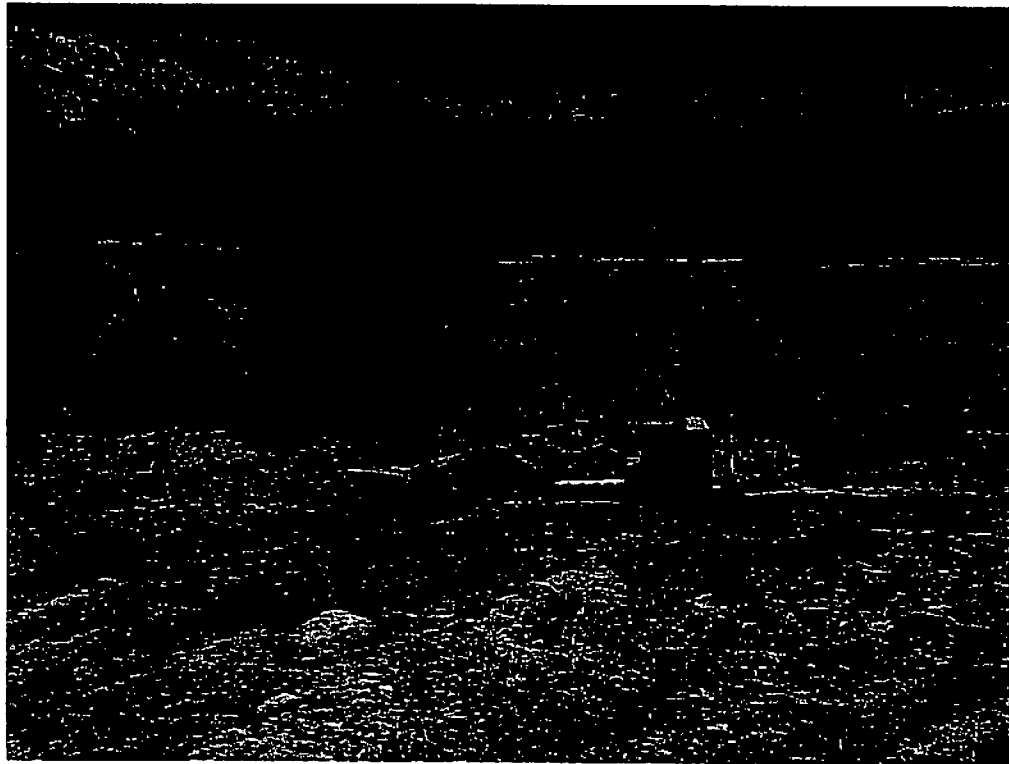


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**Environmental Assessment
Assessment of Effect**

April 2002



Dr. Goode Spring

Tropic Canyon

Bryce Canyon National Park, Utah

Environmental Assessment Assessment of Effect

Dr. Goode Spring

Bryce Canyon National Park

Summary

Bryce Canyon National Park is conducting an environmental planning analysis to assist our neighboring community (Tropic, Utah) in repairing their water collection system located at the Dr. Goode Spring (see Figure 1). The water collection apparatus ceased working several years ago and the Town is seeking authorization to repair existing problems, implement some erosion prevention measures, and develop a long-term maintenance agreement.

The purpose of this planning effort is to preserve and protect natural and cultural resources and meet the Park's responsibilities for providing the Town of Tropic with access to operate their water development at Dr. Goode Spring. The decision facing the park is whether to authorize the project as proposed or request further modification to the proposal and/or mitigation measures

The location of the proposed project is in Tropic Canyon approximately 2 miles north of the Town of Tropic. The project as proposed is to repair the existing facility, shore up the stream-bank to protect against further erosion, and replace about 325 feet of buried pipe.

