

APPENDIX A:
DEQ LOCAL REALIGNMENT SEGMENTS PRELIMINARY ANALYSIS

Development of Alternative 4 (Possible Agency-Proposed Local Realignments)

During the development of Alternative 4, DEQ considered eight possible local realignments to address specific scoping issues (**Figure A1**). The eight local realignments are presented below as segments A1, A2, B1, B2, C1, C2, D, and E. In assembling Alternative 4 as a whole, DEQ selected segments A1, B2, C1, the north half of D, and E. As discussed in Section 2.5, the DEQ Director may select some of the segments included in Alternative 4 as mitigations to address land use and visual resource issues identified during scoping and in the analysis of Alternative 2. Therefore, all of the segment descriptions are included here for information. DEQ's analysis of these segments, and the information that helped in the selection of segments for Alternative 4, are presented here.

West Great Falls Realignment Segment A1

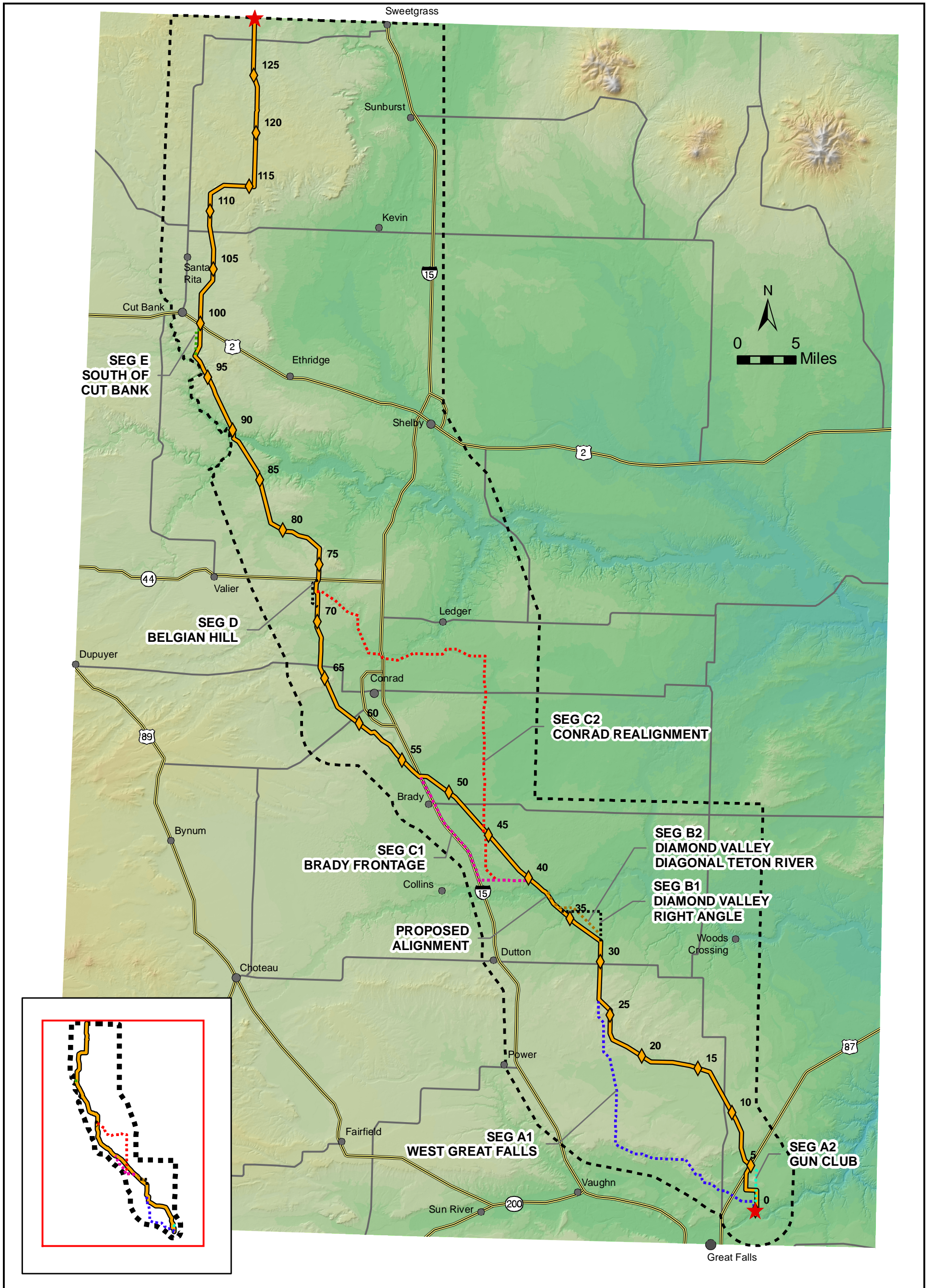
Alternative segment A1 is an alignment that would diverge from the southern 23 miles of Alternative 2, to avoid diagonal crossing of farm land, where possible. Where Alternative 2 would go directly north out of the Great Falls Substation, segment A1 would take a west-northwesterly path out of Great Falls paralleling the railroad and WAPA 230-kV transmission line, making use of an existing transportation corridor. The segment A1 alignment would head west and then north along the railroad and rejoin Alternative 2 where it leaves 8th Road. Segment A1 is the only segment that would run south and west of Benton Lake National Wildlife Refuge.

Shooting Sports Complex Realignment Segment A2

Approximately 1½ miles north of Great Falls, Alternative 2 would turn directly west for a mile and then run directly north along the west side of the Great Falls Shooting Sports Complex. Segment A2 is a 4.2-mile-long alignment that would continue directly north from Great Falls along the edge of cropland and parallel to the access road on the east side of the Great Falls Shooting Sports Complex. The alignment would parallel the existing 161-kV NWE transmission line between Great Falls and Havre. Segment A2 would rejoin Alternative 2 where it crosses Highway 87. This alignment would minimize crossing of farmland.

Diamond Valley Right Angle Realignment Segment B1

Segment B1 is a 5.9-mile-long alignment addressing the area in Teton county 2 to 5 miles south of the Teton River. In the headwaters of Kinnerely Coulee, segment B1 would run directly north where Alternative 2 turns northwest. After running directly north for approximately 2½ miles, segment B1 would turn directly west running approximately 3 miles until it would rejoin Alternative 2 in the vicinity of Hunt Coulee. This alignment would avoid diagonal crossing of farm land.



**FIGURE A1
AGENCY PROPOSED
LOCAL REALIGNMENT
SEGMENTS**

- | | | | | |
|---------------|--|---|--|-------------------------------|
| LEGEND | | ALT2 - ALIGNMENT | | CITIES AND TOWNS |
| | | ALT2 - MILEPOSTS | | ALIGNMENT END AND EXIT POINTS |
| | | SEGMENT A1 WEST GREAT FALLS | | STUDY AREA BOUNDARY |
| | | SEGMENT A2 SHOOTING SPORTS COMPLEX | | MAJOR HIGHWAYS |
| | | SEGMENT B1 DIAMOND VALLEY RIGHT ANGLE | | SECONDARY ROADS |
| | | SEGMENT B2 DIAMOND VALLEY AND TETON RIVER | | |
| | | SEGMENT C1 BRADY FRONTAGE ROAD | | |
| | | SEGMENT C2 CONRAD REALIGNMENT | | |
| | | SEGMENT D BELGIAN HILL | | |
| | | SEGMENT E SOUTH OF CUT BANK | | |

Diamond Valley and Teton River Realignment Segment B2

Segment B2 is a 6.5-mile-long alignment that would diverge from Alternative 2 at the same location as segment B1. Where the segment B2 alignment intersects the Alternative 3 alignment and existing NWE 115-kV transmission line, it would parallel the line for approximately 3 miles until it would turn west to join Alternative 2 just south of the Teton River. Segment B2 would cross Hunt Coulee approximately $\frac{3}{4}$ mile north of the Alternative 2 crossing and $\frac{1}{4}$ mile north of the segment B1 crossing. Segment B2 would then cross the Teton River just east of the location described in Alternative 2. Segment B2 would address a landowner concern over opening a new corridor rather than paralleling an existing line which already has disrupted farming practices in some fields.

Brady Frontage Road Realignment Segment C1

Segment C1 is a 15-mile-long realignment that would diverge from Alternative 2 approximately 8 miles southeast of Brady. Segment C1 would run directly west from the Alternative 2 along the northern edge of the Teton River bank to the Interstate 15 frontage road, and follow the frontage road for about 11 miles past the town of Brady to rejoin Alternative 2 about two miles north of Brady. Segment C1 would closely parallel the existing transportation corridor of Interstate 15 and the frontage road. Segment C1 would decrease crossing of farmland and avoid paralleling one pipeline.

Conrad Realignment Segment C2

Segment C2 is a 41-mile-long realignment that would diverge from Alternative 2 at the same location as segment C1. After approximately 3 miles running directly west, segment C2 would turn northwest for approximately $1\frac{1}{2}$ miles, then turn directly north for approximately 18 miles, then turn directly west, heading for the Dry Fork of the Marias River. After the alignment crosses the existing WAPA 230-kV transmission line, approximately 2 miles south of Ledger, it intersects the river. The alignment generally parallels the Dry Fork of the Marias until it would cross Interstate 15, then head northwest along Big Flat Coulee for approximately 8 miles. The alignment would turn due west for approximately 1 mile before rejoining Alternative 2, approximately 4 miles north of the Dry Fork of the Marias River crossing. This segment would minimize diagonal crossing of farm land, avoid crossing farm land by traversing uncultivated land, and avoid residences and paralleling of pipelines.

Belgian Hill Realignment Segment D

Segment D is a 2.8-mile-long realignment that would move the alignment slightly west from the Alternative 2 alignment for 2 miles, just north of Belgian Hill, farther away from four residences (**Figure A2**). The alignment would generally parallel Alternative 2. Segment D would result in greater potential for general local acceptance. This segment would reduce visual impacts. Some diagonal crossing of farmland would be required.



**FIGURE A2
SEGMENT D
BELGIAN HILL**

- | | | | | |
|---------------|------------------|--|------------------------------|-------------------------------|
| LEGEND | ALT2 - ALIGNMENT | SEGMENT D BELGIAN HILL | CONSERVATION RESERVE PROGRAM | CITIES AND TOWNS |
| | MILEPOSTS | RESIDENCES OR FARMSTEADS WITHIN 1 MILE OF ALIGNMENTS | EASEMENTS | ALIGNMENT END AND EXIT POINTS |
| | | | STUDY AREA | EXISTING TRANSMISSION LINES |
| | | | MAJOR HIGHWAYS | SECONDARY ROADS |
| | | | RIVERS AND STREAMS | |

South of Cut Bank Realignment Segment E

Segment E is a 2.5-mile-long realignment that would move the alignment approximately ¼ mile west for a 2-mile stretch, just south of the Alternative 2 intersection with Highway 2. Segment E would move the alignment to follow property boundaries better and is located farther away from residential areas and result in greater potential for general local acceptance. Segment E would generally parallel Alternative 2.

Land Use Segment Analysis

Table A1 shows how many miles of cropland and CRP would be crossed by each agency-proposed local realignment segment in comparison to the same segment of Alternative 2.

TABLE A1 AGENCY SEGMENT CROPLAND COMPARISON TO ALTERNATIVE 2 SEGMENTS			
	Linear Miles	Acres in 500-Foot Wide Buffer	Miles Crossing CRP or Cropland
Segment A1 (West Great Falls)	27.3	1,652	11.7
Alternative 2 Corresponding segment	26.8	1,621	17.2
Segment A2 (Shooting Sports Complex)	4.2	255	2.4
Alternative 2 Corresponding segment	5.0	301	2.4
Segment B1 (Diamond Valley Right Angle)	5.9	357	5.4
Alternative 2 Corresponding segment	4.2	256	3.7
Segment B2 (Diamond Valley & Teton River)	6.5	393	5
Alternative 2 Corresponding segment	5.9	358	5.2
Segment C1 (Brady Frontage)	15.0	904	9.3
Alternative 2 Corresponding segment	13.3	804	12.6
Segment C2 (Conrad Realignment)	41.0	2,481	28.3
Alternative 2 Corresponding segment	33.0	1,999	27.5
Segment D (Belgian Hill)	2.8	170	2.8
Alternative 2 Corresponding segment	2.4	73	2.2
Segment E (South of Cut Bank)	2.5	149	0
Alternative 2 Corresponding segment	2.3	140	.7

Notes: Alternative 4 would require the use of monopole on cropland or CRP. The overall Alternative 2 alignment crosses 92.7 miles of cropland and CRP.

Table A2 shows the types of land use crossed by Alternatives 2 and 3, and how many miles of farm land are crossed parallel to farming rows, perpendicular to farming rows, or at a diagonal to farming rows.

TABLE A2 TYPES OF LAND USE CROSSED BY ALTERNATIVES 2 AND 3 (MILES)								
	Alternative 2				Alternative 3			
	Parallel ^a	Perpendicular ^b	Diagonal ^c	Total	Parallel ^a	Perpendicular ^b	Diagonal ^c	Total
Irrigated cropland	1.4	0	0.1	1.5	0	0	6.8	6.8
Non-irrigated cropland	34.5	3.9	52.8	91.2	27.3	0	63.6	90.9
Rangeland	6.3	1.8	25.5	33.6	5.2	0.2	16.2	21.6
Road/Right of Way	0.2	0.9	0.2	1.3	0.1	0	0.2	0.3
Residential	0	0	0	0	0	0	0.1	0.1
Forest	0	0	0	0	0	0	0.1	0.1
Riparian	0.6	0	1.3	1.9	0.1	0	1.2	1.3
Water	0	0	0	0	0	0	0.1	0.1
Total Miles	43.0	6.6	79.9	129.5	32.7	0.2	88.3	121.2

Notes:

^a parallel to north and south

^b perpendicular to north and south

^c diagonal to north and south

Sources: Orthophotographs 2005 (Montana NRIS 2006a); NRIS 2000; MATL 2006b; field verification; photographic interpretation

The agency-proposed local realignment segments were developed, in part, to reduce the impacts on farming from the proposed transmission line. The numbers of miles of crossings parallel to, perpendicular to, and diagonal to irrigated cropland, non-irrigated cropland, and rangeland are summarized for corresponding segments of Alternative 2 and agency-proposed local realignments (**Table A3**).

**TABLE A3
MILES OF PARALLEL, PERPENDICULAR, AND DIAGONAL ACROSS CROPLAND
AND RANGELAND ALTERNATIVE 2 AND CORRESPONDING AGENCY LOCAL
REALIGNMENT SEGMENT**

	Alternative 2				Agency-proposed Local Realignment Segment			
	Parallel ^a	Perpendicular ^b	Diagonal ^c	Total	Parallel ^a	Perpendicular ^b	Diagonal ^c	Total
Segment A1 — West Great Falls								
Irrigated	--	--	--	--	--	--	--	--
Non-irrigated	5.4	1.0	10.8	17.2	6.6	1.6	3.5	11.7
Rangeland/ Native	1.0	1.0	6.5	8.5	1.9	2.7	10.7	15.3
Other	0	0.9		0.9	0.1	--	0.1	0.2
Total Miles	6.4	2.9	17.3	26.6	8.6	4.3	14.3	27.2
Segment A2 — Great Falls Shooting Sports Complex								
Irrigated	-	-	-	-	-	-	-	-
Non-irrigated	1.7	0.5	0.2	2.4	1.7	0.1	0.6	2.4
Rangeland/ Native	1.1	0.0	0.7	1.8	1.1	--	0.7	1.8
Other	0.0	0.0	0.0	0.0	--	--	--	--
Total Miles	2.8	0.5	0.9	4.2	2.8	0.1	1.3	4.2
Segment B1 — Diamond Valley Right Angle								
Irrigated	--	--	--	--	--	--	--	--
Non-irrigated	--	--	3.7	3.7	2.5	2.9	--	5.4
Rangeland/ Native	--	--	0.3	0.3	--	0.4	--	0.4
Other	--	--	--	--	--	0.1	--	0.1
Total Miles	--	--	4.0	4.0	2.5	3.4	--	5.9
Segment B2 — Diamond Valley Diagonal-Teton River								
Irrigated	0.0	0.0	0.0	0.0	-	-	-	-
Non-irrigated	0.0	0.0	5.2	5.2	0.5	0.8	3.7	5.0
Rangeland/ Native	0.0	0.0	0.8	0.8	0.2	0.5	0.7	1.4
Other	0.0	0.0	0.2	0.2	0.0	0.0	0.1	0.1
Total Miles	0.0	0.0	6.2	6.2	0.7	1.3	4.5	6.5
Segment C1 — Brady Frontage								
Irrigated	--	--	--	--	--	--	--	--
Non-irrigated	--	0.5	12.1	12.6	--	3.8	5.5	9.3
Rangeland/ Native	--	0.1	0.6	0.7	--	0.8	0.0	0.8
Other	--	--	0.2	0.1	--	--	4.9	4.9
Total Miles	--	0.6	12.9	13.4	--	4.6	10.4	15.0

TABLE A3 MILES OF PARALLEL, PERPENDICULAR, AND DIAGONAL ACROSS CROPLAND AND RANGELAND ALTERNATIVE 2 AND CORRESPONDING AGENCY LOCAL REALIGNMENT SEGMENT								
	Alternative 2				Agency-proposed Local Realignment Segment			
	Parallel ^a	Perpendicular ^b	Diagonal ^c	Total	Parallel ^a	Perpendicular ^b	Diagonal ^c	Total
Segment C2 — Conrad Realignment								
Irrigated	0.9	--	0.0	0.9	1.2	0.5	-	1.7
Non-irrigated	3.3	--	23.2	26.6	14.8	6.5	5.3	26.6
Rangeland/ Native	0.6	--	3.9	4.5	1.1	1.2	9.8	12.1
Other	0.1	--	0.9	0.9	0.2	-	0.4	0.6
Total Miles	4.9	0.0	28.0	32.9	17.3	8.2	15.5	41.0
Segment D — Belgian Hill								
Irrigated	0.4	--	--	0.4	--	--	--	--
Non-irrigated	1.0	--	0.6	1.6	2.8	--	--	2.8
Rangeland/ Native	0.2	--	0.1	0.1	--	--	--	--
Other	0.1	--	--	0.1	--	--	--	--
Total Miles	1.7	0	0.7	2.4	--	--	--	2.8
Segment E — South of Cut Bank								
Irrigated	--	--	--	--	--	--	--	--
Non-irrigated	0.7	--	--	0.7	--	--	0	--
Rangeland/ Native	0.8	--	0.8	0.8	2.4	--	--	2.4
Other	--	--	--	0	--	--	--	--
Total Miles	1.5	0	0.8	1.5	--	--	--	2.4

Notes:

^a parallel to north and south

^b perpendicular to north and south

^c diagonal to north and south

-- Not applicable

Sources: Orthophotographs 2005 (Montana NRIS 2006a); MATL 2006b; field verification; photographic interpretation .

The following observations were made:

- Segment A1 (West Great Falls) is 0.6 miles longer than the segment it would replace in Alternative 2, however, it reduces the diagonal crossing of cropland from 10.8 miles to 3.5 miles.
- Segment A2 (Great Falls Shooting Sports Complex) increases the diagonal crossing of non-irrigated cropland from 0.2 in Alternative 2 to 0.6 miles in Alternative 4.
- Segment B1 (Diamond Valley Right Angle) is 1.9 miles longer than the segment it would replace in Alternative 2, however, it eliminates diagonal crossing of cropland, compared to 3.7 miles of diagonal crossing in Alternative 2 for this segment and moves the transmission line alignment onto existing utility corridors or other land uses (non-farm).
- Segment B2 (Diamond Valley Diagonal - Teton River) is 0.3 miles longer than the segment of Alternative 2 it would replace, but it reduces the diagonal crossing of cropland from 5.2 miles to 3.7 and shifts the crossing to parallel (0.5 miles) or perpendicular (0.8 miles).
- Segment C1 (Brady Frontage) is 1.6 miles longer than the segment it would replace in Alternative 2. It would reduce the diagonal crossing of cropland from 12.1 miles to 5.5 miles.
- Segment C2 (Conrad Realignment) is nearly 8 miles longer than the segment of Alternative 2 it would replace (41 miles compared to 32.9 miles), however, it would substantially reduce the diagonal crossing of cropland from 23.2 miles to 5.3 miles. Most (14.8 miles) of the cropland crossed would be parallel to the north-south orientation of crop rows. Approximately 6.5 miles would be crossed perpendicular to the rows. Additionally, more of the alignment (12.1 miles) would cross native vegetation or rangeland, compared to Alternative 2 which has 4.5 miles crossing those vegetation types.
- Segment D (Belgian Hill) is 0.4 miles longer than the segment it would replace in Alternative 2, however, it would remove all the diagonal crossing of cropland in this segment and increase the distance of parallel crossing from 1.4 miles to 2.8 miles. The parallel crossings or alignment near the edges of the fields would not interfere with farming activities as much as diagonal crossings.
- Segment E (South of Cut Bank) is 0.9 miles longer than the segment it would replace in Alternative 2, however, it would remove all crossings of cropland (including diagonal) and move the alignment onto native or rangeland vegetation.

Table A4 compares how many miles of transmission line cross CRP land or cropland under each agency-proposed local realignment segment and how many acres would be affected. Segments B1, C2, and D would result in a slight increase in acres removed from production because of the longer length of the line under these segments (see **Table A4**).

Segment	Alternative 2		Agency-proposed Local Realignment	
	Miles	Acres^a	Miles	Acres^a
A1 West Great Falls	17.2	1.8	11.7	1.2
A2 Great Falls Shooting Sports Complex	2.4	0.3	2.4	0.3
B1 Diamond Valley Right Angle	3.7	0.4	5.4	0.6
B2 Diamond Valley Diagonal-Teton River	5.2	0.5	5.0	0.5
C1 Brady Frontage	12.6	1.3	9.3	1.0
C2 Conrad Realignment	27.5	2.8	28.3	3.0
D Belgian Hill	2.0	0.2	2.8	0.3
E South of Cut Bank	0.7	0.1	0.0	0.0

Notes:

^a Acres rounded to nearest 0.01. Calculation based on 0.01 acres per structure at a structure every 500 feet (10.5 structures per mile)

Sources: Orthophotographs, 2005 (Montana NRIS 2006a), NRIS 2000, MATL 2006b; field verification; photographic interpretation

Some segments (B1 - Diamond Valley Right Angle, C1 - Conrad Realignment and D - Belgian Hill) increase the length of power line crossing farmland and CRP slightly (see **Table A4**) over Alternative 2 for those segments.

Conservation Easements and Special Management Areas

Linear miles of lands under federal/state special management and those lands currently under federal or state conservation easements (wetland easements, CRP, and FWP easements) are summarized in **Table A5** for each alignment. Segments A1 and A2 would eliminate crossing the Great Falls Shooting Sports Complex. Some agency-proposed local realignments would increase the number of miles crossing CRP over corresponding Alternative 2 segments they would replace.

**TABLE A5
MILES OF FEDERAL/STATE SPECIAL MANAGEMENT AREAS
AND CONSERVATION EASEMENTS CROSSED**

	Alternative 2 Corresponding Segment	Alternative 3	Agency-proposed Local Realignments
State Land (FWP) – Great Falls Shooting Sports Complex			
Segment A1 (West Great Falls)	0.73	--	0
Segment A2 (Great Falls Shooting Sports Complex)	0	0.51	0.76
Segment B1 (Diamond Valley Right Angle)	--	--	--
Segment B2 (Diamond Valley Diagonal-Teton River)	--	--	--
Segment C1 (Brady Frontage)	--	--	--
Segment C2 (Conrad Realignment)	--	--	--
Segment D (Belgian Hill)	--	--	--
Segment E (South of Cut Bank)	--	--	--
Montana State Trust Land (DNRC)			
Segment A1 (West Great Falls)	3.69	--	2.56
Segment A2 (Great Falls Shooting Sports Complex)	0.12	--	0.08
Segment B1 (Diamond Valley Right Angle)	0.00	--	0.00
Segment B2 (Diamond Valley Diagonal-Teton River)	1.24	--	1.24
Segment C1 (Brady Frontage)	1.14	--	2.68
Segment C2 (Conrad Realignment)	1.70	--	4.03
Segment D (Belgian Hill)	0.00	--	0.00
Segment E (South of Cut Bank)	0.00	--	0.00
Conservation Easements			
Segment A1 (West Great Falls)	(CRP) 5.32 (Stewardship) 0.12	--	10.04
Segment A2 (Great Falls Shooting Sports Complex)	0.00	--	0.00
Segment B1 (Diamond Valley Right Angle)	0.00	--	0.00
Segment B2 (Diamond Valley Diagonal-Teton River)	1.54	--	1.54
Segment C1 (Brady Frontage)	0.00	--	3.10
Segment C2 (Conrad Realignment)	2.16	--	4.17
Segment D (Belgian Hill)	1.36	--	1.48
Segment E (South of Cut Bank)	1.04	--	0.90

Notes:
-- = not applicable

Planned Land Use

The Segment A1 West Great Falls local alignment crosses the planned Kyles Addition subdivision. No residences are under construction or completed in this subdivision.

Wetlands Segment Analysis

The length of each segment and the wetlands affected by each segment are shown in **Table A6**, along with the length of the corresponding segment of Alternative 2 which it could replace.

