

## **Chapter 3**

### **Affected Environment and Environmental Consequences**

#### **3.1 Introduction**

This chapter describes the affected environment (baseline conditions) of resources of the human environment that would be impacted by the Proposed Action as described in Chapter 2. It also documents the environmental consequences (impacts) on the quality of the human environment. Baseline conditions are the existing physical conditions of the impacted resources in the impact area of influence. The human environment is defined in this study as environmental resources including fish, wildlife, threatened and endangered species, cultural resources and social and economic conditions occurring in the impact area of influence.

The analysis presented in this chapter compares impacts that would occur with the Proposed Action and with continued existing conditions under the No Action Alternative. The impact analysis incorporates the Standard Operating Procedures (SOPs) for construction described in Chapter 2.

The following studies were completed to determine impacts of the Proposed Action as well as the Victory Ranch Resort development. Impacts related to the Victory Ranch Resort project are discussed in Section 3.13, Cumulative Impacts. Copies of these reports, as well as the 404 permit application are available upon request.

Wetlands – Locations and classifications of Corps of Engineers jurisdictional wetlands were mapped throughout the project area to determine how best to minimize wetland impacts. In the Provo River Valley, 337 acres of wetlands and waters of the US identified within the project area.

*Wetland Delineation, Victory Ranch on the Provo River, Wasatch County, Utah, August 10, 2001.*

Spotted Frogs – All wetlands of the Provo River corridor within the project area were surveyed for spotted frog activity in 2001 during the spring breeding season (April 13-May 21), in the summer (July 24-30) and in the fall (September 12-24). In addition thirteen spotted frog breeding sites and fifteen non-breeding sites were subject to a habitat assessment to characterize typical spotted frog habitats. A total of 43 spotted frog egg masses (28% of all egg masses recorded by the Utah Division of Wildlife Resources above Jordanelle Reservoir that year) were located within the proposed project area.

*Status of Columbia Spotted Frog and Boreal Toad on Victory Ranch, Utah, January 14, 2002.*

Ute Ladies'-tresses – A detailed survey of Ute ladies'-tresses was conducted in the project area between August 7 and September 3, 2001 to record sightings of plant colonies and potential habitat. No Ute ladies'-tresses were observed

during the surveys. The report concluded that approximately 118 acres of wetlands were potential habitat ranging from moderate to high potential or high potential if irrigated.

*Ute Ladies'-tresses Surveys, Proposed Victory Ranch Project, Wasatch County, Utah, October, 2001.*

Cultural Resources Survey of Structures – Structures in the project area were recorded in 2001 and 2002. Several structures, including the Weber/Provo Canal are considered eligible for inclusion in the National Register of Historic Places. A cultural resources inventory for the project area and the Victory Ranch Resort development was completed and submitted to SHPO in 2003.

*Architectural Documentation of Selected Historic Structures for the Proposed Victory Ranch Project, Wasatch and Summit Counties, Utah, (Cultural Resources Report 5177-01-20118) February, 2002.*

*Draft Cultural Resources Inventory of 3700 Acres in the Proposed Victory Ranch Development Area, Summit & Wasatch Counties, Utah, August 2003.*

Restoration Design – A feasibility level restoration assessment has been completed to determine the appropriateness of a variety of restoration alternatives and to help guide future detailed design and restoration activities. The Proposed Action is based on this report.

*Technical Report, Victory Ranch Feasibility Assessment and River Restoration Design Components, February 4, 2002.*

Bird Survey – A bird survey within the project area was completed in May and June, 2001. A total of 57 species were recorded and a great blue heron rookery is present in the upper river reach. No federally threatened or endangered species, nor species listed as sensitive by the state of Utah were encountered. The bald eagle is likely present during winter but is not known to breed in the project area. Yellow-billed cuckoos have recently been sighted in Heber Valley. It is conceivable that historically this species occurred on Victory Ranch, although it is currently not likely to occur in these reaches based on the degraded condition of the riparian corridor.

*Breeding Bird Populations of the Provo River Corridor on Victory Ranch, Utah, 2001 Status Report, Analysis of Habitat Associations and Restoration Recommendations, February, 2002.*

## **3.2 Water Resources and Water Quality**

### **3.2.1 Introduction**

This section addresses potential impacts on water quality and water resources that would result from the No Action Alternative and the Proposed Action.

### **3.2.2 Issues**

The following issues raised during the scoping process are addressed in the impact analysis:

- Impacts of the Proposed Action on water quality and quantity.
- Impacts on water consumption and water quality with continued irrigation and livestock grazing under the No Action Alternative.

### **3.2.3 Affected Environment**

The impact area of influence for surface water resources covers the Provo River and associated waters within the Project area. Baseline conditions for the affected area include water consumption for irrigation, water quality impacts of unrestricted livestock grazing and water quality impacts of transbasin diversions during high flows. These conditions are documented in the reports listed above in Section 3.1.

### **3.2.4 Impact Analysis**

#### **3.2.4.1 Introduction**

Potential impacts on water quality caused by the No Action Alternative and the Proposed Action were compared. Measures that would mitigate for Proposed Action impacts are taken into account.

Specifically, the restoration design addresses sediment transport related to unnaturally high seasonal flows in this segment of the river as well as the impacts of grazing on water quality. Changes in water consumption were examined to compare the demands of current irrigation use with proposed diversions altered or moved during the restoration project to serve irrigation needs on the Victory Ranch Resort.

The following impacts on water resources would be considered significant:

- A change in water quality causing State water quality standards to be violated.
- If annual sediment loads in the river were increased long-term.

#### **3.2.4.2 No Action Alternative**

Under the No Action Alternative unrestricted irrigation diversions would continue to provide water for pasture irrigation. Grazing of cattle in the upper river valley would continue to contribute to erosion and add nitrogen to surface waters. Dramatic consumption of grasses and destruction of forest understory also would continue to impede natural filtration and processing of nutrient inputs.

### **3.2.4.3 Proposed Action**

Water currents, bed loading and turbidity: River restoration is designed to improve conditions within the Provo River channel by giving it sufficient space and continuity to function as a naturally braided river. The river system as it exists now is a braided channel choked with boulders. Sinuosity is out of balance partly due to dikes and bridge structures and the channel bed is unstable because the water volume is augmented at peak flows which transport large quantities of rock and sediment leaving seasonally low flows dwarfed in a sea of rock. The primary methods to reduce channel erosion and sediment transport are to remove high flows from the main channel by creating an off-river side channel along most of the upper reach and moving the Weber/Provo Diversion discharge point to the SR 32 highway bridge at the downstream end of the project. Since the canal would join with the Provo River above the SR 32 bridge, there would be no change to off-site hydrology dynamics below the bridge. Continuity would also be improved by removing constrictions associated with two bridges within the project area.

Sediment transport functions are very nonlinear throughout the entire range of discharge. Thus, at low stream discharge, essentially no bedload is transported, however, when more and more water is conveyed by the channel, shear stresses increase to a level that is sufficient to initiate sediment movement on the bed. When this threshold for movement is reached the rate of sediment transport increases rapidly with increasing discharge. The nonlinearity of bedload transport functions is very important for the Upper Provo River. The river was already a high energy system in its natural state, but the addition of water from the Duchesne and Weber Rivers, on top of the already high flows of the Provo River, pushed the sediment transport rate of the Provo to very high levels.

Preliminary sediment transport computations were completed for the Victory Ranch “Technical Report” (dated 2/4/02), and these computations showed that mean annual bedload transport rates of over 6,000 metric tons were likely in the Victory Ranch section under present flow conditions, which include both the Duchesne and Weber River water. The same transport computations were repeated using a flow duration relation that removed approximately 900 cfs from the discharge, which is approximately equal to the water that is added to the Provo River via the Weber Canal. These computations show that transport through the Victory Ranch section would be reduced to approximately 500 metric tons per year: a reduction of approximately 5,500 metric tons. This represents a very large reduction in bedload sediment being delivered to the State Park. The river will have the same “ability” to transport sediment through the Park, but less material will be delivered to the park.

Flooding and Connectivity: Some river connections to existing side channels are artificially constructed and maintained for irrigation purposes with flows directed into upland meadows. Many of the existing irrigation diversions would be abandoned or modified to give off-river channels natural flow patterns. Dikes would be removed to allow overbank flooding and reconnect the river with its floodplain.

Storm Water and Development Runoff: Temporary construction site erosion controls would be installed using best management practices and following a Storm Water Pollution Prevention Plan (SWP3) developed for the site in accordance with Utah Division of Water Quality regulations. Particular care would be used to protect existing natural wetlands and water features from sediment-laden runoff. Additionally, limits of disturbance would be marked to ensure construction equipment does not enter existing natural wetland areas designated to remain undisturbed. Regular inspections and maintenance to erosion controls would be conducted throughout all construction phases and until new vegetation has established sufficiently to stabilize disturbed areas.

Currently there are no down stream water supply intakes between the Victory Ranch River Restoration Project and the outlet of the Jordanelle Reservoir. There is a proposal to construct a water supply intake on the north arm of the Jordanelle Reservoir to provide an additional source of supply to the Jordanelle Special Service District's Water Treatment Plant. It is anticipated that the Victory Ranch River Restoration Project will be completed several years before this intake project is analyzed in detail and approved.

The volume of sediment that may be liberated during construction activities is small, compared to the large volumes of sediment moved by the Upper Provo River. This section of the Provo is a very high-energy river that transports large volumes of material on an annual basis. Bedload transport computations were included in the Otis Bay "Technical Report" (dated 2/4/02), and in confined sections, the estimated annual bedload transport rate was over 6,000 metric tons per year. The volume of sediment that is likely to result from construction activities could not possibly represent even a small fraction of this high annual load. The additional sediment that does move, due to construction activities, is likely to be relatively fine material, which is likely to be transported to the lake or may be stored temporarily within low channel areas below the construction site. These fine sediments will, however, be mobilized in the high spring runoff of the subsequent year, and are unlikely to remain within the channel for any extended period of time. Although sediment production is always a concern, the impact of the project with respect to sediment will be minimal.

Water Quality: In 1981 Utah Governor Scott Matheson established the Jordanelle Reservoir Water Quality Technical Advisory Committee (JTAC) for the purpose of developing a reservoir management plan for the Deer Creek Reservoir and the then future Jordanelle Reservoir. Thus, JTAC was created with the representation of over twenty federal, state, local agencies and private companies.

The Water Quality Management Plan for Deer Creek and Jordanelle Reservoir was implemented by JTAC in 1984. This plan directs JTAC to conduct a water sampling program to monitor the condition of water quality throughout the year. It also requires that an annual report be released that analyzes and presents the resulting data. Water samples have been taken from the following three sample points that establish the existing water quantity, sediment loading and water quality through Victory Ranch since

1981. Details of each sampling results for the 22 year period can be found on the EPA water quality data storage system known as STORET. STORET numbers for each site are listed below. The three sampling sites are: 1) Weber Provo Canal Diversion, STORET # 499814 located on the north boundary of Victory Ranch, 2) Provo River above Hailstone, STORET # 499813 located at the west end of the river restoration project on Victory Ranch near the Jordanelle Reservoir and 3) Provo River above Woodland, STORET # 499840 located 4½ miles upstream from Victory Ranch.

