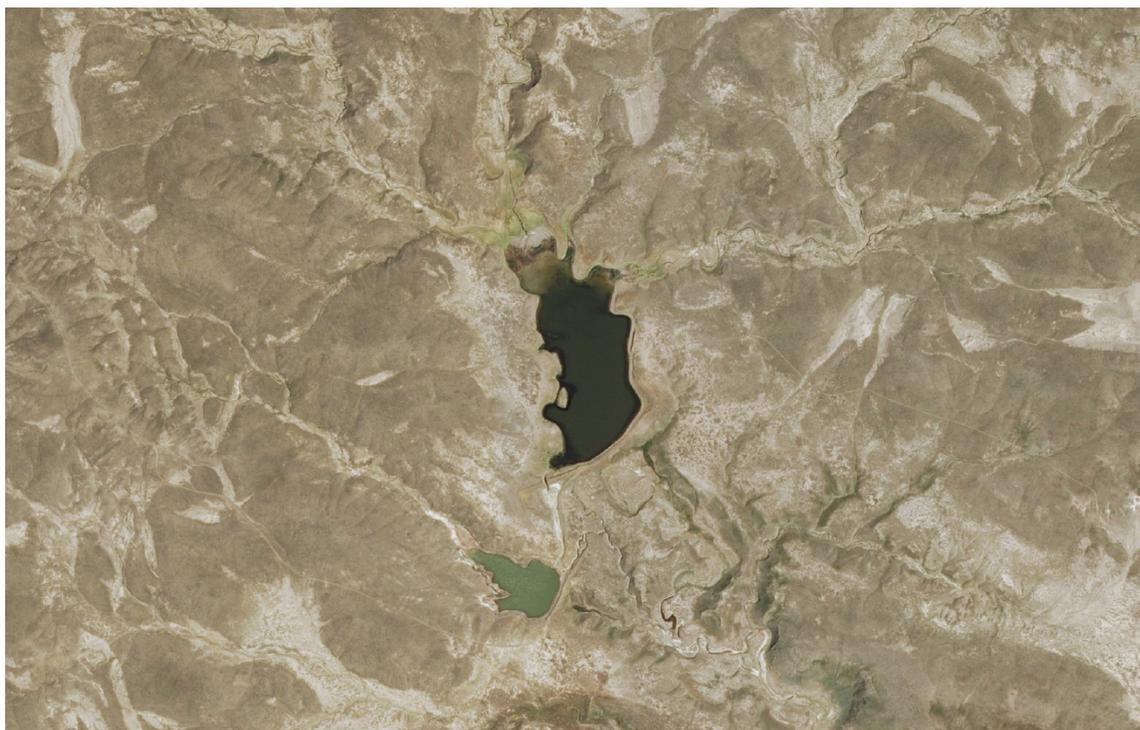


**United States Department of the Interior  
Bureau of Land Management**

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**Environmental Assessment DOI-BLM-MT-L060-2011-005-EA  
March 12, 2013**

**Buffalo Wallow Reservoir Reconstruction**



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## Table of Contents

CHAPTER 1: Purpose and Need for the Proposed Action.....	3
Introduction .....	3
Purpose and Need.....	3
Background.....	3
Scoping.....	3
Conformance with BLM Land Use Plans and Regulations.....	7
CHAPTER 2: Alternatives.....	8
Alternative considered but dropped from further analysis –Reconstruct Buffalo Wallow Reservoir and construct a new access route.....	8
No Action .....	9
Alternative 1- Proposed Action Reconstruct Buffalo Wallow Dam.....	9
Alternative 2 – Reconstruct Buffalo Wallow and add Exclosure Fence .....	10
Alternative 3 – Breach Buffalo Wallow and Turkey Track.....	11
CHAPTER 3: Affected Environment .....	11
CHAPTER 4: Environmental Effects.....	17
Description of Impacts from No Action .....	17
Description of Impacts from Proposed Action-Alternative 1 .....	19
Description of Impacts from Alternative 2 – Reconstruct Buffalo Wallow and add Exclosure Fence .....	26
Description of Impacts from Alternative 3 – Breach Buffalo Wallow and Turkey Track .....	29
CHAPTER 5: Consultation and Coordination .....	33
Introduction .....	33
Persons, Groups, and Agencies Consulted .....	33
List of Preparers .....	33
References .....	33
Appendix A – Map 1 .....	34
Appendix A – Map 2 .....	35

# **CHAPTER 1: Purpose and Need for the Proposed Action**

## **Introduction**

Buffalo Wallow Reservoir is located at T. 20 N. R. 26 E. in Fergus County and is the primary water source for livestock and wildlife in the immediate area. The reservoir is identified as a BLM hazard class dam due to the amount of water stored in the reservoir and is listed in the deferred maintenance program.

## **Purpose and Need**

The BLM is proposing this project to mitigate public safety issues associated with the road across the Buffalo Wallow embankment and address the needs of a dysfunctional reservoir.

## **Background**

Outlet works in the dam became perforated and allowed water to flow uncontrolled on the outside of the conduit. This uncontrolled flow created large caverns and sinkholes that threatened the safety of the dam. Furthermore, the backside of the dam is sloughing, threatening the overall integrity of the structure. The water level in the reservoir has been reduced. The existing outlet is still in place and has been buried by sediment. The dam structure continues to deteriorate and in its current state the dam poses a hazard to the public that use the area.

The Lewistown Field Office applied for design and reconstruction funding for Buffalo Wallow Dam to bring the structure up to hazard class dam standards. The project was funded and a task order was issued to HKM Engineering to provide a geotechnical investigation, a reservoir site and basin topographical survey, a reconstruction design and construction contracting documents for the project.

The dam embankment is part of the existing road system in the area. The road is currently impassable and the sinkholes pose a hazard to the public. In 2008 a member of the public attempted to drive across the embankment and caused significant damage to their vehicle.

Buffalo Wallow was one of the 16 reservoirs identified for fisheries on BLM land according to the Approved Judith Resource Area RMP (Table 2.4, page 17). Until 2008, Montana Fish, Wildlife and Parks stocked Buffalo Wallow with Rainbow Trout (*Oncorhynchus mykiss*) on a regular schedule. This site is a popular BLM fishery in Fergus County.

Buffalo Wallow Reservoir serves as the primary water source for the southern portion of the Whiskar pasture in the North Crooked Creek Grazing Allotment.

The BLM has made repeated attempts since the 1990s to obtain legal motorized access for the public to Buffalo Wallow Reservoir. These efforts to obtain easements have not been successful.

## **Scoping**

### **Issues identified through internal scoping**

- Water Source for Livestock
- Hazard Class Dam

- Unsafe/impassable roads
- Greater Sage-Grouse Habitat
- Lack of legal motorized public access (via easements)

### **External scoping**

- Draft EA posted to BLM website on February 13, 2013.
- News release published in the February 13, 2013 edition of several Montana papers, including the Lewistown News Argus, inviting public comment until March 1, 2013.
- Draft EA shared with cooperating agency, Montana Fish Wildlife & Parks, on February 13, 2013.
- Draft EA shared with Charles M. Russell National Wildlife Refuge on February 13, 2013.
- Draft EA shared with Western Watersheds Project on February 13, 2013.
- Draft EA shared with local representatives of Walleye's Unlimited and Trout Unlimited for distribution to their organizations on February 13, 2013.
- Crooked Creek Cooperative State Grazing District and affected permittee notified by phone of the EA's posting.

### **Comments received on Buffalo Wallow Reconstruction Draft EA**

The Buffalo Wallow Reconstruction Draft EA was completed and distributed to the public on February 13, 2013. The public review period was 16 days; the final day for comments was March 1, 2013 as indicated in the press release and direct emails to cooperating agencies. A summarization of substantive comments received and the BLM's responses are listed below.

**Comment 1:** Quality, cold water fisheries south of the Missouri River are in short supply and should be maintained. Buffalo Wallow was a quality fishery and should be repaired.

**Response 1:** The BLM LFO realizes that Buffalo Wallow Reservoir has been one of the only quality cold water fisheries south of the river. Chapter 3, Table 1, provides a description of other reservoirs in the area that are currently or historically stocked with fish by MFWP.

**Comment 2:** Existing water storage facilities should be maintained for livestock, wildlife, and storage in arid areas.

**Response 2:** The Draft EA states in Chapter 2, Alternative 3, that an offsite water pit would be constructed with a top dimension of 110' X 160' and be 16 feet deep. This pit would provide 2.1 to 2.5 acre foot of water for livestock and wildlife.

**Comment 3:** Legal access to Buffalo Wallow Reservoir has been a goal of the BLM since the 1990's. FWP encourages the BLM to further evaluate and pursue a legal public access to the dam even before it is reconstructed, including a thorough evaluation and analysis to determine the best possible solution to providing access.

**Response 3:** As stated by the FWP "Legal access to Buffalo Wallow Reservoir has been a goal of the BLM since the 1990's." There have been repeated attempts by the BLM to obtain easements to Buffalo Wallow Reservoir with no success. The Northeast Fergus Watershed Area Plan EA # MT060-08-057 (2009) states on page 31; "Three of these reservoirs (Buffalo Wallow, Crooked Creek, and Whisker) do not currently have legal public access. The BLM has plans to work with the various landowners towards securing public access easements to these reservoirs." The watershed plan further states on page 31, "To fix the overflow pipe properly it would require nearly

total reconstruction of the reservoir dam and would be very expensive. The Lewistown Field Office has applied for repair funding in the past but has decided not to pursue that option until such time that a public easement has been obtained.” The BLM has no authority to force private landowners to grant the public access. Historically the landowners along the access route have allowed temporary access for construction purposes and public access if traffic is confined to the existing route. This limited access could be allowed indefinitely or taken away at a moment’s notice by any of the four landowners.

**Comment 4:** The BLM should construct a road on BLM administered lands that guarantees public access. This road does not have to be heavily engineered like other reservoir access roads (Payola) and only needs to be a trail.

**Response 4:** There is only one potential route to access Buffalo Wallow that could be located solely on BLM administered lands. This route would require 3 miles of new road construction. Some portions of this road would not require much construction and could be limited to a “trail”; however there would be significant construction efforts involved in crossing Whisker Coulee. This coulee is very deep and has intermittent water flow. At least two large culverts would have to be installed, requiring additional permitting and consultation with the state of MT. The sides of the coulee would have to be built up or sloped to meet BLM construction standards. Comparing this potential road construction to the new access road to Payola reservoir is not appropriate to this EA as the Payola road was an improvement to an existing Right Of Way.

**Comment 5:** If the Sage Hen habitat is a question then why route the road around the area?

**Response 5:** All of the non-wooded areas between Musselshell Trail and Valentine Road are within Greater Sage-Grouse Preliminary Priority Habitat (PPH). There is no possible route alternative to access Buffalo Wallow that is outside of PPH. Chapter 2, page 5, of the draft EA covers the restrictions for new road construction in sage-grouse PPH.

**Comment 6:** If that (the best possible solution) entails building a new route, hopefully abandoning existing roads on BLM land could mitigate some of the Sage Grouse issues.

**Response 6:** There is limited opportunity to abandon roads on BLM lands in the area due to the checkerboard nature of land ownership. As it currently stands only the last mile of the current access road could be reclaimed. This would not be enough to offset the 3 miles of new construction needed to build a road only on BLM administered lands.

