Research Project
Quarterly Progress Report

RESEARCH PROGRAMS

INSTRUCTIONS

Consultant project managers/principal investigators should complete a quarterly progress report for each calendar quarter, or part thereof, during which project is active. All fields must be completed.

Date: 31 July 2015 (draft), 9 September 2015 (final)	**Progress Report Number:** Quarterly Report 2015-2
Project Title: US 93 North Post-Construction Wildlife-Vehicle Collision and Wildlife Crossing Monitoring and Research on the Flathead Indian Reservation between Evaro and Polson, Montana	**Report Period:** **Due Date** ☐Quarter 1 (January 1 – March 31) *April 30* ■Quarter 2 (April 1 – June 30) *July 31* ☐Quarter 3 (July 1 – September 30) *October 31* ☐Quarter 4 (October 1 – December 31) *January 31*
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MDT Project Manager Sue Sillick	**MDT Project Number:** #8208	**Project Start Date:** 1 January 2010
Original Project End Date: 31 July 2015	**Current Project End Date:** 31 July 2016	**Number of Extensions:** 0 (extended as work scope changed)

Project Schedule Status:

■ On schedule ☐ On approved revised schedule ☐ Ahead of schedule ☐ Behind schedule

Project Expenses Statistics:

Project Expenses This Quarter	Total Project Expenses to Date	Projected Cost to Date
$45,346	$467,828.45*[1] *[1]Invoices from CSKT received And processed through May 2015, total of $138,825.83	$654,709 (incl. $50K added in 2012)

Percent Over/Under	Total Project Budget	Remaining Total Budget
31.5% under budget (but some invoices from CSKT have not been received yet).	$703,893.90 (incl. $50K added in 2012) (incl. $153,893.53 added in 2014) WTI: $457,007.90 CSKT: $246,886.00	$236,065,45 WTI: $128,005.28 (for work 1 July 2015 – 31 July 2016) CSKT: $108,060.17 (for work 1 June 2015 – 31 July 2016)

Project Schedule Status (list all tasks with percentage complete, original and revised estimated and actual begin date; original and revised estimated and actual completion date, any outstanding issues, including such items as: schedule, resources, etc.)**:**

Task	Planned Percentage complete*1	Actual Percentage complete*1
1. Deer and black bear vehicle collisions	80%	80%*2
2. Wildlife use of underpasses	87%	85%*3
3. Cost-benefit analyses	70%	70%*4

*1 Reflects projected end date field work 31 Dec 2015

Dates:
This is a long term project with many tasks that reoccur annually.
The starting date for the tasks was 1 January 2010 and the end date for the project is 31 July 2016.

Notes:

*2 Crash and carcass data have been collected and analyzed through 2014 (see latest annual report).

*3 Crossing structures: Data have been analyzed through 2014 (see recent annual report).
Data from 2015 are being entered for Evaro structures and the isolated structures.
Jump-out data have been analyzed through 2014, data collection for Evaro jump-outs is ongoing.
Data entry wildlife guards and human access point is ongoing.
Calibration data tracking beds (inside and outside structures and cameras): data entry and analyses is ongoing.
Deer pellet surveys Evaro: analyzed through 2014.

*4 Basic data on the costs of the mitigation measures have been obtained in 2011 and 2012. Some analyses are possible (with crash and carcass data through 2012) now but have not been conducted yet. Since the analyses will be based on the crash and carcass data through 2015, we propose to not conduct these analyses until all the data have been collected. The funds for this project are problematic because of UTC shortfall ($100,591) and underfunding for 5th year Ravalli Curves and Ravalli Hill ($6,658.32). Therefore we suggest conducting these analyses only once towards the end of the project.

Progress and Accomplishments this Quarter (includes meetings, work plan status, contract status, significant progress, etc.)**:**

1. Cameras are managed continuously (change batteries, memory cards, download data).
2. Vegetation maintenance in front of cameras is ongoing during the growing season.
3. Monitoring tracking beds jump-outs Evaro for season, was started again 1 May 2015.
4. Data entry images at the structures for 2014 was completed.
5. Draft annual report with data through 2014 was submitted 30 June 2015.

