

## **Chapter 3 Affected Environment and Environmental Consequences**

### **Logan Canyon Recreation Residence Permit Re-Issuance Environmental Assessment**

#### **General for all Resources**

Logan Canyon is well developed with 14 Forest Service campgrounds and picnic areas within the drainage. U.S. Highway 89, a National Scenic Byway, passes through the canyon. There are 12 recreation residence tracts that have a total of 84 permits. Eleven of these tracts are next to the Logan River. One, Beirdneau, is across the highway from the river and on a drier upland site, although it does have a small stream out of a spring just above the tract that passes through it.

Vegetation on south facing slopes consists mainly of mountain brush and juniper. North facing slopes are mainly coniferous. Along the Logan River one finds willows, birch, other riparian hardwoods, and a scattering of scrub maple, and juniper. Most recreation residence tracts have been altered to some extent with planted, watered, and mowed lawns.

Existing lots within the Logan Canyon tracts total about 37 acres which does not include roads or common spaces between cabin lots. There are about 3.24 miles of roads within the tracts. Over the years many lots and common areas between lots have been converted from natural vegetation to watered and mown blue grass.

The techniques and methodologies used in this analysis consider the best available science. The analysis includes a summary of the credible scientific evidence that is relevant to evaluating reasonably foreseeable impacts. The analysis also identifies methods used and references scientific sources relied on. When appropriate, the conclusions are based on the scientific analysis that shows a thorough review of relevant scientific information, a consideration of responsible opposing views, and the acknowledgment of incomplete or unavailable information.

**Table 3-1**

This table shows the actions considered in the cumulative effects disclosure for the Logan Canyon Summer Home Group tracts. In most cases past and present ongoing activities have resulted in the resource's existing condition description in Chapter 3.

<b>PAST ACTIONS</b>		
<b>Action</b>	<b>Description</b>	<b>Date</b>
Logan Canyon Highway Construction	Widening lanes, straightening curves, reducing elevation, creating pullouts, installing guard rails, and other safety enhancement measures.	1997 to 2006
Riparian Area Restoration and Improvements	Restoration of stream bank vegetation at: Four to five rock weirs placed on the outside meanders of Logan River at Guinavah-Malibu Picnic Area (a) and at Birch Glen Recreation Residence area (b). Stream bank scour on stream banks has been reduced.	a. late 1990's b. January 2007
Logan Highway Bridge Construction	Right Hand Fork, Stokes Nature Center, First Dam. Reconstruction of bridges and underpasses to enhance safety.	Completed 2006
Wildfires	Recent history of fire occurring on both sides of lower Logan Canyon, but not in the areas of recreation residences (typically riparian).	2000-2003
<b>PRESENT and ONGOING ACTIONS</b>		
<b>Action</b>	<b>Description</b>	<b>Date</b>
Fish Stocking In Logan River	Fish stocking of rainbow trout, brown trout, and brook trout. The Utah Division of Wildlife Resources has stopped stocking viable rainbow trout in waters that support BCT.	Ongoing
Maintenance of Power and Telephone transmission line ROW	Clearing of vegetation to avoid lines.	Ongoing
Road maintenance	Cleaning culverts, re-surfacing existing roads and parking lots, grading.	Ongoing
Recreation Use on roads and trails (winter and summer) as related to wildlife, fish, watershed, and vegetation	Hiking, biking, skiing, dog-walking, angling, photographing,	Ongoing
Weed Control	FS working in cooperation with Cache	Ongoing

	County Weed board to eradicate noxious weed spread in Logan Canyon corridor. Rec residents to refrain from non-native plantings.	
Fire Suppression	Active fire suppression in human-caused fires.	Ongoing
Operation and maintenance of First, Second, and Third Dams	Maintenance activities or water withdrawals conducted by Logan City at dam locations.	Ongoing
Grazing	Grazing by cattle on Logan Canyon allotment that is upland from one tract (Beirdneau)	Ongoing
Non-native aquatic species	Introduction of non-natives or exotic species	Ongoing
<b>REASONABLY FORESEEABLE ACTIONS</b>		
<b>Action</b>	<b>Description</b>	<b>Date</b>
Replacement of Logan City Waterline	North or South side of Highway (depending on NEPA analysis) from DeWitt Springs to 1 <sup>st</sup> dam	Project beginning summer 2007
Logan City Spring Development	Guinavah Area	Could begin in 2009.

**Table 3-1-A.** Actions not considered in the cumulative effects analysis and the Justification for Elimination from Consideration

<b>Action</b>	<b>Justification</b>
Private Land Developments, Right Hand Fork	No formal proposed action in place
Operation and maintenance of Logan City Waterline. DeWitt Springs to 1 <sup>st</sup> dam accessed via service vehicles to maintain line.	Negligible effect on water, wildlife & fish, TES plants, RHCAs, and spread of noxious weeds.
Operation and maintenance of Existing Diversions at Red Bridge.	Negligible effect on water, wildlife & fish, TES plants, RHCAs, and spread of noxious weeds.
Zanavoo Expansion, Proposal to build 3-story lodging facility.	No formal proposed action in place.
Hiking Trail Construction, First Dam to Stokes Nature Center.	No formal proposed action in place.

## 3.1 Wildlife

### 3.1.1 Affected Environment

#### General Wildlife

Big game. Logan Canyon is part of the Cache Hunt Unit and consists of mule deer, elk, and moose. The Utah Division of Wildlife Resources (UDWR), in general, considers all elevations below 7,000 feet in elevation to be big game winter range. In Logan Canyon south and south westerly facing slopes are usually clear of snow or have less snow when compared to the northerly facing slopes and the canyon bottom. It is on these south and south westerly facing slopes where big game will spend most of the winter if they are higher in the canyon. All recreational residence tracts are below the 7,000 foot elevation, but those right along the river are adjacent to the north facing slopes and hold enough snow that they receive minimal use. Beirdneau is on the north side of the highway on the south facing slope. It is low on the slope with the potential to hold more snow than it would if higher on the slope but still will provide habitat for big game longer into the winter and earlier in the spring.

The UDWR's deer herd objective for the Cache Unit is 25,000 with the 2004 post-season estimate of 13,700 (UDWR, 1998). The low population numbers have been attributed to many factors including loss of low elevation winter range, road kill, and predators. The elk herd objective is 2,300, with a 2004 post-season population estimate of 2,030 (UDWR, 1998b). There is no population objective or estimate for moose, but moose have a much larger winter range because they tolerate much deeper snow than deer or elk.

Fifty two per cent (258,454 acres) of deer summer range and 18% (52,258 acres) of deer winter range in the Cache Unit are on National Forest System lands. For elk, 54% (232,746 acres) of summer range and 28% (97,108 acres) of winter range are on the Wasatch-Cache National Forest.

Small game. Small game in Logan Canyon consists of blue grouse, ruffed grouse, and snowshoe hare. Where waterfowl does not actually fall into the small game category they are recognized here for convenience. Waterfowl use areas along the Logan River where the currents are slow and in the reservoirs formed by second and third dams. The other small game species use uplands where appropriate habitat is present

Small mammals. There are many species of small mammals in Logan Canyon including squirrels, chipmunks, skunk, porcupine, raccoon, marmots, and mink (a mink was observed on the bridge entering Card Summer Home area on October 17, 2005).

These small mammals have the capacity to hide and for the most part go undetected. Out buildings and woodpiles around summer homes create habitat for many of them.

Neo-tropical migrants.

There are many species of migratory birds that spend the summer breeding period in habitats provided in Logan Canyon. Partners in Flight (PIF) species of concern and the U.S. Fish and Wildlife Service (FWS) birds of conservation concern lists contain the following species in Table WL-1 for the Utah Overthrust Mountain Section that includes Logan Canyon:

Table 1-Wildlife. Bird species of Concern That May be Present in the Utah Overthrust Mountain Section (from PIF and FWS lists).

Species <sup>A</sup>	Primary Breeding Habitat	Secondary Breeding Habitat	Winter Habitat <sup>B</sup>	Nests
Black-throated gray warbler *	Pinyon-Juniper	Mountain Shrub	Migrant	Trees
Brewer's sparrow *	Shrubsteppe	High Desert Shrub	Migrant	Sage
<b>Broad-tailed hummingbird</b>	Lowland Riparian	Mountain Riparian	Migrant	Trees
Gray Viero *	Pinyon-Juniper	Northern Oak	Migrant	Shrubs
Virginia's warbler *	Northern Oak	Pinyon-Juniper	Migrant	Ground
Williamson's sapsucker	Sub-Alpine Conifer	Aspen	Migrant	Trees
Yellow-billed cuckoo *	Lowland Riparian	Agriculture	Migrant	Trees/ Willows
Lewis' Woodpecker *	Ponderosa Pine	Lowland Riparian	Northern Oak	Trees
<b>Loggerhead shrike</b>	High Desert Scrub	Pinyon-Juniper	High Desert Scrub	Trees
Pinyon Jay	Pinyon-Juniper	Ponderosa Pine	Pinyon Juniper	Trees
<b>Red-naped sapsucker</b>	Aspen	Mixed Conifer	Mountain Riparian	Trees
Sage sparrow *	Shrubsteppe	High Desert Scrub	Low Desert Scrub	Sage/ Ground
Three-toed woodpecker	Sub-Alpine Conifer	Lodgepole Pine	Sub-Alpine Conifer	Trees

<sup>A</sup> Bold type = PIF list.  
 Regular type = BCC list.  
 \* = both lists.

<sup>B</sup> Some species are not migratory but are listed because they are on the PIF and/or BCC lists.

In general, tree-nesting birds have not been affected by the presence of recreational residence tracts. Some larger trees have been removed but most are desired by permittees for shade and aesthetics. Species that depend on sagebrush, willows, other shrubs, and the ground for foraging or nesting may have been affected with the removal of these types of vegetation when grass was planted.

**Management Indicator Species (terrestrial)**

Terrestrial management indicator species (MIS) identified in the Forest Plan Final Environmental Impact Statement, Appendix J, are beaver, goshawk, and snowshoe hare. MIS are monitored and evaluated on a Forest-wide basis and not by individual projects. As data is collected on the species, an annual report is issued by the Forest that gives

protocols for the monitoring and results of the previous years monitoring. This report comes out in February or March each year (Wasatch-Cache National Forest. 2006).

**Beaver.** While baseline information is being collected, there is Utah Division of Wildlife Resource (UDWR) information to aid in the assessment of historical beaver trends for the Forest. The 1979-80 and 1998-1999 Furbearer Harvest Reports ((Proven, 1980, and Wolfe, 1999 respectively) and the 1971-1982 Beaver Distribution, Habitat and Population Survey (Blackwell, 1993) provide relevant information on beaver. The 1979-80 Harvest and 1971-82 Survey Reports display beaver estimations by “units” while the 1998-1999 Harvest Report considers regions (Great Basin, Rocky Mtn., Uintah Basin, and Colorado Plateau). The Survey restates the trend from the 79-80’ Report.