**Comment 7:** Many dams, like Buffalo Wallow, managed by the Lewistown Field Office, are nearing the end of their functional life; reconstruction will be necessary to maintain these as recreational pond fisheries.

**Response 7:** The Judith Valley Phillips Resource Management Plan Environmental Impact Statement states on page 22, “Recreation sites for fishing will be developed by BLM when there is an opportunity to share funding with other agencies such as MDFWP.” The BLM has not received any financial assistance from FWP towards reconstructing Buffalo Wallow or obtaining easements. The BLM is currently focusing our efforts on developing fisheries that have legal public access to ensure responsible use of our funding.

**Comment 8:** FWP strongly advocates that water right discrepancies be addressed as part of this action, so that the water rights abstract reservoir record reflects the historic storage in the reservoir.

**Response 8:** Chapter 3 – Affected Environment, Hydrology/Riparian section describes the water right discrepancies. The issue is a factor being considered in the analysis of reconstructing Buffalo Wallow Reservoir. The water right claim volumes were clearly erroneously decreed in the Lower Musselshell water rights decree, but correcting a decreed right does require an amendment through the water court system. If an alternative is selected that includes reconstructing Buffalo Wallow Reservoir, the BLM is prepared to file a motion to amend the water right claim. If an alternative is selected that includes breaching Buffalo Wallow Reservoir, the BLM would most likely terminate the water right claim. However another possibility includes changing the place of use in accordance with Montana water law.

**Comment 9:** Will the reservoir pool actually be returned to its historic level? On page 7 (item 9) the EA states, “the spillway would be lowered to facilitate the existing historical storage.”

**Response 9:** The original statement, “the spillway would be lowered to facilitate the existing historical storage”, has been amended to, “the auxiliary spillway would be lowered to facilitate the existing historical storage.” The historical condition of the Buffalo Wallow embankment included a drop inlet as the primary spillway and an emergency, auxiliary spillway at an elevation above the primary spillway. The proposed reconstruction would not include a drop inlet spillway, and the elevation of the auxiliary spillway would be decreased to the elevation of the historic primary spillway elevation. In a sense, the former auxiliary spillway would become the primary spillway of the reconstructed embankment at an elevation that matched the historical capacity of the reservoir.

**Comment 10:** If the primary spillway is lowered, will reservoir storage and depth be reduced and by how much?

**Response 10:** The primary spillway elevation will not be lowered. If an alternative is selected that includes reconstructing Buffalo Wallow embankment, the former auxiliary spillway would become the primary spillway of the reconstructed embankment at an elevation that matched the historical capacity of the reservoir. There would be no change in the historical storage and depth of the reservoir.

**Comment 11:** If there is a decline in historic water level/elevation, would it be substantial enough to impact the fishery?

**Response 11:** If an alternative is selected that includes reconstructing Buffalo Wallow embankment, there would be no decline in historic water level/elevation. The former auxiliary spillway would become the primary spillway of the reconstructed embankment at an elevation that matched the historical capacity of the reservoir. There would be no change in the historical storage and depth of the reservoir.

**Comment 12:** Where will the primary spillways be located?

**Response 12:** The primary spillway will be located in the current position of the auxiliary spillway; however, the elevation of the auxiliary spillway will be lowered to the historic primary spillway elevation to maintain historical storage and depth of the reservoir.

**Comment 13:** Will the main control structure include a trickle tube or control valve or will the spillway serve that role?

**Response 13:** If an alternative is selected that includes reconstructing Buffalo Wallow embankment, the embankment would not include a trickle tube or drop inlet. The primary spillway

will be located in the current position of the auxiliary spillway; however, the elevation of the auxiliary spillway will be lowered to the historic primary spillway elevation to maintain historical storage and depth of the reservoir.

**Comment 14:** What precautions will be taken to prevent erosion of the spillway embankment and associated water quality issues?

**Response 14:** Flood-frequency estimates routed through the Buffalo Wallow structure estimate that the spillway would only run every 3 to 5 years. A well vegetated spillway that infrequently runs would alleviate some water quality concerns; however, some spillway erosion would be possible. The anticipated maintenance costs of repairing the proposed spillway was less than replacing a trickle tube, which would require complete breaching of the reservoir again in the future. Therefore, the proposed reconstruction was designed without a trickle tube.

**Comment 15:** Buffalo Wallow was a premier rainbow fishery for decades and is substantially more valuable as a fishery than the ponds listed in Table 1 of the EA. It rarely winterkilled. Only three ponds listed in table 1 currently have fish and are within a one hour drive of Buffalo Wallow Reservoir. None are a trout fishery.

**Response 15:** The BLM acknowledges the fact that Buffalo Wallow was a quality fishery; however there are other ponds in the area that contain fish and have legal public access. Table 1 was provided to highlight these ponds and shows that there are 3 trout fisheries located in the Winnett area.

## **Conformance with BLM Land Use Plans and Regulations**

### Conformance with Land use Plans

The alternatives considered are in conformance with the Judith Valley Phillips Resource Management Plan (JVP RMP) (September 1994), as amended by the Standards for Rangeland Health and Guidelines for Livestock Grazing for Montana, North Dakota, and South Dakota ROD approved in 1997. The JVP RMP (page 13) states: “Range improvements (primarily reservoirs, fences, and land treatments) will be built to support AMP’s.” Specific to soils management described on Page 9, the approved plan states: “Prior to authorizing any surface disturbing activity, the BLM will evaluate the activity and if necessary apply mitigating measures, deny the authorization, or relocate the activity to a more suitable soil type....All surface disturbing activities are subject to an on-site evaluation to develop mitigation to reduce erosion and soil compaction and improve soil stability and salinity control.” In the vegetation management section on page 11 the document states, “As reservoirs are planned during the development of AMPs or habitat management plans (HMP), fisheries potential will be a key consideration in location and design. Existing fisheries reservoirs will be fenced to exclude livestock, if necessary, to improve emergent vegetation, shade and/or improve the recreational experiences.”

### Relationship to Statutes, Regulations, or Other Plans

The alternatives considered are in conformance with the federal grazing regulations that state in Subchapter D – Range Management at 43 CFR 4120.3-1 (a): Range improvements shall be installed, used, maintained, and/or modified on the public lands, or removed from these lands, in a manner consistent with multiple-use management.

Federal Land Policy and Management Act of 1976, Section 401 (b)(1) (P.L. 94-579; 42 U.S.C 1751, as amended)  
Taylor Grazing Act of 1934, Section 315(b) (43 U.S.C. 315-315r, as amended)

## **CHAPTER 2: Alternatives**

### **Alternative considered but dropped from further analysis –Reconstruct Buffalo Wallow Reservoir and construct a new access route**

There currently is no public access easement guaranteeing the public motorized access to Buffalo Wallow Reservoir. The historic road that has been used for access crosses four separate private land parcels after it leaves Musselshell Trail. If the dam is reconstructed any of the four private landowners could close the portion of the access route that crosses their property and deny the public access. In anticipation of this the BLM has identified three alternative routes to access Buffalo Wallow. It was determined that analyzing the potential routes in detail would be beyond the scope of this EA but the basic route information would have bearing on which alternative would be chosen. All three routes are located within Greater Sage-Grouse Preliminary Priority Habitat.

Each of the three routes would utilize existing roads and trails to the fullest extent possible, however areas of new road will have to be constructed regardless of the route chosen (map #2). The amount of new road construction for each route is as follows: route A is 2.5 miles, route B is 4.5 miles, and route C is 3 miles. Routes A and B will still require an easement across one private land parcel (different landowner for each route) to guarantee public access. Route C would be constructed only on BLM administered lands. The impact of new road construction associated with route C may be limited if Marcott Well is repaired and a proposed pipeline is installed, as the new road would be constructed in conjunction with the possible pipeline scar associated with the well project. Routes B and C would have to cross Whisker Coulee which has very steep banks and intermittent water flow. Crossing this coulee would require at the least 2 large culverts which would require additional permitting with the state of Montana. The sides of the coulee would require extensive engineering to slope and build them to BLM road standards.

The BLM's emphasis for protecting and managing Greater Sage-Grouse habitat in WO-IM 2012-043 incorporates the following principles:

1. Protection of unfragmented habitats;
2. Minimization of habitat loss and fragmentation; and
3. Management of habitats to maintain, enhance, or restore conditions that meet Greater Sage-Grouse life history needs.

Additional interim conservation policies and procedures in WO-IM 2012-043 for Preliminary Priority Habitat (PPH) includes:

#### *Travel Management-Proposed Authorizations/Activities*

- *Route construction should be limited to realignments of existing or designated routes to enhance other resources only if that realignment conserves or enhances sage-grouse habitat. Use existing roads, or realignments as described above, to access valid existing rights that are not yet developed. If valid existing rights cannot be accessed via existing*

*roads, then any new road constructed will be built to the absolute minimum standard necessary. No improvement to existing routes will occur that would change route category (i.e., road, primitive road, or trail) or enhance capacity.*

Identified alternative access routes would add 2.5 to 4.5 miles of road through sage-grouse PPH. Any new routes would further reduce habitat for sage-grouse (primarily big sagebrush, but also riparian and mixed grass prairie) and the longer route would occur 0.3 miles from sage-grouse lek CC-12. This lek has had a significant decline in male sage-grouse attendance, going from 44 in 2006 and becoming lower in each of five subsequent surveys to a low of three in 2012. The reason for the sharp decline is not known, however a portion is likely the result of the long winters and wet springs in 2010 and 2011. New road construction would have direct and indirect impacts on sage-grouse by removing sagebrush and increasing motorized use within PPH. This action would be contrary to current management direction in WO-IM 2012-043 (BLM 2011).

The new routes would neither consolidate use nor benefit sage-grouse. The impacts to sage-grouse could be mitigated by reclaiming existing routes in the area. However, a new route constructed only on BLM administered land (route C) would add 3 miles of new road. Only 1 mile of the existing Buffalo Wallow access route would be eligible for reclamation due to the checkerboard nature of land ownership in the area.

## **No Action**

Under the No Action alternative no improvements to the structure of the dam would occur; therefore the safety concerns associated with the low hazard class dam would not be alleviated. The road across the Buffalo Wallow embankment and the adjacent Turkey Track Reservoir embankment would not be repaired.

## **Alternative 1- Proposed Action Reconstruct Buffalo Wallow Dam**

The proposed action is to reconstruct the Buffalo Wallow Dam and a portion of its spillway. The following list includes all actions to be taken in order to address the hazards associated with the Buffalo Wallow Reservoir. Construction efforts associated with this alternative are expected to take 3 months. See map number 1 for locations of actions.

1. Repair sections of the existing road on BLM lands for passage of equipment and vehicles in order to complete this alternative. Repairs will be in accordance with existing BLM road standards.
2. Dewater construction area and reservoir as needed.
3. Construct a new access road to Buffalo Wallow Reservoir in accordance with existing BLM road standards. The new road would cross the coulee above Turkey Track Reservoir and follow the contour of the hill until it crosses the spillway for Buffalo Wallow. Upon completion of the dam reconstruction this new access road would be connected to the existing 2-track road that runs east from the Buffalo Wallow embankment.
4. Install a new 24 inch HDPE culvert with flared ends where the access road crosses the coulee above Turkey Track Reservoir. Material needed for culvert installation would be borrowed from Buffalo Wallow/Turkey Track excavation.
5. Excavate dam embankment for removal of existing CMP outlet.