Water quality monitoring results for these sites are presented in the annual Water Quality Implementation Report prepared for the Wasatch County Commission in association with the Jordanelle Reservoir Water Quality Technical Advisory Committee.

The data from the stream samples collected at the above three locations were used with flow data to calculate river loadings of three constituents: total suspended solids (TSS), total phosphorous (TP) and dissolved total phosphorous (DTP). Table 3-1 illustrates the results of these calculations for the 1995 through 2001 period.

**Table 3-1  
Provo River Loading Summary**

	1995	1996	1997	1998	1999	2000	2001
<b>Provo River at Woodland, STORET 499840</b>							
Weighted Average Flow (cfs)	303	242	220	296	323	138	342
TP Weighted Average (mg/l)	0.026	0.009	-	0.018	0.017	0.000	0.040
TP Annual Load (kg/yr)	7,053	1,995	-	4,762	4,784	106	13,385
DTP Weighted Average (mg/l)	0.009	0.004	-	0.001	0.014	0.010	0.000
DTP Annual Load (kg/yr)	2,499	1,995	-	201	3,918	786	0
TSS Weighted Average (mg/l)	38.2	11.5	7.7	10.7	42.9	4.6	68.1
TSS Annual Load (kg/l)	10,334,714	2,486,544	1,517,482	2,825,034	12,370,157	559,772	20,735,744
<b>Weber Provo Canal, STORET 499814</b>							
Weighted Average Flow (cfs)	57	82	21	57	192	43	-
TP Weighted Average (mg/l)	0.048	0.022	-	0.014	0.027	0.010	-
TP Annual Load (kg/yr)	2,432	1,594	-	731	4,545	498	-
DTP Weighted Average (mg/l)	0.014	0.007	-	0	0.007	0.000	-
DTP Annual Load (kg/yr)	733	526	-	0	1,183	467	-
TSS Weighted Average (mg/l)	37.8	31.1	4.2	7.2	22.2	9.4	-
TSS Annual Load (kg/l)	1,937,566	2,287,441	76,622	366,015	3,795,684	359,197	-
<b>Provo River at Hailstone, STORET 499813</b>							
Weighted Average Flow (cfs)	385	284	308	288	338	163	347
TP Weighted Average (mg/l)	0.042	0.023	-	0.02	0.03	0.010	0.070
TP Annual Load (kg/yr)	14,267	5,825	-	5,159	8,946	1,560	22,785
DTP Weighted Average (mg/l)	0.006	0.010	-	0.007	0.004	0.010	0.000
DTP Annual Load (kg/yr)	1,926	2,528	-	1,725	1,132	969	78
TSS Weighted Average (mg/l)	42.4	22.0	25.8	8.3	39.1	8.1	69.0
TSS Annual Load (kg/l)	14,552,043	5,571,686	7,076,823	2,132,646	11,800,919	1,180,828	21,411,976

Typical increases in TP and TSS occur through this stretch between Woodland and Hailstone on the order of a ratio varying from 2.0 to 3.8. In the past, these increases have been attributed to the erodibility of soil through this area and agricultural activities that increase

loadings.

Based on existing data from stream sampling, diverting the Weber/Provo Canal flows to a point further downstream would result in a marked reduction in TSS during periods of high flow.

Water Consumption: Aquifer recharge is estimated to be similar to the no action alternative because most of the irrigation water currently used for pasture in the river valley would remain in the river, side channels, ponds and wetlands created or preserved by the restoration effort. Some irrigation diversions would be reconstructed for future irrigation needs at Victory Ranch.

#### **3.2.4.4 Impact Summary**

The No Action Alternative would provide no change in the current rate of Provo River channel erosion and associated sediment deposition at the Rock Cliffs state park. Phosphorous and nitrogen inputs associated with grazing in the upper river valley and excessive erosion would continue.

Under the Proposed Action, Provo River channel erosion would be reduced, particularly in the river reach between the current Weber/Provo Canal and the SR 32 bridge. Erosion of associated off-channel water features would also decrease due to removal of grazing from the project area. There would be no measurable effects to historic water use or overall water consumption.

### **3.3 Aquatic Resources**

#### **3.3.1 Introduction**

This section addresses potential impacts on aquatic resources that would result from the No Action Alternative and the Proposed Action.

#### **3.3.2 Issues**

The following issues raised during the scoping process are addressed in the impact analysis:

- Impact on the aquatic environment during construction of the Proposed Action.
- Impacts on the acreage of aquatic features.
- Impacts on the quality of aquatic features.

#### **3.3.3 Affected Environment**

The impact area of influence for aquatic resources include all surface water features within the Proposed Action project area. Baseline conditions for the affected area include the condition of the Provo River with existing dikes, transbasin hydrologic impacts, irrigation diversions in their current conditions characterized by washed out head gates and current land use practices. Game fish, non-game fish, macroinvertebrates

and amphibians (other than spotted frog) were not surveyed within Victory Ranch. Based on data collected in 1993 below the Jordanelle Reservoir (URMCC, 1997) brown trout are the most common game fish species, rainbow trout were much less common and mountain whitefish are also present. Longnose dace, redbreasted sunfish, mountain sucker and mottled sculpin were the most common non-game fish collected in the Provo River below the Jordanelle Dam. There is no specific or quantitative information on the presence or abundance of amphibians in the Provo River other than spotted frog. Other amphibians reported as present include Woodhouse toad, leopard frog, boreal chorus frog and tiger salamander. All amphibian species are associated with pond, emergent marsh and stream riparian habitats.

### **3.3.4 Impact Analysis**

#### **3.3.4.1 Introduction**

The River Restoration Feasibility Study and Conceptual Design and other reports listed in Section 3.1, as well as information from the Provo River Restoration Project (PRRP) through Heber Valley serve as the basis for determining baseline conditions. Potential impacts on the quantity and quality and of the aquatic environment caused by the No Action alternative and the Proposed Action were examined based on general guidelines concerning river conditions contributing to habitat quality. To a large extent, recommendations in the VR River Restoration Feasibility Study are based on the author's experience with the PRRP just a few miles downstream.

The following impacts on aquatic resources would be considered significant:

- A net loss of aquatic habitat acreage.
- A reduction in habitat diversity.
- An overall reduced quality of aquatic habitat after taking into account habitat quantity and quality improvements related to the restoration project.

#### **3.3.4.2 No Action Alternative**

Under the No Action Alternative current land use practices and hydrologic conditions would persist with few foreseeable changes to the aquatic environment. Current conditions affecting the aquatic environment are the high water inputs (600 cfs from the Duchesne Tunnel and 1000 cfs from the Weber/Provo Canal) as well as unrestricted grazing, dikes, bridges and irrigation diversions.

#### **3.3.4.3 Proposed Action**

Construction Temporary impacts to the aquatic environment would occur due to increased turbidity and sedimentation during construction. The impacts would be minimal and probably not measurable compared to baseline conditions. The following standard operating procedures similar to those used on the Provo River Restoration Project in Heber Valley would be implemented to minimize sediment impacts.

- When construction begins in a given area, operators will be instructed to work quickly to construct small berms or barriers that limit throughflow to prevent large volumes of sediment from being released into the river for extended periods of time.
- Whenever possible, disturbance of the armor layer will be avoided or minimized. The armor layer is composed of larger than average particles, with very little fine material. It provides a barrier that prevents finer material in the substrate from being mobilized.
- Whenever possible, reasonable efforts will be made to remove sediment from equipment prior to entering the channel.
- When working outside the channel or on channel margins, silt fences will be used to prevent sedimentation in all areas where surface runoff is a concern.

Protection of wetlands and terrestrial habitat are covered in the construction SOPs under the headings of erosion control and water quality. Protocol for avoiding and minimizing impacts to spotted frogs is attached as Appendix B.

Physical Habitat Direct long term physical changes to the aquatic habitat are summarized in Table 3-2 and discussed below.

<b>Table 3-2 Summary of changes to Aquatic Habitat (open water habitat)</b>	
<b>Habitat Type</b>	<b>Net Change in Habitat Area*</b>
Off channel open water (perennial ponds and vegetated shallows)	+4 acres
Side channel surface water (perennial stream)	+4 acres
Spotted frog habitat (without accounting for beaver activity)	+4 acres

\* Acreage estimates are approximate

All of the constructed aquatic habitat built as ponds and vegetated shallows would be in the upper river reach. The proposed side channel paralleling the river in the upper reach accounts for the gains in channel surface area. The 4-acre figure in Table 3-1 is the acreage of new open water features proposed in the restoration plan. Existing acreage of open water is in the Wetland Delineation Report, August 2001. Existing ponds = 8.2 acres in meadows plus 25.5 acres of beaver ponds in forested areas, totaling 33.7 acres. The addition of 4 acres of open water represents an increase of about 12 percent.

Areas mapped as wetlands are also mapped as potential spotted frog habitat in baseline mapping, but include seasonally saturated wet meadows. In the table above and in this discussion, changes to spotted frog habitat refer to aquatic habitat; areas that could actually be occupied by eggs, tadpoles or frogs as well as aquatic features that may serve as migration corridors. Wet meadows that almost never have standing water are not counted as aquatic habitat. The new Weber/Provo Canal alignment would impact approximately 2000 square feet of this aquatic habitat suitable for spotted frogs, though none were found in the potential impact area. The canal would join with the Provo River above the SR 32 bridge, therefore there would be no change to off-site hydrology dynamics below the bridge.

Ponds and vegetated shallow areas to be created in the restoration project are counted as new potential spotted frog habitat. In the upper reach past beaver control and dam destruction practices would be discontinued. It is expected that this change would allow for substantial creation of spotted frog habitat which is counted in Table 3-2 above.

The expanded river bed area is not based on the full potential space provided for future river migration by dike removal. The estimate conservatively counts only the footprints of expansions where dikes and bridges currently create significant constrictions confining even high flows to a single channel. The proposed short sections of new dikes would convert some channel bottom areas to oxbow-type wetland and these have been subtracted to estimate the net change to river bed area.

Habitat Quality Under the Proposed Action, all aspects of aquatic habitat quality are predicted to improve or at least experience no adverse effects compared to baseline conditions. Proposed restoration would improve quality of the aquatic environment by providing legal protection of the environment, greater space for the river, improved hydrology, increased aquatic habitat acreage, greater continuity and increased complexity. Some of the adverse impacts of high water inputs can be mitigated primarily by removing the Weber water from approximately one mile of river, reducing severe erosion impacts and by adding the side channel in the upper river reach to increase habitat diversity and reduce the adverse affects of high flows in the main channel.

