1.0 INTRODUCTION

1.1 Background and Scope

The Homestead, in Glen Arbor Township, Leelanau County, Michigan, is a private resort community with a variety of seasonal and year-round rental and privately owned properties including two small hotels, a lodge, an inn, single-family residences, and resort condominiums. The Homestead holds legal easements for land application of treated wastewater on two parcels of federal land within Sleeping Bear Dunes National Lakeshore (Lakeshore) (Figures 1 and 2).

On December 1, 1972, Crystal River Associates obtained an easement (Appendix 1) from Arthur S. Huey, Helen M. Huey, and Ash, Inc. allowing for the use of an 8.3-acre wooded parcel of mixed hardwood forest and red pines (Parcel B) and a 4.6-acre parcel of mostly open field (Parcel C) as "seepage" areas for treated wastewater disposal from The Homestead (Figure 2). Parcel A was also included in the agreement (Figure 2). This parcel was designated as an isolation area and was acquired with restricted development rights. The Bayberry Group, Inc. is the successor of Crystal River Associates and currently owns and operates The Homestead. On August 31, 1979, the National Park Service (NPS) acquired Parcels B and C subject to easements held by The Homestead for their treated wastewater disposal system. The wastewater system used by The Homestead is an aerated lagoon system with "slow rate irrigation" applied to Parcels B and C. The original discharge system for treated wastewater was designed and built in 1972. That system was redesigned and rebuilt in 1992. The design capacity for the existing treatment facility is 468,000 gallons per day with an annual permitted irrigation flow of 20,800,000 gallons and a maximum daily irrigation limit of 233,725 gallons. The actual annual discharge rates to Parcels B and C have varied between 11,900,000 gallons and 14,537,000 gallons annually. Treated wastewater from the lagoon is sprayed over Parcels B and C. Permitted effluent limits for discharge from the lagoon are 10 mg/l (ppm) for total inorganic nitrogen (TIN), 7 mg/l (ppm) for phosphorus, and 10 counts per 100 milliliters fecal coliform. Actual averages in lagoon wastewater discharges range around 9.5 for TIN and 5.0 for P (Sheaffer & Roland, 2003). The concept of spraying the wastewater onto Parcels B and C is based on the ability of the vegetative cover in these areas to take up significant amounts of nitrogen and (to some extent) phosphorus from the surface before these nutrients are absorbed by the soil or percolate down to the groundwater. The alfalfa cover crop over most of Parcel C is harvested and removed from the site two to three times per year thus removing whatever nutrients the plants assimilated. Being mostly wooded, Parcel B vegetation is not harvested. The irrigation season is from May 1 to October 31, and is prohibited during rainfall events.

In certain months of recent years, The Homestead has been out of compliance with wastewater disposal standards as required by the groundwater discharge permit and Rule 2222 of Part 22 Groundwater Quality Rules of Part 31, Water Resources Protection, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended (Act 451). The Homestead often exceeded the TIN and fecal coliform standards in wastewater effluent. Monitoring wells downgradient from Parcel B have detected TIN above the 5 ppm groundwater standard. Although the levels of TIN detected did not exceed public health standards (10 ppm), TIN is a particular concern since private potable water wells use groundwater from this downgradient area. The best available information shows that there has been no increase in any of the constituents, originating from the system, in these private wells. Also, irrigation of water that is high in fecal coliform is a direct contact hazard for people who might come in contact with the irrigation water. Phosphorus in the treated waste water is not as much of a concern as TIN since existing soils (primarily Kalkaska series) readily adsorb phosphorus, and have an estimate 89 years of remaining capacity under existing phosphorus loading levels (Gosling Czubak, 2002).