Alternative Comparison	Segment Length	Palustrine PEM	Palustrine PUS, PUB, & PAB	Lacustrine	Riverine	Total
	(miles)	(acres)	(acres)	(acres)	(acres)	(acres)
West Great Falls Segment A1	27.3	13.25	0.43	0.0	0.0	13.68
Corr. Alt. 2 Segment	26.8	15.72	1.07	0.78	0.0	17.57
Great Falls Shooting Sports Complex Segment A2	4.2	0.0	0.13	3.21	0.0	3.34
Corr. Alt. 2 Segment	5.0	4.13	0.0	0.78	0.0	4.91
Diamond Valley Right Angle Segment B1	5.9	<1 Est.	ND	ND	<1 Est.	ND
Corr. Alt. 2 Segment	4.2	<1 Est.	ND	ND	<1 Est.	ND
Diamond Valley Diagonal-Teton River Segment B2	6.5	1-2	ND	ND	2-3	ND
Corr. Alt. 2 Segment	5.9	1-2	ND	ND	2-3	ND
Brady Frontage Segment C1	15.0	0.0	0.0	0.0	0.0	0.0
Corr. Alt. 2 Segment	13.3	10.12	1.98	0.0	0.0	12.10
Conrad Realignment Segment C2	41.0	18.10	2.01	0.0	0.0	20.11
Corr. Alt. 2 Segment	33.0	13.75	1.98	0.0	0.0	15.73
Belgian Hill Segment D	2.8	0.0	0.0	0.0	0.0	0.0
Corr. Alt. 2 Segment	2.4	0.0	0.41	0.0	0.0	0.41
South of Cut Bank Segment E	2.5	0.0	0.0	0.0	0.0	0.0
Corr. Alt. 2 Segment	2.3	0.0	0.0	0.0	0.0	0.0

Notes:

- Alt. Alternative
- Corr. Corresponding
- PEM Palustrine Emergent wetlands
- PUS Palustrine Unconsolidated Shore wetlands
- PUB Palustrine Unconsolidated Bottom wetlands
- PAB Palustrine Aquatic Bed wetlands
- Est. estimated using the 2005 aerial photographs
- ND No Data

Potential impacts to wetlands for all eight local realignment segments were evaluated using the wetland data provided in **Table A6**. Total potential wetlands recorded along each local realignment segment were compared to the total wetlands recorded for the corresponding segment of Alternative 2. The total wetland acres was also segregated into four main wetland categories (2 palustrine classes, 1 lacustrine, and 1 riverine) to better evaluate the types of wetlands that each segment may impact. Total wetland acreage does not include any wetlands that may exist in Teton County for the portion of the segments where no official wetland data currently exist. The 2005 National Agricultural Imagery Program aerial photographs were used to visually identify observable wetlands along the local realignment segments in Teton County and to estimate the approximate number of wetlands for these alignments. Even though the wetland acreage could not be quantified from the aerial photographs, it was determined that no single large wetland or concentration of wetlands existed that could not be spanned using 500 foot span lengths.

Potential impacts to wetlands for the local realignment segments were compared only to the corresponding segments of Alternative 2 for which each could substitute. As was determined for the entire analysis area, the majority of the wetlands along all local realignment segments are classified as palustrine, emergent wetlands (PEM).

Segment A1 (West Great Falls) The A1 segment traverses around the southern and western sides of Benton Lake NWR area and would potentially impact 3.89 fewer acres of wetlands, compared to the corresponding segment of Alternative 2. Several smaller areas with palustrine and lacustrine wetlands exist directly north of Great Falls (Black Horse Lake area) and along the western side of Benton Lake NWR. A1 would impact fewer wetlands primarily because it is located along steeper slopes compared to crossing a more flat bench area. No riverine wetlands are delineated along segment A1 facility location. However, segment A1 crosses the Lake Creek channel in Teton County and could potentially impact a small riverine wetland (possibly about 1 acre) at that location.

Segment A2 (Great Falls Shooting Sports Complex Realignment) This 4.2 mile long segment runs north from the Great Falls 230-kV switch yard along the edge of cropland and parallel to the access road to the Great Falls Shooting Sports Complex. The Segment A2 centerline crosses over an actively used gun club, but would not be located over any existing or planned buildings. The segment A2 facility location would potentially impact 1.57 fewer acres of wetlands compared to the corresponding segment of Alternative 2. The primary difference between these two alignments was that the segment A2 realignment would cross a larger portion of the Black Horse Lake Flat that has been mapped as a lacustrine wetland.

Segment B1 (Diamond Valley Right Angle) This 5.9 mile long B1 segment is located in Diamond Valley area of Teton County, approximately 2 to 5 miles south of the Teton River. The types and amounts of wetlands that would be impacted within the 500 foot wide facility location of segment B1 are very similar to those that occur along the 4.2 mile long corresponding Alternative 2 portion. Both segment B1 and the corresponding Alternative 2 centerlines would cross Hunt Coulee; segment B1 would cross this coulee at a straight east to west angle, while the Alternative 2 would cross Hunt Coulee at a southeast to northwest angle. Hunt Coulee has palustrine emergent wetlands (estimated to be less than one acre) and a small area of riverine wetlands (estimated to be less than one acre) in the bottom of the coulee. These wetland areas could be spanned causing minimal impacts to wetlands under both the B1 segment and Alternative 2 alignments.

Segment B2 (Diamond Valley and Teton River) This 6.5 mile long segment B2 is also located in the Diamond Valley area of Teton County, but would utilize the same alignment as Alternative 3 for approximately 3.25 miles where it would parallel the existing NWE 115-kV transmission line. Segment B2 would cross Hunt Coulee approximately $\frac{3}{4}$ mile north of the Alternative 2 crossing and $\frac{1}{4}$ mile north of the segment B1 crossing of Hunt Coulee. This alignment would also extend further north and includes a modified crossing of the Teton River that avoids some cropland. The types and amounts of wetlands that would be impacted within the 500 foot wide facility location for segment B2 are very similar to those that occur along the 5.9 mile long corresponding Alternative 2 portion. Both alternative alignments would cross small areas with palustrine emergent wetlands (estimated at one to two acres) and a small area of riverine wetlands (estimated at two to three acres) in the bottom of Hunt Coulee and the Teton River. All wetland areas visually identified on the 2005 aerial photographs for segment B2 could be spanned.

Segment C1 (Brady Frontage Road) Segment C1 is a 15.0 mile long alignment that runs directly east - west along the northern edge of the Teton River bank and then parallels the Interstate 15 frontage road for approximately 11 miles, connecting back with the Alternative 2 alignment just north of Brady, Montana. Segment C1 would potentially impact 12.1 fewer acres of wetlands compared to the Alternative 2 alignment through this area. There are no wetlands of any type mapped along the Brady Frontage Road alignment. Several areas with palustrine wetlands (total of 12.1 acres) exist along the corresponding segment of Alternative 2 through this area.

Segment C2 (Conrad Realignment) Segment C2 is a 41.0 mile long alignment that runs around the Town of Conrad on the east and north sides. Segment C2 takes off from Alternative 2 at the same location as segment C1. Both Alternative C1 and C2 segments would be in the same alignment for approximately 3.25 miles where segment C2 would begin to run north. This alternative alignment would travel north for approximately 20 miles where it would turn west and continue for approximately 18 miles where it

would rejoin Alternative 2. This alternative alignment would cross several major coulees (South Pondera, Pondera, Favot, and Big Flat) and the Dry Fork Marias River.

Segment C2 would potentially impact 4.38 more acres of total wetlands compared to the corresponding Alternative 2 alignment through this area. The main reason for the increased number of wetlands crossed by segment C2 is the higher proportion of coulees and unfarmed drainages that were used by this alternative in the avoidance of farmed land. Small areas with palustrine and riverine wetlands exist along most of the major coulees and along the Dry Fork Marias River crossing. Segment C2 also crosses slightly larger and more defined drainages due to its more eastern location. Drainages generally flow west to east in this area and tend to have more defined channels as they flow toward the Missouri River.

Segment D (Belgian Hill) Segment D is a relatively short (2.8 mile) alignment located in the Belgian Hill area. This alternative segment generally parallels Alternative 2, but is located approximately ½ mile to the west. This alignment segment was developed primarily to minimize visual impacts to four residences located along the Alternative 2 alignment. Segment D would potentially impact 0.41 fewer acres of palustrine wetlands compared to Alternative 2 through this locale.

Segment E (South of Cut Bank) Segment E is a relatively short (2.5 mile) segment located in an area southeast of Cut Bank. This alternative segment also parallels the Alternative 2 alignment approximately ½ mile to the west. This alignment segment was developed primarily to minimize visual impacts to residences located along the Alternative 2 alignment and to avoid paralleling a buried gathering pipeline for the oil wells in the local area. There are no mapped wetlands along either segment E or the corresponding Alternative 2 alignment in this locale.

Vegetation Segment Analysis

Rangeland vegetation, such as grassland, improved pasture, seeded grasslands, shrubland, badland, riparian and wetlands, and forested cover types, would be removed by the construction of access roads and structures, and at construction staging areas. Maintenance activities would not likely result in additional ground disturbance. Linear miles of rangeland cover types affected by alternative are presented in **Table A7**. Disturbance resulting from staging areas would be similar for Alternatives 2 and 3.

Agency-proposed local realignment segments total approximately 38.5 miles. The comparable segments of Alternative 2 total almost 20 miles (**Table A8**), nearly doubling the grassland the rangeland cover types under alternative segments. The increased crossing in rangeland cover types would result in more tower structures and access roads, thus increasing rangeland impacts. Disturbance due to maintenance activities would also increase over the life of the project due to increased structure and road

placement in rangeland and vegetation (**Table A9**). Disturbance resulting from staging areas would be similar to those of Alternatives 2 and 3.

TABLE A7						
Native Vegetation Cover Types Crossed by Alternatives 2, 3, and 4						
Rangeland Cover Types	Alternative 2		Alternative 3		Agency-proposed Local Realignment	
	Miles	Total Land Cover (percent)	Miles	Total Land Cover (percent)	Miles	Total Land Cover (percent) ^a
Grassland/ Shrubland	33.6	25.9	21.6	17.8	A1 = 15.3 A2 = 1.8 B1 = 0.4 B2 = 1.3 C1 = 0.8 C2 = 12.0 D = 2.8 E = 2.5	A1 = 56.2 A2 = 42.2 B1 = 7.3 B2 = 19.9 C1 = 5.2 C2 = 29.1 D = 99.0 E = 100.0
Riparian	1.9	1.5	1.3	1.1	A1 = 0.2 A2 = 0.03 B1 = 0.1 B2 = 0.2 C1 = 0.05 C2 = 1.0 D = 0.04 E = 0.0	A1 = 0.7 A2 = 0.7 B1 = 2.2 B2 = 2.8 C1 = 0.3 C2 = 2.3 D = 0.01 E = 0.0
Forest (Cottonwood)	0.0	0.0	0.1	0.1	B2 = 0.04 ^b	B2 = 0.6
Total	35.5	27.4	23.0	19.0	--	--
Total Line Length	129.9	--	121.6	--	--	--

Notes:

a Percent of segment.

b Found only in segment B₂

Source: Orthophotographs 2005 (Montana NRIS 2006a) analysis of land cover in vegetation analysis area, October 2006.

-- not applicable

**TABLE A8
LINEAR MILES OF VEGETATION CHANGE BETWEEN ALTERNATIVE 2 AND
AGENCY-PROPOSED LOCAL REALIGNMENTS**

Native Vegetation Cover Types	Alternative 2 (miles)	Agency-proposed Local Realignments (miles)
Rangeland	A1 = 8.5 A2 = 1.8 B1 = 0.3 B2 = 0.8 C1 = 0.6 C2 = 4.5 D = 0.3 E = 1.6	A1 = 15.3 A2 = 1.8 B1 = 0.4 B2 = 1.3 C1 = 0.8 C2 = 12.0 D = 2.8 E = 2.5
Riparian	A1 = 0.0 A2 = 0.0 B1 = 0.2 B2 = 0.2 C1 = 0.1 C2 = 0.8 D = 0.1 E = 0.0	A1 = 0.2 A2 = 0.03 B1 = 0.1 B2 = 0.2 C1 = 0.05 C2 = 1.0 D = 0.04 E = 0.0
Forest (Cottonwood)	No Data	B2 = 0.4 ^a

Note:

a Found only in segment B₂

Source: Orthophotographs 2005 (Montana NRIS 2006a) of land cover in vegetation analysis area, October 2006

**TABLE A9
ESTIMATED ACRES OF DISTURBANCE DUE TO H-FRAME STRUCTURES IN
RANGELAND VEGETATION**

Rangeland Cover Types	Alternative 2			Agency-proposed Local Realignments		
	Miles ^a	Number of Structures ^b	Acres ^c	Miles	Number of Structures	Acres
Grassland/ Shrubland	18.4	121	0.1	36.9	244	0.2
Riparian	1.4	9	<0.01	1.6	11	<0.01
Total	19.8	130	0.1	38.5	255	0.2

Notes:

a Segment total.

b Average 800-foot span between H-frame structures.

c Based on 36 square feet occupied by an H-frame structure.

Riparian Vegetation

The effects to riparian vegetation from the agency-proposed local realignments would be similar to those of Alternative 2 because both alternatives cross similar amounts of riparian habitat (**Table A9**).

Species of Concern

The effects on species of concern from agency-proposed local realignments would be the same as Alternative 2 because both alternatives cross similar amounts of riparian habitat where these species are likely to occur (**Table A10**).

Weed Control

The agency-proposed local realignments would cross more native vegetation than Alternative 2 (**Table A8**). This increase in land area potentially exposed to disturbance and noxious weed invasion would require greater diligence, expense, and coordination to successfully implement a noxious weed control plan (**Table A9**). The MATL Noxious Weed and Invasive Plant Control Plan (**Appendix C**) would adequately reduce the increased risk of noxious weed spread in the analysis area.

Wildlife Segment Analysis

Big Game Species

Impacts on big game species would not be expected. Pronghorn and mule deer does with fawns could be displaced by activities during late spring and early summer, but disturbance within a given portion of the line would be temporary and animals could easily use adjacent habitat during disturbance periods. Activities would not disturb wintering animals as the construction activities would occur during the spring and summer months. The proposed and alternative transmission line alignments would cross through mule deer winter range and there would be some permanent loss of habitat as a result of structures and access roads (see **Table A10**). This habitat loss would not impact mule deer as this is a minor loss relative to the amount of available habitat within the region.

TABLE A10 MULE DEER WINTER RANGE IMPACTED BY ALTERNATIVES				
MULE DEER WINTER RANGE	Alternative			
	2	3	2 Corresponding to Agency-proposed Local Realignments ^a	Agency-proposed Local Realignment by Segments ^b
Miles of Mule Deer Winter Range Bisected by Transmission Line	Alternative 2 Segment A 19	20	A1 = 1.8 A2 = 1.8 B1 = 0 B2 = 1.0 C1 = 0.67 C2 = 9.3 D = 0 E = 0	A1 = 4.2 A2 = 1.8 B1 = 0.9 B2 = 3.0 C1 = 4.8 C2 = 8.8 D = 0 E = 0

Notes:

a Segment of the Alternative 2 alignment that corresponds with the agency-proposed local realignment segment.

b Agency-proposed local realignment segments that correspond to the Alternative 2 segments.

Threatened and Endangered Segment Analysis

The alternative alignments traverse the known habitat range of four Species of Concern and one federally threatened species. **Table A11** lists the linear miles of special status species' habitat range along each of the two action alternatives and local realignments.

TABLE A11 LINEAR MILES OF SPECIAL STATUS SPECIES' HABITAT RANGE BY ALTERNATIVE AND AGENCY-PROPOSED LOCAL REALIGNMENTS					
Common Name	State Rank	Alternative			
		2	3	2 Corresponding to Agency-proposed Local Realignments ^a	Agency-proposed Local Realignment by Segments ^b
Black-crowned night-heron	S3B	11.2	9.1	A1 = 11.2 A2 = 0 B1 = 0 B2 = 0 C1 = 0 C2 = 0 D = 0 E = 0	A1 = 2.6 A2 = 0 B1 = 0 B2 = 0 C1 = 0 C2 = 0 D = 0 E = 0
Black-necked stilt	S3, S4B	11.2	9.1	A1 = 11.2 A2 = 0 B1 = 0 B2 = 0 C1 = 0 C2 = 0 D = 0 E = 0	A1 = 2.6 A2 = 0 B1 = 0 B2 = 0 C1 = 0 C2 = 0 D = 0 E = 0

TABLE A11 LINEAR MILES OF SPECIAL STATUS SPECIES' HABITAT RANGE BY ALTERNATIVE AND AGENCY-PROPOSED LOCAL REALIGNMENTS					
Common Name	State Rank	Alternative			
		2	3	2 Corresponding to Agency-proposed Local Realignments ^a	Agency-proposed Local Realignment by Segments ^b
Burrowing owl	S2B	4.2	3.9	A1 = 4.2 A2 = 0 B1 = 0 B2 = 0 C1 = 0 C2 = 0 D = 0 E = 0	A1 = 0 A2 = 0 B1 = 0 B2 = 0 C1 = 0 C2 = 0 D = 0 E = 0
Ferruginous hawk	S2B	6.5	0	A1 = 6.5 A2 = 0 B1 = 0 B2 = 0 C1 = 0 C2 = 0 D = 0 E = 0	A1 = 5.8 A2 = 0 B1 = 0 B2 = 0 C1 = 0 C2 = 0 D = 0 E = 0
Peregrine falcon	S2B	2.5	2.2	A1 = 0 A2 = 0 B1 = 0 B2 = 0 C1 = 0 C2 = 0 D = 0 E = 0	A1 = 0 A2 = 0 B1 = 0 B2 = 0 C1 = 0 C2 = 0 D = 0 E = 0
Total for All species	--	19.9	11.3	A1 = 17.7 A2 = 0 B1 = 0 B2 = 0 C1 = 0 C2 = 0 D = 0 E = 0	A1 = 8.4 A2 = 0 B1 = 0 B2 = 0 C1 = 0 C2 = 0 D = 0 E = 0

Notes:

Source: MTNHP. 2005. GIS Analyses of Element Occurrence Data. Montana Natural Heritage Program, Helena, Montana. Available at: <http://nhp.nris.state.mt.us/mbd>

State: S2 = Imperiled because of rarity, or because of other factors demonstrably making it very vulnerable to extinction throughout its range; B = a state rank modifier indicating breeding status for a migratory species; S3 = vulnerable because of rarity, or found in restricted range even though it may be abundant at some of its locations; S4 = apparently secure, though it may be quite rare in parts of its range, especially at the periphery; S1 = critically imperiled because of extreme rarity, or because of some factor of its biology making it especially vulnerable to extirpation; SH = Historical, known only from records over 50 years ago; may be rediscovered; N = non-breeding.

a Segment of the Alternative 2 alignment that corresponds with the agency-proposed local realignment segment.

b Agency-proposed local realignment segments that correspond to the Alternative 2 segments.

Socioeconomics Segment Analysis

The socioeconomic impacts described above are essentially equal for all of the alternatives and segments with the exception of differences in the estimated property tax revenue available to each affected county depending on the mileage of the line that would ultimately be constructed within each county's jurisdiction (**Table A12**).

Cultural Resources Segment Analysis

The Class 1 cultural resource searches resulted in the identification of three previously recorded sites considered eligible for the NRHP in sections along the agency-proposed local realignment segments. These sites include the Rainbow Dam Road, an historic transmission line, and the Burlington Northern-Santa Fe Railroad. There are 20 sites where NRHP-eligibility has not been determined, is unknown, or is unresolved. This group includes six tipi ring sites, two lithic scatter sites, two prehistoric camp sites, an historic road or trail, five homesteads, two historic irrigation systems, one historic trash dump, and one historic mining site.

Two NRHP-eligible sites, 24CA416 the Rainbow Dam Road and 24CA1040 an historic transmission line just north of the Missouri River, are located in sections containing both segment A1 and segment A2. The sections crossed by segment A1 contains three of the tipi ring sites, the two lithic scatter sites, the two prehistoric camp sites, three of the homesteads, and the historic mining site in the category of undetermined, unknown, or unresolved NRHP eligibility.

There are no previously recorded cultural resource sites in sections along either segment B1 or segment B2.

One section along segment C1 contains one tipi ring site of undetermined NRHP eligibility. Several sections along segment C2 contain two of the tipi ring sites, two of the homesteads, one of the historic irrigation systems, and the one historic trash dump in the category of undetermined, unknown, or unresolved NRHP eligibility.

Two sections along segment D contain the historic road or trail and one of the historic irrigation systems both of undetermined NRHP eligibility. Two sections along segment E contain the NRHP-eligible Site 24GL191, the Great Northern Railroad – now part of the Burlington Northern-Santa Fe.

**TABLE A12
TAX BENEFIT ESTIMATES FOR ALTERNATIVES AND SEGMENTS**

	Alignment Length (Miles)	Value \$/Mi.	Estimated Value in County (BxC)	Class 9 Tax Rate (Valuation Ratio): 12%	Taxable Value (DxE)	Avg. Rural Mill Levy	Property Tax (FxG)
Cascade							
Alternative 2	12.76	\$363,284	\$4,635,504	0.12	\$556,260	0.50412	\$280,422
Alternative 3	12.31	\$363,284	\$4,472,026	0.12	\$536,643	0.50412	\$270,533
Alternative 4							
Segment A1 - Alt 2	12.75	\$363,284	\$4,631,871	0.12	\$555,825	0.50412	\$280,202
Segment A1 - Alt 4	19.8	\$363,284	\$7,193,023	0.12	\$863,163	0.50412	\$435,138
Chouteau							
Alternative 2	5.87	\$363,284	\$2,132,477	0.12	\$255,897	0.43959	\$112,490
Alternative 3	10.21	\$363,284	\$3,709,130	0.12	\$445,096	0.43959	\$195,660
Alternative 4							
Segment A1 - Alt 2	5.87	\$363,284	\$2,132,477	0.12	\$255,897	0.43959	\$112,490
Segment A1 - Alt 4	0	\$363,284	\$0	0.12	\$0	0.43959	\$0
Glacier							
Alternative 2	40.41	\$363,284	\$14,680,306	0.12	\$1,761,637	0.53745	\$946,792
Alternative 3	37.34	\$363,284	\$13,565,025	0.12	\$1,627,803	0.53745	\$874,863
Alternative 4	40.41	\$363,284	\$14,680,306	0.12	\$1,761,637	0.53745	\$946,792
Pondera							
Alternative 2	45.69	\$363,284	\$16,598,446	0.12	\$1,991,814	0.52162	\$1,038,970
Alternative 3	44.44	\$363,284	\$16,144,341	0.12	\$1,937,321	0.52162	\$1,010,545
Alternative 4							
Segment C1 - Alt 2	4.11	\$363,284	\$1,493,097	0.12	\$179,172	0.52162	\$93,460
Segment C1 - Alt 4	7.12	\$363,284	\$2,586,582	0.12	\$310,390	0.52162	\$161,906
Segment C2 - Alt 2	28.86	\$363,284	\$10,484,376	0.12	\$1,258,125	0.52162	\$656,263
Segment C2 - Alt 4	34.66	\$363,284	\$12,591,423	0.12	\$1,510,971	0.52162	\$788,153

**TABLE A12
TAX BENEFIT ESTIMATES FOR ALTERNATIVES AND SEGMENTS**

	Alignment Length (Miles)	Value \$/Mi.	Estimated Value in County (BxC)	Class 9 Tax Rate (Valuation Ratio): 12%	Taxable Value (DxE)	Avg. Rural Mill Levy	Property Tax (FxG)
Teton							
Alternative 2	25.16	\$363,284	\$9,140,225	0.12	\$1,096,827	0.4991	\$547,426
Alternative 3	17.32	\$363,284	\$6,292,079	0.12	\$755,049	0.4991	\$376,845
Alternative 4							
Segment A1 - Alt 2	8.13	\$363,284	\$2,953,499	0.12	\$354,420	0.4991	\$176,891
Segment A1 - Alt 4	7.47	\$363,284	\$2,713,731	0.12	\$325,648	0.4991	\$162,531
Segment C1 - Alt 2	4.12	\$363,284	\$1,496,730	0.12	\$179,608	0.4991	\$89,642
Segment C1 - Alt 4	7.89	\$363,284	\$2,866,311	0.12	\$343,957	0.4991	\$171,669
Segment C2 - Alt 2	4.12	\$363,284	\$1,496,730	0.12	\$179,608	0.4991	\$89,642
Segment C2 - Alt 4	6.29	\$363,284	\$2,285,056	0.12	\$274,207	0.4991	\$136,857
Notes:							
Sources: Mullen 2006							
Montana Department of Revenue 2004							

Notes:

a Mullen 2006

b Montana Department of Revenue 2004

\$/Mi. = dollars per mile

Visuals Segment Analysis

Alternative 4 was developed by comparing eight segments that originated and ended at various locations off of Alternative 2 (**Table A13**). Compared to the corresponding segment from Alternative 2, there are fewer residences in the immediate foreground and foreground (0 to ¼ mile and ¼ to ½ mile) of segments A1, A2, B1, B2, C2, and D compared to the corresponding Alternative 2 segments. The differences are all fewer than 5 residences, except A1 (A1 = 13 and corresponding Alternative 2 A1 = 28). Segment E and the corresponding Alternative 2 segment are the same. Segment C1 has a considerably more residences than the corresponding Alternative 2 segment (C1 = 66 versus corresponding Alternative 2 = 0).

Travel corridor comparison (½ to 1 mile) shows that segments A1, A2, and D have a shorter lineal mileage from the major travel routes in the area than do the corresponding Alternative 2 segments. Segment A1 is approximately 3 miles shorter than its corresponding Alternative 2 segment and the other segments are within 1.5 lineal miles of their corresponding Alternative 2 segments. Segment C1 has a considerable amount more lineal mileage within ½ to 1 mile than the corresponding Alternative 2 segment (C1 = 12.38 miles versus corresponding Alternative 2 C1 = 4.83 miles).

All recreation sites were not compared, but those that were are similar in visual impacts.

In summary, segment A1 has less of a visual impact than the corresponding Alternative 2 segment. The corresponding Alternative 2 segment C1 has considerably smaller visual impact than the segment C1. Transmission line alignments in segments D and E were located in consultation with local residents to reduce visual impacts.

TABLE A13
Comparison of Visual Impacts
Alternative 2, 3, and 4 Segments

Alternative	Segment	Number of Residences (Points)			Recreation – Benton Lake (Miles)	Recreation – State Lands ^a (Miles)	Recreation – Lewis & Clark Trail (Lineal Mileage)			Travel Corridor ^b (Lineal Mileage)
		0 to ¼	¼ to ½	½ to 1	Within One Mile	Miles Crossed	0 to ¼	¼ to ½	½ to 1	½ to 1
2		30	60	91	9.42	0.73	7.94	3.39	6.90	19.61
3		34	71	124	8.90	0.49	7.72	2.30	4.96	21.39
4	A1	10	3	29	--	0.77	0.50	0.52	1.07	4.17
	A2	5	8	4	--	--	--	--	--	2.00
	B1	1	0	2	--	--	--	--	--	--
	B2	2	0	1	--	--	--	--	--	--
	C1 ^c	9	57	41	--	--	0.64	0.55	0.89	12.38
	C2 ^c	8	16	22	--	--	0.50	0.51	0.79	3.34
	D	4	1	2	--	--	--	--	--	2.50
E	2	3	3	--	--	0.47	0.50	0.50	1.14	
2	A1	9	19	34	--	0.73	0.74	1.15	2.05	7.95
	A2	5	10	13	--	--	--	--	--	3.17
	B1	2	0	1	--	--	--	--	--	--
	B2	2	0	1	--	--	--	--	--	--
	C1	0	0	0	--	--	0.70	1.00	1.38	4.83
	C2	9	20	10	--	--	0.70	1.00	1.38	1.88
	D	4	0	2	--	--	--	--	--	2.45
E	2	3	4	--	--	--	--	--	1.14	

Notes:

a Does not include the conservation easement located north of the Missouri River at Great Falls Substation (Lewis and Clark Greenway Conservation Easement)

b Interstate 15, U.S. Highways 2 and 87, and Montana State Highway 44

c C1 and C2 do not have the same endpoints.

