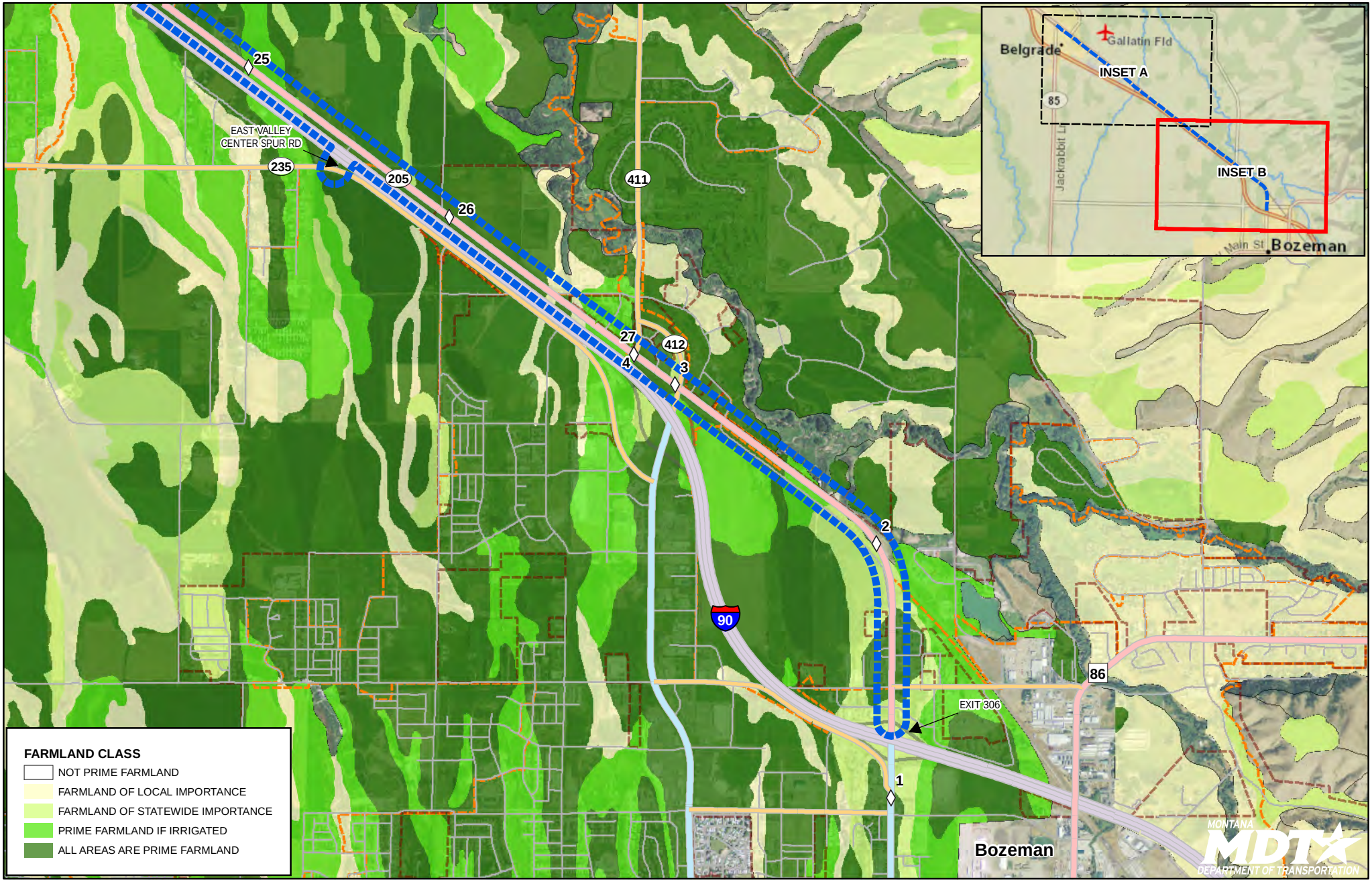

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Scale: 1 in. = 0.5 mile

N W E S

Projection: NAD 1983 StatePlane Montana FIPS 2500
Sources: NRCS SSURGO database for Gallatin County - 2015, Aerial Imagery - NAIP 2013

EXHIBIT 3B - PRIME FARMLANDS
BELGRADE TO BOZEMAN
CORRIDOR STUDY
GALLATIN COUNTY, MONTANA

- REFERENCE MARKER
- STUDY AREA
- CITY BOUNDARY
- 2010 URBANIZED AREA
- NHS INTERSTATE
- NHS NON-INTERSTATE
- PRIMARY
- URBAN
- INTERSTATE RAMP
- OFF SYSTEM ROUTE

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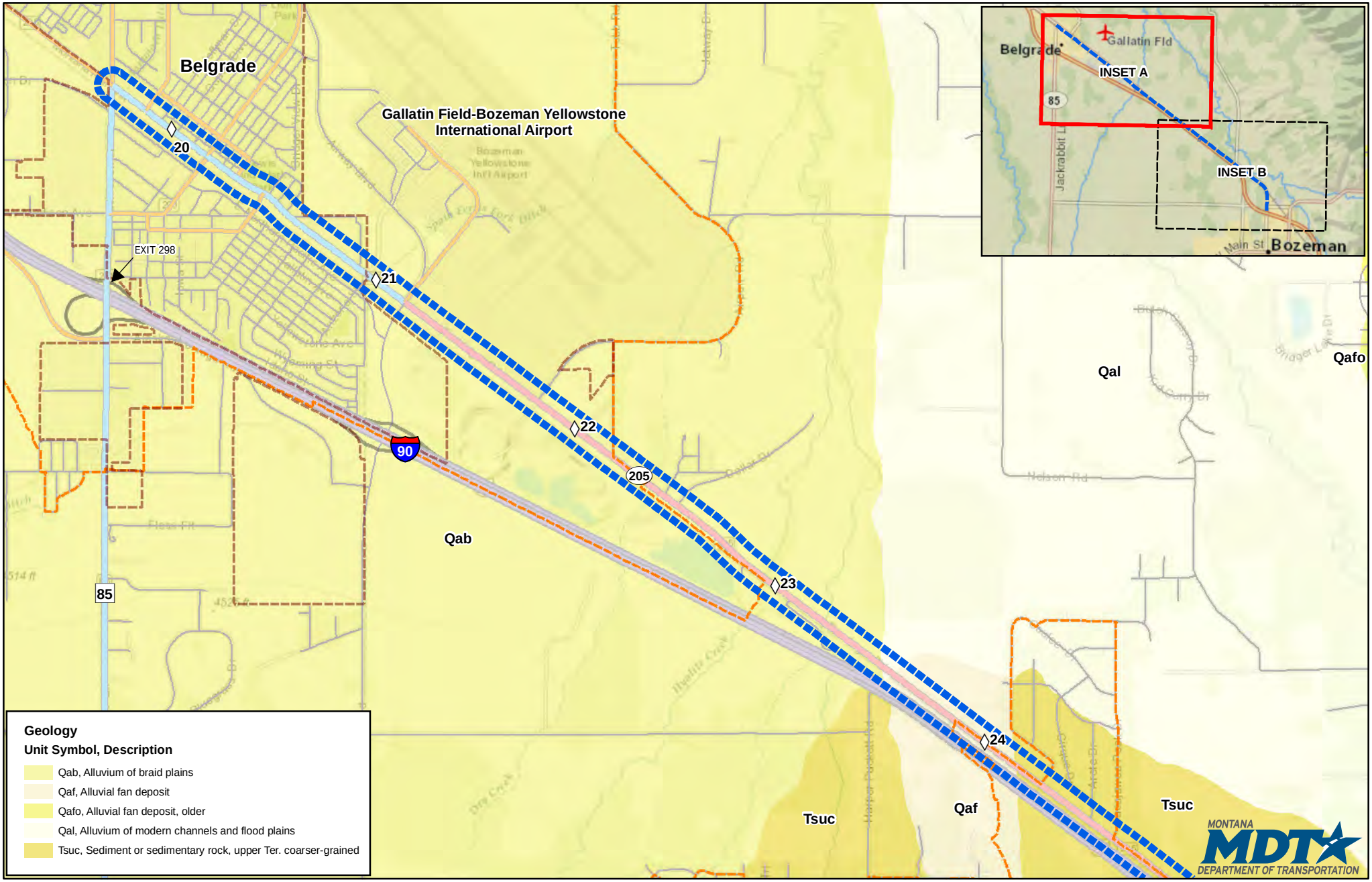

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Scale: 1 in. = 0.5 mile

Projection: NAD 1983 StatePlane Montana FIPS 2500
Sources: Montana Bureau of Mines and Geology (MBMG)
Bozeman 100k Geologic Quad - Vuke, S.M., Lonn, J.D., Berg, R.B., and Schmidt, C.J., 2014.
Aerial Imagery - NAIP 2013

N W E S

EXHIBIT 4A - GEOLOGY
BELGRADE TO BOZEMAN CORRIDOR STUDY
GALLATIN COUNTY, MONTANA

- REFERENCE MARKER
- STUDY AREA
- CITY BOUNDARY
- 2010 URBANIZED AREA
- NHS INTERSTATE
- NHS NON-INTERSTATE
- PRIMARY
- URBAN
- INTERSTATE RAMP
- OFF SYSTEM ROUTE

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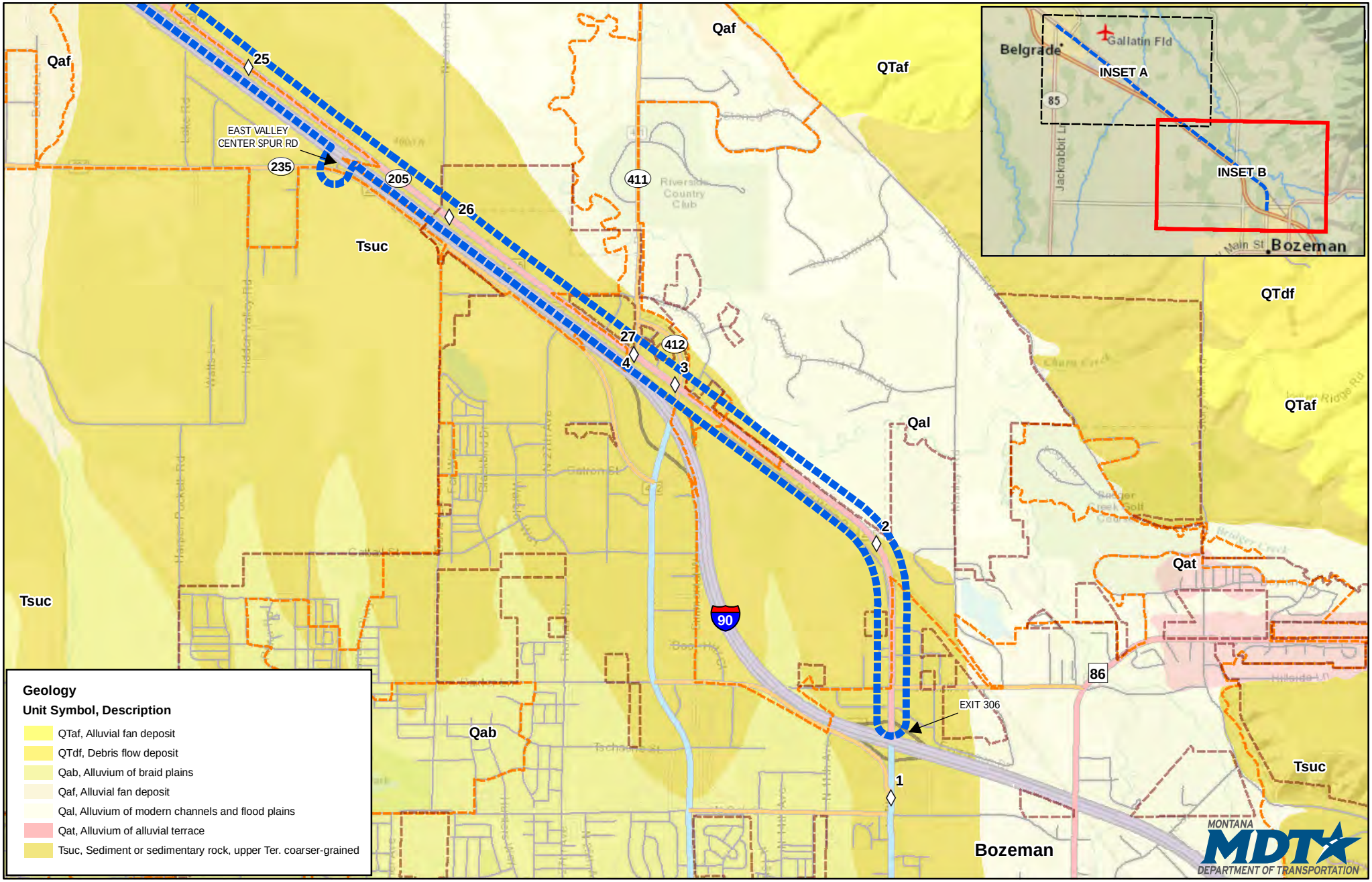


0 0.25 0.5 1 Miles

Scale: 1 in. = 0.5 mile

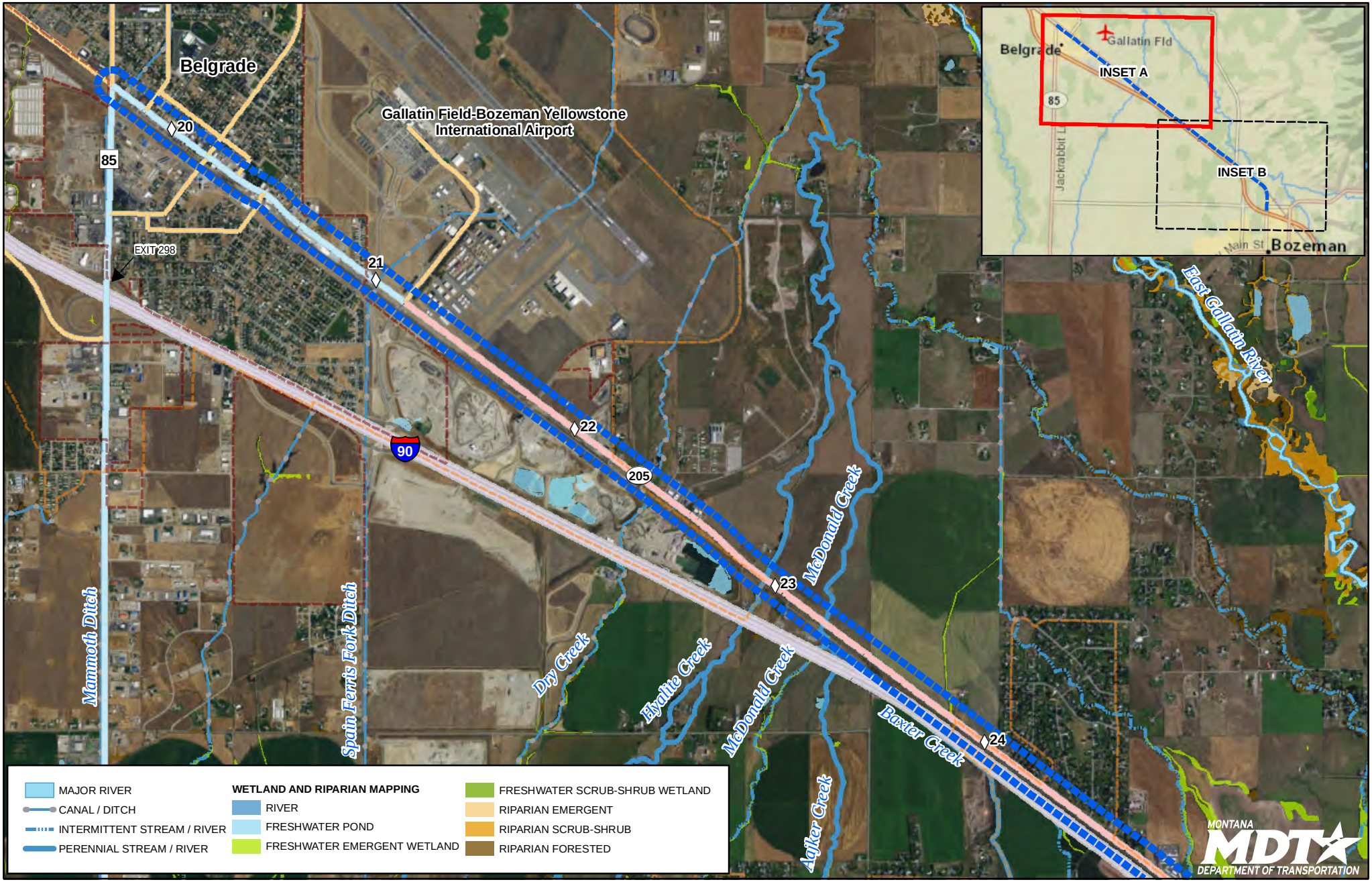
Projection: NAD 1983 StatePlane Montana FIPS 2500
Sources: Montana Bureau of Mines and Geology (MBMG)
Bozeman 100k Geologic Quad - Vuke, S.M., Lonn, J.D., Berg, R.B., and Schmidt, C.J., 2014.
Aerial Imagery - NAIP 2013

