RIVER BEND ESTATES

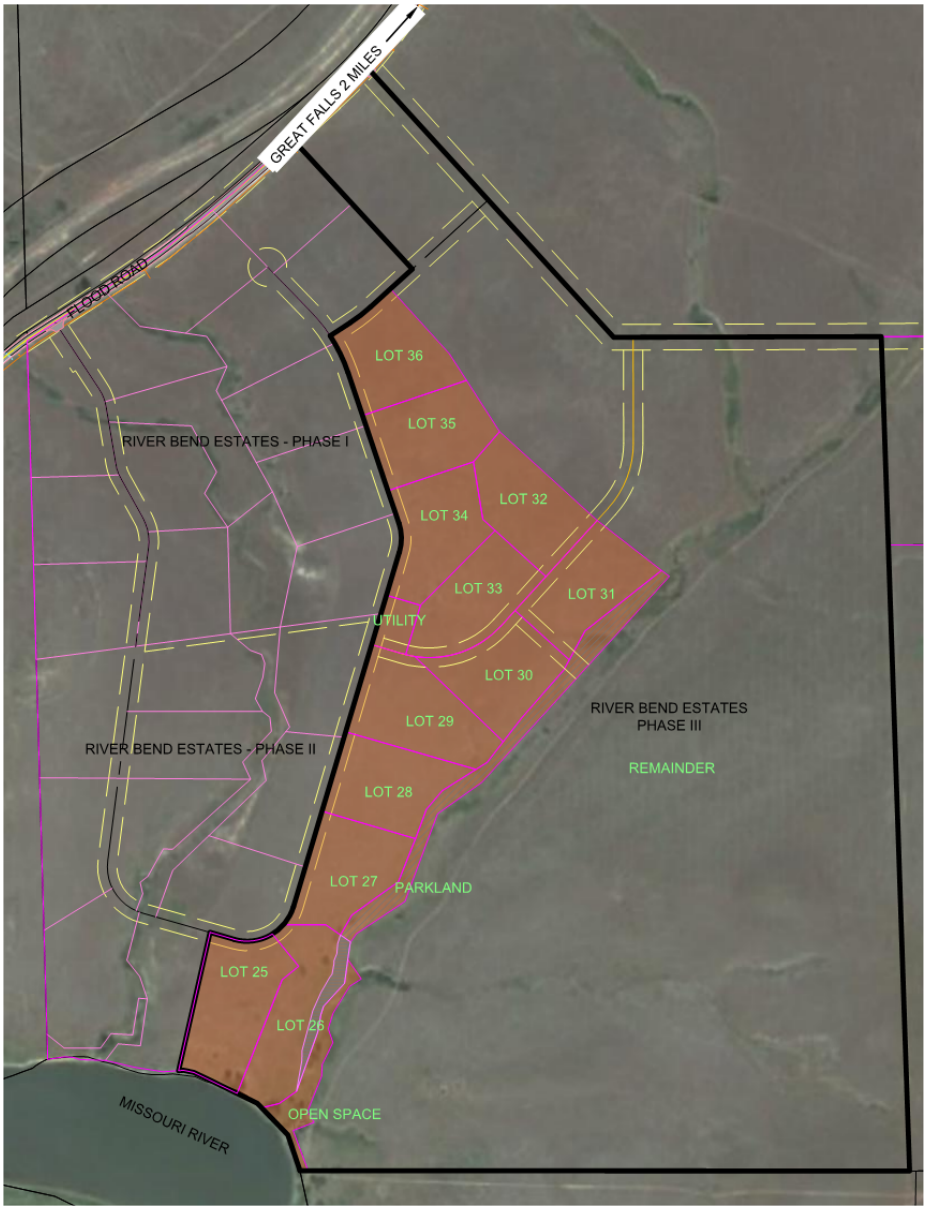
PHASE III

MAJOR SUBDIVISION

PRELIMINARY PLAT APPLICATION

Cascade County, MT

July 2020



Prepared for:

Higgins Enterprises
PO Box 322
Ulm, MT 59485

Prepared by:

Jason Crawford, PE
800 N. Last Chance Gulch
Suite 101
Helena, MT 59601
406-461-2115

TRIPLE TREE
ENGINEERING

In accordance with the Cascade County Subdivision Regulations adopted December 31, 2018 following is the preliminary plat application and supporting materials. The following has been organized and ordered as directed in Appendix A of the regulations and the preliminary plat application.

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1 PRELIMINARY PLAT APPLICATION

The signed preliminary plat application is included below.

Subdivision Application

Cascade County Public Works Department
Planning Division
121 4th St No, STE 2H/I, Great Falls MT 59401
Phone: 406-454-6905 Fax: 406-454-6919

Requirements Attached

Non Refundable Application Fee Required

Date:_____

PART I **GENERAL DESCRIPTION AND INFORMATION**

Name of Proposed Subdivision: River Bend Estates Phase III

Location (City and/or County): Cascade County

Legal Description: _____ ¼ _____ ¼ of Section 34 Township 20N Range 3E

Is concurrent review by the local governing body and DEQ requested? ☒ Yes ☐ No

Type of water supply system:

☒ Individual or shared well ☐ Individual cistern ☐ New public system

☐ Individual surface water supply for spring ☐ Service connection to public system

☐ Multiple-family water supply system (3-14 connections and fewer than 25 people)

☐ Service connection to multiple-family system ☐ Extension of public main

Type of wastewater treatment system:

☒ Individual or shared on-site septic system

☐ Multiple-family on-site system (3-14 connections and fewer than 25 people)

☐ Service connection to multiple-family system

☐ Service connection to public system

☐ Extension of public main

☐ New public system

Name of solid waste (garbage) disposal site: High Plains Landfill

Is information included which substantiates that there will be no degradation of state waters or that degradation will be non-significant? ☒ Yes ☐ No

If not, have you enclosed an Application to Degrade? ☐ Yes ☐ No (NA)

Descriptive Data:

Number of lots or rental spaces: 16

Total acreage in lots being reviewed: 27.37

Total acreage in streets or roads: 3.70

Total acreage in parks, open spaces and/or common facilities: 2.84

TOTAL gross acreage of subdivision: 115.56

Minimum size of lots or spaces: 0.40 (Utility Lot)

Maximum size of lots or spaces: 87.44

Provide the following information regarding the development:

Current land use: Grazing and Fallow
Existing zoning or other regulations: Suburban Residential 2 - SR 2 - Minimum Lot Size 2-acres
Depth to ground water at the time of year when water table is nearest to the natural ground surface within the drain field area: 70'
Depth to bedrock or other impervious material in the drain field area: 8'+

An overall development plan indicating the intent for the development of the remainder of the tract, if a tract of land is to be subdivided in phases.

Drafts of any covenants and restrictions to be included in deeds or contracts for sale. Drafts of homeowners' association bylaws and articles of incorporation, if applicable. (Submitting a draft copy of homeowners' association bylaws and articles of incorporation is adequate for DEQ to initiate and complete its review of sanitary facilities, but a copy of the fully executed documents must be submitted before DEQ can issue final approval.)

The undersigned understands that:

A person may not file a subdivision plat with a county Clerk and Recorder, make disposition of any lot (sell, rent, lease or otherwise convey title to or possession of a lot)*, erect any facility for the supply of water or disposal of sewage or solid waste, or occupy a permanent building in a subdivision until the reviewing authority has indicated that the subdivision is subject to no sanitary restrictions (§76-4-123 MCA) *Parenthetical text added for clarification.

I designate Jason Crawford as my representative for purposes of this application.

Name, address and telephone number of designated representative, if any: (engineer, surveyor)

Name: Jason Crawford Phone: 406-461-2115

Address: 3102 Old Broadwater Lane

City: Helena State: MT Zip: 59602

Rick Higgins Judy Higgins Rick and Judy Higgins

Signature of Owner **Printed Name**

Address: PO Box 322

City: Ulm State: MT Zip: 59485

The statement must be signed by the owner of the land proposed for subdivision or the responsible officer of the corporation offering the same for sale.

2 REVIEW FEE

Review Fee Calculation - $1,000 + $50/lot for 16 lots = $1,800. A copy of the submitted check is attached.

N. RICHARD HIGGINS 10-98
JUDY F. HIGGINS
DBA HIGGINS ENTERPRISES LTD
NO. 110 ABERDARE LANE 406-866-3432
P.O. BOX 322
ULM, MT 59485-0322

7711
83-168/929

4-30 2020
Date

CHECK ARMOR

Pay to the Order of Cascade Cty Planning $ 1800 00

One Thousand - Eight Hundred Dollars

First Interstate Bank
406-792-3336
firstinterstate.com

For Phase III - permit

N Richard Higgins

⑆092901683⑆ 210004685⑈ 7711

3 PRELIMINARY PLAT

The preliminary plat is included below.

RIVER BEND ESTATES SUBDIVISION PHASE 3

BEING A SUBDIVISION IN THE SW1/4 OF SECTION 34, T20N, R3E, P.M.M., CASCADE COUNTY, MONTANA

CERTIFICATE OF OWNERS:

WE, RICK AND JUDY HIGGINS, THE UNDERSIGNED AUTHORIZED REPRESENTATIVES OF HIGGINS ENTERPRISES, OWNER OF THE SUBJECT PROPERTY DO HEREBY CERTIFY THAT WE HAVE CAUSED TO BE SURVEYED AND PLATTED INTO LOTS, BLOCKS, AND EASEMENT THE FOLLOWING DESCRIBED PROPERTY, TO WIT:
A PARCEL OF LAND SITUATED IN THE SW1/4 OF SECTION 34, TOWNSHIP 20 NORTH, RANGE 3 EAST, P.M.M., CASCADE COUNTY, MONTANA, MORE PARTICULARLY DESCRIBED AS FOLLOWS:

PROPERTY DESCRIPTION:
Commencing at the South Quarter Corner of Section 34, T.20N.,R.3E., P.M.M; thence N89°58'00"W a distance of 1870.25 feet to True Point of Beginning; thence N89°58'00"W along the south line of Section 34 a distance of 25.15 feet to a point on the meander line of the Missouri River; thence the following five(5) courses along the Missouri River meander: N18°41'00"W a distance of 117.00 feet; N43°51'00"W a distance of 136.90 feet; N64°03'00"W a distance of 220.00 feet; N78°37'00"W a distance of 32.60 feet; S85°30'00"W a distance of 15.00 feet; thence departing the meander line N12°49'26"E a distance of 440.49 feet to a point at the centerline of 60 foot easement known as River Bend Drive; thence the following nine(9) courses along the centerline of River Bend Drive: S74°03'31"E a distance of 77.20 feet to a point of curvature; thence along an arc to the left having a length of 233.81 feet and a radius of 150.00 feet; thence N16°37'47"E a distance of 1149.75 feet to a point of curvature; thence along an arc to the left having a length of 92.36 feet and a radius of 150.00 feet; thence N18°38'53"W continuing along the centerline of River Bend Drive a distance of 493.78 feet to a point of curvature; thence along an arc to the left having a length of 127.02 feet and a radius of 500.00 feet; thence N56°47'46"E a distance of 74.66 feet to a point of curvature; thence along an arc to the left having a length of 79.02 feet and a radius of 500.00 feet; thence N47°44'27"E a distance 84.35 feet; thence departing the centerline of River Bend Drive S42°15'33"E a distance of 271.47 feet; thence S32°52'01"E a distance of 289.22 feet; thence S47°42'13"E a distance of 409.53 feet; thence S52°14'07"E a distance of 284.86 feet; thence S42°22'27"W a distance of 865.44 feet; thence S54°33'12"w a distance of 169.23 feet; thence S20°20'09"W a distance of 199.88 feet; thence S56°26'51"W a distance of 180.54 feet; thence S35°57'05"W a distance of 31.91 feet; thence S13°41'35"W a distance of 8.99 feet; thence S08°20'20"W a distance of 46.10 feet; thence S34°52'12"E a distance of 73.34 feet; thence S57°02'14"W a distance of 43.52 feet; thence S31°38'25"W a distance of 96.64 feet; thence S17°19'59"W a distance of 51.18 feet; thence S18°27'31"E a distance of 45.97 feet; thence S25°57'02"W a distance of 75.78 feet; thence S03°01'00"W a distance of 36.73 feet; thence S21°57'19"W a distance of 118.03 feet; thence S31°32'00"E a distance of 39.04 feet; thence S68°19'34"W a distance of 69.86 feet; thence S20°18'26"E a distance of 132.97 feet to a point on the south line of Section 34 and the Point of Beginning of this River Bend Estates Subdivision Phase 3. This Subdivision containing 28.12 Acres±.

DEDICATION
The above described tract of land is to be known and designated as River Bend Estates Phase 3, and the land included in all streets, avenues, alleys, and parks or public squares are hereby granted and donated to the use of the public forever.

DECLARATION OF COVENANT:
This declaration made on the date hereafter set forth, by Higgins Enterprises LTD., Owner and Subdivider.

WITNESSETH:
That whereas, declarant is the owner of certain property known as River Bend Estates Phase 3 in Cascade County, State of Montana, which is described on the attached plat. Now therefore, Higgins Enterprises LTD, owner of the subject property hereby declares that all of the properties described above shall be held, sold, and conveyed subject to covenants which shall run with the real property and be binding on all parties having any heirs, successor and assigns, and shall bind each owner thereof. The covenants may be revoked for any and all parcels within the subdivision by mutual consent of the owners of the parcels in question and the governing body of Cascade County, Montana; and

DECLARATION OF IMPROVEMENTS GUARANTEE:
We, Rick and Judy Higgins, the undersigned authorized representatives of Higgins Enterprises LTD, owner of the subject property and subdivider, do hereby agree and consent to the terms and conditions of the attached "IMPROVEMENTS Guarantee" issued by Cascade County; and

UTILITY EASEMENTS PER THIS PLAT
The undersigned hereby grants unto each and every person, firm or corporation, whether public or private, providing or offering to provide telephone, telegraph, electric power, gas, cable television, water or sewer service to the public, the right to the joint use of an easement for the construction, maintenance, repair and removal of their lines and other facilities, in, over, under and across each area designated on this plat as 'Utility Easement' to have and to hold forever; and

NOTICE OF AGRICULTURAL ACTIVITIES:
This subdivision is in the vicinity of existing agricultural activities which may affect a purchaser's use and/or enjoyment of his/her property; and

STATEMENT OF LIMITED PUBLIC SERVICES:
Certain public services such as, but not limited to, school busing, snow plowing, and road maintenance may not be provided by Cascade County; and

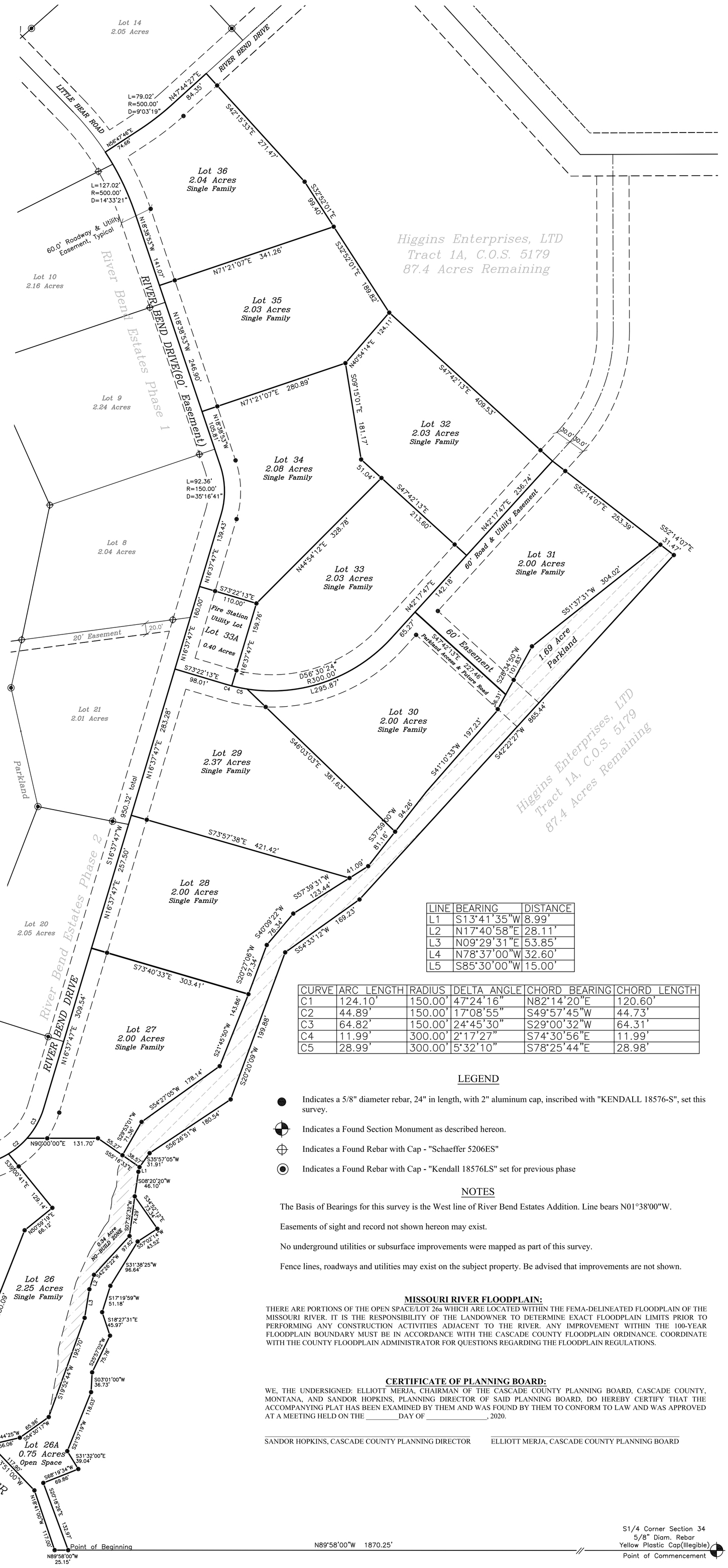
WAIVER TO PROTEST BID:
For each and every lot in this subdivision, we the undersigned owners of said property, hereby, waive, release, and remiss the right to protest, as defined by MCA 7-12-2019 through 7-12-2112 (2014), and further hereby assents, to any creation or extension of a rural improvement district, as defined by Title 7 Chapter 12, Part 21, MCA (2014), which may touch and concern any of all of the lots in this subdivision and which may hereafter be proposed for the paving of other improvement of certain county roads or any road that may provide access to the lots in the subdivision, as deemed by the Board of Cascade County Commissioners, Cascade County, Montana. This assent and waiver shall touch, concern, benefit, and burden each and every lot in this subdivision and shall run with the land and be binding upon any and all grantees, transferees, successors and assigns of each and every such lot.

RICK AND JUDY HIGGINS, AUTHORIZED REPRESENTATIVES OF HIGGINS ENTERPRISES LTD **DATED**

State of Montana)
County of Cascade)

On this ___ day of _____2020, Rick Higgins and Judy Higgins each personally appeared before and having been duly sworn did herein execute the above record for the purposes stated.

Printed Name:_____ Signature:_____
Notary Public for State of Montana



LINE	BEARING	DISTANCE
L1	S13°41'35"W	8.99'
L2	N17°40'58"E	28.11'
L3	N09°29'31"E	53.85'
L4	N78°37'00"W	32.60'
L5	S85°30'00"W	15.00'

CURVE	ARC LENGTH	RADIUS	DELTA ANGLE	CHORD BEARING	CHORD LENGTH
C1	124.10'	150.00'	47°24'16"	N82°14'20"E	120.60'
C2	44.89'	150.00'	17°08'55"	S49°57'45"W	44.73'
C3	64.82'	150.00'	24°45'30"	S29°00'32"W	64.31'
C4	11.99'	300.00'	2°17'27"	S74°30'56"E	11.99'
C5	28.99'	300.00'	5°32'10"	S78°25'44"E	28.98'

LEGEND

- Indicates a 5/8" diameter rebar, 24" in length, with 2" aluminum cap, inscribed with "KENDALL 18576-S", set this survey.
- Indicates a Found Section Monument as described hereon.
- Indicates a Found Rebar with Cap - "Schaeffer 5206ES"
- Indicates a Found Rebar with Cap - "Kendall 18576LS" set for previous phase

NOTES

The Basis of Bearings for this survey is the West line of River Bend Estates Addition. Line bears N01°38'00"W.

Easements of sight and record not shown hereon may exist.

No underground utilities or subsurface improvements were mapped as part of this survey.

Fence lines, roadways and utilities may exist on the subject property. Be advised that improvements are not shown.

MISSOURI RIVER FLOODPLAIN:

THERE ARE PORTIONS OF THE OPEN SPACE/LOT 26a WHICH ARE LOCATED WITHIN THE FEMA-DELINEATED FLOODPLAIN OF THE MISSOURI RIVER. IT IS THE RESPONSIBILITY OF THE LANDOWNER TO DETERMINE EXACT FLOODPLAIN LIMITS PRIOR TO PERFORMING ANY CONSTRUCTION ACTIVITIES ADJACENT TO THE RIVER. ANY IMPROVEMENT WITHIN THE 100-YEAR FLOODPLAIN BOUNDARY MUST BE IN ACCORDANCE WITH THE CASCADE COUNTY FLOODPLAIN ORDINANCE. COORDINATE WITH THE COUNTY FLOODPLAIN ADMINISTRATOR FOR QUESTIONS REGARDING THE FLOODPLAIN REGULATIONS.

CERTIFICATE OF COUNTY COMMISSION:

THE COUNTY COMMISSION OF CASCADE COUNTY, MONTANA, DOES HEREBY CERTIFY THAT IT HAS EXAMINED THIS PLAT OF RIVER BEND ESTATES PHASE 3, AND HAVING FOUND THE SAME TO CONFORM TO LAW, APPROVES IT, AND HEREBY ACCEPTS THE DEDICATION TO PUBLIC USE OF ANY AND ALL LANDS SHOWN ON THIS PLAT AS BEING DEDICATED TO SUCH USE, THIS_____DAY OF_____, 2020

_____
CASCADE COUNTY COMMISSIONER

ATTEST:_____
CLERK AND RECORDER, CASCADE COUNTY, MONTANA

BY:_____
DEPUTY

100 0 100 200 300
GRAPHIC SCALE - FEET SCALE 1" = 100'

Total Area= 28.12 Acres
Parkland= 1.69 Acres
Open Space(26A)= 0.75 Acres
Public/ROW= 3.19 Acres
Utility Site= 0.40 Acres
Net Area= 21.75 Acres

CERTIFICATE OF PLANNING BOARD:

WE, THE UNDERSIGNED: ELLIOTT MERJA, CHAIRMAN OF THE CASCADE COUNTY PLANNING BOARD, CASCADE COUNTY, MONTANA, AND SANDOR HOPKINS, PLANNING DIRECTOR OF SAID PLANNING BOARD, DO HEREBY CERTIFY THAT THE ACCOMPANYING PLAT HAS BEEN EXAMINED BY THEM AND WAS FOUND BY THEM TO CONFORM TO LAW AND WAS APPROVED AT A MEETING HELD ON THE _____DAY OF _____, 2020.

_____ _____
SANDOR HOPKINS, CASCADE COUNTY PLANNING DIRECTOR ELLIOTT MERJA, CASCADE COUNTY PLANNING BOARD

CERTIFICATE OF COUNTY TREASURER

I, Diane Heikkila, County Treasurer of Cascade County, Montana hereby certify pursuant to Section 76-3-207(3), M.C.A. that all real property taxes assessed and levied on the land described herein have been paid.

Dated this, ___ day of _____, 2020

_____
Diane Heikkila, Treasurer, Cascade County, Montana

CERTIFICATE OF SURVEYOR

I, James S Kendall, a Registered Professional Land Surveyor, Montana License Number 18576-LS, do hereby certify that I have performed the survey shown and described hereon; that survey was completed and all monuments established during August/September 2020; and that survey is true and complete as shown.

_____
James S Kendall, PLS MT No. 18576LS

MONTANA JAMES KENDALL 18576LS LICENSED LAND SURVEYOR

34

SW1/4, SECTION 34, T20N, R3E, P.M.M.

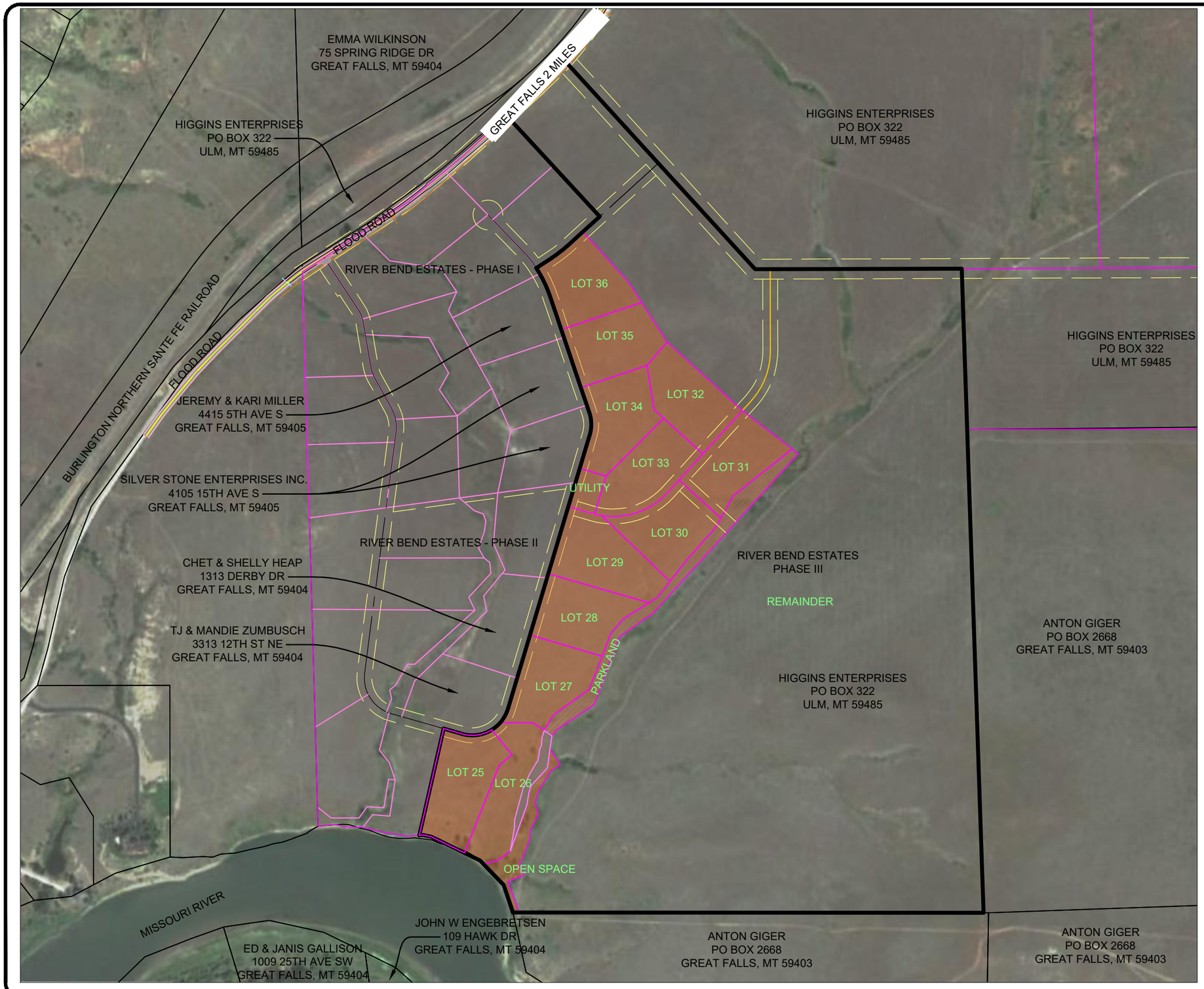
KENDALL LAND SURVEYING, INC
GREAT FALLS, MONTANA 59401
406-217-7707

SCALE: 1" = 100'
DRAWN BY: JSK
DATE: 02AUGUST2020

4 VICINITY SKETCH

The vicinity sketch is included below.

RIVER BEND ESTATES
PHASE III
Vicinity Map



NOTES:
THERE ARE NO EXISTING BUILDINGS, STRUCTURES, OR OTHER IMPROVEMENTS LOCATED ON THE SUBJECT PROPERTY OR THE LANDS WITHIN 300 FEET OF THE SUBJECT PROPERTY BESIDES THE EXISTING FIRE FIGHTING WATER SUPPLY BUILDING LOCATED ON THE UTILITY LOT AND ONE RECENTLY CONSTRUCTED HOME WEST OF PHASE III.

THE SUBJECT PROPERTY AND THE ADJACENT LANDS TO THE EAST AND WEST ARE PROPOSED TO BE ZONED SUBURBAN RESIDENTIAL 1 - SR 1 - MINIMUM LOT SIZE 1 ACRE.

N

200 0 200 400
SCALE FEET

PRELIMINARY
NOT FOR
CONSTRUCTION

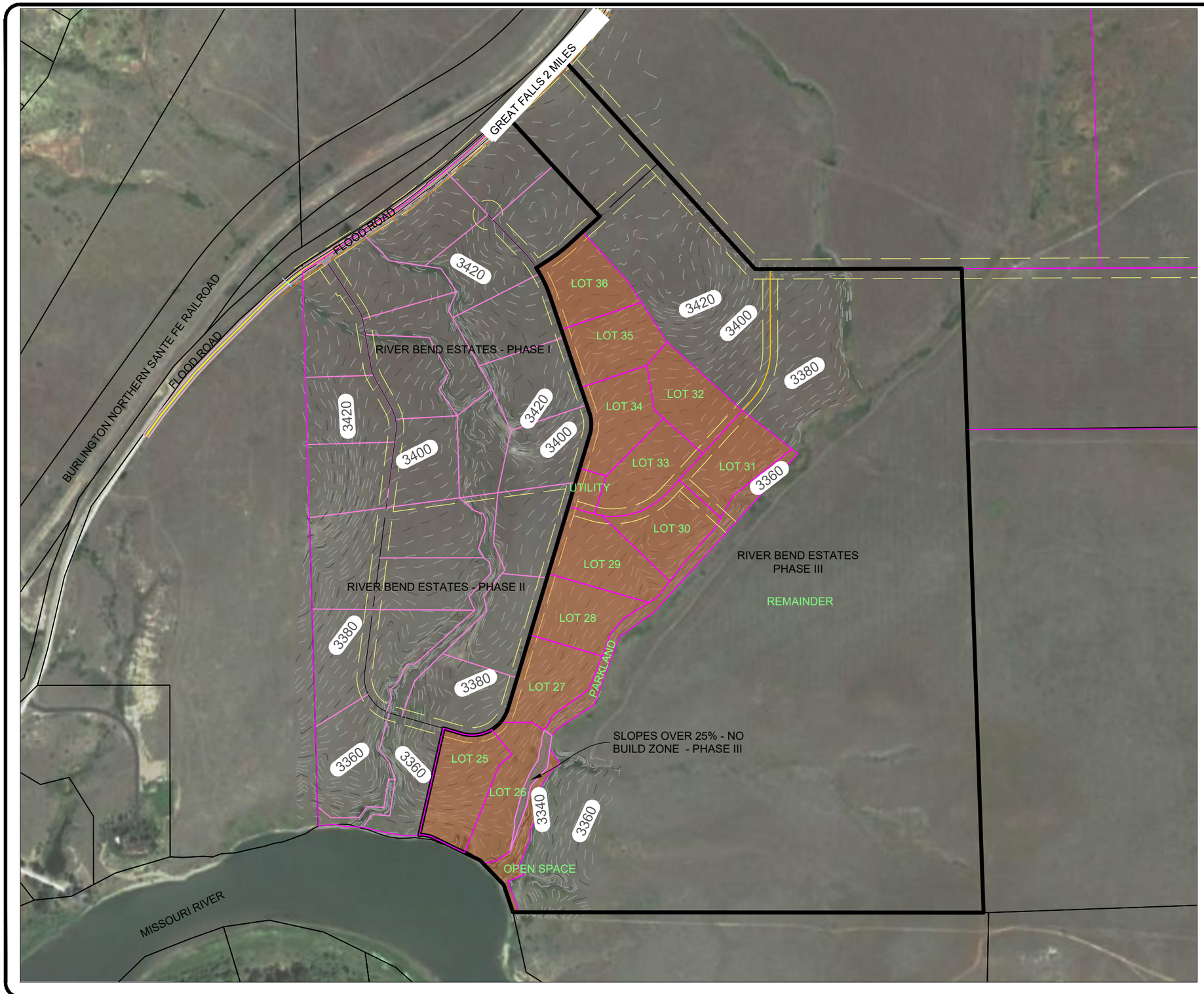
TRIPLE TREE
ENGINEERING

Jul 21, 2020 - 9:06am - C:\Users\Jason Crawford\SyncedFolder\Desktop\19-72 RBE III\Phase III Prelim Plat Exhibits.dwg

5 TOPOGRAPHIC MAP

The topographic map is included below.

RIVER BEND ESTATES PHASE III TOPOGRAPHY & GEOLOGY



NOTES:
THERE ARE NO EXISTING BUILDINGS, STRUCTURES, OR OTHER IMPROVEMENTS LOCATED ON THE SUBJECT PROPERTY OR THE LANDS WITHIN 300 FEET OF THE SUBJECT PROPERTY BESIDES THE EXISTING FIRE FIGHTING WATER SUPPLY BUILDING LOCATED ON THE UTILITY LOT AND ONE RECENTLY CONSTRUCTED HOME WEST OF PHASE III.

THE SUBJECT PROPERTY AND THE ADJACENT LANDS TO THE EAST AND WEST ARE PROPOSED TO BE ZONED SUBURBAN RESIDENTIAL 1 - SR 1 - MINIMUM LOT SIZE 1 ACRE.

200 0 200 400
SCALE FEET

PRELIMINARY
NOT FOR
CONSTRUCTION

TRIPLE TREE
ENGINEERING

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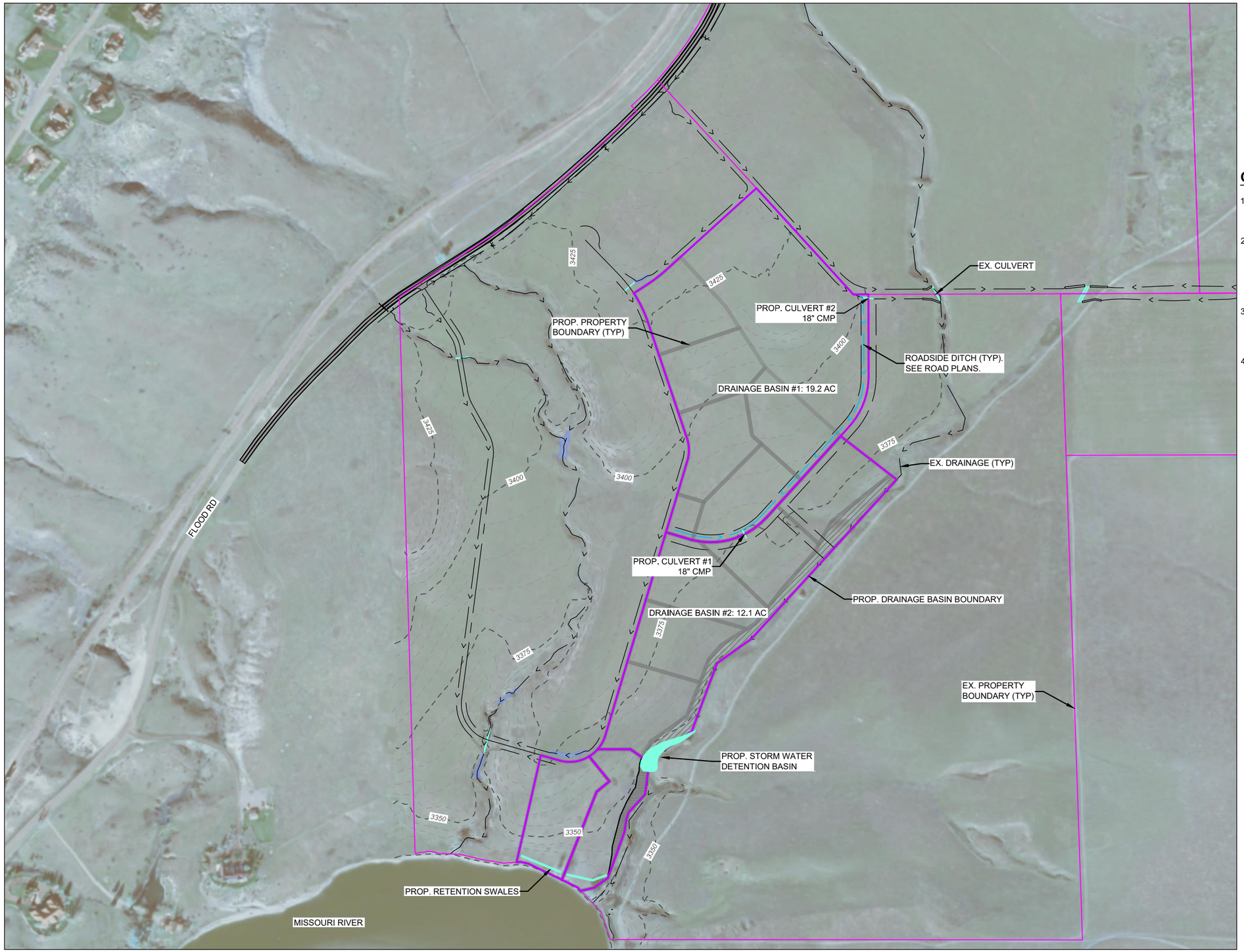
6 GRADING AND DRAINAGE PLAN

The storm water plan is included below. One additional road is proposed to accommodate Phase III. The road plan and profile sheets are included in Section 7. The plan and profile sheets include the proposed grading for the site.



CONSTRUCTION NOTES

1. DRAINAGE BASINS DELINEATED BASED ON SURVEY OF EXISTING TOPOGRAPHY AND USGS QUAD MAPS.
2. CULVERTS #1 AND #2 HAVE BEEN PRELIMINARILY SIZED AT 18". THESE CULVERTS WILL BE SIZED AS NECESSARY TO LIMIT POST-DEVELOPMENT PEAK FLOWS TO PRE-DEVELOPMENT PEAKS.
3. THE PROPOSED STORM WATER RETENTION SWALES WILL BE DESIGNED TO HOLD THE REQUIRED VOLUME FOR EACH BASIN.
4. THE PROPOSED STORM WATER DETENTION BASIN WILL BE DESIGNED TO HOLD THE REQUIRED VOLUME FOR THE CORRESPONDING DRAINAGE BASIN.

N

200 0 200 400
SCALE FEET

PRELIMINARY
NOT FOR
CONSTRUCTION

TRIPLE TREE
ENGINEERING

REVISIONS		
DATE	DESCRIPTION	

RIVER BEND ESTATES
HIGGINS ENTERPRISES LTD.
CASCADE COUNTY, MONTANA

STORM WATER PLAN

PROJECT #:	19-72
DRAFTED BY:	CE
CHECKED BY:	SLP
DATE:	07/15/2020

SHEET
1

Jul 21, 2020 - 10:24am - P:\Great Falls\19-72 River Bend Phase III\Design\CADD\ConstructionDrawings\PlanSetDrawings\19-72_StormWater.dwg

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7 Engineering Plans for all Public and Private Improvements

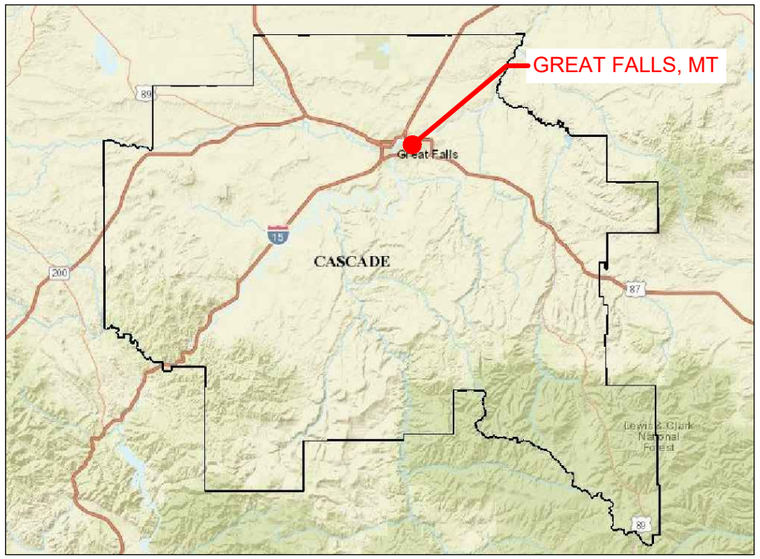
One additional road is proposed to accommodate Phase III.

The road plan and profile sheets are included below:

The stormwater plan supporting information is included above in Section 6. No new approaches are proposed for Phase III onto Flood Road. The well and drain field layout and supporting information is included below in Section 22.

RIVER BEND ESTATES - PHASE III

VICINITY MAP



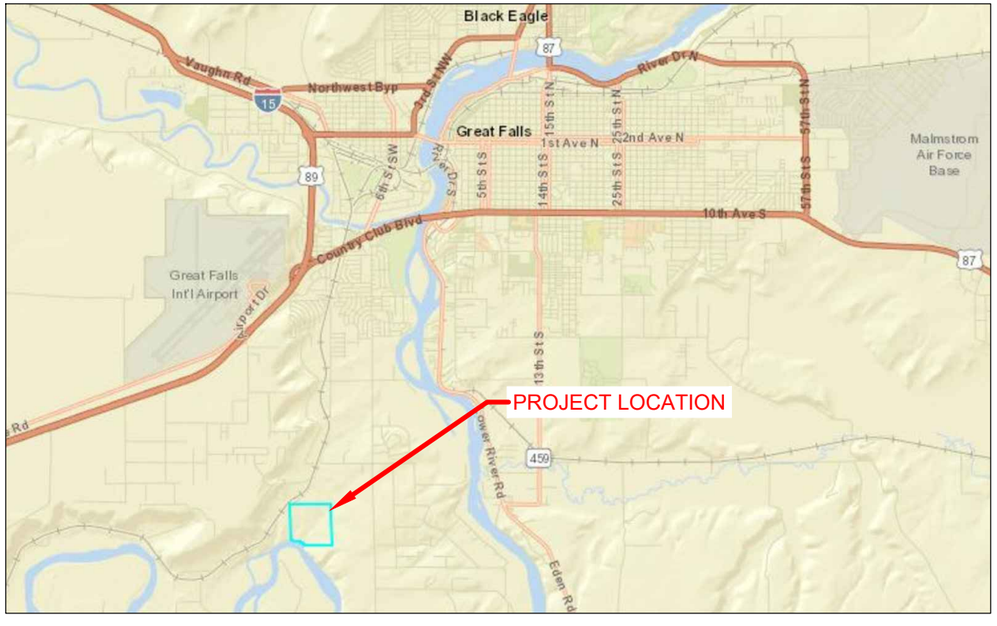
HIGGINS ENTERPRISES LTD.
CASCADE COUNTY, MONTANA

July 2020

SHEET INDEX

SHEET	DESCRIPTION
G-1	COVER
G-2	GENERAL NOTES
D-1	DETAILS
PP-1	PLAN & PROFILE INDEX
PP-2 TO PP-4	ALIGNMENT 1 PLAN & PROFILE

GREAT FALLS MONTANA



BASIS OF SURVEY

ALL CONTOURS, ELEVATIONS, AND COORDINATES FOR THE PROJECT ARE BASED ON A LOCAL COORDINATE SYSTEM

CERTIFICATION

I HEREBY CERTIFY THAT THE ATTACHED PLANS WERE PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY REGISTERED PROFESSIONAL ENGINEER IN THE STATE OF MONTANA.

PRELIMINARY
NOT FOR
CONSTRUCTION

SCOTT L. PFAHLER, P.E.

Montana811.org
Tap - Click - Call
811 Before you dig!

TRIPLE TREE
ENGINEERING
800 N Last Chance Gulch, Suite 101
Helena, MT 59601

Jul 30, 2020 - 9:05am - P:\Great Falls\19-72 River Bend Phase III\Design\CADD\ConstructionDrawings\PlanSetDrawings\19-72_Cover.dwg

GENERAL NOTES

1. THESE NOTES ARE FOR GENERAL REFERENCE IN CONJUNCTION WITH, AND AS A SUPPLEMENT TO THE WRITTEN NOTES AND DETAILS INCLUDED ON INDIVIDUAL DRAWINGS. ALL WORK FOR THIS PROJECT SHALL BE PERFORMED IN ACCORDANCE WITH THE MONTANA PUBLIC WORKS STANDARD SPECIFICATIONS (MPWSS). REFERENCE THE FOLLOWING SECTIONS OF MPWSS:
   - **DIVISION I - GENERAL REQUIREMENTS**
     - SECTION 01570: CONSTRUCTION TRAFFIC CONTROL
   - **02100 SITE PREPARATION**
     - SECTION 02110: GEOTEXTILES
   - **02200 EARTHWORK**
     - SECTION 02221: TRENCH EXCAVATION AND BACKFILL FOR PIPELINES AND APPURTENANT STRUCTURES
     - SECTION 02230: STREET EXCAVATION, BACKFILL, AND COMPACTION
     - SECTION 02235: CRUSHED BASE COURSE
   - **02500 PAVING AND SURFACING**
     - SECTION 02502: ASPHALT PRIME AND/OR TACK COAT
     - SECTION 02504: ASPHALT SEAL COAT
     - SECTION 02505: CONSTRUCTION SEAL
     - SECTION 02510: ASPHALT CONCRETE PAVEMENT
     - SECTION 02529: CONCRETE SIDEWALKS, DRIVEWAYS, APPROACHES, CURB RETURN FILLETS, VALLEY GUTTERS, AND MISCELLANEOUS NEW CONCRETE CONSTRUCTION
   - **02700 SEWERAGE AND DRAINAGE**
     - SECTION 02720: STORM DRAIN SYSTEMS
   - **02700 LANDSCAPING**
     - SECTION 02910: SEEDING

2. THE CONTRACTOR IS RESPONSIBLE FOR OBTAINING ALL REQUIRED PERMITS AND PAYING ASSOCIATED FEES.

3. THE LOCATION OF EXISTING UTILITIES ARE SHOWN IN AN APPROXIMATE WAY ONLY AND HAVE NOT BEEN INDEPENDENTLY VERIFIED BY THE OWNER OR ITS REPRESENTATIVE. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK. UNDERGROUND LOCATES SHALL BE MADE USING THE "ONE CALL" NUMBER 1-800-424-5555. ALL EXISTING UTILITIES WHICH NEED TO BE REMOVED, RELOCATED AND/OR ADJUSTED SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.

4. THE CONTRACTOR SHALL FIELD VERIFY EXISTING CONDITIONS PRIOR TO CONSTRUCTION. IF THE SITE IS FOUND TO BE DIFFERENT THAN THE CONSTRUCTION PLANS, THE CONTRACTOR SHALL NOTIFY THE ENGINEER OF THE DISCREPANCY.

5. THE CONTRACTOR IS RESPONSIBLE FOR ALL REPAIRS TO SURFACING (ASPHALT, CONCRETE, GRAVEL, LANDSCAPING, ETC.) BEYOND THE CONSTRUCTION LIMITS DAMAGED AS A RESULT OF CONSTRUCTION ACTIVITIES; THIS INCLUDES SURFACING REPAIR ON HAUL ROUTES. ANY DAMAGE SUSTAINED TO HAUL ROADS AND PROPERTY SHALL BE RESTORED TO EXISTING CONDITION OR BETTER AT THE EXPENSE OF THE CONTRACTOR. REMEDIATION OF THE DAMAGE WILL BE ALLOWED AFTER THE MAJORITY OF HAULING ACTIVITIES HAS BEEN COMPLETED, UNLESS OTHERWISE DIRECTED BY THE OWNER, ENGINEER OR GOVERNING AUTHORITY. IF THE DAMAGE POSES A SAFETY RISK, IT SHALL BE REPAIRED IMMEDIATELY.

6. CONTRACTOR SHALL BE RESPONSIBLE FOR QUALITY CONTROL TO ASSURE THAT ALL ASPECTS OF THE PROJECT ARE CONSTRUCTED IN ACCORDANCE WITH THE PLANS AND SPECIFICATIONS.

7. THE CONTRACTOR SHALL REMOVE AND DISPOSE OF ALL ASPHALT, CONCRETE, GRAVEL AND REFUSE MATERIAL OFFSITE.

QUALITY CONTROL TESTING REQUIREMENTS

THE TABLE ON THIS SHEET OUTLINES THE MINIMUM FREQUENCY OF QUALITY CONTROL TESTING WHICH SHALL BE PERFORMED BY THE CONTRACTOR'S DESIGNATED INDEPENDENT TESTING FIRM FOR ACCEPTANCE.

GRADING & EROSION CONTROL

1. THE CONTRACTOR WILL BE RESPONSIBLE FOR DEVELOPING A STORM WATER POLLUTION PREVENTION PLAN (SWPPP), AS WELL AS SUBMITTING THE NOTICE OF INTENT (NOI) AND SWPPP TO THE MONTANA DEPARTMENT OF ENVIRONMENTAL QUALITY (DEQ). ASSOCIATED FEES WILL BE PAID FOR AT THE CONTRACTOR'S EXPENSE.

   1.1. THE CONTRACTOR SHALL INSTALL AND MAINTAIN ALL EROSION CONTROL ELEMENTS AND BEST MANAGEMENT PRACTICES IN ACCORDANCE WITH THE APPROVED SWPPP.

   1.2. THE CONTRACTOR SHALL INSPECT EROSION CONTROL ELEMENTS AT THE TIME INTERVAL SPECIFIED IN THE SWPPP AND DOCUMENT IN ACCORDANCE WITH THE REQUIREMENTS OF THE NOTICE OF INTENT AND THE SWPPP.

2. ALL CONSTRUCTION ACTIVITIES SHALL BE CONDUCTED IN A LOGICAL SEQUENCE SO AS TO MINIMIZE THE AMOUNT OF BARE SOIL EXPOSED AT ANY ONE TIME. THE CONSTRACTOR SHALL MAINTAIN EXISTING SITE VEGETATION OR GROUND COVER TO THE EXTENT AND LONGEST TIME POSSIBLE.

3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MINIMIZING TRACKING OF SOIL AND DEBRIS ONTO ADJACENT PROPERTIES AND ROADWAYS. TRACKING MUST BE RESTORED BY THE END OF EACH DAY.

4. ALL WASTE AND UNUSED MATERIALS SHALL BE PROPERLY DISPOSED OF AND NOT ALLOWED TO BE CARRIED OFF SITE BY RUNOFF OR WIND.

5. TOPSOIL SHALL BE STRIPPED TO FULL DEPTH FROM AREAS REQUIRING GRADING AND STOCKPILED FOR REPLACEMENT ONCE THE CONSTRUCTION ACTIVITY HAS BEEN COMPLETED. SEED ALL DISTURBED AREAS FOLLOWING CONSTRUCTION.

6. THE CONTRACTOR SHALL SEED ALL DISTURBED AREAS WITH A NATIVE SEED MIX. SUBMIT THE SEED MIX TO THE ENGINEER FOR APPROVAL.

ABBREVIATIONS

THE FOLLOWING WORDS MAY BE ABBREVIATED THROUGHOUT THE PLAN SET:

EA	=	EACH
EX.	=	EXISTING
GALV.	=	GALVANIZED
LF	=	LINEAL FOOT
LT	=	LEFT
MAX.	=	MAXIMUM
MDD	=	MAXIMUM DRY DENSITY
MIN.	=	MINIMUM
MPWSS	=	MONTANA PUBLIC WORKS STANDARD SPECIFICATIONS
OC	=	ON CENTER
PROP.	=	PROPOSED
PVC	=	POLYVINYL CHLORIDE
RCP	=	REINFORCED CONCRETE PIPE
RT	=	RIGHT
SF	=	SQUARE FOOT
TYP	=	TYPICAL

QUALITY CONTROL TESTING

TEST SPECIFICATION/MATERIAL	TEST METHOD	MINIMUM FREQUENCY
EARTHWORK		
TRENCH BACKFILL	MOISTURE-DENSITY LAB TEST PER SECTION 02221	1 SUBMITTAL/SOIL TYPE ENCOUNTERED 1 SUBMITTAL/BORROW SOURCE
TRENCH COMPACTION	IN PLACE DENSITY (95% MIN.)	1 TEST/200LF/2 FT OF VERTICAL DEPTH BEGINNING 1 FT ABOVE CROWN OF PIPE
TRENCH COMPACTION (LATERALS, STRUCTURES, VALVES, HYDRANTS AND MANHOLES)	IN PLACE DENSITY (95% MIN.)	1 TEST/2 FT OF VERTICAL DEPTH BEGINNING 1 FT ABOVE CROWN OF PIPE WITHIN 2 FT FROM EDGE OF STRUCTURE, VALVE, HYDRANT, OR MANHOLE
PIPE BEDDING	TYPE I BEDDING GRADATION & PLASTICITY INDEX / TYPE II BEDDING GRADATION	1 SUBMITTAL
SUBGRADE AND EMBANKMENT	MOISTURE-DENSITY LAB TEST PER SECTION 02230	1 SUBMITTAL/SOIL TYPE ENCOUNTERED 1 SUBMITTAL/BORROW SOURCE
COMPACTION OF SUBGRADE AND EMBANKMENT FOR ROADWAYS	IN PLACE DENSITY (95% MIN.)	1 TEST/LIFT/200 LF/12 FT. LANE AND TOP 6 INCHES (OFFSET TESTS BY 100' FOR ALTERNATING LIFTS)
CRUSHED BASE COURSE	GRADATION - MOISTURE DENSITY - FRACTURED FACES (CRUSHED) - LA ABRASION, LL, PL, AND PI LAB TESTING PER SECTION 02235	1 SUBMITTAL
COMPACTION OF CRUSHED BASE COURSE FOR ROADWAYS	IN PLACE DENSITY (95% MIN.)	1 TEST/LIFT/200 LF/12 FT. LANE
ASPHALT CONCRETE PAVEMENT		
ASPHALT CONCRETE PAVEMENT (BASE COURSE AND SURFACE COURSE)	MIX DESIGN GRADATION ASPHALT OIL CONTENT MARSHALL TEST RICE SPECIFIC GRAVITY (SECTION 02510)	1 SUBMITTAL 1 TEST 1 TEST 1 TEST 1 TEST
COMPACTION OF ASPHALT CONCRETE PAVEMENT	IN PLACE DENSITY/THICKNESS	4 CORES/APPROACH
PORTLAND CEMENT CONCRETE PAVEMENT		
PORTLAND CEMENT CONCRETE	MIX DESIGN	1 SUBMITTAL
PORTLAND CEMENT CONCRETE PAVEMENT	AIR, SLUMP, AND 7-DAY & 28-DAY COMPRESSIVE STRENGTH	1 TEST/DAY OR EVERY 50 CY
PORTLAND CEMENT CONCRETE FLATWORK AND CURB & GUTTER	AIR, SLUMP, AND 7-DAY & 28-DAY COMPRESSIVE STRENGTH	1 TEST/DAY OR EVERY 50 CY

SURVEY INFORMATION

1. ALL CONTOURS, ELEVATIONS, AND COORDINATES FOR THE PROJECT ARE BASED ON A LOCAL COORDINATE SYSTEM.

2. THE INITIAL SITE SURVEY WAS PERFORMED IN JULY 2018 AND MAY HAVE SINCE TRANSFORMED.

3. THE ENGINEER WILL PROVIDE CONSTRUCTION STAKING INCLUDING INFORMATION FOR ROAD CENTERLINE ALIGNMENT, STORM WATER DITCHES, AND CULVERT LOCATIONS. IT IS ANTICIPATED THAT ALL STAKING CAN BE COMPLETED IN ONE SITE VISIT. ADDITIONAL STAKING SHALL BE PAID FOR AT THE CONTRACTOR'S EXPENSE.

4. THE OWNER AND ENGINEER ARE NOT RESPONSIBLE FOR STAKES THAT ARE DISTURBED OR DESTROYED. MARK AND PROTECT EXISTING PROPERTY PINS AND/OR STREET MONUMENTS. HIRE A LICENSED LAND SURVEYOR TO REPLACE ALL PROPERTY CORNERS OR OTHER MONUMENTS THAT ARE DESTROYED DURING CONSTRUCTION.

PRELIMINARY
NOT FOR
CONSTRUCTION

TRIPLE TREE
ENGINEERING

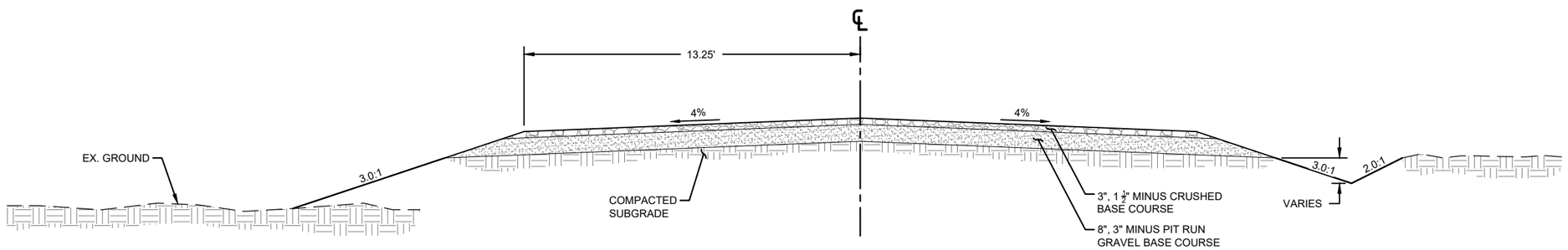
REVISIONS		
DATE	DESCRIPTION	

RIVER BEND ESTATES - PHASE III
HIGGINS ENTERPRISES LTD.
CASCADE COUNTY, MONTANA

GENERAL NOTES

PROJECT #:	19-72
DRAFTED BY:	JEH
CHECKED BY:	SLP
DATE:	04/29/2020

SHEET
G-2



1 / D-1 **TYPICAL SECTION - 1**

PRELIMINARY
NOT FOR
CONSTRUCTION

TRIPLE TREE
ENGINEERING

REVISIONS		
DATE	DESCRIPTION	

RIVER BEND ESTATES - PHASE III
HIGGINS ENTERPRISES LTD.
CASCADE COUNTY, MONTANA

DETAILS

PROJECT #:	19-72
DRAFTED BY:	JEH
CHECKED BY:	SLP
DATE:	04/29/2020

SHEET
D-1

May 05, 2020 - 12:55pm - P:\Great Falls\19-72 River Bend Phase III\Design\CADD\ConstructionDrawings\PlanSetDrawings\19-72_Details.dwg

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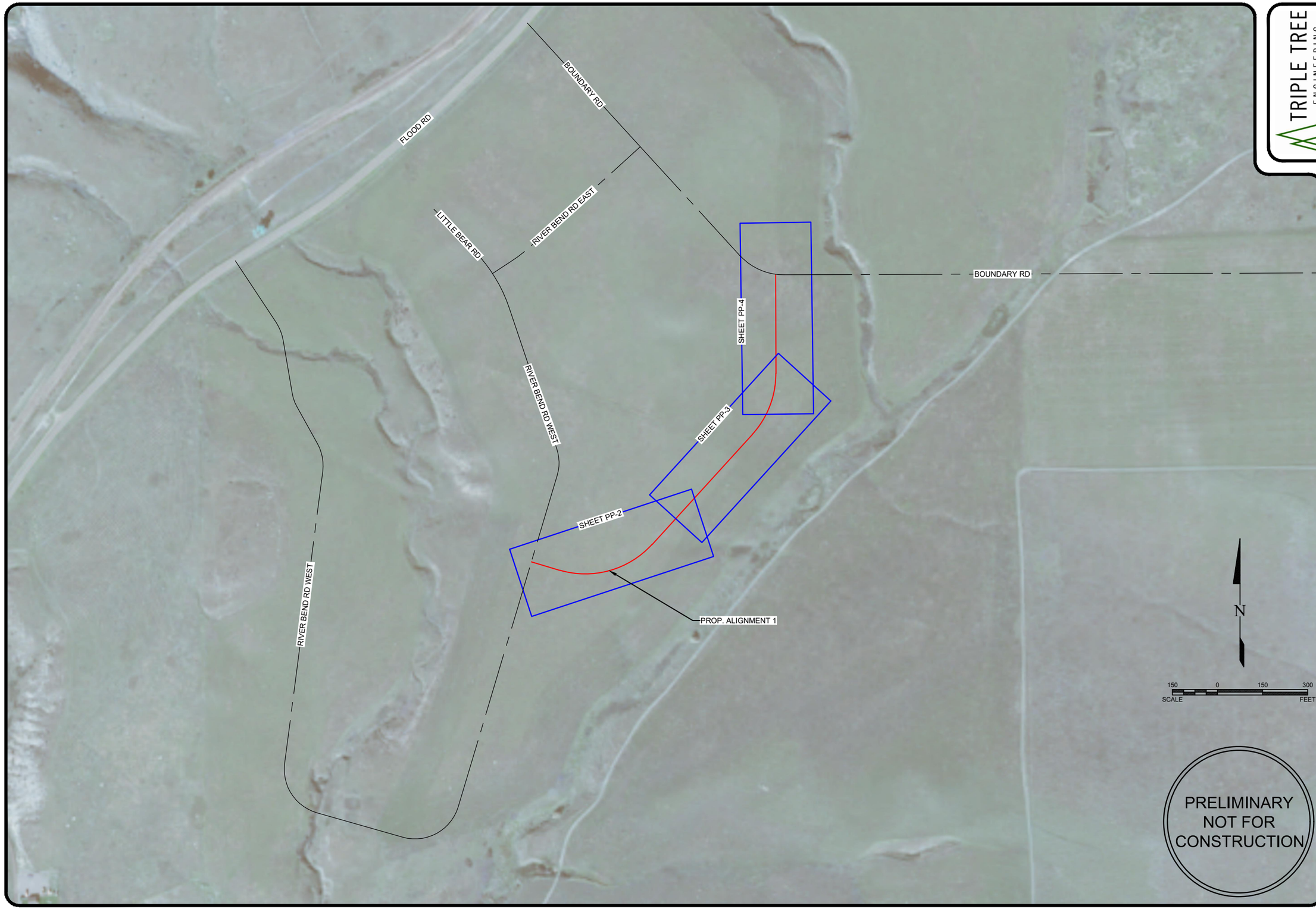

TRIPLE TREE
ENGINEERING

REVISIONS

DATE	DESCRIPTION

RIVER BEND ESTATES
HIGGINS ENTERPRISES LTD.
CASCADE COUNTY, MONTANA

ROAD PLAN & PROFILE INDEX

PROJECT #:	19-72
DRAFTED BY:	CE
CHECKED BY:	SLP
DATE:	07/15/2020

SHEET
PP-1

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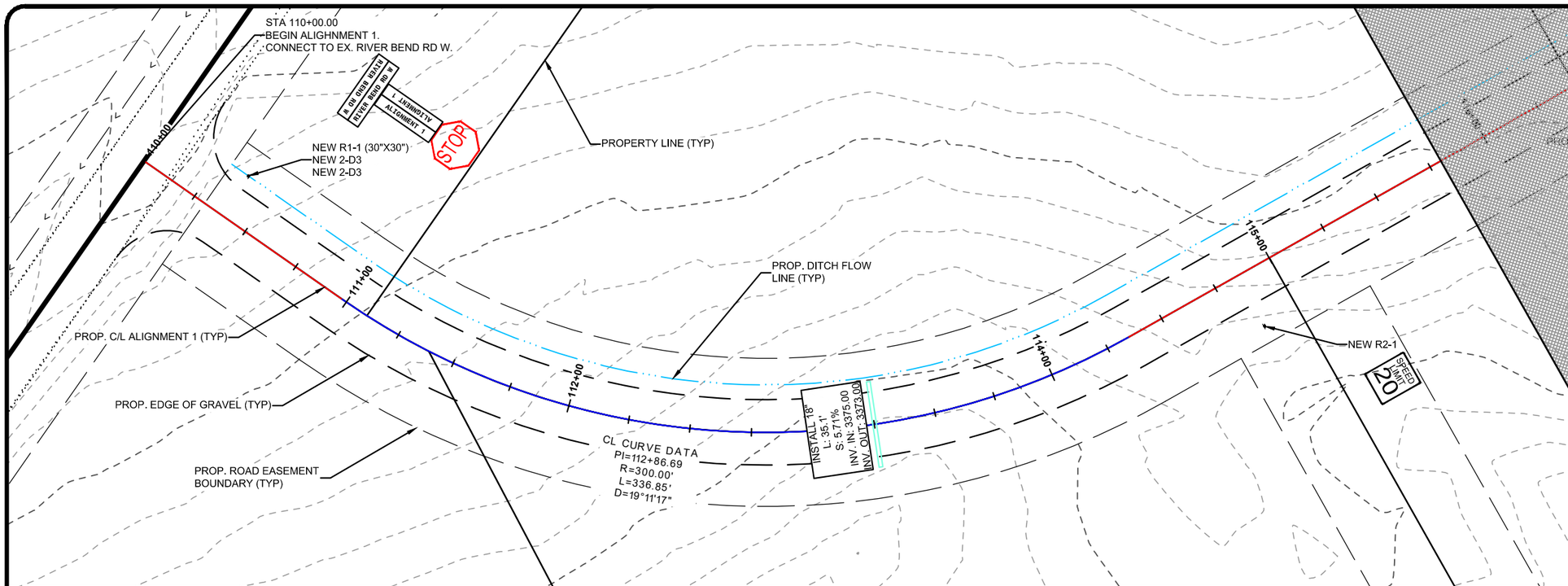
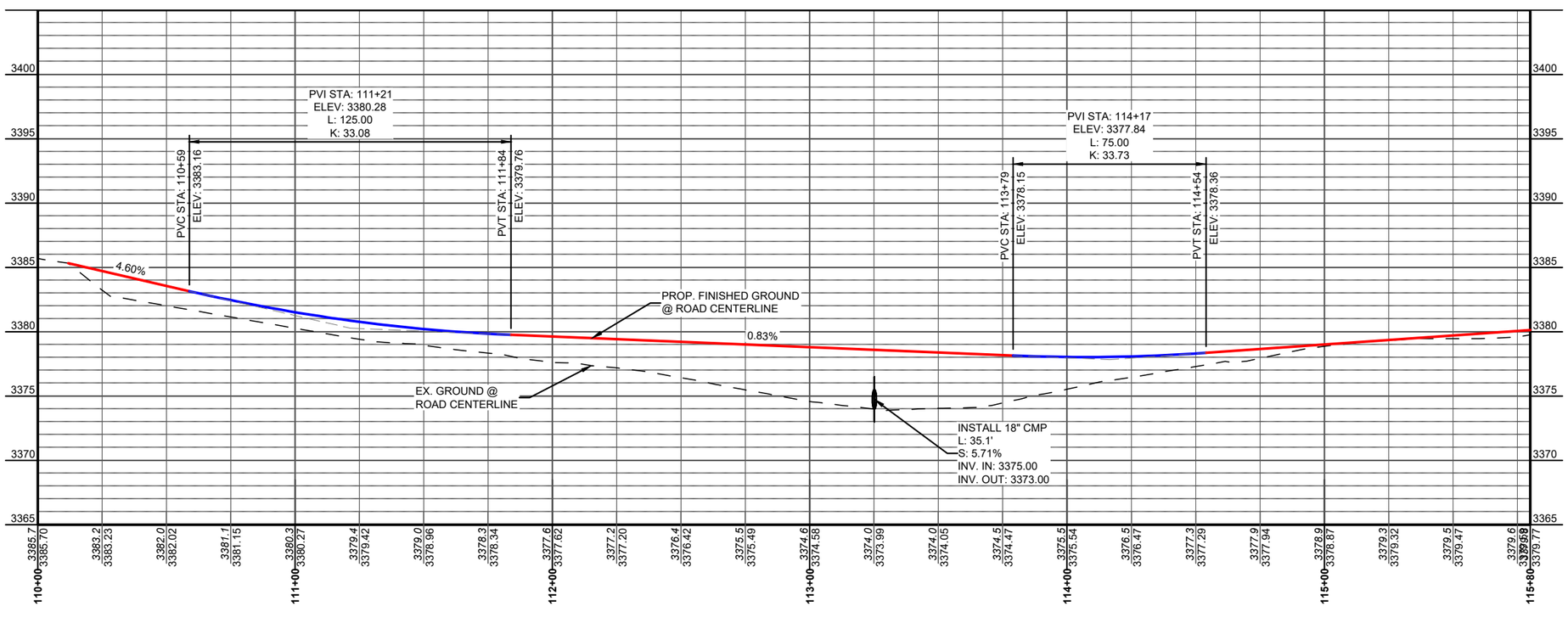
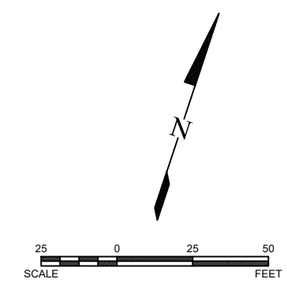


CONSTRUCTION NOTES

1. SIGN MATERIALS AND INSTALLATION SHALL BE IN ACCORDANCE WITH THE MUTCD MANUAL AND MDT DETAILED DRAWINGS 619-00, 619-02, 619-16, 619-20, AND 619-21. SIGNS SHALL BE MOUNTED ON EITHER STEEL OR TREATED WOOD POSTS.





PRELIMINARY
NOT FOR
CONSTRUCTION

TRIPLE TREE
ENGINEERING

REVISIONS	
DATE	DESCRIPTION

RIVER BEND ESTATES - PHASE III

HIGGINS ENTERPRISES LTD.
CASCADE COUNTY, MONTANA

ALIGNMENT 1 PLAN & PROFILE

PROJECT #:	19-72
DRAFTED BY:	JEH
CHECKED BY:	SLP
DATE:	04-29-2020

SHEET
PP-2

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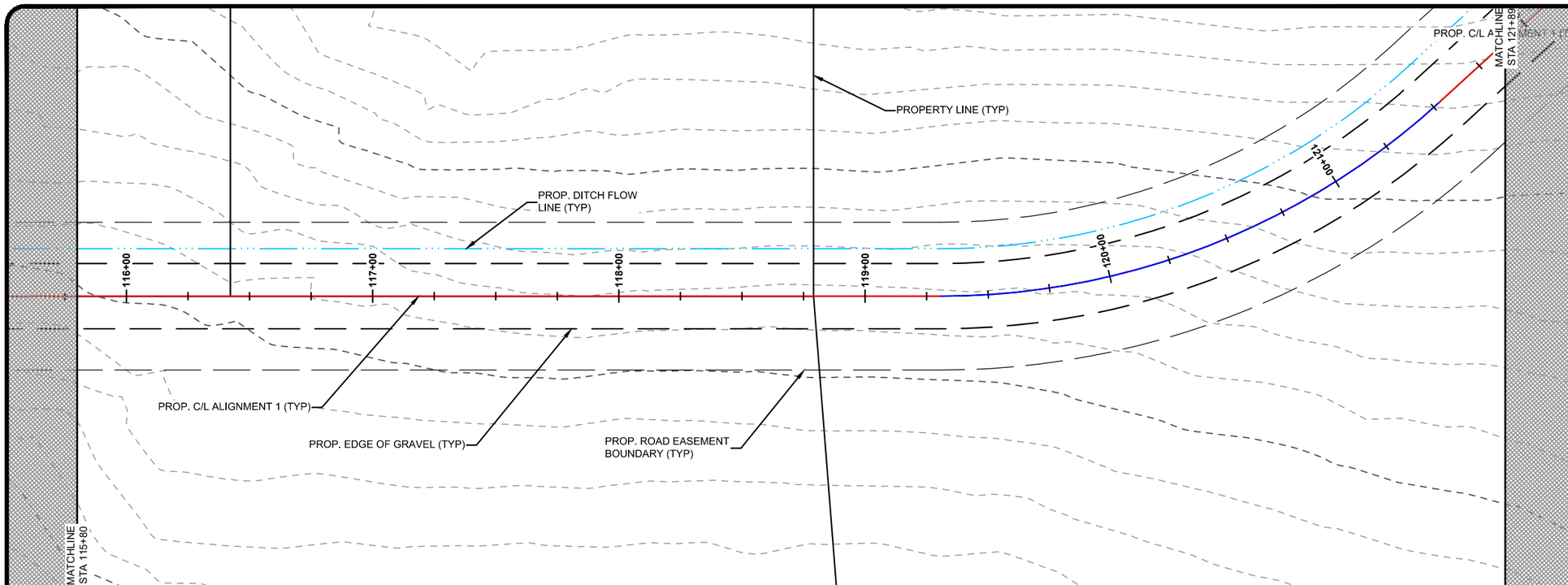

CONSTRUCTION NOTES

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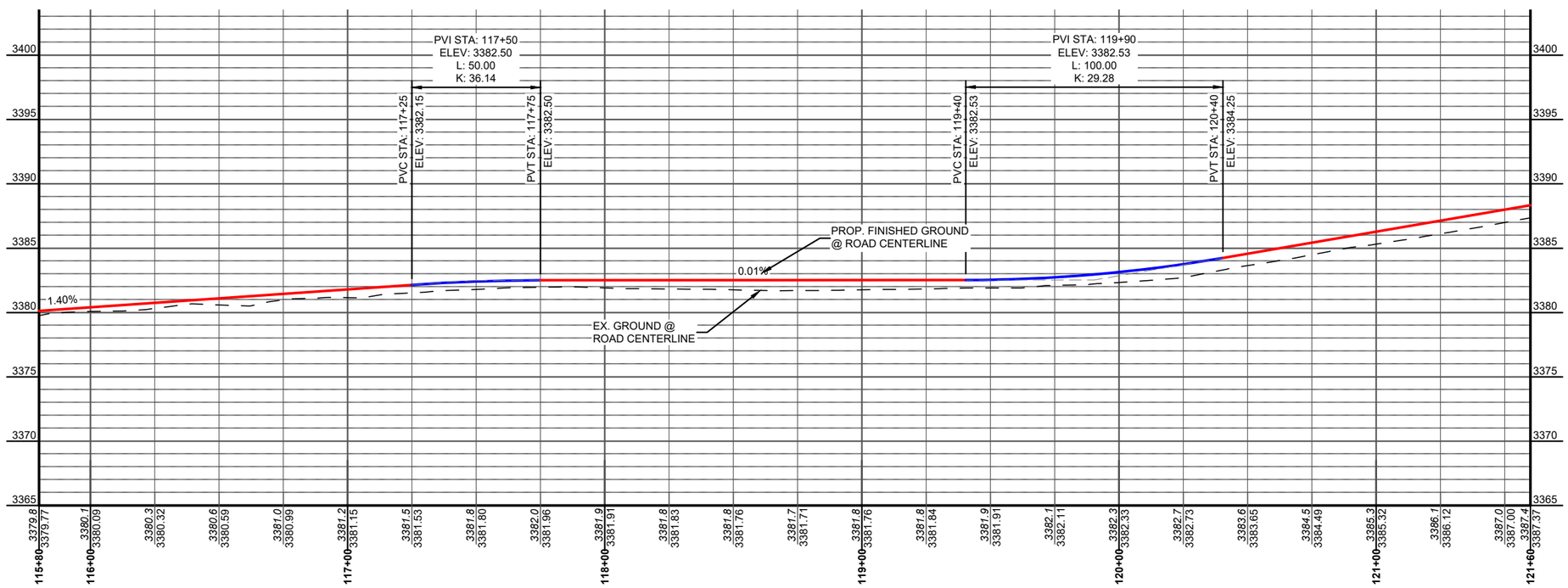

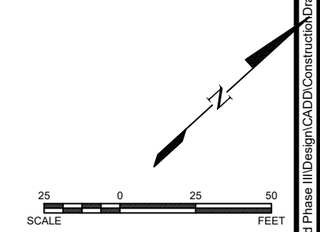

PRELIMINARY
NOT FOR
CONSTRUCTION

TRIPLE TREE
ENGINEERING

REVISIONS	
DATE	DESCRIPTION

RIVER BEND ESTATES - PHASE III

HIGGINS ENTERPRISES LTD.
CASCADE COUNTY, MONTANA

ALIGNMENT 1 PLAN & PROFILE

PROJECT #:	19-72
DRAFTED BY:	JEH
CHECKED BY:	SLP
DATE:	04-29-2020

SHEET
PP-3

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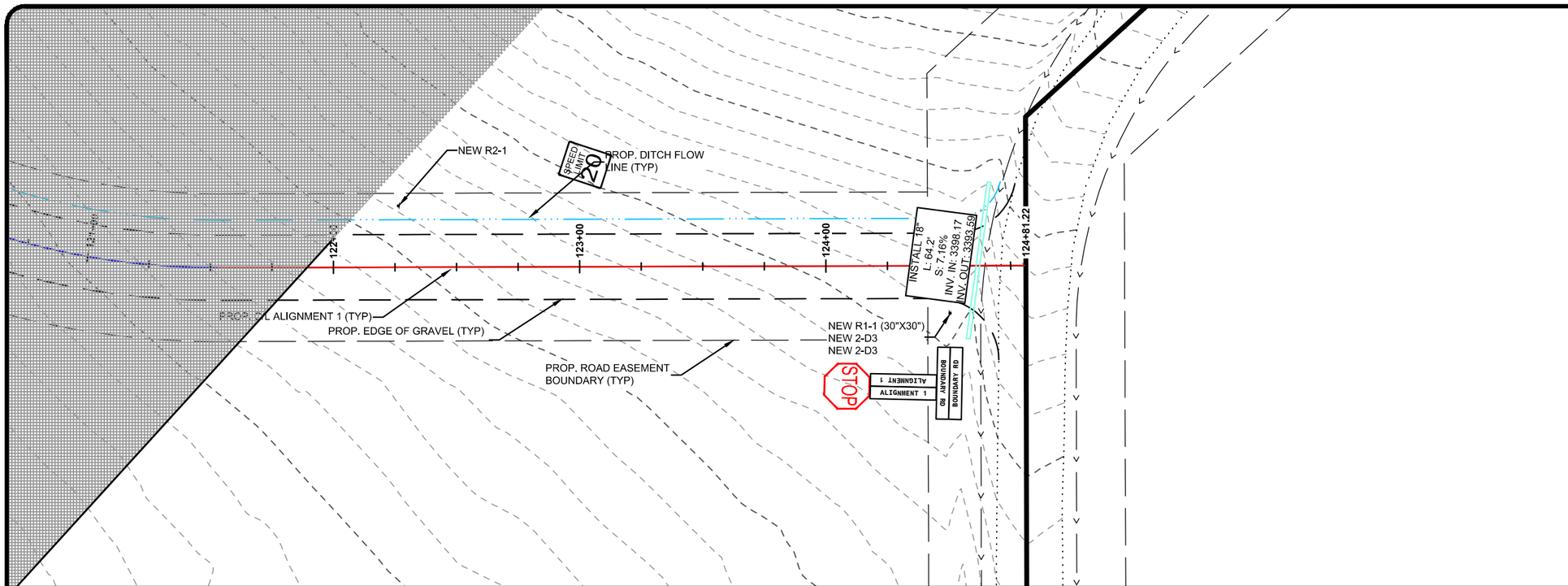

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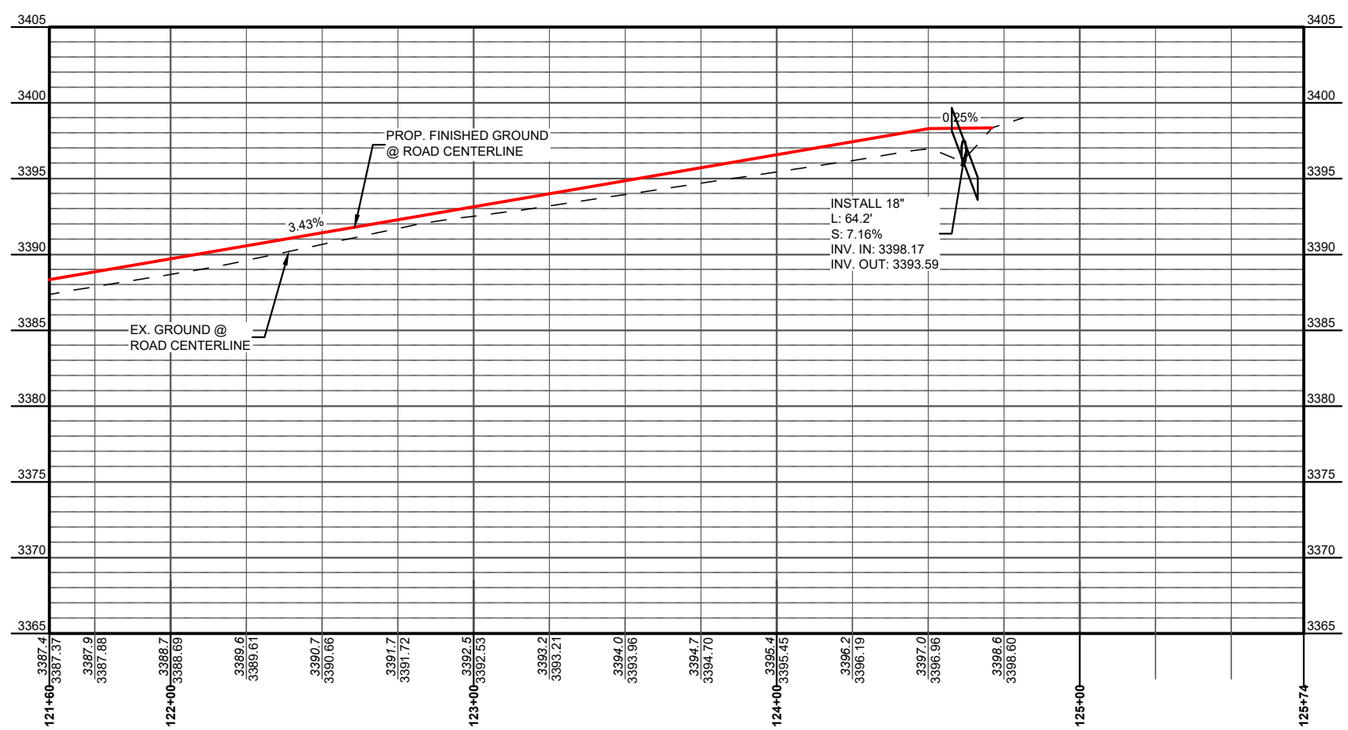

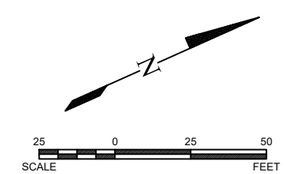

PRELIMINARY NOT FOR CONSTRUCTION

TRIPLE TREE ENGINEERING

REVISIONS	
DATE	DESCRIPTION

RIVER BEND ESTATES - PHASE III

HIGGINS ENTERPRISES LTD.
CASCADE COUNTY, MONTANA

ALIGNMENT 1 PLAN & PROFILE

PROJECT #:	19-72
DRAFTED BY:	JEH
CHECKED BY:	SLP
DATE:	04-29-2020

SHEET

PP-4

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8 PHASING PLAN

The project consists of a single phase. The project will develop 12 residential lots, 1 parkland lot, 1 open space lot, 1 utility lot, and 1 remainder. The project includes preliminary plat, permitting, construction, and final plat. All the proposed improvements will be completed with the only phase of the project. Following is an estimated schedule for the project:

- Conduct topographic survey – 1/5/2020
- Prepare and submit preliminary plat – 8/7/2020
- Cascade County sufficiency review (30 working days) – 8/21/2020
- Cascade County approval or conditional approval (60 working days) - 10/1/2020
- Submit plans and design reports to DEQ - 9/1/2020
- Obtain DEQ approval (55 working day) - 10/1/2020
- Begin construction – 10/1/2020
- Prepare and submit storm water record drawings to DEQ - as soon as construction is complete
- Prepare and submit final plat application - as soon as construction is complete

9 TITLE REPORT

The title report and the referenced and supporting documents are included in the following pages. The title report includes 5 Tracts of Record. Prior to development of River Bend Estates Higgins Enterprises adjusted the boundaries of the 5 Tracts as shown on COS #5179 also included in the following pages. River Bend Estates Phase I and Phase II developed Tract 1A. The approved final plats for River Bend Estates Phase I and Phase II are also included below. River Bend Estates Phase II included a remainder of 115.56 acres. River Bend Estates Phase III will develop that remaining 115.56 acres.

Chicago Title Company

ISSUING OFFICE: 101 River Dr N, Great Falls, MT 59401

FOR SETTLEMENT INQUIRIES, CONTACT: Chicago Title Company, LLC
101 River Dr N · Great Falls, MT 59401
(406)453-7622 · FAX (406)761-0719

October 30, 2017

N. Richard Higgins and Judy L. Higgins
P O Box 322
Ulm, MT 59485

Order No.: 3522171863

Property Address: 6750 Fox Farm Road, Great Falls, MT 59404
Seller: Flood Properties LLC
Buyer: N. Richard Higgins and Judy L. Higgins

We appreciate the opportunity of being of service to you. Please call us immediately if you have any questions or concerns.

Sincerely,

Chicago Title Company, LLC

Escrow Contact:
Amy Daniels
406-453-7622
Amy.Daniels@ctt.com

Title Contact:
Doris Eckenstein
406-453-7622
Doris.Eckenstein@ctt.com

This Document Prepared By:
Chicago Title Company, LLC
101 River Dr N
Great Falls, MT 59401

After Recording Return To:
N. Richard Higgins and Judy L. Higgins
P O Box 322
Ulm, MT 59485

Order No.: 3522171863-AD

WARRANTY DEED
(Joint Tenancy)

For Value Received Flood Properties LLC, the grantor(s), do(es) hereby grant, bargain, sell and convey unto N. Richard Higgins and Judy L. Higgins, as joint tenants with right of survivorship (and not as tenants in common), and to the survivor of said named joint tenants, and to the heirs and assigns of such survivor, of P O Box 322, Ulm, MT 59485, the grantee(s), the following described premises, in Cascade County, Montana, to wit:

error - make correction as surveyed.

Tracts of Record 1, 2, 3, 4 and 5 of Certificate of Survey No. S-0005119 filed September 16, 2017 located in Section 34, Township 20 North, Range 3 East, Cascade County, Montana.

TO HAVE AND TO HOLD unto the Grantee and to the heirs and assigns forever, subject, however, to:

A. All reservations and exceptions of record and in patents from the United States or the State of Montana;

B. All existing easements and rights of way of record, building, use zoning, sanitary and environmental restrictions;

C. Taxes and assessments for the year 2017 and subsequent years;

D. All prior conveyances, leases or transfers of any interest in minerals, including oil, gas and other hydrocarbons;

Except with reference to items referred to in paragraphs above, this Deed is given with the usual covenants expressed in §30-11-110, Montana Code Annotated.

This conveyance is made and accepted upon the express agreement that the consideration heretofore paid constitutes an adequate and full consideration in money or money's worth.

IN WITNESS WHEREOF, the undersigned have executed this document on the date(s) set forth below.

Flood Properties LLC

BY:_____
Russ Barrett
Managing Member

State of Montana County of Cascade) ss.

This instrument was acknowledged before me on October _____, 2017 by Russ Barrett, Managing Member for Flood Properties LLC.

_____
Amy K. Daniels
Notary Public for the State of Montana
Residing at Great Falls, MT
My Commission Expires: 01/30/2019

Rina Moore - Clerk and Recorder, Cascade County
Fee: $7.00 WD eRecorded

This Document Prepared By:
Chicago Title Company, LLC
101 River Dr N
Great Falls, MT 59401

After Recording Return To:
N. Richard Higgins and Judy L. Higgins
P O Box 322
Ulm, MT 59485

Order No.: 3522171863

FILED AT THE REQUEST OF CHICAGO TITLE

WARRANTY DEED
(Joint Tenancy)

For Value Received Flood Properties LLC, the grantor(s), do(es) hereby grant, bargain, sell and convey unto N. Richard Higgins and Judy L. Higgins, as joint tenants with right of survivorship (and not as tenants in common), and to the survivor of said named joint tenants, and to the heirs and assigns of such survivor, of P O Box 322, Ulm, MT 59485, the grantee(s), the following described premises, in Cascade County, Montana, to wit:

Tract of Record 6 of Certificate of Survey No. S-0005119 filed September 16, 2017 located in Section 34, Township 20 North, Range 3 East, Cascade County, Montana.

TO HAVE AND TO HOLD unto the Grantee and to the heirs and assigns forever, subject, however, to:

A. All reservations and exceptions of record and in patents from the United States or the State of Montana;

B. All existing easements and rights of way of record, building, use zoning, sanitary and environmental restrictions;

C. Taxes and assessments for the year 2017 and subsequent years;

D. All prior conveyances, leases or transfers of any interest in minerals, including oil, gas and other hydrocarbons;

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This conveyance is made and accepted upon the express agreement that the consideration heretofore paid constitutes an adequate and full consideration in money or money's worth.

IN WITNESS WHEREOF, the undersigned have executed this document on the date(s) set forth below.

Flood Properties LLC

BY: Russ Barrett
Russ Barrett
Managing Member

State of Montana County of Cascade) ss.

This instrument was acknowledged before me on ~~November~~ 1/12/18, 2017 by Russ Barrett, Managing Member for Flood Properties LLC.

Amy K. Daniels
Notary Public for the State of Montana
Residing at Great Falls, MT
My Commission Expires: 01/30/2019

AMY K. DANIELS NOTARY PUBLIC SEAL STATE OF MONTANA

AMY K. DANIELS
NOTARY PUBLIC for the
State of Montana
Residing at Great Falls, Montana
My Commission Expires
January 30, 2019

Fee: $7.00 MD eRecorded

This Document Prepared By:
Chicago Title Company, LLC
101 River Dr N
Great Falls, MT 59401

After Recording Return To:
N. Richard Higgins and Judy L. Higgins
P O Box 322
Ulm, MT 59485

Order No.: 3522171863-AD

FILED AT THE REQUEST OF CHICAGO TITLE

WARRANTY DEED
(Joint Tenancy)

For Value Received Flood Properties LLC, the grantor(s), do(es) hereby grant, bargain, sell and convey unto N. Richard Higgins and Judy L. Higgins, as joint tenants with right of survivorship (and not as tenants in common), and to the survivor of said named joint tenants, and to the heirs and assigns of such survivor, of P O Box 322, Ulm, MT 59485, the grantee(s), the following described premises, in Cascade County, Montana, to wit:

Tracts of Record 1, 2, 3, 4 and 5 of Certificate of Survey No. S-0005119 filed September 16, 2017 located in Section 34, Township 20 North, Range 3 East, Cascade County, Montana.

TO HAVE AND TO HOLD unto the Grantee and to the heirs and assigns forever, subject, however, to:

A. All reservations and exceptions of record and in patents from the United States or the State of Montana;

B. All existing easements and rights of way of record, building, use zoning, sanitary and environmental restrictions;

C. Taxes and assessments for the year 2017 and subsequent years;

D. All prior conveyances, leases or transfers of any interest in minerals, including oil, gas and other hydrocarbons;

Except with reference to items referred to in paragraphs above, this Deed is given with the usual covenants expressed in §30-11-110, Montana Code Annotated.

This conveyance is made and accepted upon the express agreement that the consideration heretofore paid constitutes an adequate and full consideration in money or money's worth.

IN WITNESS WHEREOF, the undersigned have executed this document on the date(s) set forth below.

Flood Properties LLC

BY: Russ Barrett
Russ Barrett
Managing Member

State of Montana County of Cascade) ss.

This instrument was acknowledged before me on October 5th, 2017 by Russ Barrett, Managing Member for Flood Properties LLC.

Amy K. Daniels
Notary Public for the State of Montana
Residing at Great Falls, MT
My Commission Expires: 01/30/2019

AMY K. DANIELS NOTARY PUBLIC SEAL STATE OF MONTANA

AMY K. DANIELS
NOTARY PUBLIC for the
State of Montana
Residing at Great Falls, Montana
My Commission Expires
January 30, 2019

R0346032 10/10/2017 01:38:18 PM Total Pages: 1
Rina Moore - Clerk and Recorder, Cascade County
Fee: $7.00 WD eRecorded

This Document Prepared By:
Chicago Title Company, LLC
101 River Dr N
Great Falls, MT 59401

After Recording Return To:
N. Richard Higgins and Judy L. Higgins
P O Box 322
Ulm, MT 59485

Order No.: 3522171863-AD

FILED AT THE REQUEST OF CHICAGO TITLE

WARRANTY DEED
(Joint Tenancy)

For Value Received Flood Properties LLC, the grantor(s), do(es) hereby grant, bargain, sell and convey unto N. Richard Higgins and Judy L. Higgins, as joint tenants with right of survivorship (and not as tenants in common), and to the survivor of said named joint tenants, and to the heirs and assigns of such survivor, of P O Box 322, Ulm, MT 59485, the grantee(s), the following described premises, in Cascade County, Montana, to wit:

Tracts of Record 1, 2, 3, 4 and 5 of Certificate of Survey No. S-0005119 filed September 16, 2017 located in Section 34, Township 20 North, Range 3 East, Cascade County, Montana.

TO HAVE AND TO HOLD unto the Grantee and to the heirs and assigns forever, subject, however, to:

A. All reservations and exceptions of record and in patents from the United States or the State of Montana;

B. All existing easements and rights of way of record, building, use zoning, sanitary and environmental restrictions;

C. Taxes and assessments for the year 2017 and subsequent years;

D. All prior conveyances, leases or transfers of any interest in minerals, including oil, gas and other hydrocarbons;

Except with reference to items referred to in paragraphs above, this Deed is given with the usual covenants expressed in §30-11-110, Montana Code Annotated.

This conveyance is made and accepted upon the express agreement that the consideration heretofore paid constitutes an adequate and full consideration in money or money's worth.

IN WITNESS WHEREOF, the undersigned have executed this document on the date(s) set forth below.

Flood Properties LLC

BY: Russ Barrett
Russ Barrett
Managing Member

State of Montana County of Cascade) ss.

This instrument was acknowledged before me on October 5th, 2017 by Russ Barrett, Managing Member for Flood Properties LLC.

Amy K. Daniels
Notary Public for the State of Montana
Residing at Great Falls, MT
My Commission Expires: 01/28/2018

AMY K. DANIELS
NOTARY PUBLIC for the

ALTA OWNER'S POLICY OF TITLE INSURANCE

Issued By:

CHICAGO TITLE
INSURANCE COMPANY

Policy Number:

3522171863

Any notice of claim and any other notice or statement in writing required to be given to the Company under this Policy must be given to the Company at the address shown in Section 18 of the Conditions.

COVERED RISKS

SUBJECT TO THE EXCLUSIONS FROM COVERAGE, THE EXCEPTIONS FROM COVERAGE CONTAINED IN SCHEDULE B, AND THE CONDITIONS, CHICAGO TITLE INSURANCE COMPANY, a Florida corporation (the "Company") insures, as of Date of Policy and, to the extent stated in Covered Risks 9 and 10, after Date of Policy, against loss or damage, not exceeding the Amount of Insurance, sustained or incurred by the Insured by reason of:

1. Title being vested other than as stated in Schedule A.
2. Any defect in or lien or encumbrance on the Title. This Covered Risk includes but is not limited to insurance against loss from
   (a) A defect in the Title caused by
      (i) forgery, fraud, undue influence, duress, incompetency, incapacity, or impersonation;
      (ii) failure of any person or Entity to have authorized a transfer or conveyance;
      (iii) a document affecting Title not properly created, executed, witnessed, sealed, acknowledged, notarized, or delivered;
      (iv) failure to perform those acts necessary to create a document by electronic means authorized by law;
      (v) a document executed under a falsified, expired, or otherwise invalid power of attorney;
      (vi) a document not properly filed, recorded, or indexed in the Public Records including failure to perform those acts by electronic means authorized by law; or
      (vii) a defective judicial or administrative proceeding.
   (b) The lien of real estate taxes or assessments imposed on the Title by a governmental authority due or payable, but unpaid.
   (c) Any encroachment, encumbrance, violation, variation, or adverse circumstance affecting the Title that would be disclosed by an accurate and complete land survey of the Land. The term "encroachment" includes encroachments of existing improvements located on the Land onto adjoining land, and encroachments onto the Land of existing improvements located on adjoining land.
3. Unmarketable Title.
4. No right of access to and from the Land.
5. The violation or enforcement of any law, ordinance, permit, or governmental regulation (including those relating to building and zoning) restricting, regulating, prohibiting, or relating to
   (a) the occupancy, use, or enjoyment of the Land;
   (b) the character, dimensions, or location of any improvement erected on the Land;
   (c) the subdivision of land; or
   (d) environmental protection

   if a notice, describing any part of the Land, is recorded in the Public Records setting forth the violation or intention to enforce, but only to the extent of the violation or enforcement referred to in that notice.

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6. An enforcement action based on the exercise of a governmental police power not covered by Covered Risk 5 if a notice of the enforcement action, describing any part of the Land, is recorded in the Public Records, but only to the extent of the enforcement referred to in that notice.
7. The exercise of the rights of eminent domain if a notice of the exercise, describing any part of the Land, is recorded in the Public Records.
8. Any taking by a governmental body that has occurred and is binding on the rights of a purchaser for value without Knowledge.
9. Title being vested other than as stated in Schedule A or being defective
   (a) as a result of the avoidance in whole or in part, or from a court order providing an alternative remedy, of a transfer of all or any part of the title to or any interest in the Land occurring prior to the transaction vesting Title as shown in Schedule A because that prior transfer constituted a fraudulent or preferential transfer under federal bankruptcy, state insolvency, or similar creditors' rights laws; or
   (b) because the instrument of transfer vesting Title as shown in Schedule A constitutes a preferential transfer under federal bankruptcy, state insolvency, or similar creditors' rights laws by reason of the failure of its recording in the Public Records
      (i) to be timely, or
      (ii) to impart notice of its existence to a purchaser for value or to a judgment or lien creditor.
10. Any defect in or lien or encumbrance on the Title or other matter included in Covered Risks 1 through 9 that has been created or attached or has been filed or recorded in the Public Records subsequent to Date of Policy and prior to the recording of the deed or other instrument of transfer in the Public Records that vests Title as shown in Schedule A.

The Company will also pay the costs, attorneys' fees, and expenses incurred in defense of any matter insured against by this Policy, but only to the extent provided in the Conditions.

IN WITNESS WHEREOF, CHICAGO TITLE INSURANCE COMPANY has caused this policy to be signed and sealed by its duly authorized officers.

Chicago Title Insurance Company

By:

President

Chicago Title Company, LLC
101 River Dr N
Great Falls, MT 59401

Countersigned By:

Authorized Officer or Agent

Attest:

Secretary

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EXCLUSIONS FROM COVERAGE

The following matters are expressly excluded from the coverage of this policy, and the Company will not pay loss or damage, costs, attorneys' fees, or expenses that arise by reason of:

1. (a) Any law, ordinance, permit, or governmental regulation (including those relating to building and zoning) restricting, regulating, prohibiting, or relating to
   (i) the occupancy, use, or enjoyment of the Land;
   (ii) the character, dimensions, or location of any improvement erected on the Land;
   (iii) the subdivision of land; or
   (iv) environmental protection;
   or the effect of any violation of these laws, ordinances, or governmental regulations. This Exclusion 1(a) does not modify or limit the coverage provided under Covered Risk 5.
   (b) Any governmental police power. This Exclusion 1(b) does not modify or limit the coverage provided under Covered Risk 6.
2. Rights of eminent domain. This Exclusion does not modify or limit the coverage provided under Covered Risk 7 or 8.
3. Defects, liens, encumbrances, adverse claims, or other matters
   (a) created, suffered, assumed, or agreed to by the Insured Claimant;
   (b) not Known to the Company, not recorded in the Public Records at Date of Policy, but Known to the Insured Claimant and not disclosed in writing to the Company by the Insured Claimant prior to the date the Insured Claimant became an Insured under this policy;
   (c) resulting in no loss or damage to the Insured Claimant;
   (d) attaching or created subsequent to Date of Policy (however, this does not modify or limit the coverage provided under Covered Risk 9 and 10); or
   (e) resulting in loss or damage that would not have been sustained if the Insured Claimant had paid value for the Title.
4. Any claim, by reason of the operation of federal bankruptcy, state insolvency, or similar creditors' rights laws, that the transaction vesting the Title as shown in Schedule A, is
   (a) a fraudulent conveyance or fraudulent transfer; or
   (b) a preferential transfer for any reason not stated in Covered Risk 9 of this policy.
5. Any lien on the Title for real estate taxes or assessments imposed by governmental authority and created or attaching between Date of Policy and the date of recording of the deed or other instrument of transfer in the Public Records that vests Title as shown in Schedule A.

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SCHEDULE A

Name and Address of Title Insurance Company: Doris Eckenstein
Chicago Title Company, LLC
101 River Dr N
Great Falls, MT 59401

Address Reference: 6750 Fox Farm Road, Great Falls, MT 59404

Date of Policy	Amount of Insurance	Premium
October 10, 2017 at 01:38 PM	$900,000.00	$2,223.00

1. Name of Insured:

   N. Richard Higgins and Judy L. Higgins

2. The estate or interest in the Land that is insured by this policy is:

   Fee Simple

3. Title is vested in:

   N. Richard Higgins and Judy L. Higgins, as joint tenants

4. The Land referred to in this policy is described as follows:

   Tracts of Record 1, 2, 3, 4 and 5 of Certificate of Survey No. S-0005119 filed September 16, 2017 located in Section 34, Township 20 North, Range 3 East, Cascade County, Montana.

THIS POLICY VALID ONLY IF SCHEDULE B IS ATTACHED

END OF SCHEDULE A

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SCHEDULE B
EXCEPTIONS FROM COVERAGE

This policy does not insure against loss or damage, and the Company will not pay costs, attorneys' fees or expenses that arise by reason of:

1. Rights or claims of parties in possession not shown by the Public Records.*

2. Encroachments, overlaps, boundary line disputes, and any other matters which would be disclosed by an accurate survey and inspection of the Land including, but not limited to, insufficient or impaired access and matters contradictory to any survey plat shown by the Public Records.*

3. Easements, or claims of easements, not shown by the Public Records.*

4. Any lien, or right to a lien, for services, labor, or material heretofore or hereafter furnished, imposed by law and not shown by the Public Records.*

5. (a) unpatented mining claims; (b) reservations or exceptions in patents or in Acts authorizing the issuance thereof; (c) water rights, claims or title to water, whether or not the matters accepted under (a), (b), (c) are shown by the Public Records.*

6. Taxes to special assessments which are not shown as existing liens by the records of any taxing authority that levies taxes or assessments on real property or by the Public Records. Proceedings by a public agency which may result in taxes or assessments, or notices of such proceedings, whether or not shown by the records of such agency or by the Public Records.*

7. Mineral rights, claims or title to minerals in or under said land, including but not limited to metals, oil, gas, coal, or other hydrocarbons, sand, gravel, or stone, and geothermal energy rights, and easement or other rights or matters relating thereto, whether express or implied, recorded, or unrecorded.*

SPECIAL EXCEPTIONS:

8. General Taxes for the year 2016

   1st Half: $850.61 Paid
   2nd Half: $753.61 Paid
   Total for year: $1,604.22
   Receipt No.: 30221
   Parcel No.: 0002506800
   County: $1,381.16; Cons: $6.06; Fire: $97.00; Solid Waste: $120.00

2017
4 1,118 12/11
1,021
2,139 23

FOX FARM ROAD
313 56

9. General County Taxes for the year 2017 and subsequent years, which are a lien but not yet due or payable.

10. This property is within the boundaries of the Cascade County Rural Solid Waste District created by Resolution filed May 28, 1971 under Miscellaneous File No. 5284, records of Cascade County, Montana, and will be subject to any levies or assessments thereof.

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AMERICAN LAND TITLE ASSOCIATION

SCHEDULE B
EXCEPTIONS FROM COVERAGE
(continued)

11. This property lies within the boundaries of Resolution No. 99-59 (Cascade County Rural Solid Waste District) and may be subject to special levies or assessments thereof recorded June 15, 1999 on Reel 322, Document 631, records of Cascade County, Montana, and further lying within the boundaries of Resolution No. 08-66, increasing the fees of the Cascade County Rural Solid Waste District, recorded July 24, 2008 on R-0176866, records of Cascade County, Montana.

12. This property lies within the boundaries of Resolution No. 00-81 increasing the fees on habitable structures in the Gore Hill Fee Service Area and may be subject to special levies and assessments, recorded October 4, 2000 on Reel 339 Document 825, records of Cascade County, Montana.

13. This property lies within the boundaries of Resolution No. 06-38, to increase fees within Certain Cascade Fire Service Areas executed by the Cascade County Commission, recorded August 29, 2006 on R-0132837, records of Cascade County, Montana, as it applies to Ulm, Black Eagle, Gore Hill, Vaughn, Fort Shaw, Simms, Sand Coulee and Dearborn.

14. Any claim arising from the difference in the mean low water mark line of the Missouri River and the meander line as shown by the government survey. (Tract 1)

15. A portion of the property may have been acquired by accretion or avulsion in the changes of the mean low water line of the Missouri River. This commitment/policy is issued and accepted upon the assumption that title to the alluvion follows that of the abutting property and liability thereon is excepted. (Tract 1)

16. Any right, interest or easement in favor of the public which exist or are claimed to exist, over that part of said land included within the bed and banks of the Missouri River, and any portage rights associated therein. (Tract 1)

17. Any adverse claim based on the assertion that some portion of said land is now, or at any time within, the boundaries of the Missouri River. (Tract 1)

18. Any adverse claim which may be asserted by the owner, or owners, of adjacent parcels as to the apportionment of accretion. (Tract 1)

19. Rights of Cascade County as to Flood Road. (Tracts 1, 2 and 3)

20. Easement executed by Nicholas H Binsfield and John Binsfield to Montana Power for an electric transmission system and telephone system, recorded October 16, 1954 on Book 236, Page 223, records of Cascade County, Montana. (SW¼NE¼)
(Tract 4)

21. Easement executed by Nicholas Binsfield to Montana Power Company for an electric powerline and communication and anchor guys, recorded June 3, 1985 on Reel 174, Document 611, records of Cascade County, Montana. (NE¼NE¼NW¼)
(Tract 2)

22. Option Agreement to Secure Public Roadway Easement to Cascade County, recorded May 3, 2016 on R0321890.

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SCHEDULE B
EXCEPTIONS FROM COVERAGE
(continued)

23. This property lies within the boundaries of Resolution No. 16-48 to create Rural Special Improvement District No. 16-01 for the purpose of undertaking certain local improvements and financing the costs thereof and incidental thereto, recorded May 26, 2016 at R0322907 and will be subject to any levies and assessments thereof.

    Re-recorded May 31, 2016 on R0323002.

24. Highway Easement to Cascade County executed by Flood Properties, LLC recorded September 19, 2016 on R0328511. (Tracts 4 and 5)

25. Perpetual Easement for right of way executed by Flood Properties, LLC to Cascade County recorded October 11, 2016 on R0329500 and R0329503. (Tracts 4 and 5)

26. Overhead Electric Powerline Easement executed by Flood Properties, LLC to Northwestern Corp. recorded January 17, 2017 on R0334154 and Correction Easement recorded March 7, 2017 on R0336426. (Tracts 4 and 5)

27. Perpetual Easement for Right of Way executed by Flood Properties, LLC to Cascade County recorded March 14, 2017 on R0336767 and R0336768. (Tracts 4 and 5)

28. Temporary Construction Easement executed by Flood Properties, LLC to Cascade County recorded May 3, 2017 on R0338852. (Tracts 4 and 5)

END OF SCHEDULE B

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CONDITIONS

1. DEFINITION OF TERMS

The following terms when used in this policy mean:

(a) "Amount of Insurance": The amount stated in Schedule A, as may be increased or decreased by endorsement to this policy, increased by Section 8(b), or decreased by Sections 10 and 11 of these Conditions.

(b) "Date of Policy": The date designated as "Date of Policy" in Schedule A.

(c) "Entity": A corporation, partnership, trust, limited liability company, or other similar legal entity.

(d) "Insured": The Insured named in Schedule A.

(i) The term "Insured" also includes

(A) successors to the Title of the Insured by operation of law as distinguished from purchase, including heirs, devisees, survivors, personal representatives, or next of kin;

(B) successors to an Insured by dissolution, merger, consolidation, distribution, or reorganization;

(C) successors to an Insured by its conversion to another kind of Entity;

(D) a grantee of an Insured under a deed delivered without payment of actual valuable consideration conveying the Title

(1) if the stock, shares, memberships, or other equity interests of the grantee are wholly-owned by the named Insured,

(2) if the grantee wholly owns the named Insured,

(3) if the grantee is wholly-owned by an affiliated Entity of the named Insured, provided the affiliated Entity and the named Insured are both wholly-owned by the same person or Entity, or

(4) if the grantee is a trustee or beneficiary of a trust created by a written instrument established by the Insured named in Schedule A for estate planning purposes.

(ii) With regard to (A), (B), (C), and (D) reserving, however, all rights and defenses as to any successor that the Company would have had against any predecessor Insured.

(e) "Insured Claimant": An Insured claiming loss or damage.

(f) "Knowledge" or "Known": Actual knowledge, not constructive knowledge or notice that may be imputed to an Insured by reason of the Public Records or any other records that impart constructive notice of matters affecting the Title.

(g) "Land": The land described in Schedule A, and affixed improvements that by law constitute real property. The term "Land" does not include any property beyond the lines of the area described in Schedule A, nor any right, title, interest, estate, or easement in abutting streets, roads, avenues, alleys, lanes, ways, or waterways, but this does not modify or limit the extent that a right of access to and from the Land is insured by this policy.

(h) "Mortgage": Mortgage, deed of trust, trust deed, or other security instrument, including one evidenced by electronic means authorized by law.

(i) "Public Records": Records established under state statutes at Date of Policy for the purpose of imparting constructive notice of matters relating to real property to purchasers for value and without Knowledge. With respect to Covered Risk 5(d), "Public Records" shall also include environmental protection liens filed in the records of the clerk of the United States District Court for the district where the Land is located.

(j) "Title": The estate or interest described in Schedule A.

(k) "Unmarketable Title": Title affected by an alleged or apparent matter that would permit a prospective purchaser or lessee of the Title or lender on the Title to be released from the obligation to purchase, lease, or lend if there is a contractual condition requiring the delivery of marketable title.

2. CONTINUATION OF INSURANCE

The coverage of this policy shall continue in force as of Date of Policy in favor of an Insured, but only so long as the Insured retains an estate or interest in the Land, or holds an obligation secured by a purchase money Mortgage given by a purchaser from the Insured, or only so long as the Insured shall have liability by reason of warranties in any transfer or conveyance of the Title. This policy shall not continue in force in favor of any purchaser from the Insured of either (i) an estate or interest in the Land, or (ii) an obligation secured by a purchase money Mortgage given to the Insured.

3. NOTICE OF CLAIM TO BE GIVEN BY INSURED CLAIMANT

The Insured shall notify the Company promptly in writing (i) in case of any litigation as set forth in Section 5(a) of these Conditions, (ii) in case Knowledge shall come to an Insured hereunder of any claim of title or interest that is adverse to the Title, as insured, and that might cause loss or damage for which the Company may be liable by virtue of this policy, or (iii) if the Title, as insured, is rejected as Unmarketable Title. If the Company is prejudiced by the failure of the Insured Claimant to provide prompt notice, the Company's liability to the Insured Claimant under the policy shall be reduced to the extent of the prejudice.

4. PROOF OF LOSS

In the event the Company is unable to determine the amount of loss or damage, the Company may, at its option, require as a condition of payment that the Insured Claimant furnish a signed proof of loss. The proof of loss must describe the defect, lien, encumbrance, or other matter insured against by this policy that constitutes the basis of loss or damage and shall state, to the extent possible, the basis of calculating the amount of the loss or damage.

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AMERICAN LAND TITLE ASSOCIATION

(continued)

5. DEFENSE AND PROSECUTION OF ACTIONS

(a) Upon written request by the Insured, and subject to the options contained in Section 7 of these Conditions, the Company, at its own cost and without unreasonable delay, shall provide for the defense of an Insured in litigation in which any third party asserts a claim covered by this policy adverse to the Insured. This obligation is limited to only those stated causes of action alleging matters insured against by this policy. The Company shall have the right to select counsel of its choice (subject to the right of the Insured to object for reasonable cause) to represent the Insured as to those stated causes of action. It shall not be liable for and will not pay the fees of any other counsel. The Company will not pay any fees, costs, or expenses incurred by the Insured in the defense of those causes of action that allege matters not insured against by this policy.

(b) The Company shall have the right, in addition to the options contained in Section 7 of these Conditions, at its own cost, to institute and prosecute any action or proceeding or to do any other act that in its opinion may be necessary or desirable to establish the Title, as insured, or to prevent or reduce loss or damage to the Insured. The Company may take any appropriate action under the terms of this policy, whether or not it shall be liable to the Insured. The exercise of these rights shall not be an admission of liability or waiver of any provision of this policy. If the Company exercises its rights under this subsection, it must do so diligently.

(c) Whenever the Company brings an action or asserts a defense as required or permitted by this policy, the Company may pursue the litigation to a final determination by a court of competent jurisdiction, and it expressly reserves the right to appeal from any adverse judgment or order.

6. DUTY OF INSURED CLAIMANT TO COOPERATE

(a) In all cases where this policy permits or requires the Company to prosecute or provide for the defense of any action or proceeding and any appeals, the Insured shall secure to the Company the right to so prosecute or provide defense in the action or proceeding, including the right to use, at its option, the name of the Insured for this purpose. Whenever requested by the Company, the Insured, at the Company's expense, shall give the Company all reasonable aid (i) in securing evidence, obtaining witnesses, prosecuting or defending the action or proceeding, or effecting settlement, and (ii) in any other lawful act that in the opinion of the Company may be necessary or desirable to establish the Title or any other matter as insured. If the Company is prejudiced by the failure of the Insured to furnish the required cooperation, the Company's obligations to the Insured under the policy shall terminate, including any liability or obligation to defend, prosecute, or continue any litigation, with regard to the matter or matters requiring such cooperation.

(b) The Company may reasonably require the Insured Claimant to submit to examination under oath by any authorized representative of the Company and to produce for examination, inspection, and copying, at such reasonable times and places as may be designated by the authorized representative of the Company, all records, in whatever medium maintained, including books, ledgers, checks, memoranda, correspondence, reports, e-mails, disks, tapes, and videos whether bearing a date before or after Date of Policy, that reasonably pertain to the loss or damage. Further, if requested by any authorized representative of the Company, the Insured Claimant shall grant its permission, in writing, for any authorized representative of the Company to examine, inspect, and copy all of these records in the custody or control of a third party that reasonably pertain to the loss or damage. All information designated as confidential by the Insured Claimant provided to the Company pursuant to this Section shall not be disclosed to others unless, in the reasonable judgment of the Company, it is necessary in the administration of the claim. Failure of the Insured Claimant to submit for examination under oath, produce any reasonably requested information, or grant permission to secure reasonably necessary information from third parties as required in this subsection, unless prohibited by law or governmental regulation, shall terminate any liability of the Company under this policy as to that claim.

7. OPTIONS TO PAY OR OTHERWISE SETTLE CLAIMS; TERMINATION OF LIABILITY

In case of a claim under this policy, the Company shall have the following additional options:

(a) To Pay or Tender Payment of the Amount of Insurance.

To pay or tender payment of the Amount of Insurance under this policy together with any costs, attorneys' fees, and expenses incurred by the Insured Claimant that were authorized by the Company up to the time of payment or tender of payment and that the Company is obligated to pay.

Upon the exercise by the Company of this option, all liability and obligations of the Company to the Insured under this policy, other than to make the payment required in this subsection, shall terminate, including any liability or obligation to defend, prosecute, or continue any litigation.

(b) To Pay or Otherwise Settle With Parties Other Than the Insured or With the Insured Claimant.

(i) To pay or otherwise settle with other parties for or in the name of an Insured Claimant any claim insured against under this policy. In addition, the Company will pay any costs, attorneys' fees, and expenses incurred by the Insured Claimant that were authorized by the Company up to the time of payment and that the Company is obligated to pay; or

(ii) to pay or otherwise settle with the Insured Claimant the loss or damage provided for under this policy, together with any costs, attorneys' fees, and expenses incurred by the Insured Claimant that were authorized by the Company up to the time of payment and that the Company is obligated to pay.

Upon the exercise by the Company of either of the options provided for in subsections (b)(i) or (ii), the Company's obligations to the Insured under this policy for the claimed loss or damage, other than the payments required to be made, shall terminate, including any liability or obligation to defend, prosecute, or continue any litigation.

8. DETERMINATION AND EXTENT OF LIABILITY

This policy is a contract of indemnity against actual monetary loss or damage sustained or incurred by the Insured Claimant who has suffered loss or damage by reason of matters insured against by this policy.

(a) The extent of liability of the Company for loss or damage under this policy shall not exceed the lesser of

(i) the Amount of Insurance; or

(ii) the difference between the value of the Title as insured and the value of the Title subject to the risk insured against by this policy.

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(continued)

(b) If the Company pursues its rights under Section 5 of these Conditions and is unsuccessful in establishing the Title, as insured,

(i) the Amount of Insurance shall be increased by Ten percent (10%), and

(ii) the Insured Claimant shall have the right to have the loss or damage determined either as of the date the claim was made by the Insured Claimant or as of the date it is settled and paid.

(c) In addition to the extent of liability under (a) and (b), the Company will also pay those costs, attorneys' fees, and expenses incurred in accordance with Sections 5 and 7 of these Conditions.

9. LIMITATION OF LIABILITY

(a) If the Company establishes the Title, or removes the alleged defect, lien, or encumbrance, or cures the lack of a right of access to or from the Land, or cures the claim of Unmarketable Title, all as insured, in a reasonably diligent manner by any method, including litigation and the completion of any appeals, it shall have fully performed its obligations with respect to that matter and shall not be liable for any loss or damage caused to the Insured.

(b) In the event of any litigation, including litigation by the Company or with the Company's consent, the Company shall have no liability for loss or damage until there has been a final determination by a court of competent jurisdiction, and disposition of all appeals, adverse to the Title, as insured.

(c) The Company shall not be liable for loss or damage to the Insured for liability voluntarily assumed by the Insured in settling any claim or suit without the prior written consent of the Company.

10. REDUCTION OF INSURANCE; REDUCTION OR TERMINATION OF LIABILITY

All payments under this policy, except payments made for costs, attorneys' fees, and expenses, shall reduce the Amount of Insurance by the amount of the payment.

11. LIABILITY NONCUMULATIVE

The Amount of Insurance shall be reduced by any amount the Company pays under any policy insuring a Mortgage to which exception is taken in Schedule B or to which the Insured has agreed, assumed, or taken subject, or which is executed by an Insured after Date of Policy and which is a charge or lien on the Title, and the amount so paid shall be deemed a payment to the Insured under this policy.

12. PAYMENT OF LOSS

When liability and the extent of loss or damage have been definitely fixed in accordance with these Conditions, the payment shall be made within thirty (30) days.

13. RIGHTS OF RECOVERY UPON PAYMENT OR SETTLEMENT

(a) Whenever the Company shall have settled and paid a claim under this policy, it shall be subrogated and entitled to the rights of the Insured Claimant in the Title and all other rights and remedies in respect to the claim that the Insured Claimant has against any person or property, to the extent of the amount of any loss, costs, attorneys' fees, and expenses paid by the Company. If requested by the Company, the Insured Claimant shall execute documents to evidence the transfer to the Company of these rights and remedies. The Insured Claimant shall permit the Company to sue, compromise, or settle in the name of the Insured Claimant and to use the name of the Insured Claimant in any transaction or litigation involving these rights and remedies.

If a payment on account of a claim does not fully cover the loss of the Insured Claimant, the Company shall defer the exercise of its right to recover until after the Insured Claimant shall have recovered its loss.

(b) The Company's right of subrogation includes the rights of the Insured to indemnities, guaranties, other policies of insurance, or bonds, notwithstanding any terms or conditions contained in those instruments that address subrogation rights.

14. THIS SECTION IS INTENTIONALLY DELETED

15. LIABILITY LIMITED TO THIS POLICY; POLICY ENTIRE CONTRACT

(a) This policy together with all endorsements, if any, attached to it by the Company is the entire policy and contract between the Insured and the Company. In interpreting any provision of this policy, this policy shall be construed as a whole.

(b) Any claim of loss or damage that arises out of the status of the Title or by any action asserting such claim shall be restricted to this policy.

(c) Any amendment of or endorsement to this policy must be in writing and authenticated by an authorized person, or expressly incorporated by Schedule A of this policy.

(d) Each endorsement to this policy issued at any time is made a part of this policy and is subject to all of its terms and provisions. Except as the endorsement expressly states, it does not (i) modify any of the terms and provisions of the policy, (ii) modify any prior endorsement, (iii) extend the Date of Policy, or (iv) increase the Amount of Insurance.

16. SEVERABILITY

In the event any provision of this policy, in whole or in part, is held invalid or unenforceable under applicable law, the policy shall be deemed not to include that provision or such part held to be invalid, but all other provisions shall remain in full force and effect.

17. CHOICE OF LAW; FORUM

(a) Choice of Law: The Insured acknowledges the Company has underwritten the risks covered by this policy and determined the premium charged therefor in reliance upon the law affecting interests in real property and applicable to the interpretation, rights, remedies, or enforcement of policies of title insurance of the jurisdiction where the Land is located.

Therefore, the court or an arbitrator shall apply the law of the jurisdiction where the Land is located to determine the validity of claims against the Title that are adverse to the Insured and to interpret and enforce the terms of this policy. In neither case shall the court or arbitrator apply its conflicts of law principles to determine the applicable law.

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AMERICAN LAND TITLE ASSOCIATION

(continued)

(b) Choice of Forum: Any litigation or other proceeding brought by the Insured against the Company must be filed only in a state or federal court within the United States of America or its territories having appropriate jurisdiction.

18. NOTICES, WHERE SENT

Any notice of claim and any other notice or statement in writing required to be given to the Company under this policy must be given to the Company at:

Chicago Title Insurance Company
P.O. Box 45023
Jacksonville, FL 32232-5023
Attn: Claims Department

END OF CONDITIONS

Copyright American Land Title Association. All rights reserved.

The use of this Form (or any derivative thereof) is restricted to ALTA licensees and ALTA members in good standing as of the date of use. All other uses are prohibited. Reprinted under license from the American Land Title Association.

This Document Prepared By:
Chicago Title Company, LLC
101 River Dr N
Great Falls, MT 59401

After Recording Return To:
Karl J. Birky
1220 Central Ave W
Great Falls, MT 59404

Order No.: 3522180966-AD

READ, APPROVED AND ACCEPTED KB

WARRANTY DEED

For Value Received Higgins Enterprises Ltd, a corporation duly organized and existing under the laws of the State of Montana, grantor, does hereby Grant, Bargain, Sell and Convey unto Karl J. Birky, of 1220 Central Ave W, Great Falls, MT 59404, grantee(s), the following described real estate, to wit:

Tract of Record 3 of Certificate of Survey No. S-0005119 filed September 16, 2017 located in Section 34, Township 20 North, Range 3 East, Cascade County, Montana.

RESERVING UNTO the grantor, all remaining mineral rights whatsoever, plus sand, gravel and all other materials.

ALSO RESERVING UNTO the grantor, a utility easement along the east boundary 20 feet in width running north and south along said eastern bountary line.

TO HAVE AND TO HOLD unto the Grantee and to the heirs and assigns forever, subject, however, to:

A. All reservations and exceptions of record and in patents from the United States or the State of Montana;

B. All existing easements and rights of way of record, building, use zoning, sanitary and environmental restrictions;

C. Taxes and assessments for the year 2019 and subsequent years;

D. All prior conveyances, leases or transfers of any interest in minerals, including oil, gas and other hydrocarbons;

Except with reference to items referred to in paragraphs above, this Deed is given with the usual covenants expressed in §30-11-110, Montana Code Annotated.

This conveyance is made and accepted upon the express agreement that the consideration heretofore paid constitutes an adequate and full consideration in money or money's worth.

IN WITNESS WHEREOF, the undersigned have executed this document on the date(s) set forth below.

Higgins Enterprises Ltd

BY:_____
N. Richard Higgins
Title

BY:_____
Judy L. Higgins
Title

COPY

CONTRACT
17-27

RETURN TO COMMISSION

PERPETUAL EASEMENT FOR RIGHT OF WAY
Flood Properties: 341.82-acre parcel, Geocode 02-3015-34-1-01-01-0000

THIS INDENTURE is made and entered into this 14th day of March, 2017, by and between Flood Properties LLC, GRANTOR, and Cascade County, GRANTEE.

WITNESSETH:

That for and in consideration of the sum of One Dollar ($1.00) and other good and valuable consideration, in hand paid, the receipt whereof is hereby acknowledged, GRANTOR hereby bargains, sells, conveys, transfers and grants to the GRANTEE, its successors, heirs and assigns, a perpetual easement and right-of-way, together with all necessary appurtenances thereto, in, under, through, over and across the real property of the GRANTOR hereinafter described together with all rights to erect, construct, install, lay, excavate, and thereafter use, operate, inspect, repair, maintain, replace and remove said easement and right-of-way.

The perpetual easement for right of way is located in Cascade County, Montana as depicted on attached Exhibit 'A', ("Easement Area"), together with the right of ingress and egress through, over and across the adjacent lands of the GRANTOR, his successors, heirs and assigns, for the purposes of this easement and right of way.

It is understood and agreed that the following covenants and conditions attach and pertain to the foregoing grant of easement:

1. All costs associated with initial construction will be borne by GRANTEE.
2. For the protection of said easement, neither GRANTOR nor GRANTEE shall make or construct any building or other permanent improvement, except landscaping, utilities, paving, and non-masonry fencing, upon the land covered by this easement, and said land shall be kept free of any such permanent obstruction that would impair the operation and/or maintenance of any utilities and/or right of way placed therein.
3. This grant of easement shall run with the land and shall be binding upon the GRANTOR, its successors, heirs and assigns, and shall inure to the benefit of the GRANTEE, its successors, heirs and assigns.
4. The intent of this easement is for the construction, installation, use and ongoing operations and maintenance of GRANTEE for utility and/or right of way.
5. GRANTEE will obtain all necessary and applicable permits from all requisite authorities and comply with all conditions required in said permits.
6. GRANTEE agrees that it will return the surface area disturbed by the installation, maintenance and repair of its utilities and appurtenances to substantially the same condition as existed prior to the commencement of the work, which shall include but not be limited to, backfilling, compacting, re-seeding and reestablishing grass, and noxious weed control management in perpetuity.

R0336767 CAG
Total Pages: 4 R 0.00 By:mejohnson 03/14/2017 02:23:44 PM
Cascade County, Rina Ft Moore - Clerk & Recorder

R0336768 ES
Total Pages: 4 R 0.00 By:mejohnson 03/14/2017 02:24:46 PM
Cascade County, Rina Ft Moore - Clerk & Recorder

Unofficial Copy

7. GRANTEE agrees that it will provide for the improvement, maintenance and repair of its improvements to be located in the Easement Area at its own cost and expense, and will not allow any lien to be filed against GRANTOR's Property as a result of GRANTEE's improvement, maintenance or repair of its facilities.

8. Disclosure. GRANTEE acknowledges that it has acquired this Easement in full reliance upon representations of GRANTOR and is relying upon disclosures of GRANTOR with regard to the condition of the property which is the subject of this easement including without limitation, the environmental condition of the Easement Area, the suitability, habitability, merchantability or fitness of Easement Area for construction, development, and for the GRANTEE's intended use.

9. Indemnification. GRANTOR, its successors and assigns, shall release, indemnify and hold harmless GRANTEE, its directors, officers, employees, contractors, and agents from and against all actions, suits, claims, demands, losses, damages, judgments, fines, penalties, costs, expenses, and fees (including reasonable attorney fees and court costs incurred enforcing this indemnity obligation or defending a third-party claim through any final appeal) or liability of any character whatsoever, brought or asserted for injuries to or death of any person or persons, damages to property, or a violation of any federal state or local statute, rule, regulation or ordinance (including but not limited to, environmental, safety or health statute, rule, regulation, or ordinance), arising from the acts or omissions of GRANTOR, its employees, contractors or agents, from use of the easement granted herein or arising from GRANTOR's failure to comply with the terms of this Easement Agreement. The indemnification obligation of GRANTOR shall survive the termination of this Easement Agreement.

10. Venue. Venue for any disputes will be the Eighth Judicial District Court, Cascade County Montana. The parties will attempt in good faith to negotiate and resolve any disputes prior to either party initiating litigation.

11. Fees and Costs. The Parties shall bear their own costs and fees in the event either or both Parties institutes an action or proceeding to enforce any rights arising under this Easement and Right of Way Agreement.

12. Severability. In the event any term or provision of this Easement and Right of Way Agreement is declared to be invalid or illegal for any reason, this Agreement will remain in full force and effect and the same will be interpreted as though such invalid and illegal provision were not a part thereof. The remaining provisions will be construed to preserve the intent and purpose of this Agreement and the parties will negotiate in good faith to modify the provisions held to be invalid or illegal to preserve each Party's anticipated benefits thereunder.

13. Entire Agreement. This Easement Agreement supersedes all prior discussions and agreements between the parties with respect to the subject matter hereof and contains the sole and entire agreement between the parties.

Unofficial Copy

GRANTOR:

Russell Barrett, MGR

STATE OF MONTANA)
:ss.
County of Cascade)

This instrument was signed or acknowledged before me on this 27th day of January, 2017 by russell barrett.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed my Official Seal the day and year in this certificate first above written.

Trudy Whitmore
(Signature of notary public)

TRUDY WHITMORE
NOTARY PUBLIC for the
State of Montana
Residing at Fort Shaw, Montana
My Commission Expires
January 13, 2018

(NOTARIAL SEAL)

Trudy Whitmore
(print name)
Notary Public for State of Montana
Residing at Fort Shaw
My Commission expires: 1/13/2018

GRANTEE:

BOARD OF COUNTY COMMISSIONERS OF CASCADE COUNTY

James Larson, Chairman

Joe Briggs, Commissioner

Jane Weber, Commissioner

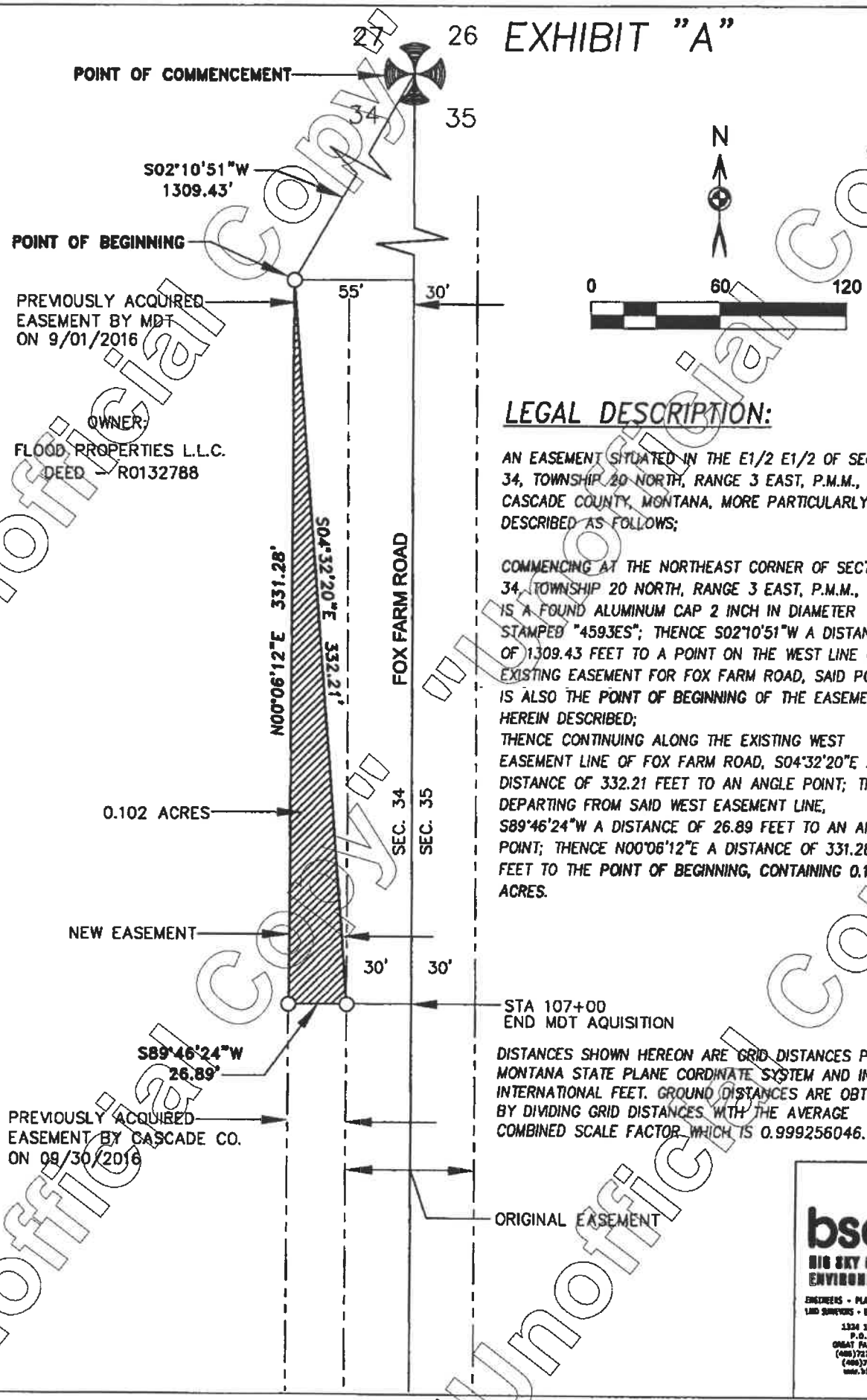
ATTEST

On this 14th day of March, 2017, I hereby attest the above-written signatures of the Cascade County Commissioners.

Rina Fontana Moore,
Cascade County Clerk and Recorder

Unofficial Copy

EXHIBIT "A"



LEGAL DESCRIPTION:

AN EASEMENT SITUATED IN THE E1/2 E1/2 OF SECTION 34, TOWNSHIP 20 NORTH, RANGE 3 EAST, P.M.M., CASCADE COUNTY, MONTANA, MORE PARTICULARLY DESCRIBED AS FOLLOWS;

COMMENCING AT THE NORTHEAST CORNER OF SECTION 34, TOWNSHIP 20 NORTH, RANGE 3 EAST, P.M.M., WHICH IS A FOUND ALUMINUM CAP 2 INCH IN DIAMETER STAMPED "4593ES"; THENCE S02°10'51"W A DISTANCE OF 1309.43 FEET TO A POINT ON THE WEST LINE OF AN EXISTING EASEMENT FOR FOX FARM ROAD, SAID POINT IS ALSO THE **POINT OF BEGINNING** OF THE EASEMENT HEREIN DESCRIBED;
THENCE CONTINUING ALONG THE EXISTING WEST EASEMENT LINE OF FOX FARM ROAD, S04°32'20"E A DISTANCE OF 332.21 FEET TO AN ANGLE POINT; THENCE DEPARTING FROM SAID WEST EASEMENT LINE, S89°46'24"W A DISTANCE OF 26.89 FEET TO AN ANGLE POINT; THENCE N00°06'12"E A DISTANCE OF 331.28 FEET TO THE **POINT OF BEGINNING, CONTAINING 0.102 ACRES.**

DISTANCES SHOWN HEREON ARE GRID DISTANCES PER MONTANA STATE PLANE CORDINATE SYSTEM AND IN INTERNATIONAL FEET. GROUND DISTANCES ARE OBTAINED BY DIVIDING GRID DISTANCES WITH THE AVERAGE COMBINED SCALE FACTOR WHICH IS 0.999256046.

bsc&e
BIG SKY CIVIL & ENVIRONMENTAL, INC
ENGINEERS - PLANNERS - DESIGNERS - LAND SURVEYORS - ENVIRONMENTAL SPECIALISTS
1324 13th Ave. SW
P.O. Box 3625
GREAT FALLS, MT 59403
(406)727-3285 OFFICE
(406)727-3656 FAX
www.bigskycee.com

Unofficial Copy

R0336426 03/07/2017 08:44:38 AM Total Pages: 2
Rina Moore - Clerk and Recorder, Cascade County
Fee: $14.00 ES eRecorded

RETURN TO:
NorthWestern Energy
Lands & Permitting Department
11 East Park Street
Butte, MT 59701-9394

CORRECTION CORPORATE EASEMENT

THIS CORRECTION CORPORATE EASEMENT is made this 27th day of February 2017, by **FLOOD PROPERTIES, LLC,** a Montana Corporation, of Fairfield, MT 59436 (GRANTOR), and **NORTHWESTERN CORPORATION D/B/A NORTHWESTERN ENERGY** (GRANTEE), a Delaware Corporation, 11 East Park St., Butte, MT 59701-1711.

1. On the day of **JANUARY 13, 2017**, Grantor or Grantor's predecessor executed and delivered to Grantee or its predecessors, for the consideration therein mentioned, an easement for an **OVERHEAD ELECTRIC POWER LINE**, which said easement is recorded in the office of the County Clerk and Recorder of **CASCADE** County, State of Montana, on **JANUARY 17, 2017** at 12:43 PM, a copy of which is attached as Exhibit A and incorporated by reference herein;

2. In the Easement the real property description incorrectly read as follows:

Township 20 North, Range 03 East, M.P.M.
Section 35: SE4NE4, NE4SE4

instead of the following correct real property description which was in fact intended by the parties and which would adequately express the agreement between them:

Township 20 North, Range 03 East, M.P.M.
Section 34: SE4NE4, NE4SE4

3. In all other particulars, the easement described in Paragraph 1 shall remain the same.

Flood Properties, LLC

Russ Barrett MGR

By: **Russ Barrett**
Title: **President/Manager**

STATE OF Montana)
)ss.
COUNTY OF Cascade)

This Instrument was acknowledged before me on February 27, 2017, by **Russ Barrett**, known to me to be the **President/Manager of Flood Properties, LLC.**

TRUDY WHITMORE
NOTARY PUBLIC for the
State of Montana
Residing at Fort Shaw, Montana
My Commission Expires
January 13, 2018

(NOTARY SEAL)

Trudy Whitmore
Print Name: Trudy Whitmore
Notary Public for the State of Montana
Residing at Fort Shaw
My Commission Expires 1/13 2018

Project: Fox Farm Re-Route
SAP No.: 24068229-4400
Agent: D. Swanson/M. Nicola

Unofficial Copy

R0334154 01/17/2017 02:12:43 PM Total Pages: 2
Rina Moore - Clerk and Recorder, Cascade County
Fee: $14.00 ES eRecorded

After Recording, Return To:
NorthWestern Energy
Land & Permitting Department
11 East Park Street
Butte, MT 59701

Exhibit A

CORPORATE OVERHEAD ELECTRIC POWER LINE EASEMENT

Flood Properties, LLC, a Montana corporation of Fairfield, MT 59436, "Grantor", in consideration of $1.00 and other good and valuable consideration, in hand paid, the receipt of which is acknowledged, does grant and convey to **NORTHWESTERN CORPORATION D/B/A NORTHWESTERN ENERGY**, a Delaware corporation, 11 East Park Street, Butte, MT 59701, "Grantee", and to its successors, assigns and apportionees, an easement approximately 20 feet in width, upon which to construct, operate, maintain, replace, upgrade, and remove an overhead electric powerline, communications systems, and necessary appurtenances, including any guy wires that may extend beyond the easement width, over, under, along and across that certain real property located in **Cascade** County, Montana, and particularly described as follows:

TOWNSHIP 20 NORTH, RANGE 03 EAST, M.P.M.

SECTION 35: SE4NE4, NE4SE4, as more particularly described on Exhibit "A", attached hereto and made a part hereof.

TOGETHER with reasonable right of access to and from the easement area over lands of the Grantor using existing roads and trails where practicable; the right to use and keep the easement area free and clear of any and all obstructions or structures, except fences; and the right to clear and remove all timber, brush, or vegetation outside of the easement area that may, in the Grantee's sole opinion, endanger the powerline, communications system, necessary appurtenances or guy wires.

GRANTOR covenants with the Grantee that the Grantor is lawfully seized and possessed of the real estate above-described, and that the Grantor has a good and lawful right to convey it, or any part thereof.

DATED this 13th day of January, 2017.

Flood Properties, LLC

Russ Barrett, MGR.
By: Russ Barrett
Title: President/Manager

STATE OF Montana)
COUNTY OF Cascade) ss.

This instrument was acknowledged before me on January 13th 2017 by Russ Barrett, known to me to be the President/Manager of **Flood Properties, LLC.**

DYLAN SWANSON
NOTARY PUBLIC for the
STATE OF MONTANA
Residing at Havre, Montana
My Commission Expires
June 4, 2019

(NOTARY SEAL)

Print Name:
Project: Fox Farm Re-Route
Agent: D.Swanson/M.Nicola
SAP No.: 24068229-4400

STATE OF MONTANA } SS
COUNTY OF CASCADE
I HEREBY CERTIFY THAT THE INSTRUMENT TO WHICH THIS CERTIFICATE IS ANNEXED, IS A TRUE, COMPLETE AND CORRECT COPY OF THE ORIGINAL ON FILE IN MY OFFICE.
WITNESS MY HAND AND SEAL OF OFFICE
JAN 18 2017
RINA FT MOORE
Clerk and Recorder/Public Surveyor
By
DEPUTY

Unofficial Copy

R0336426 03/07/2017 08:44:38 AM Total Pages: 2

R0338852 ES
Total Pages: 4 R 0 00 By:mejohnson 05/03/2017 09:34:35 AM
Cascade County, Rina Ft Moore - Clerk & Recorder

TEMPORARY CONSTRUCTION EASEMENT

THIS INDENTURE is made and entered into this 30 day of January, 2017, by and between Flood Properties, GRANTOR, and Cascade County, GRANTEE.

WITNESSETH:

That for and in consideration of the sum of One Dollar ($1.00) and other good and valuable consideration, in hand paid, the receipt whereof is hereby acknowledged, GRANTOR hereby bargains, sells, conveys, transfers and grants to the GRANTEE, its successors, heirs and assigns, a temporary Easement and right-of-way, together with all necessary appurtenances thereto, in, under, through, over and across the real property of the GRANTOR hereinafter described together with all rights to erect, construct, install, lay, excavate, and thereafter use, operate, inspect, repair, maintain, replace and remove said temporary Easement and right-of-way.

This temporary Easement for right of way is located in Cascade County, Montana as depicted on attached Exhibit(s) ("Easement Area(s)"), together with the right of ingress and egress through, over and across the adjacent lands of the GRANTOR, his successors, heirs and assigns, for the purposes of this Easement and right of way.

It is understood and agreed that the following covenants and conditions attach and pertain to the foregoing grant of Easement:

1. All costs associated with initial construction will be borne by GRANTEE.

2. County is reconstructing its right-of-way which lies adjacent to or adjoining GRANTOR's property. This Easement is for the construction, installation, and use by GRANTEE and its authorized agents, contractors and assigns, for purposes of reconstructing, repairing, and like work (hereinafter "Work") which may be necessary to restore GRANTOR's approach off of the County's reconstructed right-of-way. Said temporary easement will terminate upon GRANTEE's acceptance of the Work. Upon termination of the temporary Easement, GRANTOR shall bear all responsibility for the Easement Area and the Work.

3. GRANTEE shall return surface region of the Easement Area which may have been disturbed by the Work to substantially the same condition as existed prior to the commencement of the Work.

4. GRANTEE will obtain all necessary and applicable permits from all requisite authorities and comply with all conditions required in said permits. GRANTEE will provide for all Work in the Easement Area and shall not permit it, its authorized agents, contractors and assigns to lien GRANTOR's Property for any Work performed by GRANTEE in the Easement Area.

5. Disclosure. GRANTEE acknowledges that it has acquired this Easement in full reliance upon representations of GRANTOR and is relying upon disclosures of GRANTOR with regard to the condition of the property which is the subject of this Easement including without limitation, the environmental condition of the

Return to: Planning Depts.

Unofficial Copy

Easement Area, the suitability, habitability, merchantability or fitness of Easement Area for construction, development, and for the GRANTEE's intended use.

6. Indemnification. GRANTOR, its successors and assigns, shall release, indemnify and hold harmless GRANTEE, its directors, officers, employees, contractors, and agents from and against all actions, suits, claims, demands, losses, damages, judgments, fines, penalties, costs, expenses, and fees (including reasonable attorney fees and court costs incurred enforcing this indemnity obligation or defending a third-party claim through any final appeal) or liability of any character whatsoever, brought or asserted for injuries to or death of any person or persons, damages to property, or a violation of any federal state or local statute, rule, regulation or ordinance (including but not limited to, environmental, safety or health statute, rule, regulation, or ordinance), arising from the acts or omissions of GRANTOR, its employees, contractors or agents, from use of the Easement granted herein or arising from GRANTOR's failure to comply with the terms of this Easement Agreement. The indemnification obligation of GRANTOR shall survive the termination of this Easement Agreement.

7. Venue. Venue for any disputes will be the Eighth Judicial District Court, Cascade County Montana. The parties will attempt in good faith to negotiate and resolve any disputes prior to either party initiating litigation.

8. Fees and Costs. The Parties shall bear their own costs and fees in the event either or both Parties institutes an action or proceeding to enforce any rights arising under this Easement and Right of Way Agreement.

9. Severability. In the event any term or provision of this Easement Agreement is declared to be invalid or illegal for any reason, this Agreement will remain in full force and effect and the same will be interpreted as though such invalid and illegal provision were not a part thereof. The remaining provisions will be construed to preserve the intent and purpose of this Agreement and the parties will negotiate in good faith to modify the provisions held to be invalid or illegal to preserve each Party's anticipated benefits thereunder.

10. Entire Agreement. This Easement Agreement supersedes all prior discussions and agreements between the parties with respect to the subject matter hereof and contains the sole and entire agreement between the parties.

Unofficial Copy

GRANTOR:

Russ Barrett, Manager

STATE OF MONTANA)
:ss.
County of Cascade)

This instrument was signed or acknowledged before me on this 30th day of January, 2017 by Russ Barrett.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed my Official Seal the day and year in this certificate first above written.

Trudy Whitmore
(Signature of notary public)

Trudy Whitmore
(print name)
Notary Public for State of Montana
Residing at Fort Shaw
My Commission expires: 1/13/2018

TRUDY WHITMORE NOTARIAL SEAL STATE OF MONTANA

TRUDY WHITMORE
NOTARY PUBLIC for the
State of Montana
Residing at Fort Shaw, Montana
My Commission Expires
January 13, 2018

(NOTARIAL SEAL)

GRANTEE:

BOARD OF COUNTY COMMISSIONERS OF CASCADE COUNTY

James Larson, Chairman

Joe Briggs, Commissioner

Jane Weber, Commissioner

ATTEST

On this 1st day of May, 2017, I hereby attest the above-written signatures of the Cascade County Commissioners.

Rina Fontana Moore,
Cascade County Clerk and Recorder

Unofficial Copy

EXHIBIT "A"
(FLOOD)

OWNER:
FLOOD PROPERTIES LLC

46.90 113+30.00

159.32 113+30.00

TEMPORARY
CONSTRUCTION EASEMENT
±0.040 ACRES

113+50.28

159.32 113+70.00

47.10 113+70.00

EXISTING R/W

RECONSTRUCTED FOX FARM ROAD

SEC. 34

SEC. 35

N

0 30 60

DISTANCES SHOWN HEREON ARE GRID DISTANCES PER MONTANA STATE PLANE CORDINATE SYSTEM AND IN INTERNATIONAL FEET. GROUND DISTANCES ARE OBTAINED BY DIVIDING GRID DISTANCES WITH THE AVERAGE COMBINED SCALE FACTOR WHICH IS 0.999256046.

bsc&e
BIG SKY CIVIL & ENVIRONMENTAL, INC
ENGINEERS - PLANNERS - DESIGNERS -
LAND SURVEYORS - ENVIRONMENTAL SPECIALISTS
3324 13th Ave. SW
P.O. BOX 3025
GREAT FALLS, MT 59403
(406)727-7387 OFFICE
(406)727-3456 FAX
www.bigskyco.com

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RETURN TO COMMISSION

CONTRACT 16-181

PERPETUAL EASEMENT FOR RIGHT OF WAY
Flood Properties: 341.82-acre parcel, Geocode 02-3015-34-1-01-01-0000

THIS INDENTURE is made and entered into this 30th day of September, 2016, by and between Russell Barrett, MGR GRANTOR, and Cascade County, GRANTEE.

WITNESSETH: RETURN TO COMMISSION

That for and in consideration of the sum of One Dollar ($1.00) and other good and valuable consideration, in hand paid, the receipt whereof is hereby acknowledged, GRANTOR hereby bargains, sells, conveys, transfers and grants to the GRANTEE, its successors, heirs and assigns, a perpetual easement and right-of-way, together with all necessary appurtenances thereto, in, under, through, over and across the real property of the GRANTOR hereinafter described together with all rights to erect, construct, install, lay, excavate, and thereafter use, operate, inspect, repair, maintain, replace and remove said easement and right-of-way.

The perpetual easement for right of way is located in Cascade County, Montana as depicted on attached Exhibit 'A', ("Easement Area"), together with the right of ingress and egress through, over and across the adjacent lands of the GRANTOR, his successors, heirs and assigns, for the purposes of this easement and right of way.

It is understood and agreed that the following covenants and conditions attach and pertain to the foregoing grant of easement:

1. All costs associated with initial construction will be borne by GRANTEE.
2. For the protection of said easement, neither GRANTOR nor GRANTEE shall make or construct any building or other permanent improvement, except landscaping, utilities, paving, and non-masonry fencing, upon the land covered by this easement, and said land shall be kept free of any such permanent obstruction that would impair the operation and/or maintenance of any utilities and/or right of way placed therein.
3. This grant of easement shall run with the land and shall be binding upon the GRANTOR, its successors, heirs and assigns, and shall inure to the benefit of the GRANTEE, its successors, heirs and assigns.
4. The intent of this easement is for the construction, installation, use and ongoing operations and maintenance of GRANTEE for utility and/or right of way.
5. GRANTEE will obtain all necessary and applicable permits from all requisite authorities and comply with all conditions required in said permits.
6. GRANTEE agrees that it will return the surface area disturbed by the installation, maintenance and repair of its utilities and appurtenances to substantially the same condition as existed prior to the commencement of the work, which shall include but not be limited to, backfilling, compacting, re-seeding and reestablishing grass, and noxious weed control management in perpetuity.

R0329503 ES
Total Pages: 5 R 0.00 By:mejohnson 10/11/2016 01:11:07 PM
Cascade County, Rina Ft Moore - Clerk & Recorder

R0329500 CAG
Total Pages: 5 R 0.00 By:mejohnson 10/11/2016 01:11:07 PM
Cascade County, Rina Ft Moore - Clerk & Recorder

Unofficial Copy

7. GRANTEE agrees that it will provide for the improvement, maintenance and repair of its improvements to be located in the Easement Area at its own cost and expense, and will not allow any lien to be filed against GRANTOR's Property as a result of GRANTEE's improvement, maintenance or repair of its facilities.

8. Disclosure. GRANTEE acknowledges that it has acquired this Easement in full reliance upon representations of GRANTOR and is relying upon disclosures of GRANTOR with regard to the condition of the property which is the subject of this easement including without limitation, the environmental condition of the Easement Area, the suitability, habitability, merchantability or fitness of Easement Area for construction, development, and for the GRANTEE's intended use.

9. Indemnification. GRANTOR, its successors and assigns, shall release, indemnify and hold harmless GRANTEE, its directors, officers, employees, contractors, and agents from and against all actions, suits, claims, demands, losses, damages, judgments, fines, penalties, costs, expenses, and fees (including reasonable attorney fees and court costs incurred enforcing this indemnity obligation or defending a third-party claim through any final appeal) or liability of any character whatsoever, brought or asserted for injuries to or death of any person or persons, damages to property, or a violation of any federal state or local statute, rule, regulation or ordinance (including but not limited to, environmental, safety or health statute, rule, regulation, or ordinance), arising from the acts or omissions of GRANTOR, its employees, contractors or agents, from use of the easement granted herein or arising from GRANTOR's failure to comply with the terms of this Easement Agreement. The indemnification obligation of GRANTOR shall survive the termination of this Easement Agreement.

10. Venue. Venue for any disputes will be the Eighth Judicial District Court, Cascade County Montana. The parties will attempt in good faith to negotiate and resolve any disputes prior to either party initiating litigation.

11. Fees and Costs. The Parties shall bear their own costs and fees in the event either or both Parties institutes an action or proceeding to enforce any rights arising under this Easement and Right of Way Agreement.

12. Severability. In the event any term or provision of this Easement and Right of Way Agreement is declared to be invalid or illegal for any reason, this Agreement will remain in full force and effect and the same will be interpreted as though such invalid and illegal provision were not a part thereof. The remaining provisions will be construed to preserve the intent and purpose of this Agreement and the parties will negotiate in good faith to modify the provisions held to be invalid or illegal to preserve each Party's anticipated benefits thereunder.

13. Entire Agreement. This Easement Agreement supersedes all prior discussions and agreements between the parties with respect to the subject matter hereof and contains the sole and entire agreement between the parties.

Unofficial Copy

CONTRACT
16-181

GRANTOR:

Russell Barrett, MGR

STATE OF MONTANA)
:ss.
County of Cascade)

This instrument was signed or acknowledged before me on this 30th day of September, 2016 by russell barrett.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed my Official Seal the day and year in this certificate first above written.

Trudy Whitmore
(Signature of notary public)

Trudy Whitmore
(print name)
Notary Public for State of Montana
Residing at Fort Shaw
My Commission expires: 1/13/2018

TRUDY WHITMORE NOTARIAL SEAL STATE OF MONTANA

TRUDY WHITMORE
NOTARY PUBLIC for the
State of Montana
Residing at Fort Shaw, Montana
My Commission Expires
January 13, 2018

(NOTARIAL SEAL)

GRANTEE:

BOARD OF COUNTY COMMISSIONERS OF CASCADE COUNTY

Joe Briggs, Chairman

James Larson, Commissioner

Jane Weber, Commissioner

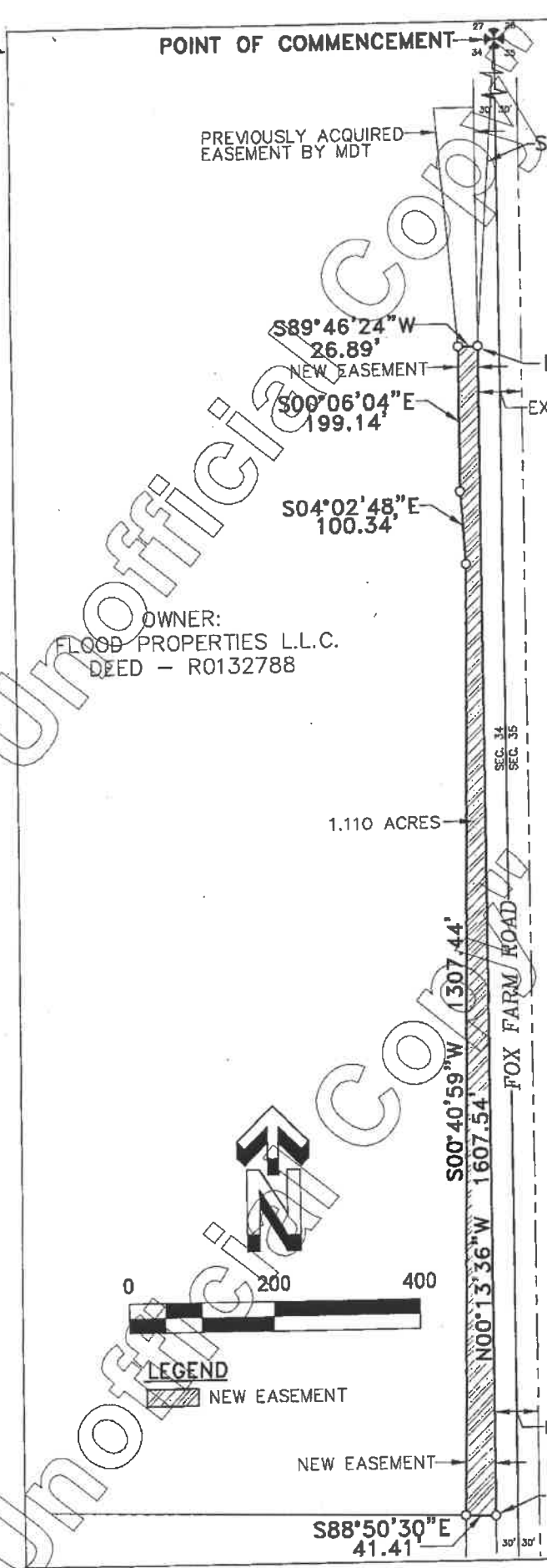
ATTEST

On this 11th day of October, 2016, I hereby attest the above written signatures of the Cascade County Commissioners.

Rina Fontana Moore, by Alex Johnson
Cascade County Clerk and Recorder
Deputy

Unofficial Copy

EXHIBIT "A"



LEGAL DESCRIPTION:

AN EASEMENT SITUATED IN THE E1/2 E1/2 OF SECTION 34, TOWNSHIP 20 NORTH, RANGE 3 EAST, P.M.M., CASCADE COUNTY, MONTANA, MORE PARTICULARLY DESCRIBED AS FOLLOWS;

COMMENCING AT THE NORTHEAST CORNER OF SECTION 34, TOWNSHIP 20 NORTH, RANGE 3 EAST, P.M.M., WHICH IS A FOUND ALUMINUM CAP 2 INCH IN DIAMETER STAMPED "4593ES"; THENCE S00°49'21"W A DISTANCE OF 1639.77 FEET TO A POINT ON THE WEST LINE OF AN EXISTING EASEMENT FOR FOX FARM ROAD, SAID POINT IS ALSO THE **POINT OF BEGINNING** OF THE EASEMENT HEREIN DESCRIBED;
THENCE DEPARTING FROM THE EXISTING WEST EASEMENT LINE OF FOX FARM ROAD, S89°46'24"W A DISTANCE OF 26.89 FEET TO AN ANGLE POINT; THENCE S00°06'04"E A DISTANCE OF 199.14 FEET TO AN ANGLE POINT; THENCE S04°02'48"E A DISTANCE OF 100.34 FEET TO AN ANGLE POINT; THENCE S00°40'59"W A DISTANCE OF 1307.44 FEET TO THE SOUTH BOUNDARY OF THE PARCEL DESCRIBED IN DEED R0132788; THENCE ALONG SAID SOUTH BOUNDARY S88°50'30"E A DISTANCE OF 41.41 FEET TO A POINT ON THE EXISTING WEST EASEMENT LINE OF FOX FARM ROAD; THENCE ALONG SAID WEST EASEMENT LINE N00°13'36"W A DISTANCE OF 1607.54 FEET TO THE **POINT OF BEGINNING, CONTAINING 1.110 ACRES MORE OR LESS.**

DISTANCES SHOWN HEREON ARE GRID DISTANCES PER MONTANA STATE PLANE CORDINATE SYSTEM AND IN INTERNATIONAL FEET. GROUND DISTANCES ARE OBTAINED BY DIVIDING GRID DISTANCES WITH THE AVERAGE COMBINED SCALE FACTOR WHICH IS 0.999256046.

bsc&e
BIG SKY CIVIL & ENVIRONMENTAL, INC
ENGINEERS - PLANNERS - DESIGNERS - LAND SURVEYORS - ENVIRONMENTAL SPECIALISTS
1324 13th Ave. SW
P.O. BOX 3625
GREAT FALLS, MT 59403
(406)727-1185 OFFICE
(406)727-3656 FAX
www.bigskyce.com

Unofficial Copy

bsc e

September 23, 2016

Flood Properties, LLC
c/o Mr. Russ Barrett
P.O. Box 336
Fairfield, MT

RE: Fox Farm Road – Appraisal/Easement

Dear Mr. Barrett,

Attached please find the following:

Appraisal, dated 9/10/16 (valuation date: 7/22/16)
Revised legal description: Exhibit "A"
Perpetual Easement for Right Of Way

The appraisal was completed by J. Michael Joki, an independent, Montana-State Certified Real Estate Appraiser, #152. His credentials/qualifications are included within the document. The appraisal was based on an acreage of 1.30 acres, and the calculated compensation is summarized on page 54 of the document; however, BSCE was recently advised that a portion of the easement, or right-of-way area, was already obtained by MDT; therefore, the total acreage contained within the County easement area will be 1.11 acres (see revised Exhibit 'A'). Due to the modification, the adjusted, calculated compensation is revised as follows:

1.11 acres x $4,000/ac x 95%	$4,218
Total Compensation (rounded up)	**$4,250**

We are pleased to announce that this project is moving forward with the cooperation of property owners, the Montana Department of Transportation and various utility companies. In accordance with the Option Agreement, we respectfully request that you execute the enclosed Perpetual Easement for Right of Way, have it notarized, and return the original to BSCE in the stamped, self-addressed envelope. Upon full execution by Cascade County, the easement will be recorded and a check will be mailed to Flood Properties, LLC for the amount shown above.

On behalf of Cascade County, we greatly appreciate your cooperation and assistance. Please contact me should you have any questions or concerns.

Sincerely,
Big Sky Civil & Environmental, Inc.

Joseph N. Murphy, P.E.

encl. Appraisal
Revised Exhibit A
Perpetual Easement for Right of Way

Great Falls:
324 13th Ave. SW | PO Box 3625 | Great Falls, MT 59403 | PH (406) 727-2185

Missoula:
2614 Murphy St., Ste. B | Missoula, MT 59808 | PH (406) 728-5356

www.bigskyce.com

Unofficial Copy

Montana Department of Transportation
Right–of–Way Bureau
PO Box 201001
Helena, MT 59620–1001

ROW\Forms\Pln\527 Revised 11/06/09

State of Montana
Department of Transportation

Right-of-Way Bureau
2701 Prospect Avenue
PO Box 201001
Helena, MT 59620-1001

R/W ID.: STPU 5220(6) Parcel No.: 44 County: Cascade
Designation: Fox Farm Rd – Great Falls
Project No.: 8193-006-000

Highway Easement

This Easement, made this 1ST day of SEPTEMBER, 20 16, in consideration of the sum of One Dollar ($1.00) and other good and valuable consideration now paid, the receipt of which is acknowledged, **witnesses that**,

Flood Properties, LLC
PO Box 336
Fairfield, MT 59436

do(es) hereby **grant, bargain, sell** and **convey** unto **Cascade County, Montana,** an easement and right-of-way for highway purposes, including the construction, reconstruction and maintenance of a highway over, across, and the right of entry upon and occupation of lands, and the right to take therefrom such earth, sand, gravel, stones, and trees as may be necessary in the construction, reconstruction, and maintenance of a highway covering and embracing the following described land:

Parcel No. 44, on Montana Department of Transportation Project STPU 5220(6), as shown on the Right-of-Way plan for said project recorded in the office of the County Clerk and Recorder of Cascade County, Montana. Said Easement covers and embraces the following described land:

A tract of land in the SE¼NE¼ of Section 34, Township 20 North, Range 3 East, P.M.,M., Cascade County, Montana, as shown by the shaded area on the plat, consisting of 1 sheet, attached hereto and made a part hereof, containing an area of 0.35 acre, more or less.

R0328511 ES
Total Pages: 3 R 21.00 By:tmarch 09/19/2016 03:11:45 PM
Cascade County, Rina Ft Moore - Clerk & Recorder

Unofficial Copy

Highway Easement
R/W ID.: STPU 5220(6)
Designation: Fox Farm Rd – Great Falls

Parcel No.: 44

TO HAVE AND TO HOLD all of the above-described property unto **Cascade County, Montana**, and to its successors and assigns as long as the same is used for highway purposes.

This Easement was executed on the date of its last acknowledgment.

