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[GSENM WaterCatchmentsEA_DRFTv3.docx](#)
[GSENM WaterCatchmentsEA_DRFT_MapsAppendix.docx](#)
[PRange EA 20217 water+catchments.pdf](#)

Hi all,

Chapters 1 and 2 of the Water Catchment Projects EA has been updated based on comments from Dana and our discussion from 12/12. It is attached to this email. I have retained all comments and tracked changes in this version. Please let me know if we need to check in on this prior to our Tuesday 12/19 call. It is my understanding that this version is ready for internal scoping perhaps pending availability of additional diagrams and/or photographs of typical representations of project elements. For good measure I have also attached what I believe is the most recent set of maps for these projects (as well as a blank Map appendix). One overview map showing the distribution of all water catchment projects is still needed. This would be the map identified as Map X.1 in Chapter 1. I will email or call Paul separately to request this map.

That's all for now....

Thanks!
Ben

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GSENM Water Catchment Projects EA

Appendix X.1 – Maps

INSERT MAP

Map X.1. Proposed water catchments and associated water distribution infrastructure in the Headwaters, First Point, Five Mile Mountain, Mollies Nipple, Wagon Box Mesa, and Death Hollow allotments.

INSERT MAP

Map X.2. Proposed water catchment and associated water distribution infrastructure for the West Bench Water Catchment Project.

INSERT MAP

Map X.3. Proposed water catchment and associated water distribution infrastructure for the Fourmile Bench Water Catchment Project.

INSERT MAP

Map X.4. Proposed water catchment and associated water distribution infrastructure for the First Point Water Catchment Project.

INSERT MAP

Map X.5. Proposed water catchment and associated water distribution infrastructure for the Five Mile North Water Catchment Project.

INSERT MAP

Map X.6. Proposed water catchment and associated water distribution infrastructure for the Houserock Valley Water Catchment Project.

INSERT MAP

Map X.7. Proposed water catchment and associated water distribution infrastructure for the Wagon Box Water Catchment Project.

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

**Environmental Assessment
DOI BLM UT 0300 2017 0065 EA**

Month 2017

GSENM Water Catchment Projects

Location:

<i>West Bench Water Catchment</i>	T 40S R 1E, T 39S R 1E
<i>Fourmile Bench Water Catchment</i>	T 40S R 2E
<i>First Point Water Catchment</i>	T 41S R 4W
<i>Five Mile North Water Catchment</i>	T 42S R 2W
<i>House Rock Valley Water Catchment</i>	T 43S R 2W
<i>Wagon Box Water Catchment</i>	T 34S R 7E

U.S. Department of the Interior
Bureau of Land Management
Grand Staircase Escalante National Monument
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BLM



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GSENM Water Catchment Projects
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GSENM Water Catchment Projects

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1.0 PURPOSE AND NEED

1.1 Introduction and Background

The Bureau of Land Management (BLM) Grand Staircase Escalante National Monument (GSENM) proposes to construct and install up to six water catchments and associated water distribution infrastructure (e.g., protection fencing, catchment aprons, storage tanks, pipelines, troughs, wildlife drinkers) in the Headwaters, First Point, Five Mile Mountain, Mollies Nipple, Wagon Box Mesa, and Death Hollow allotments. Map X.1 in Appendix X.1 provides an overview of allotments and projects. A summary of current conditions within each allotment as well as anticipated project elements is provided in Table X.1. Additional details related to the current condition within each allotment is provided in the affected environment discussion in Chapter 3.

Table X.1. Summary of Current Conditions within Each Allotment and Anticipated Project Elements.

Project (Allotment(s))	Summary of Current Conditions Within Allotments	Anticipated Project Elements
West Bench Water Catchment (Headwaters)	The Headwaters Allotment (approximately 154,430 acres) is located approximately 25 miles southeast of Cannonville, Utah and consists of federal public lands within the GSENM. The majority of the Headwaters Allotment consists of native range. The largest vegetation type within the allotment is pinyon-juniper. Other substantial components are sagebrush, salt brush, and a minor portion of grassland (re-seeded). There are currently nine water-related range improvements installed within the allotment.	Fencing, catchment apron, storage tank, pipeline (approximately 3 miles placed in or adjacent to Monument Administrative Road #441A), troughs (3), wildlife drinker
Fourmile Bench Water Catchment (Headwaters)	Surface waters within the allotment are primarily composed of Wahweap Creek, Last Chance Creek, and Warm Creek. Springs, seeps, and other water features also exist on the allotment. Rangeland Health Assessment data indicate that the Standards and Guidelines for Rangeland Health are not being met for water quality on the allotment. This assessment indicates that existing livestock grazing management practices and levels of grazing use are not a substantial factor in not meeting this standard.	Fencing, catchment apron, storage tank, pipeline (approximately 3 miles placed in or adjacent to Monument Administrative Road #444A, #445A, and #446A), troughs (5), wildlife drinker
First Point Water Catchment (First Point)	The First Point Allotment (3,007 acres) is approximately 30 miles northeast of Kanab, Utah and consists of federal public lands within the GSENM. The First Point Allotment is located on the Skutumpah Terrace above the White Cliffs and is comprised mostly of crested wheatgrass seedings with some pinyon-juniper woodlands, rock outcrops, and sagebrush bottoms. There are currently three water-related range improvements installed within the allotment however the allotment does not contain perennial or intermittent streams. Assessment data indicate that all Standards and Guidelines for Rangeland Health are being met on the allotment.	Fencing, catchment apron, storage tank, pipeline (approximately 3 miles placed in or adjacent to the existing two-track road that is located north of Monument Road #502), troughs (3), wildlife drinker
Five Mile North Water Catchment (Five Mile Mountain)	The Five Mile Mountain Allotment (18,087 acres) is located approximately 30 miles east of Kanab, Utah and consists of private and federal public lands located within the boundaries of the GSENM. The Five Mile Mountain Allotment is comprised mostly of pinyon-juniper woodlands, limestone hills, Wyoming big sagebrush, and unclassified land cover. There are currently two water-related range improvements installed within the allotment however the allotment does not contain perennial or intermittent streams. Assessment data indicate that all Standards and Guidelines for Rangeland Health are being met on the allotment.	Fencing, catchment apron, storage tank, pipeline (approximately 100-200 feet placed, subject to construction constraints, to minimize pipeline distance and disturbance), trough (1), wildlife drinker

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Table X.1. Summary of Current Conditions within Each Allotment and Anticipated Project Elements.

Project (Allotment(s))	Summary of Current Conditions Within Allotments	Anticipated Project Elements
Houserock Valley Water Catchment (Mollies Nipple)	The Mollies Nipple Allotment (103,478 acres) is located approximately 25 miles east of Kanab, Utah and consists of federal public lands located within GSENM. The Mollies Nipple Allotment is comprised of oak woodland, pinyon-juniper, and sagebrush grasslands. Some of the areas within the allotment have been seeded in the past. There are currently 16 water-related range improvements installed within the allotment. Several springs are present on the allotment but the allotment is lacking perennial or intermittent streams. Assessment data indicate that Standards and Guidelines for Rangeland Health are not being met for upland soils, riparian and wetland areas, and desired species on the allotment.	Fencing, catchment apron, storage tank, pipeline (approximately 100-200 feet placed, subject to construction constraints, to minimize pipeline distance and disturbance), trough (1), wildlife drinker
Wagon Box Water Catchment (Wagon Box Mesa, Death Hollow)	The Wagon Box Mesa Allotment (30,600 acres) is located approximately 15 miles east of Boulder, Utah and consists of federal public lands located within GSENM, Glen Canyon National Recreation Area (GCNRA), and Capitol Reef National Park (CRNP). Small portions of the allotment lay within GCNRA (770 acres) and CRNP (1,210 acres). The allotment is comprised primarily of pinyon-juniper woodlands, big sagebrush grasslands, and desert shrublands. There are currently 14 water-related range improvements installed within the allotment. Two springs, both located in the south half of the allotment, are present on this allotment but the allotment is lacking perennial or intermittent streams. Assessment data indicate that all Standards and Guidelines for Rangeland Health are being met on the allotment.	Fencing, catchment apron, storage tank, pipeline (approximately 0.5 mile placed, subject to construction constraints, to minimize pipeline distance and disturbance), troughs (2), wildlife drinker
	The Death Hollow Allotment (19,537 acres) is located approximately 10 miles east of Boulder, Utah and consists of federal public lands located within GSENM. Vegetation within the allotment is primarily pinyon-juniper woodlands, desert shrub, and sagebrush grasslands. There are currently 23 water-related range improvements installed within the allotment. A few springs exist within the Death Hollow Allotment but the allotment is lacking perennial or intermittent streams. The majority of water developments and springs are located in the southwestern half of the Death Hollow Allotment. Like the Wagon Box Mesa Allotment, assessment data indicate that all Standards and Guidelines for Rangeland Health are being met on the Death Hollow Allotment.	

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1.2 Purpose and Need for the Action

The purpose of the BLM action is to provide reliable water storage and improve water availability for wildlife and livestock in the Headwaters, First Point, Five Mile Mountain, Mollies Nipple, Wagon Box Mesa, and Death Hollow allotments. Reliable water storage and improved water availability are also intended to improve livestock distribution (dispersing cattle throughout the area to take advantage of available forage and reduce concentration of livestock at existing water sources) and thereby enhance wildlife habitat and improve vegetation, soil, and water resource conditions.

The need for the BLM action is based on lack of dependable water sources and/or resource impacts near existing water sources across portions of the aforementioned allotments.

