

**ADDENDUM to**

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**Specialist Report 7.0 and 8.0  
Water and Watershed Resources**

**Oil and Gas Leasing EIS  
on Lands Administered by the  
Dixie National Forest**

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## 1.0 INTRODUCTION

This addendum updates Specialist Report 7.0 and 8.0: Water and Watershed Resources, which informed the DEIS. This addendum provides the supplemental information necessary to inform the FEIS and make a decision. The specific purposes of this supplement are to:

1. Provide an overview of changes between the Draft and Final EIS (**Section 2.0**).
2. Highlight the changes since the DEIS that were made specifically to protect Water and Watershed Resources or that are otherwise relevant to Specialist Report 7.0 or 8.0 (**Section 3.0**).

## 2.0 CHANGES BETWEEN DRAFT AND FINAL EIS

Several changes were made to the action alternatives, and specifically leasing options, in response to public comments on the DEIS. Other changes to leasing options reflect Forest or other Agency decisions made since the DEIS that have bearing on the resources analyzed.

**Table 1** summarizes the changes to leasing options since the DEIS.

**Table 1 Changes to leasing options since the DEIS reflected in the new GIS model.**

Resource	DEIS Leasing Option	FEIS Leasing Option	Alternatives Affected
Inventoried Roadless Areas	NSO (mod*)	NSO	C, D1, and E1
SIO Unassigned	LN	CSU	B, C, D, and E
NPS Protective Measure (new)	n/a	NL	B
	n/a	NSO	C
ROS Primitive	NL	NSO	C
Sage-Grouse Leks	1-mile buffer	2-mile buffer	B and C
Fisheries Habitat	300-foot buffer	500-foot buffer	C
Boreal Toad Habitat (new)	n/a	Added to "Forest Service-Sensitive Species and Suitable Habitat"	A-E
Desert Tortoise Habitat	various	No suitable habitat determination	A-E
Desert Tortoise Critical Habitat	various	No suitable habitat determination	A-E
Lava Fields over Sensitive Aquifers	NSO	NL	B and C
Class I Airsheds – 60 km buffer (new)	n/a	CSU	A-E
Iron Town Historic District	various	No acres on Dixie National Forest	A-E

\*Actual leasing option CSU but called a "modified NSO."

### 2.1 New GIS Model

The GIS model was re-run to incorporate the changes made to leasing options and the addition of new resources in the FEIS. The new model output, or the number of acres under each leasing option across the Forest, and revised baseline acres where appropriate, is reflected in each resource section in the FEIS. Regarding these specialist report updates (i.e., addendums),

individual number replacements in the text that reflect the new model output for the FEIS are not listed in the errata sections. Instead, tables of data, usually replacing a specific table in the DEIS specialist report, are presented in each specialist report addendum to summarize the data changes in the FEIS.

## 2.2 Errata

Errata correct (**Section 2.3.1**) or expand on data previously presented (**Section 2.3.2**), or incorporate new information or decisions since the DEIS (**Section 2.3.3**).

### 2.2.1 Clarifications

Clarifications to the DEIS were made to correct errors or to eliminate confusion. Most were made as responses to public comments on the DEIS.

