



VISION ZERO
zero deaths
zero serious injuries

Montana Department of Transportation

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Memorandum

To: Distribution *DAW*
Prepared By: Deb Wambach, Butte District Biologist
Date: April 12, 2021
Subject: MDT Wildlife Accommodation Recommendation Memo (WARM)
NH 49-1(25)9
Stone Creek - North
UPN 7931000
Work Type 140 - Reconstruction – without added capacity

Approved: _____

Tom Martin, P.E.
Environmental Services Bureau Chief

Date: April 12, 2021

This memo reflects the project-specific wildlife accommodations recommended by Environmental Services for further consideration by the design team. During preparation of the Biological Resources Report/ Preliminary Biological Assessment (BRR/PBA) for this project, an initial wildlife needs analysis identified various wildlife needs along the project corridor and presented general recommendations for consideration. Because this project was in development prior to inception of the Wildlife Accommodation Process (WAP), this memo is being prepared to formally document and refine the recommendations previously made in other milestone and technical reports, beginning with the Preliminary Field Review Report. This documentation will provide transparency and allow for formal documentation of the wildlife accommodation decisions through the Wildlife Accommodation Decision Report (WADR) prepared in conjunction with the scope of work.

Proposed Scope of Work

The proposed scope of work is to reconstruct the roadway providing geometric improvements, shoulder widening, and structure replacements at Stone Creek and the Beaverhead River. The project was nominated as a Primary Rural Minor Arterial with a design speed of 55-mph and has since been upgraded to a Rural Principal Arterial (National Highway System) route with a design speed of 60-mph.

The work will include clearing, grading, drainage, structure replacement, gravel, plant mix surfacing, culverts, signing, striping, fencing and other miscellaneous items. Extensive right-of-way and utility relocation will be required.

Project Location and Limits

N-49 is in Beaverhead and Madison counties and begins near the junction of N-89 and P-89 north of Dillon and ends near the junction of N-29 and P-29 in Twin Bridges. The project begins at RP 9.0 about 8.4 miles northeast of Dillon. The project extends northeasterly 7.3 miles to RP 16.3 and ends 10.7 miles southwest of Twin Bridges. The project stationing runs southwest to northeast. There are existing bridges over Stone Creek, approximately RP 9.0±, and the Beaverhead River, approximately RP 14.6±.

Wildlife Needs Analysis Summary

The Preliminary Field Review Report (PFR) was published in September 2012. The Environmental Considerations section of this report (Page 8) includes the following information as provided by the District Biologist: *Agricultural and livestock operations are the predominant land use adjacent to the roadway. Due to the high use of the project area by wildlife, especially deer, wildlife friendly fencing is recommended throughout the project corridor. At most, existing ROW fencing should be replaced in-kind (i.e. no more restrictive than the existing configuration). The opportunity for potential underpass wildlife crossings at the deep gullies crossing beneath the highway at a few locations within the project limits should be examined and documented during project development.*

The Biological Resources Report/Preliminary Biological Assessment was completed for MDT by a natural resource term consultant, Confluence Consulting, Inc. in October 2013. Pages 21-25 of this report documents general wildlife needs and makes general recommendations for potential wildlife accommodations along the project. This assessment was completed prior to the establishment of the MDT WAP. This information is referenced for project history purposes and updated with supplemental wildlife needs analysis and project development information that occurred since the time of its publication in October 2013.

The first Alignment and Grade Review Report (AGR001) was published in February 2015. The Environmental Considerations section of this report (Page 8) contains the following information: *Agricultural and livestock operations are the predominant land use adjacent to the roadway. All existing ROW fencing will be replaced with the agreed upon type of fencing in the R/W agreement. Due to the high level of use of the project area by wildlife, especially deer, wildlife friendly fencing is recommended, where landowners are agreeable. The following station locations will be evaluated for possible wildlife underpasses: 519+00 (RP 10.2), 575+00 (RP 11.2), 607+00 (RP 11.8), 655+00 (RP 12.8), 680+00 (RP 13.4), 702+00 (RP 13.8), and at the Beaverhead River bridge crossing. Crossing locations will be evaluated to ensure compatible land use on both sides of the crossing, landowner willingness to keep the crossing open on both sides, and topographic and roadway design compatibility. Crossings will be installed with restrictive fencing to help guide the deer to the underpasses. Crossings will likely be placed mid-slope in areas of high fill, rather than in the bottom of the ditch line. This will help provide a shorter crossing length, which reduces cost and makes the crossing more attractive to the target species.*