-- not available

APPENDIX B:
TYPES OF H-FRAME STRUCTURES

**APPENDIX C:
MATL NOXIOUS WEED CONTROL PLAN**

**THIS DOCUMENT IS INCLUDED AS APPENDIX N TO THE MATL MFSA
APPLICATION**

**Montana Alberta Tie Ltd.
230-kV Transmission Line Project from
Lethbridge, Alberta to Great Falls, Montana**

APPENDIX N

**Noxious Weed and
Invasive Plant Control Plan**

DRAFT- June 2006

TABLE OF CONTENTS

1.0	Introduction.....	1
2.0	Plan Purpose.....	3
3.0	Objectives	3
4.0	Weed Control Area	4
5.0	Pre-Construction Surveys	4
6.0	Noxious Weed Management	5
7.0	Preventive Measures.....	5
8.0	Control Measures	6
9.0	Reporting.....	7
10.0	References	7

LIST OF TABLES

Table 1-1	Designated Noxious Weeds of Montana.....	1
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1.0 Introduction

This plan was developed to identify noxious weed and invasive plant control practices that would be implemented for the US portion of the Montana Alberta Tie Ltd (MATL) 230-kV transmission line project from the Canadian border to Great Falls, Montana. A noxious weed is a weed arbitrarily defined by law as being especially undesirable, troublesome, or difficult to control. Invasive plants are alien species whose introduction does or is likely to cause economic or environmental harm or harm to human health (USFR 1999). Equipment and supplies necessary for construction and future operation and maintenance (O&M) activities, and the activities themselves, are possible agents for the spread of noxious and invasive plants (Sheley and others, 1999). Construction and maintenance vehicles can potentially carry seeds into the project area, and from one part of the area to another. The risk of establishing a weed and invasive plant community increases with ground disturbing maintenance activities (Sheley and others, 1999).

Executive Order 13112 requires that each federal agency 1) prevent the introduction and spread of invasive species, 2) detect and respond rapidly to control such species, 3) monitor invasive species populations, and 4) provide for restoration of native species and habitat conditions in ecosystems that have been invaded (USFR 1999). The Montana County Weed Control Act (Title 7, Chapter 22 Part 21) provides for weed management at the county level. The law requires counties to develop a long-term management plan for the control of noxious weeds in their county.

Table 1-1 below provides a summary of the categories of noxious weeds identified in the state of Montana’s Weed Management Plan along with each weed’s reported distribution within the six project area counties; Glacier, Toole, Pondera, Teton, Cascade and Chouteau Counties.

Table 1-1 Designated Noxious Weeds of Montana

Category 1 – Widespread Noxious Weeds*	
Canada Thistle (<i>Cirsium arvense</i>)	Reported in All Project Area Counties
Field Bindweed (<i>Convolvulus arvensis</i>)	Reported in All Project Area Counties
Leafy Spurge (<i>Euphorbia esula</i>)	Reported in All Project Area Counties
Russian Knapweed (<i>Centaurea repens</i>)	Reported in All Project Area Counties
Spotted Knapweed (<i>Centaurea maculosa</i>)	Reported in All Project Area Counties
Whitetop or Hoary Cress (<i>Cardaria draba</i>)	Reported in All Project Area Counties except Glacier County (historically present)
Diffuse Knapweed (<i>Centaurea diffusa</i>)	Reported in Teton, Cascade and Chouteau Counties
Dalmatian Toadflax (<i>Linaria dalmatica</i>)	Reported in All Project Area Counties
St. Johnswort (<i>Hypericum perforatum</i>)	Reported in Glacier, Cascade and

	Chouteau Counties. Historically present in Teton County.
Sulfur (Erect) Cinquefoil (<i>Potentilla recta</i>)	Reported in Glacier, Pondera, Cascade and Chouteau Counties. Historically present in Toole County.
Common tansy (<i>Tanacetum vulgare</i>)	Reported in Glacier, Cascade and Chouteau Counties. Historically present in Toole and Pondera Counties.
Ox-eye Daisy (<i>Chrysanthemum leucanthemum</i> L.)	Reported in Glacier, Cascade and Chouteau Counties. Historically present in Pondera and Teton Counties.
Houndstongue (<i>Cynoglossum officinale</i> L.)	Reported in All Project Area Counties
Yellow toadflax (<i>Linaria vulgaris</i>)	Reported in All Project Area Counties
Diffuse Knapweed (<i>Centaurea diffusa</i>)	Reported in All Project Area Counties
Category 2 – Established New Invaders*	
Dyers Woad (<i>Isatis tinctoria</i>)	Historically present in Pondera and Chouteau Counties, but not currently reported.
Purple Loosestrife or Lythrum (<i>Lythrum salicaria</i> , <i>L. virgatum</i> , and any hybrid crosses thereof).	Reported in Pondera and Cascade Counties. Historically present in Toole County.
Tansy Ragwort (<i>Senecio jacobea</i> L.)	Not reported in any Project Area County.
Meadow Hawkweed Complex (<i>Hieracium pratense</i> , <i>H. floribundum</i> , <i>H. piloselloides</i>)	Historically present in Pondera and Chouteau Counties.
Orange Hawkweed (<i>Hieracium aurantiacum</i> L.)	Not reported in any Project Area County.
Tall Buttercup (<i>Ranunculus acris</i> L.)	Reported in Glacier County. Historically present in Teton County.
Tamarisk [Saltcedar] (<i>Tamarix</i> spp.)	Reported in Cascade and Chouteau Counties. Historically present in Teton County.
Perennial pepperweed (<i>Lepidium latifolium</i>)	Reported in Toole, Pondera, Teton, Cascade and Chouteau Counties.
Category 3 – Non-Established New Invaders*	
Yellow Starthistle (<i>Centaurea solstitialis</i>)	Not reported in any Project Area County.

Common Crupina (<i>Crupina vulgaris</i>)	Not reported in any Project Area County.
Rush Skeletonweed (<i>Chondrilla juncea</i>)	Not reported in any Project Area County.
Eurasian watermilfoil (<i>Myriophyllum spicatum</i>)	Not reported in any Project Area County.
Yellow flag iris (<i>Iris pseudacoru</i>)	Reported in Cascade County.

**As reported in the 2005 update of the Montana Weed Management Plan*

2.0 Plan Purpose

The weed control plan is part of the overall restoration program. The overall goal of the restoration program is to preserve the native plant species, community, and functioning ecosystem within the Project Study Area. The purpose of this weed control plan is to prevent and control the spread of noxious weeds and invasive plants during and following construction of the proposed project. MATL and its contractors will be responsible for carrying out the methods described in this plan. Reasonable alternatives may be substituted or methods employed to the extent agreed upon jointly by MATL and the State Inspector (or DEQ personnel).

The Noxious Weed and Invasive Plant Control Plan will implement preventative measures to keep construction sites within the Project Study Area free of species that are not yet established there but which are known to be pests elsewhere in the region. The Plan will set priorities for the control or elimination of weeds that have already established on the site, according to their actual and potential impacts on native species and communities, particularly on our conservation targets. MATL and its contractors will take action only when careful consideration indicates leaving the weed unchecked will result in more damage than controlling it with available methods. This strategy will be developed in coordination with the BLM, State of Montana and the impacted County Weed Districts (Glacier, Pondera, Teton, Chouteau, and Cascade Counties). The focus of MATL's noxious weed and invasive plant control efforts will be to prevent the spread of new populations resulting from project activities, and to assist landowners in their weed control responsibilities by reducing or eliminating existing infestations in the project area. Without concurrent control of weed infestations by landowners on surrounding lands, weed control efforts in the project area by MATL will likely be unsuccessful.

3.0 Objectives

For the project area, the objectives of noxious weed and invasive plant control are: 1) to acquire information on the occurrence, distribution and abundance of noxious weeds and invasive plants in the project area prior to construction, 2) to reduce or eliminate

existing infestations and prevent the spread of new and existing populations of noxious weeds and invasive plants within the project area to the extent feasible for the life of the project following each construction phase, 3) to ensure any populations of rare plants within the project area are not negatively impacted by control activities, and 4) to coordinate and consult with designated BLM, State of Montana and County weed personnel regarding all noxious weed control activities conducted by MATL to ensure compatibility with existing weed control protocol.

4.0 Weed Control Area

The area for noxious weed and invasive plant control (hereafter referred to as the 'weed control area') includes all lands disturbed by construction activities plus a 30-foot buffer area around disturbances. Newly constructed roadways, where needed, are expected to be about 14 feet wide with varying widths of cut and fill slopes. To buffer all disturbed areas it is estimated that the 'weed control area' will consist of an approximately 100-foot corridor along all roadways and tensioning sites that are used for construction, and all lands within 50 feet of each new transmission line structure. MATL will assume responsibility to control noxious and invasive plants in the weed control area.

5.0 Pre-Construction Surveys

Noxious weed and invasive plant inventories in the project area will be conducted by MATL-designated botanists who are familiar with the taxonomic characteristics and typical habitat preferences of noxious weeds and invasive plants. Prior to construction, surveys will be conducted along existing and proposed new roads to be used for the project, structure locations, pulling and tensioning sites, staging and laydown areas, excavated sites, and other construction sites along the ROW. The Project area will be divided into small survey units (e.g., one or more segments between transmission line structures, including transmission line structure locations) and botanists will record all noxious weed and invasive species present within the survey unit.

Relative abundance of each noxious weed and invasive plant will be recorded for the following three zones (including travelways in and out of the three zones):

- Zone 1: Immediately on the existing or proposed disturbed sites (e.g., roadbeds, structure locations, cut/fill slopes);
- Zone 2: within 30 feet of disturbances, and
- Zone 3: in the general area greater than 30 feet from disturbances.

Ground surveys will be conducted in Zones 1 and 2; Zone 3 will receive a reconnaissance-level survey based on what is visible adjacent to the 30 ft buffer. Relative abundance of noxious and invasive plant species found in surveyed areas will be recorded. The project botanist will identify locations of any rare plant species that could potentially be affected by control activities and identify conditions necessary to avoid adverse impacts to these locations.

Maps illustrating noxious weed and invasive species abundances in survey units will be produced at an appropriate scale to assist with monitoring and control activities. Other ancillary thematic layers will also be plotted on the maps to assist with navigation and planning.

The dates of all pre-construction surveys will be coordinated with designated BLM, State of Montana, and weed boards/coordinators in Glacier, Pondera, Teton, Chouteau, and Cascade Counties. It is MATL's intent to conduct the survey at an appropriate time in the growing season to positively identify targeted noxious weeds and invasive species and to establish baseline conditions for future control activities. It is anticipated that the pre-construction survey will occur in late summer 2006.

6.0 Noxious Weed Management

Weeds and invasive species are spread by a variety of means including humans (e.g., workers, hikers and recreationalists, etc.), vehicles, construction equipment, construction and reclamation materials, livestock, and wildlife. Implementation of preventive measures to control the spread of noxious weeds and invasive plants is the most cost-effective management approach.

7.0 Preventive Measures

The following preventive measures would be implemented to prevent the spread of noxious/invasive plants during construction and future O&M activities:

1. Prior to construction, the construction contractor will be trained on methods for cleaning equipment, identification of problem plant species in the project area, and procedures to follow when an invasive or noxious weed is located. To assist in identification, the contractor will be supplied with a list and pictures of noxious and invasive species that may exist within the project area.
2. Prior to any construction disturbance, all known weed populations will be flagged so that they may be avoided.
3. Prior to entering the project area, vehicles and construction equipment will be cleaned (pressure wash or forced air) of all mud, dirt, and plant parts where there is a potential to import weeds. This will be done to remove weed seed that may be attached to this equipment. Washing will occur at designated sites (i.e., construction yards), that include appropriate containment systems.
4. Equipment, materials, and vehicles will be stored at specified work areas or construction yards. All personal vehicles, sanitary facilities, and staging areas will be confined to a limited number of specified weed-free locations to decrease chances of incidental disturbance and spread of noxious weeds and invasive plants.
5. Disturbed areas will be promptly seeded following completion of construction activities to reduce the potential for the spread and establishment of noxious

weeds and invasive plants. Seeding should occur as soon as possible following construction and during the optimal time period. Landowners will be contacted and asked to, if possible, refrain from grazing or moving cattle through populations of noxious weeds and newly planted areas. Only county/state-approved mixtures of certified “weed-free” seed will be used. All other introduced construction materials used for the Proposed Project, such as straw and fill, shall also be weed-free.

6. To limit new or improved accessibility into the area by OHVs and other motorized vehicles, all new access roads undesired or not required for maintenance would be controlled in accordance with management directives of BLM, State of Montana, and private landowners.

8.0 Control Measures

If pesticides are used in the project area, an integrated pest management plan would be developed to ensure that applications will be conducted consistent with BLM and Department of Interior (DOI) policies.

Assuming the project will begin construction in late 2006 or early 2007, MATL will flag all known noxious/invasive plants (for avoidance) prior to the time of construction (e.g., September 2006) to prevent the spread of existing populations found in the designated weed control area. Following construction, annual spraying will begin, likely during the months of May and June; however the potential for fall treatment does exist for some species. Annual spraying will continue as necessary to control noxious/invasive plants in the weed control area for the life of the Proposed Project.

Using the prior years’ survey information, annual spraying will be planned by MATL and coordinated with BLM, the State of Montana, and County weed coordinators/boards to ensure spraying will be conducted at the proper growing period, during favorable environmental conditions, and will use the appropriate chemicals to control targeted species. The chemicals used must be approved for use.

Only EPA-registered pesticides will be used. Pesticide use shall be limited to nonpersistent, immobile pesticides and will be applied in accordance with label and application permit directions. Spraying will be conducted using a qualified contractor as deemed appropriate by MATL and in consultation with designated BLM personnel, State of Montana personnel, and County weed coordinators/boards. The applicator used must possess a Montana State Pesticide Applicators License. Rather than broad application, the intent of applying herbicide will be to treat only designated areas.

It is anticipated that most spraying will be conducted using ATV-mounted spray equipment, supported by one or more four-wheel drive pickups equipped with water tanks. Pickups will carry necessary chemicals, fluid pumps, tools, and water to provide a base station for refilling of ATV spray tanks. Spraying infestations within the weed control area will be conducted by ATV, using hand-held spray guns with 25 to 50 foot hoses attached to spray tanks or by using 8 to 12 foot spray booms. The spray booms

will be utilized for treating larger areas on roadbeds and on gentle to moderately steep terrain. All spraying equipment shall be calibrated to ensure the proper rate of herbicide is applied.

Following annual spraying, a monitoring survey will be conducted to verify locations of noxious weeds and invasive plants in the project vicinity. These monitoring surveys are expected to occur in the late summer/early fall (August-September) and will be conducted using MATL's-designated botanist personnel in the same manner described for the pre-construction surveys.

9.0 Reporting

Beginning with the fall/winter of 2007 (November 2007 to February 2008), MATL will prepare and submit a status report to designated federal, state and county personnel regarding the previous years' weed control activities. The winter 2007 report will detail baseline conditions regarding the occurrence, distribution, and abundance of listed species located in the project area, weed control activities accomplished to date, and expected activities for the following year. Each subsequent years' report will 1) detail the current status of noxious weed and invasive plant occurrence, distribution and abundance, 2) summarize activities conducted in the project area during previous years, and 3) outline projected activities for the following year. This will include timing of surveys, herbicide treatments, amount and types of chemicals applied, and a list of participants and their activities. These reports will continue annually from winter 2007 for the life of the project, or as required by designated federal, state and county personnel to ensure long-term noxious/invasive plant control measures are met in the weed control area.

10.0 References

Montana Department of Agriculture. 2005. Montana Noxious Weed List. Montana Dept. of Agriculture, Helena, Montana. Available at <http://agr.state.mt.us/weedpest/noxiousweedslist2.asp>.

Sheley, R.L., Manoukian, M., and G. Marks. 1999. "Preventing Noxious Weed Invasion," pages 69-72 in, R.L. Sheley and J.K. Petroff, editors. *Biology and Management of Noxious Rangeland Weeds*. Oregon State University Press, Corvallis, OR.

USFR (U.S. Federal Register). 1999. "Presidential Document, Executive Order 13112. Invasive Species," Federal Register 64:6183-6186.

APPENDIX D:
DRAFT MATL RECLAMATION AND REVEGETATION PLAN

**THIS DOCUMENT IS INCLUDED AS APPENDIX O TO THE MATL MFSA
APPLICATION**

**Montana Alberta Tie Ltd.
230-kV Transmission Line Project from Lethbridge,
Alberta to Great Falls, Montana**

Appendix O

Revegetation and Reclamation Plan

DRAFT

TABLE OF CONTENTS

1. Overview	1
2. Objectives.....	1
3. Reclamation	1
4. Revegetation	3
5. Description of Existing Vegetation.....	3
6. Revegetation Mixtures.....	4
7. Erosion Control.....	5
8. Monitoring	6
9. Reporting.....	6
Literature Cited	7

1. Overview

As part of its MFSA Application, MATL has prepared a draft Revegetation and Reclamation Plan as Appendix K to the “DEQ Environmental Specifications for Montana Alberta Tie Ltd (MATL)” report. The plan is required to specify, at a minimum, seeding mixtures and rates, and procedures to abide by the requirements of ARM 17.20.1902(10). This rule states that following construction work in rangeland areas, the coverage of desirable perennial plant species shall be 30% or more of that of adjacent rangeland of similar slope and topography the year following revegetation, and 90% or more of the coverage of similar adjacent lands within five years. In forested lands, revegetated land other than that in the right-of-way or permanent access roads will be planted with trees so that after five years the stand density of the adjacent forest will be attained at maturity.

This plan also provides the framework to satisfy any identified landowner specifications for their property, as well as any necessary requirements of the General Permit for Storm Water Discharges Associated with Construction Activity, Montana Department of Natural Resources and Conservation requirements for an easement and construction on State lands, U.S. Army Corps of Engineers, U.S. Environmental Protection Agency, U.S. Fish and Wildlife Service and state and county requirements for mitigation associated with construction impacts to waters of the US and the state including streams and wetlands.

2. Objectives

The short term objectives of reclamation are to control erosion and sedimentation, thereby minimizing impacts on adjacent lands and waterways. Properly timed and executed construction practices will mitigate short-term impacts. Long term objectives include erosion and sedimentation control, reclamation of topography, soils and vegetation to a condition equal to that existing prior to disturbance, and reclamation of lands to productive uses consistent with that existing prior to disturbance and applicable land management policies. These objectives will be attained by adherence to practices outlined in the DEQ Environmental Specifications for Montana Alberta Tie Ltd (MATL) document, as well as practices outlined in this reclamation and revegetation plan to the extent feasible (Appendix K to that document). Reasonable alternatives may be substituted or methods employed to the extent agreed upon jointly by MATL and the State Inspector (or DEQ personnel).

3. Reclamation

Clearing, Grading, and Topsoil Handling: Per the standards identified in the “DEQ Environmental Specifications for Montana Alberta Tie Ltd (MATL)” report, soil disturbance and earth moving will be kept to a minimum and will follow typical procedures to minimize impacts and enhance reclamation. In addition, right-of-way

clearing shall be kept to the minimum necessary to meet the requirements of the National Electric Safety Code.

The permanent easement and temporary work space (the construction right-of-way) will be sized to provide space for all construction activities including temporary storage of any graded material and salvaged topsoil. To prevent wind erosion and facilitate reclamation, the roots of existing vegetation will be retained in place to the extent practical.

In any areas where topsoil must be temporarily removed, a minimum of 3 inches and a maximum of 12 inches of topsoil will be salvaged. Topsoil is defined as an upper layer of the soil, composed primarily of a mixture of organic matter and mineral matter; it is alive with microscopic and small macroscopic organisms (McKinney and Schoch 2006). Topsoil will not be mixed or stored with spoil material. In addition, topsoil will not be stripped during excessively wet or inordinately windy conditions.

Following any necessary clearing for work space, these areas will be graded as necessary to create a level work surface for the passage of heavy construction equipment and other vehicles. Any areas graded during construction will be re-graded to reestablish pre-disturbance landforms. Every reasonable effort will be made to complete final grading and installation of permanent erosion control measures as soon as practicable following construction. All disturbed areas (including temporary access roads and other ancillary facilities) will be returned to pre-excavation grades with allowance for settling. If any discontinuity between natural topography and re-graded ground results, MATL will undertake additional grading work to smooth the transition zone. The elevation of the re-graded right-of-way will not be lower than the natural grade.

For disturbed areas where topsoil was removed, redistribution depths will vary between 3 and 12 inches depending upon depth of topsoil stripped. Topsoil will not be mixed with spoil material at any time during soil handling operations and to the extent practical only topsoil will be re-spread on the surface. Topsoil from un-stripped areas will not be utilized to cover adjacent disturbances.

In addition:

- All garbage and debris will be removed from the re-graded areas before topsoil is replaced.
- Any excess rock not buried or blended with the natural terrain will be disposed of at an approved location.
- The length of time that topsoil is stored will be minimized based on the proposed construction schedule. Topsoil redistribution will begin immediately after re-grading (weather permitting).

- Replaced topsoil will be left in a roughened condition to discourage wind and water erosion. Additional erosion control and soil stabilization may be required on steeper slopes, on topsoil easily transported by wind, etc.
- If it is necessary to alleviate compaction, rutting or crusting prior to seeding, the replaced topsoil will be worked with a harrow, disc, spring, tooth, chisel plow or similar implement.
- Fertilization is not recommended since soil will only be stockpiled for a short period of time and fertilizer may enhance weed growth.

In addition, agricultural areas occupied during construction will be ripped, as necessary, in order to remediate compaction. This effort will be sufficient to relieve compaction to its actual depth.

4. Revegetation

In general, revegetation will be conducted on the right-of-way and at other disturbed areas (temporary access roads, staging areas) to restore vegetative cover that is similar to pre-construction condition, or if requested, meet any other reasonable landowner requests once site work is completed. Disturbed areas will be reclaimed by appropriate contouring and replanting with an approved seed mix. All seed mixtures will be certified “weed free”. Noxious weeds will be controlled through implementation of a Noxious and Invasive Plant Control Plan (Appendix F to the “DEQ Environmental Specifications for Montana Alberta Tie Ltd (MATL)” report, which will be approved, before construction, by the county weed boards affected by the project bounds.

5. Description of Existing Vegetation

Agriculture dominates land use within the Project Study Area and is interspersed with patches of non-farmland mostly in the form of low to moderately covered grasslands. In upland communities not converted to dryland farming such as rangeland, coulees, and slopes, the dominant grass communities include grama (*Bouteloua* spp.)-needlegrass (*Stipa* spp.) and wheatgrass (*Agropyron* spp.), and wheatgrass-needlegrass (Kuchler 1964). North of Cut Bank toward the Canadian border where the Foothill Grassland and Milk River Pothole Upland ecoregions exist, the natural vegetation is characterized by blue grama grass, wheatgrass, and, to a lesser extent, June grass (*Koeleria* spp.). A variety of shrubs and herbs also occur, but sagebrush (*Artemesia cana* and *Artemesia tridentata*) are most abundant, and on drier sites yellow cactus and prickly pear (*Opuntia* spp.) can be found. Saline areas support alkali grass (*Puccinellia* spp.), wild barley (*Hordeum* spp.), greasewood (*Sarcobatus vermiculatus*), saltwort (*Salicornia rubra*) and Pursh seepweed (*Suaeda calceoliformis*). Land that has been converted from dryland farming into the Conservation Reserve Program (CRP) is dominated by wheatgrass (*Agropyron* spp.), alfalfa (*Medicago* spp.), clover (*Trifolium pratense*) and annual weeds (e.g. *Tragopogon dubius*).

The Marias and Teton rivers support the most significant forested riparian habitats in the Project Study Area. Riparian habitats along the Marias and Teton rivers include oxbow marshes and shrub-dominated terraces, but the defining feature is the cottonwood gallery forest that lines the rivers. Despite the fact that these riparian cottonwood forests have been reduced and fragmented by conversion of the floodplain to irrigated agriculture and pasture, they remain the only significant forested habitat within the Project Study Area. The width of the cottonwood gallery forest varies between 30 and 500 feet.

6. Revegetation Mixtures

Revegetation seed mixtures will be agreed upon by MATL and DEQ personnel prior to any revegetation activities taking place on disturbed areas.

Species Selected: Selection of adapted plant species for revegetation is primarily based on existing species occurrence on adjacent lands, and community compositions. Consideration will also be given to establishment potential, growth characteristics, soil stabilizing qualities, availability of seed, and landowner and agency recommendations. MATL will utilize revegetation mixtures based on inventories and knowledge of vegetative types based on field visits conducted to date, and based on any specific recommendations made by the county weed boards.

Species Composition and Rates: The use of native graminoids will be emphasized throughout much of the project area. If noxious weeds invade revegetated areas, control measures, identified in consultation with the county weed board, would be initiated. If any revegetation is required in riparian areas containing woody plants, MATL will plant native shrubs and trees in these locations.

Final seeding and planting rates and species composition will be determined through consultation with DEQ, county weed board members, and land managers on any public lands crossed. Unless otherwise appropriate, approximately 20 pounds per acre of a mix of grasses and forbs seeds should be planted using the broadcast method. A post-seeding pass with a cultipacker would ensure adequate contact of the seed with the soil.

Reseeding will take place in the first appropriate season (Spring or Fall) after construction and at the landowners' discretion. Seeds are best planted in the spring. Seeds planted in the fall are going to be more susceptible to frost-heave and being eaten by rodents. Weed control is also less effective in the fall. Areas disturbed by the Project that supported native vegetation will be revegetated with native species.

Plant Materials: Typically, plant material dealers providing commercial seed will be encouraged to supply seed of local origin. Seed will be purchased in accordance with pure live seed specifications for seed mixtures, emphasizing the use of weed-free certified seed. All seed will be tested to ensure it is noxious weed-free. Seed

certification/testing tags will be submitted to DEQ or the counties if requested. Seed will be utilized within 12 months of testing. Containerized or bare root stock will be utilized for native shrub or tree plantings and local stock will be utilized if available.

Seeding Methods: Soil will be conditioned to prepare a good seedbed., Seed will be broadcast utilizing manually operated bucket spreaders, mechanical seed spreaders, blowers or hydroseeders. Seed will be mixed frequently in spreader hoppers to discourage settling. Seeded areas will be chained, harrowed or cultipacked to cover the seed and provide better seed/soil contact. On any areas of steeper slopes, broadcast seeded or hydroseeded areas will be dozer tracked perpendicular to the slope to provide for better seed germination. When hydroseeding is used, seed and mulch will be sprayed in one application. On small areas of revegetation or inaccessible sites, seed will be covered via hand raking.

