



U.S. Department of the Interior
Bureau of Land Management

October 2019

**DRAFT Environmental Assessment
of the Right-of-Way Grant for the Ash Creek Project and Recreation and Public Purposes
Act Lease/Patent for the Toquer Reservoir Recreation Area**

DOI-BLM-UT-C030-2012-0001-EA

Applicant: Washington County Water Conservancy District

Case Numbers: UTU-88485 and UTU-91524

**St. George Field Office
345 East Riverside Drive
St. George, Utah 84790**

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1.0-INTRODUCTION

This Environmental Assessment (EA) has been prepared to disclose the potential environmental consequences associated with Washington County Water Conservancy District’s (WCWCD) proposed Ash Creek Project and Toquer Reservoir Recreation Area in Washington County, Utah (**Figure 1**). This EA is a site-specific analysis of potential impacts that could result with the implementation of the Proposed Actions or alternatives to the Proposed Actions. This EA assists the Bureau of Land Management (BLM) in project planning and ensuring compliance with the National Environmental Policy Act (NEPA), and in making a determination as to whether any “significant” impacts could result from the analyzed actions.

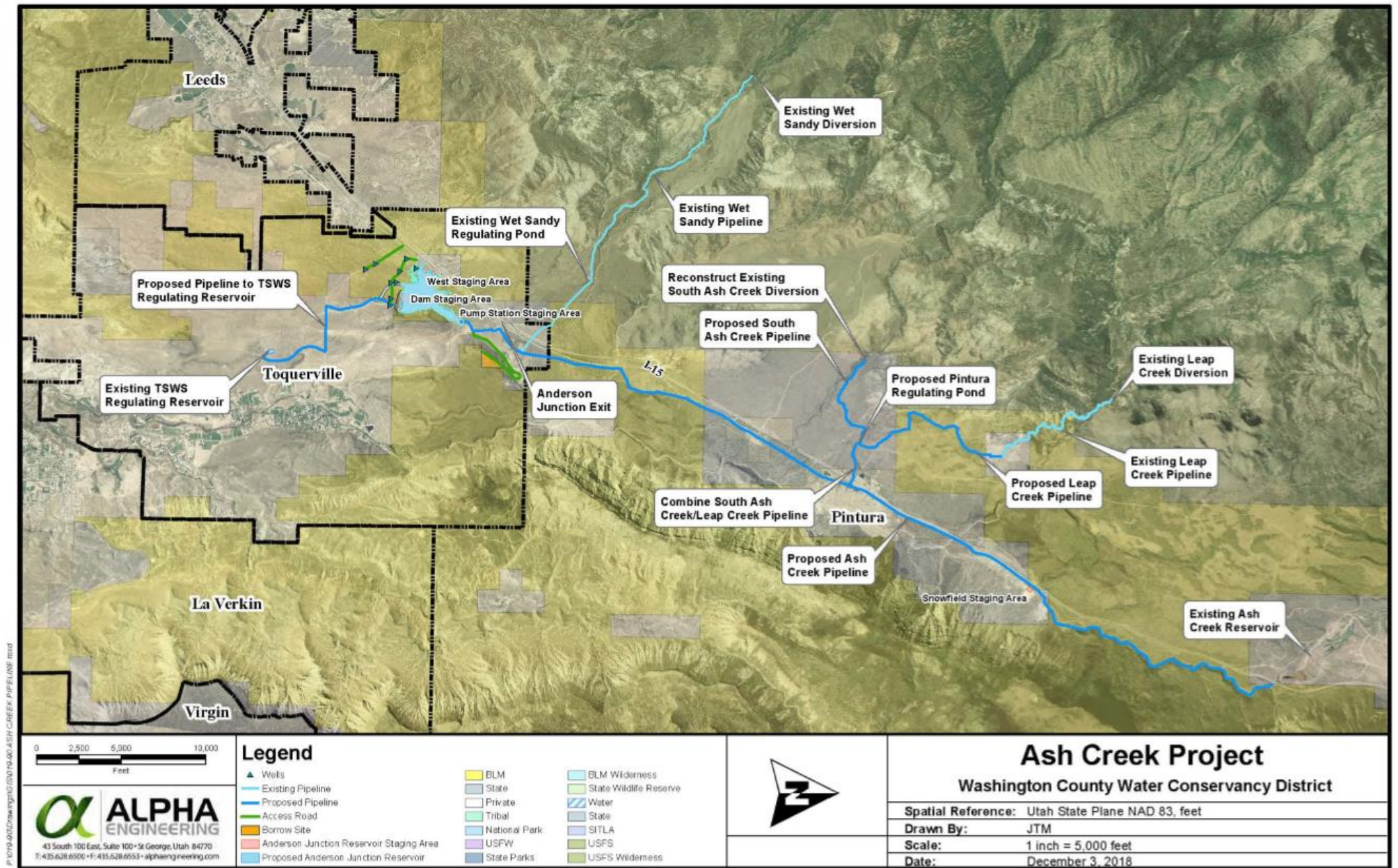


Figure 1. Ash Creek Project area location and Project components

1.1 SUMMARY OF THE PROPOSED PROJECT

The Washington County Water Conservancy District (WCWCD) filed an application with the Bureau of Land Management (BLM) St. George Field Office for a right-of-way (ROW) and a Recreation and Public Purposes (R&PP) Act lease on BLM-managed lands in Washington County, Utah for the construction, operation, and maintenance of the proposed Ash Creek Project and Toquer Reservoir Recreation Area (Project).

The WCWCD's proposes to construct a new water system that would provide an alternate source of water for the Toquerville Secondary Water System (TSWS) and, through exchange, allow Toquerville Springs water, the current TSWS source, to be delivered as municipal drinking water in Toquerville, LaVerkin and Hurricane. From the base of the existing dam on Ash Creek Reservoir, the Project would install 18.8 miles of pipeline and associated facilities, continuing in a southerly direction to the proposed new reservoir and public recreation area at Anderson Junction. The Project would be developed on lands administered primarily by the BLM St. George Field Office, with additional areas of state lands administered by the Utah School and Institutional Trust Lands Administration (SITLA) and private land also included.

The sources of water for the Project would be surface flows from Ash Creek that are impounded in the Ash Creek Reservoir and in the Ash Creek watershed below the reservoir. The WCWCD has a water right (Water Right # 81-351, priority date 1956) to 10,000 acre-feet from the Ash Creek Reservoir but does not have a pipeline system in place to convey water from this reservoir. Surface flows in the tributary streams of Leap Creek, South Ash Creek, and Wet Sandy are fully appropriated water rights held by multiple entities. See **Appendix F** for a detailed list and analysis of water rights. Each of these tributaries has an existing diversion structure that has historically diverted water into open, unlined ditches for agricultural use. To conserve water, the WCWCD installed a pipeline from the diversion on Leap Creek to replace an open ditch in 2003 and upgraded the diversion structure on Wet Sandy and piped the open ditch in 2010.

The proposed R&PP lease and subsequent patent area is for approximately 13 acres of BLM-administered lands for development of the Toquer Reservoir Recreation Area. The recreation area is located within the municipal boundary of Toquerville City, Washington County, Utah. The recreation area would provide an additional outdoor venue including camping, picnicking, and hiking as well as interpretive kiosk and overlook area.

The Project's area is defined as Sections 23, 26, 27, 28, 29 and 32, Township 42 South, Range 14 West; Sections 5, 6 and 7, Township 43 South, Range 14 West; and Sections 1, 2, 3 and 12, Township 43 South, Range 15 West. Refer to **Figure 1**.

The WCWCD's primary purposes for the proposed Project are:

1. Conserve a portion of the surface run-off that is currently being lost to seepage in the Ash Creek Reservoir and pipe it to a new reservoir site that will more effectively store water and help ensure predictable water supplies to water rights holders and local communities (refer to **Appendix F**);
2. Minimize water losses to seepage and evapotranspiration by replacing open ditches with pressurized pipelines in Project Area;
3. Conserve high quality potable water for human consumption (culinary uses), by substituting lower quality water for agricultural uses in the Project Area;
4. Recharge the Navajo aquifer and provide for groundwater storage and purification, thereby conserving water for future use; and
5. Provide for safe and enjoyable water-based public recreational uses of the proposed Toquer Reservoir, thereby benefitting local residents and visitors to the area.

1.2 PURPOSE AND NEED OF THE BLM

The BLM's purpose is to respond to WCWCD's application for the ROW grant and R&PP lease to patent on BLM-administered lands for the proposed Ash Creek Project and Toquer Reservoir Recreation Area. The need is established by the BLM's statutory and regulatory responsibilities regarding ROWs under FLPMA (43 USC 1761) and regarding the leasing/patenting of public lands for recreational and public purposes under the R&PP Act of 1954 (43 USC 869).

1.3 DECISIONS TO BE MADE

The decisions the BLM will make based on the analysis of this EA are:

1. Whether to approve or deny the WCWCD's application for the proposed pipeline and reservoir ROW for the construction, operation, and maintenance of water pipelines, Toquer reservoir and appurtenant facilities related to the Ash Creek Project, and if so, under what terms and conditions; and
2. Whether to approve or deny the WCWCD's R&PP Act lease application and subsequent patent under the R&PP Act for construction, operation, and maintenance of the proposed recreation area at the proposed Toquer Reservoir, and if so, under what terms and conditions.

1.4 CONFORMANCE WITH BLM LAND USE PLAN

The Project (**Section 2.2**) would be in conformance with the following management decisions from the St. George Field Office *Record of Decision and Resource Management Plan* (1999), as amended 2001 and 2016:

1.4.1 Lands and Realty

LD-01 (pg 2.1): *Lease or transfer of land under the R&PP Act shall occur where such is determined to be the most appropriate method for achieving desired public and municipal purposes.*

LD-06 (pg 2.2): *Over the life of the Plan, it is expected that up to 18,000 acres of public lands may be transferred out of public ownership in Washington County. Most of these transfers will occur as a result of land exchanges needed to complete acquisition of state and private lands within the Washington County HCP Reserve or to support the statewide inholdings exchange with the Utah School and Institutional Trust Lands Administration.*

Generally, public lands within the designated transfer areas shown on Map 2.1 constitute a pool of lands which may be transferred through sale, exchange, or lease and conveyance under the Recreation and Public Purposes Act or other applicable authority. Lands not contained in this pool may be transferred (other than under land sale authority) if subsequent analysis determines that such transfer will meet the land transfer criteria established above. (BLM 1999:2.2)

LD-12 (pg 2.3): *Applications for new rights-of-way on public lands will be considered and analyzed on a case-by-case basis. Proposals would be reviewed for consistency with planning decisions and evaluated under requirements of the National Environmental Policy Act and other applicable laws for resource protection. Mitigation needed to avoid adverse impacts will be integrated into project proposals and, where appropriate, alternatives identified to further reduce environmental impacts to lands, resources or adjacent land uses.*

LD-13 (pg 2.3): *All new rights-of-way will be subject to applicable standards listed in Appendix 1 for surface disturbing activities. Where needed, wildlife seasonal use restrictions will apply to right-of-way construction. Rights-of-way will generally remain open to other public uses that do not*

conflict with the purposes for which the rights-of-way are established.

1.4.2 Soils and Water Resources

Objectives (pgs 2.11-2.12): *BLM's objectives for soil and water resources will be to work with municipalities, state, and local agencies, and other interested parties to:*

- d) promote water conservation;*
- f) ensure water availability for the maintenance of key natural systems and human enjoyment;*
- g) where necessary to meet essential community needs, identify environmentally suitable sites for water storage and routes for water transport.*

SW-15 (pg 2.17): *The [Anderson Junction reservoir site], identified by the State of Utah's Division of Water Resources and the Washington County Water Conservancy District on public lands in Washington County, is recognized as a special resource warranting federal awareness and attention in future land management planning and decision making processes. In evaluating land use proposals and management options for the site, BLM will give full consideration to the unique values associated with the potential for water storage and related purposes prior to making decisions which would preempt the use of such sites for future reservoir development. Where preemption is considered, the State of Utah and local affected agencies will be consulted and given sufficient opportunity to respond to the proposal before decisions are made. Development of the site for reservoir purposes will require complete environmental and engineering analysis and public participation prior to consideration for approval.*

1.4.5 Recreation

Objectives (pg 2.37): *BLM's objective for recreation management will be to provide an array of quality recreation experiences within the agency's capability and logical recreation niche to meet the reasonable needs and expectations of local residents and visitors from outside the area.*

1.4.4 Visual Resources

Objectives (pg 2.51): *BLM's objective will be to manage the public lands in such a way as to preserve those scenic vistas, which are deemed most important:*

- a) in their impact on the quality of life for residents and communities in the area;*
- b) in their contribution to the quality of recreational visitor experiences; and*
- c) in supporting the regional tourism industry and segments of the local economy dependent on public land resources.*

1.5 RELATIONSHIPS TO STATUTES, REGULATIONS, AND OTHER PLANS

The Project would be consistent with the federal environmental laws and regulations, Executive Orders, and Department of Interior and BLM policies, including the following:

- Title II and V of FLPMA (43 USC 1761)
- Recreation & Public Purposes Act (43 USC 869)
- NEPA and the associated CEQ regulations at 43 CFR, Part 2800
- Endangered Species Act (ESA)(1973), as amended
- Executive Order 13175 Consultation and Coordination with Indian Tribal Governments
- National Historic Preservation Act (NHPA) of 1966 (54 USC 300101)
- Migratory Bird Treaty Act (MBTA) (1918)
- Clean Water Act (CWA) Section 404 (b)(1) Guidelines

Implementation of the Project would also be in compliance with applicable state and local statutes, and enforceable plans, including:

- Utah Code Annotated 9-8-404
- State of Utah Code Title 17: Water and Irrigation
- State of Utah Administrative Code R655-11: Requirements for the Design, Construction and Abandonment of Dams

Washington County's Resource Management Plan (2019).

Water, (2) Water rights, (C) Management Actions, (i): *The county will work to ensure that state and federal actions support a water supply that is adequate for the population.*

General Plan of Washington County, Utah (WCPC 2010, revised 2012), pg 54:

Other projects are planned to be constructed in the near future to be able to continue efficient water resource management, including the Ash Creek Project that will involve construction of a new reservoir near Anderson Junction and the Warner Valley Reservoir Project. The General Plan is supportive of these efforts to provide for the water needs of county residents. The construction of reservoirs and wells at strategic locations in the county also helps to improve the underground water supply.

1.6 IDENTIFICATION OF ISSUES

A BLM ID Team screened the proposed Project and completed an ID Team Checklist (**Appendix A**) that identified the following resource values and land uses to be analyzed in this EA:

Water Resources/Quality

- Would the construction, operation, and maintenance of the Project affect 1) the amount of surface water available for infiltration/recharge in the Navajo aquifer, and 2) groundwater levels and discharge?

Cultural Resources

- What adverse effects would there be on National Register of Historic Places (NRHP)-eligible properties within the Project area?

Socio-economics

- How would the construction, operation, and maintenance of the Project effect the surrounding communities and local economy?

Wetlands/Riparian Zones

- What would be the impacts on riparian zones related to construction, operation, and maintenance of the Project?

Fish and Wildlife, Excluding U.S. Fish and Wildlife Service (USFWS)-Designated Species

- What effects would the project construction and maintenance have on small mammals, reptiles, amphibians, and birds, including BLM-sensitive species within the Project area?
- What effect would project construction, implementation, and maintenance have on aquatic species (Bonneville cutthroat trout, desert sucker, flannelmouth sucker, and Virgin spinedace) by water quality changes (siltation and temperature) and changes to stream flow?
- Would permanent roads, the reservoir, and associated facilities cause loss of general terrestrial species habitat?
- How would construction activities affect crucial wintering range for mule deer?

Migratory Birds

- Would construction and maintenance activities associated with the proposed Project affect migratory bird species that occupy the action area and adjacent lands seasonally or year-round?
- Would potential foraging, nesting, and cover habitat for migratory birds be lost in both the long term and the short term during project construction and maintenance activities?
- Would migratory birds be disturbed or displaced from nests or individuals killed if Project activities occur during nesting seasons?
- Would Project construction, implementation, and maintenance affect aquatic migratory bird species due to possible changes in water quality (siltation and temperature) and stream flow?
- Would terrestrial migratory bird species habitat be lost?

Federally Listed Threatened, Endangered, or Candidate Animal Species

- Would construction and maintenance activities result in the loss of Mexican spotted owl (*Strix occidentalis ludica*) critical habitat, and southwestern willow flycatcher (*Empidonax traillii extimus*), and western yellow billed cuckoo (*Coccyzus americanus*) potential dispersal and foraging habitat?
- Would the above species be displaced into adjacent habitats during construction and maintenance activities?

Vegetation, Excluding USFWS-Designated Species

- What effect would there be on vegetation in areas where shrubs and trees need to be cleared?

Lands/Access

- What effects would the Project have on the maintenance and operation of existing ROW holders and ancillary facilities (power line, fiber optic, cable, natural gas) in the Project Area?
- Would the Project require the exercise of eminent domain related to the private land around the proposed reservoir site?

Recreation

- What effect would the Toquer Reservoir and recreation area have on dispersed casual recreational uses and opportunities on public lands within Washington County?

Visual Resources

- What effect would the Project have on the identified Key Observation Points (KOPs)?

1.7 ISSUES IDENTIFIED BUT ELIMINATED FROM FURTHER ANALYSIS

Several resources and issues were dismissed from further analysis because they are either not present, would not be affected to a degree that requires detailed analysis, or are not subject to Section 7 consultation. The Checklist (**Appendix A**) details issues and resources considered by BLM and provides a rationale for the findings of the resource specialists.

1.7.1. California condor

The California condor was listed as federally endangered on March 11, 1967 (USFWS 1967) and by 1987 was noted to only occur in California (USFWS 1996). In 1987 the last wild condor was captured and taken to the San Diego Wild Animal Park (USFWS 1996). Beginning with the first successful breeding of California condors in 1988, the population grew to 121 in 1996, including 104 in the captive flock and 17 in the wild (USFWS 1996).

In January 1996, the USFWS announced plans to reintroduce California condors into northern Arizona and designate these birds as non-essential experimental populations, as provided by Section 10j of the ESA (USFWS 1996). California condors from the experimental population area (USFWS 1996) frequently forage away from the Vermillion Cliffs of Arizona into southwestern Utah, including Washington County. Most California condor use occurs east of the Project area near Zion National Park; no nests, roosts, or other special use areas for condors have been identified in the Project area.

Under the requirements of NEPA, when a Proposed Action may potentially affect the California condor 10(j) non-essential experimental population, the 10(j) population should be addressed (and their status defined) and then not carried forward for further analysis within the NEPA document.

2.0-DESCRIPTION OF ALTERNATIVES

2.1 ALTERNATIVE A-NO ACTION

Action 1- Under Alternative A, the No Action Alternative, the BLM would not authorize a ROW to allow the WCWCD to construct, operate, and maintain a water pipeline and reservoir for the proposed Ash Creek Project on BLM-managed public lands. If the No Action Alternative were to be selected, the WCWCD could, nevertheless, undertake actions on SITLA and private lands, including making repairs to the Ash Creek Reservoir, reconstruction of the diversion on South Ash Creek, and replacing the unlined Pintura ditch with a pipeline and constructing a regulating pond to serve Pintura water users.

The upgrade of the South Ash Creek diversion and piping the South Ash Creek canal would result in approximately 26.3 acres of temporary surface disturbance. Post-construction, approximately 19.4 acres would be revegetated along the pipeline alignment. The Pintura regulating pond would cover approximately 2.8 acres of land. Water diversion would likely be less than the Proposed Action and similar to the existing amount of diversion for the users in the Pintura area.

Action 2- Under Alternative A, the No Action Alternative, the BLM would not grant to the WCWCD the R&PP lease for the proposed recreation area at the proposed Toquer reservoir.

2.2 ALTERNATIVE B - PROPOSED ACTIONS

Action 1: The WCWCD requests a ROW grant from the BLM for the construction, operation, and maintenance of the Ash Creek Project's pipelines, 185-acre reservoir footprint, and associated facilities on BLM-managed lands in Washington County, Utah (See **Figure 1**).

Action 2: The WCWCD requests an R&PP lease and subsequent patent under the R&PP Act on BLM-managed lands for the proposed 13-acre recreation area at the proposed Toquer Reservoir.

If an R&PP lease with an option to patent is used, the BLM would, at a minimum issue the lease and patent with encumbrances that would require the following:

- A reversionary clause that would require that the lands be used as stated within the Plan of Development or the patent would be revoked and the land would revert back to the federal government.
- Development and implementation of a noxious and invasive weed management plan.

The Ash Creek Piping and Toquer Reservoir Hydraulic Analysis (Alpha 2019) was prepared to address the various components of the piping network and to provide a schematic representation of the proposed system. The Hydraulic Report is an integral component of the Proposed Actions and included with this reference. Alpha developed this spreadsheet model to simulate the hydrology of Ash Creek and each of the tributary streams. The model used the hydrology of the tributaries and the function of the existing and planned pipelines, incorporated the pipeline designs, historical data, irrigation requirements and other site

conditions to determine a reliable yield of the system. A conceptual model of Project water conveyance and storage components with their expected associated average annual water volumes that would be diverted to authorized water rights holders and to the proposed Toquer Reservoir is shown in **Figure 2-1**. A reliable yield of 1,730 acre-feet per year (af/yr) from the proposed Project has been modeled using available flow date from Ash Creek and the three tributary streams (Alpha 2019).

