
SECTION 2: ALTERNATIVES

DEVELOPMENT OF THE ALTERNATIVES

Alternatives were developed that describe and analyze five different approaches for achieving the overall Tremont goal. The improved and/or new facilities would allow Tremont to meet its long-term objectives to serve as the primary environmental residential environmental education center for the park.

The issues identified during scoping were used as the basis for the development of four “action” alternatives. In addition, National Environmental Policy Act requires consideration of the No Action Alternative for comparison of impacts. The alternatives were developed at an National Park Service workshop in 2006, during which a set of guiding principles for the alternatives was established based on issues and problems associated with the current facilities. The following guiding principles were incorporated into each of the alternatives to the greatest extent possible.

Tremont Programs

- Tremont has an established program and the facilities should meet these programmatic needs.
- The facilities should encourage students to spend time outdoors.
- Youth are the priority user groups at Tremont, followed by teachers, families, and adults in that order.
- Tremont plans to grow the citizen’s science program. This may offer an opportunity to provide education on sustainability and resource conservation.
- The community should be encouraged to take ownership of Tremont, to feel they are an integral part of the facility.

Sustainable Design

- Reduce the physical impact of Tremont on the park.
- At a minimum, buildings must meet a LEED Silver certification.
- Incorporate sustainable design and construction techniques to use and demonstrate cutting edge “green” technology.
- The site should be designed to utilize less physical space.
- Facilities need to be sustainable, but also practical and inexpensive to maintain. Operation and maintenance costs are important considerations for each of the alternatives. Inherent to the concept of sustainability is the intent that systems and materials are designed to provide for long term cost efficiencies to operate and maintain.
- Creating “buildings that teach” is an important concept. The facilities, their design, materials, and function, should demonstrate principles of conservation and sustainability. Tremont has an



opportunity to celebrate its site and natural surroundings as an integral component of its built/unbuilt facilities.

Tremont Buildings / Facilities

- The dining hall and dorms should be located in the center of the site and other facilities radiate outward.
- Provide transitional zones between the built and the natural environment.
- Provide transitional zones between public space and Tremont.
- Incorporate flexibility into housing accommodations - suggest providing accommodations for 150 people, although they would not all be used at one time.
- Provide a campus that enhances learning - buildings should be ecologically friendly and should aid in the teaching of ecological principles.
- A multi-functional room should be provided that is large enough to accommodate both Tremont and community activities.
- The maximum capacity should be approximately 125 to 150 students.
- Male and female students should be separated.
- Water and wastewater systems should be upgraded if they are determined to be inadequate.
- Heating, ventilation, and air conditioning needs to be upgraded.
- More windows are needed in existing facilities.

Accessibility

- Provide improvements to the entry / arrival sequence to develop a sense of arrival at Tremont.
- Cars and truck traffic should be separated from the pedestrian circulation.
- Improve safety by minimizing vehicular circulation into the Tremont activity zones.
- Program activities should be separated from outside services such as food delivery, garbage pickup, etc.
- Parking should be provided for approximately 70 cars, equal to what is currently allotted for parking.
- Operation of the programs at Tremont should not stop due to construction activities. It is understood that some program adjustments may need to be made during construction activities.



The guiding principles led the team in the development of five alternatives for the project:

- Alternative A – the No Action Alternative.
- Alternative B - Modification to Existing Facilities (Limited).
- Alternative C - the preferred alternative - Modification to Existing Facilities (Moderate).
- Alternative D – Moderate Redevelopment.
- Alternative E – Major Redevelopment.

The action alternatives for the redevelopment of Tremont represent different ways to achieve the overall goal of becoming an environmental education center that models sustainable design practices and instruction. The alternatives for the project were therefore developed to achieve the following specific purposes:

- Provide facilities that blend with the park environment.
- Provide facilities that are appropriate for a variety of uses.
- Adequate utilities to meet existing and future demands.
- Separates parking and education spaces.
- Provides appropriate transition between indoor and outdoor spaces.
- Provide for sustainable and cost effective maintenance.
- Model sustainable practices.
- Minimize impacts on the landscape.
- Serve as a showcase of sustainable design so they become educational tools.
- Brings together partners to enhance educational opportunities, enhancing the understanding and appreciation of the park and the use of sustainable practices.

Implementation of the proposed project depends on the availability of funding. The approval of the development concept plan/environmental assessment does not guarantee that funding and staffing needed to implement the project will be forthcoming. Funding for capital construction improvements is not currently shown in National Park Service construction programs. Larger capital improvements may be phased over several years, and full implementation of the proposed project could extend many years into the future.

DESCRIPTION OF THE ALTERNATIVES

The following sections provide a description of the alternatives and define the rationale for the action in terms of resource protection and management, visitor and operational use, costs, and other applicable features.



Alternative A: No Action

Alternative A, the No Action Alternative, provides a basis for comparing present operations at Tremont with the action alternatives and their anticipated environmental consequences. The No Action Alternative is defined as a continuation of present management practices, with an ongoing routine of continuing maintenance and repairs at Tremont, and implementing previously approved plans. No new construction would occur.

In 1964, the federal government built two U.S. Department of Labor Job Corps centers in the Great Smoky Mountains National Park. One of the centers was located at Tremont and the other was located near the Oconaluftee Visitor Center in North Carolina. Over the years, a number of the original Tremont Job Corps facilities were removed and other facilities were remodeled to accommodate current needs and uses. While new facilities, such as staff housing, were added, the overall footprint of Tremont decreased over time due to the removal of numerous buildings. Figure 2 shows the existing site plan. Figure 3 summarizes the major operational issues with the existing facilities. Today, the remaining structures total approximately 34,852 square feet of space in either enclosed buildings or covered space (such as the pavilion). The current facilities occupy approximately 10 acres. The existing space utilization breakdown is in Table 2:

Table 2 Square footages of existing facilities at Tremont.

Facility Type	Area (sf)
ACTIVITY CENTER/ DINING FACILITY	
Kitchen and Dining Hall	2857
General Activity room	2542
First aid room	144
Spruce Fir Room	816
Science Room	658
Storage	1079
Bathrooms and Showers	1054
Mountain Room	315
Upstairs Room next to Spruce Fir	432
Entrance Room	432
TOTAL	10329
QUARTERS	
Dormitory and Bathrooms	10470
Seasonal Quarters, Single Staff	440
Seasonal Quarters, Single Staff	440
Seasonal Quarters, Married Staff	440
Seasonal Quarters, Married Staff	440



Table 2 Square footages of existing facilities at Tremont.

Facility Type	Area (sf)
Oasis Quarters, 2 Staff	1025
Director' s Quarters and Garage	1992
TOTAL	15247
ADMINISTRATION SPACE	
Book Store	371
Office Space	1821
Carpenter Shop, Garage, Storage	1966
TOTAL	4158
SHELTERS	
Steel Picnic Shelter	1920
River House	1702
Friendship Circle Shelters(2)	1158
Outdoor Class Room	0
Arrival Shelter	0
Oil and Paint Storage	338
TOTAL	5118
TOTAL SQUARE FOOTAGE	34852
TOTAL ACREAGE	0.8

Under Alternative A, the existing aging wastewater treatment system would continue to be used. This system consists of two infiltration ponds located on the east side of the Middle Fork that receive wastewater from collection wells on the other side of the river through a system of pipes and a pump. The system has had periodic mechanical problems.

Under Alternative A, the current Tremont educational programs would continue. The Great Smoky Mountains National Park owns the property and buildings on the site, and Tremont utilizes the facilities without charge. Tremont is responsible for maintaining the facilities, with the exception of water and wastewater systems (external to buildings), electrical systems, and access roads. The No Action Alternative represents continuation of Tremont’s ongoing routine of continuing maintenance and repairs.

Tremont operates the bookstore at Tremont and uses profits from the bookstore to partially offset the costs of operating and maintaining Tremont. This practice would continue under the No Action Alternative. Under the No Action Alternative, the National Park Service would respond to future needs and conditions with no anticipated major changes in the present management actions.



Estimated Costs – Alternative A

Costs were estimated using National Park Service guidelines for a Class C cost estimate (NPS 2001a). Class C estimates are general, or order-of-magnitude estimates. The accepted industry range of Class C estimates is –30 percent to +50 percent. The National Park Service uses this range of costs because they are approximate estimates based on conceptual designs. No construction costs are associated with Alternative A since no new facilities would be constructed. The following costs for Alternative A are given for comparison with the alternatives. Costs are estimated based on fiscal year 2009 dollars.

- Annual maintenance and operating costs, including personnel, would range between \$ 216,473 and \$ 463,871.
- Total life cycle costs over a 20-year period would range between \$ 2.2 and 4.9 million.

Alternative B: Modifications to Existing Facilities (Limited)

Alternative B would include minor upgrades, modifications, additions, and spatial reconfiguration to existing facilities and infrastructure to optimize functionality and potential utilization. Figure 4 shows the Alternative B site plan. Table 3 summarizes the major features of Alternative B. Modifications and additions would incorporate sustainable design principles and systems, where possible, to further enhance awareness and educational opportunities provided at Tremont.

Alternative B would partially fulfill some of the objectives for the redevelopment of Tremont, including:

- Providing an improved facility for educational programs compared to the No Action Alternative.
- Improving park learning opportunities.
- Providing greater flexibility for serving varied user groups than the No Action Alternative.

Alternative B would not fulfill the following objectives for the redevelopment of Tremont:

- The facility would not maximize the experience of living within a national park to learn about the Great Smoky Mountains and sustainability.
- It would not provide an opportunity to enhance abilities to serve the local community and foster partnerships.
- The facility would not provide a premier site for meetings and environmental education.
- The design and features proposed would not be those of a residential learning center.
- The facility would not foster a sense of place for visitors.



Table 3 Alternative B Features and Improvements

Feature	Improvement
Activity Center / Dining Facility	Provide sound proof classrooms.
	Upgrade the heating, ventilation, and air conditioning systems and mechanical systems, utilizing sustainable system design, installation and components. Provide passive ventilation systems to minimize mechanical requirements and energy usage.
	Install new, strategically placed, larger, energy efficient, operable windows.
	Provide ADA compliance throughout the facility.
	2 nd floor space attic in Activity Center strengthened, but not finished out.
Dormitory	Provide 2-story ADA compliant restroom additions to each end of the existing dormitory, utilizing water conservation techniques such as ultra-low flow toilets, waterless urinals, flow regulated shower heads with temporary cut-off buttons and foot operated metered faucets. Minimize the construction disturbance and protect the natural drainage patterns when constructing restroom additions. Provide adequate sediment control by providing temporary vegetative cover and/or silt fences, and check dams with sediment traps.
	Reconfigure/renovate dormitory spaces to become ADA compliant and to improve utilization potential and increase flexibility. Utilize low emissions materials for renovations to improve indoor air quality.
	Install new, strategically placed, larger, energy efficient, operable windows
River House	This structure would be retained but not renovated.
Administration/Office	No changes.
Staff Housing	No changes (including Director's home).
Main Pavilion	No changes.
Site/Infrastructure	Upgrade or replace wastewater treatment plant with a standard extended aeration treatment plant. Eliminate wastewater treatment ponds. Assume the wastewater treatment plant would require 0.5 acres of land to construct and that the ponds would be filled in.
General	Sustainable principles utilized during the entire renovation/construction process, including the design, construction, operation, building systems, furnishings, materials and demolition.
	Native plant material strategically located to create outdoor space and to help moderate climatic extremes. Locally grown native plant species utilized to reinforce the natural setting of the national park as well as to minimize maintenance and energy requirements.
	Materials removed during renovation reused on-site or recycled, when possible.