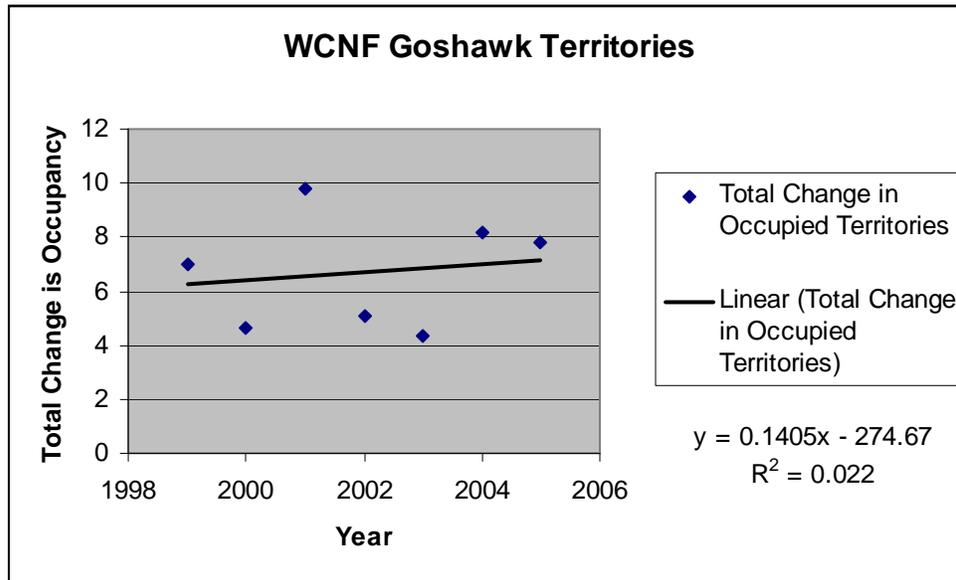
There are 13 trapping units that include some National Forest System lands administered by the Wasatch-Cache National Forest. UDWR beaver units include all land ownerships. In the UDWR’s 1993 document three units were determined to be increasing and 9 units were determined to be static.

With the exception of a few specific locations, Forest Service management of suitable beaver habitat within National Forest boundaries has not changed significantly from 1980 to the present. Therefore, until Forest Service monitoring yields data for population trend, it is assumed that the determinations made in the State of Utah Survey Report remain valid.

Beaver monitoring is accomplished on the Forest by monitoring random sections (1 square mile) across the Forest. None of these sections fall in areas along the Logan River where summer home tracts are present. In areas where the tracts are the river size and proximity to U.S Highway 89 greatly decrease beaver habitat. In visits to the tracts there is some evidence of beaver but nothing in the recent past.

**Goshawk.** Figure WL-1 shows the territory occupancy across the Forest from 1999 to 2004 (adjusted to 1999 occupied territories, based on the difference in numbers of territories monitored). The baseline used was the 1999 territory occupancy of 7 known occupied territories. Adjusting to the 1999 occupied territories there has been a high in 2001 of 9.76 occupied territories and a low of 4.33 in 2003. These differences in years are not statistically significant, showing a static trend in the goshawk population Forest-wide.

Figure 1-Wildlife. Total change in occupied territories on the WCNF, 1999-2005.



The monitoring plan calls for the monitoring of 50% of the goshawk territories on the Forest annually. At the present time this totals 25 territories. There have been no goshawk territories identified in the portion of Logan Canyon where recreational residence tracts are located although many tracts are adjacent to suitable habitat and some contain suitable habitat.

**Snowshoe Hare.** Snowshoe hare monitoring for the Forest Plan is divided into two populations (Uinta Mountains and Bear River/Wasatch Range) because of natural barriers that keep the populations from intermixing. Monitoring grids (5 transects with 10 points in each transect) were established in vegetation types that support snowshoe hare across the Bear River/Wasatch Range in 2003. From 2003 – 2005 hare numbers increased while there was a decrease in 2006. It is too early to tell if this decrease is part of a normal snowshoe hare cycle or not. Annual surveys will continue and evaluation of the data will take place at an appropriate time.

Recreational residence tracts do have snowshoe hare habitat, although none of the monitoring grids are located in the tracts. Snowshoes will use woodpiles, under porches and such as hiding cover, but there is no indication of decreases or increases within the tracts. With the length of time the tracts have been in place it is assumed that equilibrium has been reached.

### **Endangered, Threatened, and Sensitive Species (terrestrial species)**

The U.S. Fish and Wildlife Service (FWS) Utah Field Office releases their list, "Federally Listed and Proposed (P) Endangered (E), Threatened (T), and Candidate (C) Species and Habitat in Utah by County" (FWS, 2006) on a periodic basis. Species listed as occurring or having habitat in Cache County are the bald eagle (*Haliaeetus leucocelphalus*), western yellow-billed cuckoo (*Coccyzus americanus*) and the Canada

lynx (*Lynx Canadensis*). These are shown on Table WL-2 with the indication of whether they have habitat in or adjacent to the recreational residence tracts. Statements about each species follow the table.

Table 2-Wildlife. Federally listed and candidate species from Cache County, Utah.

Species/ (Status)	Scientific Name	Habitat in Logan Canyon
Bald Eagle (T)	<i>Haliaeetus leucoelphalus</i>	Yes
Canada lynx (T)	<i>Lynx canadensis</i>	Yes
Yellow-billed cuckoo (C)	<i>Coccyzus americanus</i>	Yes

Forest Service sensitive species are those species identified by the Regional Forester as “[species] for which population viability is a concern as evidenced by ... significant current or predicted downward trends in population numbers or density... or significant or predicted downward trends in habitat capability that would reduce a species existing distribution” (FSM 2670.5). Forest Service sensitive terrestrial species for the Wasatch-Cache National Forest are on Table WL-3. Species that have habitat in or very near recreational residence tracts are discussed below the table. They include the Townsend’s big-eared bat (*Corynorhinus townsendii*), great gray owl (*Strix nebulosa*), Northern goshawk (*Accipiter gentilis*), and Northern three-toed woodpecker (*Picoides tridactylus*).

Table 3-Wildlife. Habitat Presence for Endangered, Threatened, and Sensitive Species in Recreational Residence Tracts in Logan Canyon

Track/District	Bald Eagle	Y-b Cuckoo	Lynx		Spotted Bat	Wolverine	Big-eared Bat	Boreal Owl	Flam. Owl	Great Gray	Goshawk	Peregrine	3-toed	Sharp-tail	Sage Grouse	Pygmy Rabbit
Status	T	C	T		S	S	S	S	S	S	S	S	S	S	S	S
Beirdneau, D-7	N	N	N		N	N	N	N	N	N	N	N	N	N	N	N
Birch Glen, D-7	Y	Y	N		N	N	N	N	N	Y	Y	N	Y	N	N	N
Brachipod, D-7	Y	Y	N		N	N	Y	N	N	Y	Y	N	Y	N	N	N
Brown’s Rolloff, D-7	Y	Y	N		N	N	N	N	N	Y	Y	N	Y	N	N	N
Chokecherry, D-7	Y	Y	N		N	N	N	N	N	Y	Y	N	Y	N	N	N
Gus Lind, D-7	Y	Y	N		N	N	N	N	N	Y	Y	N	Y	N	N	N
Hailstone, D-7	Y	Y	N		N	N	N	N	N	Y	Y	N	Y	N	N	N
Juniper, D-7	Y	Y	N		N	N	N	N	N	Y	Y	N	Y	N	N	N
Lower Card, D-7	Y	Y	N		N	N	N	N	N	Y	Y	N	Y	N	N	N
Pine Bluffs,	Y	Y	N		N	N	N	N	N	Y	Y	N	Y	N	N	N

D-7																
Upper Card, D-7	Y	Y	N		N	N	N	N	N	Y	Y	N	Y	N	N	N
Valhalla, D-7	Y	Y	N		N	N	N	N	N	Y	Y	N	Y	N	N	N

Status:

- E – Endangered
- T – Threatened
- C – Candidate
- S – Sensitive

**Bald eagle.** Except for 8 nesting pairs of bald eagles, none of which are on the Wasatch-Cache National Forest, bald eagles are considered winter visitants in Utah (FWS, 2006). Although roost trees and open water for foraging is present in the Logan Canyon, the area receives only incidental use with the most activity along the Little Bear River west of the Forest in Cache Valley. Continuation of the recreational residence tracts would have no effect on bald eagles.

**Yellow-billed cuckoo.** Utah is on the outer edge of the range for yellow-billed cuckoos. The Bear River Range along with the Wasatch Range and the Uinta Mountains are an island of habitat occasionally used by the species. All reports in Cache County are from areas below the Forest boundary although all recreational residence tracts are within their elevational range. Willows and other shrubby vegetation that has been removed and replaced with blue grass within these tracts have reduced the amount of habitat for the cuckoo. Continuation of these tracts will have no effect on the yellow-billed cuckoo.

**Canada lynx.** Logan Canyon cuts across the north / south running Bear River Range that creates the important wildlife corridor connecting the Wasatch and Uinta Mountain Ranges with other ranges in Idaho and Wyoming. In recent years one known lynx that left Colorado where it had been transplanted used this corridor to make its trip back towards Canada where it was captured. The most suitable lynx habitat with the best connectivity is higher in the canyon above the recreation residence tracts. In the area where the tracts are located, lynx habitat is generally located on the north facing slopes where mature conifer stands are located. The south facing slopes are drier and consist mostly of pinyon-juniper stands and grasses. Where it is possible for a lynx to traverse this section of canyon the route does not contain the most suitable habitat. The Federal Register of Thursday, July 3, 2003, in the FWS “Remanded Determination of Status for the Contiguous United States Population Segment of the Canada Lynx; Clarification of Findings; Final Rule,” it states, “...There is no evidence of lynx reproduction in Utah. We conclude that lynx that occur in Utah are dispersers rather than residents...” The proposal to continue recreation residents tracts in Logan Canyon will have no effect on lynx.

**Townsend’s big-eared bat.** There is a known population of big-eared bats in Logan Cave just above the highest of the recreation resident tracts. These bats forage along the Logan River. The continued existence of the tracts will have no impact on the big-eared bats that have existed with the tracts for decades.

**Great horned owls.** Great horned owl habitat is present in the coniferous stands south and east of the recreation resident tracts. The continued existence of the tracts will have no impact on the owls that may have existed with the tracts for decades.