1.3 Decision to be Made

Following the environmental analysis in the EA, the GSENM Manager will decide whether to implement the proposed water catchment projects and if so under what conditions, specifications, and provisions.

1.4 Conformance with BLM Land Use Plan(s)

The GSENM Management Plan (MMP), as amended by the Utah Greater Sage Grouse Resource Management Plan (RMP) Amendment finalized in September 2015 (BLM 1999, as amended 2015), currently governs and addresses water storage and water availability activities on GSENM lands. The projects, described in detail in Chapter 2.0, would fulfill the following water resources objective outlined in the MMP:

- "...ensure that appropriate quality and quantity of water resources are available for the proper care and management of the objects of the Monument." (page 31)

Further, these projects would specifically conform to the following MMP decisions: WAT 1, WDEV 1, FENCE 1, FW 7, and SOIL 1. The specific language contained in these MMP decisions is attached as [Appendix X](#). In addition, the Proposed Action would not conflict with other decisions in the MMP.

1.5 Relationship to Laws, Regulations, Policies, Program Guidance, and Other Plans

A listing of directly relevant laws, regulations, policies, program guidance, and other plans is provided in Table X.2 along with a brief explanation of their relationship to the Proposed Action. The Proposed Action is consistent with these laws, regulations, policies, program guidance, and other plans.

Table X.2. Relevant Laws, Regulations, Policies, Program Guidance, and Other Plans

Relevant Law, Regulation, Policy, Program Guidance, or Plan	Relationship to the Proposed Action
Presidential Proclamation Establishing the Grand Staircase-Escalante National Monument (September 18, 1996)	The Presidential Proclamation establishing the GSENM directs the Secretary of the Interior to address the need for water for the proper care and management of the objects of the GSENM and actions that may be necessary pursuant to federal and state law to assure water availability. The water catchment projects proposed by the BLM directly address water needs and water availability in six locations across the GSENM.
Federal Land Policy and Management Act (FLPMA) of 1976	Title II Section 202 of FLPMA directs the development of land use plans for BLM lands. Once land use plans are developed, any approved project must be provided in the land use plan or be consistent with the decisions in the approved land use plan. As described in Section 1.4 above, these projects conform to the GSENM MMP.
Omnibus Public Land Management Act (OPLMA) of 2009	OPLMA established the National Landscape Conservation System (NLCS) to conserve, protect, and restore nationally significant landscapes that have outstanding cultural, ecological, and scientific values for the benefit of current and future generations. OPLMA requires that NLCS units, including GSENM, be managed in a manner that protects the values for which the components of the system were designated. The GSENM Water Catchment Projects were proposed and designed to meet the objectives of OPLMA.
Utah's Standards for Rangeland Health (BLM 1997)	BLM Utah's Standards for Rangeland Health established the "standards" for rangeland health and "guidelines" for grazing management. The "standards" spell out the conditions to be achieved on BLM lands in Utah and the "guidelines" describe the practices to be applied to achieve the "standards". Rangeland health standards focus on maintaining upland soils, riparian and wetland areas, desired species, and water quality in a healthy and sustainable condition. The GSENM Water Catchment Projects were proposed and designed to meet or make progress towards meeting rangeland health standards in each associated allotment.

Table X.2. Relevant Laws, Regulations, Policies, Program Guidance, and Other Plans

Relevant Law, Regulation, Policy, Program Guidance, or Plan	Relationship to the Proposed Action
Kane County, Utah General Plan (Kane County 2011)	The Kane County, Utah General Plan identifies multiple relevant key issues associated with the environment including protection of watersheds and multiple use management of public lands. Kane County also sets forth a goal to "[r]ecognize the presence of water resources in the county and the integral role these systems play in the natural and built environment." Kane County further sets forth an objective to "[p]romote the development of the county's mineral, water, manpower, industrial, historical, cultural, and other resources." The Water Catchment Projects are consistent with the key issues, goals, and objectives identified above.
Garfield County Draft Resource Management Plan (Garfield County 2017)	The Garfield County Draft Resource Management Plan in Section X (X) identifies...NEED TO CONFIRM THAT GARFIELD COUNTY IS INCLUDED IN PROPOSED ACTION.

1.6 Scoping and Identification of Issues

1.6.1 Internal and External Scoping

A BLM interdisciplinary (ID) team formulated potential issues associated with the Proposed Action through an internal scoping process conducted between DATE and DATE. An ID team checklist (attached as Appendix X) was completed as part of the internal scoping process.

The BLM also solicited public comments on the Proposed Action through an external (public) scoping process. The public scoping period began on DATE, and finished on DATE. The BLM published a public notice in the X newspaper, published a public notice on the BLM's national NEPA register (WEB LINK), and sent out a public scoping letter and requested comments within the 15 day public comment period. The mailing list can be found in the administrative record. Public scoping letters were sent to X recipients. X comment letters were received. The letters received were from X, X, and X. Substantive comments from these letters are reflected in the issues discussion below.

1.6.2 Issues Considered in Detail

The following issues for detailed analysis were identified during the internal and external scoping processes:

1.6.3 Issues Considered but Eliminated from Further Analysis

The following issues were considered but dismissed from detailed analysis:

2.0 DESCRIPTION OF ALTERNATIVES, INCLUDING PROPOSED ACTION

2.1 Introduction

This EA analyzes the potential effects of implementing Alternative A (No Action) and Alternative B (Proposed Action). The No Action Alternative is considered and analyzed to provide a baseline against which to compare the impacts of the Proposed Action. No other alternatives were brought forward for detailed analysis (see Section 2.X for further details and rationale concerning alternatives eliminated from detailed analysis).

2.2 Alternative A No Action

Under the No Action Alternative, the BLM would not implement the proposal to construct and install up to six water catchments and associated water distribution infrastructure (e.g., protection fencing, catchment aprons, storage tanks, pipelines, troughs, wildlife drinkers) in the Headwaters, First Point, Five Mile Mountain, Mollies Nipple, Wagon Box Mesa, and Death Hollow allotments. Management of the areas would remain in accordance with the laws, regulations, policies, program guidance, and other plans described in section 1.5 above.

2.3 Alternative B Proposed Action

Under the Proposed Action Alternative, the BLM would construct and install water catchments and associated water distribution infrastructure (e.g., protection fencing, catchment aprons, storage tanks, pipelines, troughs, wildlife drinkers) in the Headwaters, First Point, Five Mile Mountain, Mollies Nipple, Wagon Box Mesa, and Death Hollow allotments.

Anticipated elements of each project under the Proposed Action are summarized in Table X.3. Further details related to each project element are provided below. Each project would be composed of the same elements. As a result, the project elements described below do not reference specific projects but would apply to all projects unless otherwise indicated. Detailed project maps (Maps X.2 X.7) are located in [Appendix X.1](#).

Table X.3. Summary of Anticipated Project Elements.

Project (Allotment(s))	Anticipated Project Elements
West Bench Water Catchment (Headwaters)	Fencing, catchment apron, storage tank, pipeline (approximately 3 miles placed in or adjacent to Monument Administrative Road #441A), troughs (3), wildlife drinker
Fourmile Bench Water Catchment (Headwaters)	Fencing, catchment apron, storage tank, pipeline (approximately 3 miles placed in or adjacent to Monument Administrative Road #444A, #445A, and #446A), troughs (5), wildlife drinker
First Point Water Catchment (First Point)	Fencing, catchment apron, storage tank, pipeline (approximately 3 miles placed in or adjacent to the existing two-track road that is located north of Monument Road #502), troughs (3), wildlife drinker
Five Mile North Water Catchment (Five Mile Mountain)	Fencing, catchment apron, storage tank, pipeline (approximately 100-200 feet placed, subject to construction constraints, to minimize pipeline distance and disturbance), trough (1), wildlife drinker
Houserock Valley Water Catchment (Mollies Nipple)	Fencing, catchment apron, storage tank, pipeline (approximately 100-200 feet placed, subject to construction constraints, to minimize pipeline distance and disturbance), trough (1), wildlife drinker
Wagon Box Water Catchment (Wagon Box Mesa, Death Hollow)	Fencing, catchment apron, storage tank, pipeline (approximately 0.5 mile placed, subject to construction constraints, to minimize pipeline distance and disturbance), troughs (2), wildlife drinker
<u>Water Catchment and Infrastructure Summary Across All Projects</u>	<u>Six catchment aprons with fencing, six storage tanks, approximately 10 total miles of pipeline, 15 troughs, six wildlife drinkers</u>

A maximum of up to approximately 5 acres of potential disturbance would occur for each proposed water catchment project (inclusive of each catchment area, troughs, storage tanks, and pipelines). Following project construction activities disturbed areas would be seeded with native grasses, forbs, and shrub species. All fill materials would be of similar color to those occurring at each site. Metal materials used in construction of catchments would be non reflective and colored gray or dark brown. Total construction time is estimated to be approximately six weeks (or approximately 30 work days) though some construction timeframes may be closer to approximately two to four weeks or extend up to approximately eight weeks. The ideal construction window is between May and October though construction activities may fall outside this timeframe based on the availability of funding and personnel resources and other constraints (e.g., migratory birds and other sensitive resources). Project components would be maintained on an as needed basis.