Construction schedules and seasonal conditions will impact revegetation activities. Seeding and planting will occur as soon after seedbed preparation as possible, either in the fall or spring. Spring seeding, if required, will be conducted as early as possible to maximize the benefits of spring soil moisture.

Planting Methods: In disturbed areas where native shrub or trees need to be planted, MATL will typically utilize stock located as close to the project area as possible. Topsoil salvaged from construction disturbance (assuming no noxious weeds are present) will also be utilized to help promote the re-establishment of existing plant communities.

Tree and shrub planting procedures will follow guidelines set forth in US Forest Service Reforestation Handbook (See FSH 2409.26b, Chapter 700).

7. Erosion Control

In accordance with requirements of the General Permit for Storm Water Discharges Associated with Construction Activity, erosion and sediment control measures will be implemented at disturbed areas to minimize soil movement and improve the potential for revegetation and help ensure successful reclamation. Prior to construction, MATL will prepare a Storm Water Pollution Prevention Plan as part of the application for a General Permit in order to assess the potential for storm water runoff in the areas surrounding the disturbed sites, identify sources of pollutants from the disturbed sites and identify best management practices or control measures to minimize or eliminate these pollutants from entering any surface waters. Drawings of typical techniques that MATL proposes to utilize during construction to control erosion and sediment load to streams and wetlands are presented in Attachment A of this plan (forthcoming from SNC-Lavalin).

8. Monitoring

Revegetated areas will be monitored for a period of at least five years to identify success of reestablishing vegetative cover. This includes monitoring and controlling any noxious weed introduction as discussed further in MATL's Noxious and Invasive Plant Control Plan (Appendix F to the "DEQ Environmental Specifications for Montana Alberta Tie Ltd"). Monitoring efforts identified in this plan will be coordinated with efforts set forth in Appendix F.

Per requirements of ARM 17.20.1902(10), the coverage of desirable perennial plant species will be reviewed against the standard that the revegetative cover be 30% or more of that of adjacent rangeland of similar slope and topography the year following, and 90% or more of the coverage of similar adjacent lands within five years. At the end of the five years, the vegetative cover will be surveyed and documented, and if at that time it is determined that additional monitoring and control will be necessary, DEQ and the appropriate county weed control board will be consulted to determine a plan of action.

Specifically, qualified specialists (identified by MATL) will complete quantitative monitoring on an annual basis to compare adjacent, undisturbed vegetation to the revegetated areas. Evaluation factors will include percent of total vegetative cover, percent litter cover, percent bare ground, species diversity, species composition, woody plant survival (if planted in that area), and presence of noxious weeds. Areas with poor regeneration will be evaluated to identify what reclamation techniques could be utilized to address the problem (address soil fertility, soil erosion, etc.)

9. Reporting

Beginning with the fall/winter of 2007 (November 2007 to February 2008), MATL will prepare and submit a status report to designated state personnel regarding the previous years monitoring activities. The winter 2007 report will detail baseline conditions regarding typical vegetative cover located in the project area, reclamation and revegetation activities accomplished to date, and expected activities for the following year. Each subsequent years report will 1) detail the current status of vegetative cover, as compared to adjacent land cover, 2) summarize activities conducted in the project area during previous years, and 3) outline projected activities for the following year. This effort will be coordinated with reporting requirements for Appendix F (Noxious and Invasive Plant Control Plan). These reports will continue annually from winter 2007 as required by designated state personnel to ensure long-term revegetative measures are met.

Literature Cited

McKinney, M.L. and R.M. Schoch. 2006. Environmental Science, Systems and Solutions. Third Edition. Available at http://environment.jbpub.com/mckinney/interactive_glossary_showterm.cfm?term=topsoil%20. Accessed 24 May 2006.

**APPENDIX E:
DRAINAGES AND WETLAND AREAS THAT WOULD BE AVOIDED**

**THESE TABLES WERE PRESENTED IN THE MATL MFSA APPLICATION AS
TABLES 4.5-7 AND 4.5-12**

**APPENDIX E-1
DRAINAGES AND WATER BODIES CROSSED NORTH TO SOUTH BY
PREFERRED ALTERNATIVE A
MONTANA ALBERTA TIE LTD., LETHBRIDGE, AB - GREAT FALLS, MT**

Water body	River Miles¹
Red River	8.00 miles
Fitzpatrick Coulee	8.97 miles
Old Maids Coulee	4.95, 5.06 and 10.09 miles
Marias River	171.23 miles
Bullhead Creek	9.94 miles
Winginaw Coulee	0.22 miles
Ringwald Coulee	0.37 miles
Schultz Creek	21.87 miles
Dry Fork Marias River	27.59 miles
Spring Creek	4.55 miles
Pondera Coulee	95.85 miles
Railroad Coulee	3.75 miles
South Pondera Coulee	16.86, 17.15 and 17.30 miles
Brady Coulee	3.83 miles
Rocky Coulee	16.15 miles
Teton River	96.04 miles
Hunt Coulee	2.17 miles
Kinley Coulee	6.34 miles
Unnamed Stream	1.36 miles
Timber Coulee	16.58 miles
Unnamed Stream	3.11 miles
Huntley Coulee	25.21 miles

¹ Source: Montana Fish, Wildlife, and Parks. River miles listed are the point locations at which the alternative would cross the particular water body. River miles are published as an aid to people using the river for commerce, recreation and emergency services. As one travels upstream, the numbers increase until the last listed mile of the navigation map. If multiple river miles are listed then the alignment crosses that particular water body multiple times.

APPENDIX E-2
LINEAR MILES OF WETLANDS ALONG THE TRANSMISSION LINE ALTERNATIVES
MONTANA ALBERTA TIE, LTD., LETHBRIDGE, AB - GREAT FALLS, MT

	Preferred Alternative A	Alternative B	Alternative C	<i>Western Alt. Segment</i>	<i>Eastern Alt. Segment</i>
Wetland Class	Length (Miles)	Length (Miles)	Length (Miles)	<i>Length (Miles)</i>	<i>Length (Miles)</i>
L2ABF	0.00	0.00	0.00	0.00	0.00
L2USA	0.00	0.00	0.00	0.00	0.00
L2USAd	0.00	0.00	0.00	0.00	0.00
PABF	0.00	0.01	0.00	0.00	0.00
PABFh	0.09	0.09	0.09	0.00	0.00
PABFx	0.00	0.00	0.00	0.00	0.00
PEMA	0.64	0.14	0.39	0.03	0.11
PEMAAd	0.08	0.02	0.02	0.00	0.00
PEMAh	0.00	0.00	0.04	0.00	0.00
PEMB	0.09	0.00	0.03	0.00	0.00
PEMC	0.18	0.39	0.20	0.15	0.14
PEMCh	0.00	0.03	0.03	0.00	0.00
PEMF	0.00	0.02	0.00	0.00	0.00
PEMFh	0.00	0.02	0.00	0.00	0.00
PSSA	0.00	0.00	0.06	0.00	0.00
PUBFx	0.00	0.00	0.05	0.00	0.00
PUSA	0.02	0.00	0.00	0.00	0.02
PUSAh	0.00	0.00	0.04	0.00	0.00
R3UBH	0.00	0.03	0.04	0.00	0.00
R3USC	0.04	0.04	0.00	0.00	0.00
Total Wetlands	1.14	0.77	0.99	0.18	0.27
U	106.49	98.77	118.02	18.32	18.13
No Data	22.26	24.89	17.48	--	0.01
Total Length of Alternative	129.89	124.43	136.49	18.50	18.41

APPENDIX F:
DRAFT DEQ ENVIRONMENTAL SPECIFICATIONS

Draft DEQ Environmental Specifications

The following specifications have been developed by the DEQ for projects receiving a Certificate of Compliance and would become conditions to the Certificate of Compliance if it is approved.

CONTENTS

DEFINITIONS

PREFACE

INTRODUCTION

0.0 GENERAL SPECIFICATIONS

- 0.1 Scope
- 0.2 Environmental protection
- 0.3 Contract documents
- 0.4 Briefing of employees
- 0.5 Compliance with regulations
- 0.6 Limits of liability
- 0.7 Designation of sensitive areas
- 0.8 Performance bonds
- 0.9 Designation of structures
- 0.10 Access
- 0.11 Designation of structures
- 0.12 Salvage

1.0 PRE-CONSTRUCTION PLANNING AND COORDINATION

- 1.1 Planning
- 1.2 Pre-construction conference
- 1.3 Public contact
- 1.4 Historical and archaeological survey

2.0 CONSTRUCTION

- 2.1 General
- 2.2 Construction monitoring
- 2.3 Timing of construction
- 2.4 Public safety
- 2.5 Protection of property
- 2.6 Traffic control
- 2.7 Access roads and vehicle movement
- 2.8 Equipment operation
- 2.9 Right-of-way clearing and site preparation
- 2.10 Grounding
- 2.11 Erosion and sediment control
- 2.12 Archaeological, historical and paleontologic resources
- 2.13 Prevention and control of fires
- 2.14 Waste disposal
- 2.15 Special measures

3.0 POST-CONSTRUCTION CLEANUP AND RECLAMATION

- 3.1 Cleanup
- 3.2 Restoration, reclamation, and revegetation

- 3.3 Monitoring
- 4.0 OPERATION AND MAINTENANCE
 - 4.1 Right-of-way management and road maintenance
 - 4.2 Maintenance inspections
 - 4.3 Correction of LANDOWNER problems
 - 4.4 Herbicides and weed control
 - 4.5 Monitoring
- 5.0 ABANDONMENT

APPENDICES

- A. Sensitive areas
 - B. Performance bond specifications
 - C. Variations in right-of-way width
 - D. Areas where construction timing restrictions apply
 - E. Aeronautical hazard markings
 - F. Noxious weed areas
 - G. Grounding specifications
 - H. Culvert and bridge requirements
 - I. Historic preservation plan
 - J. Burning plan and fire plan
 - K. Reclamation and revegetation plan
 - L. Areas where stockpiling of topsoil, hydro seeding, fertilizing, or mulching is required
 - M. Roads to be closed and/or obliterated
 - N. Right-of-way management plan
 - O. Watersheds and other areas where herbicides are prohibited
 - P. Names and addresses of STATE INSPECTOR and Owner's liaison
 - Q. Monitoring plan

DEFINITIONS

ACCESS EASEMENT: Any land area over which the OWNER has received an easement or other permission from a LANDOWNER allowing travel to and from the project. Access easements may or may not include access roads.

ACCESS ROAD: Any travel course which is constructed by substantial recontouring of land and which is intended to permit passage by most four-wheeled vehicles.

BEGINNING OF CONSTRUCTION: Any project-related earthmoving or removal of vegetation (except for clearing of survey lines).

BOND: Performance bond to guarantee successful reclamation and revegetation of the project as allowed under 75-20-302(2),MCA

CERTIFICATE: Certificate of Compliance issued by the Department of Environmental Quality.

CONTRACTOR: Constructors of the Facility (agent of owner)

FWP: Montana Fish, Wildlife and Parks

DNRC: Montana Department of Natural Resources and Conservation

DOT: Montana Department of Transportation

DEQ: Montana Department of Environmental Quality

LANDOWNER: The owner of private property or the managing agency for public lands.

OWNER: The owner(s) of the facility, or the owner's agent.

SENSITIVE AREA: Area which exhibits environmental characteristics that may make it susceptible to impact from construction of a transmission facility. The extent of these areas is defined for each project but may include any of the areas listed in Circular MFSA-2 Sections 3.2(1)(d) and 3.4(1).

SHPO: State Historic Preservation Office

STATE INSPECTOR: DEQ employee or DEQ designee with the responsibility for monitoring the OWNER's and contractor's compliance with terms and conditions of the Certificate of Compliance issued for a project.

INTRODUCTION

The purpose of these specifications is to ensure mitigation of potential environmental impacts during the construction, operation and maintenance of a transmission facility.

For non-exempt facilities, the Montana Major Facility Siting Act supersedes all state and local environmental permit requirements except for those dealing with air and water quality, public health and safety, water appropriations and diversions, and easements across state lands (75-20-103 and 401, MCA). A major purpose of these conditions is to ensure that the intent of the laws which are superseded is met, even though the procedures of applying for and obtaining permits from various state agencies are not. As specified later in this document, the STATE INSPECTOR will have the responsibility for arranging reviews and inspections by other state agencies, which would otherwise have been done through a permit application process.

Appendices A through Q refer to the site-specific concerns and areas that apply for a specific project. These addenda, as needed, will be prepared by DEQ working in consultation with the OWNER prior to the start of construction.

0.0 GENERAL SPECIFICATIONS

0.1. SCOPE

These specifications apply to all lands affected by the project. Where the LANDOWNER requests practices other than those listed in these specifications, the OWNER may authorize such a change provided that the STATE INSPECTOR is notified in writing of the change and that the change would not be in violation of: (1) the intent of any state law which is superseded by the Montana Major Facility Siting Act; (2) the Certificate; (3) any conditions imposed by DEQ; (4) DEQ's finding of minimum adverse impact; or (5) the regulations in ARM 17.20.1901 and 17.20.1902.

0.2. ENVIRONMENTAL PROTECTION

The OWNER shall conduct all operations in a manner to protect the quality of the environment and to reduce impacts to the greatest extent practical.

0.3. CONTRACT DOCUMENTS

These specifications shall be part of or incorporated into the contract documents; therefore, the OWNER and the OWNER'S agents shall be held responsible for adherence to these specifications in performing the work

0.4. BRIEFING OF EMPLOYEES

The OWNER shall ensure that the CONTRACTOR and all field supervisors are provided with a copy of these specifications and informed of which sections are applicable to specific procedures. It is the responsibility of the OWNER, its CONTRACTOR and the CONTRACTOR'S Construction Supervisors to ensure that the intent of these measures is met. Supervisors shall inform all employees on the applicable environmental constraints spelled out herein prior to and during construction. Site-specific measures spelled out in the appendices

attached hereto shall be incorporated into the design and construction specifications or other appropriate contract document.

0.5. COMPLIANCE WITH REGULATIONS

All project-related activities of the OWNER shall comply with all applicable local, state, and federal laws, regulations, and requirements.

0.6. LIMITS OF LIABILITY

The OWNER is not responsible for correction of environmental damage or destruction of property caused by negligent acts of DEQ employees during construction monitoring activities.

0.7. DESIGNATION OF SENSITIVE AREAS

DEQ, in its evaluation of the project, has designated certain areas along the right-of-way or access roads as SENSITIVE AREAS. The OWNER shall take all reasonable actions to avoid adverse impacts in these SENSITIVE AREAS and adopt the measures in Appendix A.

0.8. PERFORMANCE BOND

To ensure compliance with these specifications, the OWNER shall submit to the State of Montana or its authorized agent a BOND or BONDS pertaining specifically to the restoration and revegetation of the right-of-way and adjacent land damaged during construction. Post-construction monitoring by DEQ will determine compliance with these specifications and other mitigating measures included herein. At the time cleanup and restoration are complete, and revegetation is progressing satisfactorily, the OWNER shall be released from its obligation for restoration. At the time the OWNER is released, a portion of this BOND or a separate BOND shall be established by the OWNER and submitted to the State of Montana or its authorized agent. This BOND shall be held for five years or until monitoring by DEQ indicates that reclamation, weed control, and road closures have been adequate. The amount and bonding mechanisms for this section shall be specified by DEQ and agreed to by the OWNER under provisions established by 17.20.1902(9) as specified in Appendix B and attached. Proof of bond shall be submitted to DEQ two weeks prior to the start of construction.

0.9. DESIGNATION OF STRUCTURES

Each structure for the project shall be designated by a unique number on plan and profile maps, and a shape file, route, or geodatabase showing line, structure, and access locations submitted to DEQ. References to specific poles or towers in Appendices A through Q shall use these numbers. If this information is not available because the survey is not complete, station numbers or mileposts shall indicate locations along the centerline. Station numbers or mileposts of all angle points shall be designated on plan and profile maps.

0.10. ACCESS

When easements for construction access are obtained for construction personnel, provision will be made by the OWNER to ensure that DEQ personnel or contractors will be allowed access to the right-of-way and to any off-right-of-way access roads used for construction during the term

of the CERTIFICATE. Liability for damage caused by providing such access for the STATE INSPECTOR shall be limited by section 0.6 LIMITS OF LIABILITY.

0.11. DESIGNATION OF STATE INSPECTOR

DEQ shall designate a STATE INSPECTOR or INSPECTORS to monitor the OWNER'S compliance with these specifications and any other project-specific mitigation measures adopted by DEQ as provided in ARM 17.20.1901 through 17.20.1902. The STATE INSPECTOR shall be the OWNER's liaison with the State of Montana on construction, post-construction, and reclamation activities. All communications regarding the project shall be directed to the STATE INSPECTOR. The name of the STATE INSPECTOR can be obtained by contacting the Bureau Chief of the Environmental Management Bureau, Permitting and Compliance Division, Department of Environmental Quality, or the Bureau Chief's successor (see Appendix P).

1.0. PRE-CONSTRUCTION PLANNING AND COORDINATION

1.1. PLANNING

1.1.1. Planning of all stages of construction and maintenance activities is essential to ensure that construction-related impacts will be kept to a minimum. The CONTRACTOR and OWNER shall, to the extent possible, plan the timing of construction, construction and maintenance access and requirements, location of special use sites, and other details before the commencement of construction.

1.1.2. Preferably thirty days, but at least fifteen days before the start of construction, the OWNER shall submit plan and profile map(s) and an electronic equivalent acceptable to the STATE INSPECTOR depicting the location of the centerline and of all construction access roads, maintenance access roads, structures, clearing backlines, and, if known, special use sites. The scale of the map for special use sites shall be 1:24,000 or larger.

1.1.3. If special use sites are not known at the time of submission of the plan and profile, the following information shall be submitted no later than five days prior to the start of construction. The location of special use sites including staging sites, pulling sites, batch plant sites, splicing sites, borrow pits, and storage or other buildings shall be plotted on one of the following and submitted to DEQ: ortho-photomosaics of a scale 1:24,000 or larger, or available USGS 7.5' plan and profile maps of a scale 1:24,000 or larger, or an electronic equivalent acceptable to the STATE INSPECTOR.

1.1.4. Changes or updates to the information submitted in 1.1.2 and 1.1.3 shall be submitted to DEQ as they become available. In no case shall a change be submitted less than five (5) working days prior to its anticipated date of construction. Changes in these locations prior to construction where designated SENSITIVE AREAS are affected must be submitted to DEQ seven (7) working days before construction and approved by the STATE INSPECTOR prior to construction.

1.1.5. Long-term maintenance routes to all points on the line should be planned before construction begins. Where known, new construction access roads intended to be maintained for permanent use shall be differentiated from temporary access roads on the maps required under 1.1.2 above.

1.2. PRE-CONSTRUCTION CONFERENCE

1.2.1. At least one week before commencement of any construction activities, the OWNER shall schedule a pre-construction conference. The STATE INSPECTOR shall be notified of the date and location for this meeting. One of the purposes of this conference shall be to brief the CONTRACTOR and land management agencies regarding the content of these specifications and other DEQ approved mitigating measures, and to make all parties aware of the roles of the STATE INSPECTOR and of the federal inspectors (if any).

1.2.2. The OWNER's representative, the CONTRACTOR's representative, the STATE INSPECTOR, and representatives of affected state and federal agencies who have land management or permit and easement responsibilities shall be invited to attend the pre-construction conference.

1.3. PUBLIC CONTACT

1.3.1. Written notification by the OWNER's field representative or the CONTRACTOR shall be given to local public officials in each affected community prior to the beginning of construction to provide information on the temporary increase in population, when the increase is expected, and where the workers will be stationed. If local officials require further information, the OWNER shall hold meetings to discuss potential temporary changes. Officials contacted shall include the county commissioners, city administrators, and law enforcement officials. It is also suggested that local fire departments, emergency service providers, and a representative of the Chamber of Commerce be contacted.

1.3.2. The OWNER shall negotiate with the LANDOWNER in determining the best location for access easements and the need for gates.

1.3.3. The OWNER shall contact local government officials, or the managing agency, as appropriate, regarding implementation of required traffic safety measures.

1.4. HISTORICAL AND ARCHAEOLOGICAL SURVEY

1.4.1. The OWNER must develop and carry out a plan submitted to the State Historic Preservation Office (SHPO) that includes steps which have been and will be taken to identify, evaluate, and avoid or mitigate damage to cultural resources affected by the project. The plan (Appendix I) shall include: (1) actions taken to identify cultural resources during initial intensive survey work; (2) an evaluation of the significance of the identified sites and likely impacts caused by the project; (3) recommended treatments or measures to avoid or mitigate damage to known cultural sites; (4) steps to be taken in the event other sites are identified after approval of the plan; and (5) provisions for monitoring construction to protect cultural resources. Except for monitoring, all steps of the plan must be carried out prior to the start of construction. The requirements for this plan should not be construed to exempt or alter compliance by the OWNER or managing agency with 36 CFR 800. This plan must be filed with SHPO.

2.0 CONSTRUCTION

2.1. GENERAL

2.1.1. The preservation of the natural landscape contours and environmental features shall be an important consideration in the location of all construction facilities, including roads, storage areas, and buildings. Construction of these facilities shall be planned and conducted so as to minimize destruction, scarring, or defacing of the natural vegetation and landscape. Any necessary earthmoving shall be planned and designed to be as compatible as possible with natural landforms.

2.1.2. Temporary construction sites and staging areas shall be the minimum size necessary to perform the work. Such areas shall be located where most environmentally compatible, considering slope, fragile soils or vegetation, and risk of erosion. After construction, these areas shall be restored as specified in Section 3.0 of these specifications unless the STATE INSPECTOR authorizes a specific exemption in writing.

2.1.3. All work areas shall be maintained in a neat, clean, and sanitary condition at all items. Trash or construction debris (in addition to solid wastes described in section 2.14) shall be regularly removed during the construction, restoration, and reclamation periods.

2.1.4. In areas where mixing of soil horizons would lead to a significant reduction in soil productivity, increased difficulty in establishing permanent vegetation, or an increase in weeds, mixing of soil horizons shall be avoided insofar as possible. This may be done by removing and stockpiling topsoil, where practical, so that it may be spread over subsoil during site restoration. Known areas where stockpiling of topsoil is required are listed in Appendix L. Prior to construction the STATE INSPECTOR may designate other areas.

2.1.5. Vegetation such as trees, plants, shrubs, and grass on or adjacent to the right-of-way which do not interfere with the performance of construction work or operation of the line itself shall be preserved.

2.1.6. The OWNER shall take all necessary actions to avoid adverse impacts to SENSITIVE AREAS listed in Appendix A. The STATE INSPECTOR shall be notified two working days in advance of initial clearing or construction activity in these areas. The OWNER shall mark or flag the clearing backlines and limits of disturbance in certain SENSITIVE AREAS as indicated in Appendix A. All construction activities must be conducted within this marked area.

2.1.7. The OWNER shall either acquire appropriate land rights or provide compensation for damage for the land area that will be disturbed by construction. The width of the area disturbed by construction shall not exceed a reasonable distance from the centerline as necessary to perform the work. For this project, work should be contained within the area specified in Appendix C.

2.1.8. Flow in a stream course may not be permanently diverted. If temporary diversion is necessary, flow will be restored before a major runoff season or the next spawning season, as determined by the STATE INSPECTOR in consultation with the managing agency.

2.2. CONSTRUCTION MONITORING

2.2.1. The STATE INSPECTOR is responsible for implementing the monitoring plan required by ARM 17.20.1902. The plan specifies the type of monitoring data and activities required, and terms and schedules of monitoring data collection, and assigns responsibilities for data collection, inspection reporting, and other monitoring activities. It is attached as Appendix Q.

2.2.2. The STATE INSPECTOR, the OWNER, and the OWNER'S agents will attempt to rely upon a cooperative working relationship to reconcile potential problems relating to construction in SENSITIVE AREAS and compliance with these specifications. When construction activities would cause excessive environmental impacts due to seasonal field conditions or damage to sensitive features, the STATE INSPECTOR will discuss possible mitigating measures or minor construction rescheduling to avoid these impacts with the OWNER. The STATE INSPECTOR will be prepared to provide the OWNER with written documentation of the reasons for the modifications within 24 hours of their imposition.

2.2.3. The STATE INSPECTOR may require mitigating measures or procedures at some sites beyond those listed in Appendix A in order to minimize environmental damage due to unique circumstances that arise during construction, such as unanticipated discovery of a cultural site. The STATE INSPECTOR will follow procedures described in the monitoring plan when such situations arise.

2.2.4. In the event that the STATE INSPECTOR shows reasonable cause that compliance with these specifications is not being achieved, DEQ would take corrective action as described in 75-20-408, MCA.

2.3. TIMING OF CONSTRUCTION

2.3.1. Construction and motorized travel may be restricted or prohibited at certain times of the year in certain areas. Exemptions to these timing restrictions may be granted by DEQ in writing if the OWNER can clearly demonstrate that no environmental impacts will occur as a result. These areas, listed in Appendix D, include areas deemed as SENSITIVE AREAS.

2.3.2. In order to prevent rutting and excessive damage to vegetation, construction will not take place during periods of high soil moisture when construction vehicles will cause severe rutting.

2.4. PUBLIC SAFETY

2.4.1. All construction activities shall be done in compliance with existing health and safety laws.

2.4.2. Requirements for aeronautical hazard marking shall be determined by the OWNER in consultation with the Montana Aeronautical Division, the FAA, and DEQ. These requirements are listed in Appendix E. Where required, aeronautical hazard markings shall be installed at the time the wires are strung, according to the specifications listed in Appendix E.

2.4.3. Noise levels shall not exceed established DEQ standards as a result of operation of the facility and associated facilities. For electric transmission facilities, the average annual noise levels, as expressed by an A-weighted day-night scale (Ldn) will not exceed 50 decibels at the

edge of the right-of-way in residential and subdivided areas unless the affected LANDOWNER waives this condition.

2.4.4. The facility shall be designed, constructed, and operated to adhere to the National Electric Safety Code regarding transmission lines.

2.4.5. The electric field at the edge of the right-of-way will not exceed 1 kilovolt per meter measured 1 meter above the ground in residential or subdivided areas unless the affected LANDOWNER waives this condition, and the electric field at road crossings under the facility will not exceed 7 kilovolts per meter measured 1 meter above the ground.