Estimated Costs – Alternative B

The following costs are estimated based on fiscal year 2009 dollars (the National Park Service uses a wide range of costs because these are approximate estimates based on conceptual designs):

- Construction improvements under the Alternative B are estimated to range from \$3.1 million to \$6.6 million.
- Annual maintenance and operating costs, including personnel, would range from \$218,423 to \$468,048.
- Total life cycle costs over a 20-year period would range between \$5.5 and \$11.6 million.

Alternative C: The Preferred Alternative - Modifications to Existing Facilities (Moderate)

Alternative C (Figure 5; Table 4) would include moderate upgrades, modifications, additions, and spatial reconfiguration to the infrastructure and existing facilities to optimize class room and office space efficiency, utilization, functionality, energy conservation, and visual quality. Alternative C consists of moderate modifications to existing facilities, with the exception of an option for either rehabilitating the existing dormitory or construction of a new dormitory (both using sustainable design principles). These changes would incorporate sustainable design principles and systems, to the extent possible, to further enhance awareness and educational opportunities provided at Tremont. Table 4 lists the proposed improvements proposed for the Tremont facilities under Alternative C.

Alternative C would partially fulfill the objectives for the redevelopment of Tremont.

- The design and features proposed would be an improvement compared to the No Action Alternative.
- It would provide an improved facility for excellent educational programs, as compared to the No Action Alternative.
- The facilities would improve park learning opportunities.
- The facility would foster a greater sense of place than the No Action Alternative.
- The facility would provide greater flexibility for serving varied user groups than the No Action Alternative.
- It would provide a greater opportunity to enhance abilities to serve the local community and foster partnerships as compared with the No Action Alternative.



Table 4 Alternative C Features and Improvements

Feature	Improvement
Activity Center / Dining Facility	Provide sound proof classrooms.
	Upgrade the heating, ventilation, and air conditioning systems and mechanical systems, utilizing sustainable system design, installation and components. Provide passive ventilation systems to minimize mechanical requirements and energy usage.
	2 nd floor space attic in Activity Center rehabilitated, but not finished out.
	Install new, strategically placed, larger, energy efficient, operable windows.
	Provide ADA compliance throughout the facility.
	Enlarge and reconfigure the existing restroom facilities to comply with Americans with Disabilities Act. Restroom renovations include water conservation techniques such as ultra-low flow toilets, waterless urinals, flow regulated shower heads with temporary cut-off buttons and foot operated metered faucets.
	Modify the exterior elevations and roof lines to improve visual qualities and to blend with the national park setting. Indigenous materials utilized when possible to maximize regional continuity and to minimize energy consumption. Materials removed during renovation reused on-site or recycled, when possible.
Dormitory	Rehabilitate existing dormitory or construct a new dormitory in its current location. If rehabilitated, provide 2-story Americans with Disabilities Act compliant restroom additions to each end of the existing dormitory, utilizing water conservation techniques such as ultra-low flow toilets, waterless urinals, flow regulated shower heads with temporary cut-off buttons and foot operated metered faucets. Minimize the construction disturbance and protect the natural drainage patterns when constructing restroom additions. Provide adequate sediment control by providing temporary vegetative cover and/or silt fences, and check dams with sediment traps. Provide durable updated furnishings that have been locally manufactured utilizing indigenous materials. Furnishings easily disassembled with minimal harmful emissions.
	If rehabilitated, reconfigure/renovate dormitory spaces to enhance compliance with the Americans with Disabilities Act and to improve utilization potential and increase flexibility. Utilize low emissions materials for renovations to improve indoor air quality. Restroom renovations include water conservation techniques such as ultra-low flow toilets, waterless urinals, flow regulated shower heads with temporary cut-off buttons and foot operated metered faucets. Install new, strategically placed, larger, energy efficient, operable windows
	If rehabilitated, modify the exterior elevations and roof lines to improve visual qualities and to blend with the national park setting. Indigenous materials utilized when possible to maximize regional continuity and to minimize energy consumption. Materials removed during renovation reused on-site or recycled, when possible.
	If replaced, a new dormitory would be constructed using sustainable design principles (LEED Silver rating at a minimum). This is an option to rehabilitation of the dormitories under this alternative.



Table 4 Alternative C Features and Improvements	
Feature	Improvement
River House	Retain use of existing River House (no improvements).
Administration/Office	Retain use of existing Administration/Office (no improvements).
Staff Housing	Retain use of existing Oasis' house Ranger Station (no improvements). Retain use of other existing staff housing (no improvements).
Main Pavilion	Retain use of existing pavilion (no improvements).
Site/Infrastructure	Upgrade or replace existing wastewater treatment plant with a standard extended aeration treatment plant.
	Improve the site storm water drainage system between the existing dormitory, main pavilion and activity center/dining facility, including storm piping, inlets and outfall structures as required. Minimize the construction disturbance and protect the natural drainage patterns during construction operations. Provide adequate sediment control by providing temporary vegetative cover and/or silt fences, and check dams with sediment traps. Reconfigure road and parking lot to provide separation between automobile and pedestrian traffic.
	Reconfigure and improve access to existing trail heads to minimize conflicts with Tremont.
General	Sustainable principles utilized during the entire renovation/construction process, including the design, construction, operation, building systems, furnishings, materials and demolition.
	Native plant material strategically located to create outdoor space and to help moderate climatic extremes. Locally grown native plant species utilized to reinforce the natural setting as well as to minimize maintenance and energy requirements.
	Materials removed during renovation reused on-site or recycled, when possible.



Estimated Costs – Alternative C

The following costs for Alternative C, assuming rehabilitation of the existing dormitory, are estimated based on fiscal year 2009 dollars (the National Park Service uses a wide range of costs because these are approximate estimates based on conceptual designs):

- Construction improvements (assuming a rehabilitated dormitory) are estimated to range from \$5.9 million to \$12.6 million.
- Annual maintenance and operating costs, including personnel, would range between \$211,086 and \$452,326.
- Total life cycle costs over a 20-year period would range between \$8.1 and \$17.4 million.

The following costs for Alternative C, assuming complete reconstruction of a new dormitory, are estimated based on fiscal year 2009 dollars:

- Construction improvements under Alternative C (assuming construction of a new dormitory) are estimated to range from \$8.0 million to \$17.1 million.
- Annual maintenance and operating costs, including personnel, would range between \$211,086 and \$452,326.
- Total life cycle costs over a 20-year period would range between \$10.3 and \$21.9 million.

Alternative D: Moderate Redevelopment

Alternative D - would include moderate site redevelopment and major modifications, additions, and spatial reconfiguration to the site and existing facilities to increase facility function, utilization, energy conservation, and visual appearance. Figure 6 shows the Alternative D site plan. Significant changes proposed include construction of two new dormitories, demolition of the River House and roadway, and various walkway improvements and reconfigurations (including demolition of the existing dormitory and construction of a parking lot in its place). Modifications and additions would incorporate sustainable design principles and systems, where possible, to further enhance awareness and educational opportunities provided at Tremont. Table 5 lists the features and improvements made to the Tremont facilities under Alternative D.

Alternative D would fulfill a number of the objectives for the redevelopment of Tremont, including.

- The design and features proposed would be a significant improvement compared to the No Action Alternative.
- It would provide a facility that would provide improved support for educational programs, as compared to the No Action Alternative.
- The facilities would improve park learning opportunities.
- The facility would help promote a sense of place with visitors.



- The facility would provide greater flexibility for serving varied user groups compared to the No Action Alternative with the creation of two new dormitories.
- The facility would improve the experience of being within a national park setting to learn about the Great Smoky Mountains and sustainability, as compared to the No Action Alternative.

Alternative D would not fulfill the following objectives for the redevelopment of Tremont:

- Although representing an improvement over the No Action Alternative, Alternative D facilities would provide a partially reconstructed educational facility.

Implementation of Alternative D would be divided into two phases, as follows:

- Phase 1 – In phase 1, the roads and the two new dormitories would be constructed. The existing dormitory building would be removed and the space would be converted into parking.
- Phase 2 – In phase 2, improvements to the Activity Center and Administration Building would be implemented.

Estimated Costs –Alternative D

The following costs are estimated based on fiscal year 2009 dollars (the National Park Service uses a wide range of costs because these are approximate estimates based on conceptual designs):

- Construction improvements under Alternative D are estimated to range from \$15.4 million to \$33.1 million.
- Annual maintenance and operating costs, including personnel, would range between \$219,602 and \$470,576.
- Total life cycle costs over a 20-year period would range between \$17.8 and \$38.0 million.



Table 5 Alternative D Features and Improvements

Feature	Improvement
Activity Center / Dining Facility	Provide sound proof classrooms.
	Upgrade the heating, ventilation, and air conditioning systems and mechanical systems, utilizing sustainable system design, installation and components. Provide passive ventilation systems to minimize mechanical requirements and energy usage.
	2 nd floor space attic in Activity Center rehabilitated, but not finished out.
	Install new, strategically placed, larger, energy efficient, operable windows.
	Provide Americans with Disabilities Act compliance throughout the facility.
	Enlarge and reconfigure the existing restroom facilities to enhance compliance with the Americans with Disabilities Act. Restroom renovations include water conservation principles and techniques. Utilize grey water and/or rainwater for toilets in addition to ultra-low flow toilets, waterless urinals, flow regulated shower heads with temporary cut-off buttons and foot operated metered faucets.
	Provide accessible restroom shower facilities to support tent platform campers, including water conservation principles and techniques. Utilize grey water and/or rainwater for toilets in addition to ultra-low flow toilets, waterless urinals, flow regulated shower heads with temporary cut-off buttons and foot operated metered faucets.
	Modify the exterior elevations and roof lines to improve visual qualities and to blend with the national park. Indigenous materials utilized when possible to maximize regional continuity and to minimize energy consumption.
Dormitory	Demolish existing dormitory and construct a parking lot in its place.
	Construct two new dormitories to accommodate housing requirements removed from existing dormitory. New dormitories would improve utilization potential and increase flexibility.
River House	Demolish building.
Administration/Office	Renovate and reconfigure existing administration/maintenance building to accommodate enlarged office space and visitor center/bookstore areas and backcountry information.
	Modify the exterior elevations and roof lines to improve the visual qualities.
	Enhance Americans with Disabilities Act compliance throughout the facility.
Staff Housing	Reconfigure Oasis House for Tremont Director's home.
	Convert existing Director's home to staff housing using minimal reconfiguration.



