

ENVIRONMENTAL ASSESSMENT FOR
SUNSET CRATER VOLCANO NATIONAL MONUMENT
WASTEWATER SYSTEM PROJECT

August 2010



Prepared for:
National Park Service
U.S. Department of Interior
Flagstaff Area National Monuments
Flagstaff, Arizona

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Sunset Crater Volcano National Monument Wastewater System Environmental Assessment

Summary

Sunset Crater Volcano National Monument (SUCR) is proposing to replace the existing wastewater system, which consists of one septic tank. The wastewater system was built around 1965 to serve the visitor center, maintenance annex, and employee housing (i.e., 2 apartment units). The existing wastewater system consists of one 6,000 gallon septic tank, which is regularly plugged. The existing wastewater system has been passing solids through the septic tank and clogging the distribution box. SUCR proposes to replace the existing wastewater system to meet the U.S. Health Public Service standards. The replacement of the existing wastewater system will accommodate the current and future wastewater use for the current annual visitation numbers, and the additional housing units, plus the projected annual visitation numbers. The wastewater system will be located on Coconino National Forest land.

This Environmental Assessment (EA) evaluates 2 alternatives; a No Action Alternative (I), and the Preferred Alternative (II). The No Action alternative would maintain the current sewage conditions. Actions under the Preferred Alternative include replacing the entire existing wastewater system with larger septic tanks, installing new manholes, replacing the gravity sewer system, and installing new drainfield chambers.

This Environmental Assessment has been prepared in compliance with the National Environmental Policy Act (NEPA) and National Historic Preservation Act (NHPA) to provide the decision-making framework that:

- 1) analyzes a reasonable range of alternatives to meet objectives of the proposed plan;
- 2) evaluates potential issues and impacts to the natural and cultural resources of Sunset Crater National Monument; and
- 3) identifies specific and required mitigation measures that are designed to lessen the degree or extent of these impacts.

Resource topics determined to potentially be affected by the alternatives include: Geologic and Soil Resources, Vegetation Resources, Special Status Species, Cultural Resources, Visitor Use Experience, and Public Health. Other resource topics were examined and dismissed because it was determined that this plan would result in only negligible or minor effects to those resources. No major effects are anticipated as a result of this program. Public scoping will be conducted to assist with the development of this document and comments will be received.

Public Comment

The Sunset Crater Volcano EA will be available via the internet at <http://parkplanning.nps.gov/Plans.cfm>. If you wish to make a comment on this EA, please submit written suggestions, comments, and concerns regarding the proposed project online at the NPS Planning, Environment, and Public Comment (PEPC) website at: <http://parkplanning.nps.gov/>. Click on Flagstaff Areas in the “Choose a Park” pulldown menu then click on the “SUCR Replace Existing Septic Tank and Drainfield,” then click on “Open for

Public Comment” on the left sidebar, then click on the document and finally click on “Comment on Document”.

If you are not able to submit comments electronically and wish to comment on this EA, please mail your comments to the name and address listed below. The EA will be available for public comments for 30 days; the comments are due by September 9, 2010. Please note the names and addresses of comments received become public record. If you wish your name and/or address to not be used, then you must state this at the beginning of your comments. All submissions made by organizations, businesses, and individuals identifying themselves as representatives or officials of organizations or businesses will be available for public review in their entirety.

Please address comments to:

Superintendent; Attn: Flagstaff Area National Monuments; 6400 N. Highway 89, Flagstaff, Arizona 86004.

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1.0 PURPOSE AND NEED

1.1 Introduction

Sunset Crater National Monument (SUCR) is located in northern Arizona approximately 13 miles northeast from Flagstaff (Figure 1). SUCR is approximately 3,040 acres surrounded by Coconino National Forest, and was established on May 26, 1930 by President Herbert Hoover to protect its geologic formations. The primary purpose of SUCR is to preserve and protect SUCR's geologic formations, features, and resources for scientific interests and research, and for public interests, which include education, recreation, and scenic values.

SUCR's significance is explained relative to the nation's natural and cultural heritage as the following:

- SUCR is the most recent eruption within the San Francisco Peaks volcanic field and provides unique volcanic research opportunities (i.e., eruption dynamics, change, and recovery in arid climates).
- SUCR provides an archaeological and ethnographic record of human adaptation, recovery, and response to the volcanic eruption; and has current cultural significance to native tribes.
- The park's volcanic features have few visible human disturbances and provide an excellent opportunity for science, education, and interpretation, including plate tectonics, ongoing geologic and ecological processes, and the overall view of how this area is important in Southwestern U.S. and world geology.
- The microhabitat and climate provide a unique species mix of mosses, lichens, endemic species, and plant communities which are examples of succession and adaptation to a volcanic eruption.

SUCR has a semi-arid, continental climate that includes moderately hot, moist summers and cold, dry winters. The mean annual temperature in SUCR is 45.9 F° with a mean summer temperature of 63.7 F° and a mean winter temperature of 29.3 F° (Western Regional Climate Center 2010). The mean annual precipitation is 16.76 inches with the majority of precipitation occurring between July to September (Western Regional Climate Center 2010). The prevailing winds are southwesterly.

The proposed project would include replacing the existing wastewater system for the park Visitor Center and administrative site. The proposed new system would include one 6,000 gallon septic tank and one 12,000 gallon septic tank, new 6" gravity sewer pipes five new manholes, and 1,344 feet of drainfield chambers. The old system would be disconnected, pumped, and abandoned following the U.S. Public Health Services and Arizona Department of Environmental Quality standards. These improvements would be within the administrative zone as identified within the SUCR General Management Plan/Final Environmental Impact Statement (National Park Service (NPS) 2002). Approximately 2.68 acres within the proposed project area would be impacted.

1.2 Purpose of the Environmental Assessment

This Environmental Assessment (EA) has been prepared in compliance with the National Environmental Policy Act (NEPA), National Historic Preservation Act (NHPA), and the NPS Director's Order (DO) -12 to provide the decision-making framework that:

- 1) analyzes a reasonable range of alternatives to meet objectives of the proposed plan;
- 2) evaluates potential issues and impacts to the natural and cultural resources of Sunset Crater National Monument; and
- 3) identifies specific and required mitigation measures that are designed to lessen the degree or extent of these impacts.

The following goals would be met with the proposed project: 1) replace the existing aging and inadequate wastewater system; and 2) prevent clogging of the wastewater system by installing a new wastewater system.

1.3 Purpose and Need

Sunset Crater Volcano National Monument (SUCR) is proposing to replace the existing wastewater system, which consists of one septic tank. The current wastewater system was built around 1965 to serve the visitor center, maintenance annex, and employee housing (i.e., 2 apartment units). The wastewater system consists of one 6,000 gallon septic tank and 430 feet of 6" sewer pipes with a 50 x 36 foot drainfield.

The 2005 and 2006 U.S. Public Health Service inspections found the wastewater system not in compliance and recommended the system be replaced. The wastewater system is over 40 years old and is showing signs of inadequacy. Currently, the wastewater system serves the visitor center, maintenance annex, and employee housing, which includes 3 houses, 2 apartment units, and 4 seasonal trailer sites. Annual visitation in 2008 to SUCR was approximately 221,400, and water usage was 1,078,800 gallons. The increased annual visitation to the visitor's center plus the additional employee housing connected to the wastewater system far exceeds the design capacity of the septic tank and leach field. The wastewater system is frequently plugged and solids have been passing through the septic tank and clogging the distribution box. Failure to replace the current wastewater system could result in a facility closure, including restrooms in the Visitor Center and employee housing.

In summary the following objectives would be met with this project:

- Replace aging and inadequate wastewater system
- Make changes to the wastewater system to meet the US Public Health Service standards
- Increase the wastewater system operating capacity to accommodate current and future waste water use

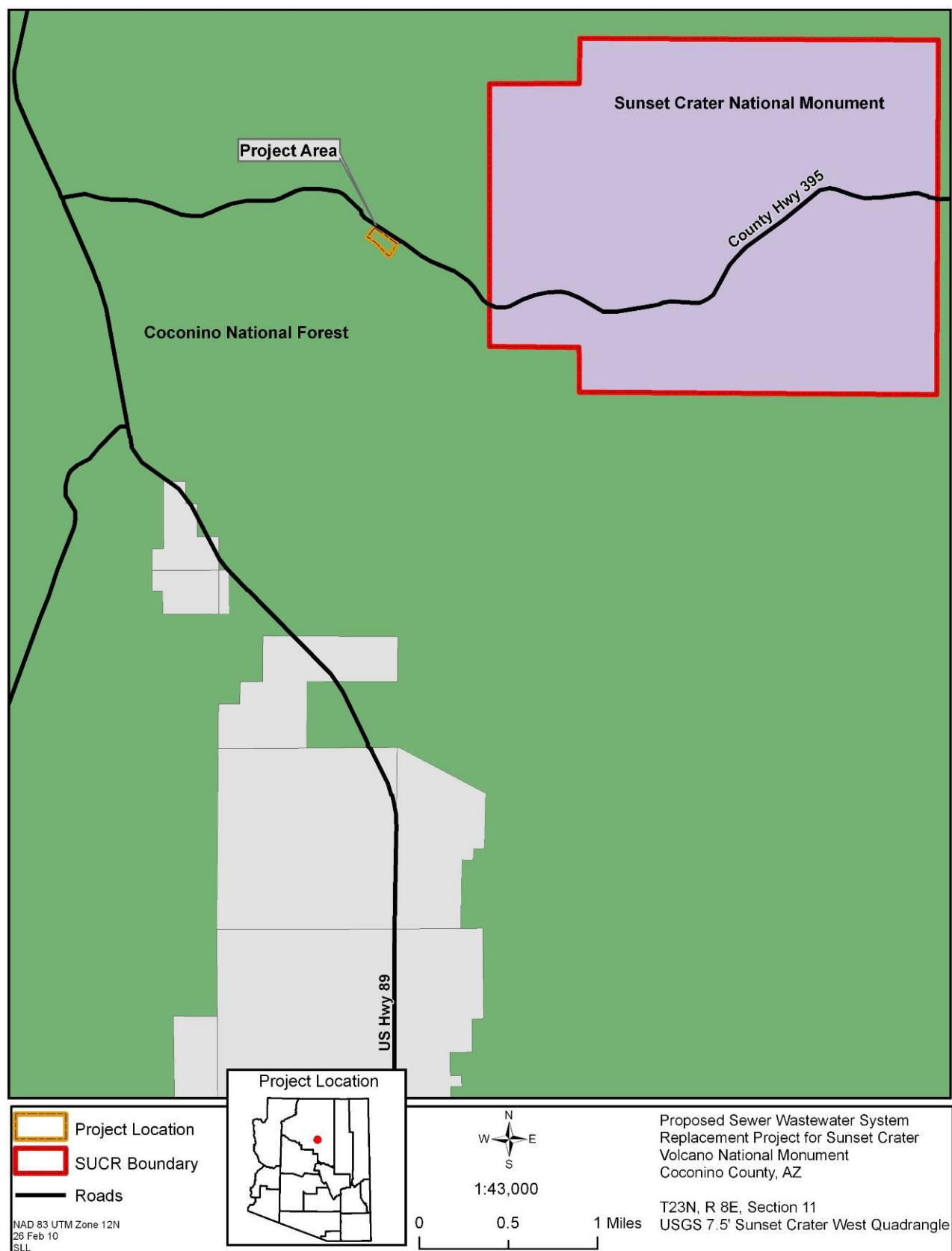


Figure 1. Location of Project in relation to SUCR Monument in northern Arizona.

1.4 Scope of Plan

The scope of this EA is to develop a document identifying potential issues and impacts to the natural and cultural resources of SUCR through implementation of the proposed actions. This EA considers impacts within SUCR and adjacent lands that could reasonably be impacted by the proposed wastewater system construction; however only activities occurring within the boundaries of SUCR and the surrounding Coconino National Forest (CNF) resources are addressed in the scope of this document.

1.5 Relationship to Other Plans and Policies

The proposed action is consistent with the SUCR General Management Plan (GMP) /Final Environmental Impact Statement (NPS 2002), the Flagstaff Area National Monuments Strategic Plan: Statements of Desired Optimum Conditions and Seven Year Project Plan (FLAG Monuments Strategic Plan) (NPS 2009), and the Coconino National Forest Plan as Amended (USDA Forest Service 1987). According to the FLAG Monuments Strategic Plan (NPS 2009), the desired optimum conditions for buildings and utilities are to assure operational functionality and visitor and employee safety. Preventative maintenance programs are established, timely, and support rehabilitation projects, such as the proposed wastewater system replacement. The GMP analyzed operational efficiency, which is the ability to adequately protect and preserve vital park resources and provide for a pleasurable visitor experience (NPS 2002). Utilities (i.e., sewer) that are used to facilitate operations of the park are included under this section. The replacement of the wastewater system would be capable of handling the increased visitation rate and employment housing to the system. According to the Coconino National Forest Plan (USDA 1987 as amended), recreational activities and facilities are to meet visitor needs and be consistent with ecological goals and recreational objectives.

1.6 Public Scoping

Scoping is a process to identify the natural resources that may be impacted by the proposed project, and to identify alternatives for achieving the proposed action, while minimizing the potential impacts. The National Park Service (NPS) conducted both internal scoping with the appropriate SUCR personnel, and external scoping with the general public and interested/affected groups and agencies.

Internal scoping was conducted by an interdisciplinary team of professionals from SUCR. The interdisciplinary team discussed the purpose and need for the project, identified potential alternatives to address these needs, determined potential environmental impacts, and discussed past, present, and foreseeable projects that may have cumulative effects, and potential mitigation measures.

External scoping was conducted by distributing a scoping letter to inform the public of the proposed wastewater system replacement at SUCR and to solicit feedback on the EA. The scoping letter dated ___, 2010 was mailed to 90 addressees, including adjacent land owners, various federal and state agencies, affiliated Native American tribes, and local agencies. The announcement was also published on the NPS Planning Environment and Public Comment (PEPC) website.

1.7 Impact topics Retained for Further Analysis

Impact topics for this project have been identified on the basis of federal laws, regulations, and orders, including the NPS 2006 Management Policies, and NPS knowledge of resources at SUCR. Impact topics that are carried forward for further analysis in this Environmental Assessment are those where the proposed action may have a measurable effect. There were 6 impact topics retained for further analysis. The rationale for retaining each of these topics is listed below with a description of the existing setting or baseline conditions (i.e. affected environment) within the project area. Some impact topics were dismissed from further consideration when the environmental effects were estimated to be either minor or negligible. The following impact topics were retained for further analysis:

Natural Resources

- 1) Geologic and Soil Resources
- 2) Vegetation
- 3) Special Status Species

Cultural Resources

- 4) Archeological

Social Issues

- 5) Visitor Use Experience
- 6) Public Health and Safety

Natural Resources

1) Geologic and Soil Resources

The 2006 Management Policies for the National Park Service (NPS) states the NPS will preserve and protect geologic features and processes from disturbances. These policies also state NPS will aim to understand and preserve the soil resources and to prevent unnatural erosion, removal, or contamination of them. The proposed wastewater system replacement would require excavating and backfilling for utility trenches and structures and topsoil removal for site clearing, which has potential to have a measurable impact on the soil resources; therefore impacts to this topic will be analyzed further.