The Michigan Department of Environmental Quality (MDEQ) has notified The Homestead that groundwater samples taken from monitoring wells immediately downgradient from the wastewater spray fields have periodically exceeded state water quality standards for TIN. In response to this notification, The Homestead developed an Irrigation Management Plan (IMP) to address the issue of TIN in groundwater (Sheaffer & Roland, 2003). The initial IMP called for some major changes on the two irrigated parcels—particularly Parcel B for which a recommendation was made to remove all trees, grade the site to eliminate slopes more than 20 percent, and plant the parcel with a mixture of orchard grass and fescue, varieties highly efficient at nutrient uptake. The IMP also called for replacing the existing alfalfa and some trees from Parcel C and replanting the parcel with the same mixture of orchard grass and fescues. IMPs similar to this were proposed by The Homestead in 1992 and 1997. Because of impacts to Lakeshore resources and visitor experiences, the Lakeshore recommended that alternative methods be considered. Consequently, these IMPs were not permitted by MDEQ and spray irrigation of wooded Parcel B and Parcel C continued.

The NPS questions whether spray irrigation systems fall under the definition of "seepage," as used in the easement language. There were also other concerns about the IMP recommendations to improve TIN and phosphorus uptake by vegetation on Parcels B and C. The NPS would prefer to avoid the removal of forest cover on Parcel B. Also, there is a question concerning required setbacks from a wastewater spray field easement line. The IMP proposes varying setbacks of the sprayed area to the parcel edges. These setbacks do not conform to the 100-foot standard for wastewater spray fields established by the MDEQ. The state Attorney General's office has opined that the MDEQ cannot require the setbacks from the easement line (only from a property line). The NPS Solicitor's Office disagrees. If the standard setbacks do apply, then it is uncertain as to whether the existing parcels would be of sufficient size (surface area) to treat the wastewater nutrient loads proposed in the IMP (Sheaffer & Roland, 2003).