Table 5 Alternative D Features and Improvements	
Feature	Improvement
Main Pavilion	Relocate existing pavilion.
	Provide ventilation.
	Provide interior lighting. Replace roof and improve exterior visual quality.
Site/Infrastructure	Upgrade or replace antiquated wastewater treatment plant with a standard extended aeration treatment plant.
	Improve the site storm water drainage system throughout the site. Create constructed wetlands and/or bioretention to filter impurities from storm water runoff and to encourage infiltration. Minimize the construction disturbance and protect the natural drainage patterns during construction operations. Provide adequate sediment control by providing temporary vegetative cover and/or silt fences, and check dams with sediment traps.
	Utilize permeable pavement where feasible in the construction of new parking lots, roadways and sidewalks.
	Reconfigure and improve access to existing trail heads to minimize conflicts with Tremont operations.
	Provide roundabout entry feature to function as a bus drop-off/loading area and turnaround point.
	Improve arrival sequence for sense of place.
	Reconfigure roadways, parking and walkways to minimize pedestrian/vehicular conflicts.
	Area occupied by demolished dormitory would be used for parking. All car parking would be located on main campus on east side of river. Parking for a total of 70 vehicles would be provided. No construction would occur on the west side of the river. However, buses would continue to park on west side of river in current established parking areas (horse trailer/pump house parking areas).
General	Sustainable principles would be utilized during the entire renovation/construction process, including the design, construction, operation, building systems, furnishings, materials and demolition.
	Native plant material strategically located to create outdoor space and to help moderate climatic extremes. Locally grown native plant species will be utilized to reinforce the native natural setting of the national park as well as to minimize maintenance and energy requirements.
	Materials removed during renovations and demolitions reused on-site or recycled, when possible.



Alternative D would not fulfill the following objectives for the redevelopment of Tremont:

- Although representing an improvement over the No Action Alternative, Alternative D facilities would provide a partially reconstructed educational facility.

Implementation of Alternative D would be divided into two phases, as follows:

- Phase 1 – In phase 1, the roads and the two new dormitories would be constructed. The existing dormitory building would be removed and the space would be converted into parking.
- Phase 2 – In phase 2, improvements to the Activity Center and Administration Building would be implemented.

Estimated Costs –Alternative D

The following costs are estimated based on fiscal year 2009 dollars (the National Park Service uses a wide range of costs because these are approximate estimates based on conceptual designs):

- Construction improvements under Alternative D are estimated to range from \$15.4 million to \$33.1 million.
- Annual maintenance and operating costs, including personnel, would range between \$219,602 and \$470,576.
- Total life cycle costs over a 20-year period would range between \$17.8 and \$38.0 million.

Alternative E: Major Redevelopment

Alternative E would consist of complete site redevelopment, including new and upgraded facilities that meet the current and future needs of Tremont. All site development, facility design, and construction would become a model of sustainable design principles and development. Site development would become an integral part of the educational opportunities at Tremont. Figure 7 shows the Alternative E site plan.

Significant changes include construction of two new dormitories, a new activity center/dining/administration facility, new staff housing, new council house pavilion, construction of a new maintenance building and the demolition of the River House. The functional layout of the site plan is designed to provide safer, more efficient transition between facilities. Commercial traffic and visitors are separated from Tremont program



Table 6 Alternative E Features and Improvements

Feature	Improvement
Activity Center / Dining / Administration Facility	Construct new Activity Center / Dining / Administration Facility utilizing sustainable design and construction concepts, techniques and materials.
	Provide new sound proof classrooms.
	Provide new high seasonal energy efficiency ratio heating, ventilation, and air conditioning systems and efficient mechanical systems in the new building.
	Provide new science laboratory in the new building.
	Provide strategically placed large, energy efficient, operable windows using sustainable design principals.
	Provide restroom facilities and accessibility that enhance compliance with the Americans with Disabilities Act.
	Provide accessible restroom shower facilities to support tent campers.
	Design new building to blend with the national park setting.
Dormitory	Construct two new dormitories that would improve utilization potential and increase flexibility, utilizing sustainable design and construction concepts, techniques, and materials.
	Existing dormitory to be removed, and in its place a new maintenance building would be constructed.
	Design exterior elevations and roof lines to blend with the national park setting.
	Provide enhanced Americans with Disabilities Act compliant restrooms.
	Provide strategically placed large, energy efficient, operable windows.
River House	Demolish building.
Staff Housing	Remove 'Oasis' House Ranger Station from further use by Tremont.
	Construct new staff housing to blend with the national park setting, utilizing sustainable design and construction concepts, techniques and materials. Part of the new staff housing would include space a for site administrator/emergency contact manager.



Table 6 Alternative E Features and Improvements

Feature	Improvement
Main Pavilion	Relocate existing pavilion.
	Provide ventilation.
	Provide interior lighting.
	Replace roof and improve exterior visual quality.
Council House Pavilion	Demolish and replace with new pavilion.
Site/Infrastructure	Demolish all existing buildings on site.
	Install solar panels.
	Improve the site storm water drainage system throughout the site. Create constructed wetlands and/or bioretention to filter impurities from storm water runoff and to encourage infiltration. Minimize the construction disturbance and protect the natural drainage patterns during construction operations. Provide adequate sediment control by providing temporary vegetative cover and/or silt fences, and check dams with sediment traps.
	Upgrade or replace antiquated wastewater treatment plant with an advanced form of technology, partly for purposes of student education Tremont.
	Reconfigure and improve access to existing trail heads to minimize conflicts with the Tremont.
	Reconfigure roadways, parking and walkways to minimize or eliminate pedestrian/vehicular conflicts.
	No new parking on the west side of the river would be constructed. However, buses would park on west side of river in existing parking areas (Horse trailer/pump house parking areas).
	Improve arrival sequence to provide 'sense of place'.
General	Sustainable principles utilized during the entire renovation/construction process, including the design, construction, operation, building systems, furnishings, materials and demolition.
	Native plant material strategically located to create outdoor space and to help moderate climatic extremes. Locally grown native plant species utilized to reinforce the native natural setting of the national park as well as to minimize maintenance and energy requirements.
	Materials removed during renovation reused on-site or recycled, when possible.



activities. Table 6 lists the features and improvements proposed for Tremont facilities under Alternative E. Alternative E would fulfill each of the objectives for the redevelopment of Tremont.

- The design and features proposed are those of a high quality residential learning center.
- It would provide an excellent facility for excellent educational programs.
- The facilities would enhance park learning opportunities rather than distract from them.
- The facility would foster a sense of place with visitors.
- The facility would create greater flexibility for serving varied user groups.
- The facility would provide a premier site for meetings and environmental education.
- The facility would maximize the opportunity and enhance the experience of being within the national park to learn about the Great Smoky Mountains and sustainability.
- It would provide an opportunity to enhance abilities to serve the local community and foster partnerships.

Alternative E would be completed in three phases, as follows:

- Phase 1 -two new dormitories would be constructed.
- Phase 2 -the new activity building would be constructed.
- Phase 3 -the new administration building would be constructed.

Estimated Costs – Alternative E

The following costs are estimated based on fiscal year 2009 dollars (the National Park Service uses a wide range of costs because these are approximate estimates based on conceptual designs):

- Construction improvements under the Alternative E are estimated to range from \$24.2 million to \$51.8 million.
- Annual maintenance and operating costs, including personnel, would range between \$229,203 and \$492,648.
- Total life cycle costs over a 20-year period would range between \$26.6 and \$57.0 million.

MITIGATION MEASURES OF THE ACTION ALTERNATIVES

For all action alternatives, best management practices and mitigation measures would be used to prevent or minimize potential adverse effects associated with the construction and operation of the improved Tremont campus. These practices and measures would be incorporated into the project construction documents and plans to reduce the



magnitude of impacts and ensure that major, adverse impacts would not occur. Mitigation measures undertaken during project implementation would include, but would not be limited to those listed below. The impact analysis in the “Environmental Consequences” section was performed assuming that these best management practices and mitigation measures were implemented as part of all action alternatives.

Practices to Minimize Effects on Soil and Water Quality

Best management practices would be employed during construction to minimize effects of soil erosion on water quality of the Middle Prong. Mitigation measures taken during construction would include the following:

General Mitigation Measures

- Construction limits would be delineated by the park prior to any construction activity. Workers would be instructed to avoid conducting activities and disturbing areas beyond the construction limits.
- All tools, equipment, barricades, signs, surplus materials, demolition debris, and rubbish would be removed from the project work limits upon project completion.
- Contractors would be required to properly maintain construction equipment and generators (e.g., mufflers) to minimize noise from use of the equipment.
- All equipment on the project would be maintained in a clean and well-functioning state to avoid or minimize contamination from automotive fluids. All equipment would be checked daily.
- Materials would be stored, used, and disposed in a proper manner.
- A hazardous spill plan would be approved by the park prior to construction. This plan would state what actions would be taken in the case of a spill, notification measures, and preventive measures to be implemented, such as the placement of vehicles and generators.

Mitigation Measures for Soil

- Surveys for sensitive native plants would be conducted prior to vegetation disturbance. Non-natives plants would utilize disturbed areas and be controlled. If fill is needed, it would be obtained on-site from depths of greater than 18 inches to minimize the potential for causing spread of non-native plants.
- Wait until just before the beginning of construction to clear vegetation and disturb the soil.
- Minimize the area of bare soil within the approved work zone as much as possible.
- Maintain a buffer of natural vegetation around the work area to slow runoff and trap sediments.



- Consider phasing construction to minimize the extent of disturbed soil.
- Park vehicles and equipment and temporarily store materials on locations that are already devoid of vegetation and/or compacted from previous activities.
- If vegetation disturbance cannot be avoided and conditions warrant, reseed the disturbed area with a mixture of park-approved or park-provided seed mix native, self-sustaining native plant species in accordance with known, successful local techniques.
- Ensure that the final land form is stable, minimizes soil erosion, and is hydrologically compatible with the surrounding area.
- Provide slope and land form stability by reducing slope angles.

Mitigation Measures for Vegetation

- Effects on vegetation would be minimized during the detailed planning phase of the design.
- Forested areas would be avoided to the maximum extent practicable by shifting building footprints and other construction footprints to avoid these areas.
- Construction would be planned primarily in previously disturbed areas.
- Native species would be used in all the plantings. Surveys for non-native species will be conducted on the site. Several non-native species of plants currently occur on the site and could spread during operation of the new facilities. The National Park Service will monitor the site for these species and take appropriate steps to control them as needed.

Mitigation Measures for Special Status Species

- A survey would be conducted to determine the presence of roost trees of the federally endangered Indiana bat on the site. These trees will be avoided if possible; however, if roost trees greater than 6 inches DBH are found that have characteristics for Indiana bat summer roosts (i.e., dead trees with exfoliating bark, tree cavities, and crevices), the following decision process would be employed:
 - Remove potential roost trees only between October 15 and April 15; or
 - Have a qualified individual observe for bats existing in the trees for 20 minutes before and after sunset. If bats are observed, use mist netting to determine species or resurvey tree at a later date.
- Under Alternatives D and E, some additional lighting would be proposed. Light that reflects upward could have a negative impact on the rare species of moths listed in Table 12. Their mating periods could be disrupted, and if attracted to the lights, they would be eaten by bats. Any reduction in light pollution in the proposed project would be a positive factor for these rare moths. During design



of the site modifications, this would be taken into consideration, and the design would be developed to minimize these types of effects.

Mitigation Measures for Visitor Use and Experience and Visual Quality/Viewshed

- Construction would be carefully planned to minimize potential disruption of visitor use of the Tremont facility by visitors and students.
- During construction, contractors would be required to submit and adhere to an approved health and safety plan to minimize health and safety risks during the construction phase.
- Phasing of construction would be conducted as part of this program.

Mitigation of Measures for Cultural Resources

- Mitigation of potential effects on cultural resources was achieved by conducting an archaeological survey of the project site. The survey was completed by the University of Tennessee Archeological Research Laboratory in 2006 (UTARL 2007). The study “integrated archival research with a field testing program that incorporated shovel testing, hand augering and backhoe testing.” The study concluded there were no intact archaeological deposits with the potential for National Register eligibility in the project area, and recommended the “project should proceed as planned, but if unanticipated subsurface features (e.g., privy pits), or burials are encountered during construction, “the project must be halted and the park Archaeologist should be contacted for an evaluation before work resumes.”