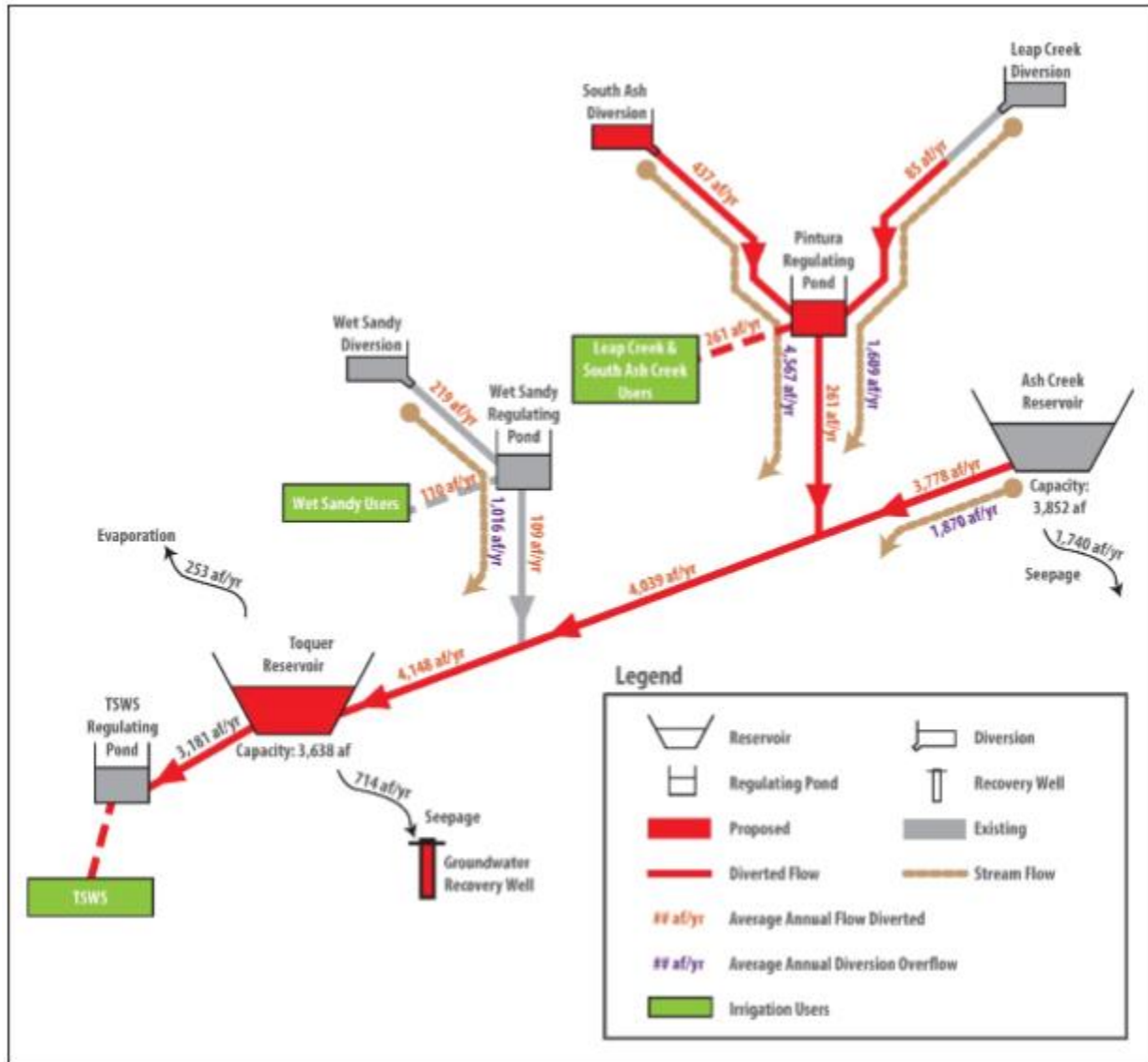


Figure 2-1 Conceptual model of Project Water Conveyance and Storage Components (Alpha 2019)

Table 2-1 provides a summary of total acres that would be temporarily and permanently disturbed by construction, operation, and maintenance of the Project. Individual components of the Project are summarized below. Refer to the POD in **Appendix D** for specific design features and dimensions of pipelines, reservoir, recreation area, associated facilities related to the Project.

- **Ash Creek Pipeline**—A buried water pipeline would be installed from the base of existing Ash Creek Reservoir Dam along existing roads and trails where possible to the proposed Toquer

Reservoir. A 14-foot wide permanent access road would be constructed within the 50-foot wide permanent ROW on top of the buried pipeline for future maintenance.

- **South Ash Creek Diversion Structure**—The existing diversion structure on South Ash Creek would be replaced with a buried water pipeline for water diversion.
- **South Ash Creek Pipeline**—The existing, unlined ditch extending from the South Ash Creek diversion to the new regulating pond near Pintura would be replaced with a buried water pipeline.
- **Leap Creek Pipeline**—A buried pipeline would be installed from the existing Leap Creek diversion to the new regulating pond in Pintura.
- **Regulating Pond**—A regulating pond near Pintura would be constructed to receive water from the new South Ash Creek and Leap Creek pipelines. The pond would provide hydraulic pressure for the South Ash/Leap Creek combined pipeline.
- **South Ash/Leap Creek Combined Pipeline**—A buried water pipeline would be constructed from the Pintura regulating pond to the Ash Creek pipeline.
- **Pintura Pipeline**—A buried water pipeline would be constructed from the new regulating pond in Pintura parallel with the South Ash/Leap Creek combined pipeline interconnecting into a new Pintura pressurized irrigation system.
- **Wet Sandy Connection**—Connect the existing Wet Sandy diversion, regulating pond, and pipeline to the new Ash Creek Pipeline.
- **Toquer Reservoir**—A water storage reservoir would be constructed at Anderson Junction, impounded by an earth and rock fill dam with a concrete weir and splash pad for an open overflow channel into the existing ephemeral Anderson Junction Wash below the proposed dam.
- **Toquerville Secondary Irrigation Pipeline**—A buried water pipeline would be installed from the Toquer Reservoir to the existing Toquerville Secondary Water System (TSWS) regulating pond. No other changes would be made to the TSWS.
- **Recovery Wells, Access Roads, and Power Lines**—Drill and operate as many as nine groundwater recharge and production wells within a well field protection zone, south of the proposed Toquer Reservoir, for future use in the culinary system. Roads would be constructed as necessary to access the wells. Power lines to operate the wells would be connected to existing power lines in the area..
- **Toquer Recreation Area**—The recreation area would be developed on a 13-acre parcel at the southwestern end of the reservoir. Amenities would include campsites, a boat dock and ramp, fee station, restrooms, parking lots, 20’x40’ covered pavilion, utilities to the recreation area, an unpaved hiking and mountain biking trail around the reservoir, interpretive kiosk panels and boundary fencing.
- **Lift Station**—The existing lift station for the Ash Creek Special Service District (ACSSD) is located within the proposed footprint of the reservoir and will need to be relocated to north of the reservoir high water elevation on 40’x50’ area of already disturbed land owned by the WCWCD.

Table 2-1. Total Temporary and Permanent Surface Disturbance

Land Status	Permanent New Surface Disturbance (Acres)	Temporary Construction ROW (Acres)	Permanent ROW (Acres)
BLM	128.7	182.7	203.9
SITLA	1.6	11.3	29.7
Private	30.8	72.9	96.4
TOTAL	161.1	266.9	330.0

2.2.1 Pipeline Construction

The pipeline portion of the Project would consist of 6 segments totaling 18.8 miles of pipeline being installed within already disturbed areas where possible. Installation of the pipelines would require a 50-foot-wide permanent ROW and a 100-foot-wide temporary construction ROW. The permanent ROW could expand to 300 feet in steep areas to account for cut and fill. The steep areas generally occur from the existing Ash Creek Reservoir to the Snowfield staging area. A 14-foot-wide permanent access road would be constructed within the 50-foot ROW and on top of the buried pipeline for future maintenance. During pipeline construction, approximately 50 feet on either side of the centerline of the ROW would be needed for vehicle passage and pipeline assemblage. Approximately 36 feet of the permanent ROW and any disturbed portions of the temporary construction ROW would be re-seeded with native species, using a seed mix recommended by BLM, after construction.

1. The proposed Ash Creek pipeline would originate at the base of the existing Ash Creek Reservoir and continue in a southerly direction to the proposed Toquer Reservoir, a distance of approximately 10.87 miles
2. The proposed Leap Creek pipeline would extend from an existing diversion structure and pipeline to the proposed regulating pond in Pintura (2.12 miles)
3. The proposed South Ash Creek pipeline would originate at the proposed South Ash diversion and also connect to the proposed Pintura regulating pond (1.32 miles)
 - a. A new diversion would be installed on the South Ash Creek diversion. The diversion would include a coarse screen to prevent damage to the diversions and pipelines from transport of cobbles and boulders during high water events; it would also include a small concrete lined pond to temporary settle solids from the water.
 - b. The WCWCD would install two wildlife guzzlers along the South Ash Creek pipeline route to compensate for water that would be made unavailable to wildlife when the open ditch is converted to the pipeline.
4. The combined South Ash Creek/Leap Creek pipeline would extend from the proposed Pintura regulating pond to the proposed Ash Creek pipeline (0.55 miles).
5. A pipeline running parallel to the combined Ash Creek/Leap Creek would connect the new regulating pond with the Pintura pressurized irrigation system (1.77 miles).
6. A buried pipeline would extend south from the Toquer Reservoir and connect to the existing TSWS regulating pond (2.17 miles). For roughly the southern half of this distance, this pipeline segment would be constructed within the ROW of State Route 17 (SR-17) planned bypass west of Toquerville. The exact route of the SR-17 bypass is still under design and planning by the city of Toquerville and the Utah Department of Transportation (UDOT). Water diverted by the proposed Project that would not be delivered to existing holders of water rights in the three tributaries and to the TSWS could be used for irrigation purposes in the cities of La Verkin and Hurricane or diverted into the existing Quail Creek pipeline serving the Quail Creek/Sand Hollow Reservoir system.

2.2.1.1 Staging Areas

Three staging areas (**Figure 2-2** in Appendix H) in already disturbed areas have been identified along the pipeline; two are in areas on private property already disturbed from the Snowfield Gravel Pit and one at the outlet of the existing Ash Creek Reservoir on BLM-managed land. The staging area on BLM-managed land at the outlet of the existing Ash Creek Reservoir would serve for delivery and storage of pipe and other fittings and materials, as well as access for construction of the upper pipeline segment.

2.2.2 South Ash Creek Diversion Structure

The diversion dam would be located on lands administered by SITLA and the WCWCD would obtain all necessary ROWs or easements (see **Figure 1**). This action could occur regardless of BLM action.

The diversion structure construction area ROW would be staked and cleared of vegetation. The existing sandbag and plastic diversion would be removed. During construction of the new diversion dam, water would be diverted around the construction area and continue down the existing South Ash Creek streambed by the installation of a temporary coffer dam, pipeline, or diversion. The diversion structure would measure approximately 40 foot long by 20 feet wide. A concrete-lined settling basin would be included to complement the diversion. It would be located away from the stream and receive water from the diversion. The basin would be excavated 6 to 8 feet, formed, and poured with concrete. The overall diversion structure would require a 350 by 500-foot permanent ROW (4.02 acres) to construct and maintain the diversion. A CWA 404 or stream alteration permit would be required for the construction of the diversion structure. Refer to the POD in **Appendix D** for specific design features and construction methods.

2.2.3 Pintura Regulating Pond

The combined South Ash Creek and the Leap Creek pipeline would flow into the proposed Pintura regulating pond that would be constructed west of the town of Pintura on SITLA land (**Figure 1**). This action could occur regardless of BLM action.

The regulating pond would measure approximately 150 by 250 feet and would require a 550 by 650-foot permanent ROW (8.2 acres) to construct and maintain. The WCWCD would deliver water to the water right holders in Pintura through a new pressurized irrigation system that would be regulated from this pond. Refer to the POD in **Appendix D** for specific construction and design features.

The pond ROW would be staked and cleared of all vegetation. The pond would be lined with an impervious material, either clay or an artificial lining, then covered with sand and gravel, with riprap protection on the side slopes to protect the lining. The pond would have an overflow into an existing ditch or streambed. For safety purposes, chain-link fencing would be installed around the pond.

2.2.4 Toquer Reservoir Area

Topographical conditions dictate the overall capacity of the proposed Toquer Reservoir. The preliminary design identifies the reservoir's maximum storage capacity to be 3,638 acre-feet, with a surface area of approximately 115 acres. A 372-acre temporary construction area and a 185-acre permanent area would be required for construction and operation of the reservoir, earthen dam, and spillway. The spillway would consist of a concrete weir and splash pad and an 1,972-foot excavated overflow channel (1,602 feet on BLM and 370 feet on private land) leading to Anderson Wash. The reservoir would be created by the construction of an earth and rockfill dam with central clay core transitioning to basalt rock fill.

The amount of water available for the reservoir is limited by the amount of water available in the respective streams; the capacity of the respective pipeline; and the prevailing water rights that must be satisfied on the streams. Refer to **Figure 2-1** above. The remaining streamflow in the four areas of contribution is conveyed within the piping system into the Toquer Reservoir. This water is diverted and stored during periods of availability then distributed during the irrigation season to the TSWS. The average total monthly and average annual amount of water available to the Toquer Reservoir are presented in **Figure 2-3** (Alpha 2019). Recreation use is second to consumptive water use and the reservoir will be managed as such.

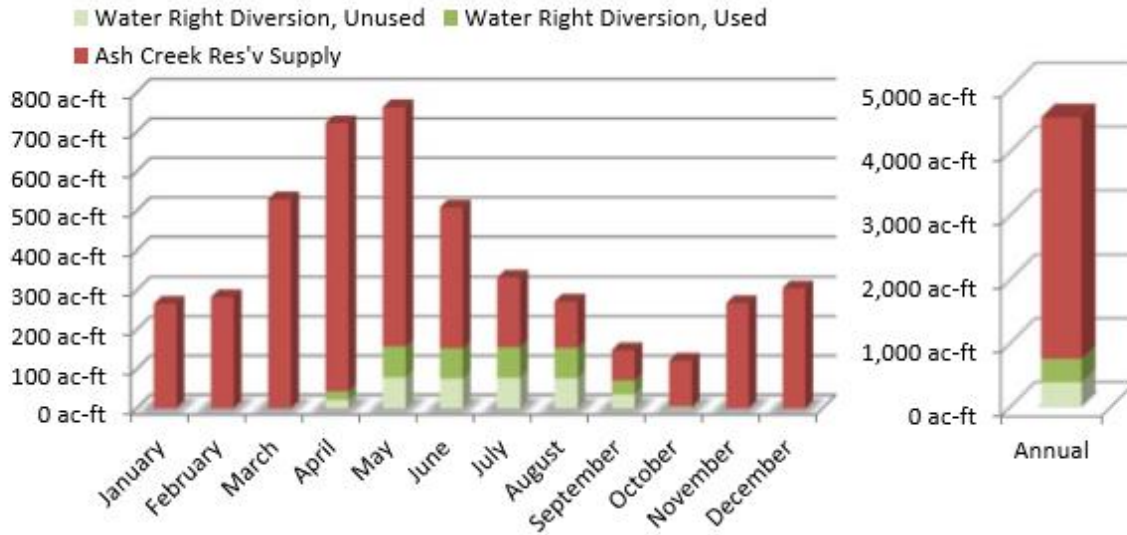


Figure 2-3. Average Total Monthly and Average Annual Amount of Water Available to the Proposed Toquer Reservoir (Alpha 2019)

2.2.4.2 Borrow Areas

Borrow areas for construction materials would be within the reservoir site, except for specialized materials (clay for the dam core and rip rap for the dam surface) which would be obtained from off-site private land sources; private property owned by the WCWCD near Toquerville and clay from an existing, disturbed pit on WCWCD property located at Bench Lake, Hurricane, Utah. See **Figure 2-4** in **Appendix H**.

2.2.4.3 Recovery Wells

Nine potential recovery well locations with proposed access roads have been identified adjacent to the proposed Toquer Reservoir (**Figure 2-5** in **Appendix H**). These wells would be used to recover groundwater that has been recharged through seepage into the underlying Navajo Sandstone aquifer, through expected seepage from water storage in the proposed Toquer Reservoir. Seepage was calculated based on soil and bedrock types and conditions at the site. It was estimated that the seepage rate is 0.25 inch per day or 714 acre-feet of losses annually (Alpha, 2019). There will be instrumentation directly with the dam's construction, including monitoring wells that will give WCWCD an initial idea of the water migration.

These wells would be drilled at an unknown future time when sufficient groundwater has accrued and as demand for water requires use of this stored and protected underground water supply. It is yet not known how many wells would be needed over time to adequately recover the recharged groundwater, although it is currently estimated that four wells would, at minimum, be necessary. During well construction, access to some of the wells would be via an existing road, and access to the remaining wells may require a new access road. After construction and filling of the reservoir, further study would clarify the recharge hydrogeology in order to ascertain the final number and locations of recovery wells. Associated access and pipeline routes cannot be determined until well sites are specified.

Depending on the number of wells drilled, up to between 12 to 15 power poles with pads could be needed to extend power from nearby power lines to operate the recovery wells. Existing access roads may require widening and improvement to ensure all-weather access to the wells, power lines, and poles. New access roads and widening of existing roads would be constructed to WCWCD standards on compacted subgrade and overlaid with gravel as needed to ensure adequate access for future operation and maintenance activities. Construction and installation of poles, pads, and pipelines needed to convey water to expected

destinations would conform with BLM requirements.

2.2.4.4 Staging Areas

Three staging areas have been identified for the reservoir. These would occur within the reservoir footprint and would eventually be covered with water. See **Figure 2-5** in **Appendix H**.

2.2.5 Recreation Area

A 13-acre recreation area adjacent to the reservoir—included in the permanent 185-acre reservoir area—would be constructed and jointly operated on a year-round basis by WCWCD and Toquerville City. To date, the city of Toquerville has signed a Resolution of Support for the Project (**Appendix D**). The St. George BLM Field Office will be provided a copy of the WCWCD and Toquerville City signed agreement disclosing the responsibilities of each party.

The BLM amenities associated with the recreation area would include boat ramp, ten tent sites, ten RV spaces (including utility hookups), and locations for day use activities. Fees could be charged for day use and primitive/RV camping. Reservations for camping and use of the group site would be required and made through Toquerville City. Private vendors would operate retail vending machines, watercraft rentals, and other goods in the recreation area. Authorized boating and other recreational water use would be limited to non-motorized watercraft and other recreational devices. The recreation area would include the following features (**Figure 2-6** in **Appendix H**):

- Entrance Station—Visitor information would be provided and day use and overnight camping fees would be collected
- Boat Ramp—A paved boat ramp and access for non-motorized watercraft
- Parking—A paved parking for single vehicles and vehicles with trailers
- Camping—Tent and RV sites and a campground host site
- Group Site—A covered pavilion with paved parking that would be accessible for those with mobility limitations, per the ADA
- Day Use Area—Picnic tables, barbeque pits, flush toilets, and interpretive/regulatory kiosk(s), all ADA accessible for those with mobility limitations
- Trail—An unpaved, but surfaced, 10-foot-wide trail for non-motorized use would be constructed around the perimeter of the reservoir. The trail would be ADA compliant

2.2.6 Operation and Maintenance

Construction would commence as soon as necessary permits are obtained and all plans are finalized. Construction of the pipelines and reservoir is estimated to take up to 15 months to complete and would occur simultaneously. Approximately 300,000 gallons of water per day would be required during the 15-month construction period. The water used for construction would come from permitted sources; Ash Creek Reservoir, the Wet Sandy System, groundwater from WCWCD's Cottam Well system or from local municipalities. The water will be used largely for soil conditioning during backfilling and for dust control. Soil moisture conditions will play a role in determining how much water is needed.

The recreation site would be constructed within 3-4 years of completing the pipelines and reservoir.

Refer to the POD in **Appendix D** for detailed numbers on operation and maintenance of the pipeline and reservoir in addition to the estimated number of personnel and equipment that would be required. It is anticipated that routine project maintenance would include the following:

- Diversion dam sluice gates would need to be opened and flushed periodically
- Pipeline air valves would need to be inspected at least annually to ensure that they are functioning properly

- Pipelines would likely need to be cleaned with a poly pig on an annual basis
- A grader would be used to grade the pipeline roadways as necessary to ensure that access is maintained
- The pipeline system is estimated to have a 50-year life before major pipeline repair would be required
- The reservoir dam would require regular inspection and maintenance
- Water levels in the Pintura regulating pond and Toquer Reservoir would largely be controlled at the diversions on Leap Creek, South Ash Creek, and Wet Sandy Creek, with direct releases from the reservoir and pond expected to be infrequent and minimal

The Best Management Practices (BMPs) and Standard Operating Procedures (SOPs), and Applicant Committed Environmental Protection Measures (EPMs) that are included in **Appendix D** would be followed during construction, operation and maintenance of the Proposed Actions and are, therefore, integral components of this alternative.

2.2.7 Termination and Restoration

If the Project is terminated or abandoned, a joint inspection would be held with the authorized officer(s) of the BLM prior to termination in order to agree upon an acceptable rehabilitation plan for the area.

2.3 ALTERNATIVES CONSIDERED BUT NOT ANALYZED IN DETAIL

No other action alternatives were identified that would meet the WCWCD's purpose and need for the proposed project. The following alternatives were considered but eliminated from detailed study in this EA, for the reasons described below.