Due to the complexities of the alignment options north of the Beaverhead River bridge, a few different alignment and grade reviews had been held since the first one in November 2014. A second Alignment and Grade Review Report (AGR003) was published in May 2019. This report focuses on the development of the Least Environmentally Damaging Practicable Alternative (LEDPA) with regard to aquatic resource impacts, but also contains the following information in the Environmental Considerations section (Page 12 and 13): *Agricultural and livestock operations are the predominant land use adjacent to the roadway. All existing right-of-way fencing will be replaced with the agreed upon type of fencing in the Right-of-way agreement. Due to the high level of use of the project area by wildlife, especially deer, wildlife friendly fencing is recommended, where landowners are agreeable. The following station locations will be evaluated for possible wildlife underpasses: 519+00 (RP 10.2), 575+00 (RP 11.2), 607+00 (RP 11.8), 655+00 (RP 12.8), 680+00 (RP 13.4), 702+00 (RP 13.8), and at the Beaverhead River bridge crossing. Crossing locations will be evaluated to ensure compatible land use on both sides of the crossing, landowner willingness to keep the crossing open on both sides and topographic and roadway design compatibility. Underpasses would be installed and connected by wildlife barrier fencing to help guide the wildlife to the structures. Fence end treatments will be considered to close the fencing in areas it cannot be terminated at logical topographical features. Crossings will likely be placed mid-slope in areas of high fill, rather than in the bottom of the ditch line. This will help provide a shorter crossing length, which reduces cost and makes the crossing more attractive to the target species.*

It should be noted that wildlife accommodation recommendations were generally discussed at the initial public meeting and met with some support from adjacent landowners. Additionally, Geotech performed subsurface investigations at the stations referenced above for the purpose of evaluating those aspects of the feasibility of larger structure installation higher in the embankment to facilitate wildlife passage through underpasses. Table 1 shows the boring reference associated with these locations:

Table 1: Borings associated with proposed wildlife crossing stations

Proposed Wildlife Xing Station	Boring(s)	Station	Date Drilled
518+70	7931-17	517+80	3/31/15
	7931-18	518+40	5/13/15
574+40	7931-32	574+85	6/16/15
607+00	7931-39	606+67	5/19/15
654+75	7931-53	654-74	6/17/15
	7931-54	654+95	5/19/15
680+00	7931-63	680+59	7/14/15
702+00	7931-69	703+01	6/8/15

Generally, Geotech has reported “I took a quick look at the N-values recorded for those borings and I don’t see any major concerns with placement of an RCB within the embankment material at the locations listed...”. (email, N. Jaynes, August 19, 2020). Section 3.4 Embankments (page 9) of the Activity 464 Alignment Report (July 5, 2017) recommends allowing appropriate time for settlement during construction and reducing slopes to 2.5H:1V or 3.0H:1V or flatter to achieve slope stability in some of these locations.

Wildlife Needs Verification and Supporting Documentation

Because this project and the initial wildlife needs evaluation began prior to the inception of the formalized WAP, the following information is provided as an update to previous work and serves as the current wildlife needs assessment.

Crash Data

Crash data for the project corridor was requested from Traffic & Safety in August 2019. They provided available information for reported incidents contained in the MDT Crash Database occurring at the requested location for the 10-year time frame January 1, 2009 through December 31, 2018. There was a total of 59 reported crashes within the project limits during that time period. These included twelve wild animal collisions and one domestic animal collision. Additionally, animals in roadway were listed as the contributing circumstance in three other crash types including a fixed object, a roll-over, and a rear-end collision. The 16 animal-related crashes accounted for 27% of all reported crashes and included 12 no apparent injury (34%), one possible injury crash (12.5%), two suspected minor injury crashes (25%), one suspected serious injury crash (20%), and no fatal crashes. There were three non-animal-related fatal crashes reported.