Russ E. Barnett as MANAGER of FLOOD PROP. LLC.
(Signature) (Type of Authority) (Name of Entity)

_____ as _____ of _____.
(Signature) (Type of Authority) (Name of Entity)

_____ as _____ of _____.
(Signature) (Type of Authority) (Name of Entity)

_____ as _____ of _____.
(Signature) (Type of Authority) (Name of Entity)

State of Montana
County of Cascade

This instrument was acknowledged before me on September 1st 2016
(date)

by Russ E. Barnett
(name of person(s))

as MANAGER
(type of authority, e.g.; president, trustee, member, partner, etc.)

of Flood properties llc
(name of entity on behalf of whom instrument was executed)

Trudy Whitmore
Notary Signature Line

Trudy Whitmore
Notary Printed Name

TRUDY WHITMORE
NOTARY PUBLIC for the
State of Montana
Residing at Fort Shaw, Montana
My Commission Expires
January 13, 2018
(Seal)

Notary Public for State of Montana
Residing at: Fort Shaw
My Commission Expires: 1 / 13 / 2018

State of _____
County of _____

This instrument was acknowledged before me on _____
(date)

by _____
(name of person(s))

as _____
(type of authority, e.g.; president, trustee, member, partner, etc.)

of _____
(name of entity on behalf of whom instrument was executed)

_____
Notary Signature Line

_____
Notary Printed Name

(Seal)

Notary Public for State of _____
Residing at: _____
My Commission Expires: _____ / _____ / 20__ __

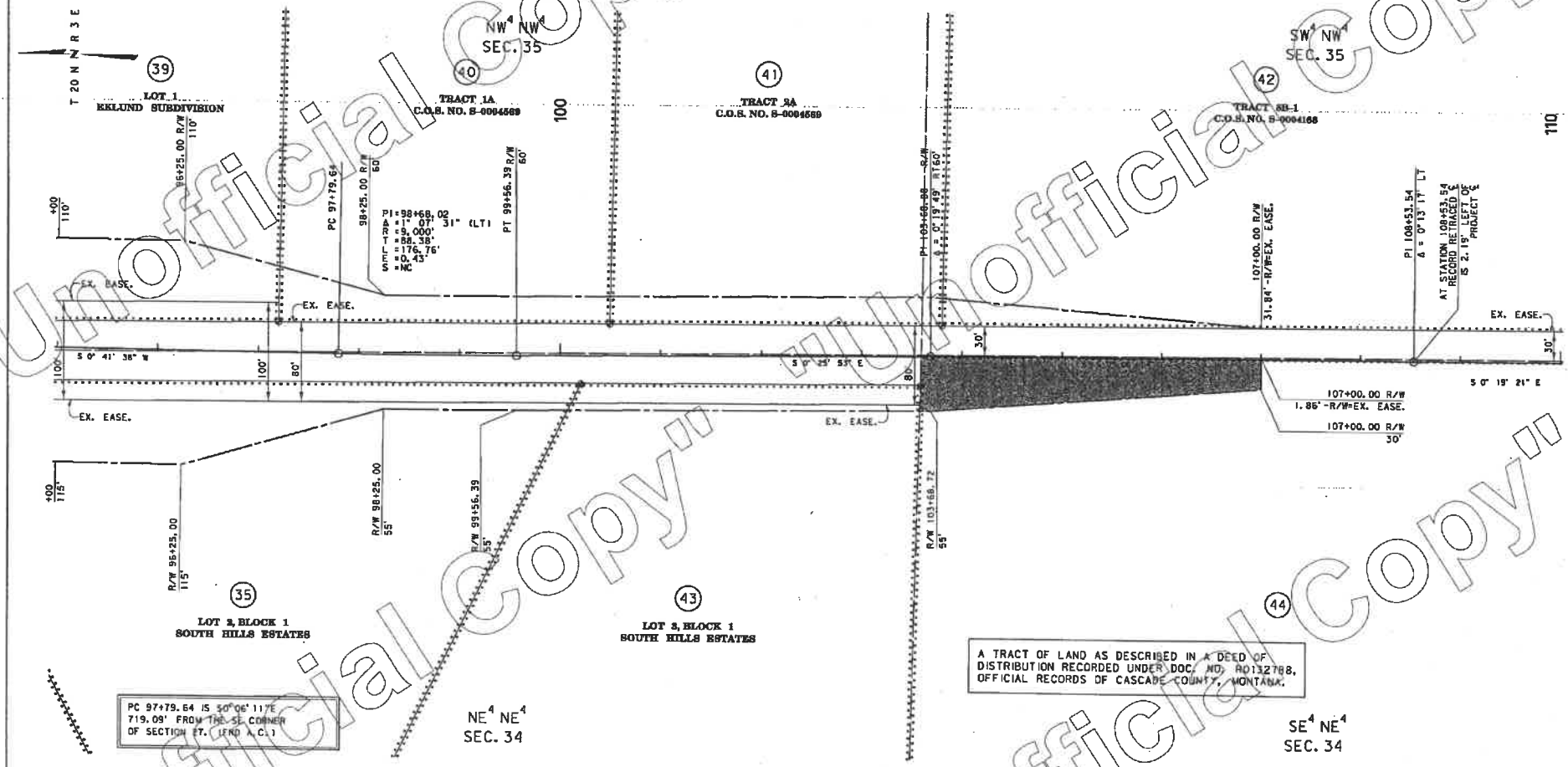
Recording Information

R0328511 09/19/2016 03:11:45 PM Total Pages: 3

Unofficial Copy

STATE	RIGHT OF WAY	SHEET NO.	TOTAL SHEETS
MONTANA			
R/W ID.	STPU 5220(6)		
PROJECT NO.	8193-006-000		

FOX FARM RD - GREAT FALLS



PARCEL 44 ; SHEET 1 OF 1

THIS PLAT IS PREPARED FROM THE MONTANA DEPARTMENT OF TRANSPORTATION RIGHT OF WAY PLANS AND IS RECORDED IN THE OFFICE OF THE COUNTY CLERK AND RECORDER. OFFICIAL PLANS AND EXHIBITS CAN BE FOUND AT THE DEPARTMENT OF TRANSPORTATION, HELENA, MONTANA.

3	MDT MONTANA DEPARTMENT OF TRANSPORTATION	...W193000ROEXH003_P44.DGN
2		9/23/2016
1		7:16:54 AM v10mb

NOTES:
1. THE PROPOSED R/W LINE WHERE A SPIRAL CURVE TRANSITION IS USED IS A CHORD RATHER THAN A CONCENTRIC CURVE.
2. ALL STATIONS AND OFFSETS FOR R/W BREAKS ARE IN REFERENCE TO THE R/W BASELINE.

GRID STATE PLANE COORDINATES

THIS IS A STATE PLANE COORDINATE PROJECT. ALL DIMENSIONS, DISTANCES AND AREAS ON THIS PROJECT ARE GRID, EXCEPT FOR THE EXISTING R/W WIDTH DIMENSION, WHICH IS RECORD.
THE COMBINATION SCALE FACTOR IS 0.99926079

LEGEND

OWNERSHIP BOUNDARY		TRACT CONVEYED	
RIGHT OF WAY LINE			
R.R. R/W LINE			
CENTERLINE			
FULL ACCESS CONTROL		DATE PREPARED	7-19-16
LIMITED ACCESS CONTROL		DATE REVISED	

MONTANA DEPARTMENT OF TRANSPORTATION
RIGHT OF WAY EXHIBIT
CASCADE COUNTY
SCALE 1"=50'
0 50' 100' 150'

"Unofficial Copy"

RETURN TO COMMISSION

OPTION AGREEMENT TO
SECURE PUBLIC ROADWAY EASEMENT
Fox Farm Road

THIS OPTION AGREEMENT ("Agreement") made and entered into this 28th day of April, 20 16, by and between Russ Barrett, whose principal address is PO Box 336 Fairfield, MT 59436, hereinafter referred to as "PROPERTY OWNER" and BOARD OF COMMISSIONERS OF CASCADE COUNTY, whose principal address is 325 2nd Ave N, Great Falls, MT 59401, hereinafter referred to as "COUNTY":

WITNESSETH:

WHEREAS, PROPERTY OWNER is the fee simple owner of certain real property being, lying and situated in the County of Cascade, State of Montana. The Public Roadway Easement which is the subject of this Agreement is shown on the attached Exhibit 'A'.

If, during design, it is determined that the proposed easement as described herein and as shown on Exhibit 'A' is larger in size than ultimately needed, COUNTY reserves the right and PROPERTY OWNER mutually agrees to reduce the easement as required by COUNTY.

WHEREAS, COUNTY desires an option to secure a perpetual Public Roadway Easement upon the terms and provisions as hereinafter set forth;

NOW, THEREFORE, for good and valuable consideration the receipt and sufficiency of which is hereby acknowledged by the parties hereto and for the mutual covenants contained herein, PROPERTY OWNER and COUNTY hereby agree as follows:

1. DEFINITIONS. For the purposes of this Agreement, the following terms shall have the following meanings:

(a) "Execution Date" shall mean the day upon which the last party to this Agreement shall duly execute this Agreement;

(b) "Option Term" shall mean that period of time commencing on the Execution Date and ending on or before May 1, 2021;

(c) "Option Exercise Date" shall mean that date, within the Option Term, upon which the COUNTY shall send its written notice to PROPERTY OWNER exercising its Option to obtain Public Roadway Easement;

(e) "Easement Purchase Date" shall mean the last day of the closing term or such other date during the closing term selected by COUNTY.

2. GRANT OF OPTION. For and in consideration of the sum of One Dollar ($1.00) and other good and valuable consideration, in hand paid, the receipt whereof is hereby acknowledged, PROPERTY OWNER does hereby grant to COUNTY the exclusive right and Option ("Option") to purchase the Easement upon the terms and conditions as set forth herein.

3. EXERCISE OF OPTION. COUNTY may exercise its exclusive right to secure Easement pursuant to the Option, at any time during the Option Term, by giving written notice thereof to PROPERTY

R0321890 CMS
Total Pages: 6 R 0.00 By:tmarch 05/03/2016 09:59:13 AM
Cascade County, Rina Ft Moore - Clerk & Recorder

OWNER. As provided for above, the date of sending said notice shall be the Option Exercise Date. In the event the COUNTY does not exercise its exclusive right to secure easement as granted by the Option during the Option Term, this Agreement shall become absolutely null and void and neither party hereto shall have any other liability, obligation or duty herein under or pursuant to this Agreement.

4. CONTRACT FOR EASEMENT PURCHASE. In the event that the COUNTY exercises its exclusive Option as provided for in the preceding paragraph, PROPERTY OWNER agrees to convey and COUNTY agrees to purchase Easement and both parties agree to execute a contract for such Easement purchase in accordance with the following terms and conditions:

(a) Easement Purchase Price. The easement purchase price shall be the appraised value, as mandated by MCA Section 7-8-2202 and all other applicable laws.

(b) Upon exercising the purchase option, COUNTY and PROPERTY OWNER shall discuss in good faith, alternative payment options which must be mutually agreed upon by the parties. In the event that COUNTY and PROPERTY OWNER are unable to reach a mutual agreement regarding payment terms by the 1ST day of MAY, 2017 COUNTY agrees to pay appraised value in lump sum at closing.

(c) In the event that COUNTY exercises its option to purchase the subject easement, PROPERTY OWNER shall deliver to COUNTY, within 60 days of the Option Exercise Date, a Certificate of Title by a reputable title company covering the property described herein which shall reflect that fee simple title to the subject property is vested in PROPERTY OWNER and that the subject property is subject only to taxes for the current year, easements, and rights of way of record, and prior mineral reservations. Should the Certificate reflect any other exceptions to the title unacceptable to COUNTY, COUNTY shall have the option to either accept the property in its existing condition with no further obligation on the part of PROPERTY OWNER to correct an unacceptable title conditions, or to cancel this Agreement.

(d) In the event that COUNTY exercises its option hereunder and accepts the Certificate of Title presented by PROPERTY OWNER, COUNTY shall prepare all documents necessary to accomplish conveyance of the Easement from PROPERTY OWNER to COUNTY in a form similar in content to the attached *Exhibit B*, and pay all necessary recording fees.

(e) Closing Date. The closing date shall be on 1ST OF DEC, 2016 or at any other date during the Option Term as may be selected by COUNTY; COUNTY shall be entitled to possession of the Easement at closing.

5. VENUE, GOVERNING LAW, FEES AND COSTS.

(a) Execution by Both Parties. This Agreement shall not become effective and binding until fully executed by both COUNTY and PROPERTY OWNER.

(b) Notice. All notices, demands and/or consents provided for in this Agreement shall be in writing and shall be delivered to the parties hereto by hand or by United States Mail with postage pre-paid. Such notices shall be deemed to have been served on the date mailed, postage pre-paid. All such notices and communications shall be addressed to the PROPERTY OWNER at PO Box 336, Fairfield, MT 59401 and to COUNTY at 325 2ND AVE N, GREAT FALLS, MT 59401 or at such other address as either may specify to the other in writing.

R0321890 05/03/2016 09:59:13 AM Total Pages: 8

(c) Governing Law. This Agreement shall be governed by and construed in accordance with the laws of the State of Montana. Any contract dispute will be litigated in the Eighth Judicial District Court for Cascade County. In the event of a dispute regarding the terms of this agreement, the parties hereto will be responsible for their own costs and attorney fees.

(d) Successors and Assigns. This Agreement shall apply to, inure to the benefit of and be binding upon and enforceable against the parties hereto and their respective heirs, successors, and or assigns, to the extent as if specified at length throughout this Agreement.

(e) Time. Time is of the essence of this Agreement.

(f) Headings. The headings inserted at the beginning of each paragraph and/or subparagraph are for convenience of reference only and shall not limit or otherwise affect or be used in the construction of any terms or provisions hereof.

(g) During the term of this option, COUNTY, its agents, employees, and representatives shall be entitled to enter upon the subject property, upon reasonable notice to PROPERTY OWNER, for the purpose of conducting engineering studies and surveys as needed.

(h) Upon execution by the parties hereto, this Option Agreement shall be recorded by COUNTY and placed into the public land data records for Cascade County at the Cascade County Clerk and Recorder's Office.

(h) Entire Agreement. This Agreement contains all of the terms, promises, covenants, conditions and representations made or entered into by or between PROPERTY OWNER and COUNTY and supersedes all prior discussions and agreements whether written or oral between PROPERTY OWNER and COUNTY with respect to the Option and all other matters contained herein and constitutes the sole and entire agreement between PROPERTY OWNER and COUNTY with respect thereto. This Agreement may not be modified or amended unless such amendment is set forth in writing and executed by both PROPERTY OWNER and COUNTY with the formalities hereof.

R0321890 05/03/2016 09:59:13 AM Total Pages: 8

IN WITNESS, the parties involved have sealed this Agreement by their signatures:

Dated this 22 day of April, 2016

Russ Barrett
OWNER

OWNER

STATE OF MONTANA)
:ss.
County of Cascade)

On this 22nd day april, 2016, before me, a Notary Public of and for the State of Montana, residing at Great Falls, Montana, personally appeared russ barrett and _____, and acknowledged to me that he executed the same and stated under oath that the matters contained therein are true, accurate and complete to the best of their knowledge, information and belief.

SUBSCRIBED AND SWORN TO before me this 22nd day of april, 2016.

Trudy Whitmore
Notary Public for the State of Montana

NOTARIAL SEAL

TRUDY WHITMORE
NOTARY PUBLIC for the
State of Montana
Residing at Fort Shaw, Montana
My Commission Expires
January 13, 2018

R0321890 05/03/2016 09:59:13 AM Total Pages: 8

Dated this 2ND day of MAY, 2016

BOARD OF COUNTY COMMISSIONERS OF CASCADE COUNTY

Joe Briggs, Chairman

James Larson, Commissioner

Jane Weber, Commissioner

ATTEST

On this 2nd day of May, 2016, I hereby attest the above-written signatures of the Cascade County Commissioners.

Rina Fontana Moore,
Cascade County Clerk and Recorder

APPROVED FOR LEGAL CONTENT

By:
COUNTY Legal Services

Date: 2 May 16

R0321890 05/03/2016 09:59:13 AM Total Pages: 8

CASCADE COUNTY

Your Local Government in Great Falls, Montana

Shopping Cart: 0 items [$0.00]

New Search | History | Payoff | PayTaxes | Help

Parcel Number: 0002506800

Status: Current

Receipt: 31145

2016 Owner(s):
FLOOD PROPERTIES LLC
BARRETT RUSS

Mailing Address:
PO BOX 336
Fairfield, MT 59436

Levy District:
1-A, Levy District 1-A

2015 Value:

Market:	$147,514
Taxable:	$2,728

2015 Taxes: View Pie Charts

First Half:	$844.01	**Due:** 11/30/2015
Second Half:	$746.99	**Due:** 5/31/2016
Total:	$1,591.00	

2015 Payments:

First Half:	$844.01
Second Half:	$746.99
Total:	$1,591.00

(May include penalty & interest)

Detail

Detail

2016 Legal Records:

Geo Code: 02-3015-34-1-01-01-0000 **Instru#:** R0132788 **Date:** 2006-08-28

Property address: 6750 FOX FARM RD, GREAT FALLS MT 59404
TRS: T20, R3E, Sec. 34
Legal: E/FLOOD RD S/2N/2,N/2N/2SE, SW,NENW E/RD
Mark: 1 & 7

Note: The accuracy of this data is not guaranteed.

Web data was last updated 04/28/2016 09:45 AM.

Send Payments To:

Cascade County
Treasurer's Office
121 4th St North,
Suite 1A,
Great Falls, MT 59401

tyler technologies

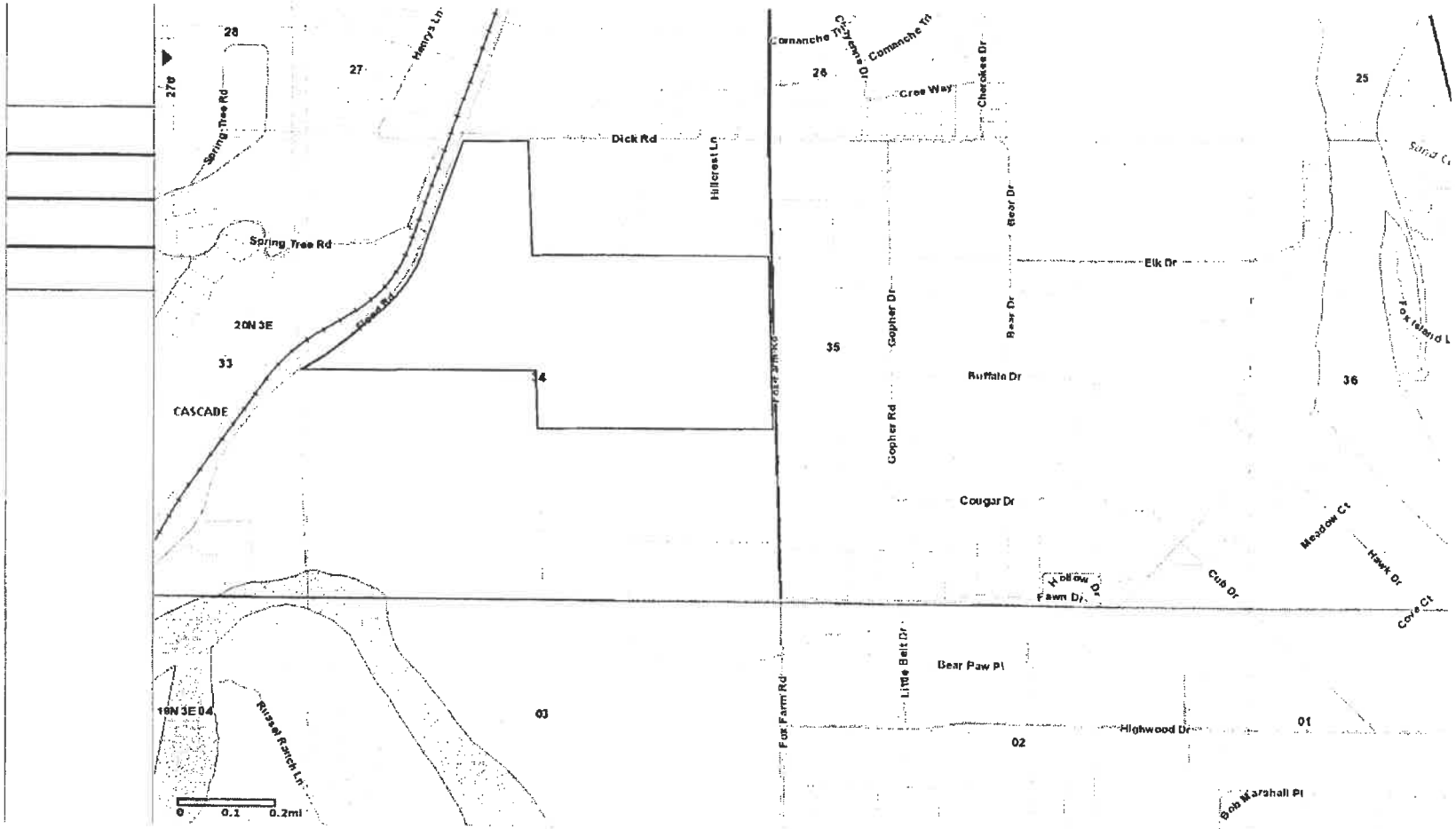
© 2016 Tyler Technologies, Inc. iTax Version 2016.1.1.1

Cascade County, Montana, and particularly described as follows:

Township 20 North, Range 3 East: R0132788

Section 34: N½N½SE¼; S½NE¼; SW¼; Part of the S½NW¼; All that part of the NE¼NW¼ lying north and east of the Great Northern Railway right-of-way, 341 agricultural acres, more or less.

Prior Deed Reference: Reel 293, Document 979.



R0321890 05/03/2016 09:59:13 AM Total Pages: 8

RETURN TO CONVERSION

OPTION AGREEMENT TO
SECURE PUBLIC ROADWAY EASEMENT
Fox Farm Road

THIS OPTION AGREEMENT ("Agreement") made and entered into this 28TH day of APRIL, 20 16, by and between RUSS BARRETT, whose principal address is PO BOX 336 FAIRFIELD, MT 59436, hereinafter referred to as "PROPERTY OWNER" and BOARD OF COMMISSIONERS OF CASCADE COUNTY, whose principal address is 325 2ND AVE N, GREAT FALLS, MT 59401, hereinafter referred to as "COUNTY":

WITNESSETH:

WHEREAS, PROPERTY OWNER is the fee simple owner of certain real property being, lying and situated in the County of Cascade, State of Montana. The Public Roadway Easement which is the subject of this Agreement is shown on the attached Exhibit 'A'.

If, during design, it is determined that the proposed easement as described herein and as shown on Exhibit 'A' is larger in size than ultimately needed, COUNTY reserves the right and PROPERTY OWNER mutually agrees to reduce the easement as required by COUNTY.

WHEREAS, COUNTY desires an option to secure a perpetual Public Roadway Easement upon the terms and provisions as hereinafter set forth;

NOW, THEREFORE, for good and valuable consideration the receipt and sufficiency of which is hereby acknowledged by the parties hereto and for the mutual covenants contained herein, PROPERTY OWNER and COUNTY hereby agree as follows:

1. DEFINITIONS. For the purposes of this Agreement, the following terms shall have the following meanings:

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(b) "Option Term" shall mean that period of time commencing on the Execution Date and ending on or before MAY 1, 2021;

(c) "Option Exercise Date" shall mean that date, within the Option Term, upon which the COUNTY shall send its written notice to PROPERTY OWNER exercising its Option to obtain Public Roadway Easement;

(e) "Easement Purchase Date" shall mean the last day of the closing term or such other date during the closing term selected by COUNTY.

2. GRANT OF OPTION. For and in consideration of the sum of One Dollar ($1.00) and other good and valuable consideration, in hand paid, the receipt whereof is hereby acknowledged, PROPERTY OWNER does hereby grant to COUNTY the exclusive right and Option ("Option") to purchase the Easement upon the terms and conditions as set forth herein.

3. EXERCISE OF OPTION. COUNTY may exercise its exclusive right to secure Easement pursuant to the Option, at any time during the Option Term, by giving written notice thereof to PROPERTY

R0321890 CMS
Total Pages: 8 R 0.00 By:tmarch 05/03/2016 09:59:13 AM
Cascade County, Rina Ft Moore - Clerk & Recorder

Unofficial Copy

OWNER. As provided for above, the date of sending said notice shall be the Option Exercise Date. In the event the COUNTY does not exercise its exclusive right to secure easement as granted by the Option during the Option Term, this Agreement shall become absolutely null and void and neither party hereto shall have any other liability, obligation or duty herein under or pursuant to this Agreement.

4. CONTRACT FOR EASEMENT PURCHASE. In the event that the COUNTY exercises its exclusive Option as provided for in the preceding paragraph, PROPERTY OWNER agrees to convey and COUNTY agrees to purchase Easement and both parties agree to execute a contract for such Easement purchase in accordance with the following terms and conditions:

(a) Easement Purchase Price. The easement purchase price shall be the appraised value, as mandated by MCA Section 7-8-2202 and all other applicable laws.

(b) Upon exercising the purchase option, COUNTY and PROPERTY OWNER shall discuss in good faith, alternative payment options which must be mutually agreed upon by the parties. In the event that COUNTY and PROPERTY OWNER are unable to reach a mutual agreement regarding payment terms by the 1ST day of MAY, 2017 COUNTY agrees to pay appraised value in lump sum at closing.

(c) In the event that COUNTY exercises its option to purchase the subject easement, PROPERTY OWNER shall deliver to COUNTY, within 60 days of the Option Exercise Date, a Certificate of Title by a reputable title company covering the property described herein which shall reflect that fee simple title to the subject property is vested in PROPERTY OWNER and that the subject property is subject only to taxes for the current year, easements, and rights of way of record, and prior mineral reservations. Should the Certificate reflect any other exceptions to the title unacceptable to COUNTY, COUNTY shall have the option to either accept the property in its existing condition with no further obligation on the part of PROPERTY OWNER to correct an unacceptable title conditions, or to cancel this Agreement.

(d) In the event that COUNTY exercises its option hereunder and accepts the Certificate of Title presented by PROPERTY OWNER, COUNTY shall prepare all documents necessary to accomplish conveyance of the Easement from PROPERTY OWNER to COUNTY in a form similar in content to the attached *Exhibit B*, and pay all necessary recording fees.

(e) Closing Date. The closing date shall be on 1ST OF DEC, 20 16 or at any other date during the Option Term as may be selected by COUNTY; COUNTY shall be entitled to possession of the Easement at closing.

5. VENUE, GOVERNING LAW, FEES AND COSTS.

(a) Execution by Both Parties. This Agreement shall not become effective and binding until fully executed by both COUNTY and PROPERTY OWNER.

(b) Notice. All notices, demands and/or consents provided for in this Agreement shall be in writing and shall be delivered to the parties hereto by hand or by United States Mail with postage pre-paid. Such notices shall be deemed to have been served on the date mailed, postage pre-paid. All such notices and communications shall be addressed to the PROPERTY OWNER at PO Box 336, Fairfield, MT 59401 and to COUNTY at 325 2ND AVE N, GREAT FALLS, MT 59401 or at such other address as either may specify to the other in writing.

R0321890 05/03/2016 09:59:13 AM Total Pages: 8

"Unofficial Copy"

(c) Governing Law. This Agreement shall be governed by and construed in accordance with the laws of the State of Montana. Any contract dispute will be litigated in the Eighth Judicial District Court for Cascade County. In the event of a dispute regarding the terms of this agreement, the parties hereto will be responsible for their own costs and attorney fees.

(d) Successors and Assigns. This Agreement shall apply to, inure to the benefit of and be binding upon and enforceable against the parties hereto and their respective heirs, successors, and or assigns, to the extent as if specified at length throughout this Agreement.

(e) Time. Time is of the essence of this Agreement.

(f) Headings. The headings inserted at the beginning of each paragraph and/or subparagraph are for convenience of reference only and shall not limit or otherwise affect or be used in the construction of any terms or provisions hereof.

(g) During the term of this option, COUNTY, its agents, employees, and representatives shall be entitled to enter upon the subject property, upon reasonable notice to PROPERTY OWNER, for the purpose of conducting engineering studies and surveys as needed.

(h) Upon execution by the parties hereto, this Option Agreement shall be recorded by COUNTY and placed into the public land data records for Cascade County at the Cascade County Clerk and Recorder's Office.

(h) Entire Agreement. This Agreement contains all of the terms, promises, covenants, conditions and representations made or entered into by or between PROPERTY OWNER and COUNTY and supersedes all prior discussions and agreements whether written or oral between PROPERTY OWNER and COUNTY with respect to the Option and all other matters contained herein and constitutes the sole and entire agreement between PROPERTY OWNER and COUNTY with respect thereto. This Agreement may not be modified or amended unless such amendment is set forth in writing and executed by both PROPERTY OWNER and COUNTY with the formalities hereof.

R0321890 05/03/2016 09:59:13 AM Total Pages: 8

"Unofficial Copy"

IN WITNESS, the parties involved have sealed this Agreement by their signatures:

Dated this 22 day of April, 2016

Russ Barrett
OWNER

OWNER

STATE OF MONTANA)
:ss.
County of Cascade)

On this 22nd day april, 2016, before me, a Notary Public of and for the State of Montana, residing at Great Falls, Montana, personally appeared russ barrett and _____, and acknowledged to me that he executed the same and stated under oath that the matters contained therein are true, accurate and complete to the best of their knowledge, information and belief.

SUBSCRIBED AND SWORN TO before me this 22nd day of april, 2016.

Trudy Whitmore
Notary Public for the State of Montana

NOTARIAL SEAL

TRUDY WHITMORE
NOTARY PUBLIC for the
State of Montana
Residing at Fort Shaw, Montana
My Commission Expires
January 13, 2018

R0321890 05/03/2016 09:59:13 AM Total Pages: 8

"Unofficial Copy"

Dated this 2nd day of MAY, 2016

BOARD OF COUNTY COMMISSIONERS OF CASCADE COUNTY

Joe Briggs, Chairman

James Larson, Commissioner

Jane Weber, Commissioner

ATTEST

On this 2nd day of May, 2016, I hereby attest the above-written signatures of the Cascade County Commissioners.

Rina Fontana Moore,
Cascade County Clerk and Recorder

APPROVED FOR LEGAL CONTENT

By: COUNTY Legal Services

Date: 2 May 16

R0321890 05/03/2016 09:59:13 AM Total Pages: 8

"Unofficial Copy"

CASCADE COUNTY

Your Local Government in Great Falls, Montana

Shopping Cart: 0 items [$0.00]

New Search | History | Payoff | PayTaxes | Help

Parcel Number: 0002506800

Status: Current

Receipt: 31145

2016 Owner(s):
FLOOD PROPERTIES LLC
BARRETT RUSS

Mailing Address:
PO BOX 336
Fairfield, MT 59436

Levy District:
1-A, Levy District 1-A

2015 Value:

Market:	$147,514
Taxable:	$2,728

2015 Taxes: View Pie Charts

First Half:	$844.01	**Due:** 11/30/2015
Second Half:	$746.99	**Due:** 5/31/2016
Total:	$1,591.00	

2015 Payments:

First Half:	$844.01
Second Half:	$746.99
Total:	$1,591.00

(May include penalty & interest)

Detail

Detail

2016 Legal Records:

Geo Code: 02-3015-34-1-01-01-0000 **Instru#:** R0132788 **Date:** 2006-08-28

Property address: 6750 FOX FARM RD, GREAT FALLS MT 59404
TRS: T20, R3E, Sec. 34
Legal: E/FLOOD RD S/2N/2,N/2N/2SE, SW,NENW E/RD
Mark: 1 & 7

Note: The accuracy of this data is not guaranteed.

Web data was last updated 04/28/2016 09:45 AM.

Send Payments To:

Cascade County
Treasurer's Office
121 4th St North,
Suite 1A,
Great Falls, MT 59401

tyler technologies

© 2016 Tyler Technologies, Inc. iTax Version 2016.1.1.1

Unofficial Copy

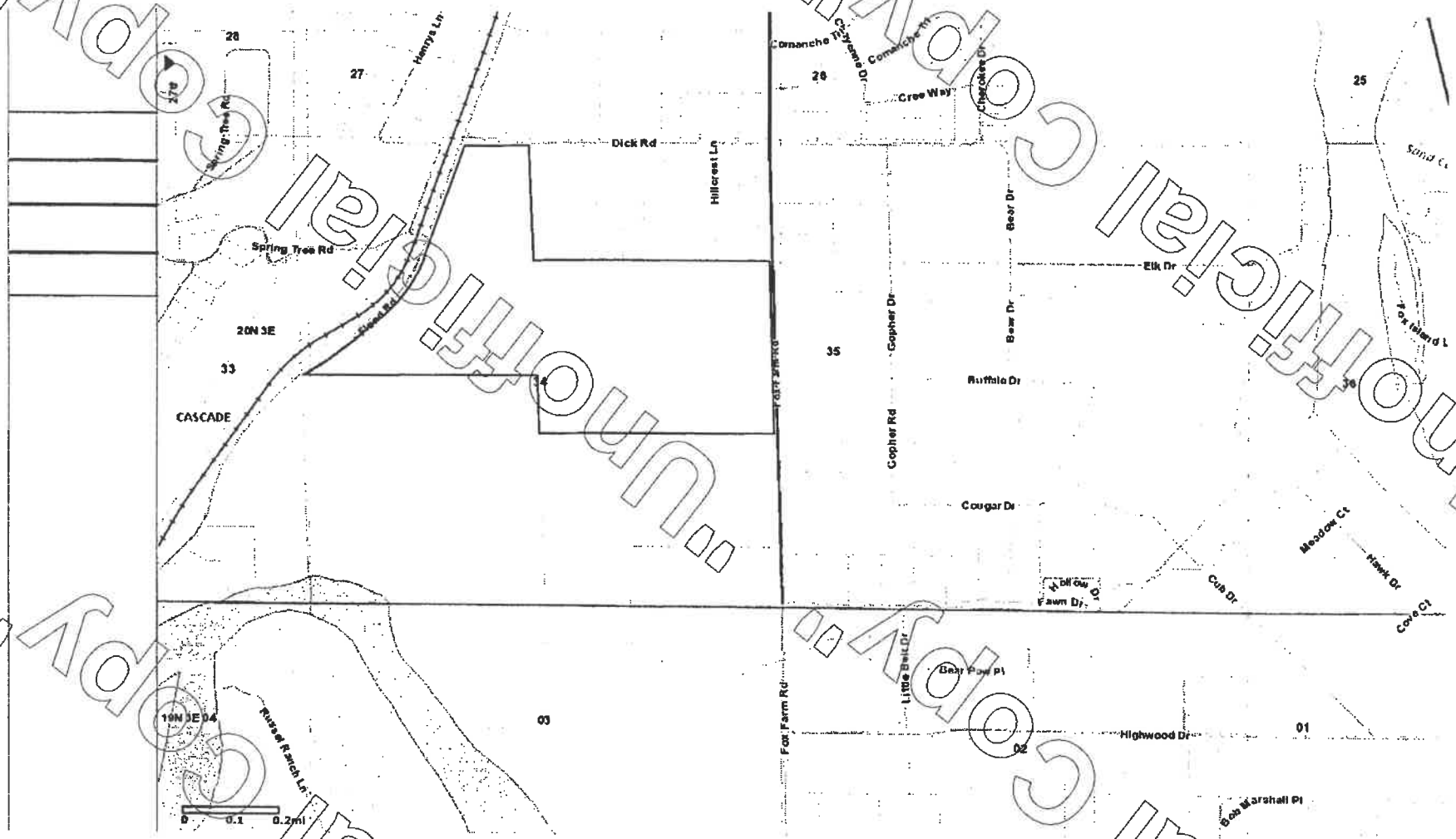
Cascade County, Montana, and particularly described as follows:

Township 20 North, Range 3 East: R0132788

Section 34: N½N½SE¼; S½NE¼; SW¼; Part of the S½NW¼; All that part of the NE¼NW¼ lying north and east of the Great Northern Railway right-of-way, 341 agricultural acres, more or less.

Prior Deed Reference: Reel 293, Document 979.

"Unofficial Copy"



R0321890 05/03/2016 09:59:13 AM Total Pages: 8

unofficial copy

BOOK 236

June 1985

M.P. 140—Rev. 1-49

RIGHT OF WAY EASEMENT

4-16-54

BOOK 236 PAGE 223

Nicholas H. Binsfield and John H. Binsfield, his wife, of Great Falls, Montana, in consideration of one (1) $ Dollars, and other goods and valuable consideration, in hand paid, the receipt of which is hereby acknowledged, grant, convey, and warrant to THE MONTANA POWER COMPANY, a corporation, whose postoffice address is Butte, Montana, the right to construct, maintain, operate and remove an electric transmission system and telephone system, as now surveyed and located over, along and across that certain real property, located in Cascade County, Montana, and particularly described as follows, to-wit:

S½ of NE¼ of Section 34, Township 20 North, Range 3 East, M.P.M.

WITNESS our hand this 16th day of September, 1954

Nicholas H. Binsfield

John H. Binsfield

STATE OF MONTANA,
County of Cascade } ss.

On this 16th day of September, in the year 1954, before me, H. J. Magnuson, Notary Public in and for the State aforesaid, personally appeared Nicholas H. Binsfield and John H. Binsfield known to me to be the persons whose names are subscribed to the within instrument, and acknowledged to me that they executed the same.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed my Notarial Seal on the day and year in this certificate first above written.

H. J. Magnuson
Notary Public for the State of Montana,
Residing at Great Falls, Montana.
My Commission Expires Feb. 21, 1956.

2572

Right of Way Easement

TO

THE MONTANA POWER CO.

Transmission Line

STATE OF MONTANA,
County of Cascade } ss.

Filed for Record at Request of
THE MONTANA POWER CO.

On the 16 day of Sept, 1954
at 28 minutes past 10 A.M., and
recorded in Volume of Deeds,
Pages , inclusive
Records of County.

Deputy.

Indexed
Recorded
Compared
Paged

INDIVIDUAL
MPCo. R.E. 138

REEL 174 DOCUMENT 611

RIGHT-OF-WAY EASEMENT

Nicholas H. Binsfield and _____, his wife

_____ and _____, his wife

of _____, Montana, in consideration of $1.00, and other good and valuable consideration, in hand paid, the receipt of which is hereby acknowledged, do___ hereby grant and convey to THE MONTANA POWER COMPANY, a corporation, whose post office address is 40 East Broadway, Butte, Montana 59701, and to its sucessors, assigns, and permittees, the right to construct, maintain, operate and remove:

an electric power line and communication system - anchor - guys

~~a gas line~~

over, under, along and across that certain real property, located in Cascade County, Montana and particularly described as follows, to-wit:

T20 R3E

Sec 34: NE¼ NE¼ NW¼

Together with the right of access to said right of way over and along existing roads and trails and the right to clear and remove all timber and brush from the right of way _____ feet on each side of said line and to cut and remove such trees outside of such right of way which may endanger said line or lines.

THE GRANTOR(S) do hereby covenant with the Grantee that they are lawfully seized and possessed of the real estate above-described, that they have a good and lawful right to convey it, or any part thereof, and that the Grantor(s) will forever warrant and defend the title thereto against the lawful claims of all persons whatsoever.

WITNESS our hand s this 22nd day of May, 1985

x Nicholas H Binsfield

STATE OF Mont)
COUNTY OF Cascade)

On this 22nd day of May, 1985 before me, a Notary Public for the State of Mont, personally appeared Nicholas H Binsfield known to me to be the person whose name subscribed to the above instrument and acknowledged to me that executed the same.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed my Notarial Seal the day and year first above written.

RECORDED JUN 3 1985
TIME 8:48 A.M.
DOCUMENT NO. _____
JOE TROPILA
Clerk and Recorder
Cascade County, Montana
by _____

Notary Public for the State of Mont
Residing at Butte
My Commission Expires 10-5-85

Filed for record this _____ day of _____, 19__, at _____ o'clock _____ and Recorded in Book _____ of _____ on Page _____ of the Records of County of _____, State of Montana.

_____
CLERK AND RECORDER

By _____

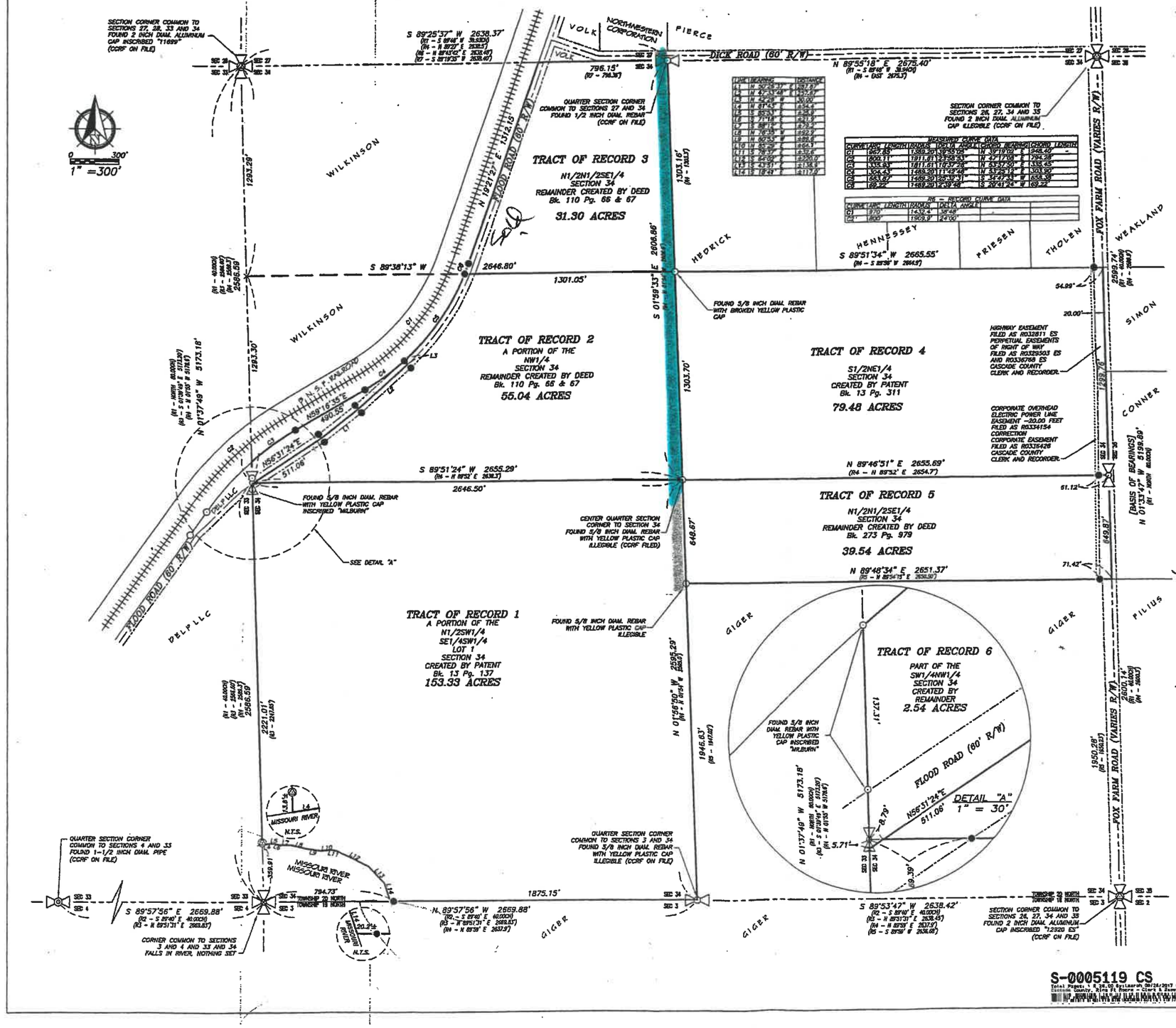
Project Ulm-Great Falls Elec Line
Map No. 45-F
Chg. No. B-18245-2
Tract No. _____

Return to: THE MONTANA POWER COMPANY
REAL ESTATE DEPARTMENT
40 East Broadway
Butte, Montana 59701

draft # 3304
SS # 70-01-2204

CERTIFICATE OF SURVEY

LOCATED IN SECTION 34, T20N, R3E, P.M. MT, CASCADE COUNTY, MONTANA



LINE	BEARING	DISTANCE
L1	N 20°26'31" E	±121.67'
L2	N 41°43'18" E	±70.47'
L3	N 42°25' W	50.00'
L4	N 81°42' W	±54.4'
L5	S 85°34' W	±54.5'
L6	S 71°11' E	±41.5'
L7	S 88°13' E	±23.5'
L8	N 76°35' W	±52.1'
L9	N 60°55' W	±69.4'
L10	N 65°09' W	±66.1'
L11	S 75°37' E	±32.4'
L12	S 54°09' E	±20.0'
L13	S 43°31' E	±13.8'
L14	S 18°41' E	±17.2'

MEASURED CURVE DATA

CURVE	ARC LENGTH	RADIUS	DELTA ANGLE	CHORD BEARING	CHORD LENGTH
C1	867.85'	1389.20'	35°46'19"	N 39°19'09" E	854.40'
C2	802.11'	1911.61'	23°58'24"	N 47°17'08" E	796.28'
C3	335.43'	1811.61'	10°37'02"	N 53°52'50" E	335.05'
C4	554.43'	1489.20'	21°20'44"	N 37°23'34" E	551.30'
C5	683.87'	1489.20'	26°18'31"	S 34°27'43" W	677.78'
C6	69.22'	1489.20'	2°39'48"	S 20°41'26" W	69.22'

R6 – RECORD CURVE DATA

CURVE	ARC LENGTH	RADIUS	DELTA ANGLE
C1	370'	1432.4'	18°44'
C2	800'	1909.9'	24°00'

NOTES:

The Basis of Bearings for this survey is referenced to a direct GPS measurement from geodetic north (using WGS 84), resulting in a bearing of N 01°33'47" W between the monumented Section Corner common to Sections 2 and 3, Township 19 North, Range 3 East, and Sections 34 and 35, Township 20 North, Range 3 East, and the monumented Section Corner common Sections 26, 27, 34 and 35 as shown hereon.

No underground utilities or subsurface improvements were mapped as part of this survey except where specifically indicated.

Multiple fence lines, utilities, and roadways exist, take note that they do exist and are not shown hereon.

Easements of sight and record not shown hereon may exist.

The record information shown hereon as (R1) is referenced to the Field Notes of the Survey of the Exterior Boundaries Subdivision and Meander Lines of Township 20 North, Range 3 East, Principal Meridian Montana Territory, as surveyed by United States Deputy Surveyors dated 1871, available through the United States Department of Interior, Bureau of Land Management, Public Room.

The record information shown hereon as (R2) is referenced to the Field Notes of the Survey of the Exterior Boundaries Subdivision and Meander Lines of Township 19 North, Range 3 East, Principal Meridian Montana Territory, as surveyed by United States Deputy Surveyors dated 1871, available through the United States Department of Interior, Bureau of Land Management, Public Room.

The record information shown hereon as (R3) is referenced to the Certificate of Survey indexed as COS #4987 recorded in the Office of the Clerk and Recorder, Cascade County, Montana.

The record information shown hereon as (R4) is referenced to the Certificate of Survey indexed as COS #1932 recorded in the Office of the Clerk and Recorder, Cascade County, Montana.

The record information shown hereon as (R5) is referenced to the Certificate of Survey indexed as COS #4744 recorded in the Office of the Clerk and Recorder, Cascade County, Montana.

The record information shown hereon as (R6) is referenced to the Great Northern Railway Right of Way Plan entitled "FLOOD CASCADE CO., MONT. SEC. 34, T. 20 N. R. 3 E. available online through the Montana Department of Transportation.

The record information shown hereon as (R7) is referenced to the Certificate of Survey indexed as COS #1918 recorded in the Office of the Clerk and Recorder, Cascade County, Montana.

Purpose of Survey

The purpose of this ... Recorder, Cascade County, M... numents for those Tracts of Re...

TRACT OF RECORD ... and Recorder, Cascade ...

TRACT OF RECORD ... Clerk and Recorder, Cascade ...

TRACT OF RECORD ... Clerk and Recorder, Cascade ...

TRACT OF RECORD ... and Recorder, Cascade ...

TRACT OF RECORD ... Clerk and Recorder, Cascade ...

TRACT OF RECORD ... assigned.

Being this map is ...

To Be included IN Survey & Deed on Tracts 1-5

CERTIFICATE OF S...

State of Montana

County of Cascade

I, Mark Th... direction that this map w... rk and during the mont... corners Recorder, Cascad... as set or found ...

MONTANA MARK THEODOR LARSON 19235 LICENSED 9-26-17 PROFESSIONAL LAND SURVEYOR

Mark Theodor Larson PLS
Montana Professional Land Surveyor License Number 19235

Dated this 26th day of September, 2017.

LEGEND

- ● Indicates a 5/8 inch diameter rebar, 24 inches in length, with a yellow plastic cap inscribed with "PLS 19235", set this survey.
- ⊙ Indicates a monument as described found this survey.
- ⊗ Indicates 2 inch diameter aluminum cap, on a 5/8 inch diameter rebar, found this survey.
- ◎ Indicates a 1–1/2 inch iron pipe, found this survey
- × Indicates a calculated position, nothing found or set.
- Section Line
- Quarter Section Line
- Section Subdivision Line
- Tract of Record Boundary Line
- Adjoiner Parcel Line
- County Road Centerline
- County Road Right–of–Way Line
- Utility Easement Line
- Railroad Centerline
- N.T.S. Not to Scale

General 20' Utility Easement

EXAMINED FOR COMPLIANCE WITH SUBDIVISION & PLATTING ACT
TREASURER'S STAMP YES ___ NO X
DATE September 26, 2017
BY [signature]
CASCADE COUNTY PLANNING DIVISION

OWNERS: FLOOD PROPERTIES LLC

S-0005119 CS
Total Pages: 1 $ 26.00 Recorded: 09/26/2017 01:43:29 PM
Cascade County, Mina Fe Fosse – Clerk & Recorder

1/4	SEC	TSP	RGE
	34	T20N	R3E

WOITH ENGINEERING, INC.
ENGINEERS & SURVEYORS
P.O. BOX 7326, GREAT FALLS, MONTANA 59406

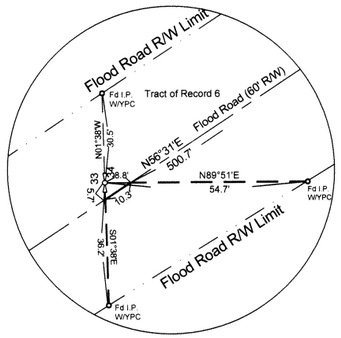
JOB NO.: 1748
F.B.NO.: U.P.S.
FILE: 1748BASE.DWG
DRAWN: MTL
DATE: 9-26-2017

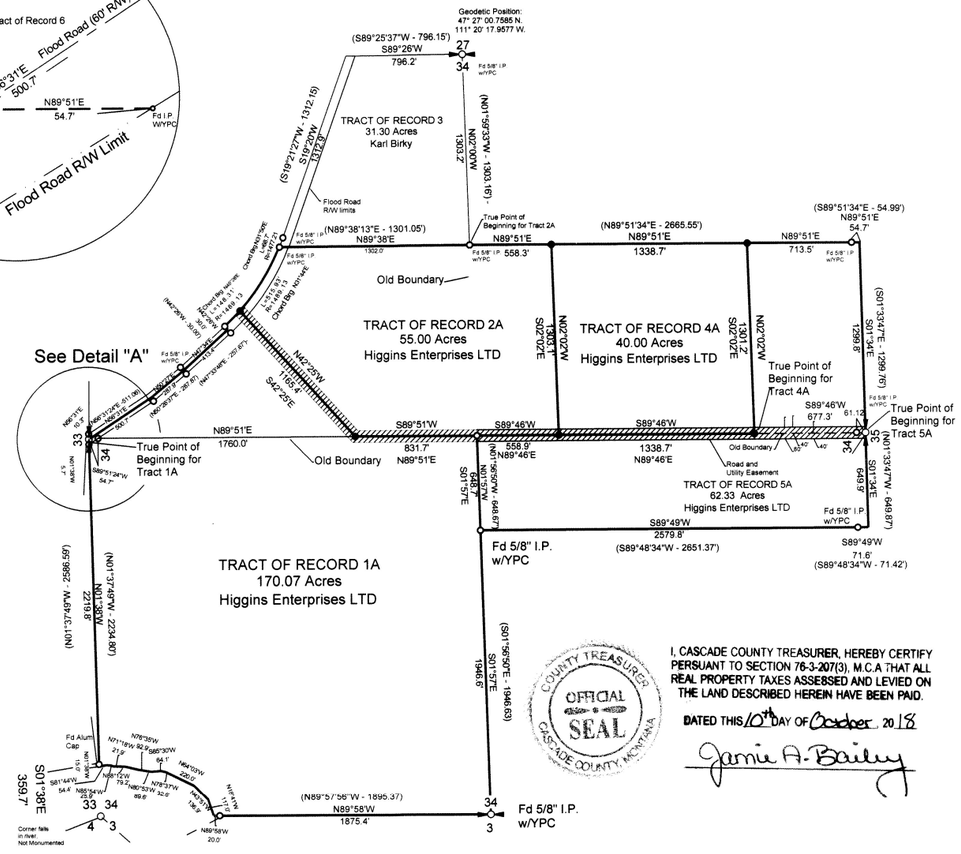
1

CERTIFICATE OF SURVEY #5179

Located in Section 34, T. 20 N., R. 3 E., P.M.MT
Cascade County, Montana

Detail "A"





SCALE:

0 300 600 1200 Feet

METHODS:
This survey was performed in accordance with applicable State laws. A Survey Grade Global Positioning System (GPS) was used in this survey.

OTHER DATA AVAILABLE:
For a detailed description of corner monumentation, see the appropriate Corner Recordation Form on file in the Cascade County Clerk & Recorder's Office.

BASIS OF BEARING:
The basis of bearing for this survey are True Mean Bearings obtained by using geodetic inverses from corner positions determined with survey grade Geographical Positioning System (GPS) equipment using an autonomous position on the north one quarter section corner of Section 34, T.20N., R.3E., P.M.MT. This geodetic position is accurate to within ±3.0 meters.

I, CASCADE COUNTY TREASURER, HEREBY CERTIFY PERSUANT TO SECTION 76-3-207(3), M.C.A THAT ALL REAL PROPERTY TAXES ASSESSED AND LEVIED ON THE LAND DESCRIBED HEREIN HAVE BEEN PAID.

DATED THIS 10th DAY OF October, 2018

Jamie A. Bailey

COUNTY TREASURER OFFICIAL SEAL CASCADE COUNTY, MONTANA

EXAMINED FOR COMPLIANCE WITH SUBDIVISION & PLATTING ACT
TREASURER'S STAMP YES X NO ___
DATE 10-9-2018
BY _____
CASCADE COUNTY PLANNING DIVISION

CITY-COUNTY HEALTH DEPT
Great Falls, Montana
Exempt From Health Dept. Review
Date: 10-10-2018
By: _____

LEGEND:

Not Found / Found — SECTION CORNER STATUS AS NOTED

Not Found / Found — QUARTER SECTION CORNER STATUS AS NOTED

○ FOUND PREVIOUSLY SET CORNER AS NOTED OR 5/8" I.P. WITH YELLOW PLASTIC CAP

● SET 5/8" REBAR WITH YELLOW PLASTIC CAP

(North - 40.0') EXISTING FENCE LINES

Certificate of Survey #5119

PURPOSE:

This survey was performed in August, 2018 as a Boundary Line Adjustment of four parcels in Section 34, T.20N., R.3E., P.M.MT., Cascade County, Montana.

DESCRIPTION OF PARCELS SURVEYED:

Four tracts of land in Section 34, T.20N.,R.3E., P.M.MT; more particularly described:

TRACT OF RECORD 1A: *Beginning at West Quarter Section Corner of Section 34, T.20N.,R.3E., P.M.MT; thence S. 01°38' E., 5.71 feet to the center of Flood Road The True Point of Beginning; thence N. 56°31' E., 10.3 feet; thence N. 56°31' E., 500.7 feet along said centerline; thence N. 50°27' E., 287.9 feet along said centerline, thence N. 47°34' E., 413.4 feet along said centerline; thence N. 42°26' W., 30.0 feet to the west right of way limit of Flood Road; thence 148.31 feet along a 1489.13 radius curve with a chord bearing of N. 45°26' E; thence S. 42°25' E., 1165.4 feet; thence N. 89°51' E., 831.7 feet; thence S. 01°57' E., 648.7 feet; thence S. 01°57' E., 1946.6 feet to the South Quarter Section corner of Section 34, T. 20N., R.3E.; thence N. 89°58' W., 1875.4 feet; thence N. 89°58' W., 20.0' feet to the edge of the Missouri River; thence N. 18°41' W., 117.0 feet along said river; thence N. 43°51' W., 136.9 feet along said river; thence N. 64°03' W., 220.0 feet along said river; thence N. 78°37' W., 32.6 feet along said river; thence S. 85°30' W., 64.1 feet along said river; thence N. 80°53' W., 89.6 feet along said river; thence N. 76°35' W., 92.9 feet along said river; thence N. 88°12' W., 79.2 feet along said river; thence N. 71°18' W., 21.9 feet along said river; thence N. 85°54' W., 25.9 feet along said river; thence S. 81°44' W., 54.4 feet along said river; thence N. 01°38' W., 15.0 feet; thence N 01°38' W., 2219.8 feet to the True point of Beginning of Tract of Record 1A containing 170.07 acres*

TRACT OF RECORD 2A: *Beginning at the North One Quarter Section corner of Section 34, T.20 N., R.3 E., P.M.MT; thence S. 02°00' E., 1303.2 feet to the True Point of Beginning of Tract of Record 2A; thence N. 89°51' E., 558.3 feet; thence S. 02°02' E, 1303.1 feet; thence S. 89° 46' W., 558.9 feet; thence S. 89°51' W., 831.7 feet; thence N 42°25' W., 1165.4 feet to the west right of way limit of Flood Road; thence 515.93 feet along a curve to the left 1489.13 radius and chord bearing N. 31°44' E., thence N. 89°38 E., 1302.0 feet to the True Point of Beginning of Tract of Record 2A containing 55.01 acres.*

TRACT OF RECORD 4A: *Beginning at the East One Quarter Section corner of Section 34, T.20N., R.3E., P.M.MT.; thence S. 89°46' W., 61.12 feet; thence S. 89°46' W., 677.3 feet to the True Point of Beginning for Tract of Record 4A; thence S. 89°46' W., 1338.7 feet; thence N. 02°02' W., 1303.1 feet; thence N. 89°51' E., 1338.7 feet; thence S02°02' E., 1301.2 feet to the True Point of Beginning of Tract of Record 4A containing 40.00 acres.*

TRACT OF RECORD 5A: *Beginning at the East One Quarter Section corner of Section 34, T.20N., R.3E., P.M.MT. the True Point of Beginning for Tract of Record 5A; thence S. 01°34' E., 649.9 feet down the center of Fox Farm Road; thence S. 89°49' W., 71.6 feet; thence S. 89°49' W., 2579.8 feet; thence N. 01°57' W., 648.7 feet; thence N. 89°46' E., 558.9 feet; thence N. 89°46' E., 1338.7 feet; thence N. 02°02' W., 1301.2 feet; thence N. 89°51' E., 713.5 feet; thence N. 89°51' E., 54.7 feet to the centerline of Fox Farm Road; thence S. 01°34' E., 1299.8 feet down the centerline of said road to the True Point of Beginning of Tract of Record 5A containing 62.33 acres.*

CERTIFICATE OF LANDOWNER:

I, the undersigned property owner do hereby certify that I have caused to be surveyed as shown by this Certificate of Survey, four parcels of land in Section 34, T.20N., R.3E., P.M.MT., Cascade County, Montana. I further certify that no new or additional parcels are hereby created, therefore this survey is exempt from review as a subdivision under both the Montana Subdivision and Platting Act 76-3-207-(1)(a), divisions made outside of platted subdivisions for the purpose of relocating common boundary lines between adjoining properties and the Montana Sanitation in Subdivision Act 76-4-105(17) definition of a subdivision.

Dated this 4 *day of* October, *2018*

~~Richard N. Higgins~~ N. Richard Higgins, Judy Higgins
for Higgins Enterprises LTD

STATE OF MONTANA)
:ss
COUNTY of Cascade)

On this 4 *day of* October, *2018, before me a Notary Public in and for the State of Montana, personally appeared the aboved signed property owner, known to me to be the person who executed the foregoing Certificate of Survey and acknowledged to me that he executed the same.*

AMY K. DANIELS NOTARY PUBLIC for the State of Montana Residing at Great Falls, Montana My Commission Expires January 30, 2019

Notary Public Amy K. Daniels
State of Montana
Residing at Great Falls
My Commission Expires 1-30-2019

CERTIFICATE OF SURVEYOR:

I, Dale E. Schaeffer, Montana Registered Professional Engineer and Land Surveyor, Montana Registration No. 5206ES, do hereby certify that in July, 2018, I surveyed a tract of land in Section 34, T.20N.,R.3E., P.M.MT., Cascade County, Montana, as shown on the accompanying map.

Dale E. Schaeffer, PELS
Montana Registration No. 5206ES
Great Falls, Montana
October 1, 2018

MONTANA DALE E. SCHAEFFER 5206 ES REGISTERED PROFESSIONAL ENGINEER & LAND SURVEYOR

S-0005179 CS
Total Pages: 1 R 27.00 By: bhanson 10/10/2018 02:56:17 PM
Cascade County, Rina Ft Moore - Clerk & Recorder

OWNER: Higgins Enterprises LTD

1/4	SEC.	TWN.	RGE.	JOB NO.: 18045	SHEET NO. 1
All	34	20N	3E	DRAWN BY: D.E.S.	1 SHEETS
				DATE: 8/27/2018	

SCHAEFFER ENGINEERING & SURVEYING
1708 22ND AVENUE SOUTH
GREAT FALLS, MONTANA 59405
406-761-5402
SCHAEFFER_ENGINEERING@MSN.COM

RIVER BEND ESTATES MAJOR SUBDIVISION

SITUATED IN THE W½ OF SEC. 34, T.20N., R.3E., P.M., CASCADE COUNTY, MONTANA

CERTIFICATE OF COUNTY TREASURER:

I, DIANE HEIKKILA, CASCADE COUNTY TREASURER, DO HEREBY CERTIFY PURSUANT TO SECTION 76-3-207(3), M.C.A., THAT ALL REAL PROPERTY TAXES ASSESSED AND LEVIED ON THE LAND DESCRIBED HEREIN, HAVE BEEN PAID.

_____ _____

COUNTY TREASURER OF CASCADE COUNTY, MONTANA DATED

BY:_____

DEPUTY

CERTIFICATE OF COUNTY COMMISSION:

THE COUNTY COMMISSION OF CASCADE COUNTY, MONTANA, DOES HEREBY CERTIFY THAT IT HAS EXAMINED THIS PLAT OF RIVER BEND ESTATES, AND HAVING FOUND THE SAME TO CONFORM TO LAW, APPROVES IT, AND HEREBY ACCEPTS THE DEDICATION TO PUBLIC USE OF ANY AND ALL LANDS SHOWN ON THIS PLAT AS BEING DEDICATED TO SUCH USE, THIS_____DAY OF_____, 201_

_____

CASCADE COUNTY COMMISSIONER

ATTEST:_____

CLERK AND RECORDER, CASCADE COUNTY, MONTANA

BY:_____

DEPUTY

CERTIFICATE OF PLANNING BOARD:

WE, THE UNDERSIGNED_____CHAIRMAN OF THE CASCADE COUNTY PLANNING BOARD, CASCADE COUNTY, MONTANA, AND _____PLANNING DIRECTOR OF SAID PLANNING BOARD, DO HEREBY CERTIFY THAT THE ACCOMPANYING PLAT HAS BEEN EXAMINED BY THEM AND WAS FOUND BY THEM TO CONFORM TO LAW AND WAS APPROVED AT A MEETING HELD ON THE _____DAY OF _____, 201__.

_____

CASCADE COUNTY PLANNING BOARD

ATTEST:_____

CLERK AND RECORDER, CASCADE COUNTY, MONTANA

BY:_____

DEPUTY

CERTIFICATE OF SURVEYOR:

I, DALE E. SCHAEFFER, ENGINEER SURVEYOR, MONTANA REGISTRATION NUMBER 5206 ES, DO HEREBY CERTIFY THAT DURING THE MONTHS OF JULY AND AUGUST 2018, THAT I PERFORMED, OR IT WAS PERFORMED UNDER MY DIRECT SUPERVISION, THE SURVEY THAT THE ACCOMPANYING MAP REPRESENTS AND THAT THIS SURVEY IS IN ACCORDANCE WITH THE PROVISIONS SET FORTH IN 76-3-402 AND 403, M.C.A, AND THAT THE MONUMENTS FOUND AND SET ARE OF THE CHARACTER AND OCCUPY THE POSITIONS SHOWN HEREON.

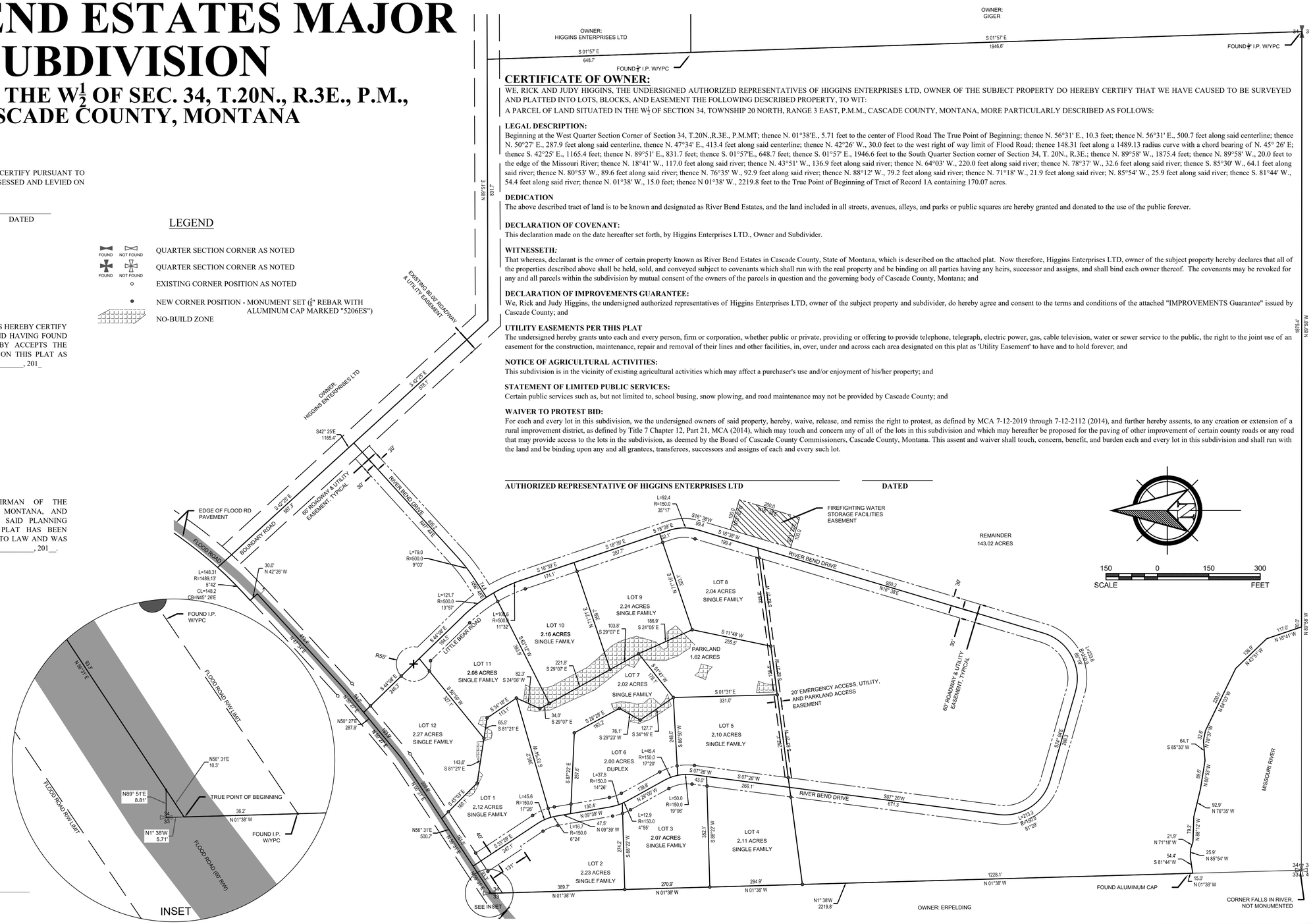
DATED THIS_____DAY OF _____, 201__.

_____

DALE E. SCHAEFFER, ENGINEER SURVEYOR MT REGISTRATION NUMBER 5206ES

LEGEND

- FOUND / NOT FOUND — QUARTER SECTION CORNER AS NOTED
- FOUND / NOT FOUND — QUARTER SECTION CORNER AS NOTED
- EXISTING CORNER POSITION AS NOTED
- NEW CORNER POSITION - MONUMENT SET (⅝" REBAR WITH ALUMINUM CAP MARKED "5206ES")
- NO-BUILD ZONE



CERTIFICATE OF OWNER:

WE, RICK AND JUDY HIGGINS, THE UNDERSIGNED AUTHORIZED REPRESENTATIVES OF HIGGINS ENTERPRISES LTD, OWNER OF THE SUBJECT PROPERTY DO HEREBY CERTIFY THAT WE HAVE CAUSED TO BE SURVEYED AND PLATTED INTO LOTS, BLOCKS, AND EASEMENT THE FOLLOWING DESCRIBED PROPERTY, TO WIT:

A PARCEL OF LAND SITUATED IN THE W½ OF SECTION 34, TOWNSHIP 20 NORTH, RANGE 3 EAST, P.M.M., CASCADE COUNTY, MONTANA, MORE PARTICULARLY DESCRIBED AS FOLLOWS:

LEGAL DESCRIPTION:

Beginning at the West Quarter Section Corner of Section 34, T.20N.,R.3E., P.M.MT; thence N. 01°38'E., 5.71 feet to the center of Flood Road The True Point of Beginning; thence N. 56°31' E., 10.3 feet; thence N. 56°31' E., 500.7 feet along said centerline; thence N. 50°27' E., 287.9 feet along said centerline, thence N. 47°34' E., 413.4 feet along said centerline; thence N. 42°26' W., 30.0 feet to the west right of way limit of Flood Road; thence 148.31 feet along a 1489.13 radius curve with a chord bearing of N. 45° 26' E; thence S. 42°25' E., 1165.4 feet; thence N. 89°51' E., 831.7 feet; thence S. 01°57'E., 648.7 feet; thence S. 01°57' E., 1946.6 feet to the South Quarter Section corner of Section 34, T. 20N., R.3E.; thence N. 89°58' W., 1875.4 feet; thence N. 89°58' W., 20.0 feet to the edge of the Missouri River; thence N. 18°41' W., 117.0 feet along said river; thence N. 43°51' W., 136.9 feet along said river; thence N. 64°03' W., 220.0 feet along said river; thence N. 78°37' W., 32.6 feet along said river; thence S. 85°30' W., 64.1 feet along said river; thence N. 80°53' W., 89.6 feet along said river; thence N. 76°35' W., 92.9 feet along said river; thence N. 88°12' W., 79.2 feet along said river; thence N. 71°18' W., 21.9 feet along said river; N. 85°54' W., 25.9 feet along said river; thence S. 81°44' W., 54.4 feet along said river; thence N. 01°38' W., 15.0 feet; thence N 01°38' W., 2219.8 feet to the True Point of Beginning of Tract of Record 1A containing 170.07 acres.

DEDICATION

The above described tract of land is to be known and designated as River Bend Estates, and the land included in all streets, avenues, alleys, and parks or public squares are hereby granted and donated to the use of the public forever.

DECLARATION OF COVENANT:

This declaration made on the date hereafter set forth, by Higgins Enterprises LTD., Owner and Subdivider.

WITNESSETH:

That whereas, declarant is the owner of certain property known as River Bend Estates in Cascade County, State of Montana, which is described on the attached plat. Now therefore, Higgins Enterprises LTD, owner of the subject property hereby declares that all of the properties described above shall be held, sold, and conveyed subject to covenants which shall run with the real property and be binding on all parties having any heirs, successor and assigns, and shall bind each owner thereof. The covenants may be revoked for any and all parcels within the subdivision by mutual consent of the owners of the parcels in question and the governing body of Cascade County, Montana; and

DECLARATION OF IMPROVEMENTS GUARANTEE:

We, Rick and Judy Higgins, the undersigned authorized representatives of Higgins Enterprises LTD, owner of the subject property and subdivider, do hereby agree and consent to the terms and conditions of the attached "IMPROVEMENTS Guarantee" issued by Cascade County; and

UTILITY EASEMENTS PER THIS PLAT

The undersigned hereby grants unto each and every person, firm or corporation, whether public or private, providing or offering to provide telephone, telegraph, electric power, gas, cable television, water or sewer service to the public, the right to the joint use of an easement for the construction, maintenance, repair and removal of their lines and other facilities, in, over, under and across each area designated on this plat as 'Utility Easement' to have and to hold forever; and

NOTICE OF AGRICULTURAL ACTIVITIES:

This subdivision is in the vicinity of existing agricultural activities which may affect a purchaser's use and/or enjoyment of his/her property; and

STATEMENT OF LIMITED PUBLIC SERVICES:

Certain public services such as, but not limited to, school busing, snow plowing, and road maintenance may not be provided by Cascade County; and

WAIVER TO PROTEST BID:

For each and every lot in this subdivision, we the undersigned owners of said property, hereby, waive, release, and remiss the right to protest, as defined by MCA 7-12-2019 through 7-12-2112 (2014), and further hereby assents, to any creation or extension of a rural improvement district, as defined by Title 7 Chapter 12, Part 21, MCA (2014), which may touch and concern any of all of the lots in this subdivision and which may hereafter be proposed for the paving of other improvement of certain county roads or any road that may provide access to the lots in the subdivision, as deemed by the Board of Cascade County Commissioners, Cascade County, Montana. This assent and waiver shall touch, concern, benefit, and burden each and every lot in this subdivision and shall run with the land and be binding upon any and all grantees, transferees, successors and assigns of each and every such lot.

_____ _____

AUTHORIZED REPRESENTATIVE OF HIGGINS ENTERPRISES LTD **DATED**

SCHAEFFER ENGINEERING & SURVEYING

1708 22nd Ave South
GREAT FALLS, MT 59405
406-761-5402

PROJECT #	18-30
DRAWN BY	JRC
CHECKED BY	DES
ISSUE DATE	08/19/2019

RIVER BEND ESTATES

HIGGINS ENTERPRISES LTD
CASCADE COUNTY, MT

FINAL PLAT

1/4	SEC.	T.	R.
	34	20N	3E

P.M. MONTANA, CASCADE CO.

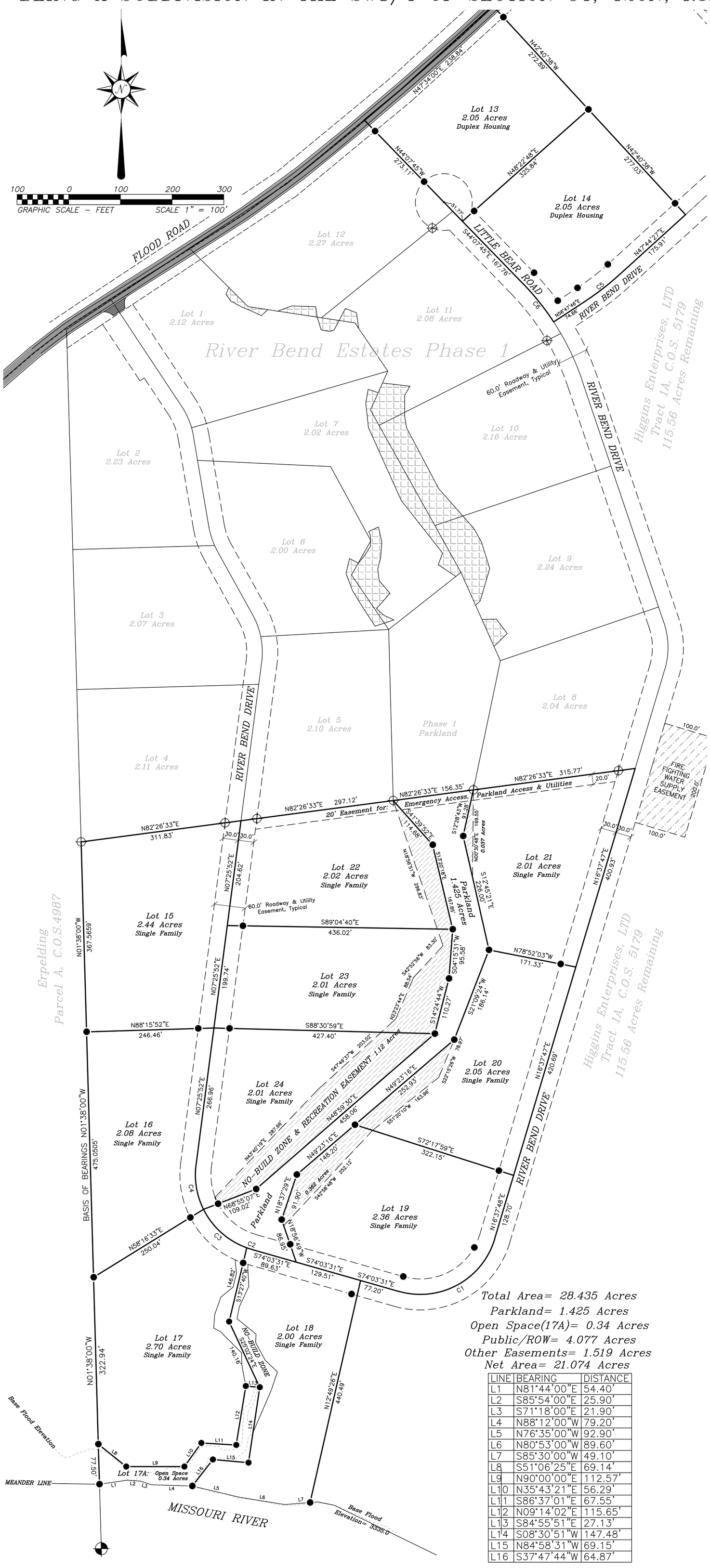
REVISIONS		
#	DATE	DESCRIPTION

SHEET

1 of 1

RIVER BEND ESTATES SUBDIVISION PHASE 2

BEING A SUBDIVISION IN THE SW1/4 OF SECTION 34, T20N, R3E, P.M.M., CASCADE COUNTY, MONTANA



Total Area= 28.435 Acres
Parkland= 1.425 Acres
Open Space(17A)= 0.34 Acres
Public/ROW= 4.077 Acres
Other Easements= 1.519 Acres
Net Area= 21.074 Acres

LINE	BEARING	DISTANCE
L1	N81°44'00"E	54.40'
L2	S85°54'00"E	25.90'
L3	S71°18'00"E	21.90'
L4	N88°12'00"W	79.20'
L5	N76°35'00"W	92.90'
L6	N80°53'00"W	89.60'
L7	S85°30'00"W	49.10'
L8	S51°06'25"E	69.14'
L9	N90°00'00"E	112.57'
L10	N35°43'21"E	56.29'
L11	S86°37'01"E	67.55'
L12	N09°14'02"E	115.65'
L13	S84°55'51"E	27.13'
L14	S08°30'51"W	147.48'
L15	N84°58'31"W	69.15'
L16	S37°47'44"W	64.87'

CURVE	ARC LENGTH	RADIUS	DELTA ANGLE
C1	233.82'	150.00'	89°18'41"
C2	9.99'	150.00'	3°48'54"
C3	114.75'	150.00'	43°49'49"
C4	88.60'	150.00'	33°50'40"
C5	79.02'	500.00'	09°03'19"
C6	95.34'	500.00'	10°55'30"

CERTIFICATE OF OWNERS:

WE, RICK AND JUDY HIGGINS, THE UNDERSIGNED AUTHORIZED REPRESENTATIVES OF HIGGINS ENTERPRISES, OWNER OF THE SUBJECT PROPERTY DO HEREBY CERTIFY THAT WE HAVE CAUSED TO BE SURVEYED AND PLATTED INTO LOTS, BLOCKS, AND EASEMENT THE FOLLOWING DESCRIBED PROPERTY, TO WIT:
A PARCEL OF LAND SITUATED IN THE SW1/4 OF SECTION 34, TOWNSHIP 20 NORTH, RANGE 3 EAST, P.M.M., CASCADE COUNTY, MONTANA, MORE PARTICULARLY DESCRIBED AS FOLLOWS:

PROPERTY DESCRIPTION:
Beginning at the West Quarter Section Corner of Section 34, T.20N.,R.3E., P.M.MT; thence S. 01°38'E., 5.71 feet to the center of Flood Road The True Point of Beginning; thence N. 56°31' E., 10.3 feet; thence N. 56°31' E., 500.7 feet along said centerline; thence N. 50°27' E., 287.9 feet along said centerline, thence N. 47°34' E., 413.4 feet along said centerline; thence N. 42°26' W., 30.0 feet to the west right of way limit of Flood Road; thence 148.31 feet along a 1489.13 radius curve with a chord bearing of N. 45° 26' E; thence S. 42°25' E., 1165.4 feet; thence N. 89°51' E., 831.7 feet; thence S. 01°57'E., 648.7 feet; thence S. 01°57' E., 1946.6 feet to the South Quarter Section corner of Section 34, T. 20N., R.3E.; thence N. 89°58' W., 1875.4 feet; thence N. 89°58' W., 20.0 feet to the edge of the Missouri River; thence N. 18°41' W., 117.0 feet along said river; thence N. 43°51' W., 136.9 feet along said river; thence N. 64°03' W., 220.0 feet along said river; thence N. 78°37' W., 32.6 feet along said river; thence S. 85°30' W., 64.1 feet along said river; thence N. 80°53' W., 89.6 feet along said river; thence N. 76°35' W., 92.9 feet along said river; thence N. 88°12' W., 79.2 feet along said river; thence N. 71°18' W., 21.9 feet along said river; N. 85°54' W., 25.9 feet along said river; thence S. 81°44' W., 54.4 feet along said river; thence N. 01°38' W., 15.0 feet; thence N 01°38' W., 2219.8 feet to the True Point of Beginning of Tract of Record 1A containing 170.07 acres.

DEDICATION
The above described tract of land is to be known and designated as River Bend Estates, and the land included in all streets, avenues, alleys, and parks or public squares are hereby granted and donated to the use of the public forever.

DECLARATION OF COVENANT:
This declaration made on the date hereafter set forth, by Higgins Enterprises LTD., Owner and Subdivider.

WITNESSETH:
That whereas, declarant is the owner of certain property known as River Bend Estates Phase 2 in Cascade County, State of Montana, which is described on the attached plat. Now therefore, Higgins Enterprises LTD, owner of the subject property hereby declares that all of the properties described above shall be held, sold, and conveyed subject to covenants which shall run with the real property and be binding on all parties having any heirs, successor and assigns, and shall bind each owner thereof. The covenants may be revoked for any and all parcels within the subdivision by mutual consent of the owners of the parcels in question and the governing body of Cascade County, Montana; and

DECLARATION OF IMPROVEMENTS GUARANTEE:
We, Rick and Judy Higgins, the undersigned authorized representatives of Higgins Enterprises LTD, owner of the subject property and subdivider, do hereby agree and consent to the terms and conditions of the attached "IMPROVEMENTS Guarantee" issued by Cascade County; and

UTILITY EASEMENTS PER THIS PLAT
The undersigned hereby grants unto each and every person, firm or corporation, whether public or private, providing or offering to provide telephone, telegraph, electric power, gas, cable television, water or sewer service to the public, the right to the joint use of an easement for the construction, maintenance, repair and removal of their lines and other facilities, in, over, under and across each area designated on this plat as 'Utility Easement' to have and to hold forever; and

NOTICE OF AGRICULTURAL ACTIVITIES:
This subdivision is in the vicinity of existing agricultural activities which may affect a purchaser's use and/or enjoyment of his/her property; and

STATEMENT OF LIMITED PUBLIC SERVICES:
Certain public services such as, but not limited to, school busing, snow plowing, and road maintenance may not be provided by Cascade County; and

WAIVER TO PROTEST BID:
For each and every lot in this subdivision, we the undersigned owners of said property, hereby, waive, release, and remiss the right to protest, as defined by MCA 7-12-2019 through 7-12-2112 (2014), and further hereby assents, to any creation or extension of a rural improvement district, as defined by Title 7 Chapter 12, Part 21, MCA (2014), which may touch and concern any of all of the lots in this subdivision and which may hereafter be proposed for the paving of other improvement of certain county roads or any road that may provide access to the lots in the subdivision, as deemed by the Board of Cascade County Commissioners, Cascade County, Montana. This assent and waiver shall touch, concern, benefit, and burden each and every lot in this subdivision and shall run with the land and be binding upon any and all grantees, transferees, successors and assigns of each and every such lot.

_____ _____
RICK AND JUDY HIGGINS, AUTHORIZED REPRESENTATIVES OF HIGGINS ENTERPRISES LTD **DATED**

State of Montana)
County of Cascade)

On this ___ day of _____2019, Rick Higgins and Judy Higgins each personally appeared before and having been duly sworn did herein execute the above record for the purposes stated.

Printed Name:_____ Signature:_____
Notary Public for State of Montana

NOTARY SEAL

CERTIFICATE OF COUNTY COMMISSION:

THE COUNTY COMMISSION OF CASCADE COUNTY, MONTANA, DOES HEREBY CERTIFY THAT IT HAS EXAMINED THIS PLAT OF RIVER BEND ESTATES, AND HAVING FOUND THE SAME TO CONFORM TO LAW, APPROVES IT, AND HEREBY ACCEPTS THE DEDICATION TO PUBLIC USE OF ANY AND ALL LANDS SHOWN ON THIS PLAT AS BEING DEDICATED TO SUCH USE, THIS_____DAY OF_____, 2019

_____
CASCADE COUNTY COMMISSIONER

ATTEST:_____
CLERK AND RECORDER, CASCADE COUNTY, MONTANA

BY:_____
DEPUTY

CERTIFICATE OF PLANNING BOARD:

WE, THE UNDERSIGNED_____CHAIRMAN OF THE CASCADE COUNTY PLANNING BOARD, CASCADE COUNTY, MONTANA, AND _____ PLANNING DIRECTOR OF SAID PLANNING BOARD, DO HEREBY CERTIFY THAT THE ACCOMPANYING PLAT HAS BEEN EXAMINED BY THEM AND WAS FOUND BY THEM TO CONFORM TO LAW AND WAS APPROVED AT A MEETING HELD ON THE _____DAY OF _____, 2019_.

_____
CASCADE COUNTY COMMISSIONER

ATTEST:_____
CLERK AND RECORDER, CASCADE COUNTY, MONTANA

BY:_____
DEPUTY

MISSOURI RIVER FLOODPLAIN:

THERE ARE PORTIONS OF LOTS 17A AND 18 WHICH ARE LOCATED WITHIN THE FEMA-DELINEATED FLOODPLAIN OF THE MISSOURI RIVER. IT IS THE RESPONSIBILITY OF THE LANDOWNER TO DETERMINE EXACT FLOODPLAIN LIMITS PRIOR TO PERFORMING ANY CONSTRUCTION ACTIVITIES ADJACENT TO THE RIVER. ANY IMPROVEMENT WITHIN THE 100-YEAR FLOODPLAIN BOUNDARY MUST BE IN ACCORDANCE WITH THE CASCADE COUNTY FLOODPLAIN ORDINANCE. COORDINATE WITH THE COUNTY FLOODPLAIN ADMINISTRATOR FOR QUESTIONS REGARDING THE FLOODPLAIN REGULATIONS.

LEGEND

- ● Indicates a 5/8" diameter rebar, 24" in length, with 2" aluminum cap, inscribed with "KENDALL 18576-S", set this survey.
- Indicates a Found Section Monument as described hereon.
- Indicates a Found Rebar with Cap - "Schaeffer 5206ES"

NOTES

The Basis of Bearings for this survey is the West line of River Bend Estates Addition. Line bears N01°38'00"W.

Easements of sight and record not shown hereon may exist.

No underground utilities or subsurface improvements were mapped as part of this survey.

Fence lines, roadways and utilities may exist on the subject property. Be advised that improvements are not shown.

CERTIFICATE OF SURVEYOR

I, James S Kendall, a Registered Professional Land Surveyor, Montana License Number 18576-LS, do hereby certify that I have performed the survey shown and described hereon; that survey was completed and all monuments established during August/September 2019; and that survey is true and complete as shown.

_____
James S Kendall, PLS MT No. 18576LS

MONTANA JAMES KENDALL 18576LS LICENSED LAND SURVEYOR

34
SW1/4, SECTION 34, T20N, R3E, P.M.M.

CERTIFICATE OF COUNTY TREASURER

I, Diane Heikkila, County Treasurer of Cascade County, Montana hereby certify pursuant to Section 76-3-207(3), M.C.A. that all real property taxes assessed and levied on the land described herein have been paid.

Dated this, ___ day of _____, 2019

SEAL

_____
Diane Heikkila, Treasurer, Cascade County, Montana

Filing No.: Clerk & Recorder

KENDALL LAND SURVEYING, INC
GREAT FALLS, MONTANA 59401
406-217-7707

SCALE: 1" = 100'
DRAWN BY: JSK
DATE: 19AUGUST2019

10 LIEN HOLDERS ACKNOWLEDGEMENT

Higgins Enterprises owns the property outright. There is not a lien against the property. The Title Report is included above in Section 9.

11 PROPOSED EASEMENTS OTHER THAN THOSE SHOWN ON THE PLAT

There are no proposed easements other than those shown on the plat.

12 PROPOSED COVENANTS

A draft of the proposed covenants is included below.

DECLARATION
OF PROTECTIVE AND RESTRICTIVE
COVENANTS OF
RIVER BEND ESTATES
Tract 2—Phase 1

THIS DECLARATION, is made _____ by Higgins Enterprises Development Company referred to hereinafter as the Declarant.

WHEREAS, the Declarant is the owner of certain real property known as River Bend Estates located in Cascade County, Montana, and described in the subdivision plat of River Bend Estates filed with the Clerk and Recorder of Cascade County, Montana on _____, as document number PL *1234-5678989.*

WHEREAS, the Declarant intends that the above described property, be subject to protective and restrictive covenants;

NOW, THEREFORE, the Declarant hereby declares that all the property described above shall be held, or sold and conveyed subject to the following easements, restrictions, covenants, and conditions, which are for the purpose of protecting the value and desirability of, and which shall run with, the real property and be binding on all parties having any right, title or interest in the described properties or any part thereof, their heirs, successors and assigns, and shall inure to the benefit of each owner thereof.

ARTICLE I
DEFINITIONS

1. **"Architectural Committee"** shall mean and refer to the committee described in Article V.
2. "**Association"** Shall mean and refer to the River Bend Estates Home Owner's Association, Inc., Montana non-profit corporation, its successors and assigns.
3. **"Common area"** shall mean all real property including any improvements thereon owned by the Association for the common use and enjoyment of the Owners.
4. **"Declarant"** shall mean and refer Higgins Enterprises LTD, dba, Higgins Development Company, and its respective agents, successors and assigns.
5. **"Lots"** shall refer to each tract of land subdivided by the Declarant and included in the development known as River Bend Estates and designated on a plat or survey thereof by a block and lot number but does not refer to private roads or Common areas. The term "Lot" shall not mean any remainder parcel or parcels owned by the Declarant but not yet subdivided into residential lots.
6. **"Owner"** shall mean and refer to the record owner whether one or more persons or entities, of a fee simple title to any Lot, including contract sellers, but excluding those having such interest merely as security for the performance of an obligation.
7. **"Property"** or ..Properties" shall mean and refer to the development known as River Bend Estates in its entirety with such additions or phases thereto as may hereafter be added by the Association or the Declarant.
8. **"Roads"** shall mean and refer to any street, walk, drive, path or other right of way, within the Properties, as designated on the plat thereof and which is owned or is to be owned by the Association.
9. **Rural Improvement District** (RID/SRID) shall mean the owners may apply for a special assessment fund for improvements and maintenance of all roads and common areas.

ARTICLE II

HOME OWNERS ASSOCIATION (HOA)

1. **Powers:** The River Bend Homeowners Association shall have all such powers as permitted by the laws of the State of Montana, provided that the Homeowners Association shall be subject to and abide by the provisions of the Declaration, as the same may be amended from time to time.
2. **Membership**: All Owners of the Lots within River Bend Estates shall be members of the Homeowners Association. The Owners of any Lot shall automatically become members of the Homeowners Association and shall remain a member until such time as the ownership of such Lot ceases for any reason, at which time the corresponding membership in the HOA shall automatically cease.
3. **Owner's Address:** Upon acquiring a Lot, the Owners of the Lot shall immediately inform the Homeowners Association of their names and of one address to which notices from the HOA should be sent. The Owners shall be responsible for informing the Homeowners Association of any change of address.
4. **Voting:** There shall be one vote for each Lot. If a person or entity owns more than one Lot , that person or entity shall have as many votes as the number of Lots owned by that person or entity. If more than one person or entity has an ownership interest in a single Lot, such persons or entities must decide among themselves how the vote for that Lot shall be cast.
5. **Management During Period of Declarant Control:** During the period of Declarant control, Declarant may appoint, remove and replace from time to time any or all of the directors and officers of the Homeowners Association. If Declarant so elects, Declarant may from time to time relinquish, either on a temporary or permanent basis, the right to appoint all or a portion of the directors and officers of the Homeowners Association; provided that any such relinquishment shall be expressed in writing to the HOA.

ARTICLE III

USE COVENANTS

1. **Lot Size:** No Lot shall be subdivided further than as described in the original conveyance by the Declarant; provided, that this provision shall not restrict a further platting of Lots so as to combine portions of a Lot with an adjoining Lot or the repeating of two or more Lots into a single Lot provided that any such replatting does not leave a portion of the Lot so divided separate and apart from a Lot contiguous to it.
2. **Use Restricted to Residential:** All Lots shall be used exclusively for residential purposes, no Lot shall be used for any commercial, business, trade, industrial, or manufacturing purpose. This prohibition, however, shall not be interpreted as to prohibit an owner or a member of an Owner's immediate family from maintaining a home office in such Owner's residence for the conducting of a non-retail business from such residence, but all other restrictions shall remain applicable including the prohibition in this Article II, Paragraph 4, of any signs or advertising. All such home office activities shall be carried on entirely within the Owners' residence and such activity shall be incidental to the use of said Lot for residential purposes.
3. **Single Dwelling Unit (SDU).** Except as otherwise provided herein, no Lot nor any portion thereof shall be used for any purpose other than a single dwelling unit.

4. **Multiple Dwelling Units (MDUs).** Declarant reserves the right to construct, sell or allow construction of condominiums/townhouses hereinafter referred to as MDUs, in areas it considers acceptable to the overall development and integrity of his vision for the property or properties. MDU owners will be considered regular members of the Association and will have the same voting rights and will be assessed as regular members.
5. **Antennas and Other Structures.** All antennas, poles, or other devices to be erected or placed on any Lot for the receiving of radio, television or other broadcast signal/s more than three (3) feet in height and two (2) feet in width, including but not limited to satellite dish receivers, must be approved pursuant to Article V herein. The installation or construction of all such antennas or satellite dish receivers, including those not required to be approved pursuant to Article V, shall be restricted to the rear of the house or restricted to the rear of the roof ridge-line or center line of the principle dwelling so as to be hidden from sight. as much as practicable. when viewed from the adjacent Lots. The installation or construction of wind turbines on any Lot is prohibited.
6. **Signs.** Signs, billboards or advertising shall not be permitted on any Lot or any access thereto except signs of up to seven (7) square feet in area which identify the Owner or the address of the particular Lot for lots greater than *5* acres but less than 20 acres, such identifying signage shall be limited to ten (10) square feet, and for lots greater than 20 acres, such identifying signage shall be limited to fifteen (15) square feet. This provision shall not be interpreted as to restrict the use of any informational or entry signage identifying or relating to the Properties and approved by the Declarant. Further, this provision shall not be interpreted as *to* restrict the use of signage for the sale of a Lot or Lots by the Declarant or by an Owner. Moreover, this provision shall not be interpreted as to restrict the use of signage by the Declarant or Declarant's agents or assigns relating to relating to construction activities thereon. construction activities thereon.
7. **Nuisances and Offensive Activities Forbidden.** Noxious or offensive activity or any activity which may be, or may become an annoyance or nuisance to the Owners or which constitutes a public nuisance, or which shall create noxious odors or offensive sounds shall be prohibited; this provision shall include but shall not be limited to nuisances caused by household pets such as barking dogs.

A. **Animal/Pet Restrictions for Lots Less Than 5 acres.** For Lots less than 5.0 acres in size, animals, livestock (including but not limited to llamas, alpaca, ostrich, goats, swine, sheep, cattle, horses or poultry) shall not be permitted on or bred, raised or kept on any Lot except for dogs, cats and other common household pets. The number of dogs shall be limited to three (3), and the number of cats shall be limited to three (3). No animals, including dogs and other household pets, shall be bred, kept or cared for on any Lot on a commercial basis. All exterior kennels or other structures for the keeping of pets shall first be approved pursuant to Article V herein, and shall be located at the rear of the Owner's residence screened from the view of adjacent Owners as much as practicable, by the use of shrubbery, walls or fencing approved pursuant to Article V herein.

B. **Animal/Pet Restrictions for Lots Over *5* acres but less than 20 acres.** For Lots 5.0 acres and greater but less than 20 acres, the prohibitions in paragraph 5 (A) herein shall be applicable except that horses may be allowed upon written request made to the Association. Said request shall contain a "horse management plan" which shall provide for the proper care and management of the property and the proposed number of horses thereon. The "horse management plan" shall set forth a mechanism for controlling grazing, maintaining sufficient growth of pasture grasses, and limiting weed growth by

utilizing such methods as rotational grazing, limiting foraging intake, supplementing feed, and irrigating and fertilizing of pastures. The Association shall grant the request if it determines in its sole discretion that the proposed "horse management plan" is sufficient to assure proper care of both the property and proposed horses thereon. The Lot Owner shall enter into a written agreement with the Association that it will abide by the "horse management plan" in *which* the Owner agrees to remove the horses from the property within sixty (60) days upon notice by the Association of Owner's failure to abide by said agreement. Information on proper grazing techniques, a form written agreement, and a sample "horse management plan" will be provided to any purchaser of said Lot prior to its sale.

C. **Animal/Pet Restrictions for Lots greater than 20 acres.** For Lots greater than 20.0 acres, the prohibitions in paragraph 5(A) herein shall be applicable except that Owners may own, keep and maintain, for their own recreational use and not for commercial or breeding purposes, not more than four (4) horses upon said Lot. The Owner shall take sufficient steps to control grazing in order to maintain sufficient growth of pasture grasses and limit weed growth. Such steps shall include as necessary, rotational grazing, limiting foraging intake, supplementing feed, and irrigating and fertilizing of pastures

6. **Fences.** All fences, walls or hedges to be placed on any Lot must be approved in advance pursuant to Article V herein by HOA. Chain link fences are prohibited except where shielded from view as much as practical and approved in advance pursuant to Article VI herein by the HOA.
7. **Roads; Trails.** All roads, drives, paths or other right-of-ways within the Properties not designated specifically on the plat as "public" or as "county" shall be for the sole benefit and access of the Properties by their respective Owners unless said road is later dedicated to the County for public use. Any such road may be dedicated to the County or for public use upon affirmative vote of sixty percent (60%) of the Owner votes cast as determined pursuant to the method set forth in Article VIII, paragraph 1, herein. Declarant hereby reserves to the Association and for the exclusive benefit of the Owners the right to use those portions of the Property designated by the Declarant as equestrian and walking trails for walkways, bicycle pathways and riding of horses.

   A. All public roads will be engineered and built to county specifications. Roads will have a gravel surface the first year allowing for construction and heavy equipment to utilize the roads with minimal damage. Asphalt will be applied thereafter. Private driveways will have a minimum of a 20 foot paved entrance adjoining the public road at the cost of the home owner. The remaining private driveway surface is the choice and responsibility of the home owner.

   B. All culverts under driveways shall be installed in accordance with county specifications including the requirements that such culverts be at least one foot in diameter and twenty five (25) feet in length.

   C. Road and shoulder right-of ways portions of the roads not surfaced will be maintained free of weeds, trash, and debris. Each Lot owner has primary responsibility for the maintenance of his frontage. However, if not maintained, said maintenance will be accomplished under this Agreement.
8. **River Lots.** Any Owner of a Lot bordering the Missouri River or the high water mark thereof shall not remove any living native vegetation growing within any portion of the Lot designated as flood plain by any federal, state or local governmental entity. Further, all permanent construction within the flood plain is prohibited. Any Owner proposing to install a seasonal dock along the Missouri River shall first apply and receive a "310" permit, or any other required permit, from the Cascade County Conservation District or other applicable governmental agency. All docks shall be seasonal and be removed from the Missouri River and its bank from October, 15 through April, 15 of each year.

9. **Vehicles.** Except on a temporary basis, outdoor repair or maintenance work of vehicles other than washing and polishing shall not be performed. Trucks exceeding a capacity of one (1) ton may not be regularly parked or kept on the Properties except in a covered garage approved pursuant to Article V herein. Similarly, all recreational vehicles such as boats, campers and camper trailers must be kept or stored, except on a temporary basis, in a covered garage or otherwise shielded from the view of adjacent Owners, as much as practicable, by the use of shrubbery, walls or fencing, all to be approved pursuant to Article V herein.
10. **Storage of Fire Wood.** Only one(1) cord of firewood may be stored upon any Lot except firewood stored in a covered garage or otherwise shielded from view in a manner approved pursuant to Article V herein.
11. **No Mining or Drilling.** No Lot shall be used for the purpose of blasting, mining, drilling, boring or exploring for oil, gas or other hydrocarbons, minerals. This provision shall not prohibit exploratory drilling or coring which is necessary to construct permitted improvements thereon. Further, this provision shall not restrict the drilling of a water well to be used for residential purposes.
12. **Water Use: Yard Size· and Trees.** The amount of irrigable property used for a lawn or yard shall not exceed one-half *(1/2)* acre per Lot. This restriction shalt not apply to any Owner utilizing his own well or water system for any excess irrigation. Owners shall have the option, but not the obligation to install cisterns with a minimal rate capacity of 1,500 gallons of water.. Cisterns are not to exceed 5,000 gallons of water.

ARTICLE IV
MAINTENANCE AND SANITATION COVENANTS

1. **General Maintenance Requirement.** Each Lot and all improvements thereon shall be maintained in good condition and repair. Each owner shall be responsible to maintain all improvements in a manner consistent with its original design, including but not limited to, painting, repair, and landscaping.
2. **Rubbish and Trash Disposal**. Junk, rubbish, trash or other materials of any kind shall not be stored or left lying about on any Lot. All garbage and trash shall be kept in covered, sanitary trash containers. All exterior trash containers, except trash containers placed out for disposal, shall be screened from the view of the other Owners by the use of walls, fencing or shrubbery approved pursuant to Article V herein. Trash containers shall not remain out for disposal for more than twenty-four (24)hours.
3. **Noxious Weeds.** All Lots shall be kept free from noxious weeds, including but not limited to leafy spurge, spotted knapweed, Canadian thistle, or other unsightly growth. In the event an Owner shall fail or refuse to keep his Lot free from said weeds or unsightly growth, then the HOA may enter upon said Property, upon fifteen (15) days prior written notice of such intended action, and remove the same or arrange for spraying of said weeds, and such entry shall not be deemed a trespass; all costs associated therewith shall be assessed against the Lot and shall become a lien thereon.
4. **Sanitation and Water Facilities.** Septic tanks, leaching fields, other private sewage treatment facilities, and wells shall be constructed and maintained in conformance with local, state and federal laws and regulations.
5. **Sanitation During Construction.** Except to the extent necessary during the period that actual construction of a residence is diligently pursued, Lots shall not be used as the location of any temporary or permanent residence until a sanitary sewage treatment facility is installed for use with respect to such Lot.
6. **Drainage.** Owners shall take reasonable precautions to prevent erosion and drainage problems on their respective Lots.

ARTICLE V

ROAD AND UTILITY EASEMENT COVENANTS

1. **Right-of-Way and Utility Easements**. Until all of the Properties have been sold by Declarant, each Lot is subject to right-of-way easements on behalf of the Declarant for ingress and egress to tracts or Lots. In addition, an easement for installation, use and maintenance of utilities, including but not limited to water lines, wells, well-pump, irrigation lines, gas lines, power lines, telephone and data lines, and sewer lines is reserved herein for the benefit of the Association, Declarant or for the respective utility along all roadways and their respective rights-of-way, common areas and along a ten (I0) foot perimeter within each Lot. Fences, landscaping or paved areas which are disturbed during the installation or repair of any such utility line, shall be reasonably restored upon completion of installation or repairs.

2. **Underground Lines.** All newly installed power, telephone and similar lines shall be buried underground except temporary lines, installed and used during the construction of a residence. This provision shall not apply to any such lines heretofore existing.

ARTICLE VI

ASSESSMENTS

1. **Assessments Creation of the Lien, and Personal Obligation of Assessments:** For each lot owned within the properties, the Declarant hereby covenants, and each owner of any lot, whether or not it shall be so expressed in any deed or contract, is deemed to have agreed to these Covenants, and have agreed to pay to the Home Owners Associations assessments for the costs, fees, and charges incurred by the Association in carrying out its functions and purposes, including attorney's fees and costs incurred to enforce these Covenants as determined to be appropriated by the Home Owners Association's Board of Directors.

The assessments, together with interest, costs and reasonable attorney's fees, shall be a charge on the land and shall be a continuing lien upon the property against which each such assessment is made. Each such assessment, together with the interest costs and reasonable attorney's fees, shall be also be the personal obligation of the owner of such property at the time when the assessment fell due.

2. **Purpose of Assessments:** The Assessments levied by the Home Owner's Association shall be used to promote the recreation, health, safety, convenience and welfare of the owners and for the improvement, repair and maintenance of roads, wells, pumps, easements and common areas, the operational costs of the Association, the enforcement of these Covenants, and for any other purposes, expressed or implied, in these Covenants, or for any reason specifically approved by the membership of the Association. The HOA shall have the authority for maintaining the common areas, perimeter fences of the subdivision in cooperation with adjoining property owners, providing for road maintenance, repairs and snow removal, and promoting the enjoyment and living on the properties.

3. **Amount and Approval of Assessments:** The maximum assessment per lot which may be made by the Association in every calendar year shall not substantially exceed the projected and budgeted reasonable costs to be incurred by the Association during the coming year in carrying out the purposes herein set forth and may include a reasonable reserve for contingencies and/or a shrinking fund for the replacement of capital improvements. The amount of the annual assessments shall be fixed by the Board of Directors of the Association in the following manner:

A. At each annual meeting of the members of the Association, the Directors shall present a proposed budget of the estimated expenses for the Association for the coming year to the members for review,

discussion, amendment, comment and approval.

B. The members shall approve or amend the proposed budget by a majority vote of the members present or those voting by proxy.

C. After the annual meeting, the Board of Directors shall set the amount of the assessments for each Lot and the date(s) due for the coming year to cover the budget approved in the manner herein set forth.

4. **Special Assessments for Capital Improvements:** In addition to the annual assessments authorized above, the Home Owner's Association may levy special assessments for the purpose of defraying in whole or in part, the cost of any construction, reconstruction, paving or replacement of roads and other capital improvements on the properties and common areas, including fixtures and personal property related thereto, provided that any such assessments and/or RIDs shall have the approval of seventy-five percent (75%) or more of all of the votes of the Members. The Board of Directors is authorized to borrow money to pay for the costs of these items provided that seventy-five percent (75%) of the owners approve the expenditure based upon one vote per Lot.

5. **Mineral Rights-Sand and Gravel:** Nothing in these covenants shall prevent Declarant from removing sand, gravel or stone from any Lot or property held in its ownership. In the event such resources are removed, the Declarant shall reclaim such affected areas. Owners may use the resources within their lots for their own personal use provided they reclaim such affected areas to the satisfaction of the OSC.

6. **Uniform Rate of Assessment:** Annual assessments shall be fixed by the Directors at a basic uniform rate for each Lot. No assessments shall be charged or levied against any lot(s) owned by the Declarant unless Declarant owns such lot for personal use rather than holding such for sale. The assessments may be collected on a monthly, quarterly or annual basis or any other regular basis as shall be determined by the Board of Directors of the Association. Special Assessments shall be fixed at the same rate for each lot affected by the special assessments.

7. **Date of Commencement of assessments: Due Dates:** Except as herein provided, the assessments provided for herein shall be due as to the Lots on the date determined by the Board of Directors. The Board of Directors shall fix the amount of the annual assessments against each lot or parcel at least thirty (30) days in advance of the first due date of each annual assessment, and at least ninety (90) days in advance of the first due date of a special assessment. Written notice of the annual and any special assessments shall be mailed or personally delivered to every owner subject thereto, at their last known mailing address.

8. **Effect of Nonpayment of Assessments; Remedies of Association:** Any assessment not paid within thirty (30) days after the due date shall bear interest from the due date at the rat of twelve percent (12%) per annum. The Association may bring an action at law against the owner(s) obligated to pay the same or foreclose the lien against the property. No owner may waive or otherwise escape liability or the assessments provided for herein by non-use of the common areas or by abandonment of his or her Lot.

Upon delivery of notice of the assessment to the owner, the assessment shall be a lien upon each owner's lot until paid. The Association may record a notice of the lien with the Clerk and Recorder of Cascade County, Montana, and, in the event of non payment within thirty(30) days after the recording of the notice of lien, the Association may foreclose the lien in the manner set forth under Montana law for the foreclosure of liens against real property. Any action taken by the Association to collect any unpaid assessments (including sending demand letters, filing liens or foreclosure thereof, or legal action to collect as assessment) shall obligate the lot owner to pay any attorney's fees and court costs so incurred by the association.

9. **Sale or Transfer of Lot:** The sale, transfer or encumbrance of any lot shall not affect the assessment lien if recorded in the records of Cascade County, Montana, or the personal liability of the owner responsible for the assessment. No sale or transfer to a third party with actual or constructive knowledge of an assessment shall not relieve such new owner from the liability or any outstanding assessments, or from any assessments thereafter becoming due, or from the recorded lien thereof. A person or entity purchasing a lot shall be responsible for checking with the Association for any outstanding assessments against said lot before closing upon purchase.

ARTICLE VII
BUILDING DESIGN COVENANTS

1. **Construction.** No residence, structures, additions, improvements or other outbuildings of whatever size may be constructed, erected or placed on any Lot unless the proposed construction *is* first approved by the Architectural Committee as defined in this Article V. All construction shall comply with applicable governmental building and health codes or similar restrictions or regulations. All building shall be site constructed. Owners are urged to design building that reflect the ranch community in keeping with the spirit of Montana.

Material composition and quality, color and shape are important in the construction of improvements. All improvements shall be constructed of higher quality materials. All exterior surfaces shall have minimum reflection values. Natural materials and earth-tone colors are encouraged.

Geodesic domes and A-frames are prohibited. Roof top equipment may be prohibited by the AC. Television and radio antennas, as well as satellite dishes and other receiving or transmitting devices, must be screened from view and subject to approval of the AC.

A. **Single Family Dwelling.** Residences shall not be erected, placed or permitted to remain on any Lot other than one (1) single family dwelling, to be used for single-family occupancy, which dwelling must first be approved pursuant to this Article V; this restriction is not intended to prohibit construction of a "guesthouse" for use by family members or by guests on a temporary basis provided that no rent or other compensation is received and such construction is integrated with the design of the primary residence and is otherwise approved pursuant to this Article V. "Single family" shall be defined as a residential unit for those persons related by blood, law, marriage, adoption, or with court ordered custody, living as a single family unit or a maximum of two (2) unrelated adults living as a single family unit. This restriction is not intended to prohibit an Owner from providing living quarters to domestic employees as part of their employment; provided, that no rent or compensation. other than employment, is received in exchange for providing such living arrangements.

B. **Townhouses/Duplexes/Planned Unit Development (PUD).** Declarant may have the option to pursue construction of one Townhouse/Duplex/PUD for single family resident per phase to be approved by the Architectural Committee and Cascade County Planning Board.

C. **Set Backs.** All residences, outbuildings, or other structures of any kind or any part thereof shall not be situated closer than twenty-five (25) feet from the side line of the Lot or tract upon which the same is located, nor situated closer than seventy-five (75) feet from the front boundary line of the Lot. A Lot Owner may, for just cause, petition the Architectural Committee to reduce the front set back requirement. The Architectural Committee may in its own discretion grant such request. but in no case shall the front set back boundary be closer than fifty (50) feet to the front boundary line of the Lot.

For purposes of this sub-paragraph (b), the "front line" of a Lot shall be deemed to be that portion of any Lot that borders any County or Association access road designated on the Plat or any other main access road later constructed including any right-of-way therefore.

D. **Unattached Buildings.** All unattached buildings or structures, of whatever size, must first be approved by the Architectural Committee, pursuant to this Article V. The design and construction of such unattached building or structure shall be integral to the original design of the residence and shall not exceed an aggregate total of more than 2,400 square feet in size. Any proposed construction of an unattached building prior to construction of the primary residence may be approved by the Architectural Committee upon a case by case basis and at its sole discretion.

E. **Barns and Stables Allowed for Lots greater than 5.0 acres.** In addition to the restriction in this Article V, sub-paragraph 1 (c), for Lots greater than 5.0 acres, construction of a barn or stable for the keeping of horses is allowed herein, but such design and construction is subject to approval pursuant to this Article V. Further provided that the submission to the Committee shall contain plans and specifications showing the location of the barn upon the Lot, the construction nature, kind, shape, height, material and building elevations of the proposed barn.

F. **Construction of improvements** on any Lot shall be commenced within thirty (30) days after the equipment or materials for such construction are moved onto the Lot. The construction of the exterior of all buildings shall be pursued with reasonable diligence, and building exteriors shall be substantially completed no later than three hundred sixty-five (365) days after the commencement of construction.

G. Exterior lighting—outside lights shall be subdued and kept to a minimum with down-lighting techniques utilized. Continuous yard lights shall not be allowed.

H. Utility installation and maintenance—River Bend Estates shall cause the installation and maintenance of electric power, natural gas, and telephones utility service to the junction of the main access road and home site driveways. Owners shall hear all responsibility and cost from junction to home sites. All utilities of every nature shall be installed and maintained underground. Piping and wiring shall be concealed.

I. **Fire PreCautions —** Each Owner shall :

1.) Keep the roof, eaves and eaves troughs of the owner's residence free from any debris such as leaves, pine needles or bother materials which may b flammable.

2.) Fireworks are not permitted on any portion of River Bend Estates unless part of an organized and permitted event approved by the HOA.

3.) Keep all chimneys free of creosote or there materials which may prove to be flammable. Catalytic converters on wood burning devices or clean burning wood stoves, subject to approval River Bend Architectural Committee, must be used. Spark arresters must be in place on all chimneys.

4.) Install Class A - fire resistant roofs

5.) Install smoke detectors in each residence.

6.) Trim grasses in accordance with HOA directives to reduce exposure to property from wildfires.

2. **<u>Criteria for Evaluation.</u>** In making its decision whether to approve or disapprove any proposed construction, the Architectural Committee shall be governed by the provisions of these Covenants, including specifically the following guidelines:

A. Each home must be custom designed for the particular Lot. Modular or mobile homes are prohibited. Designs shall take into consideration the Lot upon which the residence or any outbuilding is to be situated and the relationship of the proposed structure and its proposed location to building sites on adjoining tracts or residences already constructed or in the process of construction taking into account its effect on the view of surrounding Owners.

B. The Architectural Committee shall in its own discretion consider the relationship between the design and the Lot upon which it is to be situated and further shall consider whether the design is in harmony *with* the external design of existing homes and any homes in the process of construction in the Properties.

C. For Lots less than 5.0 acres in size, all residences designed without a "daylight basement" shall have no less than 1,700 square feet of finished living space, exclusive of any garage, porch, or basement. Homes designed with a "daylight basement" shall have no less than 1,500 square feet of finished living space above grade exclusive of any garage, porch basement, or "daylight basement." "Daylight basement" shall be defined for the purposes herein as any floor or level of living space which has greater than twenty-five percent (25%) of its walls above grade as determined by the total square footage for all walls on such level. Any floor or level of living space with fewer than twenty-five percent (25%) of its walls above grade shall be deemed a "basement" for the purposes herein. For Lots 5.0 and greater, all residences designed without a "daylight basement" shall have no less than I 500 square feet of finished living space, exclusive of any garage, porch, or basement. Homes designed with a "daylight basement" shall have no less than 1,250 square feet of finished living space above grade exclusive of any garage, porch, basement, or "daylight basement." For purposes of measurement for compliance with this paragraph, outside wall dimensions may be used. Townhouse/Duplexes shall have no less than 1500 square feet.

D. The Architectural Committee shall consider the quality of the design and the materials to be used, and conformity of the plans and specifications to the purpose and general plan and intent of these Covenants. Homes utilizing vinyl, aluminum, or a combination or variation thereof are prohibited excepting those lots 5.0 acres and greater.

3. **Submitting of Plans.** All proposals for construction of a residence, building or other structure shall be submitted to the Architectural Committee along with the drawings necessary for the Architectural Committee to evaluate any proposal. Such drawings should include the building dimensions, plot plans showing location, cross-sections and elevations, and parking areas if applicable. In addition a list of specifications shall be submitted describing the types of construction materials to be used and exterior finish and color. In certain circumstances, the Architectural Committee may, in its discretion, waive the requirement that drawings and list of specifications be submitted to the Architectural Committee.

The Architectural Committee shall make its response to the proposal in writing within thirty(30) days after being submitted to the Architectural Committee. For this purpose, the period time shall run commencing the day following the date a copy of the plans is delivered to the Declarant member of the Architectural Committee either in person or by certified or registered mail. The Architectural Committee shall either approve, reject, or conditionally approve the submission. Any rejection shall provide the reasons for such rejection, and allow for reapplication. The failure of the Architectural Committee to make its response within the above period of time shall be deemed to signify the Architectural Committee's approval of the proposed construction

4. **Modification of Design or Building.** The Architectural Committee shall have a continuing role in the approval and disapproval of proposed changes from the original design of the existing buildings or proposal submitted to the Architectural Committee. Additionally, all proposed changes to the original exterior design, exterior remodeling, and additions, including changes of color and the addition of swimming pools, volleyball, basketball and tennis courts, etc., shall be submitted and approved in writing by the Architectural Committee. In such case, the Architectural Committee may, in its discretion, waive the requirement that drawings and list of specifications be submitted.

5. **Architectural Committee.**

A. ***Membership and Purpose.*** The Architectural Committee shall be composed of three (3) members and shall oversee the construction of residences, and other improvements on the Properties. Members of the architectural Committee do not have to be Owners. The architectural Committee shall at all times include a Declarant member as defined in Article 1, paragraph 4, herein, as one of its members as long as the Declarant owns property subject to these Covenants and does not decline to act. The right of a Declarant to membership in the architectural Committee shall not be modified or eliminated by later modifications or restatement of these Covenants except by consent of Declarant. If the Declarant member is unable or declines to act, the Declarant may appoint an attorney-in-fact, to act with all rights and power attributable to the Declarant.

B. ***Election of Members.*** The Architectural Committee shall be elected annually by a majority vote of the Owners of the Lots within the Properties. Each Lot Owner shall have one vote per Lot owned. Such election shall take place in the month of January pursuant to notice delivered to all known Owners at least ten (10) days before the scheduled meeting. The first Architectural Committee, however, shall be selected by the Declarant within thirty (30) days of the filing of the plat for the first subdivision of the Properties. The incumbent Architectural Committee membership shall be responsible for calling an election and specifying the time and location of such election. For the purpose of electing the Architectural Committee, a husband and wife or other persons or entity, whether jointly or in common, shall be deemed one Lot Owner for each Lot owned and shall include any person or entity purchasing a Lot or Lots on a contract for deed or similar basis, who is not delinquent in any respect under such contract. Likewise, the Declarant shall be entitled to one vote per anticipated Lot as set forth in the preliminary plat approved by the Cascade County Commission on _____. Each architectural Committee Member shall hold office until the next annual meeting of the Owners and until his or her successor has been properly elected.

C. ***Alternate Architectural Committee Member.*** An alternate Architectural Committee Member shall also be elected at the annual meeting. Such alternate member shall be elected for the sole purposes of casting his or her vote to break any ties on matters presented to the Architectural Committee.

D. ***Notice.*** Written notice of any meeting or election shall be deemed delivered when deposited in the United States mail, postage prepaid, addressed to the Owner at the Owners' last known address. The notice shall state the place, day, and hour of such meeting and all business to be conducted.

E. ***Proxies.*** Every Owner entitled to vote for the election of Architectural Committee members may authorize another person or persons to act for the Owner by proxy. Proxies must be signed by the Owner or his attorney-in-fact and shall be revocable at any time by the Owner executing it.

F. ***Quorum.*** A majority of the Owners entitled to vote, represented in person or by proxy, shall constitute a quorum for the election of Architectural Committee members. If less than a majority of the Owners are represented at an election, a majority of the Owners so represented may adjourn the meeting from time to time and may hold a subsequent meeting with or without further notice for the purpose of electing Architectural Committee members. For the purpose of Architectural Committee action, two of the three permanent members of the Architectural Committee shall constitute a quorum.

G. ***Architectural Committee Vacancy.*** All Architectural Committee vacancies shall be filled by a special election called for that purpose. Such special election shall take place within thirty (30) days of the vacancy. A special election shall be called by the Architectural Committee with written notice to all known Owners postmarked at least ten (I 0) days before the scheduled election.

H. ***Proposed Construction.*** Architectural Committee members may not vote on their own proposals for the construction of their own residences.

I. ***Evaluation of Alleged Violations.*** Any violation of the Building Design Covenants may be submitted to the Architectural Committee in writing. If the architectural Committee determines that an Owner *is* in violation in any manner. the Architectural Committee may notify such Owner in writing. Such notice shall specify the violation and the steps needed to remedy it. If such remedial steps are not taken within a reasonable time, the Architectural Committee. on behalf of all parties subject to these Covenants, shall have the authority, but is not required, to undertake the steps necessary to remedy such violation. Any action by the Architectural Committee does not limit in any manner the enforcement remedies available to individual Owners provided in Article VIII, herein. Failure by an Owner or the Architectural Committee to enforce any covenant or restriction herein contained shall not be deemed a waiver whatsoever of the right to do so thereafter.

J. ***Special Meetings.*** In addition to the annual meeting of the Owners for the purpose of selecting the Architectural Committee, the Architectural Committee or the Owners, by written petition signed by a majority of the Owners, shall have the authority to call a special meeting of the Owners. The Notice, Proxy and Quorum requirements in paragraph 2 of this Article V shall apply to all special meetings. Notice of a special meeting shall be provided to each known Owner at least seven (7) days before the scheduled special meeting. Such notice shall include a copy of the petition calling the special meeting, if called by the Owners, and an agenda of the business to be considered at the special meeting. Only business clearly indicated by the agenda shall be conducted at all special meetings.

K. ***Majority Vote.*** A majority vote of the Architectural Committee shall determine any question presented to it.

L. Reasonable Exceptions to use Covenants. Reasonable exceptions to the Building Design Covenants may be granted on a temporary basis by the architecturalCommittee for the purpose of permitting construction of improvements on any Lot.

ARTICLE VIII
ASSOCIATION MEMBERSHIP AND VOTING RIGHTS

1. **Membership.** Every Owner of a Lot which is subject to assessment shall be a member of the Association. Membership shall be appurtenant to and may not be separated from ownership of any Lot subject to assessment. Each Owner shall be responsible to notify the Secretary of the Association of any transfer of ownership.
2. **Bylaws.** Except as otherwise required herein, the Association shall be governed by its Articles of Incorporation and bylaws.
3. **Voting.** Members shall be entitled to one vote for each Lot owned. When more than one person or entity holds an interest in any Lot, the vote for such Lot shall be exercised as they determine, but in no event shall more than one vote be cast with respect to any Lot. Unless otherwise required by theses Covenants or the Association' bylaws, a majority vote shall determine a11 issues presented to the Association.
4. **Powers.** In addition to its other powers herein contained, the Owners shall have the authority to promulgate rules pertaining to matters which affect the rights of Owners to the quiet enjoyment of their property, taking into account the reasonable needs of such Owners. Any such rules shall be ratified by a majority vote of the Owners either at the annual meeting of the Owners, special meeting of the Owners, or by a writing signed by Owners representing a majority of the outstanding votes. After ratification by the Owners, such rules shall become enforceable hereunder as if originally made a part of these Covenants. These Covenants. however, shall take precedence over any such rules in the case of any conflict between such rules and these Covenants, and any question as to such conflict shall be liberally construed in favor of these Covenants.

ARTICLE IX
PROPERTY RIGHTS

1. **Owners' Covenant of Enjoyment.** Every Owner shall have a right and easement of enjoyment in and to the common areas and roads which shall be appurtenant to and shall pass with the title to the Lot subject to the limitations herein. Every Owner shall also be entitled to use of any community water, irrigation or sewage system owned or operated by the Association unless otherwise provided herein.
2. **Dedication of Common areas.** Declarant has designated certain areas of land as roadways and as property owners' common areas. Said areas are dedicated for the use by the Owners and their families for roadway purposes and recreation purposes respectively. Any road designated as "temporary" shall not be dedicated to the Association unless specifically dedicated by the Declarant. The designated areas are not dedicated for use by the general public. Access and use of the common areas may be controlled and limited by the Association, so long as such controls and limitations do not unreasonably restrict the use by the Owners.
3. **Use: Maintenance· and Repairs**. The Association shall be responsible for the use, maintenance, repair and improvement of all Common areas, private roads, and any water wells, well pumps, irrigation or sewage system.
4. **Assessment; User Fees· Creation of Lien.** The Association shall have the right to assess each Lot equally for all costs, including taxes and insurance, associated with the use, maintenance, improvement and repair of any Association road and any common area or fixture thereon. The Association shall also have the right to charge Owners reasonable user and other fees for the use, maintenance and improvement of any community or public water, irrigation or sewage system. Such assessments and fees together with interest, costs and reasonable attorney's fees required for collection shall constitute a continuing lien upon the property and also a personal obligation of the Owner of such property at the

time when the assessment fell due. In addition to the assessments or user fees authorized above, the Association may levy, in any assessment year, a special assessment applicable to that year only, for the purpose of defraying in whole or in part, the cost of any construction, reconstruction, repair, maintenance or replacement of a capital improvement to the common area, road or community water, irrigation or sewage system, provided that any such special assessment shall have the approval of 66% of the Association members voting.

5. **Uniform Rate of Assessment: Method.** All assessments must be fixed at a uniform rate for all Lots. Said assessment shall first become due and owing upon the initial transfer of the Lot by the Declarant. Until *January 1, 2019*, the maximum annual assessment shall be *$300.00* per Lot. Effective for *January 1, 2019*, and effective for the first day of January of each year thereafter, the maximum annual assessment may be increased by majority vote of the Association membership.
6. **Purpose of Assessments.** The assessments levied by the Association shall be used exclusively to promote the recreation, health, safety, and welfare of the residents in the Properties, for the improvement, maintenance, repair and insurance for the common area and any water wells, pumps irrigation or sewage system, and to pay any taxes on Association property.
7. **Notice of Proposed Assessment· Quorum**. Written notice of any meeting called for the purpose of taking any action authorized under this Article VII shall be sent to all members not less than 30 days or more than 60 days in advance of the meeting. At the first such meeting called, the presence of members or of proxies entitled to cast sixty percent (66%} of all the votes shall constitute a quorum. If the required quorum is not present, another meeting may be called subject to the same notice requirement, and the required quorum at the subsequent meeting shall be one-half (1/2) of the required quorum at the preceding meeting. No such subsequent meeting shall be held more than 60 days following the preceding meeting.
8. **Date of Commencement of Annual Assessments.** The first annual assessments against each Lot shall commence on the first day of the month following the original conveyance of the Lot to an Owner by the Declarant. The first annual assessment shall be prorated according to the number of months remaining in the calendar year. The Association's Board of Directors shall fix the amount of the annual assessment against each Lot at least thirty days in advance of each annual assessment period. Written notice of the annual assessment shall be sent to every Owner subject thereto. The due dates shall be established by the Board of Directors. All user fees for wells, roads, snow removal and service to common grounds may be billed to the Owner as due and owing on a monthly basis.
9. **Suspension of Voting Rights.** The Association shall have the right to suspend the voting rights and right to use the Common areas or facilities thereon or use of the community water, irrigation or sewage system by an Owner for any period during which any assessment against a Lot or user fee remains unpaid for a period exceeding thirty (30) days and for a period not to exceed 60 days for any infraction of its published rules and regulations.
10. **Transfer of Association Property.** The Association shall have the right to dedicate or transfer all or any part of the Common area or community water, irrigation or sewage system *to* any public agency, authority, or utility for such purposes and subject to such conditions as may be agreed to by the members. However, the Association shall not have the authority to sell or transfer any real property owned by it except to such a public agency, authority, or utility or to another legal entity having similar purposes as the Association and with the consent of the Cascade County Board of Commissioners or its successor and with approval of 66% of the Owners.

11. **Effect of Nonpayment of Assessments**. Any assessment not paid within thirty (30) days after the due date shall bear interest from the due date at the rate of I 2% per annum. The Association may bring an action at law against the Owner personally obligated to pay the same, or foreclose the lien against the property. No Owner may waive or otherwise escape liability for the assessments provided for herein by non-use of the common area or abandonment of his Lot.
12. **Subordination of Lien to Mortgages.** The lien of the assessment or user fee provided for herein shall be subordinate to the lien of any first mortgage. Sale or transfer of any Lot shall not affect the lien. However, any holder of a first mortgage of trust indenture who obtains title to a Lot pursuant to the remedies provided in the mortgage or trust indenture, or by foreclosure of the mortgage or trust indenture, or by deed or assignment in lieu of foreclosure, will be liable for such Lot's unpaid dues or charges which accrue prior to the acquisition of title to such unit by the holder of the mortgage or trust indenture. Except as provided herein, no sale or transfer shall relieve any Lot from liability for any assessments thereafter becoming due or from the lien thereof The Association shall, upon demand, furnish a certificate signed by an officer of the Association setting forth whether the assessments on a specified Lot have been paid.

ARTICLE X
GENERAL PROVISIONS

1. **Covenants Run With Land: Term.** These Covenants are to run with the land and shall be binding on all parties and all persons claiming under them for a term of twenty (20) years from the date this Instrument is recorded; after which time, these Covenants shall be automatically ex1ended for successive periods often (10) years each; provided, however, that these Covenants may be amended (except Declarant's right to architectural Committee membership pursuant to Article V herein) by a seventy-five percent (75%) affirmative vote of the Owners of the Lots including the Declarant owner of a remainder parcel or parcels not yet subdivided into Lots but contiguous to the Properties; for the purpose of this paragraph, any Declarant Owner of such remainder parcel shall be entitled to one vote for each 2.5 acres of land within said parcel.
2. **Annexing of Additional Property.** Additional real property may be annexed and included under these Covenants and included in the Properties by an instrument signed by the Declarant or by the Owners representing a majority of the voting interest of the existing Properties. Properly executed covenants for said phase or addition shall be deemed such an instrument; any variations or additional restrictions contained in said covenants shall apply only to those specified Lots.
3. **Removal of Property.** Declarant has the right to remove its real property from the Association. Purposes for removal include, but not limited to schools, fire stations or any other public purposes. Real property may be removed from the Association and the Covenants by written consent of members representing not less than 66% of the votes and certified by the Association to contain the required signatures.
4. **Recording Amendments.** Any instrument amending or including additional property within the Properties subject to the Covenants must be recorded with the Clerk and Recorder of Cascade County, Montana.

5. **Enforcement.** Enforcement shall be by any person or entity with an interest in any Lot subject to these Covenants by proceeding in law or in equity against any person or persons violating or attempting to violate any of the Covenants either to restrain and enjoin such violation or to recover damages. Any court

finding a violation of any of the Covenants shall have in addition to the foregoing remedies, the right to require abatement of the violation, including removal of any structures or improvements, at the expense of the Owner of the Lot or Lots on which the violation occurs. Reasonable attorneys' fees and costs shall be awarded to prevailing parties enforcing these Covenants in any such proceedings. The award of such fees and monetary judgment shall become a lien upon the property of the Lot in violation. Failure to enforce any covenant or restriction herein contained shall not be deemed a waiver whatsoever of the right to do so thereafter.

6. **Effect of Partial Invalidation.** The invalidation of any one of these Covenants or any provision of this Instrument by judgment or court order shall not in any way affect the remaining provisions of these Covenants which shall remain in full force and effect.
7. **Acceptance of Lots "As Is ".** Owner acknowledges that Owner has accepted title to the Lot "as is" based solely upon the result of Owner's personal inspection and examination of the Lot and not in reliance upon any statements or representations or express or implied warranties by Declarant except as otherwise provided in a written purchase and sale agreement.
8. **Headings.** The article and paragraph headings contained in these Covenants are for reference purposes only and shall not affect in any way the meaning or interpretation of these Covenants.

Higgins Enterprises LTD Development Company
DBA/ River Bend Estates

_____
Rick Higgins, President

_____
Judy Higgins, Vice President

STATE OF MONTANA)

; ss

County of Cascade)

On this _____ before me, a Notary Public for the State of Montana, personally appeared, Rick Higgins and Judy Higgins, known to me to be the persons whose names are subscribed to the within instrument and acknowledged to me that they executed the same.

IN WITNESS WHEREOF, I have hereunto set m:v.-hand and affixed my Notarial Seal the day and year first above written.

NOTARY PUBLIC for the State of Montana
Residing at Great Falls, Montana
My Commission expires_____

(NOTARIAL SEAL)

13 Documentation of Legal and Physical Access

There are no new approach permits proposed for Phase III onto Flood Road.

14 EXISTING WATER RIGHTS

There are no existing groundwater or surface water rights on the existing property.

15 PROPOSED DISPOSITION OF WATER RIGHTS

As mentioned in Section 14, there are no existing water rights; therefore, no proposed disposition of water rights.

16 NAMES AND ADDRESSES OF ADJACENT PROPERTY OWNERS

The names and addresses of the adjacent property owners have been included on the Vicinity Sketch included above in Section 4. Following is a list of the adjacent property owners and addresses:

- Ed & Janis Gallison
  1009 25th Ave SW
  Great Falls, MT 59404

- John W Engebretsen
  109 Hawk Dr
  Great Falls, MT 59404

- Anton Giger
  PO Box 2668
  Great Falls, MT 59403

- Emma Wilkinson
  75 Spring Ridge Dr
  Great Falls, MT 59404

- Jeremy & Kari Miller
  4415 5th Ave S
  Great Falls, MT 59405

- Silver Stone Enterprises Inc.
  4105 15th Ave S
  Great Falls, MT 59405

- Chet & Shelly Heap
  1313 Derby Dr
  Great Falls, MT 59404

- TJ & Mandie Zumbusch
  3313 12th St NE
  Great Falls, MT 59404

17 PROPOSED ROAD PLANS AND PROFILES

One additional road is proposed to accommodate Phase III. Phase III will also utilize the roads that were designed, approved, and constructed in Phase I. The road plan and profile sheets for the new road are included above in Section 7. The right of way width is 60 feet. The road will not include sidewalks or curb and gutter. The minimum radiuses at the intersections is 25'. The minimum curve radius is 300'. The road will be maintained through an RID.

18 ENCROACHMENT PERMITS FOR CASCADE COUNTY

We are not proposing to encroach into the County right-of-way. The approaches to Flood Road were designed and approved as part of the original River Bend Estates subdivision.

19 PARKLAND DEDICATION CALCULATIONS

In accordance with Cascade County Subdivisions Regulations Section 10-12.A.3 a land donation equal to 5% of the area of the land proposed to be subdivided into parcels larger than one acre and not larger than three acres is required. The total area to be subdivided into parcels larger than one acre and not larger than three acres excluding the parkland area is 25.68 acres. Following is the parkland dedication calculation:

- 25.68 acres * .05 = 1.25 acres

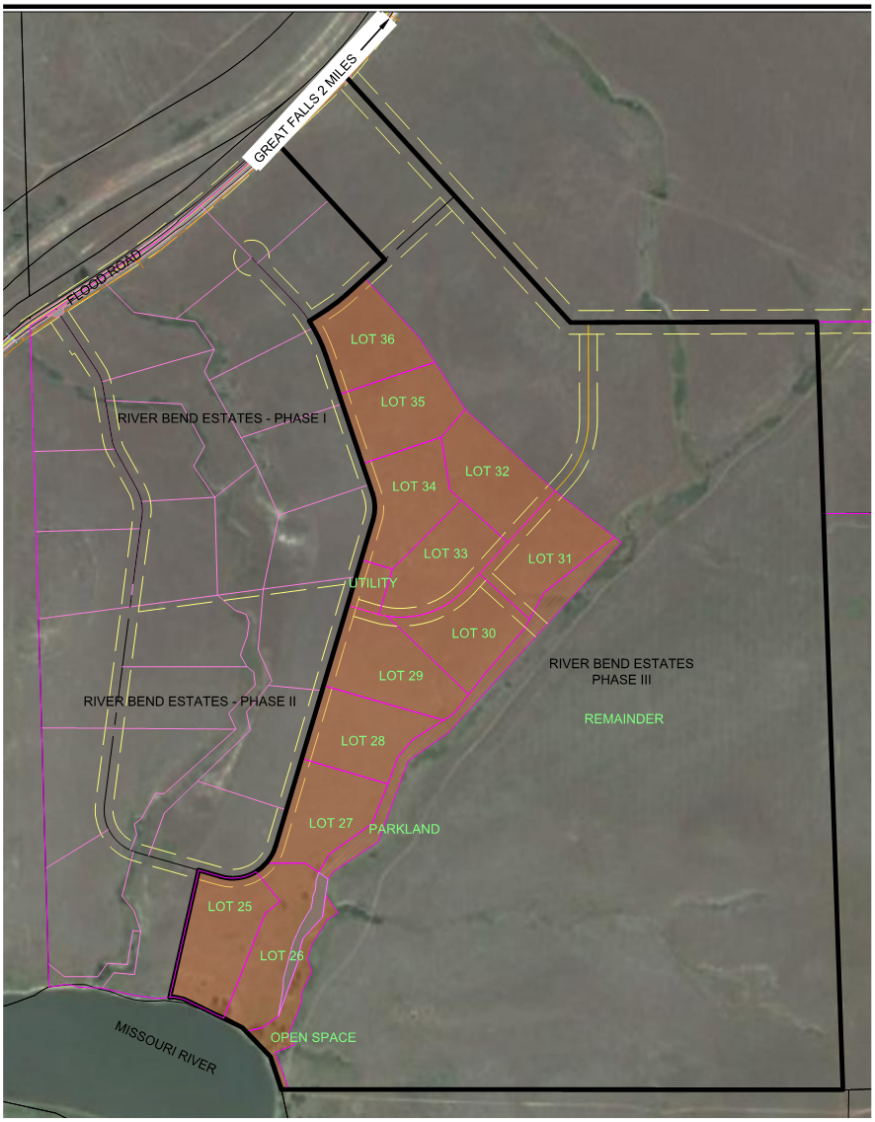
The proposed parkland is 1.69 acres.

20 Environmental Assessment, Community Impact Report, and Summary of Probable Impacts

The Environmental Assessment, Community Impact Report, and Summary of Probable Impacts are included below.

ENVIRONMENTAL ASSESSMENT

RIVER BEND ESTATES PHASE III MAJOR SUBDIVISION



Cascade County, MT

July 2020

Prepared for:

Higgins Enterprises
PO Box 322
Ulm, MT 59485

Prepared by:

Jason Crawford, PE
800 N. Last Chance Gulch
Suite 101
Helena, MT 59601

TRIPLE TREE
ENGINEERING

1 ENVIRONMENTAL ASSESSMENT 1
1.1 Surface Water 1
1.2 Groundwater 1
1.3 Topography, Geology and Soils 3
1.4 Vegetation 4
1.5 Wildlife 5

List of Appendices

Appendix A – Agency Correspondence

Appendix B – Maps

Appendix C – Well Logs

Appendix D – Groundwater Information

Appendix E – Soils Information

Appendix F – Weed Management Plan

Appendix G – USDA FSA Program Information

1 ENVIRONMENTAL ASSESSMENT

The following environmental evaluation and consideration was developed based on coordination with the MT Department of Natural Resources and Conservation, US Army Corp of Engineers, US Fish and Wildlife Services, MT Fish, Wildlife, and Park, Cascade Conservation District, and the MT Natural Heritage Program. Correspondence with the agencies is included in Appendix A. Additional environmental information provided in the MTNHP's response including Species Occurrences, Other Observed Species, Other Potential Species, Structured Surveys, Land Cover Mapping, Wetland and Riparian Area Mapping, Land Management Categories, and Biological Reports were evaluated but have not been included in Appendix A to conserve paper. The additional information is available upon request.

1.1 Surface Water

A map showing the location of the Missouri River, the FEMA defined floodplain, and the unnamed intermittent drainages in relation to River Bend Estates Phase III is included in Appendix B. According to the Cascade Conservation District the drainages located on the property are intermittent drainages. The correspondence is included in Appendix A.

There are no artificial water systems located on the property.

Water is present in the Missouri River all year and irregularly in the intermittent drainages.

The proposed River Bend Estates Phase III Subdivision does not include Missouri River stream bank alteration. Surface water will be collected and conveyed in roadside ditches and will pass underneath the new Phase III access road with a proposed culvert sized in accordance with Cascade County and MT DEQ requirements.

1.2 Groundwater

According to the MT Bureau of Mines and Geology Groundwater Assessment Program Information Pamphlet 9 "in Cascade County more than 900 wells, roughly 75 percent of all Madison wells statewide, use the Madison aquifer. Most of these wells are located in a 700-square-mile area between the Little Belt Mountain and the Missouri River near Great Falls (figure 3)."

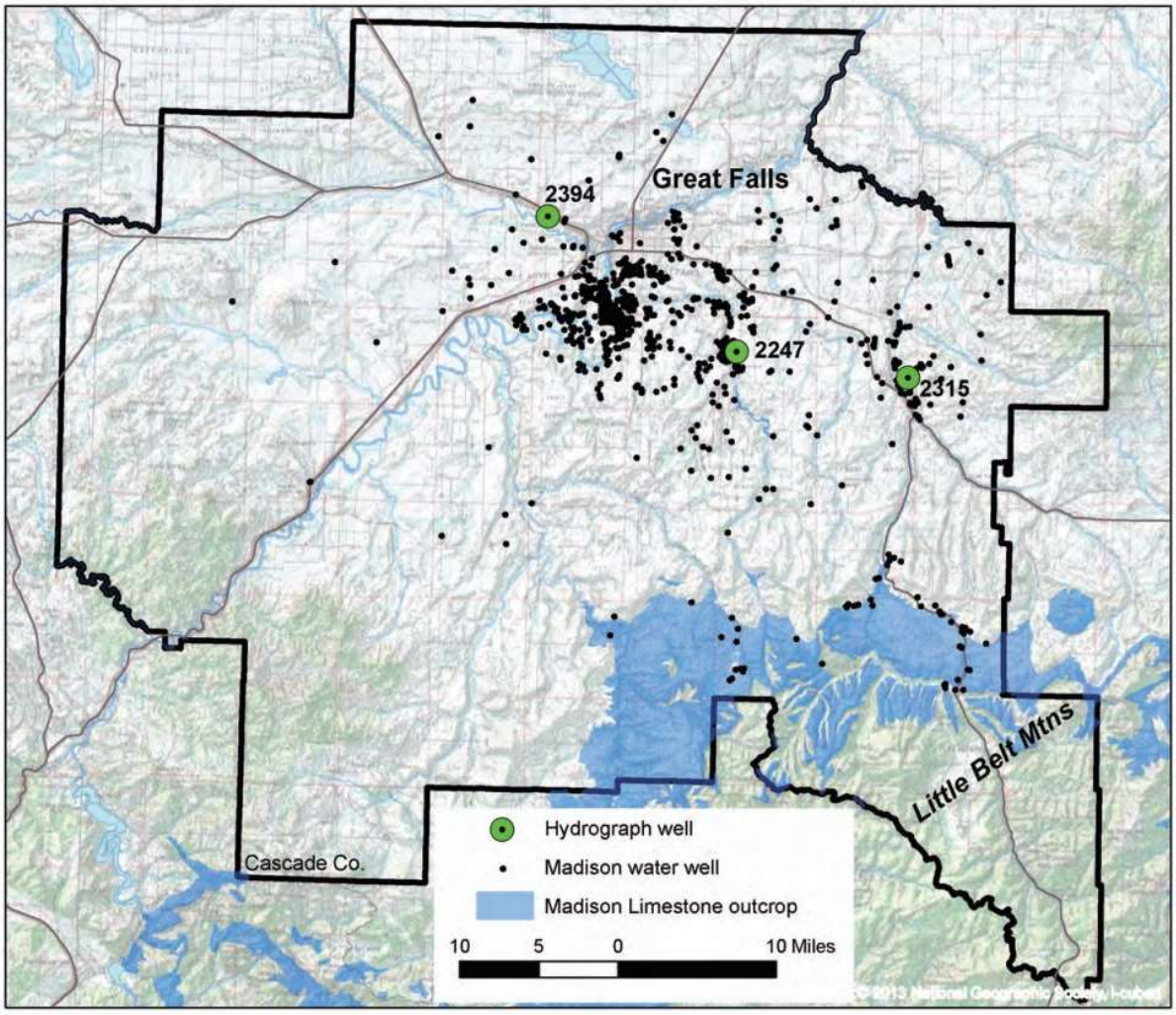


Figure 3. More than 900 wells (black dots) obtain water from the Madison Limestone near Great Falls. The Madison Limestone is exposed at the surface in the Little Belt Mountains (blue area on map), but is more than 400 feet below the surface at Great Falls.

Several well logs in and around the River Bend Estates Phase III Subdivision were reviewed. The wells in the area are general around 400' in total depth which is the recorded depth of the Madison Aquifer around Great Falls. The well logs are included in Appendix C. The following table summarizes the information from the well logs:

Well	Date Drilled	Depth	Perf. Depth	Static Water
Bruggerman	9/1/2005	450	430-450	185
Friesen	6/6/2016	390	370-390	138
Giltrap	11/12/2001	410	390-410	276
Hennessy	12/4/1991	410	380-410	175

The information reviewed in preparation of this report indicates the Madison Aquifer as the primary aquifer utilized in the area; therefore, the Madison is expected to supply water to the River Bend Estates Phase III Subdivision. It should be noted that the Kootenai which is about 150 feet deep in the area of the proposed subdivision does contain ground water intermittently. The Kootenai wells in the area are generally lower producing wells; therefore, the Madison aquifer is the primary aquifer for the area. Although the majority of the wells in the area are producing Madison aquifer water the Kootenai will likely be considered first water when computing non-degradation analyses.

According to the Phase I Feasibility Report prepared in 2009 for Central Montana Regional Water Authority by Great West Engineering. "The Madison aquifer is recharged primarily where it is visibly exposed at the land surface. These locations occur in the upland areas of the Big Snowy Mountains, Judith Mountains, Little Belt Mountains, and Moccasin Mountains. The dominant process for aquifer recharge is direct discharge to the formation from surface water, where streams flow over the outcrops."

The MBMG Reports and excerpts from the 2009 Phase I Feasibility Report are included in Appendix D.

"Zimmerman (1966) reported stream flow losses to the Madison at several locations in the Judith Basin. These observations included 90 cfs of recharge from Dry Wolf Creek, located to the northwest of Utica; 100 cfs of recharge to the Madison was reported for the Middle Fork Judith River above Sapphire Village. In this same area, 42 cfs of recharge was reported from Yogo Creek, which is tributary to the Judith River. In this particular case, the entire creek flow was discharged to formation. He also reported possibly 13 cfs of recharge from the South Fork Judith River, but noted this rate was within the measurement error. In total, Zimmerman (1966) assessed that recharge to the Madison in the Little Belt Mountains could be 180,000 af/yr, or 250 cfs." The Riverbend Estates Phase III Subdivision is estimated to utilize a total of 9.98 af/yr of which 3.92 af/yr would be for domestic use and 6.06 af/yr for irrigation. The estimated rate of recharge of 180,000 af/yr is far greater than the 10 af/yr the subdivision would utilize; therefore, aquifer depletion is not expected. Correspondence with the DNRC is included in Appendix A.

As indicated above, the groundwater recharge areas for the Madison Aquifer are located "in the upland areas of the Big Snowy Mountains, Judith Mountains, Little Belt Mountains, and Moccasin Mountains." with the Little Belts being the closest to the River Bend Estates Phase III Subdivision. The Little Belt Mountains are located approximately 40 miles southeast of the proposed subdivisions; therefore, the development is not anticipated to degrade the groundwater recharge areas.

1.3 Topography, Geology and Soils

A topographic survey was competed for the area to be subdivided and a topographic map generated. The property is well vegetated with some Class C and D soils as defined by USDA Soul Survey. There are a few areas with slopes more than 15% grade. The slopes in excess of 15% are generally limited to a small section extending approximately 25'-50' on the east side of the bottom of the intermittent drainage. The slopes over 25% have been delineated and

designated as No Build Zones on the topographic map included in Appendix B. The property is currently utilized as dryland pasture that is not grazed. A layer of shale is exposed at the surface in the bottom of the intermittent drainage at the west edge of lot 11 of River Bend Estates (Phase I) but it appears that Phase III is at a lower elevation and is below the layer of shale. On April 16th, 2020 test pits were excavated for the 12 lots. The County logged 13 test pits. There are no unstable or excessive slopes or known hazards. The two soils test pit analysis completed by the Cascade County Environmental Health Department, the corresponding Phase III test pit map, and the NRCS Soils Information is included in Appendix E. According to the MBMG interactive map there are no fault lines across the property. According to test pits excavated across the property and according to the existing well logs in the area there is no evidence of high groundwater. The well logs are included in Appendix C.

Drain fields are restricted to areas with slopes less than 25% and conditions that include 4 feet of soil before the limiting layer; therefore, drain fields cannot be constructed in those areas with bedrock near the surface. The approved drain field areas will be defined on the final plat filed with Cascade County. No Build Zones will be included on the plat limiting building within the intermittent drainages where the higher slopes exist.

One additional road is proposed to accommodate Phase III. Phase III will also utilize the roads that were designed, approved, and constructed in Phase I. The Phase III roads do not cross the intermittent drainage located on the site. The construction of the project will require a storm water pollution prevention plan which will include measures to manage the erosion and to revegetate the areas. The construction contract will include stripping and placing topsoil over the disturbed areas. All disturbed areas will be reseeded with a native seed mixture.

1.4 Vegetation

Information provided by the MT Natural Heritage Program (included in Appendix A) indicates the major vegetation types on the site as Great Plans Mixed Grass Prairie. A site review of the property indicates most of the property is vegetated with wheatgrass and fescue. Stream bank, shoreline vegetation, and a few cottonwood trees are located on the property at the Missouri River but not within the boundaries of the developed lots. As mentioned above the steepest slopes are not steep enough or unstable enough to propagate other types of vegetation.

The property is currently covered under the attached weed management plan and the owner has been successfully implementing the plan. The weed management plan is included in Appendix F. The weed management plan includes a map of the site indicating the major vegetation types including any weeds. The area to be developed is sketched on the map and is made up of "Fields" 2, 3, 9, and 10 as defined by the USDA Farm Service Agency. The property is not farmed but is included in the FSA Program. The USDA FSA Program Information is included in Appendix G. Following is a summary of the vegetation reported in each "Field":

- Field 2 – Mixed Field Grass
- Field 3 – Mixed Field Grass
- Field 9 – Grass
- Field 10 - Grass

One additional road is proposed to accommodate Phase III. Phase III will also utilize the roads that were designed, approved, and constructed in Phase I. The Phase III roads do not cross the intermittent drainage located on the site. The existing trees, stream bank, and shoreline vegetation at the Missouri River will not be impacted by the development. Cascade County requires the area defined by FEMA as a Zone A floodplain must be designated as open space or a no-build zone.

In accordance with the Cascade County July 18, 2019 River Bend Estates Phase II Major Subdivision approval, condition of approval #16 stated "A fire suppression cistern with a capacity of 64,000 installed on-site, properly maintained and equipped with the proper appurtenances for the Gore Hill volunteer Fire Department to use for firefighting at all times, for Phases 1 through 4, provided approval of Gore Hill Fire Chief is obtained. Provide the developers install and the homeowners' association maintain an accessible approach for access to the cistern at all times. A central location was agreed to by the fire chief and the 64,000-gallon tank was installed on the utility lot shown in the Phase III preliminary plat as part of Phase I construction.

1.5 Wildlife

Information provided by the MT Natural Heritage Program (included in Appendix A) includes a list of species occurrences, other observed species, other potential species, and summarizes the structured surveys in and around the area. Reference the following excerpts from the information provided by the MTNHP.

The critical wildlife area on the property is the shoreline of the Missouri River including the Cottonwood trees along the river. The Missouri River shoreline is shown on the Surface Water Exhibit included in Appendix B. The existing trees, stream bank, and shoreline vegetation at the Missouri River that is critical wildlife habitat will not be impacted by the development. Cascade County requires that the area defined by FEMA as a Zone A floodplain must be designated as open space or a no-build zone.

Appendix A – Agency Correspondence

TRIPLE TREE ENGINEERING

April 21, 2020

Department of Fish, Wildlife & Parks
1420 E. 6th Avenue
Helena, MT 59620

RE: River Bend Estates **Phase III** Subdivision

To Whom It May Concern:

Triple Tree Engineering is working with Higgins Enterprises on a residential subdivision in Cascade County. The property in located approximately 2 miles south of Great Falls. The attached vicinity maps show the location and rough layout. The subdivision would be a 12-lot residential subdivision accessing the loop road designed and approved by Cascade County for River Bend Estates Phase I as well as construction of one new road to accommodate Phase III. The new lots will utilize individual wells and drain fields. We are working with Cascade County Planning and the Cascade County Health Department to prepare the preliminary plat application.

In accordance with Cascade County Subdivision Regulations I am preparing an environmental assessment.

We are contacting your agency to identify any potential environmental impacts associated with the proposed improvements. Please take a few moments to review the proposal and provide a response detailing any potential environmental impacts. If we do not receive comments from your agency within 30 days, we will assume that you have no concerns at this time regarding the subdivision. If you have questions or comments, please contact me at 406-461-2115 or jcrawford@tripletreemt.com.

Thank You!

Sincerely,

Triple Tree Engineering, Inc.

Jason Crawford, PE

3102 Old Broadwater Lane // Helena, MT 59601 // 406.461.0692
www.tripletreemt.com

TRIPLE TREE ENGINEERING

April 21, 2020

US Army Corps of Engineers
10 W. 15th Street, Suite 2200
Helena, MT 59626

RE: River Bend Estates **Phase III** Subdivision

To Whom It May Concern:

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Sincerely,

Triple Tree Engineering, Inc.

Jason Crawford, PE

3102 Old Broadwater Lane // Helena, MT 59601 // 406.461.0692
www.tripletreemt.com

TRIPLE TREE ENGINEERING

April 21, 2020

US Fish and Wildlife Service
Ecological Services
585 Shepherd Way
Helena, MT 59601

RE: River Bend Estates **Phase III** Subdivision

To Whom It May Concern:

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Thank You!

Sincerely,

Triple Tree Engineering, Inc.

Jason Crawford, PE

3102 Old Broadwater Lane // Helena, MT 59601 // 406.461.0692
www.tripletreemt.com

TRIPLE TREE ENGINEERING

April 21, 2020

Montana Natural Heritage Program
1515 E. 6th Avenue
PO Box 201800
Helena, MT 59620-1800

RE: River Bend Estates **Phase III** Subdivision

To Whom It May Concern:

Triple Tree Engineering is working with Higgins Enterprises on a residential subdivision in Cascade County. The property in located approximately 2 miles south of Great Falls. The attached vicinity maps show the location and rough layout. The subdivision would be a 12-lot residential subdivision accessing the loop road designed and approved by Cascade County for River Bend Estates Phase I as well as construction of one new road to accommodate Phase III. The new lots will utilize individual wells and drain fields. We are working with Cascade County Planning and the Cascade County Health Department to prepare the preliminary plat application.

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Thank You!

Sincerely,

Triple Tree Engineering, Inc.

Jason Crawford, PE

3102 Old Broadwater Lane // Helena, MT 59601 // 406.461.0692
www.tripletreemt.com

TRIPLE TREE ENGINEERING

April 21, 2020

State Historic Preservation Office
1410 8th Avenue
PO Box 201202
Helena, MT 59620

RE: River Bend Estates **Phase III** Subdivision

To Whom It May Concern:

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Thank You!

Sincerely,

Triple Tree Engineering, Inc.

Jason Crawford, PE

3102 Old Broadwater Lane // Helena, MT 59601 // 406.461.0692
www.tripletreemt.com

MONTANA
Natural Heritage
Program

P.O. Box 201800 • 1515 East Sixth Avenue • Helena, MT 59620-1800 • fax 406.444.0266 • tel 406.444.5363 • http://mtnhp.org

April 27, 2020

Jason Crawford
Triple Tree Engineering
3102 Old Broadwater Lane
Helena, MT 59601

Dear Jason Crawford,

Thank you for your request for Natural Heritage information for River Bend Estates Phase III Subdivision (Cascade County). Included with this letter is an Environmental Summary report PDF and a companion Excel workbook summarizing information managed in the Montana Natural Heritage Program's (MTNHP) databases for: (1) species occurrences; (2) other observed species without Species Occurrences; (3) other species potentially present based on their range, presence of associated habitats, or predictive distribution model output if available; (4) structured surveys (organized efforts following a protocol capable of detecting one or more species); (5) land cover mapped as ecological systems; (6) wetland and riparian mapping; (7) land management categories; and (8) biological reports associated with plant and animal observations. The PDF report contains introductory materials and limitations associated with the use of each of these data types, a list of additional information resources, data use terms and conditions, and suggested contacts. The Excel workbook contains worksheets for each data type that can be easily sorted to summarize particular information needs. In addition to these materials, we have included a compilation of one page snapshots containing general description, habitat, spatial and temporal distribution, and conservation status information for each species listed in the species occurrence, other observed species, and other potential species sections of the Environmental Summary report. These three field guide compilations are excerpted from the full accounts found on the Montana Field Guide http://fieldguide.mt.gov for general reference use and, if desired, as appendices to environmental review documents.

Please keep in mind the following when using and interpreting the enclosed information:

(1) This information is intended for distribution or use only within your department, agency, or business. Please see the Data Use Terms and Conditions in the Environmental Summary report PDF for additional guidelines.

(2) Our minimum search area for standard information requests consists of the requested area buffered by an additional mile in order to capture records that may be immediately adjacent to the requested area. Please let us know if a buffer greater than 1 mile would be of use to your efforts.

(3) Additional information on animal, plant, and lichen species and ecological systems in Montana is available on the Montana Field Guide at http://fieldguide.mt.gov/

(4) In addition to the information you receive from us, we encourage you to contact state, federal, and tribal resource management agencies in the area where your project is located (see Environmental Summary report PDF).

In order to help us improve our services to you, we invite you to take a simple survey. The survey is intended to gather some basic information on the value and quality of the information and services you recently received from the Montana Natural Heritage Program. The survey is short and should not take more than a few minutes to complete. All information will be kept confidential and will be used internally to improve the delivery of services and to help document the value of our services. Use this link to go to the survey: http://www.surveymonkey.com/s/RYN8Y8L.

I hope the enclosed information is helpful to you. Please feel free to contact me at the phone or email address below if you have any questions, require additional information, or have suggestions for how we could improve our information resources.

Sincerely,

Bryce A. Maxell

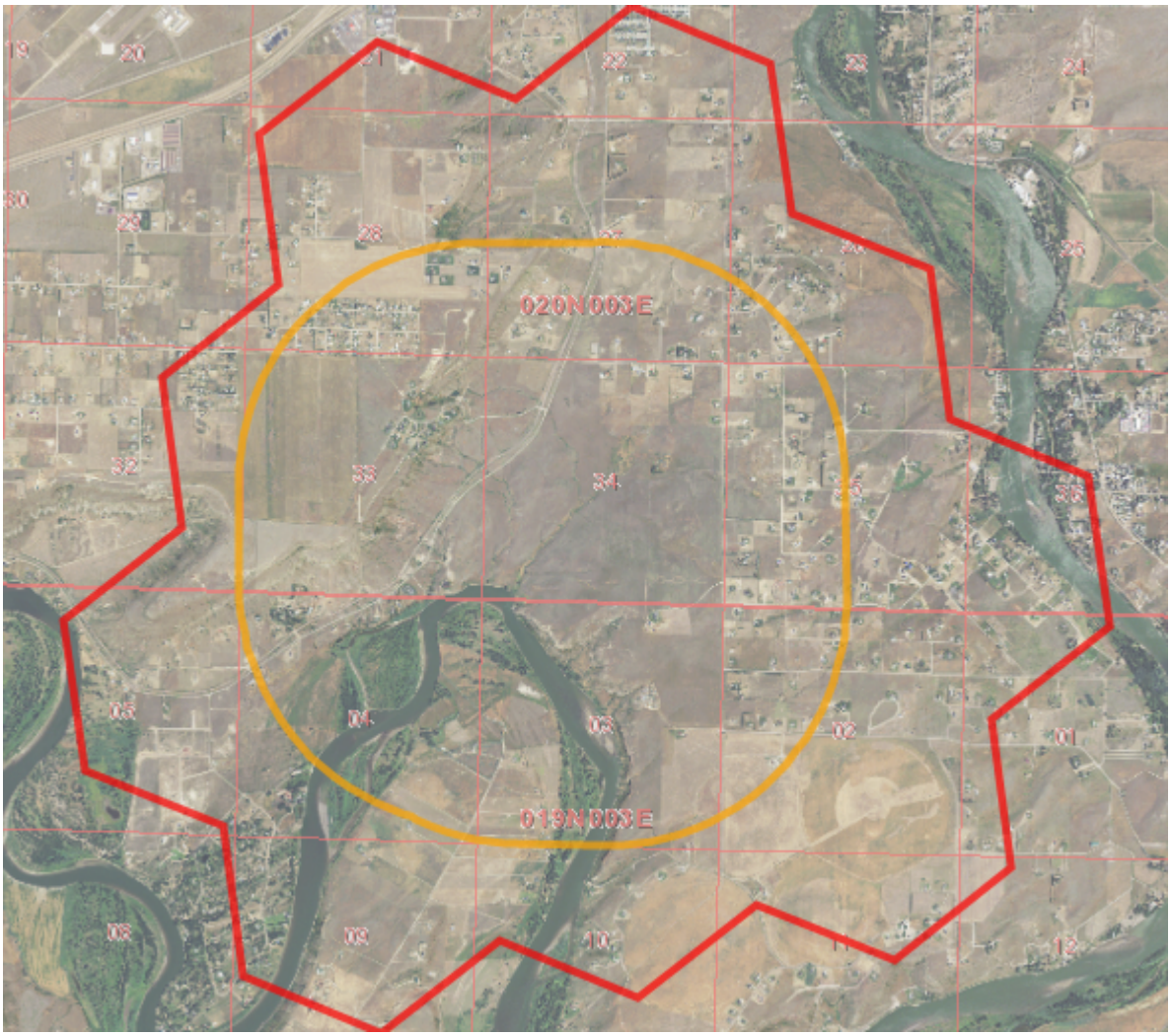
Bryce A. Maxell
Montana Natural Heritage Program
(406) 444-3989
bmaxell@mt.gov

Environmental Summary

MONTANA
Natural Heritage Program
1515 East 6th Avenue
Helena, MT 59620
(406) 444-5363
mtnhp.org

Latitude	Longitude
47.40950	-111.29426
47.47235	-111.38420

Summarized by:
20prvt0177
(Custom Area of Interest)



Suggested Citation
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for Latitude 47.40950 to 47.47235 and Longitude -111.29426 to -111.38420. Retrieved on 4/27/2020.

The Montana Natural Heritage Program is a program of the Montana State Library's Natural Resource Information System. It is operated as a special program under the Office of the Vice President for Research and Creative Scholarship at the University of Montana, Missoula.

The Montana Natural Heritage Program is part of NatureServe – a network of over 80 similar programs in states, provinces and nations throughout the Western Hemisphere, working to provide comprehensive status and distribution information for species and ecosystems.

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- Additional Information Resources

Introduction to Environmental Summary Report

The Environmental Summary report for your area of interest consists of introductory and related materials in this PDF and an Excel workbook with worksheets summarizing information managed in the Montana Natural Heritage Program's (MTNHP) databases for: (1) species occurrences; (2) other observed species without Species Occurrences; (3) other species potentially present based on their range, presence of associated habitats, or predictive distribution model output if available; (4) structured surveys (organized efforts following a protocol capable of detecting one or more species); (5) land cover mapped as ecological systems; (6) wetland and riparian mapping; (7) land management categories; and (8) biological reports associated with plant and animal observations. In order to do this in a consistent manner across Montana and allow for rapid delivery of summaries, we have intersected this information with a uniform grid of hexagons that have been used for planning efforts across the western United States (e.g. Western Association of Fish and Wildlife Agencies - Crucial Habitat Assessment Tool). Each hexagon is one square mile in area and approximately one kilometer in length on each side. Summary information for each data layer is then stored with each hexagon and those summaries are added up to an overall summary for the report area you have requested. Users should be aware that summaries do not correspond to the exact boundaries of the polygon they have specified, but instead are a summary across all hexagons intersected by the polygon they specified.