- Chapter 1
  - Section 1.5.2, Lands Not Legally Available for Leasing, clarification to language describing Utah Wilderness Act of 1984.
  - Section 1.5.2, Lands Not Legally Available for Leasing, clarification to language describing Split-estate parcels.
  - Section 1.8.2, 2001 Roadless Area Conservation Rule and Legal Activity, clarification to how Roadless Areas on the Dixie are officially identified.
- Chapter 3
  - Section 3.5.4, Aquatic Species and Habitat, clarification to which waterbodies on the Dixie are Blue Ribbon Fisheries, following a memo from the Blue Ribbon Fisheries Advisory Council dated 26 March 2006.
  - Section 3.6.2.3, Candidate Species, GIS error and clarification on acres of greater sage-grouse brood-rearing habitat within the Dixie.
- Chapter 4
  - All Sections, all effects determinations under NL were changed to “No Effect” (from “negligible”).
  - Section 4.6.4, Impacts of Connected Actions by Leasing Option, reducing impact adversity determinations for Utah prairie dog, greater sage-grouse, and pygmy rabbit.
  - Sections 4.6.4, 4.6.5, 4.9.4, and 4.9.5, Impacts of Connected Actions by Leasing Option and by Alternative: Reduced impact adversity determinations for pygmy rabbit, sensitive bats, sensitive raptors, big game, and marginally unstable slopes (soils) under CSU for some of the action alternatives due to misunderstanding (by the consultant) of the application of resource-specific CSUs.
  - Section 4.6.4, Impacts of Connected Actions by Leasing Option, road density was clarified as Open Motorized Road Density (OMRD).
  - Section 4.7.4, Impacts of Connected Actions by Leasing Option, clarification added to lava fields over sensitive aquifer impacts regarding the BLM Onshore Oil and Gas Order requirement for well casing.
  - Section 4.12.2.4 and 4.12.2.5, Class I Cumulative Impact Analysis and Visibility and Deposition Analysis, clarifications added (since SIR) regarding the need for additional air quality analyses for proposed projects and the criteria under which further analyses are required.
  - Section 4.12.2.7 (new), Direct Ozone Impacts, this section was added to clarify that ozone impacts are discussed in the cumulative effects section of Air Resources (5.12.3.1).
  - Section 4.17, Forest Plan Consistency Determination, assessments of

- Chapter 5
  - Section 5.6.2, Past, Present, and Reasonably Foreseeable Future Actions, cumulative effects discussion regarding grazing effects to Utah prairie dog and greater sage-grouse expanded to include more of the scientific information available.

## 2.2.2 Expanded Analyses

Expanded analyses were made as a result of the comments received on the DEIS. Apart from the SIR, which presented a new analysis on Climate Change and other aspects of Air Resources not in the DEIS (e.g., ozone), the main areas with information added were night skies (Visual Resources, 3.2 and 4.2), unroaded/undeveloped areas (IRAs/WSRs, 3.3 and 4.3), and greater sage-grouse (Special Status Species, 3.6 and 4.6). In the case of greater sage-grouse, impact determinations were re-assessed for alternatives B-E. Scientific evidence or Agency direction not previously considered was added to these discussions in response to public comments on the DEIS from government agencies and environmental groups.

The Air Resources analysis expanded upon in the SIR was further expanded in response to public comment on the SIR. Areas with new information include NAAQS for nitrogen oxides and ozone, secondary PM<sub>2.5</sub> analysis, updated ozone monitoring data from Zion NP, an expanded ozone analysis based on the UBAQS, and additional information on the impacts to sagebrush habitat from climate change.

## 2.2.3 New information or Agency direction (since 2008)

The following decisions, regulations, or information were incorporated in the FEIS where applicable:

- Omnibus Public Land Management Act 2009
- Memorandums 1042-154 (2009) and 1042-155 (2010) (RACR)
- Wild and Scenic Rivers Suitability Study (2008)
- Forest Service Strategic Plan (2007-2012)
- National Visitor Use Monitoring Study (2010)
- Motorized Travel Plan (2009)
- Dixie National Forest Annual Monitoring Reports (2008 and 2009)
- Dixie National Forest Aquatic Monitoring Amendment (2010)
- Conservation Agreements for southern leatherside (UDWR 2010)
- New BLM RFPs – Cedar City and Richfield Field Offices (both 2008)
- Alton Coal Development update
- Updated R4 TESP list (2011)
- New definition of Sensitive Fisheries Habitat on the Dixie (=occupied *and suitable*; 2009)
- Updated occurrence and habitat data for TES species on the Dixie (2008-2010)
- Biological Opinion from USFWS (2011), including Lease Notices
- USFS SOPA (since 1<sup>st</sup> quarter 2011; updates to Foreseeable Future Actions)
- BLM IM No. UT 2010-055 (Protection of Ground Water Associated with Oil and Gas Leasing, Exploration, and Development – Utah BLM)

## 3.0 CHANGES TO WATER AND WATERSHED RESOURCES

### 3.1 Revised Leasing Options and New Model

The main changes to water resources between the DEIS and FEIS analysis pertain to lava fields over sensitive aquifers and BLM-directed ground water protection. Leasing options for lava fields over sensitive aquifers changed under Alternatives B and C in the FEIS to NL. In the DEIS, leasing options under Alternatives B and C were NSO. Ground water protection was added in the form of a Lease Notice for ground water and transient surface water zones as mapped by the State of Utah. Additional BLM-directed protections for ground water as pertain to oil and gas development were also added to Appendix C.