6. Excavate the top and downstream sides of dam embankment and the existing dam breach. Unsaturated material from the excavation would be stockpiled on site to be used in reconstruction. Saturated material would be wasted as necessary and used to fill head cuts in the downstream channel below the embankment. Existing riprap on upstream dam face would not be disturbed during excavation.
7. Excavate a new breach through the embankment in Turkey Track Reservoir. Turkey Track would be drained and all unsaturated material would be stockpiled for use as borrow material for reconstructing the Buffalo Wallow embankment. Utilizing the unsaturated material from Turkey Track would limit the amount of material that would need to be hauled in from offsite.
8. Reconstruct the Buffalo Wallow dam embankment. A filter sand blanket drain would be installed in the embankment to control seepage and movement of the embankment. Material for the sand blanket would be hauled in from offsite. All other construction material would be obtained from stockpiles on site. Compacted road gravel would be placed on the crest of the embankment in order to reduce the potential desiccation cracking.
9. Excavate to enlarge and grade existing auxiliary spillway. The auxiliary spillway would be lowered to facilitate the existing historical storage. The auxiliary spillway outlet would be redirected into the drainage below the Turkey Track reservoir.
10. Reclaim all disturbed areas including staging areas and temporary roads. Reclamation would consist of preparation of the soil for seeding. Reseeding will be conducted by BLM personnel after site preparation is complete.

## **Alternative 2 – Reconstruct Buffalo Wallow and add Exclosure Fence**

With this alternative, all reconstruction actions contained within the proposed action would take place along with the addition of an exclosure fence and offsite water pit. According to the Judith Resource Area RMP (p. 14) the BLM may fence specific existing fishing reservoirs to establish or protect shoreline vegetation for a perimeter of a minimum of 100-feet around the high water line. Periodic, short-term grazing of fenced enclosures may be allowed, if necessary, to maintain or improve wetland habitat. The following list describes all actions associated with this alternative. See map number 1 for locations of actions.

1. 1.5 miles of four strand fence would be constructed around Buffalo Wallow Reservoir. The bottom wire would be barbless and placed 16” from the ground. The second, third and fourth wires would be barbed and placed 22”, 28”, and 40” from the ground up. Steel T-posts would be used and placed approximately sixteen feet apart. All fence corners and brace structures would be constructed of treated wood posts in accordance with BLM fence standards.
2. Two cattle guards would be installed to allow access to the reservoir. One cattle guard would be located at the entry point and the other will be located at the road leading to Crooked Creek Reservoir. Gates would be installed on one end of the cattle guard in the event that cattle enter the exclosure.
3. Construct a new offsite water pit. The water pit would have a top dimension of 110’ X 160’ and be 16 feet deep. This pit would provide 2.1 to 2.5 acre foot of water for livestock and wildlife. The pit would be located southeast of Turkey Track’s current location. There will not be a road constructed to the water pit as future maintenance will be minimal.

### **Alternative 3 – Breach Buffalo Wallow and Turkey Track**

With this alternative the existing embankment on both Buffalo Wallow and Turkey Track reservoirs would be breached to the point that neither reservoir would store any water. The following list describes all actions associated with this alternative, these actions are expected to take less than 1 month to complete.

1. Repair sections of the existing road on BLM lands for passage of equipment and vehicles in order to complete this alternative. Repairs will be in accordance with existing BLM road standards.
2. Construct a new offsite water pit. The water pit would have a top dimension of 110' X 160' and be 16 feet deep. This pit would provide 2.1 to 2.5 acre foot of water for livestock and wildlife. The pit would be located southeast of Turkey Track's current location. Future maintenance would be minimal and not require any new road construction.
3. The original outlet works of Buffalo Wallow will be removed. Metal components of the outlet works will be removed from the site.
4. The embankment breaches would be done on a maximum 3:1 slope. The Buffalo Wallow embankment should be breached with up to a 100 foot wide bottom where the entire embankment is removed to allow future channel stabilization. Once the channel has stabilized the sides of the breach will be contoured to provide for a 2 track trail to facilitate vehicle access for administrative and permittee needs.
5. Excavated material would be used to backfill holes from old spillway and outlet works to a more natural contour.
6. All topsoil would be conserved. The areas that are currently flooded would be reseeded in the future when the soil becomes dry enough to work a tractor and seed drill. Reseeding of disturbed areas will be completed by BLM using seed of native species and seed of species that would provide cover for waterfowl and other wildlife.

## **CHAPTER 3: Affected Environment**

### Cultural Resources

A records search of the State of Montana's CRABS/CRIS databases and the Central Montana District site and survey atlas was conducted on February 5, 2013. A more comprehensive examination of historic prehistoric and paleontological resources in the analysis area can be found in the Class I Overview of the BLM Central Montana District (Walker-Kuntz, et al. 2010). In 1977 the BLM completed a Class II (Sample) inventory for the South Missouri Breaks-Musselshell Range EIS, which was part of the Missouri Breaks Grazing Environmental Statement (1979). A comprehensive report of the findings was not drafted, but site forms were written, documenting the findings of individual sites. The Buffalo Wallow Dam and reservoir are ringed with historic and prehistoric sites. According to the site forms, construction of the Buffalo Wallow Dam impacted two of the sites, and the reservoir may have divided what is one site into multiple components now documented as four individual sites.

### Grazing Administration/Livestock Grazing

The Buffalo Wallow and Turkey Track Reservoirs as well as the proposed pit are located within North Crooked Creek grazing allotment (02506). It was determined in March of 2009 that the allotment was not meeting rangeland health standards due to the livestock grazing management.

The allotment was not meeting the standards due to the limited amounts of desired grass species, riparian areas in non-functional condition and vegetative conditions not providing for adequate wildlife habitat. Management actions to allow the allotment to meet or make significant progress towards meeting the rangeland health standards in accordance with BLM grazing regulations 43 CFR 4180 were analyzed in the Northeast Fergus Watershed Area Plan, dated March, 2009. The management actions analyzed in that document have not been fully implemented at this time due changes to the grazing operations of the permittees. There are signed and approved cooperative range improvement agreements in place for both the Buffalo Wallow Reservoir and Turkey Track Dam. The North Crooked Creek Allotment is authorized to be grazed as follows:

GR# 2506156

Mandatory Terms and Conditions

02506 North Crooked Creek 15 Cattle 03/01 02/28 100% Public Land Custodial 175AUMs  
554 Cattle 05/15 10/15 46% Public Land Active 1290AUMs

Other Terms and Conditions

Line 1 may be used in conjunction with your normal operation so long as use is not detrimental to the public land.

Line 2 to be grazed according to North Crooked Creek Allotment Management Plan dated 7-12-1993.

The terms and conditions contained in the expired permit continue in effect under this renewed permit until such time as the Secretary of the Interior completes processing of this permit in compliance with all applicable laws and regulations, at which time this permit may be canceled, suspended or modified, in whole or in part, to meet the requirements of such applicable laws and regulations.

Crooked Creek CSDG, Fergus County

GR# 2506167

Mandatory Terms and Conditions

02506 North Crooked Creek 110 Cattle 06/01 10/15 47% Public Land Active 233 AUMs

Other Terms and Conditions

Allotment to be used according to North Crooked Creek Allotment Management Plan dated 7-12-1993.

This permit is offered pursuant to provisions of section 123 of public law 106-113 (enacted on November 29, 1999). The terms and conditions contained in this permit continue in effect until such time as the Bureau of Land Management completes the processing of this permit in compliance with all applicable laws and regulations, at which time this permit may be canceled, suspended or modified, in whole or in part, to meet the requirements of such applicable laws and regulations.

Visual Resources

BLM manages lands with inherent scenic value. BLM uses a Visual Resource Management (VRM) system to inventory and manage visual resources on public land. The primary objectives of VRM

are to help identify visual (scenic) values and to minimize visual impacts on BLM land from proposed projects and management activities. The VRM classification system uses four classes to describe the different degrees of modification allowed to the landscape. VRM classes are based on a process that considers scenic quality, sensitivity to changes in the landscape and distance zone. The four VRM classes are numbered I to IV; the lower the number the more sensitive and scenic the area. Buffalo Wallow contains only VRM Class IV.

The objective of VRM Class IV is to provide for management activities which require major modification of the existing character of the landscape. The level of change to the characteristic landscape can be high. These management activities may dominate the view and be the major focus of viewer attention. However, every attempt should be made to minimize the impact of these activities through careful location, minimal disturbance, and repeating the basic elements of form, line, color and texture.

Recreation

Buffalo Wallow is one of the 15 Extensive Recreation Management Areas (ERMAs) identified in the Approved Judith Resource Area RMP. This site provides dispersed and unstructured recreational activities. These activities include: camping, fishing, and hunting. No Special Recreation Permits (SRPs) currently exist at the proposed location. For recreation, the Judith Valley Phillips (JVP) RMP EIS states that “these sites will receive minimal maintenance” (Bureau of Land Management, 1992, p. 22). However, minimal maintenance can include “recreation access maps, brochures and signs at key public access points and undeveloped sites will be available for the public” (Bureau of Land Management, 1992, p. 22).

Buffalo Wallow is within the East Indian Buttes Block Management Area (BMA) with the current access shown as a “designated open road” during the fall hunting season on the public BMA maps. However, motorized access is allowed year-round based on a hand shake agreement between Montana Fish, Wildlife and Parks (FWP) and the primary landowners. Thus, this unofficial agreement could be removed at any time by the landowners. The conditions for this agreement are based on the following conditions: 1) No driving off of the established trail. Stay within existing ruts. 2) Avoid driving on trails when wet. 3) No trespassing on adjacent private property during any periods outside of the fall Block Management Season. Even if vehicle access is taken away on the existing route, there is contiguous public land that could provide non-motorized access from Musselshell Trail.

Rainbow trout were stocked in Buffalo Wallow by Montana Fish Wildlife & Parks (MFWP) prior to the dam breach. Table 1 below lists other current or historically stocked reservoirs in the vicinity and general location.

Table 1. MFWP current or historically stocked fishing reservoirs in the Buffalo Wallow vicinity.

<b>Reservoir</b>	<b>Species</b>	<b>Location</b>
Holland	Large Mouth Bass	13 miles NE Valentine
Wolf Coulee #1	Channel Catfish	SE Fred Robinson Bridge off Musselshell Trail
Wolf Coulee #2	Large Mouth	SE Fred Robinson Bridge off

	Bass	Musselshell Trail
Catfish Res (pvt)	Large Mouth Bass	14 miles NE Valentine
Jakes Pond (closer to Hwy 191)	Yellow Perch and Sauger	17 miles NE Bohemian Corner
Vogel/Box Elder	Rainbow Trout, Yellow Perch	6 miles NE Winnett
Petrolia	Rainbow Trout, Walleye, Yellow Perch, Northern Pike	10 miles SE Winnett
Yellow Water	Rainbow Trout, Carp	11 miles SE Winnett
Manuel Res #2 (pvt)	Rainbow Trout	18 miles NE Winnett

### Soils

Soils were identified from the USDA-NRCS's SSURGO dataset and the Soil Data Mart (SDM) website (<http://soildatamart.nrcs.usda.gov/>). Soil surveys were performed by the Natural Resource Conservation Service according to National Cooperative Soil Survey standards. Pertinent information for review and analysis is from the SDM and the National Soils Information System (NASIS) database for the area.