The prediction of improved habitat quality is based on an understanding of how the channel form dictates conditions for fisheries. The current condition of the Upper Provo River presents some problems from a fisheries standpoint. First, the Upper Provo River currently has a channel that has adjusted its form to convey the extremely large floods that occur there due to the addition of water from the Duchesne and Weber Rivers. These large floods have created a channel that is very wide. However, this section of the river frequently experiences periods of extremely low flow during which a small amount of water is flowing in the wide channel. The result is a wide shallow stream that is nearly devoid of overhead cover and deep pools. If the Weber River water were removed from this section of the Provo River, the river channel would adjust, over a period of years,

toward a narrower channel with better cover and depth, especially during periods of low flow. These conditions will almost certainly benefit the fishery in a very real way.

Fish studies on the Middle Provo River, done by Mark Belk and his students (for the Utah Reclamation Mitigation and Conservation Commission URMCC), have demonstrated the importance of habitat diversity for maintaining a fishery that supports a full suite of native fishes as well as providing good habitat for game fish. Many native fishes require habitats that are not plentiful within the main channel of the existing Provo River. Historical photographs of the river show that it was once very complex, and provided a diverse array of aquatic habitats. However, human activities have reduced much of that complexity. Many of the existing side channels in the river were altered and converted to irrigation ditches, and much of the vegetation was removed. The new side channel will help to replace habitat that has been lost from the system, and it will provide hydraulic conditions that are very different from those found within the main channel. The new channel will provide a diversity of niches that will sustain and promote the wide array of aquatic organisms found in the Provo River.

#### **3.3.4.4 Impact Summary**

The No Action Alternative would provide no changes to aquatic conditions and processes currently being experienced.

The Proposed Action would not change the high water inputs from the Duchesne Tunnel or the Weber/Provo Canal, but the effects of these inputs would be somewhat mitigated. It would improve both the quantity and overall quality of aquatic environments.

### **3.4 Wetlands and Terrestrial Habitat**

#### **3.4.1 Introduction**

This section addresses potential impacts on wetlands and terrestrial habitat that would result from the No Action Alternative and the Proposed Action.

#### **3.4.2 Issues**

The following issues raised during the scoping process are addressed in the impact analysis:

- Impact of the Proposed Action on wetlands and terrestrial habitat.
- Impacts of the No Action Alternative on wetlands and terrestrial habitat.

#### **3.4.3 Affected Environment**

The impact area of influence for wetlands and terrestrial habitat covers the Proposed Action area. Baseline conditions for the affected area include habitat quantity and quality data for jurisdictional wetlands, riparian forest and wet meadow complexes as well as uplands in the Project area. These conditions are documented in the reports listed above in Section 3.1.

#### **3.4.4 Impact Analysis**

#### **3.4.4.1 Introduction**

Potential impacts to wetlands and terrestrial habitat caused by the No Action Alternative and the Proposed Action were compared. Measures that would mitigate for Proposed Action impacts are taken into account.

The following impacts on wetlands and terrestrial habitat would be considered significant:

- A net loss of wetland quantity and/or quality after mitigation measures are taken into account.
- A significant reduction of riparian forest quantity and/or quality after mitigation measures are taken into account (significant is considered greater than 5% of the total available habitat within the project area).
- A significant reduction of habitat designated by the Utah Division of Wildlife Resources as critical range for wildlife (significant is considered greater than 5% of the total available habitat within the project area).

#### **3.4.4.2 No Action Alternative**

Current land use practices would continue to negatively impact wetlands and terrestrial habitat quality primarily in the upper river valley due to livestock grazing. Natural habitat dynamics are also impacted by ranch management practices detrimental to beaver induced creation of wetlands.

#### **3.4.4.3 Proposed Action**

Upland Wildlife Approximately five miles of the Provo River would undergo reconstruction and restoration efforts. This effort would provide a more naturally functioning riparian system. Uplands would no longer be irrigated or grazed. The river corridor through the Victory Ranch Resort is deer and elk summer range. The Proposed Action would have no negative impacts except those of disruption during construction. In compliance with the Migratory Bird Treaty Act, construction activities would not occur in forested riparian areas during the nesting and breeding season. Removal of livestock grazing would be beneficial to upland wildlife habitat.

Riparian Habitat: A riparian bird population and habitat assessment was conducted throughout the river valley. The bird habitat assessment was used as a tool to assess the condition of riparian habitat for the following reasons. A healthy riparian corridor has a certain complement of breeding birds, which utilize a variety of microhabitats within the riparian zone for nesting or foraging (e.g., shrub understory, subcanopy, overstory, wetlands, wet meadows, river channel, etc.). When entire sets of species are missing or rare in a system (e.g., shrub understory nesters), it is generally due to a lack of available habitats. Additionally, riparian birds have been shown to act as a good “umbrella” indicator for other animals. If conditions improve for riparian songbirds, then a suite of other animals, such as butterflies, rodents, and several bats, generally benefit, too as the improvements address their habitat requirements as well.

Many breeding birds encountered at Victory Ranch are not rare or even sensitive but there are exceptions. These include nesting Great Blue Herons, nesting birds of prey and Sandhill cranes. The reason riparian songbirds are particularly useful in assessing the existing conditions is that their species composition and abundance helps elucidate the problems that restoration or habitat protection need to address. For instance, the riparian forest has been grazed for decades, which led to a large-scale loss of the riparian shrub understory. As a result, shrub nesters are underrepresented or missing in some areas. Removal of cattle from the upper river valley would substantially improve habitat as well as increase the acreage of riparian forest by allowing regeneration. This assertion is supported by the presence of young trees in and around mature forested areas on a portion of the historic Victory Ranch where grazing was discontinued for a time several years ago. The young trees generally extent 30 to 50 feet beyond the edge of the mature forest and are present within the forest as well. In areas that have not had a rest from grazing the difference in forest composition is dramatic, with a conspicuous lack of understory and almost no age and species diversity.

Preliminary bird survey data indicates the following bird species would benefit from riparian restoration and increase in numbers as riparian areas recover from cattle impacts. MacGillivray's warbler, Swainson's thrush, fox sparrow, dusky flycatcher, ruffed grouse, wild turkey, as well as the whole suite of neotropical migratory songbirds that stop over in riparian habitats, e.g., Wilson's warbler, orange-crowned warbler, Lincoln's sparrow, black-throated gray warbler, American redstart.

Wetland Impacts. Wetland impacts and conversions of wetlands to ponds or other water features are associated with the Proposed Action. Features created by the restoration effort would easily mitigate for these impacts with dike removal, constructed wet meadows, ponds and channels. Most water features which are currently diverted or otherwise controlled for irrigation would be allowed to function in a more natural condition with more natural drainage patterns. Changes to water and wetland features are summarized in Table 3-3 below and shown on Map 6. There also would be shading of water and wetland features by boardwalk crossing 50 linear feet of wetland and 11 small channels.

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Map 6 – This file is too large for viewing on-line. Please contact Beverley Heffernan (801) 379-1161, in Reclamation's Provo Area Office to obtain a copy on CD.

<b>Table 3-3 River Restoration Wetland Impacts, Conversions and New Water Features</b>							
	Wetland Fill	River Fill	Wetland to Pond or Shallow	Wetland to Channel	River to Wetland	New Water Feature	Upland to wetland
Weber Channel	0.19			0.85		7.43	
Fitzgerald Footbridge							0.26
New Ponds			1.53			1.92	
New Channel				1.71		1.19	
New Short Dikes		2.34			1.93		
Dikes Removed							11.06
Total Acres Fill Impacts	<b>2.53</b>						
Total Acres Wetland Conversions			<b>6.02</b>				
Total Acres Wetland Created						<b>21.86</b>	

#### **3.4.4.4 Impact Summary**

The No Action Alternative would have no construction-related impacts to wetlands. Degradation of wetlands and terrestrial habitats associated with livestock grazing in the upper river valley would continue.

Under the Proposed Action, 2.53 acres of wetlands/open water would be filled and 6.02 acres would be converted to/from other types of wetland/water features. Fill impacts would be mitigated for by creating 11.32 acres of wetlands and 10.54 acres of water features including the new Weber/Provo Canal alignment. These are well over the minimum 3 to 1 ratio typically required for wetland mitigation. Additionally, most of the river valley would be kept in its natural state, livestock would be removed and extensive habitat restoration and revegetation would occur.

## 3.5 Threatened and Endangered and State Sensitive Species

### 3.5.1 Introduction

This section addresses potential impacts on Federally listed Threatened and Endangered (T&E) species and Utah listed Sensitive Species that would result from the No Action Alternative and the Proposed Action. T&E species potentially in the project area include bald eagles (winter only), yellow-billed cuckoo, and Ute ladies'-tresses. Columbia spotted frog, a candidate species and a Utah Sensitive Species are known to be present in the project area.

### 3.5.2 Issues

The following issues raised during the scoping process are addressed in the impact analysis:

- Impacts of the Proposed Action on T&E and sensitive species.
- Impacts of livestock grazing and land management practices on T&E and sensitive species under the No Action Alternative.

### 3.5.3 Affected Environment

The impact area of influence includes rare and endangered species and potential habitat as follows:

Spotted frogs and Ute ladies'-tresses - wetlands in the Provo River Valley.

Bald eagles - the Provo River Valley is potential habitat for winter range only.

Yellow-billed cuckoo – riparian areas are potential habitat.

The project area includes potential habitat for two federally listed threatened, species, Ute ladies'-tresses (*Spiranthes diluvialis*) and bald eagles (*Haliaeetus leucocephalus*). Additionally, Columbia spotted frogs (*Rana luteiventris*) are present, which are a candidate for Federal T&E listing and are also a Utah Sensitive Species. Detailed surveys have been completed to locate populations of Columbia spotted frogs, evidence of bald eagle nesting sites and Ute ladies'-tresses and to map potential habitat areas. The affected environment baseline conditions are summarized below and documented in the referenced reports:

Spotted frogs - Spotted frogs are present within the project area (*Status of Columbia Spotted Frog and Boreal Toad on Victory Ranch, Utah, January, 14, 2002*)

Ute ladies'-tresses - No Ute ladies'-tresses were found within the project area. Approximately 118 acres of wetlands are considered potential habitat ranging from moderate to high potential or high potential if irrigated (*Ute ladies'-tresses Surveys of Proposed Victory Ranch Project, Wasatch County, Utah, October 2001*)

Bald eagles - No evidence of bald eagle nests were found in the project area (*Breeding Bird Populations of the Provo River Corridor on Victory Ranch, Utah, February, 28, 2002*) The riparian forest along the river is assumed to be viable winter habitat.

Yellow-billed cuckoo – No yellow-billed cuckoo (*Coccyzus americanus*) were found in the project area (*Breeding Bird Populations of the Provo River Corridor on Victory Ranch, Utah, February, 28, 2002*)

### **3.5.4 Impact Analysis**

#### **3.5.4.1 Introduction**

Potential impacts on T&E species caused by the No Action Alternative or the Proposed Action were compared and measures that would mitigate for those impacts are taken into account.

Specifically, when baseline conditions were documented in the various studies noted above, site specific recommendations were made concerning minimizing impacts and improving baseline habitat conditions.