N W E S

EXHIBIT 4B - GEOLOGY
BELGRADE TO BOZEMAN CORRIDOR STUDY
GALLATIN COUNTY, MONTANA

REFERENCE MARKER
STUDY AREA
CITY BOUNDARY
2010 URBANIZED AREA
NHS INTERSTATE
NHS NON-INTERSTATE
PRIMARY
URBAN
INTERSTATE RAMP
OFF SYSTEM ROUTE

Date: 6/14/2016 Path: S:\RIM\Projects\Corridor_Studies\PRIMARY_205\ARCMAP\EXHIBIT4B_PRIMARY_205_GEOLOGY.mxd



0 0.25 0.5 1 Miles

Scale: 1 in. = 0.5 mile

Projection: NAD 1983 StatePlane Montana FIPS 2500
Sources: National Hydrography Dataset 2015, Montana NHP Wetland And Riparian Framework 2015, Aerial Imagery - NAIP 2013

N
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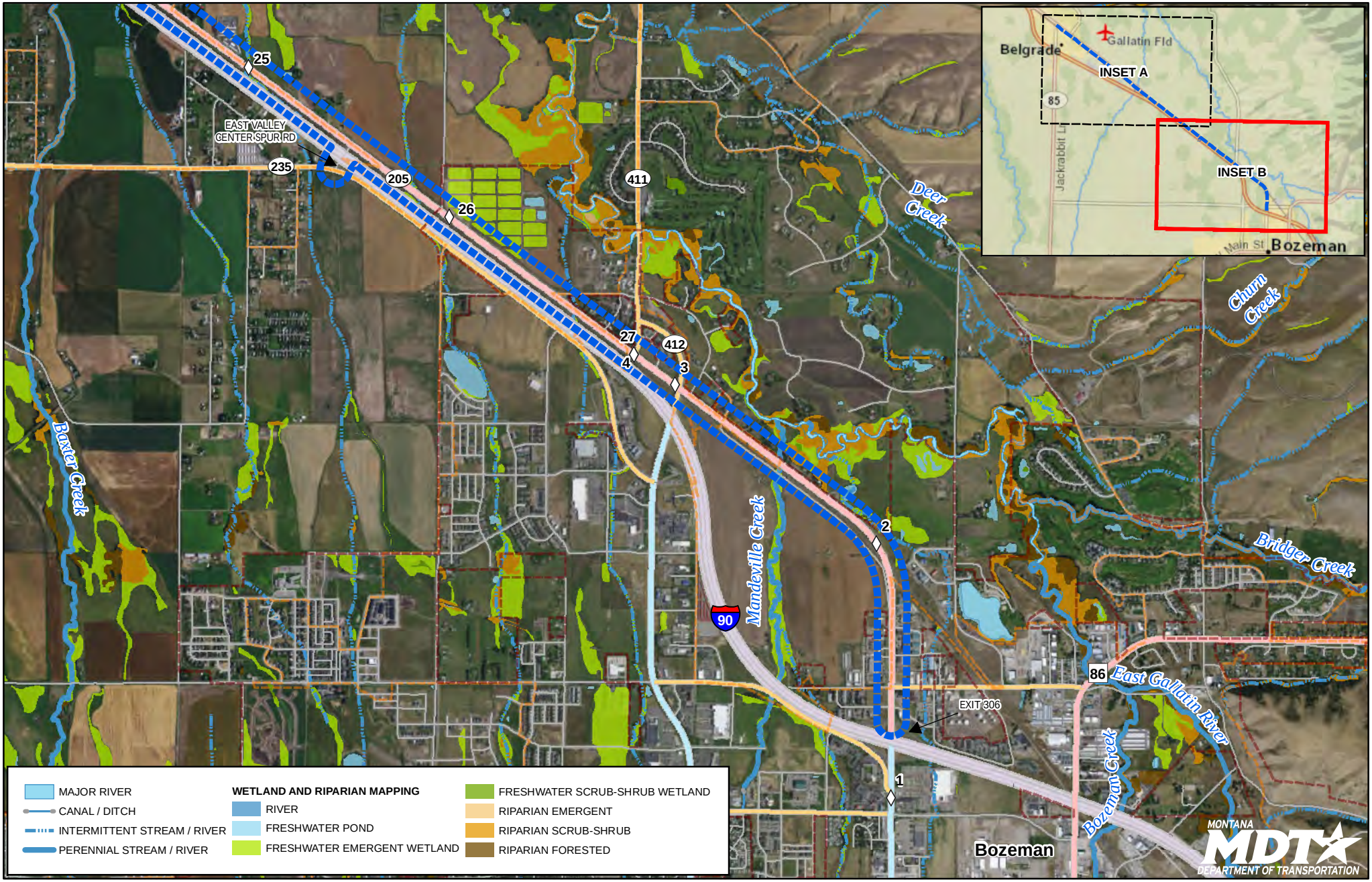
EXHIBIT 5A - SURFACE WATER & WETLANDS
BELGRADE TO BOZEMAN CORRIDOR STUDY
GALLATIN COUNTY, MONTANA

REFERENCE MARKER
STUDY AREA
CITY BOUNDARY
2010 URBANIZED AREA
NHS INTERSTATE
NHS NON-INTERSTATE
PRIMARY
URBAN
INTERSTATE RAMP

Date: 6/14/2016 Path: S:\RIM\Projects\Corridor_Studies\PRIMARY_205\ARCMAP\EXHIBIT5A_PRIMARY_205_SURFACEWATER_AND_WETLANDS.mxd



0 0.25 0.5 1 Miles

Scale: 1 in. = 0.5 mile

Projection: NAD 1983 StatePlane Montana FIPS 2500
Sources: National Hydrography Dataset 2015, Montana NHP Wetland And Riparian Framework 2015, Aerial Imagery - NAIP 2013

N
W E
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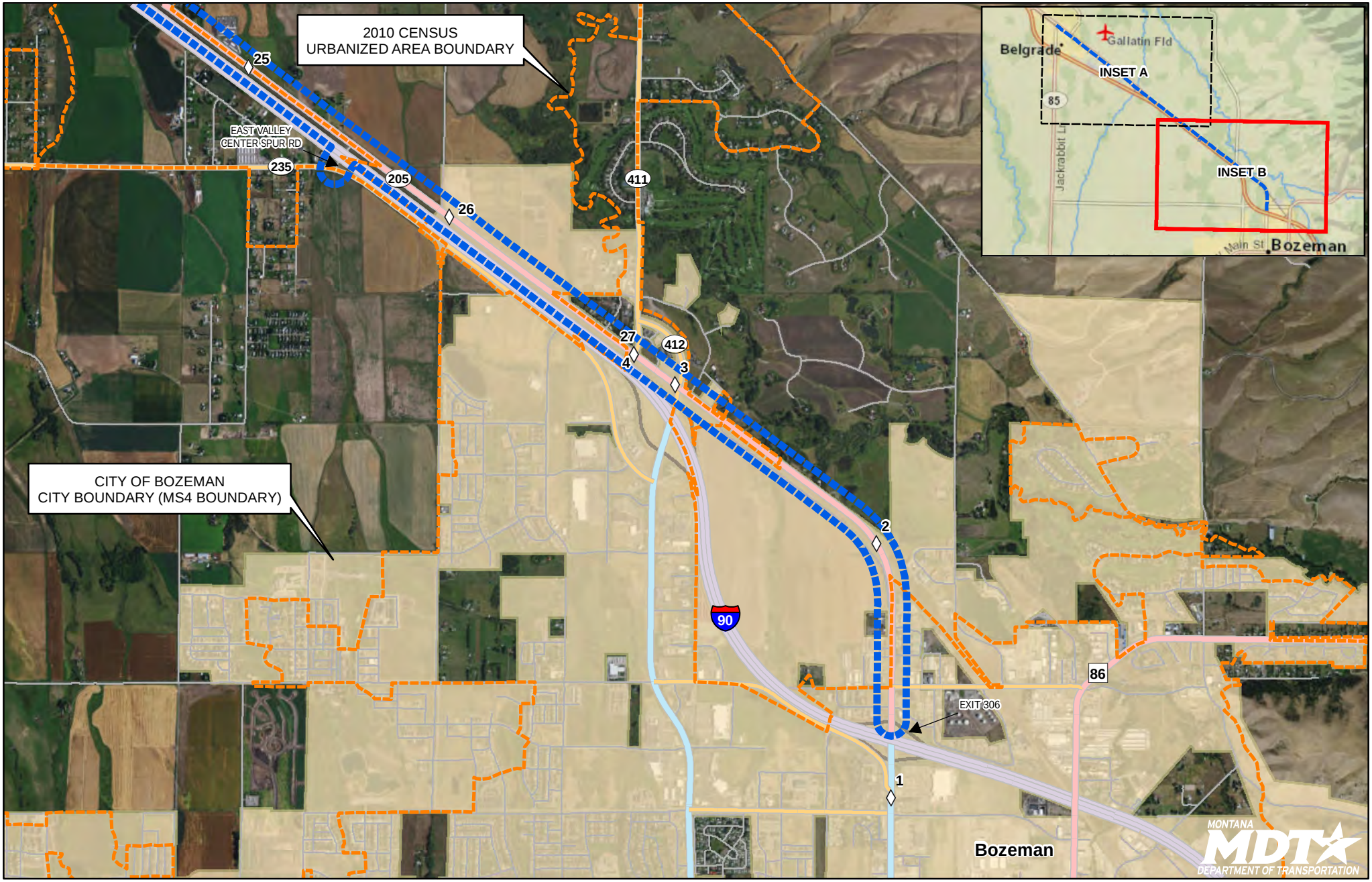
EXHIBIT 5B - SURFACE WATER & WETLANDS
BELGRADE TO BOZEMAN CORRIDOR STUDY
GALLATIN COUNTY, MONTANA

REFERENCE MARKER
STUDY AREA
CITY BOUNDARY
2010 URBANIZED AREA
NHS INTERSTATE
NHS NON-INTERSTATE
PRIMARY
URBAN
INTERSTATE RAMP
OFF SYSTEM ROUTE

Date: 6/14/2016 Path: S:\RIM\Projects\Corridor_Studies\PRIMARY_205\ARCMAP\EXHIBIT5B_PRIMARY_205_SURFACEWATER_AND_WETLANDS.mxd



0 0.25 0.5 1 Miles

Scale: 1 in. = 0.5 mile

N
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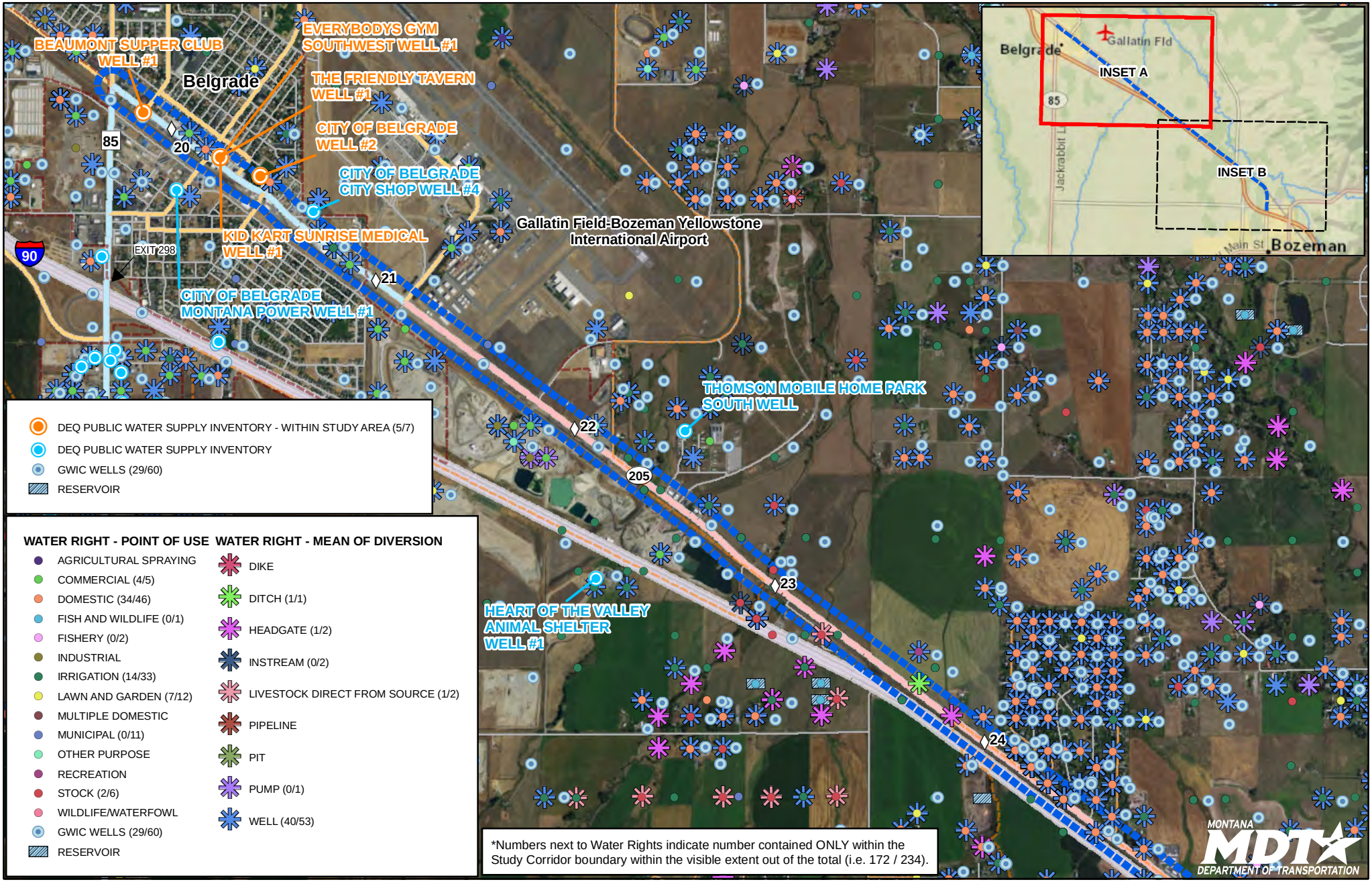
Projection: NAD 1983 StatePlane Montana FIPS 2500
Sources: MS4 and MPO Boundaries 2015,
Aerial Imagery - NAIP 2013

EXHIBIT 6 - MS4 AND URBAN BOUNDARIES
BELGRADE TO BOZEMAN CORRIDOR STUDY
GALLATIN COUNTY, MONTANA

- REFERENCE MARKER
- STUDY AREA
- 2010 URBANIZED AREA
- CITY BOUNDARY (MS4 BOUNDARY)
- NHS INTERSTATE
- NHS NON-INTERSTATE
- PRIMARY
- URBAN
- INTERSTATE RAMP
- OFF SYSTEM ROUTE

Date: 6/14/2016 Path: S:\RIM\Projects\Corridor_Studies\PRIMARY_205\ARCMAP\EXHIBIT6_PRIMARY_205_MS4_AND_URBAN_BOUNDARIES.mxd