Public Comment

If you wish to comment on the environmental assessment, you may mail comments to the name and address below. This environmental assessment will be on public review for 30 days. Please note that names and addresses of people who comment become part of the public record. **If you wish us to withhold your name and /or address, you must state this prominently at the beginning of your comment.** We will make all submissions from organizations, businesses, and from individuals identifying themselves as representatives or officials or organizations or businesses available for public inspection in their entirety.

Superintendent
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PURPOSE AND NEED

Purpose

The purpose of this assessment is to evaluate the proposal presented to the National Park Service and determine whether the methods presented would create adverse effects to natural and cultural resources. If adverse effects to Park resources are inevitable then mitigation measures will be necessary to minimize those effects. The decision facing the park is whether to authorize the proposal as submitted or make recommendations for mitigating resource degradation.

Need

The Town of Tropic holds a domestic water right from the Dr. Goode Spring (see Figure 1). The water collection apparatus authorized by the State of Utah is a buried perforated pipe to collect water in a cement box and send the water down a buried pipe approximately three and one quarter miles to the Town of Tropic.

Some time during the past few years the system quit delivering water. The system is connected to at least one other spring collection device and the loss of water in the pipe was initially thought to be related to drought conditions. Further inspection of the system determined the Dr. Goode Spring collection apparatus had failed and needed extensive repair work (see Figures 2 and 3).

The spring box is located in a stream drainage that is subject to intensive water flows during the summer monsoon rains. The rest of the year the streambed is nearly dry except for the flow of several springs throughout Tropic Canyon. In order to maintain the spring box, stream bank shoring is proposed.

The park has a legal responsibility to provide an access route to the Town for implementing routine maintenance. Once the re-construction of the water collection system is completed the Park and the Town of Tropic need to develop an agreement whereby the Town would be provided access on a periodic basis to conduct routine maintenance of the structure.

The proposed project must be completed in a manner that minimizes any adverse effects to natural and cultural resources. In developing the agreement for the Town to periodically maintain the structure the methods must also minimize adverse effects to natural and cultural resources.