2.5. PROTECTION OF PROPERTY

2.5.1. Construction operations shall not take place over or upon the right-of-way of any railroad, public road, public trail, or other public property until negotiations and/or necessary approvals have been completed with the managing agency. Roads and trails will be protected and kept open for public use. Where it is necessary to cross a trail with access roads, the trail corridor will be restored. Adequate signing and/or blazes will be established so the user can find the route. All roads and trails designated by government agencies as needed for fire protection or other purposes shall be kept free of logs, brush, and debris resulting from operations under this agreement. Any such road or trail damaged by project construction or maintenance shall be promptly restored to its original condition.

2.5.2. Reasonable precautions shall be taken to protect, in place, all public land monuments and private property corners or boundary markers. If any such land markers or monuments are destroyed, the marker shall be reestablished and referenced in accordance with the procedures outlined in the "Manual of Instruction for the Survey of the Public Land of the United States" or, in the case of private property, the specifications of the county engineer. Reestablishment of survey markers will be at the expense of the OWNER

2.5.3. Construction shall be conducted so as to prevent any damage to existing real property including but not limited to transmission lines, distribution lines, telephone lines, railroads, ditches, and public roads crossed. If such property is damaged by operations under this agreement, the OWNER shall repair such damage immediately to a reasonably satisfactory condition in consultation with the property owner.

2.5.4. In areas with livestock, the OWNER shall make a reasonable effort to comply with the reasonable requests of LANDOWNERS regarding measures to control livestock. Unless requested by a LANDOWNER, care shall be taken to ensure that all gates are closed after entry or exit. The LANDOWNER shall be compensated for any losses to personal property due to construction or maintenance activities. Gates shall be inspected and repaired when necessary during construction and missing padlocks shall be replaced. The OWNER shall ensure that gates are not left open at night or during periods of no construction activity unless the LANDOWNER makes other requests. Any fencing or gates cut, removed, damaged, or destroyed by the OWNER shall immediately be replaced with new materials. Fences installed shall be of the same height and general type as a nearby fence on the same property, and shall be stretched tight with a fence stretcher before stapling or securing to the fence post. Temporary gates shall be of sufficiently high quality to withstand repeated opening and closing during construction, to the satisfaction of the LANDOWNER.

2.5.5. The CONTRACTOR must notify the OWNER, the STATE INSPECTOR, and, if possible, the affected LANDOWNER within two working days of damage to land, crops, property, or irrigation facilities, contamination or degradation of water, or livestock injury caused by the OWNER's construction activities, and the OWNER shall reasonably restore any damaged resource or property or provide reasonable compensation to the affected party.

2.5.6. Pole holes and anchor holes must be covered or fenced in any fields, pastures, or ranges being used for livestock grazing or where a LANDOWNER's requests can be reasonably accommodated.

2.5.7. When requested by the LANDOWNER, all fences crossed by permanent access roads shall be provided with a gate. All fences to be crossed by access roads shall be braced before the fence is cut. Fences not to be gated should be restrung temporarily during construction and restrung permanently within 30 days following construction, subject to the reasonable desires of the LANDOWNER.

2.5.8. Where new access roads cross fence lines, the OWNER shall make reasonable effort to accommodate the LANDOWNER's wishes on gate location and width.

2.5.9. Any breaching of natural barriers to livestock movement by construction activities will require fencing sufficient to control livestock.

2.6. TRAFFIC CONTROL

2.6.1. At least 30 days before any construction within or over any state or federal highway right-of-way or paved secondary highway maintained by DOT, the OWNER will notify the appropriate DOT field office to review the proposed occupancy and to obtain appropriate permits and authorizations. The OWNER must supply DEQ with documentation that this consultation has occurred. This documentation should include any measures recommended by DOT and to what extent the OWNER has agreed to comply with these measures. In the event that recommendations or regulations were not followed, a statement as to why the OWNER chose not to follow them should be included.

2.6.2. In areas where project construction creates a hazard, traffic will be controlled according to the applicable DOT regulations. Safety signs advising motorists of construction equipment shall be placed on major state highways, as recommended by DOT. The installation of proper road signing will be the responsibility of the OWNER.

2.6.3. The managing agency shall be notified, as soon as practicable, when it is necessary to close public roads to public travel for short periods to provide safety during construction.

2.6.4. Construction vehicles and equipment will be operated at speeds safe for existing road and traffic conditions.

2.6.5. Traffic delays will be restricted on primary access routes, as determined by DOT or the managing agency.

2.6.6. Access for fire and emergency vehicles will be provided for at all times.

2.6.7. Public travel through and use of active construction areas shall be limited at the discretion of the managing agency.

2.7. ACCESS ROADS AND VEHICLE MOVEMENT

2.7.1. Construction of new roads shall be the minimum reasonably required to construct and maintain the facility. State, county, and other existing roads shall be used for construction access wherever possible. Access roads intended to be permanent should be initially designed as such. The location of access roads and towers shall be established in consultation with affected LANDOWNERS, and LANDOWNER concerns shall be accommodated where reasonably possible and not in contradiction to these specifications or other DEQ conditions.

2.7.2. All new roads, both temporary and permanent, shall be constructed with the minimum possible clearing and soil disturbance to minimize erosion, as specified in Section 2.11 of these specifications.

2.7.3. Where practical, all roads shall be initially designed to accommodate one-way travel of the largest piece of equipment that will be required to use them; road width shall be no wider than necessary.

2.7.4. Roads shall be located in the right-of-way insofar as possible. Travel outside the right-of-way to enable traffic to avoid cables and conductors during conductor-stringing shall be kept to the minimum possible. Road crossings of the right-of-way should be near support structures.

2.7.5. Where practical, temporary roads shall be constructed on the most level land available. Where temporary roads cross flat land they shall not be graded or bladed unless necessary, but will be flagged or otherwise marked to show their location and to prevent travel off the roadway.

2.7.6. In order to minimize soil disturbance and erosion potential, no cutting and filling for access road construction shall be allowed in areas of up to 5 percent sideslope. In areas of over 5 percent sideslope, road building that may be required shall conform to a 4 percent outslope. The roads shall be constructed to prevent channeling of runoff, and shoulders or berms that would channel runoff shall be avoided.

2.7.7. The OWNER will maintain all permanent access roads, including drainage facilities, which are constructed for use during the period of construction. In the event that a road would be left in place, the OWNER and LANDOWNER may enter into agreements regarding maintenance for erosion control following construction.

2.7.8. Any damage to existing private roads, including rutting, resulting from project construction or maintenance shall be repaired and restored to a condition as good or better than original as soon as possible. Repair and restoration of roads should be accomplished during and following construction as necessary to reduce erosion.

2.7.9. All permanent access road surfaces, including those under construction, will be prepared with the necessary erosion control practices as determined by the STATE INSPECTOR or the managing agency prior to the onset of winter.

2.7.10. Any necessary snow removal shall be done in a manner to preserve and protect roads, signs, and culverts, to ensure safe and efficient transportation, and to prevent excessive erosion damage to roads, streams, and adjacent land.

2.7.11. At the conclusion of line construction, final maintenance will be performed on all existing private roads used for construction access by the CONTRACTOR. These roads will be returned to a condition as good or better than when construction began.

2.7.12. At least 30 days prior to construction of a new access road approach intersecting a state or federal highway, or of any structure encroaching upon a highway right-of-way, the OWNER shall submit to DOT a plan and profile map showing the location of the proposed construction. At least five days prior to construction, the OWNER shall provide the STATE INSPECTOR written documentation of this consultation and actions to be taken by the OWNER as provided in 2.6.1.

2.8. EQUIPMENT OPERATION

2.8.1. During construction, unauthorized cross-country travel and the development of roads other than those approved shall be prohibited. The OWNER shall be liable for any damage, destruction, or disruption of private property and land caused by his construction personnel and equipment as a result of unauthorized cross-country travel and/or road development.

2.8.2. To prevent excessive soil damage in areas where a graded roadway has not been constructed, the limits and locations of access for construction equipment and vehicles shall be clearly marked or specified at each new site before any equipment is moved to the site. Construction foremen and personnel should be well versed in recognizing these markers and shall understand the restriction on equipment movement that is involved.

2.8.3. Dust control measures shall be implemented on access roads where required by the managing agency or where dust would pose a nuisance to residents. Construction activities and travel shall be conducted to minimize dust. Water, straw, wood chips, dust palliative, gravel, combinations of these, or similar control measures may be used. Oil or similar petroleum-derivatives shall not be used.

2.8.4. Work crew foremen shall be qualified and experienced in the type of work being accomplished by the crew they are supervising. Earthmoving equipment shall be operated only by qualified, experienced personnel. Correction of environmental damage resulting from operation of equipment will be the responsibility of the OWNER. Repair of damage to a condition reasonably satisfactory to the LANDOWNER, managing agency, or if necessary, DEQ, is required.

2.8.5. Sock lines will be strung using methods that minimize disturbance of soils and vegetation.

2.8.6. Following construction in areas designated by the local weed control board or STATE INSPECTOR as a noxious weed area the CONTRACTOR shall thoroughly clean all vehicles and equipment to remove weed parts and seeds immediately prior to leaving the area.

2.9. RIGHT-OF-WAY CLEARING AND SITE PREPARATION

2.9.1. The STATE INSPECTOR shall be notified at least ten days prior to any timber clearing. The STATE INSPECTOR shall be responsible for notifying the DNRC Forestry Division.

2.9.2. During clearing of survey lines or the right-of-way, shrubs shall be preserved to the greatest extent possible. Shrub removal shall be limited to crushing where necessary. Plants may be cut off at ground level, leaving roots undisturbed so that they may re-sprout.

2.9.3. Right-of-way clearing shall be kept to the minimum necessary to meet the requirements of the National Electric Safety Code. Trees to be saved within the clearing backlines and danger trees located outside the clearing backlines shall be marked. Clearing backlines in SENSITIVE AREAS will be indicated on plan and profile maps. All snags and old growth trees that do not endanger the line or maintenance equipment shall be preserved. In designated SENSITIVE AREAS, the STATE INSPECTOR shall approve clearing boundaries prior to clearing.

2.9.4. In no case should the entire nominal width of the right-of-way be cleared of trees up to the edge, unless approved by the STATE INSPECTOR and the LANDOWNER. Clearing should instead produce a "feathered edge" right-of-way configuration, where only specified hazard trees and those that interfere with construction or conductor clearance are removed. In areas where there is potential for long, tunnel views of transmission lines or access roads as identified in Appendix A, care shall be taken to screen the lines from view. For areas identified in Appendix A, a separating screen of vegetation shall be retained where the right-of-way parallels or crosses highways and rivers.

2.9.5. During construction, care will be taken to avoid damage to small trees and shrubs on the right-of-way that do not interfere with the clearing requirements under 2.9.3. and would not grow to create a hazard over a ten-year period.

2.9.6. Soil disturbance and earth moving will be kept to a minimum.

2.9.7. The OWNER shall be held liable for any unauthorized cutting, injury or destruction to timber whether such timber is on or off the right-of-way.

2.9.8. Unless otherwise requested by the LANDOWNER or managing agency, felling shall be directional in order to minimize damage to remaining trees. Maximum stump height shall be no more than 12 inches on the uphill side or 1/3 the tree diameter whichever is greater. Trees will not be pushed or pulled over. Stumps will not be removed unless they conflict with a structure, anchor, or roadway.

2.9.9. Special logging, clearing, or excavation techniques may be required in certain highly sensitive or fragile areas, as listed in Appendix A.

2.9.10. Crane landings shall be constructed on level ground unless extreme conditions (such as slope, soft, or marshy ground) make other construction necessary. In areas where more than one crane landing per tower site would be built, the STATE INSPECTOR will be notified at least 5 days prior to the beginning of construction at those sites.

2.9.11. No motorized travel on, scarification of, or displacement of talus slopes shall be allowed except where approved by the STATE INSPECTOR and LANDOWNER.

2.9.12. To avoid unnecessary ground disturbance, grounding wires or counterpoise should be placed or buried in disturbed areas whenever possible.

2.9.13. Slash resulting from project clearing that may be washed out by high water the following spring shall be removed and piled outside the floodplain before runoff. Instream slash resulting from project clearing must be removed within 24 hours.

2.9.14. Streamside trees will be felled away from streams rather than into or across streams.

2.10. GROUNDING

Grounding of fences, buildings, and other structures on and adjacent to the right-of-way shall be done according to the specifications of the National Electric Safety Code and any other specifications listed in Appendix G.

2.11. EROSION AND SEDIMENT CONTROL

2.11.1. Clearing and grubbing for roads and rights-of-way and excavations for stream crossings shall be carefully controlled to minimize silt or other water pollution downstream from the rights-of-way. At a minimum, erosion control measures described in the OWNER's Storm Water Control Plan shall be implemented. Sediment retention basins will be installed as required by the STATE INSPECTOR or managing agency.

2.11.2. Roads shall cross drainage bottoms at sharp or nearly right angles and level with the stream bed whenever possible. Temporary bridges, fords, culverts, or other structures will be installed to avoid stream bank damage.

2.11.3. Under no circumstances shall stream bed materials be removed for use as backfill, embankments, road surfacing, or for other construction purposes.

2.11.4. No excavations shall be allowed on any river or perennial stream channels or floodways at locations likely to cause detrimental erosion or offer a new channel to the river or stream at times of flooding.

2.11.5. Installation of culverts, bridges, or other structures in perennial streams along with clearing on stream beds and banks will be done as specified by the STATE INSPECTOR following on-site inspections with DEQ, FWP, and local conservation districts. All culverts shall be installed with the culvert inlet and outlet at natural stream grade or ground level.

2.11.6. Construction of access roads, bridges, fill slopes, culverts, or impoundments, or channel changes within the high-water mark of any perennial stream, lake, or pond, requires consultation with FWP and the local conservation district and application of applicable water quality standards. Within 15 days prior to the start of construction, the OWNER shall submit written documentation that consultation has occurred. Included in this documentation should be the recommendation of the agencies consulted and the actions that OWNER expects to take to completely implement them.

2.11.7. No blasting shall be allowed in streams. Blasting may be allowed near streams if precautions are taken to protect the stream from debris and from entry of nitrates or other contaminants into the stream.

2.11.8. The OWNER shall maintain private roads while using them. All ruts made by machinery shall be filled or graded to prevent channeling. In addition, the OWNER must take measures to prevent the occurrence of erosion caused by wind or water during and after use of these roads. Some erosion-preventive measures include but are not limited to, installing or using cross-logs, drain ditches, water bars, and wind erosion inhibitors such as water, straw, gravel, or combinations of these. Erosion control shall be accomplished as described in the Montana Pollution Discharge Elimination System (MPDES) General Permit for Storm Water Discharges Associated with Construction Activity.

2.11.9. The OWNER shall prevent material from being deposited in any watercourse or stream channel. Where necessary, measures such as hauling of fill material, construction of temporary barriers, or other approved methods shall be used to keep excavated materials and other extraneous materials out of watercourses. Any such materials entering watercourses shall be removed immediately.

2.11.10. The OWNER shall be responsible for the stability of all embankments created during construction. Embankments and backfills shall contain no stream sediments, frozen material, large roots, sod, or other materials that may reduce their stability.

2.11.11. Culverts, arch bridges, or other stream crossing structures shall be installed at all permanent crossings of flowing or dry watercourses where fill is likely to wash out during the life of the road. Culvert or bridge installation is prohibited in areas of important fish spawning beds identified by FWP and during specified fish spawning seasons on less sensitive streams or rivers. All culverts shall be large enough to handle approximately 15-year floods. Culvert size shall be determined by standard procedures taking into account the variations in vegetation and climatic zones in Montana, the amount of fill, and the drainage area above the crossing, and shall be approved as specified in 2.11.6. All culverts shall be installed at the time of road construction and maintained for the life of the project. The areas where stream-crossing measures must be taken are listed in Appendix H.

2.11.12. No fill material other than that necessary for road construction shall be piled within the high water zone of streams where floods can transport it directly into the stream. Excess floatable debris shall be removed from areas immediately above crossings to prevent obstruction of culverts or bridges during periods of high water.

2.11.13. No skidding of logs or driving of vehicles across a perennial watercourse shall be allowed, except via authorized construction roads.

2.11.14. No perennial watercourses shall be permanently blocked or diverted.

2.11.15. Skidding with tractors shall not be permitted within 100 feet of streams containing flowing water except in places designated in advance, and in no event shall skid roads be located on these stream courses. Skid trails shall be located high enough out of draws, swales, and valley bottoms to permit diversion of runoff water to natural undisturbed forest ground cover.

2.11.16. Construction methods shall prevent accidental spillage of solid matter, contaminants, debris, petroleum products, and other objectionable pollutants and wastes into watercourses, lakes, and underground water sources. Secondary containment catchment basins capable of

containing the maximum accidental spill shall be installed at areas where fuel, chemicals or oil are stored. Any accidental spills of such materials shall be cleaned up immediately.

2.11.17. To reduce the amount of sediment entering streams, a strip of undisturbed vegetation will be provided between areas of disturbance (road construction or tower construction) and stream courses, and around first order or larger streams that have a well-defined stream course or aquatic or riparian vegetation, unless otherwise required by the LANDOWNER. Buffer strip width is measured from the high water line of a channel and will be determined by the STATE INSPECTOR and managing agency. When braided streams with more than one discernible channel (ephemeral or permanent) are encountered, the high water line of the outermost channel shall be used. In the event that vegetation cannot be left undisturbed, structural sediment containment, approved by the STATE INSPECTOR, must be substituted before soil-disturbing activity commences.

2.11.18. When no longer needed, all temporary structures or fill installed to aid stream crossing shall be removed and the course of the stream reestablished to prevent future erosion.

2.11.19. All temporary dams built on the right-of-way shall be removed after line construction unless otherwise approved by the STATE INSPECTOR. Dams allowed to remain shall be upgraded to permanent structures and shall be provided with spillways or culverts, a continuous sod cover on their tops, and downstream slopes meeting dam safety standards. Spillways may be protected against erosion with riprap or equivalent means.

2.11.20. Damage resulting from erosion or other causes shall be repaired after completion of grading and before revegetation is begun.

2.11.21. Point discharge of water will be dispersed in a manner to avoid erosion or sedimentation of streams as required in DEQ permits.

2.11.22. Riprap or other erosion control activities will be planned based on possible downstream consequences of activity, and installed during the low flow season if possible.

2.11.23. Water used in embankment material processing, aggregate processing, concrete curing, foundation and concrete lift cleanup, and other wastewater processes shall not be discharged into surface waters without a valid discharge permit from DEQ.

2.12. ARCHAEOLOGICAL, HISTORICAL AND PALEONTOLOGICAL RESOURCES

2.12.1. All construction activities shall be conducted so as to prevent damage to significant archaeological, historical, or paleontological resources, in accordance with the requirements of 1.4.1 and Appendix I.

2.12.2. Any relics, artifacts, fossils or other items of historical, paleontological, or archaeological value shall be preserved in a manner acceptable to both the LANDOWNER and the State Historic Preservation Officer. If any such items are discovered during construction, SHPO shall be notified immediately. Work that could disturb the materials or surrounding area must cease until the site can be properly evaluated by a qualified archaeologist (either employed by the OWNER, managing agency or representing SHPO) and recommendations made by that person based on the Historic Preservation Plan outlined in Appendix I (but in no case more than 10 days). For significant sites, the OWNER must follow recommendations of SHPO.

2.12.3. The OWNER shall conform to treatments recommended for cultural resources by either SHPO or the Advisory Council on Historic Preservation (ACHP).

2.13. PREVENTION AND CONTROL OF FIRES

2.13.1. Burning, fire prevention, and fire control shall comply with the burning plan and fire plan in Appendix J. These plans shall meet the requirements of the managing agency and/or the fire control agencies having jurisdiction. The STATE INSPECTOR shall be invited to attend all meetings with these agencies to discuss or prepare these plans. The STATE INSPECTOR, in turn, shall notify DNRC of all such meetings.

2.13.2. The OWNER shall direct the CONTRACTOR to comply with regulations of any county, town, state or governing municipality having jurisdiction regarding fire laws and regulations.

2.13.3. Blasting caps, powder, and other explosives shall be stored only in approved areas and containers and always separate from each other.

2.13.4. The OWNER shall direct the CONTRACTOR to properly store and handle combustible material that could create objectionable smoke, odors, or fumes. The OWNER shall direct the CONTRACTOR not to burn refuse such as trash, rags, tires, plastics, or other debris, except as permitted by the county, town, state, or governing municipality having jurisdiction.

2.14. WASTE DISPOSAL

2.14.1. The OWNER shall direct the CONTRACTOR to use licensed solid waste disposal sites. Inert materials (Group III wastes) may be disposed of at licensed Class III landfill sites; mixed refuse (Group II wastes) must be disposed of at licensed Class II landfill sites.

2.14.2. Emptied pesticide containers or other chemical containers must be triple rinsed to render them acceptable for disposal in Class II landfills or for scrap recycling pursuant to ARM 17.54.201 for treatment or disposal. Pesticide residue and pesticide containers shall be disposed of in accordance with ARM 17.30.637.

2.14.3. All waste materials constituting a hazardous waste defined in ARM 16.44.303, and wastes containing any concentration of polychlorinated biphenyls must be transported to an approved designated hazardous waste management facility (as defined in ARM 17.53.201) for treatment or disposal.

2.14.4. All used oil shall be hauled away and recycled or disposed of in a licensed Class II landfill authorized to accept liquid wastes or in accordance with 2.14.2 and 2.14.3 above. There shall be no intentional release of crankcase oil or other toxic substances into streams or soil. In the event of an accidental spill into a waterway, the substances will be cleaned up and the STATE INSPECTOR will be contacted immediately. Any spill of refined petroleum products greater than 25 gallons must be reported to the State at Disaster and Emergency Services at 406-841-03911.

2.14.5. Sewage shall not be discharged into streams or streambeds. The OWNER shall direct the CONTRACTOR to provide refuse containers and sanitary chemical toilets, convenient to all principal points of operation. These facilities shall comply with applicable federal, state, and

local health laws and regulations. A septic tank pump licensed by the State shall service these facilities.

2.14.6. In order to reduce fire hazard, small trees and brush cut during construction should be chipped, burned, and/or scattered. Slash 3 inches in diameter or greater may be scattered in quantities of up to 15 tons/acre unless otherwise requested by the LANDOWNER. Tops, limbs and brush less than 3 inches in diameter and 3 feet in length may be left in quantities less than 3 tons per acre except on cropland and residential land or where otherwise specified by the LANDOWNER. In certain cases the STATE INSPECTOR will authorize chipping and scattering of tops, limbs and brush in excess of 3 tons per acre as an erosion control measure. Merchantable timber should be decked and removed at the direction of the LANDOWNER or managing agency

2.14.7. Refuse burning shall require the prior approval of the LANDOWNER and a Montana Open Burning Permit must be obtained from DEQ. Any burning of wastes shall comply with section 2.13 of these specifications.

2.15. SPECIAL MEASURES

2.15.1. Poles with a low reflectivity constant should be used to reduce potential for visual contrast.

2.15.2. At river crossings, strategic placement of structures should be done both as a means to screen views of the transmission line and right-of-way and to minimize the need for vegetative clearing. Crossings of rivers should be designed to avoid diagonal crossings.

3.0 POST-CONSTRUCTION CLEANUP AND RECLAMATION

3.1. CLEANUP

3.1.1. All litter resulting from construction is to be removed from the right-of-way and along access roads leading to the right-of-way. Such litter shall be legally disposed of as soon as possible, but in no case later than 60 days following completion of wire clipping. If requested by the LANDOWNER, the OWNER shall provide for removal of any additional construction-related debris discovered after this initial cleanup.

3.1.2. Insofar as practical, all signs of temporary construction facilities such as haul roads, work areas, buildings, foundations or temporary structures, soil stockpiles, excess or waste materials, or any other vestiges of construction shall be removed and the areas restored to as natural a condition as practical, in consultation with the LANDOWNER.

3.2. RESTORATION, RECLAMATION, AND REVEGETATION

3.2.1 Restoration, reclamation, and revegetation of the right-of-way, access roads, crane pads, splicing or stringing sites, borrow sites, gravel fill, stone, or aggregate excavation, or any other disturbance shall be in accordance with the reclamation and revegetation plan (Appendix K). The OWNER may choose to develop this plan in consultation with appropriate land management agencies as part of easement negotiations. In this case, the OWNER shall provide written documentation of consultation with those agencies and a copy of the agreed-to plan.

This plan and any conditions to the Certificate approved by DEQ shall be attached as Appendix K.

3.2.2. Scarring or damage to any landscape feature listed in Appendix A shall be restored as nearly as practical to its original condition. Bare areas created by construction activities will be reseeded in compliance with Appendices K and L to prevent soil erosion.

3.2.3. After construction is complete, and in cooperation with the LANDOWNER, temporary roads shall be closed.

3.2.4. In agricultural areas where soil has been compacted by movement of construction equipment and unless otherwise specified by the LANDOWNER, the OWNER shall direct the CONTRACTOR to rip the soil deep enough to restore productivity, or if complete restoration is not possible, the OWNER shall compensate the LANDOWNER for lost productivity.

3.2.5. Earth next to access roads that cross streams shall be replaced at slopes less than the normal angle of repose for the soil type involved.

3.2.6. All drainage channels shall be restored to a gradient and width that will prevent accelerated gully erosion.

3.2.6. Drive-through dips, open-top box culverts, waterbars, or cross drains shall be added to roads at the proper spacing and angle as necessary to prevent erosion.

3.2.7. Interrupted drainage systems shall be restored.

3.2.8. Sidecasting of waste materials may be allowed on slopes over 40 percent after approval by the LANDOWNER, however, this will not be allowed within the buffer strip established for stream courses, in areas of high or extreme soil instability, or in other SENSITIVE AREAS identified in Appendix A. Surplus materials shall be hauled to LANDOWNER-approved sites in such areas.

3.2.9. Seeding prescriptions to be used in revegetation, requirements for hydroseeding, fertilizing, and mulching, as jointly determined by representatives of the OWNER, DEQ, and other involved state and federal agencies, are specified in Appendix L.

3.2.10. Piling and windrowing of material for burning shall use methods that will prevent significant amounts of soil from being included in the material to be burned and minimize destruction of ground cover. Non-mechanized methods are recommended if necessary to minimize soil erosion and vegetation disturbance. Piles shall be located so as to minimize danger to timber and damage to ground cover when burned.

3.2.11. During restoration in areas where topsoil has been stockpiled, the site will be graded to near natural contours and the topsoil will be replaced on the surface.