2.3.1 Alternative C-Repair Ash Creek Reservoir, Construct Ash Creek Pipeline to TSWS

WCWCD considered repairing Ash Creek Reservoir as an alternative to the construction of Toquer Reservoir. Under this option, the Ash Creek, Leap Creek, and South Ash Creek pipelines would be constructed as described in the Proposed Action with the Ash Creek pipeline extending to the TSWS regulating pond. The South Ash Creek diversion structure and the Pintura Regulating Pond would also be constructed as outlined in the Proposed Action. This approach was discarded due to engineering feasibility concerns, greater cost and lower reliable yield, due in part to the lack of storage to capture flows from Leap Creek, South Ash Creek, and Wet Sandy.

2.3.2 Alternative D-Water Conservation

Due to the importance of water conservation in the WCWCD planning portfolio, a brief description of its efforts is included here. WCWCD was the first water conservancy district in Utah to adopt a water conservation plan. In addition, WCWCD's 2006 Regional Water Supply Agreement includes a number of conservation requirements for its municipal customers. Water use in the WCWCD service area reflects a trend towards increased conservation. New developments have limited irrigated area, less turf and more desert-wise landscaping.

From 2000 to 2010, conservation savings in the WCWCD service area were estimated at about 26 percent (DWRe 2014c). More recent published data from UBWR and WCWCD show an overall water conservation savings from 2000 to 2017 to be about 18 percent, 7 percent less than the original 25 percent overall regional conservation goal set by the State of Utah for 2025 (WCWD 2019a).

Given the long growing season, the annual precipitation of about 7 inches, with precipitation during the peak demand season, the achievements reflected by ongoing decreases in water use are magnified when considering that the water used by about 27 percent of the homes in Washington County that are second homes, millions of tourists each year and Dixie State University's nonresident students is all attributed to the resident population. Water use numbers will continue to decline in comparison to population as

development density increases with urbanization, water conservation technology improves and water users are educated and motivated by water conservation plans as they are updated every five years.

Between 1996 and 2010, WCWCD spent \$12.6 million on water conservation efforts, and the district currently budgets about \$250,000 per year for water conservation programs directly, in addition to a full-time water conservation manager and two full-time horticulturists for its demonstration gardens. The goal of each conservation plan is to conserve more water through the various programs that are improved and added over time. **Appendix E** contains a table of the conservation programs incorporated into the recently adopted 2015 Water Conservation Plan. Seven cities have also adopted water conservation plans: St. George, Santa Clara, Washington, Hurricane, Ivins, Toquerville and LaVerkin. The conservation efforts of the individual cities in Washington County are consistent with those of WCWCD, implementing a range of conservation measures, several in partnership with WCWCD.

Water conservation could not meet the purpose and need of the Project because it would not accomplish groundwater recharge, preventing losses to evaporation and seepage from open ditches, or replace culinary quality spring water. Reductions in use from water conservation over time would not occur fast enough nor would they reduce water use enough to offset reasonably anticipated demand.

3.0 AFFECTED ENVIRONMENT, ENVIRONMENTAL CONSEQUENCES, AND CUMULATIVE IMPACTS

This chapter describes (1) the affected environment, specifically the existing or baseline conditions relevant to each issue identified in **Section 1.6**, followed by (2) a description of the direct, indirect, and cumulative impacts projected to result from each alternative. Resources that were identified as not present in the Project Area or that would not be affected to a degree that requires detailed analysis are not described in or analyzed in this EA. The rationale for not analyzing these resources is presented in the ID Team checklist in **Appendix A**.

Impacts are direct or indirect and measured in terms of intensity (scale and concentration) and duration (short-term or long-term). 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. Impacts can be positive, seen as benefitting the resource, or negative, seen as a detriment to the resource. Positive impacts could result from management actions that maintain or enhance any of the resource values described in the analysis. Negative impacts could result from management actions that diminish any of the resource values described in the analysis. The intensity and duration of impacts are defined as follows:

- **Negligible:** The impact is at the lower level of detection; there would be no measurable change.
- **Minor:** The impact is slight but detectable; there would be a small change.
- **Moderate:** The impact is readily apparent; there would be a measurable change.
- **Major:** The impact is severe, highly noticeable, and potentially permanent.
- **Temporary:** Short-lived (i.e. during construction)
- **Short-term:** The impact would last for 10 years or less.
- **Long-term:** The impact would last for more than 10 years.

Cumulative impacts are the combined effect of past projects, specific planned projects, and other reasonably foreseeable future actions (RFFAs) within the Project Area to which the Proposed Actions may add incremental impacts. The geographic extent of cumulative impacts can vary by the type of resource and resource issues and by the type of potential impact. **Past and Present actions** in the Project area that would cumulative impact the same components of the environment as the Proposed Actions and No Action alternative are:

- Construction and use of water and wastewater systems, municipal and agricultural water diversions, well development, and irrigation for municipal landscape and agricultural fields. Evidence of agricultural diversions from Ash Creek and its tributaries predates recorded history
- Authorized and unauthorized OHV use
- Maintenance and use of existing transmission lines (overhead and buried) in the area
- Maintenance and use of existing public roads in the area
- Active sand and gravel pits

Physiographic Setting of the Project Area: The proposed Project Area is located in southwestern Utah in a physiographic transition zone between the southern Basin and Range and the Colorado Plateau. Elevation ranges from 4,660 feet at the existing Ash Creek Reservoir to 3,437 feet at the proposed Toquer Reservoir. The regional climate is characterized by low precipitation and humidity, with hot summers and cool winters. Temperature variations are extreme on a daily basis and throughout the year. Summer temperatures may exceed 105 degrees Fahrenheit and winter temperatures can drop below 20 degrees Fahrenheit. Average rainfall is approximately 7 inches per year, the majority of which occurs in late summer and winter months. The frost period may last for a period of 150 to 200 days, depending upon elevation.

3.1 Water Resources/Quality

3.1.1 Affected Environment

Information for this section is primarily taken from a hydrogeology report that was prepared by Rowley, Dixon and Layton (2018) that provides relevant hydrologic information to aid in understanding the Ash Creek watershed's groundwater and surface water resources and their interaction (**Appendix M**).

The 30 mile long and 15 miles wide Ash Creek drainage basin extends from the north of New Harmony, in Washington County, and Kanarraville, in Iron County, south-southwest to the confluence of Ash Creek with the Virgin River (**Figure 3-1 in Appendix H**). Highway I-15 runs parallel to the Hurricane fault zone from Cedar City on the north, past the small towns in the Ash Creek basin of Kanarraville, then Pintura, Toquerville, Silver Reef, and Leeds, then west of LaVerkin and Hurricane, on its way to Washington and St. George southwest of the basin. The basin contains all of the streams that are tributaries to Ash Creek and drains the Pine Valley Mountains, the Harmony Mountains on the north, and the Hurricane Cliffs of the Kolob Terrace on the east. The largest tributaries draining the east slopes of the Pine Valley Mountains and entering Ash Creek stem from the west in the project area are, in order from north to south: Leap Creek, South Ash Creek, and Wet Sandy. Once Ash Creek reaches the open valley, the drainage trends generally south until it reaches the Virgin River, near its confluence with La Verkin Creek.

Ash Creek Reservoir was built on a Pleistocene-age basalt lava flow that is about 1000 feet west of the Hurricane fault. Basalt flows are brittle rocks that fracture readily, but its location adjacent to the largest fault in southern Utah resulted in dam abutments and the reservoir floor in basalt that is heavily fractured. The water table is at depth beneath the bottom of the reservoir. Therefore, the reservoir rarely holds water past the spring season of high snowmelt and heavy rains. An average of approximately 1,740 ac-ft seeps into the groundwater each year (Alpha 2019), or approximately 16 cfs at any one time (McGettigan, 2014). A recent analysis of all available mapping, studies and data for the Ash Creek hydrologic system suggests that water leaked from Ash Creek Reservoir enters a deep flow system and is not connected to shallow groundwater and local seeps and springs (Alpha 2019). There is no evidence that all the excess groundwater in the Ash Creek basin recharges the Virgin River. It is more probable that some groundwater continues south beneath the river (Rowley, et al. 2018).

Two springs near Toquerville (Toquerville Springs and Ash Creek Spring), have an average annual total discharge of 25-30 cfs, all of it now diverted. With respect to stream flow, most of the data consists of snapshots of how that stream behaves. Gage data provide yearly averages, but the problem with such an average is that the monthly or daily variations in flows of perennial streams in the drainage basin are huge.

Uncertainty is the key word here in what the numbers mean and in how reliable they predict future stream flows. Future climate change provides still greater uncertainty to predictions of volumes of surface water.

3.1.1 Surface Water

3.1.1.1 Upper Ash Creek (North Ash Creek)

North Ash Creek is the main drainage in this watershed, with perennial, intermittent and ephemeral sections. There is perennial flow in the upper reaches of the watershed, upstream of Ash Creek Reservoir, in Ash Creek and several tributaries. North Ash Creek stream flows were measured by a USGS stream gauge from 1939 to 1947 at a site approximately 500' NW of the present dam (now within the Ash Creek Reservoir). Average annual flows ranged from 1.9 cfs to 23.1 cfs, with an average of 10.6 cfs.

3.1.1.2 Lower Ash Creek

Ash Creek downstream of the Ash Creek Reservoir and upstream of Toquerville Springs is dry most of the time and only conveys flood flows after larger precipitation events. Ash Creek flows perennially downstream of Toquerville Springs until it flows into the Virgin River. Three large tributaries flow into Ash Creek downstream of Ash Creek Reservoir and upstream of Toquerville Spring, draining the east slopes of the Pine Valley Mountains.

Lower Ash Creek has been diverted for agriculture since the late 1800s. Below the diversion, the remainder of the water continues until flows seep into permeable stream sediments and into the local groundwater system. Although these flows generally disappear shortly downstream of the diversions, in high water years surface flows can reach Ash Creek. These intermittent flows periodically provide flows to downstream waters, either through surface flows or groundwater recharge/ discharge (JBR 2013).

3.1.1.3 Leap Creek

Leap Creek has perennial stream flow upstream of an irrigation diversion which takes most of the surface flows. The diversion of Leap Creek water dates back to 1920. Downstream of the diversion, surface flows are intermittent at best, flowing in the spring season and after larger precipitation events. These intermittent flows periodically provide flows to downstream waters, either through surface flows or groundwater recharge/ discharge (JBR 2013). Most years there are not enough surface flows to fulfill all the current water rights.

3.1.1.4 South Ash Creek

South Ash Creek has perennial stream flow upstream of an irrigation diversion which takes most of the surface flows. This diversion structure is located about two miles upstream of the confluence with Ash Creek and dates back to the late 1800s. Downstream of the diversion, surface flows are intermittent at best, flowing in the spring season and after larger precipitation events. These intermittent flows periodically provide flows to downstream waters, either through surface flows or groundwater recharge/ discharge. Most years there are not enough surface flows to fulfill all the current water rights (JBR 2013).

3.1.1.5 Wet Sandy Creek

Wet Sandy Creek has perennial stream flow upstream of an irrigation diversion which takes most of the surface flows. The diversion structure and pipeline were upgraded in 2010. Downstream of the diversion, surface flows are intermittent at best, flowing in the spring season and after larger precipitation events. These intermittent flows periodically provide flows to downstream waters, either through surface flows or groundwater recharge/ discharge (JBR 2013). Most years there are not enough surface flows to fulfill all the current water rights.

3.1.1.6 Springs

There are three large spring systems, a moderate size spring and many smaller springs in the Ash Creek Watershed. Spring flows vary depending on the season and the annual precipitation amounts. Higher spring flows occur in the winter/ spring seasons and in wetter years. Lower spring flows occur in summer/ fall seasons and in years with lower precipitation amounts. Upstream of the springs, surface waters (Leap Creek, South Ash Creek and Wet Sandy Creek) seep into the groundwater system and provide water to the spring systems.

Deadman Hollow Spring is located in a small drainage east of the Ash Creek Reservoir, draining the west side of the Hurricane Cliffs. Surface water from the spring flows 1400' downstream and into Ash Creek just downstream of the Ash Creek Reservoir. Surface flows sink into the Ash Creek stream bed just below the confluence with Ash Creek (JBR 2013).

Sawyer Spring and Lower Sawyer Spring are in the northern portion of the watershed. Flows were measured at Sawyer Spring in Oct 1995, with a flow of 1.51 cfs (Heilweil et al. 2000). Flows were measured at lower Sawyer Spring in 2009, with a flow of 2.15 cfs (Player 2009). The importance of both springs is that their water levels rise and fall independently of each other (barrier flow) but that large nearby irrigation wells to the north interfere with lower Sawyer Spring because lower Sawyer Spring and these wells are in the same fault and experience conduit flow (Rowley 2018).

Toquerville Springs, the largest spring system in Utah, is located upstream of the town of Toquerville. Spring flows emerge from the eastern bank of Ash Creek, from the Pintura basalt flow, averaging 4,000 gpm. All spring flows are currently diverted for irrigation uses. All water rights to this spring system are held by the cities of Toquerville, Hurricane, La Verkin and WCWCD, with priority dates of 1862 and 1912, totaling over 4900 ac-ft of water. A flow measurement collected by USGS in 1996 at the spring was approximately 22 cfs. The water quality of Toquerville Springs was excellent when sampled in 1987, with typical total dissolved solids concentrations of about 460 milligrams per liter (mg/L) (Clyde, 1987). With these very good water quality conditions, this spring could potentially be a potable water source for the area.

Ash Creek Springs are located about one mile south of Toquerville and 2.5 miles downstream of Toquerville Springs. Spring flows emanate from the banks of Ash Creek from the Pintura basalt flow. Flow measurements range between 5.85 cfs (1968) and 6.92 cfs (1970), with a measurement taken by USGS in 1996 of 6.5 cfs. All spring flows are currently diverted for irrigation uses. Water has very good water quality conditions and could potentially be a potable water source for the area.

3.1.2 Groundwater

The groundwater system in this area is complex and is significantly influenced by two geologic structures – the Pine Valley Mountain laccolith and the Hurricane Fault. The Navajo Sandstone is found throughout the watershed, both as outcrops at higher elevations and at depth underground, and is an important regional aquifer.

There are three aquifers in the upper portion of the watershed including the shallow Quaternary basin-fill aquifer, the older Tertiary-aged alluvium in fan deposits, and the Tertiary- aged Pine Valley Monzonite. These aquifers are recharged by precipitation in the Pine Valley Mountains and by losing stream flows to alluvium. The southern discharge boundary for these aquifers is near the Ash Creek Reservoir where fractured basalts and coarse alluvium are present. Direction of groundwater flow within the upper basin generally follows topography (Heilweil, 2000).

In the lower portion of the watershed (downstream of Ash Creek Reservoir) the Navajo Sandstone and the Kayenta Formation are important aquifers as well as the localized, shallow, unconsolidated alluvial aquifers. The Navajo Aquifer is the largest regional aquifers in this area, with local recharge from the Pine Valley Mountains and possibly from the upper Ash Creek groundwater basin. Recharge to the Navajo Aquifer may be also be from stream losses in Ash Creek and tributaries (JBR 2013).

According to Rowley, Dixon & Layton, “[i]t is likely that significant groundwater crosses into the [Ash Creek] basin from Cedar basin, most of it from precipitation on the Hurricane Cliffs that moved by surface flow to the Hurricane fault zone at the base of the Cliffs, then by fracture flow southward within the fault zone. Groundwater also must be moving in thick Paleozoic aquifers beneath the surface of the Kolob Terrace, then west across the Hurricane fault into the Miocene and Jurassic aquifers juxtaposed by the fault. Yet the greatest recharge must come from the lofty Pine Valley Mountains, where precipitation enters a highly faulted excellent (brittle) Miocene aquifer that forms most of the range, then eastward down gradient to the basin. Finally, the graben of the Ash Creek basin is a complex hash of many faults underlain by basin-fill sediments, the Miocene aquifer, and the Jurassic aquifer, thereby containing more groundwater in storage than previously thought.”

Despite an inability to provide specific numbers on the volume of the groundwater resources of Ash Creek drainage basin, Rowley and others (2016 and 2018) presented evidence that the basin contains far more groundwater than estimated before. First of all, adjacent basins on the north, west, and east are in hydraulic continuity with the Ash Creek basin and contribute recharge that has been ignored previously. Second, the basin axis is a graben (geologically downthrown area) bounded by huge normal faults of opposing vertical displacement that have highly brecciated and provided secondary permeability to already large aquifers consisting of basin-fill sediments, Miocene igneous aquifers, and the Navajo Sandstone; in addition, confining units are brecciated and also given secondary permeability. Third, high precipitation values from adjacent highlands have resulted in high water tables, water wells with high yields, and mostly modern (high Tritium) water. Fourth, the population and agricultural development in the basin are limited. Therefore, it is likely that the Ash Creek basin has groundwater resources that are several times greater than any previously estimated.

The stream water that seeps out through the floor of Ash Creek Reservoir is probably not recharging any local down-gradient springs, streams, or groundwater. Arguments developed by Montgomery (1999) and Rowley and others (2016) suggest that this stream flow enters the adjacent and underlying fractures of the broad Hurricane fault zone, then moves southward (down gradient) by fracture flow along the fault zone, passing beneath the Virgin River and on to Arizona.

Bedrock made up of the Jurassic Navajo Sandstone, a 2000-ft thick, permeable sandstone rock unit that is by far the most important aquifer in Washington County, underlies the area proposed to be occupied by Toquer Reservoir. Geologic mapping of the reservoir site by Rowley and Dixon (2010) showed that the Navajo is cut by many fault splays that make up the western side of the Hurricane fault zone. These fault splays increase the permeability of the Navajo, allowing greater seepage into the Navajo bedrock.

For the Ash Creek drainage basin, quantification of groundwater is especially problematic because its southern boundary is the Virgin River instead of bedrock. There is no evidence that all the excess groundwater in the Ash Creek basin recharges the Virgin River. It is more probable that some groundwater continues south beneath the river in the Hurricane or Grand Wash faults and on to the Grand Canyon (Rowley, et al., 2018).

3.1.3 Water Quality

Surface water quality data is not collected by the BLM on public lands along the three tributaries (Leap, South Ash, and Wet Sandy) or in Ash Creek, because flows are not present at a sufficient number of

intervals during a single sample year to provide reliable and comparable results. As is typical of most streams in the area, sediment transport is expected to be high during seasonal flow events and, depending on the upstream source of the sediments, these can affect water quality.

Groundwater quality associated with the Navajo sandstone aquifer is generally good, though some has been reported to be slightly saline in some locations (Clyde 1987). Clyde (1987) reported that the water quality of Toquerville Springs was excellent (with typical total dissolved solids concentrations of about 460 milligrams per liter (mg/L) and the springs are a potable water source for the area.

3.1.2 Environmental Impacts—Alternative A-No Action

Under the No Action Alternative, there would not be any federal action on federal lands; however, WCWCD could implement water infrastructure upgrades/extensions on private and SITLA lands.

3.1.2.1 Surface Water Resources

Under the No Action alternative, water resources at Upper and Lower Ash Creek, Leap Creek and wet Sandy Creek would remain as they currently are described in **Section 3.1.1**. The No Action alternative would not have an effect on these surface water resources.

The South Ash Creek diversion upgrade and pipeline would require construction directly associated with the flowing stream channel. South Ash Creek would be rerouted during construction so that work required to occur in actively flowing water would be limited. Construction impacts from upgrading the South Ash Creek diversion and constructing pipelines could include small volume and temporary construction water usage; local and temporary increases in runoff, stream turbidity, vegetation removal, soil compaction, and drainage path modification; and inadvertent releases of hydrocarbons or other contaminants. Erosion and runoff control methods would be implemented to reduce erosion-related loading and the temporary construction disturbance area would be reclaimed so that any potential sediment increase would diminish over time. While some unquantified sediment increase may occur, it would be short-term and not extend beyond the construction period. Impacts to surface water due to construction disturbance would be negligible and short-term.

Long-term impacts to South Ash Creek downstream of the proposed diversion structure would occur, as the proposed diversion structure would increase the amount of water diverted from the stream by an average of 1,348 acre feet. This would be a beneficial and minor impact.

3.1.2.2 Ground Water Resources

Under the No Action alternative, ground water resources would remain as they currently are described in **Section 3.1.2**. Reduced groundwater infiltration from this alternative is not measurable, resulting in indirect, minor impacts on groundwater resources.

3.1.2.3 Water Quality

Potential impacts to water quality include increased sediment loading during the construction of the diversion on South Ash Creek as discussed in **Section 3.1.2.1**, and would be minor and short-term in nature.

3.1.3 Environmental Impacts—Alternative B-Proposed Actions

Construction Impacts

Approximately 300,000 gallons per day of water for dust control, compaction, and related construction uses would come from existing and permitted local sources, to be trucked to construction sites. Impacts on runoff would not be likely to alter the volume, timing, and/or extent of surface water flow to any measurable

degree because the construction footprint, in particular new disturbance, would be limited in acreage compared to overall watershed size and disturbances would be dispersed among a number of tributary drainages. Surface water quality impact potential from an unexpected release of hydrocarbons (e.g., diesel fuel) or other contaminants (e.g., concrete mix) due to accidents or spills would be minimal given the lack of nearby surface flows. There is no indication of shallow groundwater in or near the construction areas that might be impacted by the work.

Only the South Ash Creek Diversion replacement would require construction within a flowing stream channel that would be dewatered during construction, with erosion and runoff control methods resulting in negligible or minor erosion-related loading. Temporary construction disturbance would be reclaimed so that sediments would diminish over time. Refer to **Section 3.1.2.1** for the South Ash Creek diversion impacts to water resources. Construction impacts would be direct, short-term and negligible.

Post-Construction Impacts

3.1.3.1 Surface Water Resources

The amount of water available for the reservoir is limited by the available surface flows, the capacity of the pipelines, and the diversion rights. **Figure 3-2** shows the amount of water that would be diverted and the amount that would overflow and pass downstream based upon pipeline capacity and reservoir capacity.