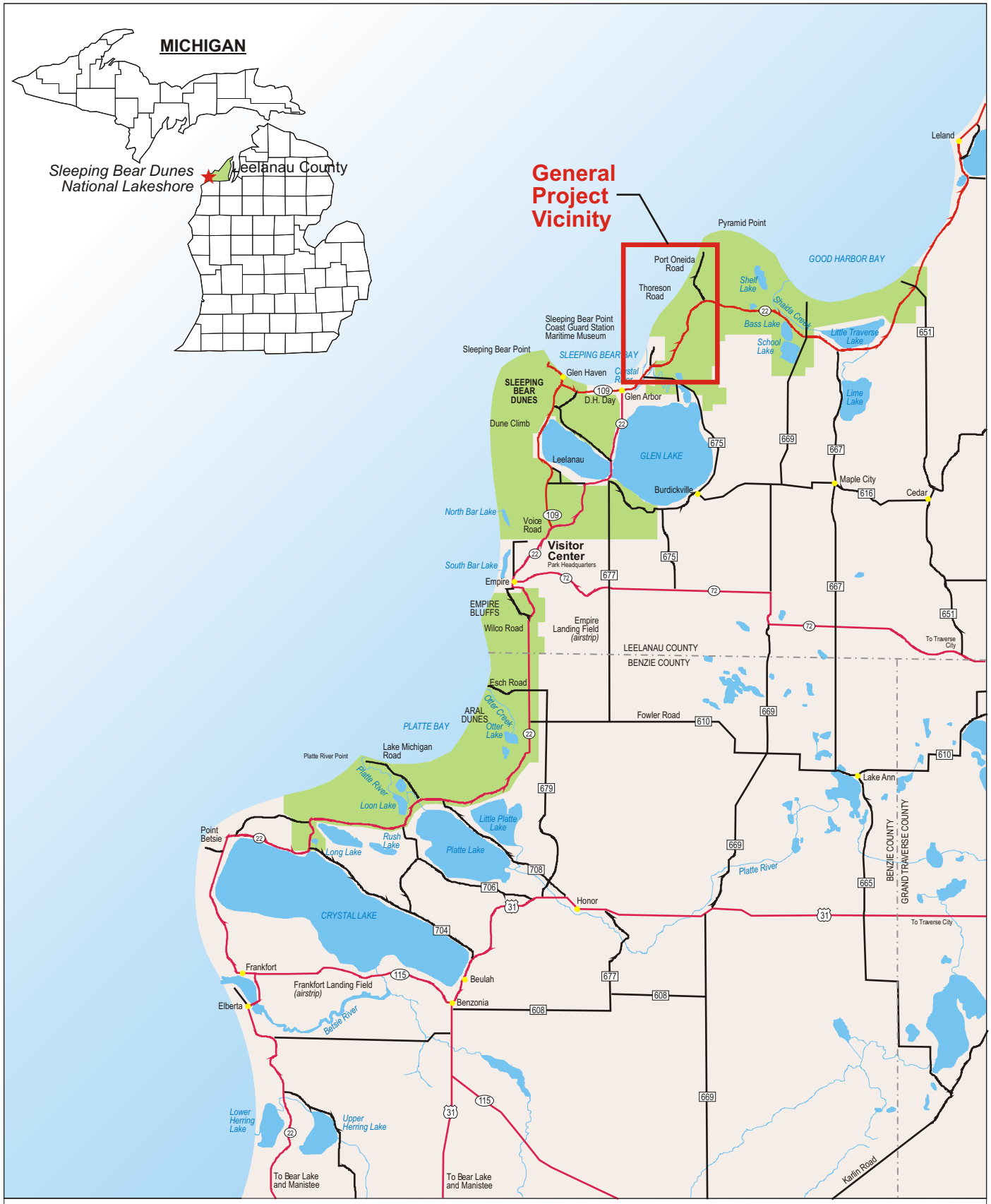
1.2 Purpose and Need

The National Park Service (NPS) has prepared this Environmental Assessment (EA) to evaluate The Homestead proposal as described in the IMP and alternative approaches (i.e., locations, technology). The goal is to allow The Homestead to exercise their legal rights to use their easements, but in a location and manner that best protects the interests of the NPS.

This EA document will describe and compare the advantages and disadvantages of using existing and alternative wastewater disposal easements. The EA complies with the National Environmental Policy Act (NEPA) of 1969, as amended, the Council on Environmental Quality (CEQ) Regulations (40 CFR § 1500-1508), and NPS regulations.

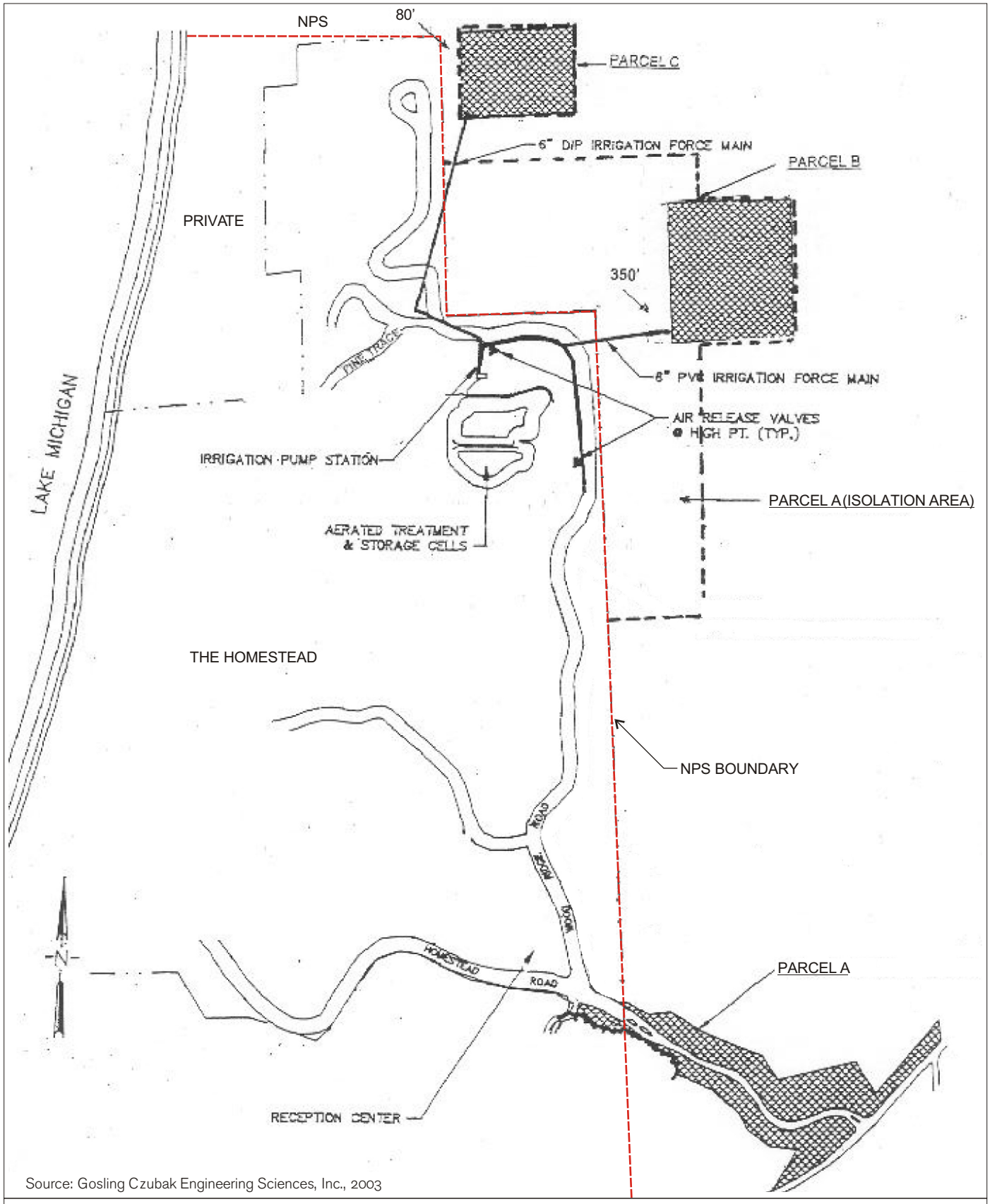
The purpose of this EA is to address the following issues:

- Existing and potential private water wells in the project vicinity must not be negatively affected.
- Impacts to the adjacent waters of Lake Michigan should be avoided.
- Impacts to the native vegetation should be minimal.
- Impacts on existing soils, topography, and vegetative cover of potential new drain fields must be minimized.
- Impacts on Lakeshore resources and values adjacent to existing Parcels B and C must be minimized.
- Visual impacts on and to NPS property should be minimally affected.



SLEEPING BEAR DUNES NATIONAL LAKESHORE
THE HOMESTEAD WASTEWATER DISPOSAL
ENVIRONMENTAL ASSESSMENT

FIGURE 1
VICINITY AND LOCATION MAP



Source: Gosling Czubak Engineering Sciences, Inc., 2003

NORTH

NOT TO SCALE

SLEEPING BEAR DUNES NATIONAL LAKESHORE
THE HOMESTEAD WASTEWATER DISPOSAL
ENVIRONMENTAL ASSESSMENT

FIGURE 2
PARCELS A, B, AND C

- Historic Thoreson Farmstead and the Port Oneida Rural Historic District should be only minimally affected.
- Lakeshore visitor experience, such as hiking and skiing along the Bay View Trail, or driving along Thoreson Road or Sunset Trail should be minimally affected.
- Surface water quality should not be degraded and erosion potential should be minimized.
- There should be only minimal impacts upon wildlife.
- The spread of non-native noxious weeds should be minimized.

An alternative has been suggested which would involve relocating the easements from Parcels B and C to one of two alternative similarly-sized locations in open fields further north and currently within Lakeshore property (Figure 3). The new easement would require that wastewater could only be applied subsurface to these sites rather than using surface spray irrigation systems as currently used on Parcels B and C. Since Thoreson Road runs north-south between the two proposed alternative locations for the new subsurface wastewater disposal system on Lakeshore property, the sites are referred to as the West Study Area and the East Study Area (Figure 3). A subsurface discharge would eliminate the potential hazard of people encountering sewage when it is sprayed above ground on an easement within NPS boundaries. The nutrients in the sewage would not be removed by plants, however. Nitrate could potentially reach groundwater; therefore, the use of groundwater for drinking water downgradient of the site would have to be restricted. Preliminary information from the MDEQ indicated that groundwater flow from either of these new locations would vent to the surface waters of Lake Michigan without intersecting private potable water wells along Sunset Trail. The NPS would have to restrict well construction downgradient of the discharge through an administrative decree.