In presenting this information, MTNHP is working towards assisting the user with rapidly assessing the known or potential species and biological communities, land management categories, and biological reports associated with the report area. We remind users that this information is likely incomplete and may be inaccurate as surveys to document species are lacking in many areas of the state, species' range polygons often include regions of unsuitable habitat, methods of predicting the presence of species or communities are constantly improving, and information is constantly being added and updated in our databases. **Field verification by professional biologists of the absence or presence of species and biological communities in a report area will always be an important obligation of users of our data. Users are encouraged to only use this environmental summary report as a starting point for more in depth analyses and are encouraged to contact state, federal, and tribal resource management agencies for additional data or management guidelines relevant to your efforts. Please see the Appendix for introductory materials to each section of the report, additional information resources, and a list of relevant agency contacts.**

MONTANA Natural Heritage Program

A program of the **Montana State Library's Natural Resource Information System** operated by the **University of Montana**.

Legend

Model Icons	Habitat Icons	Range Icons	Num Obs
N Suitable (native range)	C Common	I Introduced	Count of obs with 'good precision' (<=1000m)
O Optimal Suitability	O Occasional	Y Year-round	+ indicates additional 'poor precision' obs (1001m-10,000m)
M Moderate Suitability		S Summer	
L Low Suitability		W Winter	
I Suitable (introduced range)		M Migratory	
		H Historic	

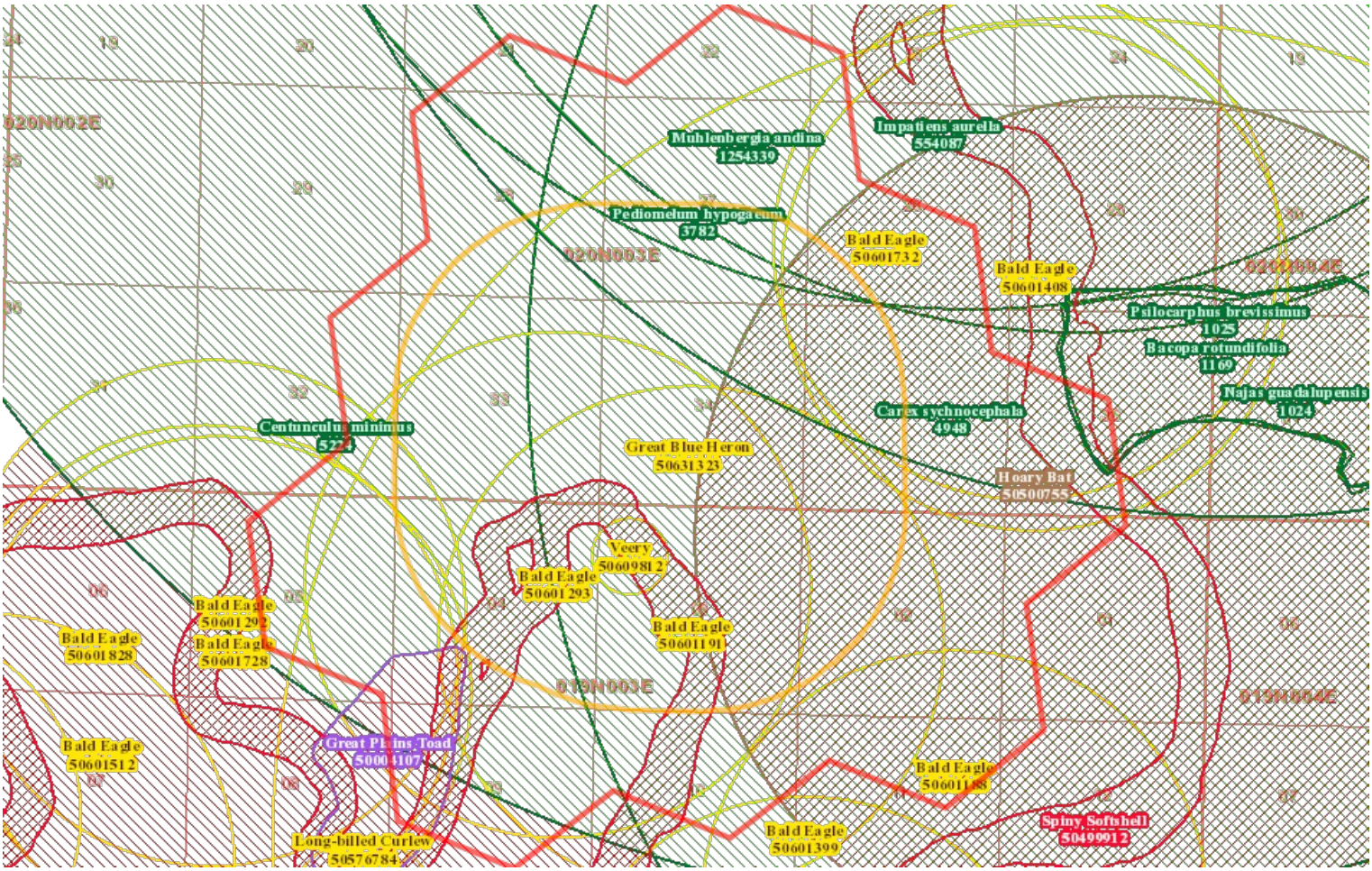
Latitude	Longitude
47.40950	-111.29426
47.47235	-111.38420

Native Species

Summarized by: **20prvt0177** *(Custom Area of Interest)*

Filtered by:

MT_Status='Species of Concern', 'Special Status', 'Important Animal Habitat', 'Potential SOC'



Species Occurrences

	USFWS Sec7	# SO	# Obs	Predictive Model	Associated Habitat	Range
R - Spiny Softshell *(Apalone spinifera)* SOC		1				Y
M - Hoary Bat *(Lasiurus cinereus)* SOC		1				S M
B - Bald Eagle *(Haliaeetus leucocephalus)* SSS		9	9 +			Y

R - Spiny Softshell *(Apalone spinifera)* SOC

View in Field Guide | View Predicted Models | View Associated Habitat | View Range Maps

Species of Concern - Native Species Global: **G5** State: **S3** BLM: **SENSITIVE** FWP SWAP: **SGCN3**

Delineation Criteria Stream reaches and impounded streams within the species' native range where the species naturally occurs and their presence has been confirmed through direct capture or where they are believed to be present based on the professional judgement of a biologist due to confirmed presence in adjacent areas. In order to reflect the importance of adjacent terrestrial habitats to survival, stream reaches are buffered 100 meters and impounded streams 50 meters into the terrestrial habitat based on PACFISH/INFISH Riparian Conservation Area standards. (Last Updated: Sep 26, 2019)

Predictive Models: N 50% Suitable (native range) (deductive) **Associated Habitats:** C 8% Common, O 1% Occasional

M - Hoary Bat *(Lasiurus cinereus)* SOC

View in Field Guide | View Predicted Models | View Associated Habitat | View Range Maps

Species of Concern - Native Species Global: **G3G4** State: **S3** BLM: **SENSITIVE** FWP SWAP: **SGCN3**

Delineation Criteria Confirmed area of occupancy based on the documented presence (mistnet captures, definitively identified acoustic recordings, and definitively identified roosting individuals) of adults or juveniles during the active season. Point observation location is buffered by a minimum distance of 3,500 meters in order to be conservative about encompassing the maximum reported foraging distance for the congeneric Lasiurus borealis and otherwise buffered by the locational uncertainty associated with the observation up to a maximum distance of 10,000 meters. (Last Updated: May 14, 2019)

Predictive Models: M 75% Moderate (inductive), L 25% Low (inductive) **Associated Habitats:** C 41% Common, O 58% Occasional

View in Field Guide **View Predicted Models** **View Associated Habitat** **View Range Maps**

Special Status Species - Native Species Global: **G5** State: **S4** USFWS: **DM; BGEPA; MBTA; BCC10; BCC11; BCC17**
USFS: **Sensitive - Known on Forests (BD, BRT, CG, HLC, KOOT, LOLO)** BLM: **SENSITIVE** PIF: **2**

Delineation Criteria Confirmed nesting area buffered by a minimum distance of 2,000 meters in order to be conservative about encompassing the breeding territory and area commonly used for renesting and otherwise buffered by the locational uncertainty associated with the observation up to a maximum distance of 10,000 meters. (Last Updated: Mar 30, 2020)

Predictive Models: M 42% Moderate (inductive), L 50% Low (inductive) **Associated Habitats:** C 8% Common, O 37% Occasional

B - Veery *(Catharus fuscescens)* **SOC** 1 1 S M

View in Field Guide **View Predicted Models** **View Associated Habitat** **View Range Maps**

Species of Concern - Native Species Global: **G5** State: **S3B** USFWS: **MBTA** BLM: **SENSITIVE** FWP SWAP: **SGCN3** PIF: **2**

Delineation Criteria Observations with evidence of breeding activity buffered by a minimum distance of 300 meters in order to be conservative about encompassing home ranges and otherwise buffered by the locational uncertainty associated with the observation up to a maximum distance of 10,000 meters. (Last Updated: Jan 03, 2020)

Predictive Models: M 42% Moderate (inductive), L 50% Low (inductive) **Associated Habitats:** C 4% Common

B - Great Blue Heron *(Ardea herodias)* **SOC** 1 1 + Y S M

View in Field Guide **View Predicted Models** **View Associated Habitat** **View Range Maps**

Species of Concern - Native Species Global: **G5** State: **S3** USFWS: **MBTA** FWP SWAP: **SGCN3**

Delineation Criteria Confirmed nesting area buffered by a minimum distance of 6,500 meters in order to be conservative about encompassing the areas commonly used for foraging near the breeding colony and otherwise buffered by the locational uncertainty associated with the observation up to a maximum distance of 10,000 meters. (Last Updated: Mar 24, 2020)

Predictive Models: M 33% Moderate (inductive), L 67% Low (inductive) **Associated Habitats:** C 4% Common

A - Great Plains Toad *(Anaxyrus cognatus)* **SOC** 1 1 Y

View in Field Guide **View Predicted Models** **View Associated Habitat** **View Range Maps**

Species of Concern - Native Species Global: **G5** State: **S2** USFS: **Sensitive - Known on Forests (CG)** BLM: **SENSITIVE** FWP SWAP: **SGCN2**

Delineation Criteria Standing water bodies with confirmed evidence of reproduction (calling adults, eggs, larvae or new metamorphs) buffered by 100 meters in order to reflect importance of adjacent terrestrial habitats to survival of breeding adults and newly metamorphosed juveniles. When specific water bodies are not able to be identified due to the difficulties of estimating distances to breeding choruses during calling surveys for this species and its tendency to breed in ephemeral waters, the species occurrence consists of the best estimate of the breeding location buffered by the locational uncertainty of the observation to a maximum distance of 10,000 meters. (Last Updated: Sep 17, 2019)

Predictive Models: L 100% Low (inductive) **Associated Habitats:** C 41% Common, O 6% Occasional

V - Bacopa rotundifolia *(Roundleaf Water-hyssop)* **SOC** 1 Not Available

View in Field Guide **View Associated Habitat**

Species of Concern - Native Species Global: **G5** State: **S3?** MNPS: **3**

Delineation Criteria Individual occurrences are generally based upon a discretely mapped area provided by an observer and are not separated by any pre-defined distance. Individual clusters of plants mapped at fine spatial scales (separated by less than approximately 25-50 meters) may be grouped together into one occurrence if they are not separated by distinct areas of habitat or terrain features. Point observations are buffered to encompass any locational uncertainty associated with the observation. (Last Updated: Apr 26, 2018)

Associated Habitats: O 8% Occasional

V - Centunculus minimus *(Chaffweed)* **SOC** 1 + Not Available

View in Field Guide **View Associated Habitat**

Species of Concern - Native Species Global: **G5** State: **S2**

Delineation Criteria Individual occurrences are generally based upon a discretely mapped area provided by an observer and are not separated by any pre-defined distance. Individual clusters of plants mapped at fine spatial scales (separated by less than approximately 25-50 meters) may be grouped together into one occurrence if they are not separated by distinct areas of habitat or terrain features. Point observations are buffered to encompass any locational uncertainty associated with the observation. (Last Updated: Sep 06, 2017)

Associated Habitats: C 4% Common

V - Najas guadalupensis *(Guadalupe Water-nymph)* **SOC** 1 Not Available

View in Field Guide **View Associated Habitat**

Species of Concern - Native Species Global: **G5** State: **S2S3**

Delineation Criteria Individual occurrences are generally based upon a discretely mapped area provided by an observer and are not separated by any pre-defined distance. Individual clusters of plants mapped at fine spatial scales (separated by less than approximately 25-50 meters) may be grouped together into one occurrence if they are not separated by distinct areas of habitat or terrain features. Point observations are buffered to encompass any locational uncertainty associated with the observation. (Last Updated: Sep 06, 2017)

Associated Habitats: C 4% Common

V - Impatiens aurella *(Pale-yellow Jewel-weed)* **SOC** 1 Not Available Not Assigned Y

View in Field Guide **View Range Maps**

Species of Concern - Native Species Global: **G4** State: **S3**

V - Psilocarphus brevissimus *(Dwarf woolly-heads)* **SOC** 1 Not Available Not Assigned Y

View in Field Guide **View Range Maps**

Species of Concern - Native Species Global: **G4** State: **S2S3** USFS: **Sensitive - Known on Forests (KOOT)** MNPS: **3**

Delineation Criteria Individual occurrences are generally based upon a discretely mapped area provided by an observer and are not separated by any pre-defined distance. Individual clusters of plants mapped at fine spatial scales (separated by less than approximately 25-50 meters) may be grouped together into one occurrence if they are not separated by distinct areas of habitat or terrain features. Point observations are buffered to encompass any locational uncertainty associated with the observation. (Last Updated: Feb 19, 2019)

V - Carex sychnocephala *(Many-headed Sedge)* **SOC** 1 + Not Available Not Assigned

View in Field Guide

Species of Concern - Native Species Global: **G5** State: **S1S2** MNPS: **1**

Delineation Criteria Individual occurrences are generally based upon a discretely mapped area provided by an observer and are not separated by any pre-defined distance. Individual clusters of plants mapped at fine spatial scales (separated by less than approximately 25-50 meters) may be grouped together into one occurrence if they are not separated by distinct areas of habitat or terrain features. Point observations are buffered to encompass any locational uncertainty associated with the observation. (Last Updated: Apr 26, 2018)

V - Muhlenbergia andina *(Foxtail Muhly)* **SOC**	1		Not Available	Not Assigned

View in Field Guide

Species of Concern - Native Species Global: **G4** State: **S2S3**

V - Pediomelum hypogaeum *(Little Indian Breadroot)* **PSOC**	1	+	Not Available	Not Assigned

View in Field Guide

Potential Species of Concern - Native Species Global: **G5** State: **S3S4** MNPS: **3**

Delineation Criteria Individual occurrences are generally based upon a discretely mapped area provided by an observer and are not separated by any pre-defined distance. Individual clusters of plants mapped at fine spatial scales (separated by less than approximately 25-50 meters) may be grouped together into one occurrence if they are not separated by distinct areas of habitat or terrain features. Point observations are buffered to encompass any locational uncertainty associated with the observation. (Last Updated: Sep 06, 2017)

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Legend

Model Icons	Habitat Icons	Range Icons	Num Obs
N Suitable (native range)	C Common	I Introduced	Count of obs with 'good precision' (<=1000m)
O Optimal Suitability	O Occasional	Y Year-round	+ indicates additional 'poor precision' obs (1001m-10,000m)
M Moderate Suitability		S Summer	
L Low Suitability		W Winter	
I Suitable (introduced range)		M Migratory	
		H Historic	

Latitude	Longitude
47.40950	-111.29426
47.47235	-111.38420

Native Species

Summarized by: **20prvt0177** *(Custom Area of Interest)*
Filtered by:
MT_Status='Species of Concern', 'Special Status', 'Important Animal Habitat', 'Potential SOC'

Other Observed Species

	USFWS Sec7	# Obs	Predictive Model	Associated Habitat	Range
B - Golden Eagle *(Aquila chrysaetos)* SOC		+			Y
A - Northern Leopard Frog *(Lithobates pipiens)* SOC		1			Y
M - Black-tailed Prairie Dog *(Cynomys ludovicianus)* SOC		+			Y
B - Ferruginous Hawk *(Buteo regalis)* SOC		+			S M
B - Common Tern *(Sterna hirundo)* SOC		+			S M
M - Black-footed Ferret *(Mustela nigripes)* SOC		+	Not Available		H
B - Franklin's Gull *(Leucophaeus pipixcan)* SOC		+	Not Available		S M
B - Piping Plover *(Charadrius melodus)* SOC		+	Not Available		M
B - Forster's Tern *(Sterna forsteri)* SOC		+	Not Available		S M
B - American White Pelican *(Pelecanus erythrorhynchos)* SOC		+	Not Available		M
B - Trumpeter Swan *(Cygnus buccinator)* SOC		+	Not Available		M

B - Golden Eagle *(Aquila chrysaetos)* SOC

View in Field Guide | View Predicted Models | View Associated Habitat | View Range Maps

Species of Concern - Native Species Global: **G5** State: **S3** USFWS: **BGEPA; MBTA; BCC17** BLM: **SENSITIVE** FWP SWAP: **SGCN3**

Predictive Models: M 42% Moderate (inductive), L 58% Low (inductive) **Associated Habitats:** C 37% Common, O 29% Occasional

A - Northern Leopard Frog *(Lithobates pipiens)* SOC

View in Field Guide | View Predicted Models | View Associated Habitat | View Range Maps

Species of Concern - Native Species Global: **G5** State: **S1,S4** USFS: **Sensitive - Known on Forests (CG, HLC, KOOT)** **Sensitive - Suspected on Forests (BRT, LOLO)** BLM: **SENSITIVE** FWP SWAP: **SGCN1**

Predictive Models: M 17% Moderate (inductive), L 83% Low (inductive) **Associated Habitats:** C 8% Common, O 5% Occasional

M - Black-tailed Prairie Dog *(Cynomys ludovicianus)* SOC

View in Field Guide | View Predicted Models | View Associated Habitat | View Range Maps

Species of Concern - Native Species Global: **G4** State: **S3** USFS: **Sensitive - Known on Forests (CG)** BLM: **SENSITIVE** FWP SWAP: **SGCN3**

Predictive Models: M 8% Moderate (inductive), L 92% Low (inductive) **Associated Habitats:** C 32% Common, O 50% Occasional

B - Ferruginous Hawk *(Buteo regalis)* SOC

View in Field Guide | View Predicted Models | View Associated Habitat | View Range Maps

Species of Concern - Native Species Global: **G4** State: **S3B** USFWS: **MBTA; BCC10; BCC17** BLM: **SENSITIVE** FWP SWAP: **SGCN3** PIF: **2**

Predictive Models: L 92% Low (inductive) **Associated Habitats:** C 33% Common, O 1% Occasional

B - Common Tern *(Sterna hirundo)* SOC

View in Field Guide | View Predicted Models | View Associated Habitat | View Range Maps

Species of Concern - Native Species Global: **G5** State: **S3B** USFWS: **MBTA** BLM: **SENSITIVE** FWP SWAP: **SGCN3** PIF: **2**

Predictive Models: L 33% Low (inductive) **Associated Habitats:** C 8% Common

M - Black-footed Ferret *(Mustela nigripes)* SOC

View in Field Guide | View Associated Habitat | View Range Maps

Species of Concern - Native Species Global: **G1** State: **S1** USFWS: **LE; XN** USFS: **Endangered, Experimental Nonessential on Forests (CG)** BLM: **ENDANGERED** FWP SWAP: **SGCN1**

Associated Habitats: C 32% Common

B - Franklin's Gull *(Leucophaeus pipixcan)* SOC

View in Field Guide | View Associated Habitat | View Range Maps

Species of Concern - Native Species Global: **G5** State: **S3B** USFWS: **MBTA** BLM: **SENSITIVE** FWP SWAP: **SGCN3** PIF: **2**

Associated Habitats: C 8% Common, O 57% Occasional

B - Piping Plover *(Charadrius melodus)* SOC

View in Field Guide | View Associated Habitat | View Range Maps

Species of Concern - Native Species Global: **G3** State: **S2B** USFWS: **LT; CH; MBTA** BLM: **THREATENED** FWP SWAP: **SGCN2** PIF: **1**

Associated Habitats: C 8% Common

B - Forster's Tern *(Sterna forsteri)* SOC

View in Field Guide | View Associated Habitat | View Range Maps

Species of Concern - Native Species Global: **G5** State: **S3B** USFWS: **MBTA** BLM: **SENSITIVE** FWP SWAP: **SGCN3** PIF: **2**

Associated Habitats: C 4% Common, O 4% Occasional

B - American White Pelican *(Pelecanus erythrorhynchos)* SOC

View in Field Guide | View Associated Habitat | View Range Maps

Species of Concern - Native Species Global: **G4** State: **S3B** USFWS: **MBTA** FWP SWAP: **SGCN3** PIF: **3**

Associated Habitats: C 4% Common

B - Trumpeter Swan *(Cygnus buccinator)* SOC

View in Field Guide **View Associated Habitat** **View Range Maps**

Species of Concern - Native Species Global: **G4** State: **S3** USFWS: **MBTA** USFS: **Sensitive - Known on Forests (BD, CG)** BLM: **SENSITIVE** FWP SWAP: **SGCN3** PIF: **1**

Associated Habitats: C 4% Common

B - Sedge Wren *(Cistothorus platensis)* **SOC** + Not Available

View in Field Guide **View Associated Habitat**

Species of Concern - Native Species Global: **G5** State: **S3B** USFWS: **MBTA** FWP SWAP: **SGCN3** PIF: **3**

Associated Habitats: C 4% Common

B - Gray-crowned Rosy-Finch *(Leucosticte tephrocotis)* **SOC** + Not Available Not Assigned WM

View in Field Guide **View Range Maps**

Species of Concern - Native Species Global: **G5** State: **S2B,S5N** USFWS: **MBTA** FWP SWAP: **SGCN2, SGIN**

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Legend

Model Icons	Habitat Icons	Range Icons	Num Obs
N Suitable (native range)	C Common	I Introduced	Count of obs with 'good precision' (<=1000m)
O Optimal Suitability	O Occasional	Y Year-round	+ indicates additional 'poor precision' obs (1001m-10,000m)
M Moderate Suitability		S Summer	
L Low Suitability		W Winter	
I Suitable (introduced range)		M Migratory	
		H Historic	

Latitude	Longitude
47.40950	-111.29426
47.47235	-111.38420

Native Species

Summarized by: **20prvt0177** *(Custom Area of Interest)*
Filtered by:
MT_Status='Species of Concern', 'Special Status', 'Important Animal Habitat', 'Potential SOC'

Other Potential Species

	USFWS Sec7	Predictive Model	Associated Habitat	Range
F - Burbot *(Lota lota)* PSOC			Not Assigned	Y
M - Porcupine *(Erethizon dorsatum)* PSOC				Y
M - Little Brown Myotis *(Myotis lucifugus)* SOC				Y
M - Merriam's Shrew *(Sorex merriami)* SOC				Y
M - Spotted Bat *(Euderma maculatum)* SOC				S M
B - Pinyon Jay *(Gymnorhinus cyanocephalus)* SOC				Y
M - Silver-haired Bat *(Lasionycteris noctivagans)* PSOC				Y
M - Townsend's Big-eared Bat *(Corynorhinus townsendii)* SOC				Y
V - Carex scoparia *(Pointed Broom Sedge)* SOC			Not Assigned	Y
R - Western Milksnake *(Lampropeltis gentilis)* SOC				Y
M - Fringed Myotis *(Myotis thysanodes)* SOC				Y

F - Burbot *(Lota lota)* PSOC

View in Field Guide **View Predicted Models** **View Range Maps**
Potential Species of Concern - Native Species Global: **G5** State: **S4**
Predictive Models: N 42% Suitable (native range) (deductive)

M - Porcupine *(Erethizon dorsatum)* PSOC

View in Field Guide **View Predicted Models** **View Associated Habitat** **View Range Maps**
Potential Species of Concern - Native Species Global: **G5** State: **S4** FWP SWAP: **SGIN**
Predictive Models: M 100% Moderate (inductive) **Associated Habitats:** C 54% Common, O 3% Occasional

M - Little Brown Myotis *(Myotis lucifugus)* SOC

View in Field Guide **View Predicted Models** **View Associated Habitat** **View Range Maps**
Species of Concern - Native Species Global: **G3** State: **S3** FWP SWAP: **SGCN3**
Predictive Models: M 92% Moderate (inductive), L 8% Low (inductive) **Associated Habitats:** C 62% Common, O 38% Occasional

M - Merriam's Shrew *(Sorex merriami)* SOC

View in Field Guide **View Predicted Models** **View Associated Habitat** **View Range Maps**
Species of Concern - Native Species Global: **G4** State: **S3** FWP SWAP: **SGCN3**
Predictive Models: M 92% Moderate (inductive), L 8% Low (inductive) **Associated Habitats:** C 53% Common, O 1% Occasional

M - Spotted Bat *(Euderma maculatum)* SOC

View in Field Guide **View Predicted Models** **View Associated Habitat** **View Range Maps**
Species of Concern - Native Species Global: **G4** State: **S3** USFS: **Sensitive - Known on Forests (BD, CG)** BLM: **SENSITIVE** FWP SWAP: **SGCN3, SGIN**
Predictive Models: M 83% Moderate (inductive), L 17% Low (inductive) **Associated Habitats:** C 42% Common, O 28% Occasional

B - Pinyon Jay *(Gymnorhinus cyanocephalus)* SOC

View in Field Guide **View Predicted Models** **View Associated Habitat** **View Range Maps**
Species of Concern - Native Species Global: **G3** State: **S3** USFWS: **MBTA; BCC17** FWP SWAP: **SGCN3**
Predictive Models: M 83% Moderate (inductive), L 17% Low (inductive) **Associated Habitats:** C 1% Common, O 20% Occasional

M - Silver-haired Bat *(Lasionycteris noctivagans)* PSOC

View in Field Guide **View Predicted Models** **View Associated Habitat** **View Range Maps**
Potential Species of Concern - Native Species Global: **G3G4** State: **S4**
Predictive Models: M 67% Moderate (inductive), L 33% Low (inductive) **Associated Habitats:** C 42% Common, O 51% Occasional

M - Townsend's Big-eared Bat *(Corynorhinus townsendii)* SOC

View in Field Guide **View Predicted Models** **View Associated Habitat** **View Range Maps**
Species of Concern - Native Species Global: **G4** State: **S3** USFS: **Sensitive - Known on Forests (BD, BRT, CG, HLC, KOOT, LOLO)** BLM: **SENSITIVE** FWP SWAP: **SGCN3**
Predictive Models: M 50% Moderate (inductive), L 50% Low (inductive) **Associated Habitats:** C 9% Common, O 50% Occasional

V - Carex scoparia *(Pointed Broom Sedge)* SOC

View in Field Guide **View Predicted Models** **View Range Maps**
Species of Concern - Native Species Global: **G5** State: **S1S2**
Predictive Models: M 50% Moderate (inductive), L 42% Low (inductive)

R - Western Milksnake *(Lampropeltis gentilis)* SOC

View in Field Guide **View Predicted Models** **View Associated Habitat** **View Range Maps**
Species of Concern - Native Species Global: **G5** State: **S2** USFS: **Sensitive - Known on Forests (CG)** BLM: **SENSITIVE** FWP SWAP: **SGCN2**
Predictive Models: M 42% Moderate (inductive), L 58% Low (inductive) **Associated Habitats:** C 37% Common, O 22% Occasional

M - Fringed Myotis *(Myotis thysanodes)* SOC

View in Field Guide | View Predicted Models | View Associated Habitat | View Range Maps
Species of Concern - Native Species Global: **G4** State: **S3** BLM: **SENSITIVE** FWP SWAP: **SGCN3**
Predictive Models: M 42% Moderate (inductive), L 58% Low (inductive) **Associated Habitats:** C 9% Common, O 61% Occasional

M - Hayden's Shrew *(Sorex haydeni)* PSOC Y

View in Field Guide | View Predicted Models | View Associated Habitat | View Range Maps
Potential Species of Concern - Native Species Global: **G5** State: **S3S4**
Predictive Models: M 33% Moderate (inductive), L 67% Low (inductive) **Associated Habitats:** C 82% Common

B - Black-billed Cuckoo *(Coccyzus erythropthalmus)* SOC S M

View in Field Guide | View Predicted Models | View Associated Habitat | View Range Maps
Species of Concern - Native Species Global: **G5** State: **S3B** USFWS: **MBTA; BCC11; BCC17** BLM: **SENSITIVE** FWP SWAP: **SGCN3, SGIN** PIF: **2**
Predictive Models: M 33% Moderate (inductive), L 67% Low (inductive) **Associated Habitats:** C 4% Common

V - Lilium philadelphicum *(Wood Lily)* SOC Not Assigned Y

View in Field Guide | View Predicted Models | View Range Maps
Species of Concern - Native Species Global: **G5** State: **S3**
Predictive Models: M 33% Moderate (inductive), L 58% Low (inductive)

V - Cyperus schweinitzii *(Schweinitz's Flatsedge)* SOC Y

View in Field Guide | View Predicted Models | View Associated Habitat | View Range Maps
Species of Concern - Native Species Global: **G5** State: **S2** MNPS: **4**
Predictive Models: M 33% Moderate (inductive), L 50% Low (inductive) **Associated Habitats:** C 3% Common

M - Eastern Red Bat *(Lasiurus borealis)* SOC S M

View in Field Guide | View Predicted Models | View Associated Habitat | View Range Maps
Species of Concern - Native Species Global: **G3G4** State: **S3** BLM: **SENSITIVE**
Predictive Models: M 25% Moderate (inductive), L 75% Low (inductive) **Associated Habitats:** C 37% Common, O 25% Occasional

B - Long-billed Curlew *(Numenius americanus)* SOC S M

View in Field Guide | View Predicted Models | View Associated Habitat | View Range Maps
Species of Concern - Native Species Global: **G5** State: **S3B** USFWS: **MBTA; BCC10; BCC11; BCC17** BLM: **SENSITIVE** FWP SWAP: **SGCN3** PIF: **2**
Predictive Models: M 25% Moderate (inductive), L 75% Low (inductive) **Associated Habitats:** C 29% Common, O 10% Occasional

V - Carex crawei *(Crawe's Sedge)* SOC Not Assigned Y

View in Field Guide | View Predicted Models | View Range Maps
Species of Concern - Native Species Global: **G5** State: **S2S3** MNPS: **2**
Predictive Models: M 17% Moderate (inductive), L 83% Low (inductive)

M - White-footed Mouse *(Peromyscus leucopus)* PSOC Y

View in Field Guide | View Predicted Models | View Associated Habitat | View Range Maps
Potential Species of Concern - Native Species Global: **G5** State: **S4**
Predictive Models: M 17% Moderate (inductive), L 75% Low (inductive) **Associated Habitats:** C 83% Common

V - Chenopodium subglabrum *(Smooth Goosefoot)* SOC Y

View in Field Guide | View Predicted Models | View Associated Habitat | View Range Maps
Species of Concern - Native Species Global: **G3G4** State: **S2** MNPS: **4**
Predictive Models: M 8% Moderate (inductive), L 75% Low (inductive) **Associated Habitats:** C 3% Common, O 4% Occasional

B - Bobolink *(Dolichonyx oryzivorus)* SOC S M

View in Field Guide | View Predicted Models | View Associated Habitat | View Range Maps
Species of Concern - Native Species Global: **G5** State: **S3B** USFWS: **MBTA** FWP SWAP: **SGCN3** PIF: **3**
Predictive Models: L 100% Low (inductive) **Associated Habitats:** C 82% Common, O 1% Occasional

B - Short-eared Owl *(Asio flammeus)* PSOC Y

View in Field Guide | View Predicted Models | View Associated Habitat | View Range Maps
Potential Species of Concern - Native Species Global: **G5** State: **S4** USFWS: **MBTA; BCC11; BCC17** PIF: **3**
Predictive Models: L 100% Low (inductive) **Associated Habitats:** C 65% Common, O 17% Occasional

M - Preble's Shrew *(Sorex preblei)* SOC Y

View in Field Guide | View Predicted Models | View Associated Habitat | View Range Maps
Species of Concern - Native Species Global: **G4** State: **S3** FWP SWAP: **SGCN3**
Predictive Models: L 100% Low (inductive) **Associated Habitats:** C 53% Common

B - Eastern Bluebird *(Sialia sialis)* PSOC S M

View in Field Guide | View Predicted Models | View Associated Habitat | View Range Maps
Potential Species of Concern - Native Species Global: **G5** State: **S4B** USFWS: **MBTA**
Predictive Models: L 100% Low (inductive) **Associated Habitats:** C 38% Common, O 20% Occasional

R - Greater Short-horned Lizard *(Phrynosoma hernandesi)* SOC Y

View in Field Guide | View Predicted Models | View Associated Habitat | View Range Maps

Species of Concern - Native Species Global: **G5** State: **S3** USFS: **Sensitive - Known on Forests (CG)** **Sensitive - Suspected on Forests (HLC)** BLM: **SENSITIVE** FWP SWAP: **SGCN3, SGIN**

Predictive Models: L 100% Low (inductive) **Associated Habitats:** C 32% Common, O 1% Occasional

B - Burrowing Owl *(Athene cunicularia)* **SOC** S M

View in Field Guide | View Predicted Models | View Associated Habitat | View Range Maps

Species of Concern - Native Species Global: **G4** State: **S3B** USFWS: **MBTA; BCC17** USFS: **Sensitive - Known on Forests (CG)** **Sensitive - Suspected on Forests (HLC)** BLM: **SENSITIVE** FWP SWAP: **SGCN3** PIF: **1**

Predictive Models: L 100% Low (inductive) **Associated Habitats:** C 29% Common, O 20% Occasional

M - Dwarf Shrew *(Sorex nanus)* **SOC** Y

View in Field Guide | View Predicted Models | View Associated Habitat | View Range Maps

Species of Concern - Native Species Global: **G4** State: **S2S3** FWP SWAP: **SGCN2-3**

Predictive Models: L 100% Low (inductive) **Associated Habitats:** C 29% Common, O 16% Occasional

M - Grizzly Bear *(Ursus arctos)* **SOC** 7 Y

View in Field Guide | View Predicted Models | View Associated Habitat | View Range Maps

Species of Concern - Native Species Global: **G4** State: **S2S3** USFWS: **PS: LT; XN** USFS: **Threatened on Forests (BD, CG, HLC, KOOT, LOLO)** BLM: **THREATENED** FWP SWAP: **SGCN2-3**

Predictive Models: L 100% Low (inductive) **Associated Habitats:** C 5% Common, O 29% Occasional

V - Elodea bifoliata *(Long-sheath Waterweed)* **SOC** Y

View in Field Guide | View Predicted Models | View Associated Habitat | View Range Maps

Species of Concern - Native Species Global: **G4G5** State: **S2?** MNPS: **3**

Predictive Models: L 100% Low (inductive) **Associated Habitats:** C 4% Common

B - Brewer's Sparrow *(Spizella breweri)* **SOC** S M

View in Field Guide | View Predicted Models | View Associated Habitat | View Range Maps

Species of Concern - Native Species Global: **G5** State: **S3B** USFWS: **MBTA; BCC10; BCC17** BLM: **SENSITIVE** FWP SWAP: **SGCN3** PIF: **2**

Predictive Models: L 100% Low (inductive) **Associated Habitats:** C 1% Common, O 1% Occasional

B - Rufous Hummingbird *(Selasphorus rufus)* **PSOC** S M

View in Field Guide | View Predicted Models | View Associated Habitat | View Range Maps

Potential Species of Concern - Native Species Global: **G5** State: **S4B** USFWS: **MBTA** PIF: **3**

Predictive Models: L 92% Low (inductive) **Associated Habitats:** C 21% Common, O 5% Occasional

B - Green-tailed Towhee *(Pipilo chlorurus)* **SOC** S M

View in Field Guide | View Predicted Models | View Associated Habitat | View Range Maps

Species of Concern - Native Species Global: **G5** State: **S3B** USFWS: **MBTA** FWP SWAP: **SGCN3** PIF: **3**

Predictive Models: L 92% Low (inductive) **Associated Habitats:** C 5% Common, O 34% Occasional

B - Lewis's Woodpecker *(Melanerpes lewis)* **SOC** S M

View in Field Guide | View Predicted Models | View Associated Habitat | View Range Maps

Species of Concern - Native Species Global: **G4** State: **S2B** USFWS: **MBTA; BCC10; BCC17** BLM: **SENSITIVE** FWP SWAP: **SGCN2** PIF: **2**

Predictive Models: L 92% Low (inductive) **Associated Habitats:** O 4% Occasional

B - Loggerhead Shrike *(Lanius ludovicianus)* **SOC** S M

View in Field Guide | View Predicted Models | View Associated Habitat | View Range Maps

Species of Concern - Native Species Global: **G4** State: **S3B** USFWS: **MBTA; BCC10; BCC17** BLM: **SENSITIVE** FWP SWAP: **SGCN3** PIF: **2**

Predictive Models: L 83% Low (inductive) **Associated Habitats:** C 53% Common, O 29% Occasional

R - Plains Hog-nosed Snake *(Heterodon nasicus)* **SOC** Y

View in Field Guide | View Predicted Models | View Associated Habitat | View Range Maps

Species of Concern - Native Species Global: **G5** State: **S2** USFS: **Sensitive - Known on Forests (CG)** BLM: **SENSITIVE** FWP SWAP: **SGCN2, SGIN**

Predictive Models: L 67% Low (inductive) **Associated Habitats:** C 37% Common, O 2% Occasional

B - Baird's Sparrow *(Centronyx bairdii)* **SOC** S M

View in Field Guide | View Predicted Models | View Associated Habitat | View Range Maps

Species of Concern - Native Species Global: **G4** State: **S3B** USFWS: **MBTA; BCC11; BCC17** BLM: **SENSITIVE** FWP SWAP: **SGCN3** PIF: **1**

Predictive Models: L 67% Low (inductive) **Associated Habitats:** C 33% Common, O 1% Occasional

M - Swift Fox *(Vulpes velox)* **SOC** Y

View in Field Guide | View Predicted Models | View Associated Habitat | View Range Maps

Species of Concern - Native Species Global: **G3** State: **S3** BLM: **SENSITIVE** FWP SWAP: **SGCN3**

Predictive Models: L 67% Low (inductive) **Associated Habitats:** C 29% Common, O 5% Occasional

B - Sprague's Pipit *(Anthus spragueii)* **SOC** 7 S M

View in Field Guide | View Predicted Models | View Associated Habitat | View Range Maps

Species of Concern - Native Species Global: **G3G4** State: **S3B** USFWS: **MBTA; BCC11; BCC17** BLM: **SENSITIVE** FWP SWAP: **SGCN3** PIF: **1**

Predictive Models: L 67% Low (inductive) **Associated Habitats:** C 29% Common, O 5% Occasional

B - Common Poorwill *(Phalaenoptilus nuttallii)* **PSOC**

View in Field Guide **View Predicted Models** **View Associated Habitat** **View Range Maps**
Potential Species of Concern - Native Species Global: **G5** State: **S4B** USFWS: **MBTA** FWP SWAP: **SGIN** PIF: **3**
Predictive Models: L 58% Low (inductive) **Associated Habitats:** C 37% Common, O 50% Occasional

B - Ovenbird *(Seiurus aurocapilla)* **PSOC**

View in Field Guide **View Predicted Models** **View Associated Habitat** **View Range Maps**
Potential Species of Concern - Native Species Global: **G5** State: **S4B** USFWS: **MBTA** PIF: **3**
Predictive Models: L 50% Low (inductive) **Associated Habitats:** C 4% Common, O 1% Occasional

B - American Bittern *(Botaurus lentiginosus)* **SOC**

View in Field Guide **View Predicted Models** **View Associated Habitat** **View Range Maps**
Species of Concern - Native Species Global: **G5** State: **S3B** USFWS: **MBTA; BCC11; BCC17** BLM: **SENSITIVE** FWP SWAP: **SGCN3** PIF: **3**
Predictive Models: L 50% Low (inductive) **Associated Habitats:** C 4% Common

B - Barrow's Goldeneye *(Bucephala islandica)* **PSOC**

View in Field Guide **View Predicted Models** **View Associated Habitat** **View Range Maps**
Potential Species of Concern - Native Species Global: **G5** State: **S4** USFWS: **MBTA** FWP SWAP: **SGIN** PIF: **2**
Predictive Models: L 42% Low (inductive) **Associated Habitats:** C 8% Common

B - Black Tern *(Chlidonias niger)* **SOC**

View in Field Guide **View Predicted Models** **View Associated Habitat** **View Range Maps**
Species of Concern - Native Species Global: **G4G5** State: **S3B** USFWS: **MBTA; BCC11** BLM: **SENSITIVE** FWP SWAP: **SGCN3** PIF: **2**
Predictive Models: L 42% Low (inductive) **Associated Habitats:** C 4% Common, O 1% Occasional

B - Cassin's Finch *(Haemorhous cassinii)* **SOC**

Not Assigned

View in Field Guide **View Predicted Models** **View Range Maps**
Species of Concern - Native Species Global: **G5** State: **S3** USFWS: **MBTA; BCC10** FWP SWAP: **SGCN3** PIF: **3**
Predictive Models: L 42% Low (inductive)

B - Black-crowned Night-Heron *(Nycticorax nycticorax)* **SOC**

View in Field Guide **View Predicted Models** **View Associated Habitat** **View Range Maps**
Species of Concern - Native Species Global: **G5** State: **S3B** USFWS: **MBTA** FWP SWAP: **SGCN3** PIF: **3**
Predictive Models: L 33% Low (inductive) **Associated Habitats:** C 8% Common

B - Great Gray Owl *(Strix nebulosa)* **SOC**

Not Assigned

View in Field Guide **View Predicted Models** **View Range Maps**
Species of Concern - Native Species Global: **G5** State: **S3** USFWS: **MBTA** BLM: **SENSITIVE** FWP SWAP: **SGCN3, SGIN** PIF: **3**
Predictive Models: L 33% Low (inductive)

B - Black-necked Stilt *(Himantopus mexicanus)* **SOC**

View in Field Guide **View Predicted Models** **View Associated Habitat** **View Range Maps**
Species of Concern - Native Species Global: **G5** State: **S3B** USFWS: **MBTA** FWP SWAP: **SGCN3** PIF: **3**
Predictive Models: L 17% Low (inductive) **Associated Habitats:** C 4% Common, O 1% Occasional

V - Physaria ludoviciana *(Silver Bladderpod)* **SOC**

View in Field Guide **View Predicted Models** **View Associated Habitat** **View Range Maps**
Species of Concern - Native Species Global: **G5** State: **S2S3**
Predictive Models: L 17% Low (inductive) **Associated Habitats:** C 3% Common

B - McCown's Longspur *(Rhynchophanes mccownii)* **SOC**

View in Field Guide **View Predicted Models** **View Associated Habitat** **View Range Maps**
Species of Concern - Native Species Global: **G4** State: **S3B** USFWS: **MBTA; BCC10; BCC11; BCC17** BLM: **SENSITIVE** FWP SWAP: **SGCN3** PIF: **2**
Predictive Models: L 8% Low (inductive) **Associated Habitats:** C 29% Common, O 49% Occasional

B - Peregrine Falcon *(Falco peregrinus)* **SOC**

View in Field Guide **View Predicted Models** **View Associated Habitat** **View Range Maps**
Species of Concern - Native Species Global: **G4** State: **S3** USFWS: **DM; MBTA; BCC10; BCC11; BCC17**
USFS: **Sensitive - Known on Forests (BD, BRT, CG, HLC, KOOT, LOLO)** BLM: **SENSITIVE** FWP SWAP: **SGCN3** PIF: **2**
Predictive Models: L 8% Low (inductive) **Associated Habitats:** C 9% Common, O 29% Occasional

B - Sharp-tailed Grouse *(Tympanuchus phasianellus)* **SOC**

Not Available

View in Field Guide **View Associated Habitat** **View Range Maps**
Species of Concern - Native Species Global: **G5** State: **SX,S4** FWP SWAP: **SGCN1** PIF: **2**
Associated Habitats: C 37% Common, O 29% Occasional

B - Chestnut-collared Longspur *(Calcarius ornatus)* **SOC**

Not Available

View in Field Guide **View Associated Habitat** **View Range Maps**
Species of Concern - Native Species Global: **G5** State: **S2B** USFWS: **MBTA; BCC11; BCC17** BLM: **SENSITIVE** FWP SWAP: **SGCN2** PIF: **2**
Associated Habitats: C 32% Common, O 22% Occasional

V - Senecio integerrimus var. scribneri *(Scribner's Ragwort)* **SOC**

Not Available

View in Field Guide | View Associated Habitat | View Range Maps
Species of Concern - Native Species Global: **G5T2T3** State: **S2S3**
Associated Habitats: C 29% Common

B - Mountain Plover *(Charadrius montanus)* SOC — Not Available — S M

View in Field Guide | View Associated Habitat | View Range Maps
Species of Concern - Native Species Global: **G3** State: **S2B** USFWS: **MBTA; BCC11; BCC17** BLM: **SENSITIVE** FWP SWAP: **SGCN2** PIF: **1**
Associated Habitats: C 29% Common

B - Evening Grosbeak *(Coccothraustes vespertinus)* SOC — Not Available — W M

View in Field Guide | View Associated Habitat | View Range Maps
Species of Concern - Native Species Global: **G5** State: **S3** USFWS: **MBTA** FWP SWAP: **SGCN3**
Associated Habitats: C 20% Common

B - Hooded Merganser *(Lophodytes cucullatus)* PSOC — Not Available — M

View in Field Guide | View Associated Habitat | View Range Maps
Potential Species of Concern - Native Species Global: **G5** State: **S4** USFWS: **MBTA** FWP SWAP: **SGIN** PIF: **2**
Associated Habitats: C 8% Common, O 1% Occasional

I - Argia vivida *(Vivid Dancer)* PSOC — Not Available — Y

View in Field Guide | View Associated Habitat | View Range Maps
Potential Species of Concern - Native Species Global: **G5** State: **S3S5**
Associated Habitats: O 8% Occasional

I - Enallagma clausum *(Alkali Bluet)* PSOC — Not Available — Y

View in Field Guide | View Associated Habitat | View Range Maps
Potential Species of Concern - Native Species Global: **G5** State: **S2S4**
Associated Habitats: O 8% Occasional

I - Rhionaeschna californica *(California Darner)* PSOC — Not Available — Y

View in Field Guide | View Associated Habitat | View Range Maps
Potential Species of Concern - Native Species Global: **G5** State: **S3S5**
Associated Habitats: O 8% Occasional

B - White-faced Ibis *(Plegadis chihi)* SOC — Not Available — S M

View in Field Guide | View Associated Habitat | View Range Maps
Species of Concern - Native Species Global: **G5** State: **S3B** USFWS: **MBTA** BLM: **SENSITIVE** FWP SWAP: **SGCN3** PIF: **2**
Associated Habitats: C 8% Common

M - Bison *(Bos bison)* SOC — Not Available — H

View in Field Guide | View Associated Habitat | View Range Maps
Species of Concern - Native Species Global: **G4** State: **S2** FWP SWAP: **SGCN2**
Associated Habitats: C 5% Common, O 6% Occasional

I - Polygonia progne *(Gray Comma)* SOC — Not Available — Y

View in Field Guide | View Associated Habitat | View Range Maps
Species of Concern - Native Species Global: **G5** State: **S2**
Associated Habitats: C 5% Common, O 1% Occasional

I - Rhionaeschna multicolor *(Blue-eyed Darner)* PSOC — Not Available — Y

View in Field Guide | View Associated Habitat | View Range Maps
Potential Species of Concern - Native Species Global: **G5** State: **S2S4**
Associated Habitats: C 4% Common, O 4% Occasional

B - Caspian Tern *(Hydroprogne caspia)* SOC — Not Available — M

View in Field Guide | View Associated Habitat | View Range Maps
Species of Concern - Native Species Global: **G5** State: **S2B** USFWS: **MBTA** BLM: **SENSITIVE** FWP SWAP: **SGCN2** PIF: **2**
Associated Habitats: C 4% Common, O 4% Occasional

B - Horned Grebe *(Podiceps auritus)* SOC — Not Available — S M

View in Field Guide | View Associated Habitat | View Range Maps
Species of Concern - Native Species Global: **G5** State: **S3B** USFWS: **MBTA; BCC11; BCC17** BLM: **SENSITIVE** FWP SWAP: **SGCN3** PIF: **2**
Associated Habitats: C 4% Common, O 1% Occasional

I - Aeshna constricta *(Lance-tipped Darner)* PSOC — Not Available — Y

View in Field Guide | View Associated Habitat | View Range Maps
Potential Species of Concern - Native Species Global: **G5** State: **S1S3**
Associated Habitats: C 4% Common

I - Argia emma *(Emma's Dancer)* PSOC — Not Available — Y

View in Field Guide | View Associated Habitat | View Range Maps
Potential Species of Concern - Native Species Global: **G5** State: **S3S5**
Associated Habitats: C 4% Common

B - Alder Flycatcher *(Empidonax alnorum)* **SOC** Not Available M

View in Field Guide **View Associated Habitat** **View Range Maps**

Species of Concern - Native Species Global: **G5** State: **S3B** USFWS: **MBTA** FWP SWAP: **SGCN3**

Associated Habitats: C 4% Common

B - Clark's Grebe *(Aechmophorus clarkii)* **SOC** Not Available M

View in Field Guide **View Associated Habitat** **View Range Maps**

Species of Concern - Native Species Global: **G5** State: **S3B** USFWS: **MBTA** FWP SWAP: **SGCN3** PIF: **3**

Associated Habitats: C 4% Common

B - Common Loon *(Gavia immer)* **SOC** Not Available M

View in Field Guide **View Associated Habitat** **View Range Maps**

Species of Concern - Native Species Global: **G5** State: **S3B** USFWS: **MBTA** USFS: **Sensitive - Known on Forests (KOOT, LOLO)** FWP SWAP: **SGCN3** PIF: **1**

Associated Habitats: C 4% Common

V - Cryptantha fendleri *(Fendler Cat's-eye)* **SOC** Not Available Y

View in Field Guide **View Associated Habitat** **View Range Maps**

Species of Concern - Native Species Global: **G5** State: **S2** BLM: **SENSITIVE** MNPS: **2**

Associated Habitats: C 3% Common

I - Sympetrum madidum *(Red-veined Meadowhawk)* **PSOC** Not Available Y

View in Field Guide **View Associated Habitat** **View Range Maps**

Potential Species of Concern - Native Species Global: **G5** State: **S2S3**

Associated Habitats: C 1% Common, O 4% Occasional

I - Limenitis arthemis *(Red-spotted Admiral)* **PSOC** Not Available Y

View in Field Guide **View Associated Habitat** **View Range Maps**

Potential Species of Concern - Native Species Global: **G5** State: **S2S3**

Associated Habitats: C 1% Common

Montana Natural Heritage Program

A program of the **Montana State Library's Natural Resource Information System** operated by the **University of Montana**.

Latitude	Longitude
47.40950	-111.29426
47.47235	-111.38420

Structured Surveys

Summarized by: **20prvt0177** *(Custom Area of Interest)*

The Montana Natural Heritage Program (MTNHP) records information on the locations where more than 80 different types of well-defined repeatable survey protocols capable of detecting an animal species or suite of animal species have been conducted by state, federal, tribal, university, or private consulting biologists. Examples of structured survey protocols tracked by MTNHP include: visual encounter and dip net surveys for pond breeding amphibians, point counts for birds, call playback surveys for selected bird species, visual surveys of migrating raptors, kick net stream reach surveys for macroinvertebrates, visual encounter cover object surveys for terrestrial mollusks, bat acoustic or mist net surveys, pitfall and/or snap trap surveys for small terrestrial mammals, track or camera trap surveys for large mammals, and trap surveys for turtles. Whenever possible, photographs of survey locations are stored in MTNHP databases.

MTNHP does not typically manage information on structured surveys for plants; surveys for invasive species may be a future exception.

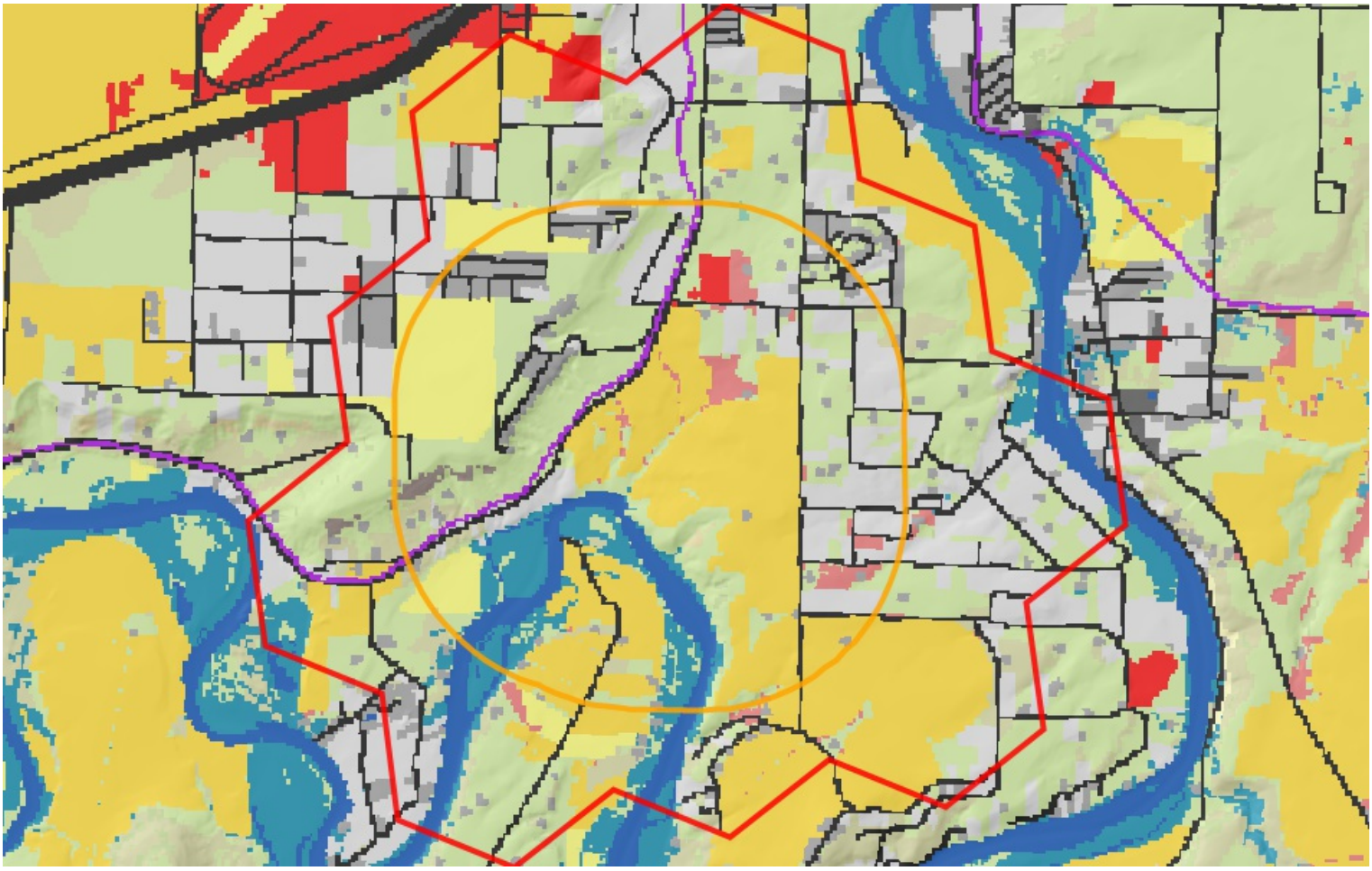
Within the report area you have requested, structured surveys are summarized by the number of each type of structured survey protocol that has been conducted, the number of species detections/observations resulting from these surveys, and the most recent year a survey has been conducted.

B-Bald Eagle Nest *(Bald Eagle Nest Survey)*	**Survey Count**: 5	**Obs Count**: 5	**Recent Survey**: 2014
B-Point Count *(Bird Point Count)*	**Survey Count**: 3	**Obs Count**: 78	**Recent Survey**: 2008
E-Eastern Heath Snail *(Eastern Heath Snail Survey)*	**Survey Count**: 1	**Obs Count**:	**Recent Survey**: 2012
E-Noxious Weed, Road-based *(Noxious Weed Road-based Visual Surveys)*	**Survey Count**: 7	**Obs Count**: 24	**Recent Survey**: 2003
E-Visual Aquatic Invasives *(Visual Encounter Surveys for Aquatic Invasives on Shorelines or Underwater)*	**Survey Count**: 2	**Obs Count**: 1	**Recent Survey**: 2012

Latitude	Longitude
47.40950	-111.29426
47.47235	-111.38420

Land Cover

Summarized by: **20prvt0177** *(Custom Area of Interest)*



28% (*2,172 Acres*)

Grassland Systems

Lowland/Prairie Grassland

Great Plains Mixedgrass Prairie

The system covers much of the eastern two-thirds of Montana, occurring continuously for hundreds of square kilometers, interrupted only by wetland/riparian areas or sand prairies. Soils are primarily fine and medium-textured. The growing season averages 115 days, ranging from 100 days on the Canadian border to 130 days on the Wyoming border. Climate is typical of mid-continental regions with long severe winters and hot summers. Grasses typically comprise the greatest canopy cover, and western wheatgrass (*Pascopyrum smithii*) is usually dominant. Other species include thickspike wheatgrass (*Elymus lanceolatus*), green needlegrass (*Nassella viridula*), blue grama (*Bouteloua gracilis*), and needle and thread (*Hesperostipa comata*). Near the Canadian border in north-central Montana, this system grades into rough fescue (*Festuca campestris)* and Idaho fescue (*Festuca idahoensis*) grasslands. Remnants of shortbristle needle and thread *(Hesperostipa curtiseta)* dominated vegetation are found in northernmost Montana and North Dakota, and are associated with productive sites, now mostly converted to farmland. Forb diversity is typically high. In areas of southeastern and central Montana where sagebrush steppe borders the mixed grass prairie, common plant associations include Wyoming big sagebrush-western wheatgrass (*Artemisia tridentata* ssp. *wyomingensis/ Pascopyrum smithii*). Fire and grazing are the primary drivers of this system. Drought can also impact it, in general favoring the shortgrass component at the expense of the mid-height grasses. With intensive grazing, cool season exotics such as Kentucky bluegrass (*Poa pratensis*), smooth brome (*Bromus inermis*), and Japanese brome (*Bromus japonicus*) increase in dominance; both of these rhizomatous species have been shown to markedly decrease species diversity. Previously cultivated acres that have been re-vegetated with non-native plants have been transformed into associations such as Kentucky bluegrass (*Poa pratensis*)/western wheatgrass *(Pascopyrum smithii)* or into pure crested wheatgrass (*Agropyron cristatum)* stands.

23% (*1,740 Acres*)

Human Land Use
Agriculture

Cultivated Crops

These areas used for the production of crops, such as corn, soybeans, small grains, sunflowers, vegetables, and cotton, typically on an annual cycle. Agricultural plant cover is variable depending on season and type of farming. Other areas include more stable land cover of orchards and vineyards.

16% (*1,204 Acres*)

Human Land Use
Developed

Developed, Open Space

Vegetation (primarily grasses) planted in developed settings for recreation, erosion control, or aesthetic purposes. Impervious surfaces account for less than 20% of total cover. This category often includes highway and railway rights of way and graveled rural roads.

No Image

7% (*545 Acres*)

Human Land Use
Developed

Other Roads

County, city and or rural roads generally open to motor vehicles.

6% (*438 Acres*)

Human Land Use
Developed

Low Intensity Residential

Includes areas with a mixture of constructed materials and vegetation. Impervious surfaces account for 20-50% of total cover. These areas most commonly include single-family housing units in rural and suburban areas. Paved roadways may be classified into this category.

5% (*407 Acres*)

Human Land Use
Agriculture

Pasture/Hay

These agriculture lands typically have perennial herbaceous cover (e.g. regularly-shaped plantings) used for livestock grazing or the production of hay. There are obvious signs of management such as irrigation and haying that distinguish it from natural grasslands. Identified CRP lands are included in this land cover type.

4% (*329 Acres*)

Wetland and Riparian Systems
Floodplain and Riparian

Great Plains Floodplain

This system occurs along the Missouri and Yellowstone Rivers and their larger tributaries, including parts of the Little Missouri, Clarkâ€™s Fork Yellowstone, Powder, Tongue, Bighorn, Milk, and Musselshell rivers. These are the big perennial rivers of the region, with hydrologic dynamics largely driven by snowmelt and rainfall originating in their headwater watersheds, rather than local precipitation events. In the absence of disturbance, periodic flooding of fluvial and alluvial soils and channel migration will create depressions and backwaters that support a mosaic of wetland and riparian vegetation, whose composition and structure is sustained, altered and redistributed by hydrology. Dominant communities within this system range from floodplain forests to wet meadows to gravel/sand flats, linked by underlying soils and flooding regimes. In the western part of the systemâ€™s range in Montana, the overstory dominant species is black cottonwood (*Populus balsamifera ssp. trichocarpa*) with narrowleaf cottonwood *(Populus angustifolia)* and eastern cottonwood (*Populus deltoides)* occurring as co-dominants in the riparian/floodplain interface near the mountains. Further east, narrowleaf cottonwood and Plains cottonwood become dominant. In relatively undisturbed stands, willow (*Salix* species), redosier dogwood (*Cornus sericea*) and common chokecherry (*Prunus virginiana*) form a thick, multi-layered shrub understory, with a mixture of cool and warm season graminoid species below.

In Montana, many occurrences are now degraded to the point where the cottonwood overstory is the only remaining natural component. The hydrology of these floodplain systems has been affected by dams, highways, railroads and agricultural ditches, and as a result, they have lost their characteristic wetland /riparian mosaic structure. This has resulted in a highly altered community consisting of relict cottonwood stands with little regeneration. The understory vegetation is dominated by non-native pasture grasses, legumes and other introduced forbs, or by the disclimax western snowberry (*Symphoricarpos occidentalis*) and rose (*Rosa* species) shrub community.

4% (*307 Acres*)

Wetland and Riparian Systems
Open Water

Open Water

All areas of open water, generally with less than 25% cover of vegetation or soil

3% (*238 Acres*)

Grassland Systems
Lowland/Prairie Grassland

Great Plains Sand Prairie

The sand prairies constitute a very unique system within the western Great Plains. The unifying and controlling feature for this system is that coarse-textured soils predominate and the dominant grasses are well-adapted to this condition. In the northwestern portion of the systemâ€™s range, stand size corresponds to the area of exposed caprock sandstone, and small patches predominate, but larger patches are found embedded in the encompassing Great Plains Mixed Grass Prairie, and usually occupy higher positions in local landscapes where former caprock formations have eroded into more subdued and planar topography. In most of eastern Montana, substrates supporting this system have weathered in place from sandstone caprock. Soils can be relatively thin or deep due to varying amounts of downslope movement of weathered sands. Needle and thread (*Hesperostipa comata*) is the dominant grass species. Other frequent species include little bluestem (*Schizachyrium scoparium*), often occurring with threadleaf sedge (*Carex filifolia*) and dominating both sandy sites and actively eroding sites. Prairie sandreed (*Calamovilfa longifolia*), sand bluestem (*Andropogon hallii*) and big bluestem (*Andropogon gerardii*) are sporadically distributed and found generally on the coarsest-textured sands. Other graminoids include bluebunch wheatgrass (*Pseudoroegneria spicata*), sun sedge (*Carex inops ssp. heliophila*), and purple threeawn (*Aristida purpurea*). Characteristic forbs differ by occurrence, but species of scurf pea (*Psoralidium* species) and Indian breadroot (*Pediomelum*) species are common. Communities of silver sage (*Artemisia cana* ssp. *cana*) or skunkbush sumac (*Rhus trilobata*) can occur within this system. Wind erosion, fire and grazing constitute the other major dynamic processes that can influence this system.

Additional Limited Land Cover

1% (*99 Acres*) Introduced Upland Vegetation - Annual and Biennial Forbland

1% (*65 Acres*) Railroad

1% (*60 Acres*) Commercial / Industrial

<1% (*38 Acres*) Great Plains Shrubland

<1% (*23 Acres*) Great Plains Cliff and Outcrop

<1% (*4 Acres*) Great Plains Badlands

<1% (*3 Acres*) Great Plains Closed Depressional Wetland

<1% (*0 Acres*) Great Plains Riparian

<1% (*0 Acres*) Big Sagebrush Steppe

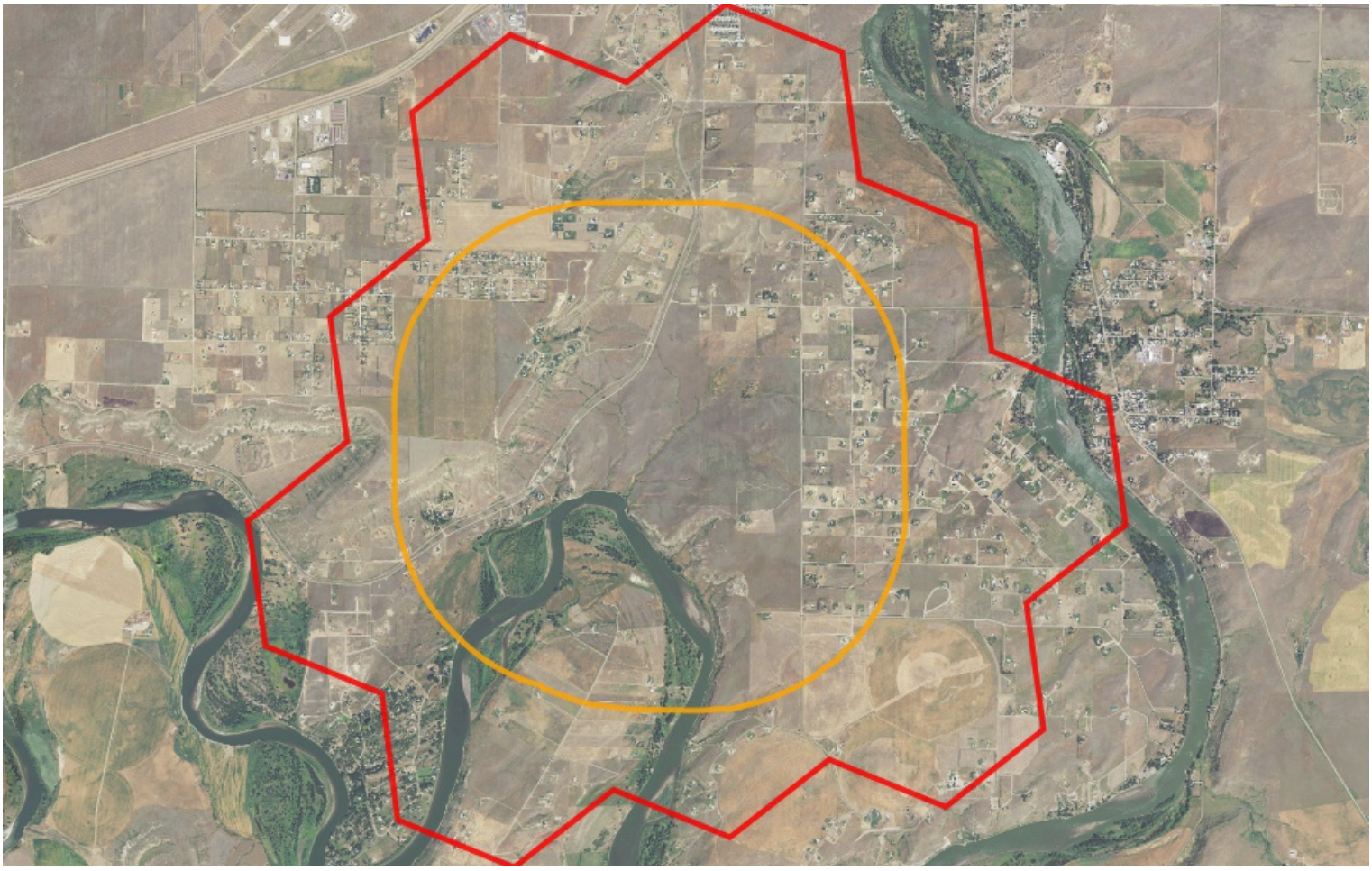
Montana Natural Heritage Program

A program of the **Montana State Library's Natural Resource Information System** operated by the **University of Montana**.

Latitude	Longitude
47.40950	-111.29426
47.47235	-111.38420

Wetland and Riparian

Summarized by: **20prvt0177** *(Custom Area of Interest)*



No Wetland records were found in the selected area

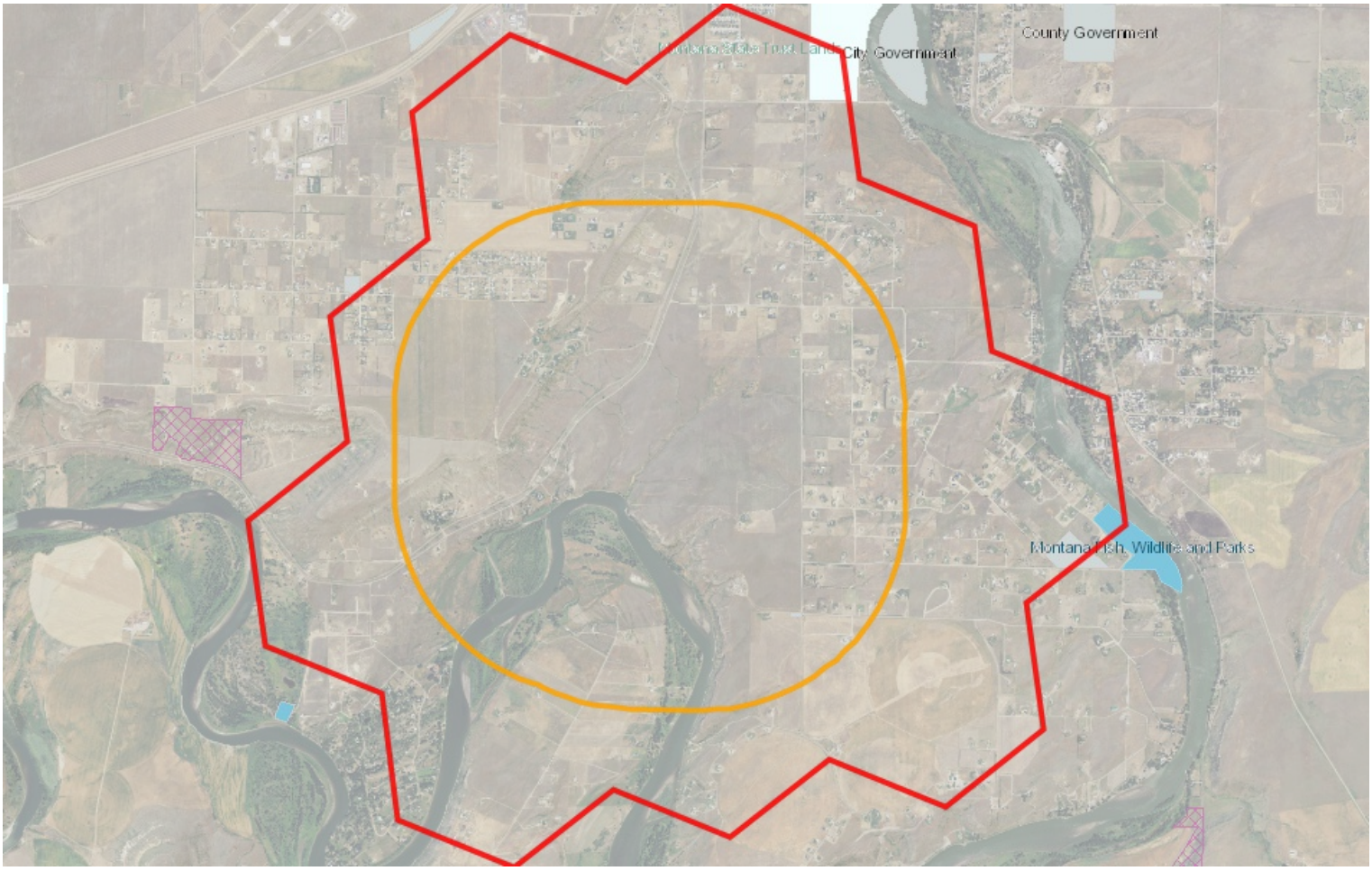
MONTANA Natural Heritage Program

A program of the **Montana State Library's Natural Resource Information System** operated by the **University of Montana**.

Latitude	Longitude
47.40950	-111.29426
47.47235	-111.38420

Land Management

Summarized by: **20prvt0177** *(Custom Area of Interest)*



Land Management Summary				Explain
	Ownership	Tribal	Easements	Other Boundaries (possible overlap)
Public Lands	**54 Acres (1%)**			
State	**39 Acres (1%)**			
Montana State Trust Lands	**30 Acres (<1%)**			
MT State Trust Owned	**30 Acres (<1%)**			
Montana Fish, Wildlife and Parks	**9 Acres (<1%)**			
MTFWP Owned	**9 Acres (<1%)**			
MTFWP Fishing Access Sites				**9 Acres**
White Bear Fishing Access Site				9 Acres
Local	**15 Acres (<1%)**			
Local Government	**15 Acres (<1%)**			
Local Government Owned	**15 Acres (<1%)**			
Private Lands or Unknown Ownership	**7,617 Acres (99%)**			

Latitude	Longitude
47.40950	-111.29426
47.47235	-111.38420

Biological Reports

Summarized by: **20prvt0177** *(Custom Area of Interest)*

Within the report area you have requested, citations for all reports and publications associated with plant or animal observations in Montana Natural Heritage Program (MTNHP) databases are listed and, where possible, links to the documents are included.

The MTNHP plans to include reports associated with terrestrial and aquatic communities in the future as allowed for by staff resources. If you know of reports or publications associated with species or biological communities within the report area that are not shown in this report, please let us know: mtnhp@mt.gov

No Biological Reports were found in the selected area

MONTANA Natural Heritage Program

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Legend

Model Icons
- N Suitable (native range)
- O Optimal Suitability
- M Moderate Suitability
- L Low Suitability
- I Suitable (introduced range)

Habitat Icons
- C Common
- O Occasional

Range Icons
- T Suspect (invasive / pest)
- D Documented (invasive / pest)
- R Released (biocontrol)
- E Established (biocontrol)

Num Obs
Count of obs with 'good precision' (<=1000m)
+ indicates additional 'poor precision' obs (1001m-10,000m)

Latitude	Longitude
47.40950	-111.29426
47.47235	-111.38420

Invasive and Pest Species

Summarized by: **20prvt0177** *(Custom Area of Interest)*

	# Obs	Predictive Model	Associated Habitat	Range
Aquatic Invasive Species				
F - Common Carp *(Cyprinus carpio)* AIS	+		Not Assigned	D
View in Field Guide / View Predicted Models / View Range Maps				
Aquatic Invasive Species - Non-native Species Global: **G5** State: **SNA**				
Predictive Models: I 42% Suitable (introduced range) (deductive)				
Noxious Weeds: Priority 1A				
V - Isatis tinctoria *(Dyer's Woad)* N1A			Not Assigned	D
View in Field Guide / View Predicted Models / View Range Maps				
Noxious Weed: Priority 1A - Non-native Species Global: **GNR** State: **SNA**				
Predictive Models: M 33% Moderate (inductive), L 67% Low (inductive)				
Noxious Weeds: Priority 2A				
V - Lepidium latifolium *(Perennial Pepperweed)* N2A			Not Assigned	D
View in Field Guide / View Predicted Models / View Range Maps				
Noxious Weed: Priority 2A - Non-native Species Global: **GNR** State: **SNA**				
Predictive Models: M 42% Moderate (inductive), L 58% Low (inductive)				
V - Hieracium praealtum *(Kingdevil Hawkweed)* N2A			Not Assigned	D
View in Field Guide / View Predicted Models / View Range Maps				
Noxious Weed: Priority 2A - Non-native Species Global: **GNR** State: **SNA**				
Predictive Models: L 75% Low (inductive)				
Noxious Weeds: Priority 2B				
V - Centaurea diffusa *(Diffuse Knapweed)* N2B			Not Assigned	D
View in Field Guide / View Predicted Models / View Range Maps				
Noxious Weed: Priority 2B - Non-native Species Global: **GNR** State: **SNA**				
Predictive Models: O 8% Optimal (inductive), M 92% Moderate (inductive)				
V - Acroptilon repens *(Russian Knapweed)* N2B			Not Assigned	D
View in Field Guide / View Predicted Models / View Range Maps				
Noxious Weed: Priority 2B - Non-native Species Global: **GNR** State: **SNA**				
Predictive Models: O 8% Optimal (inductive), M 67% Moderate (inductive), L 25% Low (inductive)				
V - Cirsium arvense *(Canada Thistle)* N2B	6		Not Assigned	D
View in Field Guide / View Predicted Models / View Range Maps				
Noxious Weed: Priority 2B - Non-native Species Global: **G5** State: **SNA**				
Predictive Models: M 100% Moderate (inductive)				
V - Convolvulus arvensis *(Field Bindweed)* N2B	1		Not Assigned	D
View in Field Guide / View Predicted Models / View Range Maps				
Noxious Weed: Priority 2B - Non-native Species Global: **GNR** State: **SNA**				
Predictive Models: M 100% Moderate (inductive)				
V - Euphorbia virgata *(Leafy Spurge)* N2B	8		Not Assigned	D
View in Field Guide / View Predicted Models / View Range Maps				
Noxious Weed: Priority 2B - Non-native Species Global: **GNRTNR** State: **SNA**				
Predictive Models: M 100% Moderate (inductive)				
V - Lepidium draba *(Whitetop)* N2B			Not Assigned	D
View in Field Guide / View Predicted Models / View Range Maps				
Noxious Weed: Priority 2B - Non-native Species Global: **GNR** State: **SNA**				
Predictive Models: M 100% Moderate (inductive)				
V - Centaurea stoebe *(Spotted Knapweed)* N2B	8		Not Assigned	D
View in Field Guide / View Predicted Models / View Range Maps				
Noxious Weed: Priority 2B - Non-native Species Global: **GNR** State: **SNA**				
Predictive Models: M 92% Moderate (inductive), L 8% Low (inductive)				
V - Linaria dalmatica *(Dalmatian Toadflax)* N2B	1		Not Assigned	D

View in Field Guide View Predicted Models View Range Maps
Noxious Weed: Priority 2B - Non-native Species Global: **G5** State: **SNA**
Predictive Models: M 92% Moderate (inductive), L 8% Low (inductive)

V - Cynoglossum officinale *(Common Hound's-tongue)* N2B — Not Assigned D

View in Field Guide View Predicted Models View Range Maps
Noxious Weed: Priority 2B - Non-native Species Global: **GNR** State: **SNA**
Predictive Models: M 33% Moderate (inductive), L 67% Low (inductive)

V - Berteroa incana *(Hoary False-alyssum)* N2B — 1 — Not Assigned

View in Field Guide View Predicted Models
Noxious Weed: Priority 2B - Non-native Species Global: **GNR** State: **SNA**
Predictive Models: L 92% Low (inductive)

V - Linaria vulgaris *(Yellow Toadflax)* N2B — Not Assigned D

View in Field Guide View Predicted Models View Range Maps
Noxious Weed: Priority 2B - Non-native Species Global: **GNR** State: **SNA**
Predictive Models: L 33% Low (inductive)

Regulated Weeds: Priority 3

V - Elaeagnus angustifolia *(Russian Olive)* R3 — Not Assigned D

View in Field Guide View Predicted Models View Range Maps
Regulated Weed: Priority 3 - Non-native Species Global: **GNR** State: **SNA**
Predictive Models: M 83% Moderate (inductive), L 17% Low (inductive)

V - Bromus tectorum *(Cheatgrass)* R3 — Not Assigned D

View in Field Guide View Predicted Models View Range Maps
Regulated Weed: Priority 3 - Non-native Species Global: **GNR** State: **SNA**
Predictive Models: L 100% Low (inductive)

Biocontrol Species

I - Aphthona lacertosa *(Brown-legged Leafy Spurge Flea Beetle)* BIOCNTRL — Not Assigned R

View in Field Guide View Predicted Models View Range Maps
Biocontrol Species - Non-native Species Global: **GNR** State: **SNA**
Predictive Models: M 92% Moderate (inductive), L 8% Low (inductive)

I - Oberea erythrocephala *(Red-headed Leafy Spurge Stem Borer)* BIOCNTRL — Not Assigned R

View in Field Guide View Predicted Models View Range Maps
Biocontrol Species - Non-native Species Global: **GNR** State: **SNA**
Predictive Models: M 75% Moderate (inductive), L 25% Low (inductive)

I - Cyphocleonus achates *(Knapweed Root Weevil)* BIOCNTRL — Not Assigned R

View in Field Guide View Predicted Models View Range Maps
Biocontrol Species - Non-native Species Global: **GNR** State: **SNA**
Predictive Models: M 17% Moderate (inductive), L 83% Low (inductive)

I - Mecinus janthiniformis *(Dalmatian Toadflax Stem-boring Weevil)* BIOCNTRL — Not Assigned R

View in Field Guide View Predicted Models View Range Maps
Biocontrol Species - Non-native Species Global: **GNR** State: **SNA**
Predictive Models: M 8% Moderate (inductive), L 92% Low (inductive)

I - Aphthona nigriscutis *(Black Dot Leafy Spurge Flea Beetle)* BIOCNTRL — Not Assigned R

View in Field Guide View Predicted Models View Range Maps
Biocontrol Species - Non-native Species Global: **GNR** State: **SNA**
Predictive Models: M 8% Moderate (inductive), L 83% Low (inductive)

I - Mecinus janthinus *(Yellow Toadflax Stem-boring Weevil)* BIOCNTRL — Not Assigned R

View in Field Guide View Predicted Models View Range Maps
Biocontrol Species - Non-native Species Global: **GNR** State: **SNA**
Predictive Models: L 8% Low (inductive)

Introduction to Montana Natural Heritage Program

P.O. Box 201800 • 1515 East Sixth Avenue • Helena, MT 59620-1800 • fax 406.444.0266 • tel 406.444.0241 • mtnhp.org

Introduction

The Montana Natural Heritage Program (MTNHP) is Montana's source for reliable and objective information on Montana's native species and habitats, emphasizing those of conservation concern. MTNHP was created by the Montana legislature in 1983 as part of the Natural Resource Information System (NRIS) at the Montana State Library (MSL). MTNHP is "a program of information acquisition, storage, and retrieval for data relating to the flora, fauna, and biological community types of Montana" (MCA 90-15-102). MTNHP's activities are guided by statute (MCA 90-15) as well as through ongoing interaction with, and feedback from, principal data source agencies such as Montana Fish, Wildlife, and Parks, the Montana Department of Environmental Quality, the Montana Department of Natural Resources and Conservation, the Montana University System, the US Forest Service, and the US Bureau of Land Management. The enabling legislation for MTNHP provides the State Library with the option to contract the operation of the Program. Since 2006, MTNHP has been operated as a program under the Office of the Vice President for Research and Creative Scholarship at the University of Montana (UM) through a renewable 2-year contract with the MSL. Since the first staff was hired in 1985, the Program has logged a long record of success, and developed into a highly respected, service-oriented program. MTNHP is widely recognized as one of the most advanced and effective of over 80 natural heritage programs throughout the Western Hemisphere.

Vision

Our vision is that public agencies, the private sector, the education sector, and the general public will trust and rely upon MTNHP as the source for information and expertise on Montana's species and habitats, especially those of conservation concern. We strive to provide easy access to our information in order for users to save time and money, speed environmental reviews, and inform decision making.

Core Values

- We endeavor to be a single statewide source of accurate and up-to-date information on Montana's plants, animals, and aquatic and terrestrial biological communities.
- We actively listen to our data users and work responsively to meet their information and training needs.
- We strive to provide neutral, trusted, timely, and equitable service to all of our information users.
- We make every effort to be transparent to our data users in setting work priorities and providing data products.

Confidentiality

All information requests made to the Montana Natural Heritage Program are considered library records and are protected from disclosure by the Montana Library Records Confidentiality Act (MCA 22-1-11).

Information Managed

Information managed at the Montana Natural Heritage Program includes: (1) lists of, and basic information on, plant and animal species and biological communities; (2) plant and animal surveys, observations, species occurrences, predictive distribution models, range polygons, and conservation status ranks; and (3) land cover and wetland and riparian mapping and the conservation status of these and other biological communities.

Data Use Terms and Conditions

- Montana Natural Heritage Program (MTNHP) products and services are based on biological data and the objective interpretation of those data by professional scientists. MTNHP does not advocate any particular philosophy of natural resource protection, management, development, or public policy.
- MTNHP has no natural resource management or regulatory authority. Products, statements, and services from MTNHP are intended to inform parties as to the state of scientific knowledge about certain natural resources, and to further develop that knowledge. The information is not intended as natural resource management guidelines or prescriptions or a determination of environmental impacts. MTNHP recommends consultation with appropriate state, federal, and tribal resource management agencies and authorities in the area where your project is located.
- Information on the status and spatial distribution of biological resources produced by MTNHP are intended to inform parties of the state-wide status, known occurrence, or the likelihood of the presence of those resources. **These products are not intended to substitute for field-collected data, nor are they intended to be the sole basis for natural resource management decisions.**
- MTNHP does not portray its data as exhaustive or comprehensive inventories of rare species or biological communities. **Field verification of the absence or presence of sensitive species and biological communities will always be an important obligation of users of our data.**
- MTNHP responds equally to all requests for products and services, regardless of the purpose or identity of the requester.
- Because MTNHP constantly updates and revises its databases with new data and information, products will become outdated over time. Interested parties are encouraged to obtain the most current information possible from MTNHP, rather than using older products. We add, review, update, and delete records on a daily basis. Consequently, we strongly advise that you update your MTNHP data sets at a minimum of every three months for most applications of our information.
- MTNHP data require a certain degree of biological expertise for proper analysis, interpretation, and application. Our staff is available to advise you on questions regarding the interpretation or appropriate use of the data that we provide. Contact information for MTNHP staff is posted at: http://mtnhp.org/contact.asp
- The information provided to you by MTNHP may include sensitive data that if publicly released might jeopardize the welfare of threatened, endangered, or sensitive species or biological communities. This information is intended for distribution or use only within your department, agency, or business. Subcontractors may have access to the data during the course of any given project, but should not be given a copy for their use on subsequent, unrelated work.
- MTNHP data are made freely available. Duplication of hard-copy or digital MTNHP products with the intent to sell is prohibited without written consent by MTNHP. Should you be asked by individuals outside your organization for the type of data that we provide, please refer them to MTNHP.
- MTNHP and appropriate staff members should be appropriately acknowledged as an information source in any third-party product involving MTNHP data, reports, papers, publications, or in maps that incorporate MTNHP graphic elements.
- Sources of our data include museum specimens, published and unpublished scientific literature, field surveys by state and federal agencies and private contractors, and reports from knowledgeable individuals. MTNHP actively solicits and encourages additions, corrections and updates, new observations or collections, and comments on any of the data we provide.
- MTNHP staff and contractors do not cross or survey privately-owned lands without express permission from the landowner. However, the program cannot guarantee that information provided to us by others was obtained under adherence to this policy.

Suggested Contacts for Natural Resource Agencies

As required by Montana statute (MCA 90-15), the Montana Natural Heritage Program works with state, federal, tribal, nongovernmental organizations, and private partners to ensure that the latest animal and plant distribution and status information is incorporated into our databases so that it can be used to inform a variety of planning processes and management decisions. In addition to the information you receive from us, we encourage you to contact state, federal, and tribal resource management agencies in the area where your project is located. They may have additional data or management guidelines relevant to your efforts. In particular, we encourage you to contact the Montana Department of Fish, Wildlife, and Parks for the latest data and management information regarding hunted and high-profile management species and to use the U.S. Fish and Wildlife Service's Information Planning and Conservation (IPAC) website http://ecos.fws.gov/ipac/ regarding U.S. Endangered Species Act listed Threatened, Endangered, or Candidate species.

For your convenience, we have compiled a list of relevant agency contacts and links below:

Montana Fish, Wildlife, and Parks

Fish Species	Zachary Shattuck zshattuck@mt.gov (406) 444-1231 or Eric Roberts eroberts@mt.gov (406) 444-5334
American Bison Black-footed Ferret Black-tailed Prairie Dog Bald Eagle Golden Eagle Common Loon Least Tern Piping Plover Whooping Crane	Lauri Hanauska-Brown LHanauska-Brown@mt.gov (406) 444-5209
Grizzly Bear Greater Sage Grouse Trumpeter Swan Big Game Upland Game Birds Furbearers	John Vore jvore@mt.gov (406) 444-3940
Managed Terrestrial Game and Nongame Animal Data	Smith Wells – MFWP Data Analyst smith.wells@mt.gov (406) 444-3759
Fisheries Data	Ryan Alger – MFWP Data Analyst ryan.alger@mt.gov (406) 444-5365
Wildlife and Fisheries Scientific Collector's Permits	http://fwp.mt.gov/doingBusiness/licenses/scientificWildlife/ Kammi McClain for Wildlife Kammi.McClain@mt.gov (406) 444-2612 Kim Wedde for Fisheries kim.wedde@mt.gov (406) 444-5594
Fish and Wildlife Recommendations for Subdivision Development	Renee Lemon RLemon@mt.gov (406) 444-3738 and see http://fwp.mt.gov/fishAndWildlife/livingWithWildlife/buildingWithWildlife/subdivisionRecommendations/
Regional Contacts 	Region 1 (Kalispell) (406) 752-5501 Region 2 (Missoula) (406) 542-5500 Region 3 (Bozeman) (406) 994-4042 Region 4 (Great Falls) (406) 454-5840 Region 5 (Billings) (406) 247-2940 Region 6 (Glasgow) (406) 228-3700 Region 7 (Miles City) (406) 234-0900

United States Fish and Wildlife Service:
Information Planning and Conservation (IPAC) website: http://ecos.fws.gov/ipac/
Montana Ecological Services Field Office: http://www.fws.gov/montanafieldoffice/ (406) 449-5225

Bureau of Land Management

Montana Field Office Contacts:

Billings	(406) 896-5013
Butte	(406) 533-7600
Dillon	(406) 683-8000
Glasgow	(406) 228-3750
Havre	(406) 262-2820
Lewistown	(406) 538-1900
Malta	(406) 654-5100
Miles City	(406) 233-2800
Missoula	(406) 329-3914

United States Forest Service

Regional Office – Missoula, Montana Contacts

Wildlife Program Leader	Tammy Fletcher	tammyfletcher@fs.fed.us	(406) 329-3588
Wildlife Ecologist	Cara Staab	cstaab@fs.fed.us	(406) 329-3677
Fish Program Leader	Scott Spaulding	scottspaulding@fs.fed.us	(406) 329-3287
Fish Ecologist	Cameron Thomas	cathomas@fs.fed.us	(406) 329-3087
TES Program	Lydia Allen	lrallen@fs.fed.us	(406) 329-3558
Interagency Grizzly Bear Coordinator	Scott Jackson	sjackson03@fs.fed.us	(406) 329-3664
Regional Botanist	Steve Shelly	sshelly@fs.fed.us	(406) 329-3041
Invasive Species Program Manager	Michelle Cox	michelle.cox2@usda.gov	(406) 329-3669

Tribal Nations

- Assiniboine & Gros Ventre Tribes – Fort Belknap Reservation
- Assiniboine & Sioux Tribes – Fort Peck Reservation
- Blackfeet Tribe - Blackfeet Reservation
- Chippewa Creek Tribe - Rocky Boy's Reservation
- Crow Tribe – Crow Reservation
- Little Shell Chippewa Tribe
- Northern Cheyenne Tribe – Northern Cheyenne Reservation
- Salish & Kootenai Tribes - Flathead Reservation

Natural Heritage Programs and Conservation Data Centers in Surrounding States and Provinces

Alberta Conservation Information Management System
British Columbia Conservation Data Centre
Idaho Natural Heritage Program
North Dakota Natural Heritage Program
Saskatchewan Conservation Data Centre
South Dakota Natural Heritage Program
Wyoming Natural Diversity Database

Invasive Species Management Contacts and Information

Aquatic Invasive Species

Montana Fish, Wildlife, and Parks Aquatic Invasive Species staff
Montana Department of Natural Resources and Conservation's Aquatic Invasive Species Grant Program
Montana Invasive Species Council (MISC)
Upper Columbia Conservation Commission (UC3)

Noxious Weeds

Montana Weed Control Association Contacts Webpage
Montana Biological Weed Control Coordination Project
Montana Department of Agriculture - Noxious Weeds
Montana Weed Control Association
Montana Fish, Wildlife, and Parks - Noxious Weeds
Montana State University Integrated Pest Management Extension
Integrated Noxious Weed Management after Wildfires

Introduction to Native Species

Within the report area you have requested, separate summaries are provided for: (1) Species Occurrences (SO) for plant and animal Species of Concern, Special Status Species (SSS), Important Animal Habitat (IAH) and some Potential Plant Species of Concern; (2) other observed non Species of Concern or Species of Concern without suitable documentation to create Species Occurrence polygons; and (3) other non-documented species that are potentially present based on their range, predicted suitable habitat model output, or presence of associated habitats. Each of these summaries provides the following information when present for a species: (1) the number of Species Occurrences and associated delineation criteria for construction of these polygons that have long been used for considerations of documented Species of Concern in environmental reviews; (2) the number of observations of each species; (3) the geographic range polygons for each species that the report area overlaps; (4) predicted relative habitat suitability classes that are present if a predicted suitable habitat model has been created; (5) the percent of the report area that is mapped as commonly associated or occasionally associated habitat as listed for each species in the Montana Field Guide; and (6) a variety of conservation status ranks and links to species accounts in the Montana Field Guide. Details on each of these information categories are included under relevant section headers below or are defined on our Species Status Codes page. In presenting this information, the Montana Natural Heritage Program (MTNHP) is working towards assisting the user with rapidly determining what species have been documented and what species are potentially present in the report area. We remind users that this information is likely incomplete as surveys to document native and introduced species are lacking in many areas of the state, information on introduced species has only been tracked relatively recently, the MTNHP's staff and resources are restricted by declining budgets, and information is constantly being added and updated in our databases. **Thus, field verification by professional biologists of the absence or presence of species and biological communities will always be an important obligation of users of our data.**

If you are aware of observation datasets that the MTNHP is missing, please report them to the Program Botanist apipp@mt.gov or Senior Zoologist dbachen@mt.gov. If you have observations that you would like to contribute, you can submit animal observations using our online data entry system at http://mtnhp.org/AddObs/, plant and animal observations via Excel spreadsheets posted at http://mtnhp.org/observations.asp , or to the Program Botanist or Senior Zoologist.

Observations

The MTNHP manages information on more than 1.8 million animal and plant observations that have been reported by professional biologists and private citizens from across Montana. The majority of these observations are submitted in digital format from standardized databases associated with research or monitoring efforts and spreadsheets of incidental observations submitted by professional biologists and amateur naturalists. At a minimum, accepted observation records must contain a credible species identification (i.e. appropriate geographic range, date, and habitat and, if species are difficult to identify, a photograph and notes on key identifying features), a date or date range, observer name, locational information (ideally with latitude and longitude in decimal degrees), notes on numbers observed, and species behavior or habitat use (e.g., is the observation likely associated with reproduction). Bird records are also required to have information associated with date-appropriate breeding or overwintering status of the species observed. MTNHP reviews observation records to ensure that they are mapped correctly, occur within date ranges when the species is known to be present or detectable, occur within the known seasonal geographic range of the species, and occur in appropriate habitats. MTNHP also assigns each record a locational uncertainty value in meters to indicate the spatial precision associated with the record's mapped coordinates. Only records with locational uncertainty values of 10,000 meters or less are included in environmental summary reports and number summaries are only provided for records with locational uncertainty values of 1,000 meters or less.

Species Occurrences

The MTNHP evaluates plant and animal observation records for species of higher conservation concern to determine whether they are worthy of inclusion in the Species Occurrence (SO) layer for use in environmental reviews; observations not worthy of inclusion in this layer include long distance dispersal events, migrants observed away from key migratory stopover habitats, and winter observations. An SO is a polygon depicting what is known about a species occupancy from direct observation with a defined level of locational uncertainty and any inference that can be made about adjacent habitat use from the latest peer-reviewed science. If an observation can be associated with a map feature that can be tracked (e.g., a wetland boundary for a wetland associated plant) then this polygon feature is used to represent the SO. Areas that can be inferred as probable occupied habitat based on direct observation of a species location and what is known about the foraging area or home range size of the species may be incorporated into the SO. Species Occurrences generally belong to one of the following categories:

Plant Species Occurrences

A documented location of a specimen collection or observed plant population. In some instances, adjacent, spatially separated clusters are considered subpopulations and are grouped as one occurrence (e.g., the subpopulations occur in ecologically similar habitats, and their spatial proximity likely allows them to interbreed). Tabular information for multiple observations at the same SO location is generally linked to a single polygon. Plant SO's are only created for Species of Concern and Potential Species of Concern.

Animal Species Occurrences

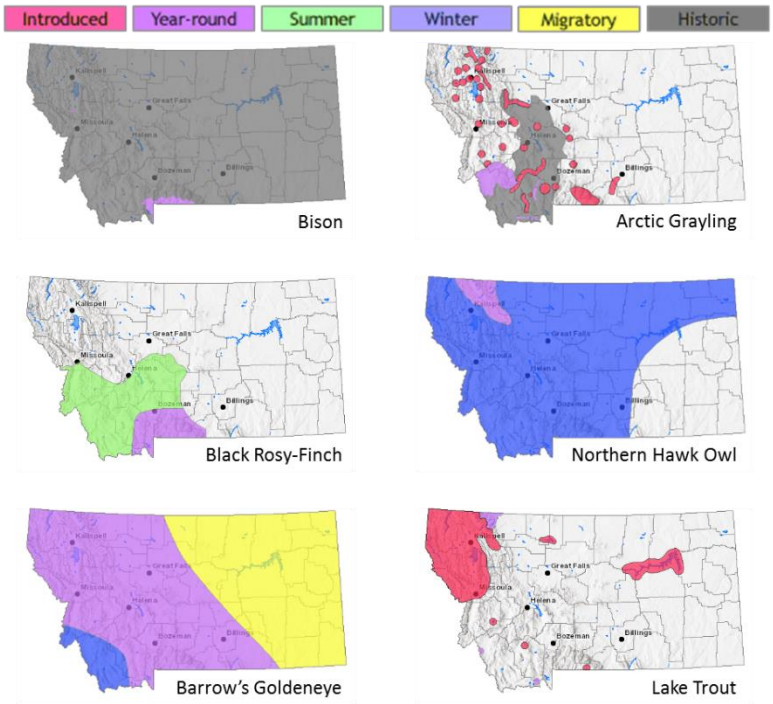
The location of a verified observation or specimen record typically known or assumed to represent a breeding population or a portion of a breeding population. Animal SO's are generally: (1) buffers of terrestrial point observations based on documented species' home range sizes; (2) buffers of stream segments to encompass occupied streams and immediate adjacent riparian habitats; (3) polygonal features encompassing known or likely breeding populations (e.g., a wetland for some amphibians or a forested portion of a mountain range for some wide ranging carnivores); or (4) combinations of the above. Tabular information for multiple observations at the same SO location is generally linked to a single polygon. Species Occurrence polygons may encompass some unsuitable habitat in some instances in order to avoid heavy data processing associated with clipping out habitats that are readily assessed as unsuitable by the data user (e.g., a point buffer of a terrestrial species may overlap into a portion of a lake that is obviously inappropriate habitat for the species). Animal SO's are only created for Species of Concern and Special Status Species (e.g., Bald Eagle).

Other Occurrence Polygons

These include significant biological features not included in the above categories, such as Important Animal Habitats like bird rookeries and bat roosts, and peatlands or other wetland and riparian communities that support diverse plant and animal communities.

Geographic Range Polygons

Geographic range polygons have not yet been defined for most plant species. Native year-round, summer, winter, migratory and historic geographic range polygons as well as polygons for introduced populations have been defined for most animal species for which there are enough observations, surveys, and knowledge of appropriate seasonal habitat use to define them (see examples to left). These native or introduced range polygons bound the extent of known or likely occupied habitats for non-migratory and relative sedentary species and the regular extent of known or likely occupied habitats for migratory and long-distance dispersing species; polygons may include unsuitable intervening habitats. For most species, a single polygon can represent the year-round or seasonal range, but breeding ranges of some colonial nesting water birds and some introduced species are represented more patchily when supported by data. Some ranges are mapped more broadly than actual distributions in order to be visible on statewide maps (e.g., fish).



Predicted Suitable Habitat Models

Recent predicted suitable habitat suitability models have not yet been created for most plant species. For animal species for which models have been completed, the environmental summary report includes simple, rule-based, associations with streams for fish and other aquatic species and mathematically complex Maximum Entropy models (Phillips et al. 2006, Ecological Modeling 190:231-259) constructed from a variety of statewide biotic and abiotic layers and presence only data for individual species contributed to Montana Natural Heritage Program databases for most terrestrial species. For the Maximum Entropy models, we reclassified 90 x 90-meter continuous model output into suitability classes (unsuitable, low, moderate, and optimal) then aggregated that into the one square mile hexagons used in the environmental summary report; this is the finest spatial scale we suggest using this information in management decisions and survey planning. Full model write ups for individual species that discuss model goals, inputs, outputs, and evaluation in much greater detail are posted on the MTNHP's Predicted Suitable Habitat Models page. Evaluations of predictive accuracy and specific limitations are included with the metadata for models of individual species. **Model outputs should not be used in place of on-the-ground surveys for species. Instead model outputs should be used in conjunction with habitat evaluations to determine the need for on-the-ground surveys for species.** We suggest that the percentage of predicted optimal and moderate suitable habitat within the report area be used in conjunction with geographic range polygons and the percentage of commonly associated habitats to generate lists of potential species that may occupy broader landscapes for the purposes of landscape-level planning.

Associated Habitats

Within the boundary of the intersected hexagons, we provide the approximate percentage of commonly or occasionally associated habitat for vertebrate animal species that regularly breed, overwinter, or migrate through the state; a detailed list of commonly and occasionally associated habitats is provided in individual species accounts in the Montana Field Guide. We assigned common or occasional use of each of the 82 ecological systems mapped in Montana by: (1) using personal knowledge and reviewing literature that

summarizes the breeding, overwintering, or migratory habitat requirements of each species; (2) evaluating structural characteristics and distribution of each ecological system relative to the species' range and habitat requirements; (3) examining the observation records for each species in the state-wide point observation database associated with each ecological system; and (4) calculating the percentage of observations associated with each ecological system relative to the percent of Montana covered by each ecological system to get a measure of numbers of observations versus availability of habitat. Species that breed in Montana were only evaluated for breeding habitat use, species that only overwinter in Montana were only evaluated for overwintering habitat use, and species that only migrate through Montana were only evaluated for migratory habitat use. In general, species were listed as associated with an ecological system if structural characteristics of used habitat documented in the literature were present in the ecological system or large numbers of point observations were associated with the ecological system. However, species were not listed as associated with an ecological system if there was no support in the literature for use of structural characteristics in an ecological system, even if point observations were associated with that system. Common versus occasional association with an ecological system was assigned based on the degree to which the structural characteristics of an ecological system matched the preferred structural habitat characteristics for each species as represented in the scientific literature. The percentage of observations associated with each ecological system relative to the percent of Montana covered by each ecological system was also used to guide assignment of common versus occasional association.

We suggest that the percentage of commonly associated habitat within the report area be used in conjunction with geographic range polygons and the percentage of predicted optimal and moderate suitable habitat from predictive models to generate lists of potential species that may occupy broader landscapes for the purposes of landscape-level planning. Users of this information should be aware that land cover mapping accuracy is particularly problematic when the systems occur as small patches or where the land cover types have been altered over the past decade. Thus, particular caution should be used when using the associations in assessments of smaller areas (e.g., evaluations of public land survey sections).

Introduction to Land Cover

Land Use/Land Cover is one of 15 Montana Spatial Data Infrastructure framework layers considered vital for making statewide maps of Montana and understanding its geography. The layer records all Montana natural vegetation, land cover and land use, classified from satellite and aerial imagery, mapped at a scale of 1:100000, and interpreted with supporting ground-level data. The baseline map is adapted from the Northwest ReGAP (NWGAP) project land cover classification, which used 30m resolution multi-spectral Landsat imagery acquired between 1999 and 2001. Vegetation classes were drawn from the Ecological System Classification developed by NatureServe (Comer et al. 2003). The land cover classes were developed by Anderson et al. (1976). The NWGAP effort encompasses 12 map zones. Montana overlaps seven of these zones. The two NWGAP teams responsible for the initial land cover mapping effort in Montana were Sanborn and NWGAP at the University of Idaho. Both Sanborn and NWGAP employed a similar modeling approach in which Classification and Regression Tree (CART) models were applied to Landsat ETM+ scenes. The Spatial Analysis Lab within the Montana Natural Heritage Program was responsible for developing a seamless Montana land cover map with a consistent statewide legend from these two separate products. Additionally, the Montana land cover layer incorporates several other land cover and land use products (e.g., MSDI Structures and Transportation themes and the Montana Department of Revenue Final Land Unit classification) and reclassifications based on plot-level data and the latest NAIP imagery to improve accuracy and enhance the usability of the theme. Updates are done as partner support and funding allow, or when other MSDI datasets can be incorporated. Recent updates include fire perimeters and agricultural land use (annually), energy developments such as wind, oil and gas installations (2014), roads, structures and other impervious surfaces (various years): and local updates/improvements to specific ecological systems (e.g., central Montana grassland and sagebrush ecosystems). Current and previous versions of the Land Use/Land Cover layer with full metadata are available for download at the Montana State Library's Geographic Information Clearinghouse.

Within the report area you have requested, land cover is summarized by acres of Level 1, Level 2, and Level 3 Ecological Systems.

Literature Cited

Anderson, J.R. E.E. Hardy, J.T. Roach, and R.E. Witmer. 1976. A land use and land cover classification system for use with remote sensor data. U.S. Geological Survey Professional Paper 964.

Comer, P., D. Faber-Langendoen, R. Evans, S. Gawler, C. Josse, G. Kittel, S. Menard, M. Pyne, M. Reid, K. Schulz, K. Snow, and J. Teague. 2003. Ecological systems of the United States: A working classification of U.S. terrestrial systems. NatureServe, Arlington, VA.

Introduction to Wetland and Riparian

Within the report area you have requested, wetland and riparian mapping is summarized by acres of each classification present. Summaries are only provided for modern MTNHP wetland and riparian mapping and not for outdated (NWI Legacy) or incomplete (NWI Scalable) mapping efforts; described here. MTNHP has made all three of these datasets and associated metadata available for separate download on the Montana Wetland and Riparian Framework MSDI download page.

Wetland and Riparian mapping is one of 15 Montana Spatial Data Infrastructure framework layers considered vital for making statewide maps of Montana and understanding its geography. The wetland and riparian framework layer consists of spatial data representing the extent, type, and approximate location of wetlands, riparian areas, and deepwater habitats in Montana.

Wetland and riparian mapping is completed through photointerpretation of 1-m resolution color infrared aerial imagery acquired from 2005 or later. A coding convention using letters and numbers is assigned to each mapped wetland. These letters and numbers describe the broad landscape context of the wetland, its vegetation type, its water regime, and the kind of alterations that may have occurred. Ancillary data layers such as topographic maps, digital elevation models, soils data, and other aerial imagery sources are also used to improve mapping accuracy. Wetland mapping follows the federal Wetland Mapping Standard and classifies wetlands according to the Cowardin classification system of the National Wetlands Inventory (NWI) (Cowardin et al. 1979, FGDC Wetlands Subcommittee 2013). Federal, State, and local regulatory agencies with jurisdiction over wetlands may define and describe wetlands differently than the NWI. Similar coding, based on U.S. Fish and Wildlife Service conventions, is applied to riparian areas (U.S. Fish and Wildlife Service 2009). These are mapped areas where vegetation composition and growth is influenced by nearby water bodies, but where soils, plant communities, and hydrology do not display true wetland characteristics. **These data are intended for use in publications at a scale of 1:12,000 or smaller. Mapped wetland and riparian areas do not represent precise boundaries and digital wetland data cannot substitute for an on-site determination of jurisdictional wetlands.**

A detailed overview, with examples, of both wetland and riparian classification systems and associated codes can be found at: http://mtnhp.org/help/MapViewer/WetRip_Classification.asp

Literature Cited

Cowardin, L.M., V. Carter, F.C. Golet, and E.T. LaRoe. 1979. Classification of wetlands and deepwater habitats of the United States. U.S. Fish and Wildlife Service, FWS/OBS-79/31. Washington, D.C. 103pp.

Federal Geographic Data Committee. 2013. Classification of wetlands and deepwater habitats of the United States. FGDC-STD-004-2013. Second Edition. Wetlands Subcommittee, Federal Geographic Data Committee and U.S. Fish and Wildlife Service, Washington, D.C.

U.S. Fish and Wildlife Services. 2009. A system for mapping riparian areas in the western United States. Division of Habitat and Resource Conservation, Branch of Resource and Mapping Support, Arlington, Virginia.

Introduction to Land Management

Within the report area you have requested, land management information is summarized by acres of federal, state, and local government lands, tribal reservation boundaries, private conservation lands, and federal, state, local, and private conservation easements. Acreage for "Owned", "Tribal", or "Easement" categories represents non-overlapping areas that may be totaled. However, "Other Boundaries" represents managed areas such as National Forest boundaries containing private inholdings and other mixed ownership which may cause boundaries to overlap (e.g. a wilderness area within a forest). Therefore, acreages may not total in a straight-forward manner.

Because information on land stewardship is critical to effective land management, the Montana Natural Heritage Program (MTNHP) began compiling ownership and management data in 1997. The goal of the Montana Land Management Database is to manage a single, statewide digital data set that incorporates information from both public and private entities. The database assembles information on public lands, private conservation lands, and conservation easements held by state and federal agencies and land trusts and is updated on a regular basis. Since 2011, the Information Management group in the Montana State Library's Digital Library Division has taken an increasingly active role in managing layers of the Montana Land Management Database in partnership with the MTNHP.

Public and private conservation land polygons are attributed with the name of the entity that owns it. The data are derived from the statewide Montana Cadastral Parcel layer. Conservation easement data shows land parcels on which a public agency or qualified land trust has placed a conservation easement in cooperation with the land owner. The dataset contains no information about ownership or status of the mineral estate. For questions about the dataset or to report errors, please contact the Montana Natural Heritage Program at (406) 444-5363 or mtnhp@mt.gov. You can download various components of the Land Management Database and view associated metadata at the Montana State Library's GIS Data List at the following links:

Public Lands
Conservation Easements
Private Conservation Lands
Managed Areas

Map features in the Montana Land Management Database or summaries provided in this report are not intended as a legal depiction of public or private surface land ownership boundaries and should not be used in place of a survey conducted by a licensed land surveyor. Similarly, map features do not imply public access to any lands. The Montana Natural Heritage Program makes no representations or warranties whatsoever with respect to the accuracy or completeness of this data and assumes no responsibility for the suitability of the data for a particular purpose. The Montana Natural Heritage Program will not be liable for any damages incurred as a result of errors displayed here. Consumers of this information should review or consult the primary data and information sources to ascertain the viability of the information for their purposes.

Introduction to Invasive and Pest Species

Within the report area you have requested, separate summaries are provided for: Aquatic Invasive Species, Noxious Weeds, Agricultural Pests, and Forest Pests that have been documented or potentially occur there based on their known distribution in the state. Definitions for each of these invasive and pest species categories can be found on our Species Status Codes page.

Each of these summaries provides the following information when present for a species: (1) the number of observations of each species; (2) the geographic range polygons for each species, if developed, that the report area overlaps; (3) predicted relative habitat suitability classes that are present if a predicted suitable habitat model has been created; (4) the percent of the report area that is mapped as commonly associated or occasionally associated habitat as listed for each species in the Montana Field Guide; and (5) and links to species accounts in the Montana Field Guide. Details on each of these information categories are included under relevant section headers under the Introduction to Native Species above or are defined on our Species Status Codes page. In presenting this information, the Montana Natural Heritage Program (MTNHP) is working towards assisting the user with rapidly determining what invasive and pest species have been documented and what species are potentially present in the report area. We remind users that this information is likely incomplete as surveys to document introduced species are lacking in many areas of the state, information on introduced species has only been tracked relatively recently, the MTNHP's staff and resources are restricted by declining budgets, and information is constantly being added and updated in our databases. **Thus, field verification by professional biologists of the absence or presence of species will always be an important obligation of users of our data.**

If you are aware of observation or survey datasets for invasive or pest species that the MTNHP is missing, please report them to the Program Coordinator bmaxell@mt.gov Program Botanist apipp@mt.gov or Senior Zoologist dbachen@mt.gov. If you have observations that you would like to contribute, you can submit animal observations using our online data entry system at http://mtnhp.org/AddObs/, plant and animal observations via Excel spreadsheets posted at http://mtnhp.org/observations.asp , or to the Program Botanist or Senior Zoologist.

Additional Information Resources

Home Page for Montana Natural Heritage Program (MTNHP)

MTNHP Staff Contact Information

Montana Field Guide

MTNHP Species of Concern Report - Animals and Plants

MTNHP Species Status Codes - Explanation

MTNHP Predicted Suitable Habitat Models (for select Animals and Plants)

MTNHP Request Information page

Montana Cadastral

Montana Code Annotated

Montana Department of Environmental Quality

Montana Fisheries Information System

Montana Fish, Wildlife, and Parks Subdivision Recommendations

Montana GIS Data Layers

Montana GIS Data Bundler

Montana Greater Sage-Grouse Project Submittal Site

Montana Ground Water Information Center

Montana Legislative Environmental Policy Office Publications
(Including Index of Environmental Permits required in Montana and Guide to the Montana Environmental Policy Act)

Montana Environmental Policy Act (MEPA)

MEPA Analysis Resource List

Laws, Treaties, Regulations, and Permits on Animals and Plants

Montana Spatial Data Infrastructure Layers

Montana State Historic Preservation Office Review and Compliance

Montana Water Information System

Montana Web Map Services

National Environmental Policy Act

Penalties for Misuse of Fish and Wildlife Location Data (MCA 87-6-222)

U.S. Fish and Wildlife Service Information for Planning and Conservation (Section 7 Consultation)

Web Soil Survey Tool

MONTANA Natural Heritage Program

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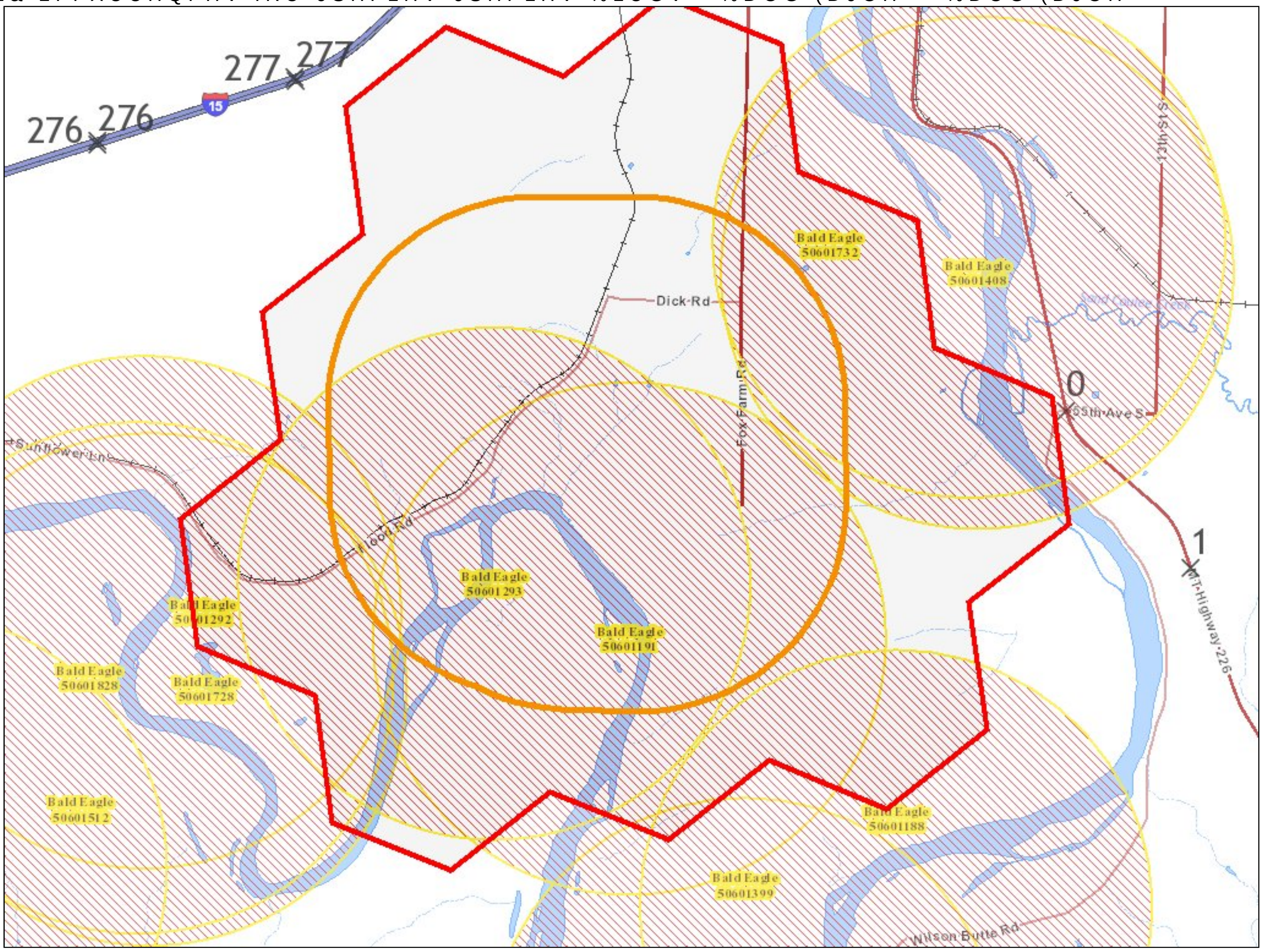

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1DWXUDO +HULWDJH 0DS 9LHZHU 0RQWDQD 1DWXUDO +HULWDJH 3URJUDP
5HWULHYHG RQ $SULO IURP KWWS PWQKS RUJ 0DS9LHZHU 625HSRUW DVS[

Cascade Conservation District

12 Third St. NW, Ste 300
Great Falls, MT 59404
Tel 406-727-3603 ext 125
Fax 406-727-4810
Email info@cascadecd.com
Web cascadecd.com

September 15, 2017

Mr. Rick Higgins
PO Box 322
Ulm, MT 59485

RE: Reservoir/Dam maintenance & repair

Dear Mr. Higgins:

Upon review of the unnamed stream drainages south of Great Falls, S34, T20N, R3E, it has been determined that the stream is considered intermittent and therefore does not fall under the purview of the Cascade Conservation District according to the Natural Streambed and Land Preservation Act (SB310) and therefore, a 310 permit is not required.

We appreciate your diligence in contacting the district prior to any work commencing on the project and hope this meets your needs going forward. Please don't hesitate to contact me if you have any further questions or concerns.

Thank you,

Tenlee A Atchison

Tenlee Atchison
Administrator

FAX
538-7089

dmann2@
mt.gov

MAT 538-7784
Doug Mann 538-7459

Dept of Water Resor.
Lewistown - WATER
DNRC - 444-6601
Shawnee - 538-7401
ex ~~[illegible]~~ 3001.

Billings - BLR
Mark Beaty - 247-7488

Local leadership in conservation stewardship..

Cascade
Conservation
District

12 Third Street NW, Suite 300
Great Falls, Montana 59404
Tel: 406-770-4308
Fax: 406-727-4810
Email: tenlee@cascadecd.com
www.cascadecd.com

Higgins Enterprises, Ltd
PO Box 322
Ulm MT 59485-0322

RE: Living on the Bank

The following gives important information and outlines your responsibilities as a landowner living on the bank of a stream or waterway in Montana

~THANK YOU FOR YOUR TIME AND ATTENTION~

Dear Water's Edge Landowner:

As we stumble out of a long winter and fall right into the warmth of summer, we wanted to take this opportunity to introduce ourselves to those who may have never needed our services or participated in any conservation programming.

Living on the bank of the river, you should be aware of all permitting regulations, Aquatic Invasive Species (AIS) issues and other events that impact your property. You should know who we are, what we offer you and why that is important.

We Are:

The Cascade Conservation District. In the early 1930's, along with the greatest depression this nation ever experienced, came an equally unparalleled ecological disaster known as the Dust Bowl. Following a severe and sustained drought in the Great Plains, the region's soil began to erode and blow away; creating huge black dust storms that blotted out the sun and swallowed the countryside. On Capitol Hill, while testifying about the erosion problem, soil scientist Hugh Hammond Bennett threw back the curtains to reveal a sky blackened by dust. Congress unanimously passed legislation declaring soil and water conservation a national policy and priority. Since about three-fourths of the continental United States is privately owned, Congress realized that only active, voluntary support from landowners would guarantee the success of conservation work on private land. In 1937, President Franklin D. Roosevelt wrote the governors of all the states recommending legislation that would allow local landowners to form soil conservation districts. There is a total of 58 conservation districts in Montana with at least one in each of the 56 counties.

Conservation districts are political subdivisions with broad power and authority under the law to carry out programs that conserve soil and water, protect streams and rivers, improve soil health, as well as improve wildlife habitat, improve the tax base, and protect the health, safety and welfare of the citizens of the state.

Conservation districts are governed by a non-paid, nonpartisan board of elected supervisors. If a city falls within a conservation district boundary, two supervisors are appointed by the city government to represent urban interests. Funding for operations comes from a small tax levied on real property within the boundaries of the conservation district. The revenue from the mill levy varies from $2,500 in less populated counties to over $200,000 in counties with a greater population base. The majority of conservation district levies generate under $25,000 in revenue. This funding is inadequate to meet the goals of conservation districts, so they rely heavily on grants and other creative funding sources.

In 1944 the Sun River Soil Conservation District was activated. It covered the irrigated area along the Sun River, including parts of Teton and Lewis & Clark Counties as well as a portion of Cascade County. And, in 1946, the balance of Cascade County was organized into the Cascade Soil and Water Conservation District. In 1960 the two districts merged as one and in 1971 the District adopted the name, the Cascade County Conservation District. In 2013, the name changed again to Cascade Conservation District (CCD). We have 4 incorporated towns within the boundaries of the district which follow county lines.

CCD is housed in the USDA Service Center. We work closely with the Natural Resource Conservation Service and the Farm Service Agency. The Montana Department of Natural Resources & Conservation (DNRC), Conservation Districts Bureau (CDB) provides financial, legal and technical assistance, and training. The CDB assists conservation districts in meeting their legal requirements to carry out conservation programs locally and assists districts with the Montana Natural Streambed and Land Preservation Act (310 Permits). CCD is not a county agency; however, there is a strong partnership between CCD and many county departments. Visit http://www.cascadecd.com/ to learn who your local CCD officials are as well as pertinent district information.

We Do:

Permitting. The Cascade Conservation District (CCD) administers The Natural Streambed and Land Preservation Act, also known as "The 310 Law" in Cascade County. The purpose of the law is to keep rivers and streams in as natural or existing condition as possible, to minimize sedimentation and to recognize beneficial uses. Any individual or corporation proposing work in a perennial stream or on the banks of the stream, must apply for a 310 permit through CCD. This includes but is not limited to:

- Boat Docks
- Boat Launches or Ramps
- Landscaping of any kind including clean up
- Bank stabilization projects
- Fencing
- Removal of material (excavation) or vegetation
- The addition of material including soil, gravel, rock and debris including grass clippings
- Decks, landings or terracing
- Bridges, culverts or fords

If you are planning to do work on or near a waterway in Montana, one or several permits may be required. Conservation districts, along with participating agencies, created a Joint Application Form to help reduce the number of application forms that you need to complete to get your permits. We hope that in addition to reducing paperwork, the use of the form will increase coordination and streamline the permitting process. The Missouri River is considered a navigable river. This means there are more permitting regulations that may be required. Please visit http://dnrc.mt.gov/licenses-and-permits/stream-permitting for a full list of all permitting requirements.

Permits follow the permittee NOT the property. If you have installed a boat dock or done other work on or near the river and you are not sure about whether that project was permitted, you can go online to verify your project is permitted at http://svcalt.mt.gov/dnrc/310permits/default.asp.

**** WARNING****

CCD and other permitting agencies will be on the river a lot this summer. We will be contacting you if we find work (including the installation of a boat dock) has taken place without proper permitting.

Any work completed without proper permitting is considered a **violation**. If you are found to be in violation of the Natural Streambed and Land Preservation Act, you and your contractor may be assessed a civil penalty for an amount not to exceed $500 per violation, and each day of violation constitutes a separate violation per Montana Code Annotated 75-7-123. In addition, if attempts by the District to obtain voluntary compliance have been unsuccessful, the evidence gathered, along with supporting documents will be submitted to the county attorney for enforcement. Further, this Conservation District has the authority under Montana Code Annotated 75-7-122 and -123 to take you to court to collect the civil penalties imposed against you and to require mitigation or abatement.

Please contact CCD immediately if a project has taken place without proper permitting. There are ways to mitigate without penalty.

Please be sure your boat dock is permitted. Permits do not allow docks to be put into the water prior to high water (typically end of May/middle of June, depending on the year) and they must be removed by December 1 each year.

******

Streams in this portion of Montana have a high potential for flooding this season. Stream-modification projects undertaken as an immediate response to flooding require an **Emergency Form 275**. Landowners must contact their local Conservation District within 15 days of taking the emergency action and submit the completed Emergency Form. This permit is not required before any project activity begins.

> To qualify as an emergency action, Montana law states the project must be the result of an *"unforeseen event or combination of circumstances that calls for immediate action to safeguard life, including human or animal, or property, including growing crops, without giving time for the deliberate exercise of judgement or discretion ..."*

Events. Enclosed are just a couple of events that we will be attending or hosting this summer. Please mark your calendars and plan to join us. We would love to visit with you about all things water and soil, wildlife and people life and all other important natural resources. We hope to meet you there.

Education. Please visit our website http://www.cascadecd.com/ or join us on Facebook to find out more about our education efforts. Please contact us if you would like to receive our quarterly newsletter. This provides information on what we have been doing for you and what is coming up in the future.

We Give:

Assistance. The Cascade Conservation District (CCD) offers cost share that provides funding for local landowners to help offset costs of implemented conservation practices. The conservation practices are based on specifications provided by the Natural Resource Conservation Service (NRCS). CCD will cost

share 50% up to $5000 for a total of $2500/practice. 3 projects or a total of $7500 is given each year. Only one practice per applicant will be cost shared each year. This is a competitive program, therefore, projects are reviewed and ranked with the top 3 receiving funding. CCD has cost shared many successful projects including spring and stock water developments, fencing projects, forestry projects and many more. Applications are due by October 1. Contracts go out to successful applicants the following January. Contact us if you have a conservation project that we could help you with.

We Rally:

Support. When it is needed the most. As active partners with local, state and federal agencies we help coordinate conservation efforts between these agencies and landowners like you to ensure accurate information, technical assistance and resources are shared ensuring the best possible outcome for the customers and the health of our landscapes.

The state of Montana implemented an extensive campaign against Aquatic Invasive Species (AIS) in 2017 after invasive mussels were detected in Tiber Reservoir in 2017. There was also a suspected detection in Canyon Ferry. This is a double threat to the waters of the Missouri in Cascade County. The economic impact to our infrastructure in these waters could be devastating. Control by state officials is daunting. The best way to insure we keep our waters clean, pristine and usable is through prevention. That prevention starts here. We are asking all landowners who live on the bank to:

1. Learn as much as you can about all AIS threats, plant and animal. Visit http://cleandraindry.mt.gov and surf the site to learn how you can help protect our waters.

2. Become a stream team member:

Water's Edge Ambassadors are those who live at the water's edge like you. These Ambassadors help monitor through the use of substrate samplers, as a start. Through regular checks of the sampler that can be hung in the water off your dock or tethered to a tree or rock, you can help us be ever vigilant. Reporting is quick and simple with regular reporting rewards possible at the end of the season.

Eye's on the Water are those who simply enjoy and/or recreate on our streams. This may be local conservation groups, civic groups and individuals or fraternal organizations who want to get involved in *Protecting our Water*. These groups will be asked to help monitor and report as well as train as inspectors for events such as fishing derbies/tournaments or substitute in the field on occasion. Members will become a valuable first line of defense in education and outreach for local visitors.

The Mighty Mo Fleet Keepers are local businesses that can distribute information about our rivers and streams. These businesses are the heart of local tourism and the best way to reach visitors who recreate in our waters. Fleet Keepers will receive up to date information as soon as it is available.

These are sweet and simple, valuable ways to ensure our waters are protected for the enjoyment of all. Please consider joining a stream team.

We Are:

Here for you. Please don't hesitate to contact us with any questions or concerns that may have been presented in this letter.

Please remember to:

- ✓ Check the permitting database at http://svcalt.mt.gov/dnrc/310permits/default.asp to make sure all river projects are properly permitted. Make sure you are aware of all permitting requirements before starting any project on or near the stream.
- ✓ Join a stream team
- ✓ Visit us at the At the Water's Edge in July or sign up to help with the River Cleanup 2018 in August from Pelican Point to Cascade.
- ✓ Like us on Facebook for up to date information and notifications.
- ✓ Contact us for more information.

Thank you for your diligence and care as *Living on the Bank* is a commitment that requires respectful stewardship in ***Protecting our Waters*** and keeping Montana great for future generations.

We look forward to seeing you soon!

Cordially yours,

CASCADE CONSERVATION DISTRICT

Tenlee A Atchison

Tenlee Atchison
Administrator

Jake Hoffman

From: Jason Crawford
Sent: Friday, May 1, 2020 3:12 PM
To: Jake Hoffman
Subject: FW: RIVER BEND ESTATES PHASE III 12-LOT SUBDIVISION, CASCADE CO
Attachments: 2020043010.pdf

Jason Crawford, PE

TRIPLE TREE
ENGINEERING

3102 Old Broadwater Lane, Helena, MT 59601
Cell: 406.461.2115
www.tripletreemt.com

From: Murdo, Damon <dmurdo@mt.gov>
Sent: Friday, May 1, 2020 1:37 PM
To: Jason Crawford <jcrawford@tripletreemt.com>
Subject: RIVER BEND ESTATES PHASE III 12-LOT SUBDIVISION, CASCADE CO

Big Sky. Big Land. Big History.
Montana
Historical Society

May 1, 2020

Jason Crawford
Triple Tree Engineering
3102 Old Broadwater Lane
Helena MT 59602

RE: RIVER BEND ESTATES PHASE III 12-LOT SUBDIVISION, CASCADE CO. SHPO Project #: 2020043010

Dear Mr. Crawford:

I have conducted a cultural resource file search for the above-cited project located in Section 34, T20N R3E. According to our records there have been no previously recorded sites within the designated search locale. The absence of cultural properties in the area does not mean that they do not exist but rather may reflect the absence of any previous cultural resource inventory in the area, as our records indicated none.

It is SHPO's position that any structure over fifty years of age is considered historic and is potentially eligible for listing on the National Register of Historic Places. If any structures are to be altered and are over fifty years old, we would recommend that they be recorded, and a determination of their eligibility be made prior to any disturbance.

Based on the previous agricultural use of the area we feel that a recommendation for a cultural resource inventory is unwarranted at this time. As long as there will be no disturbance or alteration to structures over fifty years of age we feel that there is a low likelihood cultural properties will be impacted. However, should structures need to be altered or if cultural materials be inadvertently discovered during this project we would ask that our office be contacted, and the site investigated.

If you have any further questions or comments, you may contact me at (406) 444-7767 or by e-mail at dmurdo@mt.gov.
I have attached an invoice for the file search. Thank you for consulting with us.
Sincerely,

Damon Murdo
Cultural Records Manager
State Historic Preservation Office

File: LOCLA/SUBDIVISIONS/2020

DEPARTMENT OF NATURAL RESOURCES AND CONSERVATION

Lewistown Water Resources Regional Office

STEVE BULLOCK, GOVERNOR

PHONE: (406) 538-7459

613 NE Main St, Suite E
Lewistown, MT 59457

May 6, 2020

Triple Tree Engineering
Attn: Jason Crawford
3102 Old Broadwater Ln
Helena, MT 59601

Re: River Bend Estates Phase III Subdivision DEQ Review

Mr. Crawford,

Per the information provided in an e-mail received April 23rd, the anticipated water use for the proposed River Bend Estates Phase III Subdivision does fit the current rules and laws pertaining to exempt water rights, or groundwater notices of completion. This proposed phase development, comprised of 12 single-family residential lots, all with individual wells, is considered a combined appropriation. There is also a parkland parcel and a utility parcel within the lot layout that will not require water. No review of the residual acreage of the tract being subdivided is required, the remaining parcel is approximately 90 acres and is not subject to subdivision review (greater than 20 acres). Each of the twelve wells will be limited to an individual flow rate of up to 35 gallons per minute (GPM) and all wells combined will be limited to an annual volume of up to 10.0 acre-feet (AF).

As described, your annual water use estimations for the subdivision total just under 10.00 AF and do not include any water for the parkland or utility parcels. Considering the combined appropriation and e-mail direction for the anticipated water use on the twelve lots, each lot will be limited to 0.83 AF per year including 0.33 AF for domestic use and up to 0.50 AF for lawn and garden irrigation (L & G) of up to 0.2 acres. The combined volume for the subdivision includes 3.96 AF for domestic use and up to 6.0 AF for L & G for a total proposed subdivision use of 9.96 AF per year.

	Property Description - Parcel, Lot or Tract	Annual Volume Acre-Feet/year						
		Domestic	Lawn & Garden	Commercial	Other	Total	Remaining Available	Total Volume under MCA 85-2-306 3 (iii)
Proposed Use	Lot 1	0.330	0.500			0.830		
Proposed Use	Lot 2	0.330	0.500			0.830		
Proposed Use	Lot 3	0.330	0.500			0.830		
Proposed Use	Lot 4	0.330	0.500			0.830		
Proposed Use	Lot 5	0.330	0.500			0.830		
Proposed Use	Lot 6	0.330	0.500			0.830		
Proposed Use	Lot 7	0.330	0.500			0.830		
Proposed Use	Lot 8	0.330	0.500			0.830		
Proposed Use	Lot 9	0.330	0.500			0.830		
Proposed Use	Lot 10	0.330	0.500			0.830		
Proposed Use	Lot 11	0.330	0.500			0.830		
Proposed Use	Lot 12	0.330	0.500			0.830		
Proposed Use	Parkland Lot	0.000	0.000	0.000	0.000	0.000		
Proposed Use	Utility Lot	0.000	0.000	0.000	0.000	0.000		
					Total	9.960	0.040	10.00

Application for a Beneficial Water Use Permit is not required as the combined use from the proposed wells does not exceed an individual flow rate of 35 GPM or a combined volume of 10 AF annually. No water right permitting is needed for this subdivision layout ahead of putting water to a beneficial use.

NOTE:
In Clark Fork Coalition, et. al. v. DNRC, et. al., 2016 MT 229, 384 Mont. 503, 380 P.3d 771, the Montana Supreme Court concluded that the definition of "combined appropriation" in Admin. R. Mont. 36.12.101(13) was invalid. The Court reinstated the Department's 1987 Rule defining "combined appropriation" as: " An appropriation of water from the same source aquifer by means of two or more groundwater developments, the purpose of which, in the department's judgment, could have been accomplished by a single appropriation. Groundwater developments need not be physically connected nor have a common distribution system to be considered a "combined appropriation." They can be separate developed springs or wells to separate parts of a project or development. Such wells and springs need not be developed simultaneously. They can be developed gradually or in increments. The amount of water appropriated from the entire project or development from these groundwater developments in the same source aquifer is the "combined appropriation."

Under this Rule, the Department interprets subdivisions that are pending before the Department of Environmental Quality for approval on October 17, 2014 or filed after that date to be a single project that can be accomplished by a single appropriation. Consequently all wells in such a subdivision will be considered a "combined appropriation" for the purposes of Mont. Code Ann. 85-2-306. The only exception to this interpretation is that a subdivision which has received preliminary plat approval prior to October 17, 2014 will not be considered a project under the "combined appropriation" 1987 Rule; individual lots will still be evaluated under the 1987 Rule at the time of an application to the Department. 2015 Mont. Laws § 1, Ch. 221.

This letter does not serve as a pre-approval for a water right. The information above is based upon the information provided in your request. Prior to issuance of any water right, the owner must first make application to the DNRC for a water right. Applications are generally processed on a first-come, first-served basis.

A copy of this letter and your request for DNRC review will be provided to DEQ.

Thank you,

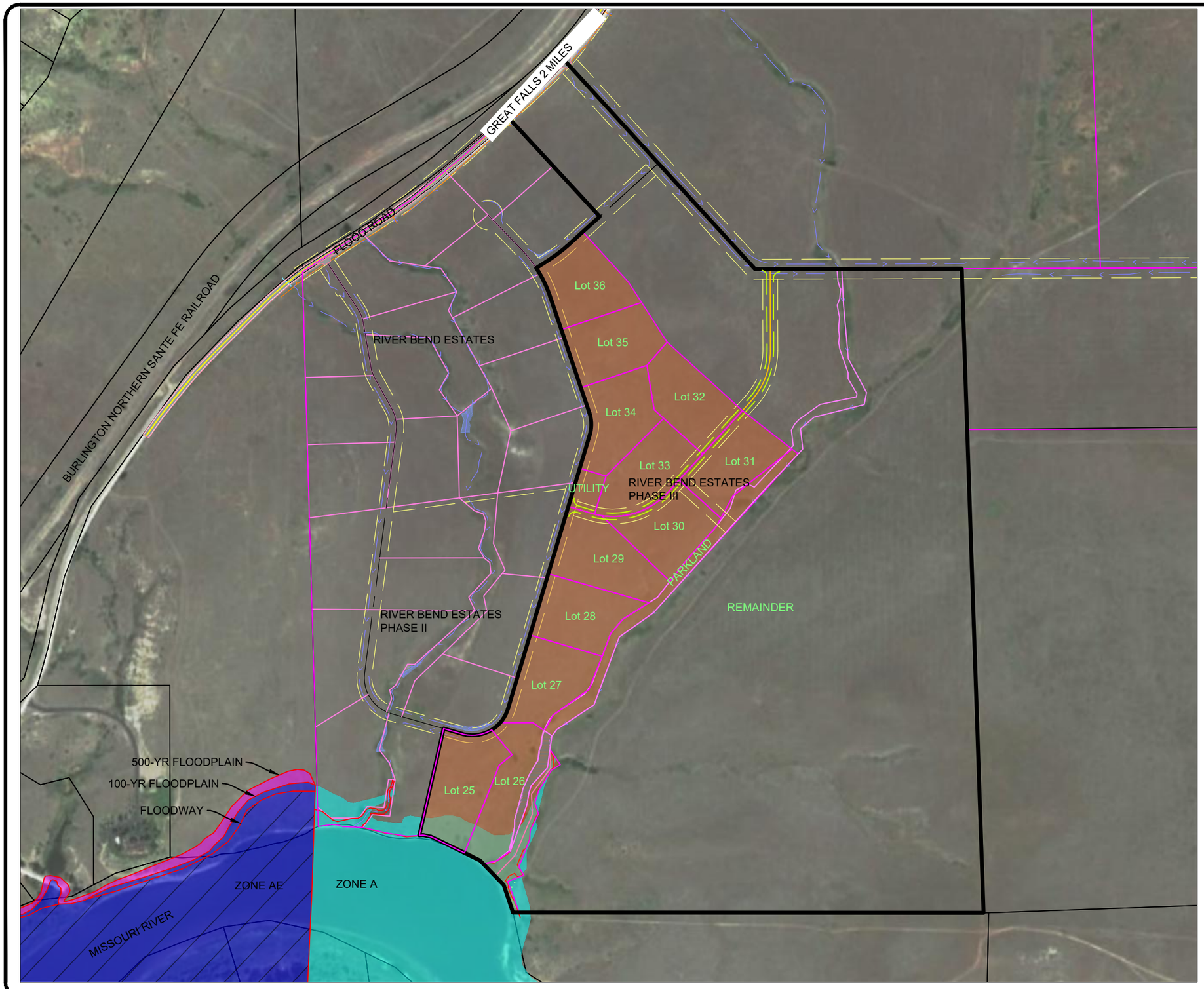
Melissa Norris

Melissa Norris
DNRC - Lewistown Regional Office

cc: DEQ, Leata English – via email only

Appendix B – Maps

RIVER BEND ESTATES
PHASE III
Surface Water Exhibit



200 0 200 400
SCALE FEET

PRELIMINARY
NOT FOR
CONSTRUCTION

TRIPLE TREE
ENGINEERING

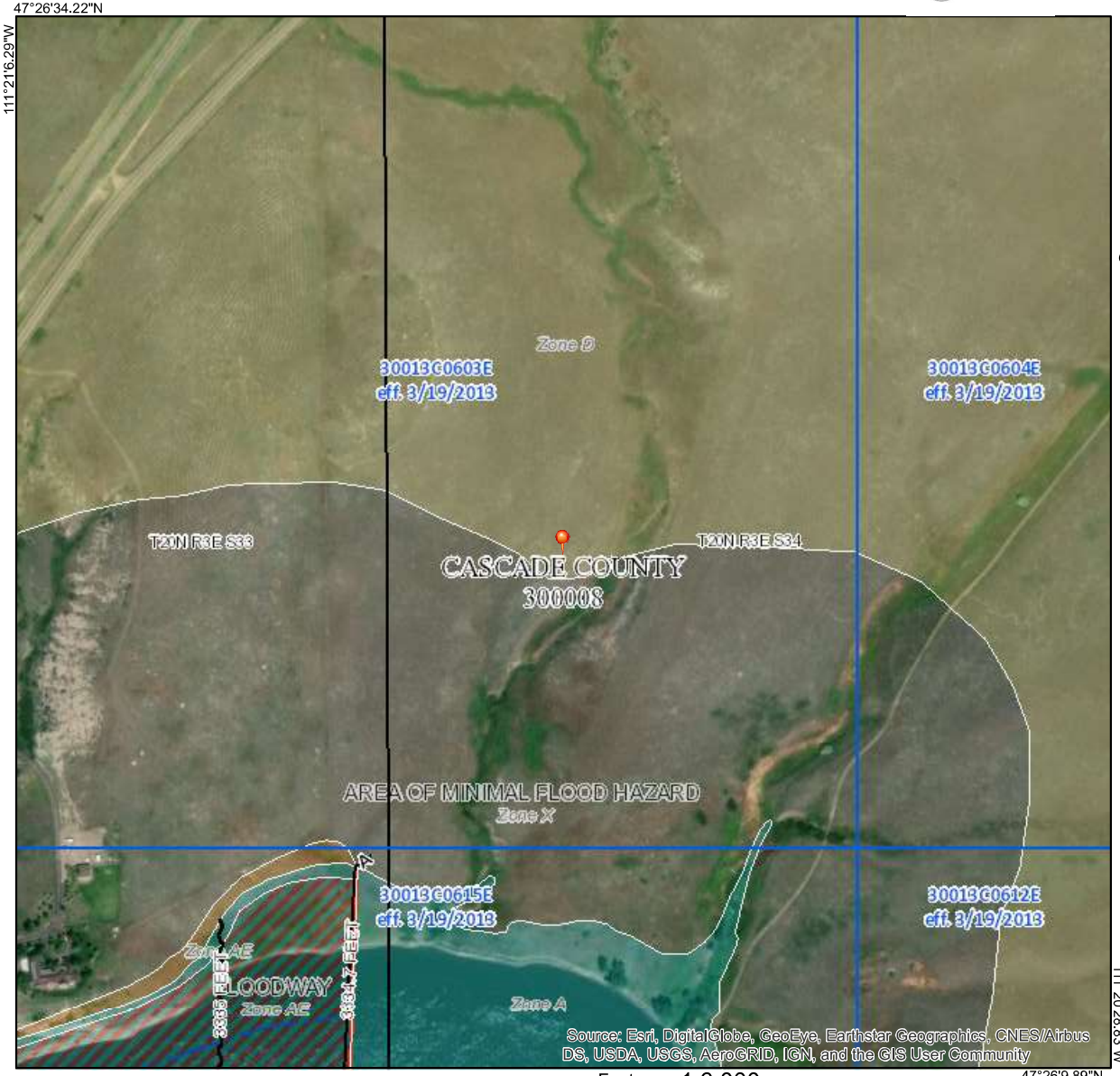
Jul 29, 2020 - 1:44pm - C:\Users\Jason Crawford\SyncedFolder\Desktop\19-72 RBE III\Phase III Prelim Plat Exhibits.dwg

National Flood Hazard Layer FIRMette

FEMA

47°26'34.22"N

111°21'6.29"W



111°20'28.83"W

47°26'9.89"N

0 250 500 1,000 1,500 2,000 Feet

1:6,000

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS

- Without Base Flood Elevation (BFE) *Zone A, V, A99*
- With BFE or Depth
- Regulatory Floodway *Zone AE, AO, AH, VE, AR*

OTHER AREAS OF FLOOD HAZARD

- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
- Future Conditions 1% Annual Chance Flood Hazard *Zone X*
- Area with Reduced Flood Risk due to Levee, See Notes, *Zone X*
- Area with Flood Risk due to Levee *Zone D*

OTHER AREAS

- NO SCREEN Area of Minimal Flood Hazard *Zone X*
- Effective LOMRs
- Area of Undetermined Flood Hazard *Zone D*

GENERAL STRUCTURES

- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

OTHER FEATURES

- B 20.2 17.5 Cross Sections with 1% Annual Chance Water Surface Elevation
- 8 Coastal Transect
- 513 Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

MAP PANELS

- Digital Data Available
- No Digital Data Available
- Unmapped

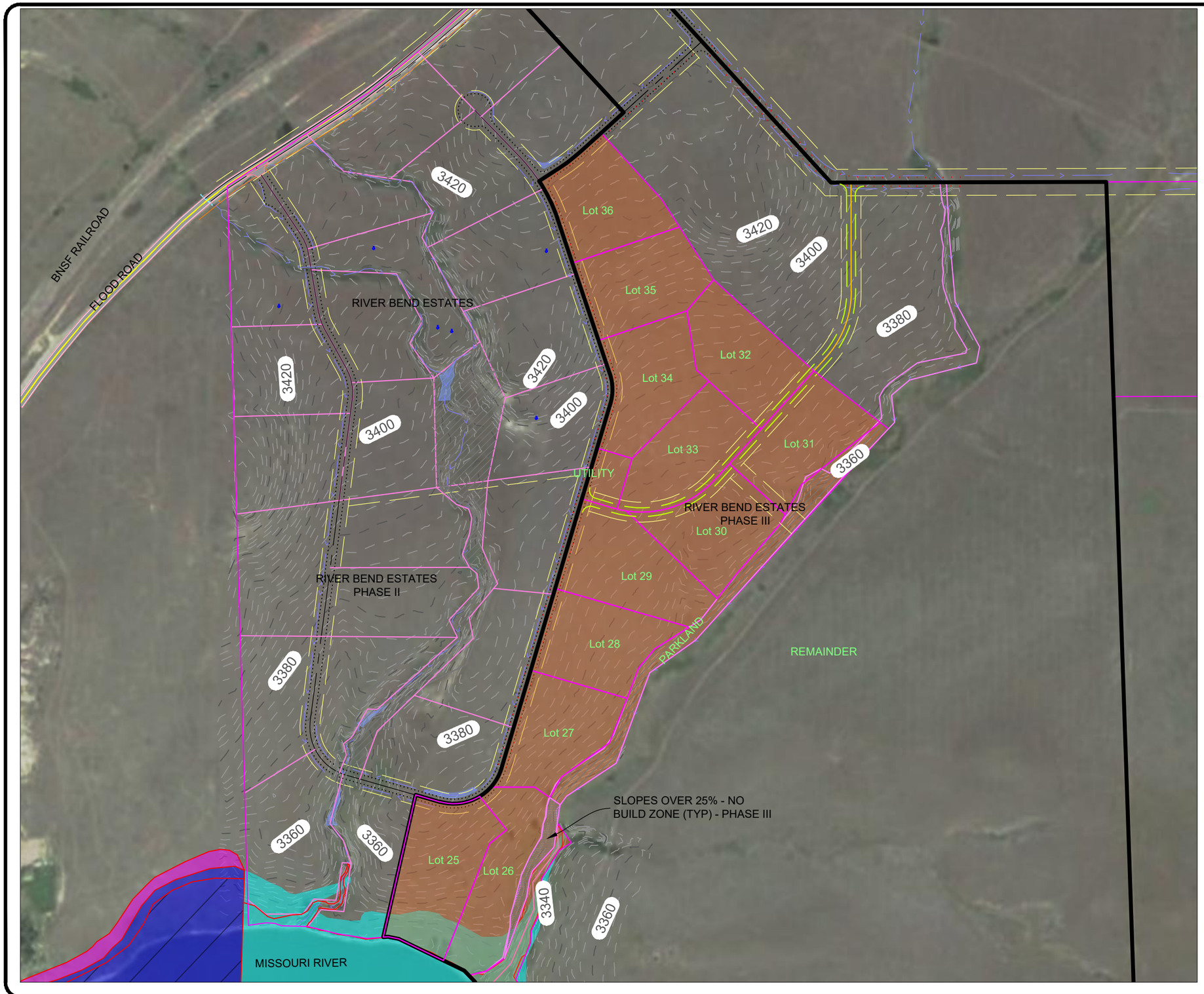
N

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The base map shown complies with FEMA's base map accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 6/29/2018 at 12:44:10 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: base map imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

RIVER BEND ESTATES
PHASE III
Topography and Geology



NOTES:
THERE ARE NO EXISTING BUILDINGS, STRUCTURES, OR OTHER IMPROVEMENTS LOCATED ON THE SUBJECT PROPERTY OR THE LANDS WITHIN 300 FEET OF THE SUBJECT PROPERTY.

THE SUBJECT PROPERTY AND THE ADJACENT LANDS TO THE EAST ARE ZONED SUBURBAN RESIDENTIAL 2 - SR 2 - MINIMUM LOT SIZE 2 ACRES. THE ADJACENT LANDS TO THE WEST ARE ZONED SUBURBAN RESIDENTIAL 1 - SR 1 - MINIMUM LOT SIZE 1 ACRE.

150 0 150 300
SCALE FEET

PRELIMINARY
NOT FOR
CONSTRUCTION

TRIPLE TREE
ENGINEERING

Jul 29, 2020 - 1:44pm - C:\Users\Jason Crawford\SyncedFolder\Desktop\19-72 RBE III\Phase III Prelim Plat Exhibits.dwg

Appendix C – Well Logs

MONTANA WELL LOG REPORT

This well log reports the activities of a licensed Montana well driller, serves as the official record of work done within the borehole and casing, and describes the amount of water encountered. This report is compiled electronically from the contents of the Ground Water Information Center (GWIC) database for this site. Acquiring water rights is the well owner's responsibility and is NOT accomplished by the filing of this report.

Other Options

Return to menu
Plot this site in State Library Digital Atlas
Plot this site in Google Maps
View scanned well log (7/12/2006 10:40:02 AM)

Site Name: BRUGGEMAN BRETT & SUZETTE
GWIC Id: 221694

Section 1: Well Owner(s)

1) BRUGGEMAN, BRETT AND SUZETTE (MAIL)
122 HAWK
GREAT FALLS MT 59404 [09/01/2005]

Section 2: Location

Township	Range	Section	Quarter Sections
19N	03E	3	NW¼ NE¼

County
CASCADE

Geocode

Latitude	Longitude	Geomethod	Datum
47.43387	-111.335078	TRS-SEC	NAD83

Ground Surface Altitude **Ground Surface Method** **Datum** **Date**

Addition **Block** **Lot**

Section 3: Proposed Use of Water

DOMESTIC (1)

Section 4: Type of Work

Drilling Method: ROTARY
Status: NEW WELL

Section 5: Well Completion Date

Date well completed: Thursday, September 01, 2005

Section 6: Well Construction Details

Borehole dimensions

From	To	Diameter
0	18.5	12
18.5	450	8

Casing

From	To	Diameter	Wall Thickness	Pressure Rating	Joint	Type
-1.5	18.5	8	0.250		WELDED	STEEL
10	450	5		200.00	SOLVENT WELD	PVC

Completion (Perf/Screen)

From	To	Diameter	# of Openings	Size of Openings	Description
430	450	5	120	1/4	DRILLED HOLES

Annular Space (Seal/Grout/Packer)

From	To	Description	Cont. Fed?
0	0	SHALE TRAP	
0	18.5	CEMENT & BENTONITE	

Section 7: Well Test Data

Total Depth: 450
Static Water Level: 185
Water Temperature:

Air Test *

100 gpm with drill stem set at 445 feet for 2 hours.
Time of recovery 0.25 hours.
Recovery water level 185 feet.
Pumping water level _ feet.

** During the well test the discharge rate shall be as uniform as possible. This rate may or may not be the sustainable yield of the well. Sustainable yield does not include the reservoir of the well casing.*

Section 8: Remarks

Section 9: Well Log

Geologic Source

330MDSN - MADISON GROUP OR LIMESTONE

From	To	Description
0	5	TOPSOIL
5	20	TAN SANDSTONE
20	80	BROWN SHALE
80	145	RED/GRAY SHALE
145	155	GRAY SANDSTONE
155	200	GRAY SHALE
200	205	GRAY SANDSTONE
205	250	RED SHALE
250	320	GRAY SHALE
320	325	GRAY SANDSTONE
325	425	GRAY SHALE
425	450	LIMESTONE

Driller Certification

All work performed and reported in this well log is in compliance with the Montana well construction standards. This report is true to the best of my knowledge.

Name:
Company: BOLAND DRILLING
License No: WWC-482
Date Completed: 9/1/2005

MONTANA WELL LOG REPORT

This well log reports the activities of a licensed Montana well driller, serves as the official record of work done within the borehole and casing, and describes the amount of water encountered. This report is compiled electronically from the contents of the Ground Water Information Center (GWIC) database for this site. Acquiring water rights is the well owner's responsibility and is NOT accomplished by the filing of this report.

Other Options

Return to menu
Plot this site in State Library Digital Atlas
Plot this site in Google Maps

Site Name: FRIESEN, ADAM
GWIC Id: 288029

Section 1: Well Owner(s)

1) FRIESEN, ADAM (MAIL)
415 5TH AVENUE NOTH
GREAT FALLS MT 59401 [06/16/2016]
2) FRIESEN, ADAM (WELL)
10 HILLCREST LANE
GREAT FALLS MT 59404 [06/16/2016]

Section 2: Location

Township	Range	Section	Quarter Sections
20N	03E	34	

County
CASCADE

Geocode

Latitude	Longitude	Geomethod	Datum
47.447033	-111.330833	NAV-GPS	NAD83

Ground Surface Altitude	Ground Surface Method	Datum	Date

Addition	Block	Lot

Section 3: Proposed Use of Water

DOMESTIC (1)

Section 4: Type of Work

Drilling Method: ROTARY
Status: NEW WELL

Section 5: Well Completion Date

Date well completed: Thursday, June 16, 2016

Section 6: Well Construction Details

Borehole dimensions

From	To	Diameter
0	25	12.3
25	390	8

Casing

From	To	Diameter	Wall Thickness	Pressure Rating	Joint	Type
-1.5	25	8	0.25		WELDED	STEEL
10	390	4.5		240.0	SPLINE	PVC

Completion (Perf/Screen)

From	To	Diameter	# of Openings	Size of Openings	Description
370	390	4.5	60	1/2"	DRILLED HOLES

Annular Space (Seal/Grout/Packer)

From	To	Description	Cont. Fed?
0	25	CEMENT/BENTONITE	

Section 7: Well Test Data

Total Depth: 390
Static Water Level: 138
Water Temperature:

Air Test *

35 gpm with drill stem set at 385 feet for 2 hours.
Time of recovery 1 hours.
Recovery water level 138 feet.
Pumping water level _ feet.

** During the well test the discharge rate shall be as uniform as possible. This rate may or may not be the sustainable yield of the well. Sustainable yield does not include the reservoir of the well casing.*

Section 8: Remarks

Section 9: Well Log

Geologic Source

Unassigned

From	To	Description
0	1	TOP SOIL
1	11	TAN SANDSTONE
11	40	GRAY SHALE
40	102	RED MUDSTONE W/ SANDSTONE LAYERS
102	165	GRAY SHALE AND SILTSTONE
165	190	RED SHALE
190	215	GRAY SILTSTONE
215	235	GRAY SANDSTONE
235	280	GRAY SHALE
280	290	GRAY SANDSTONE
290	315	GRAY AND GREEN SHALE
315	345	GRAY SANDSTONE
345	378	GRAY AND GREEN SHALE
378	388	GRAY SANDSTONE
388	390	LIMESTONE

Driller Certification

All work performed and reported in this well log is in compliance with the Montana well construction standards. This report is true to the best of my knowledge.

Name: CHRISTOPHER BOLAND
Company: BOLAND DRILLING
License No: WWC-667
Date Completed: 6/16/2016

20N 03E 34 AAB

MONTANA WELL LOG REPORT

Form No. 603 R2-99

Well ID# _____

This log reports the activities of a licensed Montana well driller and serves as the official record of work done within the borehole and casing and describes the amount of water encountered. **This form is to be completed by the driller and filed with DNRC within 60 days of completion of the work. Acquiring Water Rights is the well owner's responsibility and is not accomplished by the filing of this report.**

Well log information is stored in the Groundwater Information Center at the Montana Bureau of Mines and Geology (Butte) and water right information is stored in the Water Rights Bureau records (Helena).

For fields that are not applicable, enter NA. Optional fields have a grayed background. Record additional information in the REMARKS section.

1. WELL OWNER:
Name BOB GILTRAP
Mailing address 1104 20th AVENUE SW
GREAT FALLS MT 59404

2. WELL LOCATION: List ¼ from smallest to largest
____ ¼ NW ¼ NE ¼ NE ¼, Section 34
Township 20 N Range 3 E County CASCADE
Lot ____, Tract/Blk ____ Subdivision Name ____
Well Address ____
GPS ☐ Yes ☐ No
Latitude ____ Longitude ____
Error as reported by GPS locator (± feet) ____
Horizontal datum ☐ NAD27 ☐ WGS84

3. PROPOSED USE: ☒ Domestic ☐ Stock ☐ Irrigation
☐ Public water supply ☐ Monitoring Well ☐ Other: ____

4. TYPE OF WORK:
☒ New well ☐ Deepen existing well ☐ Abandon existing well
Method: ☐ Cable ☒ Rotary ☐ Other: ____

5. WELL CONSTRUCTION DETAILS:
Borehole:
Dia. 12.25 in. from 0 ft. to 38.5 ft.
Dia. 8.0 in. from 38.5 ft. to 410.0 ft.
Dia. ____ in. from ____ ft. to ____ ft.

Casing:
Steel: Wall thickness 0.250 ☐ Threaded ☒ Welded
Dia. 8 in. from +1.5 ft. to 38.5 ft.
Dia. ____ in. from ____ ft. to ____ ft.

Plastic: Pressure Rating 200 lbs. ☐ Threaded ☒ Welded
Dia. 5 in. from 10 ft. to 410 ft.

Perforations/Slotted Pipe:
Type of perforator used DRILLED HOLES
Size of perforations/slots 0.25 in. by ____ in.
80 no. of perforations/slots from 390 ft. to 410 ft.
____ no. of perforations/slots from ____ ft. to ____ ft.

Screens: ☐ Yes ☒ No
Material ____
Dia. ____ Slot size ____ from ____ ft. to ____ ft.
Dia. ____ Slot size ____ from ____ ft. to ____ ft.

Gravel Packed: ☐ Yes ☒ No
Size of gravel ____
Gravel placed from ____ ft. to ____ ft.

Packer: ☒ Yes ☐ No
Type SHALE TRAP Depth(s) 388 feet

Grout: Material used CEMENT & BENTONITE
Depth from 0 ft. to 38.5 ft. OR ☐ Continuous feed

6. WELL TEST DATA:
A well test is required for all wells. (*See details on well log report cover.*)
☒ Static water level 276 ft. below top of casing **or**
☐ Closed-in artesian pressure ____ psi.
How was test flow measured:
bucket/stopwatch weir, flume, flowmeter, etc ____
Yellowstone groundwater closure area only - Water Temperature ____ °F
☐ AQUIFER TEST DATA FORM ATTACHED

Test - 1 hour minimum
Drawdown is the amount water level is lowered below static level.
All depth measurements shall be from the top of the well casing.
Time of recovery is hours/minutes since pumping stopped.

Air test*
100 gpm with drill stem set at 405 ft. for 4 hours
Time of recovery 15 hrs/min. Recovery water level 276 ft.

OR Bailer test*
____ gpm with ____ ft. of drawdown after ____ hours
Time of recovery ____ hrs/min. Recovery water level ____ ft.

OR Pump test*
Depth pump set for test ____ ft.
____ gpm pump rate with ____ ft. of drawdown after ____ hrs pumping
Time of recovery ____ hrs/min. Recovery water level ____ ft.

OR Flowing Artesian*
____ gpm for ____ hours
Flow controlled by ____

**During the well test the discharge rate shall be as uniform as possible. This rate may or may not be the sustainable yield of the well. Sustainable yield does not include the resevoir of the well casing.*

7. WELL LOG: BB

Depth, Feet From	Depth, Feet To	Material: color/rock and type/descriptor (example: blue/shale/hard, or brown/gravel/water, or brown/sand/heaving)
0	12	BROKEN ROCK & SANDSTONE
12	34	GRAY SILTY SHALE
34	49	RED SHALE
49	84	GRAY SHALE
84	100	RED SHALE
100	155	GRAY SANDY SHALE
155	167	GRAY SHALE
167	189	RED SHALE
189	264	GRAY SANDSTONE
264	271	TAN SANDSTONE
271	390	GRAY SHALE
390	410	WHITE & TAN LIMESTONE

☐ ADDITIONAL SHEETS ATTACHED

8. DATE WELL COMPLETED: NOVEMBER 12, 2001

9. REMARKS: ____

10. DRILLER/CONTRACTOR'S CERTIFICATION:
All work performed and reported in this well log is in compliance with the Montana well construction standards. This report is true to the best of my knowledge.
Name, firm, or corporation (print) BOLAND DRILLING CO.
Address PO BOX 7107, GREAT FALLS MT 59406
Signature Chris Boland
Date NOV. 29, 2001 License no. 482

MBMG ID# 193256

Montana DNRC P.O. BOX 201601 HELENA, MT 59620-1601 444-6610
DEPARTMENT COPY
DRILLER: Please give this copy to the well owner to complete reverse side.
OWNER: Complete reverse side and send to DNRC when the well is completed and the water has been used beneficially for the intended purpose.

Great Falls 20N03E34 ABA CASCADE

Form No. 603 (R 2-89)

WELL LOG REPORT

File No. ~~2273~~ 80064

State law requires that the Bureau's copy be filed by the water well driller within 60 days after completion of the well.

086319

AS PER GOZ. 1-3-92 SI

1. WELL OWNER
Name Michael & Serena Hennessey

2. CURRENT MAILING ADDRESS
408 53 S.
Gt. Falls, mt. 59405

3. WELL LOCATION ~~NE~~ NW ¼ ~~SE~~ ¼ NE ¼ Section 34
Township 20 N/S Range 3 E/W County Cascade
Govn't Lot _____, or Lot _____, Block _____
Subdivision Name _____
Tract Number _____

4. PROPOSED USE: Domestic ☑ Stock ☐ Irrigation ☐
Other ☐ specify _____

5. TYPE OF WORK:
New well ☑ Method: Dug ☐ Bored ☐
Deepened ☐ Cable ☐ Driven ☐
Reconditioned ☐ Rotary ☑ Jetted ☐

6. DIMENSIONS: Diameter of Hole
Dia. 6 in. from 0 ft. to 410 ft.
Dia. _____ in. from _____ ft. to _____ ft.
Dia. _____ in. from _____ ft. to _____ ft.

7. CONSTRUCTION DETAILS:
Casing; Steel Dia. 6 from 1½ ft. to 30 ft.
Threaded ☐ Welded ☑ Dia. _____ from _____ ft. to _____ ft.
Type _____ Wall Thickness .250
Casing; Plastic Dia. 4" from -10 ft. to 410 ft.
Weight 160 PSI Dia. _____ from _____ ft. to _____ ft.
PERFORATIONS: Yes ☑ No ☐
Type of perforator used Skill saw
Size of perforations 1/16 in. by 6 in.
55 perforations from 380 ft. to 410 ft.
_____ perforations from _____ ft. to _____ ft.
_____ perforations from _____ ft. to _____ ft.
SCREENS: Yes ☐ No ☐
Manufacturer's Name _____
Type _____ Model No. _____
Dia. _____ Slot size _____ from _____ ft. to _____ ft.
Dia. _____ Slot size _____ from _____ ft. to _____ ft.
GRAVEL PACKED: Yes ☐ No ☑ Size of gravel _____
Gravel placed from _____ ft. to _____ ft.
GROUTED: To what depth? Bentonite fed. cont. along
Material used in grouting casing during drilling

8. WELL HEAD COMPLETION:
Pitless Adapter ☑ Yes ☐ No

9. PUMP (if installed)
Manufacturer's name Sta Rite
Type Sub. Model No. 410P 4CF04 HP. 2

10. WELL TEST DATA
The information requested in this section is required for all wells. All depth measurements shall be from the top of the well casing.
All wells under 100 gpm must be tested for a minimum of one hour and provide the following information:
a) Air X Pump _____ Bailer _____
b) Static water level immediately before testing 175 ft. If flowing; closed-in pressure _____ psi. _____ gpm.
Flow controlled by: _____ valve, _____ reducers, _____ other, (specify) _____
c) Depth at which pump is set for test 250
d) The pumping rate: 30 gpm.
e) Pumping water level 250 ft. at 2 hrs. after pumping began.
f) Duration of test: Pumping time 2 hrs.
g) Recovery time _____ hrs.
h) Recovery water level 175 ft. at 1 hrs. after pumping stopped.