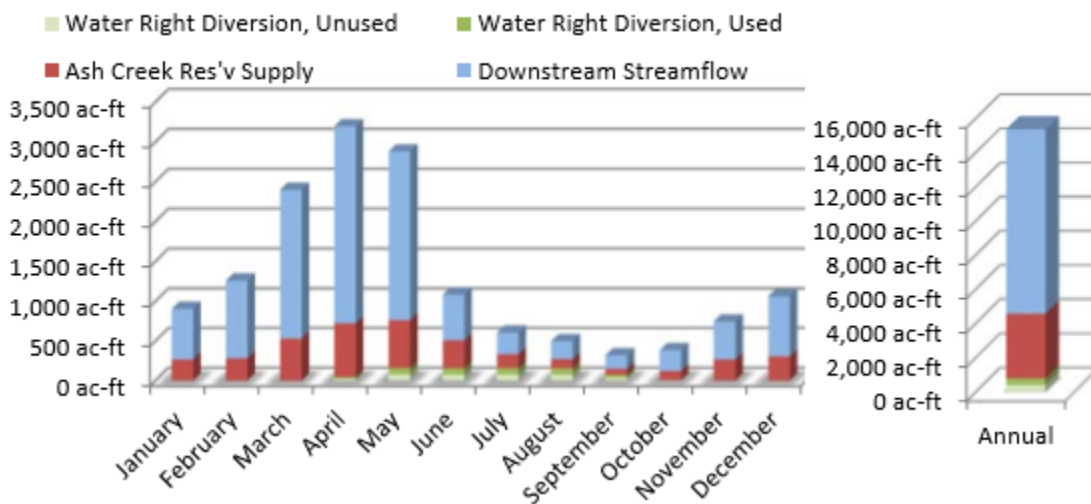


Figure 3-2. Average total monthly and average annual discharge values for Ash Creek Piping system and Toquer Reservoir (Alpha 2019).

The majority of surface flows that reach the diversion points would overflow and continue downstream on an average annual basis. Overall, the Project is expected to deplete an additional 18.6 percent of the 15,454 acre-feet total annual yield of the watershed (2,880 acre-feet). The total diversion for existing and new uses, including 848 acre-feet already being used for irrigation (21.1 percent of project use) and 287 acre-feet considered to be return flow that will return to the downstream environment, would amount to about 26 percent of the yield, averaging 4,015 acre-feet annually. The remaining 11,439 acre-feet would continue downstream as surface flow, recharge groundwater, or evaporation and seepage to support riparian and floodplain function. The annual inflows to the Toquer Reservoir are estimated to range from 548 acre-feet to 6,498 acre-feet depending on the water year (Alpha 2014). Evaporation from the proposed Toquer Reservoir is estimated at 330 acre-feet annually and seepage is estimated at 792 acre-feet annually (Alpha 2014).

Water resources upstream of the diversions would not be affected by the Proposed Action. Below the diversions, data showing current use sufficient to accurately quantify how annual hydrographs would change are not available. Furthermore, potential water losses to Ash Creek would likely be too small to measure relative to existing flows. The stream reaches downstream of Ash Creek Reservoir and the Leap Creek, South Ash and Wet Sandy diversions transition to intermittent, interrupted or ephemeral in a downstream direction. The water rights for Toquerville Springs flows are fully allocated, so if there were changes in flows from these springs, they would not change stream flow in lower Ash Creek.

All surface flows Anderson Junction Wash would be stopped at the Toquer Reservoir dam. The three miles of wash downstream of the dam would transport localized runoff to the lower reach of Ash Creek. Flows from the reservoir into the wash as a result of reservoir spills are not expected, since the amount of water delivered to the reservoir would be managed at the diversion structures in accordance with capacity.

Water use in Pintura, Anderson Junction and TSWS would not change as a result of the project. Thus there would be no measurable change to irrigation return flows to Ash Creek or the Virgin River as a result of irrigation water use.

The Proposed Actions would rely upon existing water rights held by WCWCD and others. Changes in points of diversion may redistribute withdrawals among the various tributary stream channels and would enable WCWCD to utilize a greater proportion of existing water rights, as reflected in impacts to surface flows and groundwater. Pursuant to applicable law, no changes would be authorized that would impair existing water rights. Effects to the discharge of Toquerville and Ash Creek Springs would only impact the WCWCD or its regional water supply partner, since the water needs of these entities are pooled under the Regional Water Supply Agreement. Any impact to water rights would be undeterminable. Overall, impacts to surface water, to the extent that they are determinable, would be negligible to minor, direct, and long-term.

3.1.3.2 Ground Water Resources

Because the recovery wells would only capture water that has infiltrated beneath the proposed Toquer Reservoir there would be a net zero change in groundwater storage. It is not possible to quantify other impacts to groundwater with any degree of confidence. Recharge through the basalts at Ash Creek Reservoir would be somewhat reduced. There would also be some reduction in recharge below the Leap, South Ash, and Wet Sandy diversions but with even less effect on total recharge. There is also insufficient data to quantify the reduction in recharge from the existing ditches, but it would be negligible. Combined, reduced recharge from all these sources is expected to have negligible to minor impacts on total recharge.

Groundwater resources would potentially be impacted by the proposed recovery wells downstream of the proposed reservoir. Monitoring wells would determine pumping rates, etc, to minimize withdrawal of existing groundwater resources and only pump water that has seeped in to the Navajo aquifer from the proposed reservoir. While there is not sufficient data to quantify the effects on groundwater discharge, given the likely amount of groundwater in the area, the impacts are likely to be negligible.

3.1.3.3 Water Quality

Potential impacts to water quality would be minor and short-term in nature. Short-term impacts include increased sediment loads during construction and sediment basin flushing. The proposed road crossings of Ash Creek, Leap Creek, South Ash Creek, Dry Sandy Wash, and Wet Sandy Creeks would be designed and constructed to minimize erosion potential.

Potential impacts from flushing the sediment basins on Leap Creek, South Ash Creek, and Wet Sandy Creek are expected to be minor because they would be short-term and likely limited to a short reach of stream downstream of the basin. While some sediment accumulation is inevitable, the upstream handling of sediment would eliminate the need for a flushing program at the proposed Toquer Reservoir.

Potential impacts to surface water quality from storm runoff and erosion from construction would be minimal due to the required stormwater runoff control efforts including silt fences, wattles, etc. Potential impacts to surface water quality from unexpected releases of hydrocarbons (e.g., diesel fuel) or other contaminants (e.g., concrete mix) due to accidents or spills would be minimal given the lack of nearby surface flows and the requirements for thorough spill cleanup.

Reductions in the quantity of sediment that loads to Anderson Junction Wash and lower Ash Creek would be so negligible as to be unmeasurable. Overall effects to channel stability in lower Ash Creek due to sediment management at the diversions are also negligible.

Long-term impacts from the proposed surface disturbance and increased erosion associated with new roads, pipelines, wells, reservoir and associated facilities would be minimized by reclamation efforts after several years.

3.1.4 Cumulative Effects

3.1.4.1 Alternative A-No Action

The cumulative impact area (CIA) for hydrologic conditions is the 10-digit hydrological unit code (HUC) 1501000804 Ash Creek Watershed (**Figure 3-1** in **Appendix H**). This 215-square-mile drainage area is a portion of the larger Upper Virgin River Watershed. Given the size of the CIA and the variation in land ownership, not all past and present actions can be accurately identified. However, the primary past and present actions having an impact on the hydrologic conditions within CIA include; construction of the Ash Creek dam, wastewater pipelines and septic tanks, culinary water lines, chlorine treatment for culinary uses, storage tanks, construction of numerous stock water and irrigation ponds, municipal and agricultural water diversions on Kanarra Creek, Leap Creek, South Ash Creek, Wet Sandy Creek, Ash Creek, and stream channel alterations associated with water diversion efforts, diversions from Toquerville and Ash Creek springs, public and private well development, and irrigation for residential or municipal landscape and agricultural fields.

Evidence of agricultural diversions from Ash Creek and its tributaries predates recorded history. Diversions under current operation and as outlined in the Proposed Actions would continue in the long term. The water sources of Toquerville and Ash Creek springs have been and would continue to be used under the provisions of the existing water rights for residents of Toquerville, La Verkin, and Hurricane. Operations at the existing West Field Ditch diversion below Toquerville springs would continue.

It is reasonable to expect that WCWCD would continue efforts to develop existing water rights within the Ash Creek watershed, as well as in the Virgin River watershed. The RFFAs also include; upgrades to the South Ash Creek diversion would be made to provide a more reliable, less maintenance diversion method. The South Ash Creek canal would be piped to conserve water loss from seepage. Additional water conservation measures would be encouraged by government and water suppliers. Private and public funds would be invested in research for new technology and methods for more efficient water use. Agricultural water use would be converted to municipal or industrial use as agricultural fields become developed. Some local agricultural irrigation systems would be converted from open ditch to pressurized sprinkler irrigation. New groundwater wells would be drilled to utilize the aquifers as permitted by the state engineer. The continued development of private lands within the watershed boundaries at current reasonable growth projections can be anticipated. Under the No Action Alternative, the Proposed Actions would not be approved and water resources and quality would continue to be subject to existing conditions. Therefore, the cumulative impacts of the No Action alternative when combined with past, present and the RFFAs in the Project Area would be minor and long-term.

3.1.4.1 Alternative B-Proposed Actions

The past actions, present actions, and RFFAs include those activities addressed in **Section 3.1.4.1**. The Proposed Actions would collect surface water from approximately 166 square miles of the Ash Creek Watershed, approximately 49 square miles (26%) of the watershed’s landmass would maintain the current drainage patterns. Hydrological impacts to surface water and groundwater resources in the CIA would be managed by manipulation of the diversion structures and storage. Overall, cumulative impacts from other past, present, and reasonably foreseeable future projects, in combination with the Proposed Actions would be indirect, local, short- and long-term minor. Cumulative impacts would be beneficial to anthropogenic uses of the hydrological resources within the CIA.

3.2 Cultural Resources

3.2.1 Affected Environment

The BLM, in consultation with representatives from SITLA and Utah State Historic Preservation Office (USHPO), defined the Area of Potential Effect (APE) to include all proposed pipeline alignments, the dam, reservoir and recreation area, rock borrow areas, haul roads, and construction work areas for cultural resources. Cultural resources include archaeological sites, historic structures, sacred sites, and traditional cultural properties (TCPs) that are important to a community’s practices and beliefs and are necessary to maintain a community’s identity.

The BLM determined that a literature review, Class III intensive pedestrian survey of the APE, and consultations with American Indian Tribes that claim cultural affiliation to southwestern Utah, the USHPO, and other interested parties were necessary to identify historic properties that might be affected by this project. Identification efforts were conducted between 2008 and 2013 by professional archeological consultants (Gourley et al. 2009; Gourley 2010, 2011a, 2013). Prior to initiating fieldwork, they conducted Class I file searches and literature reviews at the BLM St. George Field Office and the Utah Division of State History. Cadastral plats/General Land Office maps and other historic maps of the area were also reviewed for the presence of historic features, such as roads, ditches, cabins, and trails.

Class III level inventories were completed on approximately 1,010 acres, 23 previously documented archeological sites were relocated and site recordings updated, as needed, and 41 previously undocumented sites were recorded by the identification efforts. The BLM engaged in Section 106 consultations with the SHPO, after determining that of the 64 sites within the APE, 25 were eligible for listing to the NRHP as they retained integrity and satisfied one or more of the eligibility criteria listed at 36 CFR 60.4 (a-d). See **Table 3-1**.

Table 3-1. Cultural Resources in the APE

Total Acres Surveyed	Sites within APE	NRHP-Eligible Sites	Ineligible Sites
1,010.2	64	25	39

Through Section 106 consultations, beginning in 2009, the USHPO concurred with the BLM’s determinations of site eligibility for NRHP listing and project effects on historic properties. In 2011, the BLM initiated consultations with the Paiute Indian Tribe of Utah and its respective Bands, the Kaibab Paiute Tribe, the Hopi Tribe, the Pueblo of Zuni, and the Navajo Nation regarding the Project and the potential adverse effects that could result from the federal and state authorization of this undertaking.

Past actions include environmental changes that have occurred in the CIA beginning in prehistoric times to the recent past (5 years). Prehistorically, populations farmed the areas within the CIA. Farming activities include clearing the landscape, digging and planting fields, construction of irrigation ditches, and

harvesting. Prehistoric activities may also have included slash and burn agricultural techniques. Historic activities are related to settlement, agriculture, and mining. Settlement by pioneers included construction of roads, highways, and transportation infrastructure. Homes and farms were built and established. An extensive network of irrigation and culinary water ditches were constructed. The area has been used for ranching activities, particularly grazing, including ranch improvements, such as, fences, roads, corrals, troughs, etc. Mining activities within the CIA have been minimal and mainly include the transportation of workers and goods from the surrounding areas where mining was underway. Accidental and purposeful burns have occurred within the CIA. Other past actions that affected the cultural resources include the scientific excavation, illegal collection, and looting of archeological sites.

Present actions include infrastructure construction, improvements, and population growth. The municipalities are rapidly growing and expanding. I-15 continues to undergo major improvement projects. New secondary highways and roads are being constructed and maintained. Other present actions include upgrading and maintenance to irrigation and culinary water infrastructure. Gravel extraction occurs at two locations within the CIA. However, expansion restrictions are in place. Farming and grazing persists and results in continued maintenance to infrastructure and range improvements. Population growth and tourism have brought increased recreational use to the CIA (camping, hiking, equestrian, OHVs) which occasionally results in vandalism and looting of cultural resources as well as inadvertent impacts such as trampling of resources.

3.2.2 Environmental Impacts—Alternative A-No Action

Under the No Action Alternative, no federal authorizations would be granted for the use of BLM-managed public lands and a majority of the components of the Proposed Actions would not be constructed. Sites on BLM-administered lands would continue to be protected by federal historic preservation laws and there would be no project-related direct or indirect impacts in the long or short-term.

The WCWCD could undertake actions on SITLA and private lands, including reconstruction of the South Ash Creek diversion and replacing the unlined Pintura ditch with a pipeline. Where historic properties occur on SITLA lands, compliance with Utah Code Annotated 9-8-404 would be required and could include treatments to mitigate adverse effects. If federal funding or authorizations were required for actions on private lands that could adversely affect historic properties, adverse effects to historic properties would be addressed through the Section 106 process. The extent of possible actions under the No Action alternative and the number of historic properties that could be adversely affected cannot be quantified at this time.

3.2.3 Environmental Impacts—Alternative B-Proposed Actions

The Proposed Actions require authorizations from both federal and state agencies (SITLA) and must comply with requirements of the National Historic Preservation Act (54 USC 300101, NHPA) at Section 106, its implementing regulations at 36 CFR 60 and 800, and Utah Code Annotated 9-8-404. The BLM was identified as the lead agency for all project components on all jurisdictional lands and the Proposed Actions considered a single undertaking, subject to Section 106 of the NHPA. The NHPA requires that federal agencies make a “reasonable and good faith” effort to identify cultural resources that are listed or eligible for listing to the National Register of Historic Places (NRHP, aka historic properties) within the APE for projects or “undertakings” that the agencies carry out, fund, or authorize. Federal agencies must also take into account the effects of their undertakings on historic properties and take actions to avoid or mitigate adverse effects to historic properties through appropriate treatments.

Federal regulations at 36 CFR 800.6 provide processes to resolve adverse effects to historic and prehistoric properties, through consultations and the execution of a Memorandum of Agreement (MOA) and an

approved Treatment Plan. This plan describe the methods that will be used to minimize or mitigate adverse effects, generally through data recovery and analysis.

To lessen adverse effects on the 25 historic properties, professional archeological consultants drafted a Treatment Plan in 2012. The BLM provided this plan to SITLA, the USHPO, and the Tribes for review and comment. In 2014, the consulting parties accepted the Archeological Monitoring and Treatment Plan for the Ash Creek Pipeline and Anderson Junction Reservoir, Washington County, Utah (Gourley and Hall 2014). An MOA was signed between that BLM-St. George Field Office, the USHPO, SITLA, and the WCWCD in February of 2014 to ensure that the approved Treatment Plan would be implemented. The Tribes were invited to become signatories as Concurring Parties to the MOA, with the Paiute Indian Tribe of Utah and the Shivwits Band of Paiutes accepting the invitation.

The approved Treatment Plan includes avoidance and monitoring by qualified archeologists, phased archeological testing and/or data recovery, or the development of historic contexts for historic period sites. Phased archeological testing and/or data recovery would involve the following, using standard professional archeological field methods:

- Detailed documentation of surface artifacts, materials; structures, features and use surfaces;
- Excavation of structures, features, and use surfaces sufficient to address the research issues identified in the research design presented for each site.
- Documentation of all excavated components and associated features, and collection of materials for further laboratory analysis, to include all artifacts as well as samples of macro and microflora, stratigraphic profiles of pollen, appropriate charcoal or bulk samples for an extensive radiocarbon assay program, and micro-refuse sampling from excavated components;
- Detailed analysis of individual data sets as appropriate;
- Synthesis of analytical data sets into a quality formatted technical publication.

Table 3-2 provides information on the 25 cultural resources included in the Treatment Plan, including the site types, ownership, and proposed treatments. Cultural resources include archaeological sites, historic structures, sacred sites, and traditional cultural properties (TCPs) that are important to a community's practices and beliefs and are necessary to maintain a community's identity.

Table 3-2 Historic Properties and Proposed Treatments

Site Number	Style Type	Land Owner	Proposed Treatment
42WS3578	Historic road	Private, BLM, SITLA	Flag, avoid, monitor
42WS3709	Historic road	Private, BLM, SITLA	Develop historic context
42WS3715	Historic road	BLM	Develop historic context
42WS3834	Historic trash scatter	BLM	Analysis and plotting of artifacts
42WS3836	Prehistoric open artifact scatter	Private, BLM	Phase I testing; Phase II data recovery
42WS3849	Historic road	Private	Flag, avoid, monitor
42WS4095	Prehistoric open artifact scatter	BLM	Phase I testing; Phase II data recovery
42WS4096	Prehistoric open artifact scatter	BLM	Phase I testing; Phase II data recovery
42WS4097	Prehistoric open lithic scatter	Private, BLM	Phase I testing; Phase II data recovery
42WS4098	Prehistoric open campsite	Private, BLM	Phase I testing; Phase II data recovery
42WS4099	Historic road	Private, BLM	Develop historic context
42WS4101	Prehistoric open campsite	BLM	Phase I testing; Phase II data recovery
42WS5131	Prehistoric open campsite and historic trash scatter	BLM	Flag, avoid, monitor
42WS5132	Historic inscriptions and trash scatter	BLM	Plotting and analysis of artifacts
42WS5133	Prehistoric open campsite and historic dump	BLM	Phase I testing; Phase II data recovery
42WS5135	Historic habitation	Private	Flag, avoid, monitor
42WS5136	Prehistoric open lithic scatter	BLM	Flag, avoid, monitor
42WS5137	Prehistoric rock shelter	SITLA	Temporary fence, avoid, monitor
42WS5138	Prehistoric open campsite	SITLA	Temporary fence, avoid, monitor
42WS5139	Prehistoric open campsite	SITLA	Temporary fence, avoid, monitor
42WS5140	Prehistoric open campsite	BLM	Phase I testing; Phase II data recovery
42WS5142	Prehistoric open campsite	BLM	Flag, avoid, monitor
42WS5156	Historic ditch	Private, SITLA	Develop historic context
42WS5354	Prehistoric open lithic scatter	BLM	Phase I testing; Phase II data recovery
42WS5550	Prehistoric rock art with grinding slicks and historic inscriptions	Private	Flag, avoid, monitor

In 2014, an MOA was signed to ensure that the approved Treatment Plan would be implemented for the Proposed Actions to lessen the adverse effects to historic properties to the maximum extent possible. Professional archeological field data recovery methods would be used at 10 sites to collect and analyze the important scientific information from each site and the results documented in a technical report. Artifacts and other materials recovered from these sites would be curated in a federally-approved repository and would be available for further research studies. The technical reports would be filed with the BLM, SITLA, or private owner, and the USHPO and would be available for future research studies. For three historic period roads and an historic ditch, archival research would be completed to develop a detailed history of each feature that would also be filed with BLM, SITLA, or private owner, and the UTSHPO, and would be available for future research studies.

The Proposed Actions also include the installation of kiosk at the Recreation Area with interpretive panels that include information from the data recovery conducted as mitigation for this project. This information could enhance public understanding of the cultural history of southwestern Utah.

Implementation of the Proposed Actions would cause direct and indirect, short and long-term impacts on 15 historic properties. The characteristics of each property that qualify it for inclusion in the NRHP would be altered, directly or indirectly, in a manner that would diminish the integrity of the property's location, design, setting, materials, workmanship, feeling, or association. Direct and indirect impacts on 10 historic properties would be avoided, through project design and monitoring.

3.2.4 Cumulative Effects

3.2.4.1 Alternative A-No Action

Past and present disturbance as discussed in **Section 3.2.1** have impacted cultural resources. NRHP-eligible sites within permitted disturbance areas were subject to oversight of Section 106 of NHPA; therefore impacts or losses of cultural resources were mitigated. Impacts to cultural resources from reasonably foreseeable projects would mostly result from ground disturbance related to private lands. Increased accessibility created by new roads built in association with projects can cause cumulative impacts related to increased public visitation, recreational impacts, scientific excavation, unauthorized artifact collection, and vandalism.