Conclusion

All actions taken would protect natural and cultural resources and restore natural resources and systems specific to the Tremont site. Sensitive natural resources on the site have been identified and would be avoided to the greatest extent possible by conducting natural and cultural resource assessments. Best Management Practices would be used to avoid, reduce or minimize potential adverse effects of construction and operation on natural resources located on the site.

ALTERNATIVES CONSIDERED BUT DISMISSED

Several preliminary alternatives were considered during the master planning process for the project during design charrettes held in August 2001 by Tremont (summarized in Barge Waggoner, Sumner and Cannon 2003). These were used as a starting point for the two alternatives (A and B) presented in the master plan prepared in 2003 (Barge Waggoner, Sumner and Cannon 2003). Selected features of master plan Alternatives A and B were used as the basis for developing the alternatives in this development concept plan/environmental assessment.

The following is a summary of the information on seven preliminary alternatives that were considered in the design charrettes:



- The design objectives/issues identified in the charrettes were as follows:
 - Separate vehicular and pedestrian traffic;
 - Make all facilities ADA accessible;
 - Maximize indoor/outdoor relationships in all buildings;
 - Maximize building footprints;
 - Intrusion into visual landscape (issue to be addressed);
 - Maintain a 50-foot buffer of natural vegetation along the river;
 - Treat all runoff from impervious surfaces;
 - Maximize reuse of existing facilities and buildings;
 - Tremont should stay open during improvements;
 - Meet all National Park Service floodplain requirements;
 - Minimize intrusion on the natural environment;
 - Provide security for Tremont users and staff;
 - Provide separation of user groups;
 - Provide appropriate aesthetic entrance experience and sequence;
 - Provide logical and appropriate way finding;
 - Signage/way finding consistent with National Park Service intentions;
 - Reduce operational costs;
 - Reduce wastewater treatment volumes and consider alternate location for treatment facilities; and
 - Retain design of existing fire shelters.
- Seven preliminary alternatives were developed in charrettes based on these objectives, and on a required relationship between the different types of facilities on the campus. One relationship diagram was first developed for each of seven alternatives, and these diagrams were then used to create a final set of alternative layouts. The following is a summary of the seven alternatives developed in the charrettes using these techniques (Barge Waggoner, Sumner and Cannon 2003):
 - Charette Alternative A: This alternative was designed to reduce sprawl and over site disturbance by having a smaller overall footprint. This alternative featured a parking area on the west side of the Middle Prong, staff housing where the present dormitory is located, a new dormitory/dining area next to the Middle Prong, and a large open environmental education center on the southern end of the campus. This alternative featured a new (second) bridge across the Middle Prong south



- of the existing bridge, and a combined visitor center, auditorium, office and library. It also allowed for phasing of construction.
- Charette Alternative B: This alternative retained use of the single existing bridge over the Middle Prong, located staff housing close to the dining/dorm complex adjacent to the Middle Prong, and a parking area on the hill on the east side of the campus. It also featured a tunnel underneath the Middle Prong on the south side of the campus connecting to the parking area on the hill to help reduce traffic congestion.
 - Charette Alternative C: Alternative C was similar to Alternative B, except it placed staff parking, general parking, and the maintenance building on the southeast side of the site, and eliminated the outdoor education area.
 - Charette Alternative D: Alternative D concentrated most of the campus facilities in a single central area of the campus, and left the majority of the rest of the site undeveloped. The majority of the parking areas were moved to the west side of the Middle Prong. A second bridge was also featured to improve access to the centrally located facilities complex from the west.
 - Charette Alternative E: Under Alternative E, facilities were widely distributed across the site and were separated by several large green spaces. The auditorium/meeting building was placed on the northeastern end of the campus and the main office and maintenance building were placed on the hill on the east side of the campus. The dormitories were placed in the flat area next to the Middle Prong, and the wet lab was placed on the south side of the site next to the Middle Prong. Access to the site was provided along a road running along the east edge of the campus that connected with parking areas and a welcome center on the northwest side of the campus.
 - Charette Alternative F: Under Alternative F, the campus was divided in to a “Public Zone,” an “Entry Arrival Zone,” a “Support Zone,” and a “Learning Zone” to improve flow and reduce congestion. A large parking area was placed on the west side of the Middle Prong and the existing bridge was retained. A welcome center was placed on the west side of the Middle Prong. The maintenance building, library, and staff housing were located on the hill on the east side of the campus. The auditorium/dining area was located in the northern end of the campus, and the dormitories at the extreme southern end. Facilities were, therefore, even more widely distributed than Alternative E as a result of these changes. This also enabled maximization of green space on the campus.
 - Charette Alternative G: Under Alternative G, the majority of the campus facilities were located in the flat area next to the Middle Prong. Access to the campus was provided by the existing bridge and a new angled bridge



placed south of the existing bridge to provide direct access to a central complex of buildings surrounding a large meadow. The second bridge was connected directly to a large parking located on the west side of the Middle Prong. The large meadow was bordered on the east side by the main building complex of auditorium, dining hall, dormitories, and other buildings. The main office and maintenance building were left in their current locations. Staff housing was moved to the hill on the east side of the campus. A new welcome center was located on the west side of the Middle Prong road.

The following is a summary of Alternative A and B presented in the master plan:

- Concept A: “Concept A removes all the existing structures (including staff housing) with the exception of Friendship Circle, and replaces them with new ones. The primary design concepts for this plan include using the main building as the terminus of the linear open meadow along Middle Prong, separating the dorms into small building and tucking them into the hillside, and increasing vegetation to limit their visual impact on the site on the narrow meadow space.” (Barge Waggoner, Sumner and Cannon 2003). Detailed concept diagrams and additional details are provided in the Master Plan. Under Concept C, the buildings would be designed according to sustainable principles.
- Concept B: Concept B was very similar to Concept A, but had some key differences. The differences are as follows:
 - “Stabilized grass parking replaces the bus drop-off and parking area on the west side of Middle Prong. The existing ozone garden would be relocated.”
 - “Two pedestrian access lanes would be added to the existing bridge instead of one.”
 - “The main parking area, entry, and main service drive would be constructed of porous concrete with an integral earth tone color.”
 - “The service drive extending from the maintenance building to the existing director’s house would be built using 2-foot wide porous concrete wheel paths with stabilized grass on each side to a width of 12 feet. This would greatly reduce the amount of impervious surface.”
 - “Employee parking near the maintenance building would be on stabilized grass or grass-paved (concrete block units with grass openings) lots.”
 - Staff housing would remain in place.
 - Oasis house would be renovated to accommodate three staff housing units.
 - Existing staff apartments and the director’s house “would be renovated to incorporate as many as the visioning goals and objectives as feasible.”



- “The dormitories would be consolidated into two two-story buildings, each with 72 beds. The second floors of the buildings would have grade access to the slope at the rear of the dorms, providing ADA access to the second floor.”
- “The Council House would be moved and/or rebuilt in a prominent location at the edge of the linear meadow along the Middle Prong. The wastewater treatment greenhouse is located at the edge of the woods along the Middle Prong.”

THE ENVIRONMENTALLY PREFERRED ALTERNATIVE

The environmentally preferred alternative is the alternative that would best promote the national environmental policy expressed in the National Environmental Policy Act. The environmentally preferred alternative would cause the least damage to the biological and physical environment, and would best protect, preserve, and enhance historical, cultural, and natural resources.

Section 101(b) of the National Environmental Policy Act identifies six criteria to help determine the environmentally preferred alternative. The act directs that federal plans should:

1. Fulfill the responsibilities of each generation as trustee of the environment for succeeding generations;
2. Assure for all generations safe, healthful, productive, and aesthetically and culturally pleasing surroundings;
3. Attain the widest range of beneficial uses of the environment without degradation, risk of 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 that supports diversity and variety of individual choice;
5. Achieve a balance between population and resource use that will permit high standards of living and a wide sharing of life’s amenities; and
6. Enhance the quality of renewable resources and approach the maximum attainable recycling of depletable resources.

The identification of the “Environmentally Preferred Alternative” was based on an analysis that balances factors such as physical impacts on various aspects of the environment, mitigation measures to deal with impacts, and other factors including the statutory mission of the National Park Service and the purposes for the project.

The no action alternative (Alternative A) is not the environmentally preferred alternative because it would not address the deteriorating conditions of the existing facilities used by staff and visitors at Tremont (criteria 2, 3, and 5) as well as the management preferred



alternative, nor would it fulfill the responsibilities of each generation as trustee of the environment (criterion 1).

The environmentally preferred alternative is the National Park Service preferred alternative, Alternative C. This alternative was selected based on the following criteria:

- Alternative C improves operation efficiency and sustainability by construction and operation of “green” renovations, including a rehabilitated dormitory and activity center. In addition, a new wastewater treatment plant would be constructed that would replace the existing aging system. (criteria 1 and 6).
- Alternative C protects public and employee health, safety, and welfare by improving the physical condition inside buildings at Tremont (NEPA criteria 2, 3, and 5); and
- The effects of Alternative C on natural resources (physical disturbance of less than three acres of habitat) are similar to those associated with Alternatives B, D and E (NEPA criteria 1, 2, 3, 4, and 5), while simultaneously achieving the basic goal of incorporating sustainable features (criteria 6).

Overall, alternative C would meet the park’s planning objectives of rehabilitating the aging campus in a sustainable manner, while minimizing adverse environmental effects.

COMPARISON OF THE ALTERNATIVES

Ability of the Alternatives to Meet Project Objectives

Table 7 summarizes how each alternative meets the project objectives. This summary table provides a way to compare and contrast the degree to which each alternative accomplishes the purpose or fulfills the need identified in the “Purpose and Need” section.

Impact Summary

The terms used to define the magnitude or intensity of the environmental effects are described in Section 4, “Environmental Consequences.” Table 8 presents a summary comparison of the effects of the alternatives for each of the impact topics assessed in the Environmental Consequences section of this development concept plan/environmental assessment.

Selection of the Preferred Alternative

The National Park Service uses a selection and ranking process based on the relative advantages and costs of each project in accomplishing service-wide goals and objectives. This process is called Choosing by Advantage (NPS 1998b). In using the Choosing by Advantage process, the National Park Service asks “What and how large are the advantages of each alternative proposed for consideration?” “How important are the advantages of the alternatives?” and finally “Are those advantages worth their associated cost?” Alternatives then compete against each other in the Choosing by Advantage



process that evaluates all the alternatives relative to several factors, which reflect the National Park Service mission.

The results reflect total benefits of each alternative toward achieving the National Park Service mission. Cost is then introduced to the priority setting process, establishing an importance to cost ratio. The resulting priorities represent those projects that provide the greatest benefit to the National Park Service for each dollar spent.

During the Choosing By Advantage Workshop for Tremont conducted October 1 and 2, 2007, Alternative D was selected as the proposed Agency Preferred Alternative pending assessment by the park partner of its fundraising capability and confirmation of Board support. During a series of meetings in 2008, the Board for Great Smoky Mountains Institute at Tremont indicated their support for a less costly alternative based on their assessment of their fundraising capability.