2.3.1 Catchment (collection) Aprons

Each catchment apron would be approximately 40,000 square feet placed in the center of an area approximately 63,000 square feet (to provide for a 10 15 foot buffer area around each apron). Each apron would be constructed of black polythene sheeting with heat sealed seams. The shape of each apron would be determined by topographical constraints at each location. Prior to construction each apron area would be leveled with a grader or bulldozer or other similar equipment. If needed, fill material such as gravel or top soil may be trucked in from an outside source using existing roads. Fill material would be used to protect and increase the life of each apron by covering areas of exposed bedrock that may otherwise damage the apron. Up to 2.5 acres of surface disturbance would occur for each catchment area. Figure X.1 shows a water catchment diagram and general layout for each of the proposed catchments.

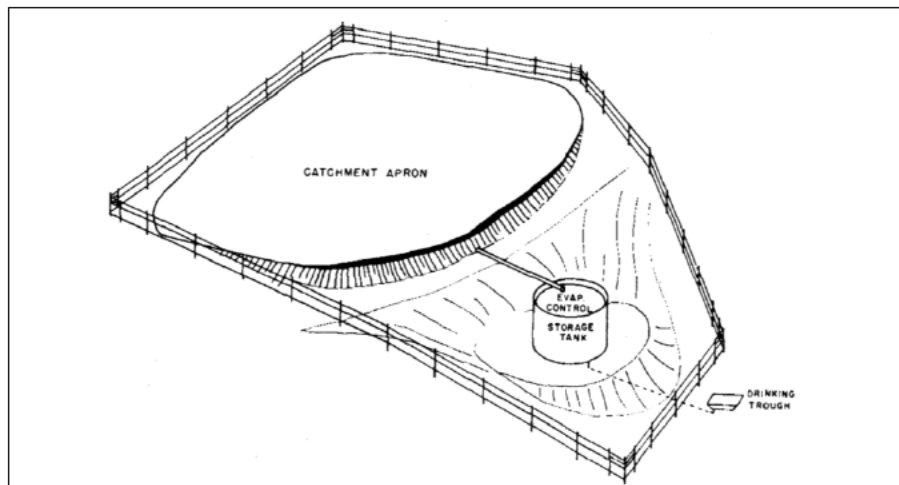


Figure X.1. Water catchment diagram and general layout for each of the proposed catchments.

Source: X

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2.3.2 Protection Fences

Each catchment apron would be surrounded by a livestock protection fence enclosing an area approximately 90,000 square feet in total extent. Each protection fence would be barbed wire construction (four strand steel post fencing with cedar post H braces) with the bottom wire approximately 18 inches above the ground surface and smooth to allow for passage of wildlife. The top wire of each fence would not exceed approximately 42 inches above ground surface.

2.3.3 Wildlife Drinkers

A wildlife drinker would be installed within the perimeter of each protection fence. Construction activities would include tapping into an existing pipeline below the tank by digging a hole with a small tractor and installing a valve and lateral line. A small trench, approximately 18 inches wide by three feet deep by 40 feet long would be excavated and 1.5 inch diameter HDPE pipe would be placed in the trench and connected to the main line. The new pipe would terminate at a small float valve and wildlife drinker approximately nine square feet in total area. The trench would be back filled and the area seeded by hand with an all native seed mix appropriate for the area.

2.3.4 Storage Tanks

Each storage tank would be approximately 60 feet in diameter and nine feet high with a storage capacity of approximately 125,000 gallons. Storage tank assembly would occur on site. The storage tank placement area (up to approximately 6,400 square feet in extent) would be cleared and leveled using a grader or bulldozer or similar equipment prior to construction of the storage tank. The bottom surface of each storage tank would consist of a concrete pad foundation approximately one foot thick hauled to the area using a cement truck. The sides of each storage tank would be made of galvanized steel. Each storage tank would be covered by a corrugated tin lid with metal supports placed within the storage tank.

2.3.5 Pipelines

Pipelines would vary in length from as little as approximately 100 200 feet to as long as approximately three miles depending on the specific water catchment project (see Table X.3). Each pipeline would be constructed of 1.5 inch diameter HDPE pipe buried 24 to 36 inches deep with either a backhoe or trencher or ripped in with a dozer equipped with a ripper and attached pipe layer. Longer pipelines (approximately three miles) would be placed in or adjacent to existing roads or two track roads (see Table X.3). Shorter pipelines (between approximately 100 200 feet and 0.5 mile in total length) would be placed (subject to project specific construction constraints such as topography, bedrock, etc.) to minimize total pipeline distance and surface disturbance.

2.3.6 Troughs

Troughs would be up to 1,000 gallons in total capacity and round or rectangular in shape. Each trough would occupy up to approximately 30 square feet in total area and be placed directly on the ground surface following clearing and grading using a grader or bulldozer or similar equipment. Some troughs would be placed directly adjacent to the catchment outside the protection fence while other troughs would be up to three miles from the catchment area (see Table X.3). Troughs associated with the proposed water catchment projects would be new with the exception of one trough in the First Point Allotment which is existing and would be interconnected with the proposed catchment via pipeline.

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2.3.7 Design Features

Design features are those measures or procedures incorporated into the Proposed Action which would reduce or avoid adverse impacts. Design features associated with the Proposed Action are summarized in Table X.4. Design feature abbreviations are identified to simplify references to design features as needed later in the analysis.

Table X.4. Design Features Associated with the Proposed Action.

Resource Issue	Design Feature Abbreviation	Design Feature Description
General		
Cultural Resources		
Water Resources		
Soils and Biological Soil Crusts		
Vegetation Resources		
Noxious and Invasive Weeds		
Wildlife Resources		

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2.4 Alternatives C X (Other Action Alternatives)

Pending determination of need for action alternatives in addition to the Proposed Action.

2.5 Alternatives Considered but Eliminated from Further Analysis

Pending internal and external scoping results.

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3.0 **AFFECTED ENVIRONMENT**

3.1 **Introduction**

This chapter presents the potentially affected existing environment (i.e., the physical, biological, social, and economic values and resources) of the impact area as identified in the Interdisciplinary Team Checklist found in Appendix __ and presented in Chapter 1 of this assessment. This chapter provides the baseline for comparison of impacts/consequences described in Chapter 4.

3.2 **General Setting**

Briefly describe the environmental setting of the project area, include physiographic province, general climate, major vegetation types [if not discussed elsewhere in this Chapter], elevation, historical uses; precipitation, and any other general information that helps the reader understand the area. Site specific maps and photographs should be included.

For additional information refer to 43 CFR 46.125 and BLM Handbook H-1790-1 sections 6.7.1, 6.7.2, and 8.3.5.

3.3 **Resources/Issues Brought Forward for Analysis**

Describe the affected environment for only those resources identified as "PI" in the Checklist and discussed in Chapter 1. Do not present resources that have been assigned a "NP" or "NI". Describe in detail the existing environment, conditions, and trends related to each resource for which there is an issue are described in detail. This narrative provides the indicators, and units of measure that will be subsequently analyzed for degree of change in Chapter 4.

For example, if the potentially affected resource is wildlife and the issue is impacts on mule deer winter range describe the indicators: present location, extent, condition, and use etc., of the mule deer winter range in Chapter 3, and then analyze how these indicators would change in Chapter 4. Describe and analyze the same indicators in the same units of measure, e.g., acres of habitat. For additional information, see Section 6.7 of the BLM NEPA Handbook.

The description of the affected environment should portray what is, not what would be if the proposal is approved, and should avoid any impact language that is appropriate for Chapter 4 discussions. Make sure the affected environment tracks in logic, order of presentation, level of detail indicators and units of measure with the environmental impacts section.

The following are guidelines to assist in development and presentation of this chapter:

- *Limit the discussion of environmental elements to only that which is necessary to understand the effects of the alternatives. Do not include encyclopedic information, but summarize what is needed for assessment/analysis.*
- *Describe the affected environment with the same indicators and units of measure used in Chapter 4.*
- *Summarize and incorporate by reference wherever possible. Remember that referenced material must be available to a reviewer and the reviewer told where the information can be obtained.*
- *Site-specific resource clearances, reports, surveys, or inventories need to be properly referenced.*
- *Present environmental components/resources in a consistent order throughout the document, e.g., alphabetical order, magnitude of conflict, etc.*

For additional information refer to 43 CFR 46.125 and BLM Handbook H-1790-1 sections 6.7.1, 6.7.2, and 8.3.5.

3.3.1 Resource 1

For consistency, the potentially impacted resources must be addressed in the same order presented in Chapters 1 and 4.

- **Issue 1**
- **Issue 2**

3.3.2 Resource 2

Continue until all resources are presented.

- **Issue 1**
- **Issue 2**

4.0 ENVIRONMENTAL IMPACTS

4.1 Introduction

This chapter presents the environmental effects of the alternatives to the resources identified as potentially impacted in the Interdisciplinary Team Checklist found in Appendix ___ and presented in Chapters 1 and 3 of this assessment. Direct effects are caused by the action and occur at the same time and place. Indirect effects are caused by the action and are later in time or farther removed in distance, but are still reasonably foreseeable. Cumulative effects are those impacts resulting from the incremental impact of an action when added to other past, present, or reasonably foreseeable actions regardless of what agency or person undertakes such other actions.

Analysis of the environmental consequences (impacts) is separate and distinct from preparation of the EA. Impact analysis is a thinking, investigative, and analytical process completed by an interdisciplinary team. Preparation of the EA is a writing, editorial, and publication process that is necessary to document the investigation and impact analysis made by the team. Do not use the word significant in the analysis or EA. Most courts have interpreted "major" to reinforce, but not to have a meaning independent from the term "significantly."

Provide the context, magnitude and intensity of the impact so that the decision maker can determine significance when the FONSI and DR are prepared. For additional information refer to BLM Handbook H-1790-1 section 6.4.