Current and future development would contribute to the cumulative effects, both direct and indirect, on prehistoric and historic cultural resources in the analysis area. All proposed, reasonably foreseeable developments with a federal nexus would be completed under the oversight of Section 106 of NHPA and thus project impacts would be individually addressed. The cumulative effects of the No Action alternative when combined with the past, present, and RFFAs in the CIA is unable to be quantified at this time.

3.2.4.2 Alternative B-Proposed Actions

The past actions, present actions, and reasonably foreseeable future actions include those activities addressed in **Section 3.2.4.1**. Data recovery of NRHP-eligible sites would expand the regional database and knowledge of prehistoric and historic contexts. The measures developed to avoid and mitigate direct impacts to cultural resources would also minimize contributions to cumulative effects. The Proposed Actions, when combined with other past, present, and the RFFAs would have long-term, and minor cumulative impacts to cultural resources.

3.3 Socio-Economics

3.3.1 Affected Environment

Settlement of Washington County has been influenced prehistorically and historically by availability to water, and in more modern times, by land ownership/administration. Historic settlement of the area began with the colonization by Mormon Settlers in the mid-1800s. Approximately 76 percent of land in Washington County is public, eight percent is state or reservation, and 16 percent is private. With 76 percent of lands under federal administration, rural, and suburban developments are dispersed throughout private lands in the County.

Located within the Project Area in Washington County, Utah are the Pintura and Anderson Junction ranching communities with approximately 23 single-family ranch houses. Neither community has any commercial or industrial development. The town of Toquerville is adjacent to the Project Area, with a population of 1,615, and little commercial or industrial development. Many of the residents of these communities commute to the Cedar City, Hurricane or St. George areas for work. Commercial gravel operations near the Project Area include the Snowfield Pit located northeast of the I-15 Snowfield exit, the Gilbert Pit located north of Anderson Junction, and the Pintura Pit west of the I-15 Anderson Junction exit.

3.3.2 Environmental Impacts—Alternative A-No Action

Under the No Action Alternative, the Project ROW and R&PP lease would be denied. Opportunity for revenues associated with the recreation area would not be realized. Monies spent on development of the Project including geotechnical testing, preliminary engineering, hydrological investigations, cultural investigations, and environmental analysis would be lost. Local businesses would not benefit from the revenue created from out of town workers during the construction period. While portions of the Project could still be completed on non BLM-managed lands, the full estimated additional average of 1,730 af/yr of culinary water would not be available (Aguero, 2013). The Socio-economic impacts of No Action alternative are considered long-term, and minor to moderate.

3.3.3 Environmental Impacts—Alternative B-Proposed Actions

Short-term, direct impacts on the regional communities would include a viable construction project. The anticipated construction contracts would be \$27 million. Construction would include multiple contractors working over a period of three to five years with the majority of construction completed during the first year upon permitting. Contractors would likely include local or regional workers. Out of town workers would utilize local amenities (i.e., hotels/motels, restaurants, gas stations, etc.) while working in the area. This would represent a short-term impact to the local economy.

While this Project would support local water users, WCWCD directives are to provide water to residents of Washington County. WCWCD actively allocates funds and delivery methods to supply the needs of the whole county. Reasonably the socio-economic benefit would be experienced by residents of the whole county. Based on current average water use, it is estimated the additional average of 1,739 af/yr of culinary water would support 8,312 residents (approximately 1.4 percent of the projected population growth of 581,731 in Washington County by 2060), 2,933 households, 2,689 employees, and 244 business establishments (Aguero, 2013).

Water from the proposed Toquer Reservoir would be used to supply the current TSWS users with irrigation water over the long-term. Water from Toquerville Springs that is currently used to supply TSWS (2,045 af/yr) would be available to supply culinary water to residents of Toquerville, Hurricane, and LaVerkin. The water supply would accommodate approximately 2 years of growth in Washington County or

approximately 40 years of growth in the immediate vicinity of the Project Area (Aguero 2013). This would be a long-term economic benefit to residents of Washington County.

In addition, the long-term maintenance and operation of the system would require two full time WCWCD employees. Long-term maintenance and operation of the recreation area would require one full time and multiple part-time employees. At this time, the agreement between the WCWCD and Toquerville City for management of the recreation area has not been finalized. The Utah State Parks have interest in the proposed reservoir and recreation area and believe that if Toquerville City cannot manage the recreational area then the area could be managed as a satellite facility from Quail Creek State Park. The socio-economic impact of the Proposed Actions would be a long-term, moderate impact on regional communities, Washington County, and subsequently the State of Utah.

3.3.4 Cumulative Effects

3.3.4.1 Alternative A-No Action

The past and present actions are expected to continue over the reasonably foreseeable future as outlined at the beginning of Chapter 3. RFFAs include the continued development of private lands in and near the Project Area and continued efforts by WCWCD to develop existing water rights within the Ash Creek Watershed along with additional conservation measures.

Additionally, the population growth, ethnic makeup, income, and poverty rate would continue to depend on factors such as social trends and overall economic conditions with the available water supply being the ultimate limiting factor in economic conditions of the region.

Under the No Action Alternative, the WCWCD's proposed Project would not be approved as applied for, and the R&PP lease and ROW would not be granted to the WCWCD. The short-term economic contribution during Project construction and the long-term incremental economic contribution of the reservoir and recreation area would not occur. The cumulative effects of the No Action alternative on socio-economics when combined with past, present, and reasonably foreseeable future actions would be negligible to minor.

3.3.4.2 Alternative B-Proposed Actions

The past actions, present actions, and reasonably foreseeable future actions include those activities addressed in **Section 3.3.4.1**. The short-term effect of the Proposed Actions during construction is job availability with an indirect effect on income level. The long-term effect of the Proposed Actions, when added to other actions in Washington County, is positive as the WCWCD develops renewable water sources which increase the dependability of the County's water supply through versatility in the whole water supply system.

The development of the proposed Toquer Reservoir on the BLM-managed public land for the R&PP lease would contribute to the continued population and economic growth of Washington County, though the relative contribution of the reservoir and recreation area would be relatively minor compared to all other economic activity and growth occurring in Washington County. The reservoir and recreation area would make the area more attractive to new residents, provide additional facilities that make visiting the area more popular among out-of-town residents, and allow the area to host continued and larger recreation events and races. The development of the reservoir and recreation area would have the largest cumulative beneficial socioeconomic impact on the communities closer to the reservoir, such as Toquerville. The cumulative effects of the Proposed Actions Alternative on socio-economics when combined with past, present, and reasonably foreseeable future actions would be minor to moderate.

3.3 Wetlands/Riparian

3.4.1 Affected Environment

Discussion on wetlands/riparian zones for the Project is derived mainly from the Anderson Junction Hydrology report (**Appendix J**) completed by JBR Environmental Consultants, Inc in 2013 (JBR 2013). In July 2012, JBR wetland scientists, Jill Hankins and Karla Knoop, conducted a wetlands and Waters of the US (WofUS) delineation of the defined Project Area. The delineation was completed in compliance with the US Army Corps of Engineers (COE) current regulatory guidance documents as pertaining to Section 404 of the Clean Water Act. A WofUS Delineation report was submitted to the COE requesting a Preliminary Jurisdictional Determination (PJD) on water features recorded within the Project Area. The COE replied to the WCWCD with a PJD dated February 12, 2014 with COE project number SPK-2011-01121. The PJD concurred with the amount and location of water bodies within the Project Area as depicted in the January 9, 2014 WofUS Delineation Report (JBR 2014) which included 18,647 linear feet of intermittent or ephemeral streambed and no wetlands within the areas of surface disturbing activities. The WofUS Delineation and PJD letter is on file in the project record. As there are no jurisdictional wetlands within the Project Area, these are not further discussed in this analysis (JBR 2013).

The WofUS Delineation documents the ordinary high water mark (OHWM) of Ash Creek, Leap Creek, Dry Wash, South Ash Creek, Dry Sandy, Wet Sandy, Anderson Junction Wash, and Anderson Valley Wash found within the project study area. Leap Creek, South Ash Creek, and Wet Sandy are intermittent, interrupted streams that flow into Ash Creek during seasonal runoff and during high flood events. Each of these intermittent tributaries to Ash Creek has an agricultural diversion that currently and historically impounds and/or diverts ordinary low flows. Ash Creek is also intermittent, interrupted through the Project Area. Ordinary low flows of Ash Creek are impounded by the Ash Creek Reservoir dam. Ash Creek is interrupted, ephemeral downstream from the Ash Creek dam to the Toquerville Springs area. Ash Creek is perennial downstream of Toquerville Springs to the confluence with the Virgin River.

In 2012, JBR observed hydromesic riparian conditions in three areas within the study area: on Ash Creek at the Ash Creek/Deadman Hollow confluence, along Ash Creek downstream of Toquerville Springs to its confluence with the Virgin River, and on South Ash Creek upstream of the diversion structure. These three areas have some developed riparian zone. Riparian conditions in these areas appear to be associated with a perennial water source. All other intermittent stream corridors within the study area are more xeric with spaced decadent/mature woody species and very little understory. Vegetation composition appears to be associated with a deeper water table, intermittent or ephemeral surface flows (JBR 2013).

3.4.1.1 Ash Creek

Ash Creek Reservoir is an on-stream facility. The dam, constructed in conjunction with I-15 in the late 1960's, retains all regular flows of North Ash Creek and Kanarra Creek within the reservoir. Dominant tree species in the reservoir area include; Single leaf ash (*Fraxinus anomala*) and Fremont cottonwood (*Populus fremontii*). These are subject to drought and can be uprooted by high magnitude flood events. Ash Creek flows below the dam only when the existing reservoir water level reaches the overflow spillway, some years for a brief period in the early- to mid-spring and most years not at all. As a result, the dam retains all of the sediment transported in the flows of North Ash Creek and Kanarra Creek. Sediment retention upstream of the dam is obvious within the basin when the reservoir is empty during the summer months.

Riparian conditions at the Ash Creek/Deadman Hollow confluence immediately below the Ash Creek Reservoir outlet are influenced by a spring flowing through Deadman Hollow into Ash Creek. This flow of spring water and nutrients maintains the narrow existing riparian community from the spring's origin through Deadman Hollow to the Ash Creek confluence for a distance of approximately 1,400 linear feet. This flow supports the following riparian species: three-square bulrush (*Schoenoplectus* spp.), wire grass

(*Juncus* spp.), muhly grass (*Muhlenbergia* spp.), rush (*Juncus* spp.), silver sage (*Artemisia cana*), and hawthorn (*Crataegus rivularis*). Ash Creek's natural channel below the confluence consists of decadent/mature and discontinuous cottonwood (*Populus* sp.) trees with little recruitment of saplings. High magnitude flood events that reach the secondary spillway scour the overflow channel which is located north of the Ash Creek natural channel. This overflow channel was heavily scoured during a flood in 2010. There is no evidence of sediment deposition from low flow and moderate flood events that would successively build sand bars and stream banks for riparian species propagation (**Figure 3-3**).



Figure 3-3: View downstream at Ash Creek below the Ash Creek Dam and the Deadman Hollow confluence. Note the lack of developed riparian community and large cobble substrate. July 9, 2012.

3.4.1.2 Leap Creek

Leap Creek drains approximately 9 square miles of the west slope of Pine Valley Mountain partially within a steep narrow volcanic graben. The existing diversion on Leap Creek was upgraded in 1995 and the ditch was piped to supply an agricultural field on the bench on the west side of I-15. This diversion has not been fully utilized in the recent years as the agricultural fields are not currently under production. Even with the diversion closed, surface flow below the diversion transitions to intermittent flows as the 4 – 15 foot wide channel meanders down the basalt alluvium. The channel substrate is very coarse sand (1 inch) made up mostly of cobbles (1 – 2 feet in diameter). Seasonal water pockets are found within the stream channel however the confluence with Ash Creek was dry on all field survey occasions (**Figure 3-4**). The channel lacks a developed riparian understory, mature cottonwood and ash trees line the channel banks increasing in separation from approximately 30 feet apart near the diversion to roughly 100 feet apart near the Ash Creek confluence. The lack of a vegetated understory and riparian trees in the rocky channel is a clear indication of the lack of perennial surface hydrology in the channel.



Figure 3-5: View to the south at Leap Creek channel below the existing diversion. Note seasonal water pockets in the stream channel sparse riparian trees and little to no riparian understory vegetation. April 25, 2012.

3.4.1.3 South Ash Creek

Surface flow have been diverted at the South Ash Creek diversion structures for irrigation use in Pintura since the late 1800s. Currently there are two diversions on South Ash Creek. The upper diversion routes water into a ditch and pipeline to prevent the stream from running subsurface before reaching the lower diversion (Hepworth et al. 2003). The lower diversion routes water into an irrigation ditch which is lined for part of its distance to Pintura. Under current conditions below the lower diversion, the creek is intermittent and supports only a narrow ribbon of sparse cottonwood and ash trees with little to no understory (**Figure 3-5**). Seasonal high flows overtop the diversion and continue down the natural channel; seasonal water pockets may be found within the stream channel after high flow events. The stream channel contains large boulders that are indicative of previous high-magnitude flood events, while the channel substrate is very rocky with little fine sediment. Google Earth images from approximately 15 years ago suggest a more robust growth of riparian trees, but stature and density appear to have since diminished.



Figure 3-5: View to the north at the existing diversion on South Ash Creek, July 9, 2012. This sandbag diversion is rebuilt as needed by the Pintura irrigation users. The existing on-stream diversion berm beneath the sand bags is evidence of the long-term, historical diversion efforts.

3.4.1.4 Wet Sandy

In 2010, the WCWCD upgraded the diversion structure on Wet Sandy and buried an 8-inch pipe to capture stream flows and store water in the pressure pond and storage tank northwest of Anderson Junction. The on-stream diversion structure diverts flow from the 5 square mile drainage area into a sediment basin. The sediment basin is flushed periodically depositing the settled sediments into the Wet Sandy stream channel. Flushing occurs as needed and during high stream flows to return small particle sediments to the natural channel downstream. This process slows sedimentation of the storage reservoir and provides substrate that supports sparse Fremont's cottonwood (*Populus fremontii*) and ash trees (*Fraxinus anomala*) along the stream channel to the confluence with Ash Creek. Wet Sandy is characterized as a losing, intermittent stream below the diversion, cottonwood and ash trees are sparsely found increasing in distance from 30 to 150 feet down the stream channel to the confluence with Ash Creek (**Figure 3-6**).



Figure 3-6: View to the west at Wet Sandy ephemeral channel near the I-15 culvert. Note large monzonite cobbles and no riparian zone understory in the channel. July 9, 2012.

3.4.1.5 Anderson Junction Wash

Anderson Junction Wash is an ephemeral drainage that would be intercepted by the proposed Toquer Reservoir and its seasonal flows impounded in the reservoir. The wash channel consists of windblown sand and bedrock. The wash contains no riparian vegetation and no wetlands. See **Figure 3-7**.



Figure 3-8: Anderson Junction Wash within the proposed reservoir basin. October 23, 2013.

3.4.2 Environmental Impacts—Alternative A-No Action

Under the No Action alternative, no federal action would be taken and the project would not be constructed on federal lands. The reservoir and the Ash Creek pipeline would not be constructed. The Ash Creek reservoir would be maintained in the short-term at current conditions; high spring run-off would periodically inundate the reservoir during wet years. Upgrades of the South Ash Creek diversion and piping the South Ash Creek ditch could still be implemented by the WCWCD on SITLA lands. These are analyzed below.

3.4.2.1 Ash Creek

Under the No Action alternative, riparian conditions in Ash Creek would remain as they currently are described in **Section 3.4.1.1**, and no new establishment of riparian vegetation would be expected. Riparian resources in Deadman Hollow upstream from the confluence with Ash Creek immediately below the dam are supported by spring flows in Deadman Hollow. Ash Creek's natural channel immediately below the dam only receives subsurface hydrology and there is currently no evidence of deposition from low flow and moderate flood events that would successively build sand bars and stream banks for riparian species propagation. The No Action alternative would not have an effect on riparian resources in Ash Creek.

3.4.2.2 Leap Creek

Under the No Action alternative, riparian conditions at Leap Creek would remain as they currently are described in **Section 3.4.1.2**. The No Action alternative would not have an effect on wetlands or riparian resources in Leap Creek.

3.4.2.3 South Ash Creek

Under the No Action alternative, upgrades of the South Ash Creek diversion and piping the South Ash Creek ditch could still be undertaken on SITLA lands. These actions would take an additional annual average 1,348 acre feet of water from the South Ash Creek diversion than the current conditions, therefore some impacts to riparian trees within the natural channel would occur. However, since the low flows of South Ash are currently diverted during the entire growing season there would be little to no new or additional impact to the low terrace understory of the natural stream channel. The existing larger hardwood trees within the natural channel have adapted to the altered flow regime with deep root systems to withstand high velocity flow events. In addition, these trees are likely supported by flows in the hyporheic zone rather than springtime high velocity flow events. The upgrade of the South Ash Creek Diversion and piping the South Ash Creek ditch could have long-term, negligible impacts on riparian resources downstream of the diversion and along the existing canal.

3.4.2.4 Wet Sandy

Under the No Action alternative, riparian conditions at Wet Sandy Creek would remain as they currently are described in **Section 3.4.1.4**. The low flows of Wet Sandy are currently diverted during the entire growing season, and the natural channel has adapted to the altered flow regime during the growing season. The No Action alternative would not have an effect on riparian resources in Wet Sandy Creek.

3.4.2.5 Anderson Junction Wash

Under the No Action alternative, riparian conditions at Anderson Junction Wash would remain as they currently are described in **Section 3.4.1.5**. The approximated 185 acres of Anderson Valley Wash and Anderson Junction Wash would not be inundated by the reservoir and recreation area. The approximate 15,716 linear feet of Anderson Junction Wash downstream of the dam would continue to convey surface flows from the upstream portion of Anderson Junction Wash's watershed (approximately 5 square miles) to Ash Creek. The No Action alternative would not have an effect on riparian resources in Anderson Junction Wash.

3.4.3 Environmental Impacts—Alternative B-Proposed Actions

3.4.3.1 Ash Creek

The Ash Creek pipeline would not affect the spring flows in Deadman Hollow or the riparian community near and upstream of its confluence with Ash Creek. The Proposed Actions would have a beneficial impact on the riparian zone within the existing Ash Creek reservoir. With outflow into the proposed Ash Creek pipeline, water retention time within the existing reservoir is estimated to be reduced to less than 30 days. The riparian zone would be expected to increase within the existing Ash Creek Reservoir basin with the reduced retention, reduced pool elevation, and continuous flow. Resident seed source is available in the soil and this transition would occur over time as previously inundated soils dry out and continuous flow carves a stream channel. This newly developed or restored riparian zone could increase the riparian zone by approximately 3,200 linear feet throughout the length of the existing Ash Creek Reservoir. The Ash Creek stream channel beneath the existing reservoir would be expected to eventually revert back to a riparian zone dominated with tree species similar to conditions found upstream of Ash Creek Reservoir. The beneficial impact is negligible in the short-term increasing to moderate over the long-term.

3.4.3.2 Leap Creek

The Proposed Actions would extend the existing pipeline from the existing Leap Creek diversion. The pipeline would be extended approximately 11,179 linear feet to connect with the proposed South Ash Creek pipeline near Pintura. Approximately 16,734 linear feet of Leap Creek's natural channel would convey an estimated annual average of 399 acre-feet less water than the current conditions (Alpha 2019). It can be expected that some impacts to riparian trees within the natural channel could occur. Since an estimated annual average flow volume of 1,343 acre-feet (77% of annual surface flows) would bypass the diversion and continue down the natural channel the potential impacts to the riparian zone are considered minor over the long-term.

3.4.3.3 South Ash Creek

The impacts would be the same as analyzed in **Section 3.4.2.3**.

3.4.3.4 Wet Sandy

The Proposed Actions would provide additional storage capacity for the diversions from Wet Sandy. An annual average 268 acre-feet of additional flows would be diverted at the Wet Sandy diversion with an estimated annual average of 758 acre-feet bypassing the diversion. Since the low flows of Wet Sandy are currently diverted during the entire growing season, there would be little to no new or additional impact to the riparian species of the natural stream channel. Impacts to riparian zones along the natural Wet Sandy channel are considered negligible over the long-term.

3.4.3.5 Anderson Junction Wash

The Proposed Actions would inundate 185 acres of Mojave Desert including two ephemeral washes within the proposed Toquer Reservoir footprint, Anderson Valley Wash and the larger Anderson Junction Wash. Approximately 2,515 linear feet of Anderson Valley Wash and approximately 5,874 linear feet of Anderson Junction Wash would be inundated and their surface connection to Ash Creek would be truncated by the proposed dam. Approximately 15,716 linear feet of Anderson Junction Wash downstream of the dam would no longer convey surface flows from the upstream portion of Anderson Junction Wash's watershed (approximately 5 square miles) to Ash Creek. The dam spillway could overflow into the downstream portion of Anderson Junction Wash and flows from the spillway could therefore reach the perennial portion of Ash Creek however; it is unlikely the spillway would ever be used as high flows would be handled at each of the upstream diversions (Leap Cr, South Ash, Wet Sandy).

Cottonwood, coyote willow, velvet ash, desert willow, seep willow, and arrow weed are expected to propagate around the shoreline after the reservoir fills. Riparian trees are expected to increase around the reservoir site over time resulting in a riparian tree fringe around the reservoir. The reservoir water elevation

could range up to 40 feet depending on precipitation, snowpack, season, and water usage. This water level drawdown zone includes approximately 68 acres of the outer circumference of the reservoir. Marsh wetland would develop within this drawdown zone over time. The amount of wetland marsh is dependent upon numerous factors; however it is reasonable to estimate 20 to 40 acres of wetland fringe around the reservoir based upon similar conditions at Sand Hollow Reservoir. Both of these effects of the Proposed Actions would be beneficial, long-term, and moderate with the creation of wetlands and the propagation of riparian tree species in a previously dry upland area.