Circumstances Affecting Project, Scope, or Budget (please describe any challenges encountered or anticipated that might affect the completion of the project within the time, scope and fiscal constraints set in the agreement, along with recommended solutions to those problems)**:**

As discussed previously, there are substantial financial shortfalls for the project. However, substantial savings have been made through CSKT (had access to supplementary funding) and through involving students. It is uncertain though if these savings are sufficient to allow for the completion of the current work scope.

A new MSc student has started work on the US93N project: Adam Andis, University of Montana. In addition there are several volunteers helping out on the project.

Two cameras at Mission Creek crossing structure (expansion bridge) were stolen sometime between 16 April 2015 and 20 May 2015. A bolt cutter was used to cut the padlocks securing the cameras to the structures. The two cameras were taken along with the memory cards. The incident was reported to CS&K Tribal Police, and the incident was also reported to MDT. Mission Creek is a site with high recreational use. The research team has had very good fortune in keeping the cameras at this location for 5 years. As the cameras were stolen 1 month before the end of the monitoring at this location, the research team chose not to replace them because of the apparent risk for theft at this location.

Results/Risk/Anything Learned:

1. See annual report with data through 2014.
2. Damages to wildlife fences and fence maintenance are an ongoing concern. These issues, as well as suggestions for a problem identification and maintenance program have been described in earlier quarterly reports. A fence maintenance program becomes more important now that the field activities by CSKT and WTI are winding down; CSKT and WTI were important eyes and ears in the field until now, but these will disappear after 31 December 2015 (at least as part of the current project).
3. Suggestions for changes to the wildlife overpass have been described in earlier quarterly reports. The suggestions include removal of livestock fences at north/west side of overpass (and at other structures on both sides of the highway if possible), attaching a visual barrier to the wildlife fence on the overpass, and the planting (with topsoil and a watering program) of cover (shrubs/small trees) on the overpass. The overpass also has a very steep slope (limited sight distance for the animals), but creating a more gradual slope would probably require structural changes to the overpass. Regardless, the research team suggests considering including ecological criteria (in addition to engineering criteria) when requesting bids for potential future wildlife crossing structures to maximize wildlife use.
4. Suggestions for changes to the jump-outs to make them more suitable for white-tailed deer have been described in earlier quarterly and annual reports. Currently the wildlife jump-outs are somewhat used by mule deer but almost not at all by white-tailed deer. The current situation, as well as possible experiments with lowering the jump-outs have implications for human safety. The current situation is that the jump-outs are not or barely functioning as an escape opportunity from the fenced right-of-way for deer, particularly white-tailed deer. This means that these animals are a safety hazard for longer until they do find a way out of the fenced road corridor.

Possible experiments with lowering the jump-outs have implications for human safety because it may also allow animals to jump in to the fenced road corridor where they are an immediate safety concern. The appropriate height for the jump-outs is a delicate balance; too high keeps the animals from escaping the fenced road corridor, too low allows animals to access the fenced road corridor. There are jump-out modifications available that have the potential to influence the ratio of animals jumping down and that can improve human safety though. Regardless, changes to the jump-out heights have real consequences for human safety as well as the lives of the animals that end up in the fenced right-of-way.