Carcass Data

Since 1998 there have been 458 carcasses recorded within the project limits. These include 177 records from the 10-year period between January 2011 and December 2020, plus year-to-date 2021. About 39% of all recorded carcasses are accounted for over the past 10 years. A look back in the data indicates that the number of carcasses recorded is decreasing slightly over time. Whether this is a function of less deer in the project area, less deer being struck, or a variation in recording effort is unclear. The carcasses are almost entirely white-tailed deer, except for a handful of mule deer and one moose recorded near the Beaverhead River bridge. Carcasses are recorded throughout the year, showing only a slight increase over the fall and early winter months.

Table 2: Crash and carcass data by location

Reference Post Range	Crashes	Carcasses Since 1998	Carcasses Since 2011	Possible Underpass Locations (RP)
9.0 - 9.9	2	34	10	
10.0 – 10.9	2	43	7	10.2
11.0 – 11.9	2	65	23	11.2, 11.8
12.0 – 12.9	1	34	11	12.8
13.0 – 13.9	1	31	7	13.4, 13.8
14.0 – 14.9	2	86	42	14.7**
15.0 – 15.9	3	147	66	
16.0 – 16.3	3*	18	11	
Total	16	458	177	

*includes the domestic animal collision **Beaverhead River bridge

The District Biologist has recently engaged with FWP Biologists and some members of the public regarding wildlife, specifically deer-vehicle conflict concerns in southwest Montana. These conversations indicated that the deer-vehicle conflict issue is widespread in the general area, and not specifically notable in the project area. The District Biologist investigated the carcass data

along nearby segments of N-49 and P-29 to compare the relative trends to the project limits. The results are shown in Table 3 below.

Table 3. Comparison of relative trends in carcass records in the project area

Route	RP Range	Miles	Carcasses Since 1998	Carcasses Since 2011	Carcass/Mile/Year (2011)	Ranking
N-49	0.0 – 8.8	8.8	257	104	1.2	8
N-49	8.9-16.5	7.6	492	201	2.6	6 *
N-49	16.6-22.5	5.9	540	240	4.0	5
N-49	22.6-27.5	5.0	628	301	6.0	1
N-29	42.8-48.0	5.2	297	91	1.8	7
N-29	48.0-53.2	5.2	719	299	5.8	2
P-29	37.0-42.8	5.8	804	288	5.0	4
P-29	32.0-37.0	5.0	498	263	5.3	3

***N-49 RP 8.9 – 16.5 is considered the subject project area.**

The project area ranks 6th of 8 similar road segments near the project area. The higher-ranking road segments are also smaller in total length than the project area, by 1.5-miles or more. While a large reconstruction project provides appropriate opportunity for the inclusion of robust wildlife accommodations, making recommendations for a strategy that would be both feasible and beneficial given the wildlife needs in the context of the surrounding areas and the project-specific constraints that must be considered is both complicated and challenging.

Considering the results of the road segment comparison, the District Biologist met with Dean Waltee, FWP R3 Wildlife Biologist and Bill Semmens, Resource Section Supervisor on March 11, 2021 to discuss trends in deer populations in the general project area, deer movements and observations in the project area as compared to surrounding areas, and the benefits and drawbacks of wildlife accommodation strategies associated with this project.

The white-tailed deer population in the project area is a non-migratory resident herd and population densities along this stretch of highway are lower than in other areas like the Ruby River bottom. Resident population numbers peak in the late summer / early fall and decline over winter into early spring. With the onset of chronic wasting disease (CWD) in the area and the current population numbers, Waltee expects a change in deer management including a more aggressive harvest and allowances for increased hunting pressure. This additional harvest, coupled with the spread of CWD, is expected to result in a declining trend in the white-tailed deer populations in the general area over the next 10 to 20 years.