**Northern goshawk.** Goshawk habitat is present in the coniferous stands south and east of the recreation resident tracts and extends into portions of some of the tracts. The continued existence of the tracts will have no impact on the goshawks (see MIS) that may have existed with the tracts for decades.

**Northern three-toed woodpeckers.** Three-toed habitat is present in the coniferous stands south and east of the recreation resident tracts with some use possible in some of the tracts.. The continued existence of the tracts will have no impact on the woodpeckers that may have existed with the tracts for decades.

### **3.1.2 Environmental Consequences**

Based on public scoping and Interdisciplinary Team discussions, the following issue was identified as relevant to this analysis for Wildlife Resources:

***Issue:** How will continued recreation residence use affect wildlife, including threatened, endangered, and Forest Service sensitive species? What will be the impact to migratory bird species and Forest Service management indicator species?*

Under both alternatives, because of the small amount of acreage involved, there would be no change in big game, small game, small mammals, and neo-tropical migrants. Distribution and movements might be affected to a degree but overall there will be no noticeable change. Trends on management indicator species across the forest would not be affected, nor would they be affected at the project level. There would be no effect on endangered, threatened, or candidate species and no impact on Forest Service sensitive species.

#### **No Action Alternative**

Under the “no action” alternative recreation residences, out buildings, roads, bridges and other improvements would be removed. Disturbed areas would be revegetated with native species or return to native species through natural succession. The tract areas would provide more security for wildlife species and would tend to be used by a more diverse array of species. This would be especially true if the areas were managed for properly functioning condition with a pattern of vegetation and age classes that would fall into historic landscape patterns. Use patterns would simulate what is presently found further away from the tracts and other developments in Logan Canyon.

## **Proposed Action Alternative**

Under the “action” alternative of reissuing permits to residences, out buildings, roads, bridges and many other improvements would remain. In discussing terrestrial wildlife and the impacts of recreation residence tracts it must be remembered that these tracts have been in place for several decades. As such, impacts on wildlife occurred long ago when cabins and roads were first built. Wildlife species have long since grown accustomed to the development or left the area. Salt blocks, feeders, and other activities will tend to attract some wildlife species that might avoid the area more without such attractants but in general what is present now would remain. Following the recreation residence guide would keep natural vegetation in place to benefit the most diverse array of species possible. This vegetation would continue to favor species that prefer and use older age classes of vegetation.

### **3.1.3 Cumulative Effects**

Cumulative effects on wildlife are centered on wildfires and human activities such as developed recreation sites, roads and road use, maintenance of power and telephone lines and right-of-ways, maintenance and replacement of water lines.

In general, wildfires are beneficial to wildlife. In setting back natural succession the area would move towards properly functioning condition with diverse age classes of vegetation that would provide habitat for the greatest number of species.

Roads might be expanded to a degree on private land but little or no expansion will occur on National Forest lands. Road use will increase as the population in northern Utah increases. This will increase the possibilities of more automobile wildlife collisions. It will also reduce habitat effectiveness for some species that tend to naturally avoid roads.

Replacement and maintenance of waterlines and power lines are short-term disturbances that may displace wildlife.

If recreational residences were continued in Logan Canyon, wildlife use patterns would continue as they have for the past several decades. Decreases in wildlife populations would be due to increased use in the canyon due to population increases and not in the static recreational residence tracts or cabins. If the residences were to be discontinued wildlife use patterns would change and the areas occupied by the tracts might be used more but an increase in wildlife numbers would most likely not be detectable.

## **3.2 Aquatic Resources**

### **3.2.1 Affected Environment**

The project area includes the Recreation Residence Tracts of the Logan District (Table 1). These are all located along the Logan River on the Wasatch-Cache National Forest, Cache County, Utah.

**Table 1-Aquatics.** Recreational tracts on the Logan District, Cache County Utah, going from the most downstream tract (west) going up canyon or east. Management prescriptions, from the Forest Plan (Wasatch-Cache National Forest 2003), are also identified by tract.

Tract	Number of homes/lots	Management Prescription <sup>(1)</sup>	Riparian Habitat Conservation Area Category <sup>(1)</sup>
Gus Lind	6	2.5	1
Beirdneau	10	2.5	2
Valhalla	3	2.5	1, 2
Birch Glen	25	2.5	1, 2, 3
Browns Roll Off	12	2.5	1, 3
Lower Card	6	2.5, 2.7, 3.1A	1, 2
Upper Card	7	2.5, 2.7, 3.1A	1, 2, 3
Pine Bluff	4	2.5, 2.7, 3.1A	1
Chokecherry	13	2.5, 2.7, 3.1A	1
Saint Anns	4	2.5, 2.7, 3.1A	1
Hailstone	1	2.5, 3.1A	1
Brachiopod	6	2.5, 3.1A	1, 2

(1) As defined in the Wasatch-Cache National Forest Plan (Wasatch-Cache National Forest 2003).

### Analysis Area

The Analysis area includes the lower Logan River and the Cottonwood Hydrologic Units (HUC) on the Logan District of the Wasatch-Cache National Forest, Cache County Utah (Table 2). This analysis was limited to these two HUCs because the impacts from recreational residences are only found within these two lower Logan River HUCs.

The Logan River HUC goes from the dam at First Dam upstream to Right Hand Fork of the Logan. It includes the perennial flows of Spring Creek, the unnamed tributary out of Beirdneau Hollow and the intermittent flows from Card Canyon.

The Cottonwood HUC goes from Right Hand Fork up to Temple Fork. Only Brachiopod Recreation Residences Tract is within this reach. Only the perennial flows of Chicken Creek and unnamed tributary of Wood Camp Hollow and the intermittent flow from and Cottonwood Creek enter the main river through this reach. The stream from Logan Cave also enters the main Logan River in this HUC.

A number of impacts that have occurred have the potential to be corrected with the proposed permit renewal. These impacts have included but are not limited to vegetation conversions, sediment runoff, compaction, potential water contamination and

nitrification, instream habitat modification, trash dumping, alteration of flood flows and drainage patterns, loss of large woody debris, loss of bank stability and riparian habitat, and water withdrawals. Evidence of these past impacts can be seen in some of the tracts.

The conversion of vegetation immediately adjacent to the Logan River and its tributaries reduces terrestrial and aquatic habitats. Overhanging vegetation is replaced with low grasses that provide little or no shade or cover for aquatic and semi-aquatic species. This reduces hiding cover for fish, hatching structure for aquatic insects and nesting cover for birds. The loss of vegetative cover through the construction of the roads and cabins or the disposal of cabin debris directly on the vegetation reduces shade or cover for aquatic and semi-aquatic species. Hiding cover for fish, hatching structure for aquatic insects, and nesting cover for birds is also reduced.

Some sediment runoff occurs from access roads, particularly those that run parallel to the Logan River and from sandbags placed along the Logan River to protect property during spring runoff. In some instances, sand bags, initially installed to provide bank protection during high flows, have been left along the stream banks, sometimes rotting away and allowing sand to go directly into the stream channel. Increased fines can smother spawned eggs and reduce habitat for young fish and aquatic insects.

Increased use of the land around the recreational residences often increases compaction. This in turn leads to less water filtration and more overland runoff and instream siltation.

Residential use in locations near streams increases the risk of introducing contaminants into the water and damaging aquatic life, ranging from elevated nutrient levels to toxic contamination from chemicals.

With increased long-term access to the stream, the desire for people to play in the Logan River and its tributaries has occurred. This has led to the construction of a few small rock weirs seen adjacent to the recreational tracts and other recreational facilities. These weirs can create habitat for small fish and at the same time they can increase water temperatures when flows are low, affecting fish and aquatic insect habitat. Some of the natural drainage patterns in the tracts have been altered as cabin owners try to protect their investment in the cabin and the use of the lot. Ditches have been constructed and channels bermed to alter water flows. This reduces filtration and potentially alters natural vegetation.

Many trees were cut in the tracts as they were initially developed. Over the years additional trees have been removed and cut up as power line right-of-ways are cleared, hazard trees removed, and fuel wood collected. Local governments and utility operators have also removed in-channel wood in an effort to reduce hazardous situations as logs could become wedged under bridges or in water diversion structures or affect erosions along roadways. The removal of trees either before or after they would have naturally fallen into Logan River (had not the recreation residences existed) has had a direct impact on aquatic species and their habitat. It also has an indirect impact as the micro-sites for new trees are eliminated and the riparian habitat is altered.

Bank stability in the flood plain is also impacted as some of the vegetation is lost along the stream and the bank strength is lost. This creates impacts to the aquatic habitat in loss of overhanging vegetation and increased siltation as described above. Cabin owners are also impacted as the rivers push closer to their cabins. Most stream banks within recreational residence tracts are stable but some native vegetation has been lost or impacted from activities within the tract. With the development of the recreational residence tracts over the last 100 years, some homeowners have desired to have lawns and watered vegetation. To provide water for these amenities, pumps have occasionally been used to pull water directly from the stream channel to run sprinkling systems.

**Table 1 in Chapter 2 (Mitigation) portrays in tabular format the allowable actions permitted in riparian habitat conservation areas (RHCA's) where recreation residences exist.**

### **3.2.2 Environmental Consequences**

This section presents the effects of recreation residence management on the following issue:

*Issue: What will be the effect of continued recreation residence use on aquatic life, including threatened, endangered, and Forest Service sensitive species, such as the Bonneville Cutthroat trout? As a component of the aquatic ecosystem, how will continued summer home use affect Riparian Habitat Conservation Areas?*

#### **No Action Alternative**

If the summer home tracts were removed and the RHCA was restored to the natural vegetation, the impact in the Lower Logan River HU would drop to 2.41% of the Lower Logan River HU (Table 3), which is less than half of the current impact in the area of 5.1% (Table 5). Impacts would decrease in the Cottonwood RHCA by 0.02%.

In Cottonwood HU the removal of the recreational residence would drop about 0.2% (Table 3) of the RHCA being impacted to 0.50% being impacted (Table 3).

#### **Proposed Action Alternative**

No ground-disturbing improvements are proposed in this permit renewal process. Any ground disturbing actions on tracts and lots will require additional separate NEPA analysis. Non ground-disturbing activities for recreation residence lots generally do not require additional NEPA, but require approval and must follow the Wasatch-Cache Recreation Residence Administrative Guide. No new lots or tracts will be authorized in Logan Canyon.

As the permits are reissued, 0.2 square miles or 2.6% of the area within 300 feet of the Logan River will continue to be impacted in the Lower Logan Canyon Hydrologic Unit

(Table 2). In the Cottonwood Hydrologic Unit, 0.01 square miles or 0.2% will continue to be impacted (Table 2).

**Table 2-Aquatics.** The hydrologic units and codes (HUC), the square miles of National Forest Lands and the area within 300 feet of the stream, the area of impact and percent of impact to the riparian habitat conservation area (RHCA) in each HUC.