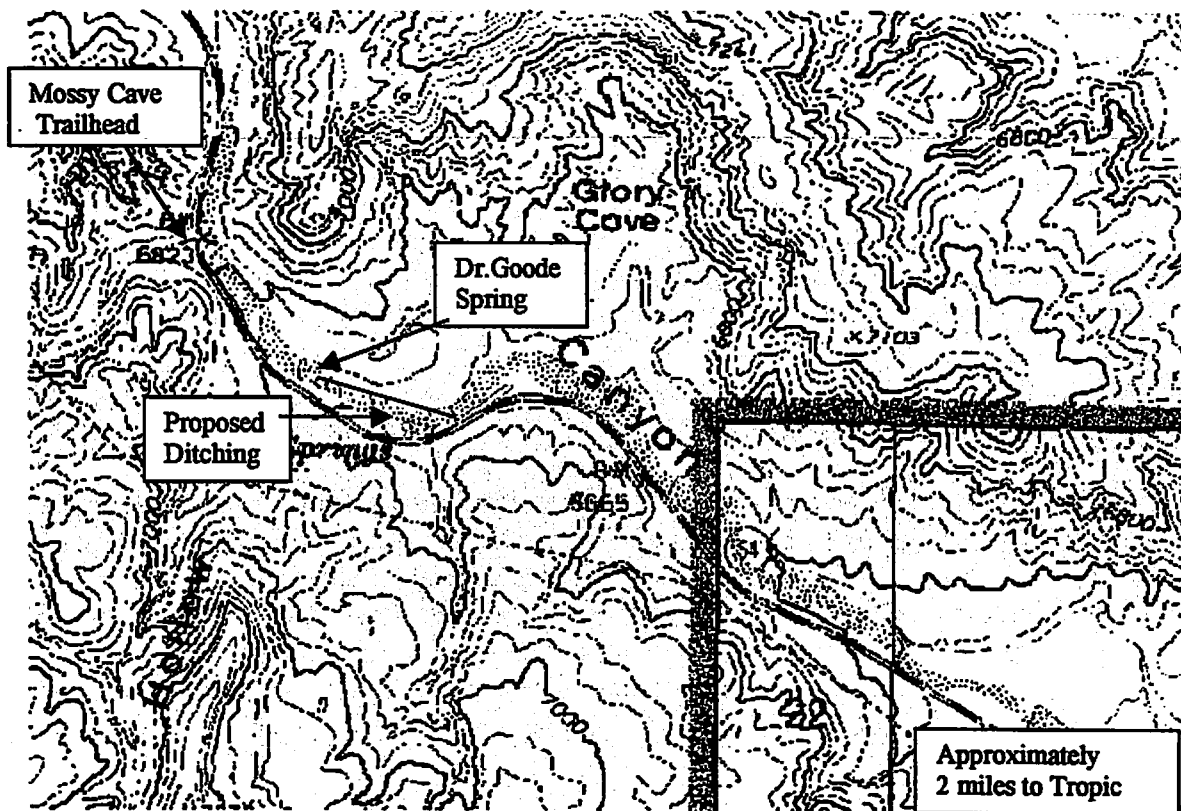


Figure 1. Location of Dr. Goode Spring

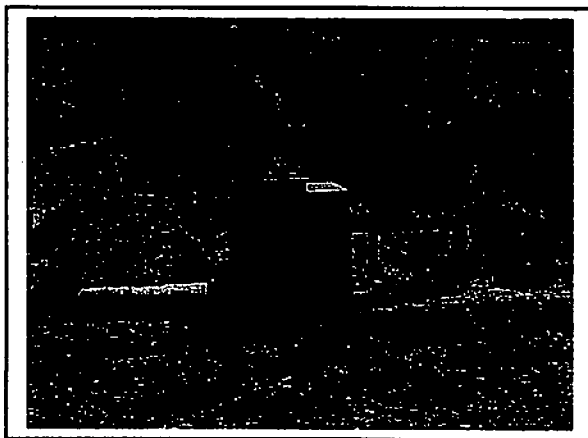


Figure 2. The stream-bank has been eroded from around the spring box and the box has settled.

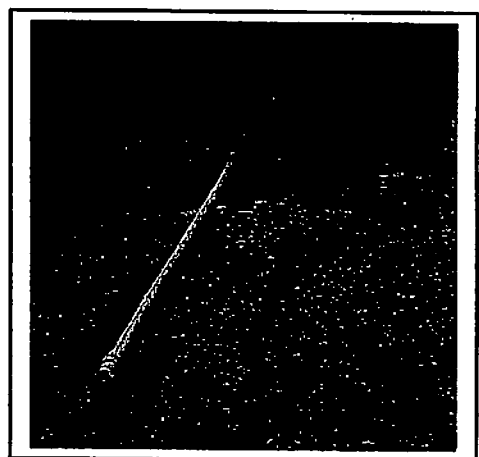


Figure 3. Approximately 300 meters downstream an exposed pipe has been disconnected from the water delivery system.

ALTERNATIVES CONSIDERED

No-Action Alternative

The no-action alternative describes the action of continuing the present management operation and condition; it does not imply or direct discontinuing the present action or removing existing uses and structures. The no-action alternative provides basis for comparing the management direction and environmental consequences of the proposed action and must always be considered in an environmental assessment. Should the no-action alternative be selected, the National Park Service would respond to future needs and conditions associated with the Dr. Goode Spring Box Repair by not recommending major actions or changes to the existing facility.

Proposed Action

The Town of Tropic proposes to repair a water collection box at the Dr. Goode Spring located in Tropic Canyon (Figure 1). The repair work entails disconnecting the collection line upstream of the collection box, cleaning out the gravel that has collected in the line, shortening the collection line by four to six feet and re-leveling/re-connecting the box to the collection line. A small amount of bank material may need to be excavated to clean the existing line and re-connect the box as close to the existing bank as possible. The construction drawings indicate the excavation to be one to two feet.