3.2.12. Excavated material not suitable or required for backfill shall be evenly filled back onto the cleared area prior to spreading any stockpiled soil. Large rocks and boulders uncovered during excavation and not buried in the backfill will be disposed of as approved by the STATE INSPECTOR and/or LANDOWNER.

3.2.13. Application rates and timing of seeds and fertilizer, and purity and germination rates of seed mixtures, shall be as determined in consultation with DEQ. Reseeding shall be done at the first appropriate opportunity after construction ends.

3.2.14. Where appropriate, hydro seeding, drilling, or other appropriate methods shall be used to aid revegetation. Mulching with straw, wood chips, or other means shall be used where necessary. Areas requiring such treatment are listed in Appendix L.

3.2.15. All temporary roads shall be obliterated and reclaimed (with the concurrence of the LANDOWNER), as specified in Appendix M. All temporary roadways shall be graded and scarified as specified to permit the growth of vegetation and to discourage traffic. Permanent unsurfaced roadbeds not open to public use will be revegetated as soon after use as possible unless specified otherwise by the LANDOWNER.

3.3. MONITORING

3.3.1. Upon notice by the OWNER, the STATE INSPECTOR will schedule initial post-construction field inspections following cleanup and road closure. Follow-up visits will be scheduled as required to monitor the effectiveness of erosion controls, reseeded measures, and the right-of-way management plan (Appendix N). The STATE INSPECTOR will contact the LANDOWNER for post-construction access and to determine LANDOWNER satisfaction with the OWNER's restoration measures.

3.3.2. The STATE INSPECTOR shall document observations for inclusion in monitoring reports regarding bond release or the success of mitigating measures required by DEQ.

3.3.2. Failure of the OWNER to adequately reclaim all disturbed areas in accordance with section 3.2 and ARM 17.20.1902(10) shall be cause for forfeiture of the reclamation BOND(s) or penalties described in Section 0.3. Success of revegetation shall be based on criteria specified in ARM 17.20.1902(10). Failure of the OWNER to achieve adequate revegetation of disturbed areas may be cause for forfeiture of the revegetation BOND(s) or penalties described in Section 0.3.

4.0. OPERATION AND MAINTENANCE

4.1. RIGHT-OF-WAY MANAGEMENT AND ROAD MAINTENANCE

4.1.1. Maintenance of the right-of-way and permanent access roads shall be as specified in the right-of-way management plan (Appendix N). This plan shall provide for the protection of SENSITIVE AREAS identified prior to and during construction as well as control of erosion on permanent access roads.

4.1.2. Vegetation that has been saved through the construction process and which does not pose a hazard or potential hazard to the transmission line, particularly that of value to fish and wildlife as specified in Appendix A, shall be allowed to grow on the right-of-way.

4.1.3. Vegetative cover adjacent to the transmission line in areas other than cropland shall be maintained in cooperation with the LANDOWNER.

4.1.4. Grass cover, water bars, cross drains, the proper slope, and other agreed to measures shall be maintained on permanent access roads and service roads in order to prevent soil erosion.

4.2. MAINTENANCE INSPECTIONS

4.2.1. The OWNER shall have responsibility to correct soil erosion, noxious weed, or revegetation problems on the right-of-way or access roads as they become known. Appropriate corrective action will be taken where necessary. The OWNER, through agreement with the LANDOWNER or managing agency, may provide a mechanism to identify and correct such problems but the OWNER is responsible for correcting these problems.

4.2.2. Operation and maintenance inspections using ground vehicles shall be timed so that routine maintenance will be done when access roads are firm, dry, or frozen, wherever possible. Maintenance vegetative clearing shall be done according to criteria spelled out in Appendix N.

4.3. CORRECTION OF LANDOWNER PROBLEMS

4.3.1. When the facility causes interference with radio, TV, or other stationary communication systems after the facility is operating, the OWNER will correct the interference with mechanical corrections to facility hardware, or antennas, or will install remote antennas or repeater stations, or will use other reasonable means to correct the problem.

4.3.2. The OWNER will respond to complaints of interference by investigating complaints to determine the origin of the interference. If the interference is not caused by the facility, the OWNER shall so inform the person bringing the complaint. The OWNER shall provide the STATE INSPECTOR with documentation of the evidence regarding the source of the interference if the person brings the complaint to the STATE INSPECTOR or DEQ.

4.4. HERBICIDES AND WEED CONTROL

4.4.1. Weed control, including any application of herbicides in the right-of-way, will be done by applicators currently licensed in Montana and in accordance with recommendations of the Montana Department of Agriculture, and in accordance with the right-of-way maintenance plan in Appendix N.

4.4.2. Herbicides will not be used in certain areas identified by DEQ and FWP, as listed in Appendix O or as requested by the LANDOWNER.

4.4.3. Proper herbicide application methods will be used to keep drift and nontarget damage to a minimum.

4.4.4. Herbicides must be applied according to label specifications and in accordance with 4.4.1 above. Only herbicides registered in compliance with applicable federal and state laws may be applied.

4.4.5. Herbicides shall not be sprayed during heavy rains or threat of heavy rains. Vegetation buffer zones shall be left along all identifiable stream channels. Herbicides shall not be used in any public water supply watershed identified by DEQ.

4.4.6. In areas disturbed by the transmission line, the OWNER will cooperate with LANDOWNERS in control of noxious weeds as designated by the weed control board having jurisdiction in the county crossed by the line.

4.4.6. The OWNER shall notify the STATE INSPECTOR in writing 30 days prior to any broadcast or aerial spraying of herbicides. The notice shall provide details as to the time, place, and justification for such spraying. DEQ, FWP, and the Montana Department of Agriculture shall have the opportunity to inspect the portion of the right-of-way or access roads before, during, and after spraying.

4.4.7. During the second and third growing seasons following the completion of restoration and reseeded, the OWNER and STATE INSPECTOR shall inspect the right-of-way and access roads for newly established stands of noxious weeds. The county weed control supervisor shall be invited to attend this inspection. In the event that stands of weeds are encountered, the OWNER shall take appropriate control measures.

4.5. MONITORING

4.5.1. DEQ may continue to monitor operation and maintenance activities for the life of the project in order to ensure compliance with the specifications in this section (see Appendix Q).

4.5.2. The OWNER will be responsible to DEQ for the term of the reclamation BOND (Section 0.8). Following BOND release, the OWNER will report to individual LANDOWNERS and managing agencies except as specified in conditions to the certificate.

4.5.3. Upon reasonable complaint from an affected LANDOWNER or managing agency, DEQ may require the OWNER to fund additional monitoring efforts to resolve problems that develop after release of the BONDS. Such efforts would be limited to determining compliance with these specifications and other conditions of the Certificate.

5.0 ABANDONMENT

When the transmission line is no longer used or useful, structures, conductors, and ground wires shall be removed and disturbed areas reclaimed using methods outlined in Appendix K.

APPENDICES

APPENDIX A: SENSITIVE AREAS FOR THE MATL TRANSMISSION LINE PROJECT

The following sensitive areas have been identified where special measures would be implemented to reduce impacts:

Land Use/Infrastructure

To minimize impacts to farming, DEQ could require the use of monopoles in the following sensitive areas to reduce impacts associated with diagonal crossing of farmland where routing around this farmland would be difficult. In addition single poles would be used on Alternative 2 where the proposed line would cross irrigated land and where the proposed transmission line would parallel an existing powerlines:

	<u>Alternative 2</u>	<u>Alternative 3</u>	<u>Alternative 4</u>
Milepost	0 - 1.05	0 - 87	32 - 36
to	1.25-1.856.12-6.45	(essentially	44 - 45
Milepost	6.8-14	all	62 - 66
	48.5-52.355.0-55.9-	cropland	82 - 83
	56.34-56.53	and CRP)	107 - 109
	58.7-64.3		112 - 114
	71.1-72.5(Belgian Hill Road reroute)		
	90-91.95		
	92.2-92.82		
	An additional 1.5 miles of monopole structures would be distributed among LANDOWNERS whose cropland is crossed on a diagonal based on easement negotiations.		
Total Miles	23.56	<87	14

Geological/Soils

Black Horse Lake

Alternatives 2 and 3 at milepost 4.35 to 4.52 The alignment would be widened an additional 500 feet further south to allow flexibility in pole placement that would avoid an area occasionally flooded by Black Horse Lake.

Teton River Crossing Area

Precision mapping for unstable soils would be conducted along the alignment between the milepost markers identified below:

Alternative 2 between mileposts 35.3 and 35.8, 36.2 and 36.6, 36.9 and 37.4, and between mileposts 38 and 40

Alternative 3 between mileposts 32.3 and 32.7, 33.08 and 33.47, and between mileposts 33.8 and 34.0 (where a landslide is crossed)

Alternative 4 between mileposts 36.18 and 36.7, 37.27 and 37.55, 37.9 and 38.4, and between mileposts 39.08 and 41.15

On Alternative 2 the alignment would be narrowed south of the river to avoid a landslide and north of the river would be widened by an additional 250 feet north of the centerline between mileposts 38 and 40 to avoid areas of slope instability in this area. A similar measure would be applied should Alternative 4 be selected. .

Dry Fork of Marias River Crossing

Alternative 4 between mileposts 69.8 and 70.2, 70.5 and 70.8, 71.1 and 71.4, 71.65 and 72.8, 73.7 and 73.75, 75.1 and 75.7, 76.1 and 76.4, 77.05 and 77.4, 77.7 and 78.05, 80.15 and 81.15, 81.35 and 81.9

The alignment would be widened to 1000 feet except on cultivated land to allow flexibility in pole placement should new cultural resource sites be encountered. Precision mapping for unstable soils should be conducted along the alignment between the milepost markers identified above. Structures and roads would be located to avoid unstable slopes. If cultural resource sites are encountered and the alignment moved, additional mapping of unstable soils would be required.

Marias River Crossing Area

Alternative 2 between mileposts 88.75 and 88.82, 89.1 and 89.4, 89.8 and 90.0, 90.35 and 90.72

Alternative 3 between mileposts 84.3 and 84.65, 84.78 and 84.95, 85.4 and 85.8

Alternative 4 between mileposts 95.2 and 97.1

Precision mapping for unstable soils must be conducted along the alignment between the milepost markers identified above.

Wildlife

On the selected alternative, areas of native vegetation that have not been surveyed for grouse leks would be surveyed prior to construction. Construction would not occur during the mating season from __ to __ within __ miles of leks. Anti perching devices would be installed and maintained on structures within __ miles of leks.

Overhead ground wires would be marked in the following areas within 2 miles of leks to reduce the potential for avian collisions with the transmission line.

Alternative 2 between mileposts 85.7 and 92

Alternative 3 between mileposts 81 and 87

Alternative 4 between mileposts 9.5 and 10.5 and 95.5 and 101.5

Overhead ground wires near wetlands would be marked to reduce the potential for collisions after inspection and field verification of the need for marking by FWP and FWS biologists.

Cultural Resources

Cultural resource surveys would be completed along unsurveyed areas with a high probability of discovering new sites. If cultural resource sites are discovered, structure locations and access routes would be modified to avoid sensitive features or the site recorded.

A professional archeologist would observe construction in high probability areas listed below during pole placement. If cultural resources are discovered during excavation, construction would be temporarily halted while the OWNER completes recovery of artifacts. Artifacts are the property of the LANDOWNER.

Alternative 2 between mileposts 0 and 15, 31 and 40, 52 and 60, 65 and 70, 72 and 83, 88 and 91, 98 and 101, 107 and 109, and 112 and 125

Alternative 3 between mileposts 0 and 15, 29 and 37, and 49 and 56, 61 and 66, 75 and 77, 83 and 86, 93 and 96, and 107 and 102

Alternative 4 between mileposts 0 and 15, 34 and 41, 55 and 57, 59 and 65, 70 and 91, 98 and 101, 108 and 111, 117 and 119, and 122 and 135

Wetlands

MATL would delineate wetlands within 500 feet of the alignment of the approved alternative for the portion through Teton County where wetlands have not been mapped by the USFWS.

Alternative 2 between mileposts 23 and 35

Alternative 3 between mileposts 17 and 42

Alternative 4 between mileposts 23 and 48

Vegetation

MATL would avoid placing roads and poles in designated 100 year floodplains.

Additional areas for monitoring or for application of mitigation measures may be identified following the pre-construction monitoring trip by the State Inspector or the Inspector's designee.

APPENDIX B: PERFORMANCE BOND SPECIFICATIONS

Construction and reclamation bonds shall be used to ensure performance with these specifications.

APPENDIX C: VARIATIONS IN RIGHT-OF-WAY WIDTH

See Appendix A for variations in right-of way widths.

DEQ does not recommend specific widths for construction easements. In accordance with the specifications, construction activities shall be contained in the minimum area necessary for safe and prudent construction.

DEQ does not recommend specific variations in right-of-way widths beyond those required to meet the National Electric Safety Code for electric transmission line operations and those necessary to meet standards established in ARM 17.20.1607(2).

APPENDIX D: AREAS WHERE CONSTRUCTION TIMING RESTRICTIONS APPLY

Except for those areas described in Appendix A, no restrictions in the timing of construction are recommended, beyond those considered necessary on the basis of on-site inspections of stream crossings required in Section 2.11.6 of these specifications and in other sections of these specifications, or as negotiated by LANDOWNERS in individual easement agreements.

APPENDIX E: AERONAUTICAL HAZARD MARKINGS

For all alternatives, the OWNER would install FAA-recommended colored aerial markers for aviation safety, as well as at crossings of the Conoco pipeline and crossings of the Cenex pipeline.

For all alternatives, the OWNER would install FAA-recommended aerial markers to make the line more visible to low flying aircraft at crossings of Interstate 15 and U.S. Highways 87 and 2. Marker balls would also be placed at all river crossings.

APPENDIX F: NOXIOUS WEED AREAS

Presence of noxious weed areas will be determined during a joint inspection by the OWNER, affected weed control boards, and LANDOWNERS. Weeds will be controlled as directed by county Noxious Weed Control programs, state law, and these Environmental Specifications.

APPENDIX G: GROUNDING SPECIFICATIONS

Powerlines, fences, and pipelines shall be grounded in accordance with the National Electrical Safety Code. The OWNER shall ensure that operation of the transmission line does not interfere with operation of cathodic protection systems of any pipelines crossed or paralleled.

APPENDIX H: CULVERT AND BRIDGE REQUIREMENTS

It does not appear that new culverts or bridges will be needed during construction. In the event a culvert or bridge is needed, it shall be installed to the standards set forth in Section 2.11.11 of the specifications and following review of the proposed installation by the STATE INSPECTOR. The STATE INSPECTOR may require site specific measures to reduce impacts.

APPENDIX I: HISTORIC PRESERVATION PLAN

The OWNER, in consultation with SHPO, shall develop a plan for identification and treatment of historical or archaeological sites affected by construction. Copies of these plans shall be part of this Appendix. The plan shall identify proposed treatments to be employed to avoid, mitigate or offset project effects on cultural resource sites or culturally significant tribal resources as agreed to by SHPO.

APPENDIX J: BURNING PLAN AND FIRE PLAN

The need for a detailed burning or fire plan is not anticipated for this project. In the event that burning is required prior to or during construction, such burning shall occur in accordance with sections 0.5, 2.13, and 2.14 of the specifications.

APPENDIX K: RECLAMATION AND REVEGETATION PLAN

At least 30 days prior to the start of construction, a reclamation and revegetation plan must be developed and submitted to DEQ for approval. This plan must, at a minimum, specify seeding mixtures, rates, seeding methods and timing of seeding. It must address LANDOWNER wishes, and satisfy requirements of the MPDES General Permit for Storm Water Discharges Associated with Construction Activity and ARM 17.20.1902(10).

If a LANDOWNER's management practices prevent the attainment of 90 percent perennial ground cover after five (5) years, revegetation on that land will be deemed adequate when portions of the right-of-way disturbed by construction and temporary roads are reclaimed to a state of usefulness similar to that existing prior to construction as determined by the STATE INSPECTOR.

APPENDIX L: AREAS WHERE STOCKPILING OF TOPSOIL, HYDRO SEEDING, FERTILIZING, OR MULCHING IS REQUIRED

At each area where cut and fill would be necessary to construct a road or crane pad, the OWNER shall salvage and stockpile topsoil, and spread the topsoil over disturbed areas following construction to increase re-vegetation success.

APPENDIX M: ROADS TO BE CLOSED AND/OR OBLITERATED

If permanent roads are necessary for construction or maintenance of the project, the OWNER shall close or obliterate the roads during decommissioning as requested by the LANDOWNER.

APPENDIX N: RIGHT-OF-WAY MANAGEMENT PLAN

DEQ does not recommend a specific right-of-way management plan. To the extent possible, all maintenance and operation activities shall be performed to comply with the requirements of the environmental specifications.

APPENDIX O: WATERSHEDS AND OTHER AREAS WHERE HERBICIDES ARE PROHIBITED

DEQ does not recommend any areas or watersheds where herbicide use is prohibited. Herbicide use shall conform to all applicable local, state, and federal restrictions.

APPENDIX P: NAME AND ADDRESS OF STATE INSPECTOR

STATE INSPECTOR

OWNER'S LIAISON

Environmental Science Specialist
Montana Dept of Environmental Quality
P.O. Box 200901
1520 East Sixth Avenue
Helena, Montana 59620-0901
(406) 444-_____

APPENDIX Q: MONITORING PLAN

The STATE INSPECTOR is responsible for implementing this monitoring plan required by 75-20-303(b) and (c), MCA, and for reporting whether terms of the Certificate of Compliance and Environmental Specifications are being met, along with any conditions in the Stormwater Discharge permit and state land easements. The STATE INSPECTOR may identify additional mitigating measures in order to minimize environmental damage due to unique circumstances that arise during construction. These measures will be presented in writing to the OWNER's Liaison who will see that such measures are implemented in a timely manner.

Within 60 days of the completion of construction the STATE INSPECTOR shall review the project area for adequate cleanup, resoration of compacted soils, and any necessary regarding. The STATE INSPECTOR shall notify the OWNER of additional cleanup and restoration of disturbed areas. Once the area is restored, the restoration bond shall be released as indicated in ARM 17.20.1902(10)-(12).

In the growing season following construction the STATE INSPECTOR will determine the adequacy of erosion controls, check for successful seed germination, and determine in conjunction with county weed supervisors areas where weed control would be necessary.

After one and five complete growing seasons following construction, the STATE INSPECTOR will determine whether revegetation efforts have been sufficient to meet the requirements of Appendix K of these Environmental Specifications. If revegetation is not adequate to meet the requirements of Appendix K, the STATE INSPECTOR shall determine whether it is in the best interest of the State to seize the BOND or BONDS and reclaim and revegetate remaining disturbed areas or to continue to monitor these areas. The STATE INSPECTOR shall respond to complaints from citizens for the life of the project.

When violations of the Certificate are identified, the STATE INSPECTOR shall report the violation in writing to the OWNER, who shall immediately take corrective action. If violations continue, penalties described in 75-20-408, MCA may be imposed.

APPENDIX G:
ALTERNATIVES CONSIDERED BUT DISMISSED BY MATL

APPENDIX G-1

SUMMARY OF MATL'S DISMISSED ALTERNATIVES AND ALIGNMENT SEGMENTS

Name of Alternatives or Segment	Location	Reasons for Not Carrying Forward
Old Primary - Segment (1)	Original Primary Alignment from Canadian Border to Cut Bank	This alignment was dropped because of its close proximity to two residences, many diagonal farmland crossings, and proximity to wells. This alignment was also dropped because of changes to the preferred Canadian border crossing, and because of limited right-of-way space due to a prairie pothole along Santa Rita Road.
Old Primary - Segment (2)	A subsequent segment revision of the Primary alignment with its border crossing farther west, connecting back to A1 approximately 8 miles to the south.	This segment was further modified (to what is shown as A3 on the map) and ultimately dropped. This change was based on a final revision to the preferred Canadian border crossing location to what is now shown on the proposed route. A2 was also dropped due to diagonal crossings of farmland/cropland and proximity to wells.
Old Primary - Segment (3)	A subsequent Primary Route segment revision altering A2, moving the Canadian border crossing slightly farther west. A3 connects back to A2 approximately 4 miles to the south of the Canadian border.	This segment of the Old Primary Route was further modified to what is now the proposed route as part of initial engineering/surveying in Spring '06 because it crossed wetland areas. This effort allowed for re-routing that better avoided wetlands and prairie potholes.
Old Primary - Segment (4)	Original Primary Route Segment - Camp Nine Road south to old Marias River Crossing	This segment was dropped because it did not make use of the available public lands near the Marias River crossing as is required under MFSA. Routing was modified to that of the proposed route to take advantage of these public lands (BLM).
Old Primary - Segment (5)	Original Primary Route Segment from south of the Marias River Crossing to Bullhead Road	This segment was dropped because it did not utilize available nearby rangeland and had a greater impact on croplands in this location. The proposed route better utilizes rangeland and has less impact on croplands.
Old Primary - Segment (6)	Original Primary Route Segment from Bullhead Creek to Burlington Northern Railroad	This segment was dropped due to many diagonal crossings of farmland/cropland. Routing was modified to that of the proposed route to minimize these impacts to agricultural lands and utilize available rangeland to a much greater extent.
Old Primary - Segment (7)	A subsequent Primary Route Segment 3-4 miles southwest of Conrad near Pondera Coulee.	This segment alternative was dropped due to the proximity of an occupied residence. This segment came within .2 miles to the east of a residence.
Old Primary - Segment (8)	Original Primary Route Segment 2-3 miles southwest of Conrad near Pondera Coulee.	This segment alternative was also dropped due to the proximity of an occupied residence. This segment came within .4 miles of a residence to the west.
Old Primary - Segment (9)	Original Primary Route Segment from two miles north of Brady to approximately three miles north of the Teton River	This segment was dropped to that of the proposed route in this location primarily to avoid impacts to six residences, and to lessen impacts to cropland. In particular this segment came within 0.5 mile of four residences north of Brady as well as within .5 mile of a school.

**APPENDIX G-1
SUMMARY OF MATL'S DISMISSED ALTERNATIVES AND ALIGNMENT SEGMENTS**

Name of Alternatives or Segment	Location	Reasons for Not Carrying Forward
Old Primary - Segment (9-south)	Original Primary Route Segment around the Teton River Crossing	This segment was dropped because it did not take advantage of nearby public lands (DNRC lands to the west) for the Teton River Crossing and because of probable cultural resources (tipi ring sites) on the northern bluffs of the Teton River in this specific location. The Teton River crossing was moved to the west in order to make use of available public lands and avoid potential cultural impacts, as well as to avoid mature riparian cottonwood forest.
Old Primary - Segment (10)	A subsequent Primary Route Segment that heads west from a point along the Current Primary Route south of Dutton, and continues 4-5 miles to the east where it connects with the Old Primary Route and continues two miles south.	This segment was dropped due to environmental and engineering constraints (slope stability issues) in constructing the line across Timber Coulee in this locale. In addition, this segment alternative did not resolve the goal of minimizing diagonal crossings of farmland to the extent of the current proposed route.
Old Primary - Segment (11)	Another subsequent Primary Route Segment starting several miles south of A10, that heads west ~7 miles to where it connects with the Old Primary Route	This segment was dropped because it crosses close to an existing range/farm near its eastern terminus. In addition, this segment alternative did not resolve the goal of minimizing diagonal crossings of farmland to the extent of the Current Primary Route.
Old Primary - Segment (12)	Original Alternative that followed east of the Great Falls Shooting Sports Complex	This segment conflicts with plans for expansion of the shooting sports complex, including plans for new and expanded buildings. Given this conflict, this segment was dropped in favor of the proposed route which is located west of the complex.
Old Alternative B Segment (1)	Original Alternative B from Canadian Border to where it connects with the Old Primary Route	Original Alternative B was modified and moved to the east to what is labeled as B2 to further avoid impacts to wetlands. In addition the original Alternative B also crossed within .25 mile of an occupied residence.
Old Alternative B Segment (2)	A subsequent Alternative B segment from Canadian Border to (new) Primary Route	This segment was dropped to avoid impacts to nearby residences and because there is no longer a Canadian Alternative or border crossing in this specific location. Alternative B now starts near Cut Bank and continues south to the Great Falls terminus.
Old Alternative B Segment (3)	Original Alternative B near Bullhead Creek	Various small sections of this segment were modified to what is now the proposed alignment to better avoid residences and irrigated croplands, avoid wetlands, as well as to improve the alignment of the route with property boundaries.
Old Alternative B Segment (4)	Original Alternative B from Dry Fork of the Marias south to South Pondera Coulee	Various small sections of this segment were modified to what is now the proposed alignment to better avoid residences and irrigated croplands, as well as to improve the alignment of the route with property boundaries.
Original Route C	From Canadian Border to Great Falls	Original Route which was modified to what is labeled as "Modified Route C" (C2) below to better avoid residences and passage across irrigated croplands, as well as to improve the alignment of the route with property boundaries.

**APPENDIX G-1
SUMMARY OF MATL'S DISMISSED ALTERNATIVES AND ALIGNMENT SEGMENTS**

Name of Alternatives or Segment	Location	Reasons for Not Carrying Forward
Modified Route C	From Canadian Border to Great Falls	The entire C2 routing was dismissed because it was the longest of the considered routes and would be the most costly to design/construct. More estimated acreage would be required (access roads, staging areas, etc.) than the Primary Route (43 acres versus 37 acres). Alternative C also had relatively higher potential impacts to visual resources (comes within 1 mile of 160 developed residences as compared to 146 for the Preferred Route). C2 also had a larger impact to prime farmland (44 miles versus 33 miles) and farmland of statewide importance (47 miles versus 43 miles) as compared to the Primary Route. In addition, this route did not match up with the finalized secondary Canadian border crossing alternative (moved to the east).
August Version Route C	From Canadian Border to Great Falls	This route was prepared for the MFSA application. This route was dismissed because it is the longest alternative, would require more disturbance, and very close to or crosses four houses.
Old Western Great Falls Alternative	Original agency alternative that connects with Great Falls to the south and west of the Primary Alternative	This alternative was originally identified in order to provide another alternative in the in the southern quarter of the project area that made wide use of rangeland instead of cropped land. However, this alternative was dropped/modified to what is labeled as W2 in order to avoid crossing the existing WAPA line and improve its alignment with property and section line boundaries.
Modified Western Great Falls Alternative	Modified agency alternative that connects with Great Falls to the south and west of the Primary Alternative	After flyover verification, this revised W2 alternative was developed to minimize deflections and parallel the WAPA line more closely. This alternative has been retained because of its use of range land and pasture as well as its more extensive use of section and property boundaries.
Cut Bank to Shelby Alternative	Alternative that follows from Cut Bank to Shelby	This alternative was dismissed in the original application due to the need for extended diagonal traversing of agricultural lands. This alternative also had more engineering requirements and land requirements, and would have resulted in higher project costs.
Shelby South Alternative	Alternative that follows from Shelby south to Great Falls	This alternative was dismissed in the original application due to engineering constraints and the potential for disturbing many more cultural and archaeological sites near the Maris River breaks area south of Shelby.
Eastern Alternative	Alternative that follows Interstate 15 from Border to Shelby	This alternative was dismissed in the original application due to difficulties with the connection required via the Shelby South alternative described above.
NWE Alternative	Rebuilds the existing NWE 115-kV line.	This alternative was dismissed in the original application. This route was considered infeasible for economic reasons, and there would also have been a logistical difficulty in maintaining service while upgrading the existing line.