Your EA must identify the known or predicted effects that are related to the issues (40 CFR 1500.4(c), 40 CFR 1500.4(g), and 40 CFR 1502.16. The terms "effects" and "impacts" are synonymous in the CEQ regulations (40 CFR 1508.8). An issue differs from an effect analysis; an issue describes an environmental problem or relation between a resource and an action, while effects analysis predicts the degree to which the resource would be affected upon implementation of action.

Provide any analysis assumptions and/or management guidelines that will help define the limits of analysis. If all mitigation has been included in the descriptions of the alternatives, state that: "Because all known mitigating measures have been included in the Descriptions of the Alternatives, the environmental consequences described below are unavoidable." When this is the case, Mitigation Measures and Residual Impacts sections should not be included in this chapter.

4.2 Direct and Indirect Impacts

Follow the outline provided below for all alternatives analyzed in detail.

Identify and analyze direct and indirect impacts on the affected environment caused by the change agents (actions) described for the proposed action, including any policies or standard program requirements. The order of presentation, level of detail, indicators and units of measure should be the same as in Chapter 3. Analysis can be divided into the following component parts:

- *Cause of the impact: What would cause an impact, i.e., change, in the present or future environment?*
- *Nature of the impact: What would be affected and how would it be affected?*
- *Context and intensity: Where would the impact occur? What is the geographic location and extent of change? What is the magnitude or degree of change? How can the magnitude be expressed qualitatively (empirically measurable units) or quantitatively (relative comparative terms)?*

Clarity of expression, logical thought processes, and rational explanations are more important than length or format in the discussion of impacts. For additional information refer to 43 CFR 46.310 (e), (f), and (g) and BLM Handbook H-1790-1 sections 6.8 and 8.3.6. Following these guidelines will help the decision-maker and the public understand your analysis:

- *Use objective, professional language without being overly technical.*
- *Avoid subjective terms such as good, bad, positive and negative. The term significant has a very specific meaning in the NEPA context. While it is a common descriptor, do not use it in NEPA documents unless it is intended to take on the NEPA meaning.*
- *Avoid the use of acronyms.*
- *Make sure to reference applicable general assumptions in section 4.2 also describe any resource specific assumptions.*
- *If data are incomplete or lacking refer to 40 CFR 1502.22 for guidance.*

If necessary information is incomplete or lacking, and cannot be obtained, it must be disclosed along with why the data would be useful. For additional information refer to 43 CFR 46.125 and BLM Handbook H-1790-1 section 6.7.2.

4.2.1 Resource 1

Describe the methodology used to conduct the analysis and why the methodology was used (40 CFR 1502.24). This explanation must include a description of any limitations inherent in the methodology. If there is substantial dispute over models, methodology, or data, you must recognize the opposing viewpoint(s) and explain the rationale for your choice of analysis. You may place discussions of methodology in the text or in the appendix of the document. To the extent possible, we recommend that the analysis of impacts be quantified.

The analytical assumptions, including geographic and temporal scope, the baseline for analysis, as well as reasonably foreseeable future actions must be clearly stated. Explain any assumptions made when information critical to the analysis was incomplete or unavailable (40 CFR 1502.22).

Example: *The visual resource analysis was conducted using a GIS-based viewshed analysis from the Colorado River, which was selected as a key observation point (KOP) because of the number of viewers on the river during the spring, summer, and fall season. The GIS-based analysis did not take into consideration vegetative screening. Additionally, the resolution of the digital elevation model used to conduct the analysis likely excludes some topographical features that may provide screening.*

4.2.1.1 Alternative A Proposed Action

Example:

Issue: How much winter forage for mule deer in Herd Unit 10A would be lost due to the proposed fire?

1) Clearing of 2 acres of land for installation of the water tank would decrease forage production used by deer in the winter months by 400 pounds per year for the 30-year life of the water tank. The decrease in forage production would eliminate feed for one deer for 1 month. The 5,000 undisturbed acres in Herd Unit 10A would continue to produce about 1 million pounds of forage each year. This is sufficient to feed approximately 2,500 deer. Since there are only an estimated 600 deer in the herd unit, there would be sufficient forage available to feed the herd through the winter.

4.2.1.2 Alternative B No Action

Explain that if the proposal is rejected, there would be no direct or indirect impacts from the proposed action. However, do describe the impacts of the actions that would continue even if the proposed action is not approved. For additional information refer to BLM Handbook H-1790-1 section 6.8.

4.2.1.3 Alternative C X Reasonable Alternatives

Continue in this outline format to present all relevant resources and issues

4.2.1.4 Mitigation Measures

This section is not required if all mitigation has been identified in the descriptions of the alternatives. Describe any measures not included in the description of the proposed action which could mitigate some or all of the impacts identified in the analysis of environmental impacts. If all the measures are incorporated into the proposed action, state that no measures other than those incorporated into the proposed action have been identified. State whether the mitigation measure(s) would completely or partially negate the environmental impact. If additional mitigation is identified for several resources, add a new alternative to the EA and analysis that incorporates all of the proposed mitigation. In this case, eliminate the mitigation measures and residual impact sections of the EA. For additional information refer to 43 CFR 46.130 and Section 6.8.4 of the BLM NEPA Handbook.

4.2.1.5 Residual Impacts

This section is not required if all mitigation has been identified in the descriptions of the alternatives. Describe the impacts on the affected environment which would remain after application of the mitigation measures, if any. Be sure to analyze the impacts of the proposed mitigation measures on other resources. For example, treatment of invasive/non-native species using chemicals may result in impacts on water quality, or other resources that must be analyzed in the EA. For additional information refer to BLM Handbook H-1790-1 sections 6.8.4.

4.2.1.6 Monitoring and Compliance

Monitoring and/or compliance can provide important information regarding desired outcomes compared to actual outcomes. The main purposes of NEPA related monitoring are to: evaluate the quality of the NEPA document, ensure compliance with the NEPA decision, measure the effectiveness or success of application stipulations, and evaluate the validity of NEPA decisions. Provide the following information as part of the analysis process:

- *Identify who would conduct the monitoring, including skills and equipment necessary and methods to be used.*
- *Describe the frequency and duration of the monitoring activity.*
- *Utilize Adaptive Management as applicable (43 CFR 46.145 and 46.310(d)).*

The suggested monitoring is identified in the EA. The commitment to this monitoring is made in the DR. If carried into the DR, the monitoring must be implemented as specified.

If monitoring is deemed unnecessary for an action, the following statement should be incorporated into the EA: "No monitoring needs have been identified for this action."

If monitoring needs have been described as a part of the proposed action, incorporate the following sentence: "The monitoring described in the proposed action would be sufficient for this action because . . . (insert rationale)."

4.2.2 Resource 2

Describe the methodology used to conduct the analysis as was discussed above under Resource 1.

4.2.2.1 Alternative A Proposed Action

Example:

Issue: How much livestock grazing forage would be lost on the Verdant allotment?

The stripping of 200 acres of vegetation for the proposed mine would decrease available forage for livestock in the Verdant Allotment by 10 AUMs. The decrease of 10 AUMs in the 400 AUM allotments would reduce the allowable number of AUMs by 2.5%. This reduction in AUMs would reduce the number of allowable cattle by 2, or a decrease of 1%. The economic impact of reduction of the number of permitted cattle is analyzed in the socio-economic impacts section of this EA.

4.2.2.2 Alternative B No Action

4.2.2.3 Alternative C X Reasonable Alternatives

4.2.2.4 Mitigation Measures

4.2.2.5 Residual Impacts

4.2.2.6 Monitoring and Compliance

4.2.3 Resource 3

Repeat as necessary.

4.3 Cumulative Impacts

The purpose of the cumulative effects section is to describe the interaction among the effects of the proposed action and these various past, present, and reasonably foreseeable actions.

The following is a basic cumulative impacts outline. The cumulative effects analysis will usually vary by resource. Remember to quantify impacts whenever possible.

- 1. Identify the resource being impacted.*
- 2. Identify the Cumulative Impact Area for the subject resource.*
- 3. Describe briefly why the Cumulative Impact Area is applicable.*
- 4. As appropriate for the subject resource, incorporate by reference cumulative analysis (including past, present, and reasonably foreseeable actions and their direct or indirect impacts) from existing documents and state why the referenced material is relevant.*
- 5. List or describe any additional past, present, and reasonably foreseeable actions ongoing in the Cumulative Impact Area beyond those previously analyzed in the documents referenced in step 4 that affect the subject resource.*
- 6. Briefly describe any additional direct and indirect impacts to the subject resource resulting from the past, present and reasonably foreseeable actions which were not previously analyzed and incorporated by reference.*
- 7. Briefly describe what the action alternative(s) will add to the past, present, and reasonably foreseeable impacts.*
- 8. If the no action alternative is a continuation of the existing situation, briefly describe what the no action will add to the cumulative impacts. If the no action alternative is to not approve the activity state:
"Because the No Action Alternative will not result in any direct or indirect impacts, it will not result in an accumulation of impacts."*

Examples are included on the following page. Refer to H-1790-section 6.8.3 for additional discussion on cumulative impacts.

Example 1: Livestock Grazing

The CIAA for livestock grazing is the Olsen AMP Grazing Allotment, which is the only allotment affected by the proposed action or alternatives. Cumulative impacts livestock grazing would include the loss of AUMs for the life of the disturbance. In the cumulative impact area, past, present, and reasonably foreseeable activities include oil and gas activities, recreation activities (including OHV use), and prescribed burns. The incremental impacts of all but the oil and gas activities are impossible to quantify. Table 5-6 below, displays the past and reasonably foreseeable impact of oil and gas development on AUMs in the Olsen AMP grazing allotment.