Wells intended to yield 100 gpm or more shall be tested for a period of 8 hours or more. The test shall follow the development of the well, and shall be conducted continuously at a constant discharge at least as great as the intended appropriation. In addition to the above information, water level data shall be collected and recorded on the Department's "Aquifer Test Data" form.

NOTE: All wells shall be equipped with an access port ½ inch minimum or a pressure gauge that will indicate the shut-in pressure of a flowing well. Removable caps are acceptable as access ports.

11. WAS WELL PLUGGED OR ABANDONED? _____ Yes X No
If yes, how? _____

12. WELL LOG

Depth (ft.) From	To	Formation
0	9	Top Soil
9	12	Rock
12	23	Sand stone
23	140	Red - Blue Shale
140	380	Layers - Sandstone - Various color hard shales - Rock
380	405	grey Rock - sandstone

RECEIVED
DEC 11 1991
MONTANA D.N.R.C.
LEWISTOWN FIELD OFFICE

BB

ATTACH ADDITIONAL SHEETS IF NECESSARY

13. DATE COMPLETED 11-15-91

14. DRILLER/CONTRACTOR'S CERTIFICATION
This well was drilled under my jurisdiction and this report is true to the best of my knowledge.
12-4-91
Date
Poverty Drilling
Firm Name
2901 9th Ave N.W. Gt. Falls mt. 59404
Address
Frank A. Martin
Signature
302
License No.

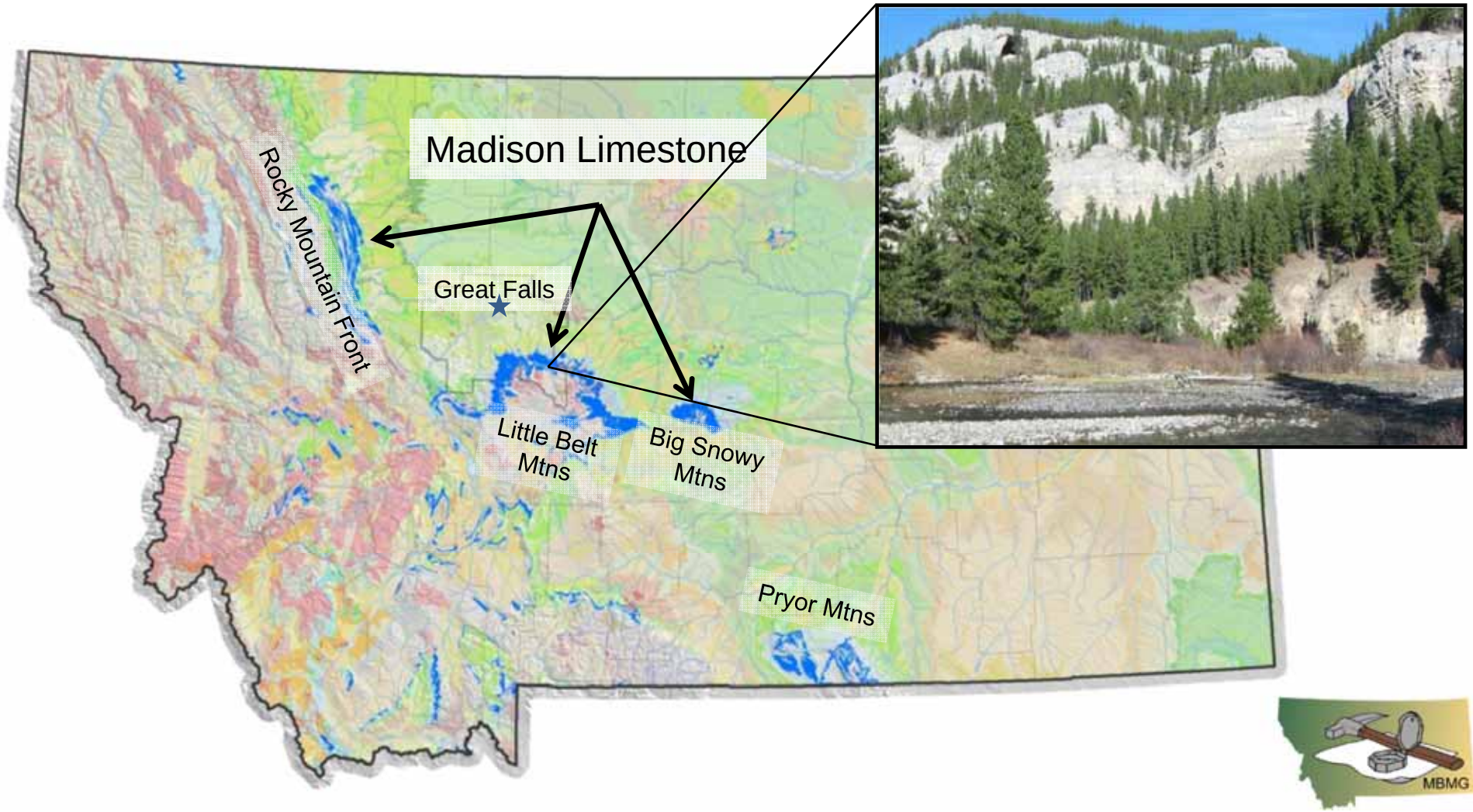
MONTANA DEPARTMENT OF NATURAL RESOURCES & CONSERVATION
1520 EAST SIXTH AVENUE HELENA, MONTANA 59620-2301 444-6610
DNRC

DEPARTMENT — BUREAU COPY

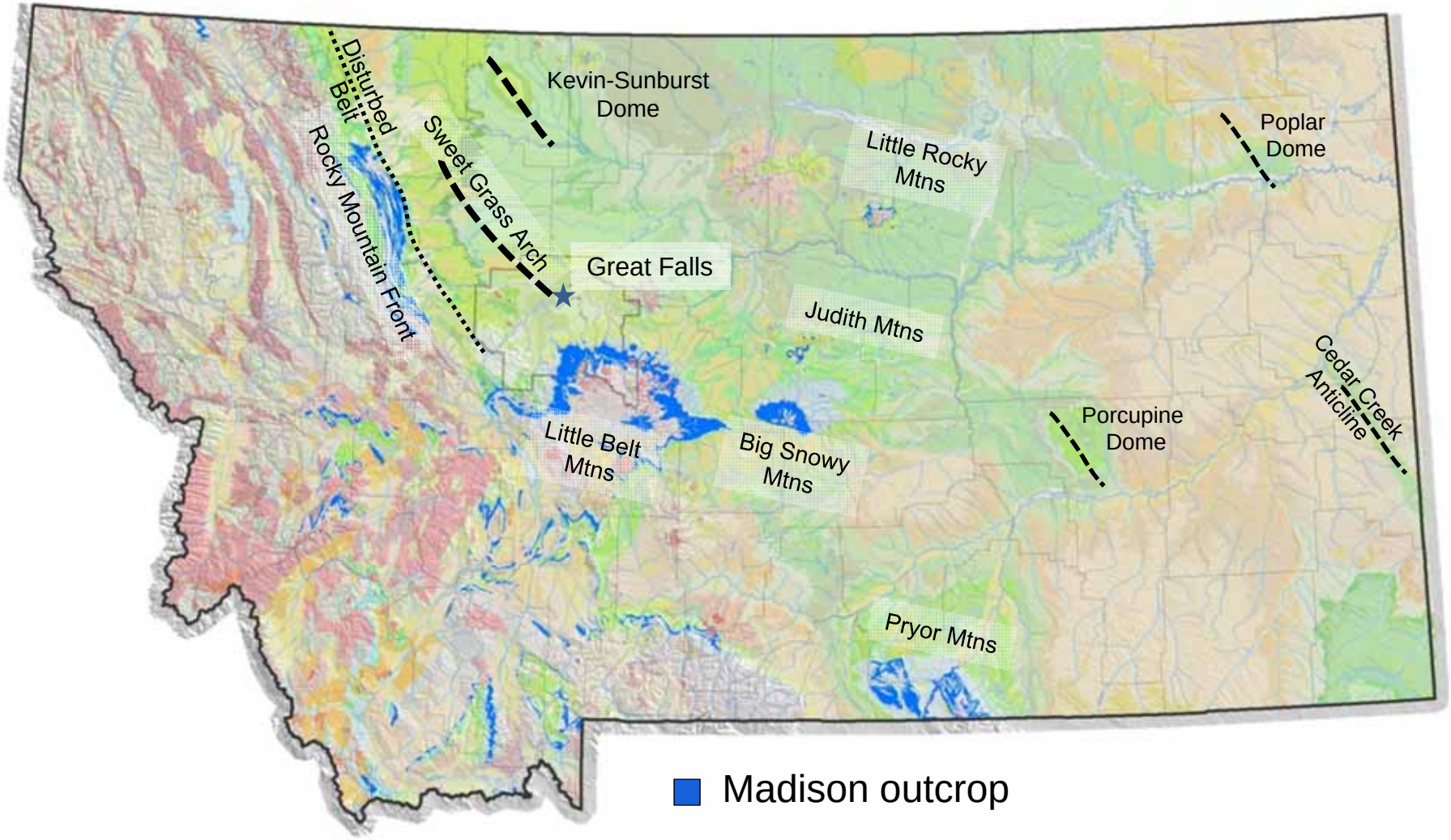
M:126085

Quality and Age of Water in the Madison Aquifer, Cascade County, Montana

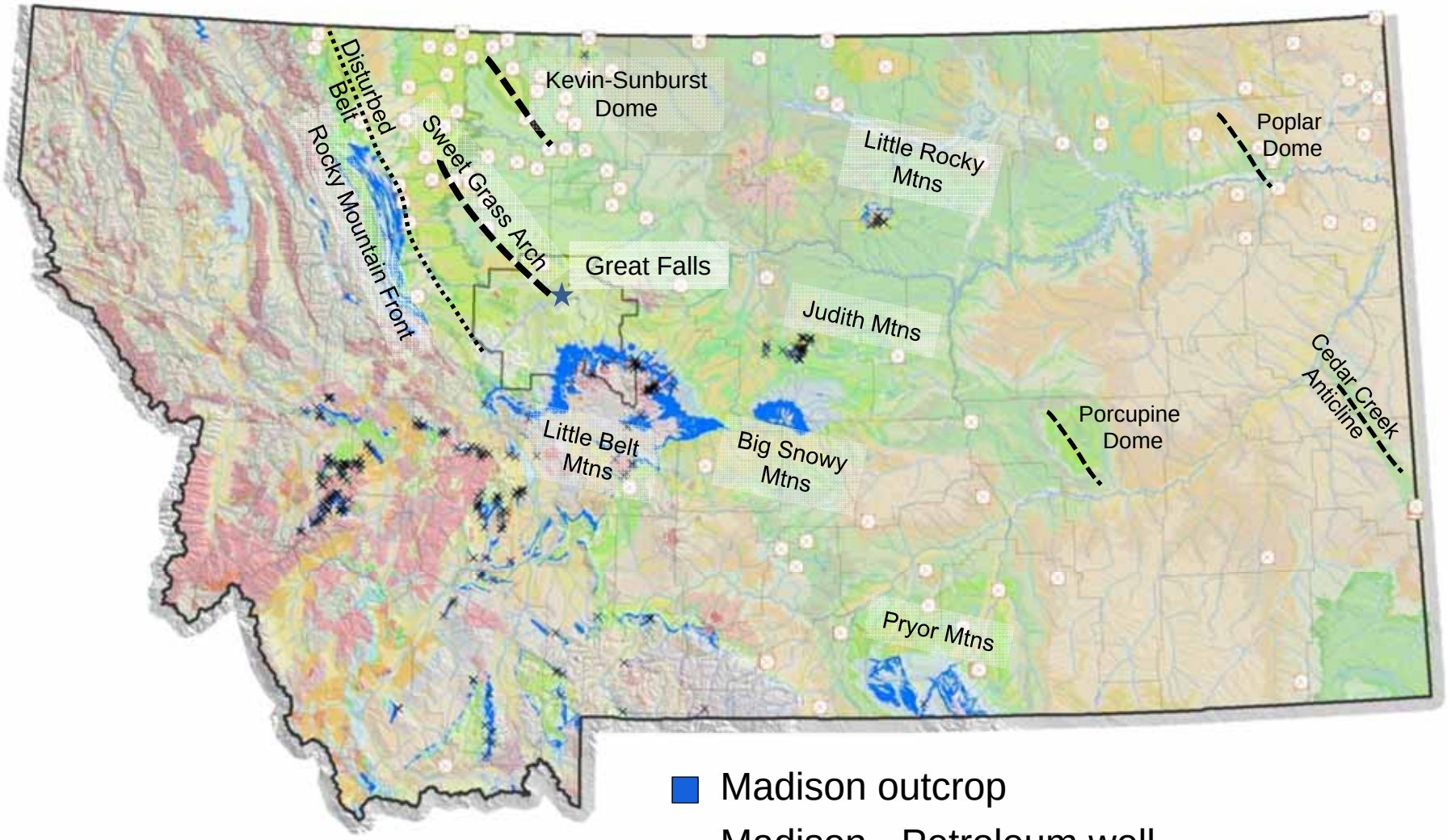
John LaFave
Montana Ground-Water Assessment Program



Madison Limestone – Structural Setting



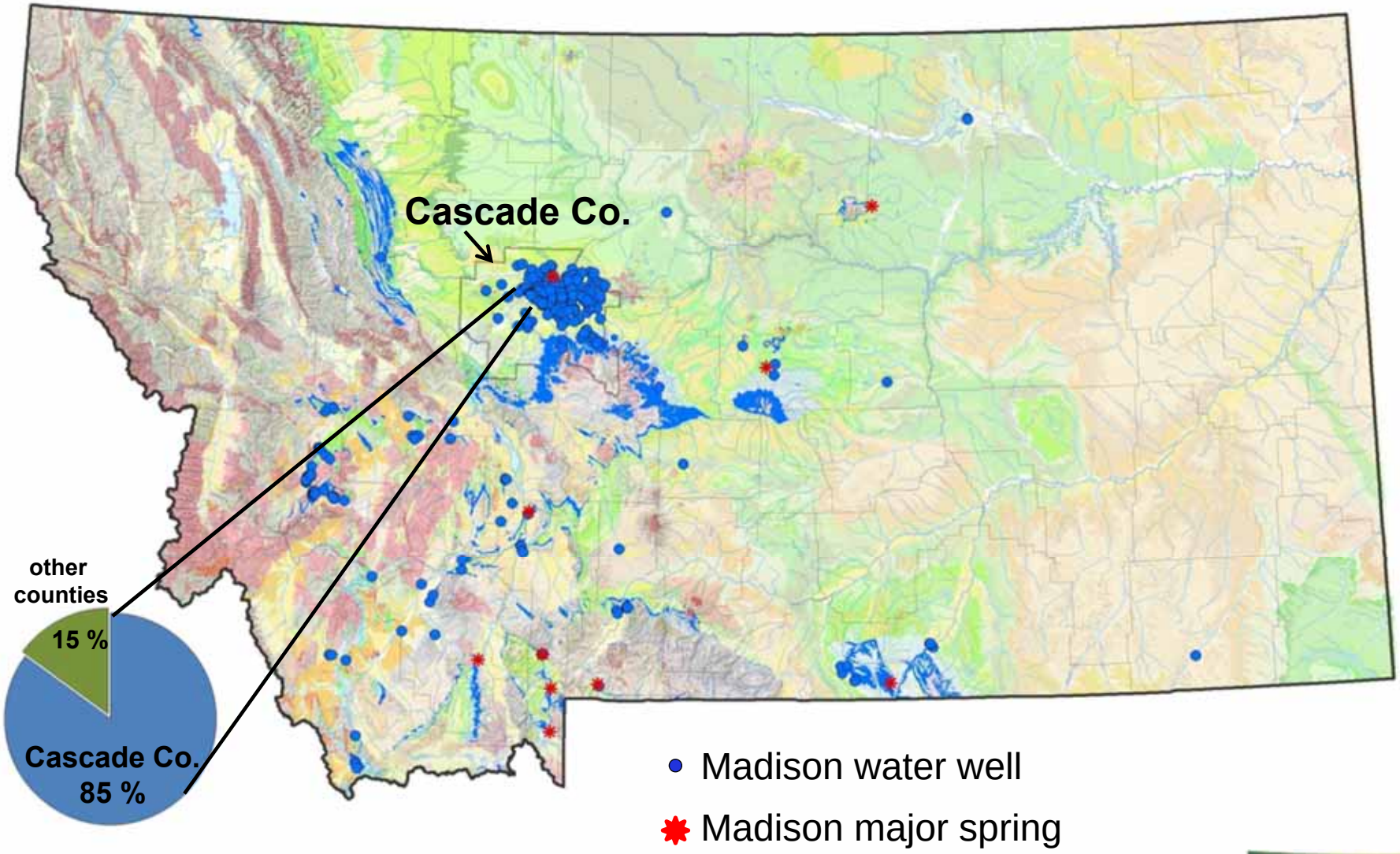
Madison Limestone – Economic Geology



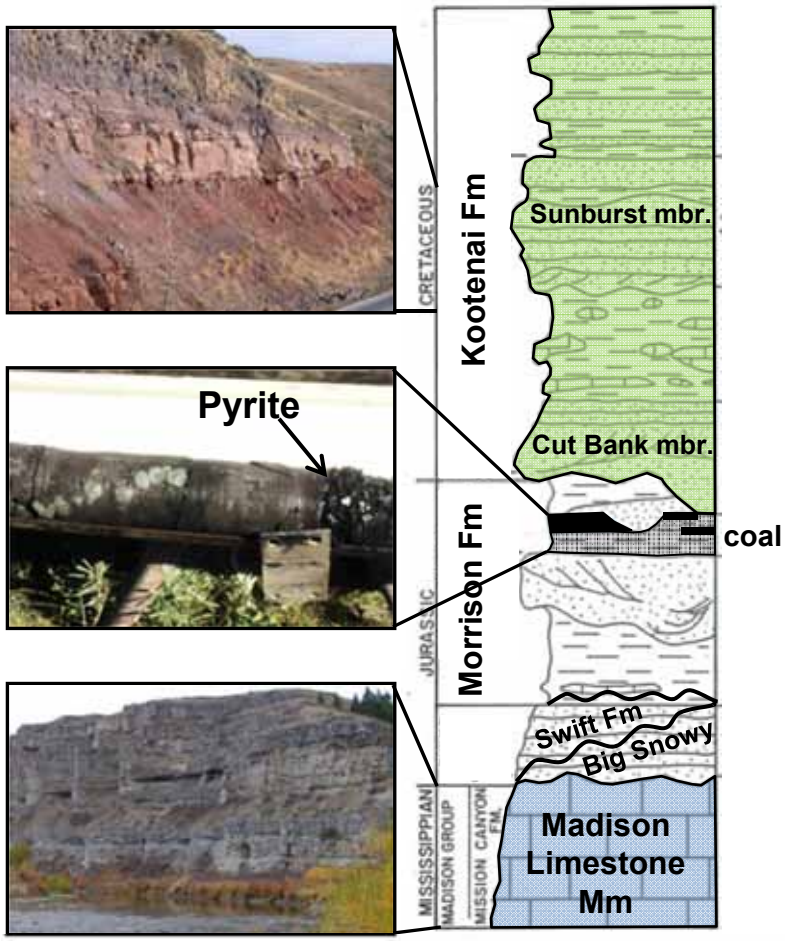
- Madison outcrop
- Madison - Petroleum well
- Metal, cement, burnt lime mine

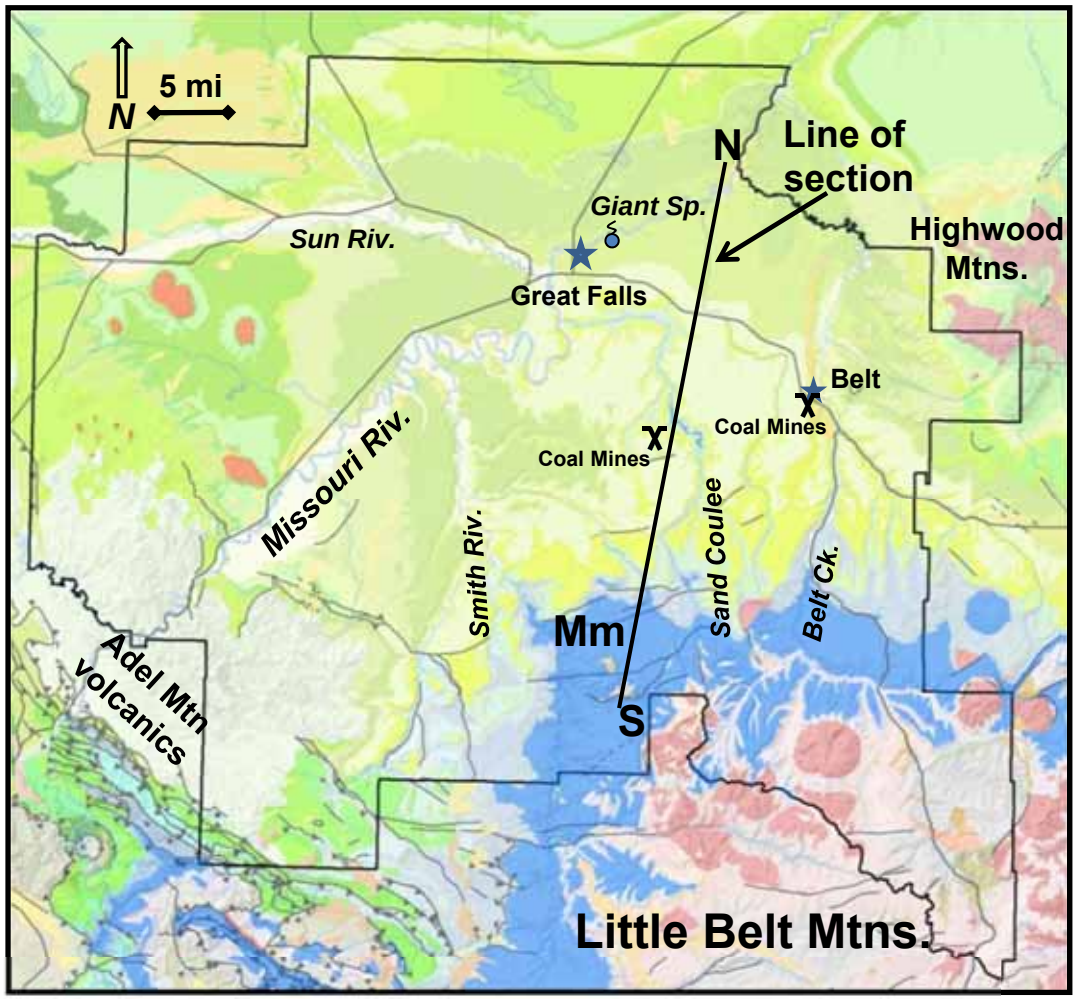
Madison Limestone – Springs

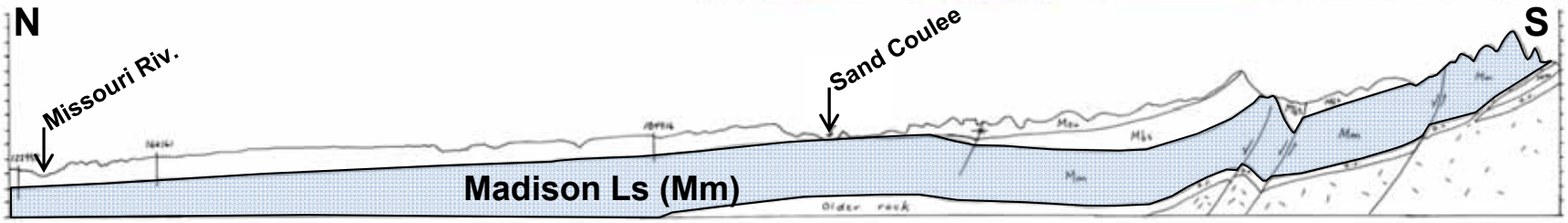
Madison Limestone – Aquifer



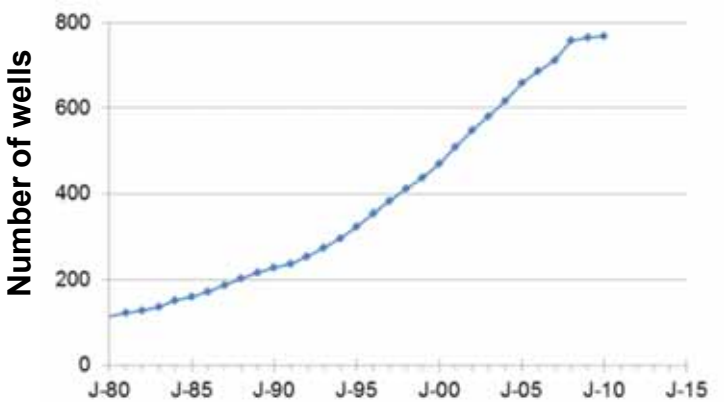
Madison Aquifer – Geologic Setting

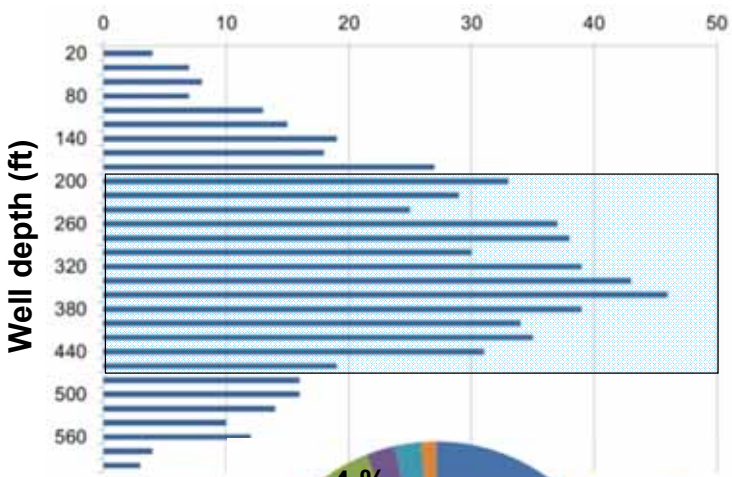


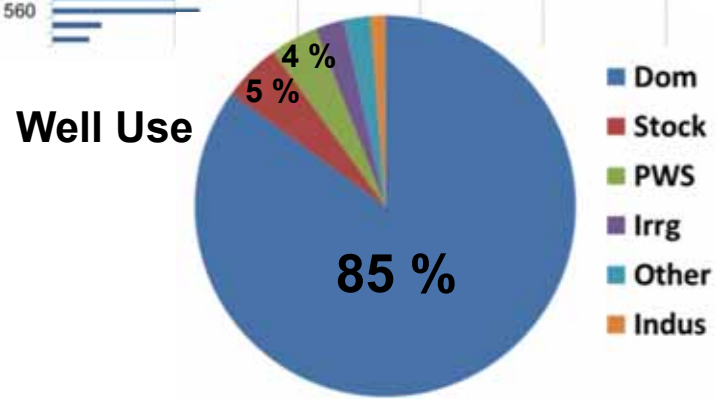


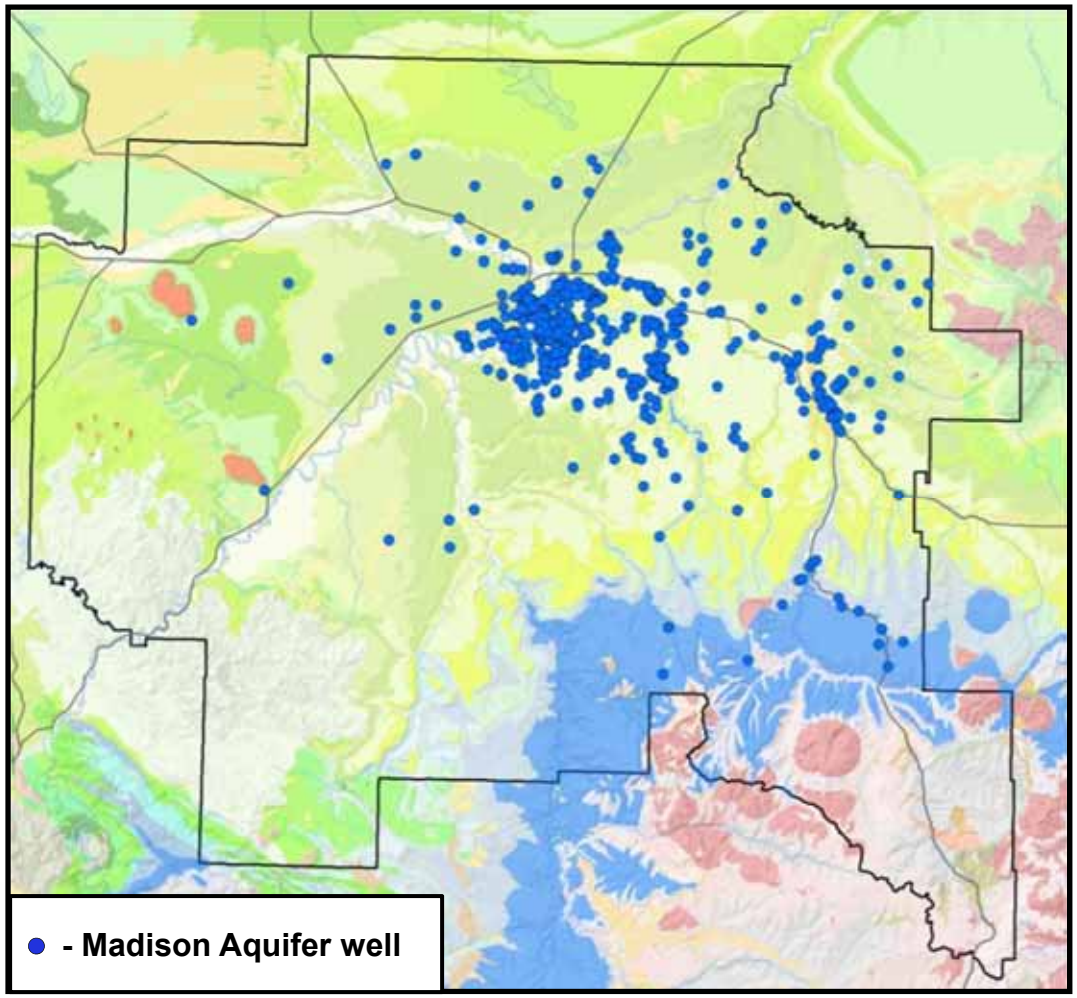


Madison Aquifer – Cascade County









Madison Aquifer – Porosity

1 - Bedding

Madison Aquifer – Porosity

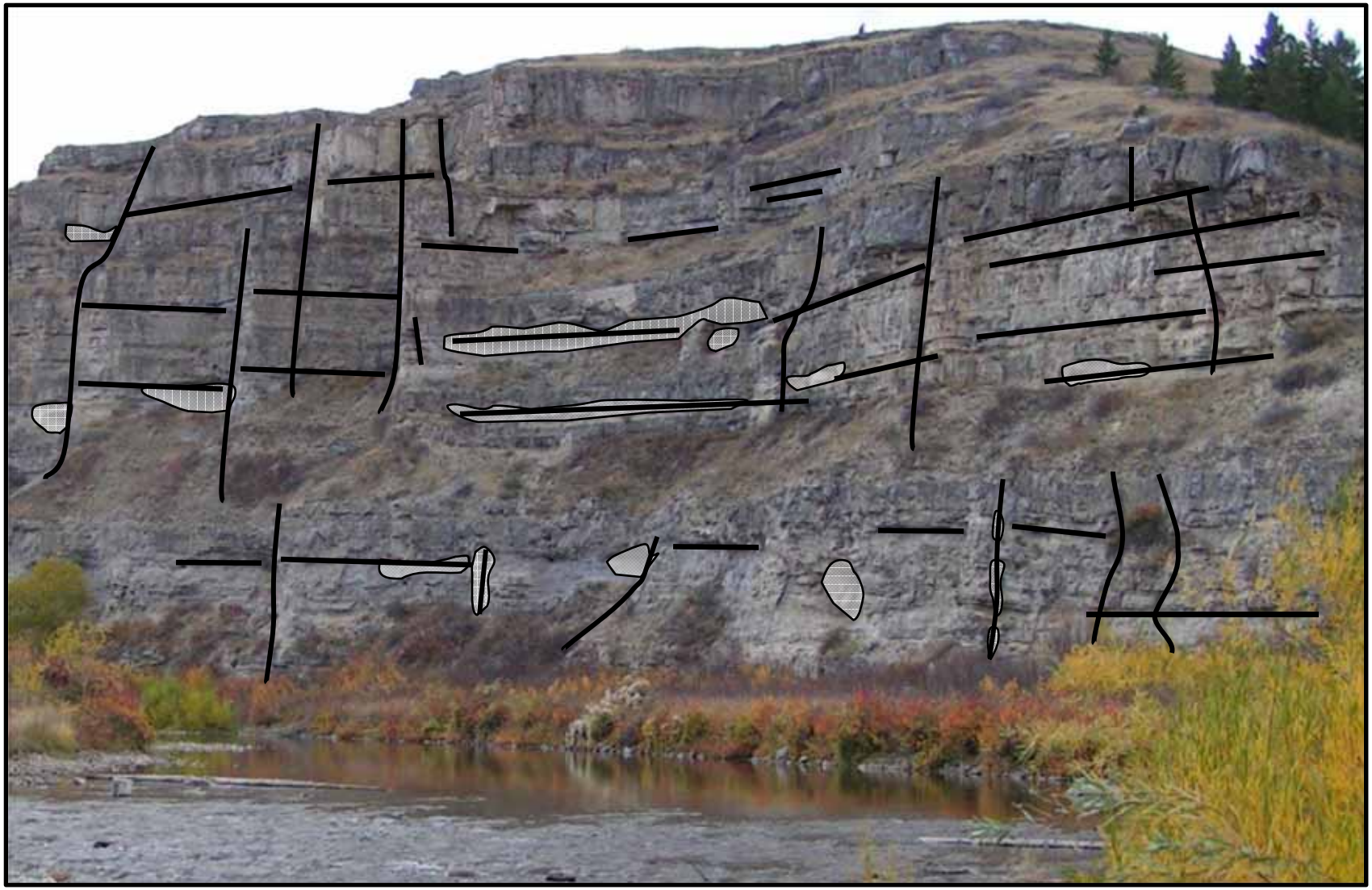
2 - Fracture

Madison Aquifer – Porosity

3 - Solution

Madison Aquifer – Porosity

Heterogeneous

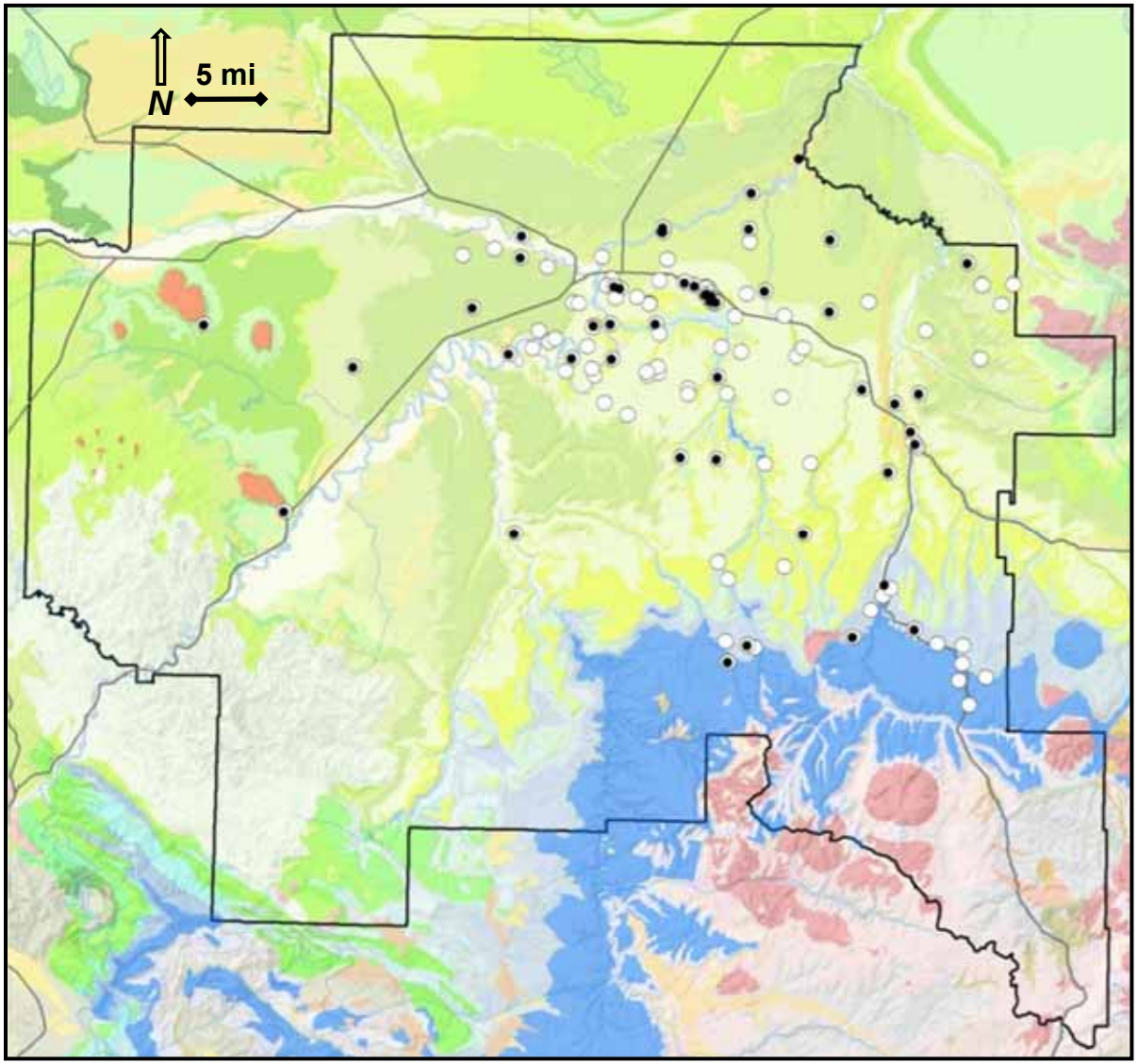


Madison Aquifer – Water Quality Data

1 – GWCP Samples

Field SC – 120 wells ○

Sampled – 50 wells ⊙



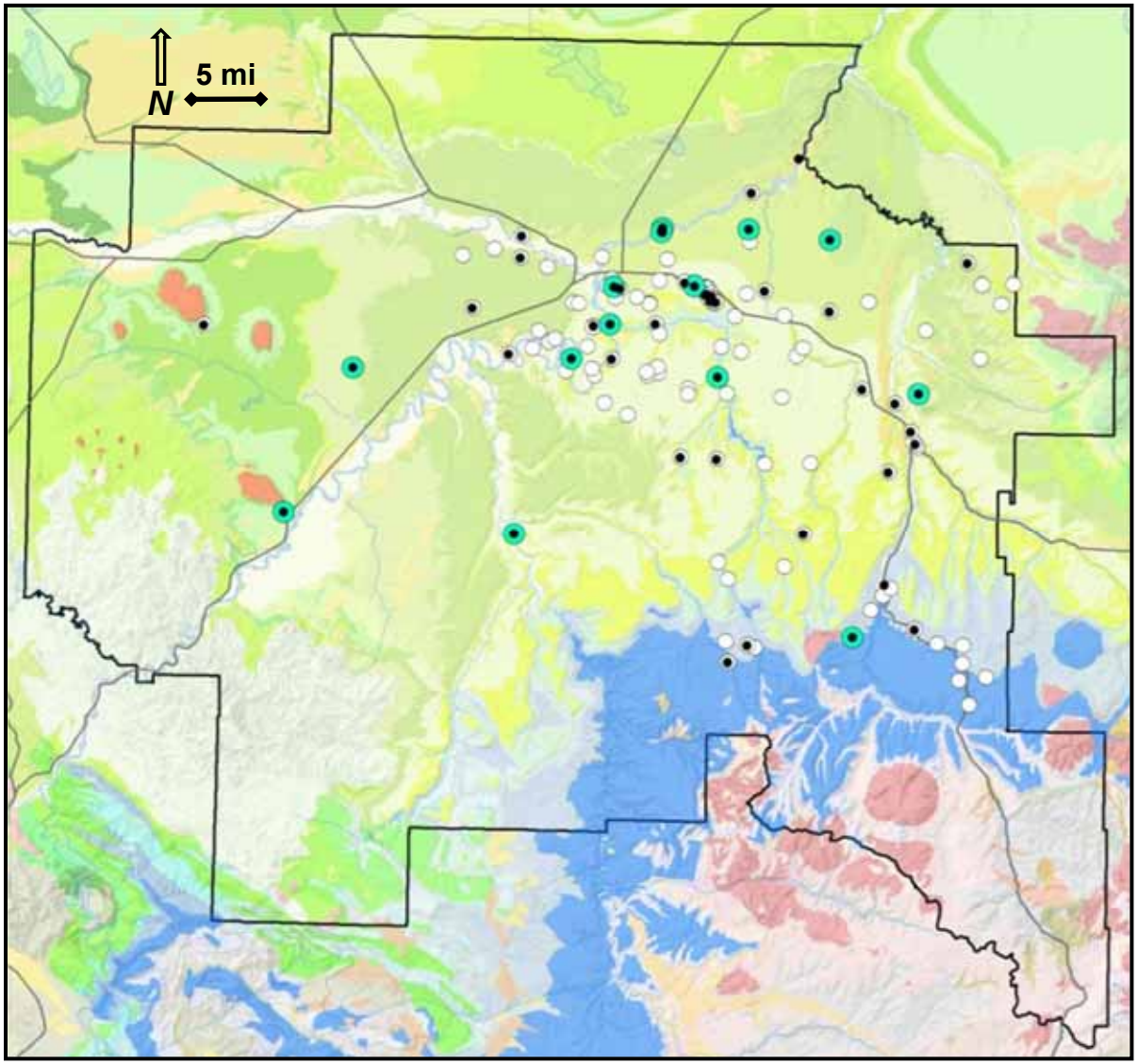
Madison Aquifer – Water Quality Data

2 – Tritium

Field SC – 120 wells

Sampled – 50 wells

Tritium – 14 wells



Madison Aquifer – Water Quality Data

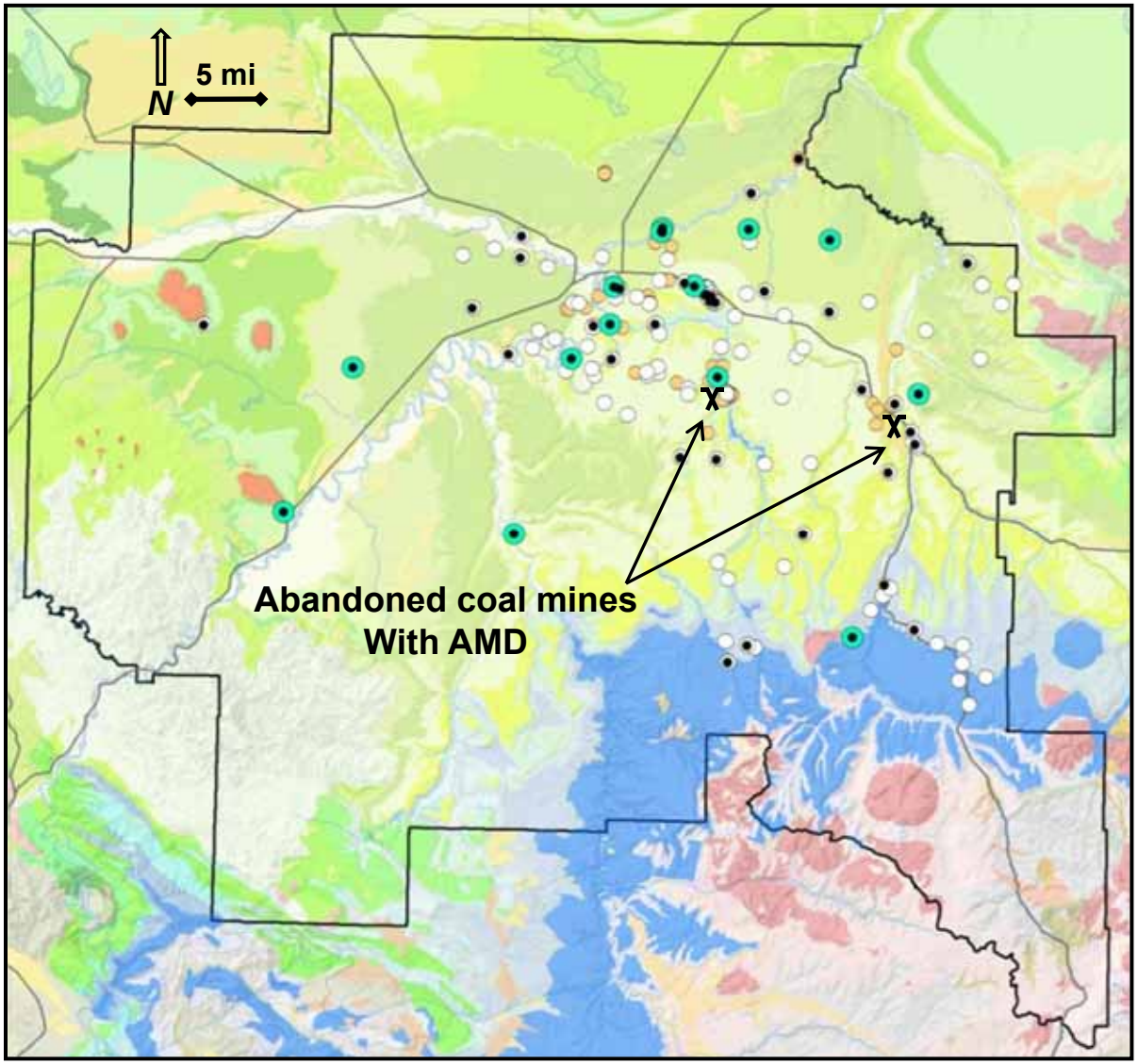
3 – Other samples

Field SC – 120 wells

Sampled – 50 wells

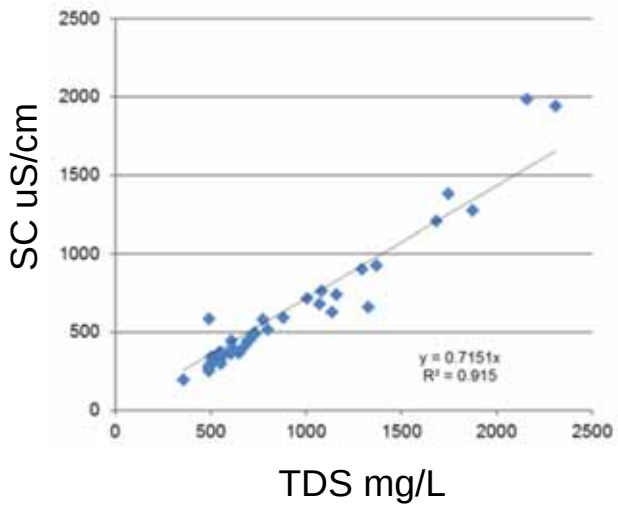
Tritium – 14 wells

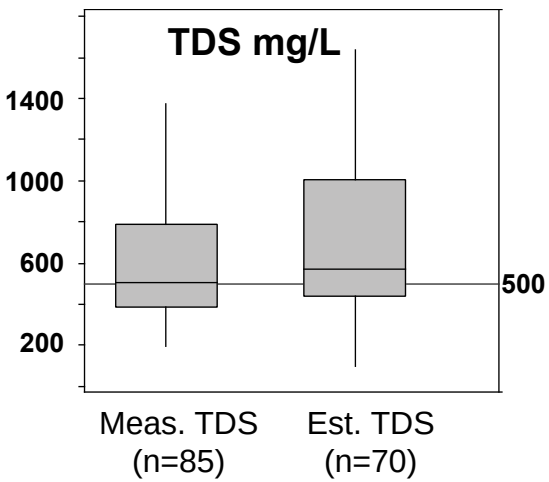
Other samples – 35 wells

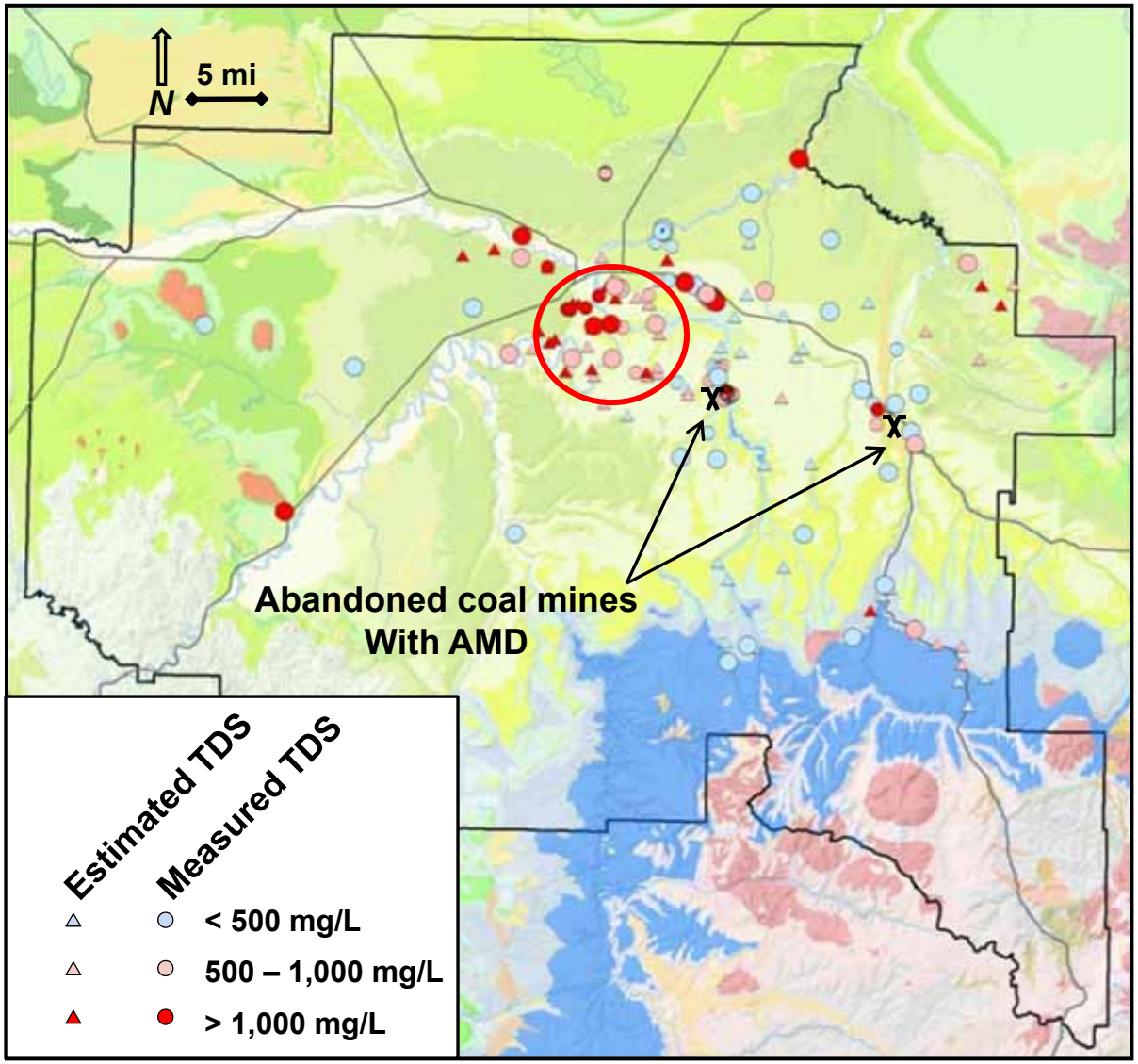


Madison Aquifer – Water Quality

Estimated and measured total dissolved solids

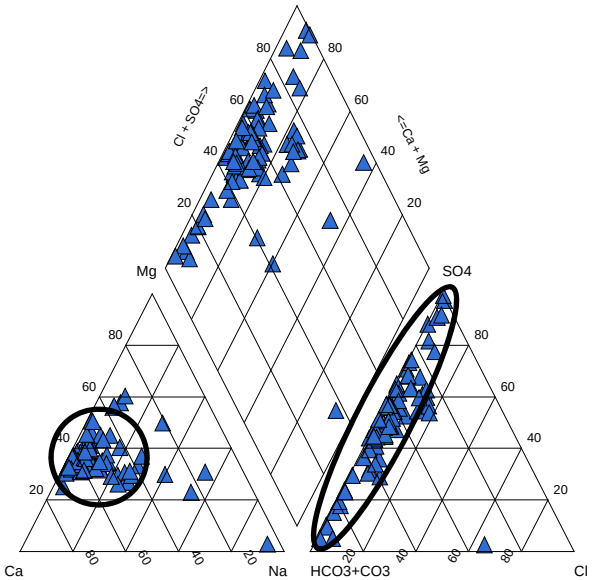


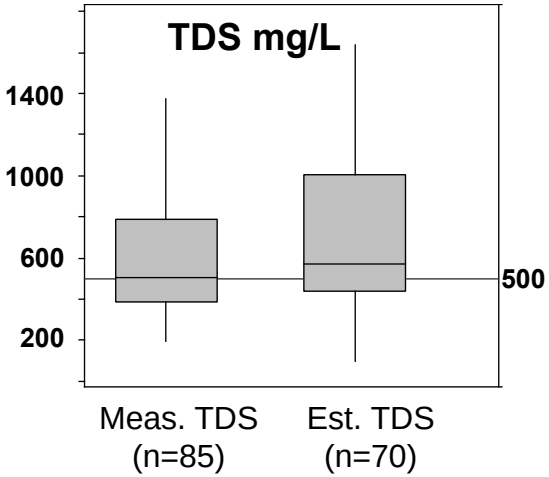


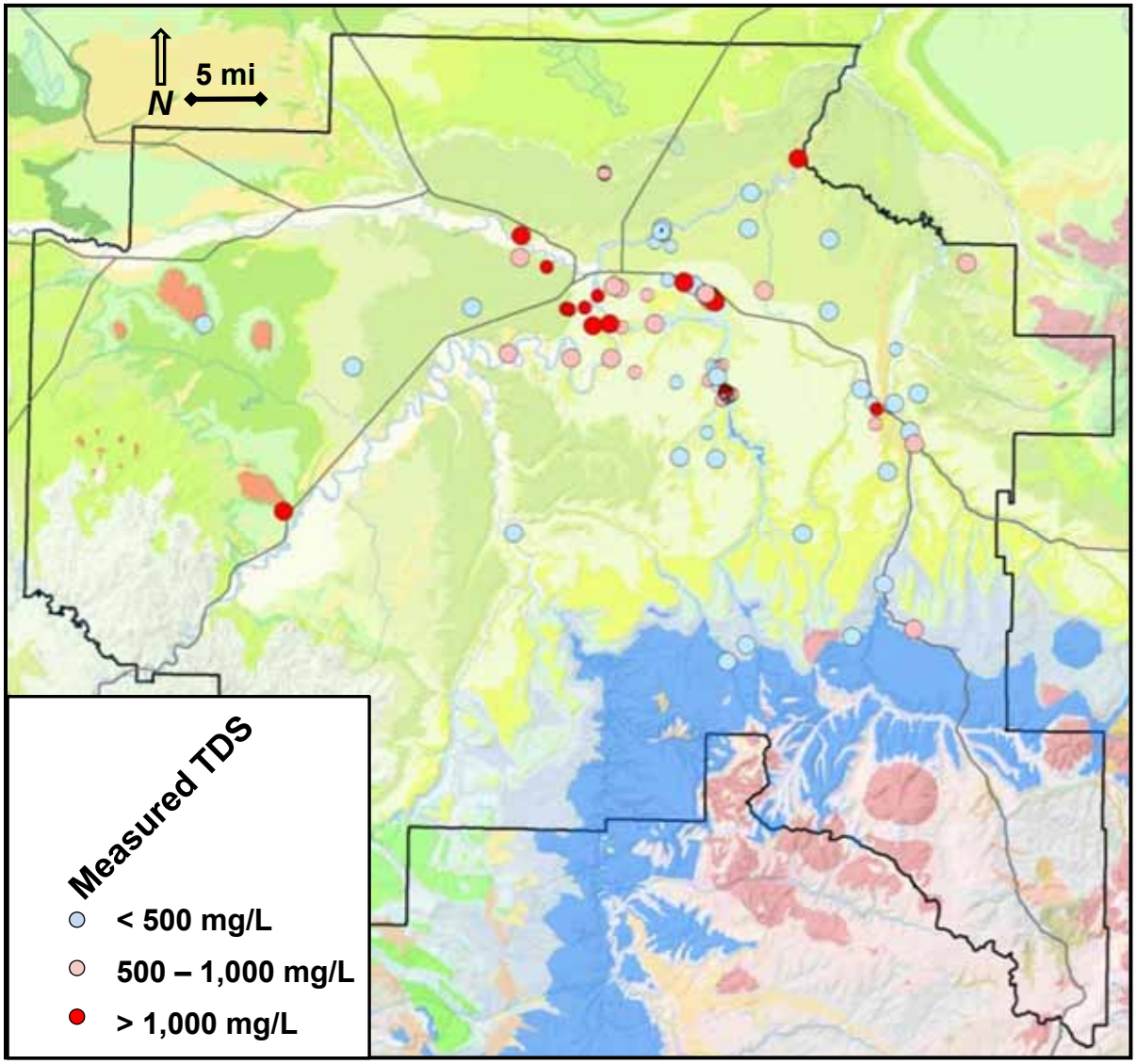


Madison Aquifer – Water Quality

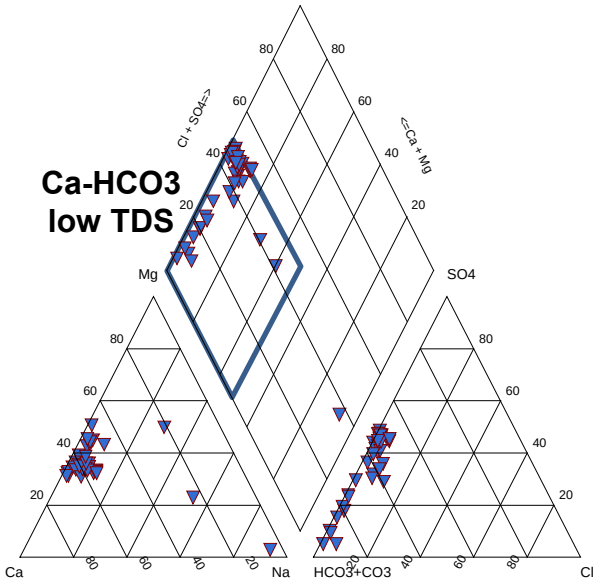
Measured total dissolved solids

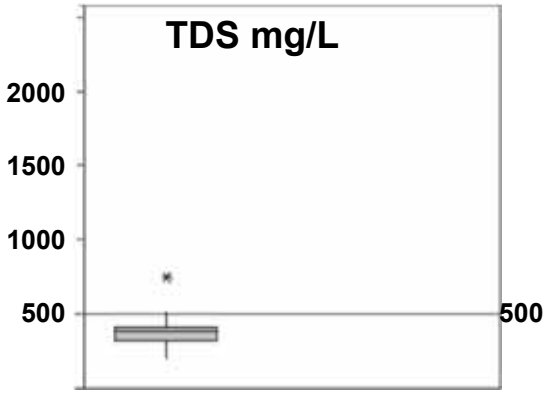




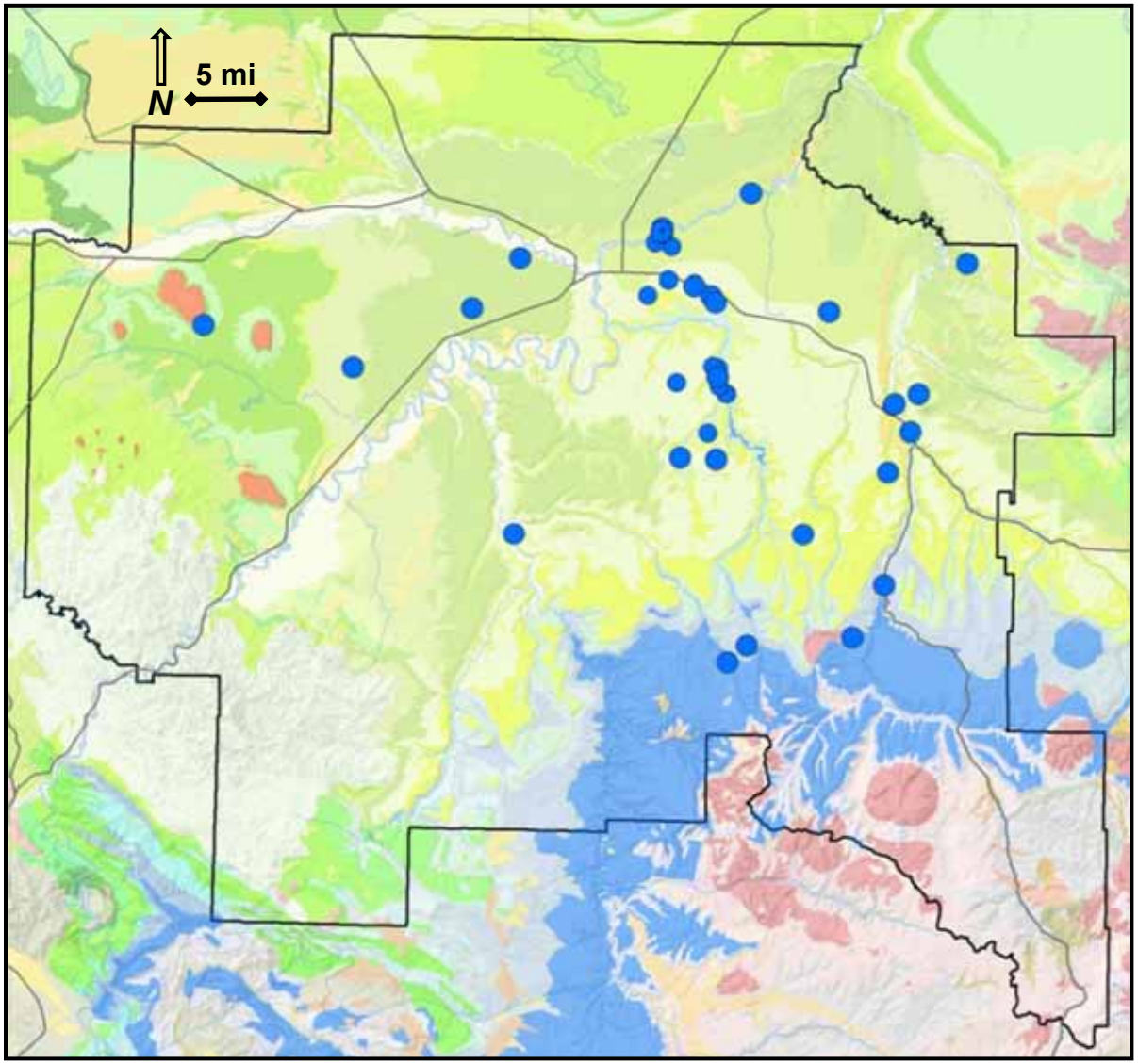


Madison Aquifer – Water Quality

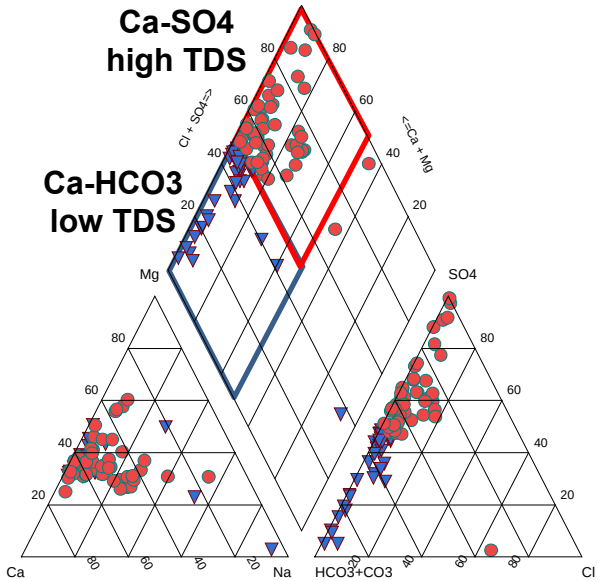


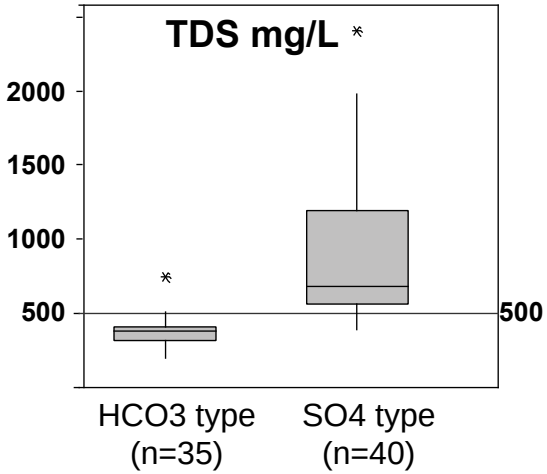


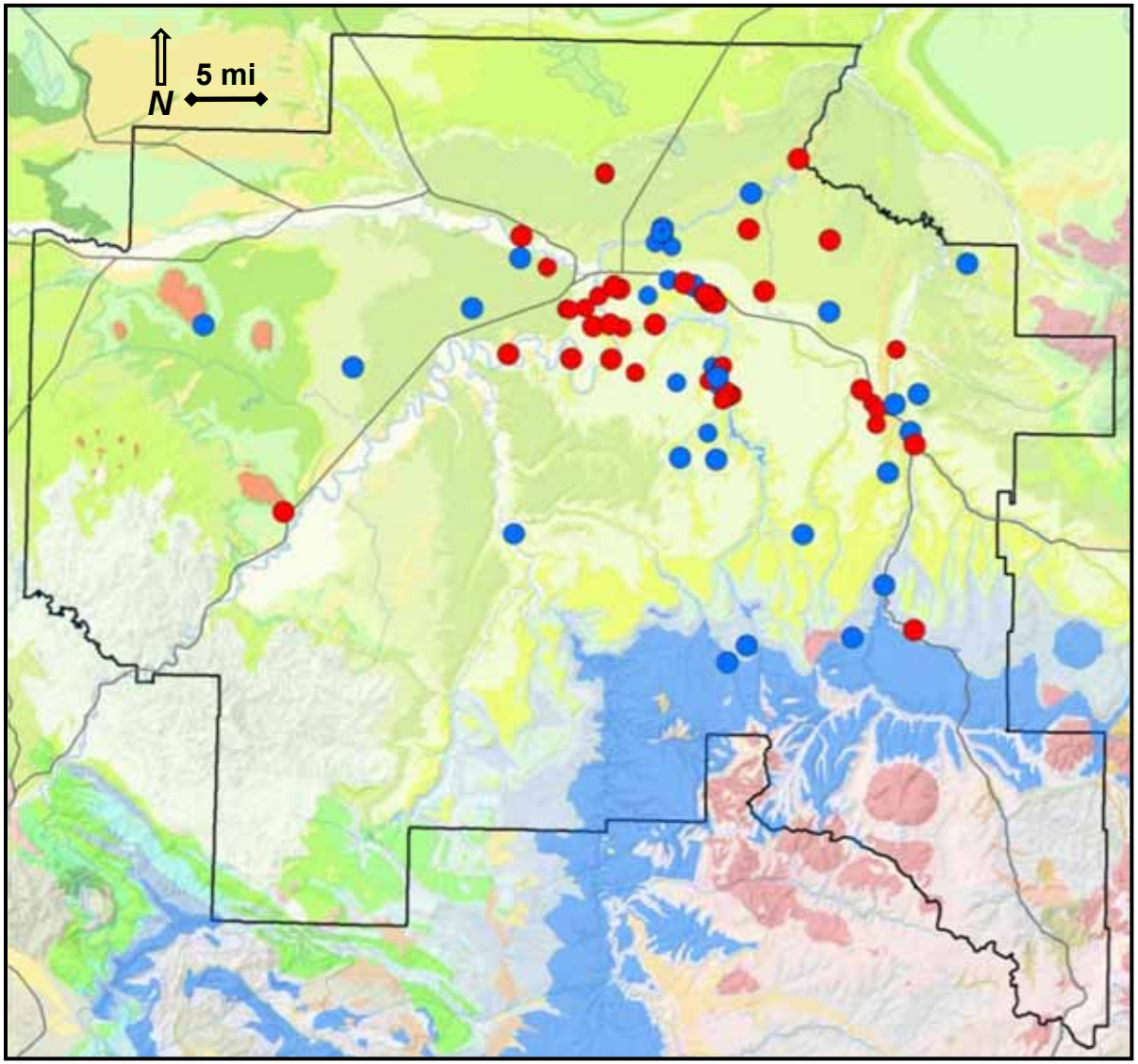
HCO3 type
(n=35)



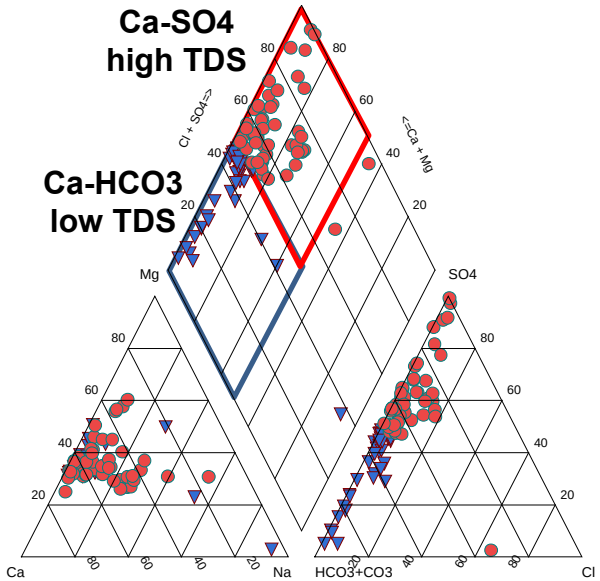
Madison Aquifer – Water Quality

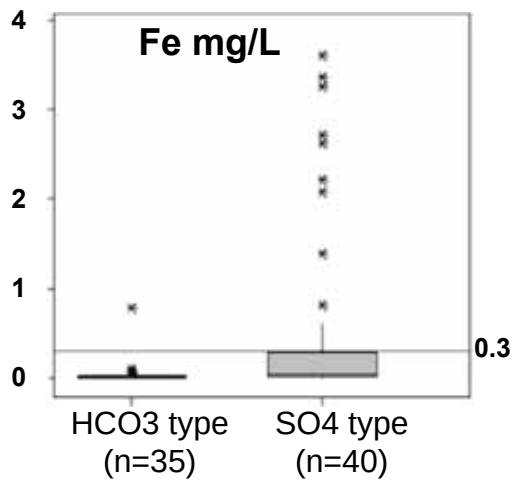


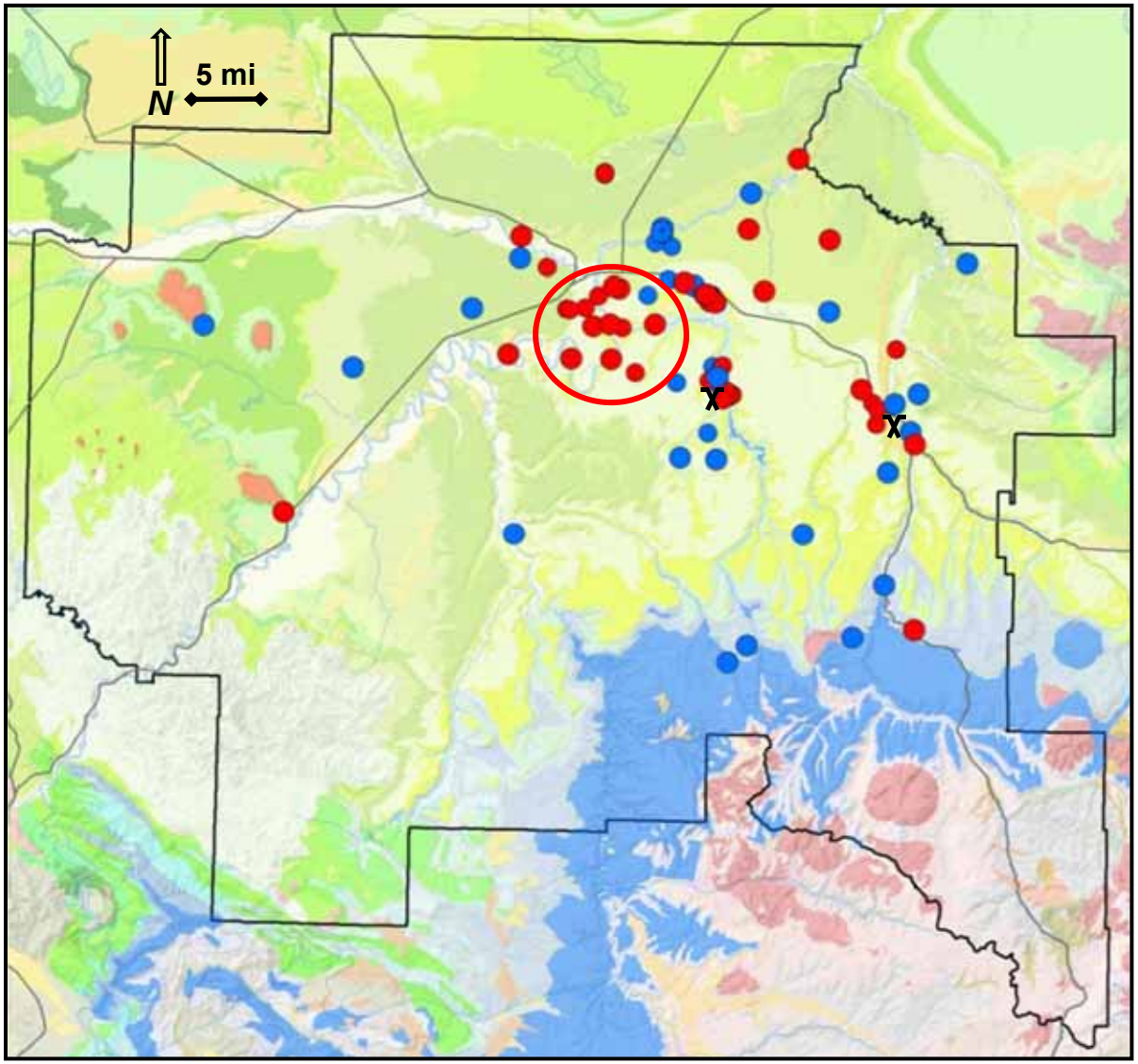




Madison Aquifer – Water Quality







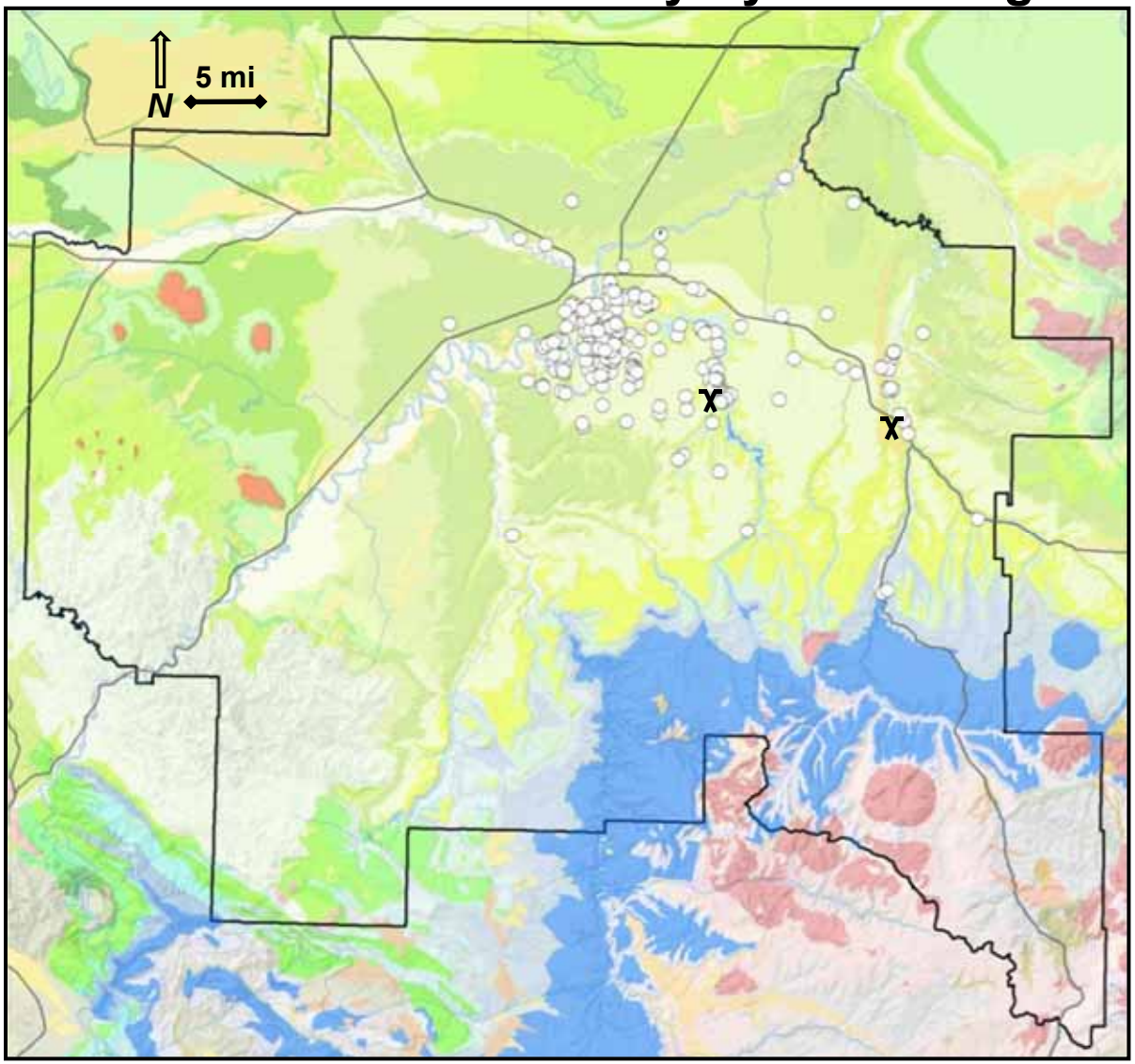
Madison Aquifer – Water Quality

Pyrite Oxidation

$$FeS_2 + 7/2\ O_2 + H_2O \rightleftharpoons$$

$$\underline{Fe}^{2+} + \underline{2SO_4} + 2H^+$$

Madison wells drilled by Byrne Drilling



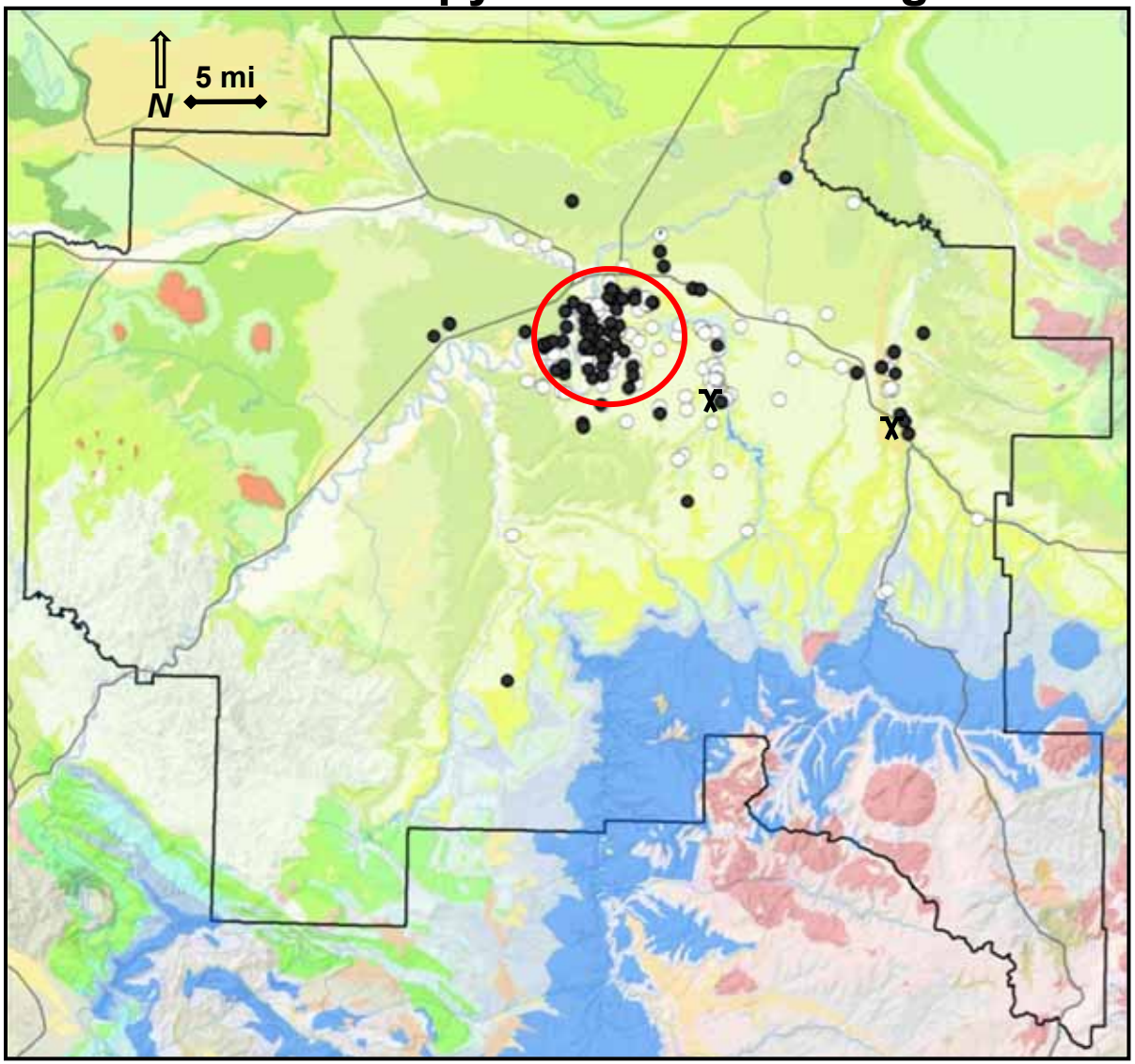
Madison Aquifer – Water Quality

Pyrite Oxidation

$$FeS_2 + 7/2\ O_2 + H_2O \rightleftharpoons$$

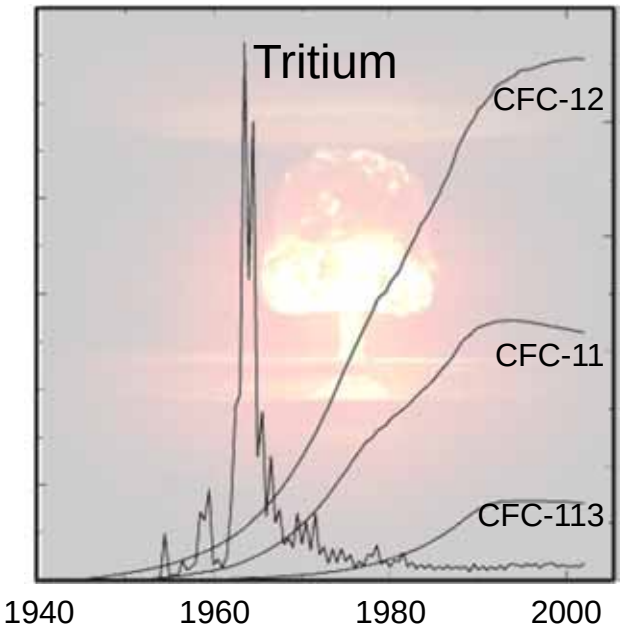
$$\underline{Fe}^{2+} + \underline{2SO_4} + 2H^+$$

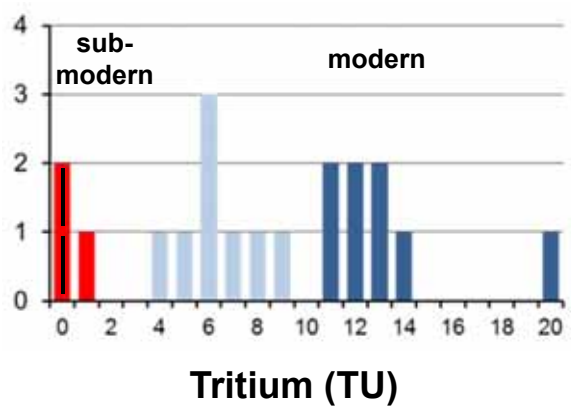
wells with pyrite note in the log

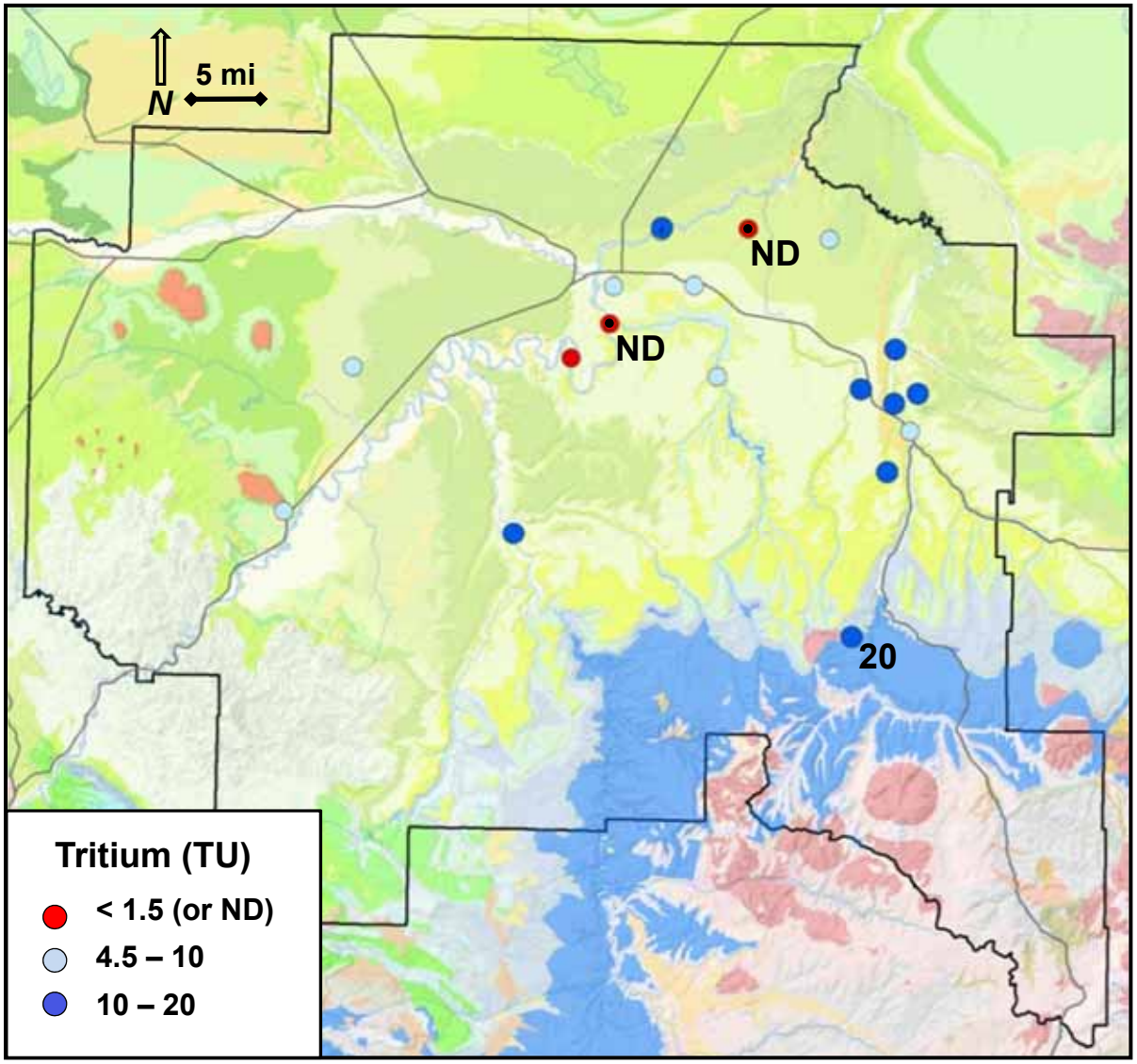


Madison Aquifer – Tritium concentrations

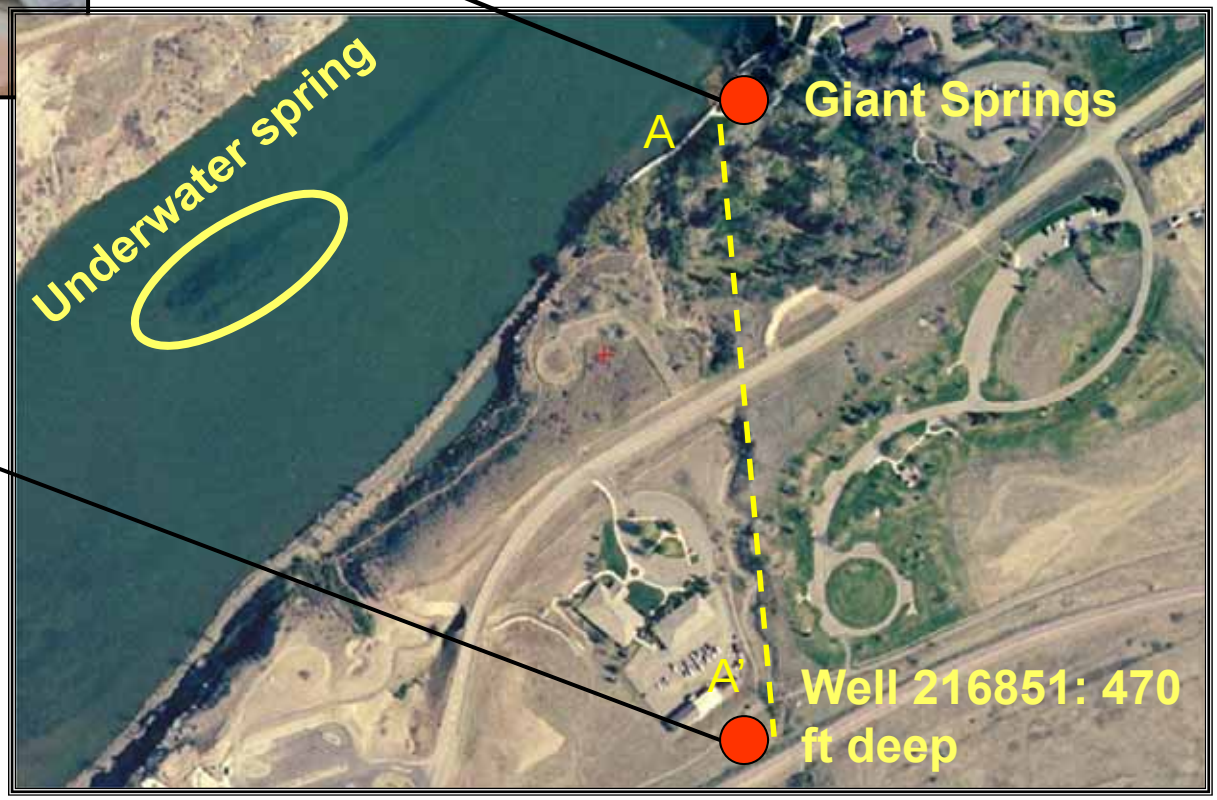
Concentrations of CFC's in air and tritium in precipitation







Madison Aquifer – CFC age dating



Madison Aquifer – CFC age dating samples collected in 2005

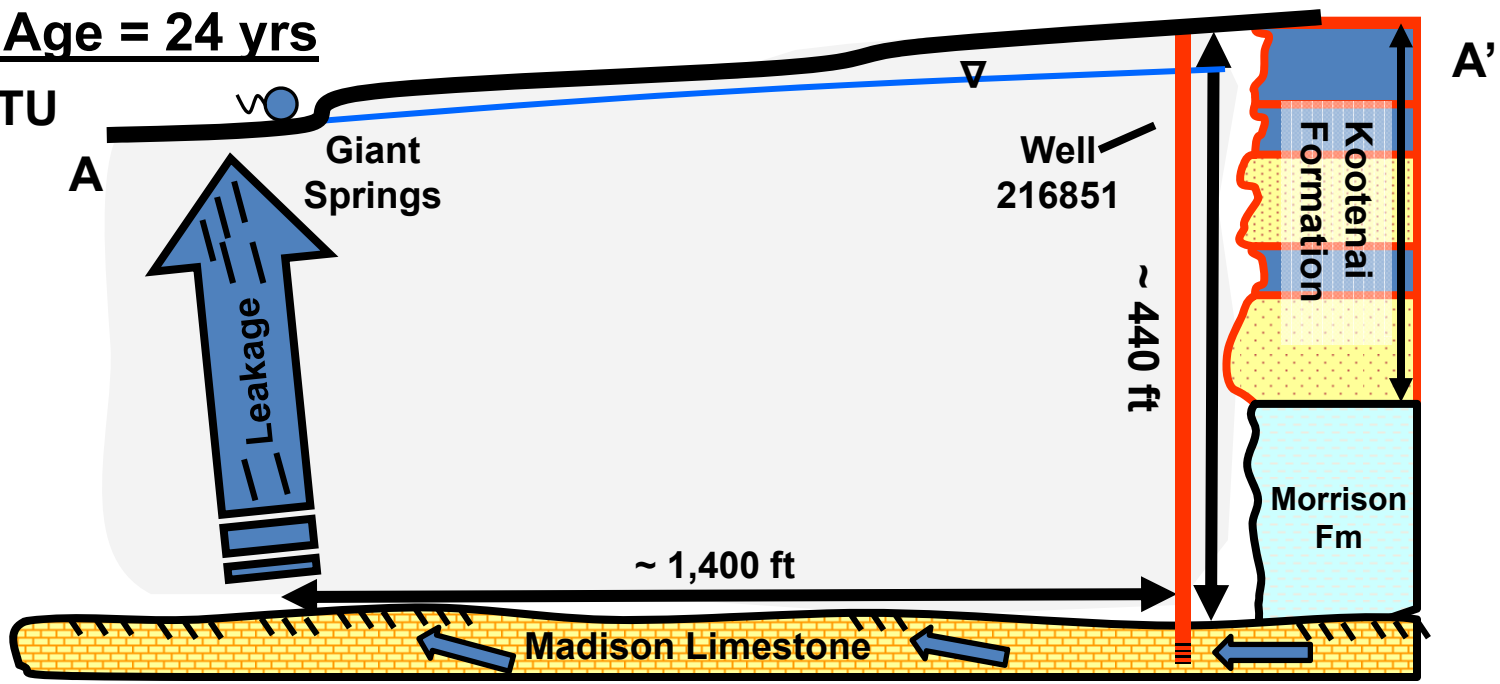
Recharge yr

CFC-11 – 1974

CFC-12 – 1982

Apparent Age = 24 yrs

3H = 10.2 TU



Recharge yr

CFC-11 – 1975

CFC-12 – 1979

Apparent Age = 26 yrs

3H = 10.1 TU

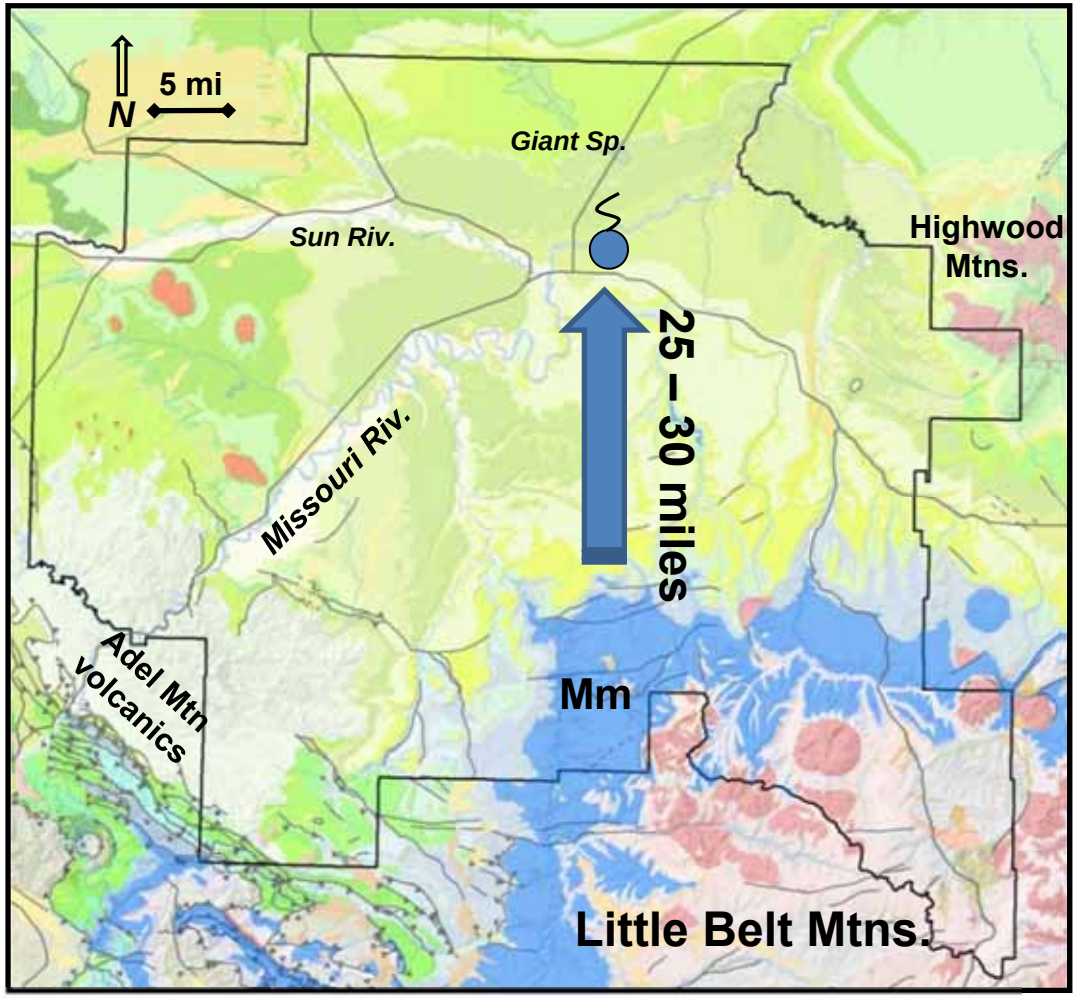
Madison Aquifer – Groundwater Velocity

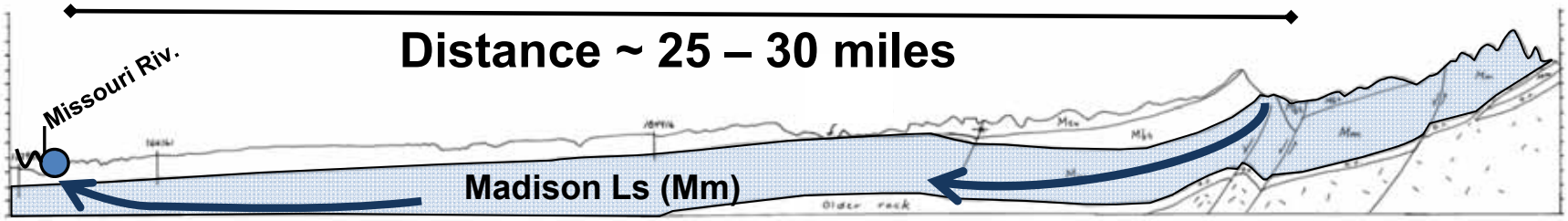
Groundwater is moving at a rate of:

~ 1 mile/year, or

~ 14 – 15 ft/day

(In this part o f the aquifer)



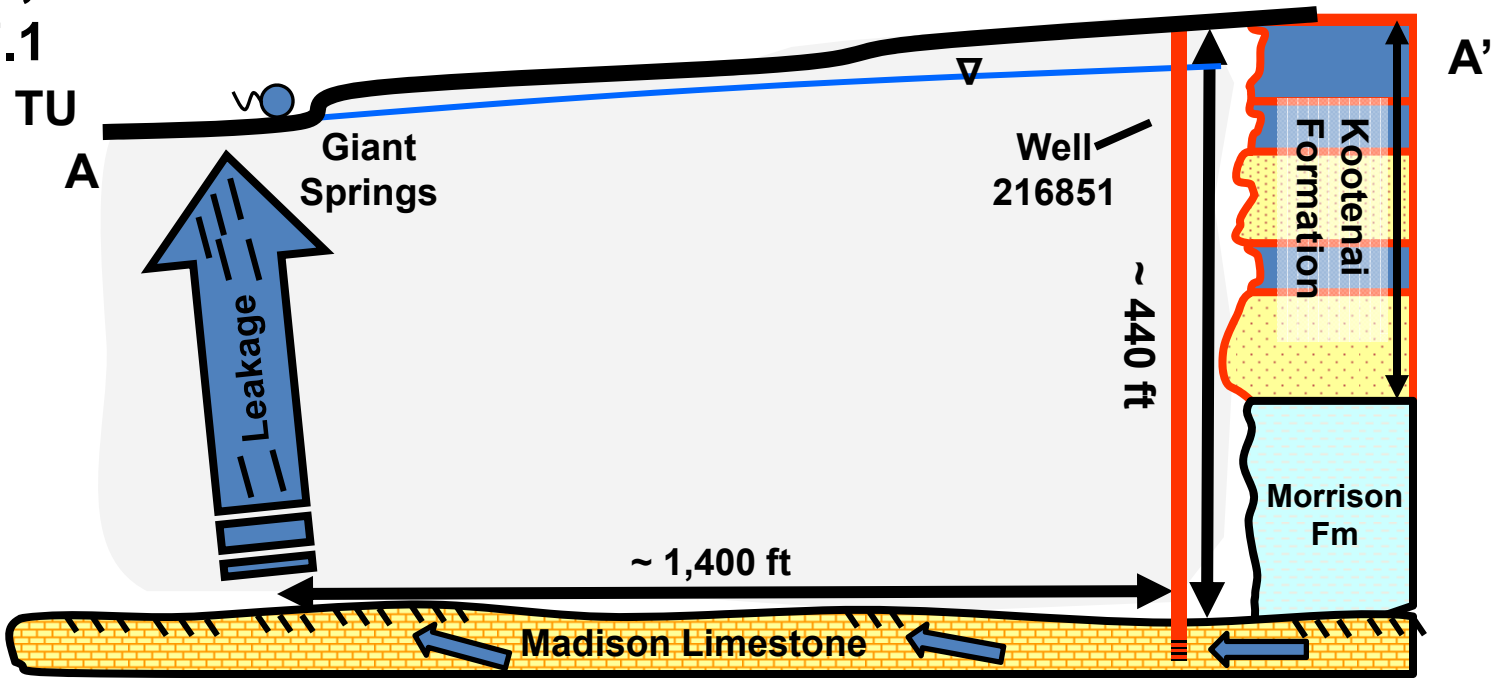


Madison Aquifer – 14C dating

PMC	14C age BP
49.38	5,668

d13C: -7.1

3H = 10.2 TU



PMC	14C age BP
47.48	5,920

d13C: -7.2

3H = 10.1 TU

1) $\underline{C}O_2 + H_2O \Leftrightarrow H_2\underline{C}O_3$

CO_2 dissolves in water and hydrates to carbonic acid

2) $H_2\underline{C}O_3 + CaCO_3 \Leftrightarrow 2HCO_3^- + Ca^{2+}$

½ HCO_3 from $\underline{C}O_2$ (modern) and ½ from limestone (dead)

Conclusions – Madison Aquifer

1) Most utilized in Cascade Co.
2) Water quality variable:
   - Ca-Mg-HCO3 (low TDS) – Ca-Mg-SO4 (high TDS)
3) Pyrite oxidation – controls?
4) Tritium –modern to sub-modern– variable porosity
5) Giant Springs: Young water

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MBMG

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Ground Water Assessment Program

Information Pamphlet 9

TRACKING MONTANA'S GROUNDWATER

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Ground Water Assessment Program statewide monitoring network wells.

INTRODUCTION

Groundwater, often called the "hidden resource," is one of Montana's most valuable natural assets. In most rural areas, groundwater supplies all the domestic, stock, and ranch needs—and in some of Montana's more "urban" areas, such as Missoula, Kalispell, and Sidney, it is the public water supply source. Groundwater also plays a crucial role in sustaining stream flow; about half of the total annual flow in typical Montana streams is derived from groundwater.

The drought of the late 1980s highlighted not only how important groundwater is for Montanans, but also how much we don't know about this resource (think; "You don't miss the water until the well runs dry"). A task force authorized by the 1989 Legislature found, among other things, that: (1) there is insufficient information about the State's groundwater, and (2) groundwater information deficiencies are hampering efforts to properly manage, protect, and develop groundwater.

In response, the 1991 Legislature passed the Ground Water Assessment Act, which established three programs at the Montana Bureau of Mines and Geology (MBMG) that focused on addressing Montana's groundwater information needs:

1. The Groundwater Monitoring Program, to provide long-term records of water quality and water levels for the State's major aquifers;
2. The Groundwater Characterization Program, to map the distribution of and document the water quality and water-yielding properties of individual aquifers across the State;
3. The Ground Water Information Center (GWIC), to make groundwater information readily accessible.

Assessment Act implementation is overseen by a steering committee that consists of representatives from water agencies in State and Federal government, representatives from local governments, and representatives from water-user groups. The committee also provides a forum through which units of State, Federal, and local government can coordinate groundwater research.

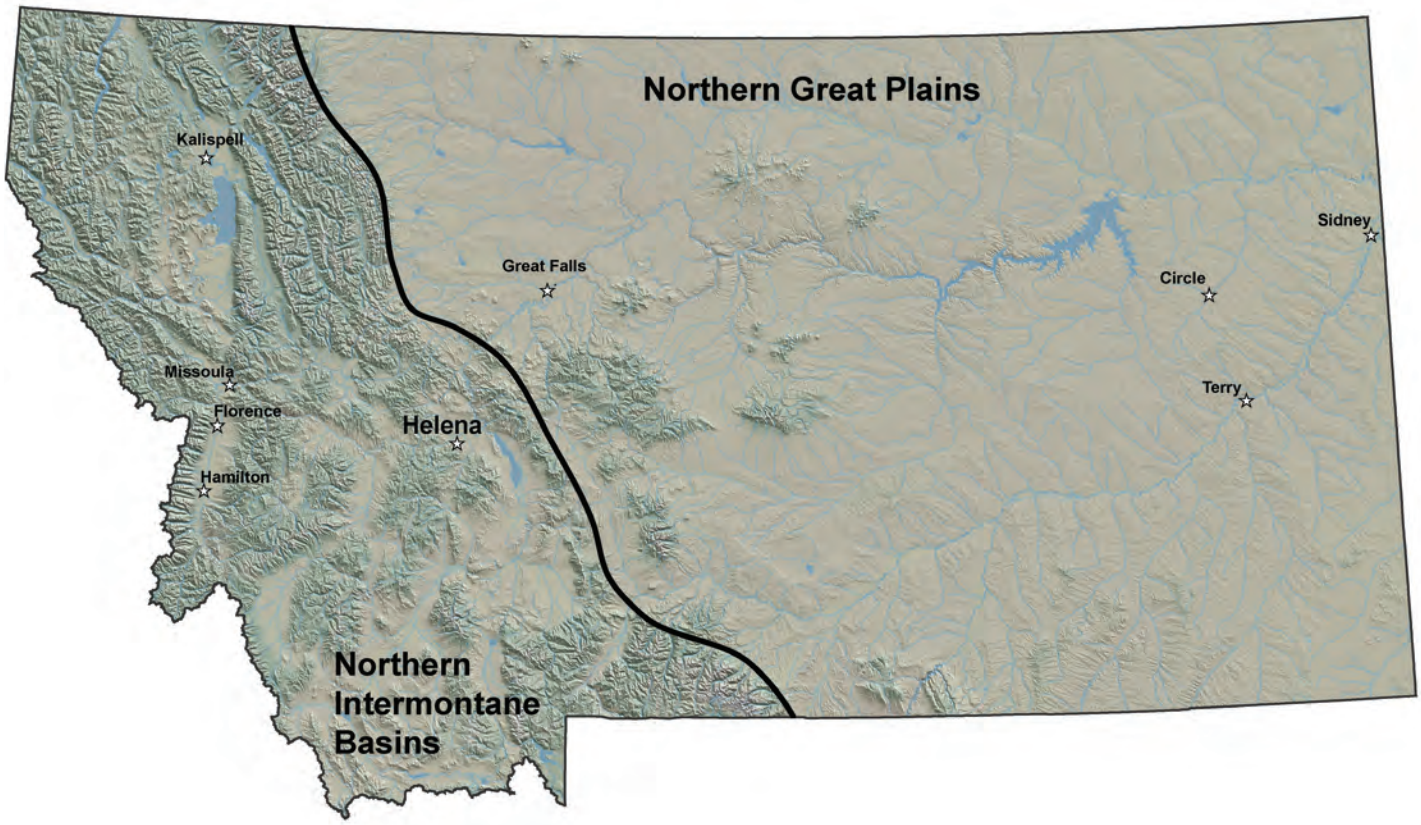


Figure 1. Montana is divided into two different physiographic regions, the Northern Great Plains and the Northern Rocky Mountains.

MONTANA GROUNDWATER AND WELLS

Montana's groundwater is stored within aquifers closely tied to the geology of Montana's two prominent physiographic regions: (1) the intermontane basins of the northern Rocky Mountains and (2) the northern Great Plains (figure 1).

Each physiographic province represents broad differences in geology and geologic history, which in turn creates different hydrogeologic settings. Generally speaking, the geologic units range from unconsolidated sand and gravel deposits to consolidated sedimentary, metamorphic, igneous, and volcanic rocks.

Within the intermontane basins, groundwater generally occurs in: (1) shallow water-table aquifers in sand and gravel and (2) deep confined to semi-confined aquifers in basin-fill. Both aquifer types contain large amounts of groundwater and are highly productive and utilized.

In the northern Great Plains, aquifers are not as productive, but nevertheless groundwater is highly utilized. Layers of sedimentary sandstone and limestone form the most important aquifers. More localized but also important are alluvial aquifers within major stream valleys.

About 200,000 wells withdraw water for domestic, stock, industrial/commercial, irrigation, and public water supply uses. Most wells (93%) provide domestic or stock water; irrigation, public water supply, and industrial wells account for the other 7 percent. Montana's water wells provide about 285 million gallons of groundwater per day (USGS). Domestic and stock-water use is volumetrically the smallest, accounting for about 12 percent of withdrawals. Irrigation, public water supply, and industrial wells account for 88 percent of annual withdrawals (figure 2).

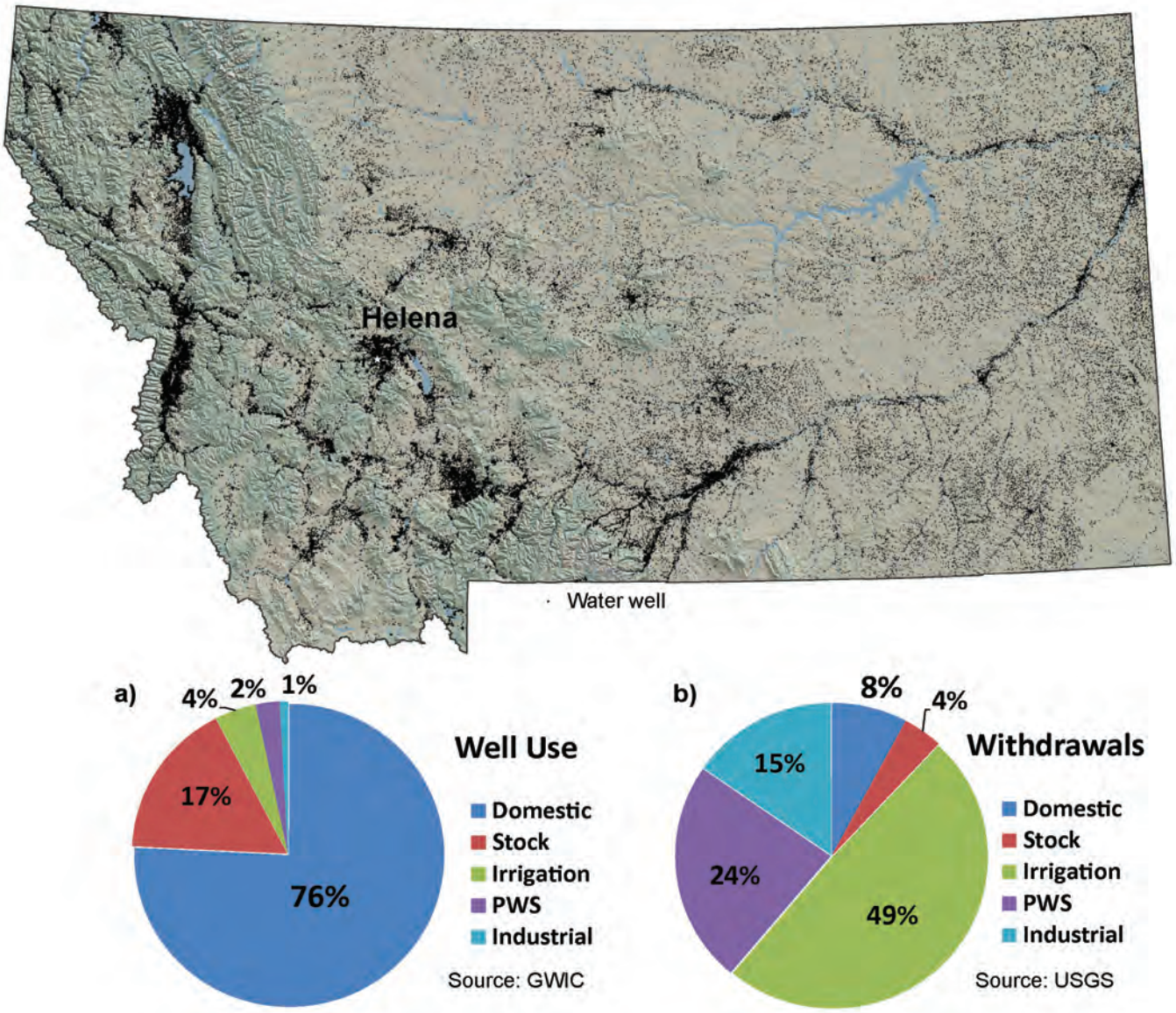


Figure 2. There are about 200,000 wells (black dots in figure) that provide water for a variety of different uses. (a) Most of the wells are for domestic and stock use. (b) Most of the withdrawals are for irrigation and public water supply.

THE MONITORING PROGRAM

When you consider our more than 200,000 wells producing 285 million gallons per day, some basic questions arise: Are groundwater resources being stressed? Are we running out of groundwater? Where are aquifers most available for future supply?

These are questions that the Ground Water Assessment Program helps address. The statewide monitoring network has been collecting systematic groundwater-level data from the State's major aquifers since 1993; some of these wells have been consistently monitored since the 1950s. Currently, the network consists of more than 900 wells from less than 10 feet to more than 3,600 feet deep that provide data for unconfined alluvial, deep basin-fill, and deep confined bedrock aquifers (shown in cover figure). Some network wells are dedicated specifically to measuring groundwater levels but many are low-use water supply or unused wells.

MBMG staff are responsible for most of the water-level measurements; however, cooperative agreements with Local Water Quality Districts in Missoula, Lewis and Clark, and Gallatin Counties as well as the Confederated Salish and Kootenai tribes augment the network.

Groundwater-level change records the balance among recharge to, storage in, and discharge from an aquifer. When water levels rise, more water is entering the aquifer (recharge) than exiting (discharge). Similarly, when water levels fall, more water is leaving the aquifer than is being replenished. Persistent long-term water-level decline suggests groundwater storage depletion.

Water levels in many Montana aquifers follow a natural seasonal cyclic pattern, typically rising during the spring and early summer in response to snowmelt, precipitation, and run-off. Water levels decline during summer and fall months because of less recharge and high evapotranspiration. The magnitude of groundwater-level fluctuations varies seasonally and from year to year in response to varying climatic conditions, illustrating that Montana's groundwater systems dynamically adjust to short- and long-term climate variability. Other factors that affect water levels include groundwater withdrawals and land use. The following examples show how data from the statewide network document the effects of climatic variability, groundwater development, and land use in several Montana aquifers.

CLIMATIC VARIABILITY: THE MADISON LIMESTONE

The Madison Limestone is a bedrock aquifer that underlies most of central and eastern Montana. Where it is close to or exposed at the surface, it is a productive and important source of municipal, domestic, industrial, and stock water; it also is the source for many large springs, including Giant Springs at Great Falls. Data from GWIC show that in Cascade County more than 900 wells, roughly 75 percent of all Madison wells statewide, use the Madison aquifer. Most of these wells are located in a 700-square-mile area between the Little Belt Mountains and the Missouri River near Great Falls (figure 3).

In Cascade County, between about 1995 and 2006, the number of wells completed in the Madison aquifer nearly doubled, from about 400 to 800 (figure 4). During this same time, water levels in Madison aquifer observation wells near Great Falls dropped about 30 feet (figure 4). Based on these facts, it appeared water was being removed from the aquifer faster than it could be replenished, and many water users began to question the aquifer's sustainability.

However, since 2006, even though new wells continued to be drilled into the Madison aquifer, water levels have climbed to altitudes higher than those measured in 1995. Although there may be a development impact, the data suggest that groundwater withdrawals are not currently driving water-level changes. Rather climate, or more specifically precipitation, appears to be the primary water-level control. Comparing water-level trends to departures from average annual precipitation shows that the period when water levels declined between 1995 and 2005 coincided with below-average precipitation (figure 4). Recovery occurred between 2006 and 2013 when the climate was relatively wet.

This example highlights the importance of long-term water-level data with regard to developing a comprehensive understanding of groundwater storage change. The Madison aquifer system is dynamic and is strongly impacted by short- and long-term climate variability.

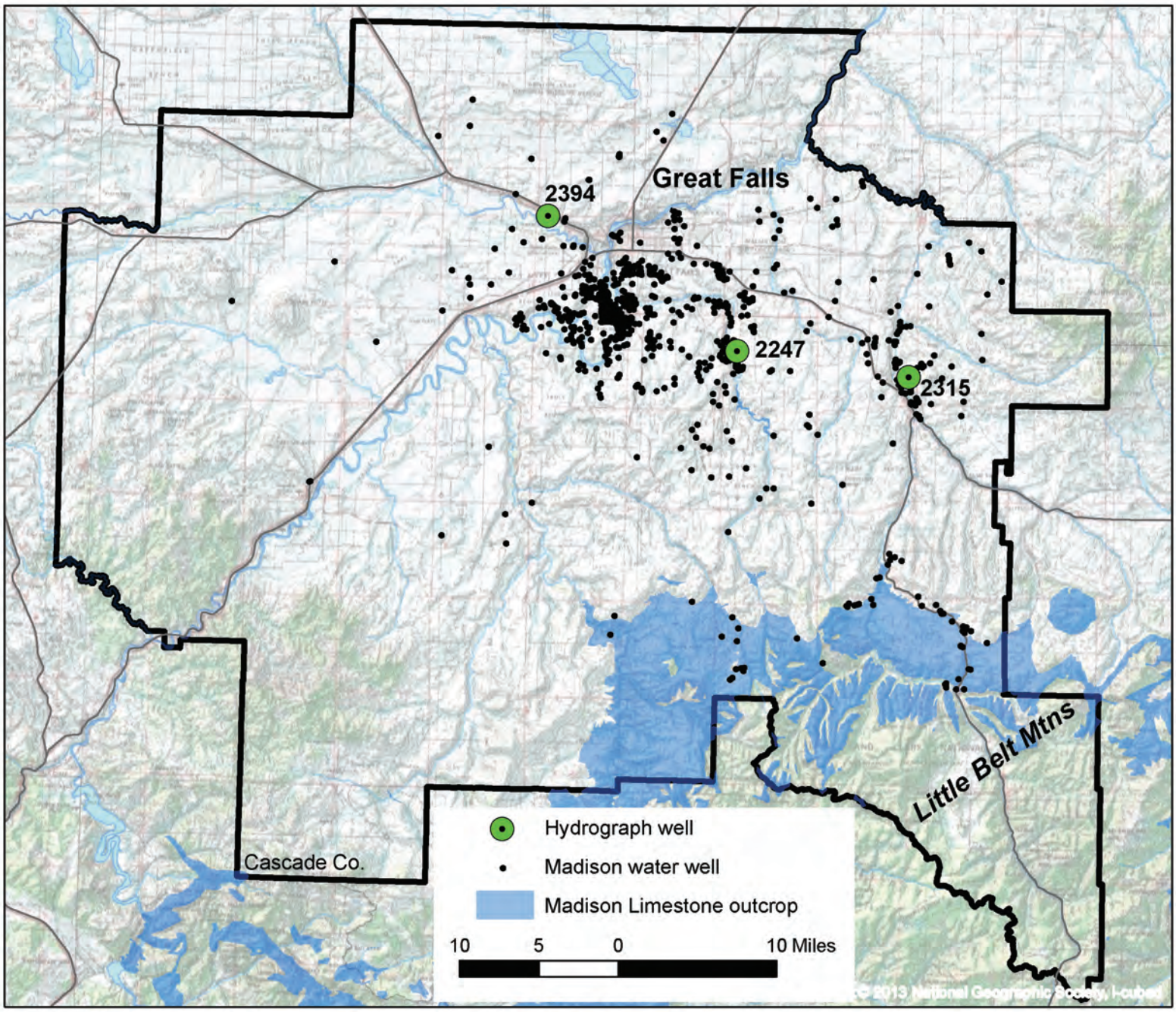


Figure 3. More than 900 wells (black dots) obtain water from the Madison Limestone near Great Falls. The Madison Limestone is exposed at the surface in the Little Belt Mountains (blue area on map), but is more than 400 feet below the surface at Great Falls.

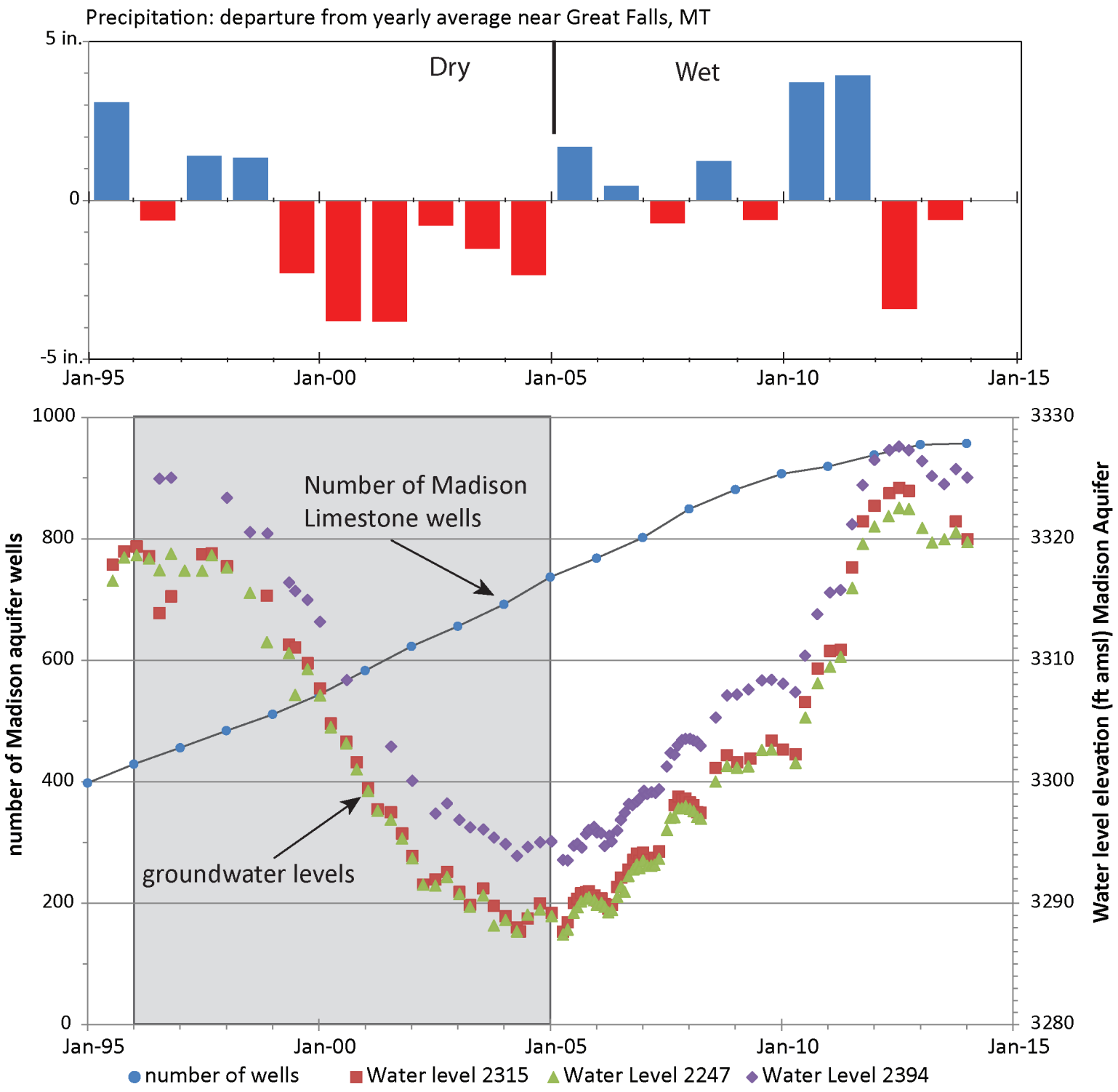


Figure 4. Between 1995 and 2005, the number of wells drilled into the Madison Limestone around Great Falls nearly doubled. During the same time period, water levels in the aquifer dropped 30 feet. However, this was also a very dry period, as indicated by the departure from average precipitation plot above. Water levels recovered following several "wet" years even though wells continued to be drilled into the aquifer. Location of the hydrograph wells is shown in figure 3.

GROUNDWATER DEVELOPMENT: THE FOX HILLS–HELL CREEK

Where groundwater production exceeds recharge, groundwater levels will decline. Where aquifers are undergoing development, a water-level record that encompasses the transitional period between the natural and the developed state of the aquifer can provide an invaluable understanding of developing problems and appropriate responses. A prime example is the history of groundwater development in the Fox Hills–Hell Creek (FHHC) aquifer in eastern Montana.

Groundwater from the FHHC is used primarily for domestic purposes and stock watering. However, the cities of Baker, Circle, Lambert, and Richey rely on it for municipal water supply. In the lower Yellowstone River area there are about 1,500 wells completed in the aquifer (figure 5). The widespread use of the aquifer has resulted in persistent water-level declines, especially in the Yellowstone River Valley. The hydrograph from an observation well (figure 5, well 1846) near Terry shows declining water levels there—about 25 feet during the past 33 years. The long-term declines occur when more water is removed from the aquifer than is recharged. At some point these declines can create undesirable effects such as increased lift costs, decreased yields, and flowing wells ceasing to flow.

Over-pumping the FHHC resulted in Montana's first controlled groundwater area. In the early 1960s at the South Pine oil field near Baker, the FHHC was pumped at about 450 gallons per minute to support secondary oil recovery. The withdrawals caused water-level declines that affected surrounding stock and domestic wells. In response to landowner complaints, the South Pine Controlled Groundwater Area was created in 1967 to limit FHHC pumping and slow the rate of water-level decline. Between 1975 and 1977 the industrial water supply wells were phased out of production, and water levels in the aquifer began to recover.

The long-term hydrograph from an observation well (figure 5, well 136642) located within the controlled groundwater area shows that between 1962 and 1967 pumping caused the water level to drop more than 130 feet. After the controlled groundwater area was established and industrial pumping reduced, the rate of water-level decline slowed considerably—dropping about 20 feet after 1967. When pumping ceased, the water level rose about 110 feet, but stabilized about 40 feet below the 1962 level. The failure to fully recover may likely be related to the same overdrafts that are creating the declines observed near Terry.

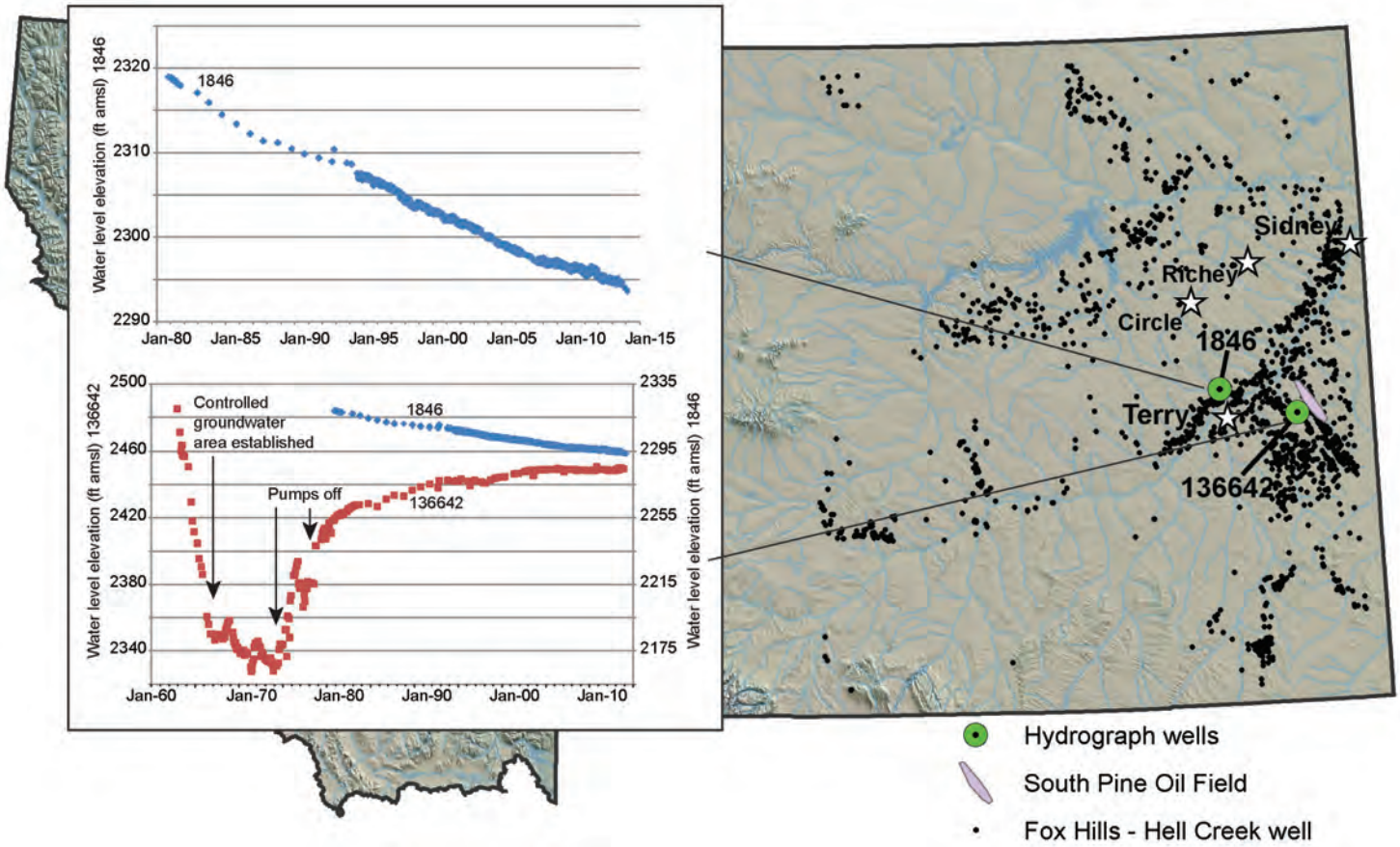


Figure 5. Water levels in the Fox Hills–Hell Creek aquifer near Terry are declining at a rate of about 1 foot per year. Near the South Pine field, water levels have recovered since industrial pumping ceased; however, they are still 40 ft lower than 1960s levels.

LAND USE: INCIDENTAL RECHARGE, BITTERROOT VALLEY

Montana's river valleys and alluvial terraces are laced with more than 7,000 miles of irrigation canals. These canals are mostly unlined, and carry about 10.5 million acre-feet of surface water each year to irrigate about 2 million acres. In these valleys, losses from the canals and seepage from irrigated fields constitute a significant fraction of aquifer recharge. Groundwater levels in such areas typically start rising during April and May when irrigation begins, remain elevated from midsummer to the end of the irrigation season, and then decline to an annual minimum just before the next growing season. This response is observed throughout the irrigated valleys in Montana.

Hydrographs from two Bitterroot Valley wells completed in the same aquifer, one in an irrigated area the other not, highlight the significance of irrigation recharge. Figure 6 shows that groundwater levels in the irrigated area near Hamilton rise quickly at the onset of irrigation, remain elevated throughout the irrigation season, and then decline in the late summer or fall when irrigation ceases. A well near Florence that is distant from irrigation shows a much different water-level response synchronized with Bitterroot River flow; water levels peak near when stream flow peaks and then gradually fall back to a base level. On average, water-level fluctuation in the Florence well is about 2 feet, whereas the average water-level fluctuation in the Hamilton well is nearly 10 feet. Recharge from irrigation water accounts for the difference.

Changes in irrigation practices, such as the conversion of flood to sprinkler irrigation or lining irrigation canals, can reduce recharge to aquifers and result in water-level declines. Urban development and subdivisions that result in an increase in paved areas and storm-water controls can also reduce aquifer recharge.

WHY MONITOR GROUNDWATER LEVELS?

Long-term water-level measurements provide a fundamental indicator of an aquifer's status. The examples presented above highlight the importance of long-term systematic data collection necessary to: 1) develop a comprehensive understanding of how aquifers respond to different stresses and 2) develop meaningful evaluations of the groundwater supply. The Ground Water Assessment Program at the Montana Bureau of Mines and Geology provides reliable baseline groundwater data against which future changes can be measured, and makes those data readily available. Through these efforts, Montana will be better positioned in coming decades to make wise use of its groundwater resources.

To see what groundwater levels are doing in your area, check out the Ground Water Information Center website: http://mbmggwic.mtech.edu/. There you can find updated hydrographs, technical reports, maps, and well logs.

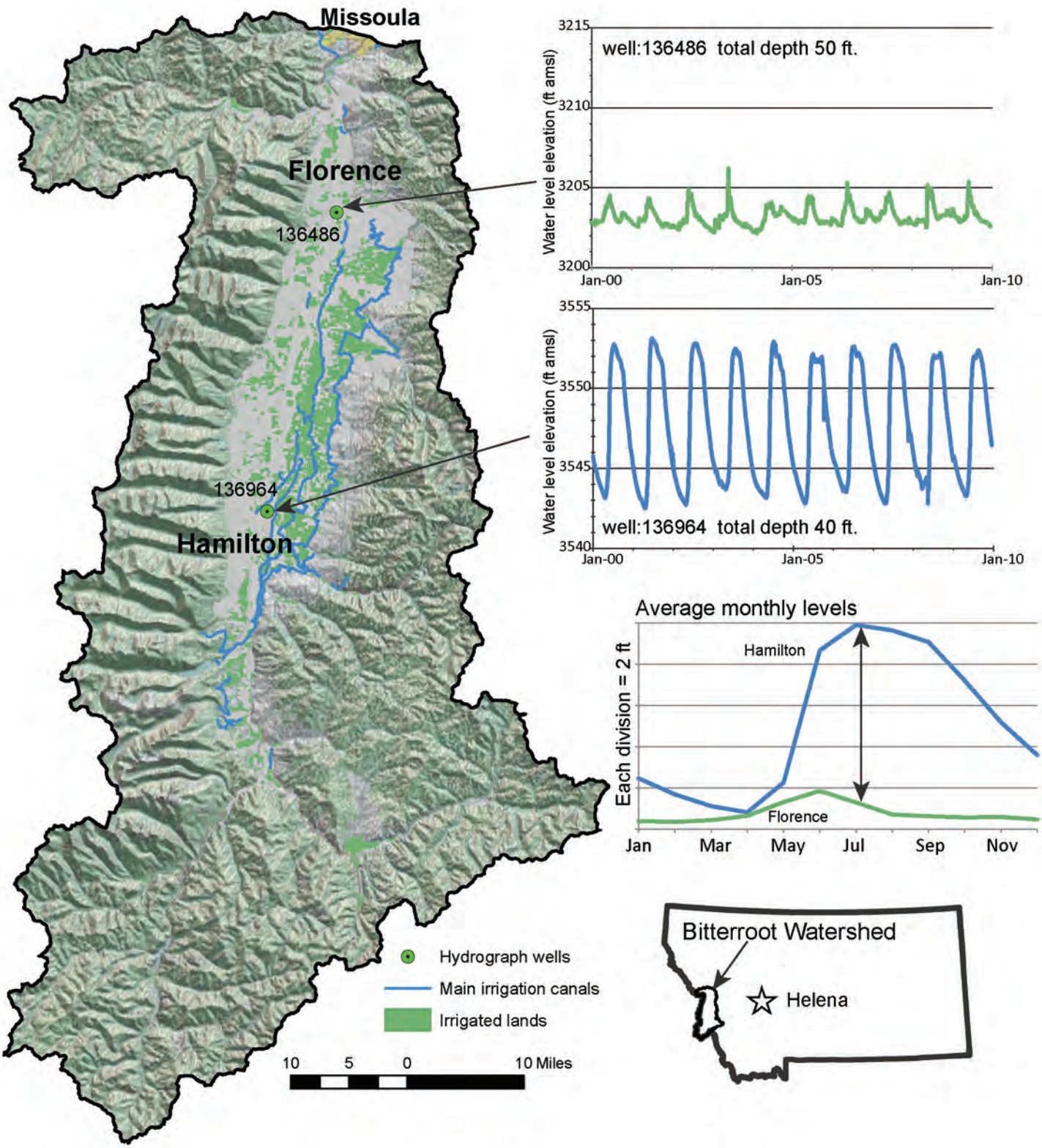


Figure 6. Hydrographs for two wells completed in the same aquifer near the Bitterroot River show very different responses. The well near Hamilton is downgradient from several irrigation canals and irrigated fields; the well near Florence is not located near irrigation. The average monthly water levels show the difference in seasonal response and highlight the importance of irrigation water as a source of recharge to the shallow aquifers.

MBMG

Montana Bureau of Mines and Geology

Table 2-3: Summary of Drilled Thickness to Madison

Parameter	Kootenai		Morrison	
	Mission Canyon	Charles	Mission Canyon	Charles
Sample Size	7	12	11	17
Mean (ft)	2024	1545	1770	1217
Standard Deviation (ft)	334	314	314	264
Inter-Quartile Range (ft)	352	499	413	502
90th Percentile (ft)	2381	1947	2182	1555
Maximum (ft)	2596	1982	2207	1596
Values are the drilled depth from top of Kootenai or Morrison to top of Mission Canyon or Charles.				

2.3 Flow Direction and Static Water Level

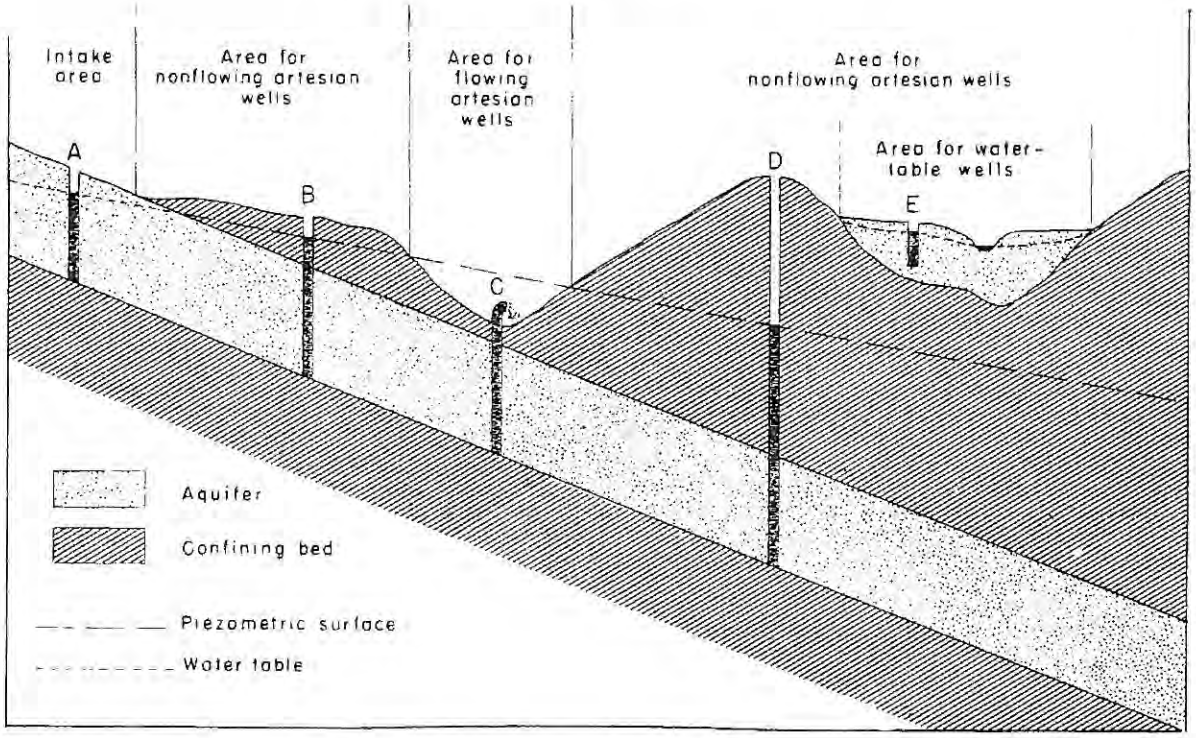
Static water level refers to the level which groundwater would rise in a well that penetrates an aquifer. In relation to the top of the aquifer, static water level limits how much drawdown can be realized during pumping (pumping can only drawdown the formation to the top of the aquifer). In relation to ground surface, static water level determines how much pumping lift is required to produce water to the public water system. Figure 2-11a illustrates how static water level can vary from a subsurface static to a flowing artesian condition when a well taps a confined aquifer. Flowing artesian conditions refer to the case where a static water level is higher than ground surface, and water flows freely from the well without pumping.

The Utica wellfield site has a static water level in the Madison that is about 400 feet below ground surface, and at least 3,100 feet above the top of the aquifer formation. Under these conditions, there is an abundance of available drawdown; however, the static lift required for pumping is substantial. One of the goals in evaluating wellfield alternatives was to identify areas where static water would be shallower or possibly flowing artesian, while also providing sufficient drawdown to allow for pumping at the maximum desired rate. The ideal wellfield location would develop Madison wells that flow directly to the water system with sufficient pressure to avoid any pumping requirements.

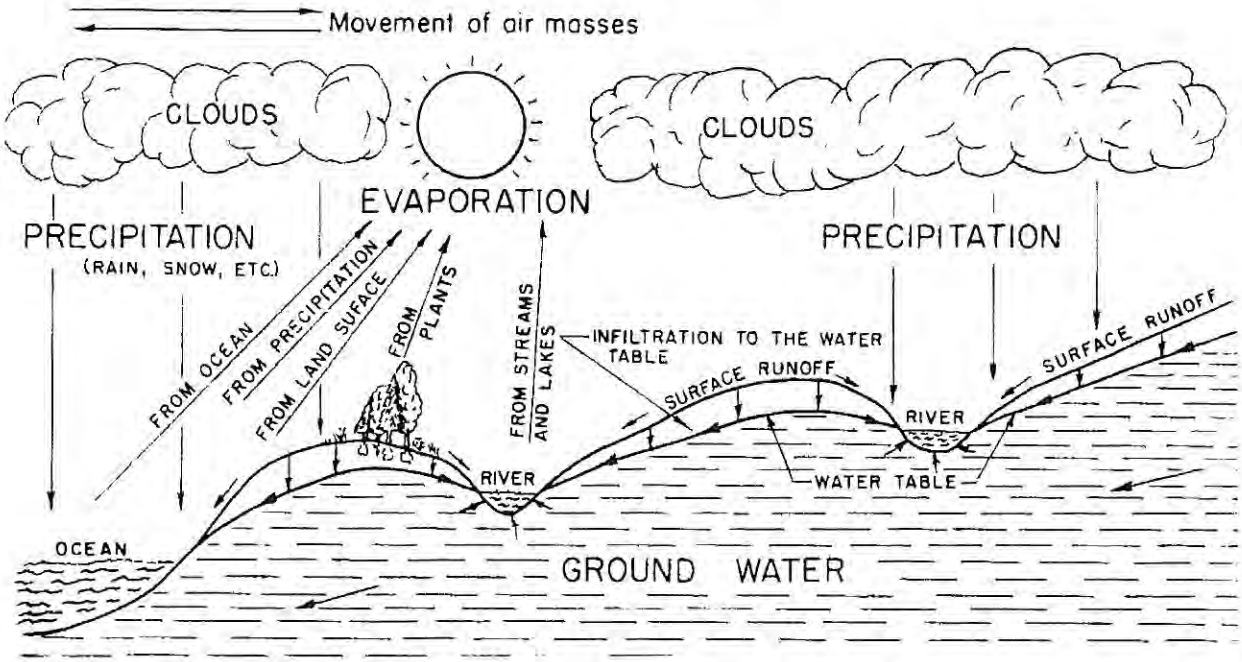
2.3.1 Regional Groundwater Flow

To put water levels in the Madison in a regional context, and to illustrate the direction of groundwater flow, two plots prepared by the USGS are shown on Figure 2-12. The upper plot (Figure 2-12a) is based on data collected from existing wells that tap the Madison and provide a direct measure of formation pressure. The contours are complex due to variations in aquifer conditions from one well to another. Some of the well data could also be impacted by production from oil wells. The lower plot (Figure 2-12b) shows a smoothed surface representing static water levels in the Madison, as

A. FLOWING AND NON-FLOW ARTESIAN WELLS



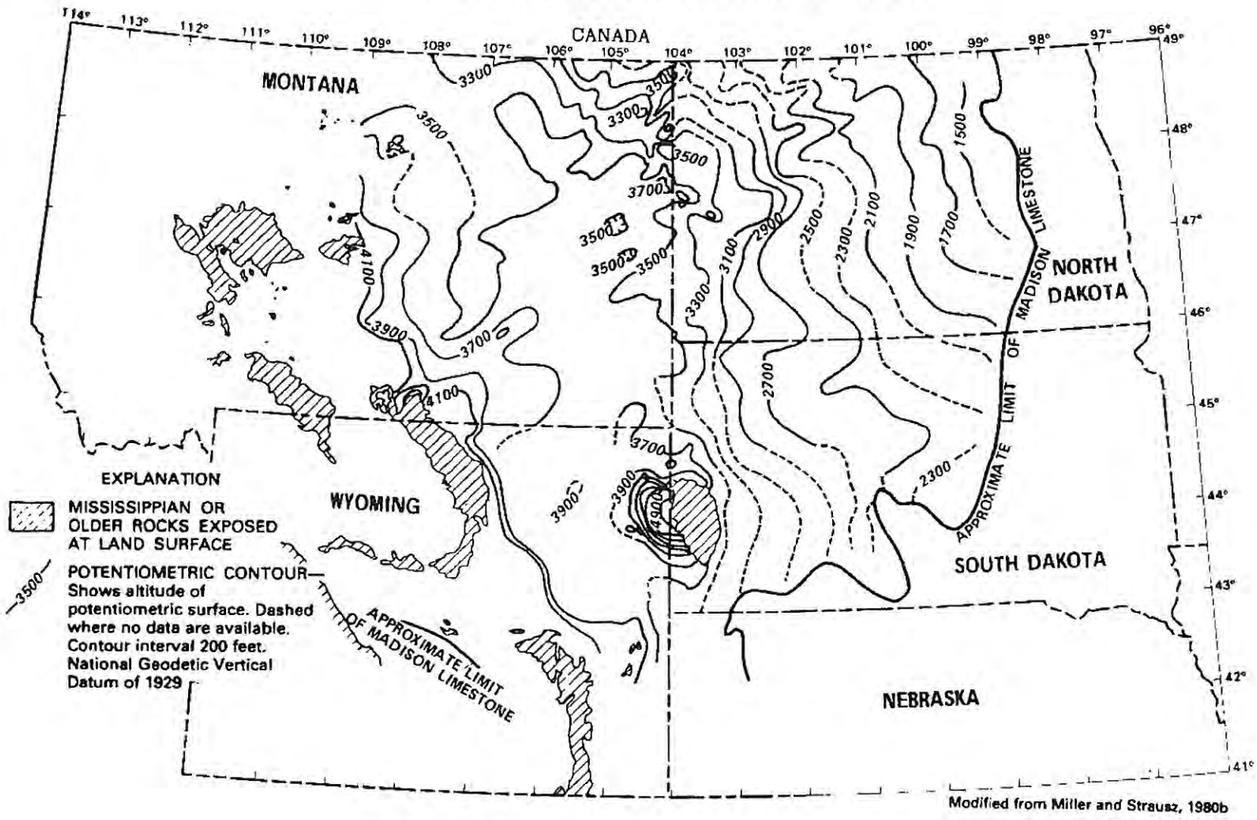
B. HYDROLOGIC CYCLE



Adapted from Zimmerman (1966)

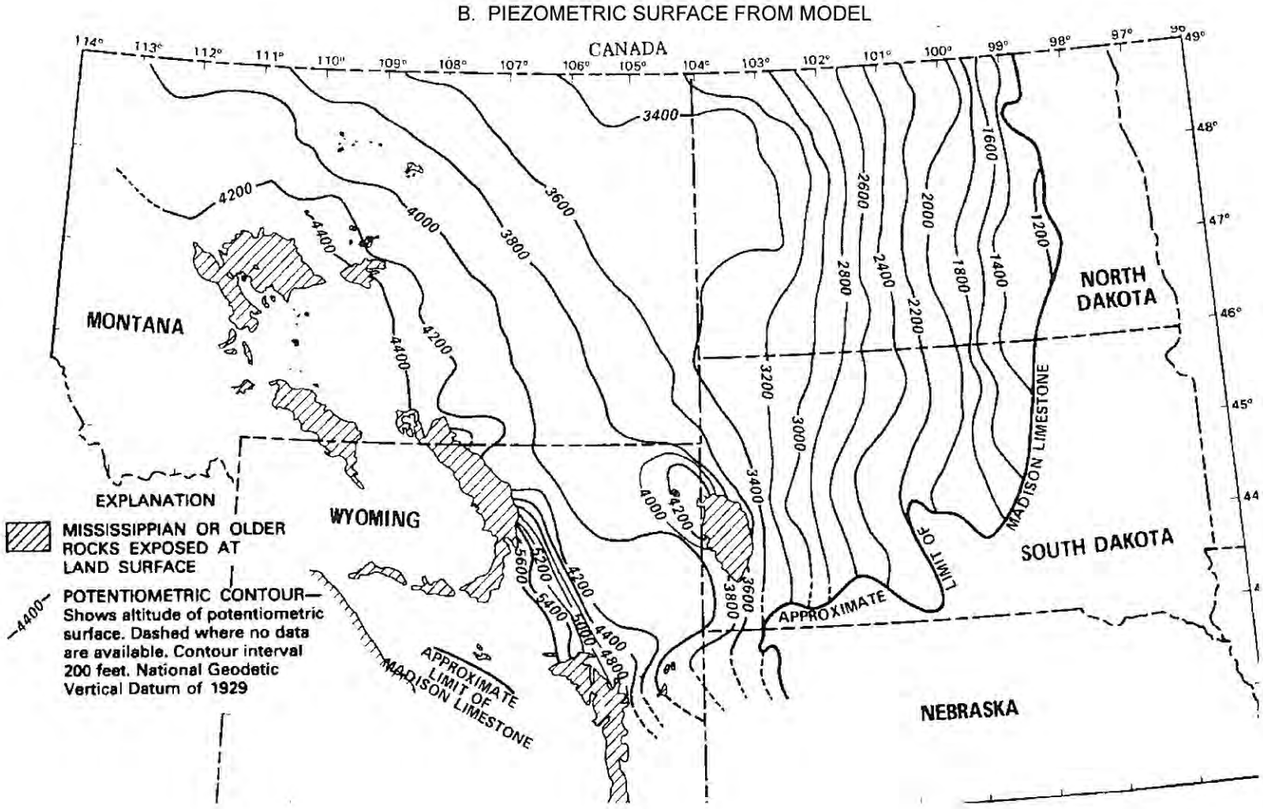
Figure 2-11
Hydrogeology Concepts

A. PIEZOMETRIC SURFACE FROM OBSERVATIONS



Modified from Miller and Strausz, 1980b

B. PIEZOMETRIC SURFACE FROM MODEL



Adapted from Downey (1984)

Figure 2-12
Madison Aquifer Piezometric Surface

determined by a groundwater computer model[4]. Both of these plots show that groundwater is flowing from central Montana to Canada and North Dakota. There are few if any intervening discharge points, which would be deep wells if present. Reasons there is no development to the east include availability of shallower groundwater (e.g, Fox Hills aquifer), large drilling depths, and groundwater salinity. Salinity in the Madison aquifer increases away from the recharge areas due to dissolution of minerals in the formation. In the Williston Basin, the Madison groundwater is brine quality.

2.3.2 Madison Aquifer Static Head

For the purpose of evaluating wellfield alternatives, analysis was completed to assess the static water level (also called head) conditions in the Madison in the project area. This work relied on earlier work completed by the Montana Bureau of Mines and Geology (Feltis 1980a, 1980b), data for petroleum wells obtained from the Montana Board of Oil and Gas Conservation, and assumptions concerning the static water levels in the Madison where it is exposed.

The analysis was completed by using interpolation tools in ArcGIS to rasterize point data. Point data were developed from piezometric surface contours prepared by Feltis, and from oil well drill-stem tests (Feltis also prepared his maps from oil well data). At the contact between the Madison and younger rocks, as mapped in the project area, it was assumed static water level was 400 feet below ground surface to create a series of artificial data points in these locations. The data points that were used are posted on Figure 2-13. The assumed static of 400 ft was tested with a sensitivity analysis, which used an assumed static of 250 feet. There was no noticeable difference in the results.

Static water levels in the Madison, as analyzed per the above discussion, are shown on Figure 2-13 in terms of static level relative to ground surface. Where static level is below the ground, it is reported as a depth to water, as would be measured in the well. Where static level is above ground, it is reported as a pressure, as would be observed for a shut-in pressure of a well. The results of this analysis show deep static levels near the upland areas that shallow outward into the basins. Shallow static and possibly flowing artesian conditions occur near Garneill and to the north to Hobson and Moore. The entire Wheatland Basin south of Garneill is characterized by high static levels, except near to the upland areas. The high pressure yellow areas are the most favorable for developing Madison wells with respect to static water level. It is important to note that static water level does not indicate high permeability and high capacity.

The results of the analysis are mostly dependent on the work by Feltis, and the associated error, which will vary spatially, is not well defined. Feltis (1977) presents a map showing a static level of about 4,125 ft msl at Utica, where the actual value measured during recent testing was 4,183 ft, a difference of only 58 ft. The recent value was used in preparing Figure 2-13. One other data point for Madison static was

[4] The contoured surface that is shown is technically referred to as the piezometric surface. It represents the elevation to which water will rise in a well that penetrates the aquifer, as already discussed.

obtained from a Montana Power wildcat well east of Garneill. A drill-stem test at this location indicated a static of 4,380 ft msl, or depth to water of 200 ft. This data point was used in creating the map so does not provide an accuracy measure. The well location lies within a large zone of the 0-250 ft category, indicating the analysis error probably is not very large, as this zone is based on the Montana Power well and also several other data points included in the analysis. The results indicate consistency among the data in this general area.

2.3.3 Madison Aquifer Available Drawdown

The height of the static water level above the top of the Madison Group provides a measure of available drawdown that could be used by pumping. Well sites located in areas with a small available drawdown will have lower capacity than areas with larger available drawdown, other factors being equal. Figure 2-14 is a map of the estimated available drawdown for the Madison aquifer in the general project area. This map was prepared by subtracting the top of the Madison elevation from the static water level. Because there could be up to 500 ft or slightly more of Charles formation overlying the aquifer, the map provides a conservative estimate of available drawdown. The results have been categorized into classes as shown in the legend. This map shows that near to upland areas there is greater risk of installing a well that could have insufficient drawdown available. Outward in the basins there is large available drawdown, generally more than would be considered necessary for a pumped well.

One of the caveats concerning the use of available drawdown is the possible occurrence of well plugging. Well plugging may be accelerated when a well is pumped at large drawdown as the formation water is subject to a much lower pressure than exists in the aquifer as it approaches the well. Carbon dioxide will degass under these conditions resulting in precipitation of calcium carbonate that can plug the flow paths into the well MacCary et al (1983).

2.4 Hydraulic Properties

Production of water from a well is highly dependent on the hydraulic properties of the aquifer, namely the transmissivity and storativity. Transmissivity[5] is an aquifer property representing the degree to which water can freely flow through the aquifer formation. Water supply wells normally try to target high transmissivity formations in order to achieve large capacity. Storativity refers to the storage of water within the aquifer, and is a very small value for deep confined aquifers such as the Madison. The value represents the amount of water that would be taken into or released from storage as a result of changes in pore water pressure.

[5] Transmissivity incorporates aquifer thickness and so represents the total flow through the aquifer over a unit of width under a unit hydraulic gradient. Permeability is a point property that does not incorporate thickness; although it is common in discussion to talk about high permeability in areas that are also high transmissivity.

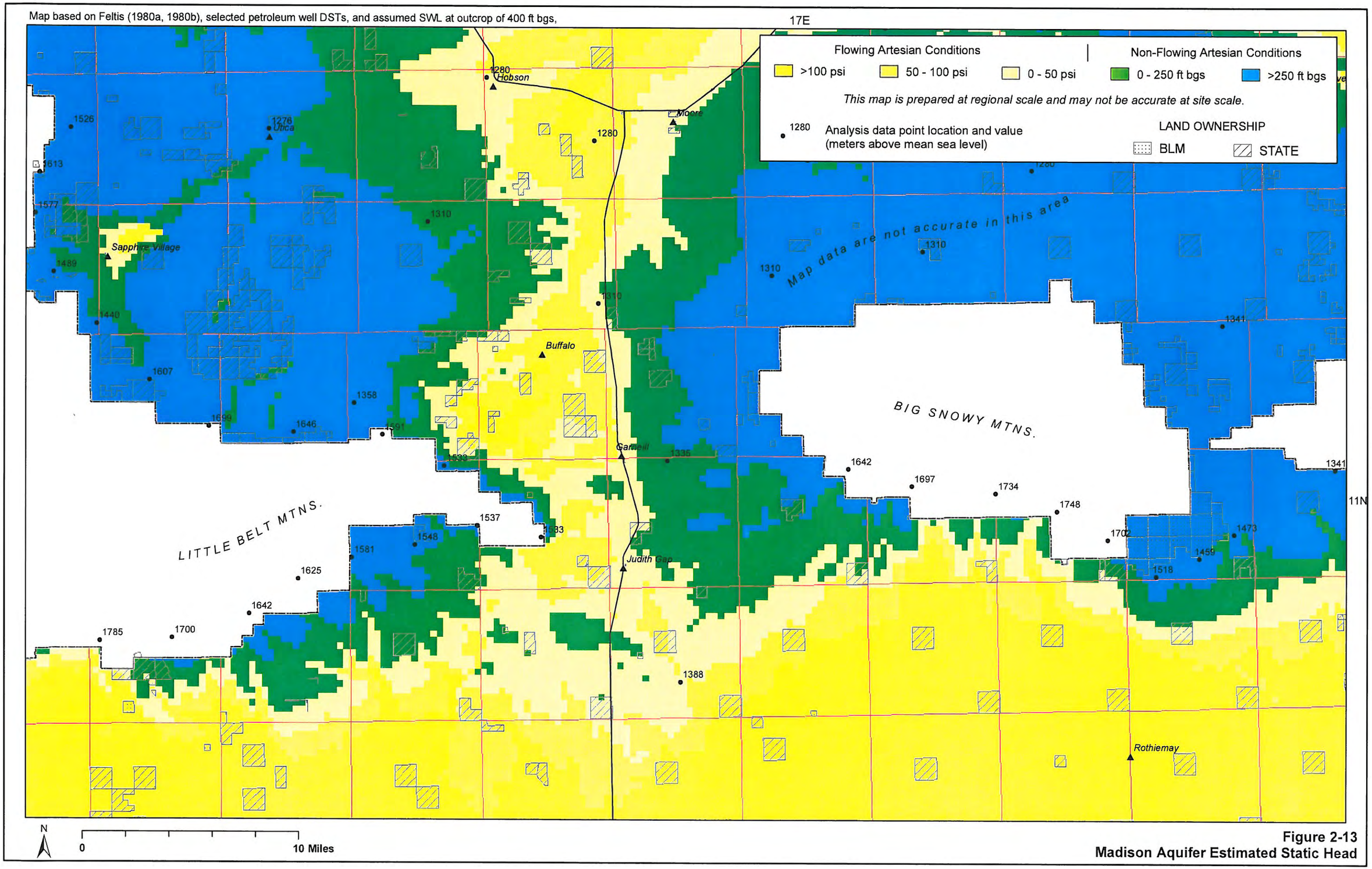


Figure 2-13
Madison Aquifer Estimated Static Head

Drawdown is calculated using piezometric surface based on 400 ft bgs water level at Madison outcrop.

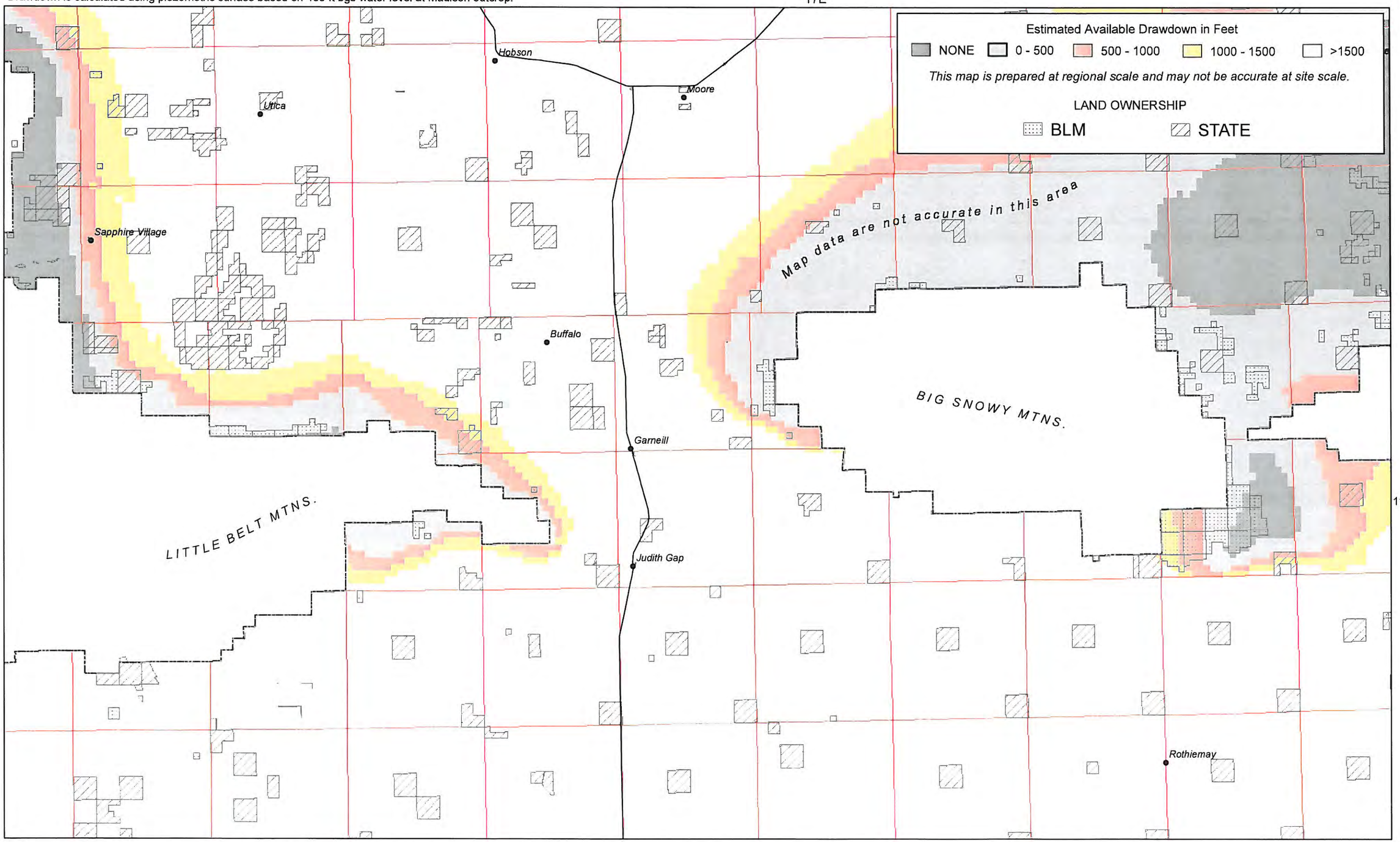


Figure 2-14
Estimated Available Pumping Drawdown in Madison Wells

2.4.1 Madison Transmissivity Discussion

The Madison aquifer is formed predominantly from limestone and dolomite rock, which are both hard, dense materials. Limestone normally has very little porosity, whereas dolomite can be more porous. Under these conditions, the transmissivity of the Madison aquifer is largely derived from fractures that have formed in the rocks. These fractures are primarily the result of tectonic forces, and consist of joints and faults[6]. Once initiated, groundwater flow along the fracture pathways dissolves the formation minerals, thereby enhancing the transmissivity. Over long periods of time, the fracture flow system can be substantially enhanced, and caverns can be formed. It is ideal to drill a Madison well into a profusely fractured area that has undergone substantial secondary enhancement by dissolution.