Soils in the project area developed from clayey shale residuum and alluvium. The primary soil map units (SMU) within the project area are the: 174 - Neldore-Thebo clays, 4 to 25 percent slopes; 175 - Neldore-Thebo clays, 25 to 60 percent slopes; 234 - Thebo clay, 8 to 25 percent slopes; and, 235 - Thebo-Weingart-Absher clays, 4 to 15 percent slopes. There are nearly barren areas of high flocculated, salt affected, clays.

Appendix 1 provides a description of the major soils that occur in a SMU. Descriptions of non-soil (miscellaneous areas) and minor SMU components are not included.

Soils on and around the reservoir areas were disturbed at the time of construction and then subsequently flooded; therefore, they are anthropic and do not have the same characteristics as in a natural state. Soils along the access road are compacted and in some places rutted and washed out.

### Vegetation

The proposed project area is dominated by native vegetation associated with the northern mixed grass prairie. Dominant grass species that are present include western wheatgrass, blue bunch wheatgrass, Sandberg's bluegrass, green needle grass and prairie June grass. Forb species that occur include common yarrow, fanweed, hoods phlox and yellow sweet clover. Prickly pear cactus is also present. The dominant shrub species is Wyoming big sage brush with rubber rabbit brush and grease wood also present. Other grass, shrub and forb species may exist in the project area, but to lesser extents than the ones listed. Wyoming big sage brush is well distributed across the project area with the exception of disturbed sites such as the dams and earthen spillways and existing two track roads.

Table 2. ReGAP class 3 primary vegetation and ownership within 3.5 miles of Buffalo Wallow Reservoir.

<b>Row Labels</b>	<b>BLM</b>	<b>Private</b>	<b>State</b>	<b>Total</b>
Inter-Mountain Basins Big Sagebrush Steppe	9517	9983	1326	20825
Northwestern Great Plains Mixedgrass Prairie	414	979	176	1569
Northwestern Great Plains Riparian	445	615	91	1151
	10376	11577	1593	23545

### Noxious Weeds

A reservoir inventory of Turkey Track Dam indicated the presence of Canada thistle. All other reservoirs inventoried also had Canada thistle infestations. Upland health assessments of the grazing allotment did not indicate the presence of noxious weeds in the uplands. Large patches of Japanese brome were documented in a separate pasture outside of the project area.

### Wildlife and Fisheries

Buffalo Wallow Reservoir provides habitat for a variety of wildlife. BLM Sensitive Species such as Plains Spadefoot and Greater Short-horned lizards have been observed in the area, and a Black-tailed prairie dog town is located approximately 1 mile southwest of the reservoir. Various bird species ranging from waterfowl, shorebirds, raptors and migratory birds such as Brewer’s sparrow utilize the area. The project area has been identified as Greater Sage-Grouse preliminary priority habitat (PPH). The nearest documented Greater Sage-Grouse lek is located approximately 2.5 miles east of the reservoir. Sage-grouse have been observed in the area year round and additional leks are likely to exist in the immediate vicinity. Game species observed in the area include pronghorn antelope, mule deer, elk, sharp-tailed grouse. Coyotes are also common in the project area. Wildlife or fish species listed as threatened or endangered do not occur in the project area and would not be impacted by any alternatives.

Prior to the dam breach and drop in water level, rainbow trout were stocked by Montana Fish, Wildlife and Parks and often survived over-winter. The unnamed drainages immediately below Buffalo Wallow and Turkey Track reservoirs are ephemeral and do not support fish.

### Hydrology/Riparian

The proposed action is located within the Crooked Creek-Chimney Crossing subwatershed (twelve digit hydrologic unit code (HUC)). The subwatershed size is approximately 32,060 acres (50.09 square miles). Forty six percent of the basin (23.27 square miles) is administered by the BLM.

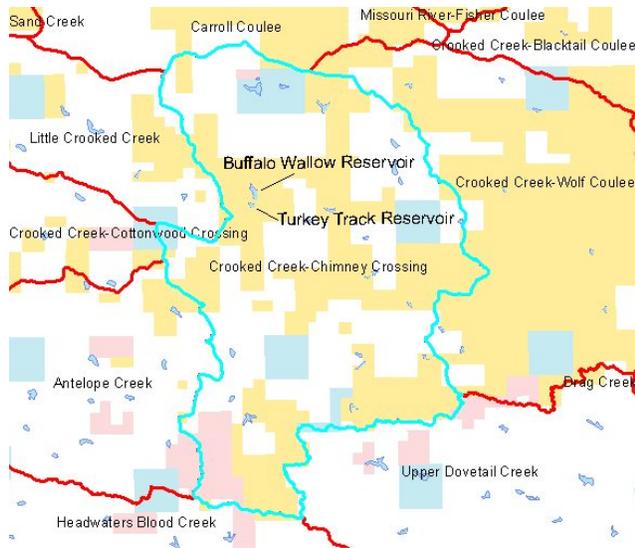


Figure. Crooked Creek-Chimney Crossing Subwatershed

Calculated with Omang and Parrett’s *A method for estimating mean annual runoff of ungaged streams based on basin characteristics in central and eastern Montana*, the mean annual yield for the Crooked Creek-Chimney Crossing subwatershed is approximately 1118 acre-feet. In the region of 21% of the subwatersheds mean annual yield is stored in dams, pits, and reservoirs.

The proposed action involves the following two existing reservoirs, Buffalo Wallow Reservoir and Turkey Track Reservoir. Both are located on unnamed tributaries of Crooked Creek. Their existing status is shown below.

Reservoir	Construction Date	Existing Capacity	Source	Current Water Right Volumes
Buffalo Wallow	1964	186.4 acre-feet	HKM Engineering estimates	25 acre-feet
Turkey Track	1962	15.6 acre-feet	$V=(0.4)*(8')*(4.87\text{acres})$	10 acre-feet

Table. Existing reservoir status

Water right claim volumes were often rough estimates at the time of completion, and many were not thoroughly investigated or verified during the 1982 filing period deadline for pre-1973 water rights claims with the Montana DNRC or during the DNRC basin review and adjudication. In fact, BLM evaluations of the 1964 constructed dimensions of Buffalo Wallow Reservoir indicate historic use of approximately 195 acre-feet.

Neither the unnamed tributaries of Crooked Creek or Crooked Creek itself is listed by Montana Department of Environmentally Quality (MDEQ) as water quality impaired streams. However, because of the geology of the area, which is primarily Cretaceous Bear Paw Shale formed in a shallow marine environment, saline seeps are often found below reservoirs. As the hydrostatic pressure of water increases in the soils, salts are leached and deposited on the surface.

Riparian-wetland vegetation in the project area is primarily saline-tolerant, herbaceous species such as cattails and three-square bulrush around the reservoirs or in the seeps below them. The unnamed tributaries of Crooked Creek below Buffalo Wallow and Turkey Track do not contain riparian-wetland vegetation and consist primarily of western wheatgrass and sagebrush. Common riparian-wetland vegetation found on Crooked Creek includes plains cottonwood, peachleaf willow, sandbar willow, saline-tolerant species such as bulrush and spikeweed, and numerous other species of sedge and rush.

#### Paleontological Resources

The subject area is located within Cretaceous Bearpaw Shale. According to the Lewistown Field Office's Class I Overview (Hanna 2009), the Bearpaw Shale is a Class 3a geologic unit under the BLM Potential Yield Classification (PFCY) system with moderate paleontological resource potential. Twelve fossil localities are documented for this geologic unit in the Lewistown Field Office area, including 8 vertebrate and 4 invertebrate localities. No known localities are within the project area under any of the alternatives.

#### Lands & Realty

There are currently no authorized or pending applications for rights-of-way within the project area.

#### Access

There currently is no public access easement guaranteeing the public motorized access to Buffalo Wallow Reservoir. The historic road that has been used for access crosses four separate private land parcels after it leaves Musselshell Trail. Landowners for the current access route to the project area have agreed to allow the passage of equipment and vehicles in order to complete any of the alternatives identified here. If there is a change and the landowners do not allow public access in the future, BLM will pursue different access routes to the project area. Permanent legal access routes into the project area will be pursued as needed, and as funds and workload allow. Future access routes will require additional analysis in a separate NEPA document and decision.

## **CHAPTER 4: Environmental Effects**

### *Description of Impacts from No Action*

#### Cultural Resources

Selecting the No Action Alternative would have no direct effect on cultural resources. What could happen is an improvement in the understanding of the archaeological and historic record by studying and analyzing the connection between the historic and prehistoric sites ringing the Buffalo Wallow Reservoir. Dewatering the reservoir may allow archaeologists to identify the multiple sites as being components of one larger archaeological site or district.

#### Grazing Administration/Livestock Grazing

Livestock would continue to graze the allotment with no modifications of the permit. Grazing distribution would remain the same until the dam eventually fails. After the dam fails there would not be a significant source of water for livestock in the immediate area which would lead to undesirable patterns of livestock use; overuse in areas where remaining stock water sources are located. New stock water developments would have to be pursued to prevent reductions in

permitted use (forage allocated to livestock) in this area of the allotment as the distance from other water sources may be too great to travel for forage.

#### Visual Resources

Visual resources would remain the same until the dam fails. When the dam fails, there would be a change in the current landscape. Buffalo Wallow is located in a VRM class IV. The change in the landscape would continue to be classified as VRM IV.

#### Recreation

If the recreating public attempts to access Buffalo Wallow via the dam, then safety would be compromised if no dam repairs are made. If the dam fails, then fishing would discontinue. However, dispersed camping and hunting activities would continue in the proposed location.

#### Soils

If the dams fail suddenly, soils below the dams and in and adjacent to the drainages could be washed out; eliminating soil productivity and creating vertical channel banks that would be too steep for vegetation to occupy. The lack of soil stabilizing vegetation would make soils susceptible to erosion and would increase sediment loads. The access road would not be improved; therefore, sections of the road would further erode and ruts would remain.

#### Vegetation/Noxious Weeds

There would be no adverse impacts to these resources under the No Action Alternative until the dam fails. When the structure fails, downstream vegetation and riparian habitats will be damaged or destroyed due to the large volume of water and sediment that will be discharged. The bare ground and deposited silt that will remain after the dams have been breached would provide opportunities for new infestations of invasive and/or noxious weeds to establish within North Crooked Creek grazing allotment, negatively impacting rangeland health.

#### Wildlife and Fisheries

Wildlife would continue to use the reservoir and habitat would be improved for amphibians in the absence of fish stocking. Water for wildlife would be available and slightly more upland habitat would occur adjacent to the shoreline over time with the decreased water level. Habitat for waterfowl and shorebirds would be reduced over time at Buffalo Wallow reservoir (reduced shoreline perimeter as the water level drops); however, these habitats remain abundant in the vicinity and would not result in changes in migratory bird populations. The fishery would not support rainbow trout over-winter due to the reduced depth resulting from the dam breach. In the current condition an annual put and take fishery may still be supported for rainbow trout or other stocked species, but over time as the water level continues to diminish fish would not be supported.