Example: Table 5-6 AUMs Lost from Past and Reasonable Foreseeable Oil and Gas Developments in the Olsen AMP Grazing Allotment

	Total Allotment AUMs	Past Action AUMs Lost	RFD AUMs Lost	AUMs Lost per Alternative	Total Reasonably Foreseeable AUMs Lost	% of Total Allotment AUMs Lost
Alternative A	134,307	29	97	12	138	0.1%
Alternative B	134,307	29	97	6	132	0.1%
Alternative C	134,307	29	97	6	132	0.1%
Alternative D	134,307	29	97	0	126	0.1%

In addition to loss of AUMs; increased roads within the Project Area would cumulatively contribute to difficulties in controlling livestock as more natural barriers to livestock movement are removed, and as more livestock use roads as travel routes; increased road and pipeline ROWs could contribute to changes in water flow, thereby reducing flows to livestock ponds; loss of vegetation and increased traffic and human activity in the Project Area could contribute to livestock displacement that is occurring throughout the Project Area as a result of recreational activities and other land uses. These past, present, and future construction activities, and other visual and noise impacts in the Project Area could cause livestock to move to adjacent undisturbed areas, thereby leading to additional livestock impacts on vegetation in those locations.

Example 2: Paleontological Resources

As potential impacts to paleontological resources across a geographic landscape are not additive, the cumulative impact area of analysis is the project area which covers 21,760 acres. As was disclosed in the River Bend/West Willow Creek EA (UT-080-97-049) past actions include 182 oil and gas wells within the River Bend Unit (pre-1997) resulting in 710 acres of surface disturbance. There were 301 additional wells proposed within the River Bend/West Willow Creek EA, with a total surface disturbance of 895 acres. The 4 additional wells proposed in this EA would be part of the wells conceptually approved through the 1997 EA. Future actions in the vicinity include, the River Bend Infill EA which could vertically and directionally drill 484 wells, including 128 wells previously approved under the 1997 River Bend EA, resulting in a total of 1,103 acres of disturbance. A total of 2,708 acres would be cumulatively disturbed (12 % of total land area in the Unit), which is a conservative total due to the overlapping of analyzed acres between the 1997 and ongoing River Bend EAs. Additional past, present, and reasonably foreseeable activities in the project area include some OHV use and vegetation treatment activities. The surface disturbance, if any, associated with these activities is impossible to quantify due to their dispersed nature. Paleontological surveys are conducted in areas with high potential for producing paleontological resources prior to approval of surface disturbing activities, and identified paleontological resources are avoided or collected. However, paleontological resources that are not visible on the surface could be unknowingly damaged or destroyed by construction activities. Unknown paleontological resources could be disturbed on up to 2,708 acres. The proposed action would make up 9.5 acres of the total disturbance. The no action alternative would not result in an accumulation of effects.

4.3.1 Resource 1

4.3.1.1 Cumulative Impact Analysis Area

Describe the geographic boundaries of cumulative impact analysis for each of the resources analyzed.

4.3.1.2 Past and Present Actions

Past or ongoing actions that affect the same components of the environment as the proposed action are:

Describe and explain the actions and activities that are in place or ongoing that affect the same environmental components that the proposed and alternative actions would affect.

4.3.1.3 Reasonably Foreseeable Actions

The following reasonably foreseeable future actions would cumulatively affect the same resources in the cumulative impact area as the proposed action and alternatives.

Include a reasonably foreseeable action scenario that identifies the actions and impact area(s). The NEPA Handbook (Section 6.8.3.4) defines a reasonably foreseeable action to those for which there are existing decisions, funding, formal proposals, or which are highly probable, based on known opportunities or trends.

4.3.1.4 Cumulative Impact Analysis

Incorporate cumulative analysis from existing documents by reference and tier to the existing land use plan, as appropriate. If no cumulative effects are anticipated from the action, use the following: "It has been determined that cumulative impacts would be negligible as a result of the proposed action or alternatives because...." Refer to H-1790-1 pages 57-61 for additional discussion on cumulative impacts.

Describe the interaction among the effects of the proposed action and these various past, present, and reasonably foreseeable actions.

How the different effects interact may help determine how you may best describe and display the cumulative effects analysis.

The cumulative effects analysis provides a basis for evaluating the cumulative effect relative to any regulatory, biological, socioeconomic, or physical thresholds. Describe how the incremental effect of the proposed action and each alternative relates to any relevant thresholds.

Distinguish between the impacts of the alternatives. Depending on the complexity of the project, it may be beneficial to have a separate fifth level subheading for each alternative.

4.3.2 Resource 2: (repeat as necessary)

4.3.2.1 Cumulative Impact Area

4.3.2.2 Past and Present Actions

4.3.2.3 Reasonable Foreseeable Action Scenario

4.3.2.4 Cumulative Impact Analysis

5.0 CONSULTATION AND COORDINATION

5.1 Introduction

The issue identification section of Chapter 1 identifies those issues analyzed in detail in Chapter 4. The Interdisciplinary Team Checklist provides the rationale for issues that were considered but not analyzed further. The issues were identified through the public and agency involvement process described in sections 5.2 and 5.3 below.

5.2 Persons, Groups, and Agencies Consulted

List all persons, agencies, and organizations consulted, and the purpose of such consultations. A table may be used for this purpose. This applies only to those consulted whose information assisted in the preparation of the EA, not those that commented on the EA during a public comment period. Sample wording is provided. The actual wording must be developed based on the circumstances of the proposal and results of the consultation process. For additional information refer to BLM Handbook H-1790-1 section 8.3.7.

Example: Table 5-1 Persons, Agencies and Organizations Consulted

Name	Purpose & Authorities for Consultation or Coordination	Findings & Conclusions
U.S. Fish & Wildlife Service (USFWS)	Information on Consultation, under Section 7 of the Endangered Species Act (16 USC 1531)	The Service agrees, by letter dated , that the proposed action may affect but would not adversely affect listed species because..... (Refer to Appendix)
Utah State Historic Preservation Office (SHPO)	Consultation for undertakings, as required by the National Historic Preservation Act (NHPA) (16 USC 470)	SHPO has approved, by letter dated , that..... (Refer to Appendix)
Tribe	Consultation as required by the American Indian Religious Freedom Act of 1978 (42 USC 1531) and NHPA (16 USC 1531)	A meeting was held on (date) to describe and discuss the concerns of the Tribe concerning the proposed action. A follow-up letter was sent and/or phone calls made on (date(s)). The Tribe has responded by letter dated , that..... OR The Tribe has not responded identifying any concerns. Lack of response is interpreted by BLM to indicate that the Tribe has no concerns relative to the proposed action.
U.S. Army Corps of Engineers	The project would require a permit from the Corps under authority of Section 404 of the Clean Water Act (33 USC 1251)	The Corps has indicated that the project meets the nationwide permit criteria which states.....
Utah Div. of Wildlife Resources	Consult with UDWR as the agency with expertise on impacts on game species.	Data and analysis regarding big game species incorporated into Chapters 3 and 4.

Table 5-1 Persons, Agencies, and Organizations Consulted

Name	Purpose & Authorities for Consultation or Coordination	Findings & Conclusions

5.3 Summary of Public Participation

Describe the process used to involve the public. Include the date of posting on ENBB, when and how scoping was conducted, dates of public meetings [if any], dates of public comment period [if any], etc. See Chapter 2 for guidance on public involvement.). For additional information refer to BLM Handbook H-1790-1 sections 6.9 and 8.3.7.

Do not include 5.3.1 5.3.3 in an EA is being released for public comment or if a public comment period is not offered.

Example: During preparation of the EA, the public was notified of the proposed action by posting on the Utah Internet Homepage on ____date. The process used to involve the public included _____. A public comment period was (not) offered (because....) between ____month/date/year and ____month/date/year.

5.3.1 Comment Analysis

Complete this section after the public comment period. List all individuals and organizations that provided comments with the exception of information that is protected by the privacy act. If appropriate, provide a succinct summary of the comments received or copies of the letters with the comments bracketed and numbered for response. For additional information refer to 43 CFR 46.305 and BLM Handbook H-1790-1 section 6.9.

5.3.2 Response to Public Comment

If applicable, group similar/like comments under appropriate headings if numerous comments are received. See Chapter 9 of the Guidebook for guidance and examples on responding to comments. For additional information refer to BLM Handbook H-1790-1 section 6.9.2.2.

5.4 List of Preparers

List all preparers, their area(s) of expertise, and the section(s) of the document they prepared. If the EA is prepared for BLM by a consultant, BLM should not be listed as an agency consulted, but rather included in the list of preparers. This information may be presented in table format. Sample wording is provided. The actual wording must be developed based on the actual preparers of the EA. Do not include the non-BLM preparers table if the document was prepared in-house.