3.4.4 Cumulative Effects

3.4.4.1 Alternative A-No Action

The past and present actions are expected to continue over the reasonably foreseeable future as outlined in **Section 3.4.1**. RFFAs include the upgrade to the South Ash Creek diversion and piping of the unlined ditch. Under the No Action alternative, the Proposed Actions would not be approved, and no other impacts to wetlands/riparian resources are anticipated to take place. Therefore, the No Action alternative when combined with past, present, and the RFFAs would have minor, long-term cumulative impacts.

3.4.4.2 Alternative B-Proposed Actions

The past actions, present actions, and RFFAs include those activities addressed in **Section 3.4.4.1**. There cumulative impacts of the Proposed Actions when combined with the past, present, and RFFAs is similar to that of the No Action alternative.

3.5 Fish and Wildlife, excluding USFW Designated Species

3.5.1 Affected Environment

The UDWR Utah Natural Heritage Program (UNHP) (UNHP 2019; **Appendix K**) indicates records of occurrence for the following Utah state-sensitive species: a recent record of the Arizona toad (*Anaxyrus microscaphus*) potentially in the Project Area and past records of occurrence within a 2-mile radius of the Project Area for Bonneville cutthroat trout (*Oncorhynchus clarkii utah*), common chuckwalla (*Sauromalus ater*), desert sucker (*Catostomus clarki*), flannelmouth sucker (*C. latipinnis*), Townsend's big-eared bat (*Corynorhinus townsendii*), and Virgin spinedace (*Lepidomeda mollispinis*). All of these species are also listed as BLM-sensitive species occurring in Washington County, Utah.

Biological surveys of the Project Area were conducted between 2009 and 2010 (JBR 2010). Survey target species included the BLM and State of Utah sensitive species identified above. No sensitive species listed in the UNHP letter were observed during the surveys, nor were any sensitive species' nests, roosts, or habitat areas identified in the Project Area. Surveys were also conducted within 0.5 mile of proposed construction areas for raptor nests. Three red-tailed hawks (*Buteo jamaicensis*), one Cooper's hawk (*Accipiter cooperii*), one raven (*Corvus corax*), and two unoccupied stick nests were recorded within the 0.5-mile buffered study area (JBR 2010).

The St George Field Office recognizes that the surveys referenced in this draft EA are outdated, and that additional surveys for wildlife species will need to be completed in the spring of 2020. We anticipate that these surveys will reflect the language in the current version of the EA. However, this EA is not to be finalized until we consider the results of the new surveys. The draft EA may be changed dependent on the findings of the upcoming surveys.

Virgin spinedace, a native minnow managed under a Conservation Agreement; desert suckers; and flannelmouth suckers, all resident in the Virgin River, may be found in lower Ash Creek near its confluence with the Virgin River but only during periods of high seasonal precipitation. When water is present in Ash

Creek, these fish may recolonize up to Ash Creek Springs. However, fish do not persist in Ash Creek downstream of Ash Creek Spring due to ephemeral flows in this reach. Bonneville cutthroat trout, a state-sensitive and BLM-sensitive species, have occurred naturally in the reaches of Leap Creek and South Ash Creek above the proposed Project (Hepworth et al. 2003).

Habitat for Arizona toad includes rocky stream courses, streams bordered by willows and cottonwoods, irrigation ditches, flooded/irrigated fields, and reservoirs (NatureServe 2018a). Such habitat may be found around Ash Creek Reservoir and some locations south along the Ash Creek channel (UDWR 1997b). If habitat for common chuckwalla occurs within the Project Area, it would likely be at the southern end in the vicinity of the proposed Toquer Reservoir. Shelter for this species in the form of rock crevices in rocky desert in the presence of creosote bush (*Larrea tridentata*, NatureServe 2018b) is largely absent where proposed pipelines and the reservoir are to be constructed.

Townsend's big-eared bats typically roost, hibernate, and give birth in caves and mines (NatureServe 2019) or day roost in deep crevices in rocky slopes or cliffs. They forage in forested areas, including pinyon-juniper forest, and are difficult to survey for. Habitat for this species in or near the Project Area would most likely occur near the section of pipeline that would be constructed adjacent to the first mile of Ash Creek Canyon downstream of Ash Creek Reservoir or where cliffs approach to less than 0.5 of the Ash Creek pipeline route near Pintura and Anderson Junction, due to the potential for caves, mines, and deep rock crevices in these areas.

Wildlife species found in the Project Area during surveys include side-blotched lizard (*Uta stansburiana*), desert spiny lizard (*Sceloporus magister*), Great Basin collared lizard (*Crotaphytus bicinctores*), tiger whiptail (*Aspidoscelis tigris*), Great Basin rattlesnake (*Crotalus oreganus lutosus*), desert horned lizard (*Phrynosoma platyrhinos*), white-tailed antelope ground squirrel (*Ammospermophilus leucurus*), rock squirrel (*Spermophilus variegates*), desert cottontail (*Sylvilagus audubonii*), black-tailed jack rabbit (*Lepus californicus*), desert woodrat (*Neotoma lepida*), mule deer (*Odocoileus hemionus*), and kangaroo rat (*Dipodomys spp*) (JBR 2010).

The Project Area overlaps with crucial mule deer winter range in the Zion Wildlife Management Unit east of I-15 from about milepost 29 south to roughly halfway between mileposts 27 to 26. The overlap encompasses the Ash Creek pipeline from just north of Dry Sandy Creek south to the proposed Toquer Reservoir, and includes roughly the northern half of the reservoir. Project Area overlap with crucial winter range west of I-15 in the Pine Valley Wildlife Management Unit encompasses all of the Leap Creek proposed pipeline and south to include all of the South Ask Creek pipeline, the regulating pool at Pintura, and all of the existing Wet Sandy Creek pipeline. It also includes all of Anderson Wash west of I-15. See **Figure 3-8** in the **Appendix H** for Project location and Wildlife Management Units overlap.

Given the size of the analysis area and the variation in land ownership, not all past and present actions having an impact on fish and wildlife can be accurately identified. However, the primary past and present actions have included: rural and agricultural development throughout adjacent private lands, municipal and agricultural water developments, stream diversions, channel alterations, floodplain development, development and use of recreational facilities, ponds, roads, trails, overhead utility lines, hunting, ranching, wood harvesting, and mineral mining.

UDOT has installed wildlife fence along the I-15 ROWs through most of the Project Area south to mile post 27 near the SR-17 Junction to reduce the numbers of car/wildlife collisions. Wildlife guzzlers were installed along the buried Wet Sandy pipeline in 2010. Domestic livestock and pets associated with existing homes and ranches are within the area.

3.5.2 Environmental Impacts—Alternative A-No Action

Under the No Action alternative, no federal action would occur on federal lands and the Project would not be constructed as proposed. The existing habitat on BLM-managed lands would remain in its current condition. Non-federal components of the Project such as the upgrade of the diversion on South Ash Creek and piping the existing South Ash Creek canal would have a direct and indirect impact on local wildlife habitat. Since the No Action alternative could still upgrade the existing diversion, it can be expected that some impacts to riparian trees within the natural channel would also occur. However, since the low flows of South Ash are currently diverted during the entire growing season there would be little to no new or additional impact to the low terrace understory of the natural stream channel.

The South Ask Creek diversion and pipeline are within critical wintering range of the mule deer. Water sources for mule deer and other terrestrial wildlife would be altered, as water from the open ditch diverted from South Ash Creek would be eliminated. However, water would be made available through two wildlife guzzlers to be installed on the South Ash Creek pipeline. The trees and vegetation within the 100 feet wide, approximately 6,966 linear feet (16 acres) pipeline alignment from the South Ash Creek diversion to the proposed Pintura regulating pond would be removed and any riparian zone that has developed along the canal would no longer be supported by surface waters from the diversion. Post-construction, the South Ash Creek pipeline alignment would be revegetated with native upland plant species with the exception of a 14-foot wide dirt road on top of the pipeline to be used for access and maintenance. This would be a minor indirect impact on riparian dependent wildlife.

Temporary displacement and harassment of local wildlife due to construction presence and noise throughout the six month construction period of the South Ash Creek pipeline would occur. Direct impacts to some small, less mobile individuals would likely occur as they may be killed or injured, or their dens may be damaged or destroyed during construction activities. Mule deer and larger animals would not likely be directly impacted by construction equipment because they typically move away from the disturbance area. Anticipated impacts to fish and wildlife from the No Action alternative would be short-term and minor to long-term and minor.

No long-term change in BCT habitat would occur since a diversion structure has been operated at South Ash Creek for decades. The trash screen on the South Ash Creek replacement diversion would likely prevent entrainment of large BCT. No impacts to BCT populations are anticipated.

3.5.3 Environmental Impacts—Alternative B-Proposed Actions

The construction and maintenance of the Proposed Actions would occur within a small portion of UDWR-designated mule deer crucial winter range. Efforts to avoid construction in crucial winter range between December 1 and April 15 would minimize disturbance to mule deer. There is ample suitable adjacent winter range so impacts resulting from construction activity would be minor. Deer would be expected to return once construction activity has been completed and no long-term adverse effects would be anticipated. Impacts of the non-federal components along the South Ash Creek from the diversion upgrade and pipeline would be the same as the No Action alternative analyzed in **Section 3.5.2**.

Other wildlife, including Townsend's big-eared bat, also may be temporarily displaced by surface disturbance, noise, and increased human presence during construction activities. These animals would be expected to return after construction activities cease. Some smaller, less mobile wildlife may be killed during construction activities. A small amount (4.7 acres) of habitat would be permanently lost due to the construction access and maintenance roads. However, this loss would be negligible due to the abundance of available habitat in the surrounding landscape and it is unlikely that local wildlife populations would be affected long term.

The most frequent disturbance post-construction is expected to be the monthly opening and flushing of the diversion dam sluice gates as well as managing water levels at Toquer Reservoir by manipulating the

diversion gates, requiring regular vehicle presence on the access roads and human presence at the diversions.

Habitat in Ash Creek Reservoir would change from that of a usually dry lakebed to a linear riparian wetland zone. Establishment of this riparian corridor could be beneficial to local and migrating avian species. Surface flows in the stream channels below the Leap and Wet Sandy diversions would continue to overtop the diversions during spring runoff, providing pockets of water for local wildlife populations. Potential habitat for Arizona toad in Ash Creek Reservoir would shift over time from the current location to the expected linear riparian area. It is expected that the species would follow the shift, so any corresponding loss of individuals due to change in habitat location in Ash Creek Reservoir would be minor. Potential Arizona toad habitat in Ash Creek could be diminished or lost, as overflow from Ash Creek Reservoir would be reduced once the Ash Creek pipeline becomes operational.

The proposed Toquer Reservoir, spillway, and recreation site would displace local wildlife species to adjacent suitable habitat on a long-term basis as long as the structures are in place. Some mortality of resident individuals could occur during construction/filling of the reservoir or if displaced individuals do not find suitable habitat nearby once construction has begun. While this loss cannot be quantified, it would be anticipated to be low. In the long term, the reservoir would provide a water source, aquatic habitat, and marsh/wetlands which, in combination with fish stocked in the reservoir serving as a prey source, would attract waterfowl, resident or migrating bird populations, bats, and other species. Riparian vegetation established around the reservoir would provide long-term habitat for a variety of species, to include BLM-sensitive species. Effects to common chuckwalla would be minimal; habitat for this species is largely absent in the southern end of the Project Area.

An indirect effect of the implementation of the Proposed Actions could include increased wildlife mortality due to vehicle collisions on new access roads or increased use of existing access roads. Wildlife may also be temporarily displaced during maintenance activities on the roads due to an increase in noise. The projected losses of habitat and impacts to wildlife are not expected to exceed a threshold of significance that would require new listings of species under the ESA. No long-term or significant impacts to populations of wildlife, including BLM-sensitive species are anticipated.

3.5.4 Cumulative Effects

3.5.4.1 Alternative A-No Action

Past and present actions as outlined in **Section 3.6.1** are expected to continue. Fish and wildlife populations would continue to be monitored by the UDWR. Non-native aquatic species control measures would be continued by the UDWR. Hunting and fishing permits would continue to be offered at presumed sustainable levels. Existing mineral leases would continue to be utilized.

Since most of the land in the analysis area is administered by the BLM, actions that would alter the use of this land would be analyzed on a case by case basis under the provisions of NEPA, significant adverse impact to fish and wildlife species would be avoided or mitigated accordingly. Under the No Action alternative, the Proposed Actions would not be approved. No federal actions would occur on federal lands and the Project would not be constructed as proposed. Therefore, no cumulative impacts to wildlife and wildlife habitat would occur.

3.5.4.2 Alternative B-Proposed Actions

The past actions, present actions, and reasonably foreseeable future actions include those activities addressed in **Section 3.5.4.1**. Considering the established fish and wildlife protective measures, the cumulative impact of the Proposed Actions on fish and wildlife when combined with past, present and RFFAs would be negligible in the long term.

3.5.5 Mitigation

WCWCD contractors will not be allowed to have firearms, air guns, or archery equipment or pets on the project sites. To prevent entrapment of wildlife during construction, any open pits or trenches would be monitored throughout the construction day. At the beginning of the construction day and before pits or trenches are filled, they would be inspected for trapped animals. If any animals are found, they would be moved out of harm's way. No rodenticides would be used on project sites. Encounters with a protected species (e.g., raptors, migratory birds, or listed or sensitive species) would be reported to the BLM and/or the appropriate oversight agency (e.g., USFWS). Any contractor or employee who inadvertently kills or injures a protected species would immediately report the incident to the BLM and/or the appropriate oversight agencies.

3.6 Migratory Birds

3.6.1 Affected Environment

Within Washington County, the nesting season for migratory birds can be divided into 3 major timeframes: (1) Early Nesting Season: January 1-March 31st (e.g., raptors); (2) Primary Nesting Season: April 1 – July 15 (e.g., songbirds, flycatchers, cuckoos, raptors, and the majority of species; and (3) Maximum Nesting Season: January 1 – August 31, especially for raptors (USFWS 2014). JBR Environmental consultants observed 63 different bird species within the Project Area, which included raptor, non-migratory birds, and non-native bird species (JBR 2010). The USFWS Information for Planning and Consultation tool (IPaC) identified 12 migratory “birds of conservation concern,” or BCC (**Appendix L**) as potentially occurring in the Project Area (USFWS 2019). Additionally, Utah Birds county checklists for Washington and Iron counties (Utah Birds 2018a; 2018b) document many migratory bird species that may nest in or pass through the Project Area.

During biological surveys conducted by JBR in 2010, out of the 12 migratory BCC, only the gray vireo (*Vireo vicinior*). The gray vireo is a summer migrant, nesting in Washington County in pinyon-juniper woodlands and mountain shrub habitat. JBR biologists also located one inactive and four active raptor nest sites in the Project Area. The active nest sites included three red-tailed hawks and one Cooper's hawk. No raptor nests were located in or around the Proposed Toquer reservoir. Information on the remaining BCC species identified by IPaC is in **Appendix L**.

The St George Field Office recognizes that the surveys referenced in this draft EA are outdated, and that additional surveys for migratory birds will need to be completed in the spring of 2020. We anticipate that these surveys will reflect the language in the current version of the EA. However, this EA is not to be finalized until we consider the results of the new surveys. The draft EA may be changed dependent on the findings of the upcoming surveys.

Past and present actions include various types of habitat alterations. Ash Creek Reservoir and the presence of irrigation ponds and stock ponds have increased stopover habitat for migratory birds within the analysis area. Lands within the Project Area have been planted into agricultural fields and fruit orchards. Developments have been landscaped with lawns, water features, and planted with landscape ornamental trees. Rangelands have been grazed and rangeland improvement measures have been implemented to increase productivity. Historically, riparian trees as well as pinyon pine trees have been harvested for wood.

Several landscape scale wildland fires have impacted portions of the Project Area, the most recent occurring about 10 years ago. Migratory bird habitat of varying acreages, particularly near and adjoining sections of Leap Creek and South Ash Creek in the Project Area, was burned. Some burned riparian vegetation in stream areas consistently receiving flow or ephemeral flow may have recovered; while vegetation in burned

upland areas may still be in recovery. The past and present actions in the analysis area have had a positive impact on the recorded population numbers and species of migratory birds.

3.6.2 Environmental Impacts—Alternative A-No Action

Under the No Action Alternative, the ROW and R&PP lease would be denied for the Project and current conditions for migratory birds would remain as described in **Section 3.6.1**. However, activities on adjacent private and SITLA land could still take place. Riparian and terrestrial vegetation utilized by migratory birds could still be impacted. Refer to **Section 3.3** and **Section 3.8** for riparian and terrestrial vegetation impacts analysis. Any positive benefit the reservoir would have for migratory birds would not be realized, though this would be negligible considering the existing conditions of terrestrial vegetation already available and currently utilized by migratory birds.

3.6.3 Environmental Impacts—Alternative B-Proposed Actions

The activities associated with the Proposed Actions would result in the temporary disturbance of 266.9 acres (182.7 are BLM managed-lands) and a permanent disturbance of 161.1 acres (128.7 acres are BLM-managed lands). If the vegetation-clearing portion of the construction activities occur outside of the migratory bird nesting season, the risk of direct impact on a nest would be negligible as adjacent suitable habitat would be available for migratory birds. If vegetation clearing would need to be done during nesting season, then prior to vegetation removal and other construction activities (within 10 days), nest surveys conducted by an authorized biologist prior to these activities. Once vegetation has been cleared, the risk of direct impact on a nest would be negligible and adjacent suitable habitat would be available for migratory birds. This would be a negligible, short-term impact during construction..

The expected establishment of a stream riparian corridor along the Ash Creek flow area through Ash Creek Reservoir is expected to result in long-term, beneficial indirect impacts to migratory birds. Over time, growth of riparian habitat around the Toquer Reservoir is expected to attract and increase the number of migratory birds and raptors that would nest, rest, or forage at the reservoir, particularly waterfowl and marsh birds and possibly larger species attracted to the stocked fish as a forage source. Nearby installation of power poles and transmission lines for the recovery wells, combined with an increase in migratory bird and raptor presence, would increase the risk of bird strikes or electrocution on these lines. Designing and constructing power poles and transmission lines to meet or exceed the APLIC (2012) guidelines would minimize the impacts of these structures to migratory birds and raptors.

Implementation of the proposed Project would result in the loss of a maximum of 77 acres of foraging, nesting, and roosting habitat for migratory birds and raptors over the life of the Project. Construction of roads and drill pads and the operation of equipment could cause avian species to avoid the area or change their pattern of movement due to the presence of humans and activities that create noise and dust. Available nesting and foraging habitat for avian species was diminished as a result of a wildland fire affecting portions of the Project Area about 10 years ago, particularly in the Leap Creek and South Ash Creek drainages. Considerable area of unburned habitat remains or has recovered, however, and so it is expected that Project impacts to migratory bird habitat would be minimal compared to the extent of unburned or recovered habitat. Impacts from the Project to portions of habitat in the Project Area would continue until reclamation is complete and vegetation is reestablished. Additionally, Project-related disturbance as well as reclamation would be phased and occur throughout the Project Area, thereby minimizing impacts to avian species and their habitat during a given construction or reclamation period.

Intermittent disturbance to nesting birds would occur post-construction from vehicle and human presence on access roads for operation and maintenance purposes. The most frequent disturbance post-construction is expected to be the monthly opening and flushing of the sluice gates, requiring regular vehicle presence on the access roads and human presence at the diversions. However, these effects would be short term and

infrequent and would not be expected to lead to detectable changes in migratory bird populations or habitat. Overall, impacts to migratory birds and raptors from the Project are expected to be long-term and minor.

3.6.4 Cumulative Effects

3.6.4.1 Alternative A-No Action

The past and present actions are expected to continue over the reasonably foreseeable future as outlined in **Section 3.6.1**. Additional new developments with ornamental landscape vegetation could be planted in the analysis area. Some agricultural fields could be developed into housing developments. Some private rangelands could graze increased stock numbers or be converted into agricultural fields. Anthropogenic impacts are expected to continue within the analysis area altering migratory bird habitat. Under the No Action alternative, the cumulative impacts to migratory birds within the analysis area would be the same as those described for fish and wildlife and BLM-sensitive species, excluding USFWS-designated species in **Section 3.5.4.1**.

3.6.4.2 Alternative B-Proposed Actions

The past actions, present actions, and RFFAs include those activities addressed in **Section 3.6.4.1**. The cumulative impact of the Proposed Actions on migratory birds when combined with past, present and reasonably foreseeable future actions is negligible in the long-term similar to that described in **Section 3.4.5.2** for fish and wildlife and BLM-sensitive species.

3.6.5 Mitigation

In order to avoid or reduce impacts on nesting success of raptors, activities would not occur within recommended spatial and seasonal buffers, and would follow Utah BLM BMPs for Raptors and Their Associated Habitats in Utah (August 2006). If existing topography limits actual line-of-sight of between an active nest (i.e., the nest has eggs or young) and construction activities, the spatial and seasonal buffer may be reduced. There would be no difference between the Project's impacts described above and residual impacts.

3.7 Federally Listed Threatened, Endangered, or Candidate Animal Species

3.7.1 Affected Environment

The IPaC tool identified 12 threatened or endangered animal and plant species potentially occurring in the Project Area (USFWS 2019). The UNHP database (UNHP 2019; **Appendix K**) indicated recent records of occurrence within a 2-mile radius of the Project Area for the following threatened or endangered species: Mojave desert tortoise (*Gopherus agassizii*), Virgin River chub (*Gila seminuda*), and woundfin (*Plagopterus argentissimus*).