As dissolution proceeds, the pore waters take on more and more dissolved ions, and eventually will no longer dissolve the formation. The freshest water with the least amount of dissolved mineral occurs near upland recharge areas. The saline water that has acquired substantial dissolved mineral ions occurs in the basins. As the salinity of the formation increases, the transmissivity of the surrounding rocks may decrease, as no dissolution is able to occur. In these transition zones, springs may occur, representing rejected recharge. The occurrence of Madison springs can be an indication of the locations where the Madison transitions from higher transmissivity to lower transmissivity. Huntoon (1993) provides a very useful discussion of these processes and associated conditions in Wyoming. Plummer et al (1990) provides a detailed geochemical analysis of formation dissolution[7].

In planning Madison water wells, it is desirable to locate geological structures that may be associated with common fracturing, such as anticline crests and fault zones. It is also of note that a satisfactory well could be drilled away from structures. Figure 2-15 provides two maps that illustrate regional structural features and lineaments that the USGS considered in their detailed studies of the Madison in the 1980s. Lineaments are simply linear features that could reflect subsurface structure, such as a fault, or possibly a geomorphic feature unrelated to deep bedrock structure. The northeasterly valley of the Judith River extending from Sapphire Village to Utica is an example of a linear feature, or lineament, which could reflect subsurface structure. Faults and folds shown on Figure 2-1 also may be potential targets for well drilling, such as the anticline folds north of the Little Belt Mountains west of Garneill.

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[6]Some hydrogeologists may consider that Mississippian (ca. 300 million years before present) karst features provide substantial permeability to the Madison. There may be some caverns related to this karst episode, but most of the present-day permeability is believed to be derived from Laramide Orogen fracturing and subsequent development of Laramide karst features over the past 60 to 90 million years. The older karst is commonly filled by sediment.

[7] Plummer et al. reports that most Madison water is in equilibrium with dolomite. High sulfate concentrations exceeding 1345 mg/L likely indicate saturation with respect to anhydrite. Super-saturation of calcite is expected for precipitation of calcium carbonate to occur. The primary reaction between pore water and the rock matrix is dedolomitization, whereby dolomite is dissolved concurrently with calcite precipitation as a result of anhydrite dissolution. Sulfate concentrations will increase along a flow path as this reaction occurs.

2.4.2 Porosity and Transmissivity Estimation by USGS

Downey (1984) presents maps of porosity and transmissivity in the Madison aquifer over the regional area studied by the USGS. Both of these maps are illustrated on Figure 2-16. The porosity analysis is based on contouring of porosity measurements obtained from petroleum wells. The data show some possibility for good porosity in Judith Basin, and possibly lower porosity in the Wheatland Basin area. The occurrence of 10% porosity, as used in preparing Figure 2-16, is actually low, but the data can be useful for evaluating trends that may reflect where porosity enhancement has occurred.

As an additional note concerning Madison porosity, Gross and Eyal (2007) conducted an extensive compilation of Madison porosity data for the Rocky Mountain region, finding that typically 75% of the formation is dolostone, and only 25% is limestone. The limestone porosity was found to be 0% to 5%, with a few values out to 25%. Dolostone ranged from 7% to 30% total porosity, with many samples found to lie between 10% and 20% porosity.

Transmissivity data are presented in units of feet-squared per day on Figure 2-16b. Transmissivity values reach a maximum of 2,500 ft^2/d in the general vicinity of Big and Warm Springs. Otherwise lower transmissivity would be anticipated in the project area, on the order of 750 ft^2/d. These values represent spatial averages, whereas much higher and much lower values could occur at individual well sites. Higher values would typically be associated with systems of fractures.

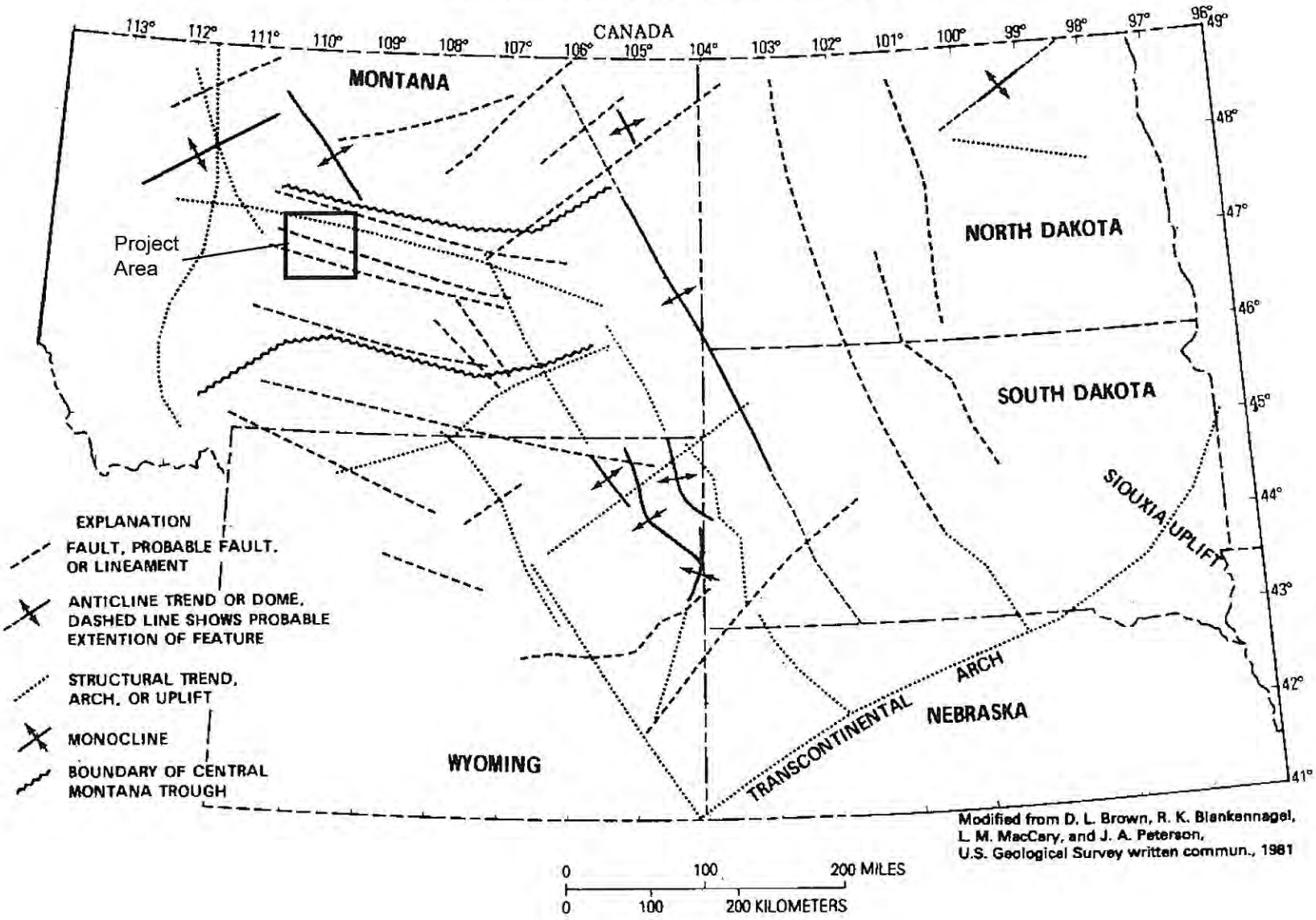
Using travel times determined from geochemistry parameters, Plummer et al (1990) estimated hydraulic conductivity to range from 0.1 to 2.5 ft/d. Per 100 feet of aquifer, these values translate to transmissivity ranging from 100 to 2,500 ft^2/d. Over the total thickness of the Mission Canyon, assuming 500 ft in total thickness, transmissivity could range from 500 to 12,500 ft^2/d.

2.4.3 Transmissivity and Storativity from Utica Pumping Test

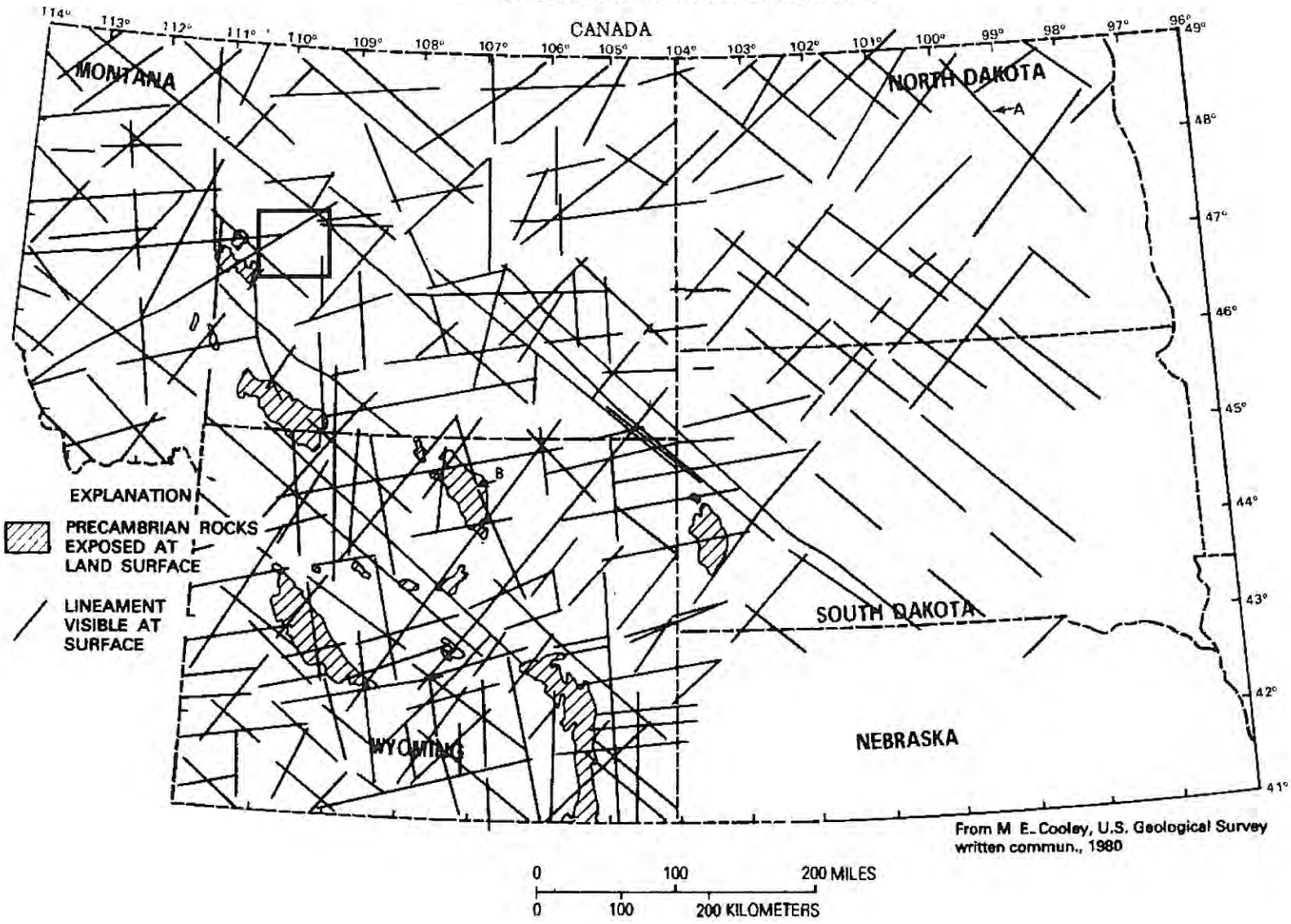
The CMRWA test well constructed in Utica was subject to pump testing in November 2005. These data were analyzed to estimate the aquifer transmissivity. The analysis was complicated by the fact that no further drawdown occurred after only two-hours of pumping despite a 12-day pumping period. Likewise, the well fully recovered within two-hours after pumping was stopped. The analysis determined that the well was connected to a primary zone with a transmissivity of 100 ft^2/d, but was being supported by a second zone with a transmissivity of at least 1,000 ft^2/d (Western Groundwater Services 2006a, 2006b). Total transmissivity to the well was estimated at 1,100 ft^2/d.

Aquifer storativity was estimated for the Utica site based on calculations using typical rock properties (Western Groundwater Services 2006a). An average value of $5x10^{-5}$ was determined, which is consistent with values for bedrock confined aquifers.

A. MAJOR PALEOZOIC STRUCTURAL FEATURES



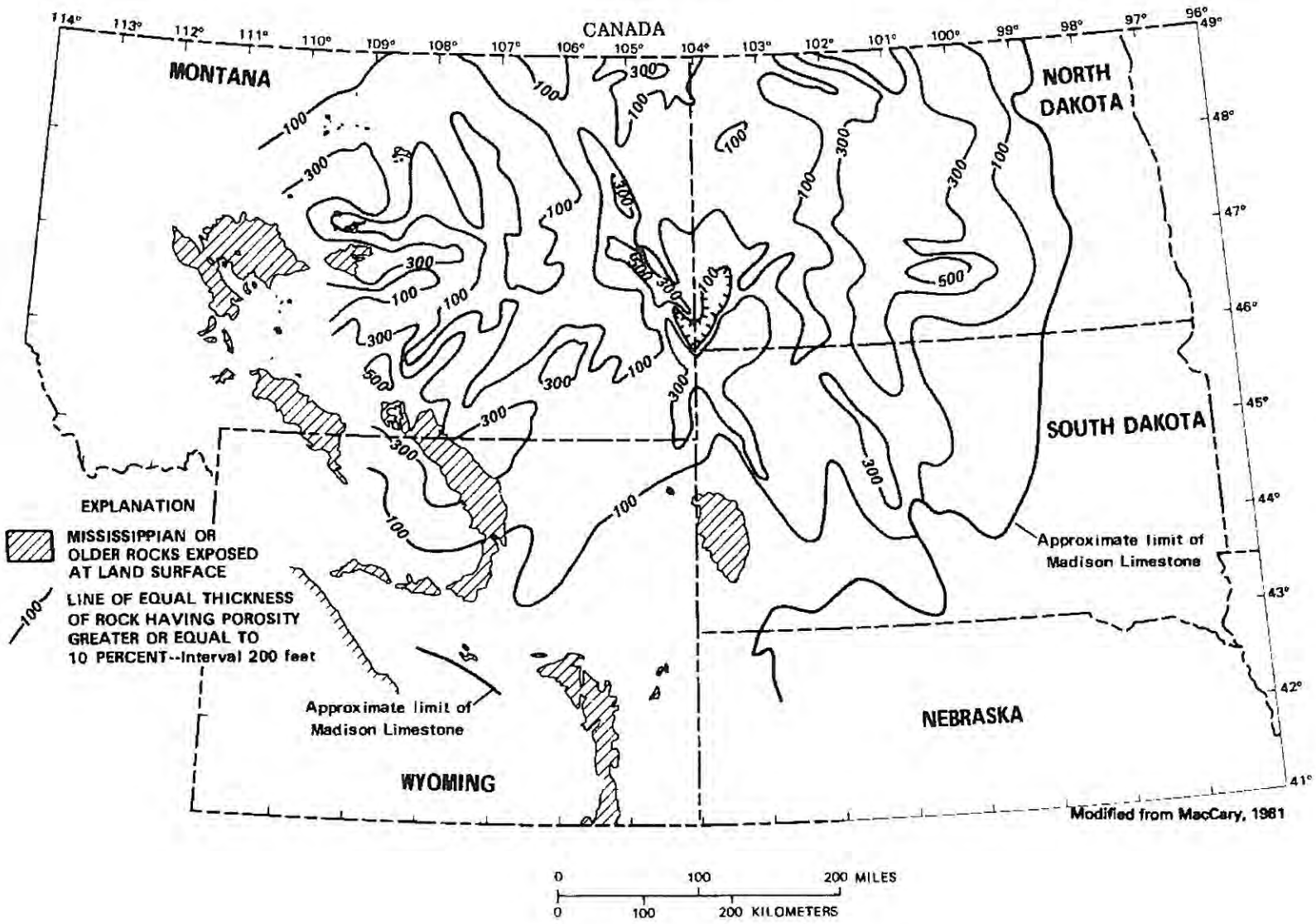
B. LANDSAT INFERRED LINEAMENTS



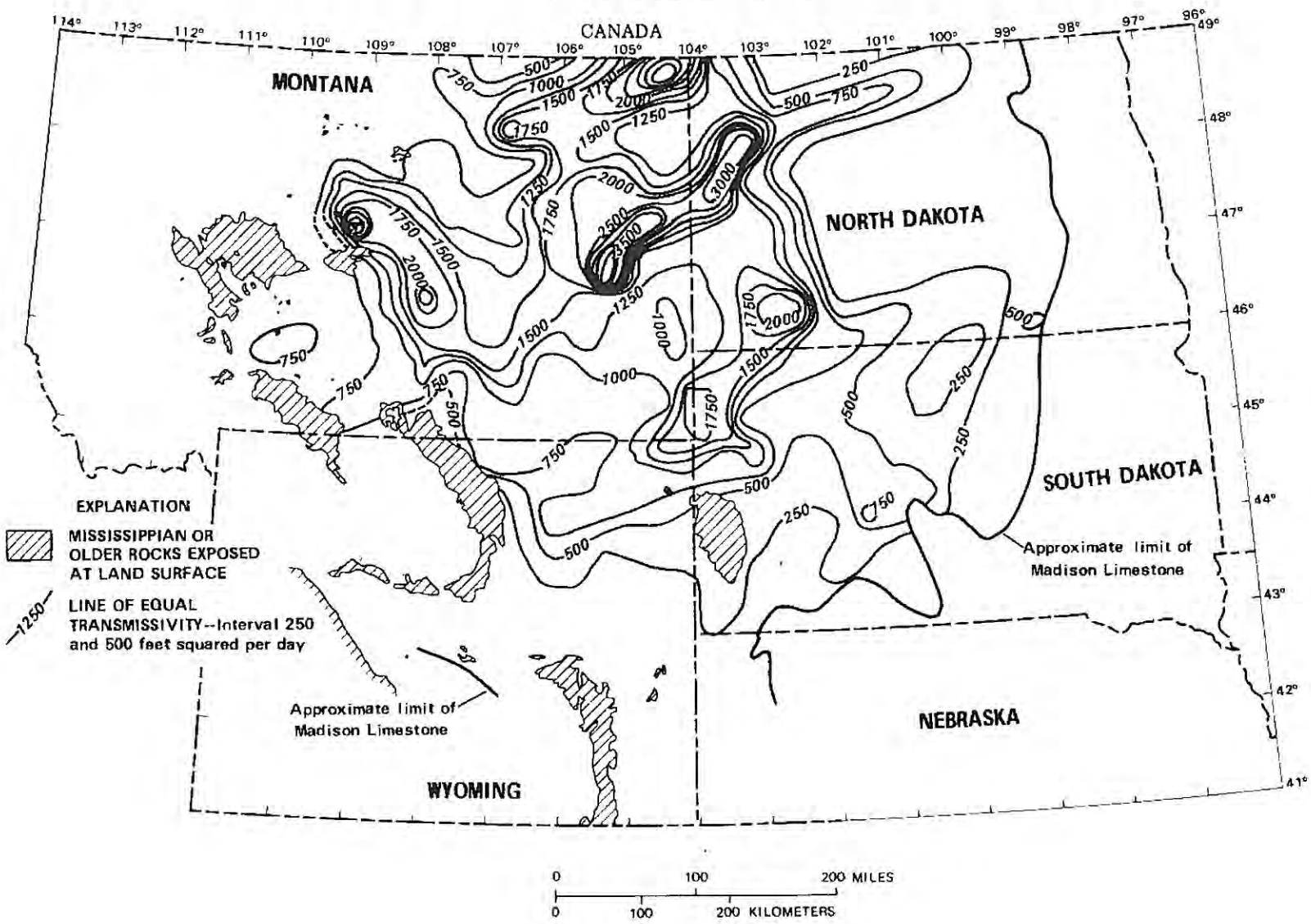
Adapted from Downey (1984)

Figure 2-15
Structure and Lineaments

A. POROSITY



B. TRANSMISSIVITY (FT2/D)



Adapted from Downey (1984)

Figure 2-16
Madison Aquifer Transmissivity and Porosity

2.4.4 Transmissivity from Montana Power Co. Wildcat

During 1988, Montana Power Company installed a wildcat well on the east side of Highway 191 near to Garneill (API No. 25-027-21221. The well penetrated the Mission Canyon formation at 3,517 feet and was subject to a drill-stem test over the interval from 3,586 ft to the total depth of the well at 3,650 ft. These tests are short term and provide only a rough estimate of permeability. The test data were analyzed to estimate a transmissivity of 42 ft^2/d for the tested zone. Assuming the same conditions prevail at depth, total transmissivity of the Mission Canyon at this location was estimated as 260 ft^2/d.

2.4.5 Transmissivity from Other Madison Wells

A compilation of transmissivity values for Madison wells in Wyoming near the Black Hills uplift is shown in Table 2.4. These values are included to show a typical range of transmissivity that may be encountered when drilling the Madison aquifer. As shown, transmissivity of several hundred feet-squared per day is common in the location of these wells, while larger values do not occur. Individual well yields are generally good with a significant drawdown required to achieve the yield. Despite several excellent producing wells, there is one of poor production and a couple of moderately low production. Two of the eight wells are excellent producers, achieving rates in excess of 1,000 gpm. The Newcastle No. 1 well is flowing artesian directly to the water system at the rate of 1,500 gpm.

Table 2-4: Aquifer Transmissivity for Madison Wells

Well Name	Drawdown (ft)	Discharge (gpm)	Specific Capacity (gpm/ft)	Transmissivity (ft^2/d)
Canyon No. 1	344	300	0.87	245[A]
Newcastle No. 1	406	1,500	3.69	790
Newcastle No. 2	428	650	1.52	325
Newcastle No. 3	64	48	0.75	161
Newcastle No. 4	373	640	1.72	367
West End No. 1	439	1,150	2.62	560
Salt Creek No. 1	295	240	0.81	76[A]
Crown Well No. 1	158	400	2.53	602[A]
Transmissivity (T) is estimated from specific capacity (Q/s) as T (ft^2/d) = 214*Q/s [A] Based on straight-line analysis of drawdown data.				

2.4.6 Hydraulic Properties Summary

The existing data that could be used to estimate likely transmissivity in the project area suggest typical values of several hundred feet-squared per day. One of the local data points, obtained from the CMRWA No. 1 pumping test, indicates a higher transmissivity of 1,100 ft^2/d. The Montana Power Company wildcat test indicated a much lower value of 260 ft^2/d, but was a partially penetrating well test of short duration. Estimated transmissivity based on travel times of geochemistry parameters suggest possibly higher values that could reach several thousand feet-squared per day.

The occurrence of Big Spring, Warm Spring, and the Hanover Well suggest that high transmissivity conditions must exist, at least at a semi-regional scale. The drainage areas of these discharge points must be underlain by large transmissivity formation in order to conduct the flows to these locations. Further discussion of these discharges is provided below. Unfortunately, no estimates of transmissivity in relation to these discharges were discovered. Values exceeding 10,000 ft^2/d would be anticipated given the magnitude of the flows.

Madison aquifer storativity is lacking in data, but was estimated in an earlier report by calculations of rock and water properties to be $5x10^{-5}$, which is a typical value for confined aquifer settings where the formation is comprised of a rigid rock matrix.

2.5 Aquifer Recharge

One of the criteria that can be used to evaluate water production potential of wellfield alternatives is the amount of aquifer recharge. Wellfields that are down-gradient from areas of high recharge have more potential to serve the project than do wellfields down-gradient from areas of lesser recharge.

2.5.1 Historical Recharge Data

The Madison aquifer is recharged primarily where it is visibly exposed at the land surface. These locations occur in the upland areas of the Big Snowy Mountains, Judith Mountains, Little Belt Mountains, and Moccasin Mountains. The dominant process for aquifer recharge is direct discharge to the formation from surface water, where streams flow over the outcrops. To a much lesser degree, direct precipitation onto the formation can also provide recharge. Recharge may also occur by vertical leakage from neighboring formations, but is also considered minor.

Observation of losses from streams to the Madison have been made at many locations. Downey (1984) described a stream sealing program in the Black Hills to reduce recharge to the Madison. In one stream, this program increased stream flow by 90 cfs. After the sealing work was completed, it was estimated that only 10 cfs entered the formation rather than 100 cfs.

Zimmerman (1966) reported stream flow losses to the Madison at several locations in the Judith Basin. These observations included 90 cfs of recharge from Dry Wolf Creek, located to the northwest of Utica; 100 cfs of recharge to the Madison was reported for the Middle Fork Judith River above Sapphire Village. In this same area, 42 cfs of recharge was reported from Yogo Creek, which is tributary to the Judith River. In this particular case, the entire creek flow was discharged to formation. He also reported possibly 13 cfs of recharge from the South Fork Judith River, but noted this rate was within the measurement error. In total, Zimmerman (1966) assessed that recharge to the Madison in the Little Belt Mountains could be 180,000 af/yr, or 250 cfs.

The work of Feltis (1980) reports several Madison recharge estimates that were determined by measuring stream flow losses. These measurements represent a

sampling of recharge occurring at various locations, but do not include all recharge to the Madison (it would be very difficult and costly to measure all recharge to the Madison from streams). The data are summarized in Table 2.5.

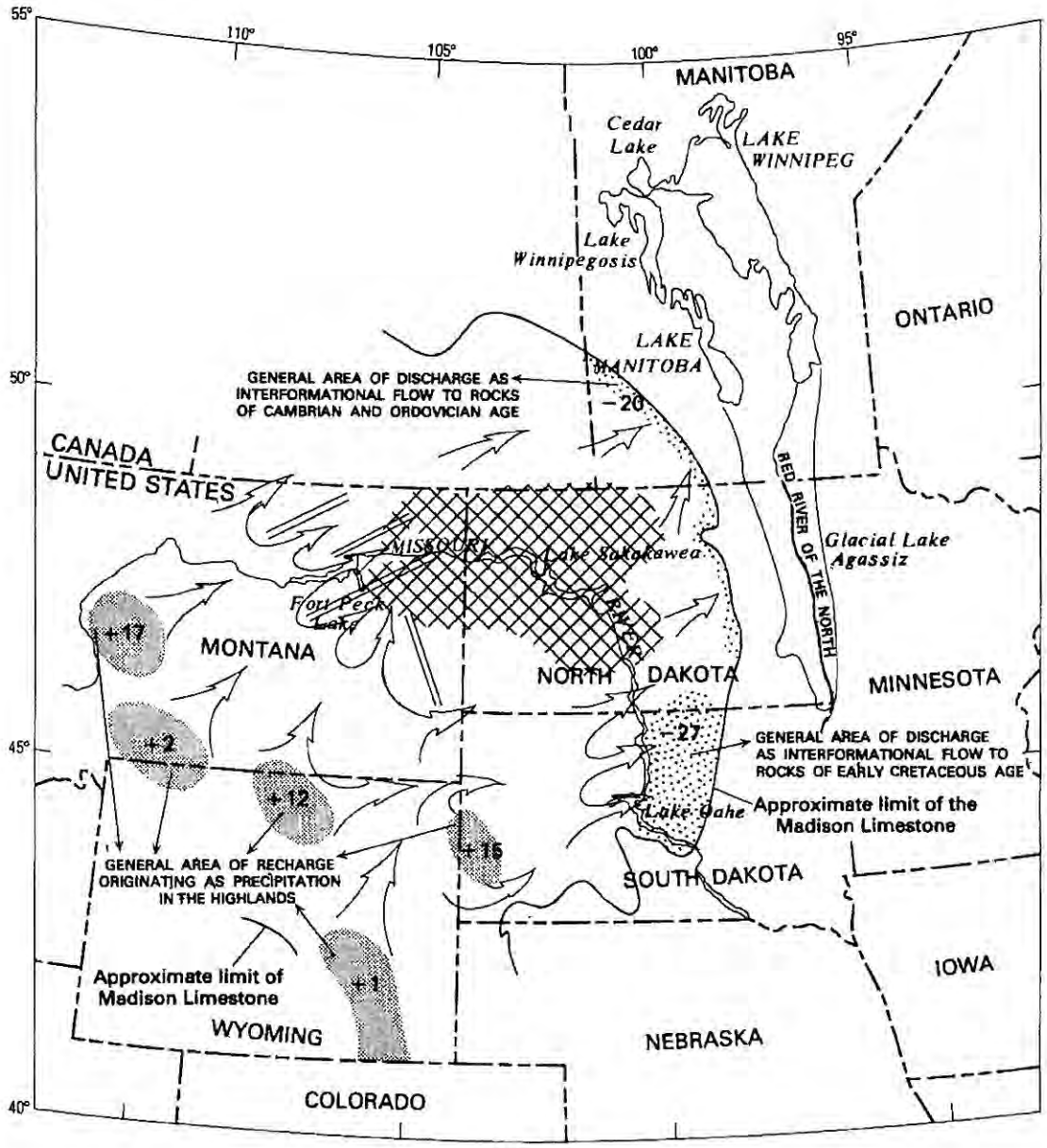
Table 2-5: Recharge to Madison from Streamflow (Feltis, 1980)

Range	Source	Date	Rate (cfs)
Little Belt	Dry Wolf Cr.	5/28/64	164
Little Belt	Yogo Cr.	5/10/64	42
Little Belt	MF Judith R.	8/26/71	13
Little Belt	SF Judith R.	6/22/71	16
Big Snowy	Rock Cr.	6/5/68	56
Big Snowy	Cottonwood Cr.	7/16/68	32

Earlier Feltis (1973) contemplated annual recharge that could provide the discharges at Warm and Big Springs. He concluded based on the volume of flow that both springs must be connected to cavernous limestone of the Madison aquifer, although both springs emerge from younger formations. For the 1968 water year, he estimated total precipitation that could recharge the Madison at 342,000 af, considering the Moccasin Mountains, Judith Mountains, and Big Snowy Mountains. He also determined that Warm and Big Springs, and the Hanover Well, were discharging 200,000 af/yr. From these estimates, he concluded that 58% of precipitation was converted to Madison aquifer recharge. Had he included some recharge from the Little Belt Mountains, as discussed below, a smaller proportion of precipitation could be allocated to Madison recharge, as the value of 58% is likely larger than actually occurs.

Downey (1984) developed a groundwater computer model for the entire Madison aquifer in a four state region and including parts of Canada. Through calibration of the model, he determined that 17 cfs, or 12,300 af/yr, of water recharged the Madison from central Montana, which includes the Little Belt Mountains, Big Snowy Mountains, Moccasin Mountains and Judith Mountains. In this calibration, he did not consider local discharges, but was only accounting for the water that entered the regional flow system, which ultimately discharges in North Dakota and Canada. The importance of Downey's work is that he has shown through a regional analysis, that a substantial volume flow rate of groundwater must leave the area contemplated for source development by the CMRWA in order to balance the overall water budget for the Madison aquifer.

Figure 2-17 illustrates the recharge and discharge locations represented in the modeling project as reported by Downey (1984). Because the Madison does not discharge elsewhere in Montana, the recharge occurring in the upland areas is leaving Montana undeveloped.



EXPLANATION

HIGHLAND AREA—Generally areas of ground-water recharge. Numbers represent rate of recharge in cubic feet per second.

-27 DISCHARGE RATE—Approximate areas of principal ground-water discharge. Numbers represent rate of discharge in cubic feet per second.

BRINE AREA—Areas within which the concentration dissolved solids in ground water is greater than 100,000 milligrams per liter.

GENERAL DIRECTION OF GROUND-WATER FLOW

GEOLOGIC STRUCTURE—Locations of paleostructures that may affect the flow of ground water.

0 100 200 MILES

0 100 200 KILOMETERS

Recharge shown is deep percolation flowing to North Dakota and Canada. Does not show recharge for any discharges in Montana.

Adapted from Downey (1984)

Figure 2-17
Estimated Recharge to Madison Aquifer

2.5.2 Recharge Analysis

Recharge to the Madison aquifer was evaluated in several areas relevant to the wellfield alternatives. The goal of this work was to assess how much recharge may occur directly up-gradient from prospective wellfield locations, and also to estimate the actual recharge for use in determining legal availability of water, which is a requirement of water right permitting.

2.5.2.1 Method

Aquifer recharge estimates were made by determining a recharge ratio representing the proportion of precipitation that becomes deep percolation into the Madison aquifer (i.e., R=DP/P, where R is the recharge ratio value, DP is the volume of deep percolation, and P is the volume of effective precipitation). The quantity of precipitation that does not percolate to the Madison provides for runoff and evapotranspiration in the watershed. To determine total recharge to the Madison in any designated area, the recharge ratio is multiplied by total precipitation onto the area (i.e., DP=RxP).

The recharge ratio (R) was determined at two locations where there are historical stream flow gauging data. One of these locations is the Judith River gauge near to Sapphire Village (period of record 1919-1975). The other is the Cottonwood Creek gauge (period of record 1945-1951), on the north side of the Big Snowy Mountains. Locations of both gauges and the respective drainage areas are shown on Figure 2-18.

Precipitation into the respective drainages was obtained from the NOAA SNOTEL database available on-line. For the Judith River gauge, precipitation data were obtained for the Daisy Peak SNOTEL. For the Cottonwood Creek gauge, precipitation data were obtained for the Crystal Lake SNOTEL. The data were obtained as monthly totals. Adjustments to the data were made to account for interception by vegetation and snowpack sublimation. These adjustments reduced the total precipitation by 13% at both locations.

Monthly water balance calculations were carried out for the drainages of both gauges (see Figure 2-11b for water balance concept). The results are shown in Tables 2-6 and 2-7. Deep percolation for each month was calculated as the remainder after subtracting evapotranspiration and runoff from precipitation. Negative values of deep percolation indicate that water from previous months that is in storage must be allocated to balance the runoff. The negative values occur during dry months with less precipitation when streams are at base flow.

The recharge ratio was calculated based on the total amounts of precipitation and deep percolation for the water year. The ratio values were 25% for the Judith River drainage and 38% for the Cottonwood Creek drainage. These values are uncharacteristically high for groundwater recharge calculations, however the recharge process to the Madison aquifer is also uncharacteristic of most aquifer recharge. The values are substantially lower than was estimated by Feltis (1973), who reported a ratio of 58%.

The winter months are shown with zero precipitation because the precipitation falling during these months is accumulated in the snowpack. The snowpack is subsequently reallocated to the period from April through July. The allocation used proportions of 20% in April and May, 40% in June, and 20% in July. This distribution is intended to represent the melting of snowpack during spring and early summer.

The evapotranspiration (ET) values were computed according to the Thornthwaite-Mather Method while accounting for soil moisture deficit (Thornthwaite and Mather 1955). The soil reservoir was set to 3.6 inches. ET values of zero occur in the winter months when average temperature is below freezing. In total, 64% of precipitation was evapotranspired for the Judith River drainage, and 53% was evapotranspired for the Cottonwood Creek drainage.

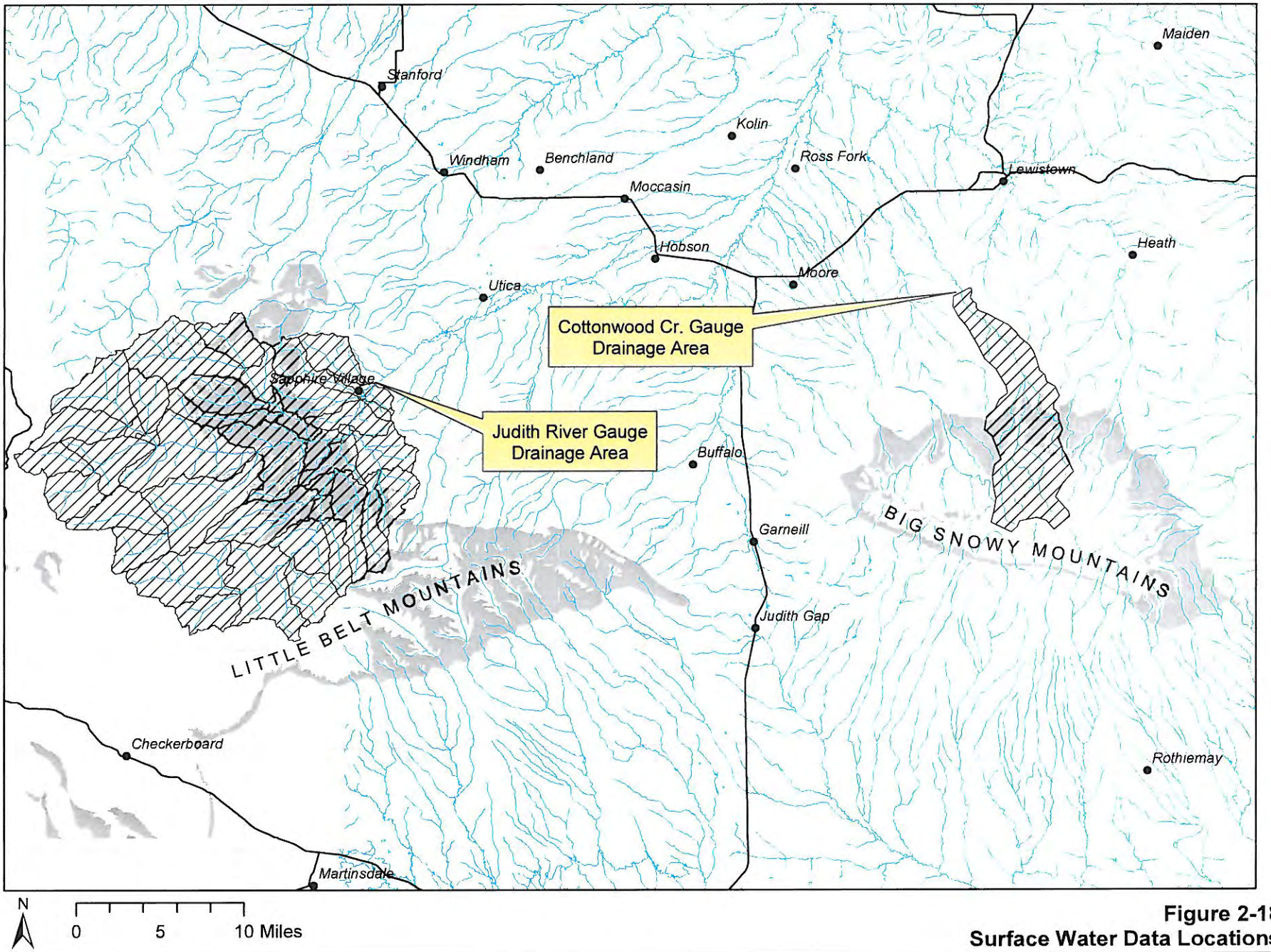


Figure 2-18
Surface Water Data Locations

Table 2-6: Recharge Analysis for Judith River Drainage

Month	Precipitation (af)	Run off (cfs)[A]	Run off (af)	Evapo-transpiration (af)	Deep Percolation (af)
Oct	25,047	12.51	755	15,224	9,068
Nov	0	9.30	562	0	0
Dec	0	6.01	363	0	0
Jan	0	3.68	222	0	0
Feb	0	3.26	197	0	0
Mar	0	3.86	233	0	0
Apr	71,658	22.46	1,356	1,832	68,470
May	76,524	193.83	11,702	32,604	32,219
Jun	109,109	271.15	16,370	51,835	40,904
Jul	52,765	84.96	5,129	79,682	-32,046
Aug	26,765	28.54	1,723	41,326	-16,284
Sep	23,187	16.21	979	26,024	-3,816
TOTAL	385,055		39,591	248,526	96,938
		RATIOS	10.3%	64.5%	25.2%

[A] Run off data from Judith River gauge (USGS 06110000). Drainage area above lowest exposure of Madison is 328 mi^2.

Table 2-7: Recharge Analysis for Cottonwood Creek Drainage

Month	Precipitation (af)	Run off (cfs)[A]	Run off (af)	Evapo-transpiration (af)	Deep Percolation (af)
Oct	6,555	2	130	2,185	4,367
Nov	0	1	87	0	0
Dec	0	1	59	0	0
Jan	0	1	31	0	0
Feb	0	1	53	0	0
Mar	0	4	229	0	0
Apr	15,517	7	436	1,422	14,088
May	15,149	28	1,685	4,958	10,163
Jun	22,360	59	3,591	8,108	14,193
Jul	11,036	17	1,028	10,804	215
Aug	5,610	6	360	9,607	-4,003
Sep	5,841	3	199	5,761	76
TOTAL	82,067		7,891	42,846	31,331
		RATIOS	9.6%	52.2%	38.2%

[A] Run off data from Cottonwood Creek gauge (USGS 06112000). Drainage area above lowest exposure of Madison is 47 mi^2.

2.5.2.2 Results

Madison aquifer recharge was evaluated for several subareas in proximity to candidate wellfield locations. These subareas are shown on Figure 2-19, and the estimated aquifer recharge rates are provided in Table 2-8. Annual precipitation data for each subarea was obtained from the statewide isohyetal map, obtained digitally from the State's NRIS website. A weighted area average was developed for each of the subareas used in the recharge calculations. Only the area uphill from the lowest

Mission Canyon outcrop was included. Also shown in Table 2-8 for each subarea is the length of stream that crosses exposed Mission Canyon formation. Stream lengths were compiled based on GIS data obtained from the Montana NRIS website.

These results provide information that can be used to assess aquifer conditions below the subareas. Wellfield locations below subareas that have large recharge and long stream lengths may be more favorably situated. Recharge provides for sustained production from the wellfield, and also may reflect the degree to which dissolution has enhanced permeability in the aquifer. Longer stream lengths should correlate to greater aquifer recharge. The results favor the north side of the Little Belt Mountains, except for the eastern tip near to Garneill, which is indicated to be much drier.

Table 2-8: Madison Aquifer Recharge Analysis by Subareas

Subarea	Area (ac)	Precipitation (af/yr)	Recharge Ratio	Recharge (af/yr)	Stream Length (mi)
Little Belts – North	212,092	366,044	25.2%	92,152	74
Little Belts – Garneill	8,004	15,144	25.2%	3,812	6
Little Belts – Southeast	23,322	44,125	25.2%	11,109	26
Big Snowy – Southeast	12,531	23,386	38.2%	8,928	10

For the purpose of assessing legal availability of groundwater, an additional recharge analysis was completed that includes the watershed areas contributing to the Judith Basin (water right permitting is discussed in a later section). This analysis was not completed for the Wheatland Basin (south side of Little Belts and Big Snowy Mtns.) because there are no known diversions for which legal availability must be demonstrated. Figure 2-20 shows the recharge areas that were considered in this analysis.

The results for recharge to the Madison aquifer in Judith Basin are shown in Table 2-9. The largest contribution of recharge is estimated for the Little Belt Mountains. Although precipitation is greater in the Big Snowy Mountains, the smaller area is a limiting factor. The Judith and Moccasin Mountains are both smaller in area and drier than the Little Belt or Big Snowy Mountains, resulting in relatively less recharge. In total, 235,000 acre-feet/year of water is estimated to recharge the Madison aquifer in Judith Basin.

In order to evaluate the uncertainty of the recharge estimates, a Monte Carlo simulation was conducted for the recharge calculations[8]. In completing this uncertainty analysis, area, precipitation and recharge ratio were assumed to follow uniform probability distributions with a coefficient of variation equal to 10%, 25%, and 25%, respectively. Appendix B provides a report with the results of this analysis. Table 2-10 reports the inter-quartile range for the recharge analysis and other statistics. The inter-quartile range may be a good indicator of the possible range in aquifer recharge. In total, this range spans from 211,000 to 279,000 acre-feet/year.

[8]This analysis was completed using the Crystal Ball® software by Decisioneering, Inc.

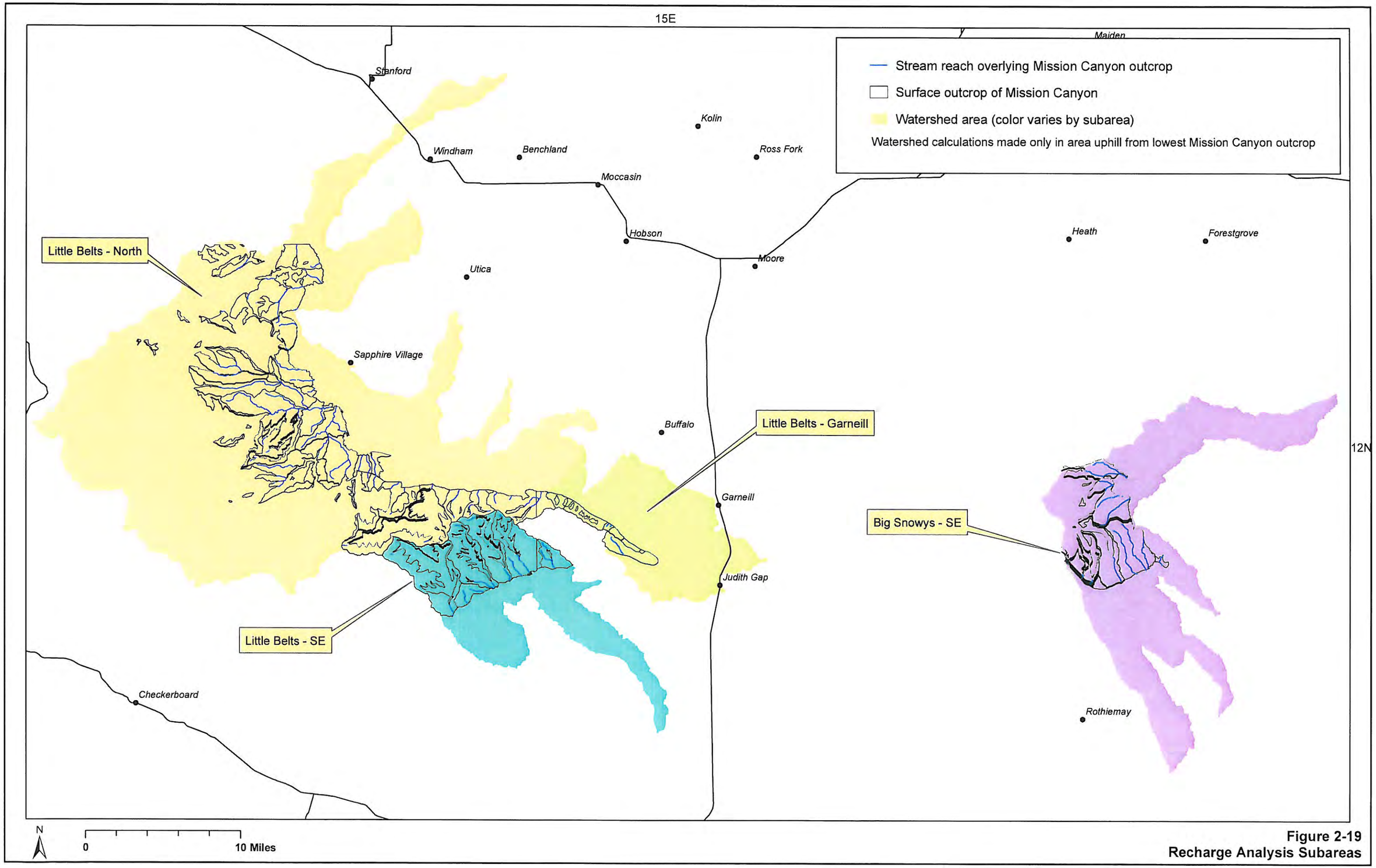


Figure 2-19
Recharge Analysis Subareas

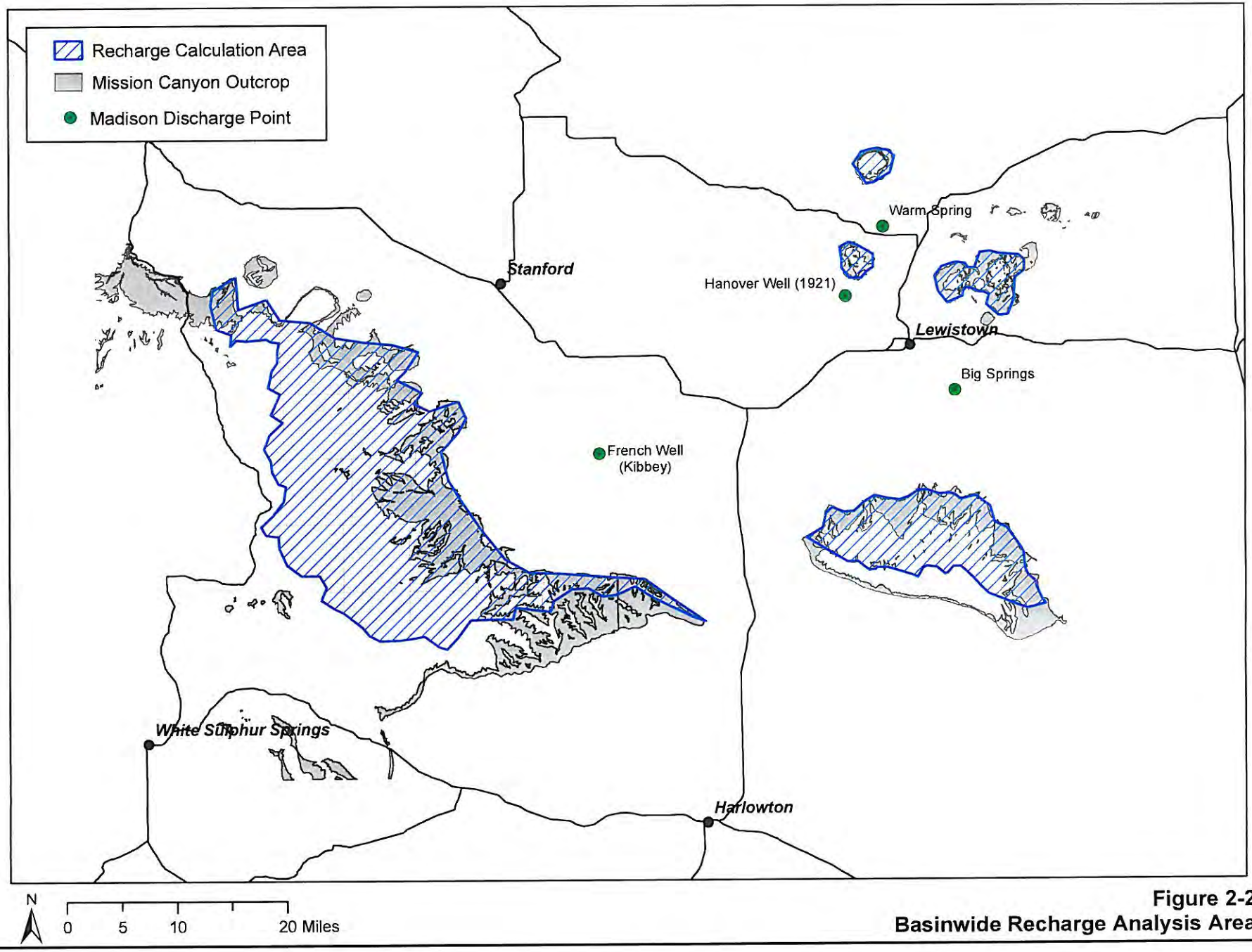


Figure 2-20
Basinwide Recharge Analysis Areas

Table 2-9: Madison Aquifer Recharge Analysis for Judith Basin

Location	Area (ac)	Precipitation (in/yr)	Recharge Ratio	Mean Recharge (af/yr)
Big Snowy Mountains	76,500	33.7	38.0%	81,747
Judith Mtns/Moccasin Mtns.	34,000	17.0	38.2%	18,431
Little Belt Mountains	311,238	20.7	25.2%	135,231
			TOTAL	235,409

Table 2-10: Recharge Uncertainty Analysis

Location	Mean (af/yr)	Standard Deviation (af/yr)	Inter-quartile Range (af/yr)
Big Snowy Mountains	81,747	17,451	68,216 - 93,282
Judith Mtns/Moccasin Mtns.	18,431	3,930	15,592 - 21,169
Little Belt Mountains	135,231	27,737	114,612 - 153,437
Total	235,409	33,254	211,335 - 257,104

2.6 Water Quality

Water quality data for the Madison aquifer in the project area are available from Feltis (1973), the Utica test well (Western Groundwater Services 2006a), and petroleum wells. Water temperature and total dissolved solids data from these sources, where available, are shown on Figure 2-21.

These data indicate a well installed in the Judith Basin area would likely achieve a TDS of about 600 to 700 mg/L. Because most of the area is unsampled, there is risk that poorer water quality could be found when drilling a new site. It is also noteworthy that although the Utica and Montana Power wells exhibit similar TDS levels, the intervening area may be different. It is likely the Montana Power well is intercepting recharge from the Big Snowy Mountains, whereas the Utica well is within groundwater recharged from the Little Belts.

Water temperature in Judith Basin is expected to vary from 50°F to 75°F, with no indication of much higher temperatures, although, as above, the majority of the area is unsampled. The water temperature data favor Judith Basin over Wheatland Basin to the south. Besides the poor aesthetic quality of a hot water, the occurrence of lower temperature groundwater could be a reflection of greater recharge and flow in the aquifer.

At the time of testing, the Utica test well was sampled and analyzed for general and regulated water quality parameters (Western Groundwater Services 2006a). Comments concerning these data, as presented in the testing report, are provided below.

- The water can be used in the state of Montana without treatment. It is fully compliant with applicable maximum contaminant levels (MCLs) for parameters that are regulated in a community public water system.

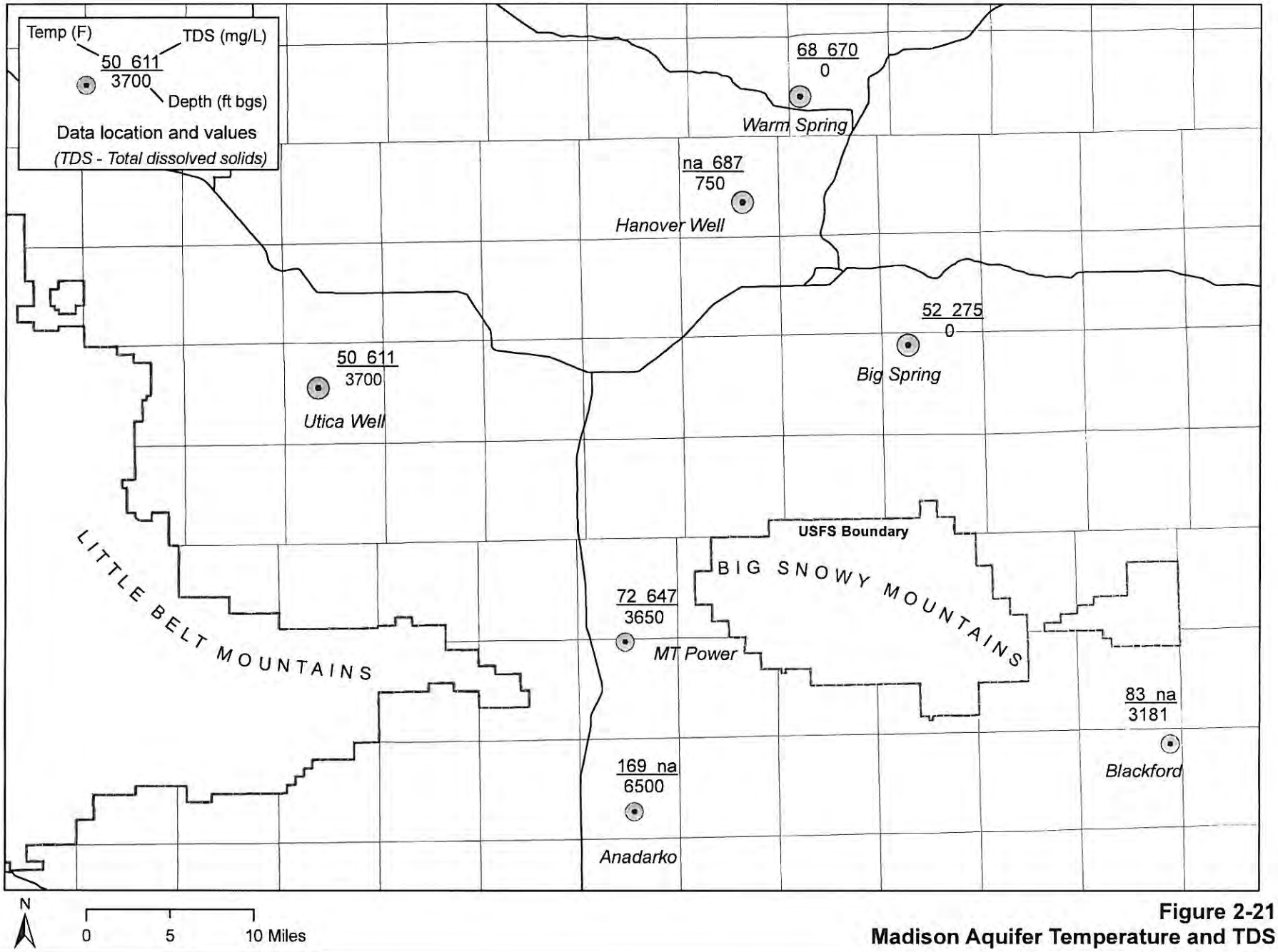


Figure 2-21
Madison Aquifer Temperature and TDS

- The final total dissolved solids concentration of 611 mg/L is moderately high, exceeding the non-enforceable secondary limit of 500 mg/L. It is possible this level will continue to decline when the well is put into service.

- The water is very hard with a reported hardness of 493 mg/L as calcium carbonate. Encrustation in water heaters is likely. Users may desire to install water softeners.
- Although iron and manganese were present in the sample, the levels are below the treatment thresholds. No treatment would be needed for these constituents at the measured concentrations.
- There was no sulfide detected in the water, which also indicates that hydrogen sulfide odor would not be expected. It is noteworthy that hydrogen sulfide odor was present earlier during the pumping phase of the test.
- Radon was measured at 266 pCi/L, which is below the proposed minimum future MCL of 300 pCi/L. Future radon treatment is not expected based on the sample results.
- Flouride was measured at 1.30 mg/L which is acceptable for dental hygiene and is below the MCL of 4.0 mg/L.
- Sulphate occurred at 185 mg/L, below the potential future MCL of 500 mg/L.
- There were no trace metals present in the water, which includes arsenic.
- Organic contaminants were completely non-detectable, except for toluene. It was detected at 0.58 µg/L, whereas the MCL is 1,000 µg/L. It could have occurred in relation to the exhaust from the site generator or from petroliferous formations.

Depending on the drilling location, the aquifer water quality could vary from that observed in the Utica test well. These variations could be favorable or unfavorable for use as drinking water. Part of testing for new wells will include detailed evaluations of water quality.

Chapter 3 Wellfield Alternatives

Wellfield alternatives within the overall project area were selected based on several factors. These included drilling depth, aquifer static head, proximity to infrastructure, and proximity to recharge areas. Wellfield alternatives and reference names are shown on Figure 3-1. Except for Utica, wellfields are named after the road along which they are located. A discussion of each wellfield is provided below. A cost summary is provided in the last subsection.

3.1 Wellfield Requirements and Layout

The Appraisal Report presents an estimate of water demand for the CMRWA water system (Great West Engineering 2007, see also §1). Consistent with this demand estimate, source capacity as derived from wells must achieve 2,770 gpm with the largest well out of service.

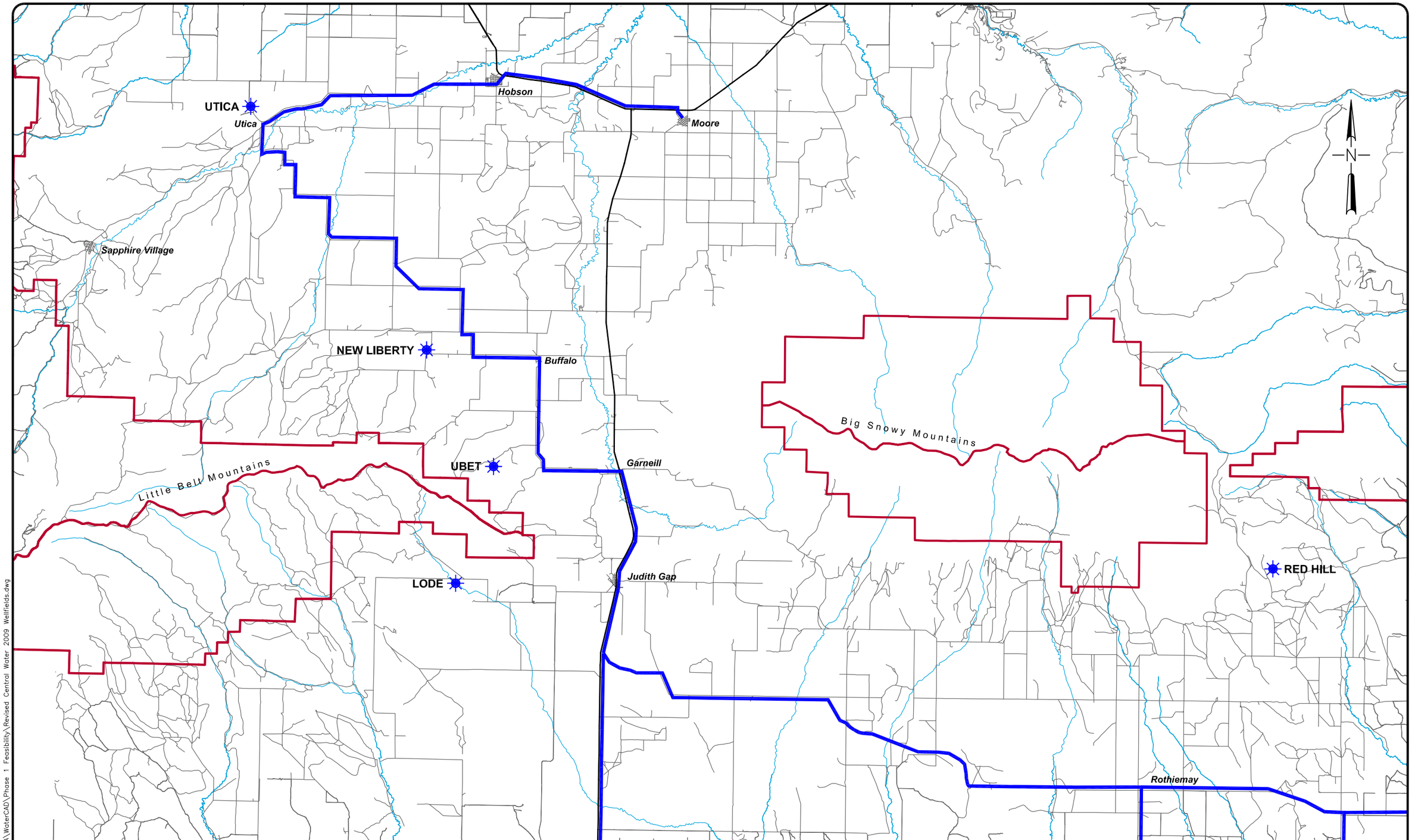
Hydrogeological analysis, also presented in the Appraisal Report, was completed to determine an optimal wellfield layout for the Utica site. As part of this analysis, it was first determined that 800 gpm was the practical maximum yield for a Madison well at Utica. Production of 800 gpm from an individual well was estimated to require 1200 feet of pumping lift and approximately 400 hp. This rate is for planning purposes, as higher or lower yields could be obtained from a new well installation, and actual yield is not known until the well is drilled and tested. Based on an 800 gpm well capacity, at least five wells must be constructed to provide the total source capacity that is required.

Well locations within the Utica site parcel were determined using a simulation-optimization program that minimized capital costs for well installations and pumping lift. Five well sites were identified within the site boundary with offsets of about 1,500 feet (Figure 3-2). The wells were located approximately across the flow direction in the Madison aquifer.

For the wellfield alternatives presented below, it is also assumed that an individual well has a capacity of up to 800 gpm. Five wells are required for each wellfield to meet the demand requirements. The offset distance between wells was set at approximately 2,000 feet, and wells were oriented across the anticipated groundwater flow direction. A slightly larger offset distance was used to provide some conservatism to the analysis.

3.2 Utica Wellfield

The Utica Wellfield is the location of the first test well installed by the CMRWA (Figure 3-2). It is located on a State parcel accessible from county road, and is in proximity to three-phase power, although upgrades would be required.



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Office: 406.652.5000
Fax: 406.248.1363
www.greatwesteng.com

CENTRAL MONTANA REGIONAL WATER AUTHORITY

FIGURE 3-1: WELLFIELD ALTERNATIVES

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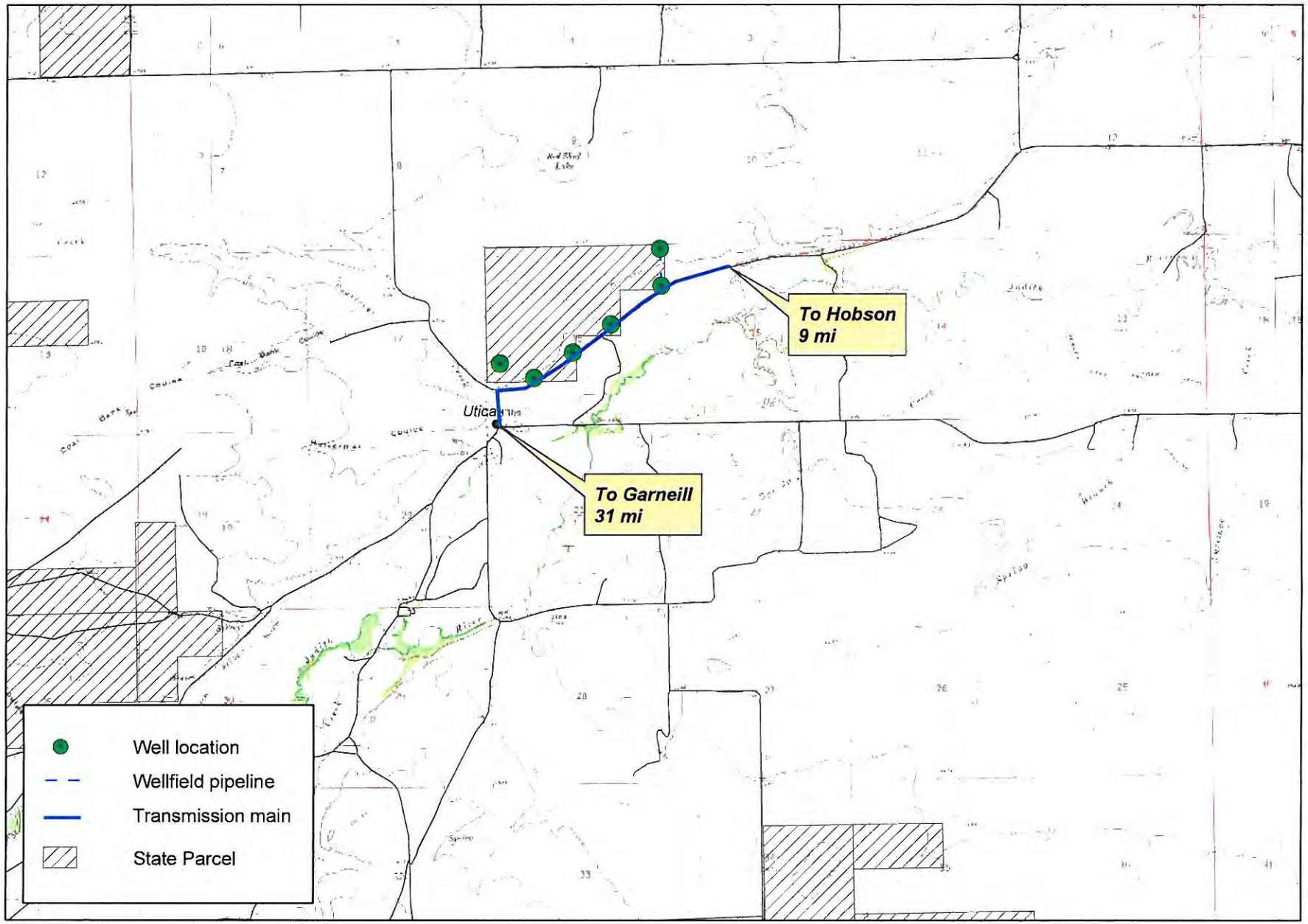
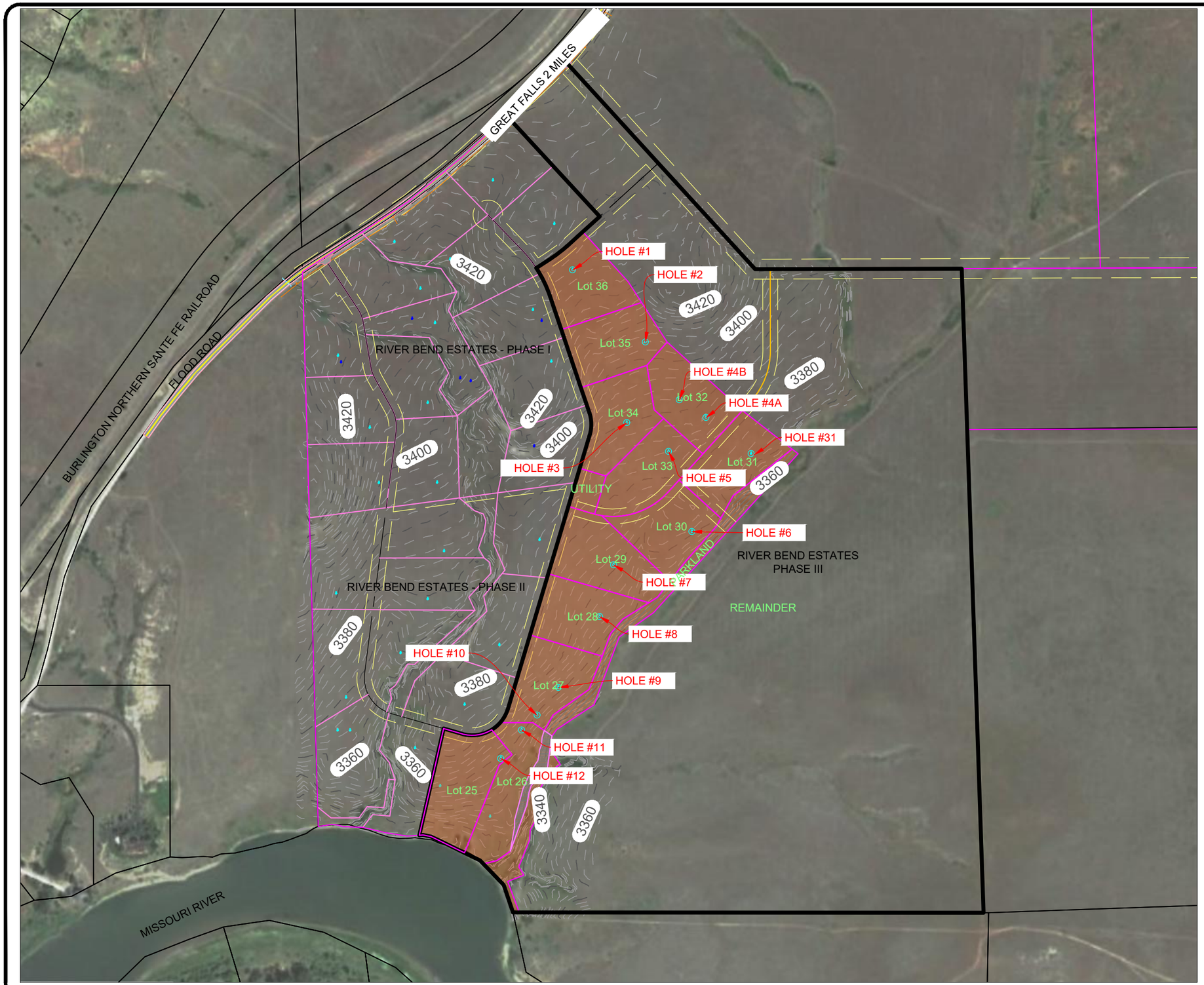


Figure 3-2
Utica Wellfield Alternative

RIVER BEND ESTATES
PHASE III
Test Pit Exhibit



NOTES:
12 TESTS PITS WERE EXCAVATED ON APRIL 16TH, 2020.. STAFF FROM CASCADE COUNTY LOGGED THE TEST PITS. THE TEST PIT LABELS CORRESPOND WITH THE SOIL PROFILE LOGS PREPARED BY THE COUNTY ON APRIL 17TH, 2020 .
1 ADDITION TEST PIT (#31) WAS EXCAVATED BY THE OWNER AND LOGGED BY CASCADE COUNTY ON JULY 8TH, 2020. THE TEST PIT LABEL CORRESPONDS WITH THE SOIL PROFILE LOG.

200 0 200 400
SCALE FEET

PRELIMINARY
NOT FOR
CONSTRUCTION

TRIPLE TREE
ENGINEERING

Jul 29, 2020 - 2:41pm - P:\Great Falls\19-72 River Bend Phase III\Preliminary Plat Application\Exhibits\Phase III Prelim Plat Exhibits.dwg

TP 12	TP 11	TP 10	TP 9	TP 8	TP-7	TP 6	TP 5	TP 4 A	TP 4 B	TP 3	TP 2	TP 1
Lot 25	Lot 26 & 27	Lot 26 & 27	Lot 28	Lot 29	Lot 30	Lot 31	Lot 33	Lot 32	Lot 32	Lot 34	Lot 35	Lot 36
0.5 gpd/sqf	0.5 gpd/sqf	0.5 gpd/sqf	0.5 gpd/sqf	0.5 gpd/sqf	0.5 gpd/sqf	0.5 gpd/sqf	0.4 gpd/sqf	0.4 gpd/sqf	0.4 gpd/sqf	0.5 gpd/sqf	0.5 gpd/sqf	0.4 gpd/sqf
0"-12" silty loam	0"-12" silty loam	0"-18" silty loam	0"-24" silty loam	0"-16" silty loam	0"-16" silty loam	0"-16" silty loam	0"-16" silty loam	0"-24" silty loam	0"-36" sandy clay loam	0"-18" silty loam	0"-24" silty loam	0"-28" silty loam
12" - 144" fine sandy loam	12"-144" fine sandy loam	18"-144" fine sandy loam	24"-156" fine sandy loam	16"-152" fine sandy loam	16"-154" fine sandy loam	16"-144" fine sandy loam	16"- 120" very fine sandy loam	24"-54" channery sandy clay loam	36"-144" channery sandy clay loam	18"-150" fine sandy loam	24"-144" fine sandy loam	16"-55" gravelly silty loam
							120" - 122" channery very fine sandy loam	54"-98" channery sandy clay loam				

Site Evaluation - SOIL PROFILE

DATE 7-8-2020

Property Owner Rick Higgins Septic (N/R) _____ Subdivision_____ # of Lots____

Property Address_____ Proposed Subdivision Name_____

Contractor Triple Tree Legal: T_____ R_____ Sec_____ 1/4_____1/4_____

Soil Evaluator Bruce Treis Round trip mileage @ $1.00/mile. # RT miles____Amount due_____

Include in the diagram all that apply.

- ☐ Wells
- ☐ Cisterns
- ☐ Existing Buildings
- ☐ Ground Water Sources (springs etc)
- ☐ Flood Plain
- ☐ Replacement Area,
- ☐ Slope (direction & percent)
- ☐ Water sources on adjacent property

N

River Bend Estates Phase 3

Soil profile 1 Lot # 31 Soil profile 2 Lot#_____

Latitude: 47° 26' 27" Latitude:_____

Longitude: 111° 20' 29" Longitude:_____

Identify: soil types and thickness; depth to bed rock, seasonally high ground water, ground water, bottom of hole.

Application Rate: 0.41 Application Rate:_____

Depth in Inches: Soil Type: Depth in Inches: Soil Type:

0-9" fine sandy loam

9"-154" very fine sandy loam

Revised 2019

SOIL PROFILE

DATE 1-10-19

Property Owner Rick Higgins

Septic (N/R) _____ **Subdivision** _____ **# of Lots** ____

Property Address _____

Proposed Subdivision Name River Bend Estates

Contractor Triple T Eng

Legal: T _____ **R** _____ **Sec** _____ **1/4** _____ **1/4** _____

Soil Evaluator Bruce Tree

FEES PAID: _____

AREA MAP

N

Soil Analysis

Hole # 2	Hole # 8	Hole # 7 opt 1	Hole # 7 opt 2
0-8" Sandy Clay	0-6" Sandy Clay	0-6" Sandy Loam	0-14" Sandy Clay
Loam with organics	Loam with organics	with organics	Loam with organics
8"-43" Silty Loam	6"-47" Sandy Clay	6"-98" Fine Sandy	14"-108" Silty Loam
43"-74" Silty Loam	Loam	Loam	
with Channers	47"-75" Silty Loam	98"-146" Fine Sandy	
74"-114" Silty Loam	75"-90" Channery	Loam	
	Clay Loam		
Application Rate			
0.41 gpd/ft²	0.3 gpd/ft²	0.5 gpd/ft²	0.41 gpd/ft²

SOIL PROFILE

DATE 1-10-19

Property Owner Rick Higgins

Septic (N/R) _____ Subdivision _____ # of Lots ____

Property Address _____

Proposed Subdivision Name River Bend Estates

Contractor Triple T Eng

Legal: T_____ R_____ Sec_____ 1/4_____ 1/4_____

Soil Evaluator Bruce Treis

FEES PAID: _____

AREA MAP

N

Soil Analysis

Hole # 7 opt 3	Hole # 10	Hole # 17 opt 1	Hole # 19 opt 1
0-14" Sandy Clay	0-16" Silty Loam	0-12" Sandy Clay	0-8" Sandy Clay
Loam with Organics	with Organics	Loam with Organics	Loam with organic
14"-126" Silty Loam	16"-44" Silty Loam	12"-124" Silty Loam	8"-114" Silty Loam
	44"-108" Chennery		
	Sandy Clay Loam		
Application Rate			
0.4 gpd/ft²	0.4 gpd/ft²	0.4 gpd/ft²	0.4 gpd/ft²

SOIL PROFILE

DATE 1-10-19

Property Owner Rick Higgins

Septic (N/R) _____ Subdivision _____ # of Lots ____

Property Address _____

Proposed Subdivision Name River Bend Estates

Contractor Triple T Eng

Legal: T_____ R_____ Sec_____ 1/4_____ 1/4_____

Soil Evaluator Bruce Treis

FEES PAID: _____

AREA MAP

N

Soil Analysis

Hole # 23 opt 2	Hole # 25	Hole #	Hole #
0-8" sandy clay	0-4" silty loam		
loam with organics	with organics		
8"-116" silty loam	4"-116" Very		
	fine sand		
Application Rate			
0.4 gpd/ft²	0.4 gpd/ft²		

SOIL PROFILE

DATE 7-31-18

Property Owner Higgins Enterprises

Septic (N/R) _____ Subdivision _____ # of Lots 12

Property Address _____

Proposed Subdivision Name River Bend Estates

Contractor Triple T Engineering

Legal: T_____ R_____ Sec_____ 1/4_____ 1/4_____

Soil Evaluator Bruce Treis

FEES PAID: _____

AREA MAP

Bare Property

N

Soil Analysis

	Hole # 1	Hole # 2	Hole # 3	Hole # 4
lat.	47.44284	47.44207	47.44133	47.44878
long.	-111.34687	-111.34809	-111.34759	-111.34737
	0-8" Sandy Clay Loam with organics	0-8" Sandy Clay Loam with organics	0-6" Silty Loam with organics	0-6" Silty Loam with organics
	8"-96" Sandy Clay Loam	8"-43" Silty Loam	6"-96" Silty Loam	6"-96" Silty Loam
		43"-74" Silty Loam with Channers		
		- Bedrock		
application rate	0.4 gpd/ft²	0.4 gpd/ft²	0.4 gpd/ft²	0.4 gpd/ft²

SOIL PROFILE

DATE 7-31-18

Property Owner Higgins Enterprises

Septic (N/R) _____ Subdivision _____ # of Lots 12

Property Address _____

Proposed Subdivision Name River Bend Estates

Contractor Triple T Engineering

Legal: T_____ R_____ Sec_____ 1/4_____ 1/4_____

Soil Evaluator Bruce Treis

FEES PAID: _____

AREA MAP

Bare Property

N

Soil Analysis

	Hole # 5	Hole # 6	Hole # 7	Hole # 8
Lat	47.4407	47.44155	47.44184	47.44412
Long	-111.34653	-111.34673	-111.34602	-111.34477
	0-8" Silty Loam with organics	0-6" Silty Loam with Organics	0-6" Sandy Loam with organics	0-6" Sandy Clay Loam with Organics
	8"-96" Silty Loam	6"-96" Silty Loam	6"-98" Sandy Loam	6"-34" Sandy Clay Loam
				34"-84" Clay Loam
Application Rate	0.4 gpd/ft²	0.4 gpd/ft²	0.5 gpd/ft²	0.3 gpd/ft²

SOIL PROFILE

DATE 7-31-18

Property Owner Higgins Enterprises

Septic (N/R) _____ Subdivision _____ # of Lots 12

Property Address _____

Proposed Subdivision Name River Bend Estates

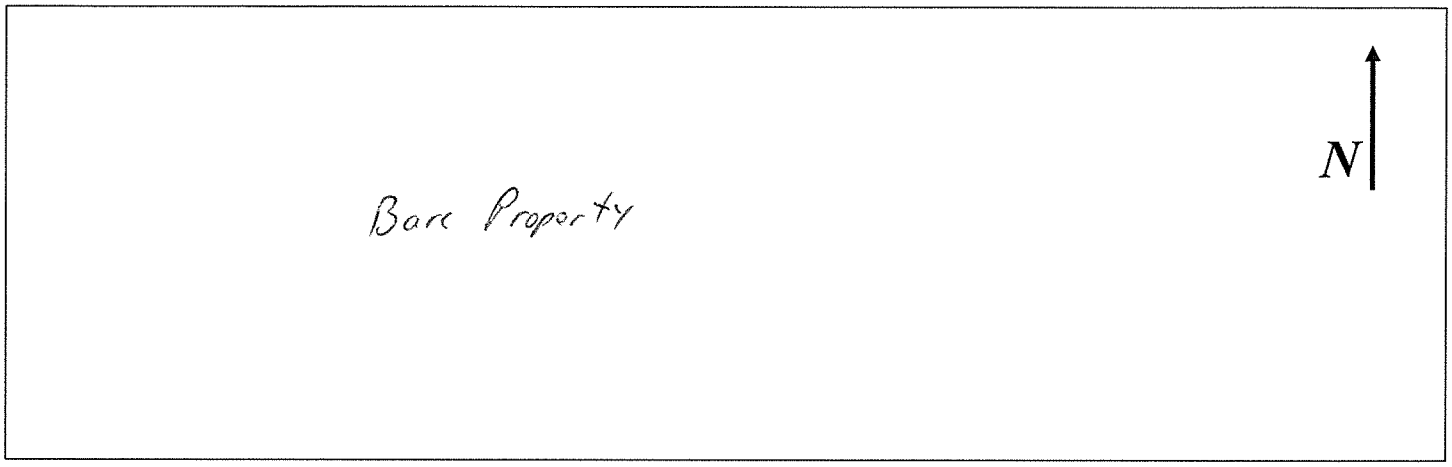
Contractor Triple T Engineering

Legal: T_____ R_____ Sec_____ 1/4_____ 1/4_____

Soil Evaluator Bruce Treis

FEES PAID: _____

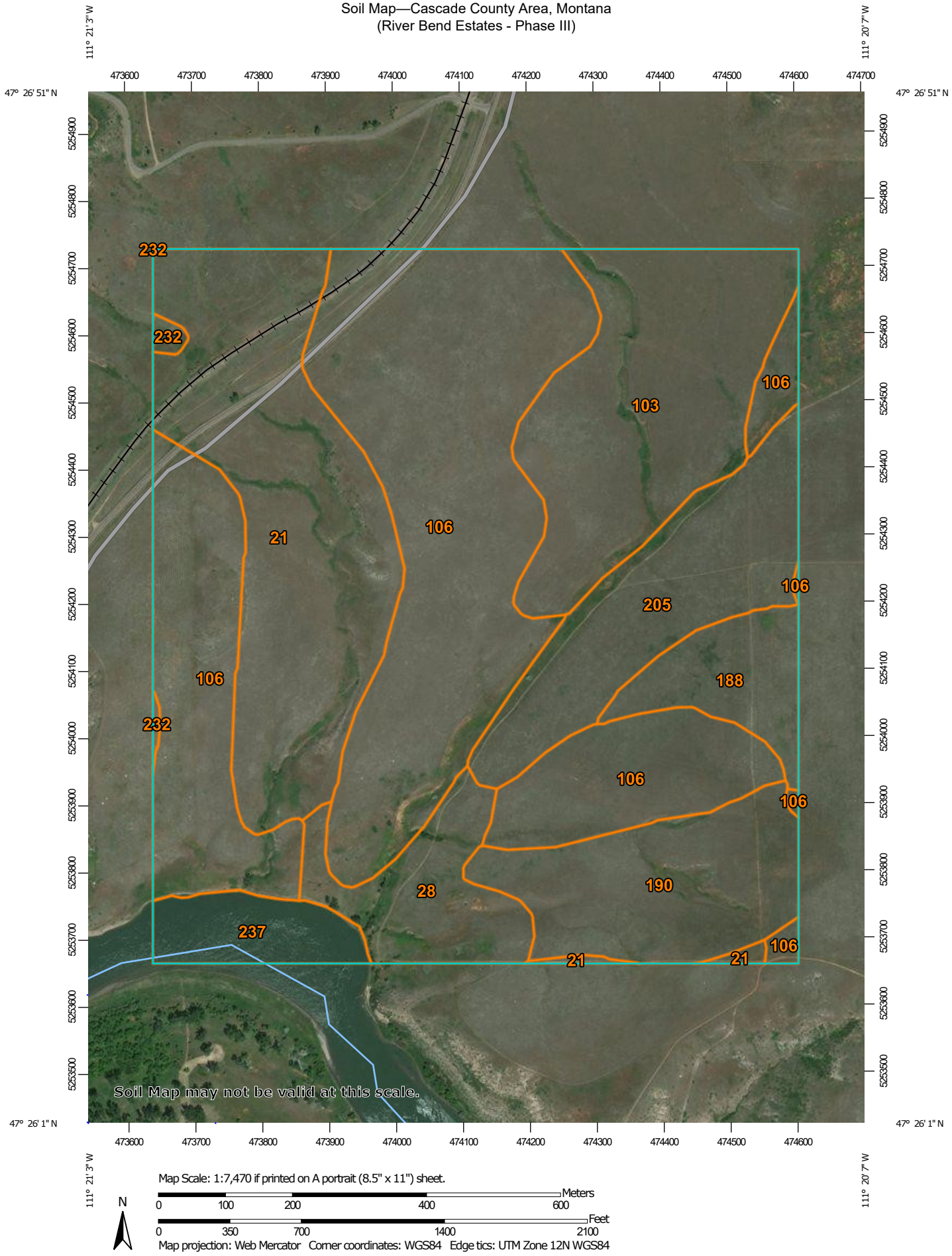
AREA MAP



Soil Analysis

	Hole # 9	Hole # 10	Hole # 11	Hole # 12
at	47.44207	47.44255	47.44315	47.44323
ng	-111.34483	-111.34492	-111.34634	-111.34685
	0-5" Clay Loam	0-4" Silty Loam	0-8" Silty Loam	0-6" Silty Loam
	with Organics	with Organics	with Organics	with Organics
	5"-28" Clay Loam	4"-28" Silty Loam	8"-96" Silty Loam	6"-96" Silty Loam
	28"-96" Gravelly	28"-74" Gravelly		
	Sandy Clay Loam	Sandy Clay Loam		
		- Bed Rock -		
Application				
Rate	0.3 gpd/ft²	0.4 gpd/ft²	0.4 gpd/ft²	0.4 gpd/ft²

Soil Map—Cascade County Area, Montana
(River Bend Estates - Phase III)



Map Scale: 1:7,470 if printed on A portrait (8.5" x 11") sheet.

N

Meters: 0 100 200 400 600

Feet: 0 350 700 1400 2100

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 12N WGS84

MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Map Unit Polygons

Soil Map Unit Lines

Soil Map Unit Points

Special Point Features

Blowout

Borrow Pit

Clay Spot

Closed Depression

Gravel Pit

Gravelly Spot

Landfill

Lava Flow

Marsh or swamp

Mine or Quarry

Miscellaneous Water

Perennial Water

Rock Outcrop

Saline Spot

Sandy Spot

Severely Eroded Spot

Sinkhole

Slide or Slip

Sodic Spot

Spoil Area

Stony Spot

Very Stony Spot

Wet Spot

Other

Special Line Features

Water Features

Streams and Canals

Transportation

Rails

Interstate Highways

US Routes

Major Roads

Local Roads

Background

Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Cascade County Area, Montana
Survey Area Data: Version 15, Sep 16, 2019

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

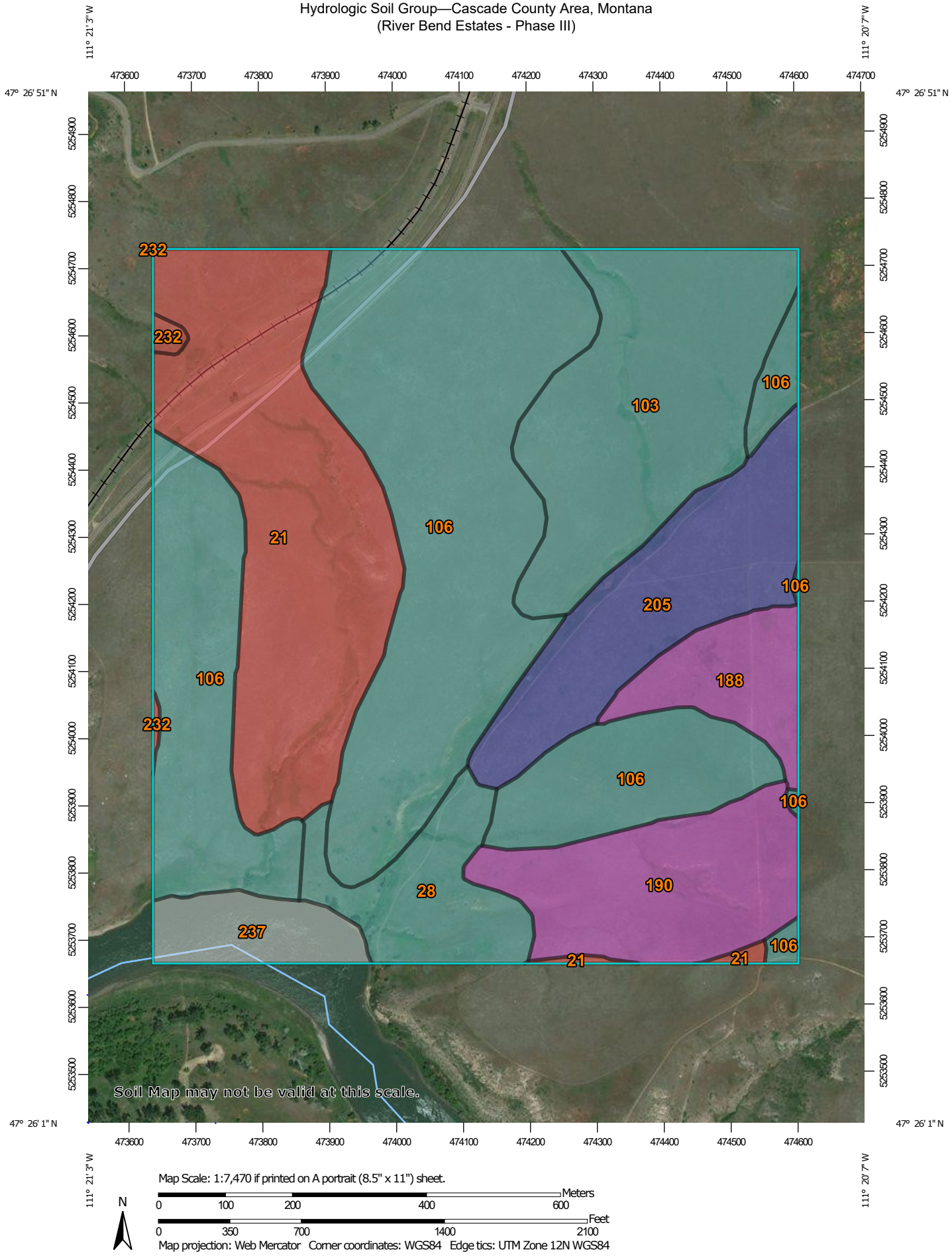
Date(s) aerial images were photographed: Sep 10, 2012—Feb 15, 2017

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
21	Big Timber-Castner complex, 8 to 30 percent slopes	46.9	18.4%
28	Bitton and Roy soils, 10 to 65 percent slopes	12.9	5.1%
103	Ipano loam, 0 to 4 percent slopes	34.7	13.6%
106	Ipano-Hillon complex, 4 to 10 percent slopes	98.3	38.6%
188	Tally fine sandy loam, 8 to 15 percent slopes	9.5	3.7%
190	Tally-Castner complex, 15 to 35 percent slopes	21.4	8.4%
205	Torex loamy sand, 0 to 6 percent slopes	22.9	9.0%
232	Yawdim-Rock outcrop complex, 25 to 70 percent slopes	0.8	0.3%
237	Water	7.4	2.9%
Totals for Area of Interest		**254.7**	**100.0%**

Hydrologic Soil Group—Cascade County Area, Montana
(River Bend Estates - Phase III)



Map Scale: 1:7,470 if printed on A portrait (8.5" x 11") sheet.

N

Meters: 0 100 200 400 600

Feet: 0 350 700 1400 2100

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 12N WGS84

MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Rating Polygons

- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Soil Rating Lines

- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Soil Rating Points

- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Water Features

Streams and Canals

Transportation

- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background

Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

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Source of Map: Natural Resources Conservation Service
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Coordinate System: Web Mercator (EPSG:3857)

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Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
21	Big Timber-Castner complex, 8 to 30 percent slopes	D	46.9	18.4%
28	Bitton and Roy soils, 10 to 65 percent slopes	C	12.9	5.1%
103	Ipano loam, 0 to 4 percent slopes	C	34.7	13.6%
106	Ipano-Hillon complex, 4 to 10 percent slopes	C	98.3	38.6%
188	Tally fine sandy loam, 8 to 15 percent slopes	A	9.5	3.7%
190	Tally-Castner complex, 15 to 35 percent slopes	A	21.4	8.4%
205	Torex loamy sand, 0 to 6 percent slopes	B	22.9	9.0%
232	Yawdim-Rock outcrop complex, 25 to 70 percent slopes	D	0.8	0.3%
237	Water		7.4	2.9%
Totals for Area of Interest			**254.7**	**100.0%**

Description

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

Rating Options

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

PROPOSED NOXIOUS WEED MANAGEMENT PLAN

In accordance with 7-22-2123 (4) MCA. A person is considered in compliance if he submits and the Board accepts a proposal to undertake specified control measures, and is in compliance for so long as he performs according to the terms of the proposal.

1. Noxious weeds requiring management with approximate size of infestations: Primarily leafy spurge and canada thistle, Some toadflax and Knapweed. Aprox. 20 acres scattered

2. Location: Township 20N Range 3E Section 34 GEO Code 02-3015-34-1-01-01-0000

   Sub-division _____ Block _____ Lot _____

   Attach map of plat, or sketch of the property with weed infestations shown

3. Number of years to implement management plan: ____1 year ✓ 3 years ____5 years

4. Specified control measures: Continue spraying weeds present; control any new infestations that occur due to ground disturbance

✓ **Chemical:** Mark which chemical(s) will be used, or write chemical(s) here: current mixture owner has used

E = excellent G = good F = fair - = not tested / not recommended **Results may be variable**	**2,4-D**	**Escort** *(metsulfuron methyl)*	**Tordon** *(picloram)* RESTRICTED USE PESTICIDE	**Perspective** *(aminocyclopyrachlor)*	**Milestone** *(aminopyralid)*	**Plateau** *(imazapic)*	**Telar** *(chlorsulfuron)*	**SpeedZone or E2** *(2,4-D + dicamba)*	**Roundup** *(glyphosate)*
X Spotted Knapweed	G	-	E	G	E	-	-	G	F
Diffuse Knapweed	F	-	E	G	E	-	-	F	F
Russian Knapweed	-	F	E	G	E	G	F	F	-
X Leafy Spurge	F	-	G	G	-	G	-	F	G
X Dalmation Toadflax*	-	F	G	G	-	G	G	-	-
X Canada Thistle	F	F	E	E	E	-	G	F	G
Field Bindweed	F	F	G	G	-	G	-	F	F
Whitetop	F	E	-	G	-	G	E	F	F
Houndstongue	F	E	G	G	-	G	G	G	F
Hoary Alyssum	F	E	-	-	-	-	-	F	F
Oxeye Daisy	F	E	G	-	E	-	-	F	F

✓ **Cultural/Physical:** Explain. Some mowing ok

____ **Biological:** As an integrated component of overall management. Explain. _____

5. Who will be doing the control work? Self ✓ Commercial contractor_____

6. Dates control measures will be carried out each year: Before weeds go to seed, fall also if needed

7. Are there any environmentally sensitive areas? yes If so describe: river, some shrubs along dry drainages

If weeds are not managed as above, this further authorizes Cascade County Weed and Mosquito Management District to implement this plan.

Dated this 18th day of July 2018.

Weed District Accept: (yes) (no)

Weed District Signature: [signature]

I acknowledge and agree to the foregoing provisions:

X Signature [signature]

Name Rick Higgins

Mailing Address PO Box 322, Ulm

City Ulm State MT Zip 59485

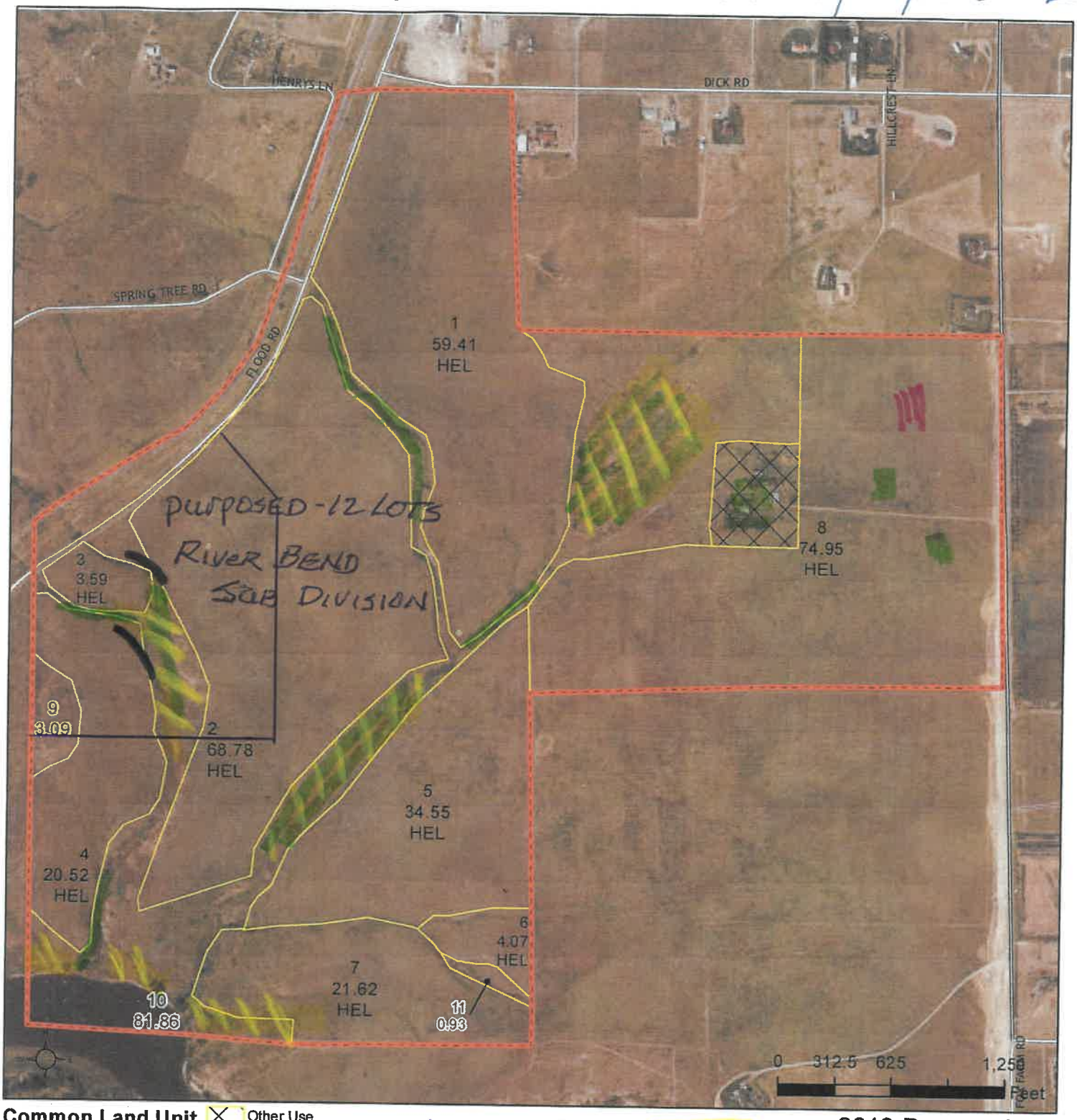
North

NOXIOUS WEED LOCATION & IDENTICATION

N. RICHARD HIGGINS
~~Flood properties~~ LLC

USDA United States Department of Agriculture

Cascade County, Montana



Common Land Unit
- Cropland
- Rangeland
- Other Use
- Tract Boundary

Wetland Determination Identifiers
- Restricted Use
- Limited Restrictions
- Exempt from Conservation Compliance Provisions

LEAFY SPURGE
CANDIAN THISLE
TOAD FLAX
SPOTTED KNAPWEED

Tract Cropland Total: 287.49 acres

2019 Program Year
Map Created March 19, 2018

Farm **5204**
Tract **9392**
34-20N-3E

United States Department of Agriculture (USDA) Farm Service Agency (FSA) maps are for FSA Program administration only. This map does not represent a legal survey or reflect actual ownership; rather it depicts the information provided directly from the producer and/or National Agricultural Imagery Program (NAIP) imagery. The producer accepts the data 'as is' and assumes all risks associated with its use. USDA-FSA assumes no responsibility for actual or consequential damage incurred as a result of any user's reliance on this data outside FSA Programs. Wetland identifiers do not represent the size, shape, or specific determination of the area. Refer to your original determination (CPA-026 and attached maps) for exact boundaries and determinations or contact USDA Natural Resources Conservation Service (NRCS).

GrazonNext® HL

SPECIALTY HERBICIDE

For control of broadleaf weeds and certain woody plants on rangeland, permanent grass pastures (including grasses grown for hay*), Conservation Reserve Program (CRP) acres and wildlife management areas in these sites.

***Hay from grass treated with GrazonNext HL within the preceding 18-months can only be used on the farm or ranch where the product is applied unless allowed by supplemental labeling**

Not For Sale, Distribution, or Use in New York State.

Group	4	HERBICIDE

Active Ingredient:
Triisopropanolammonium salt of 2-pyridine carboxylic acid, 4-amino-3,6-dichloro-.....8.24%
Dimethyl amine salt of (2,4-dichlorophenoxy) acetic acid.....41.26%
Other Ingredients 50.50%
Total.....100.00%

Acid Equivalents:
aminopyralid (2-pyridine carboxylic acid, 4-amino-3,6-dichloro-) – 4.28% - 0.41 lb/gal (50 g/L)
2,4-D [(2,4-dichlorophenoxy) acetic acid] – 34.25% - 3.33 lb/gal (400 g/L)

Keep Out of Reach of Children

DANGER PELIGRO

Si usted no entiende la etiqueta, busque a alguien para que se la explique a usted en detalle. (If you do not understand the label, find someone to explain it to you in detail.)

Agricultural Use Requirements

Use this product only in accordance with its labeling and with the Worker Protection Standard, 40 CFR part 170. Refer to label booklet under "Agricultural Use Requirements" in the "Directions for Use" section for information about this standard.

For additional Precautionary Statements, First Aid, Storage and Disposal and other use information see inside this label.

Notice: Read the entire label. Use only according to label directions. **Before using this product, read Warranty Disclaimer, Inherent Risks of Use, and Limitation of Remedies at end of label booklet. If terms are unacceptable, return at once unopened.**

In case of emergency endangering health or the environment involving this product, call 1-800-992-5994.

Agricultural Chemical: Do not ship or store with food, feeds, drugs or clothing.

EPA Reg. No. 62719-628
EPA Est. 464-MI-1
99021197

®Trademark of The Dow Chemical Company ("Dow") or an affiliated company of Dow

Produced for
Dow AgroSciences LLC
9330 Zionsville Road
Indianapolis, IN 46268

NET CONTENTS 2 GAL

Dow AgroSciences™

Curtail*

Herbicide

For selective control of broadleaf weeds in wheat and barley not underseeded with a legume, fallow cropland, grasses grown for seed, rangeland and permanent grass pastures, conservation reserve program (CRP) acres and non-cropland

Active Ingredients:
clopyralid MEA salt: 3,6-dichloro-2-pyridinecarboxylic acid, monoethanolamine salt..... 5.1%
2,4-dichlorophenoxyacetic acid, triisopropanolamine salt†..... 39.0%
Inert Ingredients..... 55.9%
Total 100.0%

Acid Equivalents:
clopyralid: 3,6-dichloro-2-pyridinecarboxylic acid - 3.9% - 0.38 lb/gal
2,4-dichlorophenoxyacetic acid - 20.9% - 2.0 lb/gal
†Isomer Specific by AOAC Method No. 978.05 (15th Ed.)

Keep Out of Reach of Children

DANGER PELIGRO

Si usted no entiende la etiqueta, busque a alguien para que se la explique a usted en detalle. (If you do not understand the label, find someone to explain it to you in detail.)

Agricultural Use Requirements

Use this product only in accordance with its labeling and with the Worker Protection Standard, 40 CFR part 170. Refer to the label booklet under "Agricultural Use Requirements" in the Directions for Use section for information about this standard.

Refer to inside of label booklet for Directions for Use including Storage and Disposal.

Notice: Read the entire label. Use only according to label directions. **Before using this product, read Warranty Disclaimer, Inherent Risks of Use, and Limitation of Remedies at end of label booklet. If terms are unacceptable, return at once unopened.**

In case of emergency endangering health or the environment involving this product, call 1-800-992-5994. If you wish to obtain additional product information, visit our web site at www.dowagro.com.

Agricultural Chemical: Do not ship or store with food, feeds, drugs or clothing.

EPA Reg. No. 62719-48
EPA Est. 464-MI-1
900-010825 / 00013916

*Trademark of Dow AgroSciences LLC

Dow AgroSciences LLC • Indianapolis, IN 46268 U.S.A.

TE AND TIMI

Per Acre (as

GROUP 4 HERBICIDE

WeedMaster®

Herbicide

FOR USE ON CONSERVATION RESERVE PROGRAM LAND, FALLOW SYSTEMS (BETWEEN CROP APPLICATIONS), GENERAL FARMSTEAD, SORGHUM, GRASS (HAY OR SILAGE), PASTURES, RANGELAND, SUGARCANE, WHEAT, CORN (PREPLANT AND PREEMERGENCE), SOYBEANS (PREPLANT) AND COTTON (PREPLANT). ALSO FOR CONTROL OF BRUSH AND BROADLEAF WEEDS ON RIGHTS-OF-WAY, FOREST BRUSH, INDUSTRIAL SITES, NON-IRRIGATION DITCHBANKS, FENCE ROWS, AND OTHER NON-CROP AREAS.

ACTIVE INGREDIENTS:

Dimethylamine salt of dicamba (3,6-dichloro-o-anisic acid)* 12.4%

Dimethylamine salt of 2,4-dichlorophenoxyacetic acid** 35.7%

OTHER INGREDIENTS: 51.9%

TOTAL: 100.0%

* This product contains 10.3% dicamba or 1 pound per gallon (120 grams per liter) and 29.6% 2,4-D or 2.87 pounds per gallon (344 grams per liter).

**Isomer specific by AOAC method 978.05, 15th Edition

SHAKE WELL BEFORE USING

KEEP OUT OF REACH OF CHILDREN

DANGER/PELIGRO

Si usted no entiende la etiqueta, busque a alguien para que se la explique a usted en detalle.
(If you do not understand the label, find someone to explain it to you in detail.)

SEE INSIDE BOOKLET FOR ADDITIONAL PRECAUTIONARY STATEMENTS

For Chemical Spill, Leak, Fire, or Exposure, Call CHEMTREC (800) 424-9300.
For Medical Emergencies Only, Call (877) 325-1840.

	FIRST AID
IF IN EYES	• Hold eye open and rinse slowly and gently with water for 15 to 20 minutes. • Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye. • Call a poison control center or doctor for treatment advice.
IF SWALLOWED	• Call a poison control center or doctor immediately for treatment advice. • Have person sip a glass of water if able to swallow. • Do not induce vomiting unless told to do so by a poison control center or doctor. • Do not give anything by mouth to an unconscious person.
IF ON SKIN OR CLOTHING	• Take off contaminated clothing. • Rinse skin immediately with plenty of water for 15 to 20 minutes. • Call a poison control center or doctor for treatment advice.
IF INHALED	• Move person to fresh air. • If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably mouth-to-mouth, if possible. • Call a poison control center or doctor for further treatment advice.

HOT LINE NUMBER
Have the product container or label with you when calling a poison control center or doctor, or going for treatment. You may also contact 1-877-325-1840 for emergency medical treatment information.

NOTE TO PHYSICIAN
Probable mucosal damage may contraindicate the use of gastric lavage.

EPA REG. NO. 71368-34
EPA EST. NO. indicated by the first two letters of the batch number on this package
(CH) 228-IL-001, (VA) 70815-GA-002

Net Contents
2.5 Gal. (9.46 L)

Manufactured for
Nufarm Inc.
11901 S. Austin Avenue
Alsip, IL 60803

1 91662 01224 8

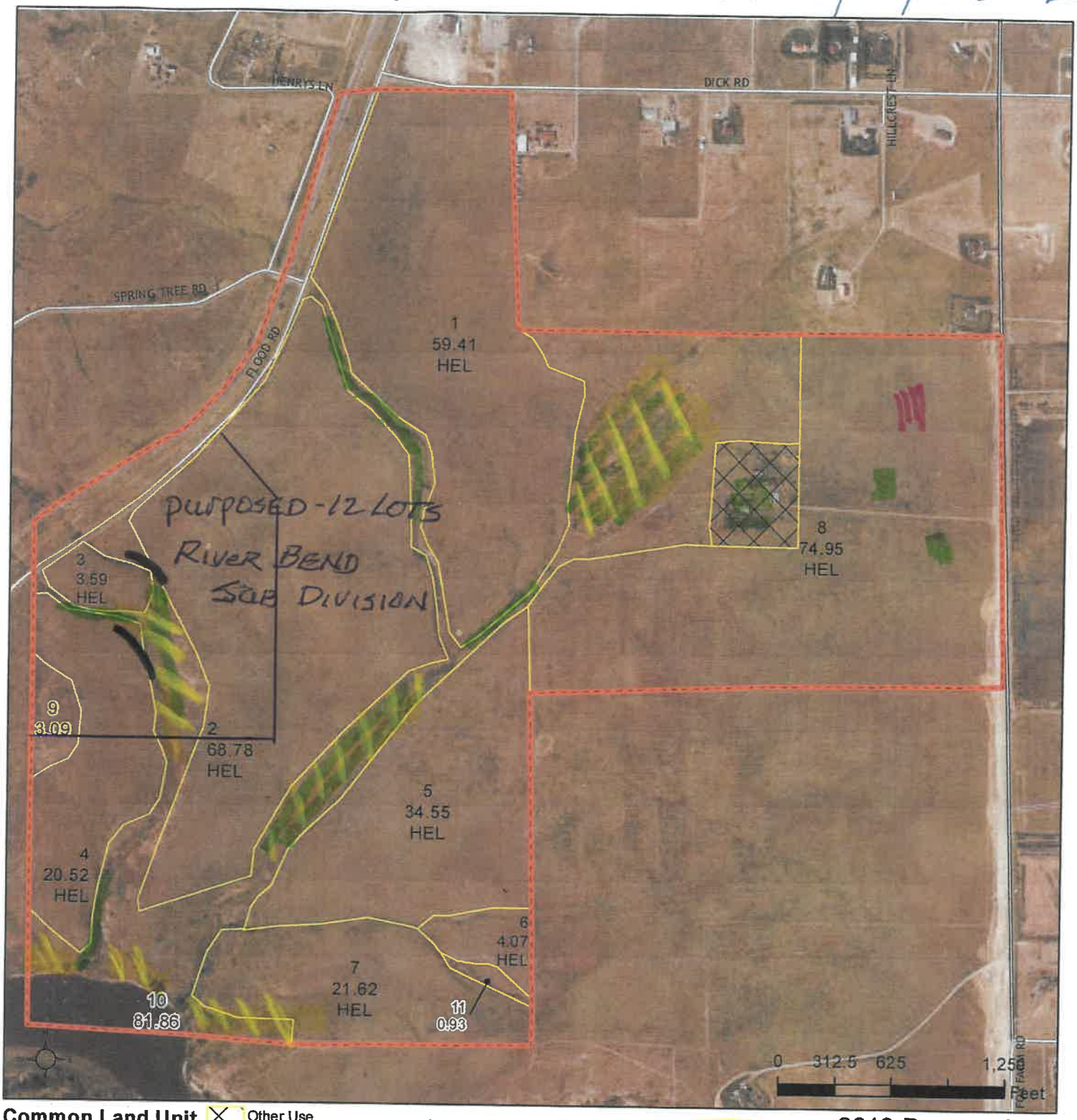
Nufarm Grow a better to

NOXIOUS WEED LOCATION & IDENTICATION

N. RICHARD HIGGINS
~~Flood properties~~ LLC

USDA United States Department of Agriculture

Cascade County, Montana



Common Land Unit
- Cropland
- Rangeland
- Other Use
- Tract Boundary

Wetland Determination Identifiers
- Restricted Use
- Limited Restrictions
- Exempt from Conservation Compliance Provisions

LEAFY SPURGE
CANDIAN THISLE
TOAD FLAX
SPOTTED KNAPWEED

Tract Cropland Total: 287.49 acres

2019 Program Year
Map Created March 19, 2018

Farm **5204**
Tract **9392**
34-20N-3E

United States Department of Agriculture (USDA) Farm Service Agency (FSA) maps are for FSA Program administration only. This map does not represent a legal survey or reflect actual ownership; rather it depicts the information provided directly from the producer and/or National Agricultural Imagery Program (NAIP) imagery. The producer accepts the data 'as is' and assumes all risks associated with its use. USDA-FSA assumes no responsibility for actual or consequential damage incurred as a result of any user's reliance on this data outside FSA Programs. Wetland identifiers do not represent the size, shape, or specific determination of the area. Refer to your original determination (CPA-026 and attached maps) for exact boundaries and determinations or contact USDA Natural Resources Conservation Service (NRCS).

Cascade, Montana

FSA - 578 (09-13-16)

Farm Number: 5204

REPORT OF COMMODITIES
FARM SUMMARY

PROGRAM YEAR: 2018

DATE: 7-6-2018
PAGE: 2

Final

Original: ~~X~~
Revision: _____
Cropland: 287.49
Farmland: 379.66

Operator Name and Address

N RICHARD HIGGINS
PO BOX 322
ULM, MT 59485-0322

NOTE: The following statement is made in accordance with the Privacy Act of 1974 (5 USC 552a as amended). The authority for requesting the information identified on this form is 7 CFR Part 718, the Farm Security and Rural Investment Act of 2002 (Pub L. 107-171), and the Agricultural Act of 2014 (Pub. L. 113-79). The information will be used to collect producer certification of the report of acreage of crops/commodities and land use data which is needed in order to determine producer eligibility to participate in and receive benefits under FSA programs. The information collected on the form may be disclosed to other Federal, State, Local government agencies, Tribal agencies, and nongovernmental entities that have been authorized access to the information by statute or regulation and/or as described in applicable Routine Uses identified in the System of Records Notice for USDA/FSA-2, Farm Records File (Automated) and USDA/FSA-14, Applicant/Borrower. Providing the requested information is voluntary. However, failure to furnish the requested information may result in a denial of the producers request to participate in and receive benefits under FSA programs. According to the Paperwork Reduction Act of 1995, an agency may not conduct or sponsor, and a person is not required to respond to, a collection of information unless it displays a valid OMB control number. The valid OMB control number for this information collection is 0560-0175. The time required to complete this information collection is estimated to average 30 minutes per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. The provisions of criminal and civil fraud, privacy, and other statutes may be applicable to the information provided. RETURN THIS COMPLETED FORM TO YOUR COUNTY FSA OFFICE.

Producer Name	Crop/ Commodity	Variety/ Type	Share	Crop/ Commodity	Variety/ Type	Share	Crop/ Commodity	Variety/ Type	Share	Crop/ Commodity	Variety/ Type	Share
N RICHARD HIGGINS	GRASS	NAG	100.00	MIXFG	IGS	100.00						

Planting Period	Crop/ Commodity	Variety/ Type	Irrigation Practice	Intended Use	Reported Quantity	Determined Quantity	Planting Period	Crop/ Commodity	Variety/ Type	Irrigation Practice	Intended Use	Reported Quantity	Determined Quantity
01	MIXFG	IGS	N	FG	287.49		01	GRASS	NAG	N	LS	85.88	

CERTIFICATION: I certify to the best of my knowledge and belief that the acreage of crops/commodities and land uses listed herein are true and correct and that all required crops/commodities and land uses have been reported for the farm as applicable. Absent any different or contrary prior subsequent certification filed by any producer for any crop for which NAP coverage has been purchased, I certify that the applicable crop, type, practice, and intended use is not planted if it is not included on the Report of Commodities for this crop year. The signing of this form gives FSA representatives authorization to enter and inspect crops/commodities and land uses on the above identified land. A signature date (the date the producer signs the FSA-578) will also be captured.

Operator's Signature (By) N. Richard Higgins | Date 7-6-2018

In accordance with Federal civil rights law and U.S. Department of Agriculture (USDA) civil rights regulations and policies, the USDA, its Agencies, offices, and employees, and institutions participating in or administering USDA programs are prohibited from discriminating based on race, color, national origin, religion, sex, gender identity (including gender expression), sexual orientation, disability, age, marital status, family/parental status, income derived from a public assistance program, political beliefs, or reprisal or retaliation for prior civil rights activity, in any program or activity conducted or funded by USDA (not all bases apply to all programs). Remedies and complaint filing deadlines vary by program or incident. Persons with disabilities who require alternative means of communication for program information (e.g., Braille, large print, audiotape, American Sign Language, etc.) should contact the responsible Agency or USDAs TARGET Center at (202) 720-2600 (voice and TTY) or contact USDA through the Federal Relay Service at (800) 877-8339. Additionally, program information may be made available in languages other than English. To file a program discrimination complaint, complete the USDA Program Discrimination Complaint Form, AD-3027, found online at http://www.ascr.usda.gov/complaint_filing_cust.html and at any USDA office or write a letter addressed to USDA and provide in the letter all of the information requested in the form. To request a copy of the complaint form, call (866) 632-9992. Submit your completed form or letter to USDA by: (1) mail: U.S. Department of Agriculture Office of the Assistant Secretary for Civil Rights 1400 Independence Avenue, SW Washington, D.C. 20250-9410; (2) fax: (202) 690-7442; or (3) email: program.intake@usda.gov. USDA is an equal opportunity provider, employer, and lender.

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CASCADE COUNTY MT

Cascade, Montana

FSA - 578 (09-13-16)

Farm Number: 5204

REPORT OF COMMODITIES
FARM AND TRACT DETAIL LISTING

PROGRAM YEAR: 2018

DATE: 7-6-2018
PAGE: 1

Final

Original:
Revision:
Cropland: 287.49
Farmland: 379.66

Operator Name and Address

N RICHARD HIGGINS
PO BOX 322
ULM, MT 59485-0322

Tract Number	CLU/ Field	Crop/ Commodity	Variety/ Type	Irr Prc	Int Use	Actual Use	Land Use	Organic Status	Native Sod	C/C Status	Reporting Unit	Reported Quantity	Determined Quantity	Crop Land	Field ID	Official/ Measured	Planting Date	Planting Period	End Date
9392	1	MIXFG	IGS	N	FG			C	N	I	A	59.41		Yes			5-1-1989	01	2030
			Producer N RICHARD HIGGINS						Share	100.00		FSA Physical Location:		Cascade, Montana				NAP Unit	797
	2	MIXFG	IGS	N	FG			C	N	I	A	68.78		Yes			5-1-1989	01	2030
			Producer N RICHARD HIGGINS						Share	100.00		FSA Physical Location:		Cascade, Montana				NAP Unit	797
	3	MIXFG	IGS	N	FG			C	N	I	A	3.59		Yes			5-1-1989	01	
			Producer N RICHARD HIGGINS						Share	100.00		FSA Physical Location:		Cascade, Montana				NAP Unit	797
	4	MIXFG	IGS	N	FG			C	N	I	A	20.52		Yes			5-1-1989	01	2030
			Producer N RICHARD HIGGINS						Share	100.00		FSA Physical Location:		Cascade, Montana				NAP Unit	797
	5	MIXFG	IGS	N	FG			C	N	I	A	34.55		Yes			5-1-1989	01	2030
			Producer N RICHARD HIGGINS						Share	100.00		FSA Physical Location:		Cascade, Montana				NAP Unit	797
	6	MIXFG	IGS	N	FG			C	N	I	A	4.07		Yes			5-1-1989	01	2030
			Producer N RICHARD HIGGINS						Share	100.00		FSA Physical Location:		Cascade, Montana				NAP Unit	797
	7	MIXFG	IGS	N	FG			C	N	I	A	21.62		Yes			5-1-1989	01	2030
			Producer N RICHARD HIGGINS						Share	100.00		FSA Physical Location:		Cascade, Montana				NAP Unit	797
	8	MIXFG	IGS	N	FG			C	N	I	A	74.95		Yes			5-1-1989	01	2030
			Producer N RICHARD HIGGINS						Share	100.00		FSA Physical Location:		Cascade, Montana				NAP Unit	797
	9	GRASS	NAG	N	LS			C	N	I	A	3.09		No				01	2030
			Producer N RICHARD HIGGINS						Share	100.00		FSA Physical Location:		Cascade, Montana				NAP Unit	797
	10	GRASS	NAG	N	LS			C	N	I	A	81.86		No				01	2030
			Producer N RICHARD HIGGINS						Share	100.00		FSA Physical Location:		Cascade, Montana				NAP Unit	797
	11	GRASS	NAG	N	LS			C	N	I	A	0.93		No				01	
			Producer N RICHARD HIGGINS						Share	100.00		FSA Physical Location:		Cascade, Montana				NAP Unit	79

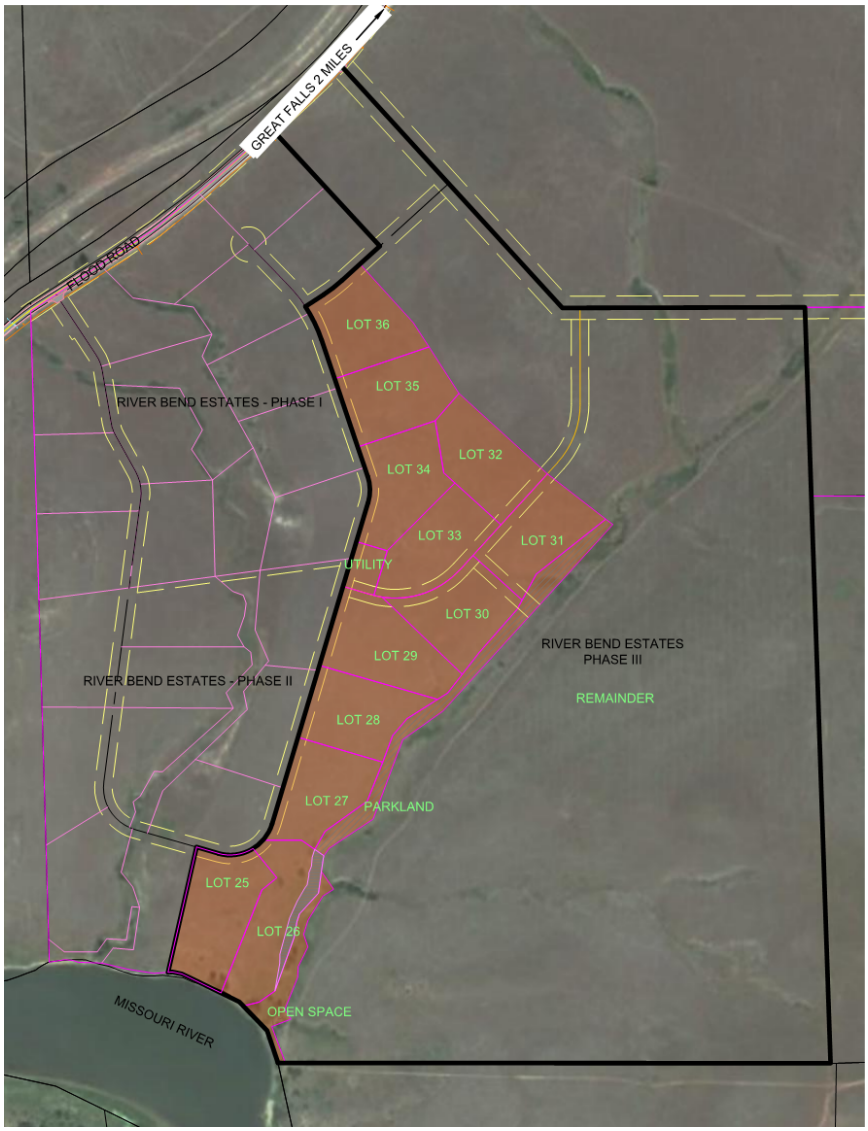
PP	Cr/Co	Var/Type	Irr Prc	Int Use	Non-Irr	Irr	PP	Cr/Co	Var/Type	Irr Prc	Int Use	Non-Irr	Irr	PP	Cr/Co	Var/Type	Irr Prc	Int Use	Non-Irr	Irr
01	MIXFG	IGS	N	FG	287.49		01	GRASS	NAG	N	LS	85.88								

Photo Number/Legal Description: 34 20N 3E

Cropland: 287.49 Reported on Cropland: 287.49 Difference: 0.00 Reported on Non-Cropland: 85.88

COMMUNITY IMPACT REPORT

RIVER BEND ESTATES PHASE III MAJOR SUBDIVISION



Cascade County, MT

July 2020

Prepared for:

Higgins Enterprises
PO Box 322
Ulm, MT 59485

Prepared by:

Jason Crawford, PE
800 N. Last Chance Gulch
Suite 101
Helena, MT 59601

TRIPLE TREE
ENGINEERING

1 COMMUNITY IMPACT REPORT 1
1.1 Education and Busing 1
1.2 Roads and Maintenance 1
1.3 Water, Sewage, and Solid Waste Facilities 3
1.4 Fire and Police Protection 4
1.5 Payment for Extension of Capital Facilities 4

List of Appendices

Appendix A – Census Information

Appendix B – Agency Correspondence

Appendix C – Traffic Information

Appendix D – Subdivision Infrastructure

Appendix E – Cascade County Soil Profiles

Appendix F – Solid Waste Information

1 COMMUNITY IMPACT REPORT

According to MT Board of Housing, Census and Economic Information Center, and information from the 2010 US Census Bureau, the average household size in Cascade County is 2.32 people, the projected population growth is 0.40%, and the percentage of people under 18 years of age is 22.5%. The Census Data is included in Appendix A.

River Bend Estates Phase III is a proposed 12 lot subdivision consisting of 12 single family lots. The projected number of residents is 28 (12*2.32) with 6 (28*22.5%) of those residents under age 18. The census indicates a growth factor of 0.40% for Cascade County; therefore, we will assume that 0.40% of our population will come from outside Cascade County. The population increase from outside Cascade County is assumed to be zero (28*0.40%=0.112 people). It is expected that many of the residents in River Bend Estates Phase III will be people who relocated within the same fire and police protection districts.

1.1 Education and Busing

The property is in the Great Falls Public School District. Following are the Great Falls Public Schools:

- Elementary – Meadowlark School (K-6)
- Middle School – North Middle School (7-8)
- High School – CM Russel High School (9-12)

As mentioned above, the percentage of the population in Cascade County under 18 years of age is 22.5%. The projected population of River Bend Estates Phase III is 28 people and of the 28 projected people in the subdivision it is estimated that 6 will be under the age of 18. It is expected that many of the residents in River Bend Estates Phase III will be people who have relocated within the same school area boundaries; although, to be conservative we will estimate that all 6 additional kids under the age of 18 will be new to the Great Falls Public School District.

We submitted a request for comments to the Director of Business Operations of the Great Falls Public Schools (GFPS) on April 21, 2020. GFPS responded on April 24, 2020 indicating the property is in the district and the district can accommodate the additional students. The GFPS correspondence is included in Appendix B.

1.2 Roads and Maintenance

According to the 7th Edition of the Institute of Transportation Engineers Trip Generation the following vehicle trip projections can be made:

- Single-Family Detached Housing – 9.57 average vehicle trip ends per dwelling unit on a weekday
    - 12 single family lots * 9.57 = 114.8 vpd

Based on this information River Bend Estates Phase III will generate approximately 115 vehicle trips per day.

According to the 2014 Great Falls Area Long Range Transportation Plan (LRTP), Flood Road is an undivided 2 lane collector with no TWLTL. Flood Road has a theoretical roadway capacity of 12,000 vpd. The LRTP indicates the existing average annual daily traffic is 1,405 trips. The existing volume to capacity ratio for Flood Road is 0.082; therefore, Flood Road has adequate capacity to handle the traffic generated from the River Bend Estates Phase III Subdivision. Pages from the LRTP are included in Appendix C.

The limited traffic increase is not expected to cause an increase in maintenance problems on the existing roads. We do not expect the limited increase in traffic to require additional plowing, mowing, or weed control along Flood Road.

One additional road is proposed to accommodate Phase III. Phase III will also utilize the roads that were designed, approved, and constructed in Phase I. These roads are 26.5' wide, gravel surfaced, crowned roads with ditches on either side to convey storm water. There are no new approach permits proposed for Phase III onto Flood Road. For Phase I and Phase II, several detention ponds were sized and designed in accordance with DEQ Circular 8 and Cascade County requirements. The additional detention pond requirements will be designed for Phase III. The Phase III improvements will be coordinated with the Phase I and Phase II improvements meeting Cascade County and DEQ requirements while minimizing disturbance. The disturbed surfaces will be reseeded with a native grass mixture. Internal road construction will not require closing existing roads. The Phase III road plans are included in Appendix D.

The proposed lots and common facilities will have year-round access over legal rights-of-way accessed from the internal subdivision road. The individual lots will not directly access Flood Road. The internal access roads cross Higgins Enterprises property only.

As mentioned above, one additional road as well as the internal roads constructed for Phase I will be utilized for access to Phase III. Following is a cost estimate to construct the Phase III internal road. The owner is proposing to create a RID to pay for the cost of the installation of the roads and for the maintenance including snow removal.

Preliminary Project Cost Estimate
River Bend Estates – Phase III
Infrastructure
Cascade County, Montana

TRIPLE TREE
ENGINEERING

Item	Quantity	Unit	Unit Cost	Cost
Traffic Control	1	LS	$ 500.00	$ 500
Topsoil Salvaging and Placing	1300	CY	$ 5.00	$ 6,500
Excavation	1500	CY	$ 10.00	$ 15,000
18" Diameter Culvert	70	LF	$ 50.00	$ 3,500
8" - 3" Pit Run	1500	CY	$ 22.00	$ 33,000
3" - 1.5" Crushed Top Surfacing	450	CY	$ 35.00	$ 15,750
Street Signs	4	EA	$ 450.00	$ 1,800
Seeding	0.5	AC	$ 3,200.00	$ 1,600
Estimated Construction Unit Prices				$ 77,650
Mobilization	4	%		$ 3,106
Bonding and Insurance	2	%		$ 1,553
Contingency	10	%		$ 90,540

1.3 Water, Sewage, and Solid Waste Facilities

The proposed water supply and sewer system is individual wells and individual drain fields. We have coordinated with Doug Mann from the DNRC-Lewistown Regional Office regarding water rights. The DNRC correspondence is included in Appendix B.

Several soil test pits have excavated across the site by the owner and soils profiles logged by the Cascade County Health Department. The soils information will be used to size the drain fields. The test pit logs are included in Appendix E.

The residents of River Bend Estates Phase III, like other Cascade County residents, will have the option to haul their own garbage to one of the container sites in Cascade County or contract with a private company to provide curbside service. Additional solid waste information is included in Appendix F.

The individual homeowners will bear the costs of water, sewage, and solid waste facility costs.

The subdivision will not connect to an existing water or sewer system.

The plans for the proposed sewer and water infrastructure will be submitted for review and approval to the MT DEQ. The submittal will include all supporting information required by the DEQ and will be submitted using the appropriate DEQ application forms.

1.4 Fire and Police Protection

The proposed subdivision lies within the Gore Hill Volunteer Fire Department coverage area. The Department is made up of 18 volunteer firefighters and two fire stations. In accordance with the Cascade County July 18, 2019 River Bend Estates Phase II Major Subdivision approval, condition of approval #16 stated "A fire suppression cistern with a capacity of 64,000 installed on-site, properly maintained and equipped with the proper appurtenances for the Gore Hill volunteer Fire Department to use for firefighting at all times, for Phases 1 through 4, provided approval of Gore Hill Fire Chief is obtained. Provide the developers install and the homeowners' association maintain an accessible approach for access to the cistern at all times. A central location was agreed to by the fire chief and the 64,000-gallon tank was installed on the utility lot shown in the Phase III preliminary plat as part of Phase I construction.

The proposed River Bend Estates Phase III lies within Cascade County; therefore, the Cascade County Sheriff's Department would provide any law enforcement protection.

According to the 2010 US Census Bureau the growth factor for Cascade County is 0.40%; therefore, we have assumed that 0.40% of the River Bend Estates Phase III population will come from outside Cascade County. The population increase from outside Cascade County is assumed to be zero (28*0.40%=0.112 people).

Base on the above information we expect that many if not all of the residents in the proposed River Bend Estates Phase III will be people who relocated within the same fire and police protection districts; therefore, we are not anticipating additional fire and police protection needs for the River Bend Estates Phase III Subdivision.

1.5 Payment for Extension of Capital Facilities

The owner is proposing to create a RID to pay for the cost of the installation of the roads, the fire protection requirements, the utilities, and for the maintenance including snow removal.

Appendix A – Census Information

QuickFacts

Cascade County, Montana

QuickFacts provides statistics for all states and counties, and for cities and towns with a ***population of 5,000 or more.***

Table

All Topics	Cascade County, Montana
Population estimates base, April 1, 2010, (V2017)	**81,324**
PEOPLE	
Population	
Population estimates, July 1, 2017, (V2017)	81,654
Population estimates base, April 1, 2010, (V2017)	**81,324**
Population, percent change - April 1, 2010 (estimates base) to July 1, 2017, (V2017)	0.4%
Population, Census, April 1, 2010	81,327
Age and Sex	
Persons under 5 years, percent	6.7%
Persons under 18 years, percent	22.5%
Persons 65 years and over, percent	18.2%
Female persons, percent	49.4%
Race and Hispanic Origin	
White alone, percent (a)	88.5%
Black or African American alone, percent (a)	1.6%
American Indian and Alaska Native alone, percent (a)	4.8%
Asian alone, percent (a)	1.0%
Native Hawaiian and Other Pacific Islander alone, percent (a)	0.1%
Two or More Races, percent	3.9%
Hispanic or Latino, percent (b)	4.5%
White alone, not Hispanic or Latino, percent	85.2%
Population Characteristics	
Veterans, 2012-2016	9,222
Foreign born persons, percent, 2012-2016	2.0%
Housing	
Housing units, July 1, 2017, (V2017)	38,845
Owner-occupied housing unit rate, 2012-2016	63.8%
Median value of owner-occupied housing units, 2012-2016	$165,800

Is this page helpful? X
Yes No

Median selected monthly owner costs -with a mortgage, 2012-2016	$1,190
Median selected monthly owner costs -without a mortgage, 2012-2016	$374
Median gross rent, 2012-2016	$671
Building permits, 2017	205
Families & Living Arrangements	
Households, 2012-2016	34,138
Persons per household, 2012-2016	2.32
Living in same house 1 year ago, percent of persons age 1 year+, 2012-2016	82.1%
Language other than English spoken at home, percent of persons age 5 years+, 2012-2016	3.2%
Education	
High school graduate or higher, percent of persons age 25 years+, 2012-2016	91.7%
Bachelor's degree or higher, percent of persons age 25 years+, 2012-2016	25.9%
Health	
With a disability, under age 65 years, percent, 2012-2016	10.1%
Persons without health insurance, under age 65 years, percent	▲ 10.2%
Economy	
In civilian labor force, total, percent of population age 16 years+, 2012-2016	59.1%
In civilian labor force, female, percent of population age 16 years+, 2012-2016	57.6%
Total accommodation and food services sales, 2012 ($1,000) (c)	194,725
Total health care and social assistance receipts/revenue, 2012 ($1,000) (c)	711,857
Total manufacturers shipments, 2012 ($1,000) (c)	955,330
Total merchant wholesaler sales, 2012 ($1,000) (c)	D
Total retail sales, 2012 ($1,000) (c)	1,359,702
Total retail sales per capita, 2012 (c)	$16,638
Transportation	
Mean travel time to work (minutes), workers age 16 years+, 2012-2016	15.6
Income & Poverty	
Median household income (in 2016 dollars), 2012-2016	$45,469
Per capita income in past 12 months (in 2016 dollars), 2012-2016	$26,578
Persons in poverty, percent	▲ 14.2%

BUSINESSES

Businesses	
Total employer establishments, 2016	2,410
Total employment, 2016	30,825
Total annual payroll, 2016 ($1,000)	1,120,234
Total employment, percent change, 2015-2016	0.1%
Total nonemployer establishments, 2016	4,775
All firms, 2012	7,315
Men-owned firms, 2012	3,581

Is this page helpful? X
Yes No

Women-owned firms, 2012	2,548
Minority-owned firms, 2012	286
Nonminority-owned firms, 2012	6,635
Veteran-owned firms, 2012	792
Nonveteran-owned firms, 2012	6,019

GEOGRAPHY

Geography	
Population per square mile, 2010	30.1
Land area in square miles, 2010	2,698.16
FIPS Code	30013

Is this page helpful? X
Yes No

Value Notes

Estimates are not comparable to other geographic levels due to methodology differences that may exist between different data sources.

Some estimates presented here come from sample data, and thus have sampling errors that may render some apparent differences between geographies statistically indistinguishable. Click the Quick Info icon to the left of each row in TABLE view to learn about sampling error.

The vintage year (e.g., V2017) refers to the final year of the series (2010 thru 2017). *Different vintage years of estimates are not comparable.*

Fact Notes

- **(a)** Includes persons reporting only one race
- **(b)** Hispanics may be of any race, so also are included in applicable race categories
- **(c)** Economic Census - Puerto Rico data are not comparable to U.S. Economic Census data

Value Flags

- **D** Suppressed to avoid disclosure of confidential information
- **F** Fewer than 25 firms
- **FN** Footnote on this item in place of data
- **NA** Not available
- **S** Suppressed; does not meet publication standards
- **X** Not applicable
- **Z** Value greater than zero but less than half unit of measure shown
- **-** Either no or too few sample observations were available to compute an estimate, or a ratio of medians cannot be calculated because one or both of the median estimates falls in the lowest or upper interval of an open ended distribution.

QuickFacts data are derived from: Population Estimates, American Community Survey, Census of Population and Housing, Current Population Survey, Small Area Health Insurance Estimates, Small Area Income and Poverty Estimates, State and County Housing Unit Estimates, County Business Patterns, Nonemployer Statistics, Economic Census, Survey of Business Owners, Building Permits.

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Is this page helpful? X
Yes No

Appendix B – Agency Correspondence

TRIPLE TREE ENGINEERING

4/21/2020

Brian Patrick, Director of Business Operations
Great Falls Public Schools
1100 4th St. South
Great Falls, MT 59405

RE: River Bend Estates Phase III

Dear Brian:

Like River Bend Estates Phase I and Phase II (Jan. 21, 2019 correspondence attached), Triple Tree Engineering is working with Rick and Judy Higgins on Phase III of River Bend Estates. The property is located approximately 2 miles south of Great falls adjacent to River Bend Estates Phase I and Phase II. The attached vicinity maps show the location and rough layout. The subdivision would be a 12-lot subdivision accessing Flood Road. We are working with Cascade County Planning and the Cascade County Health Department to prepare the preliminary plat application.

In accordance with Cascade County Subdivision Regulations I am reaching out to your office requesting "a statement from the administrator of the affected school system indicating whether the increased enrollment can be accommodated by the present personnel and facilities and by the existing school bus system." Based on Cascade County Census information we project approximately 7 children under the age of 18 will reside in River Bend Estates Phase III. It is expected that some of the residents in River Bend Estates will be people who have relocated within the same school area boundaries.

Please take a few moments to review the information and provide a statement as mentioned. If you have questions or comments, please contact me at 406-461-2115 or jcrawford@tripletreemt.com.

Sincerely,

Triple Tree Engineering, Inc.

Jason Crawford, Principal

Encl: Phase II Correspondence
Vicinity Maps

Great Falls Public Schools

Director of Business Operations • 1100 4th Street South • P.O. Box 2429
Great Falls, Montana 59403 • 406.268.6051 • Fax 406.268.6067 • www.gfps.k12.mt.us

April 24, 2020

Cascade County Public Works Department, Planning Division
121 4th St. N, Suite 2H/I
Great Falls, MT 59401

To Whom It May Concern;

Thank you for your letter indicating the River Bend Estates Phase III twelve (12)-lot Subdivision proposal. We understand the plan to create the subdivision, as this is the third phase of the development for this project. This property is located within our school district boundaries. The following is a response to the information sent to the Great Falls Public School District. We have formulated the questions below to comment on the proposed subdivision.

1. Will the existing school facilities be able to accommodate the additional estimated seven (7) students?
The addition of the development will have an impact on the Great Falls Public School District. The estimated seven (7) additional students in proximity to Meadow Lark Elementary School will be able to be accommodated by the school.

2. Do you have any other comments or requirements on the proposed subdivision as it affects the public school system?

The students from the new Phase III River Bend Estates Subdivision will be able to ride the existing bus route to Meadow Lark Elementary School.

Sincerely,

Brian Patrick
Director of Business Operations
Great Falls Public Schools

TRIPLE TREE ENGINEERING

April 23, 2020

Doug Mann
DNRC – Lewistown Regional Office
613 NE Main, Suite E
Lewistown, MT 59475

RE: River Bend Estates Phase III Subdivision – Higgins Enterprises, Cascade County, MT

Dear Doug:

Higgins Enterprises developed Tract of Record 1A of COS #5179 (attached) in 2018 as River Bend Estates Phase I and in 2019 as River Bend Estates Phase II. River Bend Estates is in Section 34, T20N, R 3E, located approximately 2 miles south of Great Falls, Montana. The Cascade County Commission approved the Final Plat of River Bend Estates Phase I on September 11th, 2019 and Phase II on October 25th, 2019. DEQ approved River Bend Estates Phase I on February 15th, 2019 and Phase II on October 4th, 2019.

Higgins Enterprises owns and would like to subdivide the 115.56-acre "REMAINDER" parcel of the River Bend Estates Phase II Major Subdivision (plat attached). The proposed River Bend Estates Phase III subdivision would include 12 single-family lots. The proposal would include water and sewer services provided by individual wells and drain fields. Attached is the proposed subdivision layout.

The purpose of this letter is to request DNRC review of the proposal to utilize individual wells as a combined appropriation where no individual well would exceed a flow rate of 35 gpm or a combined volume of 10 af annually. The Phase III remainder will be approximately 90-acres. No water use is proposed or assigned to the parkland lot or to the utility lot. Following is a summary of the proposed appropriations:

Proposed River Bend Estates Phase III:

- **Domestic** (0.33 af for each single-family lot)
  - 12 single-family lots * 0.33 af/lot = 4.0 af
- **Irrigation** (0.50 af for each single-family lot, 2.5 af/ac irrigation rate for lawn, garden, and shelterbelts)
  - 12 single-family lots * 0.20 irrigated acres/lot * 2.5 af/acre = 6.0 af
- **Total** (domestic plus irrigation)
  - 4.0 + 6.0 = **10 ac**

Please call me at (406) 461-2115 if you have any questions or need additional information.

Sincerely,

Triple Tree Engineering, Inc.

Jason Crawford, PE

DEPARTMENT OF NATURAL RESOURCES AND CONSERVATION

Lewistown Water Resources Regional Office

STEVE BULLOCK, GOVERNOR

PHONE: (406) 538-7459

613 NE Main St, Suite E
Lewistown, MT 59457

May 6, 2020

Triple Tree Engineering
Attn: Jason Crawford
3102 Old Broadwater Ln
Helena, MT 59601

Re: River Bend Estates Phase III Subdivision DEQ Review

Mr. Crawford,

Per the information provided in an e-mail received April 23rd, the anticipated water use for the proposed River Bend Estates Phase III Subdivision does fit the current rules and laws pertaining to exempt water rights, or groundwater notices of completion. This proposed phase development, comprised of 12 single-family residential lots, all with individual wells, is considered a combined appropriation. There is also a parkland parcel and a utility parcel within the lot layout that will not require water. No review of the residual acreage of the tract being subdivided is required, the remaining parcel is approximately 90 acres and is not subject to subdivision review (greater than 20 acres). Each of the twelve wells will be limited to an individual flow rate of up to 35 gallons per minute (GPM) and all wells combined will be limited to an annual volume of up to 10.0 acre-feet (AF).

As described, your annual water use estimations for the subdivision total just under 10.00 AF and do not include any water for the parkland or utility parcels. Considering the combined appropriation and e-mail direction for the anticipated water use on the twelve lots, each lot will be limited to 0.83 AF per year including 0.33 AF for domestic use and up to 0.50 AF for lawn and garden irrigation (L & G) of up to 0.2 acres. The combined volume for the subdivision includes 3.96 AF for domestic use and up to 6.0 AF for L & G for a total proposed subdivision use of 9.96 AF per year.

	Property Description - Parcel, Lot or Tract	Annual Volume Acre-Feet/year						
		Domestic	Lawn & Garden	Commercial	Other	Total	Remaining Available	Total Volume under MCA 85-2-306 3 (iii)
Proposed Use	Lot 1	0.330	0.500			0.830		
Proposed Use	Lot 2	0.330	0.500			0.830		
Proposed Use	Lot 3	0.330	0.500			0.830		
Proposed Use	Lot 4	0.330	0.500			0.830		
Proposed Use	Lot 5	0.330	0.500			0.830		
Proposed Use	Lot 6	0.330	0.500			0.830		
Proposed Use	Lot 7	0.330	0.500			0.830		
Proposed Use	Lot 8	0.330	0.500			0.830		
Proposed Use	Lot 9	0.330	0.500			0.830		
Proposed Use	Lot 10	0.330	0.500			0.830		
Proposed Use	Lot 11	0.330	0.500			0.830		
Proposed Use	Lot 12	0.330	0.500			0.830		
Proposed Use	Parkland Lot	0.000	0.000	0.000	0.000	0.000		
Proposed Use	Utility Lot	0.000	0.000	0.000	0.000	0.000		
					Total	9.960	0.040	10.00

Application for a Beneficial Water Use Permit is not required as the combined use from the proposed wells does not exceed an individual flow rate of 35 GPM or a combined volume of 10 AF annually. No water right permitting is needed for this subdivision layout ahead of putting water to a beneficial use.

NOTE:
In Clark Fork Coalition, et. al. v. DNRC, et. al., 2016 MT 229, 384 Mont. 503, 380 P.3d 771, the Montana Supreme Court concluded that the definition of "combined appropriation" in Admin. R. Mont. 36.12.101(13) was invalid. The Court reinstated the Department's 1987 Rule defining "combined appropriation" as: " An appropriation of water from the same source aquifer by means of two or more groundwater developments, the purpose of which, in the department's judgment, could have been accomplished by a single appropriation. Groundwater developments need not be physically connected nor have a common distribution system to be considered a "combined appropriation." They can be separate developed springs or wells to separate parts of a project or development. Such wells and springs need not be developed simultaneously. They can be developed gradually or in increments. The amount of water appropriated from the entire project or development from these groundwater developments in the same source aquifer is the "combined appropriation."

Under this Rule, the Department interprets subdivisions that are pending before the Department of Environmental Quality for approval on October 17, 2014 or filed after that date to be a single project that can be accomplished by a single appropriation. Consequently all wells in such a subdivision will be considered a "combined appropriation" for the purposes of Mont. Code Ann. 85-2-306. The only exception to this interpretation is that a subdivision which has received preliminary plat approval prior to October 17, 2014 will not be considered a project under the "combined appropriation" 1987 Rule; individual lots will still be evaluated under the 1987 Rule at the time of an application to the Department. 2015 Mont. Laws § 1, Ch. 221.

This letter does not serve as a pre-approval for a water right. The information above is based upon the information provided in your request. Prior to issuance of any water right, the owner must first make application to the DNRC for a water right. Applications are generally processed on a first-come, first-served basis.

A copy of this letter and your request for DNRC review will be provided to DEQ.

Thank you,

Melissa Norris

Melissa Norris
DNRC - Lewistown Regional Office

cc: DEQ, Leata English – via email only

4.2. EXISTING ROADWAY VOLUMES AND CAPACITY

Roadway traffic data was collected by MDT, City of Great Falls, and Cascade County. The data was used to establish existing traffic conditions and to provide reliable data on historic traffic volumes. Average annual daily traffic (AADT) counts for the year 2012 were used to represent existing conditions. **Figure 4.4** shows the existing AADT along the major street network. In addition, the major street network was examined to determine the existing facility size. This information is presented in **Figure 4.5**.

Roadway capacity is of critical importance when looking at the growth of a community. As traffic volumes increase, vehicle flow deteriorates. When traffic volumes approach and exceed the available capacity, the road begins to "fail". For this reason it is important to look at the size and configuration of the current roadways and determine if these roads need to be expanded to accommodate the existing or projected traffic needs.

The capacity of a roadway is based on a number of features including number of lanes, intersection function, access and intersection spacing, vehicle fleet mix, roadway geometrics, land use, and vehicle speeds. Individual roadway capacity varies greatly and should be calculated on an individual basis. For planning and comparison purposes, however, theoretical roadway capacities were developed based on simplistic roadway configurations and are shown in **Table 4.1**. These values are not intended to be used to set any thresholds for roadway performance, but rather provide some general information to be used to compare roadway performance.

Table 4.1: Theoretical Roadway Capacities

Road Configuration	Capacity (vpd) [a]
2 Lane	12,000
2 Lane - Divided / TWLTL[b]	18,000
3 Lane	18,000
3 Lane - Divided / TWLTL[b]	24,000
4 Lane	24,000
4 Lane - Divided / TWLTL[b]	32,000
6 Lane - Divided / TWLTL[b]	48,000
Interstate	68,000

[a] Values represent planning level daily capacities developed for this Transportation Plan and are intended for comparison purposes only. Actual physical roadway capacity can vary greatly depending on road design features, intersection operations and access control.
[b] TWLTL = two-way, left-turn lane

The capacities shown in **Table 4.1** represent theoretical daily volumes; however, traffic is not evenly distributed during the day. The transportation system experiences significant peaks of demand, especially during the work "rush" hours. These limited times create the greatest periods of stress on the transportation system. By concentrating large volumes in a brief period of time, a road's short-term capacity may be exceeded and a road user's perception of congestion is strongly influenced.

Roadway capacity and volume to capacity (v/c) ratio can be used as a comparison tool when looking at the transportation system. By definition, the v/c ratio is the result of the traffic volume of a roadway divided by the capacity. **Figure 4.6** shows the resultant v/c ratios of the existing major street network. The v/c ratios help identify potential capacity deficiencies for the transportation system.

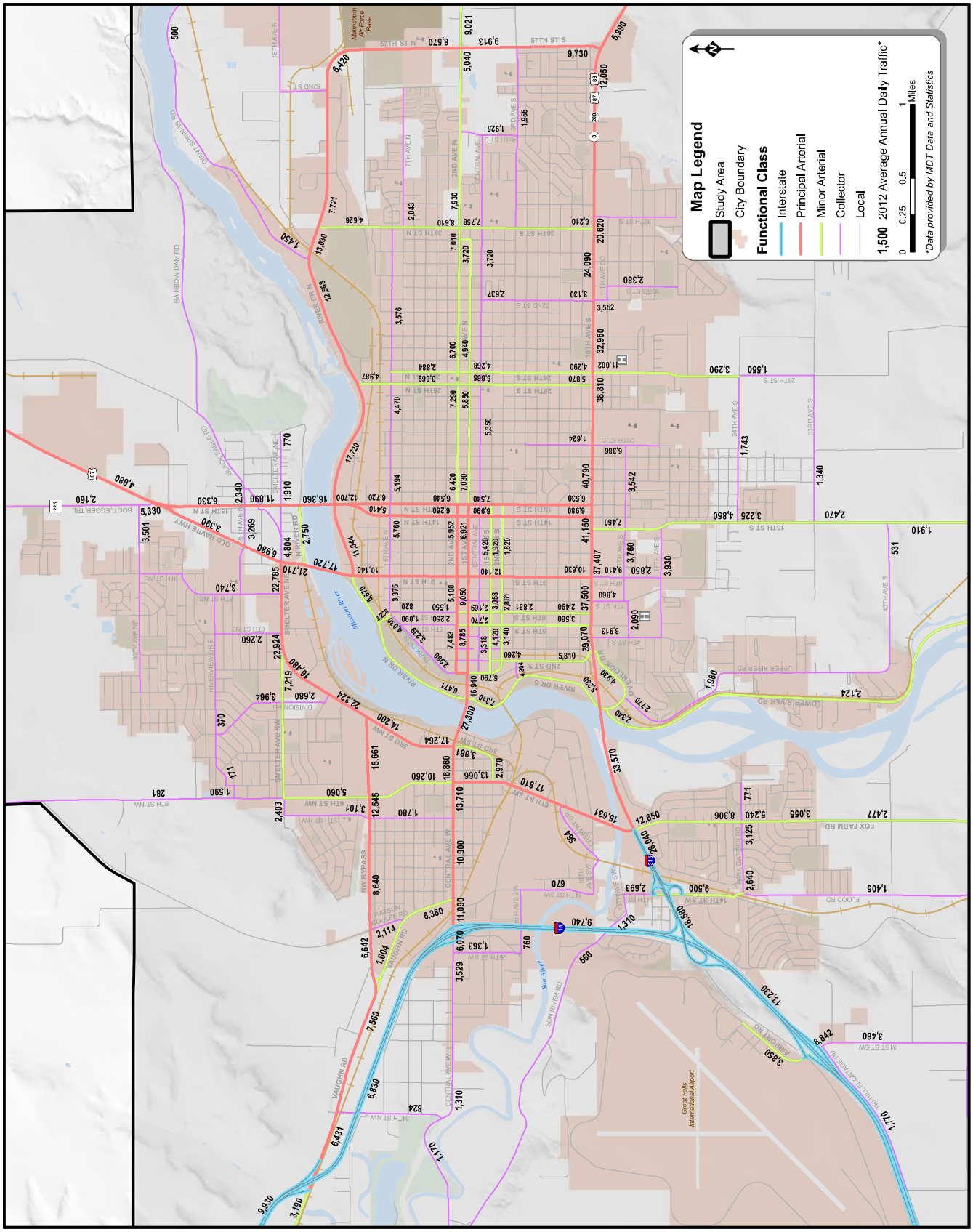


Figure 4.4: Existing Average Annual Daily Traffic

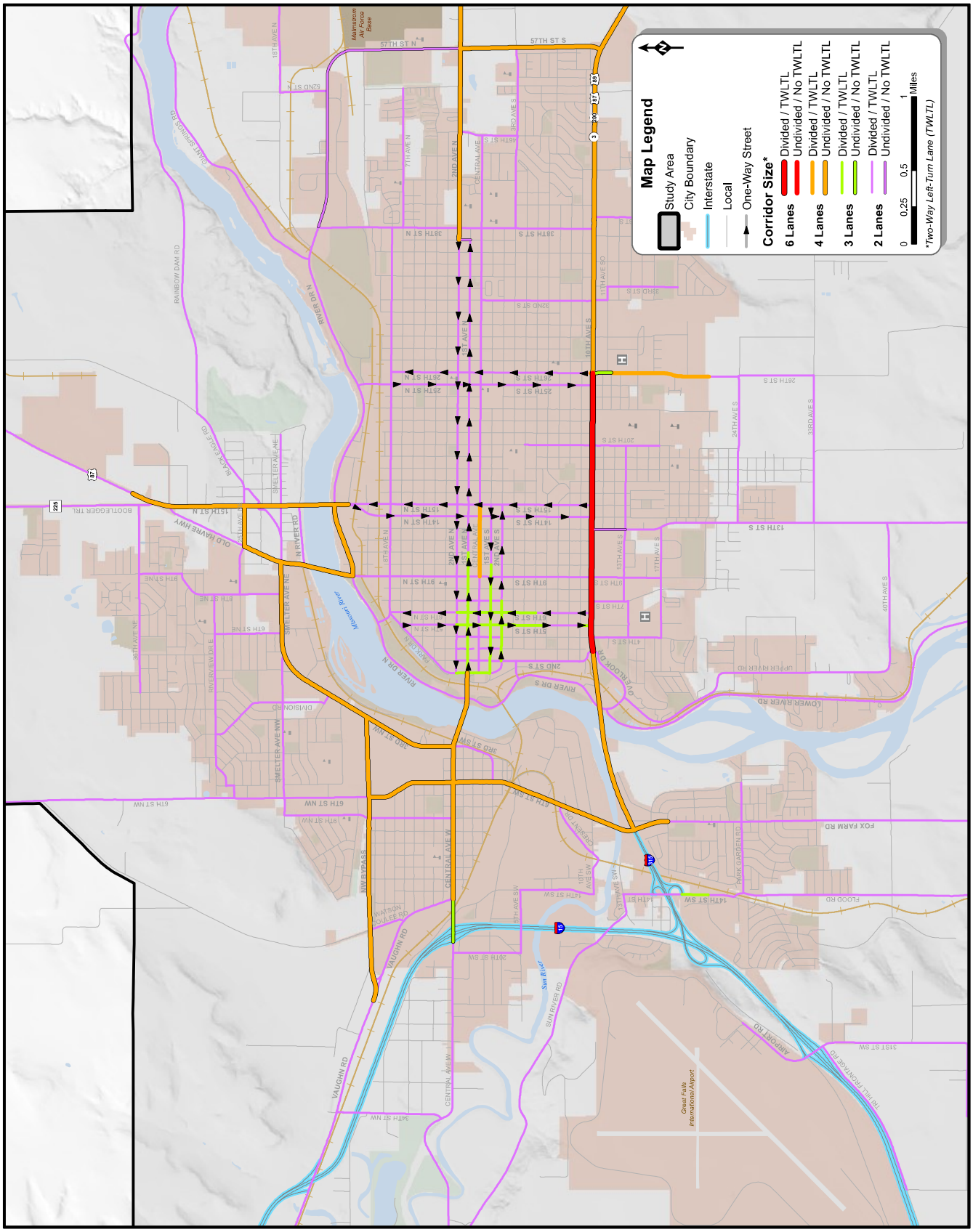


Figure 4.5: Existing Corridor Facility Size

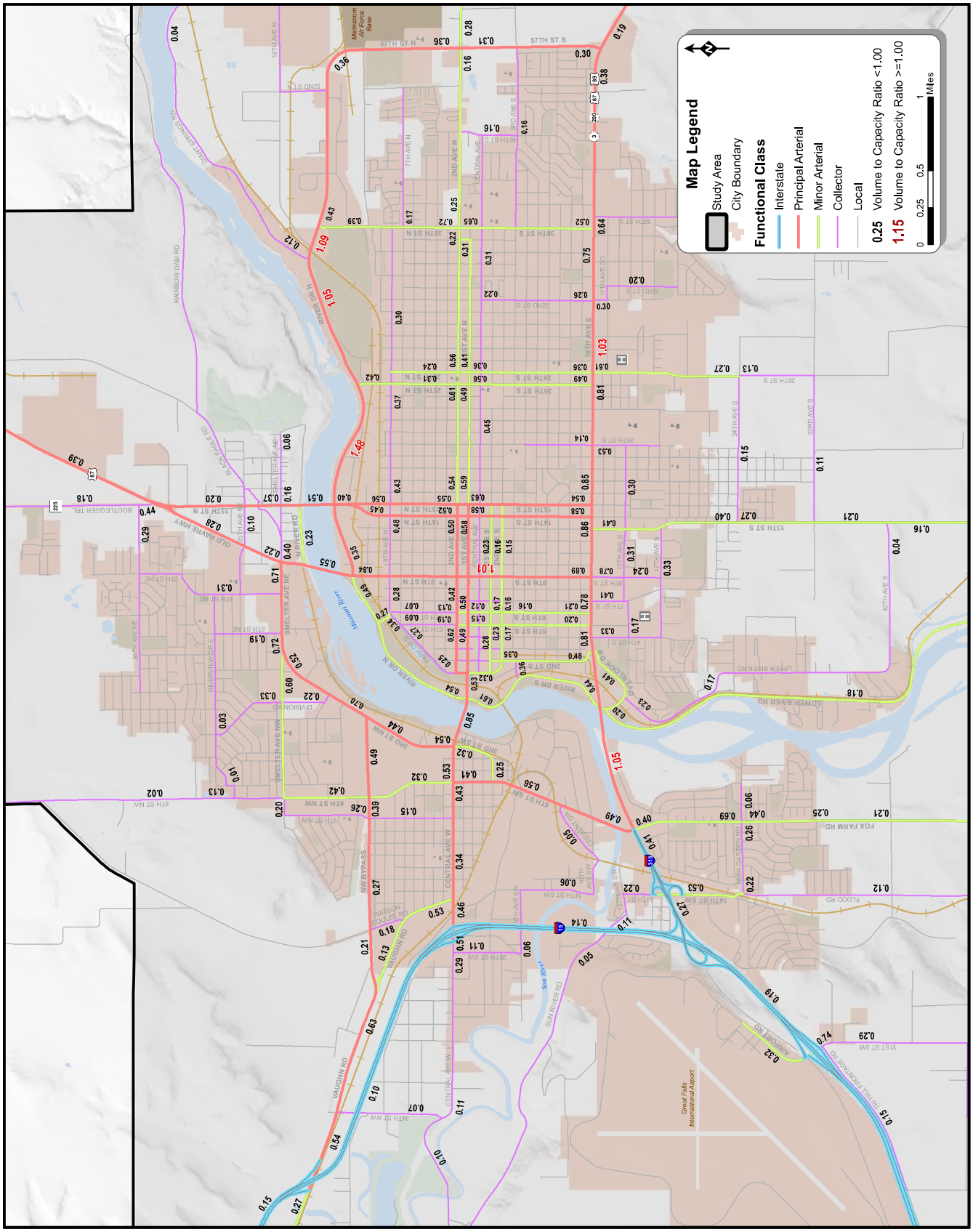
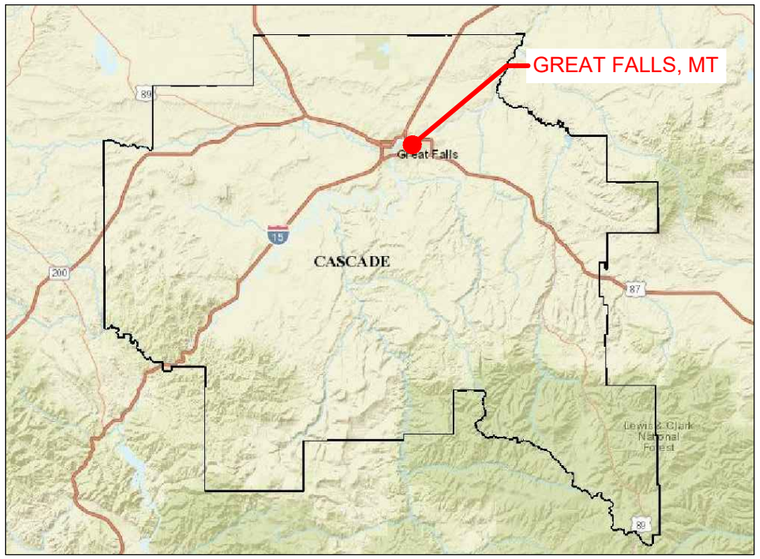


Figure 4.6: Existing Volume to Capacity Ratios

RIVER BEND ESTATES - PHASE III

VICINITY MAP



HIGGINS ENTERPRISES LTD.
CASCADE COUNTY, MONTANA

July 2020

SHEET INDEX

SHEET	DESCRIPTION
G-1	COVER
G-2	GENERAL NOTES
D-1	DETAILS
PP-1	PLAN & PROFILE INDEX
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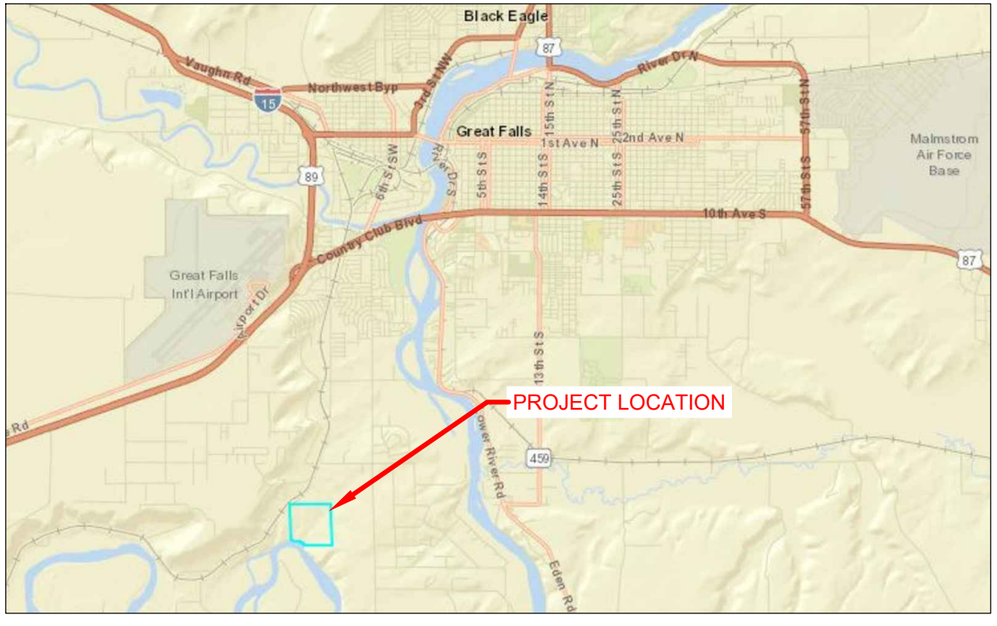
GREAT FALLS MONTANA



BASIS OF SURVEY

ALL CONTOURS, ELEVATIONS, AND COORDINATES FOR THE PROJECT ARE BASED ON A LOCAL COORDINATE SYSTEM

CERTIFICATION

I HEREBY CERTIFY THAT THE ATTACHED PLANS WERE PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY REGISTERED PROFESSIONAL ENGINEER IN THE STATE OF MONTANA.