2) Vegetation

The 2006 Management Policies for the National Park Service states the NPS will preserve and maintain all plants and animals native to the naturally evolving park unit ecosystems by preserving and restoring the abundances, diversity, dynamics, habitats, distributions, and natural processes of native plants. The proposed wastewater system would require removing ponderosa pines for the utility trenches and new sewer lines. Impacts to native vegetation from the proposed project would be minimal and would have minor impacts, thus the topic of vegetation was retained for further analysis.

3) Special Status Species

The Endangered Species Act of 1973 requires an environmental assessment for projects on federally-managed lands to determine potential effects to all federally-listed endangered, threatened, and candidate species. Section 7 of the Endangered Species Act requires all federal agencies to consult with the U.S. Fish and Wildlife Service (USFWS) to ensure that any action authorized, funded, or carried out by the agency does not jeopardize the continued existence of federally listed species or designated critical habitats. In addition, the 2006 Management Policies and Director's Order 77 *Natural Resources Management Guidelines* require the NPS to examine the impacts on federal candidate species, as well as state-listed endangered, threatened, candidate, rare, declining, and sensitive species (NPS 2006). The USFWS was contacted with regards to federal- and state-listed species that may occur within the project area. Therefore, the topic of special status species was retained for further analysis.

Cultural Resources

4) Archeological Resources

Section 106 of the National Historic Preservation Act, as amended in 1992 (16 USC 470 *et seq.*); the NPS's Director's Order 28 *Cultural Resource Management Guideline*; and NPS 2006 Management Policies (NPS 2006) require the consideration of impacts on historic properties that are listed, or eligible to be listed, in the National Register of Historic Places. The National Register is the nation's inventory of historic places and the national repository of documentation on property types and their significance. The above-mentioned policies and regulations require federal agencies to coordinate consultation with the State Historic Preservation Officer regarding the potential effects to properties listed on or eligible for the National Register of Historic Places.

The NPS, as steward of many of America's most important cultural resources, is charged to preserve historic properties for the enjoyment of present and future generations. Management decisions and activities throughout the National Park System must reflect awareness of the irreplaceable nature of these resources. The NPS will protect and manage cultural resources in its custody through effective research, planning, and stewardship in accordance with the policies and principles contained in the 2006 Management Policies, federal laws, and the appropriate Director's Orders. The replacement of the wastewater system would require excavation, potentially disturbing archeological resources. Therefore, archeological resources will be further analyzed.

Social Issues

5) Visitor Use Experience

NPS 2006 Management Policies states the fundamental purpose of all parks is for the enjoyment of park resources and values by the people of the United States. NPS is committed to providing appropriate, high-quality opportunities for visitors to enjoy the parks, and will provide opportunities specifically suited for the natural and cultural resources found within the park. In the long-term, the wastewater system replacement would be a beneficial improvement for the visitor experience. Some temporary disturbance from construction activities would be visible to

visitors, but would be minor and would have little effect to visitor experience. Although, it is estimated that impacts to visitor use and experience would be short-term, minor further analysis is proposed due to the importance of providing a quality and safe experience in SUCR. Thus, visitor use experience will be analyzed in detail.

6) Public Health and Safety

NPS 2006 Management Policies states park managers should strive to protect human life by providing injury free visits and a safe and healthful environment for visitors and employees. Replacing the wastewater system would reduce the level of maintenance and exposure to solids by the employees. Therefore, impacts to public and health safety will be further analyzed.

1.8 Impact topics Considered, but Dismissed from Further Analysis

Impact topics for this project have been identified on the basis of federal laws, regulations, and orders, including the NPS 2006 Management Policies, and NPS knowledge of resources at SUCR. Impact topics that are not carried forward for further analysis in this Environmental Assessment are those where the proposed action would have a minor impact. The rationale for not retaining each of the specific topics is listed below with a description of the existing setting or baseline conditions (i.e. affected environment) within the project area. The following impact topics were dismissed for further analysis:

- 1) Water Resources
- 2) Wildlife
- 3) Wetlands, Floodplains, and Riparian Areas
- 4) Historic Resources
- 5) Cultural Landscapes
- 6) Ethnographic Resources
- 7) Paleontological Resources
- 8) Museum collections
- 9) Park Operations
- 10) Air quality
- 11) Soundscape management
- 12) Lightscape management
- 13) Visual resources
- 14) Socioeconomics
- 15) Prime and unique farmlands
- 16) Indian trust resources
- 17) Environmental Justice
- 18) Wilderness
- 19) Invasive Plant Species

1) Water Resources

NPS policies require protection of water quality consistent with the Clean Water Act. The purpose of the Clean Water Act is to "restore and maintain the chemical, physical, and biological integrity of the Nation's waters." To enact this goal, the U.S. Army Corps of Engineers has been charged with evaluating federal actions that result in potential degradation of waters of the United States and issuing permits for actions consistent with the Clean Water Act. The U.S. Environmental Protection Agency also has responsibility for oversight and review of permits and actions, which affect waters of the United States.

SUCR is dominated by a volcanic landscape and consists of basalt and cinders that are highly permeable, but are not water bearing. There are no known springs or intermittent washes or drainages within SUCR. The Regional C aquifer is the water source for SUCR Visitor Center's drinking water supply and is approximately 1,900 feet deep within the area. The C aquifer may be hydraulically isolated from the surface by horizontal rock formations of limestone. Surface water within SUCR is provided by local catchments around the perimeter of lava flows in seepages. Water collects briefly in depressions on the lava flows, but soon evaporates or infiltrates into the aquifer below. Drinking water for the SUCR Visitor Center and administrative area is provided by Doney Park Water Company, which operates wells developed in the C aquifer (NPS 2002). The water quality data inventory and analysis (NPS 1996) found no water quality data records for SUCR monument (NPS 1996). The proposed wastewater system would not be located in the vicinity of any regulated surface waters. In addition, the new system would be designed and permitted in accordance with Arizona Department of Environmental Quality and Arizona Department of Water Resources regulations and standards to ensure the protection of both surface and groundwater resources. Since the water resources are limited at SUCR and the aquifer is relatively deep and protected from the surface by horizontal rock formations of limestone, impacts to the water resources would be negligible; thus, this topic is dismissed from further analysis.

2) Wildlife

The 2006 Management Policies for the National Park Service states the NPS will preserve and maintain all plants and animals native to the naturally evolving park unit ecosystems by preserving and restoring the abundances, diversity, dynamics, habitats, distributions, and natural processes of native animals. There are approximately 138 vertebrate species recorded for SUCR. The proposed wastewater system replacement project has the potential to have negligible to minor impacts to wildlife species or their habitats. Wildlife species may be disturbed temporarily during construction and demolition of the wastewater systems, but the impacts would be negligible and short-term for wildlife species. Therefore, the topic of wildlife was dismissed from further analysis.

3) Wetlands/Floodplains

For regulatory purposes under the Clean Water Act, the term wetlands means "those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically

adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs and similar areas."

Executive Order 11990 *Protection of Wetlands* requires federal agencies to avoid, where possible, adversely impacting wetlands. Further, Section 404 of the Clean Water Act authorizes the U.S. Army Corps of Engineers to prohibit or regulate, through a permitting process, discharge of dredged or fill material or excavation within waters of the United States. NPS policies for wetlands as stated in *2006 Management Policies* and Director's Order 77-1 *Wetlands Protection*, strive to prevent the loss or degradation of wetlands and to preserve and enhance the natural and beneficial values of wetlands. In accordance with DO 77-1 *Wetlands Protection*, proposed actions that have the potential to adversely impact wetlands must be addressed in a Statement of Findings for wetlands. No adverse impacts to wetlands as described in DO 77-1 are expected. Therefore, no Statement of Findings will be prepared and the topic of wetlands was dismissed from further analysis.

Executive Order 11988 *Floodplain Management* requires all federal agencies to avoid construction within the 100-year floodplain unless no other practicable alternative exists. The NPS guided by the *2006 Management Policies* and Director's Order 77-2 *Floodplain Management* will strive to preserve floodplain values and minimize hazardous floodplain conditions. According to Director's Order 77-2 *Floodplain Management*, certain construction within a 100-year floodplain requires preparation of a Statement of Findings for floodplains. There will be no net loss of floodplains and no construction in these areas. Therefore, a Statement of Findings for floodplains will not be prepared. Ground disturbance would be temporary and would not affect ground surface water flow. Therefore the topic of floodplains was dismissed from further analysis.

4) Historic Resources

The term "historic structures" refers to both historic and prehistoric structures, which are defined as constructions that shelter any form of human habitation or activity. The SUCR Visitor Center Complex Historic District is eligible to be listed on the National Register list, because it is an "exceptional example of NPS Mission 66 planning and park service modern architecture," (NPS 2007). Some ground disturbance would occur from the proposed wastewater system replacement project within the SUCR Visitor Center Complex Historic District. The disturbance would be temporary with no permanent visible changes and all structures would be underground. The proposed utility improvements would benefit the historic resources by preventing future sewage backups into buildings. Impacts to historic resources would be minor and minimal, thus historic resources were dismissed from further analysis.

5) Cultural Landscapes

The National Park Service defines cultural landscapes as settings humans create in the natural world. They are intertwined patterns of things both natural and constructed, expressions of human manipulation and adaptation of the land (NPS's Director's Order 28 *Cultural Resource Management Guideline*). The Flagstaff Area Monuments have recently completed Cultural Landscape Inventories for SUCR (NPS 2007). These inventories assess the character of the natural world that includes and encompasses historic districts. Such inventories describe a

landscape's physical development over time, and evaluate its significance and integrity. The project area does not have any National Register of Historic Places. The project area does not have any cultural landscapes worthy of being on the National Register of Historic Places. Some ground disturbance would occur from the proposed wastewater system replacement project within the SUCR Visitor Center Complex Historic District. The disturbance would be temporary with no permanent visible changes, thus cultural landscapes were dismissed from further analysis.

6) Ethnographic Resources

Director's Order 28 (DO-28), *Cultural Resource Management*, defines ethnographic resources as any site, structure, object, landscape, or natural resource feature assigned traditional legendary, religious, subsistence, or other significance in the cultural system of a an associated traditional group. According to DO-28 and Executive Order 13007, *Indian Sacred Sites*, the NPS should preserve and protect ethnographic resources. There are no known ethnographic resources within the proposed project area. The proposed wastewater system project would be designed to minimize any impacts to natural resources and to restore native plant communities that could be identified as ethnographic resources. If projects are proposed that would significantly alter the physical characteristics of a site all the tribes claiming cultural affiliation to the monuments will be notified and given at least 30 days notice to respond. However, the proposed project would have negligible effects on ethnographic resources, thus ethnographic resources was dismissed from further analysis.

7) Paleontological Resources

The 2006 Management Policies for the National Park Service (NPS) states the paleontological resources (fossils), including both organic and mineralized remains in body or trace form, will be protected, preserved, and managed for public education, interpretation, and scientific research. The geologic condition at SUCR is formed by very recent volcanic deposits with limited post eruption of alluvial, colluvial, and aeolian processes that are not conducive to the preservation of paleontological resources. Therefore, there would be no likely impacts to paleontological resources as a result of the proposed project and the topic was dismissed from further assessment.

8) Museum collections

The Director's Order 24 *Museum Collections* states that NPS is required to consider the impacts on museum collections (historic artifacts, natural specimens, and archival and manuscript material), and provides further policy guidance, standards, and requirements for preserving, protecting, documenting, and providing access to, and use of, NPS museum collections. No SUCR museum collection items would be disturbed as a result of this project. Therefore, museum collections were dismissed from further analysis.

9) Park Operations

Park operations include changes that may affect the current facilities or that may require a new level of maintenance or staffing. The proposed action would improve the current wastewater

system and reduce the potential level of maintenance at the site. The proposed action would not significantly change overall park operations, but would enable the park to more effectively manage solid waste for increased annual visitation and the additional employee housing (i.e., 3 houses, 4 seasonal trailers) connected to the wastewater system. Therefore, park operations were dismissed from further analysis.

10) Air quality

The Clean Air Act of 1963 (42 U.S.C. 7401 *et. seq.*) established federal programs that provide special protection for air resources and air quality related values associated with NPS units. Specifically, Section 118 of the Clean Air Act requires a park unit to meet all federal, state, and local air pollution standards. SUCR is designated as a Class II air quality area under the Clean Air Act, which means emissions of particulate matter and sulfur dioxide are allowed up to the maximum increase in concentrations of pollutants over baseline concentrations as specified in Section 163 of the Clean Air Act. In addition, the Clean Air Act gives the federal land manager the responsibility to protect air quality related values (i.e., visibility, plants, animals, soils, water quality, cultural resources, and visitor health) from adverse pollution impacts.

Motor exhaust and fugitive dust caused by a backhoe or other mechanical equipment used during the wastewater system replacement project would be negligible and temporary. The Class II air quality designation would not be affected by the project. Therefore, air quality was dismissed as an impact topic for further analysis.

11) Soundscape management

In accordance with the 2006 Management Policies for the NPS and Director's Order 47 *Sound Preservation and Noise Management*, an important component of the NPS's mission is the preservation of natural soundscapes associated with national park units. Natural soundscapes exist in the absence of human-caused sound. The natural ambient soundscape is the combination of all the natural sounds that occur in park units, together with the physical capacity for transmitting natural sounds. The frequencies, magnitudes, and durations of human-caused sound considered acceptable varies among NPS units as well as potentially throughout each monument, being generally greater in developed areas and less in undeveloped areas.

Impacts to the soundscape could occur from equipment (e.g., backhoe) used for trenching and installing the septic tanks. These impacts should be minor and temporary and should not exceed typical levels of man-made noise present during visitor season. Therefore, soundscape management was dismissed as an impact topic for further analysis.

12) Lightscape management

The 2006 Management Policies for the NPS states the NPS will strive to preserve natural ambient landscapes, which are natural resources and values that exist in the absence of human caused light. SUCR strives to limit the use of artificial outdoor lighting to the amount necessary

for basic safety requirements. There should be no impacts to lightscape management; thus, this topic was dismissed from further analysis.

13) Visual Resources

The new wastewater system would be installed underground and would only be visible to visitors during the installation phase. The impact on visual resources would be minor or negligible, thus the visual resource topic was dismissed from further analysis.

14) Socioeconomics

The proposed action would neither change local and regional land use nor appreciably impact local businesses or other agencies. There could be minimal increases in employment opportunities and revenue generated in nearby small businesses from implementation of the proposed action. Any increase in workforce and revenue would be temporary and negligible. Because the impacts to the socioeconomic environment would be negligible, this topic was dismissed from further analysis.