0 0.25 0.5 1 Miles

Scale: 1 in. = 0.5 mile

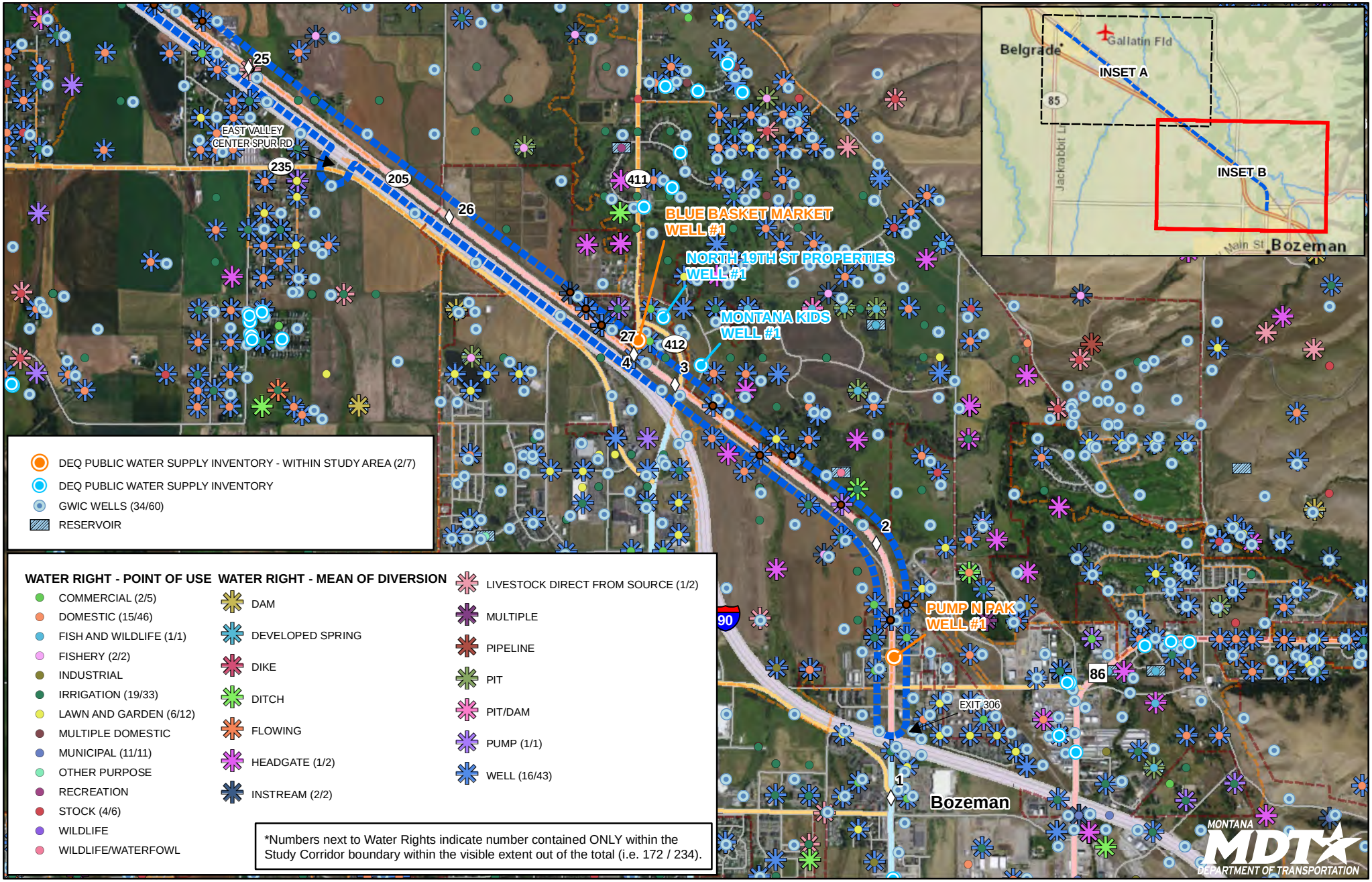
N W E S

Projection: NAD 1983 StatePlane Montana FIPS 2500
Sources: Montana DNRC Water Rights 2015, DEQ Public Water Supply Inventory 2015, MBMG GWIC Well Database 2015, Aerial Imagery - NAIP 2013

EXHIBIT 7A - WELLS & WATER RIGHTS
BELGRADE TO BOZEMAN
CORRIDOR STUDY
GALLATIN COUNTY, MONTANA

REFERENCE MARKER
STUDY AREA
2010 URBANIZED AREA
CITY BOUNDARY
NHS INTERSTATE
NHS NON-INTERSTATE
PRIMARY
URBAN
INTERSTATE RAMP
OFF SYSTEM ROUTE

Date: 6/14/2016 Path: S:\RIM\Projects\Corridor_Studies\PRIMARY_205\ARCMAP\EXHIBIT7A_PRIMARY_205_WELLS_AND_WATERRIGHTS.mxd



0 0.25 0.5 1 Miles

Scale: 1 in. = 0.5 mile

N W E S

Projection: NAD 1983 StatePlane Montana FIPS 2500
Sources: Montana DNRC Water Rights 2015, DEQ Public Water Supply Inventory 2015, MBMG GWIC Well Database 2015, Aerial Imagery - NAIP 2013

EXHIBIT 7B - WELLS & WATER RIGHTS
BELGRADE TO BOZEMAN
CORRIDOR STUDY
GALLATIN COUNTY, MONTANA

REFERENCE MARKER
STUDY AREA
CITY BOUNDARY
2010 URBANIZED AREA
NHS INTERSTATE
NHS NON-INTERSTATE
PRIMARY
URBAN
INTERSTATE RAMP
OFF SYSTEM ROUTE

Date: 6/14/2016 Path: S:\RIM\Projects\Corridor_Studies\PRIMARY_205\ARCMAP\EXHIBIT7B_PRIMARY_205_WELLS_AND_WATERRIGHTS.mxd

0 0.25 0.5 1 Miles

Scale: 1 in. = 0.5 mile

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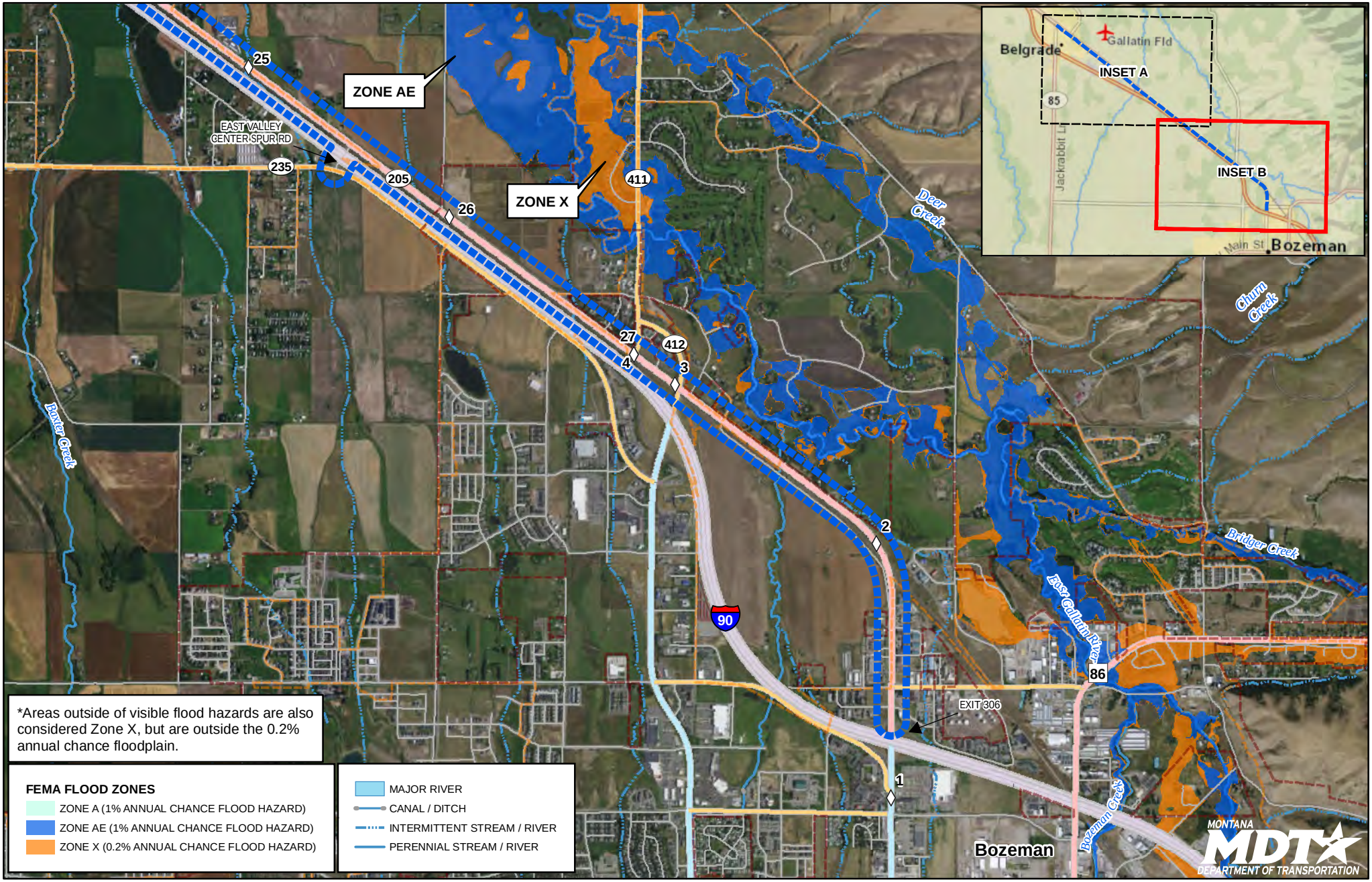
Projection: NAD 1983 StatePlane Montana FIPS 2500
Sources: National Hydrography Dataset 2015,
FEMA DFRIM Panels '30031' eff. 9/2/2011,
Aerial Imagery - NAIP 2013

EXHIBIT 8A - FEMA FLOOD ZONES
BELGRADE TO BOZEMAN
CORRIDOR STUDY
GALLATIN COUNTY, MONTANA

REFERENCE MARKER
STUDY AREA
CITY BOUNDARY
2010 URBANIZED AREA
NHS INTERSTATE
NHS NON-INTERSTATE
PRIMARY
URBAN
INTERSTATE RAMP
OFF SYSTEM ROUTE

Date: 6/14/2016 Path: S:\RIM\Projects\Corridor_Studies\PRIMARY_205\ARCMAP\EXHIBIT8A_PRIMARY_205_FEMA_FLOODZONES.mxd



0 0.25 0.5 1 Miles

Scale: 1 in. = 0.5 mile

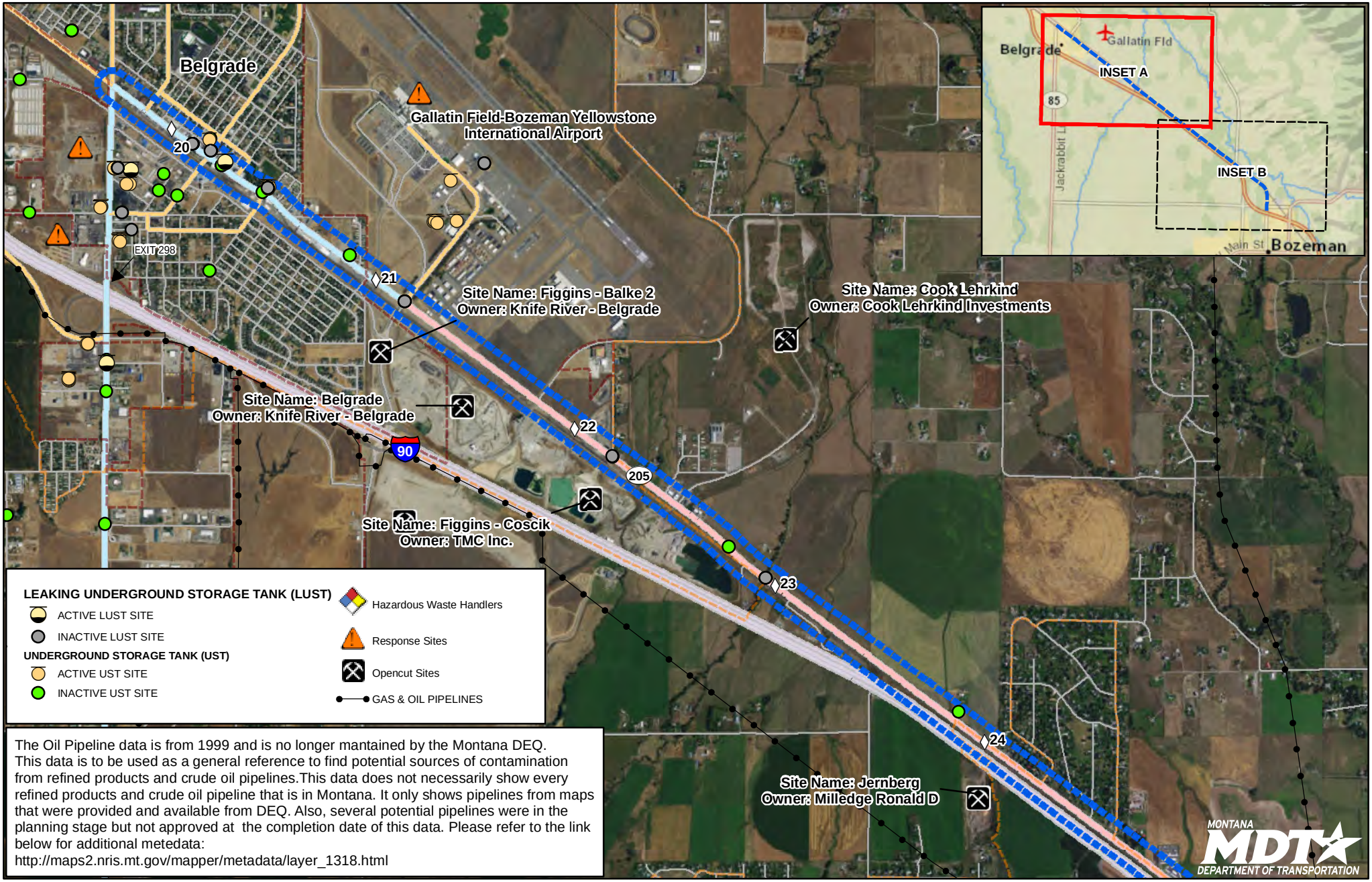
Projection: NAD 1983 StatePlane Montana FIPS 2500
Sources: National Hydrography Dataset 2015,
FEMA DFRIM Panels '30031' eff. 9/2/2011,
Aerial Imagery - NAIP 2013

N W E S

EXHIBIT 8B - FEMA FLOOD ZONES
BELGRADE TO BOZEMAN
CORRIDOR STUDY
GALLATIN COUNTY, MONTANA

REFERENCE MARKER
STUDY AREA
CITY BOUNDARY
2010 URBANIZED AREA
NHS INTERSTATE
NHS NON-INTERSTATE
PRIMARY
URBAN
INTERSTATE RAMP
OFF SYSTEM ROUTE

Date: 6/14/2016 Path: S:\RIM\Projects\Corridor_Studies\PRIMARY_205\ARCMAP\EXHIBIT8B_PRIMARY_205_FEMA_FLOODZONES.mxd



The Oil Pipeline data is from 1999 and is no longer mantained by the Montana DEQ. This data is to be used as a general reference to find potential sources of contamination from refined products and crude oil pipelines.This data does not necessarily show every refined products and crude oil pipeline that is in Montana. It only shows pipelines from maps that were provided and available from DEQ. Also, several potential pipelines were in the planning stage but not approved at the completion date of this data. Please refer to the link below for additional metedata:
http://maps2.nris.mt.gov/mapper/metadata/layer_1318.html

0 0.25 0.5 1 Miles

Scale: 1 in. = 0.5 mile

Projection: NAD 1983 StatePlane Montana FIPS 2500
Sources: Montana DEQ/DST Mapping Service includes: LUST/UST, Hazardous Waste Handlers, Petro Fund, Response Sites, and Opencut Sites 2015, Aerial Imagery - NAIP 2013

N W E S

EXHIBIT 9A - LUST, UST, & HAZARDOUS WASTE FACILITIES BELGRADE TO BOZEMAN CORRIDOR STUDY GALLATIN COUNTY, MONTANA

REFERENCE MARKER
STUDY AREA
CITY BOUNDARY
2010 URBANIZED AREA
NHS INTERSTATE
NHS NON-INTERSTATE
PRIMARY
URBAN
INTERSTATE RAMP
OFF SYSTEM ROUTE

Date: 6/14/2016 Path: S:\RIM\Projects\Corridor_Studies\PRIMARY_205\ARCMAP\EXHIBIT9A_PRIMARY_205_UST_LUST_RESPONSESITES.mxd

The Oil Pipeline data is from 1999 and is no longer mantained by the Montana DEQ. This data is to be used as a general reference to find potential sources of contamination from refined products and crude oil pipelines.This data does not necessarily show every refined products and crude oil pipeline that is in Montana. It only shows pipelines from maps that were provided and available from DEQ. Also, several potential pipelines were in the planning stage but not approved at the completion date of this data. Please refer to the link below for additional metedata:
http://maps2.nris.mt.gov/mapper/metadata/layer_1318.html