The following impacts on T&E and sensitive species would be considered significant:

- A significant reduction of habitat quantity and/or quality specific to these species after mitigation measures are taken into account (significant is considered greater than 5% of the total available habitat within the project area).

#### **3.5.4.2 No Action Alternative**

The entire project area is subjected to livestock grazing which would continue in the upper river valley under the No Action Alternative. Ranching practices have included summer-long unrestricted grazing of riparian areas along with destruction of beaver dams which has been noted as a primary cause for loss of spotted frog habitat in the area.

#### **3.5.4.3 Proposed Action**

Columbia spotted frogs - These amphibians have been studied by assessing populations and habitat availability. Spotted frog populations are assessed through identifying egg masses and assuming one male and one female for each egg mass. Surveys for spotted frog activity were conducted during the spring breeding season (April 13-May 21), in the summer (July 24-30) and in the fall (September 12-24). As a result of these studies, beavers (*Castor canadensis*) are also monitored in a sense that their actions directly affect habitat availability. The reasons for assessing populations and habitats of spotted frogs lies primarily in the fact that they are rare and sensitive, and that any impacts need to be minimized in order to avoid driving them to extinction. Spotted frogs occur in several locations. Some egg masses are very near proposed restoration construction areas (dike removal and the new Weber/Provo Canal alignment). These areas would be avoided and protected from sediment using erosion controls and construction site limit of disturbance fencing. Work near these areas would be restricted from March through June to avoid the breeding season and potential disturbance of egg masses.

The purpose of assessing the frogs' current distribution and habitat use in three seasons (spring, summer, and fall) is to be able to work on solutions for avoiding negative

impacts to sites used by the existing population. Finding such a solution is, based on previous experience, feasible in the context of this type of project and the current effort in determining the exact distribution and habitat use of the frogs has been a necessary prerequisite for planning. The majority of spotted frogs and spotted frog habitat have been found in the upper river section.

Construction of the new Weber/Provo Canal alignment would impact 0.05 acres (2000 square feet) of potential spotted frog habitat. No spotted frogs or egg masses were found in this area during the survey period. The Proposed Action is designed to create spotted frog habitat in numerous locations (estimated to be approximately 4 acres) which would be hydrologically connected and primarily designed such that they exclude predatory fish. Frog migration routes would not be adversely effected. Most of the created frog habitat would be in the upper river section where almost no human impacts or beaver control are anticipated in conjunction with potential cumulative impacts of future land use.

Ute ladies'-tresses - A survey of Ute ladies'-tresses was conducted August-September, 2001 in the project area to record sightings of plant colonies and potential habitat. No Ute ladies'-tresses were observed during the surveys. The ULT habitat map is nearly identical to the wetland map (Map 6). There are no potential ULT habitat impact areas outside of the areas already mapped as wetland impacts. Therefore mapping these impacts was considered redundant. The areas of potential ULT habitat impacted are smaller than the wetlands impacted (less than 4.28 acres). Acreage of potential habitat gained would be similar to acreage of wetlands created (13.25 acres).

Bald eagles - Impacts to bald eagle winter range are predicted to be negligible because restoration construction work would generally not take place in winter months. If construction activities take place between November and March, construction will be restricted to the hours between 9:00 am and one hour before sunset.

Yellow-billed cuckoo – No yellow-billed cuckoo were found in the project area. While it is conceivable that historically this species occurred in the project area, it is currently unlikely to occur based on the degraded condition of the riparian corridor.

#### **3.5.4.4 Impact Summary**

The No Action Alternative would continue to degrade habitat quality for T&E species and State Sensitive Species. Habitat quantity would be largely unaffected except the continued practice of beaver control would result in continuation of declining habitat quality.

The Proposed Action may affect but is not likely to adversely affect T&E or State Sensitive species. The U.S. Fish and Wildlife Service concurred with this determination in a letter dated December 11, 2003. The proposed action would preserve approximately 500 acres of riparian habitat in its natural condition. Restoration work would increase spotted frog habitat. Removal of grazing would benefit bald eagle habitat and Ute ladies'-tresses.

## **3.6 Cultural Resources**

### **3.6.1 Introduction**

This section addresses potential impacts on cultural resources that would result from the No Action Alternative and the Proposed Action. The lead Federal agency for the Victory Ranch Resort project, because of their responsibilities under Section 404 of the Clean Water Act, is the Corps who is therefore responsible under 16 U.S.C. 470-1 for the protection of historic properties (36 CFR Part 800, Section 106) compliance for the entire project. Reclamation is responsible for Section 106 compliance for the Victory Ranch River Restoration portion of the project within the larger proposed development area. However, Reclamation has assumed responsibility, on behalf of the Corps, as well as for its own requirements, for the initial Section 106 work, including SHPO and Tribal consultation, and the drafting of the Memorandum of Agreement (MOA) among the Victory Ranch Resort, the Corps, the Advisory Council on Historic Preservation (ACHP) if they choose to participate, and the SHPO for Section 106 compliance and mitigation procedures being completed on the entire Victory Ranch Resort prior to any ground-disturbing activity.

### **3.6.2 Issues**

The following issues raised during the scoping process are addressed in the impact analysis:

- Impacts of the Proposed Action on cultural resources including standing structures, the Weber/Provo Canal, dikes and archeological sites.

### **3.6.3 Affected Environment**

The impact area of influence is the Proposed Action area and the Victory Ranch Resort. A Class I cultural resources survey of selected structures in the area of potential effect (APE) that may be disturbed by the Proposed Action was conducted by P-III Associates in 2001 (*Architectural Documentation of Selected Historic Structures for the Proposed Victory Ranch Project, Wasatch and Summit Counties, Utah, February 2002*). A Class III cultural resources inventory of the Victory Ranch Resort was completed in 2003 (*Draft Cultural Resources Inventory of 3700 Acres in the Proposed Victory Ranch Development areas, Summit and Wasatch Counties, Utah, August 2003*). The 2003 Class III cultural resources inventory includes the structures inventoried in 2001. Therefore, the 2003 report defines the baseline conditions.

In the 2003 inventory of 3700 acres of the Victory Ranch, 41 archeological sites were identified and 19 of them are considered eligible for the National Register of Historic Places (NRHP). Of the 19 eligible sites, 7 are historic and 12 are prehistoric sites. The prehistoric sites (eligible and non-eligible) range all the way from the Archaic, through the Formative Period, to a Protohistoric, possibly Ute, sweat lodge (site #42WA351). The historic sites (eligible and non-eligible) are all historic structures, features and trash scatters. A list of all of the archeological sites found on the proposed Victory Ranch Resort is presented in Table 3-4. Of the 41 sites found, 8 are within the area of the Proposed Action. All are historic features and 7 of them are eligible for the NRHP. No prehistoric sites were found in the area of the Proposed Action.

<b>Table 3-4</b>			
<b>Archeological Sites Found on Victory Ranch</b>			
<b>Site No.</b>	<b>Site Type</b>	<b>Period</b>	<b>Eligible</b>
42SM455	Railroad grade (Utah Central Railway)*	Historic	Yes
42SM456	Farmstead (Richardson)*	Historic	Yes
42SM457	Farmstead (Prescott)*	Historic	Yes
42SM458/42WA359	Canal (Weber-Provo Diversion Canal)*	Historic	Yes
42SM459/42WA360	Bridge (Fitzgerald Ranch)*	Historic	Yes
42SM460/42WA361	Bridge (Prescott Ranch/Victory Ranch)*	Historic	No
42WA324	Farmstead (Larson)*	Historic	Yes
42WA325	Ranch complex (Fitzgerald)*	Historic	Yes
42WA326	Lithic artifact scatter	Prehistoric	Yes
42WA327	Lithic artifact scatter with groundstone	Prehistoric	Yes
42WA328	Lithic artifact scatter with groundstone	Prehistoric	Yes
42WA329	Lithic artifact scatter	Prehistoric	No
42WA330	Lithic artifact scatter	Prehistoric	Yes
43WA331	Lithic artifact scatter	Prehistoric	No
42WA332	Lithic raw mat. procurement locus/artifact scatter	Prehistoric	Yes
42WA333	Trash scatter	Historic	No
42WA334	Trash scatter	Historic	No
42WA335	Lithic artifact scatter/trash scatter	Pre/Historic	No/No
42WA336	Lithic artifact scatter	Prehistoric	Yes
42WA337	Trash scatter	Historic	No
42WA338	Lithic raw mat. procurement locus/artifact scatter	Prehistoric	Yes
42WA339	Mine (Ring mine)	Historic	No
42WA340	Lithic raw mat. procurement locus/artifact scatter	Prehistoric	Yes
42WA341	Lithic artifact scatter	Prehistoric	Yes
42WA342	Trash scatter	Historic	No
42WA343	Lithic raw mat. procurement locus/artifact scatter	Prehistoric	Yes
42WA344	Lithic artifact scatter	Prehistoric	No
42WA345	Lithic artifact scatter	Prehistoric	No
42WA346	Lithic artifact scatter	Prehistoric	No
42WA347	Lithic artifact scatter	Prehistoric	No
42WA348	Lithic artifact scatter	Prehistoric	No
42WA349	Lithic artifact scatter	Prehistoric	No
42WA350	Lithic artifact scatter	Prehistoric	No
42WA351	Sweathut and hearth	Prehistoric	Yes
42WA352	Lithic artifact scatter	Prehistoric	No
42WA353	Trash scatter	Historic	No
42WA354	Lithic artifact scatter	Prehistoric	No
42WA355	Lithic raw mat. procurement locus/artifact scatter	Prehistoric	No
42WA356	Lithic raw mat. procurement locus/artifact scatter	Prehistoric	No
42WA357	Lithic artifact scatter	Prehistoric	Yes
42WA358	Quarry/gravel pit (High Bluff Quarry)	Historic	No

\* Site is within the area of the Proposed Action

### 3.6.4 Impact Analysis

#### 3.6.4.1 Introduction

The procedures identified in 36 CFR 800.5, Assessment of Adverse Effects, were used to determine the effects of the Proposed Action on eligible NRHP sites.

Impacts are considered significant if they adversely affect sites that are deemed eligible for or are already listed on the NRHP.

#### 3.6.4.2 No Action Alternative

The No Action Alternative would have no effect on cultural resources.

#### 3.6.4.3 Proposed Action

The table below lists the 8 archeological sites within the area of the Proposed Action, which are eligible for the NRHP and the anticipated impacts of the Proposed Action and the Victory Ranch Resort. The most prominent feature, a red barn, would be preserved in place, stabilized and rehabilitated in consultation with the SHPO which is consistent with the Secretary of the Interior’s Standard Guidelines for Archaeology and Historic Preservation (48 FR 44716-37).