Hydrologic Unit (HU)	HUC Number (Forest Plan <sup>(1)</sup> FEIS HUC).	Forest Service Lands within the HUC (miles) <sup>2</sup>	Area within 300 feet of live water within the HUC (miles) <sup>2</sup>	Area within a recreational residence tract within 300 feet of a stream (miles) <sup>2</sup>	Area within 300 feet of a stream within a recreational residence tract (%)
Lower Logan Canyon	160102030107 (160102030307)	25.9 (16,600 ac)	6.1 (3,900 ac)	0.2 (128 ac)	2.6% (3%)
Cottonwood	160102030106 (160102030306)	24.8 (15,800 ac)	6.1 (3,900 ac)	0.01 (6 ac)	0.2% (0.2%)

Appendix B, FEIS Wasatch-Cache National Forest (2003).

As best management practices are implemented and active restoration occurs, the conversion of grass to more natural vegetation would occur. Cabin debris that has been identified on the lot would be removed per compliance inspections.

Again, as part of the implementation of best management practices, sandbags will only be allowed no greater than two feet from the cabins and outbuildings and must be removed by July 15 of each year. Fire rings, picnic tables, and outbuildings would be moved within closer proximity to the main cabin as they are replaced. Existing outhouses will be replaced with sealed vaults. Impacts are expected to continue immediately around cabins but should be reduced overall as most areas within 25 feet of the Logan River and its tributaries revert back to natural vegetation (see Table 1 in Chapter 2).

The use of fertilizers and other chemicals are no longer allowed except to restore native vegetation. Watering of lots would not be allowed. All outside pumps will be required to be removed from the tracts. Drainage alterations would be corrected in the future in order to meet riparian management objectives. This may reduce the existing impacts and allow for restoration of the RHCAs.

As forest plan standards are implemented, the impact from the removal of trees and other large wood would decrease. Bank stability and riparian habitat conditions would increase as best management practices are implemented to meet the riparian management objectives and riparian vegetation is restored in areas that have unstable banks.

### 3.2.3 Cumulative Effects

The cumulative effects to aquatic resources are described below.

#### No Action Alternative

Other activities would continue to impact the RHCA and instream habitat and species in the Lower Logan Canyon and Cottonwood hydrologic units. These include existing roads and trails, developed sites (campgrounds), dispersed camping and two dams (see Table 3–1).

Roads and trails impact approximately 0.6% (Table 3-Aquatics) and 0.4% of the RHCA in the Logan Canyon and Cottonwood hydrologic units, respectively (Table 5-Aquatics). The impacts from the roads and trails include loss of stream shading as vegetation is cleared, increased runoff from compacted soils, and loss of in-channel habitat as large hazard trees are removed.

Developed uses (campgrounds and picnic areas) are estimated to impact an additional 1.8% and 0.1% of the RHCA in the Lower Logan Canyon and Cottonwood hydrologic units respectively (Table 3– Aquatics). These impacts include loss of stream shading as vegetation is cleared, increased runoff from compacted soils, and loss of in-channel habitat as large hazard trees are removed and used for fuelwood.

In all, 2.41% and 0.5% of the RHCA could be impacted by land management activities in the Lower Logan Canyon and Cottonwood hydrologic units respectively (Table 5-Aquatics). A more detailed discussion of these impacts can be found in Meehan (1991).

**Table 3-Aquatics.** Area within 300 feet of the stream and the percent impacted by recreational residence tracts, roads and trails, and developed uses (campgrounds) within the Lower Logan Canyon and Cottonwood HUC. Table reflects the elimination of the recreational residences and their associated facilities.

Hydrologic Unit (Hu)	Area Within 300 Feet of Live Water Within The HUC (Miles) <sup>2</sup>	Area Within 300 Feet of A Stream if Recreational Residence Tracts were Eliminated (%)	Area Within 300 Feet of Live Water Impacted by Roads and Trails (%) <sup>(1)</sup>	Area Within 300 Feet of Live Water Impacted by Developed Use (%)	Total Percent of Area Within 300 Feet of Live Water Impacted. (%)
Lower Logan Canyon	6.1	0.00%	0.61%	1.80%	2.41%
Cottonwood	6.1	0.00%	0.40%	0.10%	0.50%

(1) This only includes forest roads. It does not include Highway 89 up Logan Canyon. Appendix B, FEIS Wasatch-Cache National Forest (2003).

Another land management activity that could affect stream channels and fish habitat is livestock grazing (Table 4-Aquatics). Factors that affect impacts from grazing can vary greatly between allotments, type of livestock grazed, water availability, fencing, herding, etc. Based on numbers of livestock per mile of accessible water, it is anticipated that Cottonwood HUC would have more impacts to it than Lower Logan Canyon. Most of these impacts are occurring higher in the drainages than where summer homes are located. There is a minor overlap between the Logan Canyon cattle allotment and the Brachiopod recreation residence tract.

**Table 4-Aquatics.** Other impacts occurring within the hydrologic units including the presence of non-native fish and grazing per mile of accessible water.

Hydrologic Unit (HU)	Non-Native aquatic species	Water accessible length within cattle and sheep grazing capable lands (miles)
Lower Logan Canyon	rainbow trout brown trout New Zealand mudsnail <i>Myxosoma cerebralis</i> (whirling disease etiological agent)	0.2
Cottonwood	rainbow trout brown trout <i>Myxosoma cerebralis</i> (whirling disease etiological agent)	0.2

In the Lower Logan River, the cutthroat trout population is divided into three sections by Second Dam and Third Dam. Fish below the Second Dam are impacted as available habitat is reduced by the water withdrawals at that dam. Water is diverted into an irrigation canal and the stream flow is reduced. Upstream migration, which prevents genetic exchange within the species, is eliminated by the presence of these two dams.

Other factors that impact the cutthroat trout include exotic fish (brown and rainbow trout), and *Myxosoma cerebralis*, an exotic parasite that causes whirling disease. Impacts from these exotic species can cause direct mortality or merely reduced the physical condition of the species.

If recreational residences were removed and the other identified impacts continued, it is anticipated that the Logan River and its tributaries will continue to be inhabitable for fish and other aquatic species. Dispersed use may increase in the areas currently occupied by the recreational residences. The impacts from dispersed use may or may not be greater than those currently occurring.

**Cumulative Effects**

**Proposed Action Alternative**

Other activities are also impacting the RHCA and instream habitat and species in the Lower Logan Canyon and Cottonwood hydrologic units. These include existing roads and trails, developed sites (campgrounds), dispersed camping and two dams (Table 5–Aquatics).

Roads and trails impact approximately 0.7% and 0.4% of the RHCA in the Logan Canyon and Cottonwood hydrologic units, respectively (Table 5-Aquatics). The impacts

from the roads and trails include loss of stream shading as vegetation is cleared, increased runoff from compacted soils, and loss of in-channel habitat as large hazard trees are removed.

Developed uses (campgrounds and picnic areas) are estimated to impact an additional 1.8% and 0.1% of the RHCA in the Lower Logan Canyon and Cottonwood hydrologic units respectively (Table 5– Aquatics). These impacts include loss of stream shading as vegetation is cleared, increased runoff from compacted soils, and loss of in-channel habitat as large hazard trees are removed and used for fuelwood.

In all, 5.1% and 0.7% of the RHCA could be impacted by land management activities in the Lower Logan Canyon and Cottonwood hydrologic units respectively (Table 5- Aquatics). A more detailed discussion of these impacts can be found in Meehan (1991).

**Table 5-Aquatics.** The area within 300 feet of the stream and the percent impacted by recreational residence tracts, roads, and trails and developed uses (campgrounds) within the Lower Logan Canyon and Cottonwood HUC.

Hydrologic Unit (Hu)	Area Within 300 Feet of Live Water Within The Huc (Miles) <sup>2</sup>	Area Within 300 Feet of A Stream Within A Recreational Residence Tracts (%)	Area Within 300 Feet of Live Water Impacted by Roads and Trails (%) <sup>(1)</sup>	Area Within 300 Feet of Live Water Impacted by Developed Use (%)	Total Percent of Area Within 300 Feet of Live Water Impacted. (%)
Lower Logan Canyon	6.1	2.6%	0.7%	1.8%	5.1%
Cottonwood	6.1	0.2%	0.4%	0.1%	0.7%

(1) This only includes forest roads. It does not include Highway 89 up Logan Canyon. Appendix B, FEIS Wasatch-Cache National Forest (2003).

If recreational residences and the other identified impacts continue, the Logan River and its tributaries would continue to be inhabitable for fish and other aquatic species. The overall habitat would improve as the 2003 Forest Plan and the Administrative Guide for Recreational Residences are implemented.

### 3.3 Vegetation

#### 3.3.1 Affected Environment

The project area includes the Recreation Residence Tracts of the Logan District. Most of these are located along the Logan River on the Wasatch-Cache National Forest, with the exception of Beirdneau, which is located along a tributary to the Logan River.

The typical habitat in the recreation residence tracts consists of primarily deciduous trees, mixed mountain shrub (snowberry, currant, mountain lover) and some sagebrush. Several willows occur along the riverbanks. Some tracts contain populations of juniper.

There is a good mix of tall forbs in the area as well. Conifers are rare in these lower elevation tracts.

TES Species

Seven TES plants have known occurrences in Logan Canyon and have potential habitat in or around the recreation residences (see table below for a list of these species).

Table 1-Vegetation

Sensitive	Recommended Sensitive
<i>Draba maguirei</i>	<i>Angelica wheeleri</i>
<i>Erigeron cronquistii</i>	<i>Arabis glabra</i> var.furcatipilis
* <i>Eriogonum brevicaulle</i> var. <i>loganum</i>	
<i>Penstemon compactus</i>	
<b>Threatened</b>	
<i>Primula maguirei</i>	

Primary issue/indicators for rare plants would be the presence of rare plants or rare plant habitat within the analysis areas. Tracts were surveyed in June 2006 for TES species. No individuals or populations were found and very little potential habitat exists.

Noxious Weeds, Non Native, Invasive Species and Horticultural Plantings

Using aerial photos, topographic map, and local knowledge, the area surrounding the recreation residence tracts was surveyed and although varying in size and degree of infestation the following Noxious Weeds were identified in almost every tract. (These are weeds that are typical of high human use areas.): Burdock, Houndstongue, Canada thistle, Silverleaf nightshade, Oxeye daisy, Russian olive. Of these weeds – Canada thistle and Silverleaf nightshade have to be chemically treated to be controlled.