According to Waltee, the deer in the project area likely spend most of their time west of the highway along the Beaverhead River floodplain and not so much in the pivot fields which lack suitable cover and quality forage. This observation corresponds with the general trend in the carcass data, showing increased counts of deer on the highway segments north of the project area where the river floodplain is in closer proximity to the highway. Additionally, Waltee observes several influences on deer distribution and movement including livestock concentrations, crop rotations, seasonal availability and sources of forage and cover, and seasonal influences on use of bedding and foraging resources. Depending on the proximity of these features to the roadway and the local landuse management patterns, these variations can result in spatial and temporal

influences on deer-vehicle conflict. These seasonal variations are not readily observed in the project area carcass data, which shows an approximate even split between counts from October-March and from April-September.

A recent conversation between the District Biologist and Rod Staley, MDT Maintenance Dillon Section, supports the observations and data analysis above. Rod reports that while there are white-tailed deer present in the project area, this is not one of the areas they see a lot of carcasses on. Additionally, Rod agrees that the white-tailed deer seem to be present year-round, and he has not noted a seasonal pattern in presence or carcasses counts.

Based on the current white-tailed deer population numbers in the general area, there is not a demonstrable conservation need for wildlife accommodations within the project limits. The numbers of deer-vehicle collisions may be a safety concern, but the project area does not correspond with the highest numbers of recorded deer carcasses in the general vicinity, as shown in Table 3 above. A comprehensive structural wildlife accommodation treatment of the project area would require six underpasses in addition to the Beaverhead River bridge tied together by wildlife barrier fencing. Dozens of private, public, and field approaches throughout the barrier fencing would require breaks and additional treatment. While possible, such a comprehensive treatment would be expensive and complicated. The Beaverhead River corridor is used by white-tailed deer and other wildlife species, including moose, and higher numbers of carcasses and collisions are documented in proximity of the bridge and through the northern project terminus. Wildlife accommodation recommendations considered in light of the continued evaluation of wildlife needs as discussed above, and preliminary feasibility of various strategies for inclusion of this project, are provided below.

Wildlife Accommodation Recommendations

Wildlife vehicle conflicts and collisions are documented throughout the project limits and are concentrated through the Beaverhead River bottomlands and through the northern end of the project and beyond. However, while white-tailed deer carcass counts and collisions are elevated throughout the project limits, they are not as high as several other similar road segments in the general vicinity. Given the current resident population numbers, the white-tailed deer conflicts within the project area present a greater safety concern than a conservation concern, and wildlife accommodation recommendations commensurate with the level of concern and resulting in the greatest benefit should be implemented.

- 1) The existing bridge across the Beaverhead River is a 150-foot long two-span structure. The proposed bridge is a 181-foot long single-span structure that will be shifted to the east of the existing bridge alignment. The new structure will eliminate the center pier and extend the bridge length approximately 30-feet. A comparison of vertical clearance estimates between the two structures is provided in Table 4 below.

Table 4. Estimated approximate vertical clearance in feet

Bent Location	Existing Structure	Proposed Structure (minimum)
Southern	4.0	6.0 (7.0-7.5) *
Channel - center	10.5	11.0
Northern	5.0	6.0

* The estimated vertical clearance at the southern bent provided by the proposed structure is approximately 6.0-feet. The additional 1.0 to 1.5-feet is gained by the game trail

From Geotech borings, it appears there is approximately 1.5-feet of topsoil over gravels along the southern span inside of the channel meander. To gain vertical clearance and provide a pathway enticing to wildlife, it is recommended that a 3-foot-wide trail be excavated through the southern span of the structure by removing the topsoil overburden down to approximately between 12-18-inches, creating a “game trail” through the floodplain beneath the structure.

To the extent practicable, a pathway suitable for fishermen and wildlife alike should be incorporated into the riprap and bioengineered banks along the northern bank of the river.

Wildlife barrier fencing is recommended to extend from the southern abutment to the vicinity of East Bench Road and from the northern abutment to the vicinity of Beaverhead Rock Road or beyond. There appears to be at least one driveway and one farm field approach that will require treatment within the fenced section. The fencing configuration in relation to the proposed fishing access located at the northwest abutment will also require further evaluation. Coordination with the adjacent landowners will be required.