Since that time, Alternative C has been revised and the construction cost estimates reduced to be between \$5.9 and \$17.1 million dollars, depending on whether the existing dormitory is rehabilitated or a new one is built. The re-described Alternative C (reflected within this document), with reduced construction costs and proposed reuse of existing buildings, provide the greatest opportunity for a park/partner rehabilitation project to be achieved at Tremont. This alternative will also support the other project criteria of sustainability; protection of public and employee health, safety and welfare; protection of natural resources, improving education and recreation opportunities; and improving operation efficiency, reliability, and sustainability. For these reasons, Alternative C has been selected as the Agency Preferred Alternative and supported by the Tremont Board as a park/partner project.



Table 7 Summary of How Each Alternative Meets Purpose and Need					
Feature	Alternative A - No Action	Alternative B Modifications to Existing Facilities (Limited)	Alternative C Modifications to Existing Facilities (Moderate)	Alternative D Moderate Redevelopment	Alternative E Major Redevelopment
Provide facilities that blend with the park environment.	Alternative A would not satisfy this feature as Tremont was constructed in 1964 and does not satisfy current National Park Service design standards.	Alternative B would partially satisfy this feature as the external appearance of all buildings would remain the same as Alternative A (except for addition of some windows in several of the buildings).	Alternative C would partially satisfy this feature as the external appearance of the activity center/dining hall and the dormitory would be reconstructed to improve visual qualities and to blend with the park setting. The external appearance of all other buildings would remain the same as Alternative A. If the option of reconstructing the dormitory were selected, these same types of beneficial effects would also occur.	Alternative D would satisfy this feature as the external appearance of all core buildings would be reconstructed or reconstructed to improve visual qualities and to blend with the park setting. Only the staff housing would remain the same (externally) as Alternative A.	Alternative E would satisfy this feature as all core buildings and staff housing would be demolished and new buildings with architecture designed to improve visual qualities and to blend with the park setting would be constructed.
Provide facilities that are appropriate for a variety of uses.	Alternative A would not satisfy this feature as Tremont was constructed in 1964 as a Job Corp training center and has been adapted to the current needs of Tremont. The existing buildings, do not adequately meet the proposed needs of Tremont as an educational facility.	Alternative B would not satisfy this feature as the general functional layout of all buildings would remain the same as Alternative A (except for a few minor changes to the dormitory, and the activity center/dining hall, including soundproofed classrooms and enlarged science lab).	Construct a new dorm or re-configure existing dorm space with new restrooms to optimize floor plan for flexible utilization.	Alternative D would partially satisfy this feature, since two new dormitories would be constructed with optimal floor plans for flexible utilization. A few changes would be made to the activity center/dining hall, including sound-proofed classrooms and an enlarged science lab. The existing dormitory would be demolished and	Alternative E would satisfy this feature as all new buildings would be constructed at Tremont with optimal floor plans for flexible utilization.



Table 7 Summary of How Each Alternative Meets Purpose and Need					
Feature	Alternative A - No Action	Alternative B Modifications to Existing Facilities (Limited)	Alternative C Modifications to Existing Facilities (Moderate)	Alternative D Moderate Redevelopment	Alternative E Major Redevelopment
				converted to a parking area; the existing administration / maintenance building would be renovated.	
- Adequate utilities to satisfy existing and future demands.	Alternative A would not satisfy this feature as Tremont's wastewater treatment plant is inefficient and requires replacement. Other utilities do not supply optimum efficiency due to age.	Alternative B would satisfy this feature as Tremont's wastewater treatment plant would be replaced with a new standard extended aeration treatment package plant. Other utilities do not supply optimum efficiency due to age.	Alternative C would satisfy this feature as Tremont's wastewater treatment plant would be replaced with a standard extended aeration treatment package plant. Storm water drainage would be improved in the core of the site. Other utilities do not supply optimum efficiency due to age.	Alternative D would satisfy this feature as Tremont's wastewater treatment plant would be replaced with a standard extended aeration treatment package plant. Storm water drainage would be improved in the core of the site.	Alternative E would satisfy this feature as Tremont's wastewater treatment plant would be replaced with a highly advanced technology wastewater treatment plant. Storm water drainage would be improved throughout the site.
- Separation of parking and education spaces.	Alternative A would not satisfy this feature as parking is currently dispersed throughout the site, including the use of Tremont's basketball court for visitor parking.	Same as Alternative A.	Alternative C would satisfy this feature as the roadways, parking lots, and pedestrian facilities would be relocated to minimize vehicular conflict with students and other pedestrians. The existing dormitory would be rehabilitated or replaced with a new building in the same location. Access to trail heads would be moved to reduce conflict with Tremont students.	Alternative D would satisfy this feature as the roadways, parking lots, and pedestrian facilities would be relocated to minimize vehicular conflict with students and other pedestrians. The existing dormitory would be demolished and replaced with a parking area. Two new dormitories would be constructed in the center of the Tremont complex and students could	Alternative E would satisfy this feature as the roadways, parking lots, and pedestrian facilities would be relocated to minimize vehicular conflict with students and other pedestrians. The 2 new dormitories would be constructed in the center of the Tremont complex and students could access the activity



Table 7 Summary of How Each Alternative Meets Purpose and Need					
Feature	Alternative A - No Action	Alternative B Modifications to Existing Facilities (Limited)	Alternative C Modifications to Existing Facilities (Moderate)	Alternative D Moderate Redevelopment	Alternative E Major Redevelopment
				access the activity center/dining hall, pavilion, council house, and friendship circle without crossing roads or parking lots. A roundabout entry feature would allow students to be dropped off without the vehicles entering the core of the site. Access to trail heads would be moved to reduce conflict with Tremont.	center/dining hall, pavilion, council house, and friendship circle without crossing roads or parking lots. A roundabout entry feature would allow students to be dropped off without the vehicles entering the core of the site. Access to trail heads would be moved to reduce conflict between Tremont users and the general public.
- Appropriate transition between indoor and outdoor spaces.	Alternative A would not satisfy this feature as the indoor spaces are currently separated from the outdoor spaces by roadways and parking facilities.	Same as Alternative A.	Same as Alternative A.	Alternative D would satisfy this feature as the 2 new dormitories would be constructed in the center of the Tremont complex and students could access the activity center/dining hall, pavilion, council house, and friendship circle without crossing roads or parking lots. Except for the friendship circle, most outdoor activities and open space would be located near the river.	Alternative E would satisfy this feature as the 2 new dormitories would be constructed in the center of the Tremont complex and students could access the activity center/dining hall, pavilion, council house, and friendship circle without crossing roads or parking lots. Except for the



Table 7 Summary of How Each Alternative Meets Purpose and Need					
Feature	Alternative A - No Action	Alternative B Modifications to Existing Facilities (Limited)	Alternative C Modifications to Existing Facilities (Moderate)	Alternative D Moderate Redevelopment	Alternative E Major Redevelopment
					friendship circle, most outdoor activities and open space would be located near the river.
- Provide for sustainable and cost effective maintenance	Alternative A would not satisfy this feature as Tremont was constructed in 1964 and many of the systems, such as the HVAC systems and the wastewater treatment plant, are old and do not work efficiently. Frequent, costly maintenance is required on these systems.	Alternative B would partially satisfy this feature as the HVAC systems would only be replaced with high efficiency systems in the dormitory and the activity center/dining hall. The windows in the activity center/dining hall and dormitory would be replaced with operable energy efficient windows. The wastewater treatment plant would also be replaced.	Alternative C would partially satisfy this feature as the HVAC systems would be replaced with high efficiency systems in the dormitory, the activity center/dining hall, and the administration / maintenance building (staff housing would continue with old systems). The windows in the activity center/dining hall and dormitory would be replaced with operable energy efficient windows. The wastewater treatment plant would also be replaced and storm water drainage	Alternative D would satisfy this feature as the new dormitories, the activity center/dining hall, and the administration/maintenance building would receive new high efficiency HVAC systems (staff housing would continue with old systems). The windows in the activity center/dining hall and new dormitories would be operable energy efficient windows. All roadways, parking lots, and sidewalks would be constructed with permeable pavement. The wastewater	Alternative E would satisfy this feature as the new buildings would receive new high efficiency HVAC systems, including staff housing. All windows in all buildings would be operable energy efficient windows. All roadways, parking lots, and sidewalks would be constructed with permeable pavement. The wastewater treatment plant would also be replaced and storm water drainage



Table 7 Summary of How Each Alternative Meets Purpose and Need					
Feature	Alternative A - No Action	Alternative B Modifications to Existing Facilities (Limited)	Alternative C Modifications to Existing Facilities (Moderate)	Alternative D Moderate Redevelopment	Alternative E Major Redevelopment
			improvements would be made. The activity center/dining hall and dormitory would be fitted with durable, reflective metal roofing.	treatment plant would also be replaced and some storm water drainage improvements would be made. All facilities (except staff housing) would be constructed with durable, reflective metal roofing.	improvements would be made throughout the site. All facilities (except staff housing) would be constructed with durable, reflective metal roofing. Solar panels would be installed to provide electricity for various purposes.
Model sustainable practices.	Alternative A would not satisfy this feature as Tremont was constructed in 1964 as a Job Corp training center and does not satisfy National Park Service standards for sustainable design.	Alternative B would partially satisfy this feature as the HVAC systems would only be replaced with high efficiency systems in the dormitory and the activity center/dining hall (along with increased attic insulation and operable energy efficient windows). Low flow toilets, showers, and metered faucets would be added to the dormitory.	Alternative C would partially satisfy this feature as the HVAC systems would be replaced with high efficiency systems in the dormitory and the activity center/dining hall (along with increased attic insulation and operable energy efficient windows). The staff housing would continue with the old systems. Low flow toilets, showers, and metered faucets would be added to the dormitory and the activity center/dining hall. The activity center/dining hall and dormitory would be fitted with durable,	Alternative D would satisfy this feature as the new dormitories, the activity center/dining hall, and the administration/maintenance building would receive new high efficiency HVAC systems (staff housing would continue with old systems). The windows in the activity center/dining hall and new dormitories would be operable energy efficient windows. All roadways, parking lots, and sidewalks would be constructed with permeable pavement. All facilities (except staff	Alternative E would satisfy this feature as the new buildings would receive new high efficiency HVAC systems, including staff housing. All windows in all buildings would be operable energy efficient windows. All roadways, parking lots, and sidewalks would be constructed with permeable pavement. All facilities (except staff housing) would be constructed with durable, reflective metal roofing. Solar



Table 7 Summary of How Each Alternative Meets Purpose and Need					
Feature	Alternative A - No Action	Alternative B Modifications to Existing Facilities (Limited)	Alternative C Modifications to Existing Facilities (Moderate)	Alternative D Moderate Redevelopment	Alternative E Major Redevelopment
			reflective metal roofing. If the option of reconstructing the dormitory were selected. Sustainable design practices would be implemented.	housing) would be constructed with durable, reflective metal roofing. Trees would also be added in strategic locations to provide shade to buildings to reduce cooling costs. Low flow toilets, showers, and metered faucets would be added to the dormitory and the activity center/dining hall.	panels would be installed to provide electricity for various purposes would also be added in strategic locations to provide shade to buildings to reduce cooling costs. Low flow toilets, showers, and metered faucets would be installed at all facilities.
Minimize impacts on the landscape and Middle Prong of the Little River	Alternative A would satisfy this feature as there is no construction involved and there would be no new impacts on the landscape. Continued minor adverse effects of storm water runoff on water quality and aquatic life would likely continue.	Alternative B would satisfy this feature as construction would have no effects to forest habitat. Adverse effects of storm water runoff on water quality and aquatic life of the Middle Prong would likely continue. Construction and operation of new wastewater treatment plant would have beneficial effect on water quality and aquatic life of the Middle Prong.	Alternative C would satisfy this feature as construction would have no effects to forest habitat. Effects on water quality of the Middle Prong would be similar to Alternative B.	Alternative D would nearly satisfy this feature by requiring approximately 0.5 acres of forest habitat on the 10-acre site to be altered for construction activities. Native materials would be used. Effects on water quality of the Middle Prong would be similar to Alternative B, but potential for soil erosion would be greater over the short term because of the construction of two new dormitories. Best management practices would be effective in controlling these potential effects, however. Over	Alternative E would nearly satisfy this feature by requiring approximately 0.5 acres of forest habitat on the 10-acre site to be altered for construction activities. Native materials would be used. Effects on water quality of the Middle Prong would be similar to Alternative D, but potential for soil erosion would be greater because of the construction of an entirely new