<b>Table 3-5 Summary of Impacts of the Proposed Action to Cultural Resources</b>			
<b>Ref. No.</b>	<b>Feature</b>	<b>Eligible</b>	<b>Impact</b>
42SM455	Railroad grade (Utah Central Railway)	Yes	Avoid
42SM456	Farmstead (Richardson)	Yes	Avoid
42SM457	Farmstead (Prescott - white house)	Yes	Remove*
42SM458	Canal (Weber-Provo Diversion Canal)	Yes	Alter
42SM459	Bridge (Fitzgerald Ranch)	Yes	Avoid
42SM460	Bridge (Prescott Ranch/Victory Ranch)	No	Remove
42WA324	Farmstead (Larson - red barn etc.)	Yes	Avoid**
42WA325	Ranch complex (Fitzgerald)	Yes	Avoid

\*Victory Ranch Resort Impact

\*\*The red barn will be avoided, other features will be removed

An MOA is being executed and treatment plans developed to address mitigation for impacts. The MOA is among the Victory Ranch Resort, the Corps, the ACHP if they choose to participate, and the SHPO. The MOA would address both present and future development plans in regard to the preservation and protection of cultural resource sites located within the proposed project area.

If it appears that construction activity would affect a known NRHP eligible property or contributing property in a previously unanticipated manner the SHPO would be contacted. Construction Standard Operating Procedures address protection of surface or subsurface inadvertent discoveries of cultural materials or human remains. If during

construction cultural materials or human remains are discovered, all construction in the area would cease immediately and the SHPO would be contacted.

#### **3.6.4.4 Impact Summary**

The No Action Alternative would have no impact on cultural resources.

The Proposed Action would have an adverse impact on cultural resource sites which are recommended as being eligible for inclusion on the NRHP. Mitigation policies regarding the preservation and protection of cultural resources for both present and future development plans for the proposed project would be developed in a MOA as part of the Corps' Clean Water Act compliance process. The impacts would be mitigated under the programmatic agreement described above.

### **3.7 Land Use Plans and Conflicts**

#### **3.7.1 Introduction**

This section identifies conflicts between the Proposed Action and No Action Alternatives and existing land use plans.

#### **3.7.2 Issues**

The following issues raised during the scoping process are addressed in the impact analysis.

- VR River Restoration compliance with county land use plans and goals.

#### **3.7.3 Affected Environment**

The impact area of influence for land use plans and conflicts is the Proposed Action area (Map 2). The following land use plans are applicable to the area of the Victory Ranch Resort, and the area of the Proposed Action.

*Wasatch County Jordanelle Basin Land Use Plan*, Adopted in 1998. This plan designates the general distribution, location and extent of uses for housing, business, industry, agriculture, open space and other categories of public and private land uses.

*Eastern Summit County General Plan*, Adopted in 1996. This plan designates the general distribution, location and extent of uses for housing, business, industry, agriculture, open space and other categories of public and private land uses.

*Victory Ranch Master Plan*, Approved by the Wasatch County Commission on August 27, 2001. This plan identifies and shows the location of the elements of the Proposed Action.

### **3.7.4 Impact Analysis**

#### **3.7.4.1 Introduction**

Proposed project features were compared with existing land use plans and zoning requirements to analyze impacts.

The following impacts on existing land use plans would be considered significant:

- If the Proposed Action required amending existing master plans or causes a conflict with zoning restrictions.

#### **3.7.4.2 No Action Alternative**

Land use under the No Action Alternative would not impact the existing master plans or zoning restrictions.

#### **3.7.4.3 Proposed Action**

Construction and operation of the Proposed Action would not require any changes in the Jordanelle Basin Land Use Plan or the Eastern Summit County General Plan or zoning restrictions.

## **3.8 Recreation**

### **3.8.1 Introduction**

This section addresses potential impacts on recreation resources that would result from the No Action Alternative and the Proposed Action.

### **3.8.2 Issues**

The following issues raised during the scoping process are addressed in the impact analysis.

- Impact on fishing opportunities
- Impact on boating opportunities

### **3.8.3 Affected Environment**

The impact area of influence is the Proposed Action area. This area supports recreation resources including fishing, hiking and horse riding which under existing conditions are not available for public use. The entire area of influence is private land and the land owner's permission is required to legally enter the property. The Proposed Action area is currently managed for cattle production and available recreation opportunities are incidental as afforded by the existing environment. There are no facilities present specifically to provide recreation.

### **3.8.4 Impact Analysis**

#### **3.8.4.1 Introduction**

The Proposed Action features and construction activities were compared with the location of existing recreation opportunities in the area of influence. Potential impacts were determined by evaluating the type of construction activities, restriction in use during construction and season of the year that construction would occur.

The following impacts on recreation would be considered significant:  
A permanent loss of existing recreation facilities or resource use opportunities.

#### **3.8.4.2 No Action Alternative**

The No Action Alternative would have no impact on fishing opportunities in the VR River Restoration area. Current conditions affecting fish habitat would remain and the land owner's practice of restricting fishing access would continue.

#### **3.8.4.3 Proposed Action**

Restoration work in the river channel is expected to occur during the driest months over a two-year period. Construction of the Proposed Action would affect the existing recreational opportunities for fishing during the construction season. Little work would be directly in the river and impacts to fish habitat are predicted to be minimal. Fish habitat is predicted to improve substantially after restoration work is complete. The most common short term impact would be restricted access in active construction zones. The land owner's current practice of restricting fishing access would continue during and after the construction phase. After the project is complete, fishing opportunities through the lower river section will be similar to those provided in the upper river section. There are no conflicts foreseen by the presence of the Victory Ranch River Golf Course. A fishing access trail will run along the river and fishing will be allowed in the stretch of river bordered by the golf course.

## **3.9 Transportation**

### **3.9.1 Introduction**

This section addresses potential impacts to the transportation systems and utilities that would result from the No Action Alternative and the Proposed Action.

### **3.9.2 Issues**

The following issues raised during the scoping process are addressed in the impact analysis.

- Traffic impacts on major and minor roads accessing the project area.
- Impacts to existing utilities in the project area.

### **3.9.3 Affected Environment**

The impact area of influence for transportation includes public access roads that would be used during and after construction of the Proposed Action. The impact area of influence for utilities includes any utilities that would be moved, replaced or experience interruptions during construction. The affected environment includes major and minor public roads and utilities accessing the project area. Major roads included US 40 a four lane road, SR 32 and SR 248, which are two lane roads in the area of concern. Minor roads include existing dirt and gravel roads off SR 32 that provide access to the project area.

Baseline two way Average Annual Daily Traffic (AADT) for the latest year available was 1,455 for SR 32 at US 40, 2,277 for SR 248 at Francis and 10,550 for the four lane US 40 at the intersection with SR 32.

Utilities in the project area include Utah Power & Light electrical lines that cross the Provo River at 1000 East in Francis.

### **3.9.4 Impact Analysis**

#### **3.9.4.1 Introduction**

The transportation analysis was performed by examining different factors that could cause traffic delays. Traffic volumes for major public roads were determined by dividing the maximum number of construction trips by the AADT to obtain the percentage increase in traffic. Potential delays caused by turning of construction vehicles or construction across roadways were also examined.

Transportation and utility impacts would be considered significant if construction activities associated with the Proposed Action or No Action Alternative would result in one or more the following:

- Vehicular travel delays on SR 32 of more than 15 minutes at any one time.
- Physical damage to roads that is not repaired to a level equal or better than pre-construction conditions
- Service interruptions to any utility line.
- Damage to a utility line that is not repaired to a level equal or better than pre-construction condition

#### **3.9.4.2 No Action Alternative**

Traffic volumes would be expected to remain at current levels for the No Action Alternative. No impacts to utilities would occur as a result of the No Action Alternative.

### **3.9.4.3 Proposed Action**

A transportation plan was developed and it was determined that the number of one way construction trips under the Proposed Action during peak construction periods would be a maximum of 10. This is 0.68 percent of the current traffic volume on SR 32, 0.42 percent of the traffic volume on SR 248 and 0.08 percent of the traffic volume on US 40. Construction traffic turning on and off SR 32 may cause minor delays, but no more than 3 minutes. The overhead power lines along 1000 East at the crossing of the side channel would be signed and the SOPs in Section 2.3.7 would be followed. No interruption of service is anticipated.

## **3.10 Health, Safety and Noise**

### **3.10.1 Introduction**

This section identifies potential impacts of noise, safety and health risks from the No Action Alternative and the Proposed Action.

### **3.10.2 Issues**

No issues concerning health, safety and noise were raised during the scoping process.

### **3.10.3 Affected Environment**

The impact project area of influence is within and adjacent to the Proposed Action area. Baseline conditions include noise, health and safety hazards of current land use in and around the project area.

Safety impacts related to wildland fires in the river valley are considered to be low because the vegetation along the Provo River Valley normally does not dry out to a hazardous degree and fire fighting access is good. The safety risk associated with traffic accidents is considered to be low because major routes have recently been improved to handle large traffic volumes at Level of Service A (the safest rating category).

The primary existing sources of noise are associated with traffic on SR 32 and Lower River Road, a small saw mill on the north side of SR 32 and operation of a gravel pit on Lower River Road. Traffic noise can be heard through the impact area of influence, but is not considered a public safety issue. Equipment operation at the saw mill and gravel pit are audible only near the plants, and public exposure to this noise is considered safe.

### **3.10.4 Impact Analysis**

#### **3.10.4.1 Introduction**

Impacts were determined by comparing existing risks with the increase or decrease in hazards associated with the Proposed Action. Specifically, noise, health and safety hazards during construction were analyzed.

The following impacts on noise, health and safety would be considered significant:

- An increase in the risk of flooding sufficient to threaten human life or health.
- A significant increase in vehicular accidents including construction equipment and off road vehicles.
- Violation of local, state or federal noise level standards.

#### **3.10.4.2 No Action Alternative**

The No Action Alternative would not increase health, safety or noise hazards.

#### **3.10.4.3 Proposed Action**

The Proposed Action likely would not significantly increase the risk of traffic accidents on access roads based on traffic data presented in Section 3.9 indicating the road Level of Service would remain at Level A (the safest category).

During the construction period warning signs and fences would limit public access to construction, staging and storage areas. The SOPs and construction procedures would minimize the risk of accidental injury to non-construction personnel. The contractor would be required to submit for approval a fire prevention and control plan that meets all state and local requirements. If the approved plan is properly implemented, the risk of wildland fire to workers and the public would not be considered significant. Noise exposure during construction would be limited primarily to equipment. Noise SOPs require use of periodic checking of mufflers on all construction equipment and conformance with noise control measures in the Reclamation health and safety standards manual (USBR 2001) to protect workers from unsafe exposure. Public exposure to construction noise would not be an issue since the public would not have access to construction areas. Therefore, noise exposure would not have a significant impact on the public or worker's health and safety. No significant impacts on public health and safety are likely to occur from construction of the Proposed Action taking into account hazard mitigation methods.

### **3.11 Visual Resources**

#### **3.11.1 Introduction**

This section identifies potential impacts to visual resources under the No Action Alternative and the Proposed Action.

#### **3.11.2 Issues**

No issues concerning visual resources were raised during the scoping process.

### **3.11.3 Affected Environment**

The impact area of influence is within the Proposed Action area as well as viewpoints from SR 32, Lower River Road and the bluffs above the river in the town of Francis. Baseline conditions include current land use and ranching operations in the river valley.