The output of the new GIS model as pertains to water and watershed resources is shown in the revised **Table 4.7-4**.

**Table 4.7-4 Acreage of Resource Components under each Leasing Option by Alternative**

Resource Component	Leasing Option <sup>3</sup>	Alternative <sup>1,2</sup>						
		A	B	C <sup>4</sup>	D2	D2	E1	E2
Lava Fields over Sensitive Aquifers	NA							
	NL	58,585	58,585	58,585				
	NSO				58,585	58,585	18,821	
	CSU							
	SLT						39,765	58,585
Streams, Lakes, Springs, Wetlands, Floodplains, and Riparian Areas (including riparian vegetation) <sup>5</sup>	NA	23,496	38,243	23,496	23,496	23,496	23,496	23,496
	NL	387,256	545,700	7,845				
	NSO		79,658	379,411	167,052	27,431	146,332	
	CSU				220,203	359,824		
	SLT						240,923	387,256
Municipal Watersheds	NA	7,589	7,589	7,589	7,589	7,589	7,589	7,589
	NL	45,816	45,816					
	NSO			45,816	23,548	5,901	22,594	
	CSU				22,268	39,915		
	SLT						23,222	45,816

<sup>1</sup> Small discrepancies in the acreage presented for each alternative are due to the fact that the GIS database has limitations when applied over an extremely large area that result in an inability to calculate acreages that match exactly between alternatives. A more detailed table that separates the acreage by resource component and ranger district will be available in Appendix B.

<sup>2</sup> Alternatives D1, D2, E1, and E2 represent the dual analysis of Alternatives D and E. D1 and E1 represent the acres available with NSO in all IRAs. D2 and E2 represent the acres with leasing allowed in IRAs under a less restrictive leasing option.

<sup>3</sup> Areas not legally available (NA) for leasing (see Section 1.5.2) are included in the Table to provide context to the analysis.

<sup>4</sup> NSO for Alternative B is different than for Alternative C and is described in Section 4.7.4.3

<sup>5</sup> Includes a 300-foot buffer (410,550 acres), except for Alternative B, which includes a 500-foot buffer (662,835 acres). As a result, acreage for Alternative B in the table is large than under the other alternatives.

### 3.1.1 Lava Fields over Sensitive Aquifers

The following modifications should be made to Specialist Report 7.0 to reflect the change to lava fields over sensitive aquifers:

#### Page 21 (Section 7.5.4.1)

- Replace 4<sup>th</sup> sentence in “No Lease” section with:

Under Alternative B, NL is applied to lava fields over sensitive aquifers, the 300-foot buffer around all waterbodies, and to municipal watersheds. Under Alternative C a NL stipulation is applied to lava fields over sensitive aquifers. Where NL applies to lava fields over sensitive aquifers, the intent is to avoid direct and indirect effects associated with ground disturbance as well as directional drilling from an area outside its boundaries.

#### Page 35 (Section 7.5.4.3)

- Replace 1<sup>st</sup> 2 paragraphs in “Alternative B” section with:

Alternative B would apply a NL stipulation to lava fields over sensitive aquifers, municipal watersheds, and to the 300-foot buffer around all waterbodies. It would also apply a NSO leasing option to a 500-foot buffer around these areas. All lava fields over sensitive aquifers would be NL under Alternative B. Approximately six percent (38,243 acres) of the 300-foot riparian buffer occurs in areas not legally available (NA) for leasing, approximately 82 percent (545,700 acres) would be under NL, and approximately 12 percent (79,658 acres) would have a NSO leasing option. For municipal watersheds, approximately 14 percent (7,589 acres) would be under NA and 86 percent (45,816 acres) would be NL (Table 4.7-4).

Under this alternative, disturbance (*Measurement Indicator #5*) could only occur in the 200-foot distance between the outer edge of the 300-foot buffer and the outer edge of the 500-foot buffer. Disturbance in these areas would be limited to seismic activity by NSO. As a result, up to 60 acres of seismic exploration could occur on the Pine Valley Ranger District and 120 acres on the Cedar City, Powell, and Escalante Ranger Districts. This represents less than one percent of the total acreage available on the individual ranger districts. There would be no surface disturbance to municipal watersheds or lava fields over sensitive aquifers and essentially no potential for the types of effects described in Section 4.7.4.6. Further, there would be no potential for increasing miles of roads within municipal watersheds (*Measurement Indicator #3*).