The re-construction work necessary to make this system work again would include trenching from the collection box downstream for approximately 325 feet and laying a 6 inch diameter pipe with fine grain bedding material in the bottom of the ditch. The supply line will connect to an existing line from another spring collection box downstream. This trench would be a maximum of five feet deep throughout its entire length. No apparatus to measure the rate of flow in the supply line is proposed in the draft construction plans (M. Wilson, personal communication). A second shallow trench would be placed adjacent to the supply line ditch to install an overflow drain line. The length of this ditch would be approximately 35 feet or what ever it takes to reach daylight.

The conservation measures necessary to protect the repaired system from flooding would be to install a wall of gabien baskets that extends approximately 45 feet in length and stands six feet tall.

The equipment necessary to complete this work includes a large backhoe or small track-hoe capable of lifting the existing spring box and moving it closer to the stream bank. This equipment would access the work site by traveling up the wash from an access road located outside the National Park. The access is clear with the exception of one large dead fallen tree. The tree could be moved to the side allowing access to the work site and returned to it's original fallen point after the repair and re-construction project is completed. Other equipment necessary to complete the work would include a large dump bed truck to haul materials to the site. This vehicle would access the work site on a daily basis and possibly make multiple trips to and from the work site in a given day. Other personnel could access the work site from an informal parking area located

adjacent to Highway 12. An informal trail is already existing that would provide foot traffic access for employees working on the site.

The duration of the repair and re-construction work is estimated at four to seven days. The work would be performed during the driest time of the year to mitigate adverse effects to water quality and stream organisms.

The proposed action includes development of a maintenance agreement that would provide the Town of Tropic access to the Spring box on a periodic basis to ensure it is functioning properly and that water flows from the spring do not exceed their appropriated water right.

MITIGATION FOR PROPOSED ACTION

The following measures will be included in the proposed action:

Work will be performed during a dry time of the year to mitigate adverse effects to water quality and stream organisms.

All equipment will access the work site by traveling up the wash bottom from an access road located outside the National Park. The dead tree across the wash bottom will be moved to allow access and then replaced after the work is finished.

A large dump truck (to bring in fill material) will access the work site on a daily basis and will possibly need to make multiple trips to and from the work site in a given day. All other heavy equipment will go in once, stay on site to complete the job and then go out.

All personnel will access the work site by foot via an informal trail from a pullout on Highway 12 located directly across from the spring site.

The bench upstream from the existing collection box will not be excavated more than one to two feet.

The wall of the wash located north of and adjacent to the collection box will not be excavated.

All equipment will be pressure washed to remove dirt and vegetation from the treads/wheels before working at the site.

ALTERNATIVES CONSIDERED BUT REJECTED

Relocate the water collection apparatus outside the floodplain

This alternative is not considered because it would require a new development that would drill to reach the water in the spring. This would require installation of a pump and bringing power to the

site. It would also involve construction of a collection box or relocation of the existing collection box to a new location on the stream bank, and trenching to install a supply line that would extend up to one mile in length before it exits the floodplain. This alternative would disrupt a large area of native vegetation and require changes to the appropriated water right.

Abandon the water right and remove the collection box

Domestic water is a valuable commodity in the arid climate of Tropic Utah. The Town of Tropic holds a valid water right at this location. Their water right is perfected with the State of Utah. The water rights numbers are 89-1135 (0.224 CFS, Irrigation use, 1880 priority) and 89-1469 (0.444 CFS, Municipal use, 1880 priority). Growth in numbers of people relying on water sources has increased and suitable alternatives for water developments are not available in this area.

ENVIRONMENTALLY PREFERRED ALTERNATIVE

Environmentally preferable is defined as the alternative that will promote the national environmental policy as identified in the National Environmental Policy Act (NEPA), section 101. This ordinarily means the alternative that results in the least damage to the biological and physical environment and best protects, preserves and enhances the historic, cultural and natural resources (Council on Environmental Quality 1981). Section 101 of NEPA states that ... it is the continuing responsibility of the Federal Government to ...