Table 7 Summary of How Each Alternative Meets Purpose and Need					
Feature	Alternative A - No Action	Alternative B Modifications to Existing Facilities (Limited)	Alternative C Modifications to Existing Facilities (Moderate)	Alternative D Moderate Redevelopment	Alternative E Major Redevelopment
				the long-term, storm water would be effectively managed with a new control and treatment system.	campus. Best management practices would be effective in controlling the potential effects, however.
Serve as a showcase of sustainable design they become educational tools.	Alternative A would not satisfy this feature as Tremont was constructed in 1964 as a Job Corp training center and does not satisfy National Park Service standards for sustainable design.	Alternative B would partially satisfy this feature as the HVAC systems would only be replaced with high efficiency systems in the dormitory and the activity center/dining hall (along with increased attic insulation and new operable windows). Low flow toilets, showers, and metered faucets would be added to the dormitory. Other facilities would remain as in Alternative A.	Alternative C would partially satisfy this feature as the HVAC systems would be replaced with high efficiency systems in the dormitory and the activity center/dining hall (along with increased attic insulation and new operable windows). Staff housing would continue with the old systems. Low flow toilets, showers, and metered faucets would be added to the dormitory and the activity center/dining hall. Other facilities would remain as in Alternative A. If the option of	Alternative D would satisfy this feature as the new dormitories, the activity center/dining hall, and the administration / maintenance building would receive new high efficiency HVAC systems (staff housing would continue with old systems). The windows in the activity center/dining hall and new dormitories would be operable energy efficient windows. All roadways, parking lots, and sidewalks would be constructed with permeable pavement. All facilities (except staff housing) would be	Alternative E would satisfy this feature as all buildings on the site would be constructed with sustainable design as the primary features. Sustainable design components would include high efficiency HVAC systems, operable energy efficient windows, permeable pavement on all roadways, parking lots, and sidewalks, and durable, reflective metal roofing on all buildings. Trees



Table 7 Summary of How Each Alternative Meets Purpose and Need					
Feature	Alternative A - No Action	Alternative B Modifications to Existing Facilities (Limited)	Alternative C Modifications to Existing Facilities (Moderate)	Alternative D Moderate Redevelopment	Alternative E Major Redevelopment
			reconstructing the dormitory were selected, it could be used as a showcase of sustainable design.	constructed with durable, reflective metal roofing. Trees would also be planted in strategic locations to provide shade to buildings to reduce cooling costs. Low flow toilets, showers, and metered faucets would be added to the dormitory and the activity center/dining hall. The staff could provide a tour of the Tremont site to point out sustainable features that visitors and students could use to improve the sustainability of their own homes.	would also be planted in strategic locations to provide shade to buildings to reduce cooling costs. Low flow toilets, showers, and metered faucets would be added to all buildings at Tremont. Solar panels would be used to provide electricity for various purposes. The staff could provide a tour of the Tremont site to point out sustainable features that visitors and students could use to improve the sustainability of their own homes.
Brings together partners to enhance educational opportunities, enhancing the understanding and appreciation of the park and the use of sustainable practices.	Alternative A would not satisfy this feature as there would be no changes at Tremont to increase services to the local community and encourage new partnerships, nor would there be increased potential to showcase sustainable design practices.	Alternative B would partially satisfy this feature as there would be minimal changes at Tremont to increase services to the local community and encourage new partnerships. There would be no increased potential to showcase sustainable design practices.	Alternative C would partially satisfy this feature through the use of their science lab and working with teachers and students.. There would be increased potential to showcase sustainable design practices, with the rehabilitation or re construction of the dormitory using	Alternative D would satisfy this feature as there would be significant changes at Tremont that would increase local awareness of Tremont to provide increased services to the local community and encourage new partnerships. There would be increased potential to showcase	Alternative E would satisfy this feature as there would be significant changes at Tremont that would increase local and possibly national awareness of Tremont and allow Tremont to provide significantly increased service to the local community



Table 7 Summary of How Each Alternative Meets Purpose and Need					
Feature	Alternative A - No Action	Alternative B Modifications to Existing Facilities (Limited)	Alternative C Modifications to Existing Facilities (Moderate)	Alternative D Moderate Redevelopment	Alternative E Major Redevelopment
			sustainable design principals.	sustainable design practices.	and encourage new partnerships. There would be increased potential to showcase sustainable design practices.



Table 8 Summary of Environmental Consequences

Impact Topic	Alternative A - no action	Alternative B	Alternative C	Alternative D	Alternative E
Air Quality	No construction would occur under Alternative A. Therefore, construction would have no effects on air quality. Continued use of vehicles by students, visitors, hikers and delivery trucks under Alternative A would have long-term, minor adverse effects on air quality in the Tremont area. Local, regional and national sources of air emissions would continue to be an important factor affecting air quality at Tremont under Alternative A. When combined with the effects of the other past, present, and future actions that could affect air quality in the Tremont area, the cumulative effects of Alternative A on air quality would be long-term, moderate and adverse.	Alternative B would have short-term, minor adverse effects on air quality during construction, and long-term, minor adverse effects on air quality in the Tremont area during operation. The cumulative effects on air quality in the Tremont area would be the same as those described for Alternative A, long-term, moderate and adverse.	Overall, Alternative C would have short-term, minor adverse effects on air quality in the Tremont area during the construction period. Alternative C would have a long-term, minor adverse effects on air quality in the Tremont area during operation, since the modest improvements would not greatly reduce air emissions from buildings at Tremont, and vehicle traffic would remain about the same. The cumulative effects on air quality in the Tremont area would be the same as those described for Alternative A, long-term, moderate and adverse.	Alternative D would have short-term, minor, adverse effects on air quality in the Tremont area during construction. Alternative D would have long-term, minor, adverse effects on air quality in the Tremont during operation. The cumulative effects on air quality in the Tremont area would be the same as those described for Alternative A, long-term, moderate and adverse.	Because the entire site would be reconstructed, Alternative E would have short-term, moderate adverse effects on air quality in the Tremont area during the construction period. Alternative E has more extensive sustainable design features than Alternative A since the entire campus would be reconstructed. The added sustainable design features and improvements to provide a sense of place are expected to attract an additional 1,000 students and visitors per year to Tremont. However, the overall effect of operation on local air quality is therefore expected to be long-term, minor and adverse. The cumulative effects on air quality in the Tremont area would be the same as those described for Alternative A, long-term, moderate and adverse.
Soil	Construction would have no adverse effects on soil under Alternative A, since no new soil-disturbing projects are planned. Storm water runoff from operation of Tremont would continue to erode soil on the heavily vegetated site, and would have long-term, negligible, adverse effects on soil. When the beneficial and adverse effects of other past, ongoing, and future plans, projects and activities affecting soil are combined with actions under Alternative A, the resulting cumulative effects would be long-term, moderate, and adverse.	Construction and operation of a new extended aeration package plant and new dormitory restrooms would result in the disturbance of less than 1 acre of the existing 10-acre site at Tremont. During construction, Alternative B is would have short-term, minor, adverse effects on soil. During operation, increased storm water runoff under Alternative B would have long-term, minor, adverse effects on soil. Cumulative effects of Alternative B on soil would be similar to Alternative A, long-term, moderate, and adverse.	Construction of new facilities would cause soil erosion. Best management practices would be implemented to minimize effects on soil during construction. Construction would, therefore, have short-term, minor, adverse effects on soil. Alternative C would have long-term, minor, adverse effects on soil during operation as a result of increased storm water runoff. Cumulative effects of Alternative C on soil would be long-term, moderate, and adverse, similar to Alternative A.	Alternative D is estimated to have short-term, minor, adverse effects on soil during construction. Best management practices would be implemented to minimize effects on soils, and these measures would be effective. During operation, Alternative D would have long-term, minor, adverse effects on soil as a result of construction of a new storm water control system that would minimize soil erosion. Cumulative effects of Alternative D on soil would be similar to Alternative A, long-term, moderate, and adverse.	Alternative E is estimated to have short-term, minor, adverse effects on soil during construction. Best management practices would be implemented to minimize effects on soil, and these measures would be effective. During operation, Alternative E would have long-term, minor, adverse effects on soil as a result of increased amounts of impervious surfaces on the site. These would be minimized by implementation of best management practices, including a new storm water control system. Cumulative effects of Alternative E on soil would be similar to Alternative A, long-term, moderate, and adverse.



Table 8 Summary of Environmental Consequences

Impact Topic	Alternative A - no action	Alternative B	Alternative C	Alternative D	Alternative E
Water Quality	<p>There would be no new construction under Alternative A, and therefore, no adverse effects on water quality associated with construction. Storm water runoff and wastewater discharges from operation of Tremont would continue to have long-term, minor, adverse effects on water quality of the Middle Prong. The degradation of water quality in the Middle Prong at and below the Tremont site would be limited in comparison with other projects proposed in the surrounding area. When the beneficial and adverse effects of other past, ongoing, and future plans, projects and activities affecting water quality are combined with actions under Alternative A, the resulting cumulative effects would be long-term, moderate, and adverse.</p>	<p>Construction and operation of a new extended aeration package plant and new dormitory restrooms would result in the disturbance of less than 4 acres of the existing 10-acre site at Tremont, with increased potential for soil erosion and effects on water quality. Best management practices for controlling erosion during construction would be employed and these measures would be effective. Operation of the new extended aeration package plant would eliminate the problems with the existing pond wastewater treatment system, and would result in an improvement in water quality of the Middle Prong. Overall, Alternative B is estimated to have short-term, minor adverse effects during construction and long-term, minor beneficial effects on water quality during operation. Cumulative effects of Alternative B on water quality would be similar to Alternative A, long-term, moderate, and adverse.</p>	<p>Construction of a new extended aeration package plant, trail head improvements, and a new storm water drainage system between the dormitory and activity center would result in soil disturbance of less than 4 acres of the existing 10 acre site. Operation of the new extended aeration package plant would eliminate the problems with the existing pond wastewater treatment system, and would result in an improvement in the reliability of wastewater treatment for Tremont. Overall, Alternative C is estimated to have short-term, minor adverse effects during construction and long-term, minor beneficial effects on water quality during operation. Cumulative effects of Alternative C on water quality would be similar to Alternative A, long-term, moderate, and adverse.</p>	<p>Alternative D would affect less than 4 acres of the approximately 10 acres site through new construction. Alternative D is estimated to have short-term, minor, adverse effects on water quality associated with demolition and construction on less than 4 acres of the site. Best management practices would also be implemented during construction, and would be effective. During operation, Alternative D would have long-term, minor, beneficial effects on water quality. Cumulative effects of Alternative D on water quality would be similar to Alternative A, long term, moderate, and adverse.</p>	<p>Alternative E would affect less than 4 acres of the of the existing 10 acre site due to demolition and replacement of the majority of the existing facilities on the site, construction of a new storm water drainage/treatment system; and construction of an advanced technology system wastewater treatment plant. Best management practices would be implemented to minimize effects of construction on water quality resulting from soil erosion, and these measures would be effective. Construction would have short-term, minor, adverse effects on water quality. During operation, increased amount of impervious surface on the site from replacement of the majority of existing buildings would create increased storm water runoff and soil erosion. However, a completely new sustainably designed storm water management system would minimize storm water runoff and potential effects on water quality of the Middle Prong. Operation of the new extended aeration package plant would eliminate the problems with the existing pond wastewater treatment system, and would result in an improvement in the reliability of wastewater treatment for Tremont. Operation would therefore have long-term, minor beneficial effects on water quality. In summary, Alternative E is therefore estimated to have short-term, minor adverse effects on water quality associated with demolition and construction, and long-term, minor, beneficial effects on water quality during operation.</p>