Jump-outs should be sited and implemented as determined by the design team depending on the extent and configuration of the wildlife barrier fence. Tying the barrier fence into natural movement barriers such as cut slopes or rock outcrops should be explored. If natural movement barriers cannot be secured at the fence ends, fence end treatments such as electrified mats are recommended to prevent animals from entering the highway side of the fenced section. Additional signage with flashing lights to warn motorists of the potential increase in animal movements around the ends of the fence is recommended 0.5-miles from the fence ends in the north and south bound direction approaching the treatment, respectively.

- 2) Wildlife signage in the project corridor should be evaluated and revised or provided based on the elevated numbers of carcasses and wildlife collisions in the project area. The limits of this signage should be examined and include consideration of signage that may occur outside of the project limits but be inclusive of some or the entire portion of the project limits (e.g. “Next 10 Miles”).
- 3) Wildlife friendly fencing is recommended along the bench between RP 9.0 and RP 14.3 and should be negotiated with the affected landowners. Some agricultural operations, like sheep, may not permit the use of wildlife friendly fencing. Replacement fencing should be no more restrictive than the existing fence. Consideration of the fence type and configuration across the highway from one another should be given so that wildlife have appropriate means of moving through the highway right-of-way without impediment. It may not be prudent, for example, to have wildlife friendly fencing directly across from woven wire fencing. In these situations, 4-strand farm fence may be suitable. Fencing configurations should be discussed with the District Biologist, ROW negotiators, and landowners prior to finalizing commitments.

Cost estimates for the items included in the recommendations above were made based on 2019 and 2020 average bid prices, as well as recent correspondence from subject matter experts and are provided in Table 5 below.

Table 5. Cost estimate for recommended wildlife accommodation features

Feature	Cost Estimate	Unit
Barrier Fence	\$9	Linear foot
Barrier Fence Single Panel	\$260	Each
Barrier Fence Double Panel	\$380	Each
Friendly Fence FW	\$2.50	Linear foot
Friendly Fence FM	\$5	Linear foot
Friendly Fence Single Panel	\$85	Each
Friendly Fence Double Panel	\$140	Each
Jump-out	\$11,000	Each
Wildlife (double cattle guards)	\$50,000	Each
Static signs	\$500	Each
Static signs w/flasher	\$8000	Each
Electrified Deterrent Mats	\$2150	Linear foot (road width)