#### Page 36 (Section 7.5.4.3)

- Change “Alternative C with NSO in IRAs” to “Alternative C”
- Replace 1<sup>st</sup> 2 paragraphs in “Alternative C” section with:

Alternative C would apply a NL stipulation to all lava fields over sensitive aquifers. Alternative C would apply a NSO leasing option to all other water and

watershed resources. Regarding municipal watersheds, 86 percent (45,816 acres) would be NSO and 14 percent (7,589 acres) would be NA. Approximately six percent (23,496 acres) of the 300-foot buffer areas would be within areas not legally available for leasing (NA) and approximately 7,845 acres (two percent) would be within areas with a NL option. The remaining 92 percent (379,411 acres) would be available under NSO.

Direct impacts to watershed resources and surface water would be limited to seismic exploration and a small amount of road, culvert, and bridge construction within the 300-foot buffer. The impacts of seismic exploration would be as described for SLT in Section 4.7.4.6. Road-stream crossings would also have impacts as described in Section 4.7.4.6 including the introduction of sediment, increased bank erosion, and alteration of local hydrological conditions; however, most of the impacts associated with road and stream crossings would be avoided by following existing requirements contained in Appendix C and the Gold Book (BLM and USFS 2007). In general, the impacts of road stream crossings under Alternative C would be less severe than described in Section 4.7.4.6 because only small amounts of these water and watershed resources would be affected at each crossing (there would be approximately 600 linear feet of road within the buffer at each crossing, or about 0.5 acres). As a result, impacts would range from negligible to moderate and would be short to long term. Indirect effects would be the same as described for SLT in Section 4.7.4.6. The majority of municipal watersheds would be available under NSO and the impacts to these resources would be the same as described for NSO in Section 4.7.4.3. There would be no potential for increasing miles of roads within municipal watersheds (*Measurement Indicator #3*).

Page 37 (Section 7.5.4.3)

- Replace 2<sup>nd</sup> paragraph in “Alternative D with NSO in IRAs” with:

When compared with Alternative C, assignment of leasing options under this alternative would provide less protection to lava fields over sensitive aquifers, as directional drilling would be allowed from adjacent areas and seismic activities would be permitted within the boundaries of these areas under NSO.

### **3.1.2 BLM Ground water protection**

Page 2 (Section 7.4.2)

- Add the following at the beginning of the section:

The Forest Service and BLM have a joint responsibility to address groundwater as it pertains to oil and gas operations. However, BLM is solely responsible for the protection of groundwater associated with downhole operations (i.e., inside a well). The following section describes groundwater resources under Dixie National Forest surface, for which BLM is ultimately responsible.

Page 4 (Section 7.4.4)

- Replace the last sentence of the first paragraph with:

Within the Utah Department of Environmental Quality the Division of Drinking Water (DDW) acts as the administrative arm of the Utah Drinking Water Board and implements the rules which they adopt. The DDW implements a source protection program involving drinking water source watersheds, reviews and approves plans and specifications for construction of facilities for public water systems, and implements the EPA rules relating to drinking water quality, monitoring and treatment.

Public Water Systems (PWSs) are responsible for protecting their sources of drinking water from contamination. R309-600 sets forth minimum requirements to establish a uniform, statewide program for implementation by PWSs to protect their ground-water sources of drinking water, while R309-605 regulates protection of surface water sources. The 1996 amendments to the Safe Drinking Water Act required that all states develop source water assessment programs to assess the risk of accidental contamination of all drinking water sources.

The Utah DDW expressed a desire for cooperation with BLM to formalize a process to protect Drinking Water Source Protection Zones (DWSPZs) in Utah that may potentially be impacted from oil and gas exploration or development. The cooperative effort between DDW and BLM resulted in the BLM issuing Instruction Memorandum (IM) UT 2010-055 in July of 2010.