PRELIMINARY
NOT FOR
CONSTRUCTION

SCOTT L. PFAHLER, P.E.

Montana811.org
Tap - Click - Call
811 Before you dig!

TRIPLE TREE
ENGINEERING
800 N Last Chance Gulch, Suite 101
Helena, MT 59601

Jul 30, 2020 - 9:05am - P:\Great Falls\19-72 River Bend Phase III\Design\CADD\ConstructionDrawings\PlanSetDrawings\19-72_Cover.dwg

GENERAL NOTES

1. THESE NOTES ARE FOR GENERAL REFERENCE IN CONJUNCTION WITH, AND AS A SUPPLEMENT TO THE WRITTEN NOTES AND DETAILS INCLUDED ON INDIVIDUAL DRAWINGS. ALL WORK FOR THIS PROJECT SHALL BE PERFORMED IN ACCORDANCE WITH THE MONTANA PUBLIC WORKS STANDARD SPECIFICATIONS (MPWSS). REFERENCE THE FOLLOWING SECTIONS OF MPWSS:
   - **DIVISION I - GENERAL REQUIREMENTS**
     - SECTION 01570: CONSTRUCTION TRAFFIC CONTROL
   - **02100 SITE PREPARATION**
     - SECTION 02110: GEOTEXTILES
   - **02200 EARTHWORK**
     - SECTION 02221: TRENCH EXCAVATION AND BACKFILL FOR PIPELINES AND APPURTENANT STRUCTURES
     - SECTION 02230: STREET EXCAVATION, BACKFILL, AND COMPACTION
     - SECTION 02235: CRUSHED BASE COURSE
   - **02500 PAVING AND SURFACING**
     - SECTION 02502: ASPHALT PRIME AND/OR TACK COAT
     - SECTION 02504: ASPHALT SEAL COAT
     - SECTION 02505: CONSTRUCTION SEAL
     - SECTION 02510: ASPHALT CONCRETE PAVEMENT
     - SECTION 02529: CONCRETE SIDEWALKS, DRIVEWAYS, APPROACHES, CURB RETURN FILLETS, VALLEY GUTTERS, AND MISCELLANEOUS NEW CONCRETE CONSTRUCTION
   - **02700 SEWERAGE AND DRAINAGE**
     - SECTION 02720: STORM DRAIN SYSTEMS
   - **02700 LANDSCAPING**
     - SECTION 02910: SEEDING

2. THE CONTRACTOR IS RESPONSIBLE FOR OBTAINING ALL REQUIRED PERMITS AND PAYING ASSOCIATED FEES.

3. THE LOCATION OF EXISTING UTILITIES ARE SHOWN IN AN APPROXIMATE WAY ONLY AND HAVE NOT BEEN INDEPENDENTLY VERIFIED BY THE OWNER OR ITS REPRESENTATIVE. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK. UNDERGROUND LOCATES SHALL BE MADE USING THE "ONE CALL" NUMBER 1-800-424-5555. ALL EXISTING UTILITIES WHICH NEED TO BE REMOVED, RELOCATED AND/OR ADJUSTED SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.

4. THE CONTRACTOR SHALL FIELD VERIFY EXISTING CONDITIONS PRIOR TO CONSTRUCTION. IF THE SITE IS FOUND TO BE DIFFERENT THAN THE CONSTRUCTION PLANS, THE CONTRACTOR SHALL NOTIFY THE ENGINEER OF THE DISCREPANCY.

5. THE CONTRACTOR IS RESPONSIBLE FOR ALL REPAIRS TO SURFACING (ASPHALT, CONCRETE, GRAVEL, LANDSCAPING, ETC.) BEYOND THE CONSTRUCTION LIMITS DAMAGED AS A RESULT OF CONSTRUCTION ACTIVITIES; THIS INCLUDES SURFACING REPAIR ON HAUL ROUTES. ANY DAMAGE SUSTAINED TO HAUL ROADS AND PROPERTY SHALL BE RESTORED TO EXISTING CONDITION OR BETTER AT THE EXPENSE OF THE CONTRACTOR. REMEDIATION OF THE DAMAGE WILL BE ALLOWED AFTER THE MAJORITY OF HAULING ACTIVITIES HAS BEEN COMPLETED, UNLESS OTHERWISE DIRECTED BY THE OWNER, ENGINEER OR GOVERNING AUTHORITY. IF THE DAMAGE POSES A SAFETY RISK, IT SHALL BE REPAIRED IMMEDIATELY.

6. CONTRACTOR SHALL BE RESPONSIBLE FOR QUALITY CONTROL TO ASSURE THAT ALL ASPECTS OF THE PROJECT ARE CONSTRUCTED IN ACCORDANCE WITH THE PLANS AND SPECIFICATIONS.

7. THE CONTRACTOR SHALL REMOVE AND DISPOSE OF ALL ASPHALT, CONCRETE, GRAVEL AND REFUSE MATERIAL OFFSITE.

QUALITY CONTROL TESTING REQUIREMENTS

THE TABLE ON THIS SHEET OUTLINES THE MINIMUM FREQUENCY OF QUALITY CONTROL TESTING WHICH SHALL BE PERFORMED BY THE CONTRACTOR'S DESIGNATED INDEPENDENT TESTING FIRM FOR ACCEPTANCE.

GRADING & EROSION CONTROL

1. THE CONTRACTOR WILL BE RESPONSIBLE FOR DEVELOPING A STORM WATER POLLUTION PREVENTION PLAN (SWPPP), AS WELL AS SUBMITTING THE NOTICE OF INTENT (NOI) AND SWPPP TO THE MONTANA DEPARTMENT OF ENVIRONMENTAL QUALITY (DEQ). ASSOCIATED FEES WILL BE PAID FOR AT THE CONTRACTOR'S EXPENSE.

   1.1. THE CONTRACTOR SHALL INSTALL AND MAINTAIN ALL EROSION CONTROL ELEMENTS AND BEST MANAGEMENT PRACTICES IN ACCORDANCE WITH THE APPROVED SWPPP.

   1.2. THE CONTRACTOR SHALL INSPECT EROSION CONTROL ELEMENTS AT THE TIME INTERVAL SPECIFIED IN THE SWPPP AND DOCUMENT IN ACCORDANCE WITH THE REQUIREMENTS OF THE NOTICE OF INTENT AND THE SWPPP.

2. ALL CONSTRUCTION ACTIVITIES SHALL BE CONDUCTED IN A LOGICAL SEQUENCE SO AS TO MINIMIZE THE AMOUNT OF BARE SOIL EXPOSED AT ANY ONE TIME. THE CONSTRACTOR SHALL MAINTAIN EXISTING SITE VEGETATION OR GROUND COVER TO THE EXTENT AND LONGEST TIME POSSIBLE.

3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MINIMIZING TRACKING OF SOIL AND DEBRIS ONTO ADJACENT PROPERTIES AND ROADWAYS. TRACKING MUST BE RESTORED BY THE END OF EACH DAY.

4. ALL WASTE AND UNUSED MATERIALS SHALL BE PROPERLY DISPOSED OF AND NOT ALLOWED TO BE CARRIED OFF SITE BY RUNOFF OR WIND.

5. TOPSOIL SHALL BE STRIPPED TO FULL DEPTH FROM AREAS REQUIRING GRADING AND STOCKPILED FOR REPLACEMENT ONCE THE CONSTRUCTION ACTIVITY HAS BEEN COMPLETED. SEED ALL DISTURBED AREAS FOLLOWING CONSTRUCTION.

6. THE CONTRACTOR SHALL SEED ALL DISTURBED AREAS WITH A NATIVE SEED MIX. SUBMIT THE SEED MIX TO THE ENGINEER FOR APPROVAL.

ABBREVIATIONS

THE FOLLOWING WORDS MAY BE ABBREVIATED THROUGHOUT THE PLAN SET:

EA	=	EACH
EX.	=	EXISTING
GALV.	=	GALVANIZED
LF	=	LINEAL FOOT
LT	=	LEFT
MAX.	=	MAXIMUM
MDD	=	MAXIMUM DRY DENSITY
MIN.	=	MINIMUM
MPWSS	=	MONTANA PUBLIC WORKS STANDARD SPECIFICATIONS
OC	=	ON CENTER
PROP.	=	PROPOSED
PVC	=	POLYVINYL CHLORIDE
RCP	=	REINFORCED CONCRETE PIPE
RT	=	RIGHT
SF	=	SQUARE FOOT
TYP	=	TYPICAL

QUALITY CONTROL TESTING

TEST SPECIFICATION/MATERIAL	TEST METHOD	MINIMUM FREQUENCY
EARTHWORK		
TRENCH BACKFILL	MOISTURE-DENSITY LAB TEST PER SECTION 02221	1 SUBMITTAL/SOIL TYPE ENCOUNTERED 1 SUBMITTAL/BORROW SOURCE
TRENCH COMPACTION	IN PLACE DENSITY (95% MIN.)	1 TEST/200LF/2 FT OF VERTICAL DEPTH BEGINNING 1 FT ABOVE CROWN OF PIPE
TRENCH COMPACTION (LATERALS, STRUCTURES, VALVES, HYDRANTS AND MANHOLES)	IN PLACE DENSITY (95% MIN.)	1 TEST/2 FT OF VERTICAL DEPTH BEGINNING 1 FT ABOVE CROWN OF PIPE WITHIN 2 FT FROM EDGE OF STRUCTURE, VALVE, HYDRANT, OR MANHOLE
PIPE BEDDING	TYPE I BEDDING GRADATION & PLASTICITY INDEX / TYPE II BEDDING GRADATION	1 SUBMITTAL
SUBGRADE AND EMBANKMENT	MOISTURE-DENSITY LAB TEST PER SECTION 02230	1 SUBMITTAL/SOIL TYPE ENCOUNTERED 1 SUBMITTAL/BORROW SOURCE
COMPACTION OF SUBGRADE AND EMBANKMENT FOR ROADWAYS	IN PLACE DENSITY (95% MIN.)	1 TEST/LIFT/200 LF/12 FT. LANE AND TOP 6 INCHES (OFFSET TESTS BY 100' FOR ALTERNATING LIFTS)
CRUSHED BASE COURSE	GRADATION - MOISTURE DENSITY - FRACTURED FACES (CRUSHED) - LA ABRASION, LL, PL, AND PI LAB TESTING PER SECTION 02235	1 SUBMITTAL
COMPACTION OF CRUSHED BASE COURSE FOR ROADWAYS	IN PLACE DENSITY (95% MIN.)	1 TEST/LIFT/200 LF/12 FT. LANE
ASPHALT CONCRETE PAVEMENT		
ASPHALT CONCRETE PAVEMENT (BASE COURSE AND SURFACE COURSE)	MIX DESIGN GRADATION ASPHALT OIL CONTENT MARSHALL TEST RICE SPECIFIC GRAVITY (SECTION 02510)	1 SUBMITTAL 1 TEST 1 TEST 1 TEST 1 TEST
COMPACTION OF ASPHALT CONCRETE PAVEMENT	IN PLACE DENSITY/THICKNESS	4 CORES/APPROACH
PORTLAND CEMENT CONCRETE PAVEMENT		
PORTLAND CEMENT CONCRETE	MIX DESIGN	1 SUBMITTAL
PORTLAND CEMENT CONCRETE PAVEMENT	AIR, SLUMP, AND 7-DAY & 28-DAY COMPRESSIVE STRENGTH	1 TEST/DAY OR EVERY 50 CY
PORTLAND CEMENT CONCRETE FLATWORK AND CURB & GUTTER	AIR, SLUMP, AND 7-DAY & 28-DAY COMPRESSIVE STRENGTH	1 TEST/DAY OR EVERY 50 CY

SURVEY INFORMATION

1. ALL CONTOURS, ELEVATIONS, AND COORDINATES FOR THE PROJECT ARE BASED ON A LOCAL COORDINATE SYSTEM.

2. THE INITIAL SITE SURVEY WAS PERFORMED IN JULY 2018 AND MAY HAVE SINCE TRANSFORMED.

3. THE ENGINEER WILL PROVIDE CONSTRUCTION STAKING INCLUDING INFORMATION FOR ROAD CENTERLINE ALIGNMENT, STORM WATER DITCHES, AND CULVERT LOCATIONS. IT IS ANTICIPATED THAT ALL STAKING CAN BE COMPLETED IN ONE SITE VISIT. ADDITIONAL STAKING SHALL BE PAID FOR AT THE CONTRACTOR'S EXPENSE.

4. THE OWNER AND ENGINEER ARE NOT RESPONSIBLE FOR STAKES THAT ARE DISTURBED OR DESTROYED. MARK AND PROTECT EXISTING PROPERTY PINS AND/OR STREET MONUMENTS. HIRE A LICENSED LAND SURVEYOR TO REPLACE ALL PROPERTY CORNERS OR OTHER MONUMENTS THAT ARE DESTROYED DURING CONSTRUCTION.

PRELIMINARY
NOT FOR
CONSTRUCTION

TRIPLE TREE
ENGINEERING

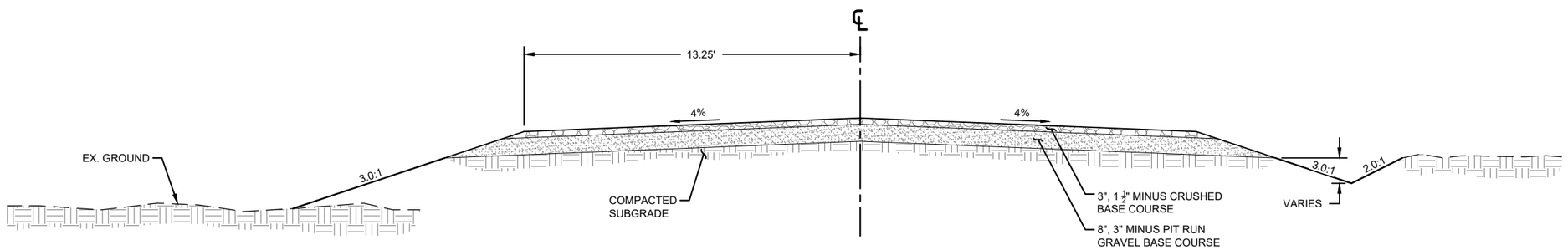
REVISIONS		
DATE	DESCRIPTION	

RIVER BEND ESTATES - PHASE III
HIGGINS ENTERPRISES LTD.
CASCADE COUNTY, MONTANA

GENERAL NOTES

PROJECT #:	19-72
DRAFTED BY:	JEH
CHECKED BY:	SLP
DATE:	04/29/2020

SHEET
G-2



1 / D-1 **TYPICAL SECTION - 1**

PRELIMINARY
NOT FOR
CONSTRUCTION

TRIPLE TREE
ENGINEERING

REVISIONS		
DATE	DESCRIPTION	

RIVER BEND ESTATES - PHASE III
HIGGINS ENTERPRISES LTD.
CASCADE COUNTY, MONTANA

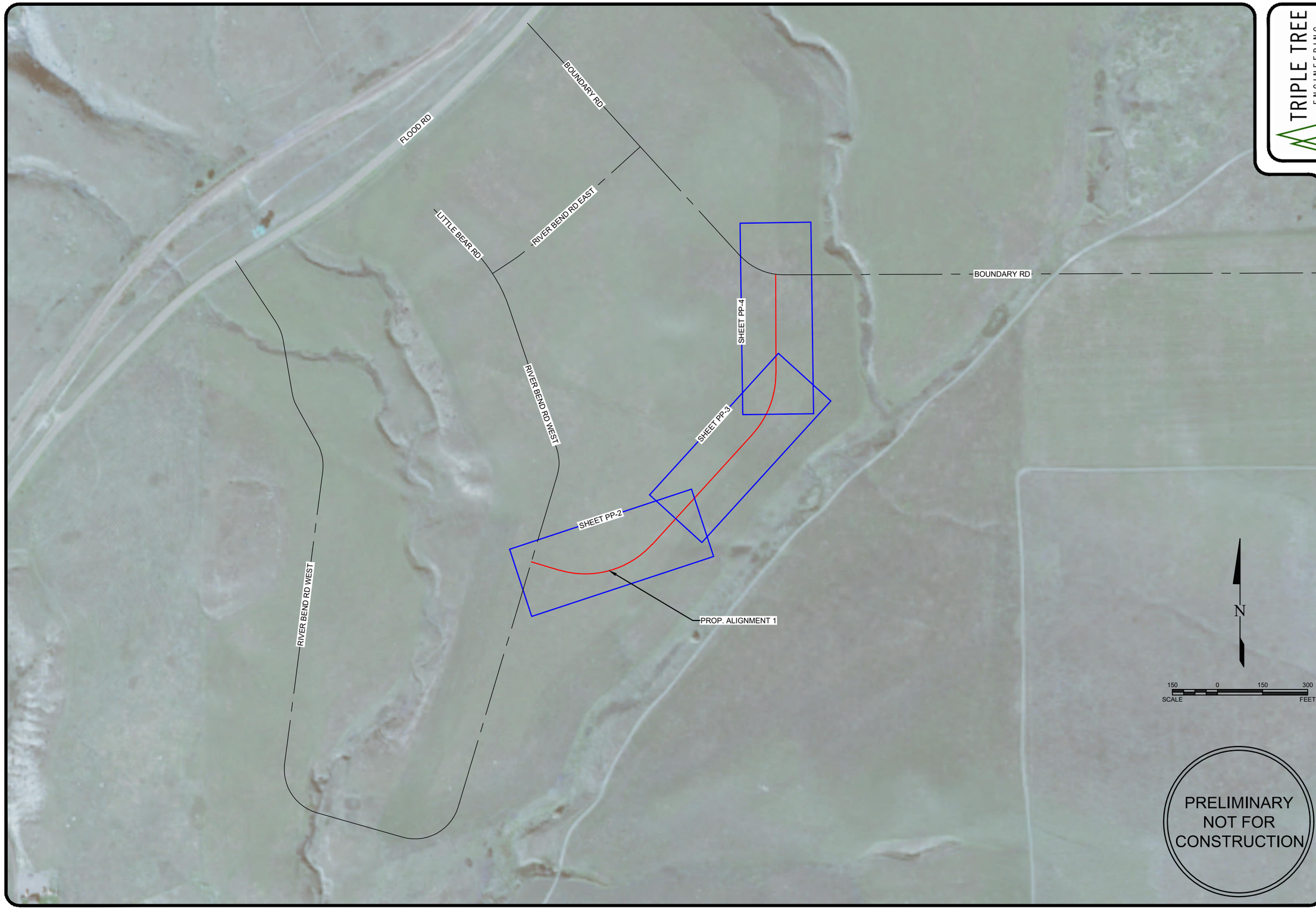
DETAILS

PROJECT #:	19-72
DRAFTED BY:	JEH
CHECKED BY:	SLP
DATE:	04/29/2020

SHEET
D-1

May 05, 2020 - 12:55pm - P:\Great Falls\19-72 River Bend Phase III\Design\CADD\ConstructionDrawings\PlanSetDrawings\19-72_Details.dwg

May 05, 2020 - 12:55pm - P:\Great Falls\19-72 River Bend Phase III\Design\CADD\ConstructionDrawings\PlanSetDrawings\19-72_Details.dwg



TRIPLE TREE
ENGINEERING

REVISIONS

DATE	DESCRIPTION

RIVER BEND ESTATES
HIGGINS ENTERPRISES LTD.
CASCADE COUNTY, MONTANA

ROAD PLAN & PROFILE INDEX

PROJECT #:	19-72
DRAFTED BY:	CE
CHECKED BY:	SLP
DATE:	07/15/2020

SHEET
PP-1

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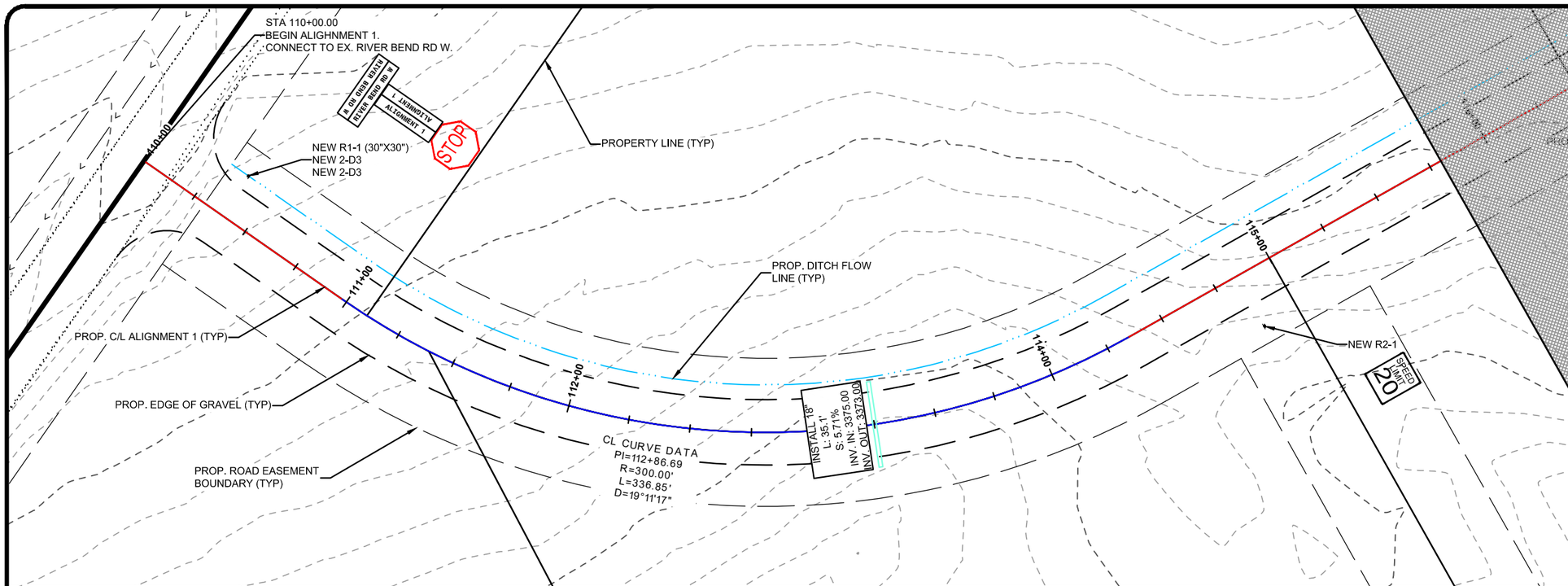
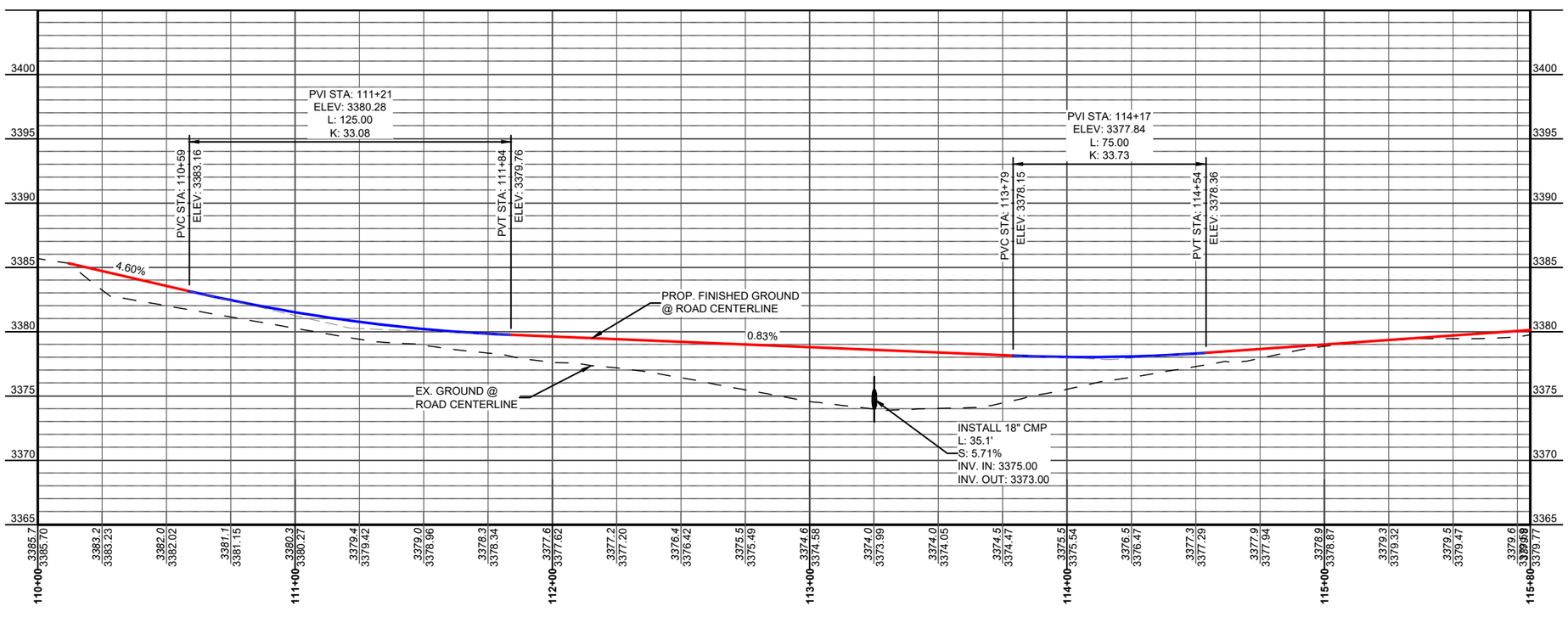
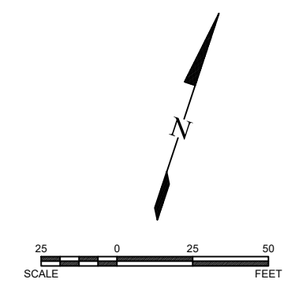


CONSTRUCTION NOTES

1. SIGN MATERIALS AND INSTALLATION SHALL BE IN ACCORDANCE WITH THE MUTCD MANUAL AND MDT DETAILED DRAWINGS 619-00, 619-02, 619-16, 619-20, AND 619-21. SIGNS SHALL BE MOUNTED ON EITHER STEEL OR TREATED WOOD POSTS.





PRELIMINARY
NOT FOR
CONSTRUCTION

TRIPLE TREE
ENGINEERING

REVISIONS	
DATE	DESCRIPTION

RIVER BEND ESTATES - PHASE III

HIGGINS ENTERPRISES LTD.
CASCADE COUNTY, MONTANA

ALIGNMENT 1 PLAN & PROFILE

PROJECT #:	19-72
DRAFTED BY:	JEH
CHECKED BY:	SLP
DATE:	04-29-2020

SHEET
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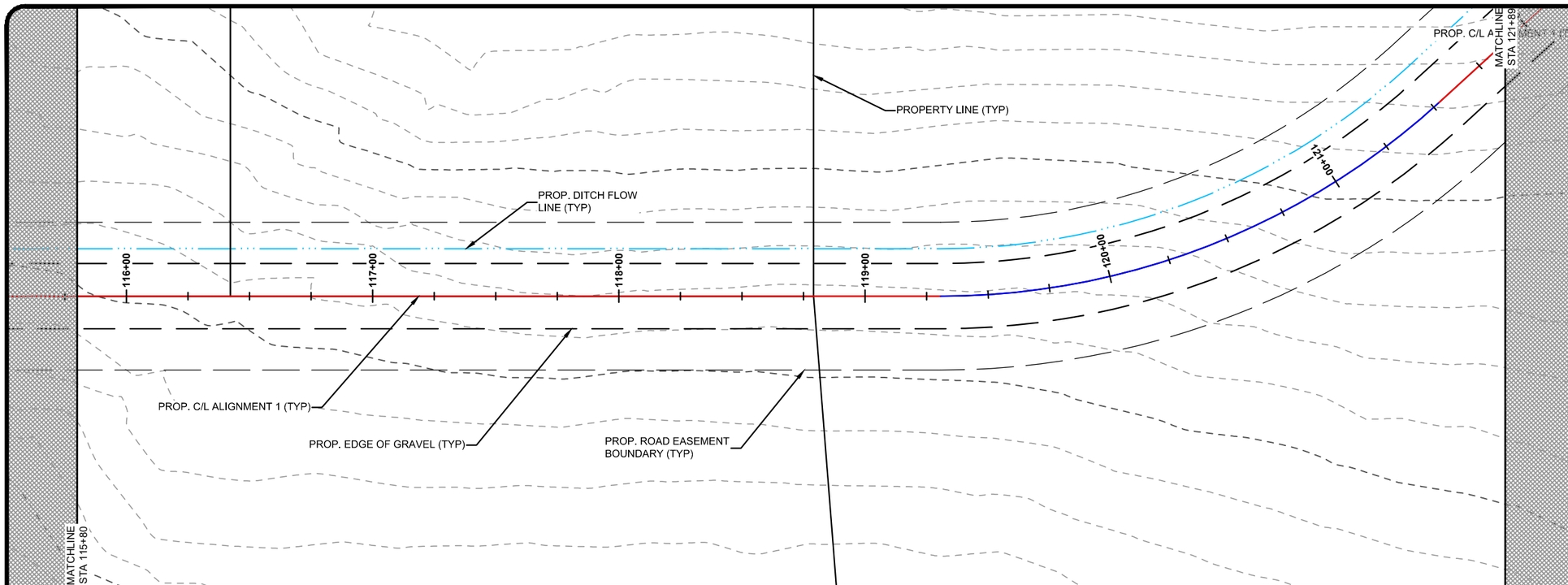

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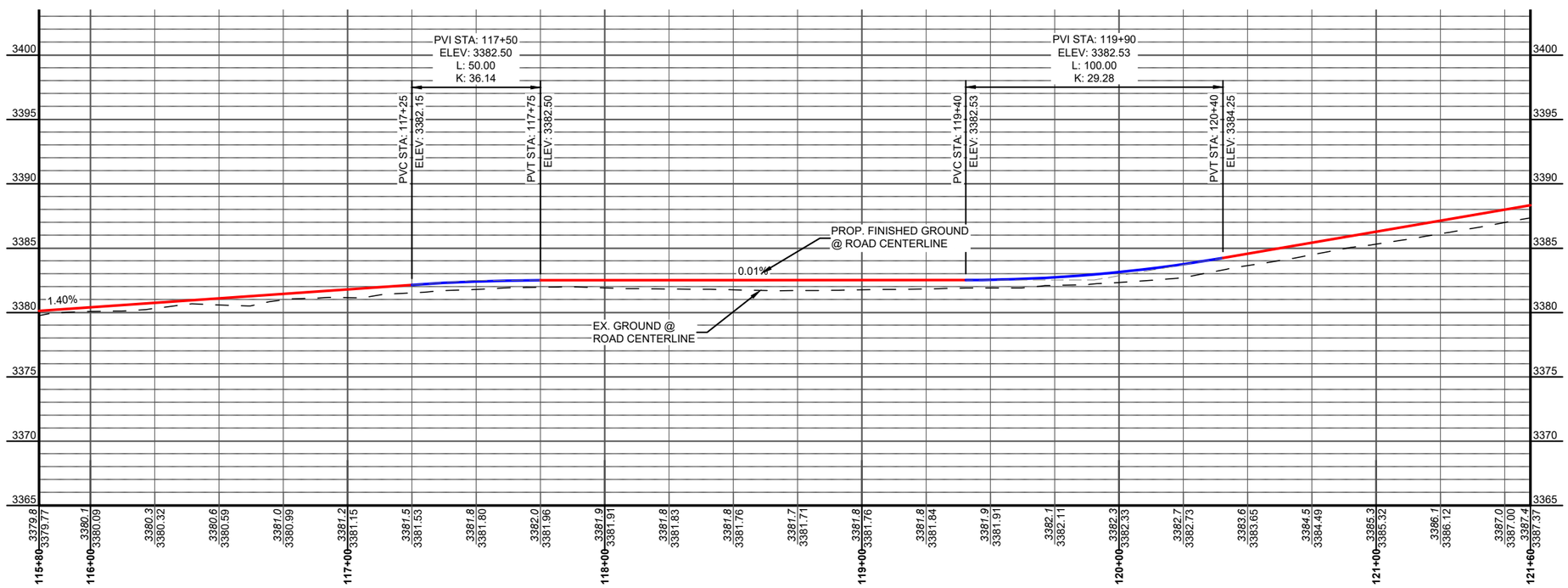

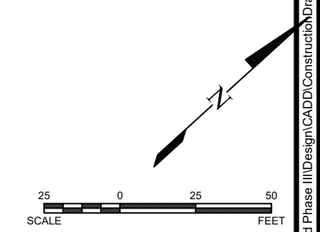

PRELIMINARY
NOT FOR
CONSTRUCTION

TRIPLE TREE
ENGINEERING

REVISIONS	
DATE	DESCRIPTION

RIVER BEND ESTATES - PHASE III

HIGGINS ENTERPRISES LTD.
CASCADE COUNTY, MONTANA

ALIGNMENT 1 PLAN & PROFILE

PROJECT #:	19-72
DRAFTED BY:	JEH
CHECKED BY:	SLP
DATE:	04-29-2020

SHEET
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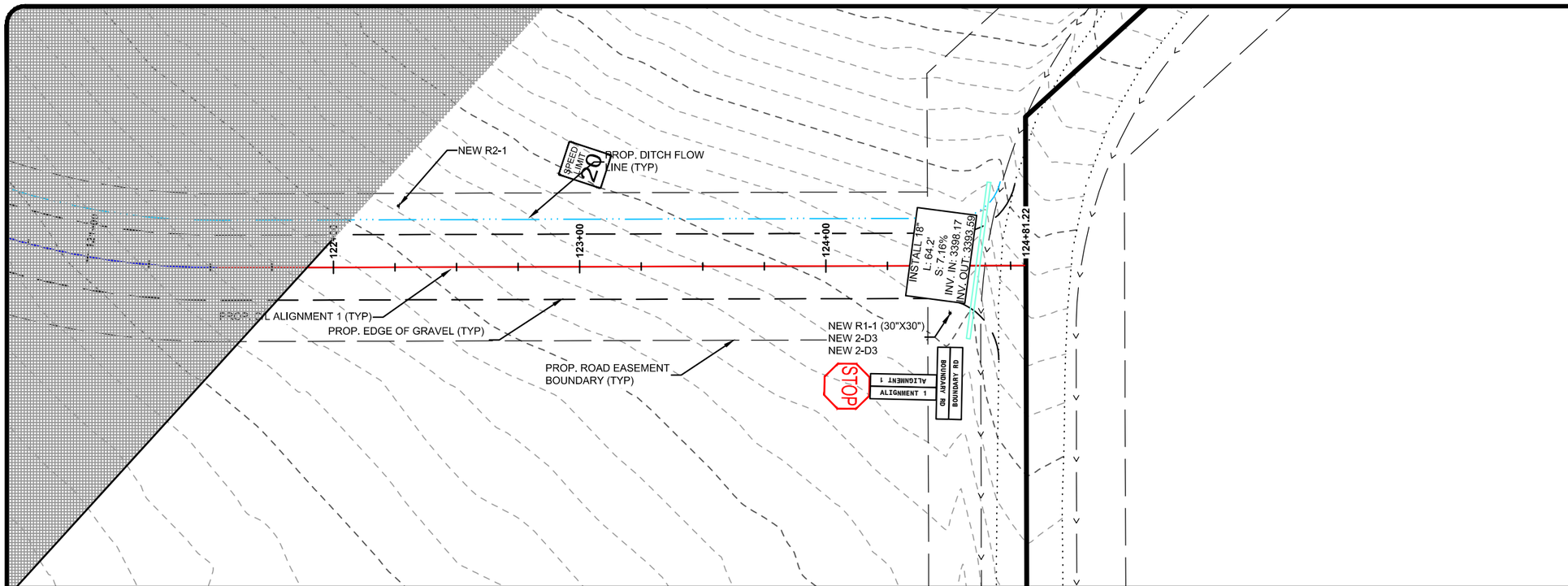

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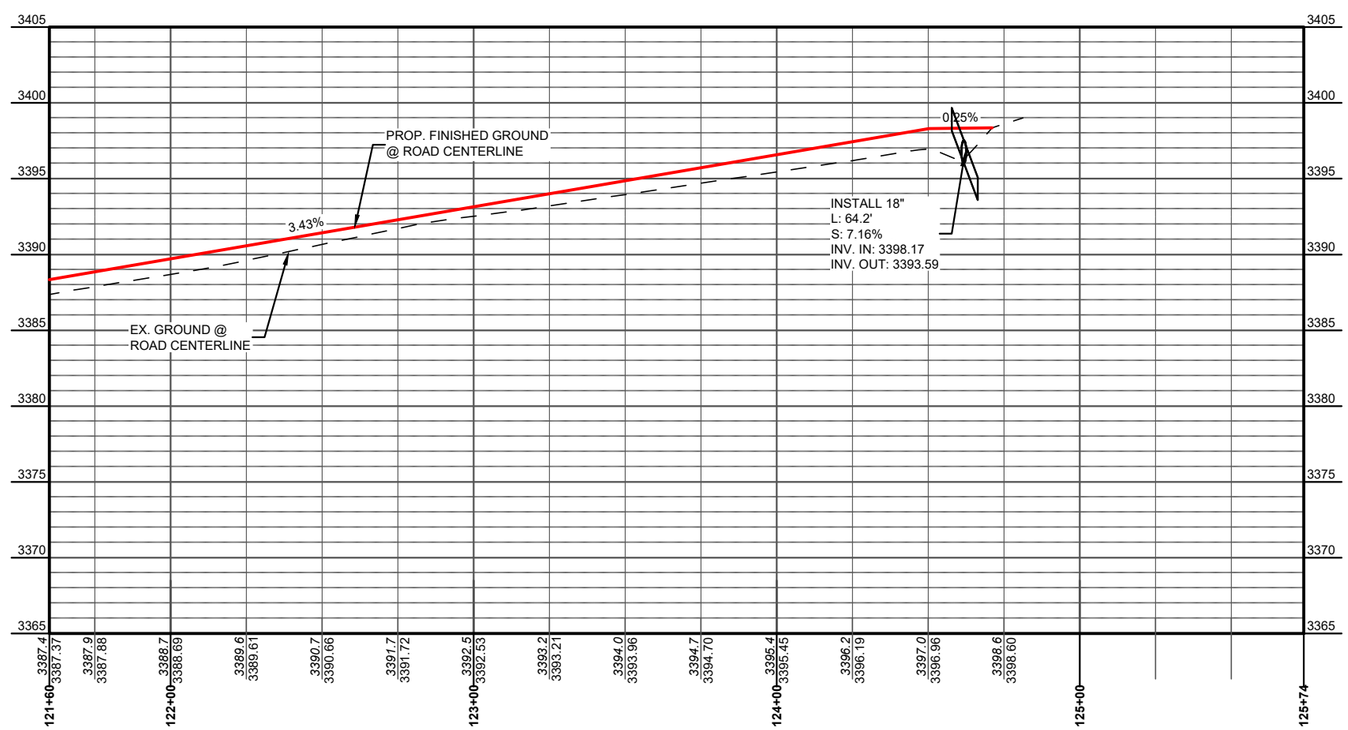

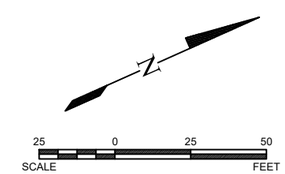

PRELIMINARY NOT FOR CONSTRUCTION

TRIPLE TREE ENGINEERING

REVISIONS	
DATE	DESCRIPTION

RIVER BEND ESTATES - PHASE III

HIGGINS ENTERPRISES LTD.
CASCADE COUNTY, MONTANA

ALIGNMENT 1 PLAN & PROFILE

PROJECT #:	19-72
DRAFTED BY:	JEH
CHECKED BY:	SLP
DATE:	04-29-2020

SHEET

PP-4

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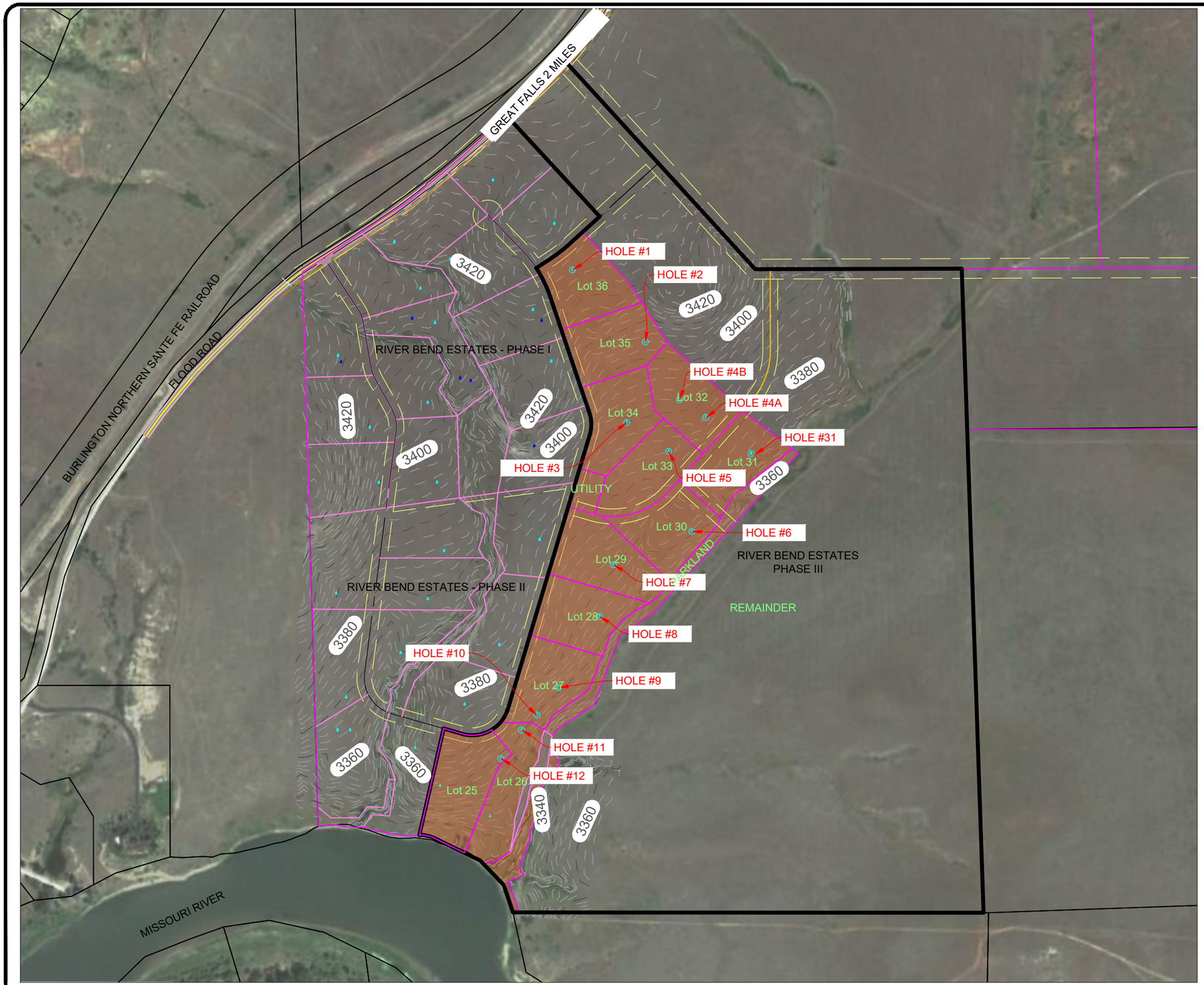
RIVER BEND ESTATES
PHASE III
Test Pit Exhibit



NOTES:
12 TESTS PITS WERE EXCAVATED ON APRIL 16TH, 2020.. STAFF FROM CASCADE COUNTY LOGGED THE TEST PITS. THE TEST PIT LABELS CORRESPOND WITH THE SOIL PROFILE LOGS PREPARED BY THE COUNTY ON APRIL 17TH, 2020 .
1 ADDITION TEST PIT (#31) WAS EXCAVATED BY THE OWNER AND LOGGED BY CASCADE COUNTY ON JULY 8TH, 2020. THE TEST PIT LABEL CORRESPONDS WITH THE SOIL PROFILE LOG.

200 0 200 400
SCALE FEET

PRELIMINARY
NOT FOR
CONSTRUCTION

TRIPLE TREE
ENGINEERING

Jul 29, 2020 - 2:41pm - P:\Great Falls\19-72 River Bend Phase III\Preliminary Plat Application\Exhibits\Phase III Prelim Plat Exhibits.dwg

TP 12	TP 11	TP 10	TP 9	TP 8	TP-7	TP 6	TP 5	TP 4 A	TP 4 B	TP 3	TP 2	TP 1
Lot 25	Lot 26 & 27	Lot 26 & 27	Lot 28	Lot 29	Lot 30	Lot 31	Lot 33	Lot 32	Lot 32	Lot 34	Lot 35	Lot 36
0.5 gpd/sqf	0.5 gpd/sqf	0.5 gpd/sqf	0.5 gpd/sqf	0.5 gpd/sqf	0.5 gpd/sqf	0.5 gpd/sqf	0.4 gpd/sqf	0.4 gpd/sqf	0.4 gpd/sqf	0.5 gpd/sqf	0.5 gpd/sqf	0.4 gpd/sqf
0"-12" silty loam	0"-12" silty loam	0"-18" silty loam	0"-24" silty loam	0"-16" silty loam	0"-16" silty loam	0"-16" silty loam	0"-16" silty loam	0"-24" silty loam	0"-36" sandy clay loam	0"-18" silty loam	0"-24" silty loam	0"-28" silty loam
12" - 144" fine sandy loam	12"-144" fine sandy loam	18"-144" fine sandy loam	24"-156" fine sandy loam	16"-152" fine sandy loam	16"-154" fine sandy loam	16"-144" fine sandy loam	16"- 120" very fine sandy loam	24"-54" channery sandy clay loam	36"-144" channery sandy clay loam	18"-150" fine sandy loam	24"-144" fine sandy loam	16"-55" gravelly silty loam
							120" - 122" channery very fine sandy loam	54"-98" channery sandy clay loam				

Site Evaluation - SOIL PROFILE

DATE 7-8-2020

Property Owner Rick Higgins Septic (N/R) _____ Subdivision_____ # of Lots____

Property Address_____ Proposed Subdivision Name_____

Contractor Triple Tree Legal: T_____ R_____ Sec_____ 1/4_____1/4_____

Soil Evaluator Bruce Treis Round trip mileage @ $1.00/mile. # RT miles____Amount due_____

Include in the diagram all that apply.

- ☐ Wells
- ☐ Cisterns
- ☐ Existing Buildings
- ☐ Ground Water Sources (springs etc)
- ☐ Flood Plain
- ☐ Replacement Area,
- ☐ Slope (direction & percent)
- ☐ Water sources on adjacent property

N

River Bend Estates Phase 3

Soil profile 1 Lot # 31 Soil profile 2 Lot#_____

Latitude: 47° 26' 27" Latitude:_____

Longitude: 111° 20' 29" Longitude:_____

Identify: soil types and thickness; depth to bed rock, seasonally high ground water, ground water, bottom of hole.

Application Rate: 0.41 Application Rate:_____

Depth in Inches: Soil Type: Depth in Inches: Soil Type:

0-9" fine sandy loam

9"-154" very fine sandy loam

Revised 2019

SOIL PROFILE

DATE 1-10-19

Property Owner Rick Higgins

Septic (N/R) _____ **Subdivision** _____ **# of Lots** ____

Property Address _____

Proposed Subdivision Name River Bend Estates

Contractor Triple T Eng

Legal: T _____ **R** _____ **Sec** _____ **1/4** _____ **1/4** _____

Soil Evaluator Bruce Tree

FEES PAID: _____

AREA MAP

N

Soil Analysis

Hole # 2	Hole # 8	Hole # 7 opt 1	Hole # 7 opt 2
0-8" Sandy Clay	0-6" Sandy Clay	0-6" Sandy Loam	0-14" Sandy Clay
Loam with organics	Loam with organics	with organics	Loam with organics
8"-43" Silty Loam	6"-47" Sandy Clay	6"-98" Fine Sandy	14"-108" Silty Loam
43"-74" Silty Loam	Loam	Loam	
with Channers	47"-75" Silty Loam	98"-146" Fine Sandy	
74"-114" Silty Loam	75"-90" Channery	Loam	
	Clay Loam		
Application Rate			
0.41 gpd/ft²	0.3 gpd/ft²	0.5 gpd/ft²	0.41 gpd/ft²

SOIL PROFILE

DATE 1-10-19

Property Owner Rick Higgins

Septic (N/R) _____ Subdivision _____ # of Lots ____

Property Address _____

Proposed Subdivision Name River Bend Estates

Contractor Triple T Eng

Legal: T_____ R_____ Sec_____ 1/4_____ 1/4_____

Soil Evaluator Bruce Treis

FEES PAID: _____

AREA MAP

N

Soil Analysis

Hole # 7 opt 3	Hole # 10	Hole # 17 opt 1	Hole # 19 opt 1
0-14" Sandy Clay	0-16" Silty Loam	0-12" Sandy Clay	0-8" Sandy Clay
Loam with Organics	with Organics	Loam with Organics	Loam with organic
14"-126" Silty Loam	16"-44" Silty Loam	12"-124" Silty Loam	8"-114" Silty Loam
	44"-108" Chennery		
	Sandy Clay Loam		
Application Rate			
0.4 gpd/ft²	0.4 gpd/ft²	0.4 gpd/ft²	0.4 gpd/ft²

SOIL PROFILE

DATE 1-10-19

Property Owner Rick Higgins

Septic (N/R) _____ Subdivision _____ # of Lots ____

Property Address _____

Proposed Subdivision Name River Bend Estates

Contractor Triple T Eng

Legal: T_____ R_____ Sec_____ 1/4_____ 1/4_____

Soil Evaluator Bruce Treis

FEES PAID: _____

AREA MAP

N

Soil Analysis

Hole # 23 opt 2	Hole # 25	Hole #	Hole #
0-8" sandy clay	0-4" silty loam		
loam with organics	with organics		
8"-116" silty loam	4"-116" Very		
	fine sand		
Application Rate			
0.4 gpd/ft²	0.4 gpd/ft²		

SOIL PROFILE

DATE 7-31-18

Property Owner Higgins Enterprises

Septic (N/R) _____ Subdivision _____ # of Lots 12

Property Address _____

Proposed Subdivision Name River Bend Estates

Contractor Triple T Engineering

Legal: T_____ R_____ Sec_____ 1/4_____ 1/4_____

Soil Evaluator Bruce Treis

FEES PAID: _____

AREA MAP

Bare Property

N

Soil Analysis

	Hole # 1	Hole # 2	Hole # 3	Hole # 4
lat.	47.44284	47.44207	47.44133	47.44878
long.	-111.34687	-111.34809	-111.34759	-111.34737
	0-8" Sandy Clay Loam with organics	0-8" Sandy Clay Loam with organics	0-6" Silty Loam with organics	0-6" Silty Loam with organics
	8"-96" Sandy Clay Loam	8"-43" Silty Loam	6"-96" Silty Loam	6"-96" Silty Loam
		43"-74" Silty Loam with Channers		
		- Bedrock		
application rate	0.4 gpd/ft²	0.4 gpd/ft²	0.4 gpd/ft²	0.4 gpd/ft²

SOIL PROFILE

DATE 7-31-18

Property Owner Higgins Enterprises

Septic (N/R) _____ Subdivision _____ # of Lots 12

Property Address _____

Proposed Subdivision Name River Bend Estates

Contractor Triple T Engineering

Legal: T_____ R_____ Sec_____ 1/4_____ 1/4_____

Soil Evaluator Bruce Treis

FEES PAID: _____

AREA MAP

Bare Property

N

Soil Analysis

	Hole # 5	Hole # 6	Hole # 7	Hole # 8
Lat	47.4407	47.44155	47.44184	47.44412
Long	-111.34653	-111.34673	-111.34602	-111.34477
	0-8" Silty Loam with organics	0-6" Silty Loam with Organics	0-6" Sandy Loam with organics	0-6" Sandy Clay Loam with Organics
	8"-96" Silty Loam	6"-96" Silty Loam	6"-98" Sandy Loam	6"-34" Sandy Clay Loam
				34"-84" Clay Loam
Application Rate	0.4 gpd/ft²	0.4 gpd/ft²	0.5 gpd/ft²	0.3 gpd/ft²

SOIL PROFILE

DATE 7-31-18

Property Owner Higgins Enterprises

Septic (N/R) _____ Subdivision _____ # of Lots 12

Property Address _____

Proposed Subdivision Name River Bend Estates

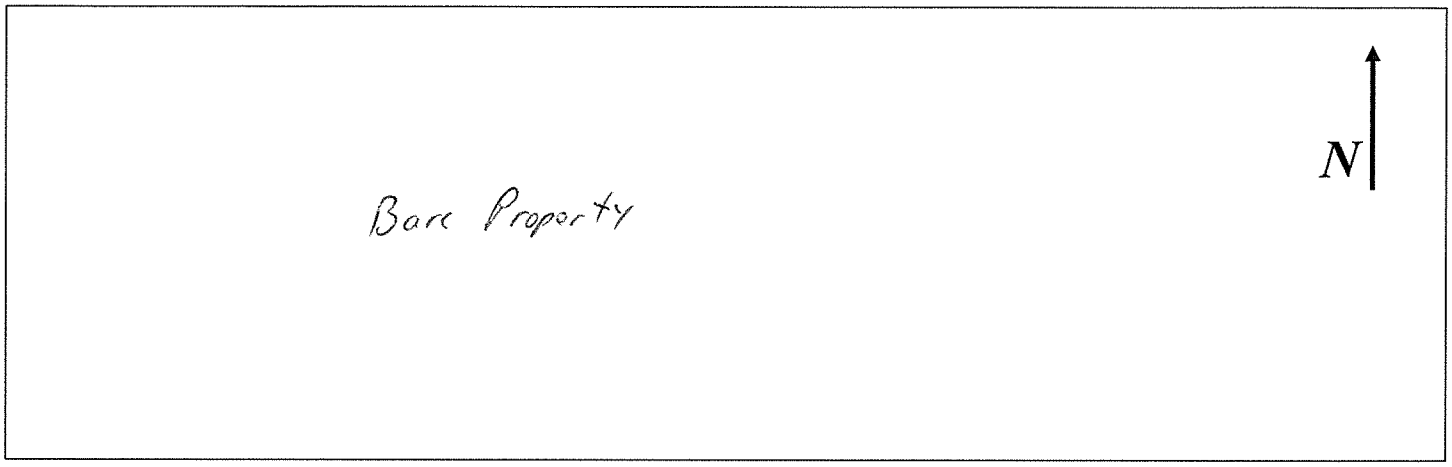
Contractor Triple T Engineering

Legal: T_____ R_____ Sec_____ 1/4_____ 1/4_____

Soil Evaluator Bruce Treis

FEES PAID: _____

AREA MAP



Soil Analysis

	Hole # 9	Hole # 10	Hole # 11	Hole # 12
at	47.44207	47.44255	47.44315	47.44323
ng	-111.34483	-111.34492	-111.34634	-111.34685
	0-5" Clay Loam	0-4" Silty Loam	0-8" Silty Loam	0-6" Silty Loam
	with Organics	with Organics	with Organics	with Organics
	5"-28" Clay Loam	4"-28" Silty Loam	8"-96" Silty Loam	6"-96" Silty Loam
	28"-96" Gravelly	28"-74" Gravelly		
	Sandy Clay Loam	Sandy Clay Loam		
		- Bed Rock -		
Application				
Rate	0.3 gpd/ft²	0.4 gpd/ft²	0.4 gpd/ft²	0.4 gpd/ft²

Please Note: The permits in this package are valid in **January through December of 2018** for solid waste use.
There will be a $10 replacement fee for each lost permit.

With the exception of the Monarch site which has a seasonally adjusted schedule and Fort Shaw, our staffed Rural Collection Sites are open to Cascade County Solid Waste District members and special permit holders four days a week. Please remember that these sites are for household waste only. **Punch cards are not valid for the disposal of special waste or Freon containing materials.**

Hours of Operation:

Hardy Creek, Ulm, Stockett, and Armington Container Sites:
Tuesday 9:00 am to 4:00 pm
Wednesday 9:00 am to 4:00 pm
Saturday 9:00 am to 4:00 pm
Sunday 9:00 am to 4:00 pm

Fort Shaw Container Site
Wednesday 9:00 am to 4:00 pm
Saturday 9:00 am to 4:00 pm
Sunday 9:00 am to 4:00 pm

Monarch Container Site
Tuesday 9:00 am to 4:00 pm (Year round)
Friday 9:00 am to 4:00 pm (June - August Only) ***
Sunday 9:00 am to 4:00 pm (Year round)

Cascade and Vaughn Container Sites:
Tuesday 7:30 am to 4:30 pm
Wednesday 7:30 am to 4:30 pm
Saturday 7:30 am to 4:30 pm
Sunday 7:30 am to 4:30 pm

Holiday Closures:

The staffed Rural Collection Sites are closed to the public on the following holidays: New Year's Day, Easter Sunday, Memorial Day, 4th of July, Labor Day, Thanksgiving, and Christmas Day.

Remember: An unused 26 punch permit can the turned in for credit to Montana Waste Systems, **provided you pay for and receive curbside service**. The Board of Commissioners has approved allowing members to turn in an unused 26 punch permit for a $35 credit on your curbside service during the period that the permit is valid. This will be a credit on your Montana Waste Systems account. Please mail your unused 26 punch permit to: Montana Waste Systems at PO Box 2645, Great Falls, MT 59403. Should you have questions, please feel free to contact Montana Waste Systems at 406-761-2545.

Administration:

We value your comments and concerns and will continue to work to address them. To improve our feedback system we have a dedicated e-mail ccswsuggestions@cascadecountymt.gov. You can also find useful information about our program under the Departments tab on our website: www.cascadecountymt.gov.

✂ -

COUNTY OF CASCADE • STATE OF MONTANA

January 1, 2018 - December 31, 2018

5846600 301
REGULAR HOUSE

Please note: each punch used at High Plains Landfill

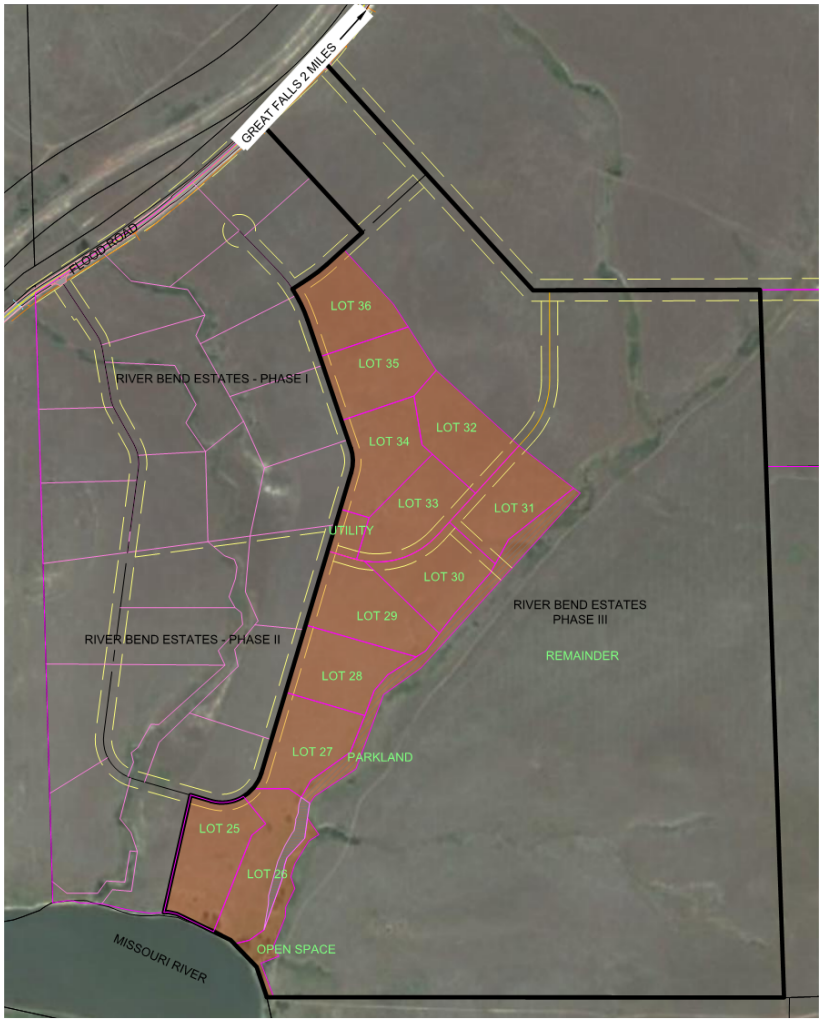
No county taxes are used to fund the operations of the Cascade County Soli
through this permit system and onsite dumping fees are required to c

HIGGINS N RICHARD & JUDY
PO BOX 322
ULM MT 59485–0322

① & ②
761-2545.
Mont. Waste
Systems 3201 15th St
OR Black Eagle
Cascade Cty Solid
Waste Dist
454-6920

Summary of Probable Impacts

RIVER BEND ESTATES PHASE III MAJOR SUBDIVISION



Cascade County, MT

July 2020

Prepared for:

Higgins Enterprises
PO Box 322
Ulm, MT 59485

Prepared by:

Jason Crawford, PE
800 N. Last Chance Gulch
Suite 101
Helena, MT 59601
406-461-2115

TRIPLE TREE
ENGINEERING

1 SUMMARY OF PROBABLE IMPACTS 1
1.1 Effects on Agriculture 1
1.2 Effects on Agricultural Water User Facilities 1
1.3 Effects on Local Services 1
1.4 Effects on the Historic or Natural Environment 4
1.5 Effects on Wildlife and Wildlife Habitat 6
1.6 Effects on the Public Health and Safety 6

List of Appendices

Appendix A – NRCS Soils Information

Appendix B – Census Information

Appendix C – Agency Correspondence

Appendix D – Traffic Information

Appendix E – Cascade County Tax Information

1 SUMMARY OF PROBABLE IMPACTS

1.1 Effects on Agriculture

The property proposed to be subdivided has not been farmed for many years nor is it timber land. There are active farms in the area, but the area of River Bend Estates Phase III is not designated as prime farmland or farmland of statewide importance as defined by the Natural Resources Conservation District (NRCS). The NRCS Soils map and information is included in Appendix A. Following is a summary of the soils recorded by NRCS for the property:

NRCS Map Unit	Map Unit Name	Farm Classification
21	Big Timber-Castner Complex	Not Prime Farmland
28	Bitton and Roy Soils	Not Prime Farmland
106	Ipano-Hillon Complex	Not Prime Farmland

With the development of the property we do not anticipate conflicts or nuisance problems with nearby agricultural operations. It appears that the majority of the farming in the area is either located on the opposite side of the Missouri River or on the opposite side of Interstate 15 from the proposed development. These two corridors provide a distinct barrier between most of the agricultural lands and the development. If anything, the proposed development would increase the value of any farmlands likely due to the increased development potential.

1.2 Effects on Agricultural Water User Facilities

We also do not anticipate conflicts or nuisance problems with agricultural water user facilities. There are no existing agricultural water systems on or adjacent to the property. There is no irrigation ditch system, head gates, siphons, sprinkler systems, or any other agricultural water user facilities on or adjacent to the property.

1.3 Effects on Local Services

The proposed use and number of lots in each are included below:

___12__ Residential, single family

____0__ Residential, multiple family

_____0__ Types of multiple family structures and number of each (e.g. duplex, 4-plex)

____0__ Planned unit development (No. of units)

____0__ Condominium (No. of units)

____0__ Mobile Home Park

____0__ Recreational Vehicle Park

____0__ Commercial or Industrial

____0__ Other (Please describe_____)

According to MT Board of Housing, Census and Economic Information Center, and information from the 2010 US Census Bureau, the average household size in Cascade County is 2.32 people, the projected population growth is 0.40%, and the percentage of people under 18 years of age is 22.5%. The Census Data is included in Appendix B.

River Bend Estates Phase III is a proposed 12 lot subdivision consisting of 12 single family lots. The projected number of residents is 28 (12*2.32) with 6 (33*22.5%) of those residents under age 18. The census indicates a growth factor of 0.40% for Cascade County; therefore, we will assume that 0.40% of our population will come from outside Cascade County. The population increase from outside Cascade County is assumed to be zero (28*0.40%=0.112 people). It is expected that many of the residents in River Bend Estates Phase III will be people who relocated within the same school, fire, and law enforcement districts.

Schools

We submitted a request for comments to the Director of Business Operations of the Great Falls Public Schools (GFPS) on April 21, 2020. GFPS responded on April 24, 2020 indicating the property is in the district and the district can accommodate the additional students. The GFPS correspondence is included in Appendix C.

Roads

According to the 7th Edition of the Institute of Transportation Engineers Trip Generation the following vehicle trip projections can be made:

- Single-Family Detached Housing – 9.57 average vehicle trip ends per dwelling unit on a weekday
    - 12 single family lots * 9.57 = 114.8 vpd

Based on this information River Bend Estates Phase III will generate approximately 115 vehicle trips per day.

According to the 2014 Great Falls Area Long Range Transportation Plan (LRTP), Flood Road is an undivided 2 lane collector with no TWLTL. Flood Road has a theoretical roadway capacity of 12,000 vpd. The LRTP indicates the existing average annual daily traffic is 1,405 trips. The existing volume to capacity ratio for Flood Road is 0.082; therefore, Flood Road has adequate capacity to handle the traffic generated from the River Bend Estates Phase III Subdivision. Pages from the LRTP are included in Appendix D.

The limited traffic increase is not expected to cause an increase in maintenance problems on the existing roads. We do not expect the limited increase in traffic to require additional plowing, mowing, or weed control along Flood Road.

One additional road is proposed in addition to the River Bend Estates Phase I road internal to the subdivision to be utilized for Phase III. Both roads are 26.5' wide, gravel surfaced, crowned roads with ditches on either side to convey storm water. At the approaches with Flood Road and

at the intermittent drainage crossing culverts have been sized to meet Cascade County and DEQ requirements. For Phase I and Phase II several detention ponds were sized and designed in accordance with DEQ Circular 8 and Cascade County requirements. The additional detention pond requirements will be designed for Phase III. The Phase III improvements will be coordinated with the Phase I and Phase II improvements meeting Cascade County and DEQ requirements while minimizing disturbance. Construction of the Phase III improvements are scheduled for the spring of 2021. The disturbed surfaces will be reseeded with a native grass mixture.

Fire and Police Protection

The proposed subdivision lies within the Gore Hill Volunteer Fire Department coverage area. The Department is made up of 18 volunteer firefighters and two fire stations. In accordance with the Cascade County July 18, 2019 River Bend Estates Phase II Major Subdivision approval, condition of approval #16 stated "A fire suppression cistern with a capacity of 64,000 installed on-site, properly maintained and equipped with the proper appurtenances for the Gore Hill volunteer Fire Department to use for firefighting at all times, for Phases 1 through 4, provided approval of Gore Hill Fire Chief is obtained. Provide the developers install and the homeowners' association maintain an accessible approach for access to the cistern at all times. A central location was agreed to by the fire chief and the 64,000-gallon tank was installed on the utility lot shown in the Phase III preliminary plat as part of Phase I construction.

The proposed River Bend Estates Phase III lies within Cascade County; therefore, the Cascade County Sheriff's Department would provide any law enforcement protection.

According to the 2010 US Census Bureau the growth factor for Cascade County is 0.40%; therefore, we have assumed that 0.40% of the River Bend Estates Phase III population will come from outside Cascade County. The population increase from outside Cascade County is assumed to be zero (28*0.40%=0.112 people).

Base on the above information we expect that many if not all of the residents in the proposed River Bend Estates Phase III will be people who relocated within the same fire and police protection districts; therefore, we are not anticipating additional fire and police protection needs for the River Bend Estates Phase III Subdivision.

Water, Sewer, and Solid Waste Systems

The proposed water supply and sewer system is individual wells and individual drain fields. We have coordinated with Doug Mann from the DNRC-Lewistown Regional Office regarding water rights. The DNRC correspondence is included in Appendix C.

Several soils test pits have excavated across the site by the owner and soils profiles logged by the Cascade County Health Department. A test pit for every drain field will be excavated prior to submittal to DEQ. The soils information will be used to size the drain fields. The test pit logs are included in Appendix A.

The residents of River Bend Estates Phase III, like other Cascade County residents, will have the option to haul their own garbage to one of the container sites in Cascade County or contract with a private company to provide curbside service.

The individual homeowners will bear the costs of water, sewage, and solid waste facility costs.

The subdivision will not connect to an existing water or sewer system.

The owner is proposing to create a RID to pay for the cost of the installation of the roads, the fire protection requirements, the utilities, and for the maintenance including snow removal.

The total 2017 tax revenues for the entire 341.82-acre property was $2,139.23 of which $669.08 went to the school district, $437.12 to the state, $494.09 to the county, and $538.94 to other. The market value was $156,097. The 2017 tax information is included in Appendix E.

To estimate the yearly tax revenues from River Bend Estates Phase III the market value of each of the 12 two acre lots was estimated to be $50,000, the remaining acreage was estimated at the 2017 market value per acre which was $456.66 acre, and home values on each of the 12 lots was estimated at $350,000.

	2017 Tax Information		**Projected Tax Revenues**	
			Reclassified Lots	Reclassified and Improved Lots
Market Value	$156,097		$745,000	$4,945,000
County Taxes	$494.09	0.32%	$2,384	$15.824
School Taxes	$669.08	0.43%	$3,204	$21,264

The list of additional taxes that are paid by residents in Cascade County is included in the tax information provided in Appendix E.

It is expected that the new taxes generated from the subdivision would cover any additional public costs.

Special improvement districts are not anticipated that would obligate the local government fiscally or administratively except for the above mentioned RID to fund and maintain the subdivision infrastructure.

We do not anticipate an affect on the local governments bonded indebtedness.

1.4 Effects on the Historic or Natural Environment

The proposed River Bend Estates Phase III Subdivision does not include Missouri River stream bank alteration. Access will be provided by the access roads designed and permitted for River Bend Estates Phase I in addition to one new road to accommodate Phase III. The culvert for the Phase III access road was sized in accordance with Cascade County and MT DEQ requirements.

Several well logs in and around the River Bend Estates Phase III Subdivision were reviewed. The wells in the area are general around 400’ in total depth which is the recorded depth of the

Madison Aquifer around Great Falls. The information reviewed in preparation of this report indicates the Madison Aquifer as the primary aquifer utilized in the area; therefore, the Madison is expected to supply water to the River Bend Estates Phase II Subdivision. It should be noted that the Kootenai which is about 150 feet deep in the area of the proposed subdivision does contain ground water intermittently. The Kootenai wells in the area are generally lower producing wells; therefore, the Madison aquifer is the primary aquifer for the area. Although the majority of the wells in the area are producing Madison aquifer water the Kootenai will likely be considered first water when computing non-degradation analyses. "Zimmerman (1966) reported stream flow losses to the Madison at several locations in the Judith Basin. These observations included 90 cfs of recharge from Dry Wolf Creek, located to the northwest of Utica; 100 cfs of recharge to the Madison was reported for the Middle Fork Judith River above Sapphire Village. In this same area, 42 cfs of recharge was reported from Yogo Creek, which is tributary to the Judith River. In this particular case, the entire creek flow was discharged to formation. He also reported possibly 13 cfs of recharge from the South Fork Judith River, but noted this rate was within the measurement error. In total, Zimmerman (1966) assessed that recharge to the Madison in the Little Belt Mountains could be 180,000 af/yr, or 250 cfs." The Riverbend Estates Subdivision is estimated to utilize a total of 10 af/yr of which 3.64 af/yr would be for domestic use and 6.36 af/yr for irrigation. The estimated rate of recharge of 180,000 af/yr is far greater than the 10 af/yr the subdivision would utilize; therefore, aquifer depletion is not expected. Correspondence with the DNRC is included in Appendix C.

Soils, slope, and vegetation information is included in Appendix A. The lands are not considered prime farmland by the NRCS. We do expect some temporary impacts to the soils and to the vegetation during construction but a Storm Water Pollution Prevention Plan (SWPPP) will be required for construction of the project. The SWPPP will include provisions for minimizing erosion, maintaining slopes, and measures for revegetating the disturbed areas.

We contacted the Montana Historical Society State Historic Preservation Office (SHPO) to conduct a cultural resource file search for the property to be subdivided. The result of the file search was that there have been no previously recorded sites within the area. SHPO's position is that any structure over fifty years of age is considered historic and is potentially eligible for listing on the National Register of Historic Places. SHPO indicated as long as there will be no disturbance or alteration to structures over fifty years of age there is a low likelihood cultural property will be impacted and a cultural resource inventory is unwarranted at this time. The correspondence with SHPO is included in Appendix C.

Stream banks or lake shorelines would not be altered. Streams would not be rechanneled nor would any surface water be contaminated from sewage treatment systems, run-off carrying sedimentation, or concentration of pesticides or fertilizers.

We do not expect groundwater supplies to be contaminated or depleted as a result of the subdivision.

We do not expect the construction of the roads or building sites to require cuts and fills on steep slopes causing erosion on unstable, erodible soils.

We do not expect the subdivision to be subject to natural hazards.

We do not expect the subdivision to influence visual features within the subdivision or on adjacent land. The lots have been configured to maintain the visual features of the property and the surrounding area.

1.5 Effects on Wildlife and Wildlife Habitat

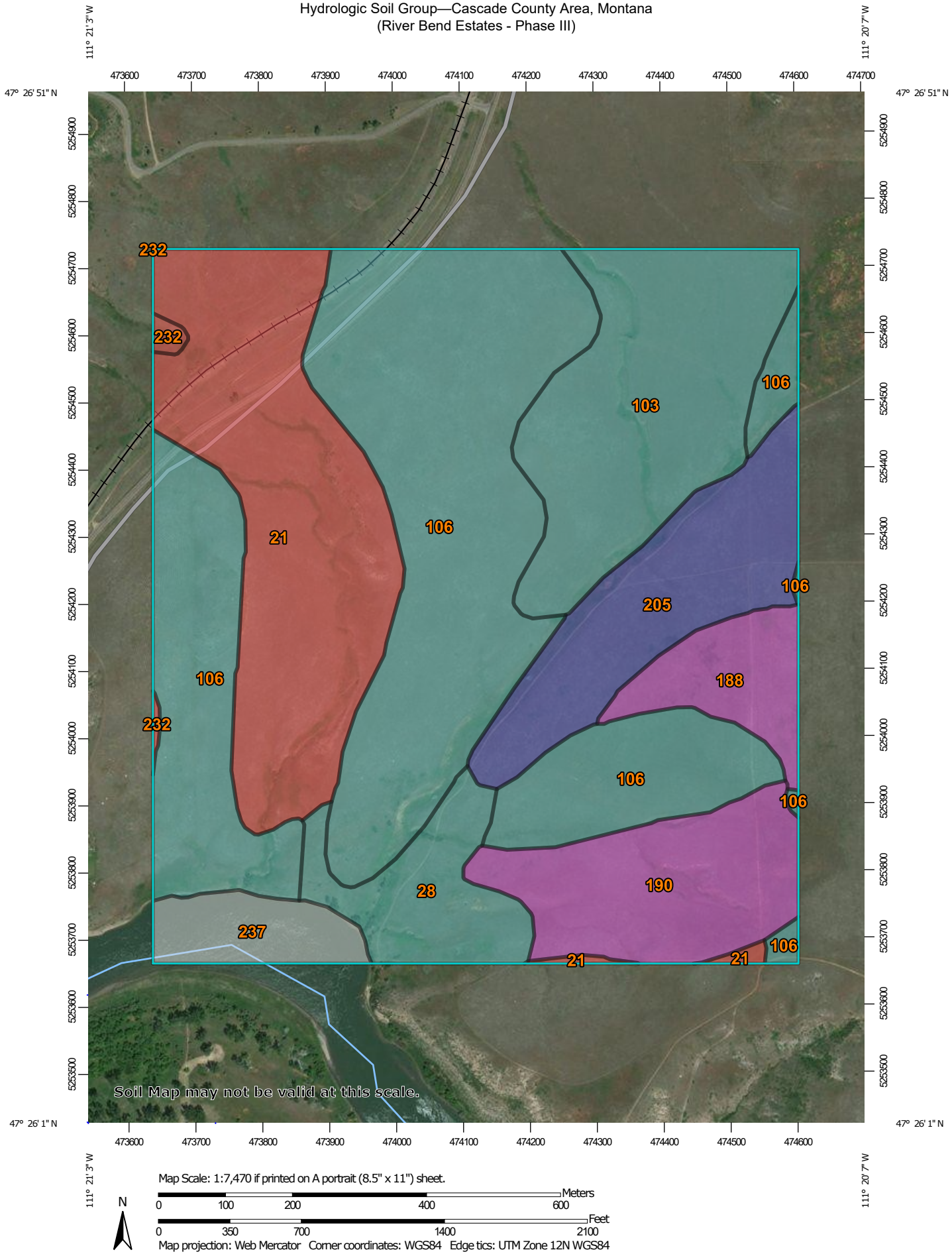
Information provided by the MT Natural Heritage Program includes a list of species occurrences, other observed species, other potential species, and summarizes the structured surveys in and around the area. The correspondence with MTNHP and the US Fish and Wildlife Service is included in Appendix C. The critical wildlife areas on the property is the shoreline of the Missouri River including the Cottonwood trees along the river. The existing trees, stream bank, and shoreline vegetation at the Missouri River that is critical wildlife habitat will not be impacted by the development. There are currently homes and subdivisions along the river and adjacent to the property that bring pet and human activity to the area; therefore, the expected impact to the wildlife as a result of this subdivision is minimal.

1.6 Effects on the Public Health and Safety

We do not expect health or safety hazards on or near the subdivision. Based on the information discussed above and correspondence with the DNRC and the affected agencies we do not expect a lack of water, drainage problems, or heavy traffic problems. The correspondence with the agencies is included in Appendix C. There are no existing structures, high pressure gas lines, high voltage power lines, or irrigation ditches on the property. There is a gas line in the Flood Road right of way but not on the property to be subdivided. The project will include proposed power, gas, and telecommunication lines but they will not be high voltage or high-pressure mains. The proposed utilities will be included on the proposed plans for the improvements.

The properties adjacent to the proposed River Bend Estates Phase III Subdivision that are not owned by Higgins Enterprises are residential properties with home sites with some dry pastureland.

Hydrologic Soil Group—Cascade County Area, Montana
(River Bend Estates - Phase III)



Map Scale: 1:7,470 if printed on A portrait (8.5" x 11") sheet.

N

Meters: 0 100 200 400 600

Feet: 0 350 700 1400 2100

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 12N WGS84

MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Rating Polygons

- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Soil Rating Lines

- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Soil Rating Points

- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Water Features

Streams and Canals

Transportation

- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background

Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Cascade County Area, Montana
Survey Area Data: Version 15, Sep 16, 2019

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Sep 10, 2012—Feb 15, 2017

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
21	Big Timber-Castner complex, 8 to 30 percent slopes	D	46.9	18.4%
28	Bitton and Roy soils, 10 to 65 percent slopes	C	12.9	5.1%
103	Ipano loam, 0 to 4 percent slopes	C	34.7	13.6%
106	Ipano-Hillon complex, 4 to 10 percent slopes	C	98.3	38.6%
188	Tally fine sandy loam, 8 to 15 percent slopes	A	9.5	3.7%
190	Tally-Castner complex, 15 to 35 percent slopes	A	21.4	8.4%
205	Torex loamy sand, 0 to 6 percent slopes	B	22.9	9.0%
232	Yawdim-Rock outcrop complex, 25 to 70 percent slopes	D	0.8	0.3%
237	Water		7.4	2.9%
Totals for Area of Interest			**254.7**	**100.0%**

Description

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

Rating Options

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

MAP LEGEND

Area of Interest (AOI)

- Area of Interest (AOI)

Soils

Soil Rating Polygons

- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Soil Rating Lines

- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Soil Rating Points

- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Water Features

- Streams and Canals

Transportation

- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background

- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Cascade County Area, Montana
Survey Area Data: Version 13, Sep 25, 2017

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Sep 10, 2012—Feb 15, 2017

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
21	Big Timber-Castner complex, 8 to 30 percent slopes	D	44.7	27.9%
28	Bitton and Roy soils, 10 to 65 percent slopes	C	7.6	4.7%
106	Ipano-Hillon complex, 4 to 10 percent slopes	C	83.4	52.0%
190	Tally-Castner complex, 15 to 35 percent slopes	A	0.1	0.1%
205	Torex loamy sand, 0 to 6 percent slopes	B	3.7	2.3%
232	Yawdim-Rock outcrop complex, 25 to 70 percent slopes	D	18.1	11.3%
237	Water		2.7	1.7%
Totals for Area of Interest			**160.3**	**100.0%**

Description

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

Rating Options

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

Soil Data Access (SDA) Prime and other Important Farmlands

An SDA-populated select list is used to pick a state and SSA which enables creation of a "Prime and other Important Farmlands" based upon those selections. The data is not static; it hits Soil Data Access Live. To reset the table hit F5 on the keyboard. Once a survey is selected and table appears, if a new survey is selected it will append to the table at the bottom. For more information about the table,

Montana

selected stateId = MT

Cascade County Area, Montana

selected SSA areasymbol = MT613

State_Sym	Area_Symbol	Area_Name	mukey	Mapunit_SYM	Mapunit_Name	Farm_Class
MT	MT613	Cascade County Area, Montana	341756	1	Abor silty clay, 0 to 4 percent slopes	Not prime farmland
MT	MT613	Cascade County Area, Montana	341867	2	Abor-Yawdim clay loams, 4 to 8 percent slopes	Not prime farmland
MT	MT613	Cascade County Area, Montana	341912	3	Abor-Yawdim clays, 8 to 20 percent slopes	Not prime farmland
MT	MT613	Cascade County Area, Montana	341923	4	Absarokee clay loam, 0 to 4 percent slopes	Prime farmland if irrigated
MT	MT613	Cascade County Area, Montana	341934	5	Absarokee clay loam, 4 to 8 percent slopes	Farmland of statewide importance
MT	MT613	Cascade County Area, Montana	341945	6	Absarokee clay loam, 8 to 15 percent slopes	Not prime farmland
MT	MT613	Cascade County Area, Montana	341956	7	Absarokee, Borky, and Blythe soils, 15 to 45 percent slo pes	Not prime farmland
MT	MT613	Cascade County Area, Montana	341967	8	Absarokee-Sinnigam complex, 2 to 8 percent slopes	Not prime farmland
MT	MT613	Cascade County Area, Montana	341978	9	Absher complex, 0 to 2 percent slopes	Not prime farmland
MT	MT613	Cascade County Area, Montana	341757	10	Absher-Nobe complex, 0 to 5 percent slopes	Not prime farmland
MT	MT613	Cascade County Area, Montana	341768	11	Acel silty clay loam, 0 to 2 percent slopes	Farmland of statewide importance
MT	MT613	Cascade County Area, Montana	341779	12	Acel silty clay loam, 2 to 8 percent slopes	Farmland of statewide importance
MT	MT613	Cascade County Area, Montana	341790	13	Adel loam, 4 to 15 percent	Not prime farmland
MT	MT613	Cascade County Area, Montana	341801	14	Aquepts and Aquolls, saline	Not prime farmland
MT	MT613	Cascade County Area, Montana	341812	15	Assinniboine fine sandy loam, 0 to 4 percent slopes	Farmland of statewide importance

MT	MT613	Cascade County Area, Montana	341823	16	Assinniboine fine sandy loam, 4 to 8 percent slopes	Farmland of statewide importance
MT	MT613	Cascade County Area, Montana	341834	17	Assinniboine-Absher complex, 0 to 2 percent slopes	Not prime farmland
MT	MT613	Cascade County Area, Montana	341845	18	Azaar fine sandy loam	Farmland of statewide importance
MT	MT613	Cascade County Area, Montana	341856	19	Benz clay loam, 0 to 2 percent slopes	Not prime farmland
MT	MT613	Cascade County Area, Montana	341868	20	Benz clay loam, 2 to 10 percent slopes	Not prime farmland
MT	MT613	Cascade County Area, Montana	341879	21	Big Timber-Castner complex, 8 to 30 percent slopes	Not prime farmland
MT	MT613	Cascade County Area, Montana	341890	22	Big Timber-Castner complex, 30 to 70 percent slopes	Not prime farmland
MT	MT613	Cascade County Area, Montana	341901	23	Binna fine sandy loam, 0 to 4 percent slopes	Not prime farmland
MT	MT613	Cascade County Area, Montana	341906	24	Binna loam, 0 to 2 percent slopes	Farmland of statewide importance
MT	MT613	Cascade County Area, Montana	341907	25	Binna loam, 2 to 5 percent slopes	Farmland of statewide importance
MT	MT613	Cascade County Area, Montana	341908	26	Binna cobbly loam, 0 to 2 percent slopes	Not prime farmland
MT	MT613	Cascade County Area, Montana	341909	27	Binna-Evanston complex, 5 to 10 percent slopes	Not prime farmland
MT	MT613	Cascade County Area, Montana	341910	28	Bitton and Roy soils, 10 to 65 percent slopes	Not prime farmland
MT	MT613	Cascade County Area, Montana	341911	29	Blythe silt loam, 0 to 5 percent slopes	Not prime farmland
MT	MT613	Cascade County Area, Montana	341913	30	Blythe silt loam, 5 to 10 percent slopes	Not prime farmland
MT	MT613	Cascade County Area, Montana	341914	31	Blythe silt loam, 10 to 20 percent slopes	Not prime farmland
MT	MT613	Cascade County Area, Montana	341915	32	Borky-Sinnigam very stony loams, 2 to 15 percent slopes	Not prime farmland
MT	MT613	Cascade County Area, Montana	341916	33	Bridger loam, 2 to 10 percent slopes	Not prime farmland
MT	MT613	Cascade County Area, Montana	341917	34	Bridger loam, 10 to 20 percent slopes	Not prime farmland
MT	MT613	Cascade County Area, Montana	341918	35	Cargill silty clay loam, 0 to 4 percent slopes	Farmland of statewide importance
MT	MT613	Cascade County Area, Montana	341919	36	Cargill-Cabbart complex, 4 to 10 percent slopes	Not prime farmland
MT	MT613	Cascade County Area, Montana	341920	37	Castner loamy fine sand, 0 to 3 percent slopes	Not prime farmland
MT	MT613	Cascade County Area,	341921	38	Castner-Sinnigam complex, 2 to 15 percent slopes	Not prime farmland

		Montana				
MT	MT613	Cascade County Area, Montana	3039704	38D	Woodhall-Woodhurst, very stony-Bavdark complex, 8 to 15 percent slopes	Not prime farmland
MT	MT613	Cascade County Area, Montana	341922	39	Castner-Perma-Rock outcrop complex, 10 to 60 percent slopes	Not prime farmland
MT	MT613	Cascade County Area, Montana	341924	40	Castner-Reeder complex, 4 to 35 percent slopes	Not prime farmland
MT	MT613	Cascade County Area, Montana	341925	41	Cheadle stony loam, 2 to 15 percent slopes	Not prime farmland
MT	MT613	Cascade County Area, Montana	341926	42	Cheadle-Hilger complex, 10 to 60 percent slopes	Not prime farmland
MT	MT613	Cascade County Area, Montana	341927	43	Cheadle-Loggert complex, 15 to 70 percent slopes	Not prime farmland
MT	MT613	Cascade County Area, Montana	341928	44	Crago gravelly loam, 0 to 2 percent slopes	Not prime farmland
MT	MT613	Cascade County Area, Montana	341929	45	Crago very cobbly loam, 0 to 15 percent slopes	Not prime farmland
MT	MT613	Cascade County Area, Montana	341930	46	Crago-Yawdim complex, 15 to 45 percent slopes	Not prime farmland
MT	MT613	Cascade County Area, Montana	341931	47	Danvers silty clay loam, 0 to 2 percent slopes	Prime farmland if irrigated
MT	MT613	Cascade County Area, Montana	341932	48	Darret silty clay loam, 8 to 20 percent slopes	Not prime farmland
MT	MT613	Cascade County Area, Montana	341933	49	Darret-Castner complex, 2 to 8 percent slopes	Not prime farmland
MT	MT613	Cascade County Area, Montana	341935	50	Darret-Castner complex, 8 to 20 percent slopes	Not prime farmland
MT	MT613	Cascade County Area, Montana	341936	51	Dast-Rentsac complex, 2 to 20 percent slopes	Not prime farmland
MT	MT613	Cascade County Area, Montana	341937	52	Delpoint loam, 4 to 20 percent slopes	Not prime farmland
MT	MT613	Cascade County Area, Montana	341938	53	Dooley sandy loam, 0 to 4 percent slopes	Farmland of statewide importance
MT	MT613	Cascade County Area, Montana	341939	54	Dooley sandy loam, 4 to 8 percent slopes	Farmland of statewide importance
MT	MT613	Cascade County Area, Montana	341940	55	Dooley sandy loam, 8 to 15 percent slopes	Not prime farmland
MT	MT613	Cascade County Area, Montana	341941	56	Dutton silty clay loam, 0 to 2 percent slopes	Farmland of statewide importance
MT	MT613	Cascade County Area, Montana	341942	57	Dutton silty clay loam, 2 to 8 percent slopes	Farmland of statewide importance
MT	MT613	Cascade County Area, Montana	341943	58	Eltsac clay, 4 to 8 percent slopes	Not prime farmland
MT	MT613	Cascade County Area, Montana	341944	59	Eltsac clay, 8 to 15 percent slopes	Not prime farmland

MT	MT613	Cascade County Area, Montana	341946	60	Eltsac-Lisam clays, 10 to 70 percent slopes	Not prime farmland
MT	MT613	Cascade County Area, Montana	341947	61	Ernem loam, 0 to 4 percent slopes	Not prime farmland
MT	MT613	Cascade County Area, Montana	341948	62	Ernem very stony loam, 0 to 15 percent slopes	Not prime farmland
MT	MT613	Cascade County Area, Montana	341949	63	Ervide loamy fine sand, 0 to 8 percent slopes	Not prime farmland
MT	MT613	Cascade County Area, Montana	3039696	63D	Windham-Kiev complex, 8 to 15 percent slopes	Not prime farmland
MT	MT613	Cascade County Area, Montana	341950	64	Ervide fine sandy loam, 0 to 4 percent slopes	Not prime farmland
MT	MT613	Cascade County Area, Montana	341951	65	Ethridge silty clay loam, 0 to 2 percent slopes	Prime farmland if irrigated
MT	MT613	Cascade County Area, Montana	341952	66	Ethridge silty clay loam, 2 to 4 percent slopes	Prime farmland if irrigated
MT	MT613	Cascade County Area, Montana	341953	67	Ethridge-Kobar silty clay loams, 0 to 2 percent slopes	Prime farmland if irrigated
MT	MT613	Cascade County Area, Montana	341954	68	Ethridge-Kobar silty clay loams, 2 to 8 percent slopes	Farmland of statewide importance
MT	MT613	Cascade County Area, Montana	341955	69	Evanston loam, 2 to 4 percent slopes	Farmland of statewide importance
MT	MT613	Cascade County Area, Montana	341957	70	Evanston loam, 4 to 8 percent slopes	Farmland of statewide importance
MT	MT613	Cascade County Area, Montana	341958	71	Evanston clay loam, 0 to 2 percent slopes	Farmland of statewide importance
MT	MT613	Cascade County Area, Montana	341959	72	Evanston cobbly clay loam, 4 to 10 percent slopes	Not prime farmland
MT	MT613	Cascade County Area, Montana	341960	73	Fairfield loam, 4 to 8 percent slopes	Farmland of statewide importance
MT	MT613	Cascade County Area, Montana	341961	74	Fairfield clay loam, 0 to 4 percent slopes	Farmland of statewide importance
MT	MT613	Cascade County Area, Montana	341962	75	Farnuf loam, 0 to 2 percent slopes	Farmland of statewide importance
MT	MT613	Cascade County Area, Montana	341963	76	Farnuf loam, 2 to 4 percent slopes	Farmland of statewide importance
MT	MT613	Cascade County Area, Montana	341964	77	Farnuf loam, 4 to 8 percent slopes	Farmland of statewide importance
MT	MT613	Cascade County Area, Montana	341965	78	Fergus clay loam, 2 to 4 percent slopes	All areas are prime farmland
MT	MT613	Cascade County Area, Montana	341966	79	Fergus clay loam, 4 to 8 percent slopes	Farmland of statewide importance
MT	MT613	Cascade County Area, Montana	341968	80	Fergus silty clay loam, 0 to 2 percent slopes	All areas are prime farmland
MT	MT613	Cascade County Area,	341969	81	Fergus-Absher silty clay loams, 0 to 2 percent slopes	Not prime farmland

		Montana				
MT	MT613	Cascade County Area, Montana	341970	82	Floweree complex, 0 to 4 percent slopes	Farmland of statewide importance
MT	MT613	Cascade County Area, Montana	341971	83	Fluventic Haplaquolls, nearly level*	Not prime farmland
MT	MT613	Cascade County Area, Montana	341972	84	Fluventic Haploborolls, nearly level*	Not prime farmland
MT	MT613	Cascade County Area, Montana	341973	85	Gerber silty clay loam, 0 to 4 percent slopes	Farmland of statewide importance
MT	MT613	Cascade County Area, Montana	341974	86	Gerber-Acel silty clay loams, 2 to 8 percent slopes	Farmland of statewide importance
MT	MT613	Cascade County Area, Montana	341975	87	Gerber-Lawther silty clays, 0 to 4 percent slopes	Farmland of statewide importance
MT	MT613	Cascade County Area, Montana	341976	88	Gerber-Lawther silty clays, 4 to 8 percent slopes	Farmland of statewide importance
MT	MT613	Cascade County Area, Montana	341977	89	Glendive loam	Not prime farmland
MT	MT613	Cascade County Area, Montana	341979	90	Hanson loam, 4 to 15 percent slopes	Not prime farmland
MT	MT613	Cascade County Area, Montana	341980	91	Hanson-Sheege complex, 4 to 15 percent slopes	Not prime farmland
MT	MT613	Cascade County Area, Montana	341981	92	Hanson-Sheege complex, 15 to 40 percent slopes	Not prime farmland
MT	MT613	Cascade County Area, Montana	341982	93	Hanson-Skaggs association, steep	Not prime farmland
MT	MT613	Cascade County Area, Montana	341983	94	Harlem silty clay loam	Farmland of statewide importance
MT	MT613	Cascade County Area, Montana	341984	95	Harlem silty clay	Farmland of statewide importance
MT	MT613	Cascade County Area, Montana	341985	96	Havre loam	Prime farmland if irrigated
MT	MT613	Cascade County Area, Montana	341986	97	Havre loam, channeled	Prime farmland if irrigated
MT	MT613	Cascade County Area, Montana	341987	98	Havre loam, saline	Not prime farmland
MT	MT613	Cascade County Area, Montana	341988	99	Hilger very stony loam, 2 to 15 percent slopes	Not prime farmland
MT	MT613	Cascade County Area, Montana	341758	100	Hilger very stony loam, 15 to 50 percent slopes	Not prime farmland
MT	MT613	Cascade County Area, Montana	341759	101	Hilger-Castner complex, 15 to 60 percent slopes	Not prime farmland
MT	MT613	Cascade County Area, Montana	341760	102	Hillon clay loam, 15 to 60 percent slopes	Not prime farmland
MT	MT613	Cascade County Area, Montana	341761	103	Ipano loam, 0 to 4 percent slopes	Prime farmland if irrigated

MT	MT613	Cascade County Area, Montana	341762	104	Ipano-Castner complex, 8 to 15 percent slopes	Not prime farmland
MT	MT613	Cascade County Area, Montana	341763	105	Ipano-Hillon complex, 0 to 4 percent slopes	Farmland of statewide importance
MT	MT613	Cascade County Area, Montana	341764	106	Ipano-Hillon complex, 4 to 10 percent slopes	Not prime farmland
MT	MT613	Cascade County Area, Montana	341765	107	Ipano-Ticell loams, 0 to 4 percent slopes	Not prime farmland
MT	MT613	Cascade County Area, Montana	341766	108	Ipano-Ticell loams, 4 to 10 percent slopes	Not prime farmland
MT	MT613	Cascade County Area, Montana	341767	109	Judith loam, 0 to 4 percent slopes	Farmland of statewide importance
MT	MT613	Cascade County Area, Montana	341769	110	Judith loam, 4 to 8 percent slopes	Farmland of statewide importance
MT	MT613	Cascade County Area, Montana	341770	111	Judith loam, sandstone substratum, 0 to 4 percent slope s	Farmland of statewide importance
MT	MT613	Cascade County Area, Montana	341771	112	Hillon-Kevin clay loams, 4 to 15 percent slopes	Not prime farmland
MT	MT613	Cascade County Area, Montana	341772	113	Scobey-Kevin clay loams, 2 to 8 percent slopes	Not prime farmland
MT	MT613	Cascade County Area, Montana	341773	114	Kobar silty clay loam, 0 to 2 percent slopes	Prime farmland if irrigated
MT	MT613	Cascade County Area, Montana	341774	115	Kobar silty clay loam, 2 to 4 percent slopes	Prime farmland if irrigated
MT	MT613	Cascade County Area, Montana	341775	116	Kobar silty clay loam, 4 to 8 percent slopes	Farmland of statewide importance
MT	MT613	Cascade County Area, Montana	341776	117	Kobar-Marias complex, 0 to 4 percent slopes	Not prime farmland
MT	MT613	Cascade County Area, Montana	341777	118	Korent loam	Farmland of statewide importance
MT	MT613	Cascade County Area, Montana	341778	119	Lallie silty clay loam	Not prime farmland
MT	MT613	Cascade County Area, Montana	341780	120	Lambeth-Floweree silt loams, 2 to 8 percent slopes	Farmland of statewide importance
MT	MT613	Cascade County Area, Montana	341781	121	Lambeth and Lothair soils, 25 to 60 percent slopes	Not prime farmland
MT	MT613	Cascade County Area, Montana	341782	122	Lawther silty clay, 0 to 4 percent slopes	Farmland of statewide importance
MT	MT613	Cascade County Area, Montana	341783	123	Lawther clay	Farmland of statewide importance
MT	MT613	Cascade County Area, Montana	341784	124	Lawther-Gerber complex, 8 to 15 percent slopes	Not prime farmland
MT	MT613	Cascade County Area, Montana	341785	125	Lennep-Nobe complex, 2 to 10 percent slopes	Not prime farmland
MT	MT613	Cascade County Area,	341786	126	Libeg stony loam, 2 to 15 percent slopes	Not prime farmland

		Montana				
MT	MT613	Cascade County Area, Montana	341787	127	Lihen loamy sand, 2 to 8 percent slopes	Not prime farmland
MT	MT613	Cascade County Area, Montana	341788	128	Lihen loamy sand, 8 to 20 percent slopes	Not prime farmland
MT	MT613	Cascade County Area, Montana	341789	129	Linnet-Acel silty clay loams, 0 to 2 percent slopes	Farmland of statewide importance
MT	MT613	Cascade County Area, Montana	341791	130	Linnet-Acel silty clay loams, 2 to 8 percent slopes	Farmland of statewide importance
MT	MT613	Cascade County Area, Montana	341792	131	Linnet-Marias complex, 0 to 2 percent slopes	Not prime farmland
MT	MT613	Cascade County Area, Montana	341793	132	Linnet-Marias complex, 2 to 8 percent slopes	Not prime farmland
MT	MT613	Cascade County Area, Montana	341794	133	Lisam-Rock outcrop complex, 4 to 50 percent slopes	Not prime farmland
MT	MT613	Cascade County Area, Montana	341795	134	Loberg stony loam, warm, 20 to 60 percent slopes	Not prime farmland
MT	MT613	Cascade County Area, Montana	341796	135	Loberg-Cheadle complex, 20 to 60 percent slopes	Not prime farmland
MT	MT613	Cascade County Area, Montana	341797	136	Loggert extremely stony loam, 2 to 15 percent slopes	Not prime farmland
MT	MT613	Cascade County Area, Montana	341798	137	Loggert extremely stony loam, 15 to 50 percent slopes	Not prime farmland
MT	MT613	Cascade County Area, Montana	341799	138	Lothair silty clay loam, 8 to 25 percent slopes	Not prime farmland
MT	MT613	Cascade County Area, Montana	341800	139	Marias silty clay, 0 to 2 percent slopes	Not prime farmland
MT	MT613	Cascade County Area, Montana	341802	140	Marias silty clay, 2 to 4 percent slopes	Not prime farmland
MT	MT613	Cascade County Area, Montana	341803	141	Marias silty clay, 4 to 8 percent slopes	Not prime farmland
MT	MT613	Cascade County Area, Montana	341804	142	Marmarth clay loam, 0 to 4 percent slopes	Farmland of statewide importance
MT	MT613	Cascade County Area, Montana	341805	143	Marvan clay, 0 to 2 percent slopes	Not prime farmland
MT	MT613	Cascade County Area, Montana	341806	144	Marvan clay, 2 to 8 percent slopes	Not prime farmland
MT	MT613	Cascade County Area, Montana	341807	145	Marvan clay, wet, 0 to 2 percent slopes	Not prime farmland
MT	MT613	Cascade County Area, Montana	341808	146	McKenzie silty clay loam	Not prime farmland
MT	MT613	Cascade County Area, Montana	341809	147	McKenzie clay	Not prime farmland
MT	MT613	Cascade County Area, Montana	341810	148	Monad loam, 2 to 10 percent slopes	Not prime farmland

MT	MT613	Cascade County Area, Montana	341811	149	Monad loam, 10 to 20 percent slopes	Not prime farmland
MT	MT613	Cascade County Area, Montana	341813	150	Monad and Libeg soils, steep	Not prime farmland
MT	MT613	Cascade County Area, Montana	341814	151	Pendroy clay, 0 to 2 percent slopes	Not prime farmland
MT	MT613	Cascade County Area, Montana	341815	152	Pendroy clay, 2 to 8 percent slopes	Not prime farmland
MT	MT613	Cascade County Area, Montana	341816	153	Pendroy clay, 8 to 15 percent slopes	Not prime farmland
MT	MT613	Cascade County Area, Montana	341817	154	Perma very stony loam, 2 to 8 percent slopes	Not prime farmland
MT	MT613	Cascade County Area, Montana	341818	155	Pylon silty clay loam, 0 to 4 percent slopes	Not prime farmland
MT	MT613	Cascade County Area, Montana	341819	156	Raynesford loam, 8 to 20 percent slopes	Not prime farmland
MT	MT613	Cascade County Area, Montana	341820	157	Raynesford loam, 20 to 40 percent slopes	Not prime farmland
MT	MT613	Cascade County Area, Montana	341821	158	Raynesford-Skaggs loams, 4 to 8 percent slopes	Not prime farmland
MT	MT613	Cascade County Area, Montana	341822	159	Raynesford-Skaggs loams, 8 to 20 percent slopes	Not prime farmland
MT	MT613	Cascade County Area, Montana	341824	160	Raynesford-Sheege complex, 4 to 15 percent slopes	Not prime farmland
MT	MT613	Cascade County Area, Montana	341825	161	Reeder loam, 2 to 8 percent slopes	Farmland of statewide importance
MT	MT613	Cascade County Area, Montana	341826	162	Reeder loam, 8 to 25 percent slopes	Not prime farmland
MT	MT613	Cascade County Area, Montana	341827	163	Reeder variant silt loam, 0 to 4 percent slopes	Prime farmland if irrigated
MT	MT613	Cascade County Area, Montana	341828	164	Rentsac-Ethridge complex, 2 to 25 percent slopes	Not prime farmland
MT	MT613	Cascade County Area, Montana	341829	165	Rivra gravelly sandy loam	Not prime farmland
MT	MT613	Cascade County Area, Montana	341830	166	Rothiemay loam, 0 to 2 percent slopes	Farmland of statewide importance
MT	MT613	Cascade County Area, Montana	341831	167	Rothiemay loam, wet, 2 to 8 percent slopes	Farmland of statewide importance
MT	MT613	Cascade County Area, Montana	341832	168	Rothiemay clay loam, 0 to 2 percent slopes	Farmland of statewide importance
MT	MT613	Cascade County Area, Montana	341833	169	Rothiemay-Binna loams, 2 to 4 percent slopes	Not prime farmland
MT	MT613	Cascade County Area, Montana	341835	170	Rothiemay-Binna loams, 4 to 10 percent slopes	Not prime farmland
MT	MT613	Cascade County Area,	341836	171	Ryell loam	Farmland of statewide

		Montana				importance
MT	MT613	Cascade County Area, Montana	341837	172	Ryell-Rivra complex	Not prime farmland
MT	MT613	Cascade County Area, Montana	341838	173	Scobey clay loam, 0 to 4 percent slopes	Prime farmland if irrigated
MT	MT613	Cascade County Area, Montana	341839	174	Scobey-Kevin clay loams, 0 to 4 percent slopes	Prime farmland if irrigated
MT	MT613	Cascade County Area, Montana	341840	175	Shane silty clay loam, 2 to 10 percent slopes	Not prime farmland
MT	MT613	Cascade County Area, Montana	341841	176	Shane-Nobe complex, 4 to 15 percent slopes	Not prime farmland
MT	MT613	Cascade County Area, Montana	341842	177	Shawa loam, 2 to 10 percent slopes	Farmland of statewide importance
MT	MT613	Cascade County Area, Montana	341843	178	Shawa loam, 10 to 20 percent slopes	Not prime farmland
MT	MT613	Cascade County Area, Montana	341844	179	Sheege stony loam, 4 to 15 percent slopes	Not prime farmland
MT	MT613	Cascade County Area, Montana	341846	180	Sheege-Rock outcrop complex, 35 to 70 percent slopes	Not prime farmland
MT	MT613	Cascade County Area, Montana	341847	181	Sheege-Whitore complex, 15 to 40 percent slopes	Not prime farmland
MT	MT613	Cascade County Area, Montana	341848	182	Sinnigam loam, 0 to 4 percent slopes	Not prime farmland
MT	MT613	Cascade County Area, Montana	341849	183	Straw loam	All areas are prime farmland
MT	MT613	Cascade County Area, Montana	341850	184	Straw silty clay loam	All areas are prime farmland
MT	MT613	Cascade County Area, Montana	341851	185	Straw-Rivra complex	Not prime farmland
MT	MT613	Cascade County Area, Montana	341852	186	Tally fine sandy loam, 0 to 2 percent slopes	Farmland of statewide importance
MT	MT613	Cascade County Area, Montana	341853	187	Tally fine sandy loam, 2 to 8 percent slopes	Farmland of statewide importance
MT	MT613	Cascade County Area, Montana	341854	188	Tally fine sandy loam, 8 to 15 percent slopes	Farmland of statewide importance
MT	MT613	Cascade County Area, Montana	341855	189	Tally loam, 2 to 8 percent slopes	Farmland of statewide importance
MT	MT613	Cascade County Area, Montana	341857	190	Tally-Castner complex, 15 to 35 percent slopes	Not prime farmland
MT	MT613	Cascade County Area, Montana	341858	191	Tanna clay loam, 0 to 2 percent slopes	Prime farmland if irrigated
MT	MT613	Cascade County Area, Montana	341859	192	Tanna clay loam, 2 to 8 percent slopes	Farmland of statewide importance
MT	MT613	Cascade County Area, Montana	341860	193	Tanna clay loam, 8 to 15 percent slopes	Not prime farmland

MT	MT613	Cascade County Area, Montana	341861	194	Tanna-Wabek complex, 2 to 10 percent slopes	Not prime farmland
MT	MT613	Cascade County Area, Montana	341862	195	Terrad silty clay, 2 to 8 percent slopes	Farmland of statewide importance
MT	MT613	Cascade County Area, Montana	341863	196	Terrad silty clay, 8 to 15 percent slopes	Not prime farmland
MT	MT613	Cascade County Area, Montana	341864	197	Thebo clay, 0 to 4 percent slopes	Not prime farmland
MT	MT613	Cascade County Area, Montana	341865	198	Thebo clay, 4 to 10 percent slopes	Not prime farmland
MT	MT613	Cascade County Area, Montana	341866	199	Ticell-Castner complex, 0 to 4 percent slopes	Not prime farmland
MT	MT613	Cascade County Area, Montana	341869	200	Tigeron-Loggert complex, 4 to 25 percent slopes	Not prime farmland
MT	MT613	Cascade County Area, Montana	341870	201	Timberg silty clay loam, 8 to 15 percent slopes	Not prime farmland
MT	MT613	Cascade County Area, Montana	341871	202	Timberg silty clay, 2 to 10 percent slopes	Farmland of statewide importance
MT	MT613	Cascade County Area, Montana	341872	203	Timberg-Big Timber complex, 15 to 40 percent slopes	Not prime farmland
MT	MT613	Cascade County Area, Montana	341873	204	Timberg-Castner complex, 2 to 10 percent slopes	Not prime farmland
MT	MT613	Cascade County Area, Montana	341874	205	Torex loamy sand, 0 to 6 percent slopes	Not prime farmland
MT	MT613	Cascade County Area, Montana	341875	206	Turner loam, 0 to 4 percent slopes	Prime farmland if irrigated
MT	MT613	Cascade County Area, Montana	341876	207	Twin Creek loam, 2 to 8 percent slopes	Farmland of statewide importance
MT	MT613	Cascade County Area, Montana	341877	208	Twin Creek silty clay loam, 0 to 2 percent slopes	Farmland of statewide importance
MT	MT613	Cascade County Area, Montana	341878	209	Vanda clay	Not prime farmland
MT	MT613	Cascade County Area, Montana	341880	210	Vanda clay, wet	Not prime farmland
MT	MT613	Cascade County Area, Montana	341881	211	Virgelle loamy fine sand, 0 to 2 percent slopes	Not prime farmland
MT	MT613	Cascade County Area, Montana	341882	212	Virgelle-Absher complex, 0 to 3 percent slopes	Not prime farmland
MT	MT613	Cascade County Area, Montana	341883	213	Wabek gravelly loam, 2 to 15 percent slopes	Not prime farmland
MT	MT613	Cascade County Area, Montana	341884	214	Waybe-Bynum clay loams, 20 to 50 percent slopes	Not prime farmland
MT	MT613	Cascade County Area, Montana	341885	215	Waybe-Rock outcrop complex, 20 to 65 percent slopes	Not prime farmland
MT	MT613	Cascade County Area,	341886	216	Whitore silty clay loam, 15 to 65 percent slopes	Not prime farmland

		Montana				
MT	MT613	Cascade County Area, Montana	341887	217	Winifred clay loam, 2 to 8 percent slopes	Farmland of statewide importance
MT	MT613	Cascade County Area, Montana	341888	218	Winifred clay loam, 8 to 15 percent slopes	Not prime farmland
MT	MT613	Cascade County Area, Montana	341889	219	Winifred-Yawdim clay loams, 15 to 50 percent slopes	Not prime farmland
MT	MT613	Cascade County Area, Montana	341891	220	Woosley silt loam, 2 to 10 percent slopes	Not prime farmland
MT	MT613	Cascade County Area, Montana	341892	221	Woosley silt loam, 10 to 20 percent slopes	Not prime farmland
MT	MT613	Cascade County Area, Montana	341893	222	Work clay loam, 0 to 2 percent slopes	Prime farmland if irrigated
MT	MT613	Cascade County Area, Montana	341894	223	Work clay loam, 2 to 4 percent slopes	Prime farmland if irrigated
MT	MT613	Cascade County Area, Montana	341895	224	Work clay loam, 4 to 8 percent slopes	Farmland of statewide importance
MT	MT613	Cascade County Area, Montana	341896	225	Work clay loam, 8 to 15 percent slopes	Not prime farmland
MT	MT613	Cascade County Area, Montana	341897	226	Work complex, 8 to 35 percent slopes	Not prime farmland
MT	MT613	Cascade County Area, Montana	341898	227	Yamac loam, 4 to 8 percent slopes	Farmland of statewide importance
MT	MT613	Cascade County Area, Montana	341899	228	Yamac loam, 8 to 15 percent slopes	Not prime farmland
MT	MT613	Cascade County Area, Montana	341900	229	Yamac clay loam, 0 to 2 percent slopes	Prime farmland if irrigated
MT	MT613	Cascade County Area, Montana	341902	230	Yamac clay loam, 2 to 4 percent slopes	Prime farmland if irrigated
MT	MT613	Cascade County Area, Montana	341903	231	Yawdim-Rentsac-Cabbart complex, 15 to 50 percent slopes	Not prime farmland
MT	MT613	Cascade County Area, Montana	341904	232	Yawdim-Rock outcrop complex, 25 to 70 percent slopes	Not prime farmland
MT	MT613	Cascade County Area, Montana	341905	233	Yetull loamy sand, 4 to 20 percent slopes	Not prime farmland
MT	MT613	Cascade County Area, Montana	341991	235	Ustorthents, 2 to 20 percent slopes	Not prime farmland
MT	MT613	Cascade County Area, Montana	341990	236	Gravel pits	Not prime farmland
MT	MT613	Cascade County Area, Montana	341992	237	Water	Not prime farmland
MT	MT613	Cascade County Area, Montana	1030116	238	Miscellaneous water	Not prime farmland
MT	MT613	Cascade County Area, Montana	3039723	1064E	Maiden-Lap families-Rock outcrop, complex, 4 to 25 percent slopes	Not prime farmland

MT	MT613	Cascade County Area, Montana	3039724	1064G	Maiden, stony-Lap, very stony families-Rock outcrop complex, 45 to 70 percent slopes	Not prime farmland
MT	MT613	Cascade County Area, Montana	3039713	1065F	Maiden, stony-Lap, very stony-Windham, stony families, complex, 25 to 60 percent slopes	Not prime farmland
MT	MT613	Cascade County Area, Montana	3039714	1111E	Levengood-Jonescreek, occasionally flooded families, complex, 2 to 35 percent slopes, very stony	Not prime farmland
MT	MT613	Cascade County Area, Montana	3039725	1115D	Nikat-Dutchhollow, occasionally flooded-Tetonville families, complex, 2 to 15 percent slopes	Not prime farmland
MT	MT613	Cascade County Area, Montana	3039706	1117C	Dutchhollow, occasionally flooded-Crookedrun-Levengood families, complex, 1 to 8 percent slopes	Not prime farmland
MT	MT613	Cascade County Area, Montana	3039721	1155D	Elispring-Skaggs-Burnette families, complex, 2 to 15 percent slopes	Not prime farmland
MT	MT613	Cascade County Area, Montana	3039716	1155E	Cowcoulee, stony-Tropal, very stony-Elispring families, complex, 15 to 35 percent slopes	Not prime farmland
MT	MT613	Cascade County Area, Montana	3039722	1156E	Cowcoulee-Burnette family-Herakle family, stony, complex, 8 to 35 percent slopes	Not prime farmland
MT	MT613	Cascade County Area, Montana	3039710	1156F	Cowcoulee-Herakle, very stony-Skaggs, stony families, complex, 25 to 60 percent slopes	Not prime farmland
MT	MT613	Cascade County Area, Montana	3039702	1164D	Ettienridge, stony-Checkerboard, very stony-Cowcoulee families, complex, 2 to 15 percent slopes	Not prime farmland
MT	MT613	Cascade County Area, Montana	3039698	1164E	Ettienridge-Checkerboard, very stony-Cowcoulee, stony families, complex, 15 to 35 percent slopes	Not prime farmland
MT	MT613	Cascade County Area, Montana	3039697	1164G	Cowcoulee, stony-Ettienridge families, complex, 35 to 70 percent slopes	Not prime farmland
MT	MT613	Cascade County Area, Montana	3039715	1165E	Tropal, extremely stony-Ettienridge, very stony families-Rock outcrop complex, 8 to 35 percent slopes	Not prime farmland
MT	MT613	Cascade County Area, Montana	3039712	1165G	Tropal family, extremely stony-Rock outcrop-Ettienridge family, very stony, complex, 35 to 70 percent slopes	Not prime farmland
MT	MT613	Cascade County Area, Montana	3039705	1174G	Ettienridge, very stony-Checkerboard, extremely stony families-Rock outcrop complex, 50 to 70 percent slopes	Not prime farmland
MT	MT613	Cascade County Area, Montana	3039726	1177G	Kimpton, very stony-Herakle, extremely stony-Cowcoulee, stony families, complex, 25 to 70 percent slopes	Not prime farmland
MT	MT613	Cascade County Area, Montana	3039727	1190F	Dailybasin-Poin families-Rock outcrop complex, 15 to 60 percent slopes	Not prime farmland
MT	MT613	Cascade County Area, Montana	3039718	1256F	Daisypeak-Spearhead-Dryadine, stony families, complex, 25 to 60 percent slopes	Not prime farmland
MT	MT613	Cascade County Area, Montana	3039717	1256G	Daisypeak, stony-Helmville, very stony-Monumentpeak, very rubbly families, complex, 35 to 70 percent slopes	Not prime farmland
MT	MT613	Cascade County Area, Montana	3039709	1262E	Daisypeak, very bouldery-Decross-Monumentpeak, very stony families, complex, 4 to 25 percent slopes	Not prime farmland
MT	MT613	Cascade County Area, Montana	3039703	1265F	Elkpeak, very stony-Arrowpeak, extremely stony families, complex, 30 to 60 percent slopes	Not prime farmland
MT	MT613	Cascade County Area, Montana	3039708	1268F	Tigeron, rubbly-Targhee, very bouldery-Como, very stony families, complex, 35 to 60 percent slopes	Not prime farmland
MT	MT613	Cascade County Area,	3039728	1280F	Highwood-Pohlod, complex, 20 to 60 percent slopes, stony	Not prime farmland

		Montana				
MT	MT613	Cascade County Area, Montana	3039729	1284F	Pohlod-Bigcoulee-Highwood, complex, 20 to 60 percent slopes	Not prime farmland
MT	MT613	Cascade County Area, Montana	3039699	2164F	Ettienridge, extremely stony-Checkerboard, rubbly families-Rock outcrop complex, 30 to 60 percent slopes	Not prime farmland
MT	MT613	Cascade County Area, Montana	3039700	2164G	Ettienridge, very stony-Tropal, very rubbly, families-Rock outcrop complex, 50 to 70 percent slopes	Not prime farmland
MT	MT613	Cascade County Area, Montana	3039719	2264F	Dryadine, extremely stony-Monumentpeak, rubbly-Helmville, stony families, complex, 25 to 60 percent slopes	Not prime farmland
MT	MT613	Cascade County Area, Montana	3039701	2264G	Dryadine, very rubbly family-Monumentpeak, extremely stony-Helmville, very stony family, complex, 45 to 70 percent slopes	Not prime farmland
MT	MT613	Cascade County Area, Montana	3039707	2268F	Kegsprings, extremely stony-Sawpit, very stony-Drywolf, very rubbly families, complex, 20 to 60 percent slopes	Not prime farmland
MT	MT613	Cascade County Area, Montana	3039720	5101G	Rock outcrop-Rubble land-Warneke family, very rubbly, complex, 50 to 70 percent slopes	Not prime farmland
MT	MT613	Cascade County Area, Montana	3039711	5111G	Rock outcrop-Rubble land-Tropal, family, very rubbly, complex, 35 to 70 percent slopes	Not prime farmland

Report Metadata: Back to top

- **Area_Symbol:** A symbol that uniquely identifies a single occurrence of a particular type of area (e.g. Dane Co., Wisconsin is WI025).
- **Area_Name:** The name given to the specified geographic area.
- **mukey:** A non-connotative string of characters used to uniquely identify a record in the Mapunit table.
- **Mapunit_SYM:** The symbol used to uniquely identify the soil mapunit in the soil survey.
- **Mapunit_Name:** Correlated name of the mapunit (recommended name or field name for surveys in progress).
- **Prime and other Important Farmlands:** Identification of map units as prime farmland, farmland of statewide importance, or farmland of local importance.

Prime and other Important Farmlands Description:

This table lists the map units in the survey area that are considered important farmlands. Important farmlands consist of prime farmland, unique farmland, and farmland of statewide or local importance. This list does not constitute a recommendation for a particular land use.

In an effort to identify the extent and location of important farmlands, the Natural Resources Conservation Service, in cooperation with other interested Federal, State, and local government organizations, has inventoried land that can be used for the production of the Nation's food supply.

Prime farmland is of major importance in meeting the Nation's short- and long-range needs for food and fiber. Because the supply of high-quality farmland is limited, the U.S. Department of Agriculture recognizes that responsible levels of government, as well as individuals, should encourage and facilitate the wise use of our Nation's prime farmland

Prime farmland, as defined by the U.S. Department of Agriculture, is land that has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops and is available for these uses. It could be cultivated land, pastureland, forestland, or other land, but it is not urban or built-up land or water areas. The soil quality, growing season, and moisture supply are those needed for the soil to economically produce sustained high yields of crops when proper management, including water management, and acceptable farming methods are applied. In general, prime farmland has an adequate and dependable supply of moisture from precipitation or irrigation, a favorable temperature and growing season, acceptable acidity or alkalinity, an acceptable salt and sodium content, and few or no rocks. The water supply is dependable and of adequate quality. Prime farmland is permeable to water and air. It is not excessively erodible or saturated with water for long periods, and it either is not frequently flooded during the growing season or is protected from flooding. Slope ranges mainly from 0 to 6 percent. More detailed information about the criteria for prime farmland is available at the local office of the Natural Resources Conservation Service.

For some of the soils identified in the table as prime farmland, measures that overcome a hazard or limitation, such as flooding, wetness, and droughtiness, are needed. Onsite evaluation is needed to determine whether or not the hazard or limitation has been overcome by corrective measures.

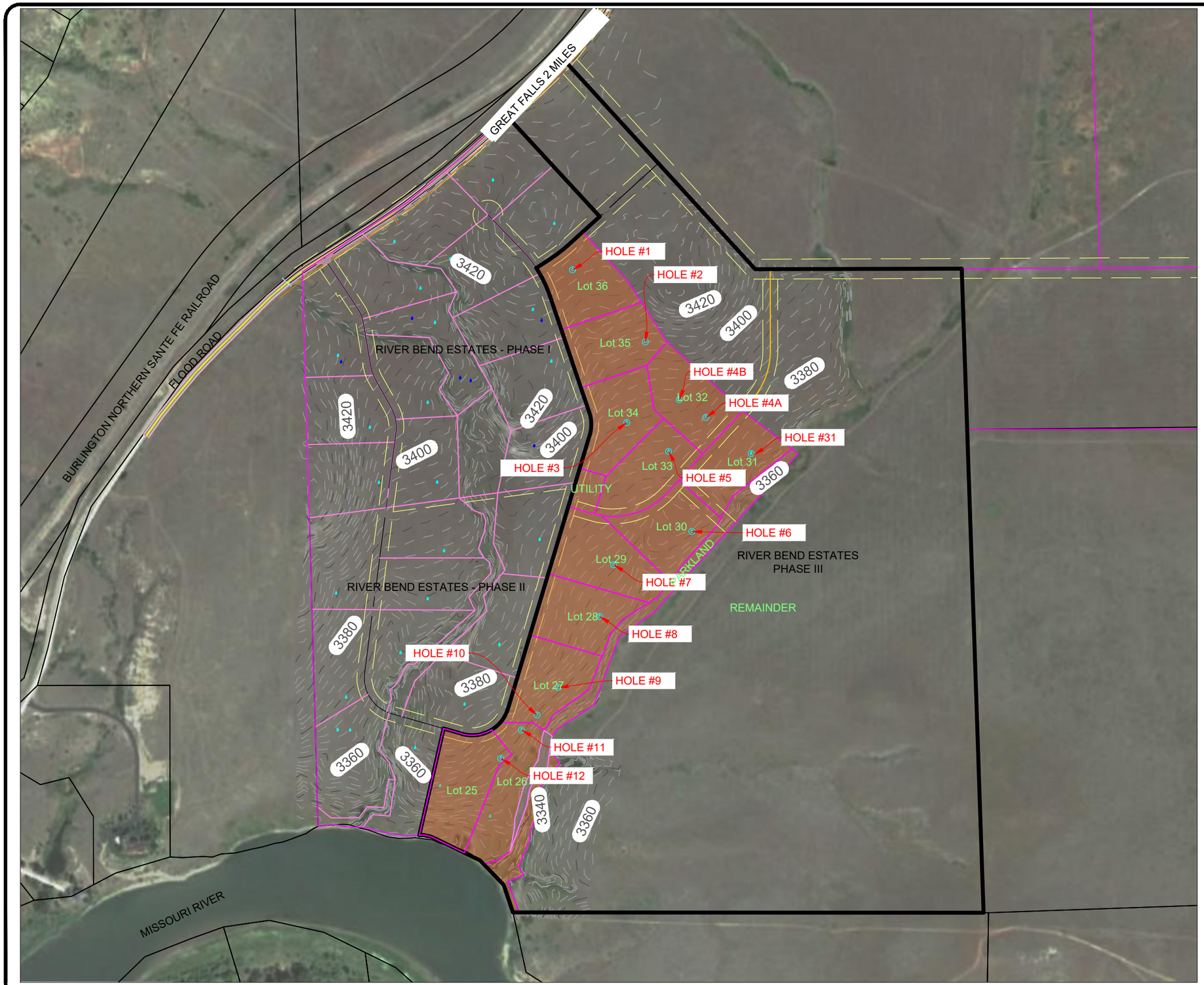
A recent trend in land use in some areas has been the loss of some prime farmland to industrial and urban uses. The loss of prime farmland to other uses puts pressure on marginal lands, which generally are more erodible, droughty, and less productive and cannot be easily cultivated.

Unique farmland is land other than prime farmland that is used for the production of specific high-value food and fiber crops, such as citrus, tree nuts, olives, cranberries, and other fruits and vegetables. It has the special combination of soil quality, growing season, moisture supply, temperature, humidity, air drainage, elevation, and aspect needed for the soil to economically produce sustainable high yields of these crops when properly managed. The water supply is dependable and of adequate quality. Nearness to markets is an additional consideration. Unique farmland is not based on national criteria. It commonly is in areas where there is a special microclimate, such as the wine country in California.

In some areas, land that does not meet the criteria for prime or unique farmland is considered to be *farmland of statewide importance* for the production of food, feed, fiber, forage, and oilseed crops. The criteria for defining and delineating farmland of statewide importance are determined by the appropriate State agencies. Generally, this land includes areas of soils that nearly meet the requirements for prime farmland and that economically produce high yields of crops when treated and managed according to acceptable farming methods. Some areas may produce as high a yield as prime farmland if conditions are favorable. Farmland of statewide importance may include tracts of land that have been designated for agriculture by State law.

In some areas that are not identified as having national or statewide importance, land is considered to be farmland of local importance for the production of food, feed, fiber, forage, and oilseed crops. This farmland is identified by the appropriate local agencies. Farmland of local importance may include tracts of land that have been designated for agriculture by local ordinance.

RIVER BEND ESTATES
PHASE III
Test Pit Exhibit



NOTES:
12 TESTS PITS WERE EXCAVATED ON APRIL 16TH, 2020.. STAFF FROM CASCADE COUNTY LOGGED THE TEST PITS. THE TEST PIT LABELS CORRESPOND WITH THE SOIL PROFILE LOGS PREPARED BY THE COUNTY ON APRIL 17TH, 2020 .
1 ADDITION TEST PIT (#31) WAS EXCAVATED BY THE OWNER AND LOGGED BY CASCADE COUNTY ON JULY 8TH, 2020. THE TEST PIT LABEL CORRESPONDS WITH THE SOIL PROFILE LOG.

200 0 200 400
SCALE FEET

PRELIMINARY
NOT FOR
CONSTRUCTION

TRIPLE TREE
ENGINEERING

Jul 29, 2020 - 2:41pm - P:\Great Falls\19-72 River Bend Phase III\Preliminary Plat Application\Exhibits\Phase III Prelim Plat Exhibits.dwg

TP 12	TP 11	TP 10	TP 9	TP 8	TP-7	TP 6	TP 5	TP 4 A	TP 4 B	TP 3	TP 2	TP 1
Lot 25	Lot 26 & 27	Lot 26 & 27	Lot 28	Lot 29	Lot 30	Lot 31	Lot 33	Lot 32	Lot 32	Lot 34	Lot 35	Lot 36
0.5 gpd/sqf	0.5 gpd/sqf	0.5 gpd/sqf	0.5 gpd/sqf	0.5 gpd/sqf	0.5 gpd/sqf	0.5 gpd/sqf	0.4 gpd/sqf	0.4 gpd/sqf	0.4 gpd/sqf	0.5 gpd/sqf	0.5 gpd/sqf	0.4 gpd/sqf
0"-12" silty loam	0"-12" silty loam	0"-18" silty loam	0"-24" silty loam	0"-16" silty loam	0"-16" silty loam	0"-16" silty loam	0"-16" silty loam	0"-24" silty loam	0"-36" sandy clay loam	0"-18" silty loam	0"-24" silty loam	0"-28" silty loam
12" - 144" fine sandy loam	12"-144" fine sandy loam	18"-144" fine sandy loam	24"-156" fine sandy loam	16"-152" fine sandy loam	16"-154" fine sandy loam	16"-144" fine sandy loam	16"- 120" very fine sandy loam	24"-54" channery sandy clay loam	36"-144" channery sandy clay loam	18"-150" fine sandy loam	24"-144" fine sandy loam	16"-55" gravelly silty loam
							120" - 122" channery very fine sandy loam	54"-98" channery sandy clay loam				

Site Evaluation - SOIL PROFILE

DATE 7-8-2020

Property Owner Rick Higgins Septic (N/R) _____ Subdivision_____ # of Lots____

Property Address_____ Proposed Subdivision Name_____

Contractor Triple Tree Legal: T_____ R_____ Sec_____ 1/4_____1/4_____

Soil Evaluator Bruce Treis Round trip mileage @ $1.00/mile. # RT miles____Amount due_____

Include in the diagram all that apply.

- ☐ Wells
- ☐ Cisterns
- ☐ Existing Buildings
- ☐ Ground Water Sources (springs etc)
- ☐ Flood Plain
- ☐ Replacement Area,
- ☐ Slope (direction & percent)
- ☐ Water sources on adjacent property

N

River Bend Estates Phase 3

Soil profile 1 Lot # 31 Soil profile 2 Lot#_____

Latitude: 47° 26' 27" Latitude:_____

Longitude: 111° 20' 29" Longitude:_____

Identify: soil types and thickness; depth to bed rock, seasonally high ground water, ground water, bottom of hole.

Application Rate: 0.41 Application Rate:_____

Depth in Inches: Soil Type: Depth in Inches: Soil Type:

0-9" fine sandy loam

9"-154" very fine sandy loam

Revised 2019

SOIL PROFILE

DATE 1-10-19

Property Owner Rick Higgins

Septic (N/R) _____ **Subdivision** _____ **# of Lots** ____

Property Address _____

Proposed Subdivision Name River Bend Estates

Contractor Triple T Eng

Legal: T _____ **R** _____ **Sec** _____ **1/4** _____ **1/4** _____

Soil Evaluator Bruce Tree

FEES PAID: _____

AREA MAP

N

Soil Analysis

Hole # 2	Hole # 8	Hole # 7 opt 1	Hole # 7 opt 2
0-8" Sandy Clay	0-6" Sandy Clay	0-6" Sandy Loam	0-14" Sandy Clay
Loam with organics	Loam with organics	with organics	Loam with organics
8"-43" Silty Loam	6"-47" Sandy Clay	6"-98" Fine Sandy	14"-108" Silty Loam
43"-74" Silty Loam	Loam	Loam	
with Channers	47"-75" Silty Loam	98"-146" Fine Sandy	
74"-114" Silty Loam	75"-90" Channery	Loam	
	Clay Loam		
Application Rate			
0.41 gpd/ft²	0.3 gpd/ft²	0.5 gpd/ft²	0.41 gpd/ft²

SOIL PROFILE

DATE 1-10-19

Property Owner Rick Higgins

Septic (N/R) _____ Subdivision _____ # of Lots ____

Property Address _____

Proposed Subdivision Name River Bend Estates

Contractor Triple T Eng

Legal: T_____ R_____ Sec_____ 1/4_____ 1/4_____

Soil Evaluator Bruce Treis

FEES PAID: _____

AREA MAP

N

Soil Analysis

Hole # 7 opt 3	Hole # 10	Hole # 17 opt 1	Hole # 19 opt 1
0-14" Sandy Clay	0-16" Silty Loam	0-12" Sandy Clay	0-8" Sandy Clay
Loam with Organics	with Organics	Loam with Organics	Loam with organic
14"-126" Silty Loam	16"-44" Silty Loam	12"-124" Silty Loam	8"-114" Silty Loam
	44"-108" Chennery		
	Sandy Clay Loam		
Application Rate			
0.4 gpd/ft²	0.4 gpd/ft²	0.4 gpd/ft²	0.4 gpd/ft²

SOIL PROFILE

DATE 1-10-19

Property Owner Rick Higgins

Septic (N/R) _____ Subdivision _____ # of Lots ____

Property Address _____

Proposed Subdivision Name River Bend Estates

Contractor Triple T Eng

Legal: T_____ R_____ Sec_____ 1/4_____ 1/4_____

Soil Evaluator Bruce Treis

FEES PAID: _____

AREA MAP

N

Soil Analysis

Hole # 23 opt 2	Hole # 25	Hole #	Hole #
0-8" sandy clay	0-4" silty loam		
loam with organics	with organics		
8"-116" silty loam	4"-116" Very		
	fine sand		
Application Rate			
0.4 gpd/ft²	0.4 gpd/ft²		

SOIL PROFILE

DATE 7-31-18

Property Owner Higgins Enterprises

Septic (N/R) _____ Subdivision _____ # of Lots 12

Property Address _____

Proposed Subdivision Name River Bend Estates

Contractor Triple T Engineering

Legal: T_____ R_____ Sec_____ 1/4_____ 1/4_____

Soil Evaluator Bruce Treis

FEES PAID: _____

AREA MAP

Bare Property

N

Soil Analysis

	Hole # 1	Hole # 2	Hole # 3	Hole # 4
lat.	47.44284	47.44207	47.44133	47.44878
long.	-111.34687	-111.34809	-111.34759	-111.34737
	0-8" Sandy Clay Loam with organics	0-8" Sandy Clay Loam with organics	0-6" Silty Loam with organics	0-6" Silty Loam with organics
	8"-96" Sandy Clay Loam	8"-43" Silty Loam	6"-96" Silty Loam	6"-96" Silty Loam
		43"-74" Silty Loam with Channers		
		- Bedrock		
application rate	0.4 gpd/ft²	0.4 gpd/ft²	0.4 gpd/ft²	0.4 gpd/ft²

SOIL PROFILE

DATE 7-31-18

Property Owner Higgins Enterprises

Septic (N/R) _____ Subdivision _____ # of Lots 12

Property Address _____

Proposed Subdivision Name River Bend Estates

Contractor Triple T Engineering

Legal: T_____ R_____ Sec_____ 1/4_____ 1/4_____

Soil Evaluator Bruce Treis

FEES PAID: _____

AREA MAP

Bare Property

N

Soil Analysis

	Hole # 5	Hole # 6	Hole # 7	Hole # 8
Lat	47.4407	47.44155	47.44184	47.44412
Long	-111.34653	-111.34673	-111.34602	-111.34477
	0-8" Silty Loam with organics	0-6" Silty Loam with Organics	0-6" Sandy Loam with organics	0-6" Sandy Clay Loam with Organics
	8"-96" Silty Loam	6"-96" Silty Loam	6"-98" Sandy Loam	6"-34" Sandy Clay Loam
				34"-84" Clay Loam
Application Rate	0.4 gpd/ft²	0.4 gpd/ft²	0.5 gpd/ft²	0.3 gpd/ft²

SOIL PROFILE

DATE 7-31-18

Property Owner Higgins Enterprises

Septic (N/R) _____ Subdivision _____ # of Lots 12

Property Address _____

Proposed Subdivision Name River Bend Estates

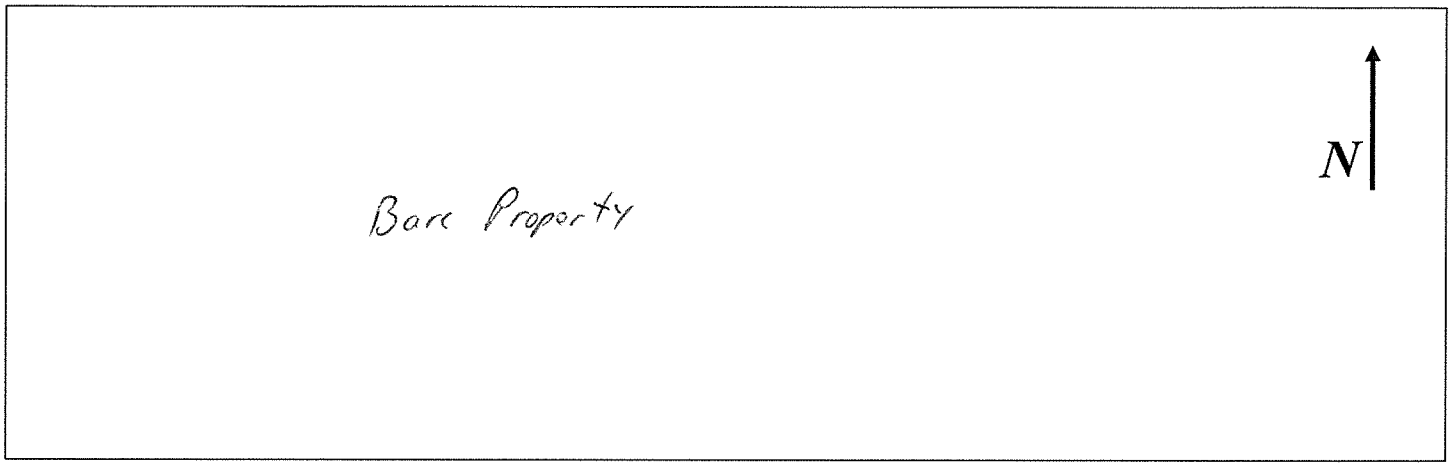
Contractor Triple T Engineering

Legal: T_____ R_____ Sec_____ 1/4_____ 1/4_____

Soil Evaluator Bruce Treis

FEES PAID: _____

AREA MAP



Soil Analysis

	Hole # 9	Hole # 10	Hole # 11	Hole # 12
at	47.44207	47.44255	47.44315	47.44323
ng	-111.34483	-111.34492	-111.34634	-111.34685
	0-5" Clay Loam	0-4" Silty Loam	0-8" Silty Loam	0-6" Silty Loam
	with Organics	with Organics	with Organics	with Organics
	5"-28" Clay Loam	4"-28" Silty Loam	8"-96" Silty Loam	6"-96" Silty Loam
	28"-96" Gravelly	28"-74" Gravelly		
	Sandy Clay Loam	Sandy Clay Loam		
		- Bed Rock -		
Application				
Rate	0.3 gpd/ft²	0.4 gpd/ft²	0.4 gpd/ft²	0.4 gpd/ft²

Appendix B – Census Information

QuickFacts

Cascade County, Montana

QuickFacts provides statistics for all states and counties, and for cities and towns with a ***population of 5,000 or more.***

Table

All Topics	Cascade County, Montana
Population estimates base, April 1, 2010, (V2017)	**81,324**
PEOPLE	
Population	
Population estimates, July 1, 2017, (V2017)	81,654
Population estimates base, April 1, 2010, (V2017)	**81,324**
Population, percent change - April 1, 2010 (estimates base) to July 1, 2017, (V2017)	0.4%
Population, Census, April 1, 2010	81,327
Age and Sex	
Persons under 5 years, percent	6.7%
Persons under 18 years, percent	22.5%
Persons 65 years and over, percent	18.2%
Female persons, percent	49.4%
Race and Hispanic Origin	
White alone, percent (a)	88.5%
Black or African American alone, percent (a)	1.6%
American Indian and Alaska Native alone, percent (a)	4.8%
Asian alone, percent (a)	1.0%
Native Hawaiian and Other Pacific Islander alone, percent (a)	0.1%
Two or More Races, percent	3.9%
Hispanic or Latino, percent (b)	4.5%
White alone, not Hispanic or Latino, percent	85.2%
Population Characteristics	
Veterans, 2012-2016	9,222
Foreign born persons, percent, 2012-2016	2.0%
Housing	
Housing units, July 1, 2017, (V2017)	38,845
Owner-occupied housing unit rate, 2012-2016	63.8%
Median value of owner-occupied housing units, 2012-2016	$165,800

Is this page helpful? X
Yes No

Median selected monthly owner costs -with a mortgage, 2012-2016	$1,190
Median selected monthly owner costs -without a mortgage, 2012-2016	$374
Median gross rent, 2012-2016	$671
Building permits, 2017	205
Families & Living Arrangements	
Households, 2012-2016	34,138
Persons per household, 2012-2016	2.32
Living in same house 1 year ago, percent of persons age 1 year+, 2012-2016	82.1%
Language other than English spoken at home, percent of persons age 5 years+, 2012-2016	3.2%
Education	
High school graduate or higher, percent of persons age 25 years+, 2012-2016	91.7%
Bachelor's degree or higher, percent of persons age 25 years+, 2012-2016	25.9%
Health	
With a disability, under age 65 years, percent, 2012-2016	10.1%
Persons without health insurance, under age 65 years, percent	▲ 10.2%
Economy	
In civilian labor force, total, percent of population age 16 years+, 2012-2016	59.1%
In civilian labor force, female, percent of population age 16 years+, 2012-2016	57.6%
Total accommodation and food services sales, 2012 ($1,000) (c)	194,725
Total health care and social assistance receipts/revenue, 2012 ($1,000) (c)	711,857
Total manufacturers shipments, 2012 ($1,000) (c)	955,330
Total merchant wholesaler sales, 2012 ($1,000) (c)	D
Total retail sales, 2012 ($1,000) (c)	1,359,702
Total retail sales per capita, 2012 (c)	$16,638
Transportation	
Mean travel time to work (minutes), workers age 16 years+, 2012-2016	15.6
Income & Poverty	
Median household income (in 2016 dollars), 2012-2016	$45,469
Per capita income in past 12 months (in 2016 dollars), 2012-2016	$26,578
Persons in poverty, percent	▲ 14.2%

BUSINESSES

Businesses	
Total employer establishments, 2016	2,410
Total employment, 2016	30,825
Total annual payroll, 2016 ($1,000)	1,120,234
Total employment, percent change, 2015-2016	0.1%
Total nonemployer establishments, 2016	4,775
All firms, 2012	7,315
Men-owned firms, 2012	3,581

Is this page helpful? X
Yes No

Women-owned firms, 2012	2,548
Minority-owned firms, 2012	286
Nonminority-owned firms, 2012	6,635
Veteran-owned firms, 2012	792
Nonveteran-owned firms, 2012	6,019

GEOGRAPHY

Geography	
Population per square mile, 2010	30.1
Land area in square miles, 2010	2,698.16
FIPS Code	30013

Is this page helpful? X
Yes No

Value Notes

Estimates are not comparable to other geographic levels due to methodology differences that may exist between different data sources.

Some estimates presented here come from sample data, and thus have sampling errors that may render some apparent differences between geographies statistically indistinguishable. Click the Quick Info icon to the left of each row in TABLE view to learn about sampling error.

The vintage year (e.g., V2017) refers to the final year of the series (2010 thru 2017). *Different vintage years of estimates are not comparable.*

Fact Notes

- **(a)** Includes persons reporting only one race
- **(b)** Hispanics may be of any race, so also are included in applicable race categories
- **(c)** Economic Census - Puerto Rico data are not comparable to U.S. Economic Census data

Value Flags

- **D** Suppressed to avoid disclosure of confidential information
- **F** Fewer than 25 firms
- **FN** Footnote on this item in place of data
- **NA** Not available
- **S** Suppressed; does not meet publication standards
- **X** Not applicable
- **Z** Value greater than zero but less than half unit of measure shown
- **-** Either no or too few sample observations were available to compute an estimate, or a ratio of medians cannot be calculated because one or both of the median estimates falls in the lowest or upper interval of an open ended distribution.

QuickFacts data are derived from: Population Estimates, American Community Survey, Census of Population and Housing, Current Population Survey, Small Area Health Insurance Estimates, Small Area Income and Poverty Estimates, State and County Housing Unit Estimates, County Business Patterns, Nonemployer Statistics, Economic Census, Survey of Business Owners, Building Permits.

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International Trade
Export Codes
NAICS
Governments
Longitudinal Employer-Household Dynamics (LEHD)
Survey of Business Owners

PEOPLE & HOUSEHOLDS
2020 Census
2010 Census
American Community Survey
Income
Poverty
Population Estimates
Population Projections
Health Insurance
Housing
International
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SPECIAL TOPICS
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Tribal Resources (AIAN)
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Yes No

Appendix C – Agency Correspondence

TRIPLE TREE ENGINEERING

4/21/2020

Brian Patrick, Director of Business Operations
Great Falls Public Schools
1100 4th St. South
Great Falls, MT 59405

RE: River Bend Estates Phase III

Dear Brian:

Like River Bend Estates Phase I and Phase II (Jan. 21, 2019 correspondence attached), Triple Tree Engineering is working with Rick and Judy Higgins on Phase III of River Bend Estates. The property is located approximately 2 miles south of Great falls adjacent to River Bend Estates Phase I and Phase II. The attached vicinity maps show the location and rough layout. The subdivision would be a 12-lot subdivision accessing Flood Road. We are working with Cascade County Planning and the Cascade County Health Department to prepare the preliminary plat application.

In accordance with Cascade County Subdivision Regulations I am reaching out to your office requesting "a statement from the administrator of the affected school system indicating whether the increased enrollment can be accommodated by the present personnel and facilities and by the existing school bus system." Based on Cascade County Census information we project approximately 7 children under the age of 18 will reside in River Bend Estates Phase III. It is expected that some of the residents in River Bend Estates will be people who have relocated within the same school area boundaries.

Please take a few moments to review the information and provide a statement as mentioned. If you have questions or comments, please contact me at 406-461-2115 or jcrawford@tripletreemt.com.

Sincerely,

Triple Tree Engineering, Inc.

Jason Crawford, Principal

Encl: Phase II Correspondence
Vicinity Maps

Cascade Conservation District

12 Third St. NW, Ste 300
Great Falls, MT 59404
Tel 406-727-3603 ext 125
Fax 406-727-4810
Email info@cascadecd.com
Web cascadecd.com

September 15, 2017

Mr. Rick Higgins
PO Box 322
Ulm, MT 59485

RE: Reservoir/Dam maintenance & repair

Dear Mr. Higgins:

Upon review of the unnamed stream drainages south of Great Falls, S34, T20N, R3E, it has been determined that the stream is considered intermittent and therefore does not fall under the purview of the Cascade Conservation District according to the Natural Streambed and Land Preservation Act (SB310) and therefore, a 310 permit is not required.

We appreciate your diligence in contacting the district prior to any work commencing on the project and hope this meets your needs going forward. Please don't hesitate to contact me if you have any further questions or concerns.

Thank you,

Tenlee A Atchison

Tenlee Atchison
Administrator

FAX
538-7089

dmann2@
mt.gov

MAT 538-7784
Doug Mann 538-7459

Dept of Water Resor.
Lewistown - WATER
DNRC - 444-6601
Shawnee - 538-7401
ex ~~[illegible]~~ 3001.

Billings - BLR
Mark Beaty - 247-7488

Local leadership in conservation stewardship..

Cascade
Conservation
District

12 Third Street NW, Suite 300
Great Falls, Montana 59404
Tel: 406-770-4308
Fax: 406-727-4810
Email: tenlee@cascadecd.com
www.cascadecd.com

Higgins Enterprises, Ltd
PO Box 322
Ulm MT 59485-0322

RE: Living on the Bank

The following gives important information and outlines your responsibilities as a landowner living on the bank of a stream or waterway in Montana

~THANK YOU FOR YOUR TIME AND ATTENTION~

Dear Water's Edge Landowner:

As we stumble out of a long winter and fall right into the warmth of summer, we wanted to take this opportunity to introduce ourselves to those who may have never needed our services or participated in any conservation programming.

Living on the bank of the river, you should be aware of all permitting regulations, Aquatic Invasive Species (AIS) issues and other events that impact your property. You should know who we are, what we offer you and why that is important.

We Are:

The Cascade Conservation District. In the early 1930's, along with the greatest depression this nation ever experienced, came an equally unparalleled ecological disaster known as the Dust Bowl. Following a severe and sustained drought in the Great Plains, the region's soil began to erode and blow away; creating huge black dust storms that blotted out the sun and swallowed the countryside. On Capitol Hill, while testifying about the erosion problem, soil scientist Hugh Hammond Bennett threw back the curtains to reveal a sky blackened by dust. Congress unanimously passed legislation declaring soil and water conservation a national policy and priority. Since about three-fourths of the continental United States is privately owned, Congress realized that only active, voluntary support from landowners would guarantee the success of conservation work on private land. In 1937, President Franklin D. Roosevelt wrote the governors of all the states recommending legislation that would allow local landowners to form soil conservation districts. There is a total of 58 conservation districts in Montana with at least one in each of the 56 counties.

Conservation districts are political subdivisions with broad power and authority under the law to carry out programs that conserve soil and water, protect streams and rivers, improve soil health, as well as improve wildlife habitat, improve the tax base, and protect the health, safety and welfare of the citizens of the state.

Conservation districts are governed by a non-paid, nonpartisan board of elected supervisors. If a city falls within a conservation district boundary, two supervisors are appointed by the city government to represent urban interests. Funding for operations comes from a small tax levied on real property within the boundaries of the conservation district. The revenue from the mill levy varies from $2,500 in less populated counties to over $200,000 in counties with a greater population base. The majority of conservation district levies generate under $25,000 in revenue. This funding is inadequate to meet the goals of conservation districts, so they rely heavily on grants and other creative funding sources.

In 1944 the Sun River Soil Conservation District was activated. It covered the irrigated area along the Sun River, including parts of Teton and Lewis & Clark Counties as well as a portion of Cascade County. And, in 1946, the balance of Cascade County was organized into the Cascade Soil and Water Conservation District. In 1960 the two districts merged as one and in 1971 the District adopted the name, the Cascade County Conservation District. In 2013, the name changed again to Cascade Conservation District (CCD). We have 4 incorporated towns within the boundaries of the district which follow county lines.

CCD is housed in the USDA Service Center. We work closely with the Natural Resource Conservation Service and the Farm Service Agency. The Montana Department of Natural Resources & Conservation (DNRC), Conservation Districts Bureau (CDB) provides financial, legal and technical assistance, and training. The CDB assists conservation districts in meeting their legal requirements to carry out conservation programs locally and assists districts with the Montana Natural Streambed and Land Preservation Act (310 Permits). CCD is not a county agency; however, there is a strong partnership between CCD and many county departments. Visit http://www.cascadecd.com/ to learn who your local CCD officials are as well as pertinent district information.

We Do:

Permitting. The Cascade Conservation District (CCD) administers The Natural Streambed and Land Preservation Act, also known as "The 310 Law" in Cascade County. The purpose of the law is to keep rivers and streams in as natural or existing condition as possible, to minimize sedimentation and to recognize beneficial uses. Any individual or corporation proposing work in a perennial stream or on the banks of the stream, must apply for a 310 permit through CCD. This includes but is not limited to:

- Boat Docks
- Boat Launches or Ramps
- Landscaping of any kind including clean up
- Bank stabilization projects
- Fencing
- Removal of material (excavation) or vegetation
- The addition of material including soil, gravel, rock and debris including grass clippings
- Decks, landings or terracing
- Bridges, culverts or fords

If you are planning to do work on or near a waterway in Montana, one or several permits may be required. Conservation districts, along with participating agencies, created a Joint Application Form to help reduce the number of application forms that you need to complete to get your permits. We hope that in addition to reducing paperwork, the use of the form will increase coordination and streamline the permitting process. The Missouri River is considered a navigable river. This means there are more permitting regulations that may be required. Please visit http://dnrc.mt.gov/licenses-and-permits/stream-permitting for a full list of all permitting requirements.

Permits follow the permittee NOT the property. If you have installed a boat dock or done other work on or near the river and you are not sure about whether that project was permitted, you can go online to verify your project is permitted at http://svcalt.mt.gov/dnrc/310permits/default.asp.

**** WARNING****

CCD and other permitting agencies will be on the river a lot this summer. We will be contacting you if we find work (including the installation of a boat dock) has taken place without proper permitting.

Any work completed without proper permitting is considered a **violation**. If you are found to be in violation of the Natural Streambed and Land Preservation Act, you and your contractor may be assessed a civil penalty for an amount not to exceed $500 per violation, and each day of violation constitutes a separate violation per Montana Code Annotated 75-7-123. In addition, if attempts by the District to obtain voluntary compliance have been unsuccessful, the evidence gathered, along with supporting documents will be submitted to the county attorney for enforcement. Further, this Conservation District has the authority under Montana Code Annotated 75-7-122 and -123 to take you to court to collect the civil penalties imposed against you and to require mitigation or abatement.

Please contact CCD immediately if a project has taken place without proper permitting. There are ways to mitigate without penalty.

Please be sure your boat dock is permitted. Permits do not allow docks to be put into the water prior to high water (typically end of May/middle of June, depending on the year) and they must be removed by December 1 each year.

******

Streams in this portion of Montana have a high potential for flooding this season. Stream-modification projects undertaken as an immediate response to flooding require an **Emergency Form 275**. Landowners must contact their local Conservation District within 15 days of taking the emergency action and submit the completed Emergency Form. This permit is not required before any project activity begins.

> To qualify as an emergency action, Montana law states the project must be the result of an *"unforeseen event or combination of circumstances that calls for immediate action to safeguard life, including human or animal, or property, including growing crops, without giving time for the deliberate exercise of judgement or discretion ..."*

Events. Enclosed are just a couple of events that we will be attending or hosting this summer. Please mark your calendars and plan to join us. We would love to visit with you about all things water and soil, wildlife and people life and all other important natural resources. We hope to meet you there.

Education. Please visit our website http://www.cascadecd.com/ or join us on Facebook to find out more about our education efforts. Please contact us if you would like to receive our quarterly newsletter. This provides information on what we have been doing for you and what is coming up in the future.

We Give:

Assistance. The Cascade Conservation District (CCD) offers cost share that provides funding for local landowners to help offset costs of implemented conservation practices. The conservation practices are based on specifications provided by the Natural Resource Conservation Service (NRCS). CCD will cost

share 50% up to $5000 for a total of $2500/practice. 3 projects or a total of $7500 is given each year. Only one practice per applicant will be cost shared each year. This is a competitive program, therefore, projects are reviewed and ranked with the top 3 receiving funding. CCD has cost shared many successful projects including spring and stock water developments, fencing projects, forestry projects and many more. Applications are due by October 1. Contracts go out to successful applicants the following January. Contact us if you have a conservation project that we could help you with.

We Rally:

Support. When it is needed the most. As active partners with local, state and federal agencies we help coordinate conservation efforts between these agencies and landowners like you to ensure accurate information, technical assistance and resources are shared ensuring the best possible outcome for the customers and the health of our landscapes.

The state of Montana implemented an extensive campaign against Aquatic Invasive Species (AIS) in 2017 after invasive mussels were detected in Tiber Reservoir in 2017. There was also a suspected detection in Canyon Ferry. This is a double threat to the waters of the Missouri in Cascade County. The economic impact to our infrastructure in these waters could be devastating. Control by state officials is daunting. The best way to insure we keep our waters clean, pristine and usable is through prevention. That prevention starts here. We are asking all landowners who live on the bank to:

1. Learn as much as you can about all AIS threats, plant and animal. Visit http://cleandraindry.mt.gov and surf the site to learn how you can help protect our waters.

2. Become a stream team member:

Water's Edge Ambassadors are those who live at the water's edge like you. These Ambassadors help monitor through the use of substrate samplers, as a start. Through regular checks of the sampler that can be hung in the water off your dock or tethered to a tree or rock, you can help us be ever vigilant. Reporting is quick and simple with regular reporting rewards possible at the end of the season.

Eye's on the Water are those who simply enjoy and/or recreate on our streams. This may be local conservation groups, civic groups and individuals or fraternal organizations who want to get involved in *Protecting our Water*. These groups will be asked to help monitor and report as well as train as inspectors for events such as fishing derbies/tournaments or substitute in the field on occasion. Members will become a valuable first line of defense in education and outreach for local visitors.

The Mighty Mo Fleet Keepers are local businesses that can distribute information about our rivers and streams. These businesses are the heart of local tourism and the best way to reach visitors who recreate in our waters. Fleet Keepers will receive up to date information as soon as it is available.

These are sweet and simple, valuable ways to ensure our waters are protected for the enjoyment of all. Please consider joining a stream team.

We Are:

Here for you. Please don't hesitate to contact us with any questions or concerns that may have been presented in this letter.

Please remember to:

- ✓ Check the permitting database at http://svcalt.mt.gov/dnrc/310permits/default.asp to make sure all river projects are properly permitted. Make sure you are aware of all permitting requirements before starting any project on or near the stream.
- ✓ Join a stream team
- ✓ Visit us at the At the Water's Edge in July or sign up to help with the River Cleanup 2018 in August from Pelican Point to Cascade.
- ✓ Like us on Facebook for up to date information and notifications.
- ✓ Contact us for more information.

Thank you for your diligence and care as *Living on the Bank* is a commitment that requires respectful stewardship in ***Protecting our Waters*** and keeping Montana great for future generations.

We look forward to seeing you soon!

Cordially yours,

CASCADE CONSERVATION DISTRICT

Tenlee A Atchison

Tenlee Atchison
Administrator

TRIPLE TREE ENGINEERING

April 21, 2020

State Historic Preservation Office
1410 8th Avenue
PO Box 201202
Helena, MT 59620

RE: River Bend Estates **Phase III** Subdivision

To Whom It May Concern:

Triple Tree Engineering is working with Higgins Enterprises on a residential subdivision in Cascade County. The property in located approximately 2 miles south of Great Falls. The attached vicinity maps show the location and rough layout. The subdivision would be a 12-lot residential subdivision accessing the loop road designed and approved by Cascade County for River Bend Estates Phase I as well as construction of one new road to accommodate Phase III. The new lots will utilize individual wells and drain fields. We are working with Cascade County Planning and the Cascade County Health Department to prepare the preliminary plat application.

In accordance with Cascade County Subdivision Regulations I am preparing an environmental assessment.

We are contacting your agency to identify any potential environmental impacts associated with the proposed improvements. Please take a few moments to review the proposal and provide a response detailing any potential environmental impacts. If we do not receive comments from your agency within 30 days, we will assume that you have no concerns at this time regarding the subdivision. If you have questions or comments, please contact me at 406-461-2115 or jcrawford@tripletreemt.com.

Thank You!

Sincerely,

Triple Tree Engineering, Inc.

Jason Crawford, PE

3102 Old Broadwater Lane // Helena, MT 59601 // 406.461.0692
www.tripletreemt.com

MONTANA
Natural Heritage
Program

P.O. Box 201800 • 1515 East Sixth Avenue • Helena, MT 59620-1800 • fax 406.444.0266 • tel 406.444.5363 • http://mtnhp.org

April 27, 2020

Jason Crawford
Triple Tree Engineering
3102 Old Broadwater Lane
Helena, MT 59601

Dear Jason Crawford,

Thank you for your request for Natural Heritage information for River Bend Estates Phase III Subdivision (Cascade County). Included with this letter is an Environmental Summary report PDF and a companion Excel workbook summarizing information managed in the Montana Natural Heritage Program's (MTNHP) databases for: (1) species occurrences; (2) other observed species without Species Occurrences; (3) other species potentially present based on their range, presence of associated habitats, or predictive distribution model output if available; (4) structured surveys (organized efforts following a protocol capable of detecting one or more species); (5) land cover mapped as ecological systems; (6) wetland and riparian mapping; (7) land management categories; and (8) biological reports associated with plant and animal observations. The PDF report contains introductory materials and limitations associated with the use of each of these data types, a list of additional information resources, data use terms and conditions, and suggested contacts. The Excel workbook contains worksheets for each data type that can be easily sorted to summarize particular information needs. In addition to these materials, we have included a compilation of one page snapshots containing general description, habitat, spatial and temporal distribution, and conservation status information for each species listed in the species occurrence, other observed species, and other potential species sections of the Environmental Summary report. These three field guide compilations are excerpted from the full accounts found on the Montana Field Guide http://fieldguide.mt.gov for general reference use and, if desired, as appendices to environmental review documents.

Please keep in mind the following when using and interpreting the enclosed information:

(1) This information is intended for distribution or use only within your department, agency, or business. Please see the Data Use Terms and Conditions in the Environmental Summary report PDF for additional guidelines.

(2) Our minimum search area for standard information requests consists of the requested area buffered by an additional mile in order to capture records that may be immediately adjacent to the requested area. Please let us know if a buffer greater than 1 mile would be of use to your efforts.

(3) Additional information on animal, plant, and lichen species and ecological systems in Montana is available on the Montana Field Guide at http://fieldguide.mt.gov/

(4) In addition to the information you receive from us, we encourage you to contact state, federal, and tribal resource management agencies in the area where your project is located (see Environmental Summary report PDF).

