

MAMMOTH CAVE NATIONAL PARK

COMBINED CLIMATE FRIENDLY PARK AND ENVIRONMENTAL MANAGEMENT SYSTEM PLAN



2016

Mammoth Cave National Park Environmental Management Plan

The Mammoth Cave National Park Environmental Management Plan (EMP) documents the park's Environmental Management System (EMS). The EMP's development and revision history and distribution list are as follows:

1. This 2016 version replaces the 2015 version. Prior EMP's have been completed every year since 2005. Previously, the park prepared a Strategic Plan for Environmental Leadership in 2002.
2. The EMP will be reviewed annually by the Green Team.
3. The original signed copy of the current EMP will be kept in the Office of the Superintendent and copies will be distributed to the Green Team and each division. The EMP is also available on the park drive for all employees to review at: *MACA EMS 2016, in the Green Team folder under "Committees and Projects"*.
4. Previous hard copy versions of the EMP are to be recycled.

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HISTORY OF ENVIRONMENTAL LEADERSHIP AND ACHIEVEMENT AT MAMMOTH CAVE NATIONAL PARK

Mammoth Cave was established as a national park in 1941, later designated a World Heritage Site in 1981, and an International Biosphere Reserve in 1990. The Biosphere Reserve was increased from 112,800 acres to 909,328 in 1996.

Mammoth Cave National Park has a long tradition of not only meeting but exceeding National Park Service objectives. This is especially true when it comes to environmental leadership. In the 1980's, Mammoth Cave National Park was one of only a few parks to separate resource protection activities from the Division of Ranger Activities and form the new Division of Science and Resource Management.

Also in the early 1980's, Mammoth Cave National Park was instrumental in the formation of the Caveland Sanitation Authority (CSA). CSA was charged with constructing a regional sewer system with the primary goal of protecting the groundwater that flows into Mammoth Cave, thus protecting the eco-system of the world's longest known cave system. This project took approximately 20 years to complete; today this system serves the cities of Cave City, Horse Cave, Park City, and Mammoth Cave National Park. This region-wide sewer system is protecting the groundwater across the majority of the sinkhole plane, which feeds much of the water that flows into and through Mammoth Cave. Today CSA has become the Caveland Environmental Authority (CEA) and in recent years completed construction on a new water delivery and distribution system for the Park. This new system has already proven to save thousands of gallons of water that was being lost each year due to the park's deteriorating water system.

Mammoth Cave National Park has consistently been a leader in recycling for well over a decade. The park, working with its partners, has continually strived to improve this operation. Common items such as aluminum cans, plastic bottles, and office paper have long been recycled, but the park is also aggressive to ensure lesser know items are recycled such as: glass bottles, cardboard, used batteries, motor oil, antifreeze, and fluorescent light tubes to name a few.

In 1999, Executive Order No. 13149 required all Federal agency fleets to use re-refined oil. The park management team decided to aggressively pursue this requirement with the goal of using alternative fuels in 100% of the park's vehicle fleet as well as equipment. Mammoth Cave National Park became the first unit in the DOI to develop an on-site fueling station using E-85 (ethanol). The park also became the first unit in the Southeast Region of the NPS to use bio-diesel in all of its diesel equipment. By 2004, Mammoth Cave National Park became the first unit in the NPS to become 100% alternative fuel compatible in all GSA vehicles and equipment, and the park proudly maintains this standard today.

The NPS Advisory Board issued "A Vision of Sustainable Parks" in 2000 recommending the Service be pro-active in environmental leadership. This statement led to the designation of 20 NPS units as Centers for Environmental Innovation. These parks will serve as models in developing, adopting and promoting practices supportive of environmental leadership and again Mammoth Cave is proud to be one of these parks!

The Department of Interior Action Plan for 2001 called for “greening” of all Interior agencies to the extent possible through recycling programs, purchase of environmentally friendly products, and requiring concessioners and contractors to consider “green” practices. This led the park management team to establish the park’s first Environmental Leadership Committee (ELC). This Committee included members from each functional area, to outline and lead Park efforts as a Center for Environmental Innovation.