15) Prime and unique farmlands

The Farmland Protection Policy Act of 1981, as amended, requires federal agencies to consider adverse effects to prime and unique farmlands that would result in the conversion of these lands to non-agricultural uses. Prime or unique farmland is classified by the U.S. Department of Agriculture's Natural Resources Conservation Service (NRCS). Prime farmland is defined as land that has the best combination of physical and chemical properties for producing food, forage, fiber, and oil seed, and for other uses (e.g., pasture land, forest land, and crop land). Unique farmland is defined as land other than prime farmland that can produce high value and fiber crops, such as fruits, vegetables, and nuts. There are no prime and unique farmlands designated in the SUCR, thus this topic was dismissed from further analysis.

16) Indian trust resources

Secretarial Order 3175 mandates any anticipated impacts to Indian trust resources from proposed project or action by the Department of Interior agencies be explicitly addressed in environmental documents. The federal Indian trust responsibility is a legally enforceable fiduciary obligation on the part of the United States to protect tribal lands, assets, resources, and treaty rights, and it represents a duty to carry out the mandates of federal law with respect to American Indian and Alaska Native tribes.

There are no Indian trust resources at SUCR. Therefore, the project would have negligible effects on Indian trust resources, and was dismissed from further analysis.

17) Environmental Justice

Executive Order 12898 *General Actions to Address Environmental Justice in Minority Populations and Low-income Populations* 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, policies, and activities on minorities and low-income populations and communities. The proposed action would not have disproportionate health or environmental effects on minorities or low-income populations or communities. Therefore, environmental justice was dismissed from further analysis.

18) Wilderness

The Wilderness Act of 1964 established the National Wilderness Preservation System to “...secure for the American people of present and future generations the benefits of an enduring resource of wilderness.” Furthermore, the Wilderness Act states that “In order to assure that an increasing population, accompanied by expanding settlement and growing mechanization, does not occupy and modify all areas within the United States and its possessions, leaving no lands designated for preservation and protection in their natural condition, it is hereby declared to be the policy of the Congress to secure for the American people of present and future generations the benefits of an enduring resource of wilderness.” Although there is great similarity between the NPS Organic Act and the Wilderness Act, Congress applied the Wilderness Act to NPS to strengthen its protective capabilities.

The 2006 Management Policies, Section 6 states, “The National Park Service will evaluate all lands it administers for their suitability for inclusion within the national wilderness preservation system. For those lands that possess wilderness characteristics, no action that would diminish their wilderness suitability will be taken until after Congress and the President have taken final action. The superintendent of each park containing wilderness will develop and maintain a wilderness management plan to guide the preservation, management, and use of the park’s wilderness area, and ensure that wilderness is unimpaired for future use and enjoyment as wilderness.”

The purpose of Director’s Order-41, *Wilderness Preservation and Management*, is to provide accountability and consistency to NPS’ wilderness management program and to guide NPS’ efforts in meeting the letter and spirit of the 1964 Wilderness Act. DO-41 should be applied to management actions carried out within the framework of a park’s general management plan, the Government Performance and Results Act, a park’s natural and cultural resource plans, and the park’s wilderness management plan.

There are no lands designated as wilderness in SUCR, nor are there any sizeable roadless areas within SUCR or on adjacent CNF lands. Thus, wilderness was dismissed for further analysis.

19) Invasive Plants

There are no federal laws governing vegetation in general; however, NPS has developed policies and guidance on vegetation management. Section 4.4 of NPS 2006 Management Policies addresses biological resource management, including management of native plants and animals. This policy states that NPS will maintain all native plants as parts of the natural ecosystems of parks. Management practices to limit potential impacts to vegetation vary amongst NPS units. However, parks generally have management practices to minimize potential impacts to vegetation and to protect sensitive vegetation resources.

There is a risk of invasive species introduction and spread associated with any construction or ground disturbing activity. However, the proposed action would result in a relatively small area of disturbance. There are sufficient mitigating measures to reduce the potential for introduction of new invasive plants. The NPS actively monitors for problem species around the SUCR facility area, and has staff dedicated to the control and removal of problem species if they are introduced. Therefore, invasive plants were dismissed for further analysis.

2.0 ALTERNATIVES CONSIDERED

2.1 Alternative I: No Action Alternative

This action represents the conditions that would continue to exist if the wastewater system was not replaced. This alternative provides a baseline for comparing and evaluating the impacts to the environment by the action alternatives. Under this alternative, the wastewater system would continue to have sewage blockages due to being undersized compared to the demands, and repairs would occur on an as needed basis. Failure to replace the wastewater system could result in violations of Federal and State of Arizona wastewater discharge regulations, and subsequent facility closure, including restrooms in the Visitor Center and employee housing.

2.2 Alternative II: Preferred Alternative

The Preferred Alternative proposes to replace the existing septic tank and drainfield (Figures 2 & Figure 3). The proposed action would remove the existing septic tank, manholes, and gravity sewer pipes. The proposed action would include installing one 12,000 gallon septic tank (36' x 8') and one 6,000 gallon septic tank (19.5' x 8'). Septic tank installation would include excavating with a backhoe approximately 8 feet deep and up to 20 feet wide for each fiberglass reinforced plastic septic tank and distribution box.

The installation of the gravity sewer pipes would require installing approximately 200 linear feet of 4" and 800 linear feet of 6" PVC gravity sewer pipes with a minimum 0.6% slope. The earthwork and clearing of vegetation for the proposed sewer alignment would be limited to a 10 foot wide corridor. The installation would include excavating and trenching with a backhoe. The trench walls would require excavating from the bottom of the trench to approximately 12" higher than the top of the pipe on each side of the pipe. If there is rock or unyielding bearing material encountered, then the trenches would be excavated 6 inches deeper to allow for bedding course with initial backfill. The gravity sewer pipes would be placed in the same trench as the existing sewer pipe when possible and new trenches would have to be excavated for the new gravity pipes connecting the septic tanks to the drainfield.

The drainfield would be located approximately 280 feet west of the existing septic tanks. The installation of 1,344 linear feet of sub-surface wastewater drainfield chambers would require excavation with a backhoe between 12" and 48" deep and a minimum 3' wide trench. The chambers installed would be approved by the Arizona Department of Environmental Quality and would be molded high-density polyethylene domed chambers with open bottoms. They would have louvered sidewalls to allow for effluent to pass laterally into the soil. The earthwork and clearing of vegetation would be limited to a 20 foot wide perimeter around the drainfield. The location was chosen for the ability to install the drainfield without damaging any trees.

The sanitary wastewater utilities to be installed would include approximately 5 manholes, and cleanouts. The manholes would be precast concrete approximately 48" in diameter and 24' to 30' in depth. The manhole frame and lid would be 3" above the surface in open areas and level with the surface in roadways. Each manhole lid would have "sanitary sewer" cast into it. Excavation for each manhole would require trenching 12" to 24" deep with a backhoe. Each cleanout would require a concrete pad approximately 18' square and 4' deep at the ground surface.

The existing utilities and below-grade utility structures of the current wastewater system that are 5 feet outside the new construction footprint would be removed. Utilities outside the 5 foot buffer would be abandoned in accordance to NPS standards. The contents from the septic tank, manholes, and drainfields would be pumped and disposed off-site in an approved EPA landfill. In addition, the soils within 5 feet of the demolished structures would be excavated and disposed off site at an approved location. All septic tanks and manholes removed include the entire depth of the structures and associated piping. All manholes no longer in use would be abandoned by removing the frames and lids and disposed at an approved location. The manholes would then be crushed and filled in with gravel. The existing drainfield would be abandoned on site by filling in the site with backfill material after the sludge has been removed.

2.2.1 Alternatives Considered and Rejected

Three additional alternatives (Alternatives III – V) were considered, but rejected based on costs. Two potential sub-surface wastewater infiltration system (SWIS) disposal field locations were evaluated. The primary location is approximately 280 feet west of the existing septic tank (Site #1) and the secondary location is approximately 60 feet south of the existing septic tank (Site #2).

Alternative III, a pressurized sub-surface disposal system, was the same as alternative III, but located at Site #1. This alternative was rejected from further consideration, because the capital and operational costs were higher than the preferred alternative.

Alternative IV was a pressurized sub-surface disposal system similar to a gravity-flow system, and would be located in Site #2. Site #2 is located at a higher elevation, and would only be plausible using a pressurized SWIS. A pressurized sub-surface disposal system would require a 2,000 gallon dosing tank with two submersible sewage pumps to discharge the septic effluent, electrical lines, and controls, in addition to the same materials used for the preferred alternative. This alternative was rejected from further consideration, because the capital and operational

Alternative V, a dosing siphon tank sub-surface disposal system, included a dosing siphon tank with a gravity feed sub-surface disposal and would be located at Site #1. The system would use a dosing siphon via gravity, which periodically and automatically doses the drainfield. This alternative was dismissed, because in order to provide adequate pressure to the SWIS, the SWIS would need to be buried seven feet below surface versus approximately two to three feet for the preferred alternative.

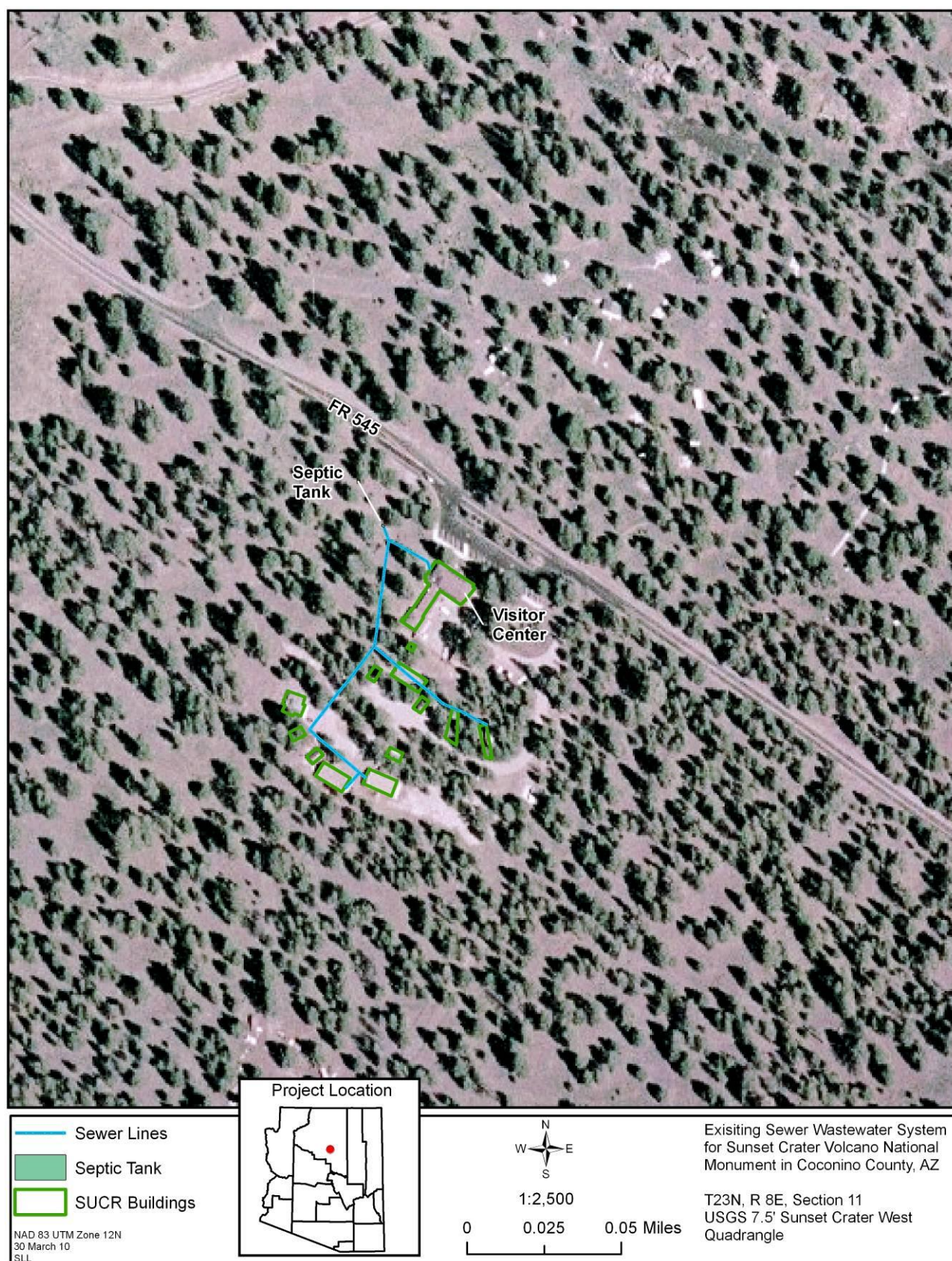


Figure 2. Existing Wastewater System for SUCR Visitor Center.

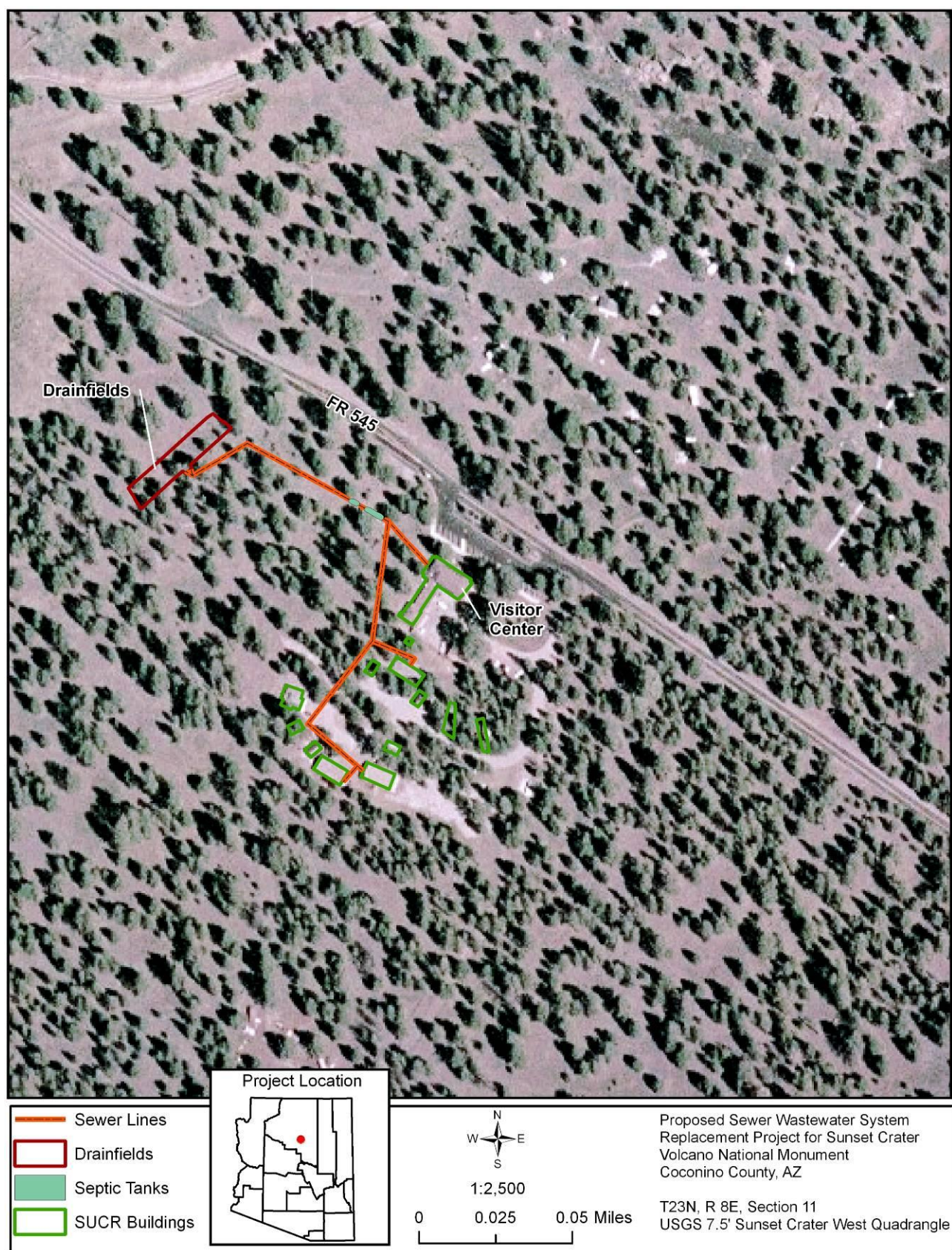


Figure 3. Proposed Replacement Wastewater System for SUCR Visitor Center.