APPENDIX H:
LAND USE TYPES BY MILEPOST

The following tables provide a breakdown of land uses along the alignments analyzed in the EIS. Riparian, forest and right of way land uses are included in the summary tables in the EIS as "Other." Mile posts run from south to north. The analysis was done with GIS, based on photographic interpretation of the land uses.

Appendix H-1			
Land Use Categories Crossed By Alternative 2			
Mile Post Begin	Mile Post End	Distance (Miles)	Land Use
0.00	1.50	1.50	Non-Irrigated
1.50	1.52	0.03	Rangeland/Native
1.52	1.58	0.05	Riparian
1.58	1.65	0.08	Rangeland/Native
1.65	1.71	0.06	Riparian
1.71	1.73	0.02	Rangeland/Native
1.73	1.97	0.24	Non-Irrigated
1.97	2.01	0.04	Riparian
2.01	2.03	0.02	Non-Irrigated
2.03	2.05	0.02	Riparian
2.05	5.29	3.24	Non-Irrigated
5.29	8.20	2.92	Rangeland/Native
8.20	9.11	0.91	Non-Irrigated
9.11	9.15	0.03	Riparian
9.15	11.18	2.03	Non-Irrigated
11.18	11.52	0.34	Rangeland/Native
11.52	11.95	0.43	Non-Irrigated
11.95	12.08	0.12	Rangeland/Native
12.08	12.21	0.14	Riparian
12.21	12.53	0.32	Non-Irrigated
12.53	12.55	0.02	Riparian
12.55	14.94	2.39	Non-Irrigated
14.94	15.21	0.26	Rangeland/Native
15.21	15.77	0.56	Non-Irrigated
15.77	15.82	0.05	Rangeland/Native
15.82	16.95	1.13	Non-Irrigated
16.95	18.14	1.20	Rangeland/Native
18.14	19.41	1.26	Non-Irrigated
19.41	19.43	0.03	Riparian
19.43	26.77	7.34	Non-Irrigated

**Appendix H-1
Land Use Categories Crossed By Alternative 2**

Mile Post Begin	Mile Post End	Distance (Miles)	Land Use
26.77	26.88	0.11	Riparian
26.88	27.15	0.27	Non-Irrigated
27.15	27.30	0.15	Riparian
27.30	29.84	2.54	Non-Irrigated
29.84	29.92	0.08	Right of way
29.92	30.96	1.04	Non-Irrigated
30.96	36.98	6.03	Rangeland/Native
36.98	37.60	0.62	Non-Irrigated
37.60	37.84	0.23	Rangeland/Native
37.84	39.06	1.22	Non-Irrigated
39.06	39.43	0.37	Rangeland/Native
39.43	39.58	0.15	Non-Irrigated
39.58	39.63	0.05	Rangeland/Native
39.63	39.80	0.17	Non-Irrigated
39.80	39.97	0.17	Rangeland/Native
39.97	40.05	0.08	Riparian
40.05	41.37	1.32	Rangeland/Native
41.37	43.96	2.59	Non-Irrigated
43.96	44.32	0.36	Rangeland/Native
44.32	44.46	0.14	Irrigated
44.46	44.87	0.40	Non-Irrigated
44.87	44.98	0.11	Rangeland/Native
44.98	45.13	0.15	Non-Irrigated
45.13	45.49	0.36	Rangeland/Native
45.49	46.97	1.48	Non-Irrigated
46.97	47.04	0.07	Rangeland/Native
47.04	47.35	0.31	Non-Irrigated
47.35	47.38	0.02	Rangeland/Native
47.38	48.43	1.05	Non-Irrigated
48.43	50.02	1.59	Rangeland/Native
50.02	50.27	0.25	Non-Irrigated
50.27	51.40	1.13	Rangeland/Native
51.40	51.51	0.11	Non-Irrigated
51.51	51.70	0.19	Rangeland/Native

**Appendix H-1
Land Use Categories Crossed By Alternative 2**

Mile Post Begin	Mile Post End	Distance (Miles)	Land Use
51.70	51.77	0.06	Non-Irrigated
51.77	51.79	0.02	Rangeland/Native
51.79	51.83	0.04	Non-Irrigated
51.83	51.90	0.07	Rangeland/Native
51.90	51.96	0.06	Non-Irrigated
51.96	52.03	0.07	Rangeland/Native
52.03	52.10	0.07	Non-Irrigated
52.10	52.48	0.38	Rangeland/Native
52.48	52.57	0.09	Non-Irrigated
52.57	52.72	0.15	Rangeland/Native
52.72	52.75	0.03	Non-Irrigated
52.75	52.90	0.15	Rangeland/Native
52.90	53.10	0.20	Non-Irrigated
53.10	53.18	0.08	Rangeland/Native
53.18	55.54	2.36	Non-Irrigated
55.54	56.06	0.52	Rangeland/Native
56.06	56.10	0.04	Right of way
56.10	56.44	0.34	Non-Irrigated
56.44	56.86	0.42	Irrigated
56.86	56.95	0.09	Rangeland/Native
56.95	56.97	0.02	Riparian
56.97	57.07	0.10	Rangeland/Native
57.07	57.10	0.02	Riparian
57.10	57.17	0.08	Rangeland/Native
57.17	57.21	0.03	Non-Irrigated
57.21	57.25	0.04	Rangeland/Native
57.25	57.75	0.51	Non-Irrigated
57.75	57.78	0.02	Riparian
57.78	59.01	1.24	Non-Irrigated
59.01	59.03	0.01	Water
59.03	59.19	0.17	Non-Irrigated
59.19	59.56	0.37	Irrigated
59.56	59.57	0.01	Water
59.57	59.93	0.36	Irrigated

**Appendix H-1
Land Use Categories Crossed By Alternative 2**

Mile Post Begin	Mile Post End	Distance (Miles)	Land Use
59.93	59.95	0.02	Right of way
59.95	60.17	0.21	Irrigated
60.17	60.20	0.03	Rangeland/Native
60.20	61.19	0.99	Non-Irrigated
61.19	61.26	0.07	Rangeland/Native
61.26	61.61	0.35	Riparian
61.61	62.75	1.14	Non-Irrigated
62.75	63.31	0.56	Rangeland/Native
63.31	64.29	0.98	Non-Irrigated
64.29	65.42	1.13	Rangeland/Native
65.42	67.35	1.93	Non-Irrigated
67.35	67.43	0.08	Riparian
67.43	68.81	1.38	Non-Irrigated
68.81	68.95	0.14	Riparian
68.95	71.18	2.23	Non-Irrigated
71.18	71.32	0.15	Rangeland/Native
71.32	71.57	0.24	Non-Irrigated
71.57	71.83	0.26	Rangeland/Native
71.83	71.89	0.06	Non-Irrigated
71.89	72.05	0.16	Rangeland/Native
72.05	72.18	0.12	Non-Irrigated
72.18	72.37	0.19	Rangeland/Native
72.37	72.73	0.37	Non-Irrigated
72.73	73.18	0.45	Rangeland/Native
73.18	73.37	0.19	Non-Irrigated
73.37	73.43	0.05	Right of way
73.43	73.81	0.39	Rangeland/Native
73.81	75.73	1.92	Non-Irrigated
75.73	75.84	0.11	Riparian
75.84	75.99	0.15	Non-Irrigated
75.99	76.38	0.39	Rangeland/Native
76.38	76.67	0.29	Non-Irrigated
76.67	76.83	0.16	Rangeland/Native
76.83	76.89	0.06	Right of way

**Appendix H-1
Land Use Categories Crossed By Alternative 2**

Mile Post Begin	Mile Post End	Distance (Miles)	Land Use
76.89	76.96	0.07	Rangeland/Native
76.96	77.88	0.91	Non-Irrigated
77.88	77.95	0.07	Rangeland/Native
77.95	78.54	0.59	Non-Irrigated
78.54	78.59	0.05	Riparian
78.59	78.69	0.10	Rangeland/Native
78.69	81.20	2.52	Non-Irrigated
81.20	81.25	0.05	Riparian
81.25	81.56	0.31	Non-Irrigated
81.56	81.65	0.09	Rangeland/Native
81.65	89.92	8.27	Non-Irrigated
89.92	90.16	0.25	Rangeland/Native
90.16	90.63	0.47	Non-Irrigated
90.63	91.06	0.43	Rangeland/Native
91.06	91.35	0.29	Non-Irrigated
91.35	91.70	0.35	Rangeland/Native
91.70	92.23	0.53	Non-Irrigated
92.23	92.31	0.08	Riparian
92.31	92.34	0.03	Rangeland/Native
92.34	92.44	0.10	Non-Irrigated
92.44	92.65	0.21	Rangeland/Native
92.65	93.12	0.46	Non-Irrigated
93.12	93.34	0.23	Rangeland/Native
93.34	93.99	0.65	Non-Irrigated
93.99	94.33	0.34	Rangeland/Native
94.33	95.92	1.58	Non-Irrigated
95.92	96.08	0.17	Riparian
96.08	98.14	2.05	Non-Irrigated
98.14	98.17	0.04	Rangeland/Native
98.17	98.19	0.02	Riparian
98.19	98.22	0.03	Rangeland/Native
98.22	99.10	0.88	Non-Irrigated
99.10	99.16	0.06	Rangeland/Native
99.16	99.59	0.43	Non-Irrigated

**Appendix H-1
Land Use Categories Crossed By Alternative 2**

Mile Post Begin	Mile Post End	Distance (Miles)	Land Use
99.59	99.69	0.10	Rangeland/Native
99.69	99.87	0.19	Non-Irrigated
99.87	99.91	0.04	Right of way
99.91	99.96	0.05	Non-Irrigated
99.96	100.01	0.05	Rangeland/Native
100.01	100.92	0.92	Non-Irrigated
100.92	100.95	0.03	Riparian
100.95	102.90	1.95	Non-Irrigated
102.90	104.31	1.42	Rangeland/Native
104.31	105.82	1.51	Non-Irrigated
105.82	106.80	0.97	Rangeland/Native
106.80	107.98	1.19	Non-Irrigated
107.98	111.44	3.46	Rangeland/Native
111.44	111.84	0.40	Non-Irrigated
111.84	112.00	0.16	Rangeland/Native
112.00	122.69	10.69	Non-Irrigated
122.69	123.16	0.47	Rangeland/Native
123.16	123.47	0.31	Non-Irrigated
123.47	125.13	1.67	Rangeland/Native
125.13	125.67	0.54	Non-Irrigated
125.67	125.83	0.16	Rangeland/Native
125.83	126.82	0.99	Non-Irrigated
126.82	127.75	0.93	Right of way
127.75	128.24	0.49	Non-Irrigated
128.24	128.42	0.18	Rangeland/Native
128.42	128.46	0.04	Riparian
128.46	128.73	0.28	Non-Irrigated
128.73	128.77	0.04	Right of way
128.77	129.60	0.83	Non-Irrigated
0.00	129.60	129.60	Miles

**Appendix H-2
Land Use Categories Crossed By Alternative 3**

Mile Post Begin	Mile Post End	Distance (Miles)	Land Use
0.00	0.04	0.04	Non-Irrigated
0.04	0.79	0.75	Rangeland/Native
0.79	3.31	2.52	Non-Irrigated
3.31	3.46	0.15	Rangeland/Native
3.46	4.00	0.54	Non-Irrigated
4.00	5.65	1.67	Rangeland/Native
5.65	5.95	0.30	Non-Irrigated
5.95	6.43	0.48	Rangeland/Native
6.43	18.96	12.52	Non-irrigated
18.96	19.04	0.08	Rangeland/Native
19.04	20.85	1.81	Non-Irrigated
20.85	20.92	0.07	Rangeland/Native
20.92	21.00	0.08	Riparian
21.00	21.71	0.71	Non-Irrigated
21.71	22.09	0.39	Rangeland/Native
22.09	23.60	1.50	Non-Irrigated
23.60	23.82	0.22	Rangeland/Native
23.82	30.75	6.94	Non-Irrigated
30.75	30.79	0.03	Riparian
30.79	32.15	1.37	Non-Irrigated
32.15	32.64	0.48	Rangeland/Native
32.64	33.00	0.37	Non-Irrigated
33.00	33.63	0.63	Rangeland/Native
33.63	33.74	0.10	Riparian
33.74	33.77	0.03	Forest
33.77	34.01	0.23	Rangeland/Native
34.01	47.66	13.66	Non-Irrigated
47.66	47.78	0.12	Rangeland/Native
47.78	47.81	0.02	Riparian
47.81	48.24	0.43	Non-Irrigated
48.24	48.39	0.15	Rangeland/Native
48.39	48.41	0.02	Riparian
48.41	49.16	0.75	Non-Irrigated

**Appendix H-2
Land Use Categories Crossed By Alternative 3**

Mile Post Begin	Mile Post End	Distance (Miles)	Land Use
49.16	49.20	0.03	Rangeland/Native
49.20	49.34	0.14	Non-Irrigated
49.34	49.38	0.04	Rangeland/Native
49.38	49.42	0.04	Riparian
49.42	49.65	0.23	Rangeland/Native
49.65	49.93	0.28	Non-Irrigated
49.93	50.05	0.12	Right of way
50.05	52.39	2.34	Non-Irrigated
52.39	52.74	0.35	Rangeland/Native
52.74	52.77	0.04	Right of way
52.95	53.26	0.31	Rangeland/Native
53.26	53.78	0.52	Non-Irrigated
53.78	53.91	0.12	Rangeland/Native
53.91	54.03	0.12	Non-Irrigated
54.03	54.10	0.07	Rangeland/Native
54.10	54.15	0.05	Non-Irrigated
54.15	54.24	0.09	Rangeland/Native
54.24	57.08	2.84	Non-Irrigated
57.08	57.12	0.04	Residential
57.12	57.19	0.07	Right of way
57.19	57.86	0.67	Non-Irrigated
57.86	57.95	0.09	Rangeland/Native
57.95	58.04	0.08	Riparian
58.04	58.17	0.13	Non-irrigated
58.17	58.25	0.08	Rangeland/Native
58.25	58.33	0.09	Riparian
58.33	58.37	0.04	Rangeland/Native
58.37	58.46	0.09	Non-Irrigated
58.46	58.49	0.03	Rangeland/Native
58.49	58.53	0.03	Non-Irrigated
58.53	59.78	1.26	Irrigated
59.78	60.69	0.91	Non-Irrigated
60.69	61.46	0.77	Rangeland/Native
61.46	62.08	0.62	Non-Irrigated

**Appendix H-2
Land Use Categories Crossed By Alternative 3**

Mile Post Begin	Mile Post End	Distance (Miles)	Land Use
62.08	62.30	0.22	Rangeland/Native
62.30	62.41	0.11	Riparian
62.41	62.48	0.07	Rangeland/Native
62.48	62.83	0.36	Irrigated
62.83	62.86	0.03	Riparian
62.86	65.01	2.15	Non-Irrigated
65.01	65.11	0.10	Rangeland/Native
65.11	65.45	0.34	Non-Irrigated
65.45	65.49	0.04	Rangeland/Native
65.49	65.74	0.25	Non-Irrigated
65.74	66.00	0.26	Rangeland/Native
66.00	66.04	0.04	Non-Irrigated
66.04	66.24	0.20	Irrigated
66.24	66.31	0.07	Non-Irrigated
66.31	66.36	0.05	Rangeland/Native
66.36	66.52	0.16	Non-Irrigated
66.52	66.78	0.25	Irrigated
66.78	66.84	0.06	Rangeland/Native
66.84	66.92	0.09	Non-Irrigated
66.92	66.96	0.04	Rangeland/Native
66.96	67.12	0.16	Riparian
67.12	67.15	0.03	Rangeland/Native
67.15	67.19	0.04	Riparian
67.19	67.53	0.34	Rangeland/Native
67.53	67.61	0.08	Riparian
67.61	68.46	0.85	Irrigated
68.46	68.52	0.06	Residential
68.52	69.21	0.69	Non-Irrigated
69.21	69.24	0.03	Riparian
69.24	69.33	0.09	Non-Irrigated
69.33	69.48	0.15	Rangeland/Native
69.48	70.35	0.87	Non-Irrigated
70.35	70.40	0.05	Rangeland/Native
70.40	70.58	0.18	Irrigated

**Appendix H-2
Land Use Categories Crossed By Alternative 3**

Mile Post Begin	Mile Post End	Distance (Miles)	Land Use
70.58	70.65	0.08	Non-Irrigated
70.65	71.46	0.81	Irrigated
71.46	71.50	0.04	Riparian
71.50	71.52	0.02	Non-Irrigated
71.52	72.42	0.90	Irrigated
72.42	73.18	0.76	Non-Irrigated
73.18	73.94	0.77	Irrigated
73.94	74.26	0.32	Non-Irrigated
74.26	74.48	0.22	Rangeland/Native
74.48	75.01	0.53	Non-Irrigated
75.01	75.03	0.03	Riparian
75.03	75.52	0.49	Non-Irrigated
75.52	75.59	0.07	Rangeland/Native
75.59	75.62	0.02	Riparian
75.62	75.69	0.07	Rangeland/Native
75.69	75.71	0.02	Riparian
75.71	75.84	0.13	Rangeland/Native
75.84	78.53	2.68	Non-Irrigated
78.53	78.72	0.19	Rangeland/Native
78.72	79.45	0.73	Non-Irrigated
79.45	79.52	0.07	Rangeland/Native
79.52	79.69	0.17	Irrigated
79.69	79.72	0.02	Riparian
79.72	79.82	0.11	Irrigated
79.82	79.97	0.14	Non-Irrigated
79.97	80.92	0.95	Irrigated
80.92	83.23	2.31	Non-Irrigated
83.23	84.22	0.99	Rangeland/Native
84.22	84.31	0.08	Forest
84.31	84.41	0.10	Water
84.41	84.53	0.11	Rangeland/Native
84.53	85.22	0.70	Non-Irrigated
85.22	85.25	0.03	Residential
85.25	86.60	1.35	Non-Irrigated

**Appendix H-2
Land Use Categories Crossed By Alternative 3**

Mile Post Begin	Mile Post End	Distance (Miles)	Land Use
86.60	86.84	0.24	Rangeland/Native
86.84	87.41	0.58	Non-Irrigated
87.41	93.49	6.08	Rangeland/Native
93.49	94.52	1.03	Non-Irrigated
94.52	94.61	0.08	Right of way
94.61	97.14	2.54	Non-Irrigated
97.14	97.30	0.16	Riparian
97.30	97.57	0.26	Non-Irrigated
97.57	97.68	0.11	Riparian
97.68	106.03	8.36	Non-Irrigated
106.03	107.28	1.25	Rangeland/Native
107.28	111.38	4.10	Non-Irrigated
111.38	111.65	0.26	Rangeland/Native
111.65	111.80	0.16	Non-Irrigated
111.80	113.33	1.52	Rangeland/Native
113.33	113.82	0.49	Non-Irrigated
113.82	114.07	0.25	Rangeland/Native
114.07	115.17	1.11	Non-Irrigated
115.17	115.40	0.22	Rangeland/Native
115.40	116.97	1.57	Non-Irrigated
116.97	117.23	0.26	Rangeland/Native
117.23	117.93	0.70	Non-Irrigated
117.93	117.96	0.03	Riparian
117.96	118.49	0.52	Rangeland/Native
118.49	121.31	2.82	Non-Irrigated
121.31	121.34	0.03	Rangeland/Native
0.00	121.34	121.34	Miles

Appendix H-3
Land Use Categories Crossed By Alternative 4

Mile Post Begin	Mile Post End	Distance (Miles)	Land Use
0.00	0.13	0.13	Non-Irrigated
0.13	0.73	0.61	Rangeland/Native
0.73	0.78	0.05	Riparian
0.78	0.87	0.09	Rangeland/Native
0.87	3.15	2.28	Non-Irrigated
3.15	3.96	0.81	Rangeland/Native
3.96	4.04	0.08	Non-Irrigated
4.04	4.85	0.81	Rangeland/Native
4.85	5.09	0.24	Non-Irrigated
5.09	5.46	0.38	Rangeland/Native
5.46	5.52	0.05	Non-Irrigated
5.52	5.80	0.28	Rangeland/Native
5.80	5.81	0.02	Riparian
5.81	6.01	0.20	Non-Irrigated
6.01	7.28	1.26	Rangeland/Native
7.28	7.45	0.17	Non-Irrigated
7.45	8.05	0.60	Rangeland/Native
8.05	8.06	0.01	Riparian
8.06	9.94	1.88	Rangeland/Native
9.94	9.95	0.01	Right of Way
9.95	10.09	0.14	Rangeland/Native
10.09	10.24	0.15	Agriculture
10.24	11.98	1.74	Rangeland/Native
11.98	12.40	0.42	Non-Irrigated
12.40	12.76	0.36	Rangeland/Native
12.76	12.96	0.20	Agriculture
12.96	14.65	1.69	Rangeland/Native
14.65	15.12	0.47	Non-Irrigated
15.12	15.21	0.09	Rangeland/Native
15.21	15.50	0.29	Non-Irrigated
15.50	15.72	0.22	Agriculture
15.72	15.76	0.04	Right of Way
15.76	19.72	3.95	Non-Irrigated

**Appendix H-3
Land Use Categories Crossed By Alternative 4**

Mile Post Begin	Mile Post End	Distance (Miles)	Land Use
19.72	21.54	1.81	Rangeland/Native
21.54	21.85	0.31	Agriculture
21.85	21.93	0.08	Rangeland/Native
21.93	21.95	0.02	Riparian
21.95	22.78	0.83	Rangeland/Native
22.78	22.82	0.05	Riparian
22.82	23.30	0.48	Rangeland/Native
23.30	23.31	0.01	Riparian
23.31	23.39	0.08	Rangeland/Native
23.39	23.75	0.36	Agriculture
23.75	23.79	0.03	Riparian
23.79	24.09	0.30	Agriculture
24.09	25.11	1.02	Non-Irrigated
25.11	26.27	1.16	Rangeland/Native
26.27	26.71	0.44	Agriculture
26.71	26.82	0.11	Rangeland/Native
26.82	27.26	0.44	Agriculture
27.26	29.21	1.95	Non-Irrigated
29.21	29.24	0.03	Riparian
29.24	30.15	0.92	Non-Irrigated
30.15	30.20	0.05	Rangeland/Native
30.20	30.25	0.05	Non-Irrigated
30.25	30.29	0.04	Right of Way
30.29	30.47	0.19	Non-Irrigated
30.47	30.57	0.10	Rangeland/Native
30.57	31.00	0.43	Non-Irrigated
31.00	31.06	0.06	Rangeland/Native
31.06	31.94	0.88	Non-Irrigated
31.94	31.97	0.03	Rangeland/Native
31.97	31.99	0.02	Riparian
31.99	32.03	0.04	Rangeland/Native
32.03	32.46	0.43	Non-Irrigated
32.46	32.51	0.05	Riparian
32.51	34.64	2.13	Non-Irrigated

**Appendix H-3
Land Use Categories Crossed By Alternative 4**

Mile Post Begin	Mile Post End	Distance (Miles)	Land Use
34.64	34.71	0.07	Rangeland/Native
34.71	36.17	1.46	Non-Irrigated
36.17	36.40	0.24	Rangeland/Native
36.40	36.42	0.01	Riparian
36.42	36.43	0.01	Rangeland/Native
36.43	36.46	0.03	Riparian
36.46	36.68	0.23	Rangeland/Native
36.68	37.26	0.58	Non-Irrigated
37.26	37.38	0.12	Rangeland/Native
37.38	37.39	0.01	Riparian
37.39	37.52	0.13	Rangeland/Native
37.52	37.85	0.33	Non-Irrigated
37.85	37.99	0.14	Agriculture
37.99	38.37	0.37	Rangeland/Native
38.37	38.41	0.04	Forest
38.41	38.49	0.08	Riparian
38.49	38.54	0.05	Non-Irrigated
38.54	38.88	0.34	Rangeland/Native
38.88	39.07	0.19	Non-Irrigated
39.07	39.42	0.35	Rangeland/Native
39.42	39.71	0.29	Non-Irrigated
39.71	40.14	0.43	Rangeland/Native
40.14	40.61	0.47	Non-Irrigated
40.61	41.11	0.50	Rangeland/Native
41.11	41.24	0.13	Non-Irrigated
41.24	41.34	0.11	Rangeland/Native
41.34	41.62	0.28	Non-Irrigated
41.62	41.69	0.07	Rangeland/Native
41.69	49.85	8.15	Non-Irrigated
49.85	49.88	0.03	Riparian
49.88	55.78	5.88	Non-Irrigated
55.78	55.81	0.04	Rangeland/Native
55.81	59.00	3.18	Non-Irrigated
59.00	59.26	0.26	Rangeland/Native

**Appendix H-3
Land Use Categories Crossed By Alternative 4**

Mile Post Begin	Mile Post End	Distance (Miles)	Land Use
59.26	60.26	0.99	Non-Irrigated
60.26	60.28	0.02	Right of Way
60.28	60.41	0.13	Non-Irrigated
60.41	60.47	0.06	Rangeland/Native
60.47	60.48	0.01	Riparian
60.48	60.52	0.04	Rangeland/Native
60.52	60.55	0.03	Riparian
60.55	60.64	0.09	Rangeland/Native
60.64	61.22	0.58	Non-Irrigated
61.22	61.27	0.05	Rangeland/Native
61.27	61.29	0.03	Non-Irrigated
61.29	62.30	1.01	Irrigated
62.30	62.57	0.27	Non-Irrigated
62.57	62.80	0.23	Irrigated
62.80	62.90	0.10	Rangeland/Native
62.90	63.00	0.10	Riparian
63.00	63.06	0.06	Rangeland/Native
63.06	63.40	0.34	Non-Irrigated
63.40	63.86	0.46	Irrigated
63.86	64.75	0.89	Non-Irrigated
64.75	64.88	0.13	Rangeland/Native
64.88	65.29	0.41	Non-Irrigated
65.29	65.43	0.13	Rangeland/Native
65.43	65.46	0.03	Non-Irrigated
65.46	65.61	0.15	Rangeland/Native
65.61	66.65	1.04	Non-Irrigated
66.65	66.75	0.10	Rangeland/Native
66.75	66.88	0.13	Non-Irrigated
66.88	67.39	0.52	Rangeland/Native
67.39	69.80	2.40	Non-Irrigated
69.80	69.92	0.12	Rangeland/Native
69.92	69.98	0.06	Agriculture
69.98	70.12	0.14	Rangeland/Native
70.12	70.41	0.29	Non-Irrigated