### **Utah Safe Drinking Water Act Terms**

**Public Water System (PWS):** a system, either publicly or privately owned, providing water through constructed conveyances for human consumption and other domestic uses, which has at least 15 service connections or serves an average of at least 25 individuals daily at least 60 days out of the year and includes collection, treatment, storage, or distribution facilities under the control of the operator and used primarily in connection with the system, or collection, pretreatment or storage facilities used primarily in connection with the system but not under the operator's control.

**Community Water System (CWS):** a PWS which serves at least 15 service connections used by year-round residents or regularly serves at least 25 year-round residents.

**Non-Transient Non-Community Water System (NTNCWS):** a PWS that regularly serves at least 25 of the same nonresident persons per day for more than six months per year. Examples of such systems are those serving the same individuals (industrial workers, school children, church members) by means of a separate system.

**Transient Non-Community Water System (TNCWS):** a non-community PWS that does not serve 25 of the same nonresident persons per day for more than six months per year. Examples of such systems are RV parks, diners or convenience stores where permanent nonresident staff number less than 25, but the number of people served exceeds 25.

Drinking Water Protection Zones

**Ground Water Source Zone 1:** is the area within a 100-foot radius from the wellhead or margin of the collection area.

**Ground Water Source Zone 2:** is the area within a 250-day ground-water time of travel to the wellhead or margin of the collection area, the boundary of the aquifer(s) which supplies water to the ground-water source, or the ground-water divide, whichever is closer.

**Ground Water Source Zone 3:** is the area within a 3-year ground-water time of travel to the wellhead or margin of the collection area, the boundary of the aquifer(s) which supplies water to the ground-water source, or the ground-water divide, whichever is closer.

**Ground Water Source Zone 4:** is the area within a 15-year ground-water time of travel to the wellhead or margin of the collection area, the boundary of the aquifer(s) which supplies water to the ground-water source, or the ground-water divide, whichever is closer.

**Surface Water Zone 1:** (A) Streams, rivers and canals: Zone 1 encompasses the area on both sides of the source, 1/2 mile on each side measured laterally from the high water mark of the source (bank full), and from 100 feet downstream of the point of departure to 15 miles upstream, or to the limits of the watershed or to the State line, whichever comes first. If a natural stream or river is diverted into an uncovered canal or aqueduct for the purpose of delivering water to a system or a water treatment facility, that entire canal will be considered to be part of Zone 1, and the 15 mile measurement upstream will apply to the stream or river contributing water to the system from the diversion. (B) Reservoirs or lakes: Zone 1 is considered to be the area 1/2 mile from the high water mark of the source.

**Surface Water Zone 2:** the area from the end of Zone 1, and an additional 50 miles upstream (or to the limits of the watershed or to the State line, whichever comes first), and 1000 feet on each side measured from the high water mark of the source.

**Surface Water Zone 3:** the area from the end of Zone 2 to the limits of the watershed or to the State line, whichever comes first, and 500 feet on each side measured from the high water mark of the source.

**Surface Water Zone 4:** the remainder of the area of the watershed (up to the State line, if applicable) contributing to the source that does not fall within the boundaries of Zones 1 through 3.

Page 33 (between **Sections 7.5.4.2** and **7.5.4.3**)

- Add new section for “Lease Notice” with the following text:

For DWSPZs, the lease notice states that before an Application for Permit to Drill (APD) is submitted or surface-disturbing activity is initiated, the lessee/operator must contact the BLM field office and the public water system manager to identify any zoning ordinances; best management practices (BMPs); pollution prevention measures; or physical controls that may be required within the protection zone.

Onshore Oil and Gas Order No. 1 contains the full list of requirements. The lease notice for DWSPZ is contained in Appendix D.

Additional groundwater protections specific to DWSPZ are contained in Appendix C. The application of these protections, the lease notice, and BLM Onshore Oil and Gas Orders and COA would eliminate, reduce, or mitigate potential impacts to usable groundwater sources.

#### **Appendix 7A – Stipulation Forms**

- Add the following three Lease Notices (the third is for surface water, from the BLM):

**DRINKING WATER PROTECTION ZONES (R309-600-7(1) Utah Administrative Code Source Protection: Drinking Water Source Protection for Groundwater Sources)**

#### **LEASE NOTICE - Groundwater Protection Zones 2-4:**

This lease (or a portion thereof) is within one or more Drinking Water Source Protection Zones (DWSPZs) designated by the Utah Division of Drinking Water (DDW). Prior to a lease being offered up for sale that overlies a DWSPZ the BLM would attach IM No. UT 2010-055, Attachment F (Utah Drinking Water Source Protection Zone Lease Notice).