This alternative was rejected, because the system design would have been extremely costly to install the SWIS deeper.

A surface wastewater disposal (i.e. evaporative lagoon, land application) was not considered, because it would be more costly, damage the viewshed, and impact a larger surface area.

2.3 Mitigation Measures during Construction of the Proposed Action

The following mitigation measures would be implemented:

- All construction would be limited to the areas within the construction limits; all activity, including vehicle and material use and storage would not be allowed outside predetermined, marked construction/staging zones and would be within 4 miles of the project area.
- Construction zones would be identified and fenced with construction tape or safety barrier fence prior to any construction activity. The fencing would define the construction zone and confine activity to the minimum area required for construction.
- Traffic controls would be installed to protect pedestrians; barricades, lights, danger signals, and warning signs would be used; guardrails and fence would be installed to protect pedestrians; and pipes, hoses, pipes, and power lines crossing sidewalks and walkways would be covered with troughs using beveled edge boards.
- All earth-moving equipment including haul vehicles would be thoroughly cleaned of mud and weed seed prior to entering the National Park.
- No imported fill material will be required under the alternatives.
- The NPS actively monitors for invasive plant species around the SUCR facility area, and has staff dedicated to the control and removal of problem species if they are introduced.
- If fuels and hazardous materials are used, a spill-protection plan must be approved by the Park Safety Officer.
- Separate temporary sanitary facilities would be provided for use by construction personnel and for park visitors.
- Soil erosion would be minimized by appropriate erosion control measures. Temporary silt fences would be installed around stockpiles and/or excavated material that cannot be backfilled within the same day excavated; downstream of any utility trench that has not been backfilled; and prior to leaving the work site for the day.
- Excavated soil may be used in the construction project; excess soil would be stored in approved areas and covered to prevent windblown dust.
- Topsoil would be removed and conserved separately then placed back on top after the work is completed. Materials would be stockpiled away from the edge of excavation and not placed within the drip line of the remaining trees.
- Where trenching has occurred, the surface of the trench would be left adequately mounded to allow for ground settling along the line. Park inspection of all fill, gravel or soil materials into SUCR would be required. Trenches left open would be fenced to protect the public.

- Areas to be cleared would take precautions to protect the existing vegetation. Temporary barriers to protect existing trees, plants, and root zones would be provided. Excavation within drip lines of trees and shrubs would be hand cleared and excavated to minimize root damage. Fill material would be placed in depressions caused by clearing or grubbing unless further excavation or earthwork is indicated. No trees with a diameter at breast height (dbh) of 16 inches or greater would be removed.
- If during construction previously undiscovered archeological resources are discovered, all work in the immediate vicinity of the discovery would be halted until the resources could be identified and documented and an appropriate mitigation strategy developed in consultation with the State Historic Preservation Officer.
- If any previously unrecorded threatened, endangered, or special status species is discovered during construction, then all work would stop until FLAG staff evaluated the impact, and would allow modifications to any contracts or work plans for measures determined necessary to protect the threatened, endangered, or special status species.
- Project ground-disturbing activities (i.e., excavations, removal and installation of sewer pipes) will be monitored by an archaeologist. Spot monitoring would continue for the duration of the entire project.
- Site disturbance, including earthwork and clearing of vegetation, would be limited to a 10 foot wide corridor along the proposed sewer line alignment and a 20 foot wide perimeter around proposed septic tanks and drainfields.
- All work would be conducted during normal Park operation hours, Monday – Friday, and workers would commute to and from the site each day and be confined to the day’s work area.
- The Park Service will designate a specific area(s) for sorting waste materials as reuse, salvage, recyclable, or debris. Waste and recycling bins would be provided and placed near each other close to the point of waste generation. Each bin would be clearly labeled to avoid confusion. All recyclable material and debris would be transported off site by the contractor and disposed at approved locations (i.e., landfills, incinerators).

2.4 Environmentally Preferred Alternative

The environmentally preferred alternative is determined by applying the criteria suggested in the National Environmental Policy Act of 1969 (NEPA), which is guided by the Council on Environmental Quality (CEQ). The CEQ provides direction that “the environmentally preferable alternative is the alternative that will promote the national environmental policy as expressed in NEPA’s Section 101.” Section 101 of the National Environmental Policy Act 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 surroundings;
- (3) attain the widest range of beneficial uses of the environment without degradations, 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;
- (6) enhance the quality of renewable resources and approach the maximum attainable recycling of resources."

The Preferred Alternative meets all six criteria better than the No Action Alternative (Table 1). The preferred alternative would accomplish criteria 1, 2, and 3 by preventing sewage pollution, or the potential of sewage pollution into the soils and groundwater. Criteria 2 and 4 are fulfilled by providing long-term maintenance solutions and protecting the SUCR Visitor Center Complex Historic District. The proposed wastewater system replacement would allow the system to handle the increased sewage demands due to increased annual visitation numbers and the additional employee housing connected to the system; thus fulfilling criteria 5. The No Action alternative would not meet any of the criteria, because potential for sewage backups into the historic district would remain. Neither alternative would achieve criteria 6. Therefore, the Preferred Alternative is the environmentally preferred alternative.

Table 1. Summary of the Proposed Action Objectives and Alternatives

Objectives	No Action Alternative	Preferred Alternative
Replace aging and inadequate wastewater sewer system	The wastewater system would not be replaced and would continue to be maintained on an as need basis	The entire wastewater system would be replaced
Make changes to wastewater sewer system to meet US Public Health Services standards	The system would remain too small to meet the current volume of sewage demands and would not meet the standards	The entire system would be replaced and would meet the standards
Increase the wastewater system operating capacity to be able to accommodate current and future wastewater use	The system would not be replaced and would continue to get plugged and pass solids through the distribution box	The system would be replaced with 2 septic tanks to increase the capability and capacity of the system to handle the volume of sewage demands and would prevent plugging and solids passing through the distribution box
Does the alternative meet project objectives	No	Yes

3.0 AFFECTED ENVIRONMENT

NEPA requires that environmental documents disclose the environmental impacts of the proposed federal action, reasonable alternatives to that action, and any adverse environmental effects that cannot be avoided should the preferred alternative be implemented. This chapter

identifies the impacts to the physical, biological, and human aspects of the environment that could be affected by the alternatives. The effects of project alternatives on each resource are also described.

This chapter analyzes the potential environmental consequences, or impacts, that would occur as a result of replacing the existing wastewater system as described in the previous chapter. Topics analyzed in this chapter include:

- 3.6) Natural Resources
 - 3.6.1) Geologic Resources and Soils
 - 3.6.2) Vegetation
 - 3.6.3) Special Status Species
- 3.7) Cultural Resources
 - 3.7.1) Archeological Resources
- 3.8) Social Issues
 - 3.8.1) Visitor Experience
 - 3.8.2) Public Health and Safety

3.1 Methodology

The effects of each alternative are assessed for direct, indirect, and cumulative effects for each resource topic selected. Actions are first analyzed for their direct and indirect effects. Direct effects are impacts that are caused by the alternatives at the same time and in the same place as the action. Indirect effects are impacts caused by the alternatives that occur later in time or are farther in distance than the action. Potential impacts are described in terms of type, context, duration, and intensity. Specific impact thresholds are given for each resource at the beginning of each resource section. General definitions for potential impacts are described as follows:

Type: Describes the impact as either beneficial or adverse:

Beneficial: A positive change in the condition or appearance of the resource or a change that moves the resource toward a desired condition.

Adverse: A change that moves the resource away from a desired condition or detracts from its appearance or condition.

Context: Describes the location or area where the impacts will occur.

- 1) site-specific - impacts would occur within the location of the proposed action
- 2) local – impacts would affect areas within the location of the proposed action and land adjacent to the proposed action
- 3) regional – impacts would affect areas within the location of the proposed action, land adjacent to the proposed action, and land in surrounding communities.

Duration: Describes the length of time an impact would occur, as either short-term or long-term.

Short-term: impacts that generally last for the duration of the project. Some impact topics will have different short-term duration measures and these will be listed with the resource.

Long-term: impacts that generally last beyond the duration of the project. Some impact topics will have different long-term duration measures and these will be listed with the resource.

Intensity: Describes the degree, level, or strength of an impact. The impacts can be *negligible*, *minor*, *moderate*, or *major*. Definitions of intensity can vary by resource topic and are provided separately for each impact topic analyzed.

3.2 Cumulative Impacts

The Council on Environmental Quality (CEQ) regulations, which guide the implementation the National Environmental Policy Act of 1969 (42 USC 4321 et seq.), require assessment of cumulative impacts in the decision-making process for federal projects. Cumulative impacts are defined as "the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions" (40 CFR 1508.7). Cumulative impacts are considered for all Alternatives.

Cumulative impacts were determined by combining the impacts of the alternative with other past, present, and reasonably foreseeable future actions. Therefore, it was necessary to identify other ongoing or reasonably foreseeable future projects at SUCR and, if applicable, in the surrounding region. The geographic scope for this analysis includes elements within the SUCR visitor center complex and areas adjacent. The following are past, present and reasonably foreseeable future actions that have and could occur in the vicinity of the project area:

- Remodel/rehab of the SUCR annex building (scheduled for 2010)
- Plan, design and construct SUCR entrance signs (scheduled for 2010)
- Modify SUCR boundary fence to improve wildlife movement within the park
- New activities proposed in the 2002 General Management Plan and Final Environmental Statement (NPS) included constructing a new curatorial facility and maintenance, resources management, and ranger support facility in the administrative area, and upgrading facilities for accessibility.

3.3 Impairment

The 2006 NPS Management Policies requires the analysis of potential effects to determine whether or not actions would impair park resources. The fundamental purpose of the National Park System, established by the Organic Act and reaffirmed by the General Authorities Act, as amended, begins with a mandate to conserve park resources and values. NPS managers must always seek ways to avoid, or to minimize to the greatest degree practicable, actions that would adversely affect park resources and values. However, these laws give the NPS the management discretion to allow impacts to park resources and values when necessary or appropriate to fulfill

the purpose of the park, as long as the impact does not constitute impairment of the affected resources or values.

Although Congress has given the National Park Service the management discretion to allow certain impacts within parks, that discretion is limited by the statutory requirement that the National Park Service must leave park resources and values unimpaired, unless a particular law directly and specifically states otherwise. The prohibited impairment is an impact that, in the professional judgment of the responsible NPS manager, would harm the integrity of park resources or values, including the opportunities that otherwise would be present for the enjoyment of those resources or values. An impact to any park resource or value may constitute an impairment. Impairment may result from NPS activities in managing the park, from visitor activities, or from activities undertaken by concessionaires, contractors, and others operating in the park. An impact would be more likely to constitute an impairment to the extent that it has a major or severe adverse effect upon a resource or value whose conservation is:

- Necessary to fulfill specific purposes identified in the establishing legislation or proclamation of the park;
- Key to the natural or cultural integrity of the park or to opportunities for enjoyment of the park; or
- Identified as a goal in the park's general management plan or other relevant NPS planning documents.

Each resource topic was analyzed to determine if impacts constituted an impairment to park resources and values.

3.4 Impacts to Cultural Resources and Section 106 of the National Historic Preservation Act

In this Environmental Assessment, impacts to cultural resources are described in terms of type, context, duration, and intensity, as described above, which is consistent with the regulations of the Council on Environmental Quality (CEQ) that implement the National Environmental Policy Act (NEPA). This Environmental Assessment is intended, however, to comply with the requirements of both NEPA and §106 of the National Historic Preservation Act (NHPA). To achieve this, a §106 summary is included under the Preferred Alternative for each of the cultural resource topics carried forward including Cultural resources. The topics of historic resources, cultural landscapes, ethnographic resources, and museum collections were dismissed from further consideration, because none were identified in the project area or impacts would be negligible. Should the proposed action be determined to potentially affect cultural resources, site specific compliance with §106 of the National Historic Preservation Act will be initiated with the park's affiliated tribes as well as the Arizona State Historic Preservation Officer (AZSHPO).

In accordance with the Advisory Council on Historic Preservation's regulations implementing Section 106 of the NHPA (36 CFR Part 800, Protection of Historic Properties, impacts to historic properties were identified and evaluated by (1) determining the area of potential effects; (2) identifying cultural resources present in the area of potential effects that were either listed in or eligible to be listed in the National Register of Historic Places; (3) applying the criteria of

adverse effect to affected cultural resources either listed in or eligible to be listed in the National Register; and (4) considering ways to avoid, minimize or mitigate adverse effects.

In accordance with the Advisory Council's regulations implementing §106 of the NHPA (36 CEQ regulations and the NPS's *Conservation Planning, Environmental Impact Analysis and Decision-Making* (Director's Order #12) also call for a discussion of the appropriateness of mitigation, as well as an analysis of how effective the mitigation would be in reducing the intensity of a potential impact (e.g. reducing the intensity of an impact from major to moderate or minor). Any resultant reduction in intensity of impact due to mitigation, however, is an estimate of the effectiveness of mitigation under NEPA only. It does not suggest that the level of effect as defined by §106 is similarly reduced. Although adverse effects under §106 may be mitigated, the effect remains adverse.

Under the Advisory Council's regulations, a determination of either *adverse effect* or *no adverse effect* must be made for affected historic properties that are eligible for or listed on the National Register of Historic Places. An *adverse effect* occurs whenever an impact alters, directly or indirectly, any characteristic of a cultural resource that qualifies it for inclusion in the National Register (e.g. diminishing the integrity of the resource's location, design, setting, materials, workmanship, feeling, or association). *Adverse effects* also include reasonably foreseeable effects caused by the Preferred Alternative that would occur later in time; be farther removed in distance; or be cumulative (36 CFR Part 800.5, Assessment of Adverse Effects). A determination of *no adverse effect* means there is an effect, but the effect would not diminish in any way the characteristics of the cultural resource that qualify it for inclusion in the National Register of Historic Places.