In 2002, the ELC developed and implemented Mammoth Cave National Park’s first Strategic Plan for Environmental Leadership. This Plan set the stage for the park to follow an established program to assist in educating employees, partners, and the public on the principles of “green” or sustainable practices. By the close of 2003, virtually all of the action items in the Plan had been fully implemented.

Installation of oil and grit separators was completed in 2004 at five parking lots in the park. Storm water runoff from these parking lots is now filtered by these oil and grit separators before it is released into the groundwater, which enters the cave system. This greatly reduces contamination of the cave hydrologic systems by hazardous materials. A project to replace the filters in all of the oil & grit separators was completed in 2009 and was completed again in 2011.

The park’s principal concessionaire, Forever Resorts, has been involved in all aspects of the park’s environmental leadership activities. In 2004, and again in 2009 a comprehensive environmental audit was completed for all facilities operated by the Mammoth Cave Hotel. These audits produced only a few minor recommendations, which have been fully addressed. The park and Forever Resorts have partnered to ensure all types of recycling activities are available to both employees and visitors. In addition they jointly operate a large cardboard compactor for recycling, and recently a joint alternative fueling station became operational that will be used by both NPS and concession staff for government and concessions vehicles and equipment.

In 2004, the park’s Environmental Leadership Committee was renamed the Environmental Management Team (EMT). The EMT was responsible for the development of this document and the direction of Mammoth Cave National Park’s Environmental Management Plan. In 2005, the EMT developed and implemented the park’s first ever Environmental Management System, and remains responsible to oversee its implementation and annual update. At the start of FY 2010 the EMT underwent another name change to the “**GREEN TEAM**”. *It was felt this name change would be more consistent with environmental awareness nationwide, both within and outside the National Park Service.*

The park completed two major projects in early 2007 to achieve significant reductions in the use of electricity and water. Both the new cave electric system and new water systems are now operational. The cave electric project initially reduced energy use in the cave by over 25%, but recent system problems have caused electricity usage to increase and these issues are still unresolved. With a reduction of water use by over 80% the new water system has been much more successful than the park envisioned.

In 2008 the park undertook the process of developing an Integrated Solid Waste Alternatives Plan (ISWAP). After much research and several reviews the final draft was presented to the Management Team in September 2008. After some minor revisions the plan was finalized and implementation of the ISWAP was a primary goal of the 2009 EMT and has remained an active goal in each updated version of the EMS including this 2013 edition

In 2011 the Green Team introduced some new activities such as a parkwide Recycling Day, which was a great success. During 2011 the Green Team also installed a small composting operation at the seasonal apartments, and raised bed garden plots were added in the same area during 2012 so residents can grow fresh vegetables using the compost.

During 2012 the park utilized a \$505,000 grant from the US Department of Energy, through a partnership with their Clean Cities Program, to purchase four new propane buses, two propane pick-up trucks, and one low speed electric. These vehicles will replace older and less efficient vehicles.

Also in 2012, the park's new visitor center was completed. Subsequently, it received a Gold LEEDS Certification.

In 2014, the park hosted a Climate Friendly Workshop. This workshop resulted in a plan that will assist the park in several areas going forward. Some of the major initiatives will be:

- Reduce Emissions from Park Facilities and Operations by identifying and implementing emission mitigation actions.
- Increase Climate Change Outreach and Education Efforts.
- Perform subsequent emission inventories to evaluate progress, develop additional emission mitigation actions to facilitate efforts, and inform the park and public of goals and successes.

In 2015, both the Integrated Solid Waste Alternatives Plan (ISWAP) and the Spill Prevention Control and Countermeasures Plan (SPCC) were completely revised.

During 2015 the park had an Environmental Audit. These audits are conducted by both NPS personnel from other parks, and a third party, and occur approximately every 5 years. Auditors only cited the park with four (4) findings of non-compliance, and all have been abated. According to the Southeast Regional Office this is the lowest number of findings any park in the region has experienced in the 15 or so year history of the program.

ENVIRONMENTAL LEADERSHIP AWARDS

Since 2000, Mammoth Cave National Park has been recognized seven separate times for achievements in environmental leadership.