#### Hydrology/Riparian

Under the no action alternative, both Turkey Track and Buffalo Wallow Reservoirs would inevitably fail. This would result in a decrease of water retained in the impoundments of 202 acre-feet. An alternative water source for livestock would be necessary, and the likely development would be the roughly 2 to 2.5 acre-foot pit. This would result in a net decrease in retained water of approximately 200 acre-feet.

Failure of Turkey Track and Buffalo Wallow Reservoirs would alleviate saline seeps below the embankments.

Riparian-wetland vegetation would be lost at Turkey Track and Buffalo Wallow Reservoirs. However, the increase in available water to downstream tributaries, such as Crooked Creek, would be made available for riparian-wetland vegetation in those areas.

#### Paleontological Resources

In the possible event of a sudden dam failure where a large volume of water is released, the resulting incised flow would have impact to the geologic unit, Bearpaw Shale. Considering this unit's PFYC classification of 3a for having moderate potential and that the damage from failure would be relatively small to subsurface layers, the probability of adverse impacts to paleontological resources would be unlikely under this alternative.

#### Lands & Realty

Since there are no authorized ROWs in the project area, there will be no impacts for lands & realty.

#### Access

There currently is no public access easement guaranteeing the public motorized access to Buffalo Wallow Reservoir. The historic road that has been used for access crosses four separate private land parcels after it leaves Musselshell Trail. Under this alternative there would be no impacts to access, as there is no legal public access now. Landowner permission may be continued to be given to recreating public for areas which cross private land into the project area, but ability to access the project area may be limited with the impassable road and unsafe conditions. When the dam eventually fails the BLM will address safety concerns associated with the road.

### *Description of Impacts from Proposed Action-Alternative 1*

#### Cultural Resources

An examination of the area of potential effect identified historic and archaeological sites around Buffalo Wallow Reservoir. Until the sites have been evaluated for listing on the National Register of Historic Places they are protected as if they are eligible for listing. The reconstruction of the dam, draining of Turkey Track Reservoir, and developing the access route across the dam would not affect historic properties. The expansion of the existing spillway could affect archaeological sites. Artifact breakage and displacement, as well as excavation activity could adversely affect archaeological sites. Indirect effects associated with this project include increased pressure from recreationists using Buffalo Wallow Reservoir as a hunting and fishing destination. Possible impacts include off road vehicle traffic and dispersed camping within the boundaries of the archaeological sites.

#### Grazing Administration /Livestock Grazing

There would be no modifications to the grazing permit due to selection of the proposed action. Maintaining the existing stock water sources would continue to evenly distribute grazing use by livestock over the range, allowing for the flexibility to meet allotment management objectives (timing, frequency and duration of use), allow implementation of grazing management strategies that promote rangeland health, and allow more regulated harvesting of forage permitted to livestock.

No additional forage would be allocated to livestock or any increase in the stocking rate as a result of the proposed action.

### Visual Resources

The proposed action is located in a VRM Class IV where the objective is to provide for management activities requiring major modification of the existing character of the landscape. Even though the level of change can be high, every attempt should be made to minimize the impacts. Visual contrasts would be increased during the reconstruction of the dam. However, the reconstruction of the dam would be temporary and the proposed action would incorporate the most relevant visual reduction features.

### Mitigation

Any unused stockpiled material should be placed in an area that is not visible by the public and re-contoured with the natural landscaping. Seeding with the surrounding native vegetation would be recommended where bare soil is created, including the unused stockpile and the reconstructed dam.

### Recreation

Current dispersed recreational activities would decline during reconstruction of the dam. Once temporary work is completed, then camping, fishing, and hunting would be able to continue. With the dam improvements, public safety would be increased.

### Soils

Soils would be affected by means of surface disturbances to reconstruct the Buffalo Wallow Dam and spillway, breach the Turkey Track embankment, re-locate and improve the access road. Surface disturbances would occur on and adjacent to the embankment areas, borrow areas, and the access road (existing and re-located). Direct effects would include removal of vegetation, exposure of the soil, mixing of soil horizons, loss of topsoil productivity, soil compaction, and increased susceptibility to wind and water erosion. A headcut could occur at the outlets of the new spillway due to the highly erodible nature of the soils. Once construction is completed and vegetation is re-established through reclamation efforts, soils should return to a productive state around the reservoir disturbance areas.

Soils/sediment would eventual dry out and go from anaerobic to aerobic conditions overtime after breaching the Turkey Track embankment. This would result in a change of vegetation composition from obligate/facultative to upland species. A headcut would move upstream through the sediments until vertical equilibrium is reached.

Equipment/vehicles associated with the project would cause soil compaction. Severity would be directly related to soil moisture, frequency, and weight (lbs. per sq. inch) of equipment. Compaction alters soil structure; decreasing porosity, infiltration rate, air space and available water holding capacity, vegetation health, and also affects re-vegetation.

Soil productivity would become severely restricted within the traveled-way of the re-located road segment for the life of the road. Traffic associated with the use of the road would cause soil compaction affecting vegetation and erosion. Erosion would be accelerated above natural rates due

to alteration of soil physical properties and removal of vegetative cover. Erosion on the fill slopes would occur until a protective vegetative cover establishes.

Soil productivity would remain severely restricted within the entire traveled-way of the access roads for the life of the roads. Soils adjacent to the roads would be disturbed at the time of improving the road. Improving the road would repair the washouts and rutted soils that have resulted from confinement of water flow within the road. Erosion could occur at the outlets of drainage features, due to the highly erodible nature of the soils. Soils within the traveled-way would still be susceptible to rutting due the severe rutting hazard during wet soil conditions.

Soils could also be effected by fluid spills, including engine oil, hydraulic oil, and fuel (gasoline or diesel), etc. These spills could severely affect soil in localized areas; excessive concentrations may be capable of soil sterilization.

### Mitigation

Construction activities shall not be performed during periods when the soil is too wet to adequately support equipment/vehicles. If equipment/vehicles create ruts in excess of 3 inches deep, operations must cease as the soil will be deemed too wet to adequately support equipment/vehicles.

Erosion control and sediment containment products (i.e. straw wattles, silt fence, erosion control blankets/mats, sediment stop, etc.) shall be installed, where necessary, to aid in stabilization and capture of sediment until vegetation reestablishes to effectively control erosion and sediment. This would include areas around the reservoirs and access road.

Design and install measures to minimize headcutting at and below the spillways.

The access road (existing and re-located section) shall be built/improved in such a manner that it is safe, stable, and erosion is minimized. Maintenance activities shall occur on a regularly scheduled basis, as long as necessary, to maintain the road prism, drainage, and erosion control features/structures.

Where soils are disturbed, topsoil shall be stripped, separated from subsoil/parent material, and stockpiled for use in reclamation.

Site reclamation will initiate with the ripping to an appropriate depth (generally below the root zone) of any compacted areas and grading to blend with the adjacent site characteristics and topography. In no instances will grading material and/or subsoil be placed over topsoil. The order of soil replacement will be the reverse of removal, e.g. first off, last on.

### Vegetation

Up to ten acres adjacent to the existing reservoir may be disturbed by construction or covered by placement of fill material. Disturbed sites would be recontoured and recovered by topsoil. The site would be reseeded by BLM. Colonization of wetland obligate species adjacent the reservoir would be expected to slightly increase as there would be a new substrate adjacent to saturated areas. This would be assuming water levels are relatively constant. Since minimal wetland obligate species currently occupy the site, no net decrease would be expected if water levels widely fluctuate.

### Noxious Weeds

The most common method of introducing and spreading non-native invasives into the area would be from contaminated vehicles and equipment, contaminated seed and movement of seeds and plant parts by wildlife and livestock. Disturbance and loss of vegetative cover at the site caused by construction activities would increase the risk of introducing and establishing noxious weeds and invasive plants. Past experience from a variety of surface disturbing activities that have occurred in the area indicate the risk would be small, short term, and would last until vegetation recovered on disturbed areas.

### Mitigation

Construction equipment would be power washed before entering public land. Native seed used in reclamation would be free of noxious weeds or invasive plants.

### Wildlife

Construction activities would cause short-term displacement of some resident wildlife species. However, distribution and abundance of wildlife would be expected to return to normal shortly after completion. Timing of activities would minimize potential disturbance impacts to a variety of native wildlife species during critical time periods (winter, nesting, etc.) Construction activities would likely be completed between July and September and would have minimal disturbance to big game species. Fish, including stocked rainbow trout, would be expected to over-winter most years following dam reconstruction.

Long-term (over ten years) waterfowl and shorebird habitat would be maintained or increased from the current level. Habitat for upland birds, including sage-grouse would remain unchanged following completion of dam related construction activities. This alternative would be in compliance with direction in WO-IM 2012-043 for Greater Sage-Grouse management.

### Mitigation

Ground disturbing activities should avoid sage-grouse and migratory bird nesting season (April 1 - July 1)

### Hydrology/Riparian

Under Alternative 1, Buffalo Wallow Reservoir would be reconstructed to historic levels of water use. Turkey Track Reservoir would be removed and a 2.1-2.5 acre-foot pit would be constructed as an alternative source of livestock water. This would lead to a small, net decrease in stored volume by approximately 13.1 acre-feet (15.6 – 2.5). Roughly one percent of the subwatershed's mean annual yield would be made available downstream.

Removal of Turkey Track Reservoir would alleviate saline seeps below the embankment. Saline seeps would remain below Buffalo Wallow Reservoir. Small amounts of saline seep may be created with the construction of the pit; however, it is anticipated to be small because as opposed to an embankment where the head of water is raised well above channel elevations, with pits, most of the head is at or below channel elevations. Overall, a small decrease in saline seeps would be anticipated.

Removal of Turkey Track Reservoir would also mobilize sediments that have accumulated in the depositional fan at the head of the reservoir. A headcut would move upstream through these sediments until vertical equilibrium is reached. Temporary increases in sediment moving downstream would occur; however, a return to more natural water and sediment yields would provide a small benefit to downstream drainages.

Cumulative effects under alternative 1 include the following. The proposed action is located within the Crooked Creek-Chimney Crossing subwatershed. Approximately 21% of the subwatershed’s mean annual yield of 1118 acre-feet is stored in pits, dams, and reservoirs. The subwatersheds identified below compose the Crooked Creek drainage, and roughly 2090 acre-feet (≈25%) of the watershed’s 8,401 acre-feet annual yield is stored in pits, dams, and reservoirs. These are conservative low estimates based upon the likelihood of inaccurate storage capacity estimates, existing reservoirs not filed with the State of Montana, and water right numbers that do not match water right numbers in the GIS layer. Values without a perfect match were removed from analysis.