BLM's rules and regulations outlined in 43 CFR §3162.4-2, §3162.5-1(a) and §3162.5-2 (d) Control of wells, Onshore Oil and Gas Orders Nos. 2 and 7, and the Gold Book have been developed to address potential impacts to ground water from the drilling and completion of oil and gas wells, including the construction and use of reserve and production pits. Specifically, §3162.5-2 (d) *Protection of fresh water and other minerals* requires that the operator shall isolate freshwater-bearing and other usable water containing 5,000 ppm or less dissolved solids and Onshore Order No. 2 increases the requirement by establishing a 10,000 ppm total dissolved solids (TDS) threshold for protection of usable water.

Concurrent with submittal of an application for a permit to drill (APD), or any proposed surface-disturbing activity, the lessee/operator must provide the BLM Authorized Officer (AO) protective measures, which adequately address protection of the DWSPZ or other usable ground water zones. If operator proposed measures are considered insufficient to adequately protect the water zones, the AO will incorporate additional protective measures as condition(s) of approval (COAs). During further analysis at time of APD approval, the BLM would attach IM No. UT 2010-055, Attachment G (Utah Drinking Water Source Protection Zone COA).

Geophysical logs will be required in order to determine cement integrity and subsequent protection/isolation of usable ground water resources. Upon well completion, additional testing may be required to verify well bore integrity for protection of usable ground water resources. Testing results will be evaluated to determine if effective implementation of mitigation measures has been achieved.

#### **LEASE NOTICE - Existing Transient Non-Community Water Systems – Zones T2 and T4:**

This lease (or a portion thereof) is within Drinking Water Source Protection Zones designated as a transient non-community water system which does not serve 25 of the same nonresident persons per day for more than 6 months per year by the Utah Division of Drinking Water. The

Transient System T2 protection zone for existing wells or springs is the area within a 250-day ground-water time of travel to the wellhead, spring or margin of the collection area, the boundary of the aquifer(s) which supplies water to the ground-water source, or the ground-water divide, whichever is closer. The Transient System T4 protection zone for existing wells or springs is the area within a 10-year ground-water time of travel to the wellhead, spring or margin of the collection area, the boundary of the aquifer(s) which supplies water to the ground-water source, or the ground-water divide, whichever is closer. Compliance with R309-600 is voluntary for existing transient non-community water systems. However, all new ground water sources (including transient non-community systems) must submit to the DDW a Preliminary Evaluation Report (R309-600-13(2)) and a Drinking Water Source Protection Plan (R309-600-7(1)) which designates ground water source protection zones 1 through 4. Protection of the zones T2 and T4 must also comply with **LEASE NOTICE – Groundwater Protection Zones 2-4**.

#### **LEASE NOTICE – Surface Water Protection Zones 2-4**

This lease (or a portion thereof) is within public Drinking Water Source Protection Zones 2, 3, and/or 4. Before application for a permit to drill (APD) submittal or any proposed surface-disturbing activity, the lessee/operator must contact the BLM field office and the public water system manager to determine any zoning ordinances, best management or pollution prevention measures or physical controls that may be required within the protection zone. Drinking Water Source Protection plans are developed by the public water systems under the requirements of R309-605-7, Drinking Water Source Protection for Surface Sources (Utah Administrative Code). There may also be county ordinances in place to protect the source protection zones, as required by Section 19-4-113 of the Utah Code.

Incorporated cities and towns may also protect their drinking water sources using Section 10-8-15 of the Utah Code. Cities and town have the extraterritorial authority to enact ordinances to protect a source of drinking water ... "For 15 miles above the point from which it is taken and for a distance of 300 feet on each side of such stream..." Class I cities (greater than 100,000 population) are granted authority to protect their entire watersheds.