0 0.25 0.5 1 Miles

Scale: 1 in. = 0.5 mile

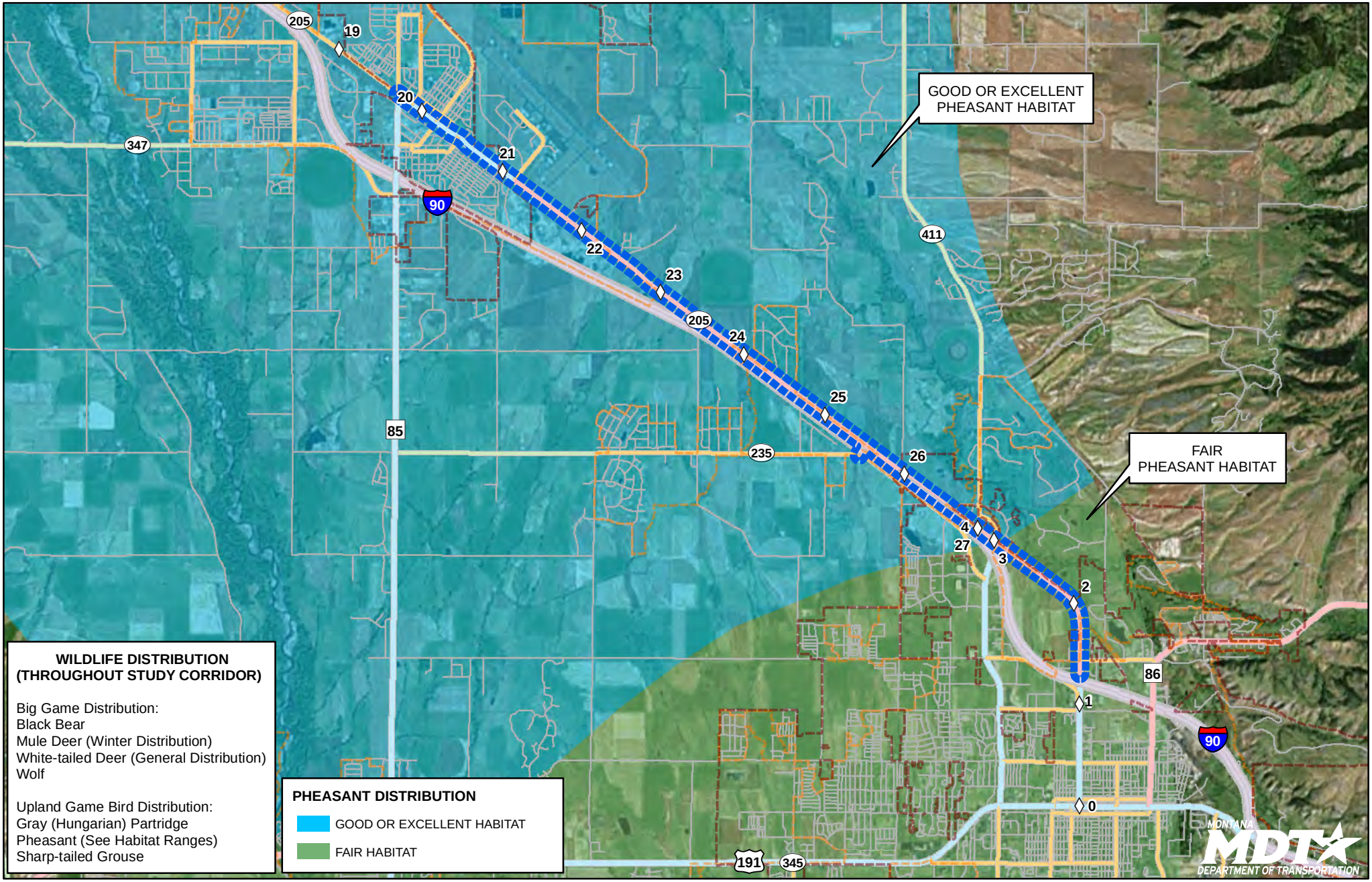
Projection: NAD 1983 StatePlane Montana FIPS 2500
Sources: Montana DEQ/DST Mapping Service includes: LUST/UST, Hazardous Waste Handlers, Petro Fund, Response Sites, and Opencut Sites 2015, Aerial Imagery - NAIP 2013

N W E S

EXHIBIT 9B - LUST, UST, & HAZARDOUS WASTE FACILITIES BELGRADE TO BOZEMAN CORRIDOR STUDY GALLATIN COUNTY, MONTANA

REFERENCE MARKER
STUDY AREA
CITY BOUNDARY
2010 URBANIZED AREA
NHS INTERSTATE
NHS NON-INTERSTATE
PRIMARY
URBAN
INTERSTATE RAMP
OFF SYSTEM ROUTE

Date: 6/14/2016 Path: S:\RIM\Projects\Corridor_Studies\PRIMARY_205\ARCMAP\EXHIBIT9B_PRIMARY_205_UST_LUST_RESPONSESITES.mxd



0 0.5 1 2 Miles

Scale: 1:80,000

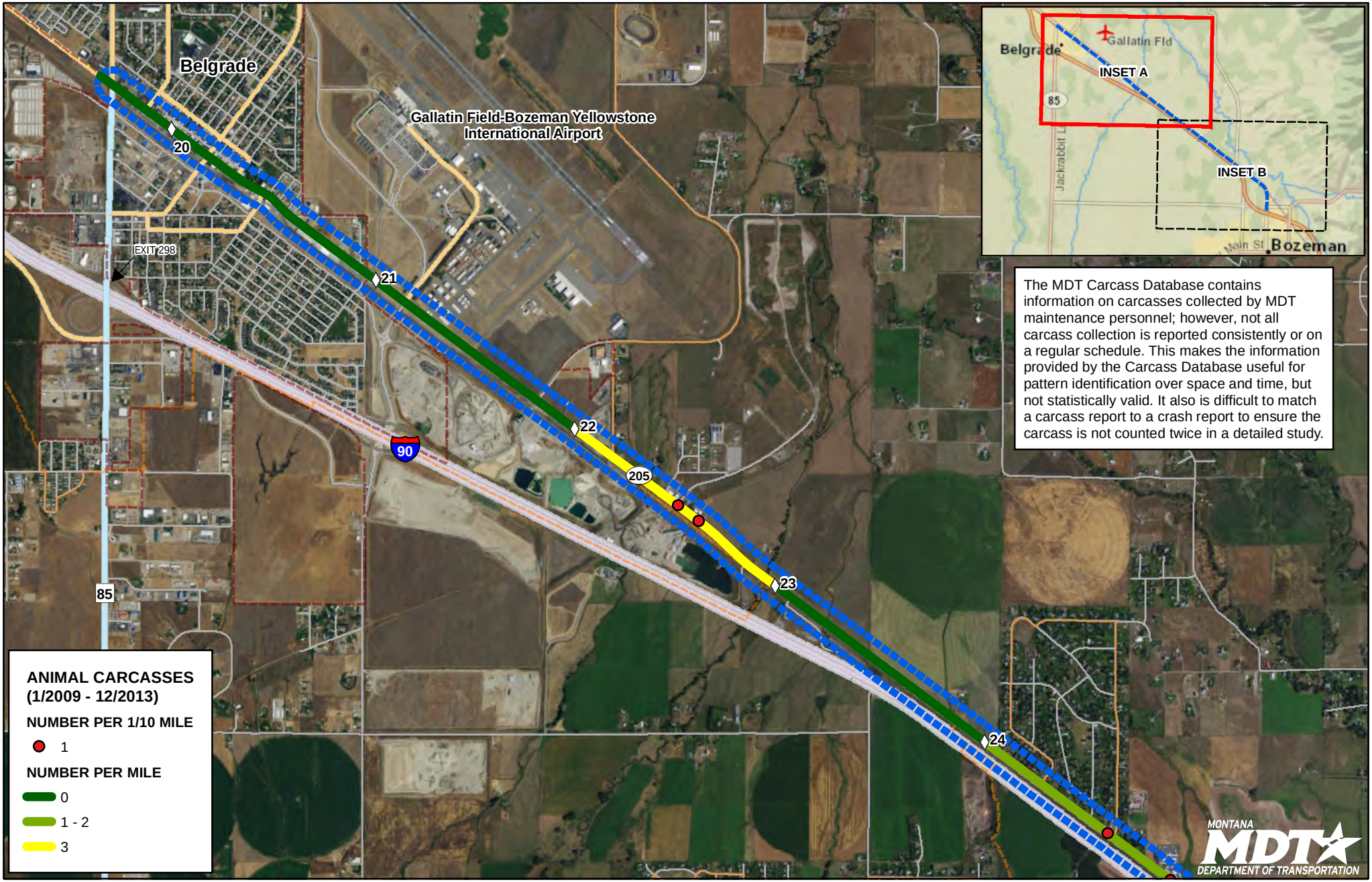
N W E S

Projection: NAD 1983 StatePlane Montana FIPS 2500
Sources: Montana Fish, Wildlife, and Parks (FWP) Wildlife Distribution dataset 2015,
Aerial Imagery - NAIP 2013

EXHIBIT 10 - WILDLIFE DISTRIBUTION AREAS BELGRADE TO BOZEMAN CORRIDOR STUDY GALLATIN COUNTY, MONTANA

- REFERENCE MARKER
- STUDY AREA
- CITY BOUNDARY
- 2010 URBANIZED AREA
- NHS INTERSTATE
- NHS NON-INTERSTATE
- PRIMARY
- SECONDARY
- URBAN
- OFF SYSTEM ROUTE

Date: 6/14/2016 Path: S:\RIM\Projects\Corridor_Studies\PRIMARY_205\ARCMAP\EXHIBIT10_PRIMARY_205_WILDLIFE_DISTRIBUTION.mxd



0 0.25 0.5 1 Miles

Scale: 1 in. = 0.5 mile

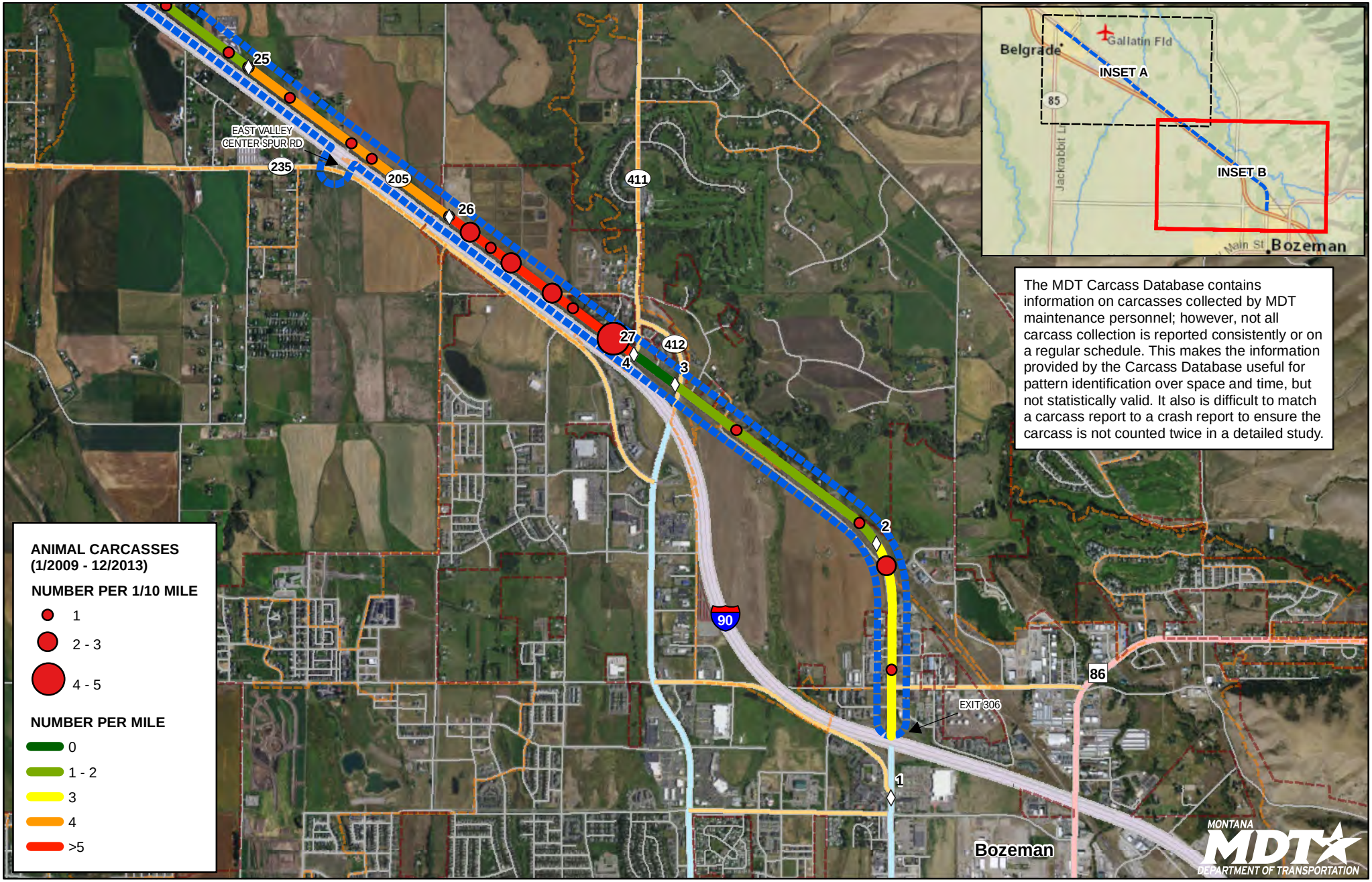
N W E S

Projection: NAD 1983 StatePlane Montana FIPS 2500
Sources: MDT Animal Carcass Dataset 2015, Aerial Imagery - NAIP 2013

EXHIBIT 11A - ANIMAL CARCASSES
BELGRADE TO BOZEMAN
CORRIDOR STUDY
GALLATIN COUNTY, MONTANA

REFERENCE MARKER
STUDY AREA
CITY BOUNDARY
2010 URBANIZED AREA
NHS INTERSTATE
NHS NON-INTERSTATE
PRIMARY
URBAN
INTERSTATE RAMP
OFF SYSTEM ROUTE

Date: 6/14/2016 Path: S:\RIM\Projects\Corridor_Studies\PRIMARY_205\ARCMAP\EXHIBIT11A_PRIMARY_205_ANIMAL_CARCASS.mxd



0 0.25 0.5 1 Miles

Scale: 1 in. = 0.5 mile

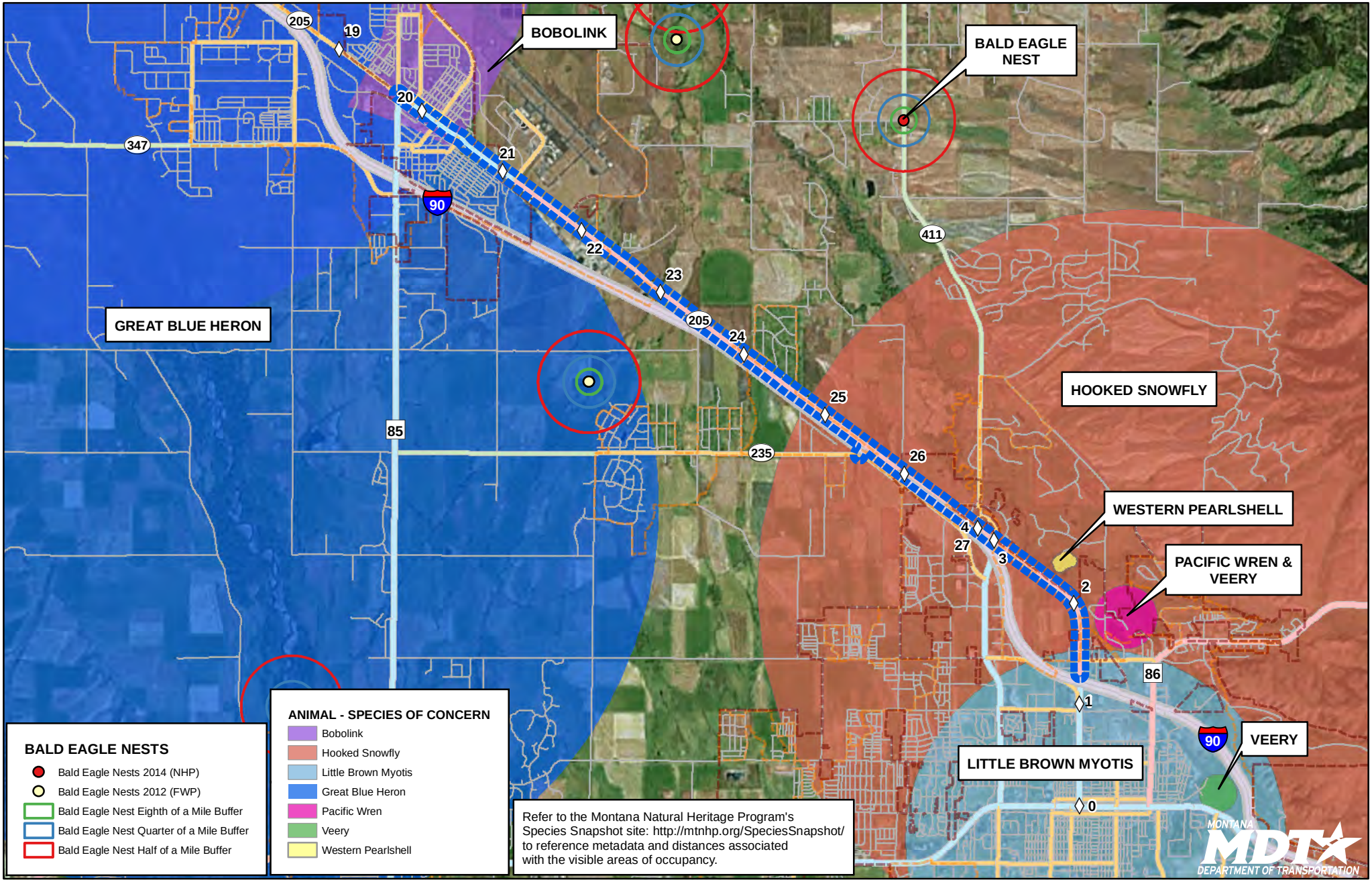
N W E S

Projection: NAD 1983 StatePlane Montana FIPS 2500
Sources: MDT Animal Carcass Dataset 2015,
Aerial Imagery - NAIP 2013