Example: Table 5-2 BLM Preparers

Name	Title	Responsible for the Following Section(s) of this Document
Robert Raptor	Team Leader	Technical Coordination & Quality Control
Jim Rafter	Recreation Specialist	Impact analysis for recreation, and visual resource management
Stephen McCoy	Petroleum Engineer	Impact analysis for energy mineral resources

Example: Table 5-3 Non-BLM Preparers

Name	Title	Responsible for the Following Section(s) of this Document
John Smith	Team Leader	Technical Coordination & Quality Control
Mike Falcon	Wildlife Biologist	Impact analysis for big game, T&E animal species
Donna Bales	Soils/Watershed Specialist	Impact analysis for watershed, water quality, and reclamation

Table 5-2 BLM Preparers

Name	Title	Responsible for the Following Section(s) of this Document

Table 5-3 Non-BLM Preparers

Name	Title	Responsible for the Following Section(s) of this Document

6.0 REFERENCES, GLOSSARY AND ACRONYMS

6.1 References Cited

This chapter provides literature references for all citations within the body of the EA including documents tiered to or incorporated by reference. Specialists must turn in a complete list of references used in preparation of the EA. Cite published scientific information where possible. Include documents used such as a cultural surveys, Water Quality 303(d) list; and published soil surveys. Other credible references include published articles or studies in scientific journals; other agency and university studies; Utah statistics; published state/county socioeconomic statistics; and published information provided on the internet.

There are various styles for the citations and references. Whatever style guide is selected, it is important to be consistent in using citations and references. Writers should use the reference worksheet provided in Appendix 6 of this Guidebook to record references cited in the analysis and EA, and submit it to the EA preparer for inclusion in the EA. Cite specific pages utilized or relied upon in your EA.

Common Examples:

1. Finch, Deborah M. and Scott H Stoleson, eds., 2000. *Status, Ecology & Conservation of the Southwestern Willow Fly catcher*. General Tech Report RMRS-GIR-60. Ogden, UT: USDA, Forest Service. Rocky Mountain Research Station. 131 pp.
2. MacMurphy, John. "Effects of streamside vegetation on water temperature." Personal telephone call. May, 24, 2010

6.2 Glossary of Terms

Optional - If the EA includes technical terms that must defined in order for the readers to understand the document, provide a glossary of terms (including the source for the definition) used in the EA. List in alphabetical order all technical terms or phrases used in the EA. Provide a source for the definition provided; explain if there may be any deviations from the official/legal definition used and why.

6.3 List of Acronyms

Optional - If several acronyms are used in the EA, provide a list of any abbreviations and their full translation as a courtesy to the reader. The acronyms and their translations should be listed in alphabetical order. Provide a definition for the acronym in the glossary, if appropriate. As an alternative, the list of acronyms may be included at the beginning of the document directly after the table of contents.

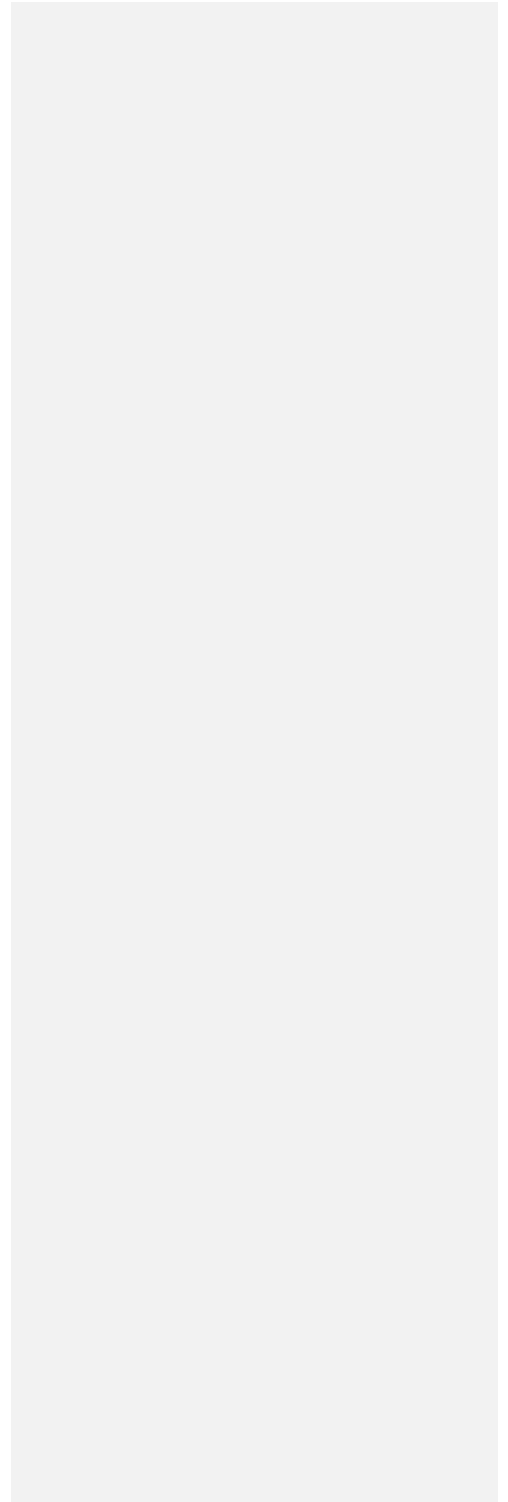
**APPENDIX A
INTERDISCIPLINARY TEAM CHECKLIST**

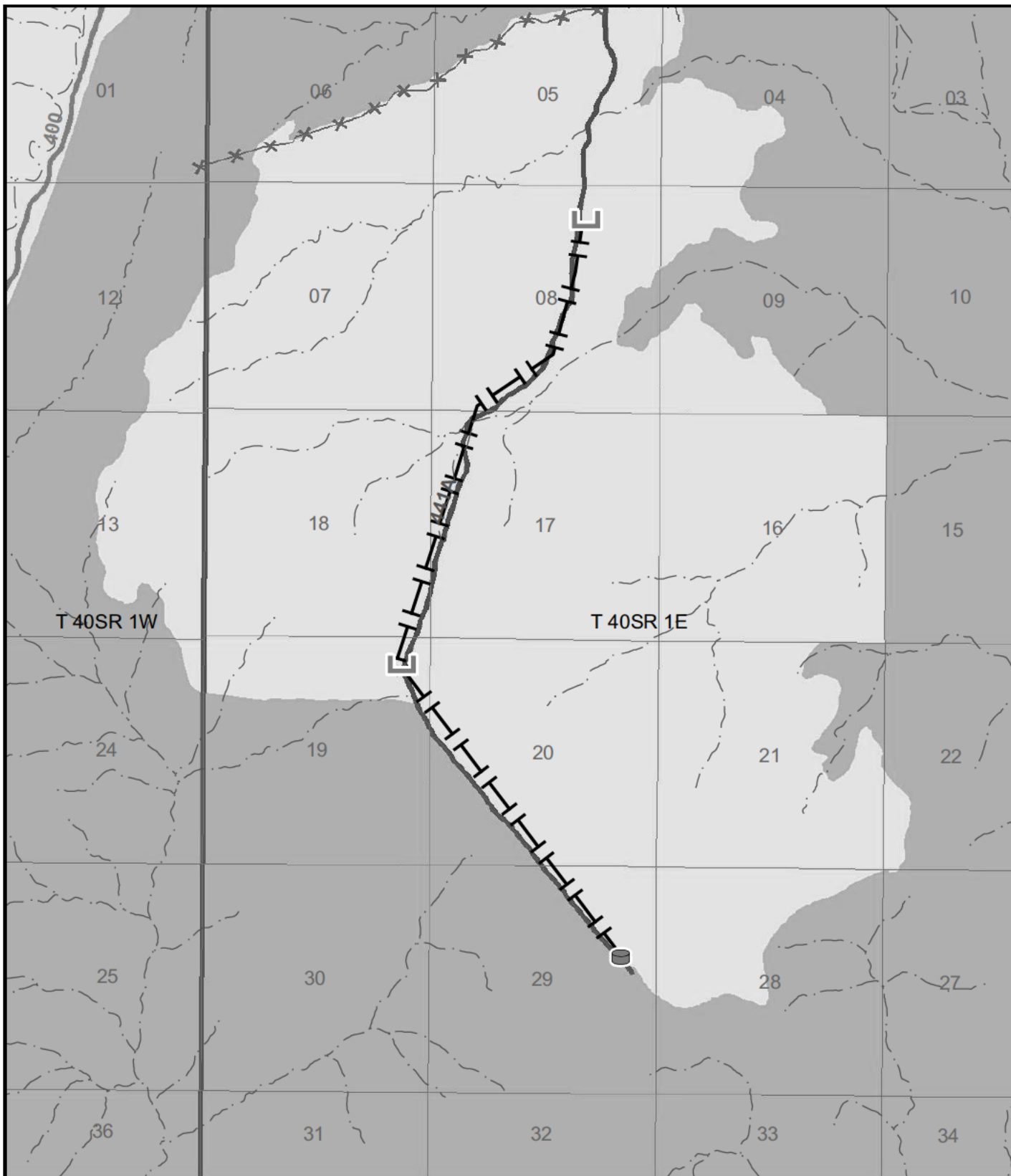
The appendices should include information that is necessary for understanding or supporting the analysis and text of the EA. This section may include any of the following, as necessary:

- *Detailed descriptions of project components necessary to support technical analysis*
- *Topographic maps or engineering drawings, referred to in text as figures or plates*
- *Photographs*
- *Any visual enhancements to help the reader*
- *Charts, graphs, figures, tables, etc.*
- *Technical reports*
- *Conclusion of consultation correspondence including determinations/concurrence*

All Utah BLM EAs will include the Checklist as an appendix. [Chapter 5 of the Guidebook].