- In 2000, the park received a "Certificate of Achievement for Park Sustainable Operations." The commendation was presented by the White House Task Force on Greening Government through Waste Prevention and Recycling.
- The park received the NPS 2003 Environmental Achievement Award. A contributing factor was development of cave lighting that can prevent the growth of algae, moss, and

ferns (lampflora) in toured passages, and therefore eliminate the need to spray bleach in the cave to remove lampflora.

- Also in 2003, the park and its concessionaire, Forever Resorts, were also recognized by the Department of the Interior, Office of Environmental Policy and Compliance with the DOI's Environmental Achievement Award. The award noted: "***For Superior Environmental Accomplishments that Improve and Sustain Our Nation's Public Lands***".
- 2004 brought the park its 4th environmental leadership award (Department of Energy Clean Cities Coalition 2004 National Partner Award) for having 100% of the park's vehicle fleet running on alternative fuels, and for successful conversion of the concession-operated cave tour bus fleet to propane.
- In 2005, Mammoth Cave National Park received a NPS Honorable Mention Environmental Achievement Commendation for minimizing petroleum use in transportation.
- The park's Green Team received the National Park Service Environmental Achievement Award for 2010. This was awarded was for significant accomplishments in Waste/Pollution Prevention and Recycling.
- 2013 brought Mammoth Cave National Park another National Park Service Environmental Achievement Award. The award inscription read: "For superior accomplishments in the sustainability of operations in support of the National Park Service's commitment to sustaining and preserving natural resources". The park achievements that lead to this award included:
 1. Alternative energy partnerships with the Department of Energy Clean Cities/National Park Initiative to replace old vehicles with new, more efficient ones that are less reliant on petroleum based fuels. The partnership with Clean Cities provided \$505,000 to replace four aging propane buses, and also provided two new propane pickups, and a new electric powered GEM (Global Electric Motorcar) vehicle. Mammoth Cave was selected as one of the first NPS areas to kick off the Initiative because of its good track record with past Clean Cities alternative fuel projects and its high visibility impact with park visitors. The partnership recognizes the Park's long collaborative history with the Kentucky Clean Fuels Coalition and also the benefit of working cooperatively with a concessioner that is also strongly committed to using alternative fuels.
 2. The park's new visitor center, completed in 2012, is now a showcase to demonstrate the practical application of sustainability, innovative techniques, and provide leadership by demonstrating the best environmental practices and products utilized in the U.S. and abroad. The result of this effort is a building that is LEED certified at the gold level, and is, in part, powered by solar energy.
 3. LED bulbs are used on all cave tours requiring helmet/headlamps, reducing battery use by 85% when compared to previous battery use.
 4. In FY12, Mammoth Cave National Park recycled: 440 pounds of aluminum; 28 gallons of antifreeze; 36 tons of asphalt; 47 tons of cardboard; 375 tons of concrete; 61 tons of construction waste; 5,000 pounds of drywall; 400 pounds of electronics; 2,578 pounds of glass; 8,646 pounds of plastic; 5,409 pounds of copper, 1,208 pounds of paper; 1,035 pounds of steel cans. The Park composted 172 pounds of food waste and 1,519 pounds of newspaper.

5. A 30,000-gallon cistern was installed next to the visitor center to capture rainwater off the roof of the building for reuse to flush toilets. A one-inch rainfall will fill the tank, which then provides enough gray-water to flush toilets for a week during the busy season.
6. The visitor center, campground, and picnic area restrooms are equipped with motion-sensor, low-flow faucets, and waterless urinals - each urinal saves at least 20,000 gallons of water/year.

INTRODUCTION TO THE MAMMOTH CAVE NATIONAL PARK ENVIRONMENTAL MANAGEMENT PLAN

- 1) This Plan describes the Environmental Management System (EMS) in place at Mammoth Cave National Park.
- 2) The EMS includes all eight Elements of the Model National Park Service EMS and conforms to the requirements contained WITHIN Director's Order #13A.
- 3) The Plan documents the overall EMS activities and the current EMS targets. Sections 2 and 3 describe the process followed to choose the current year's targets.