Watershed Subbasin (HUC 12 Name-HUC 10 Name)	#Dams	BLM Dams	Watershed total acres	Total Basin Sq Miles	Total dams /sq mile	BLM dams / sq mile	Watershed Mean Annual Runoff(cfs) Region 2 Regression Equation (Omang and Parrett, 1984) for Drainage Area	Watershed Mean Annual Yield (Acre-Feet)	Claimed Volume in Dams/Pits/Reservoirs (Acre-Feet)	Percent Mean Annual Yield Claimed in Dams/Pits/Reservoirs
Antelope Creek-Upper Crooked Creek	90	15	38755	60.55	1.49	1.60	1.85	1337	803	60.06%
Crooked Creek-Blacktail Coulee-Lower Crooked Creek	34	27	19163	29.94	1.14	1.47	0.95	689	96	13.92%
Crooked Creek-Carpenter Coulee-Lower Crooked Creek	30	26	24752	38.68	0.78	0.79	1.21	877	81	9.20%
Crooked Creek-Chimney Crossing-Upper Crooked Creek	67	35	32060	50.09	1.34	1.50	1.54	1118	238	21.27%
Crooked Creek-Cottonwood Crossing-Upper Crooked Cre	40	5	36422	56.91	0.70	0.75	1.74	1261	36	2.86%
Crooked Creek-Fort Peck Reservoir-Lower Crooked Creek	13	8	25100	39.22	0.33	0.40	1.23	889	28	3.15%
Crooked Creek-Wolf Coulee-Lower Crooked Creek	61	45	25362	39.63	1.54	1.96	1.24	897	177	19.73%
Headwaters Crooked Creek-Upper Crooked Creek	110	12	38659	60.40	1.82	2.41	1.84	1333	631	47.33%
							Totals	8401	2090	

Table. Crooked Creek Subwatersheds (12 digit HUCs)

Under alternative 1, a small decrease in stored volume (13.1 acre-feet) would occur from the removal of Turkey Track Reservoir. Cumulatively, this would be a very small effect based upon the level of appropriation within the watershed.

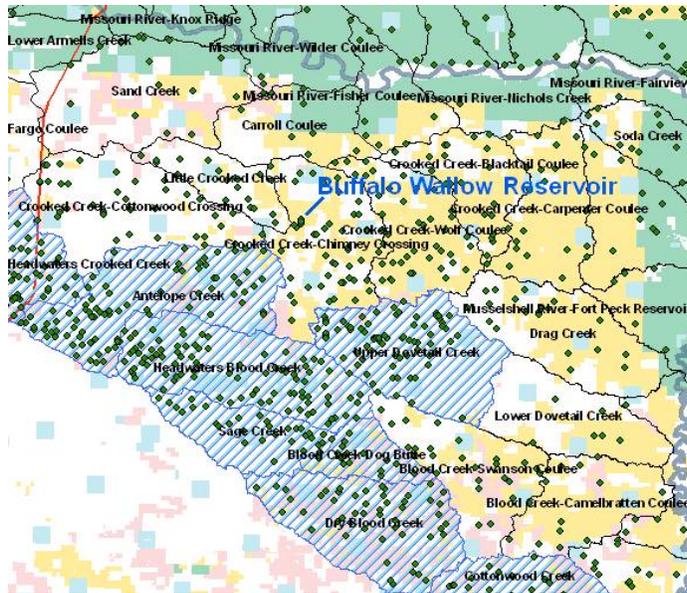


Figure. Subwatersheds with greater than 25 percent of the mean annual yield stored in pits, dams, and/or reservoirs

The two subwatersheds within the Crooked Creek drainage with greater than 25 percent of the mean annual yield stored in pits, dams, and/or reservoirs are Antelope Creek and Headwaters Crooked Creek.

Reservoir density would remain the same in the Crooked Creek-Chimney Crossing subwatershed and the Crooked Creek drainage. Although Turkey Track Reservoir would be removed, a 2.1 to 2.5 acre-feet pit would be constructed as an alternative source of water for livestock. Reservoir densities on BLM lands vary from 0.40 to 2.41 dams/square mile. The figure below identifies those watersheds with greater than one dam/square mile on BLM managed lands.

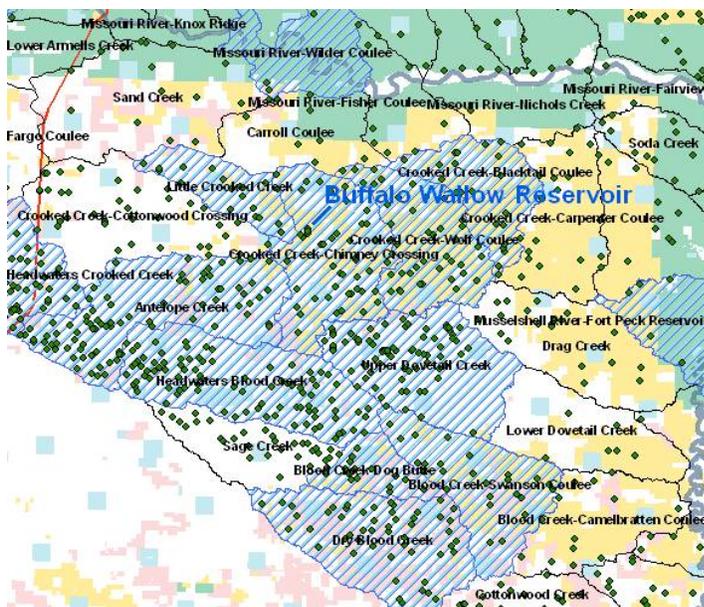


Figure. Subwatersheds with reservoir density greater than one dam/square mile on BLM managed lands

### Mitigation

Removal of the Turkey Track Reservoir embankment shall occur so the natural channel elevation and grade are exposed. Enough material shall be removed to allow passage of flows without further failure of remaining embankment materials (i.e materials shall be removed from areas that experience or could experience surface water flow).

Buffalo Wallow Reservoir shall be constructed within historical water use levels.

### Paleontological Resources

Under Alternative 1, any potential affects to paleontological resources would be through direct impacts to the underlying geologic unit, Bearpaw Shale. The reconstruction of the dam and spillway would be completed within the footprint and at depth of the preexisting reservoir area where disturbance had taken place during original construction. Considering this and that the geologic unit's PFYC classification of 3a for having moderate potential, the probability of adverse effects to paleontological resources would be low if the mitigation below is followed.

Disturbance associated to the construction or improvements to roads, utilization of borrow material areas, and breach of the Turkey Track embankment would not reach depths to which the underlying shale would be significantly impacted. In regard to these activities, probability of adverse effects to paleontological resources would be unlikely.

### Mitigation

If significant paleontological resources are discovered during construction, work will immediately cease and the BLM Lewistown Field Office Archaeologist or Geologist will be notified. Work will not proceed until the area has been formally cleared.

### Lands & Realty

There are no currently authorized ROWs or easements in the project area, so there would be no impacts under this alternative.

### Access

There currently is no public access easement guaranteeing the public motorized access to Buffalo Wallow Reservoir. The historic road that has been used for access crosses four separate private land parcels after it leaves Musselshell Trail. BLM would acquire temporary permission to access project area and then make necessary repairs for the sections of road which cross BLM land as well as the new construction of sections of road on BLM land. There would be no improvements or repairs to roads which cross privately owned lands. Without an easement in place, funds can only be expended on BLM administered land. Road conditions on privately owned land could see increased use and/or subsequent damage. Easements for the privately owned sections of road would allow the BLM to repair/construct and maintain roads on privately owned lands to the project area.

## *Description of Impacts from Alternative 2 – Reconstruct Buffalo Wallow and add Exclosure Fence*

### Cultural Resources

An examination of the area of potential effect identified historic and archaeological sites around Buffalo Wallow Reservoir. Until the sites have been evaluated for listing on the National Register of Historic Places they are protected as if they are eligible for listing. The reconstruction of the dam, draining of Turkey Track Reservoir, construction of the offsite water pit, construction of the exclosure fence, and developing the access route across the dam would not affect historic properties. The expansion of the existing spillway could affect archaeological sites. Artifact breakage and displacement, as well as excavation activity could adversely affect archaeological sites. Indirect effects associated with this project include increased pressure from recreationists using Buffalo Wallow Reservoir as a hunting and fishing destination. Possible impacts include off road vehicle traffic and dispersed camping within the boundaries of the archaeological sites. Constructing the fence could minimize off road travel, and would also reduce the potential for livestock impacts to the archaeological sites, particularly artifact displacement, breakage, and mixing of stratified assemblages.

### Grazing Administration /Livestock Grazing

Similar to the proposed action, there would be no modifications to the grazing permit by selecting this alternative. The amount of forage that would be contained within the exclosure would have a minimal impact on grazing management within the allotment. Periodic, short-term grazing within the exclosure may be allowed, if necessary, to maintain or improve wetland habitat and to mitigate dangers associated with fine fuel buildup.

### Visual Resources

The proposed action is located in a VRM Class IV where the objective is to provide for management activities requiring major modification of the existing character of the landscape. Even though the level of change can be high, every attempt should be made to minimize the impacts. Impacts to visual resources under Alternative 2 would be similar to Alternative 1 with the exception of the addition of an exclosure fence and an off-site water pit. The fence will improve the habitat by decreasing impacts from livestock, thus improving the vegetation and landscape.

### Mitigation

Any unused stockpiled material should be placed in an area that is not visible by the public and re-contoured with the natural landscaping. Seeding with the surrounding native vegetation would be recommended where bare soil is created, including the unused stockpile, areas around the reconstructed dam, and disturbances associated with the water pit. The addition of a fence around the existing reservoir would decrease the impacts from livestock and increase vegetation, thus improving visual contrasts. To keep the visual contrasts of the Buffalo Wallow structures low, the color of the T-posts and gates would be a neutral color, either dark brown or dark green. BLM approved colors can be found in the Standard Environmental Colors Chart CC-001: June 2008. The fence corners and brace structures are treated wood, which would age over time. Minimize the number of Greater Sage Grouse markers where possible. Also associated with the fence structure is a cattle guard. Since the cattle guard is a large structure in a panoramic landscape, visual contrasts

would be low if the guard was painted a neutral color such as Covert Green, unless otherwise directed by safety policy. When accessing the fence for maintenance, vehicle access would be minimized to decrease vegetation impacts. Most maintenance would be completed on foot.

### Recreation

Current recreational activities would decline during reconstruction of the dam. Once temporary work is completed, then camping, fishing, and hunting would be able to continue. With the dam improvements, public safety would be increased.

### Soils

Effects to reconstruct the Buffalo Wallow Dam and spillway, breach the Turkey Track embankment, re-locate and improve the access road would be the same as described in Alternative 1.

Soils would be affected by surface disturbances to construct the enclosure fence and new offsite water pit. Soils would become inundated with water at the new pit location changing the drainage classification. Also, soils around and adjacent to the new pit would become compacted from livestock congregation and trailing.

### Mitigation

Same as Alternative 1.

### Vegetation

Selecting this alternative would allow for an increase in shoreline vegetation. An increase in residual cover of grass species away from the shoreline would also be expected.

### Noxious Weeds

Impacts by and mitigation measures for noxious weeds would be similar to the proposed action. Areas utilized by the public for parking and camping inside the enclosure would be monitored for the presence of weeds.

### Wildlife

See Alternative 1 for impacts and mitigation associated with dam reconstruction.

The construction of approximately 1.5 miles of fence and livestock exclusion could promote emergent vegetation growth and enhance conditions for mosquitos that transmit the West Nile Virus (WNV). This increase in risk is minimal considering the current state of the reservoir that contains some emergent vegetation and an abundance of similar reservoirs in the area.