EXHIBIT 11B - ANIMAL CARCASSES
BELGRADE TO BOZEMAN
CORRIDOR STUDY
GALLATIN COUNTY, MONTANA

- REFERENCE MARKER
- STUDY AREA
- CITY BOUNDARY
- 2010 URBANIZED AREA
- NHS INTERSTATE
- NHS NON-INTERSTATE
- PRIMARY
- URBAN
- INTERSTATE RAMP
- OFF SYSTEM ROUTE

Date: 6/14/2016 Path: S:\RIM\Projects\Corridor_Studies\PRIMARY_205\ARCMAP\EXHIBIT11B_PRIMARY_205_ANIMAL_CARCASS.mxd



0 0.5 1 2 Miles

Scale: 1:80,000

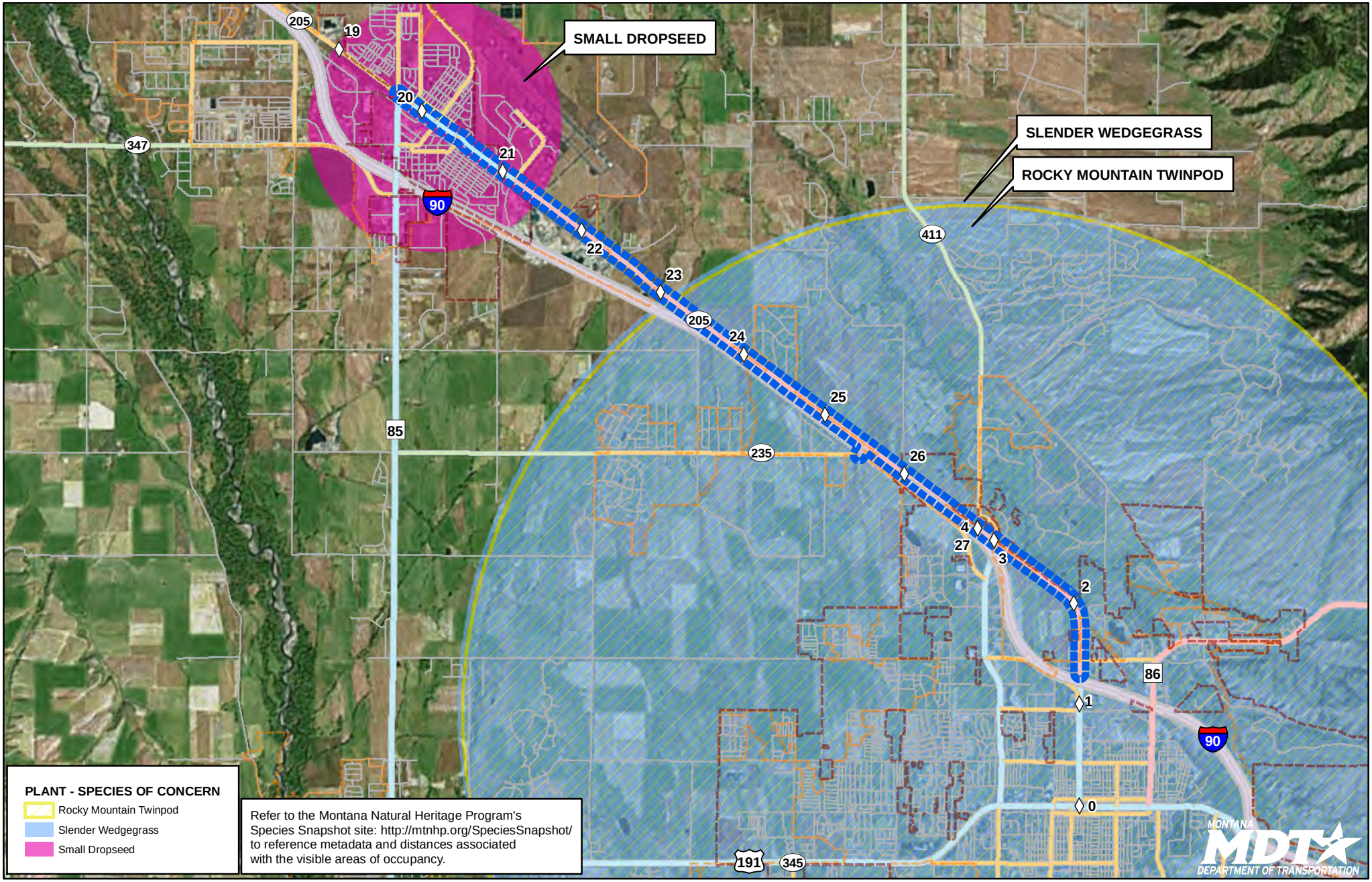
N W E S

Projection: NAD 1983 StatePlane Montana FIPS 2500
Sources: Montana Fish, Wildlife, and Parks (FWP)
Bald Eagle Nests dataset 2014, Montana Natural Heritage Program
Montana Field Guide dataset 2015, Aerial Imagery - NAIP 2013

EXHIBIT 12A - ANIMAL SPECIES OF CONCERN BELGRADE TO BOZEMAN CORRIDOR STUDY GALLATIN COUNTY, MONTANA

- REFERENCE MARKER
- STUDY AREA
- CITY BOUNDARY
- 2010 URBANIZED AREA
- NHS INTERSTATE
- NHS NON-INTERSTATE
- PRIMARY
- SECONDARY
- URBAN
- OFF SYSTEM ROUTE

Date: 6/14/2016 Path: S:\RIM\Projects\Corridor_Studies\PRIMARY_205\ARCMAP\EXHIBIT12A_PRIMARY_205_ANIMAL_SOC.mxd



0 0.5 1 2 Miles

Scale: 1:80,000

Projection: NAD 1983 StatePlane Montana FIPS 2500
Sources: Montana Natural Heritage Program
Montana Field Guide dataset 2015,
Aerial Imagery - NAIP 2013

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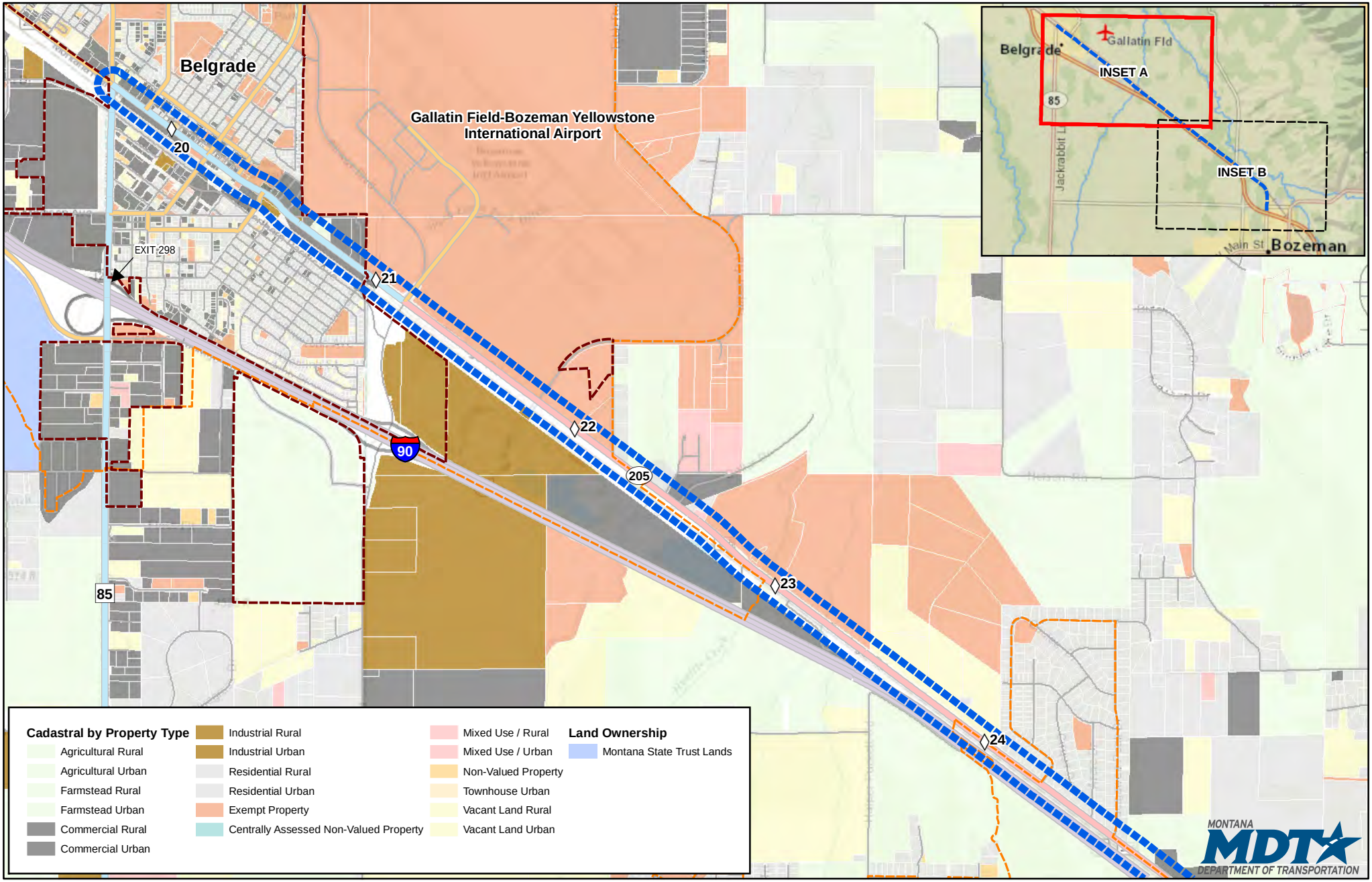
EXHIBIT 12B - PLANT SPECIES OF CONCERN BELGRADE TO BOZEMAN CORRIDOR STUDY GALLATIN COUNTY, MONTANA

- REFERENCE MARKER
- STUDY AREA
- CITY BOUNDARY
- 2010 URBANIZED AREA
- NHS INTERSTATE
- NHS NON-INTERSTATE
- PRIMARY
- SECONDARY
- URBAN
- OFF SYSTEM ROUTE

Date: 6/14/2016 Path: S:\RIM\Projects\Corridor_Studies\PRIMARY_205\ARCMAP\EXHIBIT12B_PRIMARY_205_PLANT_SOC.mxd



0 0.25 0.5 1 Miles

Scale: 1 in. = 0.5 mile

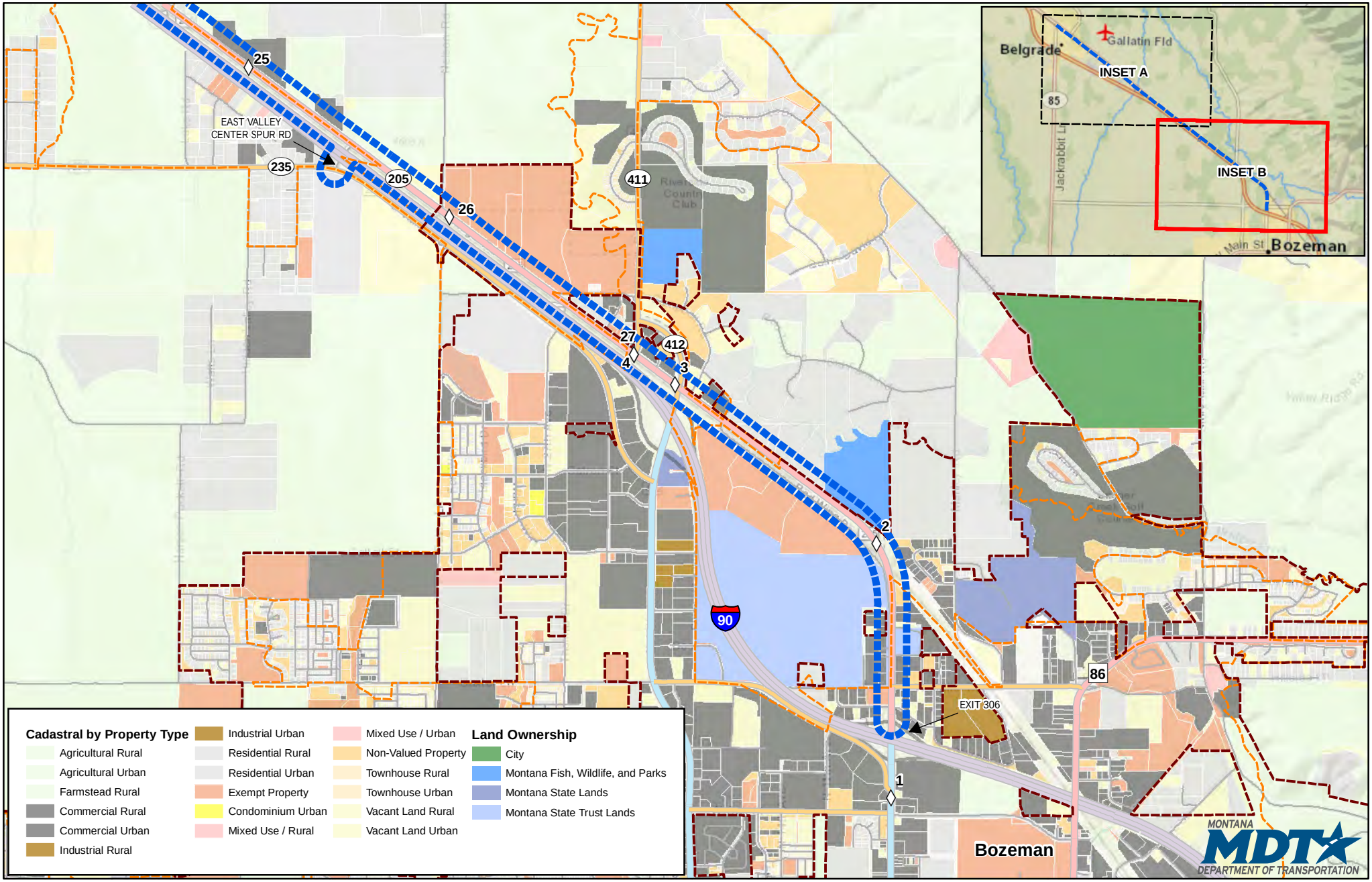
N W E S

Projection: NAD 1983 StatePlane Montana FIPS 2500
Sources: Montana Cadastral Framework (DOR/MSL) 2015, Montana Public Lands Dataset (DOR/MSL) 2015, ESRI ArcGIS Online - World Topographic Map

EXHIBIT 13A - PUBLIC LANDS & CADASTRAL BY PROPERTY TYPE BELGRADE TO BOZEMAN CORRIDOR STUDY GALLATIN COUNTY, MONTANA

- STUDY AREA
- REFERENCE MARKER
- CITY BOUNDARY
- 2010 URBANIZED AREA
- NHS INTERSTATE
- NHS NON-INTERSTATE
- PRIMARY
- URBAN
- INTERSTATE RAMP
- OFF SYSTEM ROUTE

Date: 6/14/2016 Path: S:\RIM\Projects\Corridor_Studies\PRIMARY_205\ARCMAP\EXHIBIT13A_PRIMARY_205_CADASTRAL_PUBLICLANDS.mxd



0 0.25 0.5 1 Miles

Scale: 1 in. = 0.5 mile

N
W E
S

Projection: NAD 1983 StatePlane Montana FIPS 2500
Sources: Montana Cadastral Framework (DOR/MSL) 2015,
Montana Public Lands Dataset (DOR/MSL) 2015,
ESRI ArcGIS Online - World Topographic Map

EXHIBIT 13B - PUBLIC LANDS & CADASTRAL BY PROPERTY TYPE BELGRADE TO BOZEMAN CORRIDOR STUDY GALLATIN COUNTY, MONTANA

REFERENCE MARKER
STUDY AREA
2010 URBANIZED AREA
CITY BOUNDARY
NHS INTERSTATE
NHS NON-INTERSTATE
PRIMARY
URBAN
INTERSTATE RAMP
OFF SYSTEM ROUTE