Some public water sources qualify for monitoring waivers which reduce their monitoring requirements for pesticides and volatile organic chemicals (VOCs). Exploration, drilling and production activities within a Source Protection Zone could jeopardize these waivers, thus requiring increased monitoring. Contact the public water system to determine what effect your activities may have on their monitoring waivers. Please be aware of other state rules to protect surface and ground water, including Utah Division of Water Quality Rules R317 Water Quality Rules; and Rules of the Utah Division of Oil, Gas and Mining, Utah Oil and Gas Conservation Rules R649.

During further analysis at time of APD the BLM would attach IM No. UT 2010-055, Attachment G - Utah Drinking Water Source Protection Zone COA.

At the time of development, drilling operators will additionally conform to the BLM operational regulations and Onshore Oil and Gas Order No. 7 (which prescribes measures required for the handling of produced water to ensure the protection of surface and ground water sources) and the Surface Operating Standards and Guidelines for Oil and Gas Development, The Gold Book, Fourth Edition-Revised 2007 (which provides information and requirements for conducting environmentally responsible oil and gas operations).

### 3.1.3 Errata

Errata specific to Specialist Report 7.0 or 8.0 expand on or correct data previously presented, or incorporate new information or decisions since the DEIS. Some changes, clarification and updates to resource-specific data and analysis were made as a result of the comments received on the DEIS. The errata below update the original Specialist Reports.

#### Page 4 (Section 8.4.2)

- Remove 2<sup>nd</sup> sentence in “Stream Channels and Floodplains”
- Replace last sentence of 1<sup>st</sup> paragraph in “Stream Channels and Floodplains” with:

Further, sediment deposited on the floodplain perpetuates floodplain development and provides nutrients for riparian vegetation.

#### Page 14 (Section 8.5.4.1)

- Replace 1<sup>st</sup> paragraph of “NSO” with

There are two separate NSO leasing stipulations that would apply to water and watershed resource components. The first NSO is discussed in this section and the second, which allows perpendicular stream crossings, is discussed below under the heading “NSO with Road Crossings.” The first NSO would be a general NSO that prohibits occupancy or use of the land for oil and gas related activities (i.e., construction of well pads, central tank batteries, access roads, pipelines, power lines, and other linear structures). However, it would allow for directional drilling into an NSO area from outside its boundaries and would allow for seismic activities. This leasing option is intended to prevent the most likely sources of pollutants and water-related impacts – those related to surface occupancy – from occurring, while still allowing certain uses, which have some, but more minimal potential for impacts. This first NSO is applied to lava fields over sensitive aquifers under Alternative D. It is also applied to a 500-foot buffer around streams, lakes, reservoirs, springs, and wetlands under Alternative B and to municipal watersheds under Alternative C. Further, a similar NSO leasing option is applied to IRAs under Alternative B and C and Alternatives D1 and E1. Impacts under this type of NSO are discussed below (including relevant *Measurement Indicators*).

#### Page 2 (Section 7.4.2)

- Remove 1<sup>st</sup> sentence of 3<sup>rd</sup> paragraph in “Groundwater”

#### Page 4 (Section 7.4.4)

- Remove last sentence of 1<sup>st</sup> paragraph in “Water Uses”

#### Page 8 (Section 7.4.6.2)

- Remove 2<sup>nd</sup> sentence of 2<sup>nd</sup> paragraph

Page 22 (**Section 7.5.4.1**)

- Add before 6<sup>th</sup> to last sentence in 3rd paragraph under “No Surface Occupancy”

BLM Onshore Oil and Gas Order No. 2 (43 CFR 3160) requires cementing or casing for any water bearing formation which contains total dissolved solids equal to or less than 10,000 mg/L.

Page 28 (**Section 7.5.4.2**)

- Under “Other Water Quality Impacts” replace 1<sup>st</sup> sentence of 4<sup>th</sup> paragraph:

While drilling and completion activities must use casing and dry hole plugging designs that are intended to protect groundwater resources (e.g., BLM Onshore Oil and Gas Order No. 2 requirement for cementing or casing any water-bearing formation), their unexpected failure could lead to potential impacts to groundwater quality.

Page 37 (**Section 7.5.4.3**)

- Remove second “Alternative C with NSO in IRAs” section.

Page 40 (**Section 7.5.5.3**)

- Remove last sentence of first paragraph.