Other issues that would need to be fully addressed prior to a final decision on relocating The Homestead's wastewater disposal easements include the following:

- Demonstration by an engineering firm that a new location and system would not cause downgradient flow to intersect any existing or potential wells, and would suffice to meet groundwater/surface water quality standards.
- The NPS cannot assume liability associated with any contamination of the existing parcels. Preliminary indication from the MDEQ is that the parcels would not be termed contaminated under their standards. Level I and II Environmental Surveys would need to be conducted to ensure this.
- In any easement relocation, the NPS would only be able to relinquish interests of equal or lesser value to those being conveyed.
- Consideration of impacts to visitors and resources of establishing and maintaining a new system, including installation of the transport lines, application system, and access routes.
- The easement language for a relocated wastewater disposal site would need to specify <u>only</u> an underground leach field system that allows for continued public use of the area.
- The acceptability of the relocated wastewater disposal site to the stakeholders.
- Funding for expenses ancillary to system installation, such as environmental compliance work and easement relocation preparation.
- The impacts to park development options if an area of the Lakeshore could no longer support potable water wells downgradient of any new easement location.
- Ascertain and obtain legal documents regarding no downgradient wells.
- Clarify the ownership of a 0.91-acre parcel on Sunset Shores Drive, which is located downgradient of leach fields constructed in either the East or West Study Areas.
- Impacts to the viewshed within the cultural landscape of the Port Oneida Rural Historic District.

All parties involved wish to find an equitable solution that does not degrade Lakeshore resources and the visitor experience, protects surrounding private property, and respects existing property rights.

1.3 Relationship to Other Planning Projects

Except for an occasional new individual housing unit (house, townhouse, etc), there are no substantial projects planned for The Homestead in the vicinity of Parcels B or C. The Lakeshore has no current planning projects in the vicinity of the project area, though the Thoreson Farmstead has great potential for preservation, use, and maintenance through a historic lease agreement. A private organization, The Glen Arbor Art Association, has expressed interest in using the Thoreson Farmstead as an arts center. Both the Art Association and the Lakeshore have carried out structural stabilization work and sponsored cultural activities at the Thoreson Farmstead.

1.4 Issues and Objectives

In resolving the groundwater quality problems associated with the Parcel B easement, the selection of a preferred alternative will determine the importance of various issues. If Parcels B and C are retained and improved (under the No-Action Alternative), there would be a loss of forest cover and the need for significant earthwork visible to hikers and skiers within the Lakeshore. Should a leach field disposal site be selected in the open fields north of Parcels B and C, there could be visual impacts as well due to earthwork, new standpipes, and possibly different vegetation cover compared to adjacent areas, as is often the case with large-scale developments of this type. However, extensive mitigation measures (described in the Alternatives section) have been developed that would offset these potential impacts. These mitigation measures would be included in any easement legal documents, should an easement relocation be implemented. Selection of the East Study Area site would probably also preclude development of a new well onsite at the Thoreson Farmstead (the current well is non-functional). However, a well could be offset away from leach field groundwater flow and water piped to any site within the groundwater flow areas.

Another issue concerns the suggestion that The Homestead improve the primary wastewater treatment facility and aerated lagoon in an effort to negate the need for changes to the existing easements. While this is an option for The Homestead, regardless of any such improvements, they would still retain the right to dispose of effluent on the existing parcels. Therefore, the issue remains on how to minimize existing or potential impacts resulting from treated wastewater disposal.

If spray irrigation is continued, this process could result in exposure of sewage sprayed above ground to Lakeshore visitors walking in the posted area. The subsurface disposal options are safer and aesthetically do not involve above-ground spray lines and water.