MAMMOTH CAVE NATIONAL PARK ENVIRONMENTAL COMMITMENT STATEMENT

Mammoth Cave National Park, a World Heritage Site and International Biosphere Reserve, preserves an internationally significant cave and karst system. This area includes numerous sinking streams and sinkholes, complex underground watercourses, and a multilayered cave system--the longest in the world--with unique fauna and mineralization features. The park also protects hardwood forests, rivers, ponds, and other natural cultural features.

As a National Park Service Center for Environmental Innovation, Mammoth Cave National Park has a leadership role in promoting sustainable environmental practices, both within the park and in partnership with others. This is done by:

- Breaking new ground in exceeding the requirements of federal, state, and local environmental laws, regulations, executive orders, and Department of Interior environmental polices.
- Integrating and implementing environmentally sensitive Best Management Practices including pollution prevention into all park operations and encouraging partners and neighbors to do the same.
- Selecting environmentally low-impact alternatives in planning, purchasing, contracting, and operating.
- Educating and training employees, partners, and the public about the principles of "green" or sustainable practices.
- Assigning clear responsibilities to our staff for environmental activities and holding them accountable for their environmental performance, recognizing superior effort when it is demonstrated.

- Actively monitoring the park's environmental performance at both operational and organizational levels, and seeking and implementing opportunities for improvement.

FACILITY ACTIVITIES AND ENVIRONMENTAL IMPACTS

Facility Interaction Assessment

Facility Activity	Interaction(s)	Impact(s)
1. Administrative Energy Consumption and Utility Systems	Staff uses electricity, fuel, water, raw materials, chemicals products, and a variety of consumable products. These activities can generate air emissions, wastewater, solid & universal waste, and occasionally hazardous wastes.	Consumptive use of power, water and raw materials. Wastes generated create disposal costs and environmental risks (water or air pollution) if not handled and disposed of properly.
2. Building Maintenance	Building maintenance activities use electricity, water, fuel, raw materials, and chemical products. This can generate solid, universal, and hazardous wastes.	Consumptive use of raw materials, power, fuel, and water. Use of chemical products and generation of wastes contribute to employee health and safety risks. Wastes generated create disposal costs and environmental risks (water or air pollution) if not handled and disposed of properly.
3. Concessioners/ Permitees	Park-owned facilities operated by concessioners or permittees use electricity, fuel, water, and in some cases raw materials and chemical products. This generates wastewater, solid wastes, and in some cases hazardous wastes.	Consumptive use of power, fuel, water and raw materials. Wastes generated create disposal costs, generally borne by the concessioner or permittee, and environmental risks (water or air pollution) if not handled and disposed of properly.
4. Education/Publicity	Mammoth Cave is a heavily visited National Park, and a major tourist destination within the Commonwealth of Kentucky. As a result the park staff interacts with many outside entities on a daily basis.	The staff of Mammoth Cave NP impact visitors, school children, businesses, and other government bureaus and agencies. These interactions provide a tremendous opportunity to enhance public awareness and education of environmental issues.
5. Major Construction Projects	Mammoth Cave National Park has recently completed several major construction projects and others are underway. It is imperative that the park integrates sound environmental practices into all aspects of each project.	By introducing sound environmental practices into each project from the planning stages through completion the park can have a major impact on visitors and neighbors for decades to come.