**Appendix H-3
Land Use Categories Crossed By Alternative 4**

Mile Post Begin	Mile Post End	Distance (Miles)	Land Use
70.41	71.94	1.53	Rangeland/Native
71.94	71.95	0.01	Right of Way
71.95	72.51	0.55	Rangeland/Native
72.51	72.59	0.09	Right of Way
72.59	72.75	0.16	Rangeland/Native
72.75	72.77	0.02	Right of Way
72.77	72.85	0.08	Non-Irrigated
72.85	72.87	0.02	Rangeland/Native
72.87	72.90	0.03	Riparian
72.90	73.36	0.46	Rangeland/Native
73.36	73.44	0.08	Non-Irrigated
73.44	73.48	0.03	Rangeland/Native
73.48	73.49	0.01	Right of Way
73.49	73.51	0.02	Rangeland/Native
73.51	73.56	0.05	Non-Irrigated
73.56	73.59	0.03	Rangeland/Native
73.59	73.59	0.01	Riparian
73.59	73.89	0.30	Rangeland/Native
73.89	73.96	0.07	Riparian
73.96	74.48	0.52	Rangeland/Native
74.48	74.49	0.01	Right of Way
74.49	75.21	0.72	Rangeland/Native
75.21	75.22	0.01	Right of Way
75.22	75.60	0.37	Rangeland/Native
75.60	75.60	0.00	Riparian
75.60	75.61	0.01	Rangeland/Native
75.61	75.62	0.00	Riparian
75.62	75.64	0.03	Rangeland/Native
75.64	75.65	0.00	Riparian
75.65	76.34	0.69	Rangeland/Native
76.34	76.39	0.05	Riparian
76.39	76.58	0.19	Rangeland/Native
76.58	76.82	0.24	Non-Irrigated
76.82	77.79	0.97	Rangeland/Native

**Appendix H-3
Land Use Categories Crossed By Alternative 4**

Mile Post Begin	Mile Post End	Distance (Miles)	Land Use
77.79	77.80	0.01	Agriculture
77.80	78.44	0.63	Rangeland/Native
78.44	78.59	0.15	Agriculture
78.59	79.10	0.51	Rangeland/Native
79.10	79.34	0.24	Non-Irrigated
79.34	79.43	0.09	Rangeland/Native
79.43	79.73	0.30	Non-Irrigated
79.73	79.91	0.17	Rangeland/Native
79.91	80.12	0.21	Non-Irrigated
80.12	80.44	0.32	Rangeland/Native
80.44	80.45	0.01	Riparian
80.45	80.98	0.52	Rangeland/Native
80.98	81.00	0.02	Riparian
81.00	81.62	0.62	Rangeland/Native
81.62	81.66	0.04	Riparian
81.66	81.70	0.04	Rangeland/Native
81.70	81.71	0.02	Riparian
81.71	81.76	0.04	Rangeland/Native
81.76	81.97	0.21	Right of Way
81.97	83.21	1.24	Non-Irrigated
83.21	83.25	0.04	Right of Way
83.25	83.77	0.52	Rangeland/Native
83.77	86.14	2.36	Non-Irrigated
86.14	86.21	0.08	Rangeland/Native
86.21	86.41	0.20	Non-Irrigated
86.41	86.56	0.15	Rangeland/Native
86.56	86.59	0.03	Non-Irrigated
86.59	86.74	0.15	Rangeland/Native
86.74	86.83	0.09	Non-Irrigated
86.83	87.21	0.38	Rangeland/Native
87.21	87.29	0.07	Non-Irrigated
87.29	87.35	0.07	Rangeland/Native
87.35	87.41	0.06	Non-Irrigated
87.41	87.48	0.07	Rangeland/Native

**Appendix H-3
Land Use Categories Crossed By Alternative 4**

Mile Post Begin	Mile Post End	Distance (Miles)	Land Use
87.48	87.52	0.04	Non-Irrigated
87.52	87.55	0.02	Rangeland/Native
87.55	87.61	0.06	Non-Irrigated
87.61	87.80	0.19	Rangeland/Native
87.80	87.92	0.11	Non-Irrigated
87.92	89.05	1.13	Rangeland/Native
89.05	89.30	0.25	Non-Irrigated
89.30	90.89	1.59	Rangeland/Native
90.89	91.94	1.05	Non-Irrigated
91.94	91.97	0.02	Rangeland/Native
91.97	92.28	0.31	Non-Irrigated
92.28	92.35	0.07	Rangeland/Native
92.35	93.83	1.48	Non-Irrigated
93.83	94.19	0.36	Rangeland/Native
94.19	94.34	0.15	Non-Irrigated
94.34	94.46	0.11	Rangeland/Native
94.46	94.86	0.40	Non-Irrigated
94.86	95.00	0.14	Irrigated
95.00	95.36	0.36	Rangeland/Native
95.36	97.96	2.59	Non-Irrigated
97.96	99.28	1.32	Rangeland/Native
99.28	99.36	0.08	Riparian
99.36	99.53	0.17	Rangeland/Native
99.53	99.70	0.17	Non-Irrigated
99.70	99.76	0.05	Rangeland/Native
99.76	99.90	0.15	Non-Irrigated
99.90	100.28	0.37	Rangeland/Native
100.28	101.50	1.22	Non-Irrigated
101.50	101.73	0.23	Rangeland/Native
101.73	102.35	0.62	Non-Irrigated
102.35	109.21	6.85	Rangeland/Native
109.21	109.54	0.33	Non-Irrigated
109.54	109.57	0.03	Agriculture
109.57	109.65	0.08	Right of Way

**Appendix H-3
Land Use Categories Crossed By Alternative 4**

Mile Post Begin	Mile Post End	Distance (Miles)	Land Use
109.65	112.14	2.49	Non-Irrigated
112.14	112.19	0.05	Agriculture
112.19	112.35	0.15	Riparian
112.35	112.62	0.27	Non-Irrigated
112.62	112.73	0.11	Riparian
112.73	120.08	7.34	Non-Irrigated
120.08	120.10	0.03	Riparian
120.10	120.93	0.82	Non-Irrigated
120.93	121.07	0.14	Agriculture
121.07	121.37	0.30	Non-Irrigated
121.37	122.57	1.20	Rangeland/Native
122.57	123.70	1.13	Non-Irrigated
123.70	123.75	0.05	Rangeland/Native
123.75	124.31	0.56	Non-Irrigated
124.31	124.57	0.26	Rangeland/Native
124.57	126.97	2.39	Non-Irrigated
126.97	126.99	0.02	Riparian
126.99	127.31	0.32	Non-Irrigated
127.31	127.45	0.14	Riparian
127.45	127.57	0.12	Rangeland/Native
127.57	128.00	0.43	Non-Irrigated
128.00	128.34	0.34	Rangeland/Native
128.34	129.58	1.24	Non-Irrigated
129.58	130.08	0.49	Agriculture
130.08	130.38	0.30	Non-Irrigated
130.38	130.41	0.03	Riparian
130.41	131.33	0.91	Non-Irrigated
131.33	134.25	2.92	Rangeland/Native
134.25	137.44	3.19	Non-Irrigated
137.44	137.49	0.05	Agriculture
137.49	137.51	0.02	Riparian
137.51	137.53	0.02	Agriculture
137.53	137.56	0.04	Riparian
137.56	137.68	0.12	Agriculture

**Appendix H-3
Land Use Categories Crossed By Alternative 4**

Mile Post Begin	Mile Post End	Distance (Miles)	Land Use
137.68	137.81	0.13	Non-Irrigated
137.81	137.83	0.02	Rangeland/Native
137.83	137.89	0.06	Riparian
137.89	137.96	0.08	Rangeland/Native
137.96	138.01	0.05	Riparian
138.01	138.04	0.03	Rangeland/Native
138.04	139.54	1.50	Non-Irrigated
0.00	139.54	139.32	Total

APPENDIX I:
IMPAIRED RIVER SEGMENTS SUMMARY SHEETS

APPENDIX J:
SUMMARY OF SURFACE WATER RESOURCES AND WATER QUALITY

**APPENDIX J-1
SUMMARY OF SURFACE WATER IN THE ANALYSIS AREA**

Surface Water Body ^a	Number of Crossings ^b			Flow Measured at nearest crossing ^c	Stream Classification ^d	303(d) Status ^e	Water Quality Summary ^f	Percent of Analysis Area Containing SubBasin
	Alt 2	Alt 3	Alt 4					
Upper Missouri-Sun-Smith Basin (HUC 10030102)								
Missouri River	NC	NC	NC	13,100 cfs (2005) Great Falls	B-2	5	Yes	10.0
Black Horse Lake (west finger) 8 acres	1	1	NC	ND	Not classified	NL	No	
Benton Lake	NC	NC	NC	ND	B-3	5	Yes	
Unnamed Lake (22 acres)	NC	1	NC	ND	Not classified	NL	No	
Lake Creek	NC	NC	1	ND	B-3	5	No	
Teton River Basin (HUC 10030205)								
Teton River	1	1	NC	547 cfs (2005) Chouteau	B-3	4A	Yes	18.4
Muddy Creek	NC	NC	NC		B-2	3	Yes	
Marias River Basin (HUC 10030203)								
Unnamed Lake (7 acres)	1	1	NC	ND	Not classified	NL	No	54.7
Unnamed Lake (7.6 acres)	1	1	NC	ND	Not classified	NL	No	
Pondera Coulee	1	1	1	15 cfs (2005) Conrad	B-2	5	No	
Spring Coulee	66.8	62.5	66.8 (Alt 2)	173 cfs (1982) Power	B-2	3	No	
Dry Fork Marias	1	1	1	2,130 cfs (1986) Dupuyer	B-3	1	Yes	
Schultz Coulee	1	NC	1	ND	B-2	NL	No	
Bullhead Creek	1	1	1	ND	B-2	NL	No	
Big Flat Coulee	NC	NC	6	ND	B-2	NL	No	

**APPENDIX J-1
SUMMARY OF SURFACE WATER IN THE ANALYSIS AREA**

Surface Water Body ^a	Number of Crossings ^b			Flow Measured at nearest crossing ^c	Stream Classification ^d	303(d) Status ^e	Water Quality Summary ^f	Percent of Analysis Area Containing SubBasin
	Alt 2	Alt 3	Alt 4					
Little Flat Coulee	NC	NC	NC	ND	B-2	NL	No	54.7
Hilger Coulee	NC	NC	NC	ND	B-2	NL	No	
Sand Coulee	NC	NC	NC	ND	B-2	NL	No	
Rocky Springs Coulee	NC	NC	NC	ND	B-2	NL	No	
Buckley Coulee	NC	NC	NC	ND	B-2	NL	No	
Marias River ^g	1	1	1	5,160 cfs (2005) Shelby	B-2	2	Yes	
Two Medicine River Basin (HUC 10030201)								
Two Medicine River	NC	NC	NC	ND	B-1	2 & 2A	Yes	0.2
Cut Bank Creek Basin (HUC 10030202)								
Cut Bank Creek	NC	NC	NC	4,060 cfs (2005) Cut Bank	B-2	5	Yes	6.7
Old Maids Coulee	NC	NC	NC	ND	B-1	5 & 2B	Yes	
Spring Creek	NC	NC	NC	ND	B-1	NL	No	
Big Rock Coulee	NC	NC	NC	ND	B-1	NL	No	
Hay Lake (115 acres)	1	NC	1	ND	Not classified	NL	No	
Willow Creek Basin (HUC 10030204)								
None crossed	NC	NC	NC	ND	B-2	2 & 2A	Yes	0.4
Upper Milk River Basin (HUC 10050002)								
Grassy Lake (160 acres)	1	NC	1	ND	Not classified	NL	No	6.7
Red River	1	NC	1	ND	B-1	NL	No	
Red River	1	NC	1	ND	B-1	NL	No	
Red River	1	NC	1	ND	B-1	NL	No	
Unnamed Lake (40 acra)	NC	1	NC	ND	Not classified	NL	No	
Unnamed Lake (63 acres)	NC	1	NC	ND	Not classified	NL	No	

**APPENDIX J-1
SUMMARY OF SURFACE WATER IN THE ANALYSIS AREA**

Surface Water Body ^a	Number of Crossings ^b			Flow Measured at nearest crossing ^c	Stream Classification ^d	303(d) Status ^e	Water Quality Summary ^f	Percent of Analysis Area Containing SubBasin
	Alt 2	Alt 3	Alt 4					
Total Stream/River Crossings	10	6	17					
Total Pond/Lake Crossings	4	6	2					
Total Crossings	14	12	19					

Notes

Alt = alternative

cfs = cubic feet per second

NA = Not Applicable

NC = No Crossing

ND= No Data

NL= Not Listed on the 303(d) list

^aThis table lists all perennial streams and rivers in the analysis area, as well as, all ponds or lakes greater than 5 acres that would be crossed by one or more alternatives.

^bNumbers in each column are the number of crossings for each surface water body per alternative.

^cFlow measured at nearest crossing is from the U.S. Geological data base (USGS 2006). Stream flow measurement shown in this table is typically annual peak flow or near peak flow in cubic feet per second (cfs). Year and location for measurement are noted.

^d Stream Classification Explanation

- A-CLOSED. Waters classified A-Closed are suitable for drinking, culinary, and food processing purposes after simple disinfection.
- A-1. Waters classified A-1 are suitable for drinking, culinary, and food processing purposes after conventional treatment for removal of naturally present impurities.
- B-1. Waters classified B-1 are suitable for drinking, culinary and food processing purposes after conventional treatment; bathing, swimming and recreation; growth and propagation of salmonid fishes and associated aquatic life, waterfowl and furbearers; and agricultural and industrial water supply.
- B-2. Waters classified B-2 are suitable for drinking, culinary and food processing purposes after conventional treatment; bathing, swimming and recreation; growth and marginal propagation of salmonid fishes and associated aquatic life, waterfowl and furbearers; and agricultural and industrial water supply.
- B-3. Waters classified B-3 are suitable for drinking, culinary and food processing purposes after conventional treatment; bathing, swimming and recreation; growth and propagation of non-salmonid fishes and associated aquatic life, waterfowl and furbearers; and agricultural and industrial water supply.

- C-1. Waters classified C-1 are suitable for bathing, swimming and recreation; growth and propagation of salmonid fishes and associated aquatic life, waterfowl and furbearers; and agricultural and industrial water supply.
- C-2. Waters classified C-2 are suitable for bathing, swimming and recreation; growth and marginal propagation of salmonid fishes and associated aquatic life, waterfowl and furbearers; and agricultural and industrial water supply.
- C-3. Waters classified C-3 are suitable for bathing, swimming and recreation; growth and propagation of non-salmonid fishes and associated aquatic life, waterfowl, and furbearers. The quality of these waters is naturally marginal for drinking, culinary and food processing purposes, agriculture, and industrial water supply.

^e Categorization of Surface Waters for 303(d) Listing

As of 2004, the EPA has requested that states adopt a five-part scheme for categorizing the assessment status of all waters in each state’s water quality monitoring and assessment system. These five categories are used as follows:

- Category 1: Waters for which all applicable beneficial uses have been assessed and all uses are determined to be fully supported.
- Category 2: Waters for which available data and/or information indicate that some, but not all, of the beneficial uses are supported.
 - Subcategory 2A: Available data and/or information indicate that some, but not all, of the beneficial uses are supported.
- Category 3: Waters for which there are insufficient data to assess the use support of any applicable beneficial use, so no use support determinations have been made.
- Category 4: Waters where one or more beneficial uses have been assessed as being impaired, fully supporting but threatened, all TMDLs are completed but impaired beneficial uses have not yet achieved fully supporting status, or impaired and TMDLs are not required:
 - Subcategory 4A: All TMDLs needed to rectify all identified threats or impairments have been completed and approved.
 - Subcategory 4B: Waterbodies are on lands where “other pollution control requirements required by local, state, or federal authority” [see 40 CFR 130.7(b)(1)(iii)] are in place, are expected to address all waterbody-pollutant combinations, and attain all water quality standards in a reasonable period of time. These control requirements act “in lieu of” a TMDL, thus no actual TMDLs are required.
 - Subcategory 4C: Identified threats or impairments result from pollution categories such as dewatering or habitat modification and, thus, the calculation of a TMDL is not required.
- Category 5: Waters where one or more applicable beneficial uses have been assessed as being impaired or threatened and a TMDL is required to address the factors causing the impairment or threat.

^f All available water quality summaries for surface water in the analysis area are provided in Appendix 3.5.

^g The Marias River is shown as a Category 1 stream on the Draft 2006 DEQ Water Quality Report.

APPENDIX K:
PRIORITY POLLUTANT MONITORING DATA

**APPENDIX K-1
CRITERIA POLLUTANT MONITORING DATA
PM₁₀, PM_{2.5}, SO₂, and CO**

Site	Year	PM ₁₀		PM _{2.5}		SO ₂		CO	
		Annual Mean (µg/m ³)	24-Hour High (µg/m ³)	Annual Mean (µg/m ³)	24-Hour High (µg/m ³)	Annual Mean (ppm)	24-Hour High (ppm)	Annual Mean (ppm)	8-Hour High (ppm)
Great Falls, Montana									
ID: 300130001 NW Corner 10 th Ave and 2 nd Street Intersection	1996	--	--	--	--	--	--	--	--
	1997	--	--	--	--	--	--	--	--
	1998	--	--	--	--	--	--	--	--
	1999	--	--	--	--	--	--	--	--
	2000	--	--	--	--	--	--	--	--
	2001	--	--	--	--	--	--	--	4.6
	2002	--	--	--	--	--	--	--	3
	2003	--	--	--	--	--	--	--	2.9
	2004	--	--	--	--	--	--	--	3.2
2005	--	--	--	--	--	--	--	2.0	
ID: 300130002 7 Miles NE of Malmstrom AFB	1996	--	--	--	--	--	--	--	--
	1997	--	--	--	--	--	--	--	--
	1998	--	--	--	--	--	--	--	--
	1999	--	--	--	--	--	--	--	--
	2000	--	--	--	--	--	--	--	--
	2001	--	--	--	--	--	--	--	--
	2002	--	--	--	--	--	--	--	--
	2003	--	--	--	--	--	--	--	--
	2004	5	13	--	--	--	--	--	--
2005	9	26	--	--	--	--	--	--	
ID: 300130009 Fire Station 9 th Street and 1 st Ave S	1996	19	69	--	--	--	--	--	--
	1997	20	62	--	--	--	--	--	--
	1998	--	--	--	--	--	--	--	--
	1999	--	--	--	--	--	--	--	--
	2000	--	--	--	--	--	--	--	--
	2001	--	--	--	--	--	--	--	--
	2002	--	--	--	--	--	--	--	--
	2003	--	--	--	--	--	--	--	--
	2004	--	--	--	--	--	--	--	--
2005	--	--	--	--	--	--	--	--	

**APPENDIX K-1
CRITERIA POLLUTANT MONITORING DATA
PM₁₀, PM_{2.5}, SO₂, and CO**

Site	Year	PM ₁₀		PM _{2.5}		SO ₂		CO	
		Annual Mean (µg/m ³)	24-Hour High (µg/m ³)	Annual Mean (µg/m ³)	24-Hour High (µg/m ³)	Annual Mean (ppm)	24-Hour High (ppm)	Annual Mean (ppm)	8-Hour High (ppm)
ID: 300131025 Skyway Conoco 700 10 th Ave S	1996	--	--	--	--	--	--	--	8.5
	1997	--	--	--	--	--	--	--	7.4
	1998	--	--	--	--	--	--	--	5.3
	1999	--	--	--	--	--	--	--	3.6
	2000	--	--	--	--	--	--	--	4.6
	2001	--	--	--	--	--	--	--	3.9
	2002	--	--	--	--	--	--	--	--
	2003	--	--	--	--	--	--	--	--
	2004	--	--	--	--	--	--	--	--
	2005	--	--	--	--	--	--	--	--
ID: 300131026 Great Falls HS 3 rd South and 17 th East	1996	--	--	--	--	--	--	--	--
	1997	--	--	--	--	--	--	--	--
	1998	--	--	--	--	--	--	--	--
	1999	--	--	--	--	--	--	--	--
	2000	--	--	7.5	40	--	--	--	--
	2001	--	--	5.4	33	--	--	--	--
	2002	--	--	5.3	19	--	--	--	--
	2003	--	--	7.5	61	--	--	--	--
	2004	--	--	4.5	21	--	--	--	--
	2005	--	--	5.9	20	--	--	--	--
ID: 300132000 MT Refining @ Wire Mill Road	1996	--	--	--	--	0.004	0.021	--	--
	1997	--	--	--	--	0.003	0.016	--	--
	1998	--	--	--	--	0.003	0.012	--	--
	1999	--	--	--	--	0.003	0.012	--	--
	2000	--	--	--	--	0.003	0.009	--	--
	2001	--	--	--	--	--	--	--	--
	2002	--	--	--	--	--	--	--	--
	2003	--	--	--	--	--	--	--	--
	2004	--	--	--	--	--	--	--	--
	2005	--	--	--	--	--	--	--	--

**APPENDIX K-1
CRITERIA POLLUTANT MONITORING DATA
PM₁₀, PM_{2.5}, SO₂, and CO**

Site	Year	PM ₁₀		PM _{2.5}		SO ₂		CO	
		Annual Mean (µg/m ³)	24-Hour High (µg/m ³)	Annual Mean (µg/m ³)	24-Hour High (µg/m ³)	Annual Mean (ppm)	24-Hour High (ppm)	Annual Mean (ppm)	8-Hour High (ppm)
ID: 300132001 1301 27 th Ave NE Black Eagle Race Track	1996	--	--	--	--	--	--	--	--
	1997	--	--	--	--	--	--	--	--
	1998	--	--	--	--	--	--	--	--
	1999	--	--	--	--	--	--	--	--
	2000	--	--	--	--	0.004	0.027	--	--
	2001	--	--	--	--	0.006	0.057	--	--
	2002	--	--	--	--	0.004	0.041	--	--
	2003	--	--	--	--	0.003	0.029	--	--
	2004	--	--	--	--	0.003	0.024	--	--
	2005	--	--	--	--	0.003	0.028	--	--
Browning, Montana									
ID: 300350101 Blackfeet Transit Bldg 34	1996	28	61	--	--	--	--	--	--
	1997	47	135	--	--	--	--	--	--
	1998	36	107	--	--	--	--	--	--
	1999	26	87	--	--	--	--	--	--
	2000	20	130	--	--	--	--	--	--
	2001	22	75	--	--	--	--	--	--
	2002	29	117	--	--	--	--	--	--
	2003	24	190	--	--	--	--	--	--
	2004	15	30	--	--	--	--	--	--
	2005	13	21	--	--	--	--	--	--
ID: 300350102 Blackfeet Industrial Park	1996	11	26	--	--	--	--	--	--
	1997	8	18	--	--	--	--	--	--
	1998	--	--	--	--	--	--	--	--
	1999	--	--	--	--	--	--	--	--
	2000	--	--	--	--	--	--	--	--
	2001	--	--	--	--	--	--	--	--
	2002	--	--	--	--	--	--	--	--
	2003	--	--	--	--	--	--	--	--
	2004	--	--	--	--	--	--	--	--
2005	--	--	--	--	--	--	--	--	

Notes:

PM₁₀ Particulate Matter < 10 Microns

PM_{2.5} Particulate Matter < 2.5 Microns

µg/m³ micrograms per cubic meter

ppm parts per million

Source: EPA 2006a

APPENDIX L:
PHOTOGRAPHIC SIMULATIONS

APPENDIX L

Photographic Simulations

Technical information on the generation of photographic simulations is provided here. Computer Aided Design (CAD), Geographic Information System (GIS), and 3-dimensional (3-D) modeling and design software, Global Positioning Systems (GPS) equipment, a Digital Single Lens Reflex (dSLR) camera, and direct conversations with individuals responsible for transmission line pole design were used to prepare the photograph simulations. Photographs were taken in the field at the defined viewpoint locations and used as backgrounds in the computer generated images. Several 3-D models were constructed of the topography and transmission line poles. Pole placement was performed using GIS software. The computer camera placed the poles in the 3-D model at the appropriate location and the images were generated.

On-site GPS data were obtained using the Pharos GPS Pocket Navigator package for a hand-held Dell Axim 51 PDA. Data recorded included date, time of day, latitude, longitude, elevation, and heading. Heading was verified with a hand-held compass. On-site photographs were acquired using a Canon 350D dSLR (1.6 crop factor) and a Canon 18-55 mm zoom lens. Camera information recorded and verified from photograph EXIF information included: film speed, focal length, aperture, and shutter speed. Photographs were saved as both unprocessed data from the image sensor and in a compressed format.

Montana Digital Elevation Model (DEM) data were obtained from the National Elevation Dataset (NED) as of April 2002 for each of the viewpoints. The data used included 30-meter X-Y resolution and one foot resolution in the Z-plane. Horizontal datum is North American Datum of 1927 (NAD27) with a transverse mercator projection, and National Geodetic Vertical Datum (NGVD) 1929 vertical datum.

The proposed transmission line route was presented in the MFSA application (MATL 2006b). The transmission line map datum was converted to NAD27, so that the line could be exported and then re-imported into the 3-D modeling software and aligned with the NAD27 based DEMs. Transmission line and proposed pole specifications and details were obtained from SNC-Lavalin ATP Inc. (2006). Scaled 3-D models were constructed for each of the proposed power pole types and placed into the 3-D model along the proposed transmission line alignment using specified or recommended span distances between poles. Typical conductor and ground cable sag specifications were used unless otherwise specified by SNC-Lavalin.

For each simulation, the photograph taken in the field was imported into the 3-D modeling software package and loaded as a background environment within which the view of the 3-D model is generated. To generate the correct view relative to the actual photograph, a software camera was placed at a location identical to where the photograph was taken relating the field location to the DEM location. Using the JEEEP.com coordinate translation applet, GPS recorded camera locations were converted to Universal Transverse Projection (UTM) northing and easting locations to facilitate placement of the software camera.

**APPENDIX M:
MATL SYSTEM IMPACT STUDY STAND-ALONE AND CO-EXISTING (NOT YET
AVAILABLE)**

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