An early scoping letter regarding the proposed project was sent by the NPS to approximately 100 stakeholders on August 28, 2003 (see Section 7.0). Numerous letters and email responses were received as a result. Consequently, it is expected that this EA will generate considerable public interest because of the high profile that surrounds the use of public lands in this part of Michigan. The challenge will be to balance the public trust and environmental stewardship with legal obligations required by the easements.

The NPS initiated early coordination with various federal and state regulatory agencies in April 2004 (Section 6.0).

1.5 Impact Topics Selected for Analysis

1.5.1 Topography

The No-Action Alternative would significantly change the existing topography of the land, since slopes of less than 20 percent are required for mowing (if spray irrigation is allowed). Earth disturbance would occur at the West and East Study Areas, but the leach fields would be constructed to replicate existing topography.

1.5.2 Hydrology

In the long-term, an aboveground disposal system (i.e., spray irrigation) could affect surface water quality during significant rainfall events. Under all alternatives, the surface water quality of Lake Michigan is a concern that must be addressed. All the alternatives would affect groundwater quality, whether beneficially or adversely.

1.5.3 Soils and Substrate

Soils would be significantly impacted in all alternatives. In the short- and long-term, soil structures would be disturbed in order to either install and underground leach field or recontour slopes to provide for mowing of grasses.

1.5.4 Ecological Resources

Biological resources in the vicinity of the project area may be impacted by all alternatives. In the action alternatives, construction activities could result in the removal of herbaceous cover for open grassland species of birds and other wildlife. With the No-Action Alternative, approximately ten acres of native forest cover on Parcels B and C would be removed, permanently eliminating some existing habitat for woodland birds and other forest wildlife. Aquatic flora and fauna that occur in Lake Michigan could possibly be affected by any of the alternatives. There are no other lakes, ponds, or streams within or adjacent to the project area. No federally threatened or endangered species, proposed species, or designated or proposed critical habitat are present in the project area (U.S. Fish and Wildlife Service letter, June 18, 2004).

1.5.5 Land Use

Land use around the Lakeshore is a mix of residential and open space areas. The action alternatives would have little effect on existing uses. The fields would be available for planting in native species or grain crops, depending on the requirements of any new easement. The NPS acquired the property with an existing easement to The Homestead regarding Parcels A, B, and C. Any changes in land use would have to reflect the legal aspects and language of the easement.

1.5.6 Cultural Resources (Prehistoric and Historic Archeology, Historic Structures, and the Cultural Landscape)

All alternatives have the potential to impact cultural resources. Of particular concern are archeological resources at all sites, and the Thoreson Farmstead and the more encompassing Port Oneida Rural Historic District. The character of the Thoreson Farmstead cultural landscape should be little changed by the action alternatives, with appropriate mitigation in place. Installation of a new well to support adaptive use at the Thoreson Farmstead could be affected if the East Study Area location were chosen.

1.5.7 Visitor Experience and Viewshed

In the enabling legislation for the Sleeping Bear Dunes National Lakeshore (established by Act of Congress October 21, 1970: Public Law 91-479), visitor access to recreational and scenic opportunities were considered to be key factors to the establishment of the park. Congress directed that the Lakeshore should be managed in such a way that the scenic, scientific, and historic features of the park contribute directly to the public enjoyment. For these reasons, visitor experience and the viewsheds in the park will be considered in this EA. All of the action alternatives have the potential to affect the visitor's experience and the viewsheds found along the Bay View Trail, Thoreson Road, and Sunset Trail. The potential for odor should be considered in all alternatives.

1.6 Impact Topics Eliminated from Further Evaluation

1.6.1 Floodplains and Wetlands

Federal Agencies are required to protect floodplain and wetland resources as per Executive Order 11988 (Floodplain Management) and Executive Order 11990 (The Protection of Wetlands). As there are no floodplains or wetlands within or adjacent to the project area, these subjects will not be discussed further in this EA.

1.6.2 Coastal Zone Management

The preservation and management of coastal waters in the nation are governed by the Coastal Zone Management Act of 1972 (16 USC 1451-1464, as amended). The act encourages and assists states in management programs for the wise use of land and water resources within the coastal zone, including cultural and aesthetic values as well as the need for compatible economic development. Michigan's Coastal Management Program was approved in 1978 and is administered by the MDEQ. Michigan's coastal zone boundary generally extends a minimum of 1,000 feet inland from the Ordinary High Water Mark of the Great Lakes.