In order for a historic property to be listed on the National Register of Historic Places, it must meet one or more of the following criteria of significance: 1) associated with events that have made a significant contribution to the broad patterns of our history; 2) associated with the lives of persons significant in our past; 3) embody the distinctive characteristics of a type, period, or method of construction, or represent the work of a master, or possess high artistic value, or represent a significant and distinguishable distinction; 4) have yielded, or may be likely to yield, information important in prehistory or history. In addition, the historic property must possess integrity of location, design, setting, materials, workmanship, feeling, association (*National Register Bulletin, How to Apply the National Register Criteria for Evaluation*).

3.5 Summary of Environmental Consequences of the Alternatives

Table 2 summarizes the environmental effects on resource topics analyzed in the environmental assessment.

Table 2. Summary of Environmental Impacts by Alternatives

Resource Topic	Alternative I No Action	Alternative II Replacement of wastewater system
Geologic and Soil Resources	Minor, long-term, adverse, and local impacts due to the	Direct, minor, short-term, adverse, and local impacts

	potential for sewage contamination to soil resources	due to temporary disturbance from trenching
Vegetation Resources	Direct, negligible to minor, adverse, short-term, and site-specific due to potential for repairs and maintenance on as need basis disturbing individual plants	Direct, negligible to minor, adverse, short-term, and site-specific due to trenching and drainfield installation activities that may require removal of individual trees
Special Status Species	<p>Plants: Sunset Crater penstemon and cinder phacelia - No impacts to individuals or populations due to no plants occur within the project area; Negligible to minor, adverse, short-term and long-term, local impacts to habitat due to ground disturbance for periodic maintenance and repairs.</p> <p>Wildlife: Northern goshawk- No impacts to northern goshawk individuals or populations due to no nesting sites, suitable nesting or roosting habitat are known to occur within the project area; Negligible, adverse, short to long-term, localized impacts to habitat due to noise and human presence and potential for removal of large diameter trees in the future for periodic maintenance and repairs.</p> <p>American pronghorn - No impacts to individuals, populations, or habitat due to pronghorn do not occur within the project area.</p> <p>Gunnison's prairie dog - No impacts to individuals, populations, or habitat due to Gunnison's prairie dog do not occur within the project area.</p>	<p>Plants: Sunset Crater penstemon and Cinder bhacelia - No impacts to individuals or populations due to no plants occur within the project area; Negligible to minor, adverse, short-term and long-term, local impacts to habitat due to ground disturbance for construction activities.</p> <p>Wildlife: Northern goshawk- No impacts to northern goshawk individuals or populations due to no nesting sites, suitable nesting or roosting habitat are known to occur within the project area; Negligible, adverse, short-term, localized impacts to habitat due to noise and human presence and the removal of some smaller trees and the retention of large diameter trees.</p> <p>American pronghorn - No impacts to individuals, populations, or habitat due to pronghorn do not occur within the project area.</p> <p>Gunnison's prairie dog - No impacts to individuals, populations, or habitat due to Gunnison's prairie dog do not occur within the project area.</p>

Archeological Resources	Direct, minor, adverse, long-term, and site-specific impacts due to low potential for encountering artifacts. The soil was disturbed during installation of the existing wastewater system and disturbance to the potential site is slight based on current knowledge.	Direct, minor, long-term, adverse, and site-specific due to most of the soil disturbance would occur in previously disturbed areas from trenching for the existing sewer lines, and no previously recorded archeological artifacts within the undisturbed areas from past inventories.
Visitor Use	Indirect, minor, long-term, adverse, and local impacts due to the continued wastewater exceedance of the existing wastewater system's designed capacity, which could result in the closure of the visitor center	Direct, minor, short-term, beneficial, and local due to visual quality, noise, and disturbance encounter levels within the visitor center area during construction. The visitor center would remain open with temporary restroom facilities. The alternative would be beneficial due to the ability of the wastewater system to accommodate the current and future wastewater use for visitors and employees.
Public Health and Safety	Minor to moderate, long-term, adverse, local impacts due to the continued periodic plugging and passing of solids to the septic tank, and not meeting US Public Health Service standards	Direct, moderate, long-term, beneficial, and local impacts due to replacement of the wastewater system would comply with the US Public Health Services standards and be able to accommodate the current and future wastewater use for visitors and employees. No continued periodic plugging and passing of solids to the septic tank

3.6 Natural Resources

3.6.1 Geologic Resources and Soils

The 2006 Management Policies for the National Park Service states the NPS will preserve and protect geologic features and processes from disturbances (NPS 2006). These policies also state NPS will aim to understand and preserve the soil resources and to prevent unnatural erosion, removal, or contamination of them. The proposed wastewater system replacement would require excavating and backfilling for utility trenches and structures and topsoil removal for site clearing. Approximately 10,000 square feet would be disturbed by constructing and operating the new system, a measurable impact on the soil resources.

3.6.1.1 Affected Environment

The SUCR Visitor Center area surface geology is dominated by basaltic rocks of the Tappan-Age, which consists both of unconsolidated volcanic tephra and consolidated lava flows. These deposits are over 1,000 feet deep at the project site, and resulted from the fallout and flows from the Sunset Crater Volcano Eruption and several other nearby cinder cone volcanoes. The Sunset Crater Volcano eruption period began sometime between 1040 and 1100 A.D. (Ort et al. 2002). Sunset Crater is one of the youngest geologic features in Arizona and lies near the northeastern edge of the San Francisco volcanic field, which covers approximately 1,800 square miles of the southern Colorado Plateau in north-central Arizona (Priest et al. 2001).

The volcanic deposits are underlain at great depth primarily by Triassic and Permian age, clastic, sedimentary rocks. The sedimentary rock stratum includes the Permian Kaibab Limestone and red sandstone with minor shale and conglomerate of the Triassic Moenkopi Formation. These sedimentary rock beds may also include the Permian Coconino Sandstone and Toroweap Formation (NPS 2005). The geologic formations encountered at the Sunset Crater Well included volcanic cinders, Kaibab Limestone, Coconino Sandstone, and Supai Sandstone.

The soils within the area are relatively unweathered volcanic cinder with sand below. Soil surveys have not been completed by the Natural Resource Conservation Service for the project area.

3.6.1.2 Methodology and Intensity Thresholds

The thresholds of change for the intensity and duration of an impact are defined as follows:

Impact Intensities and duration definitions for Geologic Resources and Soils

Negligible	Soils would not be affected or the effect would be below or at the lower levels of detection. Any effects to soils would be slight and not measurable.
Minor	The effects to soils and erosion disturbance would be detectable, but small and localized. Minimal soil loss would occur.
Moderate	The effects to soils would be readily apparent and would result in change over a wide area or multiple locations. Erosion would extend beyond the project site and have some soil loss.
Major	The effects to soils would be readily apparent and would substantially change the character of the soils over a wide area and substantial erosion would occur resulting in large soil loss.
Duration	Short-term - If soils and geology resources recover in less than 3 years from project impacts. Long-term – If soils and geology resources recover in more than 3 years from project impacts.

3.6.1.3 Analysis of Alternatives and Impacts on Geologic Resources and Soils**Impacts of Alternative I: No Action Alternative**

No immediate impacts to soils would be expected under the No Action Alternative. The existing wastewater system would be repaired and maintained on as need basis and soils may be disturbed during those repairs and maintenance. However, the soils surrounding the existing wastewater system were disturbed when the wastewater system was initially installed. Soils could become contaminated when the septic tank clogs and solids pass through the distribution box. Impacts to soils would be direct, minor to moderate, long-term, adverse, and local.

Cumulative Effects

Future park development and construction activities would over time increase the total area of soil disturbance around the SUCR Visitor Center and newly proposed facilities. Impacts would be very localized, but would persist as long as the facilities were in use. Modifying the SUCR boundary fence would create a small, site-specific area of soil disturbance. The No Action Alternative combined with the past, present, and foreseeable future actions that may result in increased impacts to soils, would result in minor, long-term, adverse, site-specific cumulative impacts to soil resources.

Conclusions

The No Action alternative would result in minor, long-term, adverse, and local impacts due to the potential for sewage contamination to soil resources. Cumulative effects under this alternative would be minor, long-term, adverse, and local.

Because there would be no major, adverse impacts to a resource or value whose conservation is (1) necessary to fulfill specific purposes identified in the establishing legislation and proclamation of SUCR; (2) key to the natural or cultural integrity of the monument; or (3)

identified as a goal in the monument's general management plan or other relevant National Park Service planning documents, there would be no impairment of the monument's resources or values.

Impacts of Alternative II: The Preferred Alternative

The replacement of the entire wastewater system with a 12,000 and 6,000 gallon septic tanks, gravity pipes installed via trenching, new manholes, and a new drainfield would disturb approximately 2.68 acres of soil. However, replacing the 430 linear feet of sewer lines would mainly occur within disturbed areas from previous trenching for the existing sewer lines. Trenching and excavating in undisturbed areas would be required for the sewer lines leading to the septic tanks and drainfield and the drainfield area. Topsoil would be removed and conserved separately then placed back on top to cover the trenches after the work is completed. In addition, soil erosion control measures would be implemented. Temporary silt fences would be installed around stockpiles and/or excavated material that cannot be backfilled within the same day excavated; downstream of any utility trench that has not been backfilled; and prior to leaving the work site for the day. Replacement of the sewage system would reduce the potential of contamination to soils in the area. Impacts to soils would be direct, minor, short-term, adverse, and local.

Cumulative Effects

Future park development and construction activities would over time increase the total area of soil disturbance around the SUCR Visitor Center and newly proposed facilities. Impacts would be very localized, but would persist as long as the facilities were in use. Modifying the SUCR boundary fence would create a small, site-specific area of soil disturbance. The Preferred Alternative would add approximately 2.68 acres more of soil disturbance; however this would occur mainly in previously disturbed locations. The Preferred Alternative combined with the past, present, and foreseeable future actions that may result in increased impacts to soils, would result in direct, minor, short-term to long-term, adverse, and local cumulative impacts to the soil resources.

Conclusions

The Preferred Alternative would result in direct, minor, short-term, adverse, and local impacts that are expected to recover quickly due to topsoil conservation and soil erosion controls. Cumulative effects under this alternative would be minor, short-term to long-term, adverse, and local. Some cumulative impacts would be long term if soils could not be restored as long as the newly proposed facilities are being used.

Because there would be no major, adverse impacts to a resource or value whose conservation is (1) necessary to fulfill specific purposes identified in the establishing legislation and proclamation of SUCR; (2) key to the natural or cultural integrity of the monument; or (3) identified as a goal in the monument's general management plan or other relevant National Park Service planning documents, there would be no impairment of the monument's resources or values.

3.6.2 Vegetation

The 2006 Management Policies for the National Park Service (NPS) states the NPS will preserve and maintain all plants and animals native to the naturally evolving park unit ecosystems by preserving and restoring the abundances, diversity, dynamics, habitats, distributions, and natural processes of native plants (NPS). Management practices to limit potential impacts to vegetation vary amongst each NPS units. However, parks generally have management practices to minimize potential impacts to vegetation and to protect sensitive vegetation resources.

3.6.2.1 Affected Environment

The vegetation within SUCR is diverse, including nearly barren beds of cinder or lava and rock outcrops, to grassy meadows, open stands of trees with sparse understory shrublands, and dense forests on more moist aspects of the highest slopes, drainages, and ridges. SUCR is probably most known for the sparsely vegetated cinder cones, lava beds, and lava rock outcrops. These sparsely vegetated areas have soil pockets on cinder cone slopes, lava, and deep cinder deposits, which are dominated by ponderosa pine trees.

The project area is dominated by woodlands, which are open forest canopies, and occur on flats, slopes, hills, drainages, and ridges. The project area falls within the ponderosa pine/cinder woodland vegetation community (Hansen et al. 2004). The dominant vegetation within the project area included ponderosa pines with a very sparse understory of scattered forbs and grasses.

3.6.2.2 Methodology and Intensity Thresholds

The thresholds of change for the intensity and duration of an impact are defined as follows:

Impact Intensities and duration definitions for Vegetation Resources

Negligible	No native vegetation would be affected or some individual native plants would be affected, but there would be no effect on native plant species' populations. The effects would be on a small scale.
Minor	Some individual plants would be affected and a relatively limited portion of that species' population would also be affected. Mitigation to offset adverse effects could be required and would be effective.
Moderate	Some individual native plants would be affected and a sizeable segment of the species' population would also be affected over a relatively wide area. Mitigation to offset adverse effects could be extensive, but would likely be successful.
Major	Impacts would be considerable on individual native plants and affect a sizeable segment of the species' populations over a relatively wide area. Mitigation measures to offset the adverse effects would be required, extensive, and success of the mitigation measures would not be guaranteed.
Duration	Short-term – If vegetation resources recover in 3 years or less Long-term – If vegetation resources recover in more than 3 years

3.6.2.3 Analysis of Alternatives and Impacts on Vegetation Resources

Impacts of Alternative I: No Action Alternative

There would be no change to the current wastewater system under the No Action Alternative. The existing wastewater system would be repaired and maintained on as need basis and individual plants may be disturbed during those repairs and maintenance. Occasional impacts to individual plants generally do not affect plant populations, vegetation communities, or ecological processes. The No Action Alternative would result in direct, negligible to minor, adverse, short-term, and site-specific impacts to the vegetation resources.

Cumulative Effects

Future park development and construction activities and modifying the SUCR boundary fence would have small, localized areas of vegetation disturbance to individual plants. The No Action Alternative combined with the past, present, and foreseeable future actions that may result in increased impacts to vegetation resources would result in direct, minor, adverse, short-term to long-term, and site-specific. Some cumulative impacts would be long term if plants/trees could not be regrow as long as the newly proposed facilities are being used.

Conclusions

The No Action Alternative would result in direct, negligible to minor, adverse, short-term, and site-specific impacts due to the potential for damaging individual plants during maintenance activities. Cumulative impacts would be direct, minor, adverse, short-term to long-term, and site-specific due to the localized areas of vegetation disturbance to individual plants.

Because there would be no major, adverse impacts to a resource or value whose conservation is (1) necessary to fulfill specific purposes identified in the establishing legislation and proclamation of SUCR; (2) key to the natural or cultural integrity of the monument; or (3) identified as a goal in the monument's general management plan or other relevant National Park Service planning documents, there would be no impairment of the monument's resources or values.

Impacts of Alternative II: The Preferred Alternative

The replacement of the entire wastewater system with a 12,000 and 6,000 gallon septic tanks, gravity pipes installed via trenching, new manholes, and a new drainfield would disturb approximately 2.68 acres of vegetation and plant habitat. However, replacing the 430 linear feet of sewer lines would mainly occur within disturbed areas from previous trenching for the existing sewer lines. Trenching and excavating in undisturbed areas would be required for the sewer lines leading to the septic tanks and drainfield and the drainfield area. Soil disturbance, including clearing of vegetation, would be limited to a 10 foot wide corridor along the proposed sewer line alignment and to a 20 foot wide perimeter around proposed septic tanks and drainfields.