### **3.11.4 Impact Analysis**

#### **3.11.4.1 Introduction**

Impacts were determined by comparing existing conditions with the Proposed Action during and after construction.

There are no established quality objectives for visual quality so a significant contrast to baseline conditions was used for significance criteria. The following permanent impacts would be considered significant:

- A significant change in acreage of forest cover.
- A significant change in acreage of open space.

#### **3.11.4.2 No Action Alternative**

The No Action Alternative would not significantly change existing visual conditions in the near future. If grazing continued for more than 20 years a gradual loss of mature cottonwood trees may occur because few tree seedlings survive the impacts of grazing.

#### **3.11.4.3 Proposed Action**

The Proposed Action would require removal of less than five percent of the forest cover and more than five percent of forest would be replaced. Long-term the forest cover is expected to be maintained better than under existing conditions because grazing has essentially eliminated young trees to replace aging cottonwoods. Open meadow acreage would remain essentially the same except that some upland meadow would be wetland meadow. Changes to terrestrial habitat and aquatic habitat are summarized in Table 2-1 and Table 3-2 respectively.

Restoration construction would be split into two segments, the upper and lower areas. Most of the work would be along SR 32 where the Weber/Provo Canal would be relocated. This part of the project is expected to be completed in one summer. No permanent significant adverse visual impacts are likely to occur from the Proposed Action. Impacts during construction are predicted to be minimal and limited to a three year period. These would include temporary impacts from machinery, staging areas and the actual construction work.

## **3.12 Socioeconomics**

### **3.12.1 Introduction**

This section identifies potential impacts on social and economic factors under the No Action and Proposed Action Alternatives.

### **3.12.2 Issues**

No issues concerning socioeconomics were raised during the scoping process.

### **3.12.3 Affected Environment**

The impact area of influence is the local surrounding communities, most notably Francis, Woodland, Kamas and Heber. Baseline conditions include existing conditions in retail, construction and farm sectors of the local economy.

### **3.12.4 Impact Analysis**

#### **3.12.4.1 Introduction**

Impacts were determined by estimating how the Proposed Action would affect population, agricultural economics and employment.

Impacts would be considered significant if gross revenue or impacts to social groups substantially disrupts livelihood or lifestyle of the local communities.

#### **3.12.4.2 No Action Alternative**

The No Action Alternative would not significantly affect existing socioeconomic conditions.

#### **3.12.4.3 Proposed Action**

The Proposed Action would remove grazing from the upper river section of the project area which typically is grazed by cattle annually in late summer. Construction would cause a minor increase in temporary employment. No significant impacts on socioeconomic conditions are likely to occur from the Proposed Action. The socioeconomic impacts of constructing the Proposed Action are considered much smaller in scope, but similar in nature to those of the Provo River Restoration Project through the Heber Valley.

## **3.13 Indian Trust Assets and Environmental Justice**

### **3.13.1 Indian Trust Assets**

Indian Trust Assets are legal interests in property held in trust for the benefit of Indian tribes or individuals. Lands, minerals, hunting and fishing rights, and water rights are common examples of trust assets.

The United States has a trust responsibility to protect and maintain rights reserved by or granted to Indian tribes or Indian individuals by treaties, statutes, and executive orders. The United States, with the Secretary of the Department of the Interior as the trustee, hold many assets in trust for Indian tribes or individuals. Reclamation policy is to protect American Indian Trust Assets from adverse impacts from its programs and activities when possible. This policy was undertaken as directed in Executive Order 13175 and the Commissioner's memorandum of November 1993.

No issues concerning Indian Trust Assets were identified in the scoping process. The area to be affected by the Proposed Action and No Action Alternative is private land with a Reclamation easement for flooding, channel reconstruction or diking. Reclamation has consulted with the Northern Ute Tribe of the Uintah and Ouray Reservation in Ft. Duchesne, Utah regarding Indian Trust Assets concerns for the proposed project area. This Tribe claims the proposed project area as aboriginal territory (Indian Land Areas Judicially Established 1978).

### **3.13.2 Environmental Justice**

On February 11, 1994, the President of the United States issued Executive Order 12898 on Environmental Justice in Minority Populations and Low Income Populations. The policy requires the analysis and evaluation of impacts of any proposed project, or decision on minority and low-income populations and communities as well as the equity of the distribution of the benefits and risks of those decisions.

Socioeconomic data analyzed for Wasatch and Summit Counties indicates that people of Hispanic and other minority races constitute 1% percent of Wasatch County's and 1% percent of Summit County's population (1990-2000 census data). There are no minority representatives located within the area of the proposed project area. There are no low-income or minority groups located within the proposed project area. No issues have been identified that would impact low-income or minority groups.

## **3.14 Mitigation and Monitoring**

Mitigation efforts address impacts of the Proposed Action which is designed to have minimal adverse impacts and to improve river function and the riparian environment.

### **3.14.1 Provo River and Riparian Environment**

Based on a restoration feasibility analysis, the river restoration designers have determined that in the reach above the Jordanelle Reservoir, any attempt to force the Provo River into a single threaded meandering channel would almost certainly fail. The physical setting of the Provo River channel precludes the single threaded meandering form, thus, any restoration activities planned for the river should accept the existing braided channel type and seek only to enhance it.

The restoration designers' assessment of the Provo River above Jordanelle Reservoir suggest that the main channel has the appropriate channel form for the geomorphic setting it occupies. Although the river has clearly been impacted by human activities, as a whole, it retains considerable ecological value. In many instances, disturbed rivers do not have the ability to return to an ecologically functional condition. But, in the case of the Provo River above Jordanelle Reservoir, the main river channel can easily recover from the disturbances that have impacted it if the major sources of that disturbance are removed (i.e. cattle grazing and excess flood water from the Weber/Provo Canal). While water from the Duchesne Tunnel would still be added to the high flows of the Provo River, these flows alone have had substantially less negative effect on the river than have the combined flows of both the Duchesne and the Weber/Provo Canal. Extremely invasive restoration techniques, such as excavation of a new main channel, are not appropriate for most of the river in the area of the Proposed Action and such techniques would probably do more harm than good. Only isolated sections of the main channel that are unlikely to recover on their own would require these extreme measures to achieve the desired restoration objectives.

Modifications to the river channel would primarily involve removing confining features such as dikes and bridge structures. Side channels and associated riparian areas would be created or restored to a more naturally functioning condition compared to current conditions subjected to grazing and alterations associated with irrigation. The Weber/Provo Canal would be re-routed down the south side of the highway from the Weber/Provo Canal bridge to a point just upstream of the highway bridge near the Rock Cliffs state park entrance road. By routing this flow in its own channel, more than a mile of the Provo River could be improved and sediment delivery to the state park could be considerably reduced.

Additional mitigation of environmental impacts include revegetation with native trees and shrubs in all areas within the project area disturbed by construction. Forage grasses would be replaced in part by native species in disturbed areas as well as selected undisturbed areas. However, replacing forage grasses in undisturbed areas requires use of herbicides and/or removal of topsoil, neither of which are appropriate for areas near wetlands or water features. Therefore, the forage grass eradication effort would not include these sensitive areas. Infestations of weeds, particularly those identified by the state and county as noxious weeds, would be aggressively managed primarily using herbicides. Mechanical removal would be necessary within 20 feet of surface water where herbicide applications are inappropriate. The herbicides of choice for upland weed control would most commonly be Roundup or Rodeo, both of which have been used on the Provo River Restoration Project in Heber Valley.

### **3.14.2 Wetlands and Water Features**

Direct wetland impacts associated with the Proposed Action would be compensated for in the river restoration design with in-kind wetland creation as well as constructed channels and ponds (see Table 3-2).

### **3.14.3 Threatened and Endangered and State Sensitive Species**

The Proposed Action would impact 0.05 acres (2000 square feet) of potential spotted frog habitat where no frogs were found during the surveys conducted in spring, summer and fall of 2001. However, nearly four acres of potential spotted frog habitat would be constructed. Discontinuing beaver control in the upper section is predicted to allow more spotted frog habitat to develop naturally.

### **3.14.4 Cultural Resources**

Victory Ranch owners would refine design plans where feasible to avoid impacts to all NRHP-eligible properties identified in the project area in consultation with the Corps of Engineers and Reclamation if the site is located within the Proposed Action area. If avoidance is not possible, the Corps and/or Reclamation, in consultation with Victory Ranch owners would identify impacted properties requiring further treatment proceeding as outlined in the MOA. If the site is located within the Proposed Action area, a treatment plan would be developed in consultation with the Corps, Reclamation, the relevant Indian tribe if necessary and Utah SHPO. Upon approval of the treatment plan and prior to ground-disturbing activities in the area of the impacted sites a data recovery plan would be implemented.

### **3.14.5 Monitoring**

A long-term management plan for the river valley would include monitoring of bird and spotted frog populations, riparian habitat, and river function. The land owner would be responsible for ensuring the monitoring is conducted each year. Monitoring of the restoration project would be conducted during the years of construction and for five years after restoration work is completed. During the construction phases the monitoring plans would show as-built maps of restoration work accomplished each year.

Monitoring would include annual vegetation and hydrology surveys as well as photo documentation in the areas altered by restoration work. A bird survey would be conducted during the last year of monitoring because bird populations are expected to take several years to change. The bird survey procedures would follow the procedures of the pre-project survey. Annual spotted frog population surveys have been, and will continue to be, conducted by DWR to document egg masses. Additionally, the project proponents will be responsible for conducting two full sweep surveys and providing a report on changes in locations and quality of spotted frog habitat. The first of these would be conducted one full year after the river restoration project is complete and the second one would be conducted two years after the first survey. A detailed monitoring plan would be designed based on the restoration plan. It would be submitted to the Corps of Engineers no later than August of the first year of construction and the first monitoring report would be submitted by December in the first construction year. Consultation and coordination with DWR would be ongoing as needed.

## **3.15 Cumulative Impacts**

### **3.15.1 Introduction**

The NEPA and CEQ Regulations for Implementing the Procedural Provisions of NEPA (40 CFR Part 1500-1508) require federal agencies to consider the cumulative impacts of their actions. These are defined as the incremental impact of the action when added to other past, present and reasonably foreseeable future actions, regardless of what agency (federal or non-federal) or person undertakes such actions.

Cumulative impacts can result from actions that are individually minor but collectively significant over a period of time (40 CFR 1508.7). Cumulative impacts are based on net impacts (i.e., impacts left after mitigation has been applied), not gross impacts. If the cumulative analysis were based on gross impacts, the actual cumulative impacts would be misrepresented.

This section analyzes cumulative effects of the Proposed Action together with past and future projects discussed in Section 1.5. In particular, the Victory Ranch Resort is linked to the Proposed Action and is therefore discussed in detail in this section. In summary, the Proposed Action does not contribute to unacceptable cumulative impacts. The Proposed Action would preserve land in its natural state and improve riverine habitat, benefiting fish and wildlife.