6. Vehicle/Equipment Use	<p>Operation and maintenance of motorized vehicles & equipment uses various types of fuels, electricity, water, chemical substances, and raw materials. These activities generate air emissions, wastewater, solid, universal, and hazardous waste.</p>	<p>Consumptive use of raw materials and chemical products can create air emissions concerns, and introduce pollution into other parts of the environment.</p>
7. Fuel Storage	<p>Improper storage of fuels not only is a violation of law, but can lead to health & safety concerns for employees and visitors. It can also cause irreversible damage to the ecosystem should these materials be introduced into the environment.</p>	<p>Fueling stations and storage tanks require time consuming and expensive monitoring and maintenance. Spills, leaks, or fire can cause water, soil, and/or air pollution concerns.</p>
8. Hazardous Communication (HAZCOM)	<p>HAZCOM basically covers the purchase, storage, handling, use, and disposal of all chemicals used at Mammoth Cave National Park.</p>	<p>Employees come into contact with chemicals almost every day in the workplace. Depending on how these encounters are handled can have a positive or negative effect on the environment?</p>
9. Roads, Trails, Parking Lots, and Campgrounds	<p>The park operates and maintains numerous miles of roads & trails, many parking areas, 3 front country campgrounds, and 18 backcountry campsites. Employees use a variety of substances and materials, mow lawns, clear vistas, and maintain drainage-control structures.</p>	<p>Consumptive use of fuel, electricity, water and raw materials; use of chemical or toxic substances; in some cases, use of land that would otherwise be undisturbed; have created storm-water runoff issues; and generate of solid and hazardous wastes. Spills & leaks can cause water, soil, and air pollution concerns.</p>
10. Solid and Universal Waste Management	<p>The park operation generates solid and universal wastes. Park visitors contribute a significant volume of solid waste to the park waste stream. Park staff store and dispose of solid and universal wastes.</p>	<p>Proper handling and disposal is labor intensive and costly. Leaks, spills, or fire can cause water, soil, and air pollution concerns.</p>
11. Stormwater & Wastewater	<p>Mammoth Cave is the longest cave in the world that happened to be formed by water. Man's impact to the area above the cave directly affects the cave below by what enters as a result of stormwater/wastewater.</p>	<p>Runoff from vehicles and equipment, and hazardous materials can be washed into the cave if not properly managed. This has created serious issues. This has the potential of irreversible damage occurring to the cave's eco-system.</p>
12. Cave Trails, Lighting, Lampflora, and Entrance Structures.	<p>Miles of cave trails allow almost 400,000 visitors each year to enjoy park caves. Most trails have electric lights to facilitate interpretation of the cave. Entrances are gated or air-locked as appropriate to maintain the cave atmosphere in a natural state,</p>	<p>New trail construction techniques minimize disturbance of cave resources and contain lint from visitors. Special lighting prevents the growth of lampflora in moist passages and therefore the need to spray bleach as a control measure.</p>

	and to secure the entrance.	Both lampflora and bleach are harmful to cave life. Alterations to natural airflow are prevented to protect wildlife such as hibernating bats and also to prevent decay of archaeological resources.
13. Green Procurement, Purchasing, Recycling, and ISWAP.	Staff purchase and use a wide variety of products and equipment that use electricity, water, fuel, chemical substances and raw materials. This generates solid and hazardous wastes and the park's ISWAP will be a tool to reduce the amount of waste going to the landfill.	Consumptive use of electricity, fuel, water and raw materials. Supplies/materials/equipment constitutes a major operating cost, so life span and efficiency of products purchased has significant budgetary implications. Wastes generated create disposal costs and environmental risks (water or air pollution) if not handled and disposed of properly.

Related documentation

The 2002 Final Environmental Audit Summary Report conducted at Mammoth Cave National Park provided data that the EMT used to complete the park's first EMS. In May 2005, May 2010, and January 2015, the park had follow-up Environmental Audits which produced additional recommendations that were reflected in past, and also this most recent version of the park's EMS. Specifically, it identifies opportunities for environmental improvement that the NPS Audit Program has identified based on a broad set of environmental criteria.

GOALS, OBJECTIVES, AND TARGETS

Environmental Goals, Objectives & Targets Action Plan 2016

Facility Activity: Goals and Tasks	Responsible Party	Results
<p>1. FINALIZE REQUIREMENTS TO DESIGNATE MAMMOTH CAVE NATIONAL PARK AS A CLIMATE FRIENDLY PARK.</p> <p>Goal Champion: Bob Carson & Johnny Merideth</p> <p>Objectives:</p> <p>a. Resolve Clip2 tool issue.</p>	<p>Bob Carson</p>	<p>Achieve certification in 2016.</p>
<p>2. Reduce Greenhouse Gas (GHG) emissions to 20 percent below 2010 levels by the year 2018 by implementing mitigation actions.</p> <p>Goal Champion: Bob Carson & Johnny Merideth</p> <p>Objectives:</p> <p>a. Strategy 1: Reduce Emissions from Park Facilities and Operations by identifying and implementing emission mitigation actions, Replace existing concessions fuel oil boiler with propane fueled system (35 MTCO₂E) Reduce Concessionaire electricity consumption by 20% (344 MTCO₂E). Reduce Park electricity consumption by 20% (307 MTCO₂E). Reduce gasoline vehicles miles traveled by 10% (3 MTCO₂E). Replace 3 gasoline vehicles with 3 hybrid vehicles (13 MTCO₂E). Reduce the amount of waste generated by 20% (17 MTCO₂E).</p> <p>b. Strategy 2: Increase Climate Change Outreach and Education Efforts.</p> <p>c. Strategy 3: Perform subsequent emission inventories to evaluate progress, develop additional emission mitigation actions to facilitate efforts, and inform the park and public of goals and successes.</p>	<p>SLT, Management Team, and Green Team.</p>	<p>Work to implement actions for all three strategies to achieve goal by 2018.</p>