JBR surveys revealed no tortoise use in the project area in 2010. An additional survey in 2013 when the Project footprint was realigned also revealed no tortoise or tortoise sign (Stantec 2016; JBR 2013). A small portion of the Project Area for the Ash Creek pipeline overlaps Mexican spotted owl designated critical habitat in the first mile downstream of Ash Creek Reservoir.

The St George Field Office recognizes that the surveys referenced in this draft EA are outdated, and that additional surveys for Threatened, Endangered, and Candidate animal species will need to be completed in the spring of 2020. We anticipate that these surveys will reflect the language in the current version of the EA. However, this EA is not to be finalized until we consider the results of the new surveys. The draft EA may be changed dependent on the findings of the upcoming surveys. The BLM will consult with the USFWS accordingly.

Four listed plant species identified as potentially occurring in the Project Area—dwarf bear-poppy (*Arctomecon humilis*), Holmgren milk-vetch (*Astragalus holmgreniorum*), Jones cycladenia (*Cycladenia humilis* var. *jonesii*), and Shivwits milk-vetch (*Astragalus ampullarioides*)—have elevational limitations or specific substrate requirements which preclude them from occurring in the vicinity of the Project Area.

Past actions include the federal listing of seven wildlife species that could occur within lands across the Ash Creek Watershed. The USFWS, in cooperation with the Peregrine Fund and the BLM, released experimental individuals of the endangered California condor from the Vermillion Cliffs Area in nearby Arizona. With the release of the condor, an experimental population and range was established which includes the east side of I-15 within the Ash Creek watershed. Individual condors that extend their range beyond the boundaries of the experimental range receive full federal protection in accordance with the ESA. Threats to condor include being struck by a vehicle while feeding on carrion on a road and lead poisoning from eating carrion shot with lead bullets. UDOT in cooperation with UDWR installed large game fence along the I-15 corridor through the Project Area to reduce wildlife collisions. Utah Highway Patrol actively removes large carrion from I-15 as safety precautions for vehicles, which indirectly act as a safety precaution for carrion scavengers. Wildlife managers and agencies have and continue to implement educational awareness programs on the consequences of lead ammunition on wildlife as well as reimbursement programs for lead ammunition.

3.7.1.1 Mexican spotted owl (MSO)

Currently, there is approximately 8.6 million acres of Designated Critical Habitat for the MSO in Arizona, Colorado, New Mexico, and Utah. The Recovery Plan for the MSO (USFWS 1995) provides for three levels of habitat management; protected areas, restricted areas, and other forest and woodland types. The northern extent of Ash Creek Pipeline runs parallel to the eastern edge of MSO Recovery Unit CP-11. The pipeline will encroach on approximately 19 acres of Designated Critical Habitat along the southwestern tip of this recovery unit. The habitat at this location is not suitable nesting habitat for the MSO and lacks the Primary Constituent Elements (PCE) such as canyon walls containing crevices, ledges, or caves, and the forested areas are sparse pinyon-juniper habitat lacking a shade canopy of tree branches covering more than 40% of the ground.

No owl nests were recorded within a 3-mile radius search of the 100-foot buffered Project area (UDWR 2019). This area is BLM-managed land and it is not within the boundaries of the adjacent Black Ridge Wilderness Area or Zion National Park. As per the Recovery Plan (USFWS 1995), this area is considered “other forests and woodland types” and not “restricted” or “protected” habitat because it is not within a wilderness area and the UDWR does not have records of existing nest sites.

3.7.1.2 Southwestern willow flycatcher

Designated Critical Habitat for the flycatcher in Utah includes the Virgin River and its 100-year floodplain from the Arizona state line upstream to Berry Springs (located just upstream of the State Route 9 Bridge over the Virgin River). Southern Utah contains the north-central limit of the flycatcher’s breeding range. Throughout its range, the flycatcher’s distribution follows that of its riparian habitat; relatively small, isolated, and, widely dispersed locales within a vast arid region.

There is no suitable nesting flycatcher habitat within the Ash Creek system, with riparian vegetation limited by lack of streamflow in the lower reaches of Ash Creek, Leap Creek, South Ash Creek, and Wet Sandy Creek. Along most sections of these streams, riparian vegetation is typically xeric with spaced mature woody species and very little understory (JBR 2013a). Existing diversions, the Ash Creek dam, low summer surface flows, topography, substrate, and seasonal run-off events limit the ability of Ash Creek to develop the riparian habitat structure suitable for nesting SWFL; particularly the lack of substrate and low gradient surface water. Some riparian vegetation is present on North Ash Creek at the inlet to the existing reservoir, on Ash Creek at the Ash Creek/ Deadman Hollow confluence, along Lower Ash Creek downstream of Toquerville Springs to the confluence with the Virgin River, and on South Ash Creek upstream of the

diversion structure. However, these small pockets of riparian vegetation are not suitable nesting sites as they lack lentic waters with a mosaic of dense marsh and riparian shrub species that comprise suitable nesting habitat. Transient flycatchers could use the riparian vegetation found at these areas as stop over areas during migration.

The St. George BLM Field Office conducted a habitat assessment on Ash Creek upstream of Toquerville on May 5, 2009 (BLM 2009). The area was determined unsuitable habitat due to scouring floods at sufficient frequency and magnitude to prevent the maturation and maintenance of suitable habitat. Water flows do not persist for sufficient duration to establish riparian vegetation suitable for nesting habitat. No flycatchers were observed during field surveys performed from 2009-2010 (Stantec 2016). Designated critical habitat or suitable habitat are not present in the Project Area.

3.7.1.3 Western yellow-billed cuckoo

In Utah, proposed Designated Critical Habitat is the 100-year floodplain of the Virgin River mainstem from the Mill Creek confluence in Washington City downstream to the Atkinville Wash confluence south of Bloomington (79 FR 48547). The USFWS determined that the western yellow-billed cuckoo meets the definition of a threatened species and is likely to become endangered throughout its range within the foreseeable future based on threats to its continued existence. Threats include; the loss of riparian habitat, conversion of native vegetation to non-native agricultural fields, the use of pesticides that reduce prey base, and human modification of natural hydrological processes (including modifications due to dams). As identified in the Final Listing Rule (79 FR 60015), the principal causes of riparian habitat destruction have occurred due to alteration of hydrology from dams, water diversions, channelization, and bank stabilization (i.e., levees, rip rap, etc.)

In Washington County, yellow-billed cuckoos are only known as rare summer visitors. The UDWR have no recent records of yellow-billed cuckoo occurrences in the Project and surrounding area based on surveys conducted in the Ash Creek Reservoir, lower Ash Creek, lower La Verkin Creek, Leeds Creek, Quail Creek, and Quail Creek Reservoir inlet (UDWR 2015). However, it is possible that individuals could occur in Washington County during the months of June, July, and August. Under the current conditions, the riparian zones in the Project area lack dense tracts of regenerating riparian vegetation with mature cottonwoods and willows with high productivity of prey species. The Project Area lacks the PCE of riparian woodlands of adequate size and canopy closure. Patches of shrubby vegetation with a riparian canopy cover do not meet the minimum width requirement of 100 meters or the minimum patch requirement of 12 acres. Suitable breeding habitat is not available in the Project Area. No cuckoos were documented during field surveys (Stantec 2016). Proposed designated critical habitat or suitable habitat is not present in the Project Area. Because sparse and scattered riparian vegetation in the Project Area represents marginal migratory habitat, presence of the species is not expected except on a transient basis.

3.7.2 Environmental Impacts—Alternative A-No Action

Under the No Action alternative, no federal action would occur and the Proposed Actions as designed would not be constructed on federal lands. The WCWCD would continue with non-federal actions to supply the water users of Washington County with adequate, reliable water supply by utilizing existing and acquiring water rights. Any new projects requiring federal actions would be subject to NEPA and compliance with the ESA and impacts to Threatened and Endangered species would be evaluated accordingly. The non-federal components of the No Action alternative could still be constructed as discussed in **Section 2.1**.

Mexican spotted owl designated critical habitat is east of I-15. Non-federal components of the No Action alternative would not cause surface disturbance within the boundaries of the designated critical habitat. The No Action alternative would have no effect on Mexican spotted owl or its designated critical habitat.

No suitable SWFL or Western yellow-billed cuckoo nesting habitat is within disturbance areas associated with the non-federal components of the No Action alternative. The No Action alternative would have no

effect on SWFL or its designated critical habitat. The No Action alternative would have no effect on the Western yellow-billed cuckoo or its proposed designated critical habitat.

3.7.3 Environmental Impacts—Alternative B-Proposed Actions

No long-term or significant impacts to threatened, endangered, or candidate species are anticipated. See discussions below.

3.7.3.1 MSO

The Proposed Actions will cause a direct short-term impact to approximately 19 acres of MSO Designated Critical Habitat for construction of the northern extent of the Ash Creek pipeline below the existing Ash Creek Dam. Since the pipeline will be buried and the construction easement will be revegetated, this is considered a short-term impact. All vegetation removal is planned to occur during the non-breeding season, September 1 through April 15.

Construction presence and noise during September and October could have an indirect impact on juvenile dispersal; however, this is unlikely since suitable foraging and nesting habitat is located to the east towards the Hurricane Cliffs and to the northeast towards Zion National Park. Post construction, a 14-foot wide access trail will be maintained over the top of the buried pipeline by the WCWCD. Some infrequent maintenance or emergency repairs could occur if the pipeline should break during the long-term use of the water system.

The Proposed Actions will have no effect on the Mexican spotted owl due to the lack of species occurring in the Project Area and the limited amount of suitable habitat. Since construction will have a short-term effect on vegetation within the boundaries of Designated Critical Habitat, it is determined that construction of the Project may in the short-term affect, but is not likely to adversely affect MSO Designated Critical Habitat.

3.7.3.2 SWFL

Nesting is not expected within any portion of the Project Area as no suitable nesting habitat is present. The Project Area lacks PCE 1 riparian vegetation. Some riparian trees will be removed for construction; however, all vegetation removal will be planned to occur during the non-breeding season, September 1 through April 15. Any loss or alteration of riparian vegetation has the potential to cause an indirect effect on flycatchers that could potentially migrate through the Project Area. These effects are expected to be negligible in the short term as the habitat within the Project Area is sparse and not expected to be occupied except potentially on a transient basis, if at all.

In the long term, the effects of habitat loss are also expected to be negligible due to the very small loss of riparian vegetation and the lack of suitable nesting habitat in the Project Area. Additionally, restoration efforts will contribute to the recovery of riparian vegetation that was disturbed during construction (refer to **Section 3.4**). Noise and presence associated with construction could cause transient flycatchers to disperse or alter their movement patterns. Since there are not any known nesting sites and/or occupied habitat is greater than 0.5 miles from the planned construction areas, this indirect effect is considered negligible.

Due to the potential for Project disturbance to displace SWFL from any potential stop over habitat in the Project Area and the potential for temporary construction presence or noise related effects on flycatcher movement, it is determined that the Project may affect, but is not likely to adversely affect the SWFL.

The Project will not result in direct or indirect disturbance to Designated Critical Habitat for the SWFL. Ash Creek watershed groundwater passes beneath and does not enter the Virgin River or its floodplain

(Rowley et al 2018), and so changes to the distribution or amount of groundwater resulting from the Project is not anticipated to affect Designated Critical Habitat for the SWFL. Therefore, the Proposed Actions will have no effect to Designated Critical Habitat for the SWFL.

3.7.3.3 WYBC

Because small amounts of riparian vegetation will be disturbed for construction of the South Ash Creek diversion structure, the South Ash Creek pipeline, and the Ash Creek pipeline below the existing Ash Creek dam, and because reduced water retention time in the existing Ash Creek Reservoir may result in some loss or change of riparian vegetation at the inlet, the Project may have an indirect effect on potentially suitable cuckoo habitat. Any change to riparian habitat has the potential to impact cuckoos that may be present as they would be displaced into undisturbed habitat, adjacent to the site or elsewhere. These effects are expected to be negligible in the short term as the habitat within the Project area is sparse and expected to be occupied only on a seasonal transient basis. In the long term, the effects of habitat loss are also expected to be woodlands within the Project area. Similarly, noise associated with construction could cause cuckoos to disperse or alter their movement patterns. The effects of noise are expected to be negligible due to the fact that the riparian habitat within the Project area is sparse and at most would only be occupied on a seasonal basis.

The Project will not result in direct disturbance to proposed Designated Critical Habitat for the yellow-billed cuckoo as the Project area is more than 10 air miles away from the closest proposed Designated Critical Habitat. Any projected water uses associated with the Project will not be of a magnitude sufficient to affect proposed Designated Critical Habitat of the cuckoo in Washington County.

Due to the potential for Project disturbance to displace cuckoo from any potentially suitable habitat in the Project area and the potential for temporary construction or noise related effects, it is determined that the Project may affect, but is not likely to adversely affect the yellow-billed cuckoo. There will be no effect to the Designated Critical Habitat for the yellow-billed cuckoo from the Proposed Actions.

3.7.4 Cumulative Effects

3.7.4.1 Alternative A-No Action

The past and present actions are expected to continue over the reasonably foreseeable future as outlined in **Section 3.7.1**. RFFAs include the continuing of recovery efforts by federal and state agencies and protective laws for federally listed threatened or endangered species. Federally listed species would continue to be afforded federal protection in accordance with applicable regulations as future actions are proposed and evaluated under the ESA. The No Action alternative in conjunction with the past, present, and reasonably foreseeable future actions will not impact federally listed threatened, endangered, or candidate species.

3.7.4.2 Alternative B-Proposed Actions

The past and present and reasonably foreseeable future actions are expected to continue over the reasonably foreseeable future as outlined in **Section 3.7.1** and **Section 3.7.4.1**. As federally listed species would continue to be afforded federal protection in accordance with applicable regulations as future actions are proposed and evaluated under the ESA, the Proposed Actions in conjunction with the past, present, and RFFAs are expected to be short-term and negligible.

3.7.5 Mitigation

Mitigation Measures are covered in the Fish and Wildlife, excluding USFW Designated Species section (**Section 3.5.5**).

3.8 Vegetation, excluding USFW Designated Species

3.8.1 Affected Environment

Vegetation in the Project area is typical of the transition zone between the Mojave Desert, Great Basin Desert, and the Colorado Plateau, comprised of seven ecological systems as delineated by Logan Simpson Design (LSD 2011). A complete list of vegetation recorded during site surveys is included in the biological report (JBR 2010) in **Appendix J**. No populations of the BLM-sensitive species are known to occur within the Project area.

The most prevalent vegetation community located in the Project area is the Great Basin pinyon-juniper woodland. Primary species in this upland community include Utah juniper (*Juniperus osteosperma*), singleleaf pinyon (*Pinus monophylla*), blackbrush (*Coleogyne ramosissima*), Mormon tea (*Ephedra spp.*), pointleaf manzanita (*Arctostaphylos pungens*), broom snakeweed (*Gutierrezia sarothrae*), big sagebrush (*Artemisia tridentata*), live oak (*Quercus virginiana*), and skunkbush sumac (*Rhus trilobata*). Utah serviceberry (*Amelanchier utahensis*) is dominant on the basalt cliffs, talus, and steep slopes of lava flows.

Mojave Desert vegetation occurs only at the southernmost portion of the Project area at the proposed Toquer Reservoir site. Dominant species include blackbrush, Mormon tea, Utah juniper, sand sage (*Artemisia filifolia*), and Fremont's indigo bush (*Psoralea fremontii*), with some creosote bush (*Larrea tridentata*) and white bursage (*Ambrosia dumosa*).

The potential occurrence of the BLM listed sensitive species, pinyon penstemon (*Penstemon pinorum*), to occur within the Project area was evaluated. Surveys of the Project area by JBR did not locate this species (JBR 2010). The nearest known populations of the species are located in southern Iron County on the Dixie National Forest. Therefore, it has been determined that the penstemon does not occur within the Project area.

Riparian vegetation found in some reaches along Ash Creek and its tributaries are described in **Section 3.4**.

Some vegetation in the Project Area may have been disturbed by past activities resulting in the vegetation being crushed, invasion of weeds and nonnative species, the altering of native vegetation or even the permanent loss of vegetation. Past actions that have disturbed vegetation also include historic harvesting of woodlands for building materials and firewood. Disturbances also include buried utilities, overhead utilities, dirt roads, paved roads, water diversion structures, cattle grazing, recreational OHV impacts, sand and gravel operations, rangeland improvement efforts, agricultural uses, and development of private lands. Presently no woodland harvesting is permitted on public lands within the Project Area.

Wildfires have been the primary impact to vegetation within the project area. Approximately 70-80% percent of the Ash Creek watershed, over the past 25 years, has burned. The BLM has implemented reseeding efforts on the burned areas when it has been determined that the efforts would be beneficial. Wildfire prevention and management effort involving the thinning of Pinyon and Juniper trees, primarily along I-15 has also impacted vegetation in those areas.

3.8.2 Environmental Impacts—Alternative A-No Action

Under the No Action Alternative, the Project ROW and R&PP lease would be denied and vegetation would continue to be subject to ongoing conditions and described in **Section 3.8.1**. Impacts on vegetation would be short-term and minor, reducing to negligible as seeded vegetation becomes established over the geological and cultural resource testing sites. Direct or indirect impacts to vegetation along the South Ash Creek pipeline from implementation of the non-federal components of the Project could still take place. These impacts would be similar as those discussed in **Section 3.4.2**.

3.8.3 Environmental Impacts—Alternative B-Proposed Actions

The proposed pipelines, reservoir, spillway, recreation area, access roads, and other facilities associated with the Proposed Actions would result in the temporary construction disturbance of 266.9 surface acres (182.7 acres of BLM-managed lands) and the permanent new disturbance of 161.1 surface acres (128.7 acres of BLM-managed lands). See **Table 2-1** in Chapter 2 for total temporary and permanent surface disturbance of BLM, private, and SITLA lands.

The pipelines would be buried and most of the proposed pipeline route is in already disturbed areas, however some disturbance is still necessary. Terrestrial vegetation found where the proposed Toquer Reservoir, spillway, and recreation area (approximately 171 acres of BLM-managed lands and 14 acres private lands of the total 428 disturbed acres) would be lost as long as the structures are in place. Outside of the construction ground disturbance, impacts within the 100-foot temporary construction ROW would consist of the transport and staging of vehicles, equipment, and materials; parking; and foot traffic.

Vegetation removal would be kept to that necessary to install and maintain the project and temporarily disturbed areas (266.9 acres) would be seeded using a certified weed-free seed mix approved by the BLM. Any brush removed during construction would be used as mulch after reclamation activities and any trees felled would either be left on site as down woody debris or removed. It is anticipated that vegetation would return within the 50-foot-wide permanent ROW, narrowing the ROW into a 14-foot pipeline service route over time.

Impacts from project implementation to native vegetation would continue in the long-term until reclamation is complete and vegetation is re-established. Vegetation would be negatively affected in the short-term, but positively affected in the long-term. The amount of change within the area would be small but detectable. Therefore, the Proposed Actions would have a direct, minor, negligible impact on vegetation in the short-term, but an indirect, minor, positive impact on native vegetation in the long-term.

3.8.4 Cumulative Effects

3.8.4.1 Alternative A-No Action

The past and present actions are expected to continue over the reasonably foreseeable future as outlined in **Section 3.8.1**. The RFFAs, and other future actions that would contribute the most to direct loss of vegetation are activities that involve ground disturbance, which could occur on both private and public lands in the CIA. Development of linear ROWs like a waterline or powerline results in mostly temporary disturbances that are rehabilitated and much of the construction footprints of the ROWs revegetate over time (e.g., the area under a powerline or the surface above a buried waterline). Furthermore, all ROWs are required to adhere to construction practices and reclaim temporary disturbance areas to pre-construction conditions, which minimizes adverse effects on vegetation. The amount of impact expected from the other future actions described cannot be quantified at this time. The potential for catastrophic wildland fires exists but effects of any future fires on vegetation are also unquantifiable.

The cumulative impacts of the No Action alternative combined with past, present, and the RFFAs would not cause noticeable changes to native vegetation communities within the CIA, and any impacts would be at or below the level of detection. Therefore, the No Action alternative, when combined with the past and present actions and the RFFAs in the CIA would have short-term and negligible cumulative impacts to vegetation.

3.8.4.2 Alternative B-Proposed Actions

The past actions, present actions, and reasonably foreseeable future actions include those activities addressed in **Section 3.8.4.1**. The Proposed Actions would involve revegetation activities which could have a short-term, negative impact but a positive long-term impact to 266.9 acres (182.7 on BLM-managed lands) of vegetation as the area is rehabilitated.

The Proposed Actions would temporarily and permanently disturb vegetation. Disturbance from the

Proposed Actions is expected to be a short-term, minor impact since all temporary disturbance would be revegetated with native species. Successful reclamation would lessen vegetation impacts as reseeded/planted areas become established. Reclamation practices for future disturbances would reduce impacts overall; the seeded areas would likely take many years to begin showing a natural growth of shrubs seeding in from adjacent areas, in addition to the planted species. Vegetation structure and composition would be altered in developed, disturbed, and reclaimed areas. When considered with past, present, and the RFFAs, the cumulative impact of the Proposed Actions on vegetation is long-term and minor.

3.9 Lands/Access

3.9.1 Affected Environment

Lands/access disturbances from past and present actions within the area is evident. These include buried utilities, overhead utilities, dirt roads, paved roads, water diversion structures, cattle grazing, recreational OHV impacts, sand and gravel operations, wildfire prevention, wildfire management, rangeland improvement efforts, agricultural uses, and development of private lands.