Common to all of the recreation residence tracts was the use of horticultural and non-native plantings. Poppies, Lilac, Iris, Daisies, Vinca (very aggressive), Lilly of the Valley, Arborvitae, Bishops weed, sedum sp. (non-native species), and Yew (tree) are all horticultural species, typical of urban landscaping, and were identified in several residences in almost every tract.

Dyers woad, Bull thistle, Field bindweed, White top, and Poison hemlock are noxious weeds that have been mapped in other parts of Logan Canyon. These are weeds that were mapped in areas of high human use, campgrounds, trailheads, etc. These mapped locations are considered a seed source and have likelihood of being transported to any of the Recreation Residences. These weeds will be treated through the Forest and District Noxious weed program.

### **3.3.2 Environmental Consequences**

*Issue: How will continued recreation residence use affect vegetation, including threatened, endangered, and Forest Service sensitive plant species?*

#### **No Action Alternative**

Using aerial photos, topographic maps and local knowledge, the area surrounding the recreation residence tracts was analyzed for habitat for the species in Table 1. Surveys were conducted and no TES species were found and very little potential habitat exists. In general, the vegetation surrounding the recreation residence tracts has been previously disturbed and altered by the permitted use.

No effect would occur because no TES species were found in the analysis area.

#### **Proposed Action Alternative**

Same as No Action Alternative

*Issue: To what extent will recreation residence use affect the spread of noxious and non-native invasive plant species?*

#### **No Action Alternative**

Under the No Action alternative (recreation residence removal), in all tracts except Upper Card, the vector for introducing new weed infestations will be removed. Upper Card will still have potential vectors due to the FS road running through the tract. There will still be the need to have an aggressive weed management plan to deal with existing infestations in all tracts until they are deemed –Weed Free.

#### **Proposed Action Alternative**

Under the proposed action (permit renewal) there would be an aggressive weed management plan to deal with existing infestations and potential infestations of new invaders.

### **3.3.3 Cumulative Effects**

#### **TES Species**

Because there are no direct or indirect effects, there are no cumulative effects.

#### **Non Native, Invasive Species and Horticultural Plantings**

Noxious weed establishment is dependent on two main factors, weed seed dispersal and potential habitat. The literature lists numerous vectors for weed seed dispersal. Humans, animals both wild and domestic, wind, and water have all been identified as having the ability to transport weed seeds. Potential habitat is dependent on the type of weed and its life history. The weeds that are documented on the Logan Ranger District are considered “rangeland weeds” that can establish and thrive in several vegetation types. The rate of spread and magnitude of the impacts is also variable and depends on several site specific conditions. The characteristics of the establishing weed, health of the ecosystem, and micro-climate all combine to affect the outcome. Several actions have the potential to have an effect by either introducing or enlarging weed infestations, and other actions do not.

Of the actions listed in Table 3-1 (Cumulative Effects), the following have no effect on weed infestations: Fish Stocking in the Logan River, Logan Canyon Highway and Bridge construction, Past Wildfires, and Riparian Area Restoration and Improvements.

Fish management serves to improve riparian areas and streams that support native fish species; this management includes protecting the integrity of streamside vegetation by preventing noxious weed establishment. Logan Canyon Highway and Bridge construction follows BMPs outlined by USFS which includes noxious weed abatement. UDOT has an easement on Highway 89 and performs weed treatment as needed.

No past wildfires are known in the area of the recreation residences.

Riparian Area Restoration and Improvements would include noxious weed abatement and would foster healthy and natural vegetation that is the best defense against weed infestation establishment.

Actions that may have a potential effect are: Operation and maintenance of developed recreation facilities.

Noxious weed infestations have been identified in several developed recreation sites.

- Bridger Lake Campground - Dyers woad
- Gus Lind Flat – Dyers woad
- Guinavah Malibu Campground – Dyers woad, Burdock, Houndstongue
- Card Guard Station – Burdock
- Chokecherry – Burdock, Dyers woad, Houndstongue
- Preston Valley Guard station - Burdock, Dyers woad, Houndstongue
- China Row Picnic Area – Burdock, Dyers woad, Houndstongue
- Wood Camp Campground- Burdock, Dyers woad, Houndstongue

Potential spread of noxious weeds is possible if recreation residence owners utilize the developed recreation facilities.

### **3.4 Soil and Water**

#### **3.4.1 Affected Environment**

Logan Canyon is a 214 square mile watershed containing 7 subwatersheds located east of Logan, Utah. The Logan River flows out of Logan Canyon into the Bear River near Cutler Reservoir. The average annual discharge of the Logan River near the mouth of Logan Canyon is about 215 cubic feet per second (cfs) and the minimum and maximum instantaneous extremes in discharge are 50 cfs and 2000 cfs, respectively (Utah State of 2004). Most of the recreation residences are located next to the Logan River with the exception of Beirdneau which is located along a tributary to Logan River in Beirdneau Hollow. The streambanks of the recreation residences areas along the Logan River are mostly stable and have a mix of well-vegetated, deep-rooted vegetation, and shallow-rooted vegetation with man-made stream stabilization structures such as earth berms, sandbags, logs, and broken cement slabs.

Gus Lind, Birch Glen, Juniper, and Browns Rolloff areas have a few eroding streambanks on the Logan River that lack deep-rooted vegetation. On Highway 89, rip-rap has been placed along the outside meanders of the Logan River to prevent stream erosion and these structures restrict the lateral movement of the Logan River and keep the river flowing in the same place through the canyon. Bridges that access the tracts cross the Logan River at all of the tracts except Beirdneau tract.

**Floodplains and Wetlands** – A floodplain is located along the Logan River in the valley bottom of Logan Canyon and is where most of the recreation residences are located.

<b>Recreation Residence Tract</b>	<b>Lot Number and Total Area in Floodplain</b>	<b>Remarks</b>
Gus Lind (5 permits)	All lots (1-5); 2.2 acres	All homes are on floodplain except home in the fourth lot up from down-canyon.
Beirdneau	None; 0.0 acres	Ephemeral stream flows through the area and spring development at upper-end.
Valhalla (3 permits)	All lots (8, 10, 11); 1.3 acres	Overflow channel along south edge of area. All homes are on floodplain.
Birch Glen (22 permits)	Lots 1-10, 12, 13, 16, 17, 20, 21, 23; 7.0 acres	All lots listed in floodplain have their homes on the floodplain. Spring occurs in Lot 23. Several homes in standing water during flood flows.
Brown's Rolloff (12 permits)	Lot 12 and parking lot; 0.2 acres	Home in Lot 12 is on floodplain. Ephemeral channel in Lot 11.
Lower Card (5 permits)	All lots (1-6); 1.8 acres	All homes are on floodplain.
Upper Card (6 permits)	Lots 1-3, 7; 1.2 acres	Home is Lot 1 and 2 are on floodplain.
Pine Bluffs (3 permits)	Lot 4, 5; 0.1 acres	
Chokecherry (12 permits)	Lots 1-5, 10; 1.0 acres	Homes in lots 1-5 are on floodplain.
Juniper (3 permits)	None; 0.0 acres	
Hailstone (1 permit)	Lot 2; 0.2 acres	Home is not on floodplain.
Brachiopod (2 permits)	Lots 1, 2; 0.5 acres	Homes are on floodplain.

Floodplains occur in most of the recreation residence areas in Logan Canyon and information on lots in floodplains are listed by tract number in Tables 1 and 2. A total of 14.0 acres of lots are within the floodplain area in 10 Logan Canyon recreation residence

tracts. Beirdneau, and Juniper recreation residence tracts have no floodplains or wetlands within their lots. From field review of summer home areas during high flows in May 2006, floodplain areas were delineated on recreation residence areas within Logan Canyon by observing where flood flows were located.

Wetlands appear to correspond to the floodplain area as indicated by wetland vegetation and relatively flat topography next to the Logan River. Areas of some summer home lots were also identified as wetland areas, although the lots had non-wetland vegetation planted in the lawn areas. Flood prevention structures such as berms, logs, and sandbags have been placed along the Logan on some lots in Gus Lind, Valhalla, Birch Glen, Browns Rolloff, and Upper Card. Some small wetlands occur outside of the floodplain and are associated with springs and stream channels that are tributary to the Logan River. Wetlands in the recreation residence areas have been affected mainly by planting of non-wetland vegetation and the restriction of Logan River flooding in small areas where flood prevention structures have been constructed.

<b>Tract</b>	<b>Area (acres) of Floodplain within Tract</b>	<b>Total Area (acres) of Tract</b>	<b>Percent of Tract in Floodplain</b>	<b>Number of Lots in Floodplain</b>	<b>Number of Lots in Tract</b>	<b>Percent of Lots in Floodplain</b>
Gus Lind	2.2	3.1	71	5	5	100
Beirdneau	0.0	6.1	0	0	10	0
Valhalla	1.3	1.3	100	3	3	100
Birch Glen	5.5	8.0	69	18	23	78
Brown's Rolloff	0.2	4.5	4	1	12	8
Lower Card	1.8	1.9	95	5	5	100
Upper Card	1.2	2.8	43	4	6	67
Pine Bluffs	0.1	1.1	9	1	3	33
Chokecherry	1.0	6.7	15	6	14	43
Juniper	0.0	0.7	0	0	3	0
Hailstone	0.2	0.3	67	1	1	100
Brachiopod	0.5	0.5	100	2	2	100
<b>TOTALS</b>	<b>14.0</b>	<b>37.0</b>	<b>38</b>	<b>46</b>	<b>87</b>	<b>53</b>

<b>Table 3- Water. Number of Homes and Amount of Area Occupied in Floodplain by Tract.</b>			
<b>Tract</b>	<b>Number of Homes in Floodplain</b>	<b>Building Area<sup>1</sup> Occupying Floodplain</b>	
		<b>(ft<sup>2</sup>)</b>	<b>(acres)</b>
Gus Lind	4	8,400	0.19
Beirdneau	0	0	0.00
Valhalla	3	6,300	0.14
Birch Glen	16	33,600	0.77
Brown’s Rolloff	1	2,100	0.05
Lower Card	5	10,500	0.24
Upper Card	0	0	0
Pine Bluffs	0	0	0
Chokecherry	5	10,500	0.24
Juniper	0	0	0
Hailstone	0	0	0
Brachiopod	2	4,200	0.10
<b>TOTALS</b>	<b>36</b>	<b>75,600</b>	<b>1.74</b>

1 Estimate is based on the building footprint restrictions in WCNF Recreation Residence Administrative Guide – Home -1,500 ft<sup>2</sup>, deck or patio – 500 ft<sup>2</sup>, out-building – 500ft<sup>2</sup> for a total of 2,100 ft<sup>2</sup> per lot.

**Municipal Watershed** – The Logan River is a municipal watershed and the City of Logan obtains water from Logan Canyon through a spring source below Guinavah-Malibu campground. The source area for this spring is from water originating in the upper drainages on the north side of Logan Canyon such as Blind Creek where water flows through a karst system in the limestone.