Page 41 (**Section 7.5.5.3**)

- Replace 4<sup>th</sup> paragraph in section with:

Compared to historic conditions (late 1800s and early 1900s), watershed conditions have improved on many parts of the Dixie National Forest and on lands now managed by the BLM. However, recent past and present management activities have continued to impact watershed conditions. Past and present impacts to watershed resources, which in turn, relate to water quality include: road systems in riparian and wetland areas; livestock grazing of upland and riparian areas; developed and dispersed recreation – notably off-road vehicle use; water diversions and dams; uncharacteristic fire; timber harvest; and minerals activity (including oil and gas exploration and development; USFS 2009c). These activities are described in Section 5.1.2.1 for the Dixie National Forest. Note that road system impacts and off-road vehicle use impacts will be minimized through implementation of the MTP (USFS 2009c). The section below presents information relevant to water and watershed resources that was not included in Section 5.1.2.1. These activities also occur on off-Forest lands, notably on both private and BLM-administered lands, but less so on state lands within the CEA as those are predominantly associated with State Parks. Activities that occur predominantly on private lands and that can threaten water resources include agriculture and expanding municipalities.

Page 42-43 (**Sections 7.5.5.3**) and Page 29-30 (**Section 8.5.5.2**) under “Roads”:

- Add footnote to **Table 7.5-6** and **Table 8.5-6**

<sup>1</sup>Motorized Travel Plan implementation (see USFS 2009c) will close some routes that are negatively impacting soil, water, and wildlife resources, and/or are not needed for future resource management activities.

- Replace “road density” with “Open Motorized Road Density (OMRD)” in 2<sup>nd</sup> paragraph
- Remove 2<sup>nd</sup> to last sentence in 2<sup>nd</sup> paragraph.
- Replace 3<sup>rd</sup> paragraph with:

In recent years, some roads and trails within the Dixie National Forest have been relocated away from streams or have been obliterated. The Duck Creek – Swains Access Management Project is one project designed to lessen the impact of roads on riparian areas. This project along with the implementation of the MTP in 2009 is closing or decommissioning unneeded roads, which will potentially decrease the adverse affects to water resources. Further, in recent years, the Forest Service has placed more focus on proper road placement, design, and maintenance, all with an eye towards reducing impacts to water resources.

- Replace last sentence in 4<sup>th</sup> paragraph with:  
One exception would be within the St. George Field Office, BLM where there are three wilderness study areas (Cougar Canyon, Red Mountain, and Cottonwood Creek; note the former two areas were added to the National Wilderness Preservation System by the 2009 Omnibus Public Land Management Act) that are at least partially within the CEA (BLM 1999a). Road construction in these areas would not be likely.

#### Page 30 (**Section 8.5.5.2**)

- Remove 3<sup>rd</sup> to last sentence under “Livestock Grazing.”

#### Page 45 (**Section 7.5.5.3**)

- Remove 5<sup>th</sup> sentence in 2<sup>nd</sup> paragraph under “Livestock Grazing.”

#### Page 31 (**Section 8.5.5.2**)

- Remove “...and the Red Cliffs...” to end of last sentence in “Dispersed Recreation.”

#### Page 47 (**Section 7.5.5.4**) and Page 36 (**Section 8.5.5.3**)

- Replace 1<sup>st</sup> 3 sentences under “Alternative C” with:

The NSO stipulation applied to the 300-foot buffer around streams, lakes, reservoirs, and springs under this Alternative would limit the likelihood of oil and

gas activity directly contributing to cumulative effects, though less so than under Alternative B because of a narrower stream buffer width and perpendicular stream crossings being allowed within a portion of these buffers. Further, seismic exploration could occur in all the buffered areas.

Page 39 (Section 8.5.5.3)

- Add “NL and..” before “NSO stipulations....” In **Table 8.5-8** under “Alternative C”

Page 50 (Specialist Report 7.0)

- Add the following new reference:

US Department of Agriculture. Forest Service. 2009c. Dixie National Forest Motorized Travel Plan. Final Environmental Impact Statement. US Department of Agriculture, Forest Service, Intermountain Region. April 2009.

Page 50 (Specialist Report 7.0) and Page 42 (Specialist Report 8.0)

- Add the following new reference:

US Department of the Interior. Bureau of Land Management. 1999a. Grand Staircase–Escalante National Monument Proposed Management Plan, Final EIS. US Department of the Interior, BLM, Cedar City, Utah.