The proposed wastewater system replacement would occur within the ponderosa pine/cinder woodland vegetation community where there are only ponderosa pines with no understory. All ponderosa pines with a diameter at breast height of 16 inches or greater would be avoided. In addition, a temporary barrier would be provided to protect existing trees and plants and root zones. Sparse understory vegetation would re-establish over excavated and trenched areas

within a few years after the system is installed. Some plants might benefit from additional water and nutrients available over the drainfield. The impacts to individual trees should not affect the plant population, vegetation communities, or ecological processes within SUCR. The Preferred Alternative would result in direct, negligible to minor, adverse, short-term, and site-specific impacts.

Cumulative Effects

Future park development and construction activities and modifying the SUCR boundary fence would create small, localized areas of vegetation disturbance and may affect individual plants/trees. The impacts to individual plants/trees should not affect the plant population, vegetation communities, or ecological processes within SUCR. The Preferred Alternative in combination with the past, present, and foreseeable future actions that may result in increased impacts to vegetation resources would result in direct, negligible to minor, short-term to long-term, adverse, and site-specific impacts.

Conclusions

The Preferred Alternative impacts to vegetation resources would be direct, negligible, short-term to long-term, adverse, and site-specific due to disturbance of individual trees. Cumulative impacts would be direct, negligible to minor, short-term to long-term due, adverse, and site-specific due to and some trees/plants may not be able to regrow as long as the newly proposed facilities are being used.

Because there would be no major, adverse impacts to a resource or value whose conservation is (1) necessary to fulfill specific purposes identified in the establishing legislation and proclamation of SUCR; (2) key to the natural or cultural integrity of the monument; or (3) identified as a goal in the monument's general management plan or other relevant National Park Service planning documents, there would be no impairment of the monument's resources or values.

3.6.3 Special Status Species

Section 7 of the Endangered Species Act of 1973 requires all federal agencies to consult with the U.S. Fish and Wildlife Service (USFWS) to ensure that any action authorized, funded, or carried out by the agency does not jeopardize the continued existence of federally listed species or designated critical habitats. In addition, the 2006 Management Policies and Director's Order 77 *Natural Resources Management Guidelines* require the NPS to examine the impacts on federal candidate species, as well as state-listed endangered, threatened, candidate, rare, declining, and sensitive species (NPS 2006).

According Section 4.4.2.3 in NPS 2006 Management Policies, the NPS will survey for, protect, and strive to recover all species native to National Park System units that are listed under the ESA. NPS-77 addresses the management of federally listed threatened, endangered, and candidate species, state listed species of concern, and state species of concern identified by other

groups such as locally designated species or those established by organizations such as The Nature Conservancy (TNC).

3.6.3.1 Affected Environment

The USFWS was consulted on January 11, 2010 for a list of threatened, endangered, species of concern, or designated critical habitat for the proposed action. The USFWS have no concerns regarding impacts to wildlife or habitat from the proposed action. In addition, the Arizona Heritage Database (Arizona Game and Fish Department (AGFD 2009) was consulted via the Internet to generate a list of threatened and endangered species, and other species of concern for Coconino County, Arizona. This list was compared with the NPS Inventory and Monitoring Program vertebrate species and vascular plant species occurrence database for SUCR (NPS 2009), which is the most current and accurate documentation of the monument's flora and fauna. A survey for special status plants at the Flagstaff Area National Monuments, including SUCR was completed in 2000 (Huisinga et al. 2000).

Currently, no federally listed threatened, endangered, candidate, plant or animal species is known to occur within SUCR, and the monument does not include viable habitat for any listed species (see letter from USFWS in Appendix A). However, there are two plant species of concern, the Sunset Crater penstemon (*Penstemon clutei*) and the cinder phacelia (*Phacelia serrata*). Both are short-lived wildflowers that are only found on more recent volcanic cinder deposits within the San Francisco Volcanic Field.

Sunset Crater penstemon (*Penstemon clutei*) is an herbaceous perennial 12 to 32 inches tall with deep pink or rose purple flowers in April – August (AGFD 2003). The soil in which it grows is typically a layer of cinders 2 to 5 inches deep with a layer of silty soil below, important for water retention at the root level of this species (Phillips et al. 1992). The habitat is flat or gently sloping sites in open ponderosa pine forest between 6,500 and 8,500 feet in the Sunset Crater volcanic field near Flagstaff. This species can be seasonally abundant during wet years, and has been found to thrive after wildfire and severe ground disturbance within ponderosa pine forest (Fulè et al. 2001). Numerous locations of Sunset Crater penstemon are known, including near the Visitor Center and Bonito Campground areas (Whitefield, pers. obs.), and the Lava Flow Trail and Cinder Hills Overlook areas (Huisinga et al. 2000). Threats include off-road vehicles, suppression of periodic fires, and horticultural collecting (AGFD 2003).

Cinder phacelia (*Phacelia serrata*) is an herbaceous annual 4 to 13 inches tall with blue to light violet flowers in late June to mid-September (AGFD 2004). This species is endemic volcanic cinders and is known only in two disjunct locations approximately 260 miles apart in Arizona and New Mexico. The habitat is mainly volcanic cinders associated with volcanic cones, but has also been found in road cuts and abandoned quarries in open, exposed sunny locations with volcanic cinders as the substrate. Although this species is restricted in range, it is locally abundant, and the population trend is stable (NatureServe 2009). However, its abundance is dependent upon precipitation, and in drought years it will be scarce to rare even in prime habitat (NatureServe 2009). Coconino National Forest actively manages cinder phacelia, and SUCR offers some protection. Numerous locations of cinder phacelia are known, including nearby the Visitor Center and Bonito Campground areas (Whitefield, pers. obs.), and the Lava Flow Trail and Cinder Hills Overlook areas (Huisinga et al. 2000). Threats include land trades, increased

land use (i.e., off-road vehicles, recreation, road realignments), non-native plants, and hybridization (AGFD 2004). In addition, quarrying of volcanic cinders for road construction materials is a threat to its critical habitat.

An additional bird species of concern, the northern goshawk (*Accipiter gentilis*), is known to occur on nearby U.S. Forest Service lands. The species is widespread but solitary across much of the United States and southern Canada. It nests and breeds in a wide variety of habitats, including agricultural areas and formerly logged forests. In Arizona, goshawks prefer forest interior stands of large ponderosa pine trees. Suitable habitat conditions for nesting are not likely found within SUCR, but the northern goshawks from established breeding territories on the surrounding Coconino NF may rarely cross into the monument in search of prey.

Although not formally listed as a species of concern, American pronghorn (*Antilocapra americana*) herd within the region. This species is being affected by large-scale habitat fragmentation and loss, and the regional pronghorn population has declined during the last few decades (Bright and Van Riper III 2000). American pronghorn are moderately intolerant of human disturbance, which can lead to increased adverse interactions with humans and disruptions of normal foraging and breeding patterns. A small number of pronghorn utilize montane meadow habitat in Bonito Park, approximately ½ mile west of the project site. During the winter, these animals move north and join the larger herd in the Wupatki area (Bright and Van Riper III 2000).

Gunnison's prairie dog (*Cynomys gunnisoni*), a species of concern within Arizona, inhabits montane valleys and plateaus of the Intermountain West and east of the Continental Divide they occur in upper drainage basins. In Arizona, Gunnison's prairie dogs are known to occur within the northern portion of the state. Threats to the Gunnison's prairie dog are habitat fragmentation and loss (i.e., agricultural, urbanization), poisoning, recreational shooting, and sylvatic plague (Knowles 2002). Gunnison's prairie dog utilize montane meadow habitat in Bonito Park, immediately to the west of the project site.

3.6.3.2 Methodology and Intensity Thresholds

The thresholds of change for the intensity and duration of an impact are defined as follows:

Impact Intensities and duration definitions for Special Status Species

Negligible	No special-status species or their critical habitat would be affected or some individuals could be affected as a result of the alternative, but there would be no effect on special-status species' populations. Impacts would be well within natural fluctuations.
Minor	Some special status species or their critical habitat would be affected and a limited part of the species' population would be affected as a result of the alternative. Mitigation measures, if needed, would be simple and successful.
Moderate	Some special status species or their critical habitat would be affected and a sizeable part of the species' population would be affected as a result of the alternative over a relatively large area within SUCR. Mitigation measures, if needed, would be extensive and successful.
Major	A considerable effect on special-status individuals or their critical habitat and on a sizeable segment of the species' population as a result of the alternative over a

	relatively large area in and outside SUCR. Extensive mitigation measures would be needed to offset any adverse effects and may not be successful.
Duration	Short-term – If individual species or habitat recovers in ≤ 1 year; population recovers in ≤ 5 years. Long-term – If individual species or habitat recovers in ≥ 1 year; population recovers in >5 years.

3.6.3.3 Analysis of Alternatives and Impacts on Special Status Species

Impacts of Alternative I: No Action Alternative

Sunset Crater Penstemon and Cinder Phacelia. In 2009, NPS natural resource specialists surveyed the project area for both rare plant species, Sunset Crater penstemon and cinder phacelia. The survey did not find any individual plants or populations within the project area. However, Sunset Crater penstemon or cinder phacelia habitat may be impacted due to ground disturbance for periodic maintenance and repairs. The No Action Alternative would result in no impacts to individuals or populations of both special status plant species due to no individuals or populations occur within the project area. The No Action Alternative would result in negligible, adverse, short-to long-term impacts to both special status plant species habitat due to ground disturbance for periodic maintenance and repairs.

Northern Goshawk. No nesting sites are known to occur within SUCR or the project area, but the northern goshawks from established breeding territories on the surrounding Coconino NF may rarely cross into the monument in search of prey. The No Action Alternative would have no impacts on the nesting, hunting, or dispersal of young from the ground disturbance or noise for periodic maintenance and repairs. The No Action Alternative would result in negligible, adverse, short-to long-term, local impacts for northern goshawk habitat due to the potential removal of large diameter trees in the future for periodic maintenance and repairs.

American Pronghorn. American pronghorn utilize open vegetated habitats, such as pastures and meadows, and avoids areas with high levels of human activity, motor vehicle activity, and associated noise. The small herd that utilizes the montane meadow habitat in Bonito Park does not utilize the ponderosa pine vegetation community found within and around NPS administrative area, which is also an area of high human activity and motor vehicle activity. The periodic repairs and maintenance to the existing wastewater system would have no impacts to American pronghorn individuals, populations, or habitat.

Gunnison's Prairie Dog. Gunnison's prairie dogs utilize montane valleys and plateaus and upper drainage basins, and are very tolerant of high levels of human activity, motor vehicle activity, and associated noise. They are known to utilize the montane meadow habitat in Bonito Park, but do not utilize the ponderosa pine vegetation community found within and around the NPS administrative area. In addition, the ponderosa pine habitat provides potential raptor perches, which may prey on Gunnison's prairie dogs. The periodic repairs and maintenance to the existing wastewater system would have no impacts to Gunnison's prairie dog individuals, populations, or habitat.

Cumulative Effects

Future park development and construction activities and modifying the SUCR boundary fence would create small, localized areas of disturbance to special status species. Disturbance would consist of noise from construction and vehicle traffic, and soil disturbance. The modification to the SUCR boundary fence would alter the fence wiring specifications to enable easier movement for wildlife in and out of the monument. The No Action Alternative combined with the past, present, and foreseeable future actions that may result in increased impacts to special status resources would be negligible to minor, adverse, short-term, and local.

Conclusions

There would be no change to the current conditions for special status species under the No Action Alternative. The existing wastewater system would be repaired and maintained on as need basis, which may create some disturbance (i.e., equipment noise, ground disturbance, human presence) during repairs. The No Action Alternative would result in no impacts to individuals, populations, or habitats of special status wildlife. The No Action Alternative would result in no impacts to individuals or populations of special status plant species and negligible, adverse, short-to long-term, impacts to special status plant species habitat.

Because there would be no major, adverse impacts to a resource or value whose conservation is (1) necessary to fulfill specific purposes identified in the establishing legislation and proclamation of SUCR; (2) key to the natural or cultural integrity of the monument; or (3) identified as a goal in the monument's general management plan or other relevant National Park Service planning documents, there would be no impairment of the monument's resources or values.

Impacts of Alternative II: The Preferred Alternative

Sunset Crater Penstemon and Cinder Phacelia. In 2009, NPS natural resource specialists surveyed the project area for both rare plant species, Sunset Crater penstemon and cinder phacelia. The survey did not find any individual plants or populations within the project area. However, the project area does include suitable habitat for the Sunset Crater penstemon and cinder phacelia, which may be impacted due to ground disturbance for trenching to install new sewer lines, septic tanks, and drainfields. Replacing the wastewater system under the Preferred Alternative would result in no impacts to individuals or populations of both special status plant species due to no individuals or populations occur within the project area. The Preferred Alternative would result in negligible, adverse, short- to long-term, local impacts to both special status plant species habitat due to ground disturbance for trenching to install new sewer lines, septic tanks, and drainfields.

Northern Goshawk. No nesting sites, suitable nesting or roosting habitat are known to occur within SUCR or the project area, and the closest known nesting site is approximately 5 miles from the project area on Coconino NF land. The northern goshawks from established breeding territories on the surrounding Coconino NF may rarely cross into the monument in search of prey, but are highly unlikely to utilize the area around the project area due to high levels of human activity and associated noise. The Preferred Alternative would have no impacts on the

nesting, hunting, or dispersal of young from the ground disturbance or noise from trenching to install new sewer lines, septic tanks, and drainfields due to no nesting sites, suitable nesting or roosting habitat are known to occur within SUCR or the project area. Replacement of the wastewater system under the Preferred Alternative would result in negligible, adverse, short-to long-term, local impacts for northern goshawk habitat due to the removal of some small diameter trees and the retention of large diameter trees (i.e., $\geq 16''$ dbh).

American Pronghorn. American pronghorn utilize open vegetated habitats, such as pastures and meadows, and avoids areas with high levels of human activity, motor vehicle activity, and associated noise. The small herd that utilizes the montane meadow habitat in Bonito Park does not utilize the ponderosa pine vegetation community found within and around NPS administrative area, which is also an area of high human activity and motor vehicle activity. The replacement of the wastewater system under the Preferred Alternative would have no impacts to American pronghorn individuals, populations, or habitat.

Gunnison's Prairie Dog. Gunnison's prairie dogs utilize montane valleys and plateaus and upper drainage basins, and are very tolerant of high levels of human activity, motor vehicle activity, and associated noise. They are known to utilize the montane meadow habitat in Bonito Park, but do not utilize the ponderosa pine vegetation community found within and around the NPS administrative area. In addition, the ponderosa pine habitat provides potential raptor perches, which may prey on Gunnison's prairie dogs. Replacing the wastewater system under the Preferred Alternative would have no impacts to Gunnison's prairie dog individuals, populations, or habitat.

Cumulative Effects

Future park development and construction activities and modifying the SUCR boundary fence would create small, localized areas of noise and soil disturbance to special status species. Disturbance would consist of noise from construction and vehicle traffic, and soil disturbance. The modification to the SUCR boundary fence would alter the fence wiring specifications to enable easier movement for wildlife in and out of the monument. The Preferred Alternative in combination with the past, present, and foreseeable future actions that may result in increased impacts to special status species would result in negligible to minor, short-term to long-term, adverse, and site-specific impacts.