**Water Quality** - The State of Utah has designated the streams draining the Bear River watersheds above the National Forest boundary as Antidegradation Segments. This indicates that the existing water quality is better than the established standards for the designated beneficial uses. Water quality is required by state regulation to be maintained at this level. The beneficial uses of streams within these watersheds, as designated by the Utah Department of Environmental Quality, Division of Water Quality, are:

- Class 2B – protected for recreation
- Class 3A – protected for cold water species of game fish and other cold water aquatic species
- Class 3D – protected for waterfowl shore birds and other water-oriented wildlife.
- Class 4 – protected for agricultural uses.

The numeric water quality standards can be found in Section R317-2, Utah Administrative Code, *Standards of Quality of Waters of the State* (Utah, State of. 2006a). Review of the water quality information by the State Division of Water Resources shows that the water in Logan Canyon meets all of its water quality beneficial uses (Utah, State of. 2006b).

**Sewage and Wastewater** - The current sanitation systems at the Logan recreational residences tracts are septic systems. If renewals of the septic system are needed then the

Logan Ranger District works with the Bear River health department to determine the best system for protecting human health and resources. Recent proposals for new sewer systems have been for vault toilets that contain waste and are pumped at regular intervals.

**Water Use** – Water is supplied to the recreation residences through several water systems. The location and the estimated amount of use by each summer home tract is listed in Table 3. The estimated amount of use is 300 gallons per day (gpd) per home multiplied by the number of recreation residences in each tract. The use per day is based on 75 gallons of water per day per person for four people as described in Forest Service Handbook (USDA Forest Service 1981).

Tract	Drinking Water System	Amount of Water Use	
		(gallons per day)	(gallons per min)
Gus Lind	Bridger Camp system (Logan City)	1,500	1.0
Beirdneau	Guinavah-Malibu system (Logan City)	3,000	2.1
Valhalla	Guinavah-Malibu system (Logan City)	900	0.6
Birch Glen	Guinavah-Malibu system (Logan City)	6,600	4.6
Brown's Rolloff	Browns Rolloff Spring system	3,600	2.5
Lower Card	Card Canyon Spring system	1,500	1.0
Upper Card	Card Canyon Spring system	1,800	1.3
Pine Bluffs	Card Canyon Spring system	900	0.6
Chokecherry	Card Canyon Spring system	3,600	2.5
Juniper	Card Canyon Spring system	900	0.6
Hailstone	Spring-fed	300	0.2
Brachiopod	Spring-fed	600	0.4
TOTALS		25,000	17.5

**Soil Quality –**

Soil types found within each summer home group (SHG) tract, and selected characteristics, are shown in Tables 1 and 2.

Reference can be made to Table 2-Water to reflect the area, number, and percentage of Logan Canyon Recreation Residence lots that occupy floodplains.

Tract	Soil Type R10	Soil Type R55	Soil Type R58	Soil Type R60	Soil Type R65	Soil Type R66
Gus Lind					2	3
Beirdneau					5	
Valhalla						2
Birch Glen		1	2			4
Brown's Rolloff		3				1
Lower Card						2
Upper Card				2		1
Pine Bluffs				1		1
Chokecherry				5		1
Juniper				1		
Hailstone				1		1
Brachiopod	2			1		1
TOTALS	2	4	2	11	7	17

Soil Type	R10	R55	R58	R60	R65	R66
<b>Soil Property</b>						
Erosion Hazard/1	slight	moderate	slight	slight	slight	high
Erosion Hazard/2	moderate	high	moderate	moderate	moderate	very high
Runoff	medium	medium	medium	medium	medium	slow-medium
Permeability	moderate	moderate	mod rapid	mod rapid	mod rapid	moderate
Watertable Depth	> 60 in	> 60 in	> 60 in	> 60 in	> 60 in	20-40 inches
Flood Hazard	none	none	none	none	none	seasonal
Drainage	well	well	well	well	well	mod well

/1: Under natural vegetation, /2: bare soil conditions

Within most of the tracts, the R66 soil type is associated with the lots immediately adjacent to the Logan River. Suitability of this soil type for many recreation residence related uses (septic systems, shallow excavations, dwellings without basements) is limited due to seasonally shallow water tables and the potential for seasonal flooding. All other lots within the tracts are found on upland soil types (R10, R55, R58, R60, and R65). Suitability of this soil type for many recreation residence related uses (septic systems, shallow excavations, dwellings without basements) is limited due to either steep slopes or slower percolation rates.

Most of the lands within the SHG tracts are forested with native vegetation and the existing soil quality is unaffected by summer home uses in these areas. Soil physical, chemical, and biologic properties have been harmfully disturbed only where lot and tract improvements such as roads, driveways, parking areas, homes and outbuildings have been constructed. These improvements make up a very small portion of the tracts as a whole. An estimated 15 to 20% percent of the total land area within the residential tracts

currently consists of impermeable surfaces such as roofs, concrete, or other forms of bare and compacted ground.

Field monitoring of the SHG tracts in Logan canyon was conducted to determine if tract and lot development were having an indirect effect on soil quality of the adjacent undisturbed forest lands. Soil stability in the all of the tracts is quite good, there were no areas of soil erosion or slumping noted in these areas (Flood, Paul K. 2005a.)

### 3.4.2 Environmental Consequences

*Issue: How will recreation residence use affect water quality and quantity? What will be the effects on stream, floodplains, and wetland function?*

#### No Action Alternative

**Effects to Floodplains and Wetlands:** In the short and long-term, the direct effects to floodplains and wetlands from this would be that flood-waters would more easily flood across the floodplain and wetlands would revert to natural conditions on lots that are located on the floodplain. This is because sandbags would not be placed along the Logan River to keep water from flooding the recreation residence lots, bridges, and abutments would be removed that currently keep Logan River flood-waters flowing in the channel under the bridges. The remainder of the summer home tracts are flooding naturally and have very little restriction of flow due to the presence of recreation residences. Recreation residences would revert back to natural wetland vegetative conditions where lawns are currently growing. The amount of wetland that would revert to natural vegetation would be something less than 14.0 acres since only part of the lots on most tracts are currently in lawn.

**Effects to Water Quality:** Although the direct effect of ground disturbance would occur, very little sedimentation from soil erosion would be expected because of the dense vegetation and low gradient slopes that occur on lots at most of the summer home tracts near the Logan River. Where the risk of short-term erosion is higher such as on steeper slopes, erosion control measures would be implemented to minimize erosion and sedimentation during the removal of facilities and reshaping the landscape. The long-term indirect effects would be the same as the Proposed Action because water quality beneficial use are met on the Logan River currently and the change in water quality would not likely be measurably different from existing conditions, since there is very little erosion currently.

#### Proposed Action Alternative

**Effects to Floodplains and Wetlands:** In the short and long-term, the direct effects of reissuing the permits to the recreation residence tracts in Logan Canyon on floodplains and wetlands change very little in flood characteristics of the Logan River with a small increase in wetland species where the size of lawns at a few recreation residences is

reduced as a result of following the guidelines of the WCNF recreation residences administrative guide.

**Effects to Water Quality:** In the short and long-term, the indirect effects of reissuing the permits to the recreation residence tracts in Logan Canyon would be no change to water quality of the Logan River since very little soil erosion occurs at the recreation residences tracts. Currently, water quality beneficial use is met on the Logan River and it is expected that these beneficial uses will continue to be met.

**Recommended Mitigation** – No additional mitigation is recommended because the WCNF recreation residence administrative guide has provisions for the protection of water resources.

*Issue: To what extent will continued recreation residence use affect soils, including the effects of bare soil conditions created by vehicle and pedestrian traffic within each tract?*

### **No Action Alternative**

**Effects to Soil Quality and Stability:** Upon expiration of the existing Special Use Permits (SUPs) in 2008, interim ten-year permits will be issued. Sometime prior to expiration of the ten-year permits all of the existing above ground improvements will be removed from National Forest System land. The ten-year permits will contain the same standard terms as the existing permits and the same BMPs identified for the Proposed Action will be utilized during the time the improvements remain in place. Forest or District personnel shall inspect facilities authorized under the 10-year permits to ensure compliance with permit terms and the soil and water protection requirements. As a result, the direct and indirect effects associated with the No Action Alternative, up until such time that the above ground improvements are removed will be the same as described above in the Proposed Action alternative.

The 10-year permits would involve BMPs to mitigate any impact to soil and water quality resulting from the use of the recreation residences and from removal of the structures. Short-term impact to soil and potential for impact to water resources may occur as a result of disturbance associated with cabin removal. Practices relating to structure removal include an erosion control plan to minimize/prevent sediment from entering the lake and a spill prevention, and a control and countermeasure (SPCC) plan to minimize potential contamination of soil from accidental spills while facilities are being removed from the recreation residence tract. These plans will be prepared prior to the removal of any improvements. The plans must receive review and approval by the appropriate state and federal agencies before work begins. The BMPs will be monitored to ensure that they are implemented as designed and that they are effective. Ineffective BMPs will be modified.

Once the permit holders have removed their improvements, the Forest Service will rehabilitate the disturbed areas by treating soil compaction, restoring natural drainage

patterns, and planting of native vegetation where needed. Appropriate site specific BMPs to minimize or eliminate potential sedimentation to the lake resulting from these activities will be developed, implemented, and monitored for effectiveness by the Forest Service.

In general, existing improvements to tracts and lots such as roads, driveways, parking areas, homes and outbuildings make up a small portion of the tracts as a whole. Removal of these improvements would therefore result in a small improvement in soil quality as the areas were stabilized and restored to native vegetation. In the short-term, the direct effects of removal of these improvements could be short-term increases in erosion.

### **Proposed Action Alternative**

**Effects to Soil Quality and Stability:** There will be few, if any, additional effects on soil quality, beyond those described in the “Soil/Water Resource Features and Conditions” above, associated with the reissuance of the Special Use Permits. In general, improvements to tracts and lots such as roads, driveways, parking areas, homes and outbuildings already make up only a small portion of the tracts as a whole. No additional access roads, driveways, or parking areas are being proposed under this action.

The proposed administrative guide limits the footprint of cabins to no more than 1500 square feet, attached decks and or adjacent patios/courts to 500 square feet. Some structures within the tracts are already at these limits, for these lots the proposed action would not result in any further impairments to soil productivity. For those lots with current cabin/deck sizes that are smaller than the proposed administrative guide limits, the proposed action could result in further harmful disturbance to soil physical, chemical, and biologic properties as a consequence of enlargement of either cabins or decks.