1. fulfill the responsibilities of each generation as trustee of the environment for succeeding generations;
2. assure for all Americans safe, healthful, productive and aesthetically and culturally pleasing surrounding;
3. attain the widest range of beneficial uses of the environment without degradation, risk to health or safety, or other undesirable and unintended consequences;
4. preserve important historic, cultural and natural aspects of our national heritage, and maintain, wherever possible, an environment which supports diversity, and variety of individual choice;
5. achieve a balance between population and resource use which will permit high standards of living and a wide sharing of life's amenities; and
6. enhance the quality of renewable resource and approach the maximum attainable recycling of depletable resources.

The environmentally preferred alternative for resolving the Dr. Goode spring development within Bryce Canyon National Park is based on these six criteria.

In this case, the environmentally preferred alternative would be the no-action alternative. This action would continue the flow water into Tropic wash. This would provide for the establishment of spring vegetation/habitat at the source and riparian vegetation/habitat down the wash. In an arid climates these types of habitats are unique and rare.

ISSUE TOPICS DISMISSED FROM FURTHER CONSIDERATION

Issues and concerns affecting this project were identified by NPS specialists and from other federal, state and local agencies. After public scoping, issues and concerns were distilled into distinct impact topics to facilitate the analysis of environmental consequences, which allows for a standardized comparison between alternatives based on the most relevant information. The impact topics were identified on the basis of federal laws, regulations and orders; NPS Management Policies (2001); and NPS knowledge of limited or easily impacted resources. The rationale for dismissing specific topics from further consideration is given below.

Prime and Unique Farmlands

In August of 1980, the Council on Environmental Quality (CEQ) directed that federal agencies must assess the effects of their actions on farmland soils classified by the U.S. Department of Agriculture's Natural Resources Conservation Service (NRCS) as prime or unique. Prime farmland is defined as soil that particularly produces general crops such as common foods, forage, fiber, and oil seed; unique farmland produces specialty crops such as fruits, vegetables, and nuts. According to NRCS, none of the soils in the project area are classified as prime or unique farmlands. Therefore, the topic of prime and unique farmlands was dismissed as an impact topic in this document.

Socioeconomic Environment

The proposed action would neither change local and regional land use nor impact local businesses or other agencies. An informal trail to the project would be closed to park visitors for a period of time while the construction and repair work is implemented. This closure would have negligible impacts upon park visitation because the use of this trail is generally by animals and by the Town of Tropic to access the spring box. Other park visitors rarely use this trail. Therefore, socioeconomic environment will not be addressed as an impact topic in this document.

Environmental Justice

Executive Order 12898, "requires all federal agencies to incorporate environmental justice into their missions by identifying and addressing disproportionately high and adverse human health or environmental effects of their programs and policies on minorities and low-income populations and communities. The proposed action would not have health or environmental effects on minorities or low-income populations or communities as defined in the Environmental Justice Guidance (1998). Therefore, environmental justice was dismissed as an impact topic in this document.

ENVIRONMENTAL CONSEQUENCES

IMPACTS ON SOILS

Affected Environment

This project will affect the wash bottom and the first fluvial surface (or bench) above the channel. The soil in these areas is well drained and is formed in mixed alluvium derived from sandstone and limestone. Large rock fragments make up 40 to 50 percent of the soil by volume and slopes range from 2 to 7 percent (Soil Survey Staff, 1990). These soils are young and poorly formed due to their landscape position in a highly active deposition and erosion area (the wash bottom).

Impacts of the No-Action Alternative

This alternative will have no impact on the soils of the wash and bench.