<p>3. CONTINUE INTERNAL ENVIRONMENTAL AUDIT OF PARK FACILITIES</p> <p><i>Goal Champion</i> <i>Mark Rich</i></p> <p><u>Objectives:</u></p> <p>a. Continue to inspect park facilities using the same criteria used by auditors who conduct the environmental audit every 4-5 years.</p> <p>b. Address environmental finding in quarterly facilities report.</p>	<p>Mark Rich</p> <p>Mark Rich</p>	<p>The park will remain in compliance with NPS Environmental Policies.</p> <p>Should a finding of non-compliance be found, it will be noted, and a responsible party identified to take corrective action.</p>
<p>4. CONTINUE IMPLEMENTATION OF PARK INTEGRATED SOLID WASTE ALTERNATIVES PROGRAM (ISWAP) & RECYCLING</p> <p><i>Goal Champion:</i> <i>Josh Johnson & Mark Rich</i></p> <p><u>Objectives:</u></p> <p>a. Continue educating park staff about their responsibilities, and the benefits of complying with the ISWAP.</p> <p>b. Provide periodic all employee messages to support sustainable activities.</p> <p>c. Continue to purchase Green and recycled products, for use by park staff, when possible.</p> <p>d. Continue collaborative efforts between NPS and Forever Resorts to utilize the park's plastics bailer, and cardboard compactor to facilitate a reduction in solid waste.</p> <p>e. Continue to designate and train recycling champions for each building/operation.</p> <p>f. Seasonal Support of Recycling</p>	<p>Green Team</p> <p>Green Team</p> <p>David Vanarsdall</p> <p>Mark Rich Sarah Martin</p> <p>Green Team</p> <p>Josh Johnson Mark Rich</p>	<p>All employees will be provided needed information/training to fully understand their role in the park's ISWAP.</p> <p>Messages pertaining to sustainable activities will be provided to park staff periodically.</p> <p>When feasible, the best available Green products will be purchased for use by park staff.</p> <p>This bailer and compactor provides a more efficient means to properly handle and recycle the growing quantities of plastic, thus reducing waste going to the landfill.</p> <p>Champions will be selected and trained to manage recycling in their work areas.</p> <p>The park's recycling program remains active.</p>

<ul style="list-style-type: none"> g. Expand recycling awareness, in EE programs, to educate area students, teachers, and visitors. h. Identify recycling bins in need of repair/replacement, especially those damaged by wildlife. i. Implement recommendations from updated ISWAP 	<p>EE Staff</p> <p>Josh Johnson Mark Rich Scott Powell</p> <p>Green Team</p>	<p>EE Programs in the park, and off site, will incorporate the importance of recycling into their program.</p> <p>Recycling bins that are damaged or deteriorating will be replaced or repaired.</p> <p>Implement action items in the park's updated ISWAP.</p>
<p>5. OUTREACH AND EDUCATION</p>		
<p>Goal Champion <i>Vickie Carson & Bob Carson</i></p>		
<p><u>Objectives:</u></p>		
<ul style="list-style-type: none"> a. Continue effort to sustain the Mammoth Cave Area Biosphere Reserve Program (MCABRP). 	<p>Bruce Powell Bob Carson Rick Toomey</p>	<p>The park remains active, with all partners, such as BRADD and WKU to advance the mission of the MCABRP.</p>
<ul style="list-style-type: none"> b. Ensure Environmental Leadership initiatives receive publicity and visibility. 	<p>Vickie Carson</p>	<p>The park initiatives towards environmental leadership will be highlighted via cave tours, park newspaper, environmental education program, and through media outlets.</p>
<ul style="list-style-type: none"> c. Don't Mess With Mammoth Days. 	<p>Rick Olson</p>	<p>"Don't Mess With Mammoth Days" dump cleanup events will be completed by working with Edmonson and Hart Counties Solid Waste Programs, Cave Research Foundation, and National Speleological Society.</p>
<ul style="list-style-type: none"> d. Schedule a river clean-up, in collaboration with, Hart County and other partners. 	<p>Bobby Carson Kerry McDaniels</p>	<p>At least one productive clean up along Green River will be completed.</p>
<ul style="list-style-type: none"> e. During the demolition of the Heritage Trail Wing efforts will be made to repurpose or recycle all materials where it is feasible to do so. 	<p>Steve Kovar Scott Powell</p>	<p>All materials in the Heritage Trail Wing will be repurposed or recycled as feasible, with items only going to the land fill as a last resort.</p>