The proposed administrative guide also limits the number of associated outbuildings to one. Under the proposed action, effects on soil quality are expected to decrease slightly as individual lots are brought into compliance by the removal of unauthorized structures and improvements. Soil quality will be improved when these disturbed areas are restored and stabilized with vegetation. A site specific description of unauthorized improvements that will be removed under the proposed action is contained in Appendices C and D.

Best Management Practices (BMPs) will be implemented to mitigate potential impacts to soil quality resulting from on-going land disturbing activities within the residence tracts. The objective of the BMPs is to protect the soil quality of undisturbed lands adjacent to the summer home lots from runoff and erosion that might result from activities that are under special use permits.

### **3.4.3 Cumulative Effects**

The cumulative effects to soil and water resources are described below.

### **No Action Alternative**

Soil Cumulative Effects - Non-reissuance of the recreation residence SUPs, removal of all above ground improvements from National Forest System lands within 10 years following expiration of the permits in 2008, and rehabilitation of the residential lots will contribute to restoring overall ecological health on approximately 37 acres (total area occupied by the residential tracts) within the Logan Canyon watershed. Additional restoration will result from decommissioning access routes (native surface trails and driveways) to and between the individual tract lots.

The other activities that may cause a cumulative effect to this resource are clearing of vegetation in conjunction with the power transmission and telephone lines that service the tracts, and the maintenance of system hiking trails in the tracts. Maintenance of the power line ROW would be accomplished with mechanical type equipment such as chippers and boom trucks, using existing roads and driveways within the tracts. Maintenance of the hiking trail would entail brushing and removal of fallen trees by hand crews. As such, no additional soil disturbance would occur from these activities.

Irretrievable or Irreversible Commitment of Soil Resources – Existing residences, driveways, and access roads within the tracts have all resulted in an irreversible loss of soil productivity. While Alternative 1 would discontinue these uses in the near future, the loss in soil productivity would only be renewed over a much longer period of time. A small incremental improvement of soil productivity within the Logan Canyon watershed would occur where tract related improvements were removed and restoration work was accomplished.

Water Resources Cumulative Effects – The cumulative effects analysis area and time frame, and other actions affecting the no action alternative are the same as Alternative 2 for the same reasons given in the alternative. The cumulative effects for Alternative 1 would be similar to Alternative 2 because the no action alternative and the other cumulative actions in the cumulative effects analysis area have very little change from existing conditions to floodplains or hydrologic function of wetlands, water quality, or water use.

### **Proposed Action Alternative**

The cumulative effects to soil and water resources are described below.

Soil Cumulative Effects – The renewal of term Special Use Permits, which permit the continuation of existing recreation residence uses in Logan Canyon, would result in very few additional (cumulative) adverse impacts on soil quality. Very little construction related damage to soils is anticipated under the proposed action. No additional access roads, driveways, or parking areas are being proposed under this action, and few of the existing residences can be expanded beyond their present footprints. Incorporating standard terms of use into the permits which benefit soil quality will help limit further detrimental soil disturbance and maintain the overall physical, chemical, and biological health of the soil resource. Existing degraded soils will be restored where unauthorized improvements and structures are removed as a result of implementing this alternative.

The long-term cumulative effects of implementing the Proposed Action will be beneficial to the terrestrial, riparian, and aquatic environment of the Logan Canyon watershed.

The other activities that may cause a cumulative effect to this resource are clearing of vegetation in conjunction with the power transmission and telephone lines that service the tracts, and the maintenance of system hiking trails in the tracts. Maintenance of the power line ROW would be accomplished with mechanical type equipment such as chippers and boom trucks, using existing roads and driveways within the tracts. Maintenance of the hiking trail would entail brushing and removal of fallen trees by hand crews. As such, no additional soil disturbance would occur from these activities.

Irretrievable or Irreversible Commitment of Resources –Existing residences, driveways, and access roads within the tracts have all resulted in an irreversible loss of soil productivity. Because the proposed action continues these uses, the loss in soil productivity would not be renewed over time. No additional roads, driveways, or parking areas are anticipated under the proposed action. A small incremental loss of soil productivity would occur where either residences or outbuildings are expanded to the limits specified in the proposed administrative guide.

Water Resources Cumulative Effects – The cumulative effects analysis area for water resources is the Logan Canyon canyon-bottom from Second Dam to Twin Bridges. This area is chosen because it encompasses the recreation residences and represents the area that would have influence to the water resources from other actions. The time frame for the cumulative effects analysis is from five years ago to about five years into the future since vegetative recovery usually occurs within five years and projects further in the future than five years are not known.

Other actions in the cumulative effects analysis area that may affect water resources are Logan Canyon Highway bridge construction at Right Hand Fork, campground and picnic areas, private land development at Right Hand Fork, and four to five rock weirs that were placed on the outside meanders of the Logan River at Birch Glen Recreation Residence area and at Guinavah-Malibu Picnic Area, resulting in reduced stream bank scour on stream banks in these locations. Logan Canyon Highway bridge construction at Right Hand Fork has had erosion control structures in place during construction to minimize sedimentation of the Logan River. The other remaining actions do not have active erosion occurring and is not expected to occur in the future.

The cumulative effects of these actions in addition to the proposed action is expected to have very little effect on water quality, wetlands, or water use because the proposed action of itself has very little effect on flood plains or wetland functions, water quality, and no change to water use. The other actions in the analysis area also have very little effect on these resources. As an additional point for water quality, the water quality of Logan River has been assessed by the State of Utah and meets State water quality standards. This indicates that cumulatively the water quality in Logan Canyon is good and other actions in the future are not expected to alter the water quality of the Logan River.

## **3.5 Recreation**

### **3.5.1 Affected Environment**

The analysis area includes all tracts, from Gus Lind (located about 3.5 miles from the Forest Boundary near Logan), to Brachiopod (located about 13.6 miles from the Forest Boundary near Logan). The tract maps show five in lieu lots, three in the Birch Glen tract and two in the Chokecherry tract. It was determined in this analysis that two of the Birch Glen lots would be excluded from analysis because they are located within riparian areas. However, the three remaining lots will be analyzed to see if their availability will continue.

The Logan Canyon area consists primarily of the Logan River and its tributaries, rock canyon cliffs, riparian habitat with deciduous trees, oak/maple/grass on south facing slopes, mixed with conifer on north facing slopes. Much of Logan Canyon is primarily managed as a developed recreation area with several campgrounds and picnic areas, fishing access, interpretive sites and several trails and trailheads. Developed recreation areas are dispersed throughout the canyon corridor. The main drainages are the Logan River, Right Hand Fork, Temple Fork and several smaller creeks that flow into the Logan River.

None of the recreation residence tracts are adjacent to wilderness. Recreation residence users contribute to wilderness use, but such use is a very limited amount of the total wilderness use and is insignificant for any impacts.

In lieu lots were initially identified in the tracts of Birch Glen and Chokecherry. There were three lots identified on the plat map for Birch Glen (lots 11, 16 and 22), and two on the Chokecherry plat map (lots 14 and 15). Two lots in Birch Glen (11 and 22) were dismissed from analysis because of their proximity to riparian/wetland areas.

### **3.5.2 Environmental Consequences**

This section presents the direct and indirect effects of recreation residence management on the main issues raised for recreation resources. Based on the result of public scoping and Interdisciplinary Team review, two specific issues were identified for detailed analysis in this EA.

*Issue: How will summer home use affect access and the recreation experience and safety for other visitors to Logan Canyon.?*

#### **No Action Alternative**

Due to direction found in the Forest Service Manual and the Wasatch-Cache LRMP, an amendment to the Forest Plan would be necessary to initiate the No Action Alternative.

Removal of the recreation residences would cause a decrease in the 84 cabins that provide overnight accommodations for permit holders in Logan Canyon. However, use of developed recreation areas and dispersed recreation in Logan Canyon will provide continued public recreation opportunities. Therefore, cabin removal would cause only a slight change in the recreation type and use. The area previously used for recreation residences would become dispersed recreation areas for those public visitors who want a less developed experience or are denied access to the existing developed sites due to overcrowding. The former recreation residence tract would be managed for resource needs including riparian habitat and dispersed recreation use.

During the period when facilities are being removed, there will be increased noise and general disturbance caused by demolition and heavy hauling. This will temporarily detract from the quality of the recreation experience in the area. There will be no long-term effects to recreation caused by the activities of facility removal.

It is possible that some tract roads may be converted to trails or parking access, as public dispersed use is expected to increase in these areas if recreation residences were removed. Roads that access the archery range in the Card tract would continue to exist, as would the access road into Preston Valley Campground abutting the Juniper tract. Some non-needed roads may be closed and natural conditions restored.

Since the recreation residences' taxes comprise only a small percent of the County's total real property tax revenue, no County programs are likely to be impacted. A steady decline in maintenance and construction costs would be expected over the 10-year period. At the end of that time, a small economic boost could occur for some local contractors, because they may be needed for removing the structures from the tract. Current permit holders would lose an undetermined, though likely substantial, amount of personal capital by the time the 10-year permit expires. Lost capital would be in the form of lost real property and expenses incurred to remove the improvements.

### **Proposed Action Alternative**

Implementing this alternative would involve continued use of the existing summer homes under provisions of the Recreation Residence Administrative Guide. There will be no major direct or indirect effects for re-issuance of the special use permits. There will be no major direct or indirect effects to recreation or social activities in the tract areas under the Proposed Action. Recreation and social activities associated with the residence tract will continue as described in the "Existing Condition" above.

For public recreation in Logan Canyon, there are very few public safety issues in the tract, as the general public seldom utilizes this area for recreation. One issue analyzed was that recreation residences compromise the accessibility for general public use and recreation on Forest lands occupied by recreation residence tracts. It should be noted that all recreation residences at Logan Canyon are private structures, but that they are located on National Forest lands open to the public (36 CFR 251.55b). The public is allowed to

legally access the land, but cannot use the structures and facilities. Most of the public use in these tracts is limited to an occasional fisherman or other recreationist. Generally, the public avoids using the tract areas because of their developed and private-like appearance.

Recreation group size and use at recreation residences was considered as an issue. Typically, use at a recreation residence is by the immediate family and friends. The recreation residence permit holder must be an individual, a married couple or designated representative of a formally established living or family trust. The permit holder is required to utilize the residence at least 15 days a year, but permanent residence is not allowed. Commercial use of recreation residences is prohibited and rentals require written approval. Most use of recreation residences occurs during the summer, especially on weekends. Group size is primarily limited by the size of the existing facilities and limited area of approved parking.

Taxes and annual fees will continue to be paid to the County and the U.S. Treasury, increasing with inflation adjustments. As the area population increases, demand for the cabins will increase, driving up the selling prices of available existing cabins. Because no new cabins will be added, the supply availability will not increase, thus contributing to an increased purchase price. As cabin values increase, the population with buying power to afford them will likely decrease.