Conclusions

The Preferred Alternative would not impact the parks ability to maintain the desired condition for populations of native plant and animal species functioning in as natural condition as possible to SUCR. The Preferred Alternative impacts to special status species would be negligible to minor, short-term to long-term, adverse, and site-specific. Cumulative impacts would be negligible when considered in the context of ongoing loss of special status species habitats, primarily in riparian areas. The cumulative impacts would be the same as the Preferred Alternative impacts.

Because there would be no major, adverse impacts to a resource or value whose conservation is (1) necessary to fulfill specific purposes identified in the establishing legislation and

proclamation of SUCR; (2) key to the natural or cultural integrity of the monument; or (3) identified as a goal in the monument's general management plan or other relevant National Park Service planning documents, there would be no impairment of the monument's resources or values.

3.7 Cultural Resources

3.7.1 Archeological Resources

Section 106 of the National Historic Preservation Act, as amended in 1992 (16 USC 470 *et seq.*); the NPS's Director's Order 28 *Cultural Resource Management Guideline*; and NPS 2006 Management Policies (NPS 2006) require the consideration of impacts on historic properties that are listed, or eligible to be listed, in the National Register of Historic Places. The National Register is the nation's inventory of historic places and the national repository of documentation on property types and their significance. The above-mentioned policies and regulations require federal agencies to coordinate consultation with State Historic Preservation Officer regarding the potential effects to properties listed on or eligible for the National Register of Historic Places.

The NPS, as steward of many of America's most important cultural resources, is charged to preserve historic properties for the enjoyment of present and future generations. Management decisions and activities throughout the National Park System must reflect awareness of the irreplaceable nature of these resources. The NPS will protect and manage cultural resources in its custody through effective research, planning, and stewardship and in accordance with the policies and principles contained in the 2006 Management Policies and the appropriate Director's Orders. The replacement of the wastewater system would require digging with the potential to disturb archeological resources.

3.7.1.1 Affected Environment

There have been two archaeological surveys within the area of potential effect for the proposed project. In 1984, Michael J. Bremmer, Anne R. Baldwin, and Kim McLean with Southwestern Cultural Resources Center of the NPS surveyed approximately 110 acres on the Coconino National Forest used by NPS for administrative, employee housing, and camping facilities for an archaeological inventory. One site was recorded west of the visitor center and thought to potentially be a prehistoric structure. The site was re-recorded in 1995 by Chris Downum and George Gumerman of Northern Arizona University. Downum and Gumerman did not find any surface artifacts and stated the structure outlines are speculative and represent a hypothesis regarding the potential location of prehistoric structures. They concluded the site could represent a prehistoric structure or a modern feature. The structures are thought to be a modern feature (e.g., waste rock pile) or natural (personal communication Chris Donnermeyer, FLAG Archaeologist, 1-13-10).

3.7.1.2 Methodology and Intensity Thresholds

The thresholds of change for the intensity and duration of an impact are defined as follows:

Impact Intensities and duration definitions for Cultural Resources

Negligible	Impact is at the lowest levels of detection, barely measurable, with no perceptible consequences, either adverse or beneficial. For the purposes of Section 106, the determination of effect would be no adverse effect to archaeological resources.
Minor	Disturbance of a site(s) is confined to a small area with little, if any, loss of important information potential. For purposes of Section 106, the determination of effect would be no adverse effect.
Moderate	Disturbance of the site(s) would not result in the loss of integrity. For purposes of Section 106, the determination of effect would be adverse effect.
Major	Disturbance of the site(s) is substantial and results in the loss of most or all of the site and its integrity. For purposes of Section 106, the determination of effect would be adverse effect.
Duration	Short-term – Any disturbance to archaeological resources would be permanent, and are considered long-term. Long-term – Any disturbance to archaeological resources would be permanent, and are considered long-term.

3.7.1.3 Analysis of Alternatives and Impacts on Archeological Resources

Impacts of Alternative I: No Action Alternative

There would be no change to the current wastewater system under the No Action Alternative. The existing wastewater system would be repaired and maintained on as need basis and soils may be disturbed during those repairs and maintenance. Disturbance to the previously recorded archaeological site located west of the SUCR visitor center appears slight based on current information and no known sewer line leaks in the current wastewater system. In addition, the soils surrounding the existing wastewater system was disturbed when the wastewater system was initially installed. The No Action Alternative would result in direct, minor, adverse, long-term, and site-specific impacts.

Cumulative Effects

Future park development and construction activities and modifying the SUCR boundary fence would create small, localized areas of soil disturbance and would be preceded by archeological monitoring during ground disturbing activities. The No Action Alternative combined with the past, present, and foreseeable future actions that may result in increased impacts to archeological resources would be the same as the No Action Alternative impacts, which is direct, minor, adverse, long-term, and site-specific.

Conclusions

The No Action Alternative would have direct, minor, adverse, long-term, and site-specific impacts due to the potential for damaging unidentified archeological resources during

maintenance activities. Cumulative impacts would be the same as the No Action Alternative impacts.

Because there would be no major, adverse impacts to a resource or value whose conservation is (1) necessary to fulfill specific purposes identified in the establishing legislation and proclamation of SUCR; (2) key to the natural or cultural integrity of the monument; or (3) identified as a goal in the monument's general management plan or other relevant National Park Service planning documents, there would be no impairment of the monument's resources or values.

Impacts of Alternative II: The Preferred Alternative

The replacement of the entire wastewater system with a 12,000 and 6,000 gallon septic tanks, gravity pipes installed via trenching, new manholes, and a new drainfield would disturb approximately 2.68 acres of soil. The digging would mainly occur within previously disturbed areas from trenching for the existing sewer lines. Trenching and excavating in undisturbed areas would be required for the gravity sewer pipes leading to the septic tanks and drainfield and the drainfield area. However, there are no previously recorded archeological sites within the undisturbed areas for the gravity sewer pipes leading to the septic tanks and drainfield and the drainfield area. Consequently, archeological resources are not expected to be encountered during digging for this project. An archeologist would monitor initial ground-disturbing activities. A decision to continue spot monitoring would be made based upon examination of the soils. Should artifacts be identified during construction, all work would cease in the immediate vicinity of the discovery until the resources could be identified and documented and an appropriate mitigation strategy developed in consultation with the State Historic Preservation Officer. Based upon current information, the Preferred Alternative impacts would be direct, minor, long-term, adverse, and site-specific.

Cumulative Effects

Future park development and construction activities and modifying the SUCR boundary fence would create small, localized areas of soil disturbance and would be preceded by an archeological survey and, monitoring during ground disturbing activities. The Preferred Alternative in combination with the past, present, and foreseeable future actions that may result in increased impacts to archeological resources would result in direct, minor, long-term, adverse, and site-specific impacts.

Conclusions

The Preferred Alternative impacts to archeological resources would be direct, minor, long-term, adverse, and site-specific. The cumulative impacts would be the same as the Preferred Alternative impacts.

Because there would be no major, adverse impacts to a resource or value whose conservation is (1) necessary to fulfill specific purposes identified in the establishing legislation and proclamation of SUCR; (2) key to the natural or cultural integrity of the monument; or (3) identified as a goal in the monument's general management plan or other relevant National Park Service planning documents, there would be no impairment of the monument's resources or values.

3.8 Social Issues

3.8.1 Visitor Use

NPS 2006 Management Policies states the fundamental purpose of all parks is for the enjoyment of park resources and values by the people of the United States. NPS is committed to providing appropriate, high-quality opportunities for visitors to enjoy the parks, and will provide opportunities specifically suited for the natural and cultural resources found within the park.

3.8.1.1 Affected Environment

Sunset Crater Volcano Visitor Center is located approximately two miles east of the park entrance off U.S. Highway 89. The SUCR visitor center is open year round, except on December 25th, and provides information about the monument, a film, educational exhibits, and a seismograph station. The existing wastewater system supports the visitor center facilities, employee housing, and the maintenance annex. Annual visitation in 2008 to SUCR was approximately 221, 400, which exceeds the designed capacity of the existing wastewater system.

3.8.1.2 Methodology and Intensity Thresholds

The thresholds of change for the intensity and duration of an impact are defined as follows:

Impact Intensities and duration definitions for Visitor Use

Negligible	Any changes in visitor use or experience would be below or at the level of detection. Any effects would be short-term. The visitor would not likely be aware of the effects associated with the alternative. Any effects would not change the visitor's experience of park resources and values.
Minor	Changes in visitor use or experience would be detectable, although the changes would be slight and likely short-term. The visitor would be aware of effects associated with the alternative, but the effects would be slight. If mitigation was needed to offset adverse effects to visitor experience, it would be relatively simple to implement and would likely be successful.
Moderate	Changes in visitor use or experience would be apparent and likely long-term. The visitor would be aware of the effects associated with the alternative and would

	likely be able to express an opinion about the changes. Mitigation measures would probably be necessary to offset adverse effects and would likely be successful.
Major	Changes in visitor use or experience would be readily apparent and would have important long-term consequences. The visitor would be aware of the effects associated with the alternative and would likely express a strong opinion about the changes. Mitigation measures to offset adverse effects would be needed, they would have to be extensive, and their success would not be guaranteed.
Duration	Short-term - If visitor use impacts recover in less than 1 year from project impacts. Long-term – If visitor use impacts recover in more than 1 year from project impacts.

3.8.1.3 Analysis of Alternatives and Impacts on Visitor Use

Impacts of Alternative I: No Action Alternative

There would be no change to the current wastewater system under the No Action Alternative. Annual visitation and employee wastewater use would continue to exceed the designed capacity of the existing wastewater system. The wastewater system would continue to be periodically plugged and allow solids to pass through the septic tank and clog the distribution box, which could result in the closure of the visitor center and employee housing. Impacts to visitor use would be indirect, minor, long-term, adverse, and local.

Cumulative Effects

Future park development and construction activities have the potential to increase wastewater flow, and the existing wastewater system is inadequate to handle potential wastewater increases. Modifying the SUCR boundary fence to improve wildlife movement within the monument would not impact visitor use. The No Action Alternative combined with the past, present, and foreseeable future actions that may result in increased impacts to visitor use would result in minor to moderate, short-term, adverse, local cumulative impacts to visitor use.

Conclusions

The No Action alternative would result in minor, short-term, adverse, and local impacts due to the potential for continued periodic plugging, which could result in the closure of the visitor center. Cumulative effects under this alternative would be minor to moderate, short-term, adverse, and local.

Because there would be no major, adverse impacts to a resource or value whose conservation is (1) necessary to fulfill specific purposes identified in the establishing legislation and proclamation of SUCR; (2) key to the natural or cultural integrity of the monument; or (3) identified as a goal in the monument's general management plan or other relevant National Park Service planning documents, there would be no impairment of the monument's resources or values.

Impacts of Alternative II: The Preferred Alternative

The replacement of the entire wastewater system with a 12,000 and 6,000 gallon septic tanks, gravity pipes installed via trenching, new manholes, and a new drainfield would benefit visitor use. The replacement of the wastewater system would be able to accommodate the current and future wastewater use for visitors and employees. The proposed project would require the current wastewater system to be shut down, but two temporary restroom trailers would be provided and located in the visitor center parking lot and near employee housing. Each restroom trailer would be equivalent to standard restroom trailers provided by Mesa Waste Services with one men's stall, two urinals, and two women's stalls. SUCR visitor center would not have to be closed and visitors would not be excluded from areas within the SUCR Monument during construction of the new wastewater system. However, potential impacts to visitor use experience would include visual quality, noise, and disturbance encounter levels within the visitor center area. The operation of mechanized equipment would be restricted to normal park operation hours, Monday – Friday. Information regarding the project implementation would be shared with the public through an informational flyer displayed at the visitor center or posting on SUCR's website. The purpose would be to minimize potential for negative impacts to visitor use experience during project implementation. The wastewater system would not be shut down for more than a 24 hour period to connect the Impacts to visitor use by the Preferred Alternative would be direct, minor, short-term, beneficial, and local.

Cumulative Effects

Future park development and construction activities may increase wastewater flow, but the new wastewater system would be able to handle these potential increases. Modifying the SUCR boundary fence to improve wildlife movement within the monument would not impact visitor use. The Preferred Alternative would be beneficial to visitor use by being able to accommodate the current and future wastewater use for visitors and employees and all visitor facilities would remain open and operational. The Preferred Alternative combined with the past, present, and foreseeable future actions that may result in increased impacts to visitor use, would result in direct, minor, short-term, beneficial, and local cumulative impacts.

Conclusions

The Preferred Alternative would result in direct, minor, short-term, beneficial, and local impacts. Cumulative effects under this alternative would be minor, short-term, beneficial, and local impacts.

Because there would be no major, adverse impacts to a resource or value whose conservation is (1) necessary to fulfill specific purposes identified in the establishing legislation and proclamation of SUCR; (2) key to the natural or cultural integrity of the monument; or (3) identified as a goal in the monument's general management plan or other relevant National Park Service planning documents, there would be no impairment of the monument's resources or values.

3.8.2 Public Health and Safety

NPS 2006 Management Policies states park managers should strive to protect human life, as well as provide injury free visits and a safe and healthful environment for visitors and employees.

3.8.2.1 Affected Environment

The existing wastewater system is over 40 years old and is showing signs of inadequacy. Currently, the wastewater system serves the visitor center, maintenance annex, and employee housing, which includes 3 houses, 2 apartment units, and 4 seasonal trailer sites. Annual visitation in 2008 to SUCR was approximately 221,400, and water usage was 1,078, 800 gallons. The increased annual visitation to the visitor's center plus the additional employee housing connected to the wastewater system far exceeds the design capacity of the septic tank and leach field. In 2005 and 2006, US Public Health Service inspections documented the wastewater system as out of compliance and recommended the system be replaced.

3.8.2.2 Methodology and Intensity Thresholds

The thresholds of change for the intensity and duration of an impact are defined as follows:

Impact Intensities and duration definitions for Public Health and Safety

Negligible	A change in public health and safety that is not measurable or perceptible.
Minor	A change in public health and safety that is slight and localized with few measurable consequences.
Moderate	A change to public health and safety that is readily apparent with measurable consequences.
Major	A severely adverse or exceptionally beneficial change in public health and safety.
Duration	Short-term - A public health resource change that would last several minutes to one day. Long-term – A public health resource change that would last more than one day.

3.8.2.3 Analysis of Alternatives and Impacts on Public Health and Safety

Impacts of Alternative I: No Action Alternative

There would be no change to the current wastewater system under the No Action Alternative. Annual visitation would continue to exceed the designed capacity of the existing wastewater system. The wastewater system would continue to be periodically plugged and allow solids to pass through the septic tank and clog the distribution box, and would continue not to meet the US Public Health Service standards. The No Action Alternative would result in minor to moderate, long-term, adverse, local impacts due to the continued periodic plugging and not meeting US Public Health Service standards.