The fence and livestock exclusion would benefit waterfowl and shorebirds by allowing vegetation along the shoreline to grow and provide nesting and hiding cover. Approximately 80 acres would not be grazed by livestock (except by prescription) and the fence would be constructed to wildlife friendly specifications to allow continued movement through the area and to access water. A pit for livestock water approximately 0.5 acres (½ the size of the reclaimed Turkey Track Reservoir) would shift current livestock and wildlife use patterns, but would be expected to have similar long-term use and distribution as what currently occurs.

WO-IM 2012-043 direction for fences in PPH includes the following:

- Evaluate the need for proposed fences, especially those within 1.25 miles of leks that have been active within the past 5 years and in movement corridors between leks and roost locations. Consider deferring fence construction unless the objective is to benefit Greater Sage-Grouse habitat, improve land health, promote successful reclamation, protect human health and safety, or provide resource protection. If the BLM authorizes a new fence, then, where appropriate, apply mitigation (e.g., proper siting, marking, post and pole construction) to minimize or eliminate potential impacts to Greater Sage-Grouse as determined in cooperation with the respective state wildlife agency.
- To improve visibility, mark existing fences that have been identified as a collision risk. Prioritizing fences within 1.25 miles of a lek, fences posing higher risks to Greater Sage-Grouse include those:
  - o On flat topography;
  - o Where spans exceed 12 feet between T-posts;
  - o Without wooden posts; or
  - o Where fence densities exceed 1.6 miles of fence per section (640 acres).

#### Mitigation

Proper siting, marking and construction in cooperation with MFWP would occur to minimize potential impacts with Greater Sage-Grouse

#### Hydrology/Riparian

The direct, indirect, and cumulative effects of alternative 2 would be the same as alternative 1 except for in regards to the enclosure fence around Buffalo Wallow reservoir.

Riparian-wetland vegetation would benefit from the enclosure fence. This would allow for expansion in the composition, quantity and vigor of the primarily herbaceous riparian-wetland vegetation around and immediately below the reservoir. The increase in available water would be made available to riparian-wetland vegetation downstream on Crooked Creek although this effect would be immeasurable in itself.

#### Mitigation

Same as Alternative 1.

#### Paleontological Resources

Effects to reconstruct the Buffalo Wallow Dam and spillway, breach the Turkey Track embankment, re-locate and improve the access road would be the same as described in Alternative 1.

Disturbance associated to the construction or improvements to roads, utilization of borrow material areas, breach of the Turkey Track embankment, and construction of the offsite water pit would not reach depths or surface area to which the underlying shale would be significantly impacted. In

regard to these activities, probability of adverse effects to paleontological resources would be unlikely.

#### Mitigation

Same as Alternative 1

#### Lands & Realty

There are no currently authorized ROWs or easements in the project area, so there would be no impacts under this alternative.

#### Access

There currently is no public access easement guaranteeing the public motorized access to Buffalo Wallow Reservoir. The historic road that has been used for access crosses four separate private land parcels after it leaves Musselshell Trail. BLM would acquire temporary permission to access project area and then make necessary repairs for the sections of road which cross BLM land as well as the new construction of sections of road on BLM land. There would be no improvements or repairs to roads which cross privately owned lands. Without an easement in place, funds can only be expended on BLM administered land. Road conditions on privately owned land could see increased use and/or subsequent damage. Easements for the privately owned sections of road would allow the BLM to repair/construct and maintain roads on privately owned lands to the project area.

### *Description of Impacts from Alternative 3 – Breach Buffalo Wallow and Turkey Track*

#### Cultural Resources

Selecting this Alternative would have no direct effect on cultural resources. What could happen is an improvement in the understanding of the archaeological and historic record by studying and analyzing the connection between the historic and prehistoric sites ringing the Buffalo Wallow Reservoir. Dewatering the reservoir may allow archaeologists to identify the multiple sites as being components of one larger archaeological site or district. Maintaining access through the area would not affect cultural resources. The area proposed for the offsite water pit has been inventoried; its construction and use would not affect historic cultural resources.

#### Grazing Administration /Livestock Grazing

There would be no modifications to the grazing permit due to selection of this alternative. Constructing the offsite water pit would continue to evenly distribute grazing use by livestock over the range, allowing for the flexibility to meet allotment management objectives (timing, frequency and duration of use), allow implementation of grazing management strategies that promote rangeland health and allow more regulated harvesting of forage permitted to livestock.

#### Visual Resources

The proposed action is located in a VRM class IV. The breach and water pit would change the existing character of the landscape. With class IV, these changes can occur. However, mitigation is addressed to minimize the impacts.

### Mitigation

Mitigation measures in the soils portion of Alternative 3 and reseeded addressed in the proposed action of Alternative 3 will support visual resources.

### Recreation

Fishing, the most popular recreational use of Buffalo Wallow would be removed from the site. With the water pit addition, wildlife will continue to frequent the area, thus not affecting the hunting opportunities. Dispersed camping will also be able to continue in the area. Even with the breach, the BLM would maintain the ERMA classification by continuing to provide dispersed and unstructured recreation activities. This alternative may decrease the overall number of visitors to the site due to the lack of fishing opportunities. However, breaching would address the safety concerns since the dam would no longer exist.

### Soils

Soils around the embankments would be disturbed from equipment to breach the embankments. Once vegetation is re-established through reclamation efforts, soils should return to a productive state around the disturbance areas.

Soils/sediment would eventual dry out and go from anaerobic to aerobic conditions overtime. This would result in a change of vegetation composition from obligate/facultative to upland species. Also, a headcut would move upstream through the sediments until vertical equilibrium is reached. Erosion would occur downstream due to the increase in the volume of water. Increased available water would create soil conditions that favor riparian species.

Effects from constructing a new offsite water pit would be the same as described in Alternative 2.

### Mitigation

Construction/breaching activities shall not be performed during periods when the soil is too wet to adequately support equipment/vehicles. If equipment/vehicles create ruts in excess of 3 inches deep, operations must cease as the soil will be deemed too wet to adequately support equipment/vehicles.

Erosion control and sediment containment products (i.e. straw wattles, silt fence, erosion control blankets/mats, sediment stop, etc.) shall be installed, where necessary, to aid in stabilization and capture of sediment until vegetation reestablishes to effectively control erosion and sediment. This would include areas around the reservoirs/pit.

Design and install measures to minimize headcutting at and below the pit spillway. Where soils are disturbed, topsoil shall be stripped, separated from subsoil/parent material, and stockpiled for use in reclamation.

Site reclamation will initiate with the ripping to an appropriate depth (generally below the root zone) of any compacted areas and grading to blend with the adjacent site characteristics and topography. In no instances will grading material and/or subsoil be placed over topsoil. The order of soil replacement will be the reverse of removal, e.g. first off, last on.

### Vegetation

The implementation of this alternative will have a minor impact to the existing vegetative resource through ground disturbance. Once the dams have been breached there will be impacts to the existing resource due to erosion of the earth fill dams. When the structures are breached downstream vegetation and riparian habitats will be damaged or destroyed due to the large volume of water and sediment that will be discharged. The bare ground and deposited silt that will remain after the dams have been breached would provide opportunities for new infestations of invasive and/or noxious weeds to establish within North Crooked Creek grazing allotment negatively impacting rangeland health.

### Noxious Weeds

Breaching Buffalo Wallow and Turkey Track reservoirs would leave a large expanse of bare saturated sediment. It would take at least one growing season before this area would be dry enough for reseeding/reclamation efforts. During this time noxious/invasive weeds currently on site would expand in patch size. Due to the opportunistic nature of most noxious weed species, other weed species could also become established in the disturbed area via wind, water, or biological translocation. These infestations would have to be treated prior to any reclamation efforts to prevent their spread into the adjacent upland portions of the allotment. The erosion and silt deposition that would occur downstream of the reservoirs would also provide noxious/invasive species large expanses of bare ground for colonization. These riparian areas would be very difficult to treat because of the restrictions on pesticide use within these zones.

### Wildlife

Construction activities would cause short-term displacement of some resident wildlife species. However, distribution and abundance of wildlife would be expected to return to normal shortly after completion. Timing of activities would minimize potential disturbance impacts to a variety of native wildlife species during critical time periods (winter, nesting, etc.)

This project would attempt to restore the site back to some level of pre-disturbance conditions. This would be expected to result in the improvement and availability of approximately 20 additional acres of sagebrush grasslands habitats for the majority of native wildlife species. Sagebrush obligate species such as sage-grouse and some species of songbirds would benefit from these changes. The potential for this area to harbor WNV would be reduced, which would also reduce the likelihood of transmission of WNV to a variety of local wildlife populations susceptible to this disease, including sage-grouse. Some potential habitats would be reduced for some species of waterbirds such as waterfowl and shorebirds. However, numerous wetlands exist across this landscape that provide habitat for these species.

Impacts associated with the pit are discussed in Alternative 2.

This alternative would be in compliance with WO-IM 2012-043 for Greater Sage-grouse.

### Mitigation

Ground disturbing activities should avoid sage-grouse and migratory bird nesting season (April 1 - July 1)

### Hydrology/Riparian

Alternative 3 would increase the volume of water available to downstream drainages by around 200 acre-feet or 17 percent of the subwatershed's mean annual yield. Downstream drainages would benefit from improvement in sediment and water yields, and saline seeps below the reservoirs would decrease. Riparian-wetland vegetation would be lost at the reservoir locations, but downstream riparian-wetland vegetation on Crooked Creek would receive increased water availability.

Removal of Turkey Track and Buffalo Wallow Reservoirs would also mobilize sediments that have accumulated in the depositional fans at the head of the reservoirs. A headcut would move upstream through these sediments until vertical equilibrium is reached. Temporary increases in sediment moving downstream would occur; however, a return to more natural water and sediment yields would return in the long-term.

### Mitigation

Removal of the Turkey Track and Buffalo Wallow Reservoir embankments shall occur so the natural channel elevation and grade are exposed. Enough material shall be removed to allow passage of flows without further failure of remaining embankment materials (i.e materials shall be removed from areas that experience or could experience surface water flow).

### Paleontological Resources

Disturbance associated to the breach of Buffalo Wallow and Turkey Track embankments would not reach depths or surface area to which the underlying shale would be significantly impacted. The probability of adverse effects to paleontological resources would be unlikely.

### Mitigation

Same as Alternative 1.

### Lands & Realty

There are no currently authorized ROWs or easements in the project area, so there would be no impacts under this alternative.

### Access

There currently is no public access easement guaranteeing the public motorized access to Buffalo Wallow Reservoir. The historic road that has been used for access crosses four separate private land parcels after it leaves Musselshell Trail. BLM would acquire temporary permission to access project area and then make necessary repairs for the sections of road which cross BLM land as well as the new construction of sections of road on BLM land. There would be no improvements or repairs to roads which cross privately owned lands. Without an easement in place, funds can only be expended on BLM administered land. Road conditions on privately owned land could see increased use and/or subsequent damage. Easements for the privately owned sections of road would allow the BLM to repair/construct and maintain roads on privately owned lands to the project area. After the channel stabilizes within the breach the sides of the breach will be sloped enough to allow a 2-track trail to be established for administrative and permittee access.