In order to help us improve our services to you, we invite you to take a simple survey. The survey is intended to gather some basic information on the value and quality of the information and services you recently received from the Montana Natural Heritage Program. The survey is short and should not take more than a few minutes to complete. All information will be kept confidential and will be used internally to improve the delivery of services and to help document the value of our services. Use this link to go to the survey: http://www.surveymonkey.com/s/RYN8Y8L.

I hope the enclosed information is helpful to you. Please feel free to contact me at the phone or email address below if you have any questions, require additional information, or have suggestions for how we could improve our information resources.

Sincerely,

Bryce A. Maxell

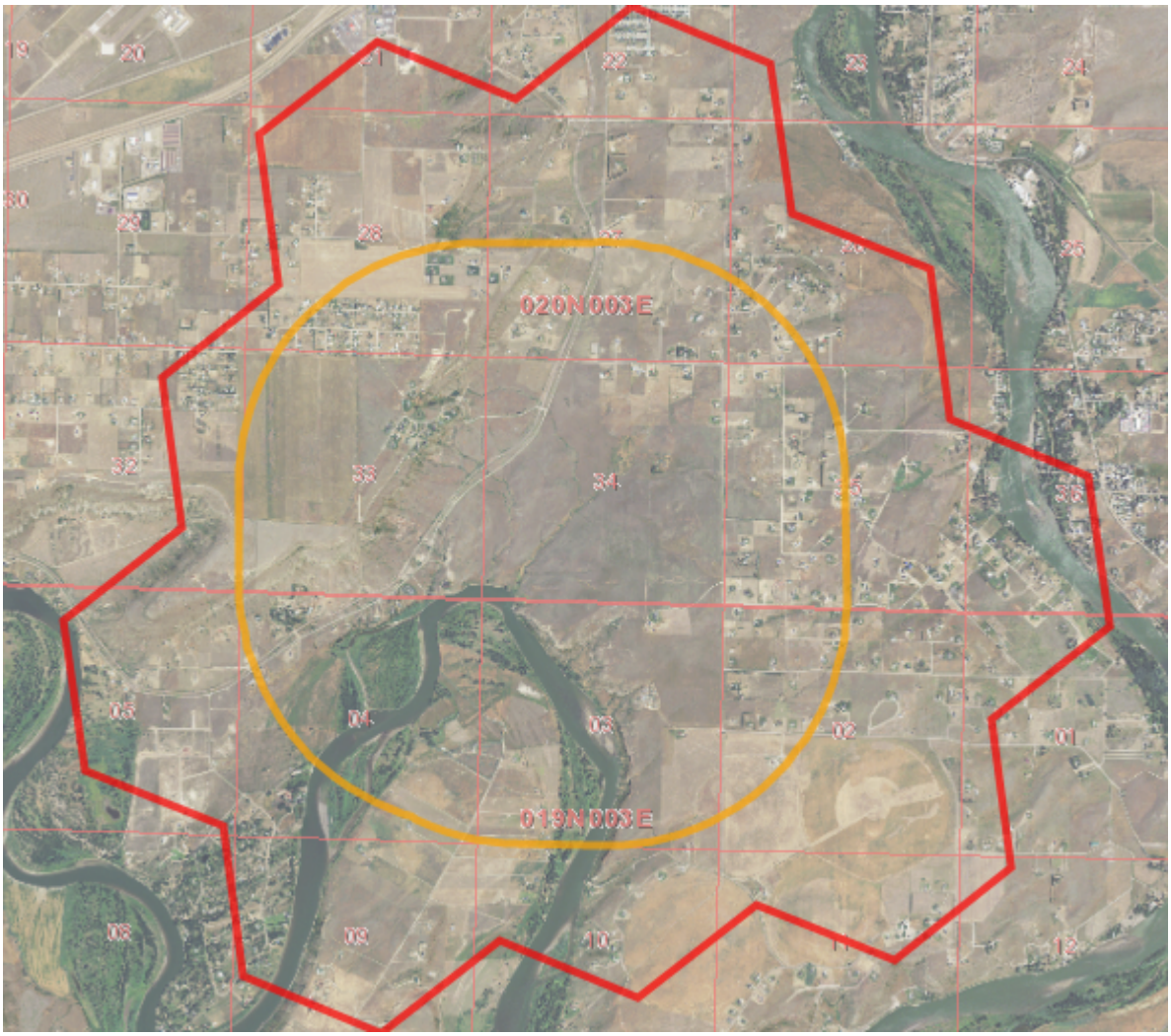
Bryce A. Maxell
Montana Natural Heritage Program
(406) 444-3989
bmaxell@mt.gov

Environmental Summary

MONTANA
Natural Heritage Program
1515 East 6th Avenue
Helena, MT 59620
(406) 444-5363
mtnhp.org

Latitude	Longitude
47.40950	-111.29426
47.47235	-111.38420

Summarized by:
20prvt0177
(Custom Area of Interest)



Suggested Citation
Montana Natural Heritage Program. Environmental Summary Report.
for Latitude 47.40950 to 47.47235 and Longitude -111.29426 to -111.38420. Retrieved on 4/27/2020.

The Montana Natural Heritage Program is a program of the Montana State Library's Natural Resource Information System. It is operated as a special program under the Office of the Vice President for Research and Creative Scholarship at the University of Montana, Missoula.

The Montana Natural Heritage Program is part of NatureServe – a network of over 80 similar programs in states, provinces and nations throughout the Western Hemisphere, working to provide comprehensive status and distribution information for species and ecosystems.

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- Species Report
- - Other Observed
- - Other Potential Species
- Structured Surveys
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- Wetland and Riparian
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- Introduction to Montana Natural Heritage Program
- Data Use Terms and Conditions
- Suggested Contacts for Natural Resource Agencies
- Introduction to Native Species
- Introduction to Land Cover
- Introduction to Wetland and Riparian
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- Introduction to Invasive and Pest Species
- Additional Information Resources

Introduction to Environmental Summary Report

The Environmental Summary report for your area of interest consists of introductory and related materials in this PDF and an Excel workbook with worksheets summarizing information managed in the Montana Natural Heritage Program's (MTNHP) databases for: (1) species occurrences; (2) other observed species without Species Occurrences; (3) other species potentially present based on their range, presence of associated habitats, or predictive distribution model output if available; (4) structured surveys (organized efforts following a protocol capable of detecting one or more species); (5) land cover mapped as ecological systems; (6) wetland and riparian mapping; (7) land management categories; and (8) biological reports associated with plant and animal observations. In order to do this in a consistent manner across Montana and allow for rapid delivery of summaries, we have intersected this information with a uniform grid of hexagons that have been used for planning efforts across the western United States (e.g. Western Association of Fish and Wildlife Agencies - Crucial Habitat Assessment Tool). Each hexagon is one square mile in area and approximately one kilometer in length on each side. Summary information for each data layer is then stored with each hexagon and those summaries are added up to an overall summary for the report area you have requested. Users should be aware that summaries do not correspond to the exact boundaries of the polygon they have specified, but instead are a summary across all hexagons intersected by the polygon they specified.

In presenting this information, MTNHP is working towards assisting the user with rapidly assessing the known or potential species and biological communities, land management categories, and biological reports associated with the report area. We remind users that this information is likely incomplete and may be inaccurate as surveys to document species are lacking in many areas of the state, species' range polygons often include regions of unsuitable habitat, methods of predicting the presence of species or communities are constantly improving, and information is constantly being added and updated in our databases. **Field verification by professional biologists of the absence or presence of species and biological communities in a report area will always be an important obligation of users of our data. Users are encouraged to only use this environmental summary report as a starting point for more in depth analyses and are encouraged to contact state, federal, and tribal resource management agencies for additional data or management guidelines relevant to your efforts. Please see the Appendix for introductory materials to each section of the report, additional information resources, and a list of relevant agency contacts.**

MONTANA Natural Heritage Program

A program of the **Montana State Library's Natural Resource Information System** operated by the **University of Montana**.

Legend

Model Icons	Habitat Icons	Range Icons	Num Obs
N Suitable (native range)	C Common	I Introduced	Count of obs with 'good precision' (<=1000m)
O Optimal Suitability	O Occasional	Y Year-round	+ indicates additional 'poor precision' obs (1001m-10,000m)
M Moderate Suitability		S Summer	
L Low Suitability		W Winter	
I Suitable (introduced range)		M Migratory	
		H Historic	

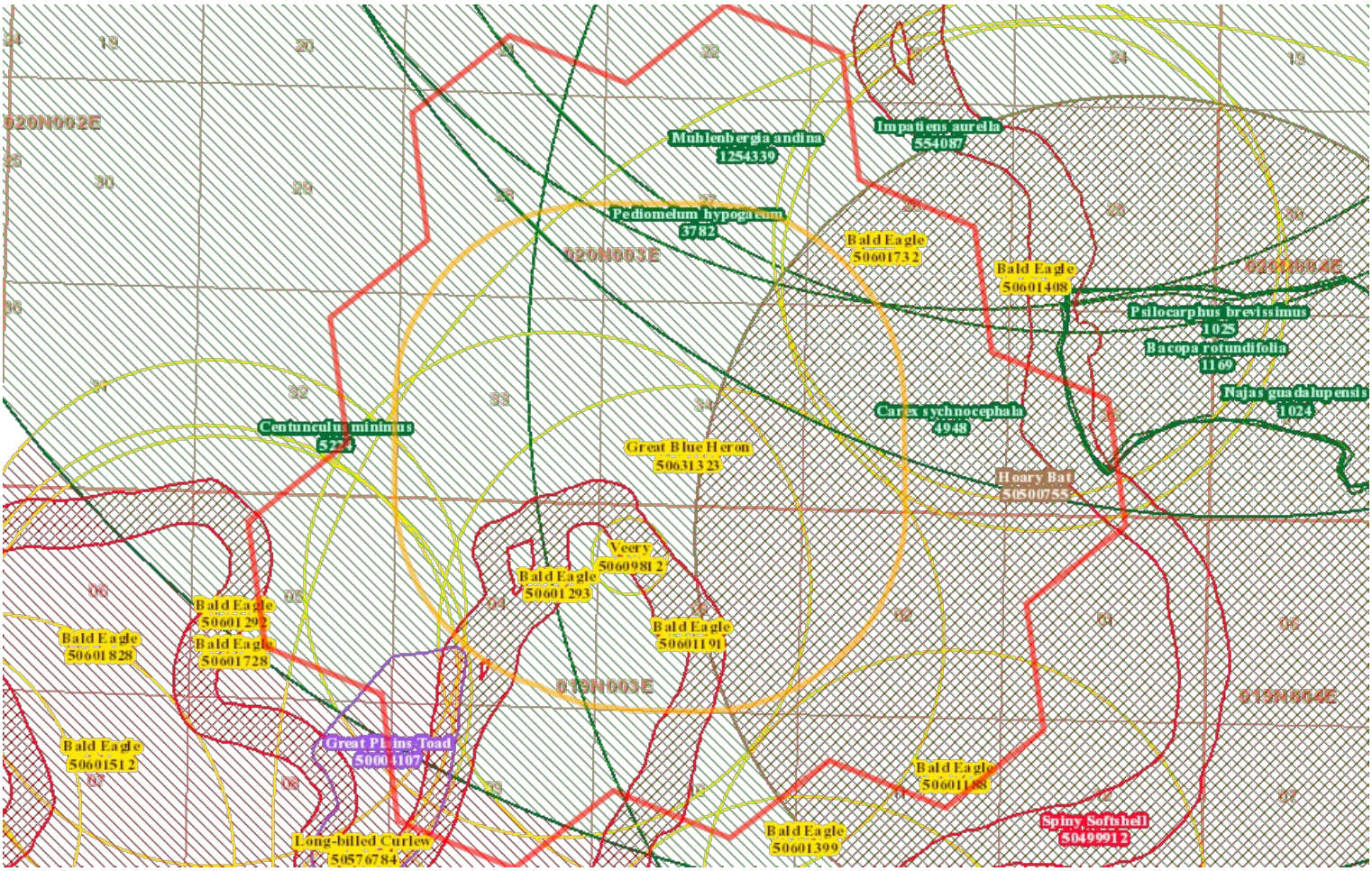
Latitude	Longitude
47.40950	-111.29426
47.47235	-111.38420

Native Species

Summarized by: **20prvt0177** *(Custom Area of Interest)*

Filtered by:

MT_Status='Species of Concern', 'Special Status', 'Important Animal Habitat', 'Potential SOC'



Species Occurrences

	USFWS Sec7	# SO	# Obs	Predictive Model	Associated Habitat	Range
R - Spiny Softshell *(Apalone spinifera)* SOC		1				Y
M - Hoary Bat *(Lasiurus cinereus)* SOC		1				S M
B - Bald Eagle *(Haliaeetus leucocephalus)* SSS		9	9 +			Y

R - Spiny Softshell *(Apalone spinifera)* SOC

View in Field Guide | View Predicted Models | View Associated Habitat | View Range Maps

Species of Concern - Native Species Global: **G5** State: **S3** BLM: **SENSITIVE** FWP SWAP: **SGCN3**

Delineation Criteria Stream reaches and impounded streams within the species' native range where the species naturally occurs and their presence has been confirmed through direct capture or where they are believed to be present based on the professional judgement of a biologist due to confirmed presence in adjacent areas. In order to reflect the importance of adjacent terrestrial habitats to survival, stream reaches are buffered 100 meters and impounded streams 50 meters into the terrestrial habitat based on PACFISH/INFISH Riparian Conservation Area standards. (Last Updated: Sep 26, 2019)

Predictive Models: N 50% Suitable (native range) (deductive) **Associated Habitats:** C 8% Common, O 1% Occasional

M - Hoary Bat *(Lasiurus cinereus)* SOC

View in Field Guide | View Predicted Models | View Associated Habitat | View Range Maps

Species of Concern - Native Species Global: **G3G4** State: **S3** BLM: **SENSITIVE** FWP SWAP: **SGCN3**

Delineation Criteria Confirmed area of occupancy based on the documented presence (mistnet captures, definitively identified acoustic recordings, and definitively identified roosting individuals) of adults or juveniles during the active season. Point observation location is buffered by a minimum distance of 3,500 meters in order to be conservative about encompassing the maximum reported foraging distance for the congeneric Lasiurus borealis and otherwise buffered by the locational uncertainty associated with the observation up to a maximum distance of 10,000 meters. (Last Updated: May 14, 2019)

Predictive Models: M 75% Moderate (inductive), L 25% Low (inductive) **Associated Habitats:** C 41% Common, O 58% Occasional

View in Field Guide **View Predicted Models** **View Associated Habitat** **View Range Maps**

Special Status Species - Native Species Global: **G5** State: **S4** USFWS: **DM; BGEPA; MBTA; BCC10; BCC11; BCC17**
USFS: **Sensitive - Known on Forests (BD, BRT, CG, HLC, KOOT, LOLO)** BLM: **SENSITIVE** PIF: **2**

Delineation Criteria Confirmed nesting area buffered by a minimum distance of 2,000 meters in order to be conservative about encompassing the breeding territory and area commonly used for renesting and otherwise buffered by the locational uncertainty associated with the observation up to a maximum distance of 10,000 meters. (Last Updated: Mar 30, 2020)

Predictive Models: M 42% Moderate (inductive), L 50% Low (inductive) **Associated Habitats:** C 8% Common, O 37% Occasional

B - Veery *(Catharus fuscescens)* **SOC** 1 1 S M

View in Field Guide **View Predicted Models** **View Associated Habitat** **View Range Maps**

Species of Concern - Native Species Global: **G5** State: **S3B** USFWS: **MBTA** BLM: **SENSITIVE** FWP SWAP: **SGCN3** PIF: **2**

Delineation Criteria Observations with evidence of breeding activity buffered by a minimum distance of 300 meters in order to be conservative about encompassing home ranges and otherwise buffered by the locational uncertainty associated with the observation up to a maximum distance of 10,000 meters. (Last Updated: Jan 03, 2020)

Predictive Models: M 42% Moderate (inductive), L 50% Low (inductive) **Associated Habitats:** C 4% Common

B - Great Blue Heron *(Ardea herodias)* **SOC** 1 1 + Y S M

View in Field Guide **View Predicted Models** **View Associated Habitat** **View Range Maps**

Species of Concern - Native Species Global: **G5** State: **S3** USFWS: **MBTA** FWP SWAP: **SGCN3**

Delineation Criteria Confirmed nesting area buffered by a minimum distance of 6,500 meters in order to be conservative about encompassing the areas commonly used for foraging near the breeding colony and otherwise buffered by the locational uncertainty associated with the observation up to a maximum distance of 10,000 meters. (Last Updated: Mar 24, 2020)

Predictive Models: M 33% Moderate (inductive), L 67% Low (inductive) **Associated Habitats:** C 4% Common

A - Great Plains Toad *(Anaxyrus cognatus)* **SOC** 1 1 Y

View in Field Guide **View Predicted Models** **View Associated Habitat** **View Range Maps**

Species of Concern - Native Species Global: **G5** State: **S2** USFS: **Sensitive - Known on Forests (CG)** BLM: **SENSITIVE** FWP SWAP: **SGCN2**

Delineation Criteria Standing water bodies with confirmed evidence of reproduction (calling adults, eggs, larvae or new metamorphs) buffered by 100 meters in order to reflect importance of adjacent terrestrial habitats to survival of breeding adults and newly metamorphosed juveniles. When specific water bodies are not able to be identified due to the difficulties of estimating distances to breeding choruses during calling surveys for this species and its tendency to breed in ephemeral waters, the species occurrence consists of the best estimate of the breeding location buffered by the locational uncertainty of the observation to a maximum distance of 10,000 meters. (Last Updated: Sep 17, 2019)

Predictive Models: L 100% Low (inductive) **Associated Habitats:** C 41% Common, O 6% Occasional

V - Bacopa rotundifolia *(Roundleaf Water-hyssop)* **SOC** 1 Not Available

View in Field Guide **View Associated Habitat**

Species of Concern - Native Species Global: **G5** State: **S3?** MNPS: **3**

Delineation Criteria Individual occurrences are generally based upon a discretely mapped area provided by an observer and are not separated by any pre-defined distance. Individual clusters of plants mapped at fine spatial scales (separated by less than approximately 25-50 meters) may be grouped together into one occurrence if they are not separated by distinct areas of habitat or terrain features. Point observations are buffered to encompass any locational uncertainty associated with the observation. (Last Updated: Apr 26, 2018)

Associated Habitats: O 8% Occasional

V - Centunculus minimus *(Chaffweed)* **SOC** 1 + Not Available

View in Field Guide **View Associated Habitat**

Species of Concern - Native Species Global: **G5** State: **S2**

Delineation Criteria Individual occurrences are generally based upon a discretely mapped area provided by an observer and are not separated by any pre-defined distance. Individual clusters of plants mapped at fine spatial scales (separated by less than approximately 25-50 meters) may be grouped together into one occurrence if they are not separated by distinct areas of habitat or terrain features. Point observations are buffered to encompass any locational uncertainty associated with the observation. (Last Updated: Sep 06, 2017)

Associated Habitats: C 4% Common

V - Najas guadalupensis *(Guadalupe Water-nymph)* **SOC** 1 Not Available

View in Field Guide **View Associated Habitat**

Species of Concern - Native Species Global: **G5** State: **S2S3**

Delineation Criteria Individual occurrences are generally based upon a discretely mapped area provided by an observer and are not separated by any pre-defined distance. Individual clusters of plants mapped at fine spatial scales (separated by less than approximately 25-50 meters) may be grouped together into one occurrence if they are not separated by distinct areas of habitat or terrain features. Point observations are buffered to encompass any locational uncertainty associated with the observation. (Last Updated: Sep 06, 2017)

Associated Habitats: C 4% Common

V - Impatiens aurella *(Pale-yellow Jewel-weed)* **SOC** 1 Not Available Not Assigned Y

View in Field Guide **View Range Maps**

Species of Concern - Native Species Global: **G4** State: **S3**

V - Psilocarphus brevissimus *(Dwarf woolly-heads)* **SOC** 1 Not Available Not Assigned Y

View in Field Guide **View Range Maps**

Species of Concern - Native Species Global: **G4** State: **S2S3** USFS: **Sensitive - Known on Forests (KOOT)** MNPS: **3**

Delineation Criteria Individual occurrences are generally based upon a discretely mapped area provided by an observer and are not separated by any pre-defined distance. Individual clusters of plants mapped at fine spatial scales (separated by less than approximately 25-50 meters) may be grouped together into one occurrence if they are not separated by distinct areas of habitat or terrain features. Point observations are buffered to encompass any locational uncertainty associated with the observation. (Last Updated: Feb 19, 2019)

V - Carex sychnocephala *(Many-headed Sedge)* **SOC** 1 + Not Available Not Assigned

View in Field Guide

Species of Concern - Native Species Global: **G5** State: **S1S2** MNPS: **1**

Delineation Criteria Individual occurrences are generally based upon a discretely mapped area provided by an observer and are not separated by any pre-defined distance. Individual clusters of plants mapped at fine spatial scales (separated by less than approximately 25-50 meters) may be grouped together into one occurrence if they are not separated by distinct areas of habitat or terrain features. Point observations are buffered to encompass any locational uncertainty associated with the observation. (Last Updated: Apr 26, 2018)

V - Muhlenbergia andina *(Foxtail Muhly)* **SOC**	1		Not Available	Not Assigned

View in Field Guide

Species of Concern - Native Species Global: **G4** State: **S2S3**

V - Pediomelum hypogaeum *(Little Indian Breadroot)* **PSOC**	1	+	Not Available	Not Assigned

View in Field Guide

Potential Species of Concern - Native Species Global: **G5** State: **S3S4** MNPS: **3**

Delineation Criteria Individual occurrences are generally based upon a discretely mapped area provided by an observer and are not separated by any pre-defined distance. Individual clusters of plants mapped at fine spatial scales (separated by less than approximately 25-50 meters) may be grouped together into one occurrence if they are not separated by distinct areas of habitat or terrain features. Point observations are buffered to encompass any locational uncertainty associated with the observation. (Last Updated: Sep 06, 2017)

MONTANA Natural Heritage Program

A program of the **Montana State Library's Natural Resource Information System** operated by the **University of Montana**.

Legend

Model Icons	Habitat Icons	Range Icons	Num Obs
N Suitable (native range)	C Common	I Introduced	Count of obs with 'good precision' (<=1000m)
O Optimal Suitability	O Occasional	Y Year-round	+ indicates additional 'poor precision' obs (1001m-10,000m)
M Moderate Suitability		S Summer	
L Low Suitability		W Winter	
I Suitable (introduced range)		M Migratory	
		H Historic	

Latitude	Longitude
47.40950	-111.29426
47.47235	-111.38420

Native Species

Summarized by: **20prvt0177** *(Custom Area of Interest)*
Filtered by:
MT_Status='Species of Concern', 'Special Status', 'Important Animal Habitat', 'Potential SOC'

Other Observed Species

	USFWS Sec7	# Obs	Predictive Model	Associated Habitat	Range
B - Golden Eagle *(Aquila chrysaetos)* SOC		+			Y
A - Northern Leopard Frog *(Lithobates pipiens)* SOC		1			Y
M - Black-tailed Prairie Dog *(Cynomys ludovicianus)* SOC		+			Y
B - Ferruginous Hawk *(Buteo regalis)* SOC		+			S M
B - Common Tern *(Sterna hirundo)* SOC		+			S M
M - Black-footed Ferret *(Mustela nigripes)* SOC		+	Not Available		H
B - Franklin's Gull *(Leucophaeus pipixcan)* SOC		+	Not Available		S M
B - Piping Plover *(Charadrius melodus)* SOC		+	Not Available		M
B - Forster's Tern *(Sterna forsteri)* SOC		+	Not Available		S M
B - American White Pelican *(Pelecanus erythrorhynchos)* SOC		+	Not Available		M
B - Trumpeter Swan *(Cygnus buccinator)* SOC		+	Not Available		M

B - Golden Eagle *(Aquila chrysaetos)* SOC

View in Field Guide | View Predicted Models | View Associated Habitat | View Range Maps

Species of Concern - Native Species Global: **G5** State: **S3** USFWS: **BGEPA; MBTA; BCC17** BLM: **SENSITIVE** FWP SWAP: **SGCN3**

Predictive Models: M 42% Moderate (inductive), L 58% Low (inductive) **Associated Habitats:** C 37% Common, O 29% Occasional

A - Northern Leopard Frog *(Lithobates pipiens)* SOC

View in Field Guide | View Predicted Models | View Associated Habitat | View Range Maps

Species of Concern - Native Species Global: **G5** State: **S1,S4** USFS: **Sensitive - Known on Forests (CG, HLC, KOOT)** **Sensitive - Suspected on Forests (BRT, LOLO)** BLM: **SENSITIVE** FWP SWAP: **SGCN1**

Predictive Models: M 17% Moderate (inductive), L 83% Low (inductive) **Associated Habitats:** C 8% Common, O 5% Occasional

M - Black-tailed Prairie Dog *(Cynomys ludovicianus)* SOC

View in Field Guide | View Predicted Models | View Associated Habitat | View Range Maps

Species of Concern - Native Species Global: **G4** State: **S3** USFS: **Sensitive - Known on Forests (CG)** BLM: **SENSITIVE** FWP SWAP: **SGCN3**

Predictive Models: M 8% Moderate (inductive), L 92% Low (inductive) **Associated Habitats:** C 32% Common, O 50% Occasional

B - Ferruginous Hawk *(Buteo regalis)* SOC

View in Field Guide | View Predicted Models | View Associated Habitat | View Range Maps

Species of Concern - Native Species Global: **G4** State: **S3B** USFWS: **MBTA; BCC10; BCC17** BLM: **SENSITIVE** FWP SWAP: **SGCN3** PIF: **2**

Predictive Models: L 92% Low (inductive) **Associated Habitats:** C 33% Common, O 1% Occasional

B - Common Tern *(Sterna hirundo)* SOC

View in Field Guide | View Predicted Models | View Associated Habitat | View Range Maps

Species of Concern - Native Species Global: **G5** State: **S3B** USFWS: **MBTA** BLM: **SENSITIVE** FWP SWAP: **SGCN3** PIF: **2**

Predictive Models: L 33% Low (inductive) **Associated Habitats:** C 8% Common

M - Black-footed Ferret *(Mustela nigripes)* SOC

View in Field Guide | View Associated Habitat | View Range Maps

Species of Concern - Native Species Global: **G1** State: **S1** USFWS: **LE; XN** USFS: **Endangered, Experimental Nonessential on Forests (CG)** BLM: **ENDANGERED** FWP SWAP: **SGCN1**

Associated Habitats: C 32% Common

B - Franklin's Gull *(Leucophaeus pipixcan)* SOC

View in Field Guide | View Associated Habitat | View Range Maps

Species of Concern - Native Species Global: **G5** State: **S3B** USFWS: **MBTA** BLM: **SENSITIVE** FWP SWAP: **SGCN3** PIF: **2**

Associated Habitats: C 8% Common, O 57% Occasional

B - Piping Plover *(Charadrius melodus)* SOC

View in Field Guide | View Associated Habitat | View Range Maps

Species of Concern - Native Species Global: **G3** State: **S2B** USFWS: **LT; CH; MBTA** BLM: **THREATENED** FWP SWAP: **SGCN2** PIF: **1**

Associated Habitats: C 8% Common

B - Forster's Tern *(Sterna forsteri)* SOC

View in Field Guide | View Associated Habitat | View Range Maps

Species of Concern - Native Species Global: **G5** State: **S3B** USFWS: **MBTA** BLM: **SENSITIVE** FWP SWAP: **SGCN3** PIF: **2**

Associated Habitats: C 4% Common, O 4% Occasional

B - American White Pelican *(Pelecanus erythrorhynchos)* SOC

View in Field Guide | View Associated Habitat | View Range Maps

Species of Concern - Native Species Global: **G4** State: **S3B** USFWS: **MBTA** FWP SWAP: **SGCN3** PIF: **3**

Associated Habitats: C 4% Common

B - Trumpeter Swan *(Cygnus buccinator)* SOC

View in Field Guide **View Associated Habitat** **View Range Maps**

Species of Concern - Native Species Global: **G4** State: **S3** USFWS: **MBTA** USFS: **Sensitive - Known on Forests (BD, CG)** BLM: **SENSITIVE** FWP SWAP: **SGCN3** PIF: **1**

Associated Habitats: C 4% Common

B - Sedge Wren *(Cistothorus platensis)* **SOC** + Not Available

View in Field Guide **View Associated Habitat**

Species of Concern - Native Species Global: **G5** State: **S3B** USFWS: **MBTA** FWP SWAP: **SGCN3** PIF: **3**

Associated Habitats: C 4% Common

B - Gray-crowned Rosy-Finch *(Leucosticte tephrocotis)* **SOC** + Not Available Not Assigned WM

View in Field Guide **View Range Maps**

Species of Concern - Native Species Global: **G5** State: **S2B,S5N** USFWS: **MBTA** FWP SWAP: **SGCN2, SGIN**

MONTANA Natural Heritage Program

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Legend

Model Icons	Habitat Icons	Range Icons	Num Obs
N Suitable (native range)	C Common	I Introduced	Count of obs with 'good precision' (<=1000m)
O Optimal Suitability	O Occasional	Y Year-round	+ indicates additional 'poor precision' obs (1001m-10,000m)
M Moderate Suitability		S Summer	
L Low Suitability		W Winter	
I Suitable (introduced range)		M Migratory	
		H Historic	

Latitude	Longitude
47.40950	-111.29426
47.47235	-111.38420

Native Species

Summarized by: **20prvt0177** *(Custom Area of Interest)*
Filtered by:
MT_Status='Species of Concern', 'Special Status', 'Important Animal Habitat', 'Potential SOC'

Other Potential Species

	USFWS Sec7	Predictive Model	Associated Habitat	Range
F - Burbot *(Lota lota)* PSOC			Not Assigned	Y
M - Porcupine *(Erethizon dorsatum)* PSOC				Y
M - Little Brown Myotis *(Myotis lucifugus)* SOC				Y
M - Merriam's Shrew *(Sorex merriami)* SOC				Y
M - Spotted Bat *(Euderma maculatum)* SOC				S M
B - Pinyon Jay *(Gymnorhinus cyanocephalus)* SOC				Y
M - Silver-haired Bat *(Lasionycteris noctivagans)* PSOC				Y
M - Townsend's Big-eared Bat *(Corynorhinus townsendii)* SOC				Y
V - Carex scoparia *(Pointed Broom Sedge)* SOC			Not Assigned	Y
R - Western Milksnake *(Lampropeltis gentilis)* SOC				Y
M - Fringed Myotis *(Myotis thysanodes)* SOC				Y

F - Burbot *(Lota lota)* PSOC

View in Field Guide **View Predicted Models** **View Range Maps**
Potential Species of Concern - Native Species Global: **G5** State: **S4**
Predictive Models: N 42% Suitable (native range) (deductive)

M - Porcupine *(Erethizon dorsatum)* PSOC

View in Field Guide **View Predicted Models** **View Associated Habitat** **View Range Maps**
Potential Species of Concern - Native Species Global: **G5** State: **S4** FWP SWAP: **SGIN**
Predictive Models: M 100% Moderate (inductive) **Associated Habitats:** C 54% Common, O 3% Occasional

M - Little Brown Myotis *(Myotis lucifugus)* SOC

View in Field Guide **View Predicted Models** **View Associated Habitat** **View Range Maps**
Species of Concern - Native Species Global: **G3** State: **S3** FWP SWAP: **SGCN3**
Predictive Models: M 92% Moderate (inductive), L 8% Low (inductive) **Associated Habitats:** C 62% Common, O 38% Occasional

M - Merriam's Shrew *(Sorex merriami)* SOC

View in Field Guide **View Predicted Models** **View Associated Habitat** **View Range Maps**
Species of Concern - Native Species Global: **G4** State: **S3** FWP SWAP: **SGCN3**
Predictive Models: M 92% Moderate (inductive), L 8% Low (inductive) **Associated Habitats:** C 53% Common, O 1% Occasional

M - Spotted Bat *(Euderma maculatum)* SOC

View in Field Guide **View Predicted Models** **View Associated Habitat** **View Range Maps**
Species of Concern - Native Species Global: **G4** State: **S3** USFS: **Sensitive - Known on Forests (BD, CG)** BLM: **SENSITIVE** FWP SWAP: **SGCN3, SGIN**
Predictive Models: M 83% Moderate (inductive), L 17% Low (inductive) **Associated Habitats:** C 42% Common, O 28% Occasional

B - Pinyon Jay *(Gymnorhinus cyanocephalus)* SOC

View in Field Guide **View Predicted Models** **View Associated Habitat** **View Range Maps**
Species of Concern - Native Species Global: **G3** State: **S3** USFWS: **MBTA; BCC17** FWP SWAP: **SGCN3**
Predictive Models: M 83% Moderate (inductive), L 17% Low (inductive) **Associated Habitats:** C 1% Common, O 20% Occasional

M - Silver-haired Bat *(Lasionycteris noctivagans)* PSOC

View in Field Guide **View Predicted Models** **View Associated Habitat** **View Range Maps**
Potential Species of Concern - Native Species Global: **G3G4** State: **S4**
Predictive Models: M 67% Moderate (inductive), L 33% Low (inductive) **Associated Habitats:** C 42% Common, O 51% Occasional

M - Townsend's Big-eared Bat *(Corynorhinus townsendii)* SOC

View in Field Guide **View Predicted Models** **View Associated Habitat** **View Range Maps**
Species of Concern - Native Species Global: **G4** State: **S3** USFS: **Sensitive - Known on Forests (BD, BRT, CG, HLC, KOOT, LOLO)** BLM: **SENSITIVE** FWP SWAP: **SGCN3**
Predictive Models: M 50% Moderate (inductive), L 50% Low (inductive) **Associated Habitats:** C 9% Common, O 50% Occasional

V - Carex scoparia *(Pointed Broom Sedge)* SOC

View in Field Guide **View Predicted Models** **View Range Maps**
Species of Concern - Native Species Global: **G5** State: **S1S2**
Predictive Models: M 50% Moderate (inductive), L 42% Low (inductive)

R - Western Milksnake *(Lampropeltis gentilis)* SOC

View in Field Guide **View Predicted Models** **View Associated Habitat** **View Range Maps**
Species of Concern - Native Species Global: **G5** State: **S2** USFS: **Sensitive - Known on Forests (CG)** BLM: **SENSITIVE** FWP SWAP: **SGCN2**
Predictive Models: M 42% Moderate (inductive), L 58% Low (inductive) **Associated Habitats:** C 37% Common, O 22% Occasional

M - Fringed Myotis *(Myotis thysanodes)* SOC

View in Field Guide | View Predicted Models | View Associated Habitat | View Range Maps
Species of Concern - Native Species Global: **G4** State: **S3** BLM: **SENSITIVE** FWP SWAP: **SGCN3**
Predictive Models: M 42% Moderate (inductive), L 58% Low (inductive) **Associated Habitats:** C 9% Common, O 61% Occasional

M - Hayden's Shrew *(Sorex haydeni)* PSOC Y

View in Field Guide | View Predicted Models | View Associated Habitat | View Range Maps
Potential Species of Concern - Native Species Global: **G5** State: **S3S4**
Predictive Models: M 33% Moderate (inductive), L 67% Low (inductive) **Associated Habitats:** C 82% Common

B - Black-billed Cuckoo *(Coccyzus erythropthalmus)* SOC S M

View in Field Guide | View Predicted Models | View Associated Habitat | View Range Maps
Species of Concern - Native Species Global: **G5** State: **S3B** USFWS: **MBTA; BCC11; BCC17** BLM: **SENSITIVE** FWP SWAP: **SGCN3, SGIN** PIF: **2**
Predictive Models: M 33% Moderate (inductive), L 67% Low (inductive) **Associated Habitats:** C 4% Common

V - Lilium philadelphicum *(Wood Lily)* SOC Not Assigned Y

View in Field Guide | View Predicted Models | View Range Maps
Species of Concern - Native Species Global: **G5** State: **S3**
Predictive Models: M 33% Moderate (inductive), L 58% Low (inductive)

V - Cyperus schweinitzii *(Schweinitz's Flatsedge)* SOC Y

View in Field Guide | View Predicted Models | View Associated Habitat | View Range Maps
Species of Concern - Native Species Global: **G5** State: **S2** MNPS: **4**
Predictive Models: M 33% Moderate (inductive), L 50% Low (inductive) **Associated Habitats:** C 3% Common

M - Eastern Red Bat *(Lasiurus borealis)* SOC S M

View in Field Guide | View Predicted Models | View Associated Habitat | View Range Maps
Species of Concern - Native Species Global: **G3G4** State: **S3** BLM: **SENSITIVE**
Predictive Models: M 25% Moderate (inductive), L 75% Low (inductive) **Associated Habitats:** C 37% Common, O 25% Occasional

B - Long-billed Curlew *(Numenius americanus)* SOC S M

View in Field Guide | View Predicted Models | View Associated Habitat | View Range Maps
Species of Concern - Native Species Global: **G5** State: **S3B** USFWS: **MBTA; BCC10; BCC11; BCC17** BLM: **SENSITIVE** FWP SWAP: **SGCN3** PIF: **2**
Predictive Models: M 25% Moderate (inductive), L 75% Low (inductive) **Associated Habitats:** C 29% Common, O 10% Occasional

V - Carex crawei *(Crawe's Sedge)* SOC Not Assigned Y

View in Field Guide | View Predicted Models | View Range Maps
Species of Concern - Native Species Global: **G5** State: **S2S3** MNPS: **2**
Predictive Models: M 17% Moderate (inductive), L 83% Low (inductive)

M - White-footed Mouse *(Peromyscus leucopus)* PSOC Y

View in Field Guide | View Predicted Models | View Associated Habitat | View Range Maps
Potential Species of Concern - Native Species Global: **G5** State: **S4**
Predictive Models: M 17% Moderate (inductive), L 75% Low (inductive) **Associated Habitats:** C 83% Common

V - Chenopodium subglabrum *(Smooth Goosefoot)* SOC Y

View in Field Guide | View Predicted Models | View Associated Habitat | View Range Maps
Species of Concern - Native Species Global: **G3G4** State: **S2** MNPS: **4**
Predictive Models: M 8% Moderate (inductive), L 75% Low (inductive) **Associated Habitats:** C 3% Common, O 4% Occasional

B - Bobolink *(Dolichonyx oryzivorus)* SOC S M

View in Field Guide | View Predicted Models | View Associated Habitat | View Range Maps
Species of Concern - Native Species Global: **G5** State: **S3B** USFWS: **MBTA** FWP SWAP: **SGCN3** PIF: **3**
Predictive Models: L 100% Low (inductive) **Associated Habitats:** C 82% Common, O 1% Occasional

B - Short-eared Owl *(Asio flammeus)* PSOC Y

View in Field Guide | View Predicted Models | View Associated Habitat | View Range Maps
Potential Species of Concern - Native Species Global: **G5** State: **S4** USFWS: **MBTA; BCC11; BCC17** PIF: **3**
Predictive Models: L 100% Low (inductive) **Associated Habitats:** C 65% Common, O 17% Occasional

M - Preble's Shrew *(Sorex preblei)* SOC Y

View in Field Guide | View Predicted Models | View Associated Habitat | View Range Maps
Species of Concern - Native Species Global: **G4** State: **S3** FWP SWAP: **SGCN3**
Predictive Models: L 100% Low (inductive) **Associated Habitats:** C 53% Common

B - Eastern Bluebird *(Sialia sialis)* PSOC S M

View in Field Guide | View Predicted Models | View Associated Habitat | View Range Maps
Potential Species of Concern - Native Species Global: **G5** State: **S4B** USFWS: **MBTA**
Predictive Models: L 100% Low (inductive) **Associated Habitats:** C 38% Common, O 20% Occasional

R - Greater Short-horned Lizard *(Phrynosoma hernandesi)* SOC Y

View in Field Guide | View Predicted Models | View Associated Habitat | View Range Maps

Species of Concern - Native Species Global: **G5** State: **S3** USFS: **Sensitive - Known on Forests (CG)** **Sensitive - Suspected on Forests (HLC)** BLM: **SENSITIVE** FWP SWAP: **SGCN3, SGIN**

Predictive Models: L 100% Low (inductive) **Associated Habitats:** C 32% Common, O 1% Occasional

B - Burrowing Owl *(Athene cunicularia)* **SOC** S M

View in Field Guide | View Predicted Models | View Associated Habitat | View Range Maps

Species of Concern - Native Species Global: **G4** State: **S3B** USFWS: **MBTA; BCC17** USFS: **Sensitive - Known on Forests (CG)** **Sensitive - Suspected on Forests (HLC)** BLM: **SENSITIVE** FWP SWAP: **SGCN3** PIF: **1**

Predictive Models: L 100% Low (inductive) **Associated Habitats:** C 29% Common, O 20% Occasional

M - Dwarf Shrew *(Sorex nanus)* **SOC** Y

View in Field Guide | View Predicted Models | View Associated Habitat | View Range Maps

Species of Concern - Native Species Global: **G4** State: **S2S3** FWP SWAP: **SGCN2-3**

Predictive Models: L 100% Low (inductive) **Associated Habitats:** C 29% Common, O 16% Occasional

M - Grizzly Bear *(Ursus arctos)* **SOC** 7 Y

View in Field Guide | View Predicted Models | View Associated Habitat | View Range Maps

Species of Concern - Native Species Global: **G4** State: **S2S3** USFWS: **PS: LT; XN** USFS: **Threatened on Forests (BD, CG, HLC, KOOT, LOLO)** BLM: **THREATENED** FWP SWAP: **SGCN2-3**

Predictive Models: L 100% Low (inductive) **Associated Habitats:** C 5% Common, O 29% Occasional

V - Elodea bifoliata *(Long-sheath Waterweed)* **SOC** Y

View in Field Guide | View Predicted Models | View Associated Habitat | View Range Maps

Species of Concern - Native Species Global: **G4G5** State: **S2?** MNPS: **3**

Predictive Models: L 100% Low (inductive) **Associated Habitats:** C 4% Common

B - Brewer's Sparrow *(Spizella breweri)* **SOC** S M

View in Field Guide | View Predicted Models | View Associated Habitat | View Range Maps

Species of Concern - Native Species Global: **G5** State: **S3B** USFWS: **MBTA; BCC10; BCC17** BLM: **SENSITIVE** FWP SWAP: **SGCN3** PIF: **2**

Predictive Models: L 100% Low (inductive) **Associated Habitats:** C 1% Common, O 1% Occasional

B - Rufous Hummingbird *(Selasphorus rufus)* **PSOC** S M

View in Field Guide | View Predicted Models | View Associated Habitat | View Range Maps

Potential Species of Concern - Native Species Global: **G5** State: **S4B** USFWS: **MBTA** PIF: **3**

Predictive Models: L 92% Low (inductive) **Associated Habitats:** C 21% Common, O 5% Occasional

B - Green-tailed Towhee *(Pipilo chlorurus)* **SOC** S M

View in Field Guide | View Predicted Models | View Associated Habitat | View Range Maps

Species of Concern - Native Species Global: **G5** State: **S3B** USFWS: **MBTA** FWP SWAP: **SGCN3** PIF: **3**

Predictive Models: L 92% Low (inductive) **Associated Habitats:** C 5% Common, O 34% Occasional

B - Lewis's Woodpecker *(Melanerpes lewis)* **SOC** S M

View in Field Guide | View Predicted Models | View Associated Habitat | View Range Maps

Species of Concern - Native Species Global: **G4** State: **S2B** USFWS: **MBTA; BCC10; BCC17** BLM: **SENSITIVE** FWP SWAP: **SGCN2** PIF: **2**

Predictive Models: L 92% Low (inductive) **Associated Habitats:** O 4% Occasional

B - Loggerhead Shrike *(Lanius ludovicianus)* **SOC** S M

View in Field Guide | View Predicted Models | View Associated Habitat | View Range Maps

Species of Concern - Native Species Global: **G4** State: **S3B** USFWS: **MBTA; BCC10; BCC17** BLM: **SENSITIVE** FWP SWAP: **SGCN3** PIF: **2**

Predictive Models: L 83% Low (inductive) **Associated Habitats:** C 53% Common, O 29% Occasional

R - Plains Hog-nosed Snake *(Heterodon nasicus)* **SOC** Y

View in Field Guide | View Predicted Models | View Associated Habitat | View Range Maps

Species of Concern - Native Species Global: **G5** State: **S2** USFS: **Sensitive - Known on Forests (CG)** BLM: **SENSITIVE** FWP SWAP: **SGCN2, SGIN**

Predictive Models: L 67% Low (inductive) **Associated Habitats:** C 37% Common, O 2% Occasional

B - Baird's Sparrow *(Centronyx bairdii)* **SOC** S M

View in Field Guide | View Predicted Models | View Associated Habitat | View Range Maps

Species of Concern - Native Species Global: **G4** State: **S3B** USFWS: **MBTA; BCC11; BCC17** BLM: **SENSITIVE** FWP SWAP: **SGCN3** PIF: **1**

Predictive Models: L 67% Low (inductive) **Associated Habitats:** C 33% Common, O 1% Occasional

M - Swift Fox *(Vulpes velox)* **SOC** Y

View in Field Guide | View Predicted Models | View Associated Habitat | View Range Maps

Species of Concern - Native Species Global: **G3** State: **S3** BLM: **SENSITIVE** FWP SWAP: **SGCN3**

Predictive Models: L 67% Low (inductive) **Associated Habitats:** C 29% Common, O 5% Occasional

B - Sprague's Pipit *(Anthus spragueii)* **SOC** 7 S M

View in Field Guide | View Predicted Models | View Associated Habitat | View Range Maps

Species of Concern - Native Species Global: **G3G4** State: **S3B** USFWS: **MBTA; BCC11; BCC17** BLM: **SENSITIVE** FWP SWAP: **SGCN3** PIF: **1**

Predictive Models: L 67% Low (inductive) **Associated Habitats:** C 29% Common, O 5% Occasional

B - Common Poorwill *(Phalaenoptilus nuttallii)* **PSOC**

View in Field Guide **View Predicted Models** **View Associated Habitat** **View Range Maps**
Potential Species of Concern - Native Species Global: **G5** State: **S4B** USFWS: **MBTA** FWP SWAP: **SGIN** PIF: **3**
Predictive Models: L 58% Low (inductive) **Associated Habitats:** C 37% Common, O 50% Occasional

B - Ovenbird *(Seiurus aurocapilla)* **PSOC**

View in Field Guide **View Predicted Models** **View Associated Habitat** **View Range Maps**
Potential Species of Concern - Native Species Global: **G5** State: **S4B** USFWS: **MBTA** PIF: **3**
Predictive Models: L 50% Low (inductive) **Associated Habitats:** C 4% Common, O 1% Occasional

B - American Bittern *(Botaurus lentiginosus)* **SOC**

View in Field Guide **View Predicted Models** **View Associated Habitat** **View Range Maps**
Species of Concern - Native Species Global: **G5** State: **S3B** USFWS: **MBTA; BCC11; BCC17** BLM: **SENSITIVE** FWP SWAP: **SGCN3** PIF: **3**
Predictive Models: L 50% Low (inductive) **Associated Habitats:** C 4% Common

B - Barrow's Goldeneye *(Bucephala islandica)* **PSOC**

View in Field Guide **View Predicted Models** **View Associated Habitat** **View Range Maps**
Potential Species of Concern - Native Species Global: **G5** State: **S4** USFWS: **MBTA** FWP SWAP: **SGIN** PIF: **2**
Predictive Models: L 42% Low (inductive) **Associated Habitats:** C 8% Common

B - Black Tern *(Chlidonias niger)* **SOC**

View in Field Guide **View Predicted Models** **View Associated Habitat** **View Range Maps**
Species of Concern - Native Species Global: **G4G5** State: **S3B** USFWS: **MBTA; BCC11** BLM: **SENSITIVE** FWP SWAP: **SGCN3** PIF: **2**
Predictive Models: L 42% Low (inductive) **Associated Habitats:** C 4% Common, O 1% Occasional

B - Cassin's Finch *(Haemorhous cassinii)* **SOC**

Not Assigned

View in Field Guide **View Predicted Models** **View Range Maps**
Species of Concern - Native Species Global: **G5** State: **S3** USFWS: **MBTA; BCC10** FWP SWAP: **SGCN3** PIF: **3**
Predictive Models: L 42% Low (inductive)

B - Black-crowned Night-Heron *(Nycticorax nycticorax)* **SOC**

View in Field Guide **View Predicted Models** **View Associated Habitat** **View Range Maps**
Species of Concern - Native Species Global: **G5** State: **S3B** USFWS: **MBTA** FWP SWAP: **SGCN3** PIF: **3**
Predictive Models: L 33% Low (inductive) **Associated Habitats:** C 8% Common

B - Great Gray Owl *(Strix nebulosa)* **SOC**

Not Assigned

View in Field Guide **View Predicted Models** **View Range Maps**
Species of Concern - Native Species Global: **G5** State: **S3** USFWS: **MBTA** BLM: **SENSITIVE** FWP SWAP: **SGCN3, SGIN** PIF: **3**
Predictive Models: L 33% Low (inductive)

B - Black-necked Stilt *(Himantopus mexicanus)* **SOC**

View in Field Guide **View Predicted Models** **View Associated Habitat** **View Range Maps**
Species of Concern - Native Species Global: **G5** State: **S3B** USFWS: **MBTA** FWP SWAP: **SGCN3** PIF: **3**
Predictive Models: L 17% Low (inductive) **Associated Habitats:** C 4% Common, O 1% Occasional

V - Physaria ludoviciana *(Silver Bladderpod)* **SOC**

View in Field Guide **View Predicted Models** **View Associated Habitat** **View Range Maps**
Species of Concern - Native Species Global: **G5** State: **S2S3**
Predictive Models: L 17% Low (inductive) **Associated Habitats:** C 3% Common

B - McCown's Longspur *(Rhynchophanes mccownii)* **SOC**

View in Field Guide **View Predicted Models** **View Associated Habitat** **View Range Maps**
Species of Concern - Native Species Global: **G4** State: **S3B** USFWS: **MBTA; BCC10; BCC11; BCC17** BLM: **SENSITIVE** FWP SWAP: **SGCN3** PIF: **2**
Predictive Models: L 8% Low (inductive) **Associated Habitats:** C 29% Common, O 49% Occasional

B - Peregrine Falcon *(Falco peregrinus)* **SOC**

View in Field Guide **View Predicted Models** **View Associated Habitat** **View Range Maps**
Species of Concern - Native Species Global: **G4** State: **S3** USFWS: **DM; MBTA; BCC10; BCC11; BCC17**
USFS: **Sensitive - Known on Forests (BD, BRT, CG, HLC, KOOT, LOLO)** BLM: **SENSITIVE** FWP SWAP: **SGCN3** PIF: **2**
Predictive Models: L 8% Low (inductive) **Associated Habitats:** C 9% Common, O 29% Occasional

B - Sharp-tailed Grouse *(Tympanuchus phasianellus)* **SOC**

Not Available

View in Field Guide **View Associated Habitat** **View Range Maps**
Species of Concern - Native Species Global: **G5** State: **SX,S4** FWP SWAP: **SGCN1** PIF: **2**
Associated Habitats: C 37% Common, O 29% Occasional

B - Chestnut-collared Longspur *(Calcarius ornatus)* **SOC**

Not Available

View in Field Guide **View Associated Habitat** **View Range Maps**
Species of Concern - Native Species Global: **G5** State: **S2B** USFWS: **MBTA; BCC11; BCC17** BLM: **SENSITIVE** FWP SWAP: **SGCN2** PIF: **2**
Associated Habitats: C 32% Common, O 22% Occasional

V - Senecio integerrimus var. scribneri *(Scribner's Ragwort)* **SOC**

Not Available

View in Field Guide | View Associated Habitat | View Range Maps
Species of Concern - Native Species Global: **G5T2T3** State: **S2S3**
Associated Habitats: C 29% Common

B - Mountain Plover *(Charadrius montanus)* SOC — Not Available — S M

View in Field Guide | View Associated Habitat | View Range Maps
Species of Concern - Native Species Global: **G3** State: **S2B** USFWS: **MBTA; BCC11; BCC17** BLM: **SENSITIVE** FWP SWAP: **SGCN2** PIF: **1**
Associated Habitats: C 29% Common

B - Evening Grosbeak *(Coccothraustes vespertinus)* SOC — Not Available — W M

View in Field Guide | View Associated Habitat | View Range Maps
Species of Concern - Native Species Global: **G5** State: **S3** USFWS: **MBTA** FWP SWAP: **SGCN3**
Associated Habitats: C 20% Common

B - Hooded Merganser *(Lophodytes cucullatus)* PSOC — Not Available — M

View in Field Guide | View Associated Habitat | View Range Maps
Potential Species of Concern - Native Species Global: **G5** State: **S4** USFWS: **MBTA** FWP SWAP: **SGIN** PIF: **2**
Associated Habitats: C 8% Common, O 1% Occasional

I - Argia vivida *(Vivid Dancer)* PSOC — Not Available — Y

View in Field Guide | View Associated Habitat | View Range Maps
Potential Species of Concern - Native Species Global: **G5** State: **S3S5**
Associated Habitats: O 8% Occasional

I - Enallagma clausum *(Alkali Bluet)* PSOC — Not Available — Y

View in Field Guide | View Associated Habitat | View Range Maps
Potential Species of Concern - Native Species Global: **G5** State: **S2S4**
Associated Habitats: O 8% Occasional

I - Rhionaeschna californica *(California Darner)* PSOC — Not Available — Y

View in Field Guide | View Associated Habitat | View Range Maps
Potential Species of Concern - Native Species Global: **G5** State: **S3S5**
Associated Habitats: O 8% Occasional

B - White-faced Ibis *(Plegadis chihi)* SOC — Not Available — S M

View in Field Guide | View Associated Habitat | View Range Maps
Species of Concern - Native Species Global: **G5** State: **S3B** USFWS: **MBTA** BLM: **SENSITIVE** FWP SWAP: **SGCN3** PIF: **2**
Associated Habitats: C 8% Common

M - Bison *(Bos bison)* SOC — Not Available — H

View in Field Guide | View Associated Habitat | View Range Maps
Species of Concern - Native Species Global: **G4** State: **S2** FWP SWAP: **SGCN2**
Associated Habitats: C 5% Common, O 6% Occasional

I - Polygonia progne *(Gray Comma)* SOC — Not Available — Y

View in Field Guide | View Associated Habitat | View Range Maps
Species of Concern - Native Species Global: **G5** State: **S2**
Associated Habitats: C 5% Common, O 1% Occasional

I - Rhionaeschna multicolor *(Blue-eyed Darner)* PSOC — Not Available — Y

View in Field Guide | View Associated Habitat | View Range Maps
Potential Species of Concern - Native Species Global: **G5** State: **S2S4**
Associated Habitats: C 4% Common, O 4% Occasional

B - Caspian Tern *(Hydroprogne caspia)* SOC — Not Available — M

View in Field Guide | View Associated Habitat | View Range Maps
Species of Concern - Native Species Global: **G5** State: **S2B** USFWS: **MBTA** BLM: **SENSITIVE** FWP SWAP: **SGCN2** PIF: **2**
Associated Habitats: C 4% Common, O 4% Occasional

B - Horned Grebe *(Podiceps auritus)* SOC — Not Available — S M

View in Field Guide | View Associated Habitat | View Range Maps
Species of Concern - Native Species Global: **G5** State: **S3B** USFWS: **MBTA; BCC11; BCC17** BLM: **SENSITIVE** FWP SWAP: **SGCN3** PIF: **2**
Associated Habitats: C 4% Common, O 1% Occasional

I - Aeshna constricta *(Lance-tipped Darner)* PSOC — Not Available — Y

View in Field Guide | View Associated Habitat | View Range Maps
Potential Species of Concern - Native Species Global: **G5** State: **S1S3**
Associated Habitats: C 4% Common

I - Argia emma *(Emma's Dancer)* PSOC — Not Available — Y

View in Field Guide | View Associated Habitat | View Range Maps
Potential Species of Concern - Native Species Global: **G5** State: **S3S5**
Associated Habitats: C 4% Common

B - Alder Flycatcher *(Empidonax alnorum)* **SOC** Not Available M

View in Field Guide **View Associated Habitat** **View Range Maps**

Species of Concern - Native Species Global: **G5** State: **S3B** USFWS: **MBTA** FWP SWAP: **SGCN3**

Associated Habitats: C 4% Common

B - Clark's Grebe *(Aechmophorus clarkii)* **SOC** Not Available M

View in Field Guide **View Associated Habitat** **View Range Maps**

Species of Concern - Native Species Global: **G5** State: **S3B** USFWS: **MBTA** FWP SWAP: **SGCN3** PIF: **3**

Associated Habitats: C 4% Common

B - Common Loon *(Gavia immer)* **SOC** Not Available M

View in Field Guide **View Associated Habitat** **View Range Maps**

Species of Concern - Native Species Global: **G5** State: **S3B** USFWS: **MBTA** USFS: **Sensitive - Known on Forests (KOOT, LOLO)** FWP SWAP: **SGCN3** PIF: **1**

Associated Habitats: C 4% Common

V - Cryptantha fendleri *(Fendler Cat's-eye)* **SOC** Not Available Y

View in Field Guide **View Associated Habitat** **View Range Maps**

Species of Concern - Native Species Global: **G5** State: **S2** BLM: **SENSITIVE** MNPS: **2**

Associated Habitats: C 3% Common

I - Sympetrum madidum *(Red-veined Meadowhawk)* **PSOC** Not Available Y

View in Field Guide **View Associated Habitat** **View Range Maps**

Potential Species of Concern - Native Species Global: **G5** State: **S2S3**

Associated Habitats: C 1% Common, O 4% Occasional

I - Limenitis arthemis *(Red-spotted Admiral)* **PSOC** Not Available Y

View in Field Guide **View Associated Habitat** **View Range Maps**

Potential Species of Concern - Native Species Global: **G5** State: **S2S3**

Associated Habitats: C 1% Common

Montana Natural Heritage Program

A program of the **Montana State Library's Natural Resource Information System** operated by the **University of Montana**.

Latitude	Longitude
47.40950	-111.29426
47.47235	-111.38420

Structured Surveys

Summarized by: **20prvt0177** *(Custom Area of Interest)*

The Montana Natural Heritage Program (MTNHP) records information on the locations where more than 80 different types of well-defined repeatable survey protocols capable of detecting an animal species or suite of animal species have been conducted by state, federal, tribal, university, or private consulting biologists. Examples of structured survey protocols tracked by MTNHP include: visual encounter and dip net surveys for pond breeding amphibians, point counts for birds, call playback surveys for selected bird species, visual surveys of migrating raptors, kick net stream reach surveys for macroinvertebrates, visual encounter cover object surveys for terrestrial mollusks, bat acoustic or mist net surveys, pitfall and/or snap trap surveys for small terrestrial mammals, track or camera trap surveys for large mammals, and trap surveys for turtles. Whenever possible, photographs of survey locations are stored in MTNHP databases.

MTNHP does not typically manage information on structured surveys for plants; surveys for invasive species may be a future exception.

Within the report area you have requested, structured surveys are summarized by the number of each type of structured survey protocol that has been conducted, the number of species detections/observations resulting from these surveys, and the most recent year a survey has been conducted.

B-Bald Eagle Nest *(Bald Eagle Nest Survey)*	**Survey Count**: 5	**Obs Count**: 5	**Recent Survey**: 2014
B-Point Count *(Bird Point Count)*	**Survey Count**: 3	**Obs Count**: 78	**Recent Survey**: 2008
E-Eastern Heath Snail *(Eastern Heath Snail Survey)*	**Survey Count**: 1	**Obs Count**:	**Recent Survey**: 2012
E-Noxious Weed, Road-based *(Noxious Weed Road-based Visual Surveys)*	**Survey Count**: 7	**Obs Count**: 24	**Recent Survey**: 2003
E-Visual Aquatic Invasives *(Visual Encounter Surveys for Aquatic Invasives on Shorelines or Underwater)*	**Survey Count**: 2	**Obs Count**: 1	**Recent Survey**: 2012

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47.40950	-111.29426
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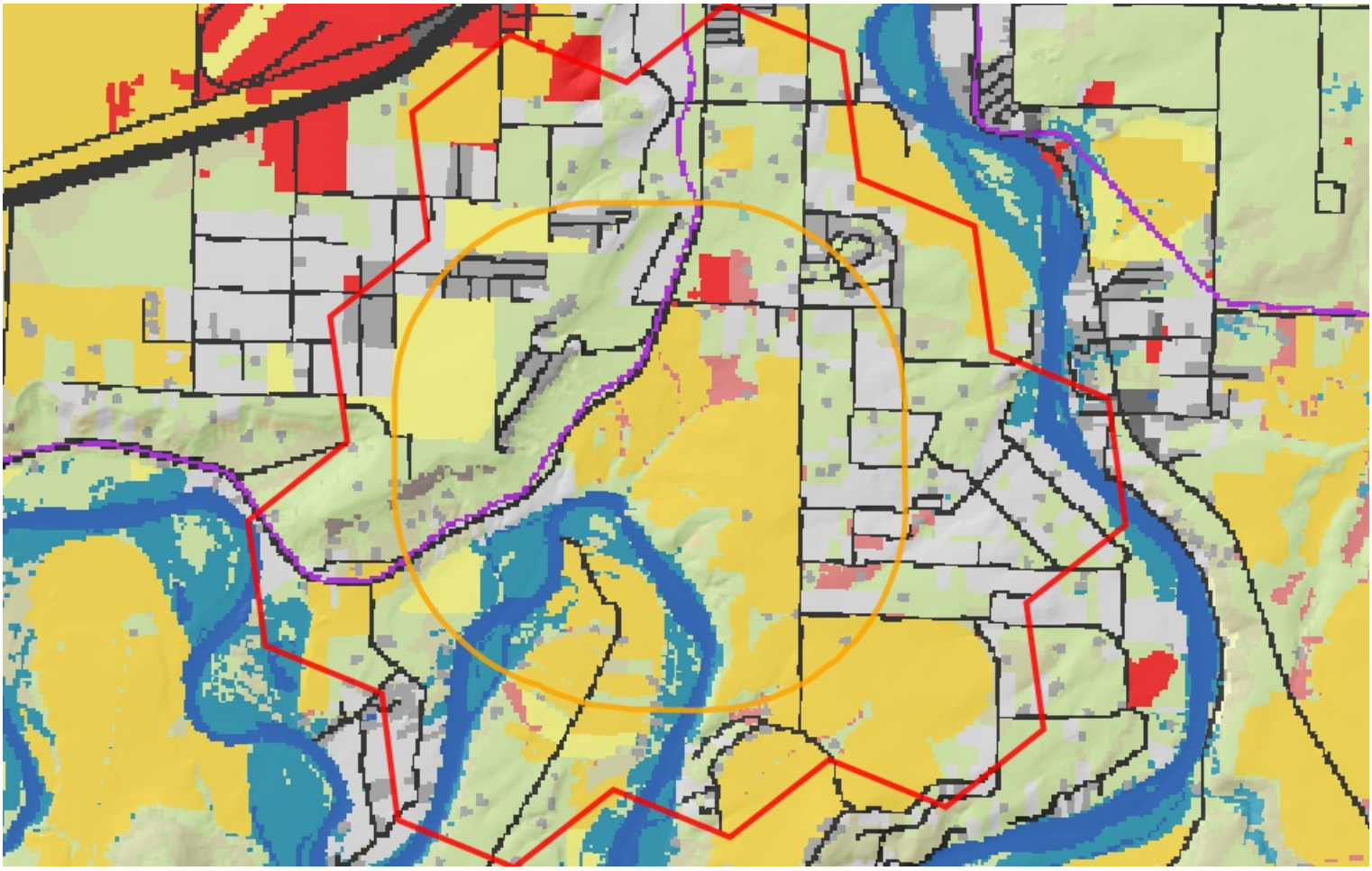
Land Cover

Summarized by: **20prvt0177** *(Custom Area of Interest)*



28% (*2,172 Acres*)

Grassland Systems

Lowland/Prairie Grassland

Great Plains Mixedgrass Prairie

The system covers much of the eastern two-thirds of Montana, occurring continuously for hundreds of square kilometers, interrupted only by wetland/riparian areas or sand prairies. Soils are primarily fine and medium-textured. The growing season averages 115 days, ranging from 100 days on the Canadian border to 130 days on the Wyoming border. Climate is typical of mid-continental regions with long severe winters and hot summers. Grasses typically comprise the greatest canopy cover, and western wheatgrass (*Pascopyrum smithii*) is usually dominant. Other species include thickspike wheatgrass (*Elymus lanceolatus*), green needlegrass (*Nassella viridula*), blue grama (*Bouteloua gracilis*), and needle and thread (*Hesperostipa comata*). Near the Canadian border in north-central Montana, this system grades into rough fescue (*Festuca campestris)* and Idaho fescue (*Festuca idahoensis*) grasslands. Remnants of shortbristle needle and thread *(Hesperostipa curtiseta)* dominated vegetation are found in northernmost Montana and North Dakota, and are associated with productive sites, now mostly converted to farmland. Forb diversity is typically high. In areas of southeastern and central Montana where sagebrush steppe borders the mixed grass prairie, common plant associations include Wyoming big sagebrush-western wheatgrass (*Artemisia tridentata* ssp. *wyomingensis/ Pascopyrum smithii*). Fire and grazing are the primary drivers of this system. Drought can also impact it, in general favoring the shortgrass component at the expense of the mid-height grasses. With intensive grazing, cool season exotics such as Kentucky bluegrass (*Poa pratensis*), smooth brome (*Bromus inermis*), and Japanese brome (*Bromus japonicus*) increase in dominance; both of these rhizomatous species have been shown to markedly decrease species diversity. Previously cultivated acres that have been re-vegetated with non-native plants have been transformed into associations such as Kentucky bluegrass (*Poa pratensis*)/western wheatgrass *(Pascopyrum smithii)* or into pure crested wheatgrass (*Agropyron cristatum)* stands.

23% (*1,740 Acres*)

Human Land Use
Agriculture

Cultivated Crops

These areas used for the production of crops, such as corn, soybeans, small grains, sunflowers, vegetables, and cotton, typically on an annual cycle. Agricultural plant cover is variable depending on season and type of farming. Other areas include more stable land cover of orchards and vineyards.

16% (*1,204 Acres*)

Human Land Use
Developed

Developed, Open Space

Vegetation (primarily grasses) planted in developed settings for recreation, erosion control, or aesthetic purposes. Impervious surfaces account for less than 20% of total cover. This category often includes highway and railway rights of way and graveled rural roads.

No Image

7% (*545 Acres*)

Human Land Use
Developed

Other Roads

County, city and or rural roads generally open to motor vehicles.

6% (*438 Acres*)

Human Land Use
Developed

Low Intensity Residential

Includes areas with a mixture of constructed materials and vegetation. Impervious surfaces account for 20-50% of total cover. These areas most commonly include single-family housing units in rural and suburban areas. Paved roadways may be classified into this category.

5% (*407 Acres*)

Human Land Use
Agriculture

Pasture/Hay

These agriculture lands typically have perennial herbaceous cover (e.g. regularly-shaped plantings) used for livestock grazing or the production of hay. There are obvious signs of management such as irrigation and haying that distinguish it from natural grasslands. Identified CRP lands are included in this land cover type.

4% (*329 Acres*)

Wetland and Riparian Systems
Floodplain and Riparian

Great Plains Floodplain

This system occurs along the Missouri and Yellowstone Rivers and their larger tributaries, including parts of the Little Missouri, Clarkâ€™s Fork Yellowstone, Powder, Tongue, Bighorn, Milk, and Musselshell rivers. These are the big perennial rivers of the region, with hydrologic dynamics largely driven by snowmelt and rainfall originating in their headwater watersheds, rather than local precipitation events. In the absence of disturbance, periodic flooding of fluvial and alluvial soils and channel migration will create depressions and backwaters that support a mosaic of wetland and riparian vegetation, whose composition and structure is sustained, altered and redistributed by hydrology. Dominant communities within this system range from floodplain forests to wet meadows to gravel/sand flats, linked by underlying soils and flooding regimes. In the western part of the systemâ€™s range in Montana, the overstory dominant species is black cottonwood (*Populus balsamifera ssp. trichocarpa*) with narrowleaf cottonwood *(Populus angustifolia)* and eastern cottonwood (*Populus deltoides)* occurring as co-dominants in the riparian/floodplain interface near the mountains. Further east, narrowleaf cottonwood and Plains cottonwood become dominant. In relatively undisturbed stands, willow (*Salix* species), redosier dogwood (*Cornus sericea*) and common chokecherry (*Prunus virginiana*) form a thick, multi-layered shrub understory, with a mixture of cool and warm season graminoid species below.

In Montana, many occurrences are now degraded to the point where the cottonwood overstory is the only remaining natural component. The hydrology of these floodplain systems has been affected by dams, highways, railroads and agricultural ditches, and as a result, they have lost their characteristic wetland /riparian mosaic structure. This has resulted in a highly altered community consisting of relict cottonwood stands with little regeneration. The understory vegetation is dominated by non-native pasture grasses, legumes and other introduced forbs, or by the disclimax western snowberry (*Symphoricarpos occidentalis*) and rose (*Rosa* species) shrub community.

4% (*307 Acres*)

Wetland and Riparian Systems
Open Water

Open Water

All areas of open water, generally with less than 25% cover of vegetation or soil

3% (*238 Acres*)

Grassland Systems
Lowland/Prairie Grassland

Great Plains Sand Prairie

The sand prairies constitute a very unique system within the western Great Plains. The unifying and controlling feature for this system is that coarse-textured soils predominate and the dominant grasses are well-adapted to this condition. In the northwestern portion of the systemâ€™s range, stand size corresponds to the area of exposed caprock sandstone, and small patches predominate, but larger patches are found embedded in the encompassing Great Plains Mixed Grass Prairie, and usually occupy higher positions in local landscapes where former caprock formations have eroded into more subdued and planar topography. In most of eastern Montana, substrates supporting this system have weathered in place from sandstone caprock. Soils can be relatively thin or deep due to varying amounts of downslope movement of weathered sands. Needle and thread (*Hesperostipa comata*) is the dominant grass species. Other frequent species include little bluestem (*Schizachyrium scoparium*), often occurring with threadleaf sedge (*Carex filifolia*) and dominating both sandy sites and actively eroding sites. Prairie sandreed (*Calamovilfa longifolia*), sand bluestem (*Andropogon hallii*) and big bluestem (*Andropogon gerardii*) are sporadically distributed and found generally on the coarsest-textured sands. Other graminoids include bluebunch wheatgrass (*Pseudoroegneria spicata*), sun sedge (*Carex inops ssp. heliophila*), and purple threeawn (*Aristida purpurea*). Characteristic forbs differ by occurrence, but species of scurf pea (*Psoralidium* species) and Indian breadroot (*Pediomelum*) species are common. Communities of silver sage (*Artemisia cana* ssp. *cana*) or skunkbush sumac (*Rhus trilobata*) can occur within this system. Wind erosion, fire and grazing constitute the other major dynamic processes that can influence this system.

Additional Limited Land Cover

1% (*99 Acres*) Introduced Upland Vegetation - Annual and Biennial Forbland

1% (*65 Acres*) Railroad

1% (*60 Acres*) Commercial / Industrial

<1% (*38 Acres*) Great Plains Shrubland

<1% (*23 Acres*) Great Plains Cliff and Outcrop

<1% (*4 Acres*) Great Plains Badlands

<1% (*3 Acres*) Great Plains Closed Depressional Wetland

<1% (*0 Acres*) Great Plains Riparian

<1% (*0 Acres*) Big Sagebrush Steppe

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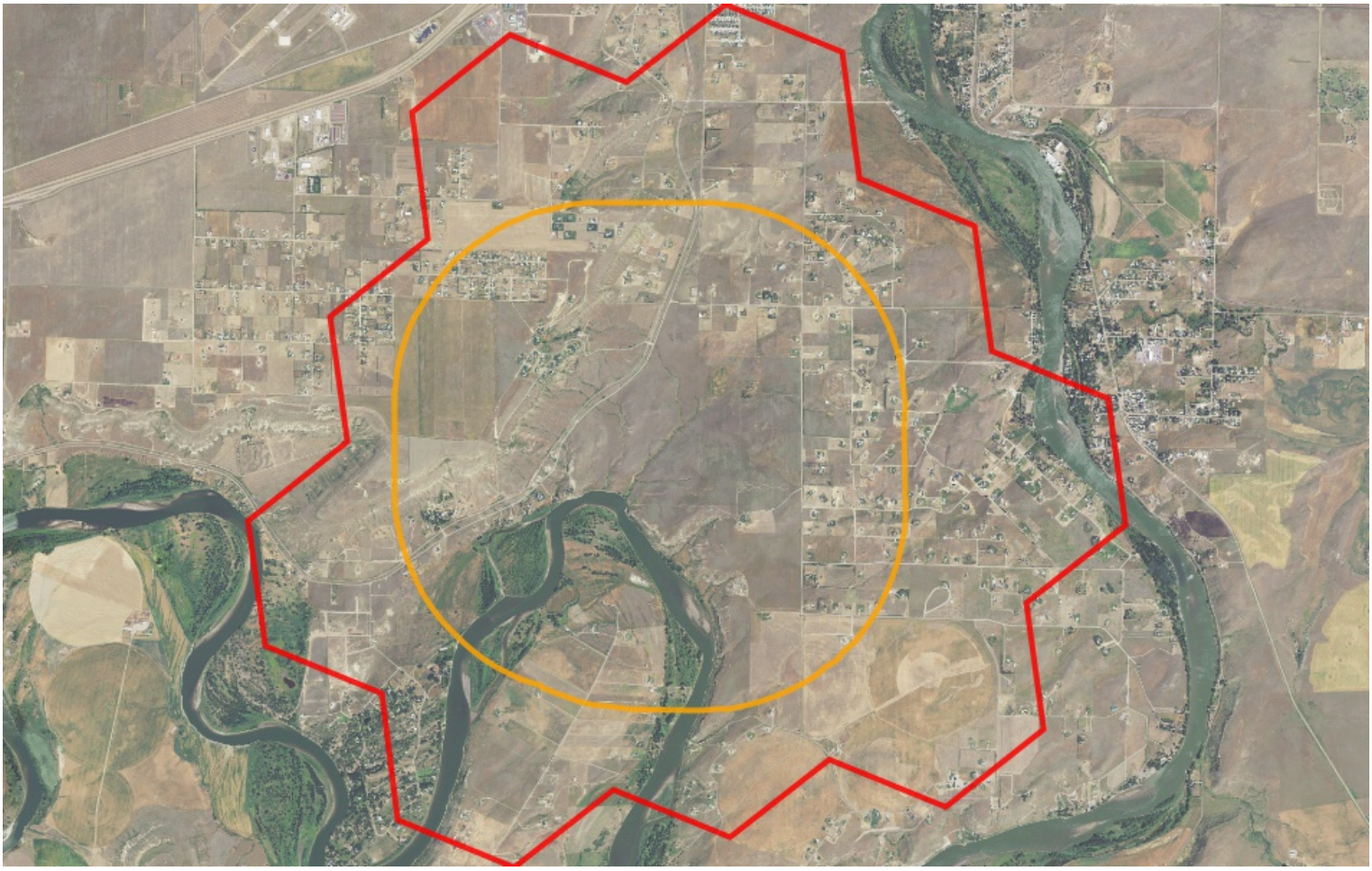
Wetland and Riparian

Summarized by: **20prvt0177** *(Custom Area of Interest)*



No Wetland records were found in the selected area

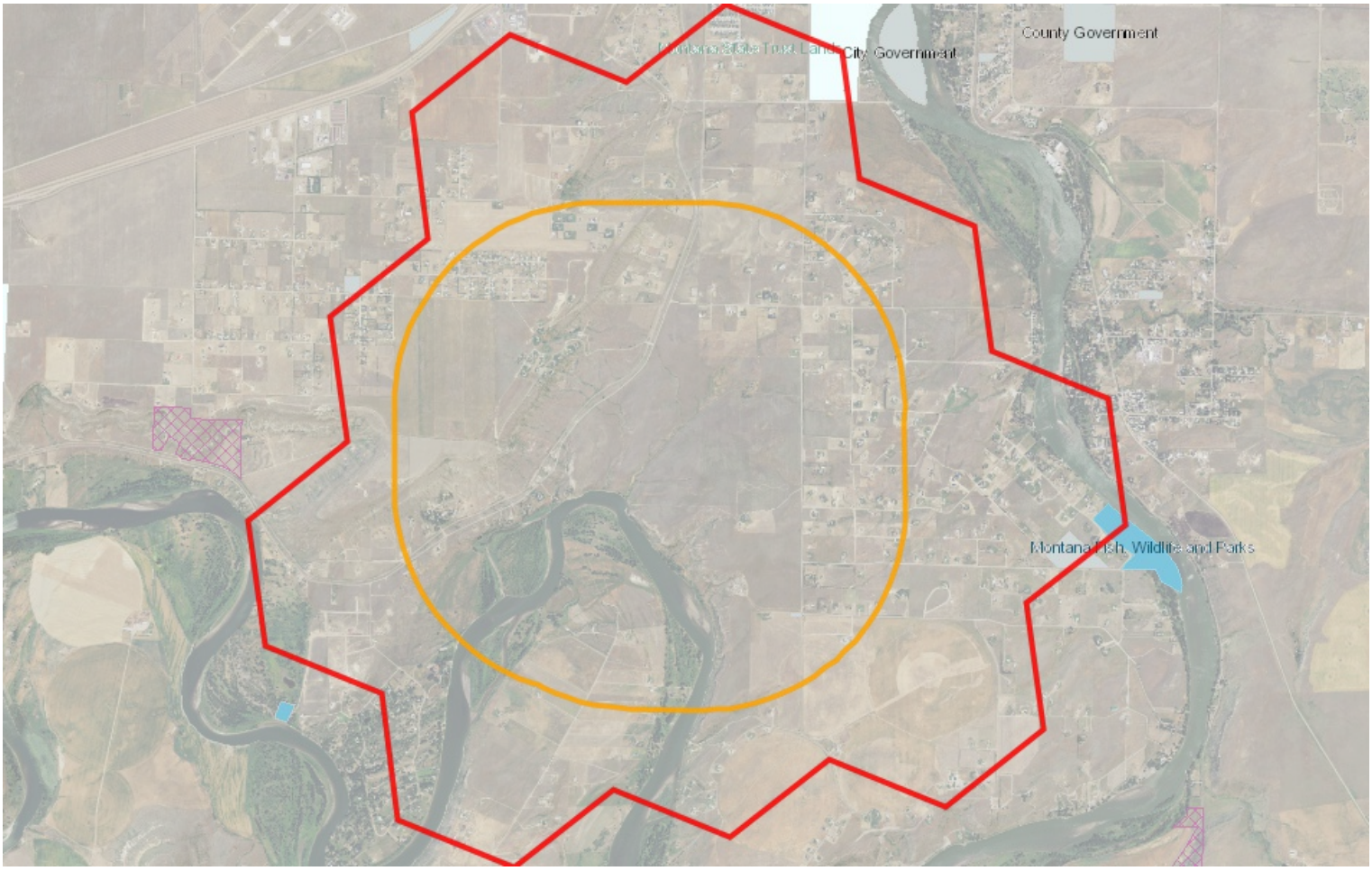
MONTANA Natural Heritage Program

A program of the **Montana State Library's Natural Resource Information System** operated by the **University of Montana**.

Latitude	Longitude
47.40950	-111.29426
47.47235	-111.38420

Land Management

Summarized by: **20prvt0177** *(Custom Area of Interest)*



Land Management Summary				Explain
	Ownership	Tribal	Easements	Other Boundaries (possible overlap)
Public Lands	**54 Acres (1%)**			
State	**39 Acres (1%)**			
Montana State Trust Lands	**30 Acres (<1%)**			
MT State Trust Owned	**30 Acres (<1%)**			
Montana Fish, Wildlife and Parks	**9 Acres (<1%)**			
MTFWP Owned	**9 Acres (<1%)**			
MTFWP Fishing Access Sites				**9 Acres**
White Bear Fishing Access Site				9 Acres
Local	**15 Acres (<1%)**			
Local Government	**15 Acres (<1%)**			
Local Government Owned	**15 Acres (<1%)**			
Private Lands or Unknown Ownership	**7,617 Acres (99%)**			

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Biological Reports

Summarized by: **20prvt0177** *(Custom Area of Interest)*

Within the report area you have requested, citations for all reports and publications associated with plant or animal observations in Montana Natural Heritage Program (MTNHP) databases are listed and, where possible, links to the documents are included.

The MTNHP plans to include reports associated with terrestrial and aquatic communities in the future as allowed for by staff resources. If you know of reports or publications associated with species or biological communities within the report area that are not shown in this report, please let us know: mtnhp@mt.gov

No Biological Reports were found in the selected area

MONTANA Natural Heritage Program

A program of the **Montana State Library's Natural Resource Information System** operated by the **University of Montana**.

Legend

Model Icons
- N Suitable (native range)
- O Optimal Suitability
- M Moderate Suitability
- L Low Suitability
- I Suitable (introduced range)

Habitat Icons
- C Common
- O Occasional

Range Icons
- T Suspect (invasive / pest)
- D Documented (invasive / pest)
- R Released (biocontrol)
- E Established (biocontrol)

Num Obs
Count of obs with 'good precision' (<=1000m)
+ indicates additional 'poor precision' obs (1001m-10,000m)

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Invasive and Pest Species

Summarized by: **20prvt0177** *(Custom Area of Interest)*

	# Obs	Predictive Model	Associated Habitat	Range
Aquatic Invasive Species				
F - Common Carp *(Cyprinus carpio)* AIS	+		Not Assigned	D
View in Field Guide / View Predicted Models / View Range Maps				
Aquatic Invasive Species - Non-native Species Global: **G5** State: **SNA**				
Predictive Models: I 42% Suitable (introduced range) (deductive)				
Noxious Weeds: Priority 1A				
V - Isatis tinctoria *(Dyer's Woad)* N1A			Not Assigned	D
View in Field Guide / View Predicted Models / View Range Maps				
Noxious Weed: Priority 1A - Non-native Species Global: **GNR** State: **SNA**				
Predictive Models: M 33% Moderate (inductive), L 67% Low (inductive)				
Noxious Weeds: Priority 2A				
V - Lepidium latifolium *(Perennial Pepperweed)* N2A			Not Assigned	D
View in Field Guide / View Predicted Models / View Range Maps				
Noxious Weed: Priority 2A - Non-native Species Global: **GNR** State: **SNA**				
Predictive Models: M 42% Moderate (inductive), L 58% Low (inductive)				
V - Hieracium praealtum *(Kingdevil Hawkweed)* N2A			Not Assigned	D
View in Field Guide / View Predicted Models / View Range Maps				
Noxious Weed: Priority 2A - Non-native Species Global: **GNR** State: **SNA**				
Predictive Models: L 75% Low (inductive)				
Noxious Weeds: Priority 2B				
V - Centaurea diffusa *(Diffuse Knapweed)* N2B			Not Assigned	D
View in Field Guide / View Predicted Models / View Range Maps				
Noxious Weed: Priority 2B - Non-native Species Global: **GNR** State: **SNA**				
Predictive Models: O 8% Optimal (inductive), M 92% Moderate (inductive)				
V - Acroptilon repens *(Russian Knapweed)* N2B			Not Assigned	D
View in Field Guide / View Predicted Models / View Range Maps				
Noxious Weed: Priority 2B - Non-native Species Global: **GNR** State: **SNA**				
Predictive Models: O 8% Optimal (inductive), M 67% Moderate (inductive), L 25% Low (inductive)				
V - Cirsium arvense *(Canada Thistle)* N2B	6		Not Assigned	D
View in Field Guide / View Predicted Models / View Range Maps				
Noxious Weed: Priority 2B - Non-native Species Global: **G5** State: **SNA**				
Predictive Models: M 100% Moderate (inductive)				
V - Convolvulus arvensis *(Field Bindweed)* N2B	1		Not Assigned	D
View in Field Guide / View Predicted Models / View Range Maps				
Noxious Weed: Priority 2B - Non-native Species Global: **GNR** State: **SNA**				
Predictive Models: M 100% Moderate (inductive)				
V - Euphorbia virgata *(Leafy Spurge)* N2B	8		Not Assigned	D
View in Field Guide / View Predicted Models / View Range Maps				
Noxious Weed: Priority 2B - Non-native Species Global: **GNRTNR** State: **SNA**				
Predictive Models: M 100% Moderate (inductive)				
V - Lepidium draba *(Whitetop)* N2B			Not Assigned	D
View in Field Guide / View Predicted Models / View Range Maps				
Noxious Weed: Priority 2B - Non-native Species Global: **GNR** State: **SNA**				
Predictive Models: M 100% Moderate (inductive)				
V - Centaurea stoebe *(Spotted Knapweed)* N2B	8		Not Assigned	D
View in Field Guide / View Predicted Models / View Range Maps				
Noxious Weed: Priority 2B - Non-native Species Global: **GNR** State: **SNA**				
Predictive Models: M 92% Moderate (inductive), L 8% Low (inductive)				
V - Linaria dalmatica *(Dalmatian Toadflax)* N2B	1		Not Assigned	D

View in Field Guide View Predicted Models View Range Maps
Noxious Weed: Priority 2B - Non-native Species Global: **G5** State: **SNA**
Predictive Models: M 92% Moderate (inductive), L 8% Low (inductive)

V - Cynoglossum officinale *(Common Hound's-tongue)* N2B — Not Assigned D

View in Field Guide View Predicted Models View Range Maps
Noxious Weed: Priority 2B - Non-native Species Global: **GNR** State: **SNA**
Predictive Models: M 33% Moderate (inductive), L 67% Low (inductive)

V - Berteroa incana *(Hoary False-alyssum)* N2B — 1 — Not Assigned

View in Field Guide View Predicted Models
Noxious Weed: Priority 2B - Non-native Species Global: **GNR** State: **SNA**
Predictive Models: L 92% Low (inductive)

V - Linaria vulgaris *(Yellow Toadflax)* N2B — Not Assigned D

View in Field Guide View Predicted Models View Range Maps
Noxious Weed: Priority 2B - Non-native Species Global: **GNR** State: **SNA**
Predictive Models: L 33% Low (inductive)

Regulated Weeds: Priority 3

V - Elaeagnus angustifolia *(Russian Olive)* R3 — Not Assigned D

View in Field Guide View Predicted Models View Range Maps
Regulated Weed: Priority 3 - Non-native Species Global: **GNR** State: **SNA**
Predictive Models: M 83% Moderate (inductive), L 17% Low (inductive)

V - Bromus tectorum *(Cheatgrass)* R3 — Not Assigned D

View in Field Guide View Predicted Models View Range Maps
Regulated Weed: Priority 3 - Non-native Species Global: **GNR** State: **SNA**
Predictive Models: L 100% Low (inductive)

Biocontrol Species

I - Aphthona lacertosa *(Brown-legged Leafy Spurge Flea Beetle)* BIOCNTRL — Not Assigned R

View in Field Guide View Predicted Models View Range Maps
Biocontrol Species - Non-native Species Global: **GNR** State: **SNA**
Predictive Models: M 92% Moderate (inductive), L 8% Low (inductive)

I - Oberea erythrocephala *(Red-headed Leafy Spurge Stem Borer)* BIOCNTRL — Not Assigned R

View in Field Guide View Predicted Models View Range Maps
Biocontrol Species - Non-native Species Global: **GNR** State: **SNA**
Predictive Models: M 75% Moderate (inductive), L 25% Low (inductive)

I - Cyphocleonus achates *(Knapweed Root Weevil)* BIOCNTRL — Not Assigned R

View in Field Guide View Predicted Models View Range Maps
Biocontrol Species - Non-native Species Global: **GNR** State: **SNA**
Predictive Models: M 17% Moderate (inductive), L 83% Low (inductive)

I - Mecinus janthiniformis *(Dalmatian Toadflax Stem-boring Weevil)* BIOCNTRL — Not Assigned R

View in Field Guide View Predicted Models View Range Maps
Biocontrol Species - Non-native Species Global: **GNR** State: **SNA**
Predictive Models: M 8% Moderate (inductive), L 92% Low (inductive)

I - Aphthona nigriscutis *(Black Dot Leafy Spurge Flea Beetle)* BIOCNTRL — Not Assigned R

View in Field Guide View Predicted Models View Range Maps
Biocontrol Species - Non-native Species Global: **GNR** State: **SNA**
Predictive Models: M 8% Moderate (inductive), L 83% Low (inductive)

I - Mecinus janthinus *(Yellow Toadflax Stem-boring Weevil)* BIOCNTRL — Not Assigned R

View in Field Guide View Predicted Models View Range Maps
Biocontrol Species - Non-native Species Global: **GNR** State: **SNA**
Predictive Models: L 8% Low (inductive)

Introduction to Montana Natural Heritage Program

P.O. Box 201800 • 1515 East Sixth Avenue • Helena, MT 59620-1800 • fax 406.444.0266 • tel 406.444.0241 • mtnhp.org

Introduction

The Montana Natural Heritage Program (MTNHP) is Montana's source for reliable and objective information on Montana's native species and habitats, emphasizing those of conservation concern. MTNHP was created by the Montana legislature in 1983 as part of the Natural Resource Information System (NRIS) at the Montana State Library (MSL). MTNHP is "a program of information acquisition, storage, and retrieval for data relating to the flora, fauna, and biological community types of Montana" (MCA 90-15-102). MTNHP's activities are guided by statute (MCA 90-15) as well as through ongoing interaction with, and feedback from, principal data source agencies such as Montana Fish, Wildlife, and Parks, the Montana Department of Environmental Quality, the Montana Department of Natural Resources and Conservation, the Montana University System, the US Forest Service, and the US Bureau of Land Management. The enabling legislation for MTNHP provides the State Library with the option to contract the operation of the Program. Since 2006, MTNHP has been operated as a program under the Office of the Vice President for Research and Creative Scholarship at the University of Montana (UM) through a renewable 2-year contract with the MSL. Since the first staff was hired in 1985, the Program has logged a long record of success, and developed into a highly respected, service-oriented program. MTNHP is widely recognized as one of the most advanced and effective of over 80 natural heritage programs throughout the Western Hemisphere.

Vision

Our vision is that public agencies, the private sector, the education sector, and the general public will trust and rely upon MTNHP as the source for information and expertise on Montana's species and habitats, especially those of conservation concern. We strive to provide easy access to our information in order for users to save time and money, speed environmental reviews, and inform decision making.

Core Values

- We endeavor to be a single statewide source of accurate and up-to-date information on Montana's plants, animals, and aquatic and terrestrial biological communities.
- We actively listen to our data users and work responsively to meet their information and training needs.
- We strive to provide neutral, trusted, timely, and equitable service to all of our information users.
- We make every effort to be transparent to our data users in setting work priorities and providing data products.

Confidentiality

All information requests made to the Montana Natural Heritage Program are considered library records and are protected from disclosure by the Montana Library Records Confidentiality Act (MCA 22-1-11).

Information Managed

Information managed at the Montana Natural Heritage Program includes: (1) lists of, and basic information on, plant and animal species and biological communities; (2) plant and animal surveys, observations, species occurrences, predictive distribution models, range polygons, and conservation status ranks; and (3) land cover and wetland and riparian mapping and the conservation status of these and other biological communities.

Data Use Terms and Conditions

- Montana Natural Heritage Program (MTNHP) products and services are based on biological data and the objective interpretation of those data by professional scientists. MTNHP does not advocate any particular philosophy of natural resource protection, management, development, or public policy.
- MTNHP has no natural resource management or regulatory authority. Products, statements, and services from MTNHP are intended to inform parties as to the state of scientific knowledge about certain natural resources, and to further develop that knowledge. The information is not intended as natural resource management guidelines or prescriptions or a determination of environmental impacts. MTNHP recommends consultation with appropriate state, federal, and tribal resource management agencies and authorities in the area where your project is located.
- Information on the status and spatial distribution of biological resources produced by MTNHP are intended to inform parties of the state-wide status, known occurrence, or the likelihood of the presence of those resources. **These products are not intended to substitute for field-collected data, nor are they intended to be the sole basis for natural resource management decisions.**
- MTNHP does not portray its data as exhaustive or comprehensive inventories of rare species or biological communities. **Field verification of the absence or presence of sensitive species and biological communities will always be an important obligation of users of our data.**
- MTNHP responds equally to all requests for products and services, regardless of the purpose or identity of the requester.
- Because MTNHP constantly updates and revises its databases with new data and information, products will become outdated over time. Interested parties are encouraged to obtain the most current information possible from MTNHP, rather than using older products. We add, review, update, and delete records on a daily basis. Consequently, we strongly advise that you update your MTNHP data sets at a minimum of every three months for most applications of our information.
- MTNHP data require a certain degree of biological expertise for proper analysis, interpretation, and application. Our staff is available to advise you on questions regarding the interpretation or appropriate use of the data that we provide. Contact information for MTNHP staff is posted at: http://mtnhp.org/contact.asp
- The information provided to you by MTNHP may include sensitive data that if publicly released might jeopardize the welfare of threatened, endangered, or sensitive species or biological communities. This information is intended for distribution or use only within your department, agency, or business. Subcontractors may have access to the data during the course of any given project, but should not be given a copy for their use on subsequent, unrelated work.
- MTNHP data are made freely available. Duplication of hard-copy or digital MTNHP products with the intent to sell is prohibited without written consent by MTNHP. Should you be asked by individuals outside your organization for the type of data that we provide, please refer them to MTNHP.
- MTNHP and appropriate staff members should be appropriately acknowledged as an information source in any third-party product involving MTNHP data, reports, papers, publications, or in maps that incorporate MTNHP graphic elements.
- Sources of our data include museum specimens, published and unpublished scientific literature, field surveys by state and federal agencies and private contractors, and reports from knowledgeable individuals. MTNHP actively solicits and encourages additions, corrections and updates, new observations or collections, and comments on any of the data we provide.
- MTNHP staff and contractors do not cross or survey privately-owned lands without express permission from the landowner. However, the program cannot guarantee that information provided to us by others was obtained under adherence to this policy.

Suggested Contacts for Natural Resource Agencies

As required by Montana statute (MCA 90-15), the Montana Natural Heritage Program works with state, federal, tribal, nongovernmental organizations, and private partners to ensure that the latest animal and plant distribution and status information is incorporated into our databases so that it can be used to inform a variety of planning processes and management decisions. In addition to the information you receive from us, we encourage you to contact state, federal, and tribal resource management agencies in the area where your project is located. They may have additional data or management guidelines relevant to your efforts. In particular, we encourage you to contact the Montana Department of Fish, Wildlife, and Parks for the latest data and management information regarding hunted and high-profile management species and to use the U.S. Fish and Wildlife Service's Information Planning and Conservation (IPAC) website http://ecos.fws.gov/ipac/ regarding U.S. Endangered Species Act listed Threatened, Endangered, or Candidate species.

For your convenience, we have compiled a list of relevant agency contacts and links below:

Montana Fish, Wildlife, and Parks

Fish Species	Zachary Shattuck zshattuck@mt.gov (406) 444-1231 or Eric Roberts eroberts@mt.gov (406) 444-5334
American Bison Black-footed Ferret Black-tailed Prairie Dog Bald Eagle Golden Eagle Common Loon Least Tern Piping Plover Whooping Crane	Lauri Hanauska-Brown LHanauska-Brown@mt.gov (406) 444-5209
Grizzly Bear Greater Sage Grouse Trumpeter Swan Big Game Upland Game Birds Furbearers	John Vore jvore@mt.gov (406) 444-3940
Managed Terrestrial Game and Nongame Animal Data	Smith Wells – MFWP Data Analyst smith.wells@mt.gov (406) 444-3759
Fisheries Data	Ryan Alger – MFWP Data Analyst ryan.alger@mt.gov (406) 444-5365
Wildlife and Fisheries Scientific Collector's Permits	http://fwp.mt.gov/doingBusiness/licenses/scientificWildlife/ Kammi McClain for Wildlife Kammi.McClain@mt.gov (406) 444-2612 Kim Wedde for Fisheries kim.wedde@mt.gov (406) 444-5594
Fish and Wildlife Recommendations for Subdivision Development	Renee Lemon RLemon@mt.gov (406) 444-3738 and see http://fwp.mt.gov/fishAndWildlife/livingWithWildlife/buildingWithWildlife/subdivisionRecommendations/
Regional Contacts 	Region 1 (Kalispell) (406) 752-5501 Region 2 (Missoula) (406) 542-5500 Region 3 (Bozeman) (406) 994-4042 Region 4 (Great Falls) (406) 454-5840 Region 5 (Billings) (406) 247-2940 Region 6 (Glasgow) (406) 228-3700 Region 7 (Miles City) (406) 234-0900

United States Fish and Wildlife Service:
Information Planning and Conservation (IPAC) website: http://ecos.fws.gov/ipac/
Montana Ecological Services Field Office: http://www.fws.gov/montanafieldoffice/ (406) 449-5225

Bureau of Land Management

Montana Field Office Contacts:

Billings	(406) 896-5013
Butte	(406) 533-7600
Dillon	(406) 683-8000
Glasgow	(406) 228-3750
Havre	(406) 262-2820
Lewistown	(406) 538-1900
Malta	(406) 654-5100
Miles City	(406) 233-2800
Missoula	(406) 329-3914

United States Forest Service

Regional Office – Missoula, Montana Contacts

Wildlife Program Leader	Tammy Fletcher	tammyfletcher@fs.fed.us	(406) 329-3588
Wildlife Ecologist	Cara Staab	cstaab@fs.fed.us	(406) 329-3677
Fish Program Leader	Scott Spaulding	scottspaulding@fs.fed.us	(406) 329-3287
Fish Ecologist	Cameron Thomas	cathomas@fs.fed.us	(406) 329-3087
TES Program	Lydia Allen	lrallen@fs.fed.us	(406) 329-3558
Interagency Grizzly Bear Coordinator	Scott Jackson	sjackson03@fs.fed.us	(406) 329-3664
Regional Botanist	Steve Shelly	sshelly@fs.fed.us	(406) 329-3041
Invasive Species Program Manager	Michelle Cox	michelle.cox2@usda.gov	(406) 329-3669

Tribal Nations

- Assiniboine & Gros Ventre Tribes – Fort Belknap Reservation
- Assiniboine & Sioux Tribes – Fort Peck Reservation
- Blackfeet Tribe - Blackfeet Reservation
- Chippewa Creek Tribe - Rocky Boy's Reservation
- Crow Tribe – Crow Reservation
- Little Shell Chippewa Tribe
- Northern Cheyenne Tribe – Northern Cheyenne Reservation
- Salish & Kootenai Tribes - Flathead Reservation

Natural Heritage Programs and Conservation Data Centers in Surrounding States and Provinces

Alberta Conservation Information Management System
British Columbia Conservation Data Centre
Idaho Natural Heritage Program
North Dakota Natural Heritage Program
Saskatchewan Conservation Data Centre
South Dakota Natural Heritage Program
Wyoming Natural Diversity Database

Invasive Species Management Contacts and Information

Aquatic Invasive Species

Montana Fish, Wildlife, and Parks Aquatic Invasive Species staff
Montana Department of Natural Resources and Conservation's Aquatic Invasive Species Grant Program
Montana Invasive Species Council (MISC)
Upper Columbia Conservation Commission (UC3)

Noxious Weeds

Montana Weed Control Association Contacts Webpage
Montana Biological Weed Control Coordination Project
Montana Department of Agriculture - Noxious Weeds
Montana Weed Control Association
Montana Fish, Wildlife, and Parks - Noxious Weeds
Montana State University Integrated Pest Management Extension
Integrated Noxious Weed Management after Wildfires

Introduction to Native Species

Within the report area you have requested, separate summaries are provided for: (1) Species Occurrences (SO) for plant and animal Species of Concern, Special Status Species (SSS), Important Animal Habitat (IAH) and some Potential Plant Species of Concern; (2) other observed non Species of Concern or Species of Concern without suitable documentation to create Species Occurrence polygons; and (3) other non-documented species that are potentially present based on their range, predicted suitable habitat model output, or presence of associated habitats. Each of these summaries provides the following information when present for a species: (1) the number of Species Occurrences and associated delineation criteria for construction of these polygons that have long been used for considerations of documented Species of Concern in environmental reviews; (2) the number of observations of each species; (3) the geographic range polygons for each species that the report area overlaps; (4) predicted relative habitat suitability classes that are present if a predicted suitable habitat model has been created; (5) the percent of the report area that is mapped as commonly associated or occasionally associated habitat as listed for each species in the Montana Field Guide; and (6) a variety of conservation status ranks and links to species accounts in the Montana Field Guide. Details on each of these information categories are included under relevant section headers below or are defined on our Species Status Codes page. In presenting this information, the Montana Natural Heritage Program (MTNHP) is working towards assisting the user with rapidly determining what species have been documented and what species are potentially present in the report area. We remind users that this information is likely incomplete as surveys to document native and introduced species are lacking in many areas of the state, information on introduced species has only been tracked relatively recently, the MTNHP's staff and resources are restricted by declining budgets, and information is constantly being added and updated in our databases. **Thus, field verification by professional biologists of the absence or presence of species and biological communities will always be an important obligation of users of our data.**

If you are aware of observation datasets that the MTNHP is missing, please report them to the Program Botanist apipp@mt.gov or Senior Zoologist dbachen@mt.gov. If you have observations that you would like to contribute, you can submit animal observations using our online data entry system at http://mtnhp.org/AddObs/, plant and animal observations via Excel spreadsheets posted at http://mtnhp.org/observations.asp , or to the Program Botanist or Senior Zoologist.

Observations

The MTNHP manages information on more than 1.8 million animal and plant observations that have been reported by professional biologists and private citizens from across Montana. The majority of these observations are submitted in digital format from standardized databases associated with research or monitoring efforts and spreadsheets of incidental observations submitted by professional biologists and amateur naturalists. At a minimum, accepted observation records must contain a credible species identification (i.e. appropriate geographic range, date, and habitat and, if species are difficult to identify, a photograph and notes on key identifying features), a date or date range, observer name, locational information (ideally with latitude and longitude in decimal degrees), notes on numbers observed, and species behavior or habitat use (e.g., is the observation likely associated with reproduction). Bird records are also required to have information associated with date-appropriate breeding or overwintering status of the species observed. MTNHP reviews observation records to ensure that they are mapped correctly, occur within date ranges when the species is known to be present or detectable, occur within the known seasonal geographic range of the species, and occur in appropriate habitats. MTNHP also assigns each record a locational uncertainty value in meters to indicate the spatial precision associated with the record's mapped coordinates. Only records with locational uncertainty values of 10,000 meters or less are included in environmental summary reports and number summaries are only provided for records with locational uncertainty values of 1,000 meters or less.

Species Occurrences

The MTNHP evaluates plant and animal observation records for species of higher conservation concern to determine whether they are worthy of inclusion in the Species Occurrence (SO) layer for use in environmental reviews; observations not worthy of inclusion in this layer include long distance dispersal events, migrants observed away from key migratory stopover habitats, and winter observations. An SO is a polygon depicting what is known about a species occupancy from direct observation with a defined level of locational uncertainty and any inference that can be made about adjacent habitat use from the latest peer-reviewed science. If an observation can be associated with a map feature that can be tracked (e.g., a wetland boundary for a wetland associated plant) then this polygon feature is used to represent the SO. Areas that can be inferred as probable occupied habitat based on direct observation of a species location and what is known about the foraging area or home range size of the species may be incorporated into the SO. Species Occurrences generally belong to one of the following categories:

Plant Species Occurrences

A documented location of a specimen collection or observed plant population. In some instances, adjacent, spatially separated clusters are considered subpopulations and are grouped as one occurrence (e.g., the subpopulations occur in ecologically similar habitats, and their spatial proximity likely allows them to interbreed). Tabular information for multiple observations at the same SO location is generally linked to a single polygon. Plant SO's are only created for Species of Concern and Potential Species of Concern.

Animal Species Occurrences

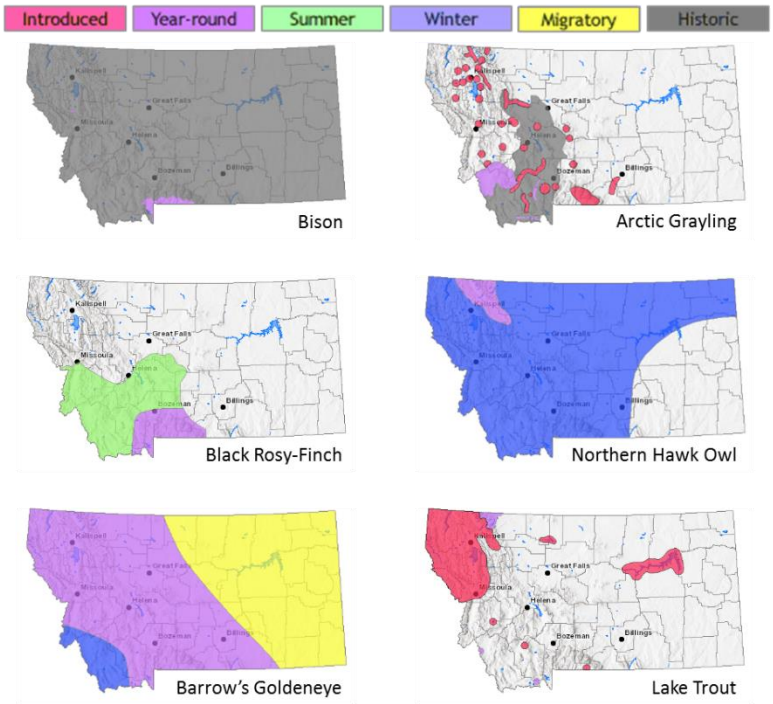
The location of a verified observation or specimen record typically known or assumed to represent a breeding population or a portion of a breeding population. Animal SO's are generally: (1) buffers of terrestrial point observations based on documented species' home range sizes; (2) buffers of stream segments to encompass occupied streams and immediate adjacent riparian habitats; (3) polygonal features encompassing known or likely breeding populations (e.g., a wetland for some amphibians or a forested portion of a mountain range for some wide ranging carnivores); or (4) combinations of the above. Tabular information for multiple observations at the same SO location is generally linked to a single polygon. Species Occurrence polygons may encompass some unsuitable habitat in some instances in order to avoid heavy data processing associated with clipping out habitats that are readily assessed as unsuitable by the data user (e.g., a point buffer of a terrestrial species may overlap into a portion of a lake that is obviously inappropriate habitat for the species). Animal SO's are only created for Species of Concern and Special Status Species (e.g., Bald Eagle).

Other Occurrence Polygons

These include significant biological features not included in the above categories, such as Important Animal Habitats like bird rookeries and bat roosts, and peatlands or other wetland and riparian communities that support diverse plant and animal communities.

Geographic Range Polygons

Geographic range polygons have not yet been defined for most plant species. Native year-round, summer, winter, migratory and historic geographic range polygons as well as polygons for introduced populations have been defined for most animal species for which there are enough observations, surveys, and knowledge of appropriate seasonal habitat use to define them (see examples to left). These native or introduced range polygons bound the extent of known or likely occupied habitats for non-migratory and relative sedentary species and the regular extent of known or likely occupied habitats for migratory and long-distance dispersing species; polygons may include unsuitable intervening habitats. For most species, a single polygon can represent the year-round or seasonal range, but breeding ranges of some colonial nesting water birds and some introduced species are represented more patchily when supported by data. Some ranges are mapped more broadly than actual distributions in order to be visible on statewide maps (e.g., fish).



Predicted Suitable Habitat Models

Recent predicted suitable habitat suitability models have not yet been created for most plant species. For animal species for which models have been completed, the environmental summary report includes simple, rule-based, associations with streams for fish and other aquatic species and mathematically complex Maximum Entropy models (Phillips et al. 2006, Ecological Modeling 190:231-259) constructed from a variety of statewide biotic and abiotic layers and presence only data for individual species contributed to Montana Natural Heritage Program databases for most terrestrial species. For the Maximum Entropy models, we reclassified 90 x 90-meter continuous model output into suitability classes (unsuitable, low, moderate, and optimal) then aggregated that into the one square mile hexagons used in the environmental summary report; this is the finest spatial scale we suggest using this information in management decisions and survey planning. Full model write ups for individual species that discuss model goals, inputs, outputs, and evaluation in much greater detail are posted on the MTNHP's Predicted Suitable Habitat Models page. Evaluations of predictive accuracy and specific limitations are included with the metadata for models of individual species. **Model outputs should not be used in place of on-the-ground surveys for species. Instead model outputs should be used in conjunction with habitat evaluations to determine the need for on-the-ground surveys for species.** We suggest that the percentage of predicted optimal and moderate suitable habitat within the report area be used in conjunction with geographic range polygons and the percentage of commonly associated habitats to generate lists of potential species that may occupy broader landscapes for the purposes of landscape-level planning.

Associated Habitats

Within the boundary of the intersected hexagons, we provide the approximate percentage of commonly or occasionally associated habitat for vertebrate animal species that regularly breed, overwinter, or migrate through the state; a detailed list of commonly and occasionally associated habitats is provided in individual species accounts in the Montana Field Guide. We assigned common or occasional use of each of the 82 ecological systems mapped in Montana by: (1) using personal knowledge and reviewing literature that

summarizes the breeding, overwintering, or migratory habitat requirements of each species; (2) evaluating structural characteristics and distribution of each ecological system relative to the species' range and habitat requirements; (3) examining the observation records for each species in the state-wide point observation database associated with each ecological system; and (4) calculating the percentage of observations associated with each ecological system relative to the percent of Montana covered by each ecological system to get a measure of numbers of observations versus availability of habitat. Species that breed in Montana were only evaluated for breeding habitat use, species that only overwinter in Montana were only evaluated for overwintering habitat use, and species that only migrate through Montana were only evaluated for migratory habitat use. In general, species were listed as associated with an ecological system if structural characteristics of used habitat documented in the literature were present in the ecological system or large numbers of point observations were associated with the ecological system. However, species were not listed as associated with an ecological system if there was no support in the literature for use of structural characteristics in an ecological system, even if point observations were associated with that system. Common versus occasional association with an ecological system was assigned based on the degree to which the structural characteristics of an ecological system matched the preferred structural habitat characteristics for each species as represented in the scientific literature. The percentage of observations associated with each ecological system relative to the percent of Montana covered by each ecological system was also used to guide assignment of common versus occasional association.

We suggest that the percentage of commonly associated habitat within the report area be used in conjunction with geographic range polygons and the percentage of predicted optimal and moderate suitable habitat from predictive models to generate lists of potential species that may occupy broader landscapes for the purposes of landscape-level planning. Users of this information should be aware that land cover mapping accuracy is particularly problematic when the systems occur as small patches or where the land cover types have been altered over the past decade. Thus, particular caution should be used when using the associations in assessments of smaller areas (e.g., evaluations of public land survey sections).

Introduction to Land Cover

Land Use/Land Cover is one of 15 Montana Spatial Data Infrastructure framework layers considered vital for making statewide maps of Montana and understanding its geography. The layer records all Montana natural vegetation, land cover and land use, classified from satellite and aerial imagery, mapped at a scale of 1:100000, and interpreted with supporting ground-level data. The baseline map is adapted from the Northwest ReGAP (NWGAP) project land cover classification, which used 30m resolution multi-spectral Landsat imagery acquired between 1999 and 2001. Vegetation classes were drawn from the Ecological System Classification developed by NatureServe (Comer et al. 2003). The land cover classes were developed by Anderson et al. (1976). The NWGAP effort encompasses 12 map zones. Montana overlaps seven of these zones. The two NWGAP teams responsible for the initial land cover mapping effort in Montana were Sanborn and NWGAP at the University of Idaho. Both Sanborn and NWGAP employed a similar modeling approach in which Classification and Regression Tree (CART) models were applied to Landsat ETM+ scenes. The Spatial Analysis Lab within the Montana Natural Heritage Program was responsible for developing a seamless Montana land cover map with a consistent statewide legend from these two separate products. Additionally, the Montana land cover layer incorporates several other land cover and land use products (e.g., MSDI Structures and Transportation themes and the Montana Department of Revenue Final Land Unit classification) and reclassifications based on plot-level data and the latest NAIP imagery to improve accuracy and enhance the usability of the theme. Updates are done as partner support and funding allow, or when other MSDI datasets can be incorporated. Recent updates include fire perimeters and agricultural land use (annually), energy developments such as wind, oil and gas installations (2014), roads, structures and other impervious surfaces (various years): and local updates/improvements to specific ecological systems (e.g., central Montana grassland and sagebrush ecosystems). Current and previous versions of the Land Use/Land Cover layer with full metadata are available for download at the Montana State Library's Geographic Information Clearinghouse.

Within the report area you have requested, land cover is summarized by acres of Level 1, Level 2, and Level 3 Ecological Systems.

Literature Cited

Anderson, J.R. E.E. Hardy, J.T. Roach, and R.E. Witmer. 1976. A land use and land cover classification system for use with remote sensor data. U.S. Geological Survey Professional Paper 964.

Comer, P., D. Faber-Langendoen, R. Evans, S. Gawler, C. Josse, G. Kittel, S. Menard, M. Pyne, M. Reid, K. Schulz, K. Snow, and J. Teague. 2003. Ecological systems of the United States: A working classification of U.S. terrestrial systems. NatureServe, Arlington, VA.

Introduction to Wetland and Riparian

Within the report area you have requested, wetland and riparian mapping is summarized by acres of each classification present. Summaries are only provided for modern MTNHP wetland and riparian mapping and not for outdated (NWI Legacy) or incomplete (NWI Scalable) mapping efforts; described here. MTNHP has made all three of these datasets and associated metadata available for separate download on the Montana Wetland and Riparian Framework MSDI download page.

Wetland and Riparian mapping is one of 15 Montana Spatial Data Infrastructure framework layers considered vital for making statewide maps of Montana and understanding its geography. The wetland and riparian framework layer consists of spatial data representing the extent, type, and approximate location of wetlands, riparian areas, and deepwater habitats in Montana.

Wetland and riparian mapping is completed through photointerpretation of 1-m resolution color infrared aerial imagery acquired from 2005 or later. A coding convention using letters and numbers is assigned to each mapped wetland. These letters and numbers describe the broad landscape context of the wetland, its vegetation type, its water regime, and the kind of alterations that may have occurred. Ancillary data layers such as topographic maps, digital elevation models, soils data, and other aerial imagery sources are also used to improve mapping accuracy. Wetland mapping follows the federal Wetland Mapping Standard and classifies wetlands according to the Cowardin classification system of the National Wetlands Inventory (NWI) (Cowardin et al. 1979, FGDC Wetlands Subcommittee 2013). Federal, State, and local regulatory agencies with jurisdiction over wetlands may define and describe wetlands differently than the NWI. Similar coding, based on U.S. Fish and Wildlife Service conventions, is applied to riparian areas (U.S. Fish and Wildlife Service 2009). These are mapped areas where vegetation composition and growth is influenced by nearby water bodies, but where soils, plant communities, and hydrology do not display true wetland characteristics. **These data are intended for use in publications at a scale of 1:12,000 or smaller. Mapped wetland and riparian areas do not represent precise boundaries and digital wetland data cannot substitute for an on-site determination of jurisdictional wetlands.**

A detailed overview, with examples, of both wetland and riparian classification systems and associated codes can be found at: http://mtnhp.org/help/MapViewer/WetRip_Classification.asp

Literature Cited

Cowardin, L.M., V. Carter, F.C. Golet, and E.T. LaRoe. 1979. Classification of wetlands and deepwater habitats of the United States. U.S. Fish and Wildlife Service, FWS/OBS-79/31. Washington, D.C. 103pp.

Federal Geographic Data Committee. 2013. Classification of wetlands and deepwater habitats of the United States. FGDC-STD-004-2013. Second Edition. Wetlands Subcommittee, Federal Geographic Data Committee and U.S. Fish and Wildlife Service, Washington, D.C.

U.S. Fish and Wildlife Services. 2009. A system for mapping riparian areas in the western United States. Division of Habitat and Resource Conservation, Branch of Resource and Mapping Support, Arlington, Virginia.

Introduction to Land Management

Within the report area you have requested, land management information is summarized by acres of federal, state, and local government lands, tribal reservation boundaries, private conservation lands, and federal, state, local, and private conservation easements. Acreage for "Owned", "Tribal", or "Easement" categories represents non-overlapping areas that may be totaled. However, "Other Boundaries" represents managed areas such as National Forest boundaries containing private inholdings and other mixed ownership which may cause boundaries to overlap (e.g. a wilderness area within a forest). Therefore, acreages may not total in a straight-forward manner.

Because information on land stewardship is critical to effective land management, the Montana Natural Heritage Program (MTNHP) began compiling ownership and management data in 1997. The goal of the Montana Land Management Database is to manage a single, statewide digital data set that incorporates information from both public and private entities. The database assembles information on public lands, private conservation lands, and conservation easements held by state and federal agencies and land trusts and is updated on a regular basis. Since 2011, the Information Management group in the Montana State Library's Digital Library Division has taken an increasingly active role in managing layers of the Montana Land Management Database in partnership with the MTNHP.

Public and private conservation land polygons are attributed with the name of the entity that owns it. The data are derived from the statewide Montana Cadastral Parcel layer. Conservation easement data shows land parcels on which a public agency or qualified land trust has placed a conservation easement in cooperation with the land owner. The dataset contains no information about ownership or status of the mineral estate. For questions about the dataset or to report errors, please contact the Montana Natural Heritage Program at (406) 444-5363 or mtnhp@mt.gov. You can download various components of the Land Management Database and view associated metadata at the Montana State Library's GIS Data List at the following links:

Public Lands
Conservation Easements
Private Conservation Lands
Managed Areas

Map features in the Montana Land Management Database or summaries provided in this report are not intended as a legal depiction of public or private surface land ownership boundaries and should not be used in place of a survey conducted by a licensed land surveyor. Similarly, map features do not imply public access to any lands. The Montana Natural Heritage Program makes no representations or warranties whatsoever with respect to the accuracy or completeness of this data and assumes no responsibility for the suitability of the data for a particular purpose. The Montana Natural Heritage Program will not be liable for any damages incurred as a result of errors displayed here. Consumers of this information should review or consult the primary data and information sources to ascertain the viability of the information for their purposes.

Introduction to Invasive and Pest Species

Within the report area you have requested, separate summaries are provided for: Aquatic Invasive Species, Noxious Weeds, Agricultural Pests, and Forest Pests that have been documented or potentially occur there based on their known distribution in the state. Definitions for each of these invasive and pest species categories can be found on our Species Status Codes page.

Each of these summaries provides the following information when present for a species: (1) the number of observations of each species; (2) the geographic range polygons for each species, if developed, that the report area overlaps; (3) predicted relative habitat suitability classes that are present if a predicted suitable habitat model has been created; (4) the percent of the report area that is mapped as commonly associated or occasionally associated habitat as listed for each species in the Montana Field Guide; and (5) and links to species accounts in the Montana Field Guide. Details on each of these information categories are included under relevant section headers under the Introduction to Native Species above or are defined on our Species Status Codes page. In presenting this information, the Montana Natural Heritage Program (MTNHP) is working towards assisting the user with rapidly determining what invasive and pest species have been documented and what species are potentially present in the report area. We remind users that this information is likely incomplete as surveys to document introduced species are lacking in many areas of the state, information on introduced species has only been tracked relatively recently, the MTNHP's staff and resources are restricted by declining budgets, and information is constantly being added and updated in our databases. **Thus, field verification by professional biologists of the absence or presence of species will always be an important obligation of users of our data.**

If you are aware of observation or survey datasets for invasive or pest species that the MTNHP is missing, please report them to the Program Coordinator bmaxell@mt.gov Program Botanist apipp@mt.gov or Senior Zoologist dbachen@mt.gov. If you have observations that you would like to contribute, you can submit animal observations using our online data entry system at http://mtnhp.org/AddObs/, plant and animal observations via Excel spreadsheets posted at http://mtnhp.org/observations.asp , or to the Program Botanist or Senior Zoologist.

Additional Information Resources

Home Page for Montana Natural Heritage Program (MTNHP)

MTNHP Staff Contact Information

Montana Field Guide

MTNHP Species of Concern Report - Animals and Plants

MTNHP Species Status Codes - Explanation

MTNHP Predicted Suitable Habitat Models (for select Animals and Plants)

MTNHP Request Information page

Montana Cadastral

Montana Code Annotated

Montana Department of Environmental Quality

Montana Fisheries Information System

Montana Fish, Wildlife, and Parks Subdivision Recommendations

Montana GIS Data Layers

Montana GIS Data Bundler

Montana Greater Sage-Grouse Project Submittal Site

Montana Ground Water Information Center

Montana Legislative Environmental Policy Office Publications
(Including Index of Environmental Permits required in Montana and Guide to the Montana Environmental Policy Act)

Montana Environmental Policy Act (MEPA)

MEPA Analysis Resource List

Laws, Treaties, Regulations, and Permits on Animals and Plants

Montana Spatial Data Infrastructure Layers

Montana State Historic Preservation Office Review and Compliance

Montana Water Information System

Montana Web Map Services

National Environmental Policy Act

Penalties for Misuse of Fish and Wildlife Location Data (MCA 87-6-222)

U.S. Fish and Wildlife Service Information for Planning and Conservation (Section 7 Consultation)

Web Soil Survey Tool

MONTANA Natural Heritage Program

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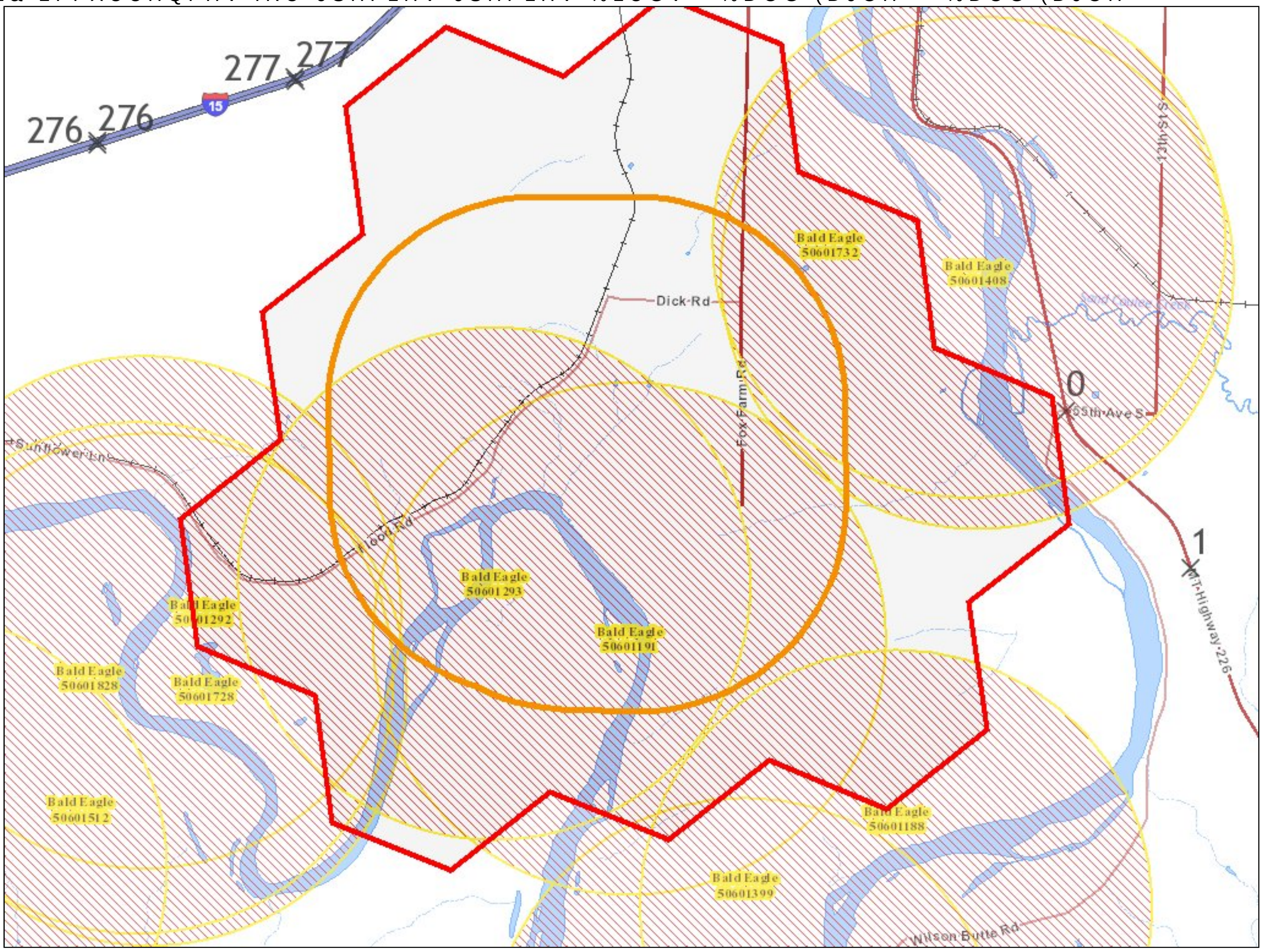

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Jake Hoffman

From: Jason Crawford
Sent: Friday, May 1, 2020 3:12 PM
To: Jake Hoffman
Subject: FW: RIVER BEND ESTATES PHASE III 12-LOT SUBDIVISION, CASCADE CO
Attachments: 2020043010.pdf

Jason Crawford, PE

TRIPLE TREE
ENGINEERING

3102 Old Broadwater Lane, Helena, MT 59601
Cell: 406.461.2115
www.tripletreemt.com

From: Murdo, Damon <dmurdo@mt.gov>
Sent: Friday, May 1, 2020 1:37 PM
To: Jason Crawford <jcrawford@tripletreemt.com>
Subject: RIVER BEND ESTATES PHASE III 12-LOT SUBDIVISION, CASCADE CO

Big Sky. Big Land. Big History.
Montana
Historical Society

May 1, 2020

Jason Crawford
Triple Tree Engineering
3102 Old Broadwater Lane
Helena MT 59602

RE: RIVER BEND ESTATES PHASE III 12-LOT SUBDIVISION, CASCADE CO. SHPO Project #: 2020043010

Dear Mr. Crawford:

I have conducted a cultural resource file search for the above-cited project located in Section 34, T20N R3E. According to our records there have been no previously recorded sites within the designated search locale. The absence of cultural properties in the area does not mean that they do not exist but rather may reflect the absence of any previous cultural resource inventory in the area, as our records indicated none.

It is SHPO's position that any structure over fifty years of age is considered historic and is potentially eligible for listing on the National Register of Historic Places. If any structures are to be altered and are over fifty years old, we would recommend that they be recorded, and a determination of their eligibility be made prior to any disturbance.

Based on the previous agricultural use of the area we feel that a recommendation for a cultural resource inventory is unwarranted at this time. As long as there will be no disturbance or alteration to structures over fifty years of age we feel that there is a low likelihood cultural properties will be impacted. However, should structures need to be altered or if cultural materials be inadvertently discovered during this project we would ask that our office be contacted, and the site investigated.

If you have any further questions or comments, you may contact me at (406) 444-7767 or by e-mail at dmurdo@mt.gov.
I have attached an invoice for the file search. Thank you for consulting with us.
Sincerely,

Damon Murdo
Cultural Records Manager
State Historic Preservation Office

File: LOCLA/SUBDIVISIONS/2020

Great Falls Public Schools

Director of Business Operations • 1100 4th Street South • P.O. Box 2429
Great Falls, Montana 59403 • 406.268.6051 • Fax 406.268.6067 • www.gfps.k12.mt.us

April 24, 2020

Cascade County Public Works Department, Planning Division
121 4th St. N, Suite 2H/I
Great Falls, MT 59401

To Whom It May Concern;

Thank you for your letter indicating the River Bend Estates Phase III twelve (12)-lot Subdivision proposal. We understand the plan to create the subdivision, as this is the third phase of the development for this project. This property is located within our school district boundaries. The following is a response to the information sent to the Great Falls Public School District. We have formulated the questions below to comment on the proposed subdivision.

1. Will the existing school facilities be able to accommodate the additional estimated seven (7) students?
The addition of the development will have an impact on the Great Falls Public School District. The estimated seven (7) additional students in proximity to Meadow Lark Elementary School will be able to be accommodated by the school.

2. Do you have any other comments or requirements on the proposed subdivision as it affects the public school system?

The students from the new Phase III River Bend Estates Subdivision will be able to ride the existing bus route to Meadow Lark Elementary School.

Sincerely,

Brian Patrick
Director of Business Operations
Great Falls Public Schools

United States Department of the Interior

FISH AND WILDLIFE SERVICE

Montana Ecological Services Office
585 Shephard Way, Suite 1
Helena, Montana 59601-6287

In Reply Refer To:
M.29 Public (I)
06E11000-2019-TA-0176;
06E11000-2019-CPA-0020

January 30, 2019

Jason Crawford, PE
Triple Tree Engineering
3102 Old Broadwater Lane
Helena, Montana 59601

Dear Mr. Crawford:

Thank you for your email of January 16, 2019, requesting U.S. Fish and Wildlife Service (Service) comment on Phase II of the proposed River Bend Estates subdivision located approximately two miles south of Great Falls in Cascade County, Montana. The proposed project would create a twelve-lot residential subdivision and use individual wells and drain fields.

Our comments are prepared under the authority of, and in accordance with, the provisions of the Migratory Bird Treaty Act (16 U.S.C. 703 et seq.), Bald and Golden Eagle Protection Act (16 U.S.C. 668-668d, 54 Stat. 250), and the Endangered Species Act (16 U.S.C. 1531 et. seq.). Our comments do not address the overall environmental acceptability of the proposed action. We offer the following comments for your consideration.

Threatened and Endangered Species

Threatened, endangered, proposed, and candidate species that may occur in Cascade County include pallid sturgeon (endangered), Canada lynx (threatened), red knot (threatened), piping plover (threatened), grizzly bear (threatened), wolverine (proposed), and whitebark pine (candidate). Pallid sturgeon, Canada lynx, red knot, piping plover, wolverine, and whitebark pine are not expected to be present in the project vicinity because the project falls outside of their specific habitat(s) and/or expected current range. No critical habitat occurs in the project area.

Grizzly bears may occur in the general project area as a rare transient. The Service recommends implementation of the following (or similar) conservation measures to manage potential bear attractants and reduce the risk of human-grizzly bear conflicts related to this project:

1. Promptly clean up any project related spills, litter, garbage, debris, etc.
2. Allow no overnight camping within the project vicinity, except in designated

campgrounds, by any crew member or other personnel associated with this project.

3. Store all food, food related items, petroleum products, antifreeze, garbage, personal hygiene items, and other attractants inside a closed, hard-sided vehicle or commercially manufactured bear resistant container.
4. Remove garbage from the project site daily and dispose of it in accordance with all applicable regulations.
5. Notify the Project Manager of any animal carcasses found in the area.
6. Notify the Project Manager of any grizzly bears observed in the vicinity of the project.

Migratory Bird Treaty Act

We have reviewed the provided information on the proposed project and have determined that there could be potential effects to migratory birds. To the extent practicable, necessary vegetation clearing, grubbing, and filling construction activities should be scheduled so as to avoid and minimize impacts to nesting birds, if present in the project area. If work is proposed to take place in migratory bird habitats that may result in take of migratory birds, their eggs, or active nests, the Service recommends that the project proponent take all practicable measures to avoid and minimize take, such as maintaining adequate buffers, to protect the birds until the young have fledged. Active nests may not be removed. The Service has developed, and continues to revise and develop, general and industry-specific conservation measures for avoiding and minimizing impacts to birds (https://www.fws.gov/birds/management/project-assessment-tools-and-guidance/conservation-measures.php). We recommend that the proposed project consider and incorporate these measures into project design, construction, and documentation as appropriate.

Bald and Golden Eagle Protection Act

The Service is aware of at least one bald eagle nest, active in 2014, within one mile of the proposed project site. We provide the following for your information, as currently unknown nests could occur in the project vicinity where suitable habitat exists, and nest surveys have not been conducted.

The bald eagle (*Haliaeetus leucocephalus*) and golden eagle (*Aquila chrysaetos*) are protected from a variety of harmful actions via take prohibitions in both the Migratory Bird Treaty Act[1] (MBTA; 16 U.S.C. 703-712) and the Bald and Golden Eagle Protection Act (BGEPA; 16 U.S.C. 668–668d). The BGEPA, enacted in 1940 and amended several times, prohibits take of bald eagles and golden eagles, including their parts, nests, young or eggs, except where otherwise

[1] On December 22, 2017, the Department of the Interior's (DOI) Office of the Solicitor Memorandum M-37050 titled The Migratory Bird Treaty Act Does Not Prohibit Incidental Take https://www.doi.gov/sites/doi.gov/files/uploads/m-37050.pdf) concludes that the MBTA's prohibitions on pursuing, hunting, taking, capturing, killing, or attempting to do the same apply only to affirmative actions that have as their purpose the taking or killing of migratory birds, their nests, or their eggs. The MBTA list of protected species includes bald and golden eagles, and the law has been an effective tool to pursue incidental take cases involving eagles. However, the primary law protecting eagles is the Bald and Golden Eagle Protection Act (BGEPA) (16 U.S. Code § 668), since the bald eagle was delisted under the Endangered Species Act in 2007. Memorandum-37050 does not affect the ability of the Service to refer entities for prosecution that have violated the take prohibitions for eagles established by the BGEPA.

permitted pursuant to federal regulations. Incidental take of eagles from actions such as electrocutions from power lines or wind turbine strikes are prohibited unless specifically authorized via an eagle incidental take permit from US Fish and Wildlife Service (Service). BGEPA provides 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 any golden eagle], alive or dead, or any part, nest, or egg thereof." BGEPA defines take to include the following actions: "pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, molest or disturb." The Service expanded this definition by regulation to include the term "destroy" to ensure that "take" also encompasses destruction of eagle nests. Also the Service defined the term disturb, which means to agitate or bother a bald or golden eagle to a degree that causes, or is likely to cause, based on the best scientific information available, (1) injury to an eagle, (2) a decrease in its productivity, by substantially interfering with normal breeding, feeding, or sheltering behavior, or (3) nest abandonment, by substantially interfering with normal breeding, feeding, or sheltering behavior.

The Service has developed guidance for the public regarding means to avoid take of bald and golden eagles:

- The 2007 *National Bald Eagle Management Guidelines* serve to advise landowners, land managers, and others who share public and private lands with bald eagles when and under what circumstances the protective provisions of BGEPA may apply. They provide conservation recommendations to help people avoid and/or minimize such impacts to bald eagles, particularly where they may constitute "disturbance," which is prohibited by the BGEPA. https://www.fws.gov/northeast/ecologicalservices/pdf/NationalBaldEagleManagementGuidelines.pdf

In addition to Service guidance, the 2010 *Montana Bald Eagle Management Guidelines: An Addendum to Montana Bald Eagle Management Plan* (1994) also provides guidance for avoiding and minimizing the risk for eagle take (http://fwp.mt.gov/fwpDoc.html?id=44181).

Other Comments:

- The Service recommends keeping disturbances to the stream bank, channel, and any associated wetlands to the minimum extent and duration possible, with as much occurring "in the dry" as possible. This would reduce disruptions to aquatic resources during construction, resulting in fewer short-term impacts to aquatic species relative to stream bed and bank disturbance and sediment inputs.
- We recommend coordination with Montana Fish, Wildlife and Parks at 1420 East Sixth Ave., P.O. Box 200701, Helena, Montana 59620-0701, (406) 444-2535, and the Montana Natural Heritage Program, 1515 East 6th Avenue, Box 201800, Helena, Montana 59620-1800, (406) 444-5354. Both of these agencies may be able to provide updated, site-specific information regarding fish, wildlife, and sensitive plant resources occurring in the proposed project area, as well as specific project-related recommendations.

Thank you for the opportunity to comment on the proposed project. The Service appreciates your efforts to incorporate fish and wildlife resource concerns into your project planning. If you have further questions related to this correspondance, please do not hesitate to contact Karen Newlon at (406) 449-5225, extension 209.

Sincerely,

Jodi L. Bush
Office Supervisor

DEPARTMENT OF NATURAL RESOURCES AND CONSERVATION

Lewistown Water Resources Regional Office

STEVE BULLOCK, GOVERNOR

PHONE: (406) 538-7459

613 NE Main St, Suite E
Lewistown, MT 59457

May 6, 2020

Triple Tree Engineering
Attn: Jason Crawford
3102 Old Broadwater Ln
Helena, MT 59601

Re: River Bend Estates Phase III Subdivision DEQ Review

Mr. Crawford,

Per the information provided in an e-mail received April 23rd, the anticipated water use for the proposed River Bend Estates Phase III Subdivision does fit the current rules and laws pertaining to exempt water rights, or groundwater notices of completion. This proposed phase development, comprised of 12 single-family residential lots, all with individual wells, is considered a combined appropriation. There is also a parkland parcel and a utility parcel within the lot layout that will not require water. No review of the residual acreage of the tract being subdivided is required, the remaining parcel is approximately 90 acres and is not subject to subdivision review (greater than 20 acres). Each of the twelve wells will be limited to an individual flow rate of up to 35 gallons per minute (GPM) and all wells combined will be limited to an annual volume of up to 10.0 acre-feet (AF).

As described, your annual water use estimations for the subdivision total just under 10.00 AF and do not include any water for the parkland or utility parcels. Considering the combined appropriation and e-mail direction for the anticipated water use on the twelve lots, each lot will be limited to 0.83 AF per year including 0.33 AF for domestic use and up to 0.50 AF for lawn and garden irrigation (L & G) of up to 0.2 acres. The combined volume for the subdivision includes 3.96 AF for domestic use and up to 6.0 AF for L & G for a total proposed subdivision use of 9.96 AF per year.

	Property Description - Parcel, Lot or Tract	Annual Volume Acre-Feet/year						
		Domestic	Lawn & Garden	Commercial	Other	Total	Remaining Available	Total Volume under MCA 85-2-306 3 (iii)
Proposed Use	Lot 1	0.330	0.500			0.830		
Proposed Use	Lot 2	0.330	0.500			0.830		
Proposed Use	Lot 3	0.330	0.500			0.830		
Proposed Use	Lot 4	0.330	0.500			0.830		
Proposed Use	Lot 5	0.330	0.500			0.830		
Proposed Use	Lot 6	0.330	0.500			0.830		
Proposed Use	Lot 7	0.330	0.500			0.830		
Proposed Use	Lot 8	0.330	0.500			0.830		
Proposed Use	Lot 9	0.330	0.500			0.830		
Proposed Use	Lot 10	0.330	0.500			0.830		
Proposed Use	Lot 11	0.330	0.500			0.830		
Proposed Use	Lot 12	0.330	0.500			0.830		
Proposed Use	Parkland Lot	0.000	0.000	0.000	0.000	0.000		
Proposed Use	Utility Lot	0.000	0.000	0.000	0.000	0.000		
					Total	9.960	0.040	10.00

Application for a Beneficial Water Use Permit is not required as the combined use from the proposed wells does not exceed an individual flow rate of 35 GPM or a combined volume of 10 AF annually. No water right permitting is needed for this subdivision layout ahead of putting water to a beneficial use.

NOTE:
In Clark Fork Coalition, et. al. v. DNRC, et. al., 2016 MT 229, 384 Mont. 503, 380 P.3d 771, the Montana Supreme Court concluded that the definition of "combined appropriation" in Admin. R. Mont. 36.12.101(13) was invalid. The Court reinstated the Department's 1987 Rule defining "combined appropriation" as: " An appropriation of water from the same source aquifer by means of two or more groundwater developments, the purpose of which, in the department's judgment, could have been accomplished by a single appropriation. Groundwater developments need not be physically connected nor have a common distribution system to be considered a "combined appropriation." They can be separate developed springs or wells to separate parts of a project or development. Such wells and springs need not be developed simultaneously. They can be developed gradually or in increments. The amount of water appropriated from the entire project or development from these groundwater developments in the same source aquifer is the "combined appropriation."

Under this Rule, the Department interprets subdivisions that are pending before the Department of Environmental Quality for approval on October 17, 2014 or filed after that date to be a single project that can be accomplished by a single appropriation. Consequently all wells in such a subdivision will be considered a "combined appropriation" for the purposes of Mont. Code Ann. 85-2-306. The only exception to this interpretation is that a subdivision which has received preliminary plat approval prior to October 17, 2014 will not be considered a project under the "combined appropriation" 1987 Rule; individual lots will still be evaluated under the 1987 Rule at the time of an application to the Department. 2015 Mont. Laws § 1, Ch. 221.

This letter does not serve as a pre-approval for a water right. The information above is based upon the information provided in your request. Prior to issuance of any water right, the owner must first make application to the DNRC for a water right. Applications are generally processed on a first-come, first-served basis.

A copy of this letter and your request for DNRC review will be provided to DEQ.

Thank you,

Melissa Norris

Melissa Norris
DNRC - Lewistown Regional Office

cc: DEQ, Leata English – via email only

Appendix D – Traffic Information

4.2. EXISTING ROADWAY VOLUMES AND CAPACITY

Roadway traffic data was collected by MDT, City of Great Falls, and Cascade County. The data was used to establish existing traffic conditions and to provide reliable data on historic traffic volumes. Average annual daily traffic (AADT) counts for the year 2012 were used to represent existing conditions. **Figure 4.4** shows the existing AADT along the major street network. In addition, the major street network was examined to determine the existing facility size. This information is presented in **Figure 4.5**.

Roadway capacity is of critical importance when looking at the growth of a community. As traffic volumes increase, vehicle flow deteriorates. When traffic volumes approach and exceed the available capacity, the road begins to "fail". For this reason it is important to look at the size and configuration of the current roadways and determine if these roads need to be expanded to accommodate the existing or projected traffic needs.

The capacity of a roadway is based on a number of features including number of lanes, intersection function, access and intersection spacing, vehicle fleet mix, roadway geometrics, land use, and vehicle speeds. Individual roadway capacity varies greatly and should be calculated on an individual basis. For planning and comparison purposes, however, theoretical roadway capacities were developed based on simplistic roadway configurations and are shown in **Table 4.1**. These values are not intended to be used to set any thresholds for roadway performance, but rather provide some general information to be used to compare roadway performance.

Table 4.1: Theoretical Roadway Capacities

Road Configuration	Capacity (vpd) [a]
2 Lane	12,000
2 Lane - Divided / TWLTL[b]	18,000
3 Lane	18,000
3 Lane - Divided / TWLTL[b]	24,000
4 Lane	24,000
4 Lane - Divided / TWLTL[b]	32,000
6 Lane - Divided / TWLTL[b]	48,000
Interstate	68,000

[a] Values represent planning level daily capacities developed for this Transportation Plan and are intended for comparison purposes only. Actual physical roadway capacity can vary greatly depending on road design features, intersection operations and access control.
[b] TWLTL = two-way, left-turn lane

The capacities shown in **Table 4.1** represent theoretical daily volumes; however, traffic is not evenly distributed during the day. The transportation system experiences significant peaks of demand, especially during the work "rush" hours. These limited times create the greatest periods of stress on the transportation system. By concentrating large volumes in a brief period of time, a road's short-term capacity may be exceeded and a road user's perception of congestion is strongly influenced.

Roadway capacity and volume to capacity (v/c) ratio can be used as a comparison tool when looking at the transportation system. By definition, the v/c ratio is the result of the traffic volume of a roadway divided by the capacity. **Figure 4.6** shows the resultant v/c ratios of the existing major street network. The v/c ratios help identify potential capacity deficiencies for the transportation system.

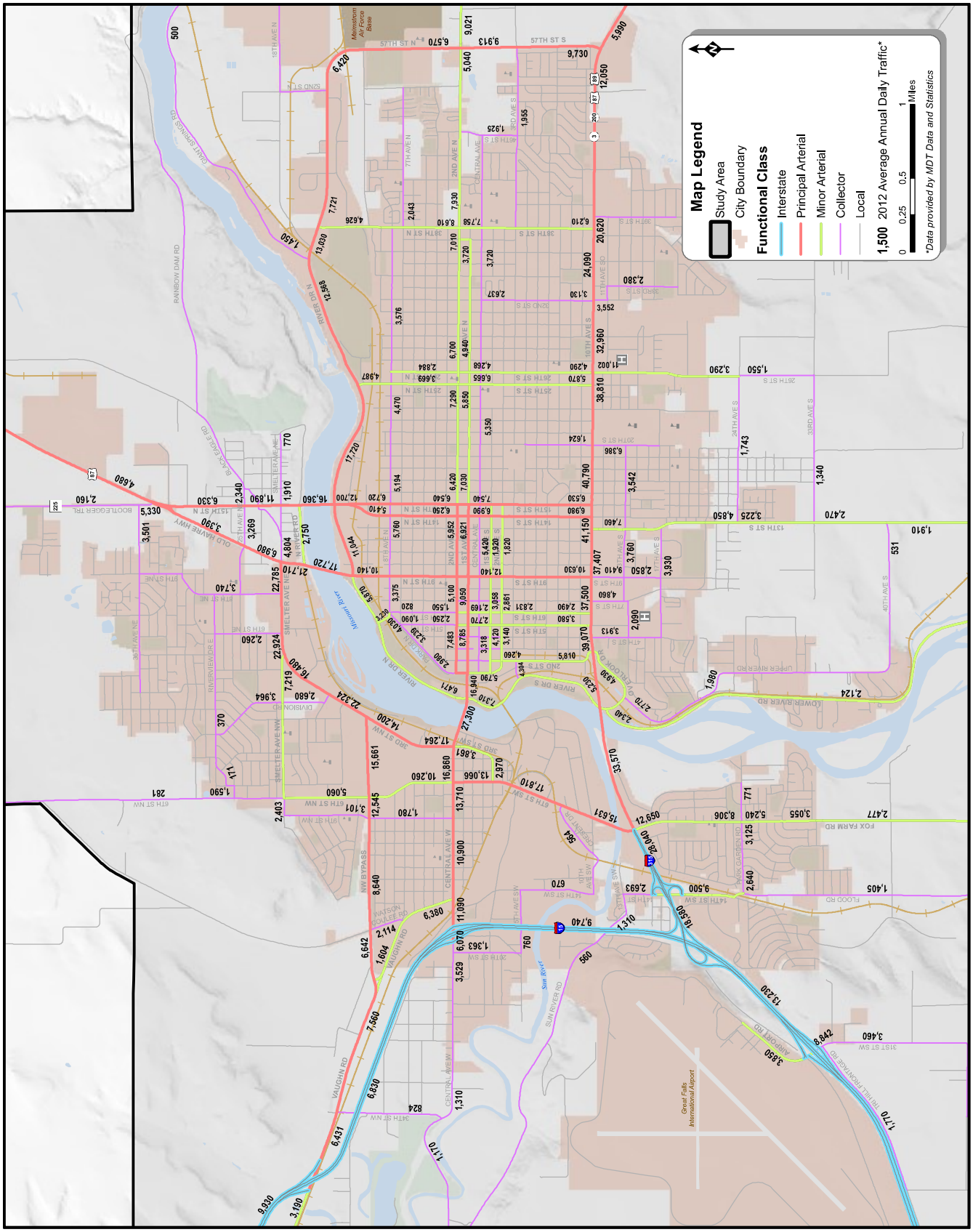


Figure 4.4: Existing Average Annual Daily Traffic

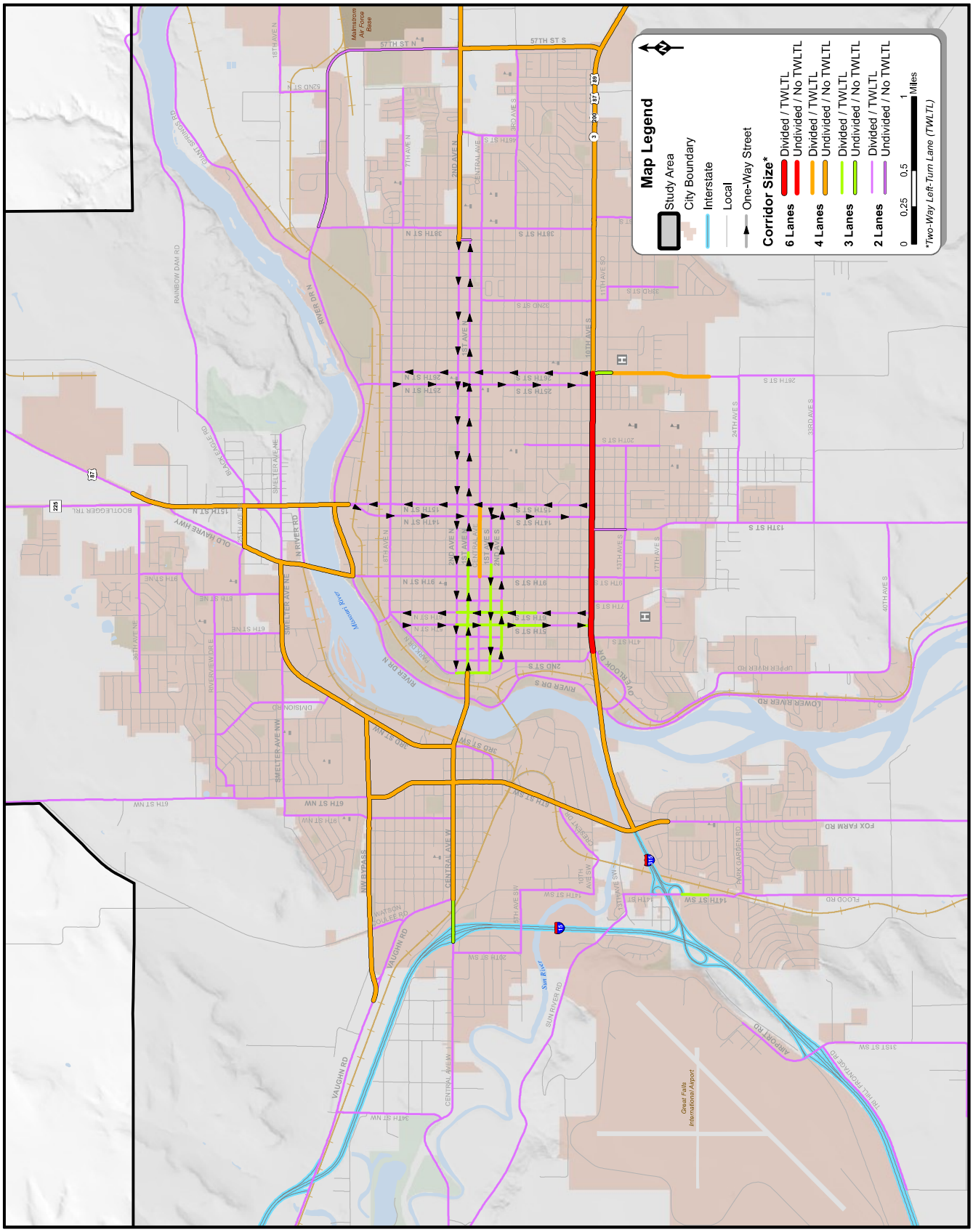


Figure 4.5: Existing Corridor Facility Size

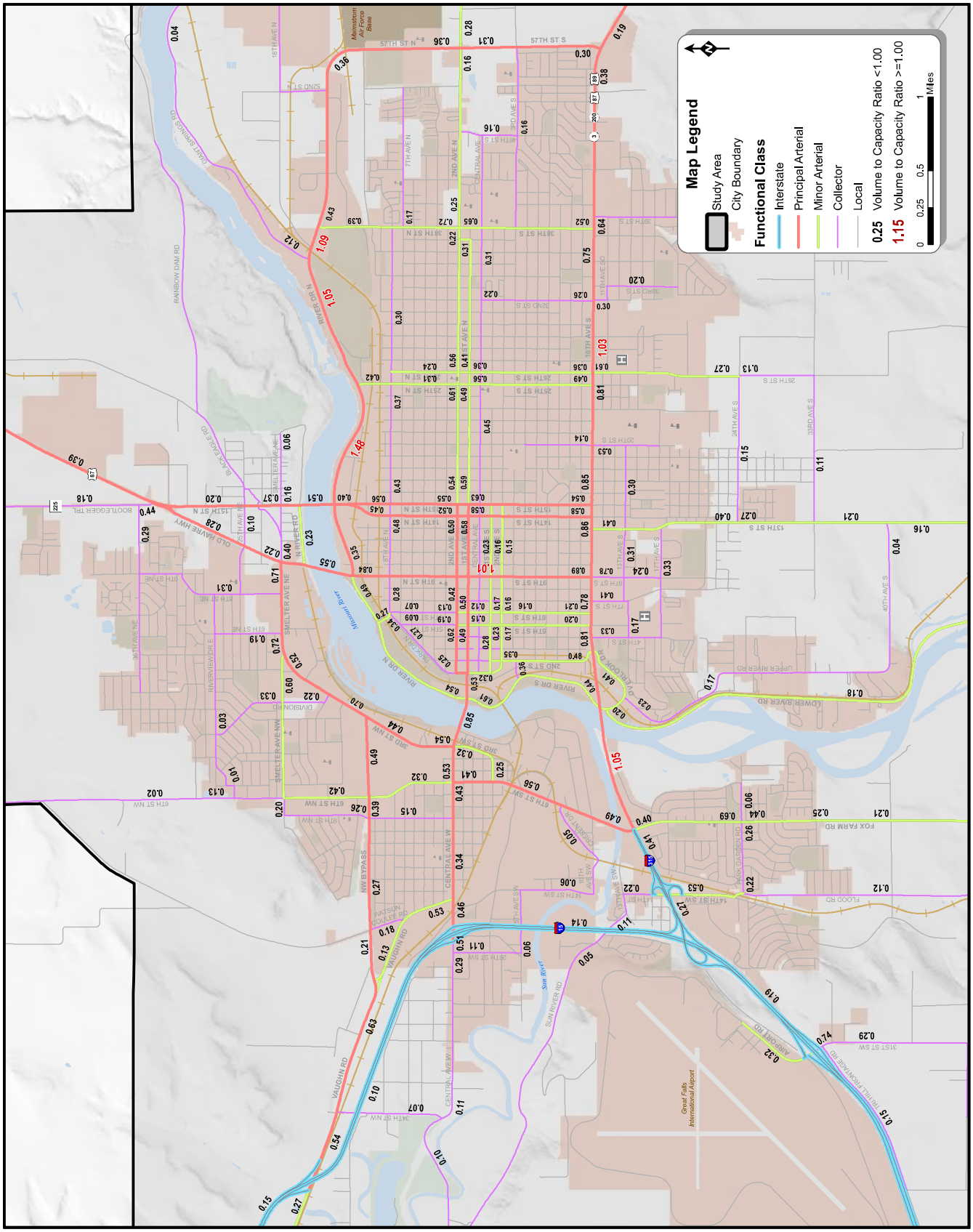


Figure 4.6: Existing Volume to Capacity Ratios

Appendix E – Cascade County Tax Information

PH. (406) 454-6850

CASCADE COUNTY - STATE OF MONTANA

P.O. Box 2549, Great Falls, MT 59403

PARCEL NO.

FLOOD PROPERTIES LLC | Levy Dist: 1-A | Real Estate for Tax Year 2017 | 0002506800

Statement#: 30070 MARKET VALUE: 156,097 MILL LEVY: 555.930 TAXABLE VALUE: 2,884

LAND DESCRIPTION	FUND DESCRIPTION	1ST HALF	2ND HALF	TOTAL DUE
(10) 02-3015-34-1-01-01-0000	CONSERVATION	2.68	2.68	5.36
Acres: 341.820	FOX FARM RID #37	156.78	156.78	313.56
SCT: 34 TWN: 20 RNG: 3E	GORE HILL FIRE	97.00	0.00	97.00
E/FLOOD RD S/2N/2,N/2N/2SE, SW,NENW	SOLID WASTE	60.00	60.00	120.00
E/RD S34,T20N,R3E Mark: 1 & 7	BRIDGE FUND	15.07	15.07	30.14
	COMP INS	0.72	0.72	1.44
	DISTRICT SCHOOL	333.31	333.31	666.62
	ELEM EQUAL	47.59	47.59	95.18
	ELEM RETIREMENT	43.62	43.62	87.24
	EMERG MED SRVCE	0.72	0.72	1.44
	EXTENSION SRVCE	1.88	1.87	3.75
	GENERAL FAIR	10.09	10.09	20.18
	GENERAL FUND	71.70	71.70	143.40
	GF HIGH TUITION	1.23	1.23	2.46
	HEALTH DEPT	9.55	9.55	19.10
	HIGH SCH RETIRE	22.38	22.38	44.76
	HIGH SCHOOL	31.72	31.72	63.44
SITUS: 6750 FOX FARM RD	JUDICIAL	5.77	5.77	11.54
	LIBRARY FUND	5.38	5.38	10.76
	MENTAL HEALTH	0.72	0.72	1.44
	MOSQ CONTROL	2.88	2.88	5.76
	MUSEUMS	2.88	2.88	5.76
	PER MED COUNTY	15.07	15.07	30.14
	PERMISSIVE SHERIFF RETIREMENT	1.51	1.51	3.02
	PLANNING BOARD	5.45	5.45	10.90
	PUBLIC SAFETY	48.18	48.18	96.36
	ROAD FUND	39.89	39.89	79.78
	ROAD MATERIALS	4.76	4.76	9.52
	SCH TRANSPORT	4.76	4.76	9.52
	SEARCH AND RESCUE	0.43	0.43	0.86
	SENIOR CITIZEN	2.16	2.16	4.32
	SPEC TRANSPORT	1.44	1.44	2.88
	ST EQUALIZATION	57.68	57.68	115.36
	UNIVERSITY	8.65	8.65	17.30
	VO-TECH CENTER	2.16	2.16	4.32
	WEED CONTROL	2.31	2.31	4.62

DELINQUENT TAXES	
YEAR	AMOUNT

A complete legal description and tax breakdown is available at http://itax.csa-inc.net/cascadeMT/

NO SECOND HALF NOTICE WILL BE SENT. YOUR CHECK IS YOUR RECEIPT. STUBS (BELOW) MUST ACCOMPANY PAYMENT, FOR A COPY OF YOUR TAX RECEIPT, INCLUDE A SELF ADDRESSED STAMPED ENVELOPE.

PAY	$1,118.12	$1,021.11	$2,139.23
	DUE 11/30/2017	DUE 05/31/2018	OR PAY TOTAL ON:

SEE REVERSE SIDE FOR IMPORTANT INFORMATION

THIS IS A BREAKDOWN OF WHERE YOUR GENERAL TAX DOLLARS GO.	STATE	COUNTY	SCHOOL	CITY	OTHER
	437.12	494.09	669.08	0.00	538.94

1st TAX YEAR 2017

RETURN STUB WITH PAYMENT TO
CASCADE COUNTY TREASURER
P.O. BOX 2549
GREAT FALLS, MT 59403

FLOOD PROPERTIES LLC
BARRETT RUSS
PO BOX 336
FAIRFIELD MT 59436-0336

1ST HALF	2ND HALF	TOTAL DUE
$1,118.12	$1,021.11	$2,139.23
DUE 11/30/2017	DUE 05/31/2018	*0002506800*

0002506800000011181200021392 39

2nd TAX YEAR 2017

RETURN STUB WITH PAYMENT TO
CASCADE COUNTY TREASURER
P.O. BOX 2549
GREAT FALLS, MT 59403

FLOOD PROPERTIES LLC
BARRETT RUSS
PO BOX 336
FAIRFIELD MT 59436-0336

2ND HALF	
$1,021.11	
DUE 05/31/2018	*0002506800*

0002506800000102111000000009

21 TRAFFIC IMPACT STUDY

According to the 7th Edition of the Institute of Transportation Engineers Trip Generation the following vehicle trip projections can be made:

- Single-Family Detached Housing – 9.57 average vehicle trip ends per dwelling unit on a weekday
    - 12 single family lots * 9.57 = 114.8 vpd

Based on this information River Bend Estates Phase III will generate approximately 115 vehicle trips per day.

According to the 2014 Great Falls Area Long Range Transportation Plan (LRTP), Flood Road is an undivided 2 lane collector with no TWLTL. Flood Road has a theoretical roadway capacity of 12,000 vpd. The LRTP indicates the existing average annual daily traffic is 1,405 trips. The existing volume to capacity ratio for Flood Road is 0.082; therefore, Flood Road has adequate capacity to handle the traffic generated from the River Bend Estates Phase III Subdivision. Pages from the LRTP are included below.

The limited traffic increase is not expected to cause an increase in maintenance problems on the existing roads. We do not expect the limited increase in traffic to require additional plowing, mowing, or weed control along Flood Road.

One additional road is proposed to accommodate Phase III. Phase III will also utilize the roads that were designed, approved, and constructed in Phase I. These roads are 26.5’ wide, gravel surfaced, crowned roads with ditches on either side to convey storm water. There are no new approach permits proposed for Phase III onto Flood Road.

4.2. EXISTING ROADWAY VOLUMES AND CAPACITY

Roadway traffic data was collected by MDT, City of Great Falls, and Cascade County. The data was used to establish existing traffic conditions and to provide reliable data on historic traffic volumes. Average annual daily traffic (AADT) counts for the year 2012 were used to represent existing conditions. **Figure 4.4** shows the existing AADT along the major street network. In addition, the major street network was examined to determine the existing facility size. This information is presented in **Figure 4.5**.

Roadway capacity is of critical importance when looking at the growth of a community. As traffic volumes increase, vehicle flow deteriorates. When traffic volumes approach and exceed the available capacity, the road begins to "fail". For this reason it is important to look at the size and configuration of the current roadways and determine if these roads need to be expanded to accommodate the existing or projected traffic needs.

The capacity of a roadway is based on a number of features including number of lanes, intersection function, access and intersection spacing, vehicle fleet mix, roadway geometrics, land use, and vehicle speeds. Individual roadway capacity varies greatly and should be calculated on an individual basis. For planning and comparison purposes, however, theoretical roadway capacities were developed based on simplistic roadway configurations and are shown in **Table 4.1**. These values are not intended to be used to set any thresholds for roadway performance, but rather provide some general information to be used to compare roadway performance.

Table 4.1: Theoretical Roadway Capacities

Road Configuration	Capacity (vpd) [a]
2 Lane	12,000
2 Lane - Divided / TWLTL[b]	18,000
3 Lane	18,000
3 Lane - Divided / TWLTL[b]	24,000
4 Lane	24,000
4 Lane - Divided / TWLTL[b]	32,000
6 Lane - Divided / TWLTL[b]	48,000
Interstate	68,000

[a] Values represent planning level daily capacities developed for this Transportation Plan and are intended for comparison purposes only. Actual physical roadway capacity can vary greatly depending on road design features, intersection operations and access control.
[b] TWLTL = two-way, left-turn lane

The capacities shown in **Table 4.1** represent theoretical daily volumes; however, traffic is not evenly distributed during the day. The transportation system experiences significant peaks of demand, especially during the work "rush" hours. These limited times create the greatest periods of stress on the transportation system. By concentrating large volumes in a brief period of time, a road's short-term capacity may be exceeded and a road user's perception of congestion is strongly influenced.

Roadway capacity and volume to capacity (v/c) ratio can be used as a comparison tool when looking at the transportation system. By definition, the v/c ratio is the result of the traffic volume of a roadway divided by the capacity. **Figure 4.6** shows the resultant v/c ratios of the existing major street network. The v/c ratios help identify potential capacity deficiencies for the transportation system.