Table 8 Summary of Environmental Consequences

Impact Topic	Alternative A - no action	Alternative B	Alternative C	Alternative D	Alternative E
Aquatic Resources	No new construction would occur, and minor amounts of storm water and treated wastewater from the existing wastewater treatment plant would continue to be discharged to the Middle Prong. Alternative A is estimated to have long-term, minor, adverse effects on aquatic resources. The degradation of aquatic life in the Middle Prong at and below the Tremont site would be limited in comparison with other projects proposed in the surrounding area. When the beneficial and adverse effects of other past, ongoing, and future plans, projects and activities affecting aquatic life are combined with actions under Alternative A, the resulting cumulative effects would be long-term, moderate, and adverse.	Construction and operation of a new extended aeration package plant and new dormitory restrooms would result in the disturbance of less than 4 acres of the existing 10-acre site at Tremont. Operation of the new extended aeration package plant would eliminate the problems with the existing pond wastewater treatment system, and would result in an improvement in the reliability of wastewater treatment for Tremont. Overall, Alternative B is estimated to have short-term, minor, adverse effects during construction and long-term, minor, beneficial effects on aquatic life during operation. Cumulative effects of Alternative B on aquatic resources would be similar to Alternative A, long-term, moderate, and adverse.	Construction of new facilities would have a potential to have a short-term, adverse affect on aquatic resources. Best management practices would minimize these effects. During operation, runoff from the facilities could affect aquatic resources. Operation of the new storm water drainage system would help minimize these short-term effects, however. In summary, Alternative C is estimated to have short-term, minor, adverse effects on aquatic resources during construction and long-term, minor, beneficial effects on aquatic resources during operation. The cumulative effects of Alternative C on aquatic resources would be similar to Alternative A, long-term, moderate, and adverse.	Construction of new facilities would have a potential to have a short-term, adverse affect on aquatic resources. Best management practices would minimize these effects. During operation, runoff from the facilities could affect aquatic resources. Operation of the new storm water drainage system would help minimize these short-term effects, however. In summary, Alternative C is estimated to have short-term, minor, adverse effects on aquatic resources during construction and long-term, minor, beneficial effects on aquatic resources during operation. The cumulative effects of Alternative C on aquatic resources would be similar to Alternative A, long-term, moderate, and adverse.	Overall, construction under Alternative E is estimated to have short-term, minor, adverse effects on aquatic resources. During operation, Alternative E would have a long-term, minor beneficial effect on aquatic resources. Cumulative effects of Alternative E on aquatic resources would be similar to Alternative A, long-term, moderate, and adverse.
Vegetation and Native Plants	No new construction would occur on the site under Alternative A. Alternative A would have no adverse effects on vegetation on the site. Projects in the surrounding area have had and would continue to have effects on vegetation, and non-native species would continue to be introduced in the areas outside the park. The cumulative effects of Alternative A are estimated to be long-term, moderate and adverse.	Alternative B would disturb less than an acre of vegetation during construction of the wastewater treatment plant (forested habitat) and the two new restrooms at the dormitory(open maintained grassed areas). Operation would have no effects on vegetation. The effects of Alternative B on vegetation are therefore estimated to be short- and long-term minor, and adverse. The cumulative effects of Alternative B on vegetation would the same as Alternative A.	Construction and operation of two new dormitories would have no effects on forested areas, and would only affect a portion of a maintained and mowed open field habitat. Construction of a new wastewater treatment plant would result in the elimination of less than 0.5 acres of vegetated habitat. Maintenance operation activities would have short- and long-term, negligible, adverse effects on vegetation. The overall effect of Alternative C on vegetation would be short- and long-term, minor and adverse. The cumulative effects of Alternative C on vegetation would the same as Alternative A, long-term, moderate and adverse.	Alternative D would result in the removal of less than 0.5 acres of Appalachian Montane Alluvial Forest. All other areas affected would either be previously disturbed, existing paved areas, existing buildings, or maintained and mowed open fields. Alternative D would have a short- and long-term, moderate, adverse effect on vegetation. The cumulative effects of Alternative D on vegetation would the same as Alternative A, long-term, moderate and adverse.	The effects of construction and operation of Alternative E on vegetation would be to the same as Alternative D. The cumulative effects of Alternative E on vegetation would be similar to Alternative D, long-term, moderate and adverse.
Special Status Species Federal Species of Concern	No construction would occur under Alternative A, and therefore no adverse effects on special status species would occur. Operation under Alternative A would have no adverse effects on special status species. For federally listed species, the equivalent Section 7 finding would be "no effect." When the beneficial and adverse effects of other past, ongoing, and future plans, projects and activities affecting special status species are combined with actions under Alternative A, the resulting cumulative effects are estimated to be long-term, minor, and adverse. For federally listed species, the equivalent Section 7 finding would be "may affect, not likely to adversely affect."	Alternative B would have no adverse effects on special status species since the majority of site improvements would occur inside existing buildings. The only ground-disturbing activities would include construction of two new restrooms on the ends of the dormitory, and a new wastewater treatment package plant in previously disturbed areas. For federally listed species, the equivalent Section 7 finding would be "no effect." The cumulative effects of Alternative B would be to the same as Alternative A, long-term, minor and adverse. For federally listed species, the equivalent Section 7 finding would be "may affect, not likely to adversely affect."	Construction and operation of two new dormitories would not affect forested habitat or adversely affect water quality. No adverse effect on special status species would therefore occur. For federally listed species, the equivalent Section 7 finding would be "no effect." The cumulative effects of Alternative C on species of special concern would be similar to Alternative A, long-term, minor and adverse. For federally listed species, the equivalent Section 7 finding would be "may affect, not likely to adversely affect."	Under Alternative D, construction and operation are estimated to have long-term, negligible adverse effects on special status species. For federally listed species, the equivalent Section 7 finding would be "may affect, not likely to adversely effect." The cumulative effects of Alternative D on species of special concern would be similar to Alternative A, long-term, minor and adverse. For federally listed species, the equivalent Section 7 finding would be "may affect, not likely to adversely affect."	Under Alternative E, construction and operation are estimated to have long-term, negligible adverse effects on special status species. For federally listed species, the equivalent Section 7 finding would be "may affect, not likely to adversely affect." The cumulative effects of Alternative E on species of special concern would be similar to Alternative A, long-term, minor and adverse. For federally listed species, the equivalent Section 7 finding would be "may affect, not likely to adversely affect."



Table 8 Summary of Environmental Consequences

Impact Topic	Alternative A - no action	Alternative B	Alternative C	Alternative D	Alternative E
Wildlife	No new construction would occur associated with this alternative. Alternative A is estimated to have long-term, negligible, adverse effects on wildlife. Similarly, cumulative effects would be long-term, negligible and adverse.	Limited new construction would occur associated with this alternative. Alternative B is estimated to have long-term, minor, adverse effects on wildlife while construction related impacts would result in a short-term moderate impact. Similarly, cumulative effects would be long-term, negligible and adverse.	Limited new construction would occur associated with this alternative. Alternative C is estimated to have long-term, minor, adverse effects on wildlife while construction related impacts would result in a short-term moderate adverse impact. Similarly, cumulative effects would be long-term, negligible and adverse.	Limited new construction would occur associated with this alternative. Alternative D is estimated to have long-term, minor, adverse effects on wildlife while construction related impacts would result in a short-term moderate impact. Similarly, cumulative effects would be long-term, negligible and adverse.	Limited new construction would occur associated with this alternative. Alternative E is estimated to have long-term, minor, adverse effects on wildlife while construction related impacts would result in a short-term moderate impact. Similarly, cumulative effects would be long-term, negligible and adverse.
Ecologically Critical Areas, Wilderness, Wild and Scenic Rivers, or Other Unique Natural Resources	Under Alternative A, no construction would occur on the Tremont site. Construction would therefore have no short-term adverse effects on the Middle Prong. Under Alternative A, storm water and small amounts wastewater associated with leakages from the existing wastewater treatment system would continue to have long-term, minor, adverse effects on water quality and aquatic life of the Middle Prong. Construction of highways, roads, private developments in the surrounding area would continue to result in a far greater amount of soil disturbance storm water runoff, and degradation of water quality than actions proposed under Alternative A. When the beneficial and adverse effects of other past, ongoing, and future plans, projects and activities affecting water quality and aquatic life are combined with actions under Alternative A, the resulting cumulative effects would be long-term, moderate, and adverse.	Effects of construction and operation on the Middle Prong would parallel the effects described in the section on "Water Quality" and "Aquatic Life," short-term, minor adverse effects during construction, and long-term, minor beneficial effects during operation. Cumulative effects of Alternative B on the Middle Prong would be similar to Alternative A, long-term, minor and adverse.	Effects of construction and operation on the Middle Prong under Alternative C would parallel the effects described in the section on "Water Quality" and "Aquatic Resources," and would have short-term, minor adverse effects during construction and long-term, minor, beneficial effects during operation. Cumulative effects of Alternative C on the Middle Prong would be similar to Alternative A, long-term, moderate and adverse.	Effects of construction and operation on the Middle Prong under Alternative D would parallel the effects described in the section on "Water Quality" and "Aquatic Resources," and would have short-term, minor adverse effects during construction and long-term, minor, beneficial effects during operation. Cumulative effects of Alternative D on the Middle Prong would be similar to Alternative A, long-term, moderate and adverse.	Effects of construction and operation on the Middle Prong under Alternative E would parallel the effects described in the section on "Water Quality" and "Aquatic Resources," and would have short-term, minor adverse effects during construction and long-term, minor beneficial effects during operation. Cumulative effects of Alternative E on the Middle Prong would be similar to Alternative A, long-term, moderate and adverse.