Impacts of the Proposed Action

This alternative will have slight impact on the soils of the wash and bench. The heavy equipment traffic in the wash bottom will disturb and compact the soil. Soil will be disturbed during the re-installation on the water supply line down the wash. This disturbance and compaction should be slight and short-lived considering the rocky and poorly-formed nature of these soils. The benches above and adjacent to the collection box will not be disturbed or driven on during construction.

IMPACTS ON VEGETATION

Affected Environment

The wash bottom is largely unvegetated with widely scattered forbs and grasses. Certain sections along the margin of the wash do contain low density patches of narrowleaf Willow (Salix exigua). The vegetation on the bench consists of scattered grasses, forbs, and shrubs, including Bitterbrush (Purshia tridentata) and shrubby Cinquefoil (Potentilla fruticosa). Also present on the bench are narrowleaf Willow and seedlings of Ponderosa pine (Pinus ponderosa) and Rocky Mt. Juniper (Juniperus scopulorum). All of the species growing within the wash and bench are adapted in different ways to the natural disturbance of flood events which maintain the wash environment. The area was surveyed for sensitive plant species found within the Park and none were observed.

Impacts of the No-Action Alternative

This alternative will have no impact on vegetation within the wash or on the bench.

Impacts of the Proposed Action

This alternative will have slight impact on the vegetation within the wash. The heavy equipment traffic in the wash bottom will damage and destroy some of the plants growing in the wash. Plants and plant roots will be disturbed during the re-installation on the water supply line down the wash. The benches above and adjacent to the collection box will not be disturbed or driven on during construction. This activity will have no impact on listed or sensitive plant species.

IMPACTS ON WILDLIFE

Affected Environment

Certain species (such as white-tailed deer and coyote) use Tropic Canyon and Wash as a travel corridor to move between Bryce Valley and the Paunsaugunt Plateau. No habitat for listed or sensitive species found in Bryce canyon occurs within the project area.

Impacts of the No-Action Alternative

This alternative will have no impact on wildlife species within the wash or on the bench.

Impacts of the Proposed Action

This alternative will have little or no impact on non-threatened, disturbance tolerant species of wildlife (such as white-tailed deer and coyote). The equipment and construction will have minimal impact on these species. This activity will have no impact on listed or sensitive wildlife species.

IMPACTS ON FLOODPLAINS

Affected Environment

Dr. Goode Spring is located within the Tropic Canyon riverine floodplain. The streambed is intermittent in the winter/spring and flooding is routine during summer monsoon rain events. The location of this water diversion is along a low gradient section of the streambed. The first fluvial surface (or bench) is only impacted by 100 and 500 year flood events. At the moment the full discharge of the spring is being discharged into Tropic Canyon wash from the broken feeder pipe. A 1996 survey of springs throughout the park noted that there was no water discharged into the Tropic Canyon stream bed at either of two locations described as Dr. Goode Spring (Ott 1996)

Impacts of the No-Action Alternative

This alternative will cause no additional impacts on this floodplain.

Impacts of the Proposed Action

This alternative will have measurable impacts on the floodplain. The proposed project is located against the east bank of the stream channel. The proposal includes construction of a gabien-stacked wall that would stand six feet tall and extend approximately 45 feet in length. The project as proposed would result in an effect that reduces the dynamic change in stream channel movement toward the east, but would not result in a completely channelized streambed. The channel would still have some room to move between the shored up stream bank and the State Highway 12 (approximately 75 meters to the southwest). The gabien-stacked wall would technically change the boundary of the existing floodplain and thus result in the water collection box being situated outside the floodplain. The overflow drain and supply line would be embedded in the stream bottom. Consequently, the existing facility if repaired and re-constructed would minimize the short and long-term adverse effects to floodplain dynamics in this location.