The proposed project is subject to the following rights-of-way:

- UTU-028808 Federal Highway Administration
- UTU-19787 UTU-72228 Qwest Corporation
- UTU-62308 Questar Gas
- UTU-93106 Diamond G Ranches
- UTU-80299 Town of Toquerville
- UTU-76673 UTU-79333 Pacificorp dba Rocky Mtn Power
- UTU-63260 BLM, Utah Trust Lands

The proposed Ash Creek pipeline would parallel a portion of a Dominion Energy (Questar Gas) mainline that was installed in the late 1980s along I-15. An overhead Rocky Mountain Power line parallels the east side of I-15 and the south side of SR-17. The proposed South Ash/Leap Creek combined pipeline would cross under the UDOT I-15 interchange at Pintura. The proposed Ash Creek pipeline would cross under SR-17 at Anderson Junction and a portion of the Ash Creek pipeline would be installed within the existing UDOT-owned I-15 frontage road through Pintura and Anderson Junction.

The Ash Creek Special Service District owns a wastewater lift station near the northern arm of the proposed Toquer Reservoir, which is not currently in use. The lift station would be relocated onto nearby land owned by WCWCD in coordination with Ash Creek Special Service District.

Twenty-three single family homes have been identified along the pipeline routes; 11 homes in Pintura and 12 homes in Anderson Junction.

WCWCD holds the following property interests for use in connection with the Proposed Action:

- A proposed 20-acre material borrow pit.
- Approximately 20 acres at the west end of the proposed reservoir for access from the frontage road, some of the recreation area, the west staging area, and the proposed borrow site north of the proposed reservoir.
- An easement for a portion of the pipeline from the proposed dam to the TSWs pond.

The reservoir would be located within the incorporated boundaries of Toquerville City approximately 19 miles northeast of St. George, along the east side of interstate 15 (refer to the POD). The recreation area included in the R&PP is a 13-acre parcel of BLM land located at the southwestern end of the reservoir. The reservoir, dam, and the trail around the reservoir include an additional 125.6 acres of BLM-managed land that will be authorized under the ROW grant. Access to the reservoir and the recreation area will be from

SR-17 and will follow the pipeline route across WCWCD owned land (refer to **Figure 1**). WCWCD will coordinate with current ROW holders regarding utility needs for the R&PP and ROW holders will request amendments to their current authorizations for connection spurs.

3.9.2 Environmental Impacts—Alternative A-No Action

Under the No Action Alternative, no federal action would occur. The ROW would not be granted and the reservoir, pipeline, and other facilities would not be constructed. Subsequently, the R&PP land lease would not be approved and the recreation area would not be constructed by the WCWCD. This alternative would not conform to the direction provided in the St. George RMP concerning R&PP leasing, unless resource conflicts could be demonstrated that would require continued federal management. The project area would remain under current federal management, as described in the St. George RMP (1999), with current uses and resource conditions continuing, at least in the short term. Direct or indirect impacts to lands and access from implementation of the non-federal components of the project would be considered negligible in the short-term and long-term.

If the No Action alternative is selected, the WCWCD would likely at some point in the future need to reconstruct the primitive system on the Ash Creek Reservoir to prevent water loss and would need to find an alternative alignment on private lands to provide the secondary water transport system to Toquerville.

3.9.3 Environmental Impacts—Alternative B-Proposed Actions

Construction of the Proposed Action would directly affect the other right-of-way holders within the construction corridor. WCWCD would be the responsible party to coordinate and relocate and/or avoid any existing utilities that could be impacted. Applicable BMPs and SOPs would be implemented to reduce or mitigate potential impact to right-of-way holders and private properties.

All private property owners within the Project area were sent scoping letters and informed about the proposed Project on March 20, 2012. WCWCD has purchased some private property and is prepared to purchase the remaining private property necessary for construction of the Proposed Actions. Parcels purchased include; approximately 20 acres at the west end of the proposed reservoir for access from the frontage road, some of the recreation area, the west staging area, and the proposed borrow site north of the proposed reservoir. Land for the TSWS pipeline from the proposed dam would be acquired prior to construction. At this time, it does not appear that the exercise of eminent domain would be necessary to construct the Project.

During the 15-month proposed construction period, local residents could experience short-term construction presence, noise and possible temporary delays in access during installation of the pipelines and, if necessary in the future, repair of the pipelines. Post construction, no adverse impact is anticipated as the pipelines are buried and all roads would be restored to “as good or better” condition. In the long-term, pipelines would remain buried and in the event of a pipeline rupture, repair crews would be present during the repair activity. Vehicular access to the single-family homes within the project area would be maintained throughout construction. The long-term impacts to lands/access would be negligible.

Relocation of the Ash Creek Special Service District lift station would not cause any impacts on the wastewater system and users, as it is currently not in use. Post-construction, the Proposed Actions would not result in any long-term impacts to the wastewater system or its users if the lift station were to be used. Post-construction, no adverse impact on lands/access is anticipated as the pipelines are buried and all roads would be restored to "as good or better" condition.

3.9.4 Cumulative Effects

3.9.4.1 Alternative A-No Action Alternative

The past and present actions are expected to continue in the CIA over the reasonably foreseeable future as outlined in **Section 3.9.1**. Undoubtedly, the use of the existing paved roads would increase with population growth. New roads would likely be constructed in the area with development of the surrounding private lands. Overhead and buried utilities would need to be maintained or upgraded. New utility companies or cellular telephone companies could likely utilize this existing I-15 corridor given the geographic confines of the region. Under the No Action alternative, no ROW or R&PP lease would be approved on BLM-managed lands, therefore the No Action alternative would not have an impact on lands and access. When combined with past, present, and the RFFAs, no cumulative impacts of the No Action alternative within the CIA would occur.

3.9.4.2 Alternative B-Proposed Actions

The past actions, present actions, and RFFAs include those activities addressed in **Section 3.9.4.1**. The development of a new recreation area at Toquer Reservoir could influence development of additional recreational trails to connect the recreation area to other developed areas particularly within Toquerville. Continued recreational pressure could encourage the use of the new proposed access roads for recreational trails, motorized and/or non-motorized uses. As more lands within the CIA become developed for utilities or other uses and access improves, it limits or precludes other potential land use such as grazing, mineral development, etc. Increased recreational pressure on the surrounding public lands is anticipated with the Proposed Actions when added to the anticipated growth within the county. However, surrounding public lands would continue to be managed according to the BLM St. George Field Office RMP. Subsequent projects or applications for use of BLM lands would be subject to NEPA analysis and are discretionary actions. The proposed reservoir would likely increase the land value of the surrounding private lands, and the proximity to the reservoir would encourage local development. Development pressures would likely require upgrades to other utilities within the CIA. The cumulative impact of the Proposed Actions on lands and access would be long-term and negligible to minor.

3.10 Recreation

3.10.1 Affected Environment

Currently, there is little recreational use of the Project Area. The road along the pipeline alignment and through the reservoir site experiences limited OHV, mountain bike, and horseback riding use. Although there are no designated trails for these uses, the public lands surrounding the Project Area are designated “open” for mountain bike use and horseback riding.

The Ash Creek Reservoir is located on private land and is not managed for recreational uses. There are no developed recreational facilities such as a boat ramp, parking area, or picnic tables. Access to the reservoir is not controlled, so when the reservoir is dry, some local residents ride horses and hike within the reservoir’s water storage area. When there is water present, there are some occasional recreational water activities such as non-motorized boating that take place on the reservoir.

3.10.2 Environmental Impacts—Alternative A-No Action

Under the No Action Alternative, the Project ROW and R&PP lease would be denied and recreation would continue to be subject to ongoing conditions. The site of the proposed reservoir is in an open recreational use area and the unofficial trails would continue to be used for OHVs, mountain biking, and horseback

riding. The long-term recreation benefits of the reservoir would not be realized. This would be a long-term, minor impact.

3.10.3 Environmental Impacts—Alternative B-Proposed Actions

Impacts to current recreational use of the Project Area would be negligible. The new recreation area and multi-use non-motorized trail around Toquer Reservoir would be a long-term beneficial impact to outdoor recreation in Washington County. Outdoor recreation within the Project Area could be disrupted during the 15-month construction period of the Proposed Actions. However, recreation use within the Project Area is currently limited so any disruptions resulting from construction activities would be limited in scope. If needed, alternate access routes to adjacent public lands are available.

Development of the proposed Toquer Reservoir and adjacent Toquer Recreation Area would provide additional recreation opportunities, increasing the area available for:

- Water surface for small non-motorized watercraft and fishing boats
- Hiking trails
- Primitive camping and RV sites
- Day use activities
- Birding

Other added recreational-related facilities would include a paved boat ramp, parking, picnic tables, barbeque pits, toilets, interpretive and regulatory kiosks, and a covered pavilion.

The long-term impact of the proposed Toquer Reservoir and adjacent Toquer Recreation Area would be to increase the availability of aquatic recreation in Washington County and could impact aquatic recreational use on existing recreational sites in Washington County such as Quail Creek State Park, Sand Hollow State Park, Zion National Park, and other areas of dispersed camping on public lands. Presence of the reservoir near the I-15/SR-17 interchange would likely attract some use from Zion National Park visitors on SR-17. The tent and RV sites at the recreation area would help to alleviate some general camping congestion connected to Zion. Given there are only 10 tent sites and 10 RV sites, the impact to camping would be long-term and negligible.

3.10.4 Cumulative Effects

3.10.4.1 Alternative A-No Action

The past and present actions are expected to continue over the reasonably foreseeable future as discussed in **Section 3.10.1**. Pressure on public lands is expected to continue in Washington County with population growth and public need, particularly when coupled with the current management direction of city officials and the public land agencies. Various recreation support facilities would be constructed on public and private lands in the foreseeable future. Under the No Action alternative, the Proposed Actions would not be approved, however the impacts to recreation would be minor increasing to moderate over time; therefore the cumulative impacts of the No Action Alternative in conjunction with past, present, and the RFFAs on recreation would be minor for the short-term and increase to moderate in the long-term as the need for recreational areas within the Washington County increase.

3.10.4.2 Alternative B-Proposed Actions

The past actions, present actions, and the RFFAs include those activities addressed in **Section 3.10.4.1**. The Proposed Actions would add a new reservoir to the fishing community in Washington County. The new reservoir would be somewhat unique to fishing since no motor boats would be permitted on the reservoir. The Proposed Actions coupled with the existing recreation facilities and public lands in

the analysis area would increase the recreational resource value of the area. Adding the Toquer Reservoir and camping facility to the wide variety of existing recreation facilities in the county would not have noticeable effect on visitor use of the existing facilities because the proposed facility is relatively small and increasing public need would outpace a noticeable effect. The cumulative impacts of the Proposed Actions on recreation in conjunction with past, present, and reasonably foreseeable future actions would be long-term and minor.

3.11 Visual Resources

3.11.1 Affected Environment

The visual resource classification on all BLM lands associated with the Proposed Actions are within VRM Class III. The VRM Class III objective is to partially retain the existing character of the landscape. Past and present actions in the area include the development of roads, overhead and buried utilities, freeway billboards, an active sand and gravel pit, a met tower measuring wind speeds, rural homes and associated ranch buildings. Lands within the analysis area include BLM, SITLA, and private lands.

Moderate change to the characteristic landscape is permitted under the Class III visual classification. Management activities may attract attention but should not dominate the view of the casual observer and allow moderate changes to the characteristic of the landscape. Under this class, most surface-disturbing activities could be authorized subject to the reclamation standards noted in the RMP (BLM 1999).

Key Observation Points (KOPs) are selected to provide representative views of a project, or views of areas with specific concerns; areas of “high scenic value” or “high visual sensitivity,” such as scenic overlooks or vantage points, and views from travel routes or communities. The KOPs to evaluate impacts to visual resources are the visual perspectives from people in vehicles traveling north or south along I-15 between Silver Reef and Pintura, as well as the visual perspectives from people in vehicles traveling east or west on SR-17 from the I-15 interchange to Toquerville (**KOP Figures 1-3**).

KOP 1 is located near the intersection of Highway 17 and I-15 west of Toquerville, Utah. The view from KOP 1 is looking south at VRM Class III lands in the Project Area (**KOP 1 Figure**). People in vehicles traveling on Highway 17 would have a view of the proposed reservoir as they begin to slow to merge onto I-15, or as they exit off I-15 and start east on Highway 17. The open landscape is dominated by the diagonal lines created by the hills against the skyline, and horizontal bands of vegetation on low rises and plains. A power line and building in the middle ground add vertical and horizontal human elements to the surrounding natural landscape. This area is typified by relatively flat desert scrub community with sparse pinyon/juniper trees increasing on the foothills. Weedy plants dominate the disturbed roadside. A large pile of gravels and rock fill material has been deposited to the right and just beyond the power pole.



KOP 1 Figure: View to the south from KOP 1 at the existing conditions.

KOP 2 is located along I-15, just east of the north bound lanes. The view from KOP 2 is looking southeast at VRM Class III lands in the Project Area (**KOP 2 Figure**). This KOP is situated between two hills where the project would be visible. At KOP 2, people in vehicles traveling north bound on I-15, or on the frontage road east of I-15, would have a view of the reservoir and dam. The viewing time would be short as the hills located on either side would block the view as the vehicles pass by. The open landscape is dominated by the diagonal and horizontal lines created by the hills against the skyline, and irregular and patchy shapes of vegetation on low rises and plains. A fence line in the foreground adds vertical and horizontal human elements to the surrounding natural landscape, as would the existing roads being traveled on.



KOP 2 Figure: View to the southwest from KOP 2.

KOP 3 is located south of KOP 2 in another area that offered a short viewing of the Project Area. The view from KOP 3 is looking east at the at VRM Class III lands in the Project Area (**KOP 3 Figure**). At KOP 3, people in vehicles traveling north bound on I-15, or on the frontage road east of I-15, would have a view of the Project Area. The viewing time would be short as the hills located on either side would block the view as the vehicles pass by. The open landscape is dominated by the diagonal and horizontal lines created by the hills against the skyline, and horizontal bands of vegetation on low rises and plains. A fence line in the foreground adds vertical and horizontal human elements to the surrounding natural landscape, as would the

existing roads being traveled on.



KOP 3 Figure: View to the east from KOP 3 near the frontage road south of KOP 2.

3.11.2 Environmental Impacts—Alternative A-No Action

Under the No Action Alternative, the Project ROW and R&PP lease would be denied and visual resources would continue to be subject to ongoing conditions. Long-term impacts of the trench testing at the proposed reservoir site is considered negligible to minor after successful reclamation. Upon reclamation, no direct or indirect impacts to visual resources would be expected.

3.11.3 Environmental Impacts—Alternative B-Proposed Actions

The impacts to visual resources, include 1) short-term reductions in scenic quality from construction-related surface disturbances, vegetation removal and clearing along the ROW, construction vehicles and construction infrastructure; and 2) potential long-term impacts to scenic quality from the constructed dam and reservoir. These potential short-term and long-term impacts could impact scenic views and viewing locations along I-15.

For the Project Area, aesthetic or visual analysis involves determining the degree of visual change between the existing landscape and the landscape that would be produced by the proposed Project. Three KOPs were identified from existing travel routes where the reservoir and dam could be visible. The water elevation and dam were superimposed on the photos taken from the three KOPs identified in **Section 3.11.1**. It was determined that the reservoir and dam would not be visible or would have extremely limited visual impacts from KOP 3 and was therefore eliminated from further analysis.

Viewers from KOP 1 would notice water in the reservoir at high water elevation and the horizontal line from the proposed dam near the edge of horizon. The brick utility pump house would be relocated to a nearby similar site and the large pile of rock debris would be removed. Overall, the visual change at KOP 1 is minor in terms of color and horizontal lines, the change would be long-term. This impact is within the limitations of the Class III visual resource objectives.



KOP 1 Simulated Figure: View to the south from KOP 1 with the proposed reservoir simulated. Note that the building and rock debris are gone.

At KOP 2, people in vehicles traveling north bound on I-15, or on the frontage road east of I-15, would have a short viewing time limited by the two hills on either side of the reservoir. Overall the visual change at KOP 2 is minor in terms of color and horizontal lines, the change would be long-term. This impact is within the limitations of the Class III visual resource objectives.



KOP 2 Figure: View of KOP 2 with the constructed dam and reservoir at high water elevation simulated.

3.11.4 Cumulative Effects

3.11.4.1 Alternative A-No Action

The past and present actions are expected to continue over the reasonably foreseeable future as outlined in **Section 3.11.1**. Future actions on BLM-managed lands would be consistent with the current RMP and any new Proposed Actions would be subject to NEPA analysis. Actions on state lands would be consistent with the current state lands guidelines. Private lands are within Toquerville municipal boundaries and current zoning would apply. Some development of private lands consistent with normal growth projections within

the analysis area is anticipated. Under the No Action alternative, the Proposed Actions would not be approved, and no visual resources would be impacted; therefore, no cumulative impacts to visual resources would occur.

3.11.4.2 Alternative B-Proposed Actions

The past actions, present actions, and the RFFAs include those activities addressed in **Section 3.11.4.1**. The visual impact of the Proposed Actions would contribute to changing the visual impression of the area from undeveloped to more developed. The long-term cumulative impacts to visual resources when considered with past, present and the RFFAs would depend on the location of the viewer, but would be minor.

4.0 CONSULTATION AND COORDINATION

4.1 Summary of Consultation and Coordination

List of all Persons, Agencies, and Organizations Consulted for Purposes of this EA

Name	Purpose & Authorities for Consultation or Coordination	Findings & Conclusions
United States Fish & Wildlife Service	Informal Consultation, under Section 7 of the ESA (16 USC 1531)	Biological Assessment findings and conclusions are outlined in this document. USFWS review of the final Biological Assessment is in process.
United States Army Corps of Engineers	Consultation for undertakings, as required by the CWA (33 USC 1251)	Preliminary Jurisdictional Determination SPK-2011-01121 to WCWCD dated February 12, 2014. Section 404 permit application will be submitted with the BLM Decision Record.
Utah State Historic Preservation Office	Consultation for undertakings, as required by the NHPA (16 USC 470)	MOU from SHPO to BLM dated March 11, 2014, Case # 09-1388, Concurrence with the proposed Treatment Plan (USHPO 2014).

4.2 Government Agencies Involved

A formal letter was sent to potentially interested government agencies as listed on the BLM cooperating agency list May 29, 2012. No responses were received and no official cooperating agencies signed onto this Project. However, other government agencies would have regulatory roles involved with the permitting or other aspects of the Proposed Actions. These include the following:

- Utah Division of Wildlife Resources
- Utah School and Institutional Trust Lands Administration
- Washington County
- Toquerville City
- US Army Corps of Engineers
- Utah State Division of Water Rights
- Utah State Division of Dam Safety

4.3 Summary of Public Participation

Between 2011 and 2012, the BLM conducted a public scoping process, posting information on the project proposal on its web-based NEPA Notification Board (ENBB) and mailing out over 1,000 scoping letters to individuals, organizations, tribal governments, federal and state agencies, and local governmental entities. Comments received as a result of the public scoping efforts are characterized in the Scoping Report that is attached as **Appendix B**.

4.3.1 Public Comments Analysis

A document summarizing comments received from the public, agencies, and other interested parties during both the informal and formal scoping periods was prepared and is on file in the Project record (comment analysis report provided in **Appendix C**). Each response was individually read and coded to ensure that individual comments, concerns, and issues were captured. Coding consists of identifying discrete comments within each response (letter) and delineating them. Comments were then summarized into “Public Concerns” by resource topic. When similar comments were combined under a single resource, the scope of the resource was expanded in the EA. Six scoping responses were extremely similar (or identical) to those submitted during the pre-scoping by the same individual, official, or organization. In these cases, the pre-scoping response was replaced by the scoping response within the analysis to avoid duplication.

Comments were received from the following organizations or affiliations.

- Landowner adjacent to Project Area (2).
- Director, NEPA Compliance and Review, EPA.
- Resident, Washington County.
- Resident, Brookside, Utah.
- Mayor, City of Hurricane.
- Director, Washington County Utah Economic Development Council.
- Landowner
- Director, Western Lands Project
- Pintura Irrigation Water Company
- Mayor, Town of New Harmony
- Forest Supervisor, Dixie National Forest
- State Directory, Utah Division of Wildlife Resources
- Director, Hopi Tribe Cultural Preservation Office
- State Directory, Utah Public Lands Policy Coordination Office
- Resident, New Harmony, Utah
- Senior Environmental Specialist, Kern River Gas Company
- Senior Planner, Washington County Department of Planning and Zoning
- Chair, Washington County Commission
- Conservation Biologist, Center for Biological Diversity
- Project Manager, US Army Corps of Engineers
- Region 4 Director, UDOT
- Utah Field Office Supervisor, USFWS

The current Proposed Actions described in **Section 2.2** is a result of modifications to the original proposal based on the public comments received.

5.0 LIST OF APPENDICES

Appendix A- 2019 ID Team Checklist

Appendix B- Scoping Report

Appendix C- Scoping Comment Analysis Report

Appendix D- Plan of Development

Appendix E- Conservation Programs Incorporated into 2015 Water Conservation Plan

Appendix F- Water Rights Analysis

Appendix G- List of Preparers

Appendix H- Figures

Appendix I- Tables

Appendix J- Biological Survey and Hydrology Reports

Appendix K- Utah Natural Heritage Program (UNHP)

Appendix L- IPaC Migratory BCC

Appendix M- Hydrogeology Report (Rowley, Dixon, and Layton 2018)

Appendix N- References