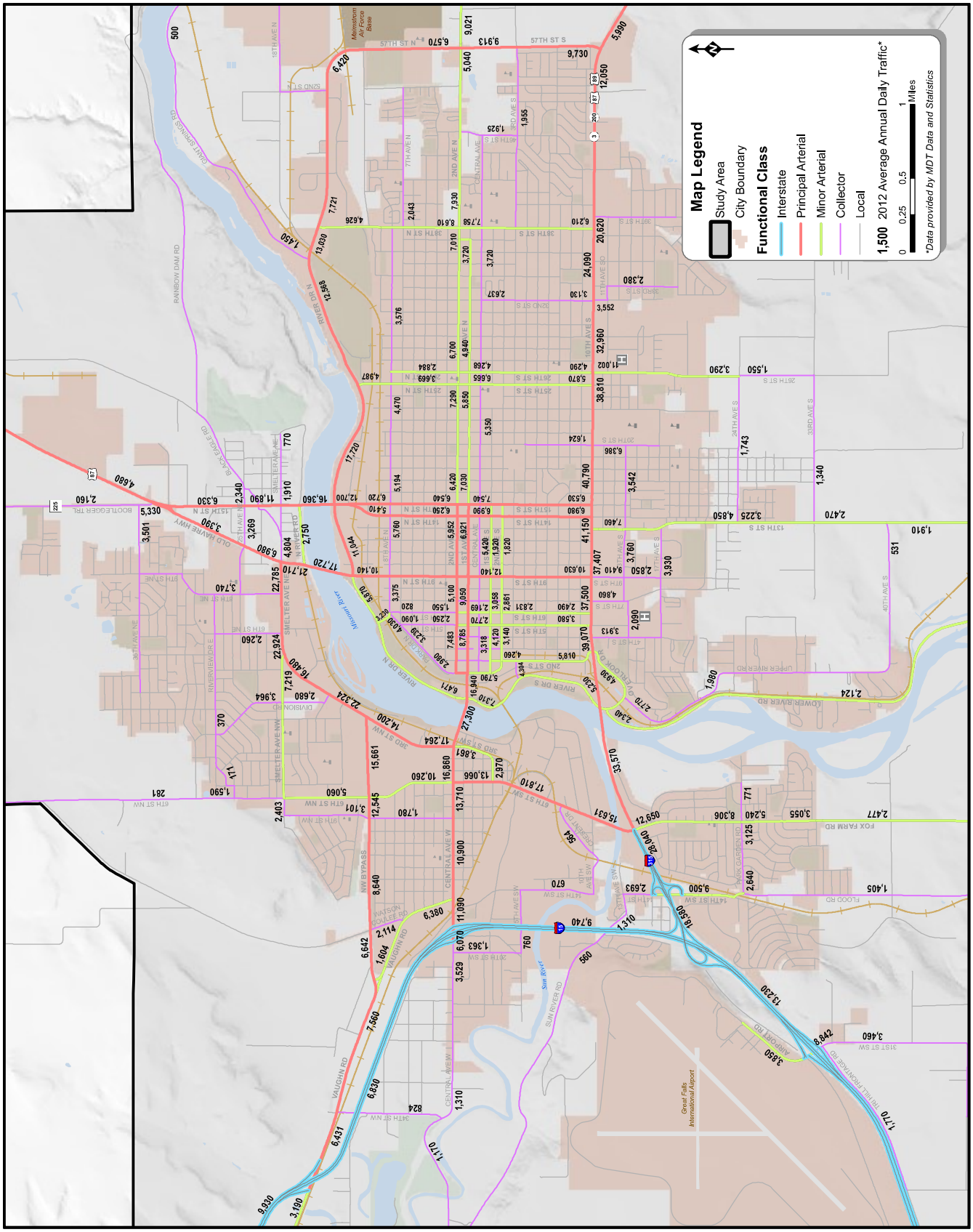


Figure 4.4: Existing Average Annual Daily Traffic

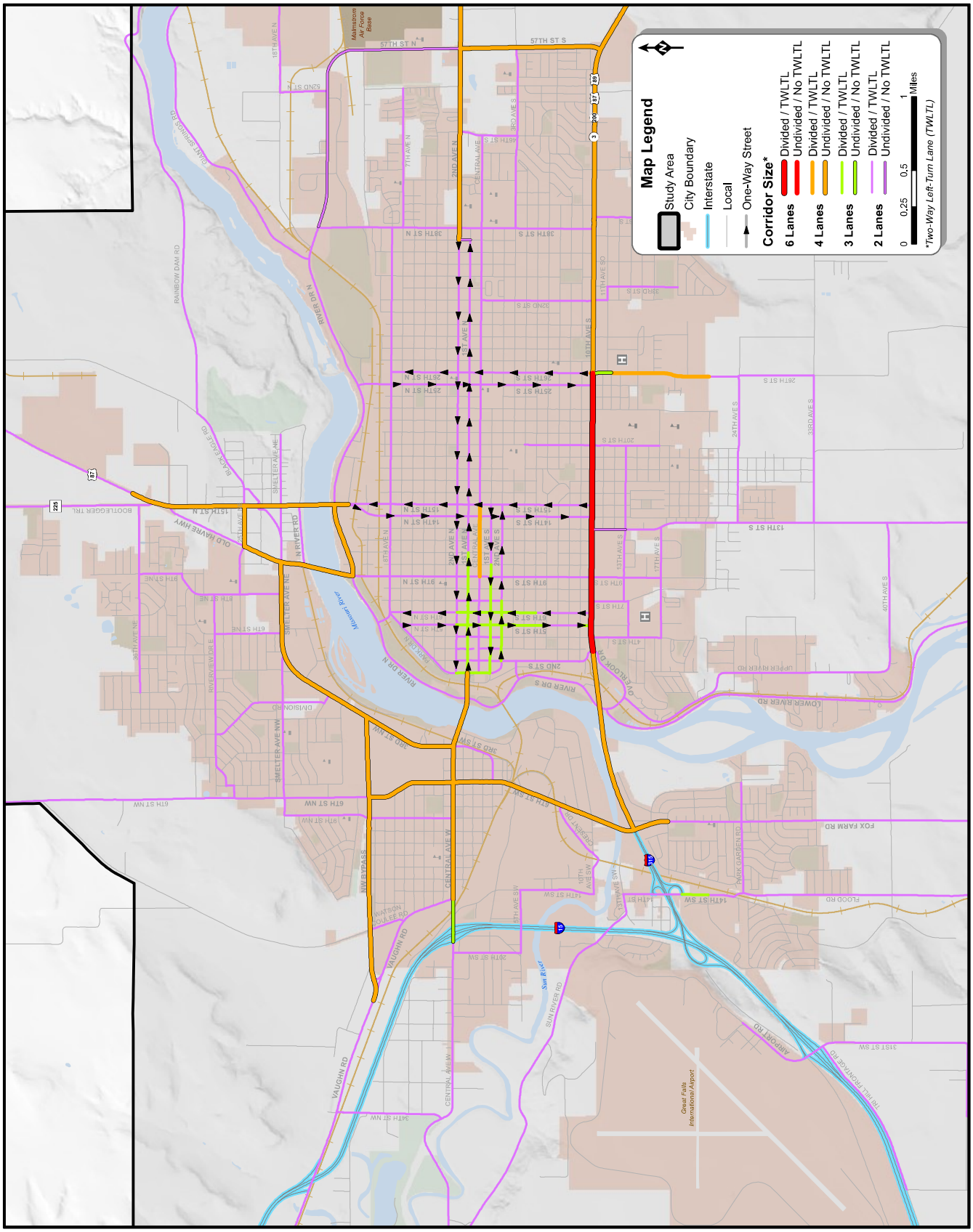


Figure 4.5: Existing Corridor Facility Size

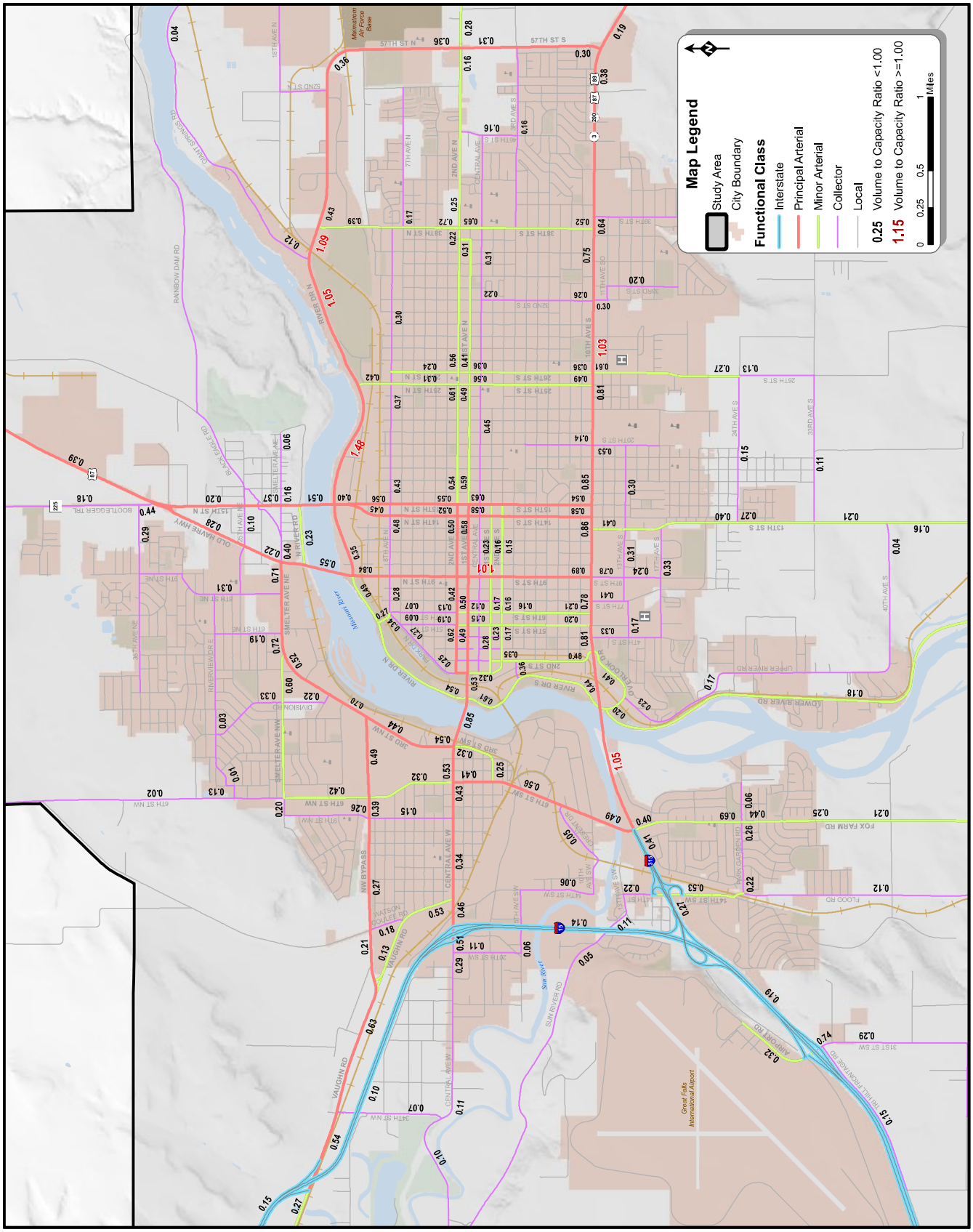


Figure 4.6: Existing Volume to Capacity Ratios

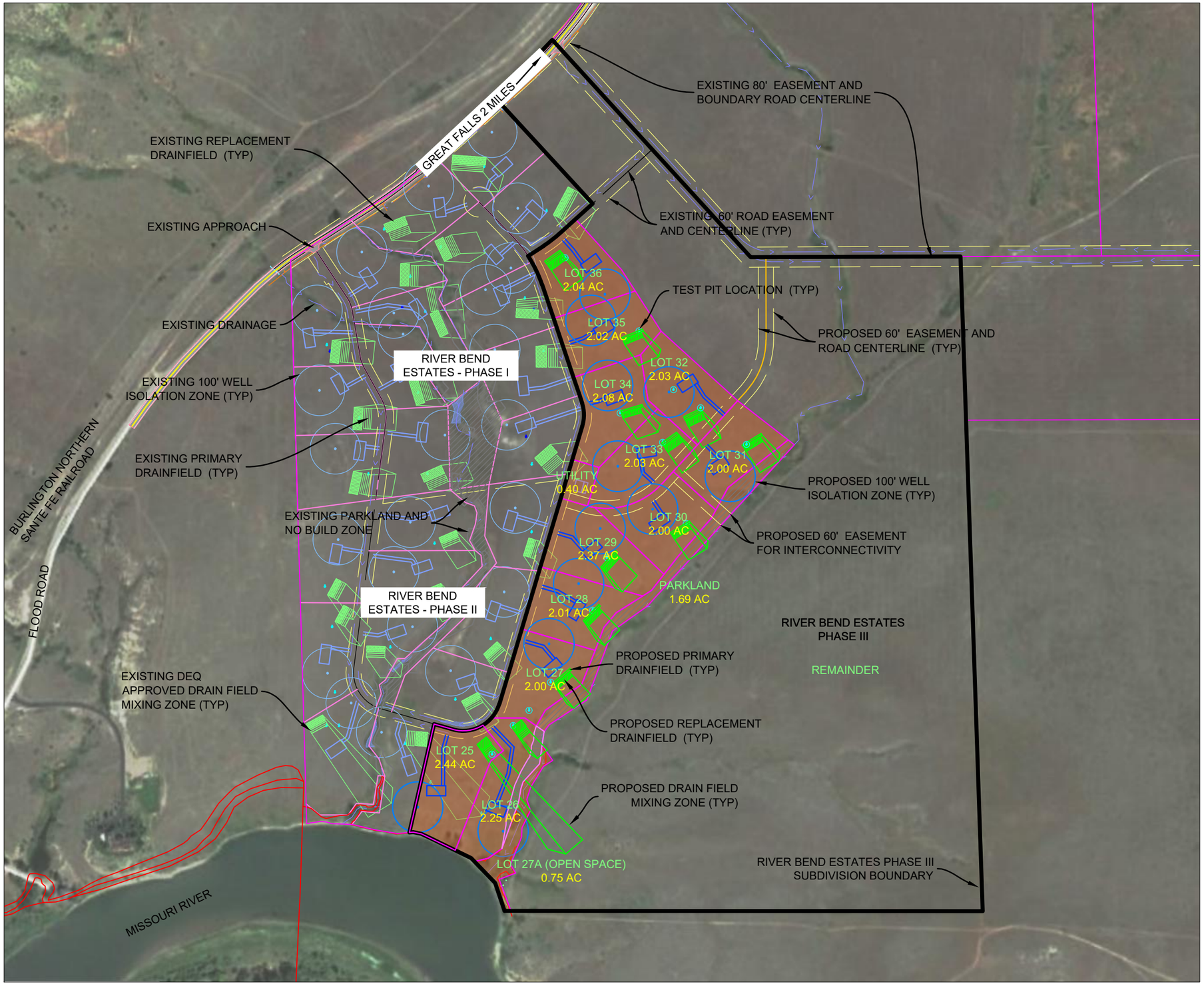
22 MATERIALS SUBMITTED TO CITY COUNTY HEALTH DEPARTMENT FOR WATER AND SANITATION INFORMATION

Test pits were excavated at each proposed drain field location on April 16, 2020 and on July 8th, 2020. The test pit soils were analyzed by Cascade County. The test pit map and information is included below. Also included below is water and sanitation information that will be submitted to the MT DEQ and the Cascade County Health Department.

All 12 residential lots will have their own well and septic system. As outlined in Appendix P of the nondegradation determination rules developed by DEQ, lots 32, 33, and 36 qualify for a Category #1 exemption from the nondegradation requirements and will not require a pressure dosed system being located greater than 1000 feet from the Missouri River. In addition, lots 26 - 31 and 34-35 qualify for a Category #2 exemption and will require a pressured dosed system. Lot 25 does not qualify for a nondegradation exemption and will require Level II treatment and a pressure dosed system.

RIVER BEND ESTATES
PHASE III
DEQ LOT LAYOUT

NOTES:
THERE IS ONE PROPOSED ADDITIONAL ROAD FOR PHASE III. PHASE III WILL ALSO UTILIZE THE ROADS PERMITTED AND CONSTRUCTED FOR RIVER BEND ESTATES PHASE I.



200 0 200 400
SCALE FEET

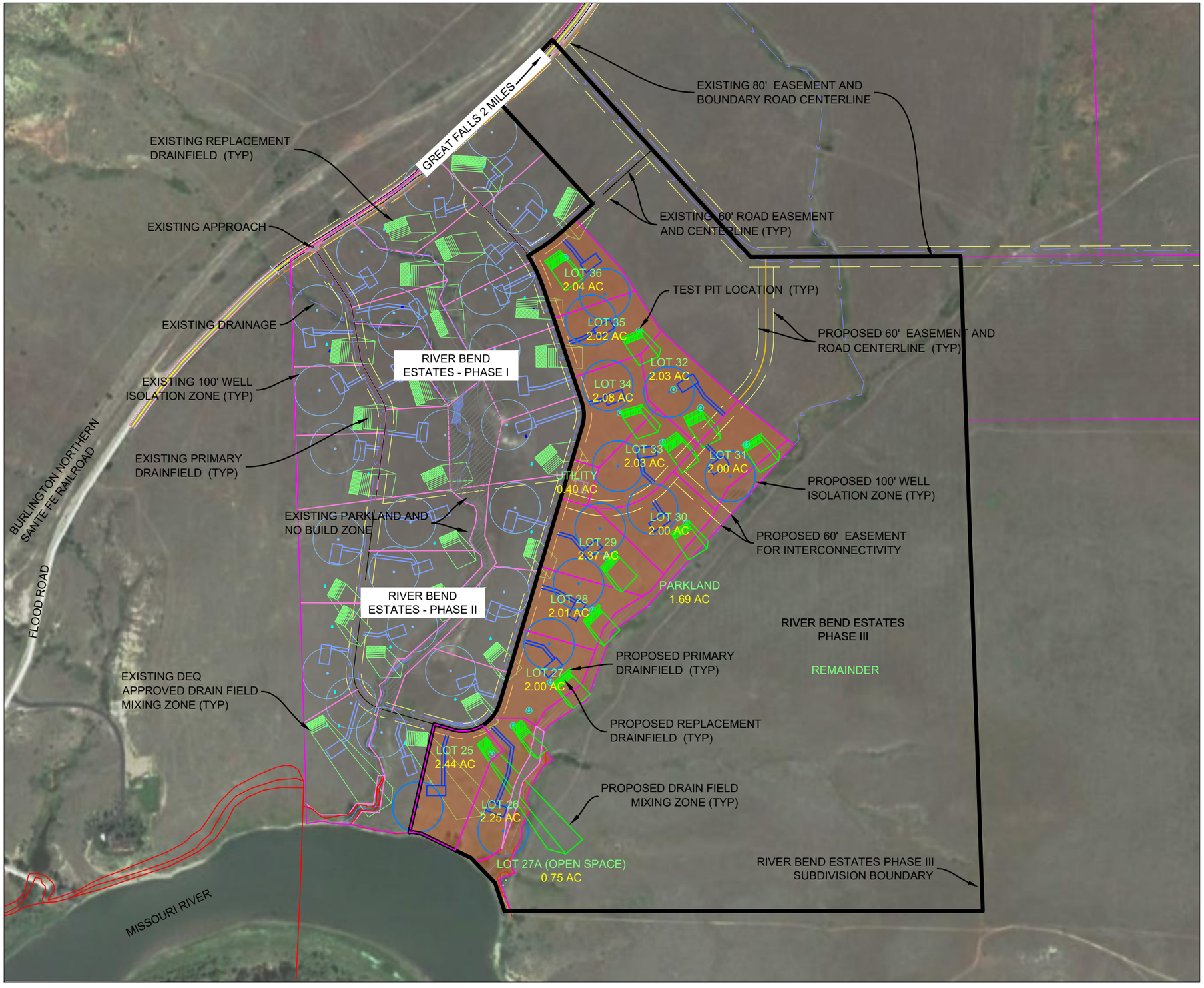
PRELIMINARY
NOT FOR
CONSTRUCTION

TRIPLE TREE ENGINEERING

Jul 30, 2020 - 10:17am - P:\Great Falls\19-72 River Bend Phase III\Preliminary Plat Application\Exhibits\Phase III Prelim Plat Exhibits.dwg

RIVER BEND ESTATES
PHASE III
DEQ LOT LAYOUT

NOTES:
THERE IS ONE PROPOSED ADDITIONAL ROAD FOR PHASE III. PHASE III WILL ALSO UTILIZE THE ROADS PERMITTED AND CONSTRUCTED FOR RIVER BEND ESTATES PHASE I.



200 0 200 400
SCALE FEET

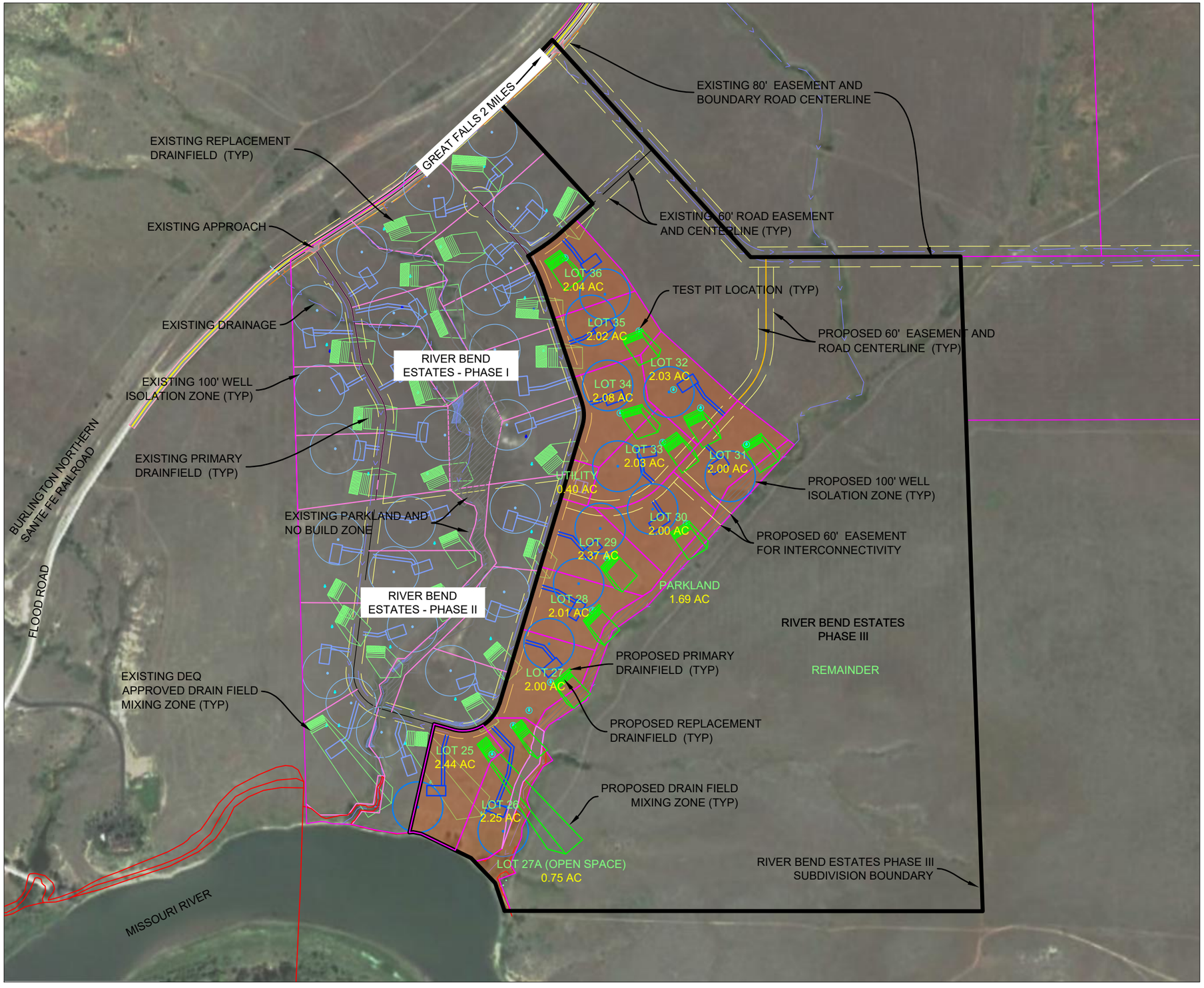
PRELIMINARY
NOT FOR
CONSTRUCTION

TRIPLE TREE ENGINEERING

Jul 30, 2020 - 10:17am - P:\Great Falls\19-72 River Bend Phase III\Preliminary Plat Application\Exhibits\Phase III Prelim Plat Exhibits.dwg

RIVER BEND ESTATES
PHASE III
DEQ LOT LAYOUT

NOTES:
THERE IS ONE PROPOSED ADDITIONAL ROAD FOR PHASE III. PHASE III WILL ALSO UTILIZE THE ROADS PERMITTED AND CONSTRUCTED FOR RIVER BEND ESTATES PHASE I.



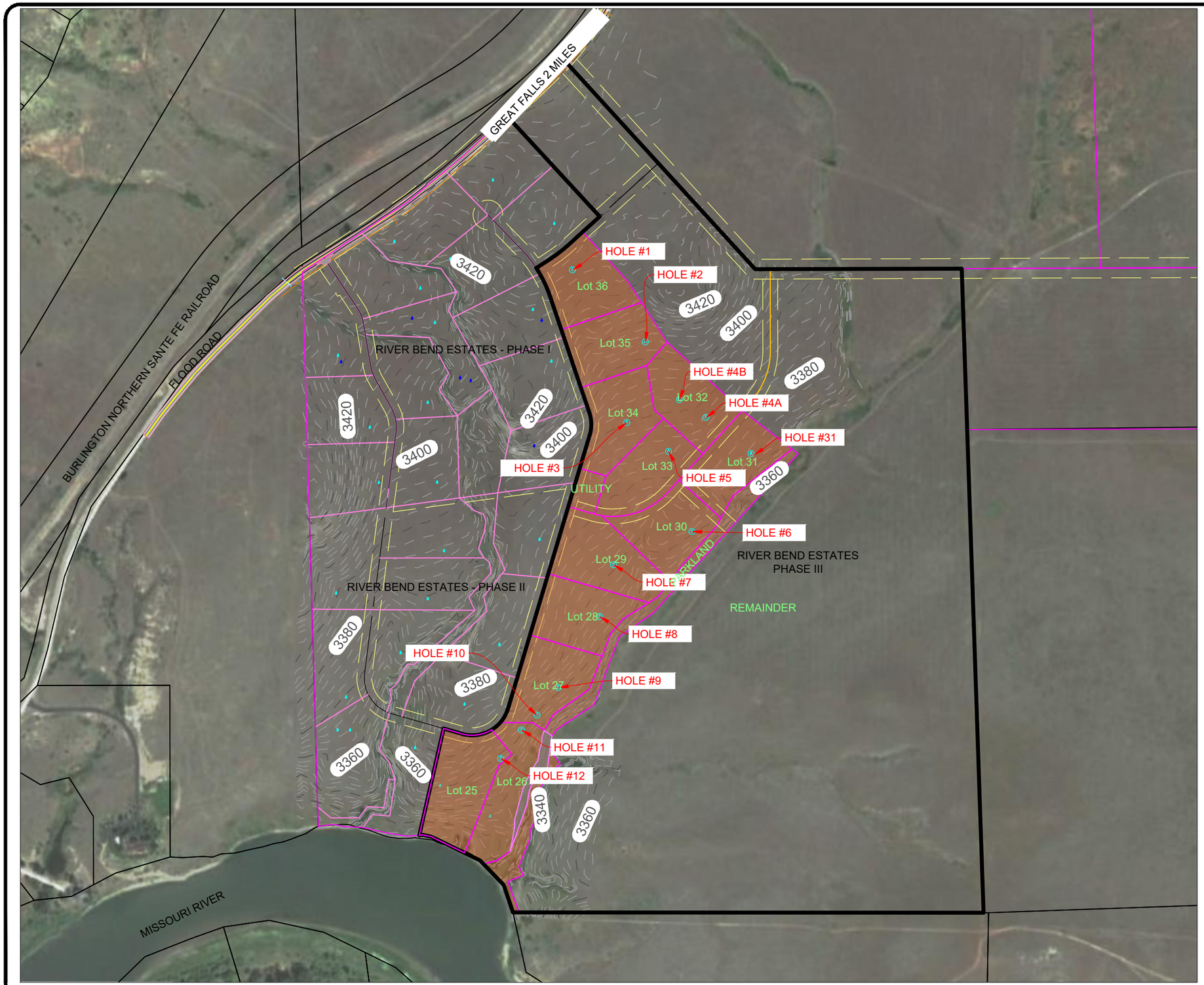
200 0 200 400
SCALE FEET

PRELIMINARY
NOT FOR
CONSTRUCTION

TRIPLE TREE ENGINEERING

Jul 30, 2020 - 10:17am - P:\Great Falls\19-72 River Bend Phase III\Preliminary Plat Application\Exhibits\Phase III Prelim Plat Exhibits.dwg

RIVER BEND ESTATES
PHASE III
Test Pit Exhibit



NOTES:
12 TESTS PITS WERE EXCAVATED ON APRIL 16TH, 2020.. STAFF FROM CASCADE COUNTY LOGGED THE TEST PITS. THE TEST PIT LABELS CORRESPOND WITH THE SOIL PROFILE LOGS PREPARED BY THE COUNTY ON APRIL 17TH, 2020 .
1 ADDITION TEST PIT (#31) WAS EXCAVATED BY THE OWNER AND LOGGED BY CASCADE COUNTY ON JULY 8TH, 2020. THE TEST PIT LABEL CORRESPONDS WITH THE SOIL PROFILE LOG.

200 0 200 400
SCALE FEET

PRELIMINARY
NOT FOR
CONSTRUCTION

TRIPLE TREE
ENGINEERING

Jul 29, 2020 - 2:41pm - P:\Great Falls\19-72 River Bend Phase III\Preliminary Plat Application\Exhibits\Phase III Prelim Plat Exhibits.dwg

TP 12	TP 11	TP 10	TP 9	TP 8	TP-7	TP 6	TP 5	TP 4 A	TP 4 B	TP 3	TP 2	TP 1
Lot 25	Lot 26 & 27	Lot 26 & 27	Lot 28	Lot 29	Lot 30	Lot 31	Lot 33	Lot 32	Lot 32	Lot 34	Lot 35	Lot 36
0.5 gpd/sqf	0.5 gpd/sqf	0.5 gpd/sqf	0.5 gpd/sqf	0.5 gpd/sqf	0.5 gpd/sqf	0.5 gpd/sqf	0.4 gpd/sqf	0.4 gpd/sqf	0.4 gpd/sqf	0.5 gpd/sqf	0.5 gpd/sqf	0.4 gpd/sqf
0"-12" silty loam	0"-12" silty loam	0"-18" silty loam	0"-24" silty loam	0"-16" silty loam	0"-16" silty loam	0"-16" silty loam	0"-16" silty loam	0"-24" silty loam	0"-36" sandy clay loam	0"-18" silty loam	0"-24" silty loam	0"-28" silty loam
12" - 144" fine sandy loam	12"-144" fine sandy loam	18"-144" fine sandy loam	24"-156" fine sandy loam	16"-152" fine sandy loam	16"-154" fine sandy loam	16"-144" fine sandy loam	16"- 120" very fine sandy loam	24"-54" channery sandy clay loam	36"-144" channery sandy clay loam	18"-150" fine sandy loam	24"-144" fine sandy loam	16"-55" gravelly silty loam
							120" - 122" channery very fine sandy loam	54"-98" channery sandy clay loam				

Site Evaluation - SOIL PROFILE

DATE 7-8-2020

Property Owner Rick Higgins Septic (N/R) _____ Subdivision_____ # of Lots____

Property Address_____ Proposed Subdivision Name_____

Contractor Triple Tree Legal: T_____ R_____ Sec_____ 1/4_____1/4_____

Soil Evaluator Bruce Treis Round trip mileage @ $1.00/mile. # RT miles____Amount due_____

Include in the diagram all that apply.

- ☐ Wells
- ☐ Cisterns
- ☐ Existing Buildings
- ☐ Ground Water Sources (springs etc)
- ☐ Flood Plain
- ☐ Replacement Area,
- ☐ Slope (direction & percent)
- ☐ Water sources on adjacent property

N

River Bend Estates Phase 3

Soil profile 1 Lot # 31 Soil profile 2 Lot#_____

Latitude: 47° 26' 27" Latitude:_____

Longitude: 111° 20' 29" Longitude:_____

Identify: soil types and thickness; depth to bed rock, seasonally high ground water, ground water, bottom of hole.

Application Rate: 0.41 Application Rate:_____

Depth in Inches: Soil Type: Depth in Inches: Soil Type:

0-9" fine sandy loam

9"-154" very fine sandy loam

Revised 2019

Appendix H

Hydraulic Gradient Three Point Solution Worksheet

Instructions to determine groundwater (GW) gradient and flow direction based on static water elevations (SWE) of 3 wells.

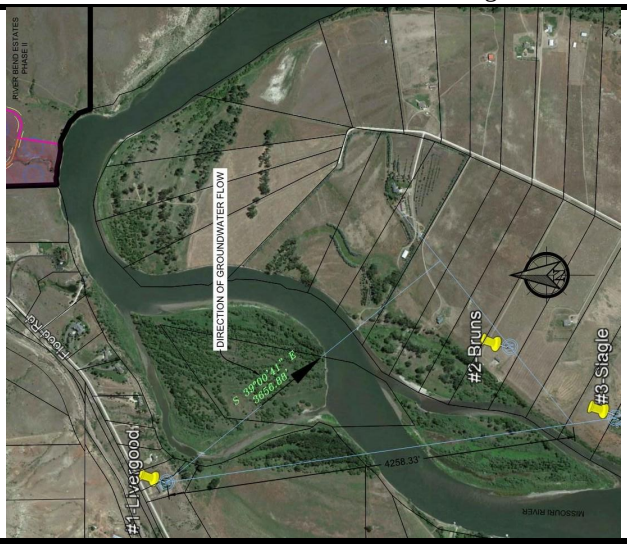
SITE NAME: River Bend Estates - Phase III

A. Record elevation difference and horizontal distances (HD) between the wells:

	Well	Topographic Elevation (ft)		Depth to Static Water (ft bgs*)		SWE (ft)	Wells		HD (ft)	
263995	#1	3396.97	-	77.5	=	3319.47	#1 to #2	=	3833.37	Livergood
216923	#2	3359.77	-	42.1	=	3317.67	#2 to #3	=	1321.20	Bruns
141009	#3	3402.58	-	85.1	=	3317.48	#3 to #1	=	4707.82	Slagle

* bgs = below ground surface

B. Plot the well locations on a scaled diagram



SCALE: 1 ” = 2,032 ’

C. Perform the following calculations:

1. Calculate the position between the High Static Water Elevation (HSWE) well and the Low Static Water Elevation (LSWE) well where the SWE is the same as the Intermediate Static Water Elevation (ISWE).

   (a) HSWE 3319.47 minus LSWE 3317.48 = (a) 1.99 (ft)

   (b) Horizontal distance between HSWE well and LSWE well 4707.82 divided by (a) 1.99

   = (b) 2365.74 (ft/ft)

   (c) HSWE 3319.47 minus ISWE 3317.67 = (c) 1.80 (ft)

   (d) (b) 2365.74 x (c) 1.80 = (d) 4258.33 (ft) (= the horizontal distance between the HSWE well and LSWE well that is equal to the ISWE).

2. Measure the distance (d) from the HSWE well along the line between it and the LSWE well, and plot that position on the diagram.
3. Draw a straight line from the ISWE well to position (d) on the well location diagram. This represents the water level contour line along which the SWE is the same as the ISWE well.
4. Draw a line perpendicular to the ISWE contour line through the HSWE well location on the well location diagram. This is the ground water flow direction (high to low). The distance along this groundwater flow line from the HSWE well to the ISWE contour line is (e).

D. Calculate the Hydraulic Gradient (HG) of the groundwater by dividing (c) by (e).

(c) 1.80 divided by (e) 3656.88 = HG .00049 (ft/ft)

MONTANA WELL LOG REPORT

This well log reports the activities of a licensed Montana well driller, serves as the official record of work done within the borehole and casing, and describes the amount of water encountered. This report is compiled electronically from the contents of the Ground Water Information Center (GWIC) database for this site. Acquiring water rights is the well owner's responsibility and is NOT accomplished by the filing of this report.

Other Options

Go to GWIC website
Plot this site in State Library Digital Atlas
Plot this site in Google Maps
View scanned update/correction (3/27/2012 2:05:03 PM)

Site Name: LIVERGOOD, MICHAEL OR LAURA
GWIC Id: 263995
DNRC Water Right: C30062950

Section 1: Well Owner(s)

1) LIVERGOOD, MICHAEL OR LAURA (WELL)
349 FLOOD RD
GREAT MT 59404 [12/29/2011]

Section 2: Location

Township	Range	Section	Quarter Sections
19N	03E	4	NE¼ NE¼

County
CASCADE

Geocode

Latitude	Longitude	Geomethod	Datum
47.4337	-111.3609	NAV-GPS	WGS84

Ground Surface Altitude **Ground Surface Method** **Datum** **Date**

Addition **Block** **Lot**

Section 3: Proposed Use of Water

DOMESTIC (1)

Section 4: Type of Work

Drilling Method: ROTARY
Status: NEW WELL

Section 5: Well Completion Date

Date well completed: Thursday, December 29, 2011

Section 6: Well Construction Details

Borehole dimensions

From	To	Diameter
0	145	6.1

Casing

From	To	Diameter	Wall Thickness	Pressure Rating	Joint	Type
-1.5	38.5	6	0.25	540.0	WELDED	A53B STEEL
15	145	4	0.25	240.0	SOLVENT WELD	PVC-SCHED 40

Completion (Perf/Screen)

From	To	Diameter	# of Openings	Size of Openings	Description

Section 7: Well Test Data

Total Depth: 145
Static Water Level: 70
Water Temperature:

Air Test *

20 gpm with drill stem set at 145 feet for 1 hours.
Time of recovery 0.17 hours.
Recovery water level 70 feet.
Pumping water level _ feet.

** During the well test the discharge rate shall be as uniform as possible. This rate may or may not be the sustainable yield of the well. Sustainable yield does not include the reservoir of the well casing.*

Section 8: Remarks

Section 9: Well Log

Geologic Source

217KOTN - KOOTENAI FORMATION

From	To	Description
0	1	SOILS
1	46	GRAY SANDSTONE
46	55	BROWN SANDSTONE
55	63	RED SHALE
63	104	GRAY SANDSTONE
104	116	RED SHALE
116	123	GRAY SHALE
123	142	LIGHT GRAY SANDSTONE WATER
142	145	RED SHALE

Driller Certification

All work performed and reported in this well log is in compliance with the Montana well construction standards. This report is true to the best of my knowledge.

125	145	4	32	1/8BY6"	SAW SLOTS

Annular Space (Seal/Grout/Packer)

From	To	Description	Cont. Fed?
0	38.5	CASING SEAL	Y

Name: TORY WING
Company: AAAA WATER WELL DRILLING INC
License No: WWD-177
Date Completed: 12/29/2011

ANALYTICAL SUMMARY REPORT

January 08, 2019

Rick Higgins
PO Box 322
Ulm, MT 59485-0322

Work Order: H19010053

Project Name: River Bend Estates

Energy Laboratories Inc Helena MT received the following 1 sample for Rick Higgins on 1/7/2019 for analysis.

Lab ID	Client Sample ID	Collect Date	Receive Date	Matrix	Test
H19010053-001	Livergood	01/05/19 12:30	01/07/19	Aqueous	Conductivity Nitrogen, Nitrate + Nitrite

This is a preliminary report that contains incomplete data or data that has not been fully validated. Caution should be exercised in the use of any data presented as final reported results may not reflect the values presented.

If you have any questions regarding these tests results, please call 406-442-0711 or 877-472-0711.

Report Approved By:

LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: Rick Higgins
Project: River Bend Estates
Lab ID: H19010053-001
Client Sample ID: Livergood

Report Date: 01/08/19
Collection Date: 01/05/19 12:30
DateReceived: 01/07/19
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL PROPERTIES							
Conductivity @ 25 C	2410	umhos/cm		1		A2510 B	01/07/19 11:31 / SRW
NUTRIENTS							
Nitrogen, Nitrate+Nitrite as N	ND	mg/L		0.01		E353.2	01/07/19 16:05 / kmd

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

PRELIMINARY

Work Order Receipt Checklist

Rick Higgins

H19010053

Login completed by: Jessica C. Smith

Date Received: 1/7/2019

Reviewed by: BL2000\rtooke

Received by: JCS

Reviewed Date: 1/8/2019

Carrier name: Hand Del

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on all shipping container(s)/cooler(s)?	Yes ☐	No ☐	Not Present ☑
Custody seals intact on all sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time? (Exclude analyses that are considered field parameters such as pH, DO, Res Cl, Sulfite, Ferrous Iron, etc.)	Yes ☑	No ☐	
Temp Blank received in all shipping container(s)/cooler(s)?	Yes ☑	No ☐	Not Applicable ☐
Container/Temp Blank temperature:	-1.4°C No Ice		
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH acceptable upon receipt?	Yes ☐	No ☑	Not Applicable ☐

Standard Reporting Procedures:

Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH, Dissolved Oxygen and Residual Chlorine, are qualified as being analyzed outside of recommended holding time.

Solid/soil samples are reported on a wet weight basis (as received) unless specifically indicated. If moisture corrected, data units are typically noted as –dry. For agricultural and mining soil parameters/characteristics, all samples are dried and ground prior to sample analysis.

Contact and Corrective Action Comments:

Nutrients samples were preserved to pH <2 with 2 mL of sulfuric acid per 250 mL in the laboratory upon receipt. JCS 01/07/19

ENERGY LABORATORIES
Trust our People. Trust our Data.

Chain of Custody & Analytical Request Record

www.energylab.com

Page _____ of _____

Account Information (Billing information)

Company/Name	Rick Higgins
Contact	Rick Higgins
Phone	406.788.4806
Mailing Address	PO Box 327
City, State, Zip	Ulm MT 59485
Email	
Receive Invoice	☑ Hard Copy ☐ Email
Receive Report	☐ Hard Copy ☐ Email
Purchase Order	
Quote	
Bottle Order	

Report Information (if different than Account Information)

Company/Name	Triple Tree Engineering
Contact	Scott Pfahler
Phone	406.461.9573
Mailing Address	
City, State, Zip	
Email	spfahler@tripletreemt.com
Receive Report	☐ Hard Copy ☐ Email

Special Report/Formats:
☐ LEVEL IV ☐ NELAC ☐ EDD/EDT (contact laboratory) ☐ Other_____

Comments

Hold samples Slagle & Bruns pending results of Livergood.
Rush ASAP

Project Information

Project Name, PWSID, Permit, etc.	River Bend Estates
Sampler Name	Rick Higgins
Sampler Phone	406.788.4806
Sample Origin State	
EPA/State Compliance	☐ Yes ☐ No

MINING CLIENTS, please indicate sample type.
*If ore has been processed or refined, call before sending.
☐ Byproduct 11 (e)2 material ☐ Unprocessed ore (NOT ground or refined)*

Matrix Codes
A - Air
W - Water
S - Soils/Solids
V - Vegetation
B - Bioassay
O - Other
DW - Drinking Water

All turnaround times are standard unless marked as RUSH.
Energy Laboratories MUST be contacted prior to RUSH sample submittal for charges and scheduling – See Instructions Page

	Sample Identification (Name, Location, Interval, etc.)	Collection Date	Collection Time	Number of Containers	Matrix (See Codes Above)	Conductivity	N+N	See Attached	RUSH TAT	ELI LAB ID (Laboratory Use Only)
1	Livergood	1/5/19	12:30	2	W					
2	Slagle	1/5/19	10:30am	2	W				X	H19010053
3	Bruns	1/5/19	10:45am	2	W					
4										
5										
6										
7										
8										
9										
10										

Custody Record MUST be signed	Relinquished by (print)	Date/Time	Signature	Received by (print)	Date/Time	Signature
	Scott Pfahler	1/7/19 8:32am	Scott Pfahler			
	Relinquished by (print)	Date/Time	Signature	Received by Laboratory (print)	Date/Time	Signature
				JESSICA SMITH	1-7-19 8:32	

LABORATORY USE ONLY

Shipped By	Cooler ID(s)	Custody Seals	Intact	Receipt Temp	Temp Blank	On Ice	Payment Type	Amount	Receipt Number (cash/check only)
HAND	583	Y (N) C B	Y N	-1.4 °C	(Y) N	Y (N)	CC Cash Check_____	$	

In certain circumstances, samples submitted to Energy Laboratories, Inc. may be subcontracted to other certified laboratories in order to complete the analysis requested. This serves as notice of this possibility. All subcontracted data will be clearly notated on your analytical report.

MONTANA WELL LOG REPORT

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Other Options

Go to GWIC website
Plot this site in State Library Digital Atlas
Plot this site in Google Maps
View scanned well log (7/12/2006 10:39:46 AM)

Site Name: BRUNS BECKY
GWIC Id: 216923

Section 1: Well Owner(s)

1) BRUNS, BECKY (MAIL)
2115 9TH AVENUE SOUTH
GREAT FALLS MT 59405 [11/15/2004]

Section 2: Location

Township	Range	Section	Quarter Sections
19N	03E	4	SW¼ SE¼

County
CASCADE

Geocode

Latitude	Longitude	Geomethod	Datum
47.422414	-111.356395	TRS-SEC	NAD83

Ground Surface Altitude **Ground Surface Method** **Datum** **Date**

Addition **Block** **Lot**

Section 3: Proposed Use of Water

DOMESTIC (1)

Section 4: Type of Work

Drilling Method: ROTARY
Status: NEW WELL

Section 5: Well Completion Date

Date well completed: Monday, November 15, 2004

Section 6: Well Construction Details

Borehole dimensions

From	To	Diameter
0	18.5	12
18.5	115	8

Casing

From	To	Diameter	Wall Thickness	Pressure Rating	Joint	Type
1.5	18.5	8	0.250		WELDED	STEEL
10	115	5		200.00	SOLVENT WELD	PVC

Completion (Perf/Screen)

From	To	Diameter	# of Openings	Size of Openings	Description

Section 7: Well Test Data

Total Depth: 115
Static Water Level: 68
Water Temperature:

Air Test *

25 gpm with drill stem set at 115 feet for 2 hours.
Time of recovery 0.25 hours.
Recovery water level 68 feet.
Pumping water level _ feet.

** During the well test the discharge rate shall be as uniform as possible. This rate may or may not be the sustainable yield of the well. Sustainable yield does not include the reservoir of the well casing.*

Section 8: Remarks

Section 9: Well Log

Geologic Source
217KOTN - KOOTENAI FORMATION

From	To	Description
0	4	SANDY TOPSOIL
4	13	BROWN SANDSTONE
13	27	BROWN SHALE & SANDSTONE
27	38	RED SHALE
38	55	RED & GRAY SHALE
55	88	LIGHT GRAY SHALE
88	112	GRAY SANDSTONE
112	115	GRAY SHALE

Driller Certification

All work performed and reported in this well log is in compliance with the Montana well construction standards. This report is true to the best of my knowledge.

90	115	5	75	0.25	DRILLED HOLES

Annular Space (Seal/Grout/Packer)

From	To	Description	Cont. Fed?
0	18.5	BENTONITE & CEMENT	
89	89	RUBBER TRAP	

Name:
Company: BOLAND DRILLING
License No: WWC-482
Date Completed: 11/15/2004

MONTANA WELL LOG REPORT

This well log reports the activities of a licensed Montana well driller, serves as the official record of work done within the borehole and casing, and describes the amount of water encountered. This report is compiled electronically from the contents of the Ground Water Information Center (GWIC) database for this site. Acquiring water rights is the well owner's responsibility and is NOT accomplished by the filing of this report.

Other Options

Go to GWIC website
Plot this site in State Library Digital Atlas
Plot this site in Google Maps
View scanned well log (7/12/2006 10:32:39 AM)

Site Name: SLAGLE GAYLE
GWIC Id: 141009
DNRC Water Right: C88208-00

Section 1: Well Owner(s)

1) SLAGLE, GAYLE (MAIL)
4806 3RD AVE S.
GREAT FALLS MT 59405 [01/24/1994]

Section 2: Location

Township	Range	Section	Quarter Sections
19N	03E	4	NE¼ SW¼ SE¼

County
CASCADE

Geocode

Latitude	Longitude	Geomethod	Datum
47.423373	-111.355042	TRS-SEC	NAD83

Ground Surface Altitude	Ground Surface Method	Datum	Date

Addition	Block	Lot
CMR ADDITION		

Section 3: Proposed Use of Water

DOMESTIC (1)

Section 4: Type of Work

Drilling Method: ROTARY
Status: NEW WELL

Section 5: Well Completion Date

Date well completed: Monday, January 24, 1994

Section 6: Well Construction Details

Borehole dimensions

From	To	Diameter
0	20	9
20	180	6

Casing

From	To	Diameter	Wall Thickness	Pressure Rating	Joint	Type
-2	20	6				STEEL
10	180	5				PVC

Completion (Perf/Screen)

From	To	Diameter	# of	Size of	Description

Section 7: Well Test Data

Total Depth: 180
Static Water Level: 90
Water Temperature:

Air Test *

30 gpm with drill stem set at _ feet for 1 hours.
Time of recovery 0.5 hours.
Recovery water level 90 feet.
Pumping water level 160 feet.

** During the well test the discharge rate shall be as uniform as possible. This rate may or may not be the sustainable yield of the well. Sustainable yield does not include the reservoir of the well casing.*

Section 8: Remarks

Section 9: Well Log

Geologic Source

217KOTN - KOOTENAI FORMATION

From	To	Description
0	10	GRAVEL
10	27	RED SHALE AND ROCK
27	37	RED AND GRAY SANDSTONE AND SHALE
37	45	GRAY BROWN SANDSTONE W/SOME SHALE
45	53	LIGHT GRAY SHALE
53	59	HARD LIGHT GRAY SANDSTONE
59	63	DARK GRAY SHALE
63	68	HARD GRAY SANDSTONE
68	76	GRAY SANDY SHALE
76	80	BROWN SANDSTONE
80	82	LIGHT GRAY SHALE
82	86	HARD RED AND GRAY SANDSTONE
86	90	VERIGATED SHALE
90	101	HARD RED SANDROCK
101	113	HARD LIGHT GRAY ROCK

Driller Certification

All work performed and reported in this well log is in compliance with the Montana well construction standards. This report is true to the best of my knowledge.

			Openings	Openings	
165	175	5		.125X4	SAW SLOTS

Annular Space (Seal/Grout/Packer)

From	To	Description	Cont. Fed?
0	20	BENTONITE SLURRY	

Name:
Company: BYRNE
License No: WWC-318
Date Completed: 1/24/1994

Site Name: SLAGLE GAYLE
GWIC Id: 141009
Additional Lithology Records

From	To	Description
113	125	GRAY STICKY SHALE
125	143	DARK GRAY STICKY SHALE
143	146	GRAY GREEN SANDY SHALE
146	180	LIGHT GRAY SANDSTONE WATER AT 172

HYDRAULIC CONDUCTIVITY

SITE NAME: River Bend Estates - Phase III
COUNTY: Cascade
LOT #:
NOTES:

		AM BOGGS WELL		DAVIDSON WELL		ODGEN WELL		SCHUMACHER WELL	
	GWIC ID #	186449		139018		33336		120979	
Variables	**Description**	**Value**	**Units**	**Value**	**Units**	**Value**	**Units**	**Value**	**Units**
Q	Pumping Rate	60.00	gpm	30.00	gpm	14.00	gpm	60.00	gpm
s	Drawdown	75.00	ft*	32.00	ft	20.00	ft	86.00	ft
b	Acquifer Thickness	10.00	ft	18.00	ft	10.00	ft	3.00	ft
EQUATIONS									
T	Transmissivity = [(Q/s)(1500)]/7.48	160.43	$feet^2$/day	188.00	$feet^2$/day	140.37	$feet^2$/day	139.91	$feet^2$/day
K	Hydraulic Conductivity = T/b	16.04	ft/day	10.44	ft/day	14.04	ft/day	46.64	ft/day
	Average K			**21.79**	**ft/day**				

*Pumping water level was not recorded and assumed to be the depth the drill stem was set at during the air test.

MONTANA WELL LOG REPORT

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Other Options

Go to GWIC website
Plot this site in State Library Digital Atlas
Plot this site in Google Maps
View scanned well log (7/12/2006 10:38:24 AM)

Site Name: AM BOGGS AND SONS INC
GWIC Id: 186449
DNRC Water Right: C115117-00

Section 1: Well Owner(s)

1) AM BOGS AND SONS INC. (MAIL)
224 RUSSELL RANCH LANE
GREAT FALLS MT 59405 [09/18/2000]

Section 2: Location

Township	Range	Section	Quarter Sections
19N	03E	4	SW¼ NE¼ SE¼

County
CASCADE

Geocode

Latitude	Longitude	Geomethod	Datum
47.425289	-111.352336	TRS-SEC	NAD83

Ground Surface Altitude	Ground Surface Method	Datum	Date

Addition	Block	Lot
CM RUSSELL RIVER RANCH		34

Section 3: Proposed Use of Water

DOMESTIC (1)

Section 4: Type of Work

Drilling Method: ROTARY
Status: NEW WELL

Section 5: Well Completion Date

Date well completed: Monday, September 18, 2000

Section 6: Well Construction Details

Borehole dimensions

From	To	Diameter
0	27	9
27	120	6

Casing

From	To	Diameter	Wall Thickness	Pressure Rating	Joint	Type
-1.5	27	6	0.250			STEEL
20	120	4		160.00		PVC

Completion (Perf/Screen)

From	To	Diameter	# of	Size of	Description

Section 7: Well Test Data

Total Depth: 120
Static Water Level: 25
Water Temperature:

Air Test *

60 gpm with drill stem set at 100 feet for 1 hours.
Time of recovery 0.25 hours.
Recovery water level 25 feet.
Pumping water level _ feet.

** During the well test the discharge rate shall be as uniform as possible. This rate may or may not be the sustainable yield of the well. Sustainable yield does not include the reservoir of the well casing.*

Section 8: Remarks

Section 9: Well Log

Geologic Source

217KOTN - KOOTENAI FORMATION

From	To	Description
0	10	SAND AND CLAY
10	20	GRAVEL
20	24	RED SANDY SHALE
24	29	GRAY SANDSTONE
29	34	RUSTY BROWN SANDSTONE
34	37	BROWN SANDSTONE
37	51	FIRM RED SHALE
51	57	SOFT RED SHALE
57	74	RED SHALEROCK W/ SANDSTONE
74	82	GRAY SANDROCK
82	90	RED SANDSTONE AND SHALE
90	102	BROWN RUSTY SANDSTONE
102	112	DARK GRAY SHALE
112	117	SOFT GRAY SHALE
117	120	RED SHALE

Driller Certification

All work performed and reported in this well log is in compliance with the Montana well construction standards. This report is true to the best of my knowledge.

			Openings	Openings	
90	100	4		1/8 X 5	SAW SLOTS

Annular Space (Seal/Grout/Packer)

From	To	Description	Cont. Fed?
0	27	BENTONITE	
89	89	SHALE TRAP	

Name:
Company: BYRNE
License No: WWC-317
Date Completed: 9/18/2000

MONTANA WELL LOG REPORT

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Other Options

Return to menu
Plot this site in State Library Digital Atlas
Plot this site in Google Maps
View scanned well log (7/12/2006 10:25:52 AM)

Site Name: DAVIDSON IAN
GWIC Id: 139018
DNRC Water Right: C88151-00

Section 1: Well Owner(s)

1) DAVIDSON, IAN (MAIL)
3340 14TH AVE SO
GREAT FALLS MT 59405 [07/11/1993]

Section 2: Location

Township	Range	Section	Quarter Sections
19N	03E	4	NE¼ NW¼ NE¼

County
CASCADE

Geocode

Latitude	Longitude	Geomethod	Datum
47.434871	-111.355042	TRS-SEC	NAD83

Ground Surface Altitude	Ground Surface Method	Datum	Date

Addition	Block	Lot
MONTE VISTA		17 AND 18

Section 3: Proposed Use of Water

DOMESTIC (1)

Section 4: Type of Work

Drilling Method: UNKNOWN
Status: NEW WELL

Section 5: Well Completion Date

Date well completed: Sunday, July 11, 1993

Section 6: Well Construction Details

Borehole dimensions

From	To	Diameter
0	75	9
75	120	6

Casing

From	To	Diameter	Wall Thickness	Pressure Rating	Joint	Type
-1.5	75	6				STEEL
10	120	5				PVC

Completion (Perf/Screen)

From	To	Diameter	# of	Size of	Description

Section 7: Well Test Data

Total Depth: 120
Static Water Level: 18
Water Temperature:

Air Test *

30 gpm with drill stem set at _ feet for 1 hours.
Time of recovery 0.25 hours.
Recovery water level 18 feet.
Pumping water level 50 feet.

** During the well test the discharge rate shall be as uniform as possible. This rate may or may not be the sustainable yield of the well. Sustainable yield does not include the reservoir of the well casing.*

Section 8: Remarks

Section 9: Well Log

Geologic Source

217KOTN - KOOTENAI FORMATION

From	To	Description
0	18	SANDY CLAY LOAM W/SOME FLOATING BROKEN SANDSTONE ROCK
18	72	GRAY SILT SAND QUICKSAND
72	98	RED ROCK SOME SHALE
98	120	LIGHT BROWN GRAY AND WHITE SANDSTONE WATER

Driller Certification

All work performed and reported in this well log is in compliance with the Montana well construction standards. This report is true to the best of my knowledge.

			Openings	Openings	
100	118	5		.125X6	SAW SLOTS

Annular Space (Seal/Grout/Packer)

From	To	Description	Cont. Fed?
0	75	BENTONITE CLAY	

Name:
Company: BYRNE
License No: WWC-318
Date Completed: 7/11/1993

MONTANA WELL LOG REPORT

This well log reports the activities of a licensed Montana well driller, serves as the official record of work done within the borehole and casing, and describes the amount of water encountered. This report is compiled electronically from the contents of the Ground Water Information Center (GWIC) database for this site. Acquiring water rights is the well owner's responsibility and is NOT accomplished by the filing of this report.

Other Options

Return to menu
Plot this site in State Library Digital Atlas
Plot this site in Google Maps
View scanned well log (7/26/2006 1:30:30 PM)

Site Name: ODGEN MORTON AND N.D.
GWIC Id: 33336
DNRC Water Right:

Section 1: Well Owner(s)

1) ODGEN, MORTON AND ND (MAIL)
N/A
SIMMS MT 59407 [08/26/1970]

Section 2: Location

Township	Range	Section	Quarter Sections
20N	03E	34	SW¼ SE¼

County	Geocode
CASCADE	

Latitude	Longitude	Geomethod	Datum
47.437506	-111.3354	TRS-SEC	NAD83

Ground Surface Altitude	Ground Surface Method	Datum	Date

Addition	Block	Lot

Section 3: Proposed Use of Water

STOCKWATER (1)

Section 4: Type of Work

Drilling Method: CHURN DRILL
Status: NEW WELL

Section 5: Well Completion Date

Date well completed: Wednesday, August 26, 1970

Section 6: Well Construction Details

Borehole dimensions

From	To	Diameter
0	98	8

Casing

From	To	Diameter	Wall Thickness	Pressure Rating	Joint	Type
0	98	7				STEEL

Completion (Perf/Screen)

From	To	Diameter	# of Openings	Size of Openings	Description
82	92	7			TORCH OR PLASMA CUTS

Annular Space (Seal/Grout/Packer)

There are no annular space records assigned to this well.

Section 7: Well Test Data

Total Depth: 98
Static Water Level: 75
Water Temperature:

Bailer Test *

_14_ gpm with _ feet of drawdown after _1_ hours.
Time of recovery _ hours.
Recovery water level _ feet.
Pumping water level _95_ feet.

** During the well test the discharge rate shall be as uniform as possible. This rate may or may not be the sustainable yield of the well. Sustainable yield does not include the reservoir of the well casing.*

Section 8: Remarks

Section 9: Well Log

Geologic Source

217KOTN - KOOTENAI FORMATION

From	To	Description
0	10	HARD ROCK
10	40	BROKEN SAND ROCK AND SHALE
40	75	DARK GRAY SHALE
75	98	HARD GREENISH GRAY ROCK WITH WATER AT 82 THRU 92 FT

Driller Certification

All work performed and reported in this well log is in compliance with the Montana well construction standards. This report is true to the best of my knowledge.

Name:
Company: BYRNE
License No: WWC-135
Date Completed: 8/26/1970

MONTANA WELL LOG REPORT

This well log reports the activities of a licensed Montana well driller, serves as the official record of work done within the borehole and casing, and describes the amount of water encountered. This report is compiled electronically from the contents of the Ground Water Information Center (GWIC) database for this site. Acquiring water rights is the well owner's responsibility and is NOT accomplished by the filing of this report.

Other Options

Return to menu
Plot this site in State Library Digital Atlas
Plot this site in Google Maps
View scanned well log (7/26/2006 1:32:26 PM)
View scanned update/correction (10/31/2008 12:26:05 PM)

NOTICE >> **This well has been marked as ABANDONED in the GWIC database.** **<< NOTICE**

Site Name: SCHUMACHER GARY L.
GWIC Id: 120979
DNRC Water Right: C074555-00

Section 1: Well Owner(s)

1) SCHUMACHER, GARY L (MAIL)
317 FLOOD RD
GREAT FALLS MT 59404 [11/25/1989]

Section 2: Location

Township	Range	Section	Quarter Sections
20N	03E	33	SE¼ SE¼

County	Geocode
CASCADE	

Latitude	Longitude	Geomethod	Datum
47.437569	-111.351738	TRS-SEC	NAD83

Ground Surface Altitude	Ground Surface Method	Datum	Date

Addition	Block	Lot
		GOVT 1

Section 3: Proposed Use of Water

DOMESTIC (1)

Section 4: Type of Work

Drilling Method: FORWARD ROTARY
Status: ABANDONED

Section 5: Well Completion Date

Date well completed: Saturday, November 25, 1989

Section 6: Well Construction Details

Borehole dimensions

From	To	Diameter
0	20	10
20	126	8

Casing

From	To	Diameter	Wall Thickness	Pressure Rating	Joint	Type
-1.5	123	6	.250			STEEL

Completion (Perf/Screen)

From	To	Diameter	# of Openings	Size of Openings	Description
123	126	6			OPEN HOLE

Annular Space (Seal/Grout/Packer)

From	To	Description	Cont. Fed?
0	20	BENTONITE CLAY	

Section 7: Well Test Data

Total Depth: 126
Static Water Level: 35
Water Temperature:

Air Test *

60 gpm with drill stem set at 60 feet for 4 hours.
Time of recovery 0.01 hours.
Recovery water level 35 feet.
Pumping water level _ feet.

** During the well test the discharge rate shall be as uniform as possible. This rate may or may not be the sustainable yield of the well. Sustainable yield does not include the reservoir of the well casing.*

Section 8: Remarks

Section 9: Well Log

Geologic Source

217KOTN - KOOTENAI FORMATION

From	To	Description
0	25	RED SANDY CLAY WITH SOME SCATTERED GRAVEL AND
25	25	BROKEN SANDSTONE
25	80	GRAY SILT
80	81	GRAVEL AND BROKEN SANDSTONE LAYER
81	100	GRAY SILT
100	123	SAND- MUDDY SAND- BROKEN SANDSTONE- GRAVEL MIXED (WATER AT 120-123FT)
123	126	DARK GRAY SHALE

Driller Certification

All work performed and reported in this well log is in compliance with the Montana well construction standards. This report is true to the best of my knowledge.

Name:
Company: BYRNE
License No: WWC-318
Date Completed: 11/25/1989

Appendix N

MONTANA DEPARTMENT OF ENVIRONMENTAL QUALITY

PHOSPHOROUS BREAKTHROUGH ANALYSIS

SITE NAME: River Bend Estates - Phase III
COUNTY: Cascade
LOT #: 25
NOTES:

VARIABLES	DESCRIPTION	VALUE	UNITS
Lg	Length of Primary Drainfield as Measured Perpendicular to Ground Water Flow	44.0	ft
L	Length of Primary Drainfield's Long Axis	44.0	ft
W	Width of Primary Drainfield's Short Axis	25.0	ft
B	Depth to Limiting Layer from Bottom of Drainfield Laterals*	6.0	ft
D	Distance from Drainfield to Surface Water	390.0	ft
T	Phosphorous Mixing Depth in Ground Water (0.5 ft for coarse soils, 1.0 ft for fine soils)**	1.0	ft
~~Ne~~			
Sw	Soil Weight (usually constant)	100.0	lb/ft3
Pa	Phosphorous Adsorption Capacity of Soil (usually constant)	200.0	ppm
#I	Number of Single Family Homes on the Drainfield	1.0	
CONSTANTS			
Pl	Phosphorous Load per Single Family Home (constant)	6.44	lbs/yr
X	Conversion Factor for ppm to percentage (constant)	1.0E+06	
EQUATIONS			
Pt	Total Phosphorous Load = (Pl)(#I)	6.44	lbs/yr
W1	Soil Weight under Drainfield = (L)(W)(B)(Sw)	660000.0	lbs
W2	Soil Weight from Drainfield to Surface Water = [(Lg)(D) + (0.0875)(D)(D)] (T)(Sw)	3046875.0	lbs
P	Total Phosphorous Adsorption by Soils = (W1 + W2)[(Pa)/(X)]	741.4	lbs
SOLUTION			
BT	**Breakthrough Time to Surface Water = P / Pt**	115.1	years

BY: Jake Hoffman
DATE: April 30, 2020

NOTES: ** Depth to limiting layer is typically based on depth to a limiting layer (such as clay, bedrock or water) in a test pit or bottom of a dry test pit minus two feet to account for burial depth of standard drainfield laterals.*
*** Material type is usually based on test pit. A soil that can be described as loam (e.g. gravelly loam, sandy loam, etc.) or finer according to the USDA soil texture classification system is considered a "fine" soil.*

REV. 12/2007

Appendix N

MONTANA DEPARTMENT OF ENVIRONMENTAL QUALITY

PHOSPHOROUS BREAKTHROUGH ANALYSIS

SITE NAME: River Bend Estates - Phase III
COUNTY: Cascade
LOT #: 26-27
NOTES:

VARIABLES	DESCRIPTION	VALUE	UNITS
Lg	Length of Primary Drainfield as Measured Perpendicular to Ground Water Flow	44.0	ft
L	Length of Primary Drainfield's Long Axis	44.0	ft
W	Width of Primary Drainfield's Short Axis	25.0	ft
B	Depth to Limiting Layer from Bottom of Drainfield Laterals*	6.0	ft
D	Distance from Drainfield to Surface Water	500.0	ft
T	Phosphorous Mixing Depth in Ground Water (0.5 ft for coarse soils, 1.0 ft for fine soils)**	1.0	ft
~~Ne~~			
Sw	Soil Weight (usually constant)	100.0	lb/ft3
Pa	Phosphorous Adsorption Capacity of Soil (usually constant)	200.0	ppm
#I	Number of Single Family Homes on the Drainfield	1.0	
CONSTANTS			
PI	Phosphorous Load per Single Family Home (constant)	6.44	lbs/yr
X	Conversion Factor for ppm to percentage (constant)	1.0E+06	
EQUATIONS			
Pt	Total Phosphorous Load = (PI)(#I)	6.44	lbs/yr
W1	Soil Weight under Drainfield = (L)(W)(B)(Sw)	660000.0	lbs
W2	Soil Weight from Drainfield to Surface Water = [(Lg)(D) + (0.0875)(D)(D)] (T)(Sw)	4387500.0	lbs
P	Total Phosphorous Adsorption by Soils = (W1 + W2)[(Pa)/(X)]	1009.5	lbs
SOLUTION			
BT	**Breakthrough Time to Surface Water = P / Pt**	156.8	years

BY: Jake Hoffman
DATE: April 30, 2020

NOTES: ** Depth to limiting layer is typically based on depth to a limiting layer (such as clay, bedrock or water) in a test pit or bottom of a dry test pit minus two feet to account for burial depth of standard drainfield laterals.*
*** Material type is usually based on test pit. A soil that can be described as loam (e.g. gravelly loam, sandy loam, etc.) or finer according to the USDA soil texture classification system is considered a "fine" soil.*

REV. 12/2007

Appendix E

MONTANA DEPARTMENT OF ENVIRONMENTAL QUALITY

NITRATE SENSITIVITY ANALYSIS

SITE NAME: River Bend Estates - Phase III
COUNTY: Cascade
NOTES: Lots 25

BY: Jason Crawford
DATE: 07/30/20

Nitrate at end of mixing zone(s) with no cumulative effects

Variable	(K)	(I)	(D)	(L)	(Y)	(Ng)	(Nr)	(Ne)	(#I)	(QI)	(P)	(V)	(W)	(Am)	(As)	(Qg)	(Qr)	(Qe)	Nt
	Hydr. cond.	Hydr. grad.	Mix zone thick	Down grad. distance	Drain-field width	Back-ground nitrate	Nitrate in precip	Effluent Nitrate conc.	# of single family homes	Effluent per drain.	Annual precip.	Percent precip.	Down-grad. width	Mix zone area	Mix. zone surface area	Ground water flow	Recharge flow	Effluent flow	Resulting nitrate (N)
LOT #	(ft/day)	(ft/ft)	(feet)	(feet)	(feet)	(mg/l)	(mg/l)	(mg/l)	homes	(ft3/day)	(in/yr)	recharge	(feet)	(ft^2)	(ft^2)	(ft3/day)	(ft3/day)	(ft3/day)	(mg/l)
25	21.79	0.00049	15.0	500	44	0.00	1.0	24.0	1.0	26.70	14.8	0.2	131.50	1972.50	65750.00	21.06	44.28	26.70	7.44
													0.00	0.00	0.00	0.00	0.00	0.00	#DIV/0!
													0.00	0.00	0.00	0.00	0.00	0.00	#DIV/0!
													0.00	0.00	0.00	0.00	0.00	0.00	#DIV/0!
													0.00	0.00	0.00	0.00	0.00	0.00	#DIV/0!
													0.00	0.00	0.00	0.00	0.00	0.00	#DIV/0!
													0.00	0.00	0.00	0.00	0.00	0.00	#DIV/0!
													0.00	0.00	0.00	0.00	0.00	0.00	#DIV/0!
													0.00	0.00	0.00	0.00	0.00	0.00	#DIV/0!
													0.00	0.00	0.00	0.00	0.00	0.00	#DIV/0!
													0.00	0.00	0.00	0.00	0.00	0.00	#DIV/0!
													0.00	0.00	0.00	0.00	0.00	0.00	#DIV/0!
													0.00	0.00	0.00	0.00	0.00	0.00	#DIV/0!
													0.00	0.00	0.00	0.00	0.00	0.00	

Nitrate at end of mixing zones with cumulative effects

LOT #																			
													0.00	0.00	0.00	0.00	0.00	0.00	#DIV/0!
											0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00	#DIV/0!
											0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00	
											0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00	
											0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00	
											0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00	
											0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00	
											0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00	
											0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00	

REV. 03/20005

NOTES:			
	= fill in values in these cells		
	= these cells are calculated for you		
Hydr. cond. =		*K*	Hydraulic Conductivity
Hydr. grad. =		*I*	Hydraulic Gradient
Mix zone thick =		*D*	Thickness of Mixing Zone up to a Maximum of 15 feet (usually constant at 15 feet)
Down grad. distance =		*L*	Mixing Zone Length (see ARM 17.30.517(1)(d)(viii), or this may also be the distance to end of last mixing zone when calculating cumulative effects.
Drainfield width =		*Y*	Width of Drainfield Perpendicular to Ground Water Flow
Background nitrate =		*Ng*	Background Nitrate (as Nitrogen) Concentration
Nitrate in precip. =		*Nr*	Nitrate (as Nitrogen) Concentration in Precipitation (usually constant at 1.0 mg/L)
Effluent Nitrate conc. =		*Ne*	Nitrate (as Nitrogen) Concentration in Effluent (50 for conventional; 24 for level II; 30 for level 1a; 40 for level 1b)
# single family homes =		*#I*	Number of Single Family Homes on the Drainfield (leave as 1 if effluent volume in next column is adjusted to equal total effluent from drainfield)
Effluent per drain. =		*QI*	Quantity of Effluent from drainfield (average rate varies depending on number of bedrooms)
Annual precip. =		*P*	Annual local Precipitation
Percent precip recharge =		*V*	Percent of Precipitation Recharging Ground Water (usually constant at 0.2)
Down grad. width =		*W*	Width of Mixing Zone Perpendicular to Ground Water Flow = (0.175)(L) + (Y)
Mix zone area =		*Am*	Cross Sectional Area of Aquifer Mixing Zone = (D)(W)
Mix zone surface area =		*As*	Surface Area of Mixing Zone = (L)(W)
Ground water flow =		*Qg*	Ground Water Flow Rate = (K)(I)(Am)
Recharge flow =		*Qr*	Recharge Flow Rate = (As)(P/12/365)(V)
Effluent flow =		*Qe*	Effluent Flow Rate = (#I)(QI)
Resulting nitrate (N) =		*Nt*	Nitrate (as Nitrogen) Concentration at End of Mixing Zone = ((Ng)(Qg) + (Nr)(Qr) + (Ne)(Qe)) / ((Qg) + (Qr) + (Qe))
			(or nitrate concentration to use as background nitrate for next downgradient drainfield when determining cumulative effects)

Sewer System Sizing Calculations

Parameters	Values												Notes	Reference	
	Lot 25	Lot 26	Lot 27	Lot 28	Lot 29	Lot 30	Lot 31	Lot 32	Lot 33	Lot 34	Lot 35	Lot 36		Circular	Section
County Test Pit Designation	**TP 12**	**TP 11**	**TP 9 & 10**	**TP 8**	**TP 7**	**TP 6**	**TP 31**	**TP 4A & 4B**	**TP 5**	**TP 3**	**TP 2**	**TP 1**			
Home Size (# of bedrooms)	4	4	4	4	4	4	4	4	4	4	4	4			
Soil Type (@ depth of laterals)	SL	SL	SL	SL	SL	SL	SL	CL	SiL	SiL	SiL	SiL			
Est Perc Rate from Table 2.1-1 (min/in)	10-16	10-16	10-16	10-16	10-16	10-16	10-16	31-51	16-31	16-31	16-31	16-31			
Application Rate (gpd/ft^2)	0.5	0.5	0.5	0.5	0.5	0.5	0.4	0.4	0.4	0.5	0.5	0.4		4	Table 2.1-1
Design Flow (based on # of bedrooms) (gpd)	350	350	350	350	350	350	350	350	350	350	350	350		4	3.1.2A
Design Flow (gpd)(based Table 3.1)														4	Table 3.1-1
Required Absorption Area (ft^2)	700	700	700	700	700	700	875	875	875	700	700	875		4	6.1.4.2
Will leaching chamber be utilized? (YES or NO)	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	if yes, absorption area can be reduced by 25%	4	6.6.2.3
Required Absorption Area (if chambers are utilized) (ft^2)	525	525	525	525	525	525	656	656	656	525	525	656		4	6.6.2.3
Replacement Drain Field Area	700	700	700	700	700	700	875	875	875	700	700	875		4	6.6.2.3
Effective chamber width (ft)	3	3	3	3	3	3	3	3	3	3	3	3	22" chamber has effective width of 24", 34" chamber has effective width of 36"	4	6.6.2.3
Primary lateral length required (ft)	175	175	175	175	175	175	219	219	219	175	175	219			
Replacement lateral length required (ft)	233	233	233	233	233	233	292	292	292	233	233	292			
Septic Tank															
Minimum Tank Size - Residential	1500	1500	1500	1500	1500	1500	1500	1500	1500	1500	1500	1500	1-3 Beds - 1,000gal, 4-5 beds - 1,500, 6-7 beds - 2,000,	4	5.1.6.2
Minimum Tank Size - Commercial														4	5.1.6.3
Primary Drain Field															
Number of Laterals	2	2	2	2	2	2	3	3	3	2	2	3			
Lateral Length	88	88	88	88	88	88	73	73	73	88	88	73			
Spacing btwn Trench Walls	4	4	4	4	4	4	5	5	5	4	4	5	Minimum Separation Gravity: 5' Pressure: 4'	4	6.1.3.3
Distance from Center to Center	7	7	7	7	7	7	7	7	7	7	7	7			
Replacement Drain Field															
Number of Laterals	3	3	3	3	3	3	4	4	4	3	3	4			
Lateral Length	78	78	78	78	78	78	73	73	73	78	78	73			
Spacing btwn Trench Walls	4	4	4	4	4	4	5	5	5	4	4	5		4	6.1.3.3
Distance from Center to Center	7	7	7	7	7	7	7	7	7	7	7	7			

Dosing Volume = Transport Pipe Volume + Manifold Pipe Volume + 5-10 times Distribution Pipe Volume															
Transport Pipe Diameter (in)	1.5	1.5	1.5	1.5	1.5	1.5	1.5			1.5	1.5				
Transport Pipe Length (ft) (horizontal dist. + dosing MH dist. + vert. riser dist.)	350	450	180	210	220	170	200			180	250				
Transport Pipe Volume (gal)	32.13	41.31	16.52	19.28	20.2	15.61				16.52	22.95				
Manifold Pipe Diameter (in)	1.5	1.5	1.5	1.5	1.5	1.5	1.5			1.5	1.5				
Manifold Pipe Length (ft)	14	14	14	14	14	14	14			14	14				
Manifold Pipe Volume (gal)	1.29	1.29	1.29	1.29	1.29	1.29	1.29			1.29	1.29				
Distribution Pipe Diameter (in)	1	1	1	1	1	1	1			1	1			4	4.2.3.3
Distribution Pipe Length (ft)	233	233	233	233	233	233	292			233	233				
Distribution Pipe Volume (gal) x 5	47.55	47.55	47.55	47.55	47.55	47.55	59.55			47.55	47.55				
Total Dose Station Volume (gal)	80.97	90.15	65.36	68.12	69.04	64.45	60.84			65.36	71.79				
Reserve Dose Station Volume (25% of avg. daily flow)	87.5	87.5	87.5	87.5	87.5	87.5	87.5			87.5	87.5				
Total Dose Station Volume below High Alarm & above min. Pump Submergence Level	168.47	177.65	152.86	155.62	156.54	151.95	148.34			152.86	159.29				

Appendix Q

TRIGGER VALUE CALCULATION FOR ADJACENT TO SURFACE WATER DILUTION ANALYSIS

"An analysis of the effect of the proposed drainfield system on the quality of any adjacent surface water is required by ARM 17.36.312 and 17.30.715(1c). The increase in the nutrient concentration in the surface water cannot exceed the trigger value (T.V. of 0.01 mg/L nitrate and 0.001 mg/L phosphorous as set forth in Circular DEQ 7."

DILUTION EQUATION: $\frac{(QD)(CD) + (QL)(CL)}{QD + QL} < T.V. = \text{non-significant}$

Note: Effluent flow rate (QD) must be multiplied by the number of drainfields in the subdivision.

NITRATE CALCULATION:

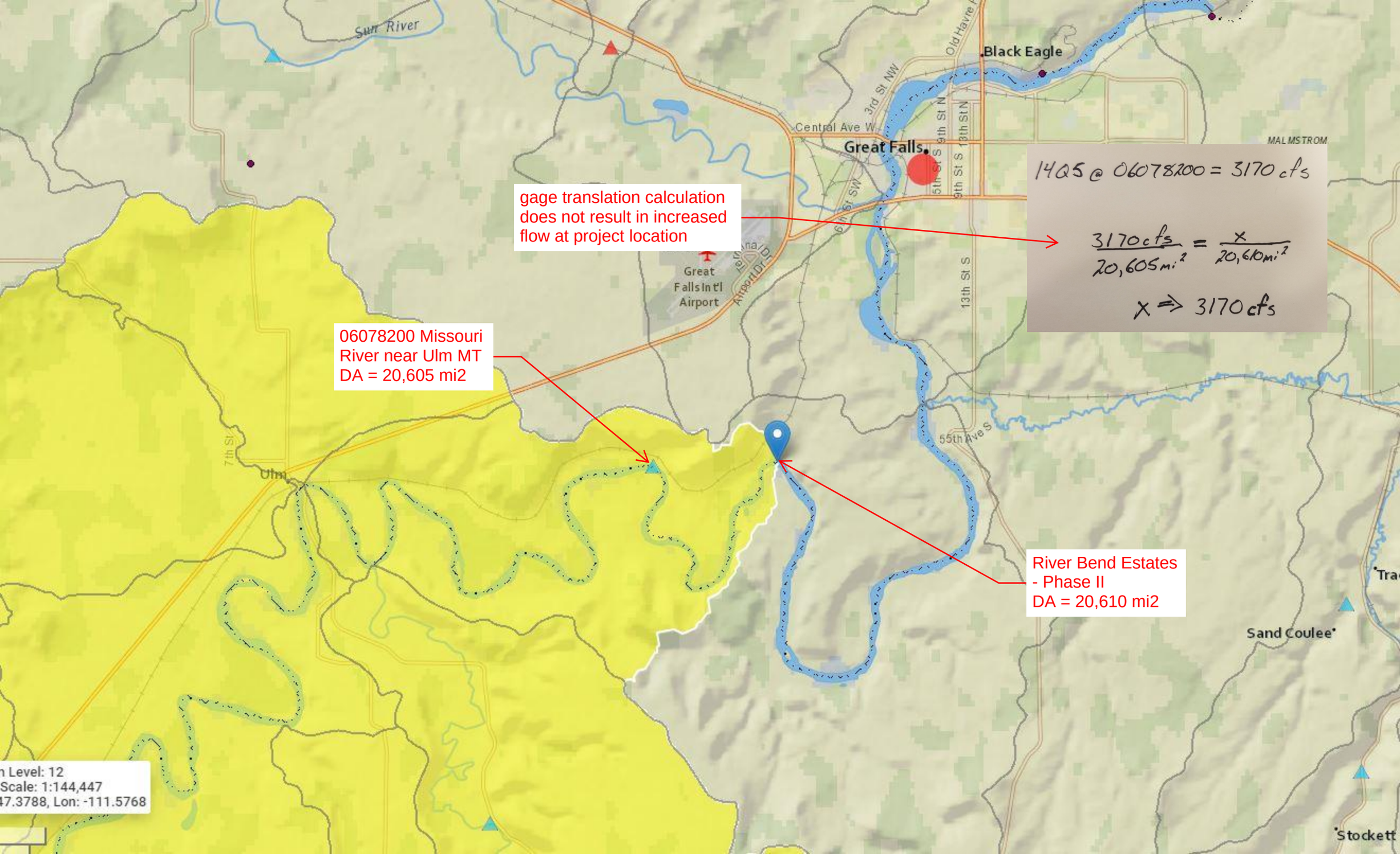
	12.00		Number of drainfields in subdivision
QD =	26.70	ft^3/d	Effluent flow rate from drainfield in cubic feet per day (commonly 200 gpd or 26.7 ft^3/d for a 2 - 5 bedroom home)
CD =	50.00	mg/L	Nitrate concentration in mg/L (50 mg/L nitrate-N for standard drainfield, 24 mg/L for Level 2 wastewater treatment system)
QL =	3170.00	ft^3/s	Flow rate in ft^3/s into (or out of) surface water determined by stream gauge (usually the 14-day, 5-year low flow or 14Q5)
CL =	0.00	mg/L	Nitrate concentration (in mg/L) in surface water; can typically assume zero since increase, not total, is important

0.0000585 mg/L = final result, must be < 0.01 mg/L to be considered nonsignificant nitrate increase

PHOSPHOROUS CALCULATION:

	12		Number of drainfields in subdivision
QD =	26.7	ft^3/d	Effluent flow rate from drainfield in cubic feet per day, (commonly 200 gpd or 26.7 ft^3/d for a 2 - 5 bedroom home)
CD =	10.6	mg/L	Phosphorous concentration in mg/L (commonly 10.6 mg/L) in effluent
QL =	3170	ft^3/s	Flow rate in ft^3/s into (or out of) surface water determined by stream gauge (usually the 14-day, 5-year low flow or 14Q5)
CL =	0	mg/L	Phosphorous concentration (in mg/L) in surface water; can typically assume zero since increase, not total, is important

0.0000124 mg/L = final result, must be < 0.001 mg/L to be considered nonsignificant for phosphorous increase



$$1405 @ 06078200 = 3170\ cfs$$

$$\frac{3170\ cfs}{20{,}605\ mi^2} = \frac{x}{20{,}610\ mi^2}$$

$$x \Rightarrow 3170\ cfs$$

06078200 Missouri River near Ulm, Mont.
Site Number 59

LOCATION.--Lat 47°26'06", long 111°23'07" (NAD 27), in NE¼NW¼NW¼ sec.5, T.19 N., R.3 E., Cascade County, Hydrologic Unit 10030102, on left bank 5.6 mi east of Ulm, 9.1 mi downstream from Smith River, and at river mile 2,140.4.
DRAINAGE AREA.--20,941 mi^2.
PERIOD OF RECORD.--August 1957 to current year (2002).
GAGE.--Water-stage recorder. Altitude of gage is 3,313.27 ft (NGVD 29).
REMARKS.--Flow regulated by 10 smaller irrigation reservoirs and powerplants, Clark Canyon Reservoir (station number 06015300), and Canyon Ferry Lake (station number 06058500). Diversions for irrigation of about 630,400 acres upstream from station. U.S. Army Corps of Engineers satellite telemeter at station.

Magnitude and probability of annual low flow based on 44 years of record

Period of consecutive days	Discharge, in ft^3/s, for indicated recurrence interval, in years, and non-exceedance probability, in percent					
	2	5	10	20	50	100
	50%	20%	10%	5%	2%	1%
1	3,390	2,690	2,380	2,150	1,910	--
3	3,510	2,820	2,520	2,300	2,070	--
7	3,670	2,960	2,650	2,420	2,190	--
14	3,770	3,080	2,780	2,550	2,330	--
30	3,950	3,210	2,880	2,640	2,400	--
60	4,160	3,370	3,020	2,770	2,510	--
90	4,380	3,520	3,150	2,880	2,610	--
120	4,550	3,670	3,290	3,010	2,730	--
183	4,880	3,930	3,510	3,190	2,850	--

Magnitude and probability of seasonal low flow from March-June based on 45 seasons of record

Period of consecutive days	Discharge, in ft^3/s, for indicated recurrence interval, in years, and non-exceedance probability, in percent					
	2	5	10	20	50	100
	50%	20%	10%	5%	2%	1%
1	4,290	3,150	2,660	2,310	1,970	--
3	4,410	3,280	2,810	2,480	2,150	--
7	4,580	3,420	2,930	2,580	2,240	--
14	4,810	3,620	3,110	2,750	2,390	--
30	5,160	3,910	3,380	2,990	2,610	--

Magnitude and probability of seasonal low flow from November-February based on 45 seasons of record

Period of consecutive days	Discharge, in ft^3/s, for indicated recurrence interval, in years, and non-exceedance probability, in percent					
	2	5	10	20	50	100
	50%	20%	10%	5%	2%	1%
1	4,120	3,440	3,140	2,920	2,690	--
3	4,280	3,570	3,260	3,020	2,780	--
7	4,460	3,730	3,390	3,130	2,850	--
14	4,580	3,810	3,460	3,190	2,900	--
30	4,750	3,930	3,540	3,250	2,950	--

Duration of daily mean flows based on 45 years of record

Discharge, in ft^3/s, which was equaled or exceeded for indicated percent of time							
99%	98%	95%	90%	80%	70%	60%	50%
2,440	2,690	3,180	3,450	3,990	4,540	5,100	5,670
40%	30%	20%	15%	10%	5%	2%	1%
6,310	7,210	8,120	8,580	10,500	14,300	19,600	22,900

Magnitude and probability of annual high flow based on 45 years of record

Period of consecutive days	Discharge, in ft^3/s, for indicated recurrence interval, in years, and exceedance probability, in percent					
	2	5	10	25	50	100
	50%	20%	10%	4%	2%	1%
1	14,900	21,900	26,000	30,700	33,900	--
3	14,500	21,500	25,700	30,500	33,700	--
7	13,900	20,700	24,900	29,900	33,300	--
15	13,000	19,600	23,800	29,100	32,900	--
30	11,700	17,600	21,500	26,400	30,000	--
60	10,300	14,800	17,600	21,000	23,400	--
90	9,360	13,000	15,300	17,900	19,800	--

Magnitude and probability of seasonal low flow from July-October based on 44 seasons of record

Period of consecutive days	Discharge, in ft^3/s, for indicated recurrence interval, in years, and non-exceedance probability, in percent					
	2	5	10	20	50	100
	50%	20%	10%	5%	2%	1%
1	3,530	2,780	2,460	2,230	2,000	--
3	3,670	2,920	2,600	2,360	2,130	--
7	3,830	3,070	2,740	2,500	2,260	--
14	3,940	3,170	2,850	2,610	2,380	--
30	4,080	3,270	2,920	2,670	2,420	--

Monthly and annual mean discharges

Month	Maximum (ft^3/s)	Minimum (ft^3/s)	Mean (ft^3/s)	Standard deviation (ft^3/s)	Years of record
October	10,000	2,200	4,160	1,390	45
November	7,950	2,920	4,690	1,240	45
December	6,790	3,020	4,650	1,060	45
January	6,760	3,100	5,080	971	45
February	8,000	3,000	5,150	1,220	45
March	8,820	2,820	5,010	1,440	45
April	9,320	2,370	5,290	1,690	45
May	15,300	2,520	6,380	2,880	45
June	17,500	1,700	7,420	4,100	45
July	9,930	2,200	4,860	1,810	45
August	7,280	2,230	4,220	1,300	46
September	9,340	1,900	3,940	1,370	46
Annual	5,800	1,700	3,220	787	45

National Water Information System: Web Interface

USGS Water Resources

Data Category: Site Information ▼ Geographic Area: United States ▼ GO

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- Please see news on new formats
- Full News

USGS 06078200 Missouri River near Ulm MT

Available data for this site SUMMARY OF ALL AVAILABLE DATA ▼ GO

Stream Site

DESCRIPTION:

Latitude 47°26'05.88", Longitude 111°23'18.40" NAD83
Cascade County, Montana, Hydrologic Unit 10030102
Drainage area: 20,605 square miles
Datum of gage: 3,313.27 feet above NGVD29.

AVAILABLE DATA:

Data Type	Begin Date	End Date	Count
Current / Historical Observations (availability statement)	1994-10-01	2018-12-11	
Daily Data			
Discharge, cubic feet per second	1957-07-31	2018-12-10	22201
Daily Statistics			
Discharge, cubic feet per second	1957-07-31	2017-10-24	21789
Monthly Statistics			

Discharge, cubic feet per second	1957-07	2017-10	
Annual Statistics			
Discharge, cubic feet per second	1957	2018	
Peak streamflow	1948-06	2017-05-24	62
Field measurements	1964-06-09	2018-10-17	200
Field/Lab water-quality samples	1982-07-07	2013-08-21	158
Water-Year Summary	2006	2017	12

OPERATION:

Record for this site is maintained by the USGS Montana Water Science Center

Email questions about this site to Montana Water Science Center Water-Data Inquiries

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Questions about sites/data?
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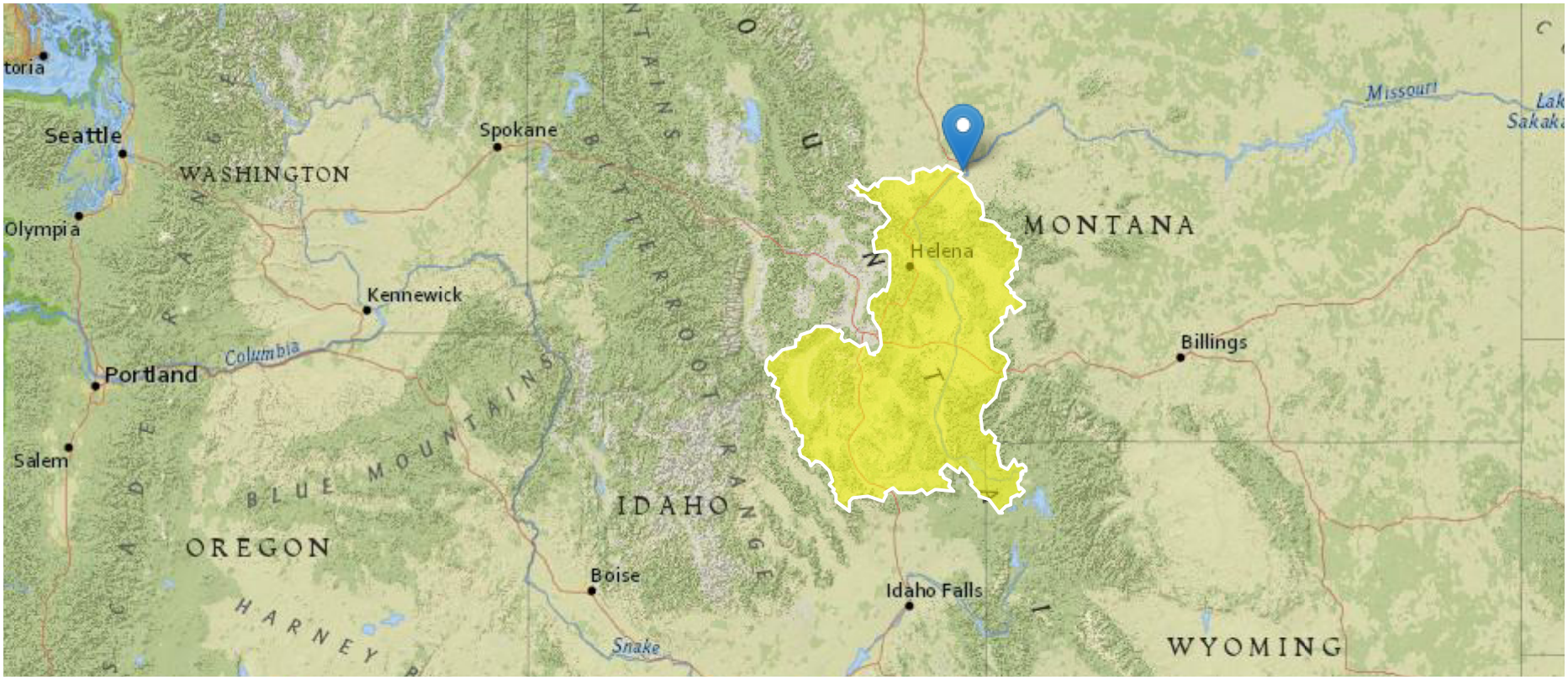
U.S. Department of the Interior | U.S. Geological Survey

Title: NWIS Site Information for USA: Site Inventory
URL: https://nwis.waterdata.usgs.gov/nwis/inventory/?site_no=06078200

Page Contact Information: Montana Water Data Support Team
Page Last Modified: 2018-12-11 10:14:52 EST
0.55 0.54 nadww01

StreamStats Report - Missouri R. @ River Bend Estates

Region ID: MT
Workspace ID: MT20181211150757547000
Clicked Point (Latitude, Longitude): 47.43607, -111.34798
Time: 2018-12-11 08:08:18 -0700



Basin Characteristics

Parameter Code	Parameter Description	Value	Unit

Parameter Code	Parameter Description	Value	Unit
CONTDA	Area that contributes flow to a point on a stream	20610.1	square miles

General Disclaimers

The delineation point is in an exclusion area. Flow statistics not enabled for this stream reach

USGS Data Disclaimer: Unless otherwise stated, all data, metadata and related materials are considered to satisfy the quality standards relative to the purpose for which the data were collected. Although these data and associated metadata have been reviewed for accuracy and completeness and approved for release by the U.S. Geological Survey (USGS), no warranty expressed or implied is made regarding the display or utility of the data for other purposes, nor on all computer systems, nor shall the act of distribution constitute any such warranty.

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USGS Product Names Disclaimer: Any use of trade, firm, or product names is for descriptive purposes only and does not imply endorsement by the U.S. Government.

Application Version: 4.2.1

23 WEED MANAGEMENT AND RE-VEGETATION PLAN

The weed management plan is attached below. The contractor selected to construct the roads, the detention pond, and the fire water supply will be required to submit a Storm Water Pollution Prevention Plan in accordance with DEQ requirements. The SWPPP will include provisions for mitigating erosion and a plan for re-vegetation. At a minimum, the contractor will be required to seed all disturbed areas with a dryland native seed mixture. Seeding will be completed in accordance with the Montana Public Works Standard Specifications Sixth Edition, Section 02910 Seeding.

PROPOSED NOXIOUS WEED MANAGEMENT PLAN

In accordance with 7-22-2123 (4) MCA. A person is considered in compliance if he submits and the Board accepts a proposal to undertake specified control measures, and is in compliance for so long as he performs according to the terms of the proposal.

1. Noxious weeds requiring management with approximate size of infestations: Primarily leafy spurge and canada thistle, Some toadflax and Knapweed. Aprox. 20 acres scattered

2. Location: Township 20N Range 3E Section 34 GEO Code 02-3015-34-1-01-01-0000

   Sub-division _____ Block _____ Lot _____

   Attach map of plat, or sketch of the property with weed infestations shown

3. Number of years to implement management plan: ____1 year ✓ 3 years ____5 years

4. Specified control measures: Continue spraying weeds present; control any new infestations that occur due to ground disturbance

✓ **Chemical:** Mark which chemical(s) will be used, or write chemical(s) here: current mixture owner has used

E = excellent G = good F = fair - = not tested / not recommended **Results may be variable**	**2,4-D**	**Escort** *(metsulfuron methyl)*	**Tordon** *(picloram)* RESTRICTED USE PESTICIDE	**Perspective** *(aminocyclopyrachlor)*	**Milestone** *(aminopyralid)*	**Plateau** *(imazapic)*	**Telar** *(chlorsulfuron)*	**SpeedZone or E2** *(2,4-D + dicamba)*	**Roundup** *(glyphosate)*
X Spotted Knapweed	G	-	E	G	E	-	-	G	F
Diffuse Knapweed	F	-	E	G	E	-	-	F	F
Russian Knapweed	-	F	E	G	E	G	F	F	-
X Leafy Spurge	F	-	G	G	-	G	-	F	G
X Dalmation Toadflax*	-	F	G	G	-	G	G	-	-
X Canada Thistle	F	F	E	E	E	-	G	F	G
Field Bindweed	F	F	G	G	-	G	-	F	F
Whitetop	F	E	-	G	-	G	E	F	F
Houndstongue	F	E	G	G	-	G	G	G	F
Hoary Alyssum	F	E	-	-	-	-	-	F	F
Oxeye Daisy	F	E	G	-	E	-	-	F	F

✓ **Cultural/Physical:** Explain. Some mowing ok

____ **Biological:** As an integrated component of overall management. Explain. _____

5. Who will be doing the control work? Self ✓ Commercial contractor_____

6. Dates control measures will be carried out each year: Before weeds go to seed, fall also if needed

7. Are there any environmentally sensitive areas? yes If so describe: river, some shrubs along dry drainages

If weeds are not managed as above, this further authorizes Cascade County Weed and Mosquito Management District to implement this plan.

Dated this 18th day of July 2018.

Weed District Accept: (yes) (no)

Weed District Signature: [signature]

I acknowledge and agree to the foregoing provisions:

X Signature [signature]

Name Rick Higgins

Mailing Address PO Box 322, Ulm

City Ulm State MT Zip 59485

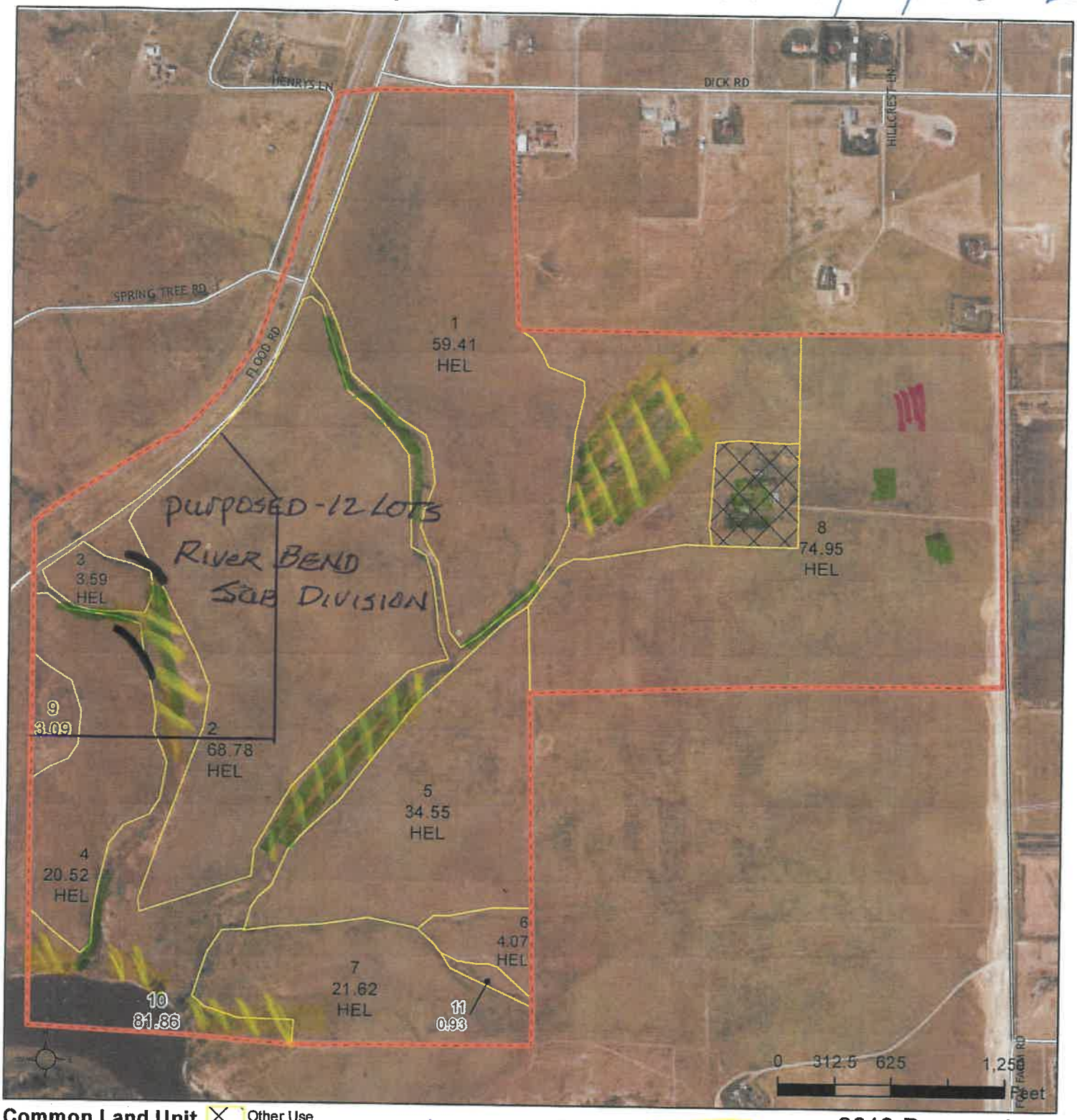
North

NOXIOUS WEED LOCATION & IDENTICATION

N. RICHARD HIGGINS
~~Flood properties~~ LLC

USDA United States Department of Agriculture

Cascade County, Montana



Common Land Unit
- Cropland
- Rangeland
- Other Use
- Tract Boundary

Wetland Determination Identifiers
- Restricted Use
- Limited Restrictions
- Exempt from Conservation Compliance Provisions

LEAFY SPURGE
CANDIAN THISLE
TOAD FLAX
SPOTTED KNAPWEED

Tract Cropland Total: 287.49 acres

2019 Program Year
Map Created March 19, 2018

Farm **5204**
Tract **9392**
34-20N-3E

United States Department of Agriculture (USDA) Farm Service Agency (FSA) maps are for FSA Program administration only. This map does not represent a legal survey or reflect actual ownership; rather it depicts the information provided directly from the producer and/or National Agricultural Imagery Program (NAIP) imagery. The producer accepts the data 'as is' and assumes all risks associated with its use. USDA-FSA assumes no responsibility for actual or consequential damage incurred as a result of any user's reliance on this data outside FSA Programs. Wetland identifiers do not represent the size, shape, or specific determination of the area. Refer to your original determination (CPA-026 and attached maps) for exact boundaries and determinations or contact USDA Natural Resources Conservation Service (NRCS).

GrazonNext® HL

SPECIALTY HERBICIDE

For control of broadleaf weeds and certain woody plants on rangeland, permanent grass pastures (including grasses grown for hay*), Conservation Reserve Program (CRP) acres and wildlife management areas in these sites.

***Hay from grass treated with GrazonNext HL within the preceding 18-months can only be used on the farm or ranch where the product is applied unless allowed by supplemental labeling**

Not For Sale, Distribution, or Use in New York State.

Group	4	HERBICIDE

Active Ingredient:
Triisopropanolammonium salt of 2-pyridine carboxylic acid, 4-amino-3,6-dichloro-.....8.24%
Dimethyl amine salt of (2,4-dichlorophenoxy) acetic acid.....41.26%
Other Ingredients 50.50%
Total.....100.00%

Acid Equivalents:
aminopyralid (2-pyridine carboxylic acid, 4-amino-3,6-dichloro-) – 4.28% - 0.41 lb/gal (50 g/L)
2,4-D [(2,4-dichlorophenoxy) acetic acid] – 34.25% - 3.33 lb/gal (400 g/L)

Keep Out of Reach of Children

DANGER PELIGRO

Si usted no entiende la etiqueta, busque a alguien para que se la explique a usted en detalle. (If you do not understand the label, find someone to explain it to you in detail.)

Agricultural Use Requirements

Use this product only in accordance with its labeling and with the Worker Protection Standard, 40 CFR part 170. Refer to label booklet under "Agricultural Use Requirements" in the "Directions for Use" section for information about this standard.

For additional Precautionary Statements, First Aid, Storage and Disposal and other use information see inside this label.

Notice: Read the entire label. Use only according to label directions. **Before using this product, read Warranty Disclaimer, Inherent Risks of Use, and Limitation of Remedies at end of label booklet. If terms are unacceptable, return at once unopened.**

In case of emergency endangering health or the environment involving this product, call 1-800-992-5994.

Agricultural Chemical: Do not ship or store with food, feeds, drugs or clothing.

EPA Reg. No. 62719-628
EPA Est. 464-MI-1
99021197

®Trademark of The Dow Chemical Company ("Dow") or an affiliated company of Dow

Produced for
Dow AgroSciences LLC
9330 Zionsville Road
Indianapolis, IN 46268

NET CONTENTS 2 GAL

Dow AgroSciences™

Curtail*

Herbicide

For selective control of broadleaf weeds in wheat and barley not underseeded with a legume, fallow cropland, grasses grown for seed, rangeland and permanent grass pastures, conservation reserve program (CRP) acres and non-cropland

Active Ingredients:
clopyralid MEA salt: 3,6-dichloro-2-pyridinecarboxylic acid, monoethanolamine salt..... 5.1%
2,4-dichlorophenoxyacetic acid, triisopropanolamine salt†..... 39.0%
Inert Ingredients..... 55.9%
Total 100.0%

Acid Equivalents:
clopyralid: 3,6-dichloro-2-pyridinecarboxylic acid - 3.9% - 0.38 lb/gal
2,4-dichlorophenoxyacetic acid - 20.9% - 2.0 lb/gal
†Isomer Specific by AOAC Method No. 978.05 (15th Ed.)

Keep Out of Reach of Children

DANGER PELIGRO

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Agricultural Use Requirements

Use this product only in accordance with its labeling and with the Worker Protection Standard, 40 CFR part 170. Refer to the label booklet under "Agricultural Use Requirements" in the Directions for Use section for information about this standard.

Refer to inside of label booklet for Directions for Use including Storage and Disposal.

Notice: Read the entire label. Use only according to label directions. **Before using this product, read Warranty Disclaimer, Inherent Risks of Use, and Limitation of Remedies at end of label booklet. If terms are unacceptable, return at once unopened.**

In case of emergency endangering health or the environment involving this product, call 1-800-992-5994. If you wish to obtain additional product information, visit our web site at www.dowagro.com.

Agricultural Chemical: Do not ship or store with food, feeds, drugs or clothing.

EPA Reg. No. 62719-48
EPA Est. 464-MI-1
900-010825 / 00013916

*Trademark of Dow AgroSciences LLC

Dow AgroSciences LLC • Indianapolis, IN 46268 U.S.A.

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Per Acre (as

GROUP 4 HERBICIDE

WeedMaster®

Herbicide

FOR USE ON CONSERVATION RESERVE PROGRAM LAND, FALLOW SYSTEMS (BETWEEN CROP APPLICATIONS), GENERAL FARMSTEAD, SORGHUM, GRASS (HAY OR SILAGE), PASTURES, RANGELAND, SUGARCANE, WHEAT, CORN (PREPLANT AND PREEMERGENCE), SOYBEANS (PREPLANT) AND COTTON (PREPLANT). ALSO FOR CONTROL OF BRUSH AND BROADLEAF WEEDS ON RIGHTS-OF-WAY, FOREST BRUSH, INDUSTRIAL SITES, NON-IRRIGATION DITCHBANKS, FENCE ROWS, AND OTHER NON-CROP AREAS.

ACTIVE INGREDIENTS:

Dimethylamine salt of dicamba (3,6-dichloro-o-anisic acid)* 12.4%

Dimethylamine salt of 2,4-dichlorophenoxyacetic acid** 35.7%

OTHER INGREDIENTS: 51.9%

TOTAL: 100.0%

* This product contains 10.3% dicamba or 1 pound per gallon (120 grams per liter) and 29.6% 2,4-D or 2.87 pounds per gallon (344 grams per liter).

**Isomer specific by AOAC method 978.05, 15th Edition

SHAKE WELL BEFORE USING

KEEP OUT OF REACH OF CHILDREN

DANGER/PELIGRO

Si usted no entiende la etiqueta, busque a alguien para que se la explique a usted en detalle.
(If you do not understand the label, find someone to explain it to you in detail.)

SEE INSIDE BOOKLET FOR ADDITIONAL PRECAUTIONARY STATEMENTS

For Chemical Spill, Leak, Fire, or Exposure, Call CHEMTREC (800) 424-9300.
For Medical Emergencies Only, Call (877) 325-1840.

	FIRST AID
IF IN EYES	• Hold eye open and rinse slowly and gently with water for 15 to 20 minutes. • Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye. • Call a poison control center or doctor for treatment advice.
IF SWALLOWED	• Call a poison control center or doctor immediately for treatment advice. • Have person sip a glass of water if able to swallow. • Do not induce vomiting unless told to do so by a poison control center or doctor. • Do not give anything by mouth to an unconscious person.
IF ON SKIN OR CLOTHING	• Take off contaminated clothing. • Rinse skin immediately with plenty of water for 15 to 20 minutes. • Call a poison control center or doctor for treatment advice.
IF INHALED	• Move person to fresh air. • If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably mouth-to-mouth, if possible. • Call a poison control center or doctor for further treatment advice.

HOT LINE NUMBER
Have the product container or label with you when calling a poison control center or doctor, or going for treatment. You may also contact 1-877-325-1840 for emergency medical treatment information.

NOTE TO PHYSICIAN
Probable mucosal damage may contraindicate the use of gastric lavage.

EPA REG. NO. 71368-34
EPA EST. NO. indicated by the first two letters of the batch number on this package
(CH) 228-IL-001, (VA) 70815-GA-002

Net Contents
2.5 Gal. (9.46 L)

Manufactured for
Nufarm Inc.
11901 S. Austin Avenue
Alsip, IL 60803

1 91662 01224 8

Nufarm Grow a better to

24 FIRM OR FEMA PANEL MAP

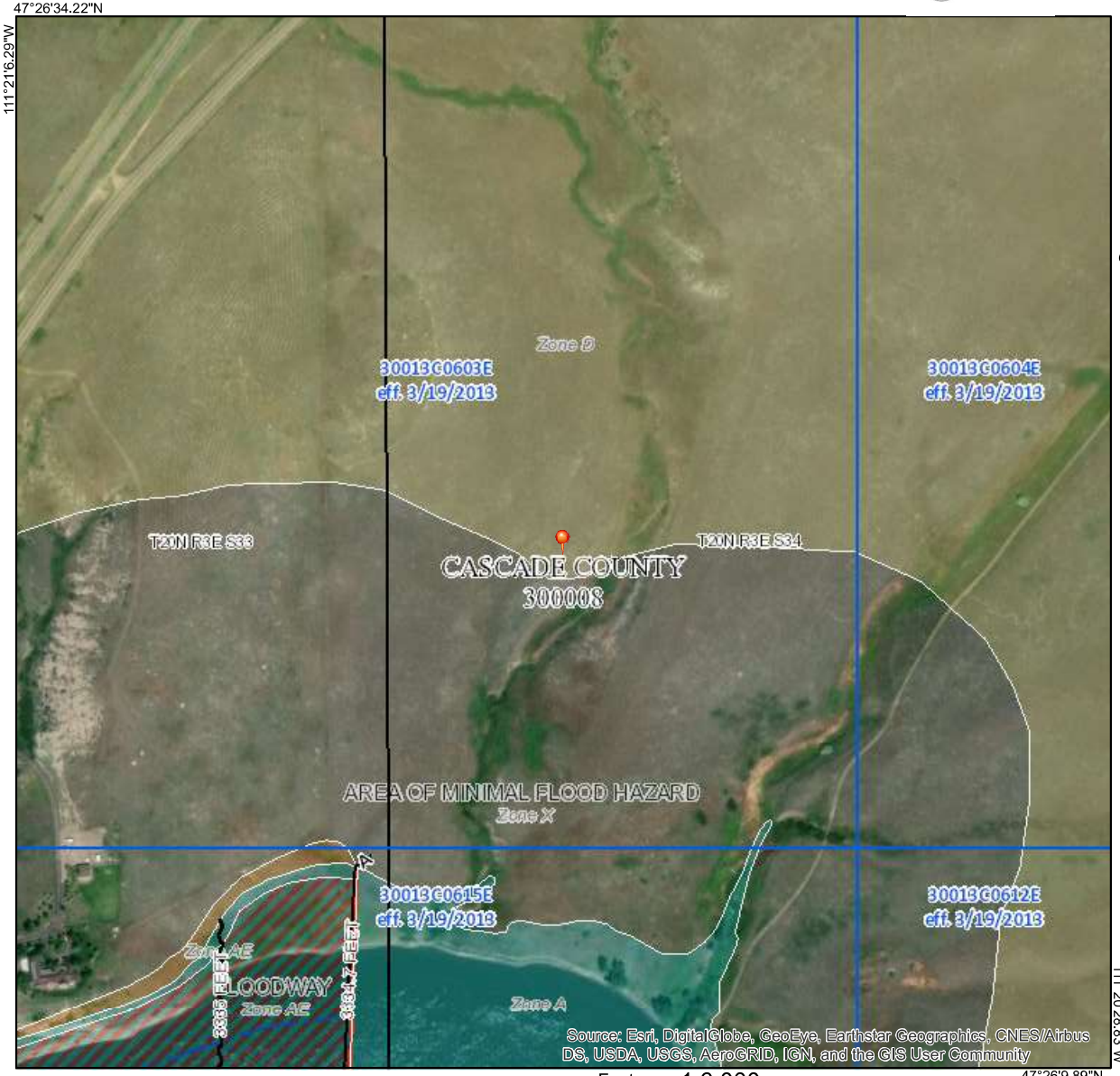
A copy of the FIRM Map is included below.

National Flood Hazard Layer FIRMette

FEMA

47°26'34.22"N

111°21'6.29"W



111°20'28.83"W

47°26'9.89"N

0 250 500 1,000 1,500 2,000 Feet

1:6,000

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS

- Without Base Flood Elevation (BFE) *Zone A, V, A99*
- With BFE or Depth
- Regulatory Floodway *Zone AE, AO, AH, VE, AR*

OTHER AREAS OF FLOOD HAZARD

- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
- Future Conditions 1% Annual Chance Flood Hazard *Zone X*
- Area with Reduced Flood Risk due to Levee, See Notes, *Zone X*
- Area with Flood Risk due to Levee *Zone D*

OTHER AREAS

- NO SCREEN Area of Minimal Flood Hazard *Zone X*
- Effective LOMRs
- Area of Undetermined Flood Hazard *Zone D*

GENERAL STRUCTURES

- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

OTHER FEATURES

- B 20.2 17.5 Cross Sections with 1% Annual Chance Water Surface Elevation
- 8 Coastal Transect
- 513 Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

MAP PANELS

- Digital Data Available
- No Digital Data Available
- Unmapped

N

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The base map shown complies with FEMA's base map accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 6/29/2018 at 12:44:10 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: base map imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

25 FLOOD HAZARD EVALUATION (IF REQUIRED)

An official floodway delineation and floodway study has been made of the Missouri River just upstream of the Higgins Enterprises property. The FIRM map has been included in Section 24 above. According to the floodway delineation and floodway study, the documented elevation of the 100-year floodplain at the upstream property line is 3,334.7 feet. The area including and below elevation 3,334.7 feet has been surveyed, identified, and will be rezoned open space per Cascade County requirements. The rezoning application is included in Section 31. This is shown on the preliminary plat included in Section 3.

26 FIRE RISK RATING ANALYSIS AND FIRE PREVENTION PLAN

The proposed subdivision lies within the Gore Hill Volunteer Fire Department coverage area. The Department is made up of 18 volunteer firefighters and two fire stations. In accordance with the Cascade County July 18, 2019 River Bend Estates Phase II Major Subdivision approval, condition of approval #16 states that "A fire suppression cistern with a capacity of 64,000 installed on-site, properly maintained and equipped with the proper appurtenances for the Gore Hill volunteer Fire Department to use for firefighting at all times, for Phases 1 through 4, provided approval of Gore Hill Fire Chief is obtained. Provide the developers install and the homeowners' association maintain an accessible approach for access to the cistern at all times. A central location was agreed to by the fire chief and the 64,000-gallon tank was installed on the utility lot shown in the Phase III preliminary plat as part of Phase I construction.

26.1 Fire Protection Plan

Following is the wild land fire risk and hazard severity assessment form for the site.

The site is utilized as dry pastureland and includes a few Cottonwood trees near the River. Most of the property is grassland. According to the Community Fire Plan Wildland-Urban Interface Cascade County and Dearborn Fire District, Lewis and Clark County map included in the Cascade County Subdivision Regulations the property is designated as Low to Moderate Terrain/Fuel Hazard.

Table 2 - WILD LAND FIRE RISK AND HAZARD SEVERITY ASSESSMENT FORM

Assign a value to the most appropriate element in each category and place the number of points in the column on the right.

	Element	Points	
A.	**Means of Access**		
	1. Ingress and Egress		
	a. Two or more roads in/out	0	0
	b. One road in/out	7	
	2. Road Width		
	a. ≥7.3 m (24 ft.)	0	0
	b. ≥6.1 m (20 ft) and <7.3 m (24 ft).	2	
	c. <6.1 m (20 ft)	4	
	3. All-Season Road Condition		
	a. Surfaced road, grade <5%	0	
	b. Surfaced road, grade >5%	2	2
	c. Non-surfaced road, grade <5%	2	
	d. Non-surfaced road, grade >5%	5	
	e. Other than all-season	7	
	4. Fire Service Access		
	a. ≤91.4 m (300 ft.) with turnaround	0	0
	b. >91.4 m (300 ft) with turnaround	2	
	c. <91.4 m (300 ft) with no turnaround	4	
	d. ≥91.4 m (300 ft) with no turnaround	5	
	5. Street Signs		
	a. Present {10.2 cm (4 in.) in size and reflectorized}	0	0
	b. Not present	5	
B.	**Vegetation (Fuel Models)**		
	1. Characteristics of Predominate Vegetation Within 91.4 m (300 ft.)		
	a. Light (e.g., grasses, forbs, saw grasses, and tundra) NFDRS Fuel Models A, C, L, N, S, and T	5	5
	b. Medium (e.g., light brush and small trees) NFDRS Fuel Models D, E, F, H, P, Q, and U	10	
	c. Heavy (e.g., dense brush, timber, and hardwoods) NFDRS Fuel Models B, G, and O	20	
	d. Slash (e.g., timber harvesting residue) NFDRS Fuel Models J, K, and L	25	
	2. Defensible Space		
	a. More than 30.48 m (100 ft) of vegetation treatment from the structure(s)	1	1
	b. 21.6 m to 30.48 m (71 ft. to 100 ft.) of vegetation treatment from the structure(s)	3	
	c. 9.14 m to 21.3 m (30 ft. to 70 ft.) of vegetation treatment from the structure(s)	10	
	d. <9.14 m (30 ft.) of vegetation treatment from the structure(s)	25	
C.	**Topography Within 91.4 m (300 ft.) of Structure(s)**		
	1. Slope <9%	1	
	2. Slope 10% to 20%	4	4
	3. Slope 21% to 30%	7	
	4. Slope 31% to 40%	8	
	5. Slope >41%	10	

Table 2 - WILD LAND FIRE RISK AND HAZARD SEVERITY ASSESSMENT FORM (continued)

	Element	Points	
D.	**Additional Rating Factors (rate all that apply)**		
1.	Topographical features that adversely affect wild land fire behavior	0-5	1
2.	Areas with a history of higher fire occurrence than surrounding area due to special situations (e.g., heavy lightning, railroads, escaped debris burning, and arson)	0-5	0
3.	Areas that are periodically exposed to unusually severe fire weather and strong dry winds	0-5	0
4.	Separation of adjacent structures that can contribute to fire spread	0-5	0
E.	**Roofing Assembly**		
1.	Class A Roof	0	0
2.	Class B Roof	3	
3.	Class C Roof	15	
4.	Non-rated	25	
F.	**Building Construction**		
1.	Materials (predominate)		
	a. Noncombustible/fire-resistive siding, eaves, and deck (see Chapter 8)	0	
	b. Noncombustible/fire-resistive siding and combustible deck	5	5
	c. Combustible siding and deck	10	
2.	Building Setback Relative to Slopes of 30% or More		
	a. >9.14 m (30 ft.) to slope	1	1
	c. <9.14 m (30 ft) to slope	5	
G.	**Available Fire Protection**		
1.	Water Source Availability		
	a. Pressurized water source availability		
	1892.7 L /min (500 gpm) hydrants ≤304.8 m (1000 ft) apart	0	
	946.4 L/min (250 gpm) hydrants ≤304.8 m (1000 ft.) apart	7	
	b. Non-pressurized water source availability (off site)		
	≥946.4 L/min (250 gpm) continuous for 2 hours	3	3
	<946.4 L/min (250 gpm) continuous for 2 hours	5	
	c. Water Unavailable	10	
2.	Organized Response Resources		
	a. Station ≤8 km (5 mi.) from structure	1	1
	b. Station >8 km (5 mi.) from structure	3	
3.	Fixed Fire Protection		
	a. NFPA 13, 13R, 13D sprinkler system	0	
1.	None	5	5
H.	**Placement of Gas and Electric Utilities**		
1.	Both underground	0	0
2.	One underground, one above ground	3	
3.	Both above ground	5	
I.	**Totals for Home or Subdivision (Total of all points)**		28

Hazard Assessment	Total Points
Low Hazard	<40
Moderate Hazard	40 – 69
High Hazard	70 -112
Extreme Hazard	>112

27 Preliminary Homeowners' Association Documents

The Articles of Incorporation and Bylaws of the River Bend Subdivision (Phase I) Homeowners' Association are included in the following pages. Phase III documents will be the same as Phase I.

ARTICLES OF INCORPORATION OF

HIGGINS ENTERPRISES DEVELOPMENT COMPANY,

RIVER BEND ESTATES SUBDIVISION

HOMEOWNERS ASSOCIATION, INC.
A NON-PROFIT CORPORATION

The undersigned incorporator, for the purpose of forming a corporation under the Montana Non-Profit Corporation Act, does hereby adopt the following Articles of Incorporation.

ARTICLE ONE: NAME

The name of the organization is HIGGINS ENTERPRISES DEVELOPMENT COMPANY, RIVER BEND ESTATES, INC.

ARTICLE TWO: DURATION

The corporation is to exist perpetually.

ARTICLE THREE: PURPOSES

a. In way of explanation and not of limitation, the purposes for which this corporation is organized and shall be operated are as follows:

i. To be and constitute the Association to which reference is made in the Restated Declaration of Protective Restrictions Covenants, Conditions and Road Maintenance Agreement for River Bend Estates, as amended from time to time (hereinafter the "Declaration"), establishing a plan of development recorded in the Office of the Cascade County, Montana, to perform all obligations and duties of the Association, and to exercise all rights and powers of the Association, as specified therein, in the Bylaws, and as provided by law;

ii. To provide an entity for the furtherance of the interests of the owners of lots in River Bend Estates;

iii. To do such other things as are incidental to the purposes of the corporation or necessary or desirable in order to accomplish them.

b. The organization is a mutual benefit corporation. This corporation is not organized for profit or organized to engage in an activity ordinarily carried on for profit. It is the intent of the corporation to qualify for tax exemption under the Internal Revenue Section 501(c) (6).

c. No substantial part of the activities of the organization shall be the carrying on of propaganda, or otherwise attempting to influence legislation, and the organization shall not participate in, or intervene in (including the publishing or distribution of statements) any political campaign on behalf of any candidate for public office.

d. No part of the net earnings of the corporation shall inure to the benefit of, or be distributable to, its members, directors, officers, or other private persons, except that the corporation shall be authorized and empowered to pay reasonable compensation for services rendered and to make payments and distributions in furtherance of the purposes set forth in this Article Three.

e. Upon the dissolution of the corporation, the Board of Directors shall, after paying or making provision for the payment of all of the liabilities of the corporation, dispose all of the assets of the corporation exclusively for the purposes of the corporation in such manner, or to such organization or organizations organized and operated exclusively for charitable, educational, religious or scientific purposes as shall at the time qualify as an exempt organization or organizations under Section 501(c)(3) of the Internal Revenue Code of 1954 (or the corresponding provision of any future United States Internal Revenue Law), as the Board of Directors shall determine.

ARTICLE FOUR: MEMBERSHIP

The corporation shall have such members as provided for in its Bylaws who shall have all the rights and privileges of members of the corporation.

ARTICLE FIVE: REGULATION OF CORPORATION

a. The affairs of the corporation shall be managed by the Board of Directors. Any class of membership established in the Bylaws shall have the right to vote.

b. Bylaws for the regulation and management of the affairs of the corporation shall be adopted by the Board of Directors; the power to alter, amend or repeal the Bylaws or adopt new Bylaws shall be vested in the Board of Directors.

c. No member, officer or director of the corporation shall be personally liable for the debts or obligations of the corporation of any nature whatsoever, nor shall any of the property of the members, officers or directors be subject to the payment of the debts or obligations of this corporation, except for liability for any breach of the director's duty of loyalty to the corporation, for acts or omissions not in good faith or which involve intentional misconduct or a knowing violation of law, or for any transaction from which the director derived any improper personal benefit.

ARTICLE SIX: REGISTERED OFFICE AND REGISTERED AGENT

The name of the corporation's initial registered agent is _____ The address of the corporation's initial registered office is _____, _____, MT _____.

ARTICLE SEVEN: INCORPORATOR

The name and address of the incorporator is:

Name Address

IN WITNESS WHEREOF, the incorporator has hereunto set his hand this ____ day of _____.

_____ Incorporator

Having been appointed as an Initial Director of this corporation , I approve these Articles of Incorporation this _____ day of month year.

Name	Address
_____Director	_____
_____Director	_____
_____Director	_____

BYLAWS OF RIVER BEND ESTATES SUBDIVISION HOMEOWNERS ASSOCIATION

ARTICLE I: NAME AND LOCATION

The name of the corporation is *Higgins Enterprises Development Company, River Bend Estates, Homeowners Association,* hereinafter referred to as the *"Association."* The principle office for the transaction of business of the Association shall initially be located at 110 Aberdare Lane, Ulm, MT 59485. The mailing address shall initially be PO Box 322, Ulm, MT 59485. Meetings of the members and directors may be held at such places within the State of Montana, Cascade County, as may be designated by the Board of Directors.

ARTICLE II: PURPOSE OF ASSOCIATION

The Association shall represent owners and serve them in accordance with: 1) the provisions of the Declaration of Protective Covenants, Road Maintenance and the creation of a Rural Improvement District (RID) for River Bend Estates Subdivision on file under Document No._____ at Cascade County, Montana Clerk and Recorder's office (hereafter "Declaration"); and 2) the purposes set forth in the Article of Incorporation for the Association and it Bylaws. Such purposes include general maintenance of the properties, coordination with governmental agencies concerning the properties, levying and collecting annual and special assessments, fees and penalties, making improvements and repairs to common areas and roads administering a common area management plan, architectural control, covenant compliance and providing such other services and representation of owners as are authorized by the Declaration.

ARTICLE III: DEFINITIONS & ABBREVIATIONS

The following words shall have the following meaning herein:

1. **"Architectural Committee also known as RBAC"** shall mean and refer to the committee described described in Article V.
2. "**Association/HOA"** Shall mean and refer to the River Bend Estates Home Owner's Association, Inc., Montana non-profit corporation, its successors and assigns.
3. **"Common area"** shall mean all real property including any improvements thereon owned by the Association for the common use and enjoyment of the Owners.
4. **"Declarant"** shall mean and refer Higgins Enterprises LTD Development Company, and its respective agents, successors and assigns. The Declarant shall vote in Association meetings on all items except assessment items. The Declarant shall pay no assessments and shall cease ti exist as a Special Member after 51% of the lots in the subdivision are sold.
5. **"Lots"** shall refer to each tract of land subdivided by the Declarant and included in the development known as River Bend Estates and designated on a plat or survey thereof by a block and lot number but does not refer to private roads or Common areas. The term "Lot" shall not mean any remainder parcel or parcels owned by the Declarant but not yet subdivided into residential lots.
6. **"Member"** shall mean and refers to every person or entity who is a member of the Association. Each owner of a lot shall be a member.
7. **"Owner"** shall mean and refer to the record owner whether one or more persons or entities, of a fee simple title to any Lot, including contract sellers, but excluding those having such interest merely as security for the performance of an obligation.
8. **"Property"** or ..Properties" shall mean and refer to the development known as River Bend Estates in its entirety with such additions or phases thereto as may hereafter be added by the Association or the Declarant.

9. **"Roads"** shall mean and refer to any street, walk, drive, path or other right of way, within the Properties, as designated on the plat thereof and which is owned or is to be owned by the Association.
10. "**Rural Improvement District"** (RID) shall mean the owners may apply for a special assessment fund for improvements and maintenance of all roads and common areas.
11. **"Declaration"** means the Declaration of Protective Covenants for River Bend Estates 1 Subdivision on file under Document No. _____ at the Cascade County, Montana Clerk and Recorder's office.

ARTICLE IV: VOTING OF MEMBERSHIP

Membership: All Owners of the Lots within River Bend Estates shall be members of the Homeowners Association. The Owners of any Lot shall automatically become members of the Homeowners Association and shall remain a member until such time as the ownership of such Lot ceases for any reason, at which time the corresponding membership in the HOA shall automatically cease.

Voting: There shall be one vote for each Lot. If a person or entity owns more than one Lot , that person or entity shall have as many votes as the number of Lots owned by that person or entity. If more than one person or entity has an ownership interest in a single Lot, such persons or entities must decide among themselves how the vote for that Lot shall be cast.

ARTICLE V: MEETING OF MEMBERS

Section 1: Annual Meeting. The first annual meeting of the Members shall be held as determined by the initial incorporators. Thereafter, the annual Meetings of the members shall be held in Cascade County, Montana at such date, time and place as may be determined by the Board of Directors but in the months of April or May.

Section 2: Special Meetings. Special meetings of the Members may be called at any time by the President or by the Board of Directors, or upon written request of the Members who are entitled to vote one-fourth (1/4) of all of the votes of the membership.

Section 3: Notice of Meetings. At least ten (10) days write notice of each meeting of the Members, both annual and special, shall be given by, or at the direction of the Secretary or person authorized to call the meeting, by e-mail to the current address as provided by each Member to the Association as last appearing on the books of the Association and in the event no valid e-mail address is provided by the Member, by mailing a copy of such notice, postage prepaid addressed to the Member's address last appearing on the books of the Association supplied by such Member to the Association for the purpose of notice. In the event the Member does not provide an e-mail or mailing address of the Member as shown as the owner of record on file with the Cascade County Treasurer or Montana Cadastral System for each lot in the Subdivision shall be the mailing address used by the Association for notice to each Member. Such notice shall specify the place, day and hour of the meeting the purpose of the meeting.

ARTICLE VI: QUOROM

The presence at the meeting of one-third (1/3) of the Members entitled to vote, in person or by proxy, shall constitute a quorum for any action except as otherwise provided in the Articles of Incorporation, the Declaration, or these Bylaws. If a quorum is not present or represented at any meeting, the Members entitled to vote there shall have power to adjourn the meeting from time to time, without notice other than announcement at the meeting, until a quorum as aforesaid shall be present or be represented.

ARTICLE VII: PROXIES

At all meetings of the Members, each Members may vote in person or by written proxy. All proxies shall be in writing, date and signed by the absent Member identifying their lot ownership and naming the Member authorized to vote on their behalf. All written proxies must be filed with the Secretary at ;east went-four (24) hours prior to the meeting. Every proxy shall be revocable and shall automatically terminate upon conclusion of the meeting for which the proxy is dedicated.

ARTICLE VIII: BOARD OF DIRECTORS

Section 1. Number - Initial Appointment — Term — Removal — Compensation — Actions

a. Number. The affairs of this Association shall be managed by a Board of not less than three (3) or more than five (5) Directors. The Directors shall determine the total numbers of persons who shall comprise the
Board.

b. Initial Appointment. Declarants shall make an appointment of Directors at the time of initial incorporation and until such time as 100% of the lots are sold by Declarants to third parties, at which time the lot owners shall then be entitled to elect the Association Board of Directors from the Members. A majority of appointed Directors serving on the Board shall be Members.

c. Term of Office. At each annual meeting the Declarants shall appoint, or after 100% of the lots are sold by Declarants to third parties, then the Members shall elect for a term not exceed 3 years, a number of directors equal to the number of directors whose terms are ending at the annual meeting.

d. Removal. Any appointed director may be removed from the Board by the Declarant(s), only for good cause. After 100% of the lots are sold by Declarant(s) to third parties, then only the Members may remove any director by a two-thirds vote of the Members of the Association, with or without cause. In the event of death, resignation or removal of a director, their successor shall be selected by Declarants in the event 100% of the lots have yet to be sold to third parties, or after 100% of the lots have been sold to third parties, then by the remaining members of the Board and shall serve for the unexpired term of his or her predecessor.

e. Compensation. No Director shall receive compensation for any service he or she may render to the Association. However, any director may be reimbursed for actual reasonable expenses incurred within the scope and performance of their duties.

f. Action without a meeting. The directors shall have the right to take any action in the absence of a meeting, which they could take at a meeting by obtaining the written approval of all the directors. Any action so approved shall have the same effect as though taken at a meeting of the directors.

g. Actions of the First Board of Directors. All of the actions including, without limitation, the adoption of Bylaws and any undertakings or contracts entered into with others on behalf of the Association of the first Board of Directors of the Association named in the Articles of Incorporation shall be binding upon the Association in the same manner as though such actions had been authorized by a Board of Directors duly elected by the Members of the Association at the first or any subsequent annual meeting of Members, so long as such actions are within the scope of the powers and duties which may be exercised by any Board of Directors as provided in the Declaration or the Association's Articles of Incorporation.

Section 2. Nomination and Election of Directors. After 100% of the lots have been sold to third parties:

a. Nomination. Nomination for election to the Board of Directors shall be made by a Nominating Committee. Nominations may also be made from the floor at the annual meeting.

The nominating committee shall consist of a member of the Board of Directors, and two or more Members of the Association. The nominating committee shall be appointed by the President subject to approval by the Board of Directors prior to each annual meeting of the Members. The nominating committee shall make as many nominations for election to the Board of Directors as it shall in its discretion determine, but not less than the number of vacancies that are to be filled. The nominating committee shall report it slate of nominees at the annual meeting.

b. Election. Election to the Board of Directors shall be by oral vote or written ballot, as the presiding officer shall direct. At such election the Members or their proxies may cast, in respect to each vacancy, as many votes as they are entitled to exercise undertake provisions of the Declaration. The persons receiving the largest number of votes shall be elected. Cumulative voting is not permitted.

Section 3. Meeting of Directors.

a. Regular Meetings. Regular meeting of the Board of Directors shall be held at least one time per year, at such time and plane and hour as may be fixed from time to time by resolution of the Board. Notice to Members of the regular meetings of the Board is not required.

b. Special Meetings. Special meetings of the Board of Directors shall be held when called by the president of the Association, or by any two directors, after not less than five (5) days written notice to each director.

c. Quorum. A majority of the number of directors shall constitute a quorum for the transaction of business. Every act or decision done or made by a majority of the directors present at a duly held meeting at which a quorum is present shall be regarded as an act of the Board.

d. Place of Meetings. Meetings of the directors of the Association may be held at such places within Cascade County, Montana, as may be designated by the Board of Directors.

Section 4. Powers and Duties of the Board of Directors.

a. Powers. The Board of Directors shall have power to:

i) Adopt and publish rules and regulations governing the use of the common area, facilities and roadways and the personal conduct of the Members and their guest thereon, and to establish penalties for the infraction thereof, including fines, penalties and revoked privileges of use as prescribed by the River Bend Estates Covenants.

ii) Declare the office of a member of the Board of Directors to be vacant in the event such member shall be assent from three (3) consecutive regular meetings of the Board of Directors

iii) Levy assessments, fees, penalties and enforce liens as authorized by Declaration.

iv) Secure for the Association liability insurance for the common areas and risks involving the Association or its Board of Directors and Association Officers.

b. Duties. It shall be the duty of the Board of Directors to:

i) Cause to be related and preserved a complete record of all its acts and corporate affairs and to present a statement thereof to the Members at the annual meeting of the Members, or at any special meeting when such statement is requested in writing by one-fourth (1/4) of the Members who are entitled to vote.

ii) Supervise all officers, agents, contractors and employees of the Association, and to see that their duties are properly performed.

iii) As more fully provided in the Declaration, to 1.) Confirm the amount of the

annual assessment against each lot at least thirty (30) days in advance of each annual assessment to be levied during the same fiscal year; 2.) Send written notice of each assessment to every Owner subject thereto at least thirty (30) days in advance of each annual assessment due date; and 3.) Exercise discretion whether to foreclose the lien against any property for which assessments are not paid within ninety (90) days after due date or to bring an action at law against the owner personally obligated to pay the same.

iv) Cause the Common Area to be maintained, repaired, replaced, so as to be reasonably safe and secure.

v) Determine the need for snow plowing, repair, maintenance or improvement of common areas, road maintenance and repair and hire a contractor to do the work.

vi) Perform such other acts as necessary for the improvement of the Association.

vii) Procure and maintain adequate liability and hazard insurance on property owned by the Association as prescribed by the Declaration.

ARTICLE IX: OFFICERS AND THEIR DUTIES

Section 1. Enumeration of Officers. The officers of the Association shall be a President, shall at all times must be a Member of the Board of Directors, and a Vice-President and a Secretary, and a Treasurer who need not be members of the Board of Directors, and such other officers as the Board may from time to time by resolution create. A person may simultaneously hold more than one office, such as Secretary/Treasurer. All officers will be Members of the Association, and do not forfeit their voting rights as a Member because they also serve as an officer or a director.

Section 2. Election of Officers. The election of officers shall take place at the first meeting of the Board of Directors following the Organization Meeting of the Corporation, and thereafter during each annual meeting of the Members.

Section 3. Nomination of Officers. Nomination for the election of the Officers shall be made by a Nomination Committee. The Nomination Committee shall consist of a Chairman, who shall be the Vice-President and two (2) other Members of the Association. The Nomination Committee shall be appointed by the President one month prior to the annual meeting to serve from the close of the annual meeting until the close of the next annual meeting. The Nomination Committee shall provide at least one candidate for each office. Nominations can also be made by the Members from the floor during the annual meeting.

Section 4. Election. Election to the Board of Directors shall be by oral vote or written ballot, as the presiding officer shall direct. At such election the Members or their proxies may cast, in respect to each vacancy, as many votes as they are entitled to exercise under the provisions of the Articles of Incorporation or by the Bylaws of each office. The persons receiving the largest number of votes shall be elected. Any objection to the vote counts must be made prior to the end of the annual meeting. The ballots shall be destroyed after the annual meeting.

Section 5. Term. The officers of the Association shall hold office for one (1) year unless they shall sooner resign, or shall be removed, or otherwise disqualified to serve.

Section 6. Special Appointments. The Board may appoint such other officers as the affairs of the Association may requirer, Each of whom shall hold office for such period, have such authority, and perform such duties as the Board may, from time to time, determine.

Section 7. Resignation and Removal. Any officer may be removed from office only with cause by the Board. Any officer may resign at any time giving writer notice to the Board, the president or the secretary. Such resignation shall take effect on the date of receipt of such notice or at any later time specified therein, and unless otherwise specified therein, the acceptance of such resignation shall not be necessary to make it effective.

Section 8. Vacancies. A vacancy in any office may be filled by appointment by the Board. The officer appointed to such vacancy shall serve for the remainder of the term of the officer they replace.

Section 9. Duties. The duties of the officers are as follows:

a. President. The President shall preside at all meetings of the Board of Directors and all annual Membership meetings, shall see the orders and resolution of the Board are carried out, shall sign all contracts or other written instruments necessary for the operation of the Association, and shall co-sign all Association checks and discharge such other duties as may be required of the President by the Bylaws and the Board.

b. Vice President. The Vice President shall act in the place and instead of the President in the event of his or her absence, inability to act or refusal to act and shall exercise and discharge other duties as may be required of the Vice President by the Bylaws and the Board.

c. Secretary. The Secretary shall record the votes and keep the minutes of all meetings and proceeding of the Board and the Members, keep the appropriate current records showing the Members of the Association together with their addresses, e-mails, and phone numbers and shall perform such other duties as required by the Bylaws and the Board.

d. Treasurer. The Treasurer shall receive and deposit in appropriate bank accounts all monies of the Association and shall disburse such funds as directed by the resolution of the Board, shall sign all checks and promissory notes of the Association, keep proper books of account, cause an audit to be made by a public accountant at the discretion of the Directors and shall prepare statements of income and expenditures to be presented to the Membership at its regular annual meetings and have available at each annual meeting a copy of said report(s).

ARTICLE X: COMMITTEES

Section 1: Architectural Control Committee/RBAC. As provided in the Declaration, the Architectural Committee shall be composed of three (3) members and shall oversee the construction of residences, and other improvements on the Properties. Members of the Architectural Committee do not have to be Owners. The Architectural Committee shall at all times include a Declarant member as defined in Article 1, paragraph 4, herein, as one of its members as long as the Declarant owns property subject to these Covenants and does not decline to act. The right of a Declarant to membership in the architectural Committee shall not be modified or eliminated by later modifications or restatement of these Covenants except by consent of Declarant. If the Declarant member is unable or declines to act, the Declarant may appoint an attorney-in-fact, to act with all rights and power attributable to the Declarant. Specifics regarding the Architectural Control Committee are stated in ARTICLE VII, BUILDING DESIGN, COVENANTS, 5. *Architectural Committee*

ARTICLE XI: ASSESSMENTS

Section 1. Types of Assessments and Fees. As more fully provided in the Declaration Article IX, each Member is obligated to pay to the Association annually a uniform rate of assessments and fees. The assessments levied by the Association shall be used exclusively to promote the

recreation, health, safety, and welfare of the residents in the Properties, for the improvement, maintenance, repair and insurance for the common area and any water wells, pumps irrigation or sewage system, and to pay any taxes on Association property.

Section 2. Waiver of Exemptions. Each Owner, to the extent permitted by law, waives, to the extent of any liens created pursuant tooth's Declaration, the benefit of any homestead or exemption laws of Montana in effect at the time assessment or installment becomes delinquent or any lien is imposed. Property or properties shall mean and refer to all Lots described on River Bend Estates Subdivision Plat _____, except for Lot 4A of Higgins Enterprises Development Company/River Bend Estates.

Section 3. Amount of Assessments and Fees.

a. Contribution to Working Capital Reserve. It shall be the obligation of each purchasing owner to pay to the Association through escrow on upon the sale of each Lot, the sum of One Thousand Dollars ($1,000) as a contribution to the Association's working capital reserve.

b. Annual Assessment. The amount of the annual assessment shall be determined by vote of a simple majority of the Members of the Association from time to time. In the event a simple majority of Members do not exercise their right to vote to set the Annual Assessment, the annual assessment amount shall then be determined by the Association's Board of Directors.

c. Special Assessment. The amount of any special assessment shall be determined by the Association's Board of Directors.

d**. Fees.** The amount of any fees charged by the Association shall be determined by the Association's Board of Directors.

Section 3. Due Date for Assessments or Fees. All assessments must be fixed at a uniform rate for all Lots. Said assessment shall first become due and owing upon the initial transfer of the Lot by the Declarant. Until *January 1, 2020*, the maximum annual assessment shall be *$300.00* per Lot. Effective for *January 1, 2020*, and effective for the first day of January of each year thereafter, the maximum annual assessment may be increased by majority vote of the Association membership. Lots owned by a Declarant and remaining vacant shall not be subject to annual or special assessments and fees. The due date for any special assessment levied by the Association shall be determined at the time the special assessment is created and the Association shall send written notice of each special assessment to every Owner subject thereto at least thirty (30) days in advance of its due date.

ARTICLE XII: BOOKS AND RECORDS

The books, records and papers of the Association shall at all times, during reasonable business hours, be subject to inspection by any Member. The Declaration and the Articles of Incorporation and the Bylaws for the Association shall be available for inspection by any Member at the principle office of the Association, where copies may be purchased at reasonable costs.

ARTICLE XIII: FISCAL YEAR

The fiscal year of the Association shall begin on the 1st day of January and end on the 31st day of December of every year except that the first fiscal year shall begin on the date of incorporation

ARTICLE XIV: AMENDMENTS AND CONFLICTS

Section 1. Amendments. These Bylaws may be amended at a regular or special meeting of the members by a vote of two-thirds majority of the quorum members present in person or by proxy.

Section 2. Controlling Conflict. In the case of any conflict between the Articles of Incorporation and these Bylaws, the Articles shall control. In the case of any conflict between the Declaration and these Bylaws, the Declarations shall control.

Section 3. Annexation Property. Declarant shall be entitled to add such real property and Common Area by annexations to the jurisdiction of the Association and the Covenants as the Declarant shall deem appropriate. After January 1, 2030 additional real property and Common Area my be annexed to the above described property and brought within the jurisdiction of the Association and by the Association to contain the required signatures.

Section 4. Removal of Property. Declarant has the right to remove its real property from the Association until January 1, 2030. Purposes for removal include, but not limited to, schools, fire stations or any other public purposes. Real property may be removed from the Association and Covenants by written consent of members representing not less than 66% of the votes and certified by the Association to contain the required signatures.

SIGNATURE PAGE TO FOLLOW

IN WITNESS WHEREOF, the undersigned, being all of the Directors RIVER BEND ESTATES SUBDIVISION HOMEOWNERS ASSOCIATION have hereunto set their hands this _____day of _____year_____

_____

Director

_____

Director

_____

Director

_____

Director / President

28 REVOCATION OF AGRICULTURAL COVENANT

There are no agricultural covenants associated with the property.

29 Montana State Historical Preservation (SHPO) Letter

Correspondence with SHPO is included below.

TRIPLE TREE ENGINEERING

April 21, 2020

State Historic Preservation Office
1410 8th Avenue
PO Box 201202
Helena, MT 59620

RE: River Bend Estates **Phase III** Subdivision

To Whom It May Concern:

Triple Tree Engineering is working with Higgins Enterprises on a residential subdivision in Cascade County. The property in located approximately 2 miles south of Great Falls. The attached vicinity maps show the location and rough layout. The subdivision would be a 12-lot residential subdivision accessing the loop road designed and approved by Cascade County for River Bend Estates Phase I as well as construction of one new road to accommodate Phase III. The new lots will utilize individual wells and drain fields. We are working with Cascade County Planning and the Cascade County Health Department to prepare the preliminary plat application.

In accordance with Cascade County Subdivision Regulations I am preparing an environmental assessment.

We are contacting your agency to identify any potential environmental impacts associated with the proposed improvements. Please take a few moments to review the proposal and provide a response detailing any potential environmental impacts. If we do not receive comments from your agency within 30 days, we will assume that you have no concerns at this time regarding the subdivision. If you have questions or comments, please contact me at 406-461-2115 or jcrawford@tripletreemt.com.

Thank You!

Sincerely,

Triple Tree Engineering, Inc.

Jason Crawford, PE

3102 Old Broadwater Lane // Helena, MT 59601 // 406.461.0692
www.tripletreemt.com

Jake Hoffman

From: Jason Crawford
Sent: Friday, May 1, 2020 3:12 PM
To: Jake Hoffman
Subject: FW: RIVER BEND ESTATES PHASE III 12-LOT SUBDIVISION, CASCADE CO
Attachments: 2020043010.pdf

Jason Crawford, PE

TRIPLE TREE
ENGINEERING

3102 Old Broadwater Lane, Helena, MT 59601
Cell: 406.461.2115
www.tripletreemt.com

From: Murdo, Damon <dmurdo@mt.gov>
Sent: Friday, May 1, 2020 1:37 PM
To: Jason Crawford <jcrawford@tripletreemt.com>
Subject: RIVER BEND ESTATES PHASE III 12-LOT SUBDIVISION, CASCADE CO

Big Sky. Big Land. Big History.
Montana
Historical Society

May 1, 2020

Jason Crawford
Triple Tree Engineering
3102 Old Broadwater Lane
Helena MT 59602

RE: RIVER BEND ESTATES PHASE III 12-LOT SUBDIVISION, CASCADE CO. SHPO Project #: 2020043010

Dear Mr. Crawford:

I have conducted a cultural resource file search for the above-cited project located in Section 34, T20N R3E. According to our records there have been no previously recorded sites within the designated search locale. The absence of cultural properties in the area does not mean that they do not exist but rather may reflect the absence of any previous cultural resource inventory in the area, as our records indicated none.

It is SHPO's position that any structure over fifty years of age is considered historic and is potentially eligible for listing on the National Register of Historic Places. If any structures are to be altered and are over fifty years old, we would recommend that they be recorded, and a determination of their eligibility be made prior to any disturbance.

Based on the previous agricultural use of the area we feel that a recommendation for a cultural resource inventory is unwarranted at this time. As long as there will be no disturbance or alteration to structures over fifty years of age we feel that there is a low likelihood cultural properties will be impacted. However, should structures need to be altered or if cultural materials be inadvertently discovered during this project we would ask that our office be contacted, and the site investigated.

If you have any further questions or comments, you may contact me at (406) 444-7767 or by e-mail at dmurdo@mt.gov.
I have attached an invoice for the file search. Thank you for consulting with us.
Sincerely,

Damon Murdo
Cultural Records Manager
State Historic Preservation Office

File: LOCLA/SUBDIVISIONS/2020

30 VARIANCE REQUEST

We are not requesting a variance with this application.

31 RE-ZONE APPLICATION

We are proposing to re-zone one additional lot situated below the Base Flood Elevation as open space. The re-zoning application is included below. The $750 review fee has already been paid. A copy of the check is included below.

File 5-5-2020

TRIPLE TREE ENGINEERING

April 30, 2020

Check # 7713 $750 on 5/5/20

Sandor Hopkins
Cascade County Public Works Planning Division
121 4th St N., Ste 2H/I
Great Fall MT, 59401

RE: River Bend Estates Phase III Subdivision
Zoning Change Application

Dear Sandor:

Mr. and Mrs. Higgins are proposing to develop a third subdivision on their property south of Great Falls, Montana. The property is located east of and adjacent to the current River Bend Estates Phases 1-2 located in the southwest corner of section 34, T 20 N, R 03 E. The project is positioned east of Flood Road, south of Dick Road, and west of Fox Farm Road.

The property includes Missouri River frontage. In accordance with the Cascade County Subdivision Regulations we have extrapolated the Base Flood Elevation (BFE) from the upstream studied area across the property along the waterway. The area below the BFE has been delineated as a separate lot and we are requesting the area be rezoned as Open Space as required in Section 10-14 of the Subdivision Regulations. ~~Additionally, we are requesting that the entirety of River Bend Estates Phases I-III, minus this Open Space lot and the Open Space lot created in Phase II, be rezoned from SR2 to SR1.~~

Please call me at (406)461-2115 if you have any questions.

Sincerely,

Triple Tree Engineering, Inc.

Jason Crawford, PE

Higgins Enterprises LTD

Rick Higgins

Rick Higgins, Owner

Judy Higgins

Encl: Cascade County Zoning Change Application
Rezone Vicinity Map
River Bend Estates Phase III Plat

N. RICHARD HIGGINS 10-98
JUDY F. HIGGINS
DBA HIGGINS ENTERPRISES LTD
NO. 110 ABERDARE LANE 406-866-3452
P.O. BOX 322
ULM, MT 59485-0322

7713

5-5-2020

Pay to the Order of Cascade City Planning $ 750

Seven Hundred & Fifty Dollars

First Interstate Bank
firstinterstate.com

For Zoning Permit N Richard Higgins

⑆092901683⑆ 2100046850⑈ 7713

Cascade County Zoning Change Application

Cascade County Public Works Department
Planning Division
121 4th St No, STE 2H/I, Great Falls MT 59401
Phone: 406-454-6905 Fax: 406-454-6919

$750.00 Non Refundable Application Fee **Payment:** Check (#) _____ Cash____

FOR OFFICE USE ONLY

Date Application Received: _____ File No: _____

Planning Board Hearing Date: _____ Action: _____

County Commission Hearing Date: _____ Action: _____

APPLICANT/OWNER:

Name: Higgins Enterprises LTD - Rick Higgins Phone: 406-788-4806

Mailing Address: PO Box 322

City/State/Zip Code: Ulm, MT, 59485

Interest in property: Full

Check which applies:

☒ Map Amendment ☐ Text Amendment, Zoning Regulations

TECHNICAL/PROFESSIONAL PARTICIPANTS:

Name: Triple Tree Engineering - Jason Crawford Phone: 406-461-2115

Mailing Address: 3102 Old Broadwater Lane

City, State, Zip: Helena, MT, 59601

Email: jcrawford@tripletreemt.com

IF THE REQUEST PERTAINS TO AN AMENDMENT TO THE TEXT OF THE ZONING REGULATIONS, PLEASE COMPLETE THE FOLLOWING:

A. What is the proposed zoning text/map amendment?

We are requesting to re-zone the area below the base flood elevation as open space.

IF THE REQUEST PERTAINS TO AN AMENDMENT TO THE ZONING MAP PLEASE COMPLETE THE FOLLOWING:

A. Address of the property: Flood Road

B. Legal Description: TRACT OF RECORD 6 OF COS #5119

(Lot/Block of Subdivision, or Geocode/Parcel #)

C. 34 / 20N / 3E

Section Township Range

D. Total acreage: 169.84

E. Zoning district: SR2

F. The **present** zoning of the above property is: SR2

G. The **proposed** zoning of the above property is: Open Space

APPLICATION REQUIREMENTS

An applicant must notify the Planning Division and request a pre-application meeting with planning staff. The pre-application meeting will be scheduled within thirty (30) days of the request. At this meeting, staff will indicate the necessary information within the application, process, and timeline for the rezoning petition process. The application for a rezoning petition must include the following and any additional materials requested by Planning Staff:

(1) A letter signed by at least one landowner within the area to be rezoned explaining the requested rezoning.
Reference the attached cover letter signed by Jason Crawford and Rick Higgins.

(2) A vicinity map of the parcels and surrounding area clearly identifying the location of the property.
Reference the attached vicinity map and the plat.

(3) A legal description of the boundaries of the proposed district.
Reference the attached vicinity map and the plat.

(4) A lot layout plan may be required indicating some or all of the following:
Reference the attached plat and the preliminary plat application for River Bend Estates Phase III.

(a) Identify any covenants, liens, easements or any other encumbrances upon the parcel. If a description will not suffice, provide copies or exhibits when necessary.

(b) The land area of the parcel (found on deed, subdivision plat or certificate of survey at the Office of the County Clerk and Recorder or Planning Division).

(c) Describe the existing land use of the parcel and neighboring areas.

(d) Describe the anticipated impact upon neighboring property.

(e) On a site plan, indicate the dimensions of the property under consideration, the size and placement of existing structures, parking areas and landscaping areas.

(f) On a site plan, indicate the location of existing curb cuts or access points.

(g) On a site plan indicate the location of any existing utilities such as water, sewer, gas, electricity, storm sewer, rivers, creeks, streams, irrigation ditches, easements, historical land marks, or any other items that may affect the application.

(5) Cite any previous request for a zone change or variance involving the parcel, as well as any action taken on previous requests.

(6) **Application Fee: All applications for rezoning must include an application fee of seven hundred fifty dollars ($750.00).**

THE FOLLOWING ARE THE CRITERIA BY WHICH ZONING AMENDMENTS ARE REVIEWED. PLEASE PROVIDE A RESPONSE AND *DETAILED* EXPLANATION FOR EACH CRITERION FOR CONSIDERATION BY THE PLANNING STAFF, PLANNING BOARD, AND COUNTY COMMISSIONERS.

Criteria 1: Is the proposed amendment in accordance with the Growth Policy's five primary goals and associated objectives? We are submitting this rezoning application as required by Cascade County Subdivision Regulations for 0.75 acres of property situated below the Base Flood Elevation to be zoned as open space. Reference attached map.

Goal 1: Sustain and strengthen the economic well-being of Cascade County's citizens.

Objectives:

a. Stimulate the retention and expansion of existing businesses, new businesses, value-added businesses, wholesale and retail businesses, and industries including agriculture, mining, manufacturing/processing, and forest products.
b. Stabilize and diversify the county's tax base by encouraging the sustainable use of its natural resources.
c. Identify and pursue primary business development that complements existing business, which is compatible with communities, and utilizes available assets. Identify and pursue targeted business development opportunities to include, but not limited to, manufacturing/heavy industry, telecommunications, and youth/social services.
d. Promote the development of cultural resources and tourism to broaden Cascade County's economic base.
e. Foster and stimulate well-planned entrepreneurship among the county's citizenry.
f. Promote a strong local business environment. Encourage and strengthen business support mechanisms such as chambers of commerce, development organizations and business roundtable organizations.
g. Improve local trade capture for Cascade County businesses. Promote local shopping as well as well-planned businesses and new businesses.
h. Network with and support other economic development efforts in the region and statewide, in recognition of Cascade County's interdependence with other communities and to leverage available local resources.
i. Encourage the growth of the agricultural economy.
j. Stimulate the growth of the economy by encouraging the use of alternative methods of energy production, including wind energy.

Goal 2: Promote and maintain Cascade County's rural character and the community's historic relationship with natural resource development.

Objectives:

a. Foster the continuance of agriculture and forestry in recognition of their economic contribution and the intrinsic natural beauty of grazing areas, farmlands, and forests.
b. Preserve Cascade County's scenic beauty and conserve its forests, rangelands and streams, with their abundant wildlife and good fisheries.
c. Preserve Cascade County's open space setting by encouraging new development to locate near existing towns and rural settlements and by discouraging poorly designed, land subdivisions and commercial development.
d. Assure clean air, clean water, a healthful environment and good community appearance.
e. Support the development of natural resources including but not limited to timber, mining, oil and gas production, and renewable energy production.
f. Continue to work with federal and state agencies to redevelop properties within Cascade County which are currently undergoing Superfund and Brownfield processes.

Goal 3: Maintain agricultural economy.

Objectives:

a. Protect the most productive soil types.
b. Continue to protect soils against erosion.
c. Protect the floodplain from non-agricultural development.
d. Support the development of value-added agricultural industry in Cascade County utilizing the products from the regional area.

Goal 4: Retain the presence of the US Military in Cascade County.

Objectives:

a. Encourage the federal congressional delegation to actively support maintaining the current mission status at a minimum.
b. Promote the location of additional military missions in Cascade County.
c. Encourage the reactivation of the runway at Malmstrom Air Force Base for fixed wing operations.
d. Refer to the Joint Land Use Study for resolving conflicts and promoting mission compatible development.

Goal 5: Preserve and enhance the rural, friendly and independent lifestyle currently enjoyed by Cascade County's citizens.

Objectives:

a. Maintain Cascade County's citizens independent lifestyle and minimize local governmental intervention, to the extent possible, consistent with the requirements of a continually evolving economy and constantly changing population.
b. Preserve and promote Cascade County's rich cultural heritage, rooted in natural resource development and reflected in its numerous cultural/historic sites and archaeological areas.
c. Promote fire prevention measures throughout the county, giving special emphasis to the extreme fire hazards present at the wild land/urban interface.
d. Encourage the continued development of educational programs and facilities, recreational opportunities and spaced and health services for all county residents.

Is the proposed amendment designed to:

Criteria 2: Secure safety from fire and other dangers? Fire requirements have been addressed with on-site water storage.

Criteria 3: Promote public health, public safety, and the general welfare?

Criteria 4: Facilitate the adequate provision of transportation, water, sewerage, schools, parks and other public requirements? Proper access to the subdivision, water and sewer service, schools, parks etc. have been addresse through the subdivision process.

Criteria 5: The reasonable provision of adequate light and air? Proposed minimum lot size of the subdivision is 1 acre.

Criteria 6: The effect on motorized and non-motorized transportation systems? TIS was prepared showing a small increas in Flood Rd traffic.

Criteria 7: Compatible urban growth in the vicinity of cities and towns that at a minimum must include the areas around municipalities? The areas around the development are zoned SR1 and SR2.

Criteria 8: The character of the district and its peculiar suitability for particular uses? We are rezoning as Open Space.

Criteria 9: Conserving the value of buildings and encouraging the most appropriate use of land throughout the jurisdictional area? We are proposing to rezone the property as open space adjacent to the River.

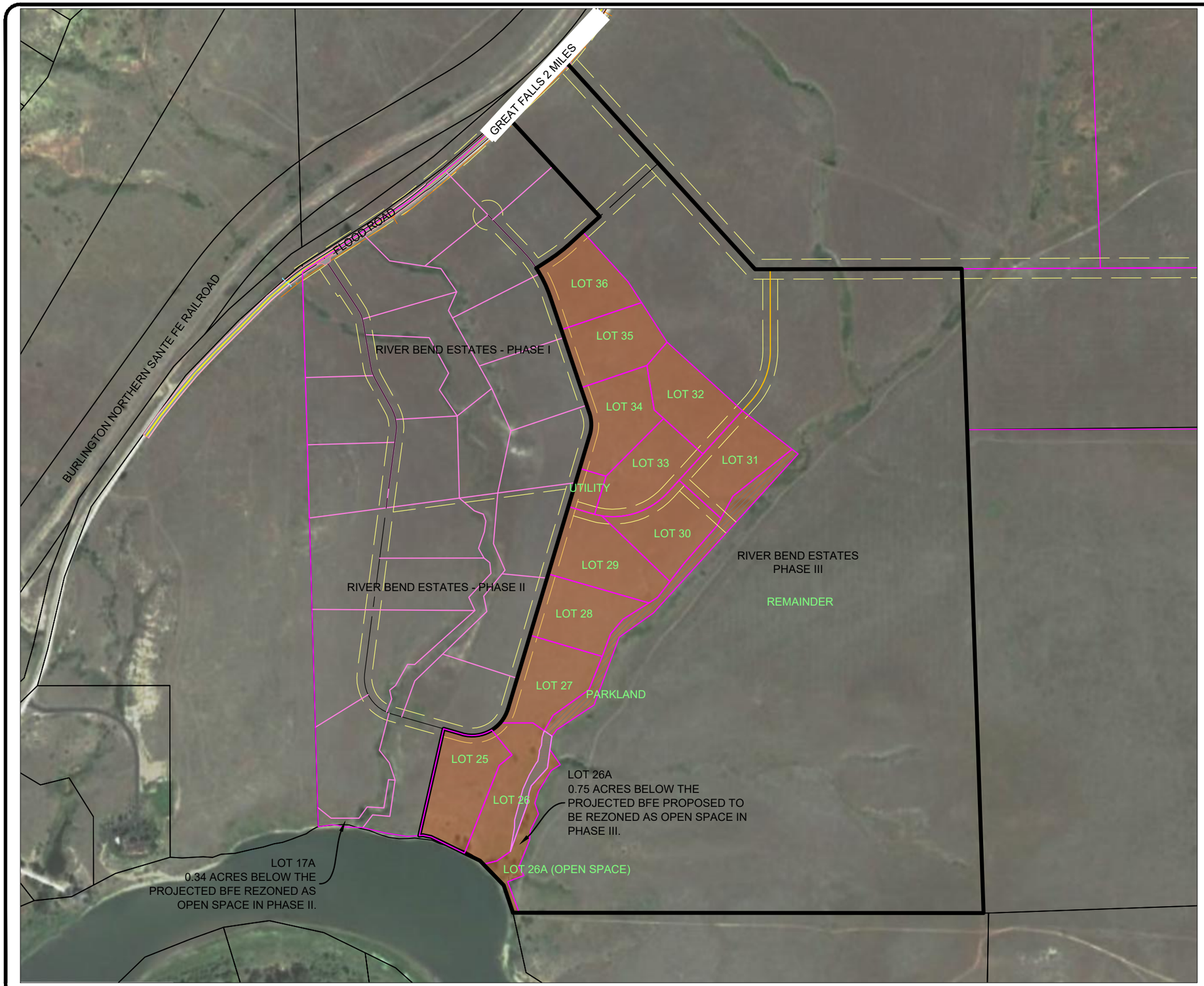
Criteria 10: Is the proposed amendment, as nearly as possible, compatible with the zoning ordinances of nearby municipalities? Great Falls is located 2 miles to the northeast with the closest properties inside the City limits zoned as R1 and R2.

I hereby certify that the information on and attached to this application is true and correct. I understand the fees for this application are not refundable. By signing of this application I agree that the Cascade County Planning Division staff to be present on the property for routine monitoring and inspection during the application process.

Applicant's Signature: Rick Higgins — **Date:** 5-5-2020

Judy Higgins — 5-5-2020

RIVER BEND ESTATES
PHASE III
REZONE VICINITY MAP



N

200 0 200 400
SCALE FEET

PRELIMINARY
NOT FOR
CONSTRUCTION

TRIPLE TREE
ENGINEERING

Jul 30, 2020 - 3:50pm - P:\Great Falls\19-72 River Bend Phase III\Preliminary Plat Application\Exhibits\Phase III Prelim Plat Exhibits.dwg

32 MITIGATION PROPOSAL FOR POTENTIAL HAZARDS

We do not anticipate any hazards.

33 Additional Relevant and Reasonable Information

We believe all relevant and reasonable information has been provided. Any necessary additional information is available upon request.