IMPACTS ON WETLANDS AND WATER RESOURCES

Affected Environment

Dr. Goode Spring meets the definition of a wetland as described by (Cowardin et al. 1979). Criteria number 5 best described the Dr. Goode Spring, "wetlands without soil and without hydrophytes, such as gravel beaches or rocky shores without vegetation". The Town of Tropic holds a valid water right at this location. Their water right is perfected with the State of Utah. The water rights numbers are 89-1135 (0.224 CFS, Irrigation use, 1880 priority) and 89-1469 (0.444 CFS, Municipal use, 1880 priority)

Impacts of the No-Action Alternative

This alternative will cause no additional impacts on this wetlands. This action will cause the infringement of two valid water rights held by the town of Tropic at this location.

Impacts of the Proposed Action

This alternative will have measurable impacts on wetlands and water resources. The repair and re-construction should be considered an "excepted action" because it represents the definition as described in the NPS Procedural Manual #77-1:Wetland Protection. Section 4.2 (A.1) paragraph f defines an excepted action as "maintenance, repair, or renovation (but not full reconstruction or expansion) of currently serviceable facilities or structures". The perforated pipe buried in the stream bank and the spring box are currently serviceable. Thus, the proposed project would repair the connection to Dr. Goode Spring and re-construct the overflow and supply lines that connect to the spring box. The re-construction would result in less than 0.1 acres of deviation from the current facility. The overflow pipe would be replaced in nearly the exact location as the original pipe. The new supply line would deviate slightly from the original route.

Diversion of water from Dr. Goode Spring creates adverse effects to this wetland area. The direct effects of this proposed action are modification to the flow of water, and degradation of natural biotic communities through the reduction in water and wet areas of the streambed. The National Park Service has considered all practicable alternatives for meeting their legal responsibilities to the Town of Tropic, which holds two valid water rights at this location.

IMPACTS ON RECREATION RESOURCES AND VISITOR EXPERIENCE

Affected Environment

Lower Tropic Canyon is primarily managed as a scenic transportation corridor for Utah Highway 12. Tropic wash is designated as a natural area in the Park's General Management Plan. The section of Tropic wash containing Dr. Goode spring is visually screened (by trees) from Highway 12. Besides Mossy Cave, this portion of the park currently receives little to no visitor use. The site is not visible from the Mossy Cave Trail or parking area.

Impacts of the No Action Alternative

This alternative will have no impact on recreation resources and visitor experience.

Impacts of the Proposed Action

This action will perpetuate the development of existing water right within the Park. This development does impact recreation values and visitor experience. This reconstruction will continue this small intrusion on the natural landscape.

IMPACTS ON CULTURAL RESOURCES**Affected Environment**

The Bryce Canyon area has seen seasonal and short-term occupation by many native groups throughout the last 12,000 years (Dominguez, 1992). The major cultures and periods were: Paleoindian (12,000-6,000 years before present [BP]); Archaic (6,000 to 1,500 years BP); Fremont 1,500-500 years BP); Piute 500-100 years BP). Early Mormons settled in this area starting in the late 1800's.

The wash bottom is an area of active deposition and erosion and as such, does not contain significant archaeological deposits. The bench containing the existing collection system was partially excavated during the initial installation. Any artifacts within the lower part of this bench are already lost. The taller second fluvial surface or bench (located NE of the existing collection box) is undisturbed and could contain undisturbed artifacts. The wash and benches at the Dr. Goode Spring have not been surveyed for archeological resources.

Impacts of the No-Action Alternative

This alternative will have no impact on cultural resources.

Impacts of the Proposed Action

If implemented as proposed this action will not affect any cultural resources. The first bench will be excavated no more than one to two feet. The second bench will not be excavated at all. Both benches will be reinforced by adding a retaining wall constructed out of gabion baskets.

CUMULATIVE EFFECTS**No-Action Alternative**

This alternative will not cause any cumulative effects on the site.

Proposed Action

This action will disturb a site that has been impacted before and will contribute effects. Because of the existing water right, this site has seen excavation and disturbance for the last 120 years. The proposed action will continue this disturbance in restoring and capturing the water right and facilitating a continuing maintenance agreement

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