5. Relatively short road lengths with wildlife fencing and wildlife crossing structures appear less effective in reducing collisions with large wild mammals than longer road sections with wildlife fencing and wildlife crossing structures. This suggests installing wildlife fencing in combination with wildlife crossing structures over relatively long road sections (at least multiple kilometers). Note that wildlife fencing should almost always be installed on both sides of the road, and that the fence ends should not be staggered. However, in some cases wildlife fencing is only implemented on one side of the highway and fence ends are off-set which results in less effective wildlife fencing. To avoid confusion, the researchers use the term “road length fenced” to indicate the length of a road section that has wildlife fencing on both sides of the highway, also because wildlife fencing may not always follow a straight line parallel to the highway. Note that it is considered “bad practice” to increase the barrier effect of a highway for wildlife (e.g. through installing wildlife fencing) without also providing for safe and effective crossing opportunities for wildlife. Note that wildlife crossing structures with no wildlife fencing or only a short road section with wildlife fencing can still have substantial use by wildlife.
6. To maximize the effectiveness of wildlife fencing and crossing structures (especially for short road sections (e.g. <5 km) with mitigation measures) in reducing wildlife-vehicle collisions, consider the following:
    a. Implement fence end treatments (i.e. electric mats or concrete) to minimize wildlife intrusions into the fenced road corridor at fence ends.
    b. Increase the spatial resolution for the crash and carcass data and/or add parameters to the existing data sheets that specify whether a wildlife-vehicle crash or a wildlife carcass observation occurred inside or outside a road section with wildlife fencing. This minimizes the likelihood of errors in the data when analyzing the effectiveness of the mitigation measures.
    c. Consider having longer road sections of wildlife fencing and wildlife crossing structures rather than multiple short sections with relatively small gaps in between.
7. Avoid installing a wildlife fence over a (seasonal) stream as this may well result in continuous erosion and continuous maintenance. Consider placing the wildlife fence outside of the streambeds, including seasonal streams. Example of where a fence was built across a seasonal stream: Finley creek 2, east/south side of highway. While the fence has been repaired here, erosion will continue in the future. A more permanent solution would be to have the fence run parallel to the highway a bit longer and then angle towards the trees beyond the right-of-way. This location is at the bottom of a steep slope equipped with a guard rail, so the clear zone is not an issue here.
8. Install a wildlife fence snug and parallel to a wing wall of a wildlife crossing structures. Avoid openings (wedge shape) on both the road side and the safe side of the fence to reduce the likelihood of animals becoming trapped and dying between the fence and the wing wall. These are important details during the construction. For future projects consider having experts on site to guide construction.
9. When ending a wildlife fence at a steep slope, consider the risk of erosion and how that may affect the integrity of the wildlife fence on the long term. For relatively short road sections with a slope, consider having a continuous fence instead. Example of a fence end at an eroding steep slope: Ravalli Curves, across from N Valley Creek road, east side highway.

Anticipated Work Next Quarter:

Field:

Crossing structures
The research team continues monitoring wildlife use of the crossing structures in Evaro area and of the isolated structures. This is a year round activity. However, monitoring of isolated wildlife crossing structures managed by CSKT ended 30 June 2015 (consistent with work scope).

Wildlife guards (4) and people access point (1)
The research team continues monitoring wildlife use of the 4 wildlife guards and the people access point.
This is a year round activity. Data entry is ongoing.

Jump-outs Evaro
The monitoring tracking beds jump-outs Evaro started again on 1 May 2015 and will continue through mid-October 2015.

Pellet transects Evaro
Deer pellet groups will be counted along transects in the Evaro area in August and September 2015.

Desk:

Economic analyses:
Wait until all crash and carcass data have been collected (through 2015)

Crossing structures: Enter data from 2015

Wildlife guards (4) and people access point (1): Data entry is ongoing.

Potential Implementation, including the party(ies) responsible for implementation, any identified barriers to implementation and a discussion of how these barriers can be eliminated or at least reduced, and the products required for implementation:

White-tailed deer appear to not or barely use the jump-outs. The researchers have suggested experimenting with lower jump-out heights in the study area or in future projects. Because of the human safety risks, the researchers have suggested to accompany lower jump-out heights with research.

Data suggest that road sections with relatively short sections of fencing (shorter than several km) are not as effective in reducing wildlife-vehicle collisions than longer road sections with wildlife fencing (at least several km). This means that the researchers encourage transportation agencies to consider lengthening the fences in certain places along US Hwy 93 N and elsewhere and to adopt a policy to implement wildlife fencing along at least several km of road, at least as long as reducing wildlife-vehicle collisions with large mammals is among the main objectives. Note that it is considered "bad practice" to increase the barrier effect of a highway for wildlife (e.g. through installing wildlife fencing) without also providing for safe and effective crossing opportunities for wildlife. Note that wildlife crossing structures with no wildlife fencing or only a short road section with wildlife fencing can still have substantial use by wildlife.

Fence maintenance is a concern. The research team suggest implementing a fence maintenance program, especially now that the field presence of the research team is winding down.

For other suggestions see section results/risks/anything learned.

People's Way Partnership:

The outreach program (separate from MDT project) aims to make the lessons learned accessible to the transportation and natural resource management community. It is up to agencies to evaluate or update their own policy with regard to highway wildlife mitigation though.

Funding activities this quarter:

1. Unfortunately the proposal to Cinnabar ($20k, 10k/year) was not awarded.