### **3.15.2 Proposed Action and Interrelated Victory Ranch Resort**

The area of the Proposed Action lies within the Victory Ranch Resort. The Victory Ranch Resort development encompasses 5803 acres, including approximately 730 acres of the Provo River Valley, from the SR 32 bridge near the Rock Cliffs state park at Jordanelle Reservoir extending upstream along the south side of SR 32 and Lower River Road for approximately 5 miles. The upstream project boundary is at 1000 East in Francis, Utah (Map 1).

The primary purpose of the Victory Ranch Resort is to provide a destination resort convenient to a major airport that offers golfing, fishing and access to downhill skiing. These activities would be provided along with a variety of other recreational opportunities at the resort including horseback riding, bird watching, sport clay shooting, rock climbing, mountain biking, hiking, camping and cross-country skiing. (Note the sport clay shooting range is in upland sage nearly a mile away from the Provo River.) The purpose of the river restoration project (the proposed action analyzed in this EA) is to improve the fishery and riparian habitat in support of catch and release fishing and bird watching opportunities. However, the resort development plan does not necessarily require restoration of the river. The need for the Victory Ranch Resort project is evidenced by favorable marketability reflecting the demand for this type of recreational resort. The project would provide about 300 jobs and a net tax contribution to Wasatch County of over 18 million at full build out with relatively few impacts on county services.

Three ranches were acquired over the past 10 years and when combined they create the resort development area composed of alpine mountains, sage covered hills and part of the Provo River Valley. Approximately 83% of the area would be open space, most of which would remain in its natural condition and be protected from future development by conservation easements. Resort housing includes 133 villas, 299 cottages, 217 lots for single-family homes, 76 employee housing units and lodging within a golf course clubhouse. The major recreational amenities include three golf courses, a fishing access trail along the Provo River, riding stables and an activities center. A mountain trail system for non-motorized use would accommodate mountain biking, horseback riding, cross country skiing, hiking and access to 6 designated camping huts within the resort. One golf course would be located in the river valley adjacent to the proposed realignment of the Weber/Provo Canal (Map 7). The fishing access trail also runs through the river valley within the area of the Proposed Action (Map 8).

#### **3.15.2.1 Water Resources**

Water used for an irrigated hay field would be used to irrigate the Lady Long Hollow golf course at the hay field location above the river valley. Water for the Mountain golf course, located above the river valley, would be pumped from the Provo River which requires approval from the Utah State Engineer for a change in the area of use. An irrigation diversion would be constructed near the Fitzgerald bridge to supply irrigation water to this area. This diversion replaces a washed out irrigation diversion just upstream from the Fitzgerald bridge. The River golf course, located in the river valley adjacent to the lower section of the Proposed Action would be irrigated using river water previously applied to the same area for pasture. Culinary water would be taken from a 1000-foot deep well to be drilled in the river valley. This also represents a change of use and requires approval of the Utah State Engineer. Total water consumption would not change because the anticipated uses are calculated not to exceed uses covered by existing water rights including accounting for evaporation and loss of return irrigation flow. The State Engineer would not approve any changes which would expand Victory Ranch current water rights.

Map 7 – This file is too large for viewing on-line. Please contact Beverley Heffernan (801) 379-1161, in Reclamation's Provo Area Office to obtain a copy on CD.

Map 8 – This file is too large for viewing on-line. Please contact Beverley Heffernan (801) 379-1161, in Reclamation's Provo Area Office to obtain a copy on CD.

### 3.15.2.2 Aquatic Resources

The River golf course would be constructed adjacent to the lower section of the Proposed Action outside of the river valley restoration area, which also defines the area of the Proposed Action. In order for Provo River channel dynamics to occur, careful planning of the proposed golf course and its associated features has been incorporated into the proposed design. Space for overbank flooding and channel migration has been included in much of the proposed floodway corridor primarily by removal of dikes on the north side. Provo River channel function should be essentially unimpaired by the proposed golf course layout.

Nutrients and Pesticides – The following studies were prepared to ensure the River golf course is designed and managed to minimize adverse environmental impacts.

*Golf Course Risk Assessment - Water Quality Risk Assessment for the River Golf Course on Victory Ranch Recreation Resort, February, 2002.*

*Golf Course Management Plan - The Integrated Golf Course Management Plan for the River Golf Course on Victory Ranch Recreation Resort, February, 2002.*

The Integrated Golf Course Management Plan (IGCMP) specifies design requirements such as grading, buffers, irrigation and fertilization systems and long-term management practices. The IGCMP has been reviewed by the Utah Division of Water Quality and the Jordanelle Technical Advisory Committee created by the Governor to monitor the water quality of the Provo River. This committee is made up of representatives of down stream water users such as the Salt Lake County Water Conservancy District, the Salt Lake Metropolitan Water District, Central Utah Project, Wasatch County, PRWUA, etc.

The turf chemical (pesticides and fertilizers) sections of the IGCMP provides risk based analysis, modeling potential nutrient and pesticide transport utilizing site specific data on soil saturation rates, subsurface and surface hydrology and climate. Risk management measures have been developed to protect sensitive species and receptors. The IGCMP is based on the philosophy that by properly growing-in and maintaining healthy turf using a variety of techniques, one minimizes the need for pesticides. Cultural, mechanical, and chemical controls are recommended. An integrated pest management program recommends thresholds for pesticide applications based on pest infestation intensity. There is a focus on slow-release nitrogen (N) fertilizers and "spoon feeding" water soluble N (i.e., frequent applications of very low doses). The criteria for the Risk Assessment was based on protection of spotted frogs which requires threshold levels well below drinking water Maximum Contaminant Levels (MCLs). Upon review of the IGCMP, the Fish and Wildlife Service indicated concern for two fungicides, Trifloxystrobin and Azoxystrobin. Use of these products was therefore removed from the IGCMP. None of the ponds within the golf course are counted as aquatic habitat because they are specifically not designed as habitat. These ponds are designed without valuable habitat features because golf course runoff is directed into them for reuse via the irrigation system back onto the course. The entire golf course is designed to drain into

these ponds in storm events. Channels created within the River golf course also are not considered new additions to aquatic habitat as some replace irrigation diversions.

The Proposed Action would remove both the Victory Ranch and Fitzgerald bridges and their abutments and the area surrounding these bridges would be restored to a more natural channel form. During these activities, steel casings would be installed under the river at each of these locations to carry future sewer lines. Dwellings currently serviced by pit toilets in Lemon's Grove would be required to hook onto the sewer line to remove their potential adverse impacts to water quality.

The golf course and the riverside trail are designed to avoid areas expected to flood and to accommodate side channels and other water features as required by the restoration design. Boardwalks would be used on the fishing paths at wetlands and to cross channels to allow for unrestricted flood flows.

Increased runoff from the Victory Ranch Resort roads and structures would be mitigated by capturing storm water in detention areas to avoid adding to peak flows in natural drainages and to increase infiltration. A Water Quality Management Concept Plan has been developed for the project with specific guidelines for drainage facilities design criteria to convey and detain runoff and control erosion at the source (Sowby & Berg, 2001). To the extent possible, the detention areas would be designed to support vegetation to help trap sediment and cycle nutrients. Most of the structures and infrastructure are located outside of riparian areas and runoff would be directed through detention areas before entering riparian zones and natural channels.

### **3.15.2.3 Wetlands and Terrestrial Habitat**

The most significant environmental impacts to wetlands and terrestrial habitat are related to development of the River golf course. The clubhouse and as much of the course as possible (23% of the turf area) have been planned for the low bench above the river valley. The remainder of the course lies within 194 acres of the river valley. Approximately 70 acres (36% of the 194-acre area) would be turf. The other 64% would be natural vegetation.

Wetland impacts related to the Victory Ranch Resort development include River golf course impacts (1.66 acres of fill and 0.15 acre of wet meadow conversion to open water). Roads would impact 0.48 acres primarily for crossings of intermittent drainages. Total impacts are 2.29 acres. A 9-acre wet meadow complex would be constructed within the upper river valley to mitigate for the development impacts. Installation of water and sewer lines would temporarily impact 1.4 acres of wetlands. These would be restored to their former condition and subsurface utility trenches would periodically include clay barriers so they do not act as drains or subsurface water conduits.

A fishing access trail for resort patrons is proposed through the river valley. The alignment avoids the river banks, wetlands, floodways and forested areas to minimize

impacts to these features. The main trail would be constructed to accommodate travel by golf carts. It would generally be 6-foot wide, surfaced with gravel or road base and include boardwalk to allow flooding where crossing wetland or drainage features. Footpaths would run from the main trail to the river at selected locations. The number and spacing of footpaths is designed to minimize habitat impacts and to discourage foot traffic beyond designated paths (Map 8). Because pedestrians may leave the established trails, they have been located to avoid prime spotted frog habitat. If particularly sensitive areas are identified, woody and/or thorny vegetation may be added to discourage wandering.

Removal of riparian forest in the River golf course area would impact 10% of the riparian forest within the project area for the Proposed Action. However, the increase in habitat value/habitat units resulting from removal of livestock in the riparian area is predicted to more than compensate for this 10% loss of grazed forest. Consequently a substantial environmental gain is represented. Additionally, the river restoration plan has an extensive revegetation and reforestation component including adding species and age diversity to 63 acres of existing forest heavily impacted by grazing and by planting about 14 acres of new forest.

The removal of grazing and change in land use would produce certain tradeoffs related to wildlife populations. Forage and plant diversity would improve with the removal of approximately 2700 sheep and 350 cattle from the ranch while leaving approximately 5159 acres as open space. All livestock would be removed from the Provo River Valley and the mountainous parts of the resort except for up to 100 head of cattle confined in the 2703-acre Alpine open space area (the highest part of the resort). However, development of 644 acres and increased human activity would displace some species from localized areas. Utah Division of Wildlife Resources maps indicate most of the Victory Ranch Resort is summer range for deer, elk, moose and sage grouse. Winter range for moose is widespread and approximately 300 acres of deer winter habitat is mapped south of SR 32 of which more than half is proposed for development. However, most of the proposed development in deer winter range is low density home lots and a golf course. Overall, the net loss of range is estimated to be less than 5% of the areas mapped as critical habitat.

Upland habitat would be directly impacted and fragmented in development areas but with 83% open space, impacts to upland game are expected to be minimal. Throughout the ranch and particularly in the 2703-acre alpine open space area, wildlife habitat is expected to improve primarily because livestock grazing would be nearly eliminated, ORVs would not be allowed and hunting would not be allowed. The alpine open space area would be open to hiking, biking, camping (limited to 6 huts), cross country skiing and horseback riding. There would be confined within the alpine open space area up to 100 cattle which would have a minimal impact.

Victory Ranch would be actively operated as a resort which provides a unique opportunity for perpetual management plans and a level of control of human impacts which would not be

possible if the area were subjected to residential lot development with each lot under individual ownership. For example, ORVs or snowmobiles would not be allowed within the resort except as needed by resort staff for maintenance work.