Date: 6/14/2016 Path: S:\RIM\Projects\Corridor_Studies\PRIMARY_205\ARCMAP\EXHIBIT13B_PRIMARY_205_CADASTRAL_PUBLICLANDS.mxd

0 0.25 0.5 1 Miles

Scale: 1 in. = 0.5 mile

Projection: NAD 1983 StatePlane Montana FIPS 2500
Sources: Montana Geographic Names Information System (GNIS) 2015,
Aerial Imagery - NAIP 2013

N
W E
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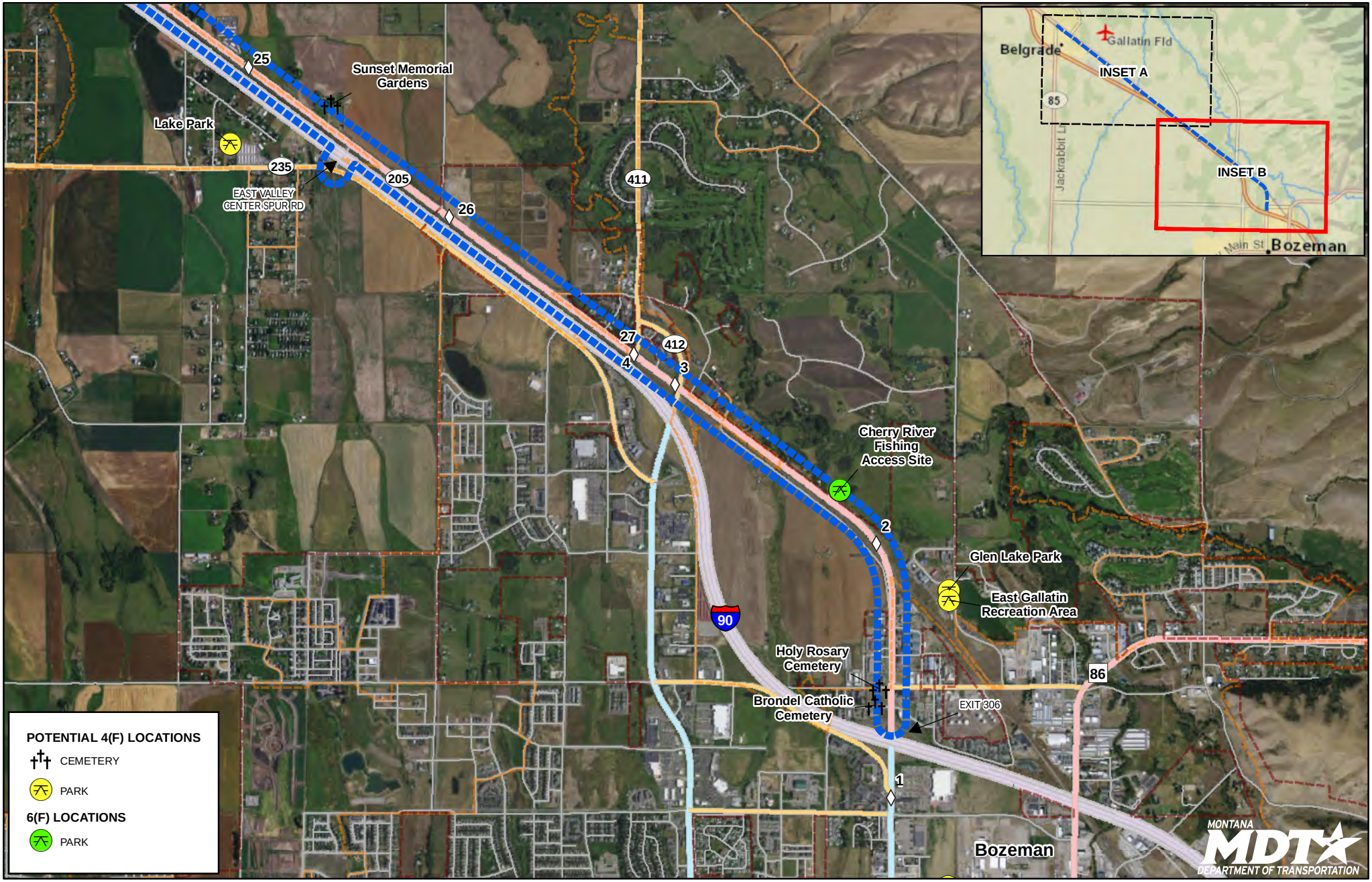
EXHIBIT 14A - 4(F) & 6(F) LOCATIONS
BELGRADE TO BOZEMAN CORRIDOR STUDY
GALLATIN COUNTY, MONTANA

- REFERENCE MARKER
- STUDY AREA
- CITY BOUNDARY
- 2010 URBANIZED AREA
- NHS INTERSTATE
- NHS NON-INTERSTATE
- PRIMARY
- URBAN
- INTERSTATE RAMP
- OFF SYSTEM ROUTE

Date: 6/14/2016 Path: S:\RIM\Projects\Corridor_Studies\PRIMARY_205\ARCMAP\EXHIBIT14A_PRIMARY_205_GNIS_4F6F_PARKS.mxd



0 0.25 0.5 1 Miles

Scale: 1 in. = 0.5 mile

N
W E
S

Projection: NAD 1983 StatePlane Montana FIPS 2500
Sources: Montana Geographic Names Information System (GNIS) 2015,
Aerial Imagery - NAIP 2013

EXHIBIT 14B - 4(F) & 6(F) LOCATIONS BELGRADE TO BOZEMAN CORRIDOR STUDY GALLATIN COUNTY, MONTANA

REFERENCE MARKER
STUDY AREA
CITY BOUNDARY
2010 URBANIZED AREA
NHS INTERSTATE
NHS NON-INTERSTATE
PRIMARY
URBAN
INTERSTATE RAMP
OFF SYSTEM ROUTE

Date: 6/14/2016 Path: S:\RIM\Projects\Corridor_Studies\PRIMARY_205\ARCMAP\EXHIBIT14B_PRIMARY_205_GNIS_4F6F_PARKS.mxd

0 0.5 1 2 Miles

Scale: 1:80,000

Projection: NAD 1983 StatePlane Montana FIPS 2500
Sources: Montana Cultural Resource Information System 2015, USGS Topographic 7.5 - minute quadrangles

N W E S

EXHIBIT 15 - CULTURAL AND HISTORICAL RESOURCES BELGRADE TO BOZEMAN CORRIDOR STUDY GALLATIN COUNTY, MONTANA

- REFERENCE MARKER
- STUDY AREA
- PLSS TWONSHIP / RANGE
- PLSS SECTION
- CITY BOUNDARY
- 2010 URBANIZED AREA
- NHS INTERSTATE
- NHS NON-INTERSTATE
- PRIMARY
- SECONDARY
- URBAN
- OFF SYSTEM ROUTE

Date: 6/14/2016 Path: S:\RIM\Projects\Corridor_Studies\PRIMARY_205\ARCMAP\EXHIBIT15_PRIMARY_205_CULTURAL_AND_HISTORICAL_RESOURCES.mxd

Attachment 2
Noxious Weeds – Invaders Database System

Invaders Database System – Gallatin County

Database queried on: April 15, 2015 Database last updated on: July 27, 2014

Genus	Species	Common Name	Noxious In	Exotic
Agropyron	repens	quackgrass	OR,WY	×
Arctium	minus	common burdock	WY	×
Artemisia	absinthium	absinth wormwood	WA	×
Bryonia	alba	white bryony	WA	×
Cardaria	draba	hoary cress	ID,MT,OR,WA,WY	×
Carduus	acanthoides	plumeless thistle	OR,WA,WY	×
Carduus	nutans	musk thistle	ID,OR,WA,WY	×
Centaurea	diffusa	diffuse knapweed	ID,MT,OR,WA,WY	×
Centaurea	jacea	brown knapweed	WA	×
Centaurea	maculosa	spotted knapweed	ID,MT,OR,WA,WY	×
Centaurea	repens	Russian knapweed	ID,MT,OR,WA,WY	×
Centaurea	solstitialis	yellow starthistle	ID,MT,OR,WA	×
Chrysanthemum	leucanthemum	oxeye daisy	MT,WA,WY	×
Cirsium	arvense	Canada thistle	ID,MT,OR,WA,WY	×
Cirsium	vulgare	bull thistle	OR,WA	×
Conium	maculatum	poison hemlock	ID,OR,WA	×
Convolvulus	arvensis	field bindweed	ID,MT,OR,WA,WY	×
Cuscuta	approximata	clustered dodder	OR,WA	×
Cynoglossum	officinale	houndstongue	MT,OR,WA,WY	×
Daucus	carota	wild carrot	WA	×
Equisetum	arvense	field horsetail	OR	
Euphorbia	esula	leafy spurge	ID,MT,OR,WA,WY	×
Gypsophila	paniculata	baby's breath	WA	×
Hieracium	aurantiacum	orange hawkweed	ID,MT,OR,WA	×
Hyoscyamus	niger	black henbane	ID,WA	×
Hypericum	perforatum	St. Johnswort	MT,OR,WA,WY	×
Iris	pseudacorus	yellowflag iris	MT,WA	×
Isatis	tinctoria	dyer's woad	ID,MT,OR,WA,WY	×
Kochia	scoparia	kochia	OR,WA	×
Lepidium	latifolium	perennial pepperweed	ID,MT,OR,WA,WY	×
Linaria	dalmatica	dalmatian toadflax	ID,MT,OR,WA,WY	×
Linaria	vulgaris	yellow toadflax	ID,MT,OR,WA,WY	×
Lysimachia	vulgaris	garden loosestrife	WA	×
Matricaria	maritima	scentless chamomile	WA	×
Mirabilis	nyctaginea	wild four o'clock	WA	
Myriophyllum	spicatum	Eurasian watermilfoil	ID,MT,OR,WA	×
Onopordum	acanthium	Scotch thistle	ID,OR,WA,WY	×
Panicum	miliaceum	wild proso millet	OR	×
Phalaris	arundinacea	reed canarygrass	WA	×

Polygonum	bohemica	Bohemian knotweed		×
Polygonum	sachalinense	giant knotweed	OR,WA	×
Potentilla	recta	sulfur cinquefoil	MT,OR,WA	×
Ranunculus	acris	tall buttercup	MT	×
Secale	cereale	cultivated rye	WA	×
Solanum	rostratum	buffalobur	ID,OR,WA	
Sonchus	arvensis	perennial sowthistle	ID,WA,WY	×
Sorghum	halepense	Johnsongrass	ID,OR,WA	×
Tanacetum	vulgare	common tansy	MT,WA,WY	×
Vaccaria	hispanica	cowcockle		×

Attachment 3
Water Resources Survey Maps

Ron Roman

Water Resources Survey

Part I:

HISTORY OF LAND AND WATER USE ON IRRIGATED AREAS

and

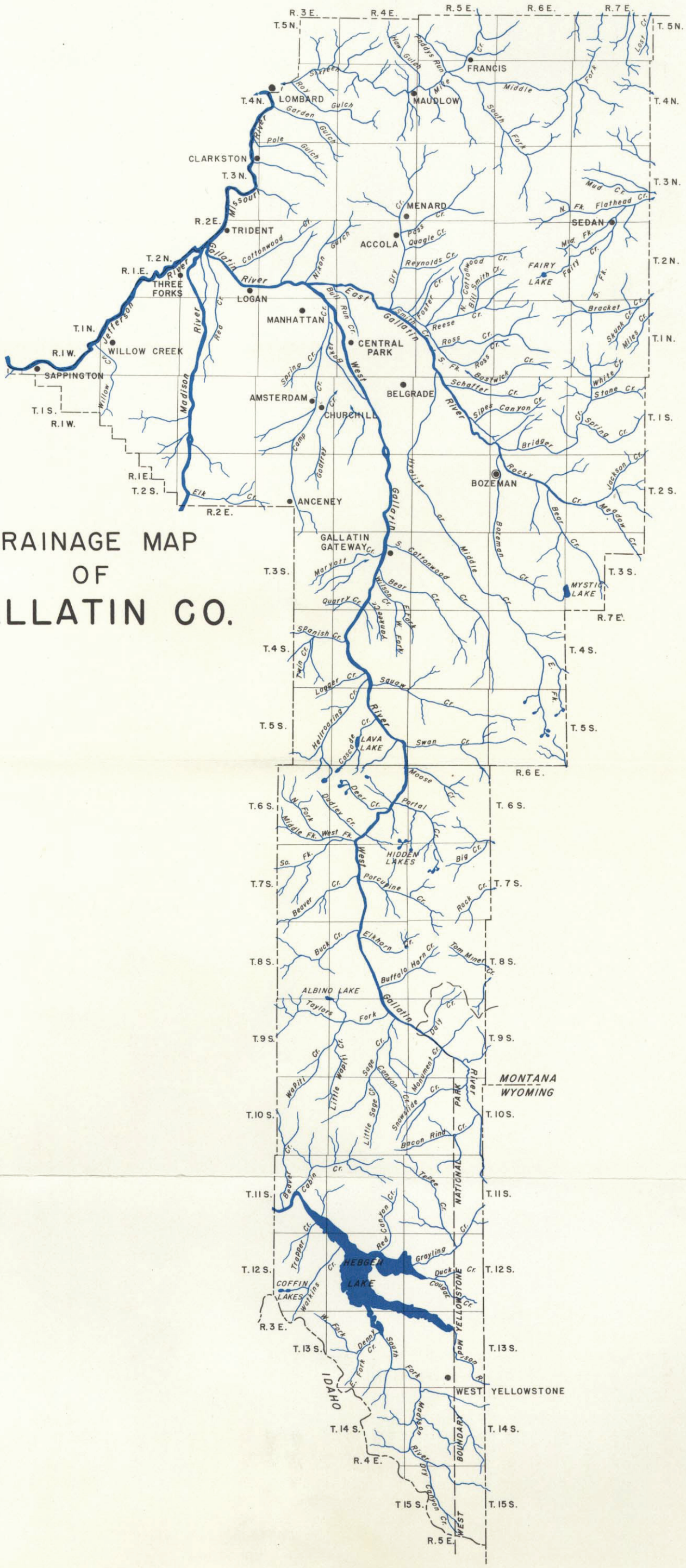
Part II:

MAPS SHOWING IRRIGATED AREAS IN COLORS DESIGNATING THE SOURCES OF SUPPLY

Gallatin County, Montana

Published by
STATE ENGINEER'S OFFICE
Helena, Montana, January, 1953
(Reprint as of June, 1961)

DRAINAGE MAP OF GALLATIN CO.



MAP SYMBOL INDEX

BOUNDARIES

- COUNTY LINE
- NATIONAL FOREST LINE

DITCHES

- CANALS OR DITCHES
- DRAIN DITCHES
- PROPOSED DITCHES

TRANSPORTATION

- PAVED ROADS
- UNPAVED ROADS
- RAILROADS
- 10 STATE HIGHWAY
- 89 U.S. HIGHWAY
- AIRPORT

STRUCTURES & UNITS

- DAM
- DIKE
- FLUME
- SIPHON
- SPILL
- SPRINKLER SYSTEM
- WEIR
- PIPE LINE
- PUMP
- PUMP SITE
- RESERVOIR
- WELL
- NATURAL CARRIER USED AS DITCH
- SPRING
- SWAMP
- GAUGING STATION
- POWER PLANT
- STORAGE TANK
- CEMETERY
- FAIRGROUND
- FARM OR RANCH UNIT
- LOOKOUT STATION
- RANGER STATION
- RAILROAD TUNNEL
- SCHOOL
- SHAFT, MINE, OR DRIFT

BOZEMAN CREEK RESERVOIR COMPANY

The Bozeman Reservoir Company was first incorporated on March 11, 1901, for a period of 20 years. Purposes of this corporation were to appropriate and use for irrigation, waters from Mystic Lake and Bozeman Creek. On September 13, 1901, the company filed on 3,000 miners inches of flood water from Bozeman Creek and Mystic Lake. A dam was then built of rock, stone, and other suitable materials across Bozeman Creek at the point where the creek flows from and forms the outlet of Mystic Lake. These flood waters so dammed, reservoired, and appropriated were run down the natural channel of Bozeman Creek to points where ditches diverted and conveyed the water to farms and other places of intended use. This company continued operations under the provisions set forth in the Articles of Incorporation until its term of existence expired on March 11, 1921.

On June 27, 1922, a new corporation of the same name was formed to succeed the defunct "Bozeman Reservoir Company." All property, rights, titles and interests owned by the former "Bozeman Reservoir Company" were acquired by the new corporation. Most important of the changes in the provisions of the new corporation were: "That the water appropriated may be used upon the lands of the stockholders in the corporation for irrigation, culinary, domestic, power, and other useful and beneficial purposes to the extent required by them; and in proportion to their respective shares and interest in the company; and for a water supply for the City of Bozeman, Montana, and the inhabitants thereof, in proportion as the shares and interests of the City of Bozeman appears or shall appear in said Company."