Figure 1-1 Sample Figure Title



Map 1: West Bench Water Catchment

- | | | | |
|--------------------|-------------------|------------------|------------------|
| Proposed Pipeline | GSENM Boundary | ROAD TYPE | OWNERSHIP |
| Trough | FENCE/DRIFT FENCE | Open | BLM |
| Catchment and Tank | Admin Only | | |
| Wahweap WSA | | | |

Kilometers
0 0.3 0.6

Miles
0 0.3 0.6



11/13/2017

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UTM NAD 83 Zone 12

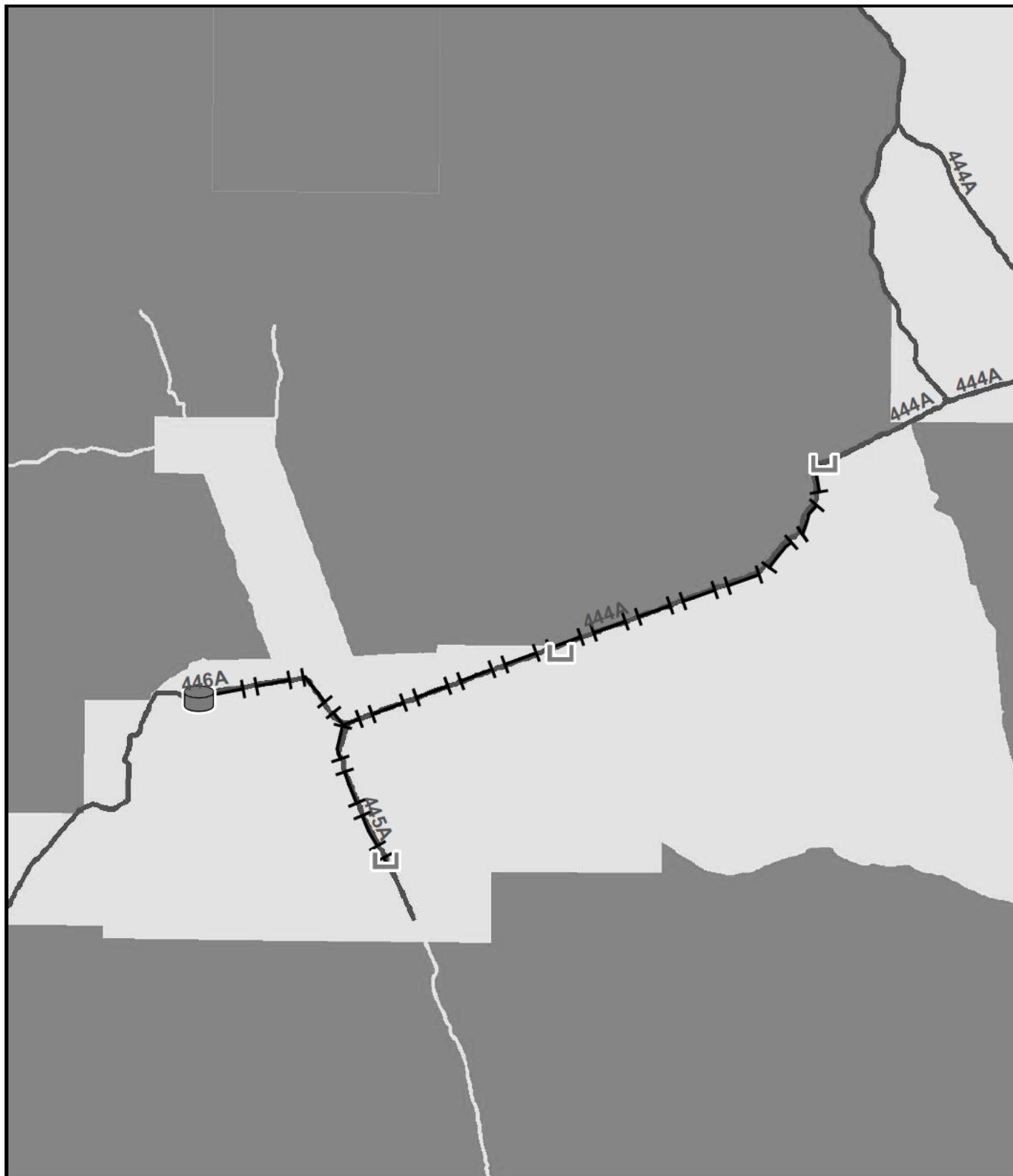
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DOI-2020-10-05766
not intended by the BLM.



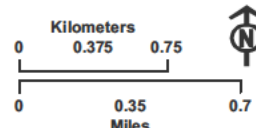
Grand Staircase-Escalante National Monument

BLM

Map 2: Four Mile Bench Pipeline



- Proposed Pipeline
 Catchment
 Trough
 GSENM Boundary
 Wahweap WSA
ROAD TYPE
 Admin Only
OWNERSHIP
 BLM



11/13/2017

Scale: 1:36,000
UTM NAD 83 Zone 12

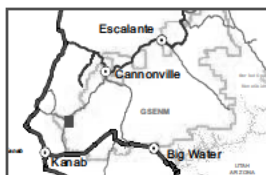
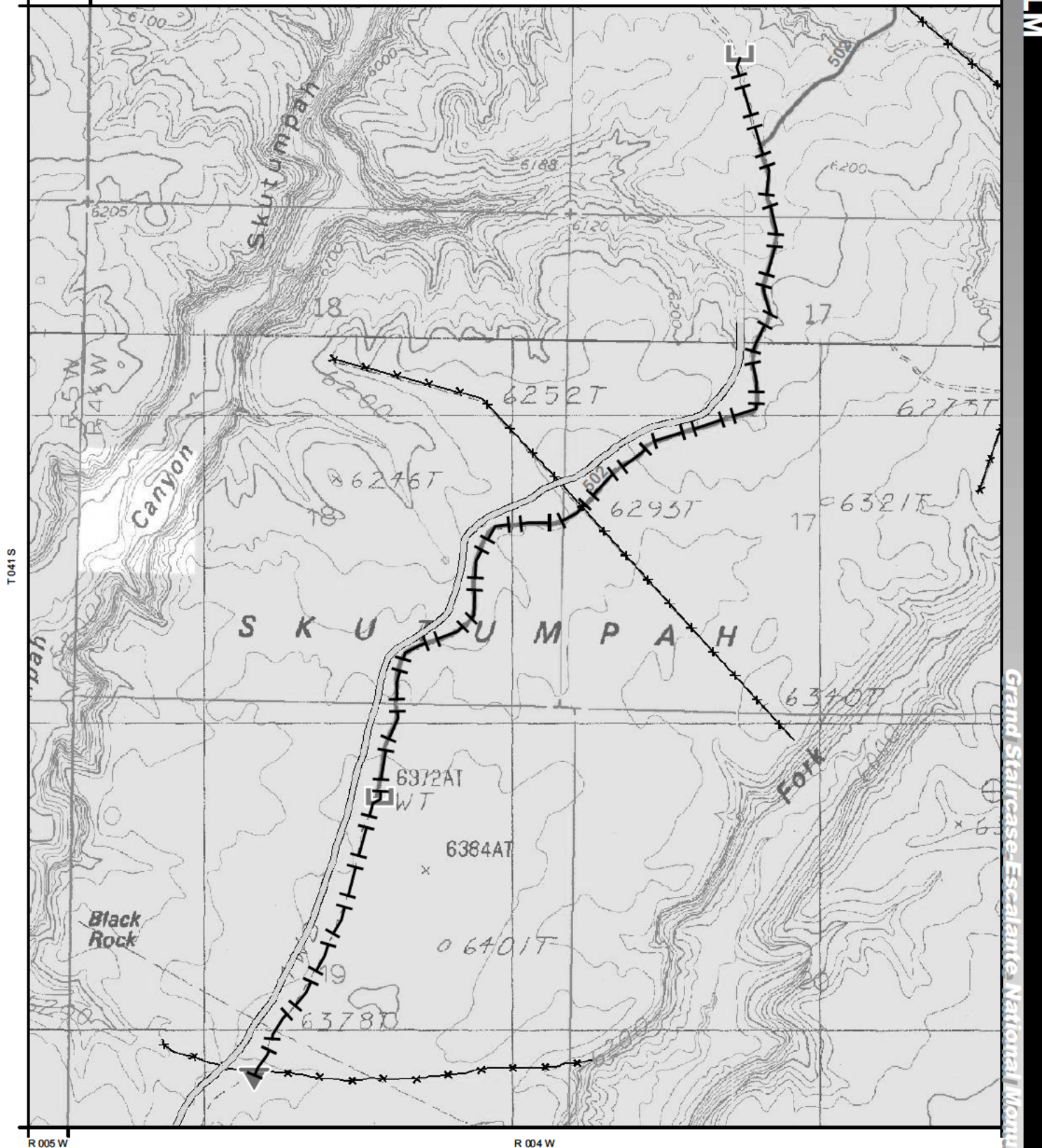
No warranty is made by the BLM
for use of the map for purposes
not intended by the BLM.