## CHAPTER 5: Consultation and Coordination

### Introduction

A notice of availability regarding this EA was posted on the Lewistown Field Office NEPA log available online @ <http://www.blm.gov/mt/st/en/info/nepa.html> on February 13, 2013.

Complete EA can be found at the following website: <http://blm.gov/6zkd>

### Persons, Groups, and Agencies Consulted

The following individuals, organizations and agencies were provided an opportunity to participate in the Buffalo Wallow Reservoir Reconstruction planning process and were provided a copy of this environmental assessment.

- Montana Fish, Wildlife, and Parks
- Charles M. Russell National Wildlife Refuge
- Western Watersheds Project
- Lewistown Chapter of Walleyes Unlimited
- Lewistown Chapter of Trout Unlimited

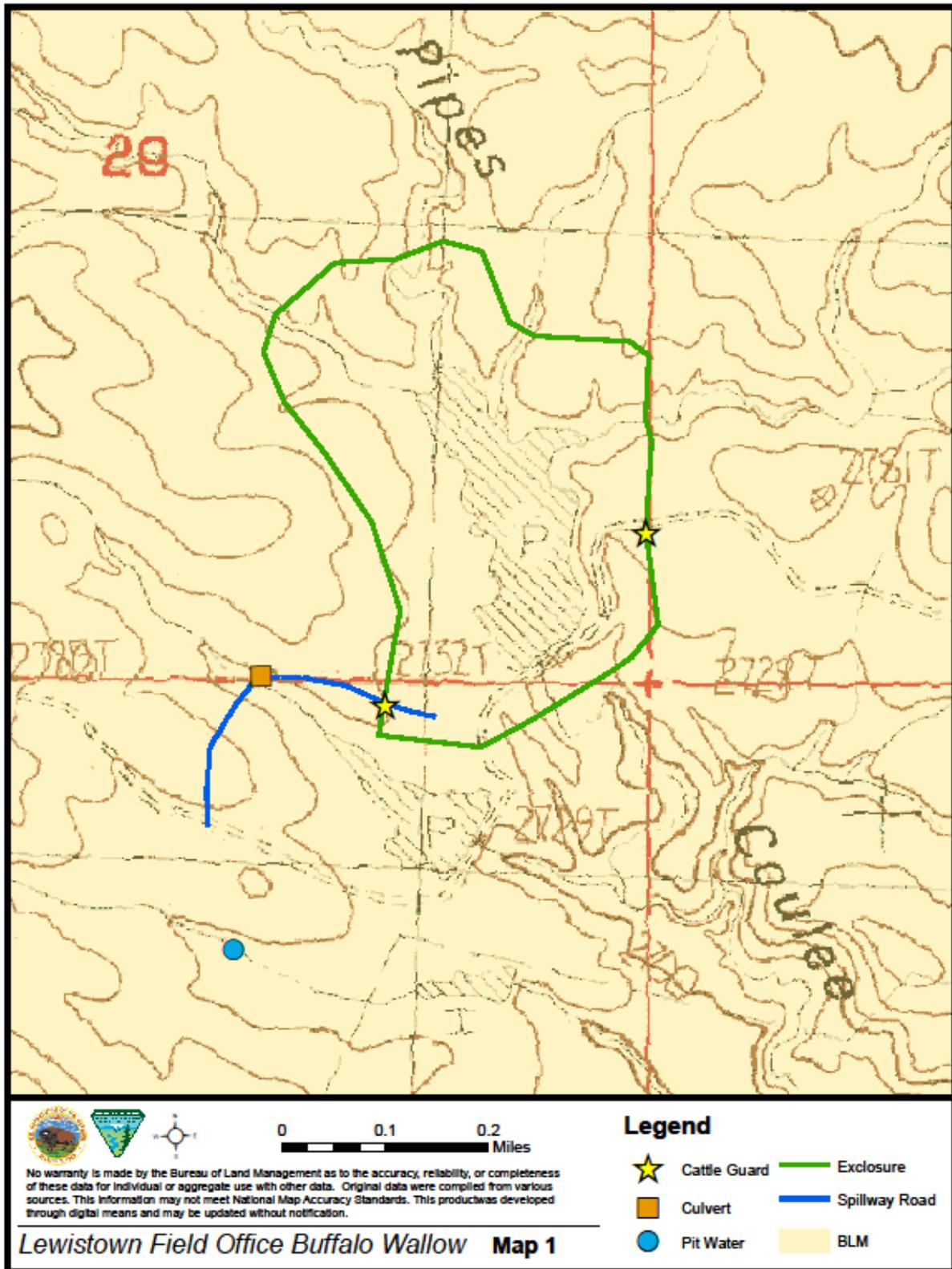
### List of Preparers

Steve Smith, Rangeland Management Specialist  
Chad Krause, Hydrologist  
Matt Comer, Wildlife Biologist  
Debbie A. Tucek, Realty Specialist  
Kelly McGill, Outdoor Recreation Planner  
Zane Fulbright, Archeologist  
Dan Brunkhorst, Planning and Environmental Specialist

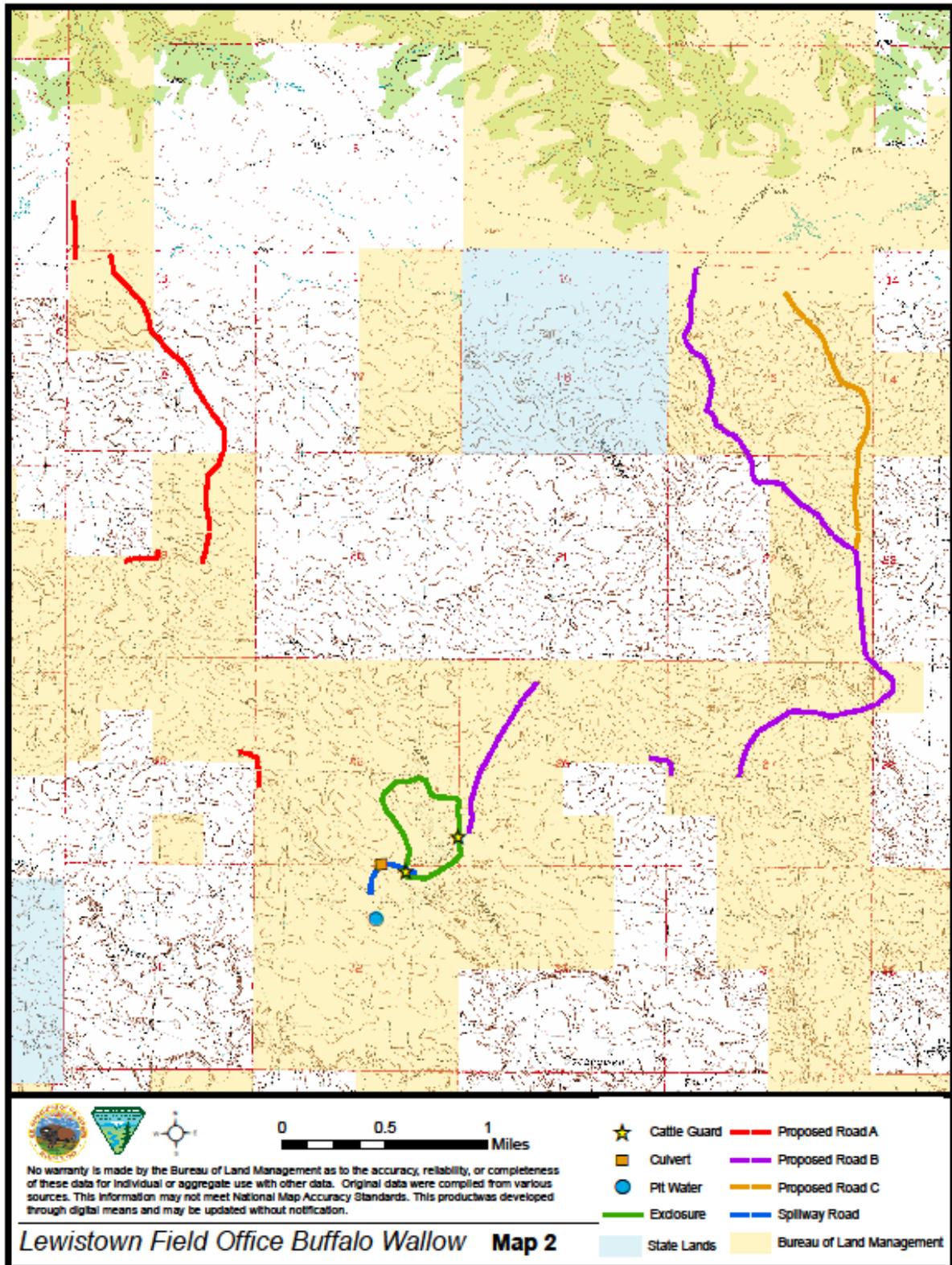
### References

- Bureau of Land Management. 2011. *Greater Sage-Grouse Interim Management Policies and Procedures. Instruction Memorandum No. 2012-043.*
- Hanna, Rebecca 2009. *Class I Overview of the BLM Lewistown Resource Management Plan Area: Including portions of Blaine, Cascade, Chouteau, Fergus, Judith Basin, Lewis & Clark, Meagher, Petroleum, Phillips, Pondera, and Teton Counties, Montana. Volume II: Paleontological Resources, Parts I and II.* Terra Paleo Research, Choteau, Montana.

# Appendix A – Map 1



# Appendix A – Map 2





# United States Department of the Interior



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## FINDING OF NO SIGNIFICANT IMPACT

### Buffalo Wallow Reservoir Reconstruction Environmental Assessment

An Environmental Assessment (EA) that analyzes proposed actions for Buffalo Wallow Reservoir by the Bureau of Land Management (BLM), Lewistown Field Office has been completed. The Buffalo Wallow Reservoir Reconstruction EA (EA # MT-L060-2011-005-EA) is available for review at the Lewistown Field Office in Lewistown, Montana and online at <http://blm.gov/6zkd>.

The BLM initiated the Buffalo Wallow Reservoir EA to analyze impacts of alternatives with mitigating public safety issues associated with the road across the Buffalo Wallow embankment and address the needs of a dysfunctional reservoir. The alternatives considered included: reconstructing the reservoir, reconstructing the reservoir and adding an exclosure fence, and breaching the reservoir.

### FINDING OF NO SIGNIFICANT IMPACT

On the basis of the analysis contained in the Buffalo Wallow Reservoir Reconstruction EA (EA # MT-L060-2011-005-EA), I find that alternatives analyzed will not have a significant effect on the human environment. As a result of this analysis, an environmental impact statement will not be prepared.

This finding is based on the following rationale:

- The alternatives would remove public safety concerns associated with the road system in the project area.
- The alternatives properly address safety concerns with a hazard class dam.
- The alternatives would have no impact on wildlife within the project area. Site specific project implementation would be mitigated to minimize impacts to wildlife species.
- The alternatives satisfy the Bureau's concerns, objectives, obligations, and will not result in any undue or unnecessary environmental degradation.
- The alternatives are in conformance with the approved Judith-Valley-Phillips Resource Management Plan (RMP), September 1994, and the federal grazing regulations, Subchapter D – Range Management at 43 CFR 4120.3-1 (a).

  
Geoff Beyersdorf  
Lewistown Field Manager

March 12, 2013  
Date