The Bozeman Reservoir Company is incorporated for a period of forty (40) years. Stock issued by the company amounts to 60 shares having a par value of $500 each. The total amount of stock actually subscribed to is 20 shares. The stock in the corporation is assessable.

A regular assessment of $25.00 per share of stock is made each year. Operation and maintenance charges have averaged about $20.00 per share for the last several years. One share of stock entitles each stockholder to the use of 100 miner's inches of water a day for a total of 14 days during the irrigation season or 50 miner's inches a day for a total of 28 days.

Largest stockholder in the corporation at the present time is the City of Bozeman, whose 6 shares are used to supply water for domestic use in the city of Bozeman. The other 14 shares (of 20 subscribed to) are owned by nine farmers in the company, being divided as follows: six having 1 share; one owning 2 shares; and the other two having 3 shares each. The water represented by the latter shares is used for irrigation on farm lands south of Bozeman. This water is diverted from Bozeman Creek and carried in the following irrigation ditches: Mystic Lake, "68", "66", and the Lower Williams.

In 1952, 437 acres of land were irrigated or supplied supplemental water from the Bozeman Reservoir Company.

(See map in Part II, Pages 38, and 42).

DRY CREEK IRRIGATION COMPANY

Prior to the organization of the Dry Creek Irrigation Company several land owners located in the Lower Dry Creek Valley, between Reynolds Creek and the East Gallatin, had

no means of irrigation because the early water rights were held by farmers at the lower end of the valley near the East Gallatin River. To acquire the early water rights on Dry Creek the upstream land owners agreed to build an irrigation canal for the farm owners in the lower valley along the East Gallatin in exchange for these rights. The Dry Creek Canal's water supply from the East Gallatin River and Smith Creek was secured, since water rights from these streams were held by farmers under the proposed canal.

To accomplish this agreement the Dry Creek Irrigation Company was incorporated on April 9, 1907, and capitalized for $12,500 divided into 1,250 shares valued at $10.00 per share par value. Each share of stock was equal to one miner's inch of water. On March 24, 1909, water rights in the amount of 1,250 miner's inches were deeded to the Dry Creek Irrigation Company. These water rights acquired by the company are all, or a part, of several appropriations in which the deed record did not clearly define any further than owner and the amount of water. These rights are as follows: From Smith Creek: John A. Moore, 100 miner's inches; S. J. Miller, 50 miner's inches; W. H. Cox, 100 miner's inches; J. S. Ballard, 100 miner's inches; G. D. Tribble, 50 miner's inches; W. M. Cowan, 100 miner's inches. From the East Gallatin River: Harvey LaRue, 50 miner's inches; L. P. Miller, 87 miner's inches; Sam P. Miller, 29 miner's inches; Will V. Callantine, 58 miner's inches; M. J. Craver, 58 miner's inches; W. T. Yadon, 58 miner's inches; Peter Stevens, 50 miner's inches; Robert Jones, 50 miner's inches; H. W. Ray, 15 miner's inches; Rebecca A. Moore, 45 miner's inches; Kate Cowan, 150 miner's inches; and William Durham, 100 miner's inches.

On June 3, 1932, new Articles of Incorporation were filed with a capital of $15,000 divided into 1,500 shares at $10.00 per share. Subscriptions issued to date amount to 1,300 shares which are equal to 1,300 miner's inches of water. This amount is 50 miner's inches in excess of the water rights deeded to the company. However, the company has established a use right for this additional water and intends to make filings accordingly.

The Dry Creek Canal diverts water from the East Gallatin River at a point on the north bank in the southeast quarter of Section 18, Township 1 North, Range 5 East. It flows in a northerly direction and into Smith Creek; it is then diverted from Smith Creek and flows northwesterly into Reese Creek; and thence diverted from Reese Creek and flows northwesterly, finally returning to the East Gallatin River in the Southwest Quarter of Section 29, Township 2 North, Range 4 East.

Water charges vary each year depending upon the requirements of the system. Assessments for operation and maintenance are levied in proportion to the shares owned in the company. The canal diverts water several miles below the critical area of the East Gallatin River and the return flow to the river eliminates any water shortage problem for the canal system.

In 1952, 1,368 acres of land were irrigated from the Dry Creek Canal with no acres potentially irrigable under the canal system.

(See Map in Part II, Pages 5, 6, and 12)

FARMERS CANAL COMPANY

On October 6, 1890, an appropriation was filed for 5,000 miner's inches of water from the West Gallatin River by the Excelsior Canal Company, an organization that was formed

lows: 3,400 miner's inches appropriated May 9, 1890; and 1,600 miner's inches appropriated June 1, 1901. Also a water right was decreed to the Low Line Canal in a Supplemental Decree, Case No. 6751, of 2,500 miner's inches apporpriated June 1, 1913.

This canal company has a shortage of water due to the late dates of priority of the above mentioned rights. Therefore, these rights are considered "flood rights," since the water is shut-off by July 15 and sometimes as early as July 1st each year.

In 1952, 7,783 acres were irrigated with 646 acres potentially irrigable under existing facilities, making a maximum acreage of 8,429 acres under the Low Line Canal.

(See Map, Part II, Pages 4, 29, and 30).

MAMMOTH DITCH COMPANY

The first incorporation of the Mammoth Ditch Company was on May 17, 1904. However, it should be pointed out that the ditch was used in 1866, 38 years before its date of incorporation and is probably one of the oldest ditches in the Gallatin Valley. Among the earliest water users under the ditch were Charles H. Waterman, C. H. McDonald, and Frank L. Benepe.

On February 16, 1927, the Mammoth Ditch Company re-incorporated for 40 years with a capital stock of $26,000 which was divided into 52 shares having a par value of $500.00. All 52 shares of stock issued are subscribed to and divided under the ditch system among fourteen farmers. The stock of the company was made assessable in certain amounts and at such times as prescribed in the by-laws by order of the trustees of the corporation. Annual assessments for operation and maintenance have averaged $10.00 per share for the last ten years. One share of stock is equivalent to 50 miner's inches.

The point of diversion of the main ditch is: A point on the east bank of the West Gallatin River in SW¼SW¼ of Section 2, Township 2 South, Range 4 East.

Two water rights were decreed to the Mammoth Ditch Company from the West Gallatin River in Case No. 3850: W. D. Bell, Jr., et al, Plaintiffs vs. F. K. Armstrong, et al, Defendants, dated October 7, 1909.

(1) 2,361 miner's inches, or a flow equivalent to 59.02 cubic feet per second, appropriated June 1, 1866.

(2) 579 miner's inches, or a flow equivalent to 14.47 cubic feet per second, appropriated May 31, 1884.

These rights are on file in Judgment Book 9, Page 288, in the office of the Clerk of the District Court of Gallatin County.

In 1952 there were 2,854 acres irrigated under the Mammoth Ditch with 122 acres potentially irrigable, making a maximum of 2,976 acres under existing ditch facilities.

(See Map, Part II, Pages 5, 6, 30, and 31).

In 1952 there were 2,702 acres irrigated from the Middle Creek Ditch with 87 acres potentially irrigable under the system.

(See Map in Part II, Pages 37, 38, and 41).

SPAIN-FERRIS DITCH COMPANY

On December 12, 1905, the water users who were transporting their water through the Spain-Ferris Ditch filed Articles of Incorporation with capitalization of $42,000, divided into 4,200 shares at $10.00 per share. In the formation of the corporation, water rights were exchanged for shares of stock in the ditch company.

The corporation's term of existence was for 20 years from and after the date of filing. In 1909 when the West Gallatin River was adjudicated (Case No. 3850), the company was decreed 4,264 miner's inches of water consisting of 1,200 miner's inches appropriated 1886; 2,764 miner's inches appropriated in 1890; and 300 miner's inches appropriated in 1892. On March 12, 1927, new Articles of Incorporation were filed for a 40 year period, claiming all property owned by the old corporation. In each of the incorporations the company name remained the same. Capital stock of the new organization was $50,000 being divided into 5,000 shares, having a par value of $10.00 per share. At the present time there are 4,200 shares of active stock subscribed to in the ditch company, with each share of stock representing one miner's inch of water. The company, with a total of 4,264 shares of water available, has 64 shares or miner's inches remaining to be disposed of at the company's discretion. In addition to the water decreed to the Spain-Ferris Ditch the ditch is carrying 638 miner's inches of individual decreed water rights of 1894 priority for three users. This water was transferred to the Spain-Ferris Ditch from the Beck-Border Ditch as a matter of convenience to the users. Practically all of the water rights in the ditch are of a comparatively late priority date and should be considered "high water rights." The water supply is generally shut-off sometime between the first and fifteenth of July each year, the exact time depending upon the amount of river flow.

The Spain-Ferris Ditch diverts water from the West Gallatin River through a slough, which starts at a point on the east bank in the northwest quarter of Section 14, Township 2 South, Range 4 East. The main ditch diverts water from the slough approximately three quarters of a mile from its source, then flows northeasterly for a distance of approximately nine miles ending in the vicinity of the airport, Gallatin Field, near Belgrade.

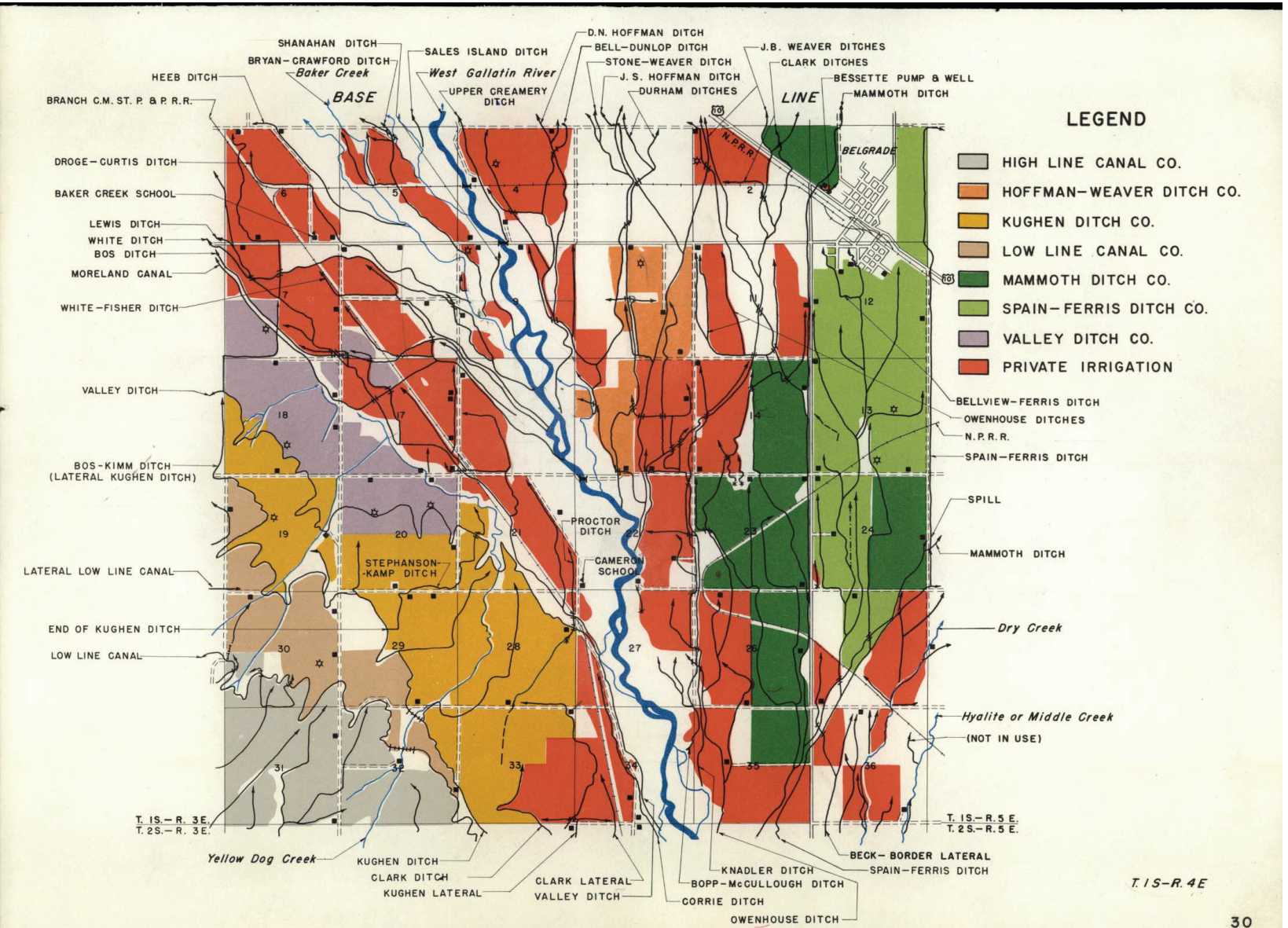
The average water assessments the last 10 years have been 45 cents for operation and maintenance for each share of stock and the same charge applies to the three individual decreed water rights carried by the company.

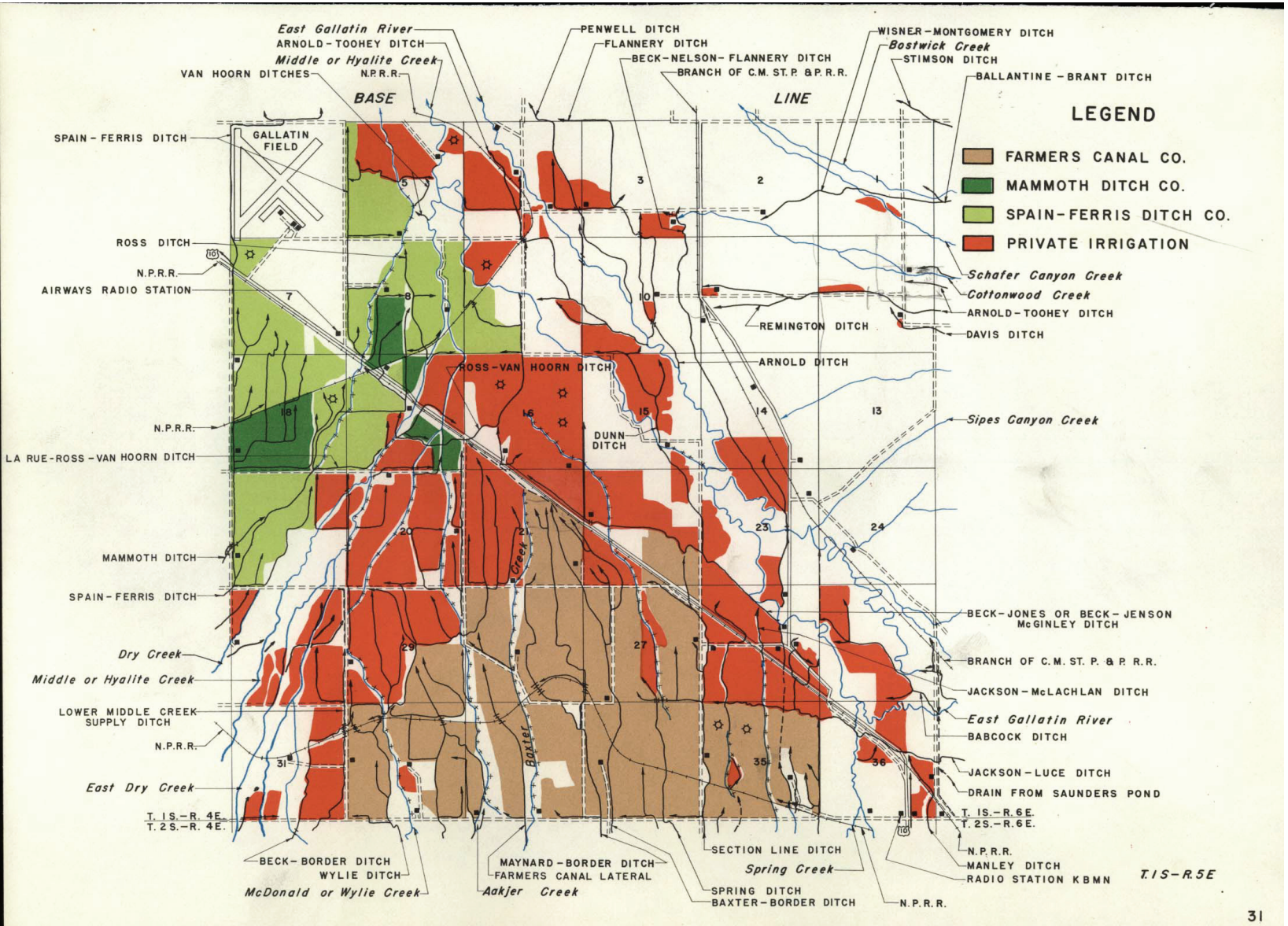
In 1952, 3,784 acres of land were irrigated from the Spain-Ferris Ditch and 313 acres of potentially irrigable land could be irrigated under present facilities.