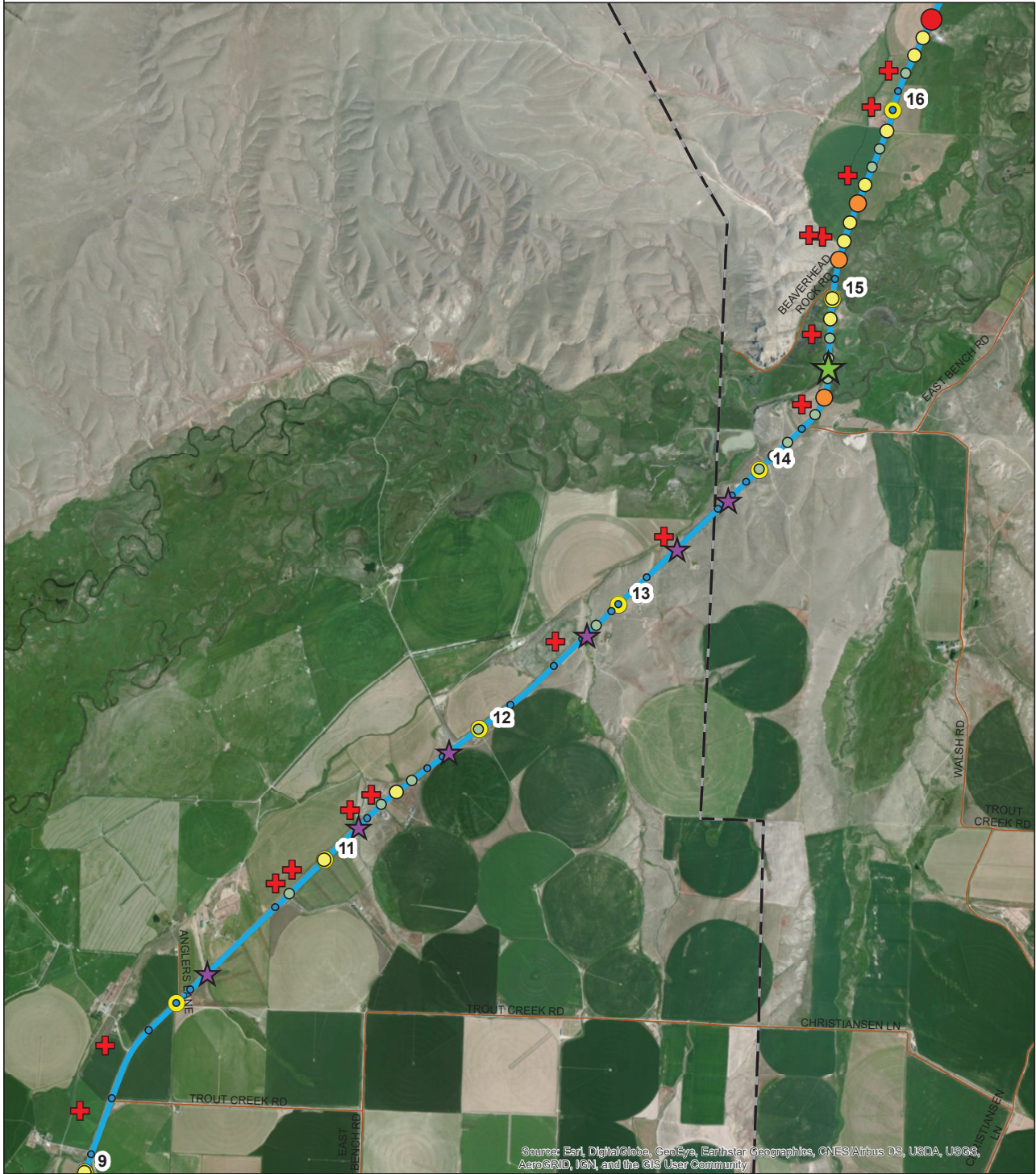
The project design team will work together to evaluate the feasibility of the wildlife accommodation recommendations for this project and document the decisions and rationale in the Wildlife Accommodations Decision Report in preparation of the Scope of Work. Design details and refinements to the accepted recommendations will be made as the project development progresses. Please contact me or Deb Wambach, Butte District Biologist if you have any questions or require additional information at this time.

Distribution:

- Bill Fogarty, Butte District Administrator
- Stephanie Brandenberger, Bridge Engineer
- Damian Krings, Highways Engineer
- Gabe Priebe, Traffic and Safety Engineer
- Dave Hedstrom, Hydraulics Supervisor
- Patty Patterson, Acting Right-of-Way Bureau Chief
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- Dave Cunningham, District Construction Operations Engineer
- Jim Pesanti, Butte Maintenance Chief
- Rod Staley, Dillon Maintenance Section
- Jen Johnson, District Hydraulics Engineer
- Tyler Steffan, District Bridge Engineer
- Pat McCann, District Geotech Engineer
- Suzy Ryan, District Project Development Engineer

Link to MDT's Wildlife Accommodations Process Research Study Final Report and Desk Guide:
<https://www.mdt.mt.gov/research/projects/env/wap.shtml>

CN 7931000 Stone Creek - North Wildlife Accommodation Map



Carcass 2011-2021

- | | | | |
|---|---------|---|------------------------------|
| • | 1 - 2 | + | Wild Animal Collision |
| ○ | 3 - 4 | ☆ | Potential Underpass Location |
| ● | 5 - 8 | ★ | Beaverhead River Bridge |
| ● | 9 - 11 | | |
| ● | 12 - 17 | | |