**Recommended Mitigation** – No additional mitigation is recommended because the WCNF Recreation Residences Administrative Guide has provisions for the protection of recreation resources.

*Issue: Should the five in-lieu lots identified on the tract maps in the Logan River corridor remain available for use by permittees who wish to move their residences out of riparian areas?*

It was determined in this analysis that two of the five in-lieu lots identified on the tract maps would not be considered as possible relocation sites because of their proximity to riparian areas and wetlands. The 3 in-lieu lots identified may be available for recreation residence use should a relocation be needed that is acceptable to a current recreation residence permit holder. No additional tracts or lots will be allowed in Logan Canyon.

### **No Action Alternative**

If the permitted use of National Forest by recreation residences expires in December 2008, with the subsequent result being the removal of all above-ground improvements, there would be no need for in lieu lots. In this case, in lieu lots would not even be identified or surveyed, as there would be no need for them to be occupied by any resident who may have been displaced due to the severity of resource impact issues at their current lot/cabin location.

### **Proposed Action Alternative**

Under this alternative, the three identified lots will be surveyed and offered up to those recreation residents who may be displaced due to riparian/floodplain area issues.

Environmental consequences of this would include the following:

- a. New impaction on approximately 1 ½ acres at the location of the in-lieu sites.
- b. Improved riparian/wetland conditions over the long term on those sites previously occupied by the relocated cabins.
- c. Improved fish and wildlife habitat, as all in-lieu lots are located upland away from the Logan River and its tributaries. The value of providing additional riparian habitat outweighs the value of wildlife habitat area lost at an in-lieu upland site.
- d. Reestablishment of native vegetation along the banks of the river on those sites that have had cabin relocation to in-lieu sites.

### **3.5.3 Cumulative Effects**

A number of past, present, and reasonably foreseeable future activities in Logan Canyon would interact cumulatively with the effects of continued recreation use. The Scenic Byway extending up Logan Canyon has a high level of development in terms of recreation facilities such as picnic areas, trails, and roads. Summer home traffic is a small component of the overall level of traffic, but the two are additive in terms of the effect on the recreation experience and safety considerations.

Public recreation use is predicted to continue to increase in Logan Canyon because of the increased population in Cache Valley. However, total use of the canyon is somewhat limited by the availability of sites, whether those are trailhead parking areas, developed campgrounds, fishing piers, or other facilities provided along the Byway. Recreation sites in the area often reach their visitor capacities during the operational season, especially on weekends and often during summer weekday evenings.

### **No Action Alternative**

Dispersed recreation use by the public in the tract areas would increase after the recreation residences were removed. Activities would include picnicking, hiking, fishing, wildlife watching and snow play. Logan Canyon is already a crowded recreation area and removal of recreation residences would probably disperse some of that use to these areas and could increase use, as more land base along the river (which tends to attract the public) would be available. It is possible that such public use could actually increase some effects on other resources in parts of these tract areas (i.e., effects to wildlife, soil erosion, soil compaction) unless additional mitigation measures were taken to prevent such effects.

**Irretrievable or Irreversible Commitment of Resources** - No major irretrievable or irreversible commitments of resources were identified by Alternative 1 (not re-issuing the recreation residence permits in Logan Canyon).

The main change is that there would no longer be the opportunity or type of recreation supplied by recreation residence facilities in Logan Canyon. That, combined with the fact that no new cabins or tracts are authorized, would mean that there would be no cabin recreation in Logan Canyon. The demand for such use would have to be satisfied outside of the Forest.

### **Proposed Action Alternatives**

The renewal of the term special use permits which permit the continuation of existing recreation residences in Logan Canyon would result in very few additional (cumulative) adverse impacts on recreation resources.

Public recreation use is predicted to continue to increase in Logan Canyon (reasonably foreseeable action), because of its nearness to Logan City/Cache Valley and because of its designation as a Scenic Byway. However, total use is somewhat limited by available parking and facilities. Developed recreation sites in the area often reach their visitor capacities during the operational season, especially on weekends and often during summer weekday evenings.

Recreation use in Logan Canyon could increase slightly if recreation residences get more use from their cabins after upgrading with more amenities, which may allow a greater capacity for more people at one time. All upgrades must be approved and follow the requirements listed in the Wasatch-Cache Recreation Residence Administrative Guide. Since cabins are generally simple and primitive in structure and features, major changes affecting their capacity in the future are predicted to be limited. Recreation residence use increase will not appreciably impact recreation as a whole for Northern Utah, the Wasatch-Cache National Forest, or even in Logan Canyon.

**Irretrievable or Irreversible Commitment of Resources** - Existing residences and lots have resulted in less public use on those areas that cabins currently occupy. Because the proposed action allows for continuation of recreation residence use, general public recreation use will not increase on this land. Other lots once listed as available have been determined to not be feasible due to riparian, slope or other resource concerns. No new lots or tracts will be added, thus limiting the capacity max to the current 84 lots.

## **3.6 Visual**

### **3.6.1 Affected Environment**

The visual analysis area is defined by the boundaries of the viewshed. The area is bounded on the north and south by the ridgelines of Logan Canyon's deep sheer limestone cliffs. The meandering Logan River at Logan Canyon's mouth forms the

western Forest boundary. The intersection at Temple Fork forms the eastern end. The analysis encompasses the period from the establishment of “Logan Canyon Group-Summer Home Sites” in 1920 to present day. (For more information on the history and establishment of summer homes, see landscape architect technical report.)

There are two landscape character themes (LCT) that compose the project area: Developed Natural Appearing (occurs within ¼ miles on each side of the Highway 89) and Natural Appearing (occurs outside the ¼ mile buffer of the Developed Natural Appearing LCT). Both LCT are being managed in a “High” scenic integrity object (SIO) (see appendix C, Other Direction, Recreation/Visual section).

### **Natural Appearing**

The existing landscape character has been influenced by both direct and indirect human activities, but appears natural to the majority of viewers. Natural elements such as native trees, shrubs, grasses, forbs, rock outcrops and streams or lakes dominate the views. While there is evidence of human influence from historic use, campgrounds, small organization camps, rustic structures and management activity, it is part of the valued built environment in the landscape to the majority of viewers.

### **Developed Natural Appearing**

This landscape character theme is characteristic of National, National Forest and State scenic byways with developed recreation facilities, concentrated use areas and undeveloped recreation impacts within the foreground of the viewshed (1/2 mile). In these areas, the roadway, recreation amenities, and development are anticipated features in the landscape. For users these amenities are part of the valued natural appearing landscape. Users of these amenities are attracted to the natural appearing landscape, but desire a moderate to easy interaction with the landscape through the use of these amenities. This landscape character is adjacent to Natural Evolving and Natural Appearing landscape character themes and should draw from, complement and harmonize with these themes.

## **3.6.2 Environmental Consequences**

*Issue: How will visual resources in Logan Canyon (Scenic Byway Corridor) be affected by continued recreation residence use?*

### **No Action Alternative**

Removal of the recreation residence structures could change the cultural character of Logan Canyon. Over the ten-year period after the special use permits are not re-issued and structures are removed there may be a short-term effect of undesirable views of structures being torn down. But once vegetation is re-established within 2 to 5 years of the structures removal there would appear to be no effect to the natural appearing landscape.

### **Proposed Action Alternative**

There is no effect because the existing recreation cabins are considered to be part of the cultural image of the canyon and a continuation of the special use permit would not change the cultural image as long as Forest direction is complied with.

### **3.6.3 Cumulative Effects**

#### **No Action Alternative**

The effects of this alternative on the viewshed would be minimal, therefore cumulatively there would be no impact on the visual resources. There would be a reduction in amenities of recreation residences and associated amenities, but there would be no change in the other amenities in regards to cumulative effects.

#### **Proposed Action Alternative**

There would be no cumulative effects to the scenic resource as a result of the proposed action. This is because the built environment of recreation facilities, trails, roads, and recreation residences with the natural appearing landscape are a desired part of the landscape character being managed for in the Developed Natural Appearing landscape character theme for this portion of the Forest. These amenities are an attraction for users that a desire a moderate to easy interaction with the landscape

### **Cultural**

#### **3.7.1 Affected Environment**

The analysis area includes those recreation residence structures and various associated improvements that are located in the Logan Canyon recreation residence tracts that may be eligible for review under the National Historic Preservation Act. Those identified historic structures and improvements must have enough physical integrity (in terms of location, design, setting, materials, workmanship, feeling, and association) to convey that significance. They must be over 50 years of age.

#### **3.7.2 Environmental Consequences**

*Issue: What will be the effect on homes and other improvements that are eligible for National Register of Historic Places, including those that are located in riparian areas?*

Compliance with the National Historic Preservation Act (NHPA) is set in motion when a proposed undertaking involves ground-disturbing activities, removal or alteration of historic buildings or structures, or may cause potential effects to historic properties including the historic setting and integrity of a property.

#### **No Action Alternative**

Since cabins and structures would be removed, NHPA compliance would be required for structures that are over 50 years old. Sites would be analyzed and documented for their National Register eligibility. This may include such things as documenting and recording the historic property with a photo report of the structures. This information will be used by the Forest Service to make its determinations about how to address the structures and to consult with the State Historic Preservation Officer. Once SHPO consultation is complete, the mitigation measures that were agreed upon through consultation will be enacted.

### **Proposed Action Alternative**

Reissuance of the existing recreation residence permits does not constitute an undertaking as defined by 36 CFR 800.16, therefore, the Section 106 process of The National Historic Preservation Act (NHPA) is not engaged for this alternative.

Compliance with NHPA will continue to be addressed in the course of regular permit administration as remodel alterations, new improvements, or activities are proposed that could have the potential to affect historic properties. The Forest Archaeologist will review all proposals that could affect historic structures, consult with SHPO, review the Forest Plan for consistency, and provide any mitigation measures that may be needed for the Authorized Officer to make a decision on a proposal.

Structures within the riparian area will be addressed on a case-by-case basis. The Forest Service will make a decision regarding the potential disposal of the structures through the consultation process with the State Historic Preservation Office and the National Advisory Council on Historic Preservation.

**Recommended Mitigation** - Compliance with NHPA will continue to be addressed in the course of regular permit administration as alterations, new improvements or activities are proposed that could have the potential to affect historic properties. The recommendation is to follow the Forest plan, consult with SHPO and agree to mitigation measures.

### **3.7.3 Cumulative Effects**

#### **No Action Alternative**

The State Historic Preservation Officer will be consulted and historic and photo documentation recorded if it is determined that a structure over 50 years old is to be removed.

#### **Proposed Action Alternative**

Because there are no direct or indirect effects, there are no cumulative effects.