Cumulative Effects

Future park development and construction activities may increase wastewater flow, and the existing wastewater system is inadequate to handle the potential increase. Modifying the boundary fence to increase wildlife movement within the monument would not affect public health and safety. The No Action Alternative combined with the past, present, and foreseeable future actions that may result in increased impacts to health and safety, would result in minor to moderate, long-term, adverse, local cumulative impacts.

Conclusions

The No Action alternative would result in minor to moderate, long-term, adverse, and local impacts due to the continued periodic plugging and not meeting US Public Health Service standards. Cumulative effects under this alternative would be minor to moderate, long-term, adverse, and local.

Because there would be no major, adverse impacts to a resource or value whose conservation is (1) necessary to fulfill specific purposes identified in the establishing legislation and proclamation of SUCR; (2) key to the natural or cultural integrity of the monument; or (3) identified as a goal in the monument's general management plan or other relevant National Park Service planning documents, there would be no impairment of the monument's resources or values.

Impacts of Alternative II: The Preferred Alternative

The replacement of the entire wastewater system with a 12,000 and 6,000 gallon septic tanks, gravity pipes installed via trenching, new manholes, and a new drainfield would benefit public health and safety. The replacement of the wastewater system would comply with the US Public Health Services standards and be able to accommodate the current and future wastewater use for visitors and employees. The Preferred Alternative would result in direct, moderate, long-term, beneficial, and local impacts.

Cumulative Effects

Future park development and construction activities would have the potential to increase wastewater flow, which the new wastewater system would be able to accommodate. Modifying the boundary fence to increase wildlife movement within the monument would not affect public health and safety. The Preferred Alternative would allow the wastewater system to comply with the US Public Health Service standards, and would allow the monument to accommodate the current and future wastewater use for visitors and employees. The Preferred Alternative combined with the past, present, and foreseeable future actions that may result in increased impacts to public health and safety, would result in direct, moderate, long-term, beneficial, and local cumulative impacts.

Conclusions

The Preferred Alternative would result in direct, moderate, long-term, beneficial, and local impacts. Cumulative effects under this alternative would be minor, short-term, adverse, and local due to the compliance with US Public Health Service standards.

Because there would be no major, adverse impacts to a resource or value whose conservation is (1) necessary to fulfill specific purposes identified in the establishing legislation and proclamation of SUCR; (2) key to the natural or cultural integrity of the monument; or (3) identified as a goal in the monument's general management plan or other relevant National Park Service planning documents, there would be no impairment of the monument's resources or values.

4.0 CONSULTATION AND COORDINATION

4.1 External Scoping

External scoping is done to inform the public and various agencies about the proposed wastewater system replacement project at SUCR and to generate feedback on the prepared Environmental Assessment.

External scoping was conducted through distribution of a scoping letter to inform the public and various agencies about the proposed wastewater system replacement project at SUCR and to generate feedback on the prepared Environmental Assessment. The scoping letter dated August 9, 2010 was sent to 90 addressees including landowners adjacent to the Monuments, various federal and state agencies, US senators, affiliated Native American tribes, local governments, and local news agencies. Information on the environmental assessment was also posted on the NPS PEPC website at <http://parkplanning.nps.gov/>. The Environmental Assessment will be available for public comments for 30 days; the comments are due by September 9, 2010.

Addressees included local landowners, state and local government officials and:

Federal Agencies

U.S. Fish and Wildlife Service

Advisory Council on Historic Preservation

U.S. Geological Survey, Southwest Biological Science Center

State Agencies

Arizona Department of Game and Fish

Arizona Dept. of Water Resources

Arizona Dept. of Environmental Quality

Arizona Dept. of Transportation, Flagstaff District

Arizona State Land Department, Forestry Division

Arizona State Historic Preservation Office

Arizona Public Service

Arizona Archeological Society

Affiliated Native American Groups

Navajo Nation
Zuni Heritage and Historic Preservation Office
Hopi Tribe, Hopi Cultural Preservation Office
Hualapai Tribe San Juan Southern Paiute Tribe
Havasupai Tribe
White Mountain Apache Tribe
Yavapai Prescott Indian Tribe
Yavapai-Apache Nation
Tonto Apache Tribe
San Juan Southern Paiute Tribe
Kaibab Band of Paiute Indians
San Carlos Apache
Fort McDowell Yavapai

4.2 Internal Scoping

Internal scoping was conducted by an interdisciplinary team of professionals from the SUCR Flagstaff Area National Monuments and Ecosystem Management, Inc consultants. Interdisciplinary team members met on October 29, 2009 to discuss the purpose and need for the project; various alternatives; potential environmental impacts; past, present, and reasonably foreseeable projects that may have cumulative effects; and possible mitigation measures. A site visit was conducted on October 29, 2009.

Internal scoping was conducted by an interdisciplinary team of professionals from the SUCR Flagstaff Area National Monuments on February 10, 2010 to discuss potential topics to retain for further analysis.

4.3 Environmental Assessment Review and List of Recipients

The Environmental Assessment will be released for public review on August 6, 2010. To inform the public of the availability of the Environmental Assessment, NPS will publish and distribute a letter or press release to various agencies, tribes, and members of the public on the National Park's mailing list, as well as place an ad in the local newspaper. Copies of the Environmental Assessment will be provided to interested individuals upon request. Copies of the document will also be available for review at the FLAG Headquarters and SUCR visitor center, and on the internet at www.nps.gov/sucr.

The Environmental Assessment is subject to a 30-day public comment period ending September 9, 2010. During this time the public is encouraged to post comments online at <http://parkplanning.nps.gov/Plans.cfm> or mail comments to Superintendent; Attn: Flagstaff Area National Monuments; 6400 N. Highway 89, Flagstaff, Arizona 86004. Following the close of the comment period, all public comments will be reviewed and analyzed prior to the release of a decision document. NPS will issue responses to substantive comments received during the public comment period, and will make appropriate changes to the Environmental Assessment as needed.

4.4 List of Preparers

Preparers that helped to develop EA content:

Stephanie Lee, Biologist, Ecosystem Management, Inc.

Mike Tremble, Ecosystem Management, Inc.

Lisa Leap, Chief of Cultural Resources, Flagstaff Area National Monuments, Flagstaff, AZ

Chris Donnermeyer, Compliance Archaeologist, Flagstaff Area National Monuments, Flagstaff, AZ

Paul Whitfield, Biologist, Flagstaff Area National Monuments, Flagstaff, AZ

5.0 REFERENCES

Executive Orders

Executive Order 11988 (Floodplain Management)

Executive Order 11990 (Protection of Wetlands)

Executive Order 12898 (Environmental Justice in Minority Populations and Low-income Populations)

Executive Order 13007 (Indian sacred sites)

NPS Director's Orders

DO-12 Conservation Planning, Environmental Impact Analysis and Decision Making

DO-24 Museum Collections

DO-28 Cultural Resource Management

DO-47 Sound Preservation and Noise Management

DO-77 Natural Resources Management Guideline (NPS-77)

DO-77-1 Wetland Protection

DO-77-2 Floodplain Management

Federal and Government

36 CFR Parks, Forests, and Public Property

40 CFR Protection of Environment

50 CFR Wildlife and Fisheries

1916 Organic Act

1963 Clean Air Act, as amended

1964 Wilderness Act

1966 National Historic Preservation Act

1969 National Environmental Policy Act

1970 General Authorities Act

1972 Clean Water Act

1973 Endangered Species Act

1979 Archeological Resources Protection Act

1981 Farmland Protection Policy Act

1993 Government Performance Results Act

Secretarial Order No. 3175 – Departmental Responsibilities for Indian Trust Resources

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**APPENDIX A:
USFWS T&E Data Request Response Letter****United States Department of the Interior**

U.S. Fish and Wildlife Service
Arizona Ecological Services Field Office
2321 West Royal Palm Road, Suite 103
Phoenix, Arizona 85021-4951
Telephone: (602) 242-0210 Fax: (602) 242-2513



In Reply Refer to:

AESO/SE
22410-2010-TA-0235

February 12, 2010

Ms. Stephanie Lee
Ecosystem Management, Inc.
4004 Carlisle Boulevard Northeast, Suite C
Albuquerque, New Mexico 87107

RE: Proposed Sewer Wastewater System Replacement Project for Sunset Crater Volcano
National Monument, Coconino County, Arizona


Dear Ms. Lee:

Thank you for your January 11, 2010, request for our review of the proposed sewer wastewater system replacement project for Sunset Crater Volcano National Monument, Coconino County, Arizona. We received your request for comments and a species list on January 13, 2010. The proposed action is to replace the existing wastewater system to meet the U.S. Public Health Service standards, and to accommodate the current and predicted annual visitation numbers and housing units. The project is located in Township 23 North, Range 8 East, section 21, approximately one mile east of the monument boundary on the Coconino National Forest. The proposed new system would include one 6,000 gallon septic tank, one 12,000 gallon septic tank, new six inch gravity sewer pipes, installation of five manholes, and 1,344 feet of drain field chambers. Approximately 2.68 acres within the proposed project area would be impacted.

We have no concerns regarding impacts to wildlife or habitat from the proposed action. There are no listed species that occur within or immediately adjacent to the project area.

We appreciate your coordination on this and other projects. We also encourage you to coordinate the review of this project with the Coconino National Forest and the Arizona Game and Fish Department. If you have any questions in regard to our review of the project, please contact Shaula Hedwall at (928) 226-0614 (x103) or Brenda Smith (x101) of our Flagstaff Suboffice.

Sincerely,

 Steven L. Spangle
Field Supervisor

APPENDIX B:

Federally-listed species, other agency “sensitive species”, or “species of concern” known to occur or potentially occur within Sunset Crater Volcano National Monument (SUCR)

COMMON NAME	SCIENTIFIC NAME	STATUS	LOCATION
<i>Wildlife Species:</i>		(1)	(2)
Bald Eagle (AZ wintering)	<i>Haliaeetus leucocephalus</i>	USFWS Recovered	SUCR (potential)
Gunnison’s prairie dog	<i>Cynomys gunnisoni</i>	AZ WSC	SUCR (observation)
American pronghorn	<i>Antilocapra americana</i>	NPS SC	SUCR (confirmed)
Townsend's big-eared bat	<i>Corynorhinus townsendii</i> spp. <i>pallascens</i>	USFWS SC	SUCR (potential)
Allen's big eared bat	<i>Idionycteris phyllotis</i>	USFWS SC	SUCR (potential)
western small-footed myotis bat	<i>Myotis ciliolabrum</i>	USFWS SC	SUCR (confirmed)
long-eared myotis bat	<i>Myotis evotis</i>	USFWS SC	SUCR (confirmed)
Arizona myotis bat	<i>Myotis occultus</i>	USFWS SC	SUCR (potential)
fringed myotis bat	<i>Myotis thysanodes</i>	USFWS SC	SUCR (confirmed)
long-legged myotis bat	<i>Myotis volans</i>	USFWS SC	SUCR (confirmed)
big free-tailed bat	<i>Nyctinomops macrotis</i>	USFWS SC	SUCR (potential)
<i>Plants:</i>			
Sunset Crater penstemon	<i>Penstemon clutei</i>	USFWS SC	SUCR (confirmed)
cinder phacelia	<i>Phacelia serrata</i>	USFWS SC	SUCR (confirmed)

(1) Status Acronyms

ESA Threatened – Federally listed as “Threatened” under the Endangered Species Act
 ESA Candidate – Candidate species for listing as “Threatened” under the Endangered Species Act
 USFWS Recovered – Recently removed from the Endangered Species List and currently in the post-listing monitoring period
 USFWS SC – Identified by the U.S. Fish & Wildlife Service as a “species of concern”
 AZ WSC – “Wildlife species of concern” identified by the Arizona Game & Fish Dept.
 NPS SC – Identified in the recent General Management Plans for WUPA, SUCR, and WACA as a “species of special management concern”

(2) Occurrence Record

Confirmed = museum voucher, published account, or NPS written record on file
 Potential = suitable habitat but no occurrence record

Observation = reliable observation communicated to NPS by other Federal agency or AZG&F
Dept. biologist

References

Arizona Game & Fish Department. 2009. List of protected and sensitive species for Coconino County, Arizona. Heritage Data Management System, via the internet at www.azgf.com.

National Park Service. 2002. General Management Plan and Final Environmental Impact Statement, Sunset Crater Volcano National Monument. November 2002.

APPENDIX C:**Special Status Species, Status, Distribution and Habitat Information for SUCR Monument**

Common Name	Scientific Name	Status ⁽¹⁾	Distribution/Habitat ⁽²⁾
Birds			
Bald Eagle	<i>Haliaeetus leucocephalus</i>	USFWS Recovered	Routinely observed in flight over Sunset Crater area during winter months; Likely to perch in snags along roadways and feed on carrion on roads; May perch or rarely roost in large ponderosa and Douglas fir snags in other areas.
Northern Goshawk	<i>Accipiter gentilis</i>	USFWS SC	No known nesting areas within/near SUCR; May hunt in SUCR; Nests within ponderosa pine stands with large diameter trees and moderate-high canopy closure.
Mammals			
American pronghorn	<i>Antilocapra americana</i>	NPS SC	<input type="checkbox"/> Bonito Park adjacent to SUCR; Infrequent in open cinder terrain around SUCR boundary.
Gunnison's prairie dog	<i>Cynomys gunnisoni</i>	AZ WSC	Montane valleys and plateaus of the Intermountain West and upper drainage basins east of the Continental Divide
Townsend's big-eared bat	<i>Corynorhinus townsendii</i> spp. <i>pallascens</i>	USFWS SC	Habitat use/habitat attributes unknown.
Allen's big eared bat	<i>Idionycteris phyllotis</i>	USFWS SC	Habitat use/habitat attributes unknown.
western small-footed myotis bat	<i>Myotis ciliolabrum</i>	USFWS SC	Habitat use/habitat attributes unknown.
long-eared myotis bat	<i>Myotis evotis</i>	USFWS SC	Habitat use/habitat attributes unknown.
Arizona myotis bat	<i>Myotis occultus</i>	USFWS SC	Habitat use/habitat attributes unknown.
fringed myotis bat	<i>Myotis thysanodes</i>	USFWS SC	Habitat use/habitat attributes unknown.
long-legged myotis bat	<i>Myotis volans</i>	USFWS SC	Habitat use/habitat attributes unknown.
big free-tailed bat	<i>Nyctinomops macrotis</i>	USFWS SC	Habitat use/habitat attributes unknown.
Plants			
Sunset Crater penstemon	<i>Penstemon clutei</i>	USFWS SC	<input type="checkbox"/> Sparsely vegetated volcanic cinder terrain; Several locations known.
cinder phacelia	<i>Phacelia serrata</i>	USFWS SC	<input type="checkbox"/> Ephemeral annual on sparsely vegetated and volcanic cinder terrain; Numerous locations known.

(1) STATUS CODES:

USFWS Recovered – removed from the Endangered Species List; currently in delisting monitoring period

USFWS SC – U.S. Fish & Wildlife Service as a “species of concern”

AZ WSC – Arizona Game & Fish Department “wildlife species of concern”

NPS SC – identified in NPS planning documents as a “species of special management concern” for SUCR

(2) ☐ Indicates full or partial survey and occurrence information is available for this species in the FLAG GIS.