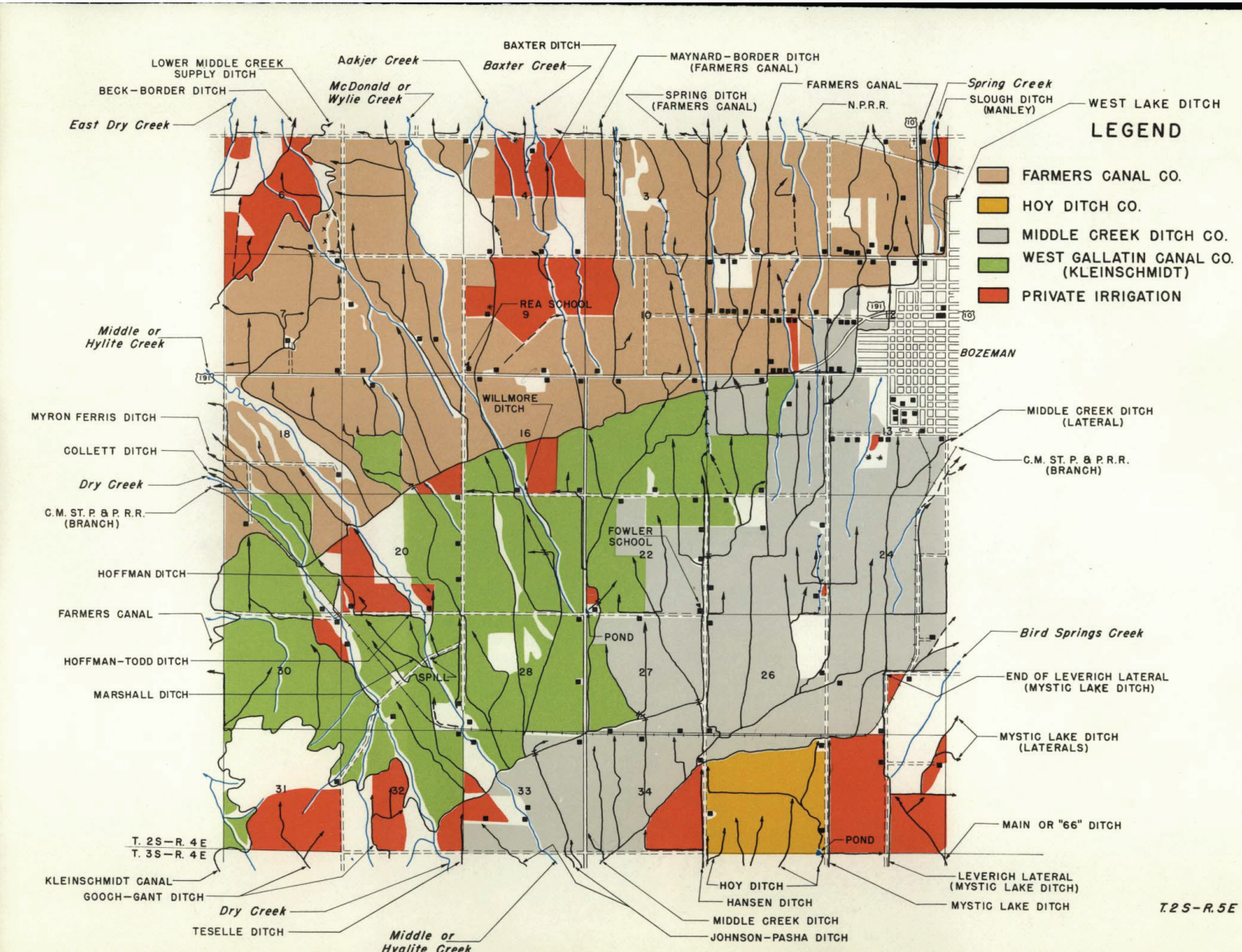
(See Map, Part II, Pages 6, 30, and 31).

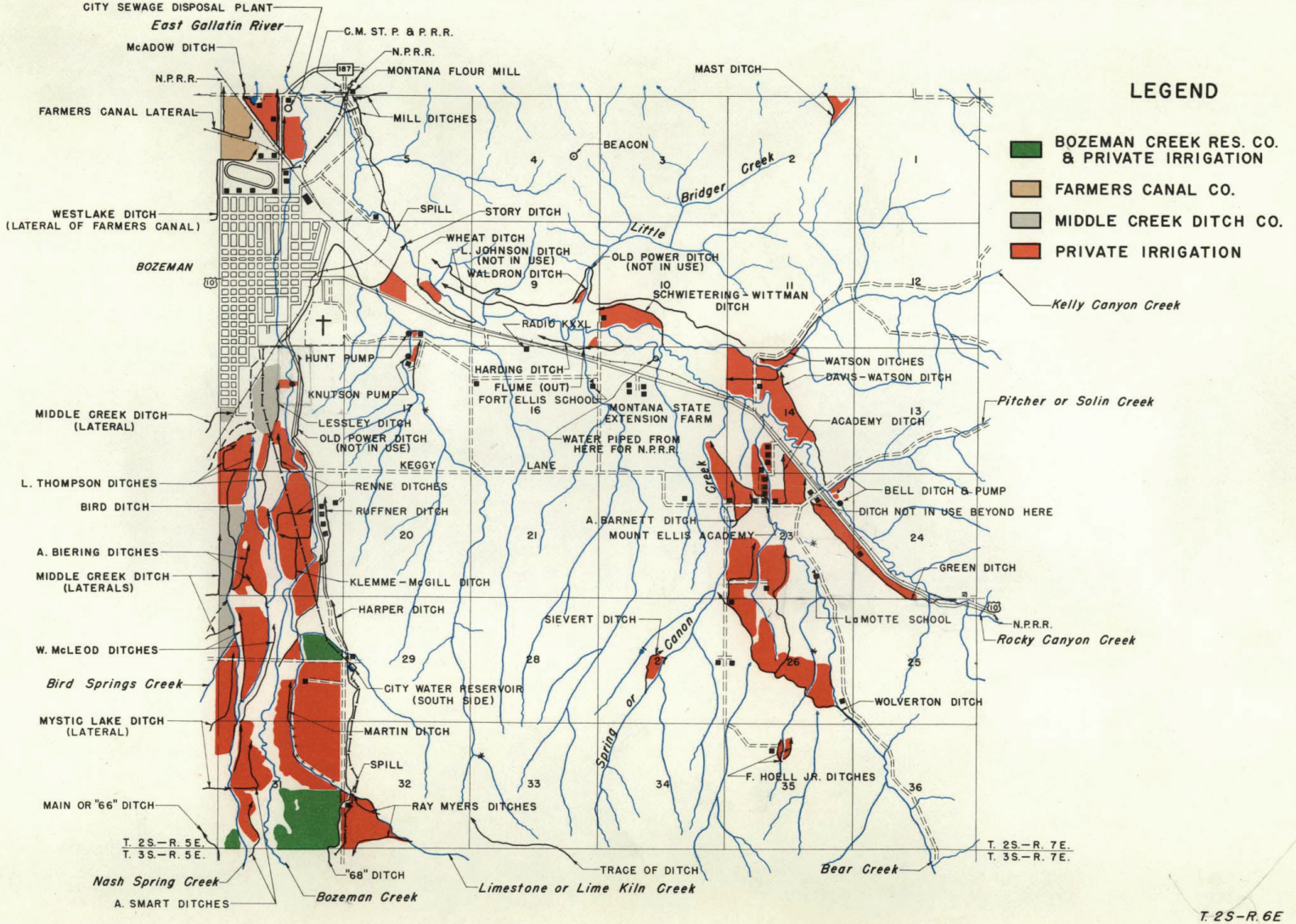
VALLEY DITCH COMPANY

On May 16, 1906, Alex Smith, Fred and Brown Heiskell, Arie TeSelle, Derk and Annie Hooyenga, Nicholas Froenkena, Walter H. Sales, Martin Leach, George Leach, and Alfred


SHANAHAN DITCH
BRYAN-CRAWFORD DITCH
Baker Creek
HEEB DITCH
BRANCH C.M. ST. P. & P. R.R.
BASE
SALES ISLAND DITCH
West Gallatin River
UPPER CREAMERY DITCH
D.N. HOFFMAN DITCH
BELL-DUNLOP DITCH
STONE-WEAVER DITCH
J. S. HOFFMAN DITCH
DURHAM DITCHES
J.B. WEAVER DITCHES
CLARK DITCHES
BESSETTE PUMP & WELL
MAMMOTH DITCH
LINE
N.P.R.R.
BELGRADE
DROGE-CURTIS DITCH
BAKER CREEK SCHOOL
LEWIS DITCH
WHITE DITCH
BOS DITCH
MORELAND CANAL
WHITE-FISHER DITCH
VALLEY DITCH
BOS-KIMM DITCH
(LATERAL KUGHEN DITCH)
LATERAL LOW LINE CANAL
END OF KUGHEN DITCH
LOW LINE CANAL
STEPHANSON-KAMP DITCH
PROCTOR DITCH
CAMERON SCHOOL
BELLVIEW-FERRIS DITCH
OWENHOUSE DITCHES
N.P.R.R.
SPAIN-FERRIS DITCH
SPILL
MAMMOTH DITCH
Dry Creek
Hyalite or Middle Creek
(NOT IN USE)
T. 1S.-R. 3E.
T. 2S.-R. 3E.
T. 1S.-R. 5 E.
T. 2S.-R. 5 E.
Yellow Dog Creek
KUGHEN DITCH
CLARK DITCH
KUGHEN LATERAL
CLARK LATERAL
VALLEY DITCH
CORRIE DITCH
OWENHOUSE DITCH
KNADLER DITCH
BOPP-McCULLOUGH DITCH
BECK-BORDER LATERAL
SPAIN-FERRIS DITCH
LEGEND
HIGH LINE CANAL CO.
HOFFMAN-WEAVER DITCH CO.
KUGHEN DITCH CO.
LOW LINE CANAL CO.
MAMMOTH DITCH CO.
SPAIN-FERRIS DITCH CO.
VALLEY DITCH CO.
PRIVATE IRRIGATION
T. 1S-R. 4E


East Gallatin River
ARNOLD - TOOHEY DITCH
Middle or Hyalite Creek
VAN HOORN DITCHES
N.P.R.R.
BASE
PENWELL DITCH
FLANNERY DITCH
BECK - NELSON - FLANNERY DITCH
BRANCH OF C.M. ST. P. & P. R.R.
LINE
WISNER - MONTGOMERY DITCH
Bostwick Creek
STIMSON DITCH
BALLANTINE - BRANT DITCH
LEGEND
FARMERS CANAL CO.
MAMMOTH DITCH CO.
SPAIN - FERRIS DITCH CO.
PRIVATE IRRIGATION
SPAIN - FERRIS DITCH
GALLATIN FIELD
ROSS DITCH
N.P.R.R.
AIRWAYS RADIO STATION
Schafer Canyon Creek
Cottonwood Creek
ARNOLD - TOOHEY DITCH
DAVIS DITCH
REMINGTON DITCH
ARNOLD DITCH
ROSS - VAN HOORN DITCH
Sipes Canyon Creek
N.P.R.R.
LA RUE - ROSS - VAN HOORN DITCH
DUNN DITCH
MAMMOTH DITCH
SPAIN - FERRIS DITCH
Dry Creek
Middle or Hyalite Creek
LOWER MIDDLE CREEK SUPPLY DITCH
N.P.R.R.
East Dry Creek
T. 1S. - R. 4E.
T. 2S. - R. 4E.
Baxter Creek
BECK - JONES OR BECK - JENSON McGINLEY DITCH
BRANCH OF C.M. ST. P. & P. R.R.
JACKSON - McLACHLAN DITCH
East Gallatin River
BABCOCK DITCH
JACKSON - LUCE DITCH
DRAIN FROM SAUNDERS POND
T. 1S. - R. 6E.
T. 2S. - R. 6E.
N.P.R.R.
MANLEY DITCH
RADIO STATION KBMN
T.1S - R.5E
BECK - BORDER DITCH
WYLIE DITCH
McDonald or Wylie Creek
MAYNARD - BORDER DITCH
FARMERS CANAL LATERAL
Aakjer Creek
SECTION LINE DITCH
Spring Creek
SPRING DITCH
BAXTER - BORDER DITCH
N.P.R.R.


LOWER MIDDLE CREEK SUPPLY DITCH
BECK-BORDER DITCH
East Dry Creek
Aakjer Creek
McDonald or Wylie Creek
BAXTER DITCH
Baxter Creek
MAYNARD-BORDER DITCH (FARMERS CANAL)
SPRING DITCH (FARMERS CANAL)
FARMERS CANAL
N.P.R.R.
Spring Creek
SLOUGH DITCH (MANLEY)
WEST LAKE DITCH
LEGEND
FARMERS CANAL CO.
HOY DITCH CO.
MIDDLE CREEK DITCH CO.
WEST GALLATIN CANAL CO. (KLEINSCHMIDT)
PRIVATE IRRIGATION
REA SCHOOL
Middle or Hylite Creek
BOZEMAN
WILLMORE DITCH
MYRON FERRIS DITCH
COLLETT DITCH
Dry Creek
C.M. ST. P. & P. R.R. (BRANCH)
MIDDLE CREEK DITCH (LATERAL)
C.M. ST. P. & P.R.R. (BRANCH)
FOWLER SCHOOL
HOFFMAN DITCH
FARMERS CANAL
HOFFMAN-TODD DITCH
MARSHALL DITCH
POND
SPILL
Bird Springs Creek
END OF LEVERICH LATERAL (MYSTIC LAKE DITCH)
MYSTIC LAKE DITCH (LATERALS)
MAIN OR "66" DITCH
T. 2S-R. 4E
T. 3S-R. 4E
KLEINSCHMIDT CANAL
GOOCH-GANT DITCH
Dry Creek
TESELLE DITCH
Middle or Hylite Creek
HOY DITCH
HANSEN DITCH
MIDDLE CREEK DITCH
JOHNSON-PASHA DITCH
LEVERICH LATERAL (MYSTIC LAKE DITCH)
MYSTIC LAKE DITCH
T.2S-R.5E


CITY SEWAGE DISPOSAL PLANT
East Gallatin River
C.M. ST. P. & P. R.R.
McADOW DITCH
N.P.R.R.
MONTANA FLOUR MILL
MAST DITCH
N.P.R.R.
FARMERS CANAL LATERAL
MILL DITCHES
BEACON
Bridger Creek
WESTLAKE DITCH
(LATERAL OF FARMERS CANAL)
SPILL
STORY DITCH
Little
WHEAT DITCH
L. JOHNSON DITCH
(NOT IN USE)
WALDRON DITCH
OLD POWER DITCH
(NOT IN USE)
BOZEMAN
SCHWIETERING - WITTMAN
DITCH
Kelly Canyon Creek
RADIO KXXL
HUNT PUMP
HARDING DITCH
WATSON DITCHES
DAVIS - WATSON DITCH
KNUTSON PUMP
FLUME (OUT)
FORT ELLIS SCHOOL
MONTANA STATE
EXTENSION FARM
Pitcher or Solin Creek
MIDDLE CREEK DITCH
(LATERAL)
LESSLEY DITCH
OLD POWER DITCH
(NOT IN USE)
WATER PIPED FROM
HERE FOR N.P.R.R.
ACADEMY DITCH
KEGGY
LANE
Creek
L. THOMPSON DITCHES
RENNE DITCHES
BELL DITCH & PUMP
BIRD DITCH
RUFFNER DITCH
A. BARNETT DITCH
MOUNT ELLIS ACADEMY
DITCH NOT IN USE BEYOND HERE
A. BIERING DITCHES
GREEN DITCH
MIDDLE CREEK DITCH
(LATERALS)
KLEMME - McGILL DITCH
HARPER DITCH
SIEVERT DITCH
LaMOTTE SCHOOL
N.P.R.R.
Rocky Canyon Creek
W. McLEOD DITCHES
Bird Springs Creek
CITY WATER RESERVOIR
(SOUTH SIDE)
Spring or Canon
WOLVERTON DITCH
MYSTIC LAKE DITCH
(LATERAL)
MARTIN DITCH
SPILL
F. HOELL JR. DITCHES
MAIN OR "66" DITCH
RAY MYERS DITCHES
T. 2S. - R. 5E.
T. 3S. - R. 5E.
Nash Spring Creek
"68" DITCH
TRACE OF DITCH
Bear Creek
T. 2S. - R. 7E.
T. 3S. - R. 7E.
A. SMART DITCHES
Bozeman Creek
Limestone or Lime Kiln Creek
LEGEND
BOZEMAN CREEK RES. CO. & PRIVATE IRRIGATION
FARMERS CANAL CO.
MIDDLE CREEK DITCH CO.
PRIVATE IRRIGATION
T. 2S - R. 6E