Table 8 Summary of Environmental Consequences

Impact Topic	Alternative A - no action	Alternative B	Alternative C	Alternative D	Alternative E
Socioeconomics	<p>There would be no construction associated with Alternative A, and therefore no construction-related effects on the economy under Alternative A. Under the Alternative A, no change in visitation is anticipated. Overall, Alternative A would therefore have no long- or short-term, beneficial and adverse effects on socioeconomics in Blount County. No construction waste that would have to be disposed and no sustainable design features would be implemented that reduce energy or water consumption at Tremont. Overall, Alternative A would have short-term and long-term, minor, and adverse effects on energy consumption (electrical and gas), water use, and solid waste. When the effects of other past, ongoing, and future plans, projects, and activities affecting the economy, energy consumption (electrical and gas), water use, and solid waste are combined with actions under Alternative A, the resulting cumulative effects would be long- and short-term, minor, and both beneficial or adverse.</p>	<p>Alternative B would have short term, negligible, beneficial effects on the economy in the Blount County and the region as a result of construction of new facilities on the site. Alternative A would have a short-term, negligible, adverse effect on waste management on the site, and a long-term, minor, beneficial effect on utilities in the Tremont area. The cumulative effects on the economy, energy consumption (electrical and gas), water use, and solid waste would be the same as those described for Alternative A, long- and short-term, minor, and both beneficial and adverse.</p>	<p>Alternative C would have short-term, negligible beneficial, effects on socioeconomics in Blount County and no effects on socioeconomics in the region. Overall, Alternative C would have a local, short-term, minor, adverse effect on solid waste and wastewater management, and a local, long-term, minor, beneficial effect on utilities in the Tremont area and the Blount County area. The cumulative effects on the economy, energy consumption (electrical and gas), water use, and solid waste would be the same as those described for Alternative A, long- and short-term, minor, and both beneficial and adverse.</p>	<p>Alternative D would have short-term, minor, beneficial effects on the economy of Blount County. Alternative D has more extensive sustainable design features than Alternatives A through C, and would result in a reduction in energy consumption at Tremont. This would have a long-term, moderate, beneficial effect on overall energy use at Tremont. Construction of the new dormitories and other site work associated with Alternative D would create solid waste that would have to be disposed in local landfills. Alternative D would have a short-term, minor, adverse effect on waste management during construction. The cumulative effects on the economy, energy consumption (electrical and gas), water use, and solid waste would be the same as those described for Alternative A, long- and short-term, minor, and both beneficial and adverse.</p>	<p>Alternative E would have a short-term, minor, beneficial effect on the economy of the Blount County and a long-term, negligible and beneficial, effect on the economy in the larger region. During construction, Alternative E would have a short-term, minor, adverse effect on the numbers of visitors and students who use the campus or visit the bookstores. Alternative E would also feature relatively large amounts of debris because the entire existing campus would be demolished. Alternative E would have a short-term, minor, adverse effect on local waste management capabilities. During operation under Alternative E all new buildings and other facilities would feature sustainable designs. Alternative E would, therefore, have a long-term, major, beneficial effect on energy and water consumption at Tremont. The cumulative effects on the economy, energy consumption (electrical and gas), water use, and solid waste would be the same as those described for Alternative A, long- and short-term, minor, and both beneficial and adverse.</p>
Transportation	<p>Under Alternative A, existing traffic patterns and problems at Tremont would continue to occur. Overall, Alternative A would result in continued traffic congestion at the site, but would not cause an increase in traffic problems over these existing conditions since no new construction would occur. Alternative A is therefore estimated to result in long-term, moderate, adverse effects on transportation. When the beneficial and adverse effects of other past, ongoing, and future plans, projects and activities affecting transportation are combined with actions under Alternative A, the resulting cumulative effects on transportation associated with construction are estimated to be short-term and long-term, moderate, and adverse. In contrast, the resulting cumulative effects on transportation associated with operation of the new roadways are estimated to be short-term and long-term, moderate, and beneficial.</p>	<p>During construction, Alternative B would result in short-term, minor, adverse effects on transportation due to increased traffic on the site and along Tremont Road. After construction is completed, traffic should resume normal characteristics as Tremont does not anticipate significantly more visitors and/or students. However, existing problems with traffic congestion on the site would continue to occur since no major changes in site layout and roads would occur under Alternative B. The overall effect of Alternative B on transportation during operation is therefore estimated to be long-term, moderate, and adverse. The cumulative effects of Alternative B on transportation in the Tremont area would be similar to those described for Alternative A, short-term and long-term, moderate, adverse and beneficial.</p>	<p>Alternative C would result in short-term, moderate, adverse effects on transportation at Tremont during construction. Alternative C would have long-term, moderate adverse effects on transportation during operation. The cumulative effects of Alternative C on transportation in the Tremont area would be similar to those described for Alternative A, short-term and long-term, moderate, adverse, and beneficial.</p>	<p>Alternative D would result in short-term, moderate, adverse effects on transportation at Tremont during construction. Because congestion would still occur on the campus, the effects of Alternative D during operation are estimated to be long-term, moderate and adverse. The cumulative effects of Alternative D on transportation in the Tremont area would be similar to those described for Alternative A, short-term and long-term, moderate, adverse and beneficial.</p>	<p>Alternative E would have a short-term, moderate, adverse effect on local transportation in southern Blount County during construction and a long-term, minor, adverse effect on local transportation in southern Blount County during operation. The complete reconstruction of the site, including a turnabout and other rerouting of traffic in the completely new campus would have a long-term, moderate beneficial effect on transportation on the site. The cumulative effects of Alternative E on transportation in the Tremont area would be similar to those described for Alternative A, short-term and long-term, moderate, adverse and beneficial.</p>



Table 8 Summary of Environmental Consequences

Impact Topic	Alternative A - no action	Alternative B	Alternative C	Alternative D	Alternative E
Visitor Use and Experience and Visual Quality/Viewshed	Under Alternative A, problems with existing deteriorating facility conditions would have a long-term, major, adverse effect on visitor experiences at Tremont. Tremont would continue to implement the same programs and this would have a long-term, negligible beneficial effect on visitor experience. The viewshed and visual quality would not change at Tremont and the single paved road that currently bisects the site in a north-south direction and the parking lot below the visitor center would continue to reduce the quality of the viewshed. This would have a long-term, major, adverse effect on the quality of the viewshed and visual quality of the site.	During construction, Alternative B would have a short-term, negligible, adverse effect on visitor experience and a short-term, moderate, adverse, effect on the viewshed and visual quality. During operation, Alternative B would have a long-term, minor, beneficial, effect on visitor experience and a long-term negligible, beneficial effect on the viewshed and visual quality of the site. Under Alternative B, improvements in the dormitory and activity center would improve the degree to which the facilities meet the requirements of the Americans with Disability Act.	Overall, during construction, Alternative C would have a short-term, minor, adverse effect on visitor use and experience and short-term, moderate, adverse effect on viewshed and visual quality during construction. During operation, Alternative C would have a long-term, minor, beneficial, effect on visitor use and experience and a long-term, moderate, beneficial effect on the viewshed and visual quality of Tremont. The cumulative effects on visitor use and experience and viewshed and visual quality would be similar to those described above for Alternative A, long-term, negligible and beneficial.	Overall, Alternative D would have a short-term, minor, adverse effect on visitor use and experience and a short-term, moderate, adverse effect on viewshed and visual quality during construction. During operation, Alternative D would have a long-term, moderate, beneficial effect on visitor use and experience and a long-term minor, beneficial effect on the viewshed and visual quality at Tremont. The cumulative effects on visitor use and experience and viewshed and visual quality would be similar to those described for Alternative A, long-term, negligible and beneficial.	Alternative E would have a short-term, moderate, adverse effect on visitor use and experience and visual quality viewshed during construction. During operation, Alternative E would have a long-term, major beneficial effect on visitor use and experience visitor use and experience and visual quality/viewshed . The cumulative effects on visitor use and experience/viewshed would be the same as those described above for Alternative A, long-term, negligible and beneficial.
Public Health and Safety	Under Alternative A, traffic on the site would continue to be congested as a result of car, bus and truck traffic, posing a safety issue for visitors. Under Alternative A, disabled students and visitors would have difficulty accessing the some of the campus buildings. The activity center of existing dormitory would continue to materials that contain asbestos and lead based paint materials. Dampness and musty smelling conditions would continue to plague the dormitory and activity center. The wastewater treatment plant would continue to work inefficiently and could experience additional operational problems. Continued operation of the existing campus under Alternative A would result in long-term, moderate, adverse effects on public health and safety. The various road improvements described in the "Cumulative Impacts Analysis Method" section would provide smoother, safer roadways for the local area and Tremont Road. When combined with the effects of the other past, ongoing, and future actions that could affect public health and safety at Tremont, the cumulative effects of Alternative A would be long-term, moderate and beneficial.	Limited construction would occur under Alternative B that would result in additional vehicles traveling to the site as described in the transportation section. This would have a short term, minor adverse effect on public safety during construction. During operation, safety conditions on the site caused by traffic congestion would be similar to Alternative A. This would result in short-term, minor, adverse effects on public health and safety. The cumulative effects on public health and safety would be the long-term, moderate and beneficial.	Overall, Alternative C would have short-term, minor, adverse effects on public health and safety during construction. During operation, Alternative C would have long-term, minor beneficial effects on public health and safety at Tremont. The cumulative effects of Alternative C on public health and safety would be long-term, moderate and beneficial.	Overall, Alternative D would have short-term, minor, adverse effects on public health and safety during construction. Alternative D would result in long-term, moderate, beneficial effects on public health and safety during operation. The cumulative effects of Alternative D on public health and safety would be long-term, moderate and beneficial.	Overall, Alternative E would have a short-term, minor, adverse effect on public health and safety during construction. During operation, Alternative E would have a long-term, moderate, beneficial, effect on public health and safety as a result of complete redesign and construction of the entire campus. The cumulative effects of Alternative D on public health and safety would be long-term, moderate and beneficial.



Table 8 Summary of Environmental Consequences

Impact Topic	Alternative A - no action	Alternative B	Alternative C	Alternative D	Alternative E
Soundscape	<p>The soundscape on the Tremont site would remain at current levels, as previously described, since no new construction would occur, and no changes in traffic patterns and volumes during operation are expected. No changes in the soundscape on the Tremont site would occur under Alternative A. Alternative A would have no short- or long-term adverse effects on soundscape. Local soundscapes would be affected by construction projects in the region along with varying traffic levels. When combined with the effects of the other past, present, and future actions that could affect soundscape at Tremont, the cumulative effects of Alternative A on soundscape would be short-term, minor and adverse.</p>	<p>Alternative B would have a short-term, negligible, adverse, effect on soundscape during construction and a long-term, negligible, beneficial effect on the soundscape in the Tremont area during operation. The cumulative effects on the soundscape in the Tremont area are the same as those described for Alternative A, short-term, minor, and adverse.</p>	<p>During construction, Alternative C would have a short-term, minor, adverse effect on soundscape. During operation, use of more efficient and less noisy air conditioners on the site would result in a long-term, negligible, beneficial effect on soundscape as compared with Alternative A. The cumulative effects on soundscape in the Tremont area would be the same as those described for Alternative A, short-term, minor and adverse.</p>	<p>Overall, during construction, Alternative D would have a short-term, minor, adverse effect on soundscape. During operation, attraction of additional visitors and students to the site would result in a long-term, negligible adverse effect on soundscape in the Tremont area and campus. Use of more efficient facilities would result in a long-term, negligible, beneficial effect on soundscape. The cumulative effects on soundscape in the Tremont area are the same as those described for Alternative A, short-term, minor and adverse.</p>	<p>Due to heavy construction activities, Alternative E would have a short-term, moderate to major adverse effect on soundscape on the Tremont campus. Attraction of additional visitors and students to the campus during operation would result in a long-term, minor adverse effect on soundscape. Use of more efficient facilities would result in long-term, negligible, beneficial effects on soundscape. The cumulative effects on soundscape in the Tremont area are the same as those described for Alternative A, short-term, minor and adverse.</p>