The Propose Action (river restoration) and the development of the Victory Ranch Resort are interrelated. While the resort could fulfill its projected needs without river restoration, the river restoration would not occur except in conjunction with the resort project. Some impacts are predicted to be beneficial, most notably in regards to the river restoration effort, and cumulative adverse impacts would be minimal. Only minimal impacts have been identified to wetlands, potential spotted frog habitat and cultural resources. Although these impacts are minimal, mitigation is also proposed to further reduce the impact.

#### **3.15.2.4 Threatened and Endangered and State Sensitive Species**

In addition to the analyses conducted for the Proposed Action, as described in Section 3.5, surveys have been completed to locate populations of rare or endangered species (spotted frogs, boreal toads, sage grouse and Ute ladies'-tresses) throughout the Victory Ranch Resort development. The development layout avoids identified areas of occurrence and habitat well suited to these species.

**Spotted Frogs** – All spotted frog populations and most spotted frog habitat lies within the VR River Restoration area with the following exception. Two frog populations were identified near the River golf course and a wet meadow located between golf course features was reportedly occupied in the early 1990s but not since that time. The golf course has been designed to avoid these areas. The two known populations are approximately 600 feet from the nearest golf course features. The golf course grading and drainage plan has been designed to ensure there is no hydrologic connection to wetland complexes with spotted frogs. The area of historic use is in the center of the large wetland meadow within the golf course where no construction is proposed. Golf course fairways located on the fringes of the meadow are in seasonally saturated pasture having no standing water or vegetated shallows for frog habitat. The golf course grading and drainage plan protects this area from runoff originating on golf course features.

**Boreal Toads** – No evidence of boreal toads were found in the Victory Ranch Resort development area.

**Ute ladies'-tresses** were not found on the site, but quality natural wetland habitat was mapped and is largely avoided.

**Sage Grouse** - A reconnaissance of likely sage grouse winter range and strutting areas throughout the development site was conducted on May 1, 2001 by Grant Jense, Division of Wildlife Resources (DWR) and Harriet Whitson, Wise Earth. The reconnaissance was conducted by vehicle and on foot. A potential strutting area was identified on the west side of section 6 (Map 1) but only 6 droppings were found in the area. In the southwest quarter of section 7 there were 20 droppings counted and this area is considered active

winter range. Potential strutting areas were examined in upper Lady Long Hollow and the parallel drainage to the south, but no evidence of sage grouse use were found. Because they are considered potential strutting and brood habitat, these drainages were surveyed again on horseback on May 16, 2001. At that time 10 droppings were found, 2 in Lady Long Hollow near the proposed Lady Long Hollow golf course and 8 in the south drainage where no development is proposed. A few sage grouse were observed east of these drainages during a site tour in September, 2003. Other areas found to have evidence of sage grouse use, as well as most of the likely strutting and brood habitat, are outside of proposed construction areas. The high use wintering area in the southwest corner of section 7 is more than one-half mile from the nearest proposed structures. While sage grouse may also use other areas as well, habitat quality would benefit from removal of livestock and habitat quantity would be preserved because most of the Victory Ranch Resort is open space. Livestock grazing is considered a significant detriment to sage grouse habitat due to destruction of herbaceous vegetation important for forage (Beck, 1997).

#### **3.15.2.5 Cultural Resources**

A Class I and Class III cultural resources inventory and final report of Victory Ranch has been completed and sent to the SHPO for consultation and concurrence on the eligibility determinations recommended for the 41 sites recorded within Victory Ranch. An MOA is being executed and treatment plans stipulated to address mitigation procedures for present, changed, or future development designs in areas where significant cultural resource sites would be adversely impacted. Construction Standard Operating Procedures presented in Section 2.3.7 address protection of surface and subsurface inadvertent discoveries of cultural resources and human remains.

#### **3.15.2.6 Land Use Plans and Conflicts**

The Jordanelle Basin Land Use Plan requires a conditional use permit for any development with densities greater than 1 unit per 160 acres. The conditional use permit allows the county to impose conditions on development features. The Victory Ranch Resort requires a conditional use permit from both Wasatch and Summit Counties. This does not conflict with land use planning requirements.

#### **3.15.2.7 Recreation**

The Victory Ranch Resort creates recreation opportunities for resort visitors. New recreation opportunities would include increased fishing opportunities in the new side channel, golfing, horse riding, hiking, camping, cross country skiing, tennis etc. There would be no change to availability or quality of recreation opportunities for the public.

### **3.15.2.8 Transportation and Utilities**

A transportation plan developed for the Victory Ranch Resort estimates average daily traffic would increase by 3756 vehicles per day when the resort is fully operational. This additional traffic would not change the service ratings of US 40, SR 248 and SR 32. They would remain at the current level of service (Level A) which is the safest category. Construction transportation requirements for the Victory Ranch Resort project are estimated at 100 round trips per day. The installation of a bridge on the gravel road section of 1000 East Francis to cross the proposed side channel would require a gravel road detour to be constructed around the west end of the bridge during its construction which would not delay traffic.

Utilities in the project area include Utah Power & Light electrical lines that cross the Provo River at 1000 East, Francis. SOPs defined in Section 2.3.7 include a commitment to repair all roads and utilities if they are damaged by construction activities.

### **3.15.2.9 Health, Safety and Noise**

During the construction period warning signs and fences would limit public access to construction, staging and storage areas. The SOPs and construction procedures would minimize the risk of accidental injury to non-construction personnel. Resort construction likely would not significantly increase the risk of traffic accidents on public access roads based on traffic data indicating the added traffic would not change the road level of service which is at Level A (the safest category).

The contractor would be required to submit for approval a fire prevention and control plan. If the approved plan is properly implemented, the risk of wildland fire to workers and the public would not be considered a significant impact. Noise exposure during construction would be limited primarily to equipment. Noise SOPs require use of periodic checking of mufflers on all construction equipment and conformance with noise control measures in the Reclamation health and safety standards manual (USBR 2001) to protect workers from unsafe exposure. Public exposure to construction noise would not be an issue since the public would not have access to construction areas.

Current wildland fire risks in the upper ranch are somewhat high due to relatively dry conditions, grazing impacts selecting for woody shrubs, poor fire fighting access and poor control of ORV trespassing which introduces potential ignition sources to the area. The risk of wildland fires would decrease with restricted access by ORVs and increased accessibility to fight wildland fires. An increased human population would be in the area and risks to human health related to wildfires is mitigated by having two routes of vehicle egress, a culinary water system that provides fire hydrants and storage for fire fighting, and by building a fire station within the Victory Ranch Resort.

#### **3.15.2.10 Visual Resources**

The Victory Ranch Resort would include one golf course in the river valley that would be partially visible from SR 32 and the bluff above the north side of SR 32. This feature would be located primarily in existing meadow changing the view from pasture to managed turf intermixed with unmanaged meadow area. Some resort lodging units would also be visible from the bluffs. The resort would not impact views of ridgelines. The impacts affect less than ten percent of the resort area acreage.

#### **3.15.2.11 Socioeconomics**

The Victory Ranch Resort would employ approximately 300 people and provide recreation and recreation lodging to 1951 guests if at full capacity. Actual occupancy is estimated at 64 percent of full capacity (1250 guests). These guests are expected to contribute revenue to the local retail economy primarily for skiing, dining and shopping.

#### **3.15.2.12 Indian Trust Assets and Environmental Justice**

The Victory Ranch Resort is private land with a Reclamation easement for flooding, channel reconstruction or diking. Reclamation has consulted with the Northern Ute Tribe of the Uintah and Ouray Reservation regarding Indian Trust Asset concerns for the Proposed Action.

There are no low income or minority representatives located within the project area. During the scoping process, no issues were identified that would impact Indian trust assets or minority groups. No unacceptable cumulative impacts have been identified.

#### **3.15.2.13 Cumulative Impacts Summary**

Table 3-6 summarizes cumulative impacts of the Proposed Action and the Victory Ranch Resort. No unacceptable cumulative effects have been identified.

<b>Table 3-6 Cumulative Impacts of the Proposed Action and Victory Ranch Resort</b>			
<b>Resource</b>	<b>Changes from Existing Conditions</b>	<b>Impacts</b>	
		<b>PA</b>	<b>VR</b>
Water Resources	Water for pasture irrigation would change to golf course irrigation and restoration water features. Irrigation water rights would be transferred to rights for wells to provide culinary water. Total consumption would not change.		
Aquatic Resources & Wetlands	Provo river modifications new side channels and ponds are expected to improve aquatic habitat. Wetland acres - PA - 2.53 fill, 6.02 conv., 21.86 new wetland/water. VR - 2.14 fill, 0.15 conv., 9 new.	M	M
Terrestrial Habitat	Leaving the proposed action area in its natural state, along with removal of grazing is expected to improve riparian habitat. Grazing would be removed from the development land. Some habitat would be displaced by roads and structures (<20% of land area)	T	U
T&E and State Sensitive Species	The PA includes creating nearly 4 acres of spotted frog habitat and would impact about 2000 square feet of existing habitat. Where wet meadows are filled potential Ute-ladies'-tresses habitat would be lost but more acres of potential habitat would be created.	M	M
Cultural Resources	One house, some pens, a barn and two bridges would be removed. The most prominent feature (red barn) would be preserved in place, stabilized & rehabilitated. An MOA would outline procedures for unavoidable impacts of present and future development designs.	M	M
Land Use Plans	No conflict with existing land use plans		
Recreation	No changes to public access restrictions. Increased recreation opportunities for resort guests only.		
Transportation	Highway level of service remains optimal		
Health, Safety & Noise	Minimal effect during construction only	T	T
Visual Resources	Views of about 35% the VR development area would include golf courses and structures.	T	U
Socioeconomics	About 300 jobs would be created and 1250 visitors would be present most of the year.		
Indian Trust Assets	Consultation with the Northern Ute tribe is complete.		

PA Proposed Action

VR Victory Ranch

M Mitigated adverse impact

T Temporary adverse impact

U Unavoidable minimal adverse impact remains after mitigation

## **3.16 Unavoidable Adverse Impacts**

### **3.16.1 Introduction**

This section describes unavoidable adverse impacts that would occur under the Proposed Action. This includes temporary impacts, mitigated impacts and impacts that remain after mitigation. It is the unavoidable adverse impacts that remain after mitigation for which a determination is made as to whether these impacts are unacceptable or if a FONSI is appropriate.

During construction of the Proposed Action there would be temporary impacts to terrestrial habitat, noise levels, and visual resources. Mitigated impacts of the Proposed Action include; 1) loss of wetlands-mitigated for by creation of new wetlands, 2) loss of spotted frog habitat-mitigated for by protecting other existing habitat and creation of new habitat, and 3) removal of structures eligible for the NRHP-mitigated for by documentation of the structures and their history. When mitigation is taken into account, no remaining unacceptable adverse impacts have been identified.

## **3.17 Irreversible and Irretrievable Commitment of Resources**

This section describes the irreversible and irretrievable commitment of resources and the potential for conservation that would occur under the Proposed Action. Most of the materials used for the Proposed Action would be rock and recovered from demolition of dikes and channel excavations. Irretrievable resources include fuel for construction equipment and materials for new diversion structures.