Since, either action alternative would result in the relocation of a similarly sized easement for a wastewater disposal system, coastal zone management will not be further discussed in this EA.

1.6.3 Rare, Threatened, or Endangered Species

No federally threatened or endangered species, proposed species, or designated or proposed critical habitat are present in the project area (U.S. Fish and Wildlife Service letter, June 18, 2004). Bird species of conservation priority are treated under ecological resources. Consequently, rare, threatened, and endangered species will not be discussed further in this EA.

1.6.4 Hazardous Waste

The alternatives would not create hazardous waste or materials nor would any of the associated actions be expected to encounter any hazardous waste or materials. Paints, solvents, and oils improperly disposed of in household drains served by any system are beyond the scope of this document. Therefore, this issue area will not be addressed in this EA.

1.6.5 Air Quality

Clean Air Act, as amended (42 USC 7401 et. seq.). Section 118 of the Clean Air Act requires all federal facilities to comply with existing federal, state, and local air pollution control laws and regulations.

Short-term construction impacts have the potential to temporarily increase local levels of particulates mainly in the form of localized fugitive dust. Some minor emissions from equipment operations would also be expected. The spray from the existing spray irrigation systems on Parcels B and C could be considered an air pollutant. But neither overall park air quality nor regional air quality is, or would be, affected. For these reasons, air quality is dismissed as an impact topic.

1.6.6 Socioeconomics

Community services in the form of improved wastewater disposal for The Homestead would not be designed to increase the capacity of the existing system. None of the alternatives would affect the local population, economy, housing, or transportation. Therefore, socioeconomics will not be discussed further in this EA.

1.6.7 Environmental Justice (Executive Order 12898 Compliance)

No known low-income or minority populations are in the immediate project vicinity nor would any such populations be directly or indirectly impacted by the relocation of wastewater disposal easements by the NPS. Therefore, environmental justice will not be discussed further in this EA.

1.6.8 Soundscape Management

In accordance with NPS Management Policies (2001) and Director's Order #47, Sound Preservation and Noise Management, an important part of the NPS mission is preservation of natural soundscapes associated with National Park Units. Under the No-Action Alternative, periodic mechanical harvesting of spray field vegetation would create noise. Although an

increase in noise would result from activities to construct a new wastewater disposal site, such increases would be temporary and short-term, and occur only during normal weekday business hours. Documentation would be required to substantiate the claim that there would be no noise associated with post-construction operation of the new facility.

1.6.9 Lightscape Management

According to NPS Management Policies (2001), the NPS strives to preserve natural ambient landscapes, which are natural resources and values that exist in the absence of human-caused light. There are no plans to add lighting (security or otherwise) to the project site. Therefore, lightscape management will not be discussed further in this EA.

1.6.10 Indian Trust Lands

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

There are no Indian trust resources at the Lakeshore. The lands comprising the park are not held in trust by the Secretary of the Interior for the benefit on Indians due to their status as Indians. Therefore, Indian trust resources are dismissed as an impact topic in this environmental assessment.

1.6.11 Park Operations

None of the alternatives would result in any noticeable change to park operations. Should the preferred alternative include subsurface leach fields in the open fields adjacent to the Thoreson Farmstead, NPS maintenance of the cultural landscape to prevent invasion by woody species of plants would minimally be reduced by the periodic removal undertaken by The Homestead personnel. Either action alternative would make Parcel B and C available for the Bay View Trail (which historically traversed them), and other visitor activities. Consequently, park operations would not be appreciably changed and will not be discussed further in this EA.

1.6.12 Prime and Unique Farmlands

Soils that meet the criteria for Prime Farmland are found in the project area. However, according to the Natural Resources Conservation Service, conversion to non-cropland occurred when the NPS obtained management authority over these lands. Therefore, impacts to lands designated as Prime or Unique will not be discussed further in this EA.