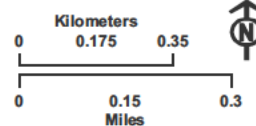
Grand Staircase-Escalante National Monument

BLM

Map3: First Point Water Catchment



- Proposed Pipeline
 ▲ Catchment
 ▭ Trough
 — FENCE/DRIFT FENCE OWNERSHIP
 — EXISTING PIPELINE
 ▭ GSENM Boundary
 — ROAD TYPE
 — Open; Open/ATV
- BLM
 Private

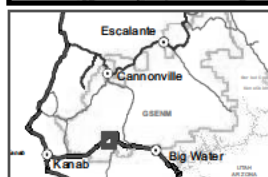
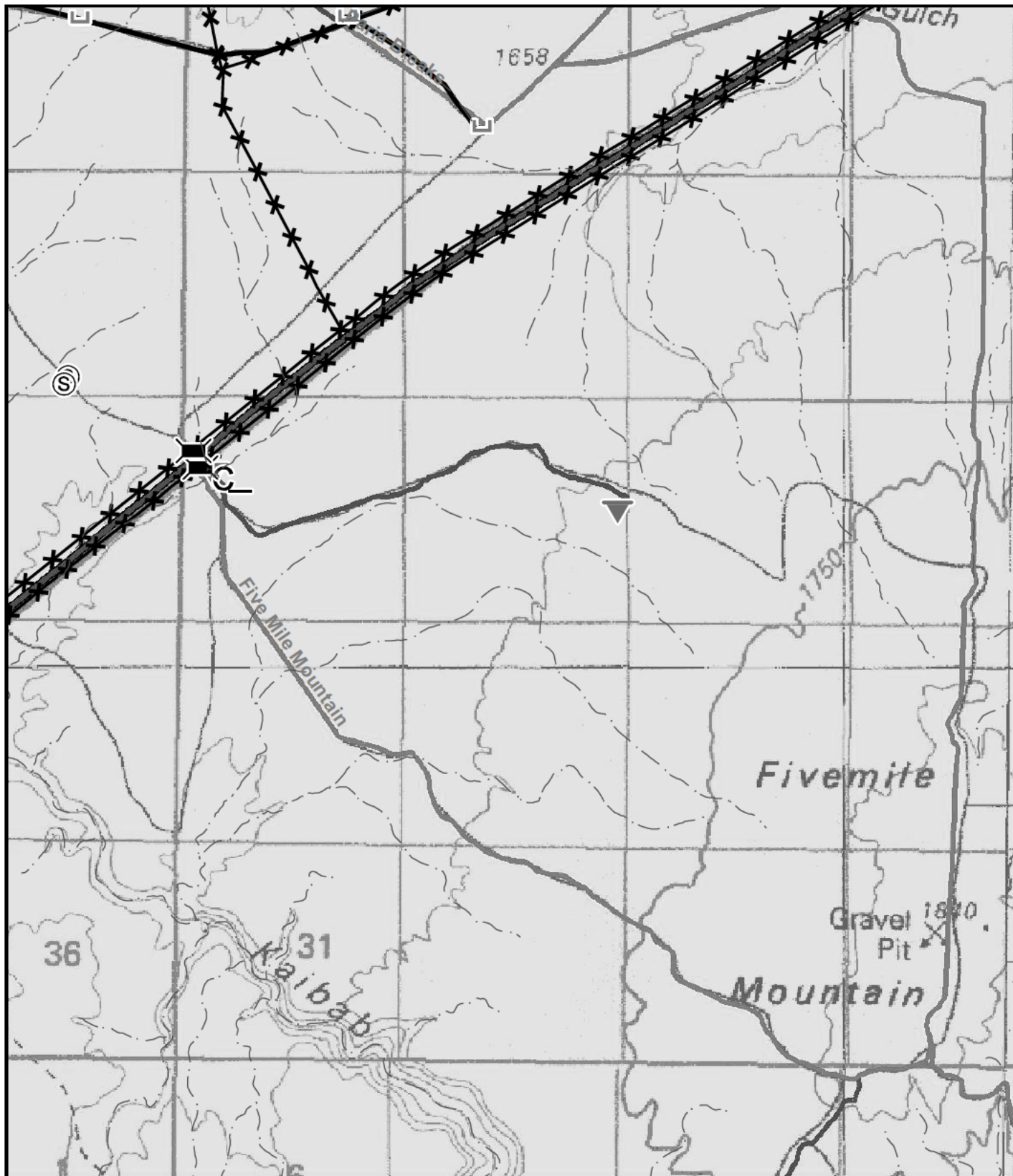


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not intended by the BLM.



Map 4: Five Mile North Water Catchment



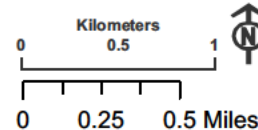
- ▼ Fivemite North Catchment
- ×× FENCE/DRIFT FENCE
- PIPELINE
- GSENM Boundary

ROAD TYPE

- US Highway 89
- Open/ATV
- Admin Only

OWNERSHIP

- BLM



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UTM NAD 83 Zone 12

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DOI-2020-10-05769
not intended by the BLM.

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Map 5: Houserock Valley Water Catchment



▼ Catchment

RIP_TYPE

✕ CATTLE GUARD

✕✕ FENCE/DRIFT FENCE

▭ GSENM Boundary

ROAD TYPE

— Open

— Open/ATV

OWNERSHIP
BLM

Kilometers
0 0.1 0.2
Miles
0 0.1 0.2



Scale: 1:10,000
UTM NAD 83 Zone 12

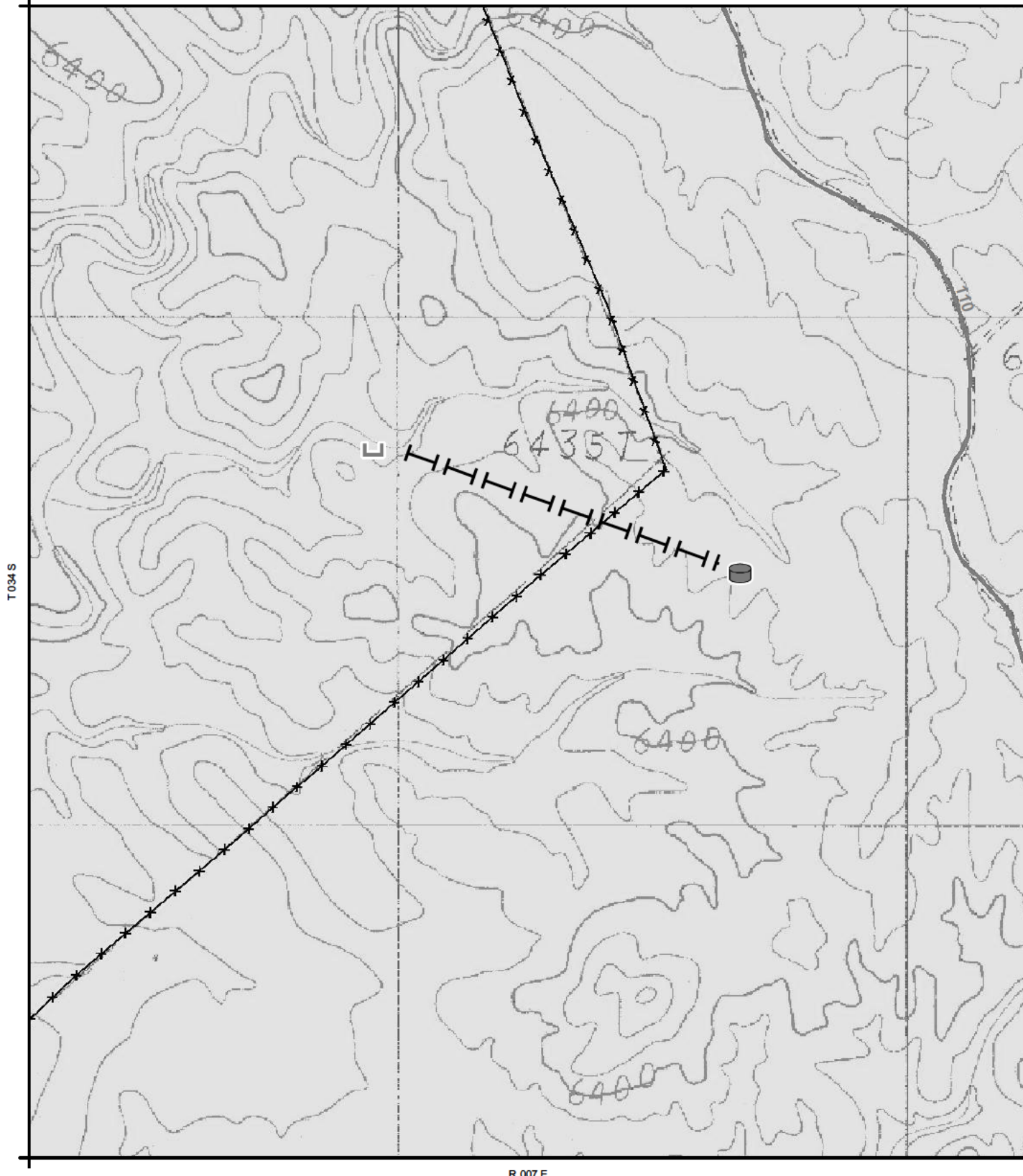
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DOI-2020-10-05750
not intended by the BLM.

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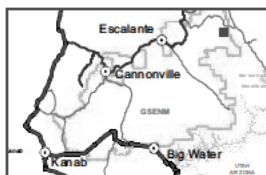
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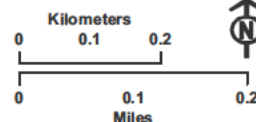
Map 6: Wagon Box Mesa Water Catchment



R 007 E



- Proposed Pipeline** **FENCE/DRIFT FENCE OWNERSHIP**
Tank
Trough
GSENM Boundary
ROAD TYPE
Open/ATV
BLM



11/13/2017

Scale: 1:10,000
UTM NAD 83 Zone 12

No warranty is made by the BLM
DOI-2020-10-05751
not intended by the BLM.

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