<p>6. INCORPORATE CONCESSIONERS ACTIVITIES INTO PARK GOALS WHERE PRACTIAL</p> <p><i>Goal Champion Sarah Martin</i></p> <p><u>Objectives:</u></p> <ul style="list-style-type: none"> a. Continue to support parkwide recycling effort. b. Continue to actively participate as member of park's Green Team. c. Install water filling stations in the hotel. 	<p>Sarah Martin</p> <p>Sarah Martin</p> <p>Steve Kovar</p>	<p>The Mammoth Cave Hotel will be a full partner with the park in recycling all materials that can be recycled.</p> <p>The Mammoth Cave Hotel will have a representative at all Green Team meetings and functions.</p> <p>A new water filling station will be installed in the Mammoth Cave Hotel.</p>
<p>7. EMPHASIZE USE OF LOCALLY GROWN FOOD PRODUCTS</p> <p><u>Objectives:</u></p> <p><i>Goal Champion Mark Rich:</i></p> <ul style="list-style-type: none"> a. Maintain garden plots at seasonal apartments for use by residents. b. Work with Mammoth Cave Hotel to increase use of locally grown food products. c. Investigate ways to expand composting program. d. Work with Mammoth Cave Hotel staff to expand composting into their operation. 	<p>Green Team</p> <p>Mark Rich Josh Johnson</p> <p>Mark Rich Josh Johnson</p> <p>Sarah Martin Josh Johnson Mark Rich</p>	<p>Green Team members will have garden plots ready for use, with some plants already growing, when seasonal employees check into their apartment.</p> <p>Sarah and her staff will obtain locally grown food products and promote to clientele.</p> <p>The Green Team will introduce new opportunities for park employees to compost.</p> <p>Mammoth Cave Hotel will introduce composting into their operation.</p>

8. ADVANCE PARK SUPPORT OF ALTERNATIVELY FUELED VEHICLES		
Objectives:		
<i>Goal Champion</i> <i>Mark Rich:</i>		
a. Actively participate with the Kentucky Clean Fuels Coalition (KCFC).	Mark Rich	The park will be represented at all KCFC quarterly meetings.
b. Purchase a GEM Car.	Steve Kovar	The park will have a new Gem car for use in the park.
c. Begin plans to install a charging station for electric vehicles at the visitor center.	Steve Kovar	Planning will be finalized, and action taken, towards the installation of a vehicle charging station at the visitor center.

ROLES, RESPONSIBILITIES AND ACCOUNTABILITY

EMS Roles and Responsibilities

Position	Responsibility
<i>Superintendent</i> <i>Sarah Craighead</i>	General manager of Mammoth Cave National Park with overall responsibility for the management of park programs, operations, and internal/external relationships.
<i>Deputy Superintendent</i> <i>Bruce Powell</i>	Manages day to day park operations and related programs including environmental management.
<i>All Division Chiefs and Supervisors</i>	Responsible for managing their programs using sound environmental practices and providing their employees the necessary tools to do the same.
<i>Concessions & Safety Manager</i> <i>Mark Rich</i>	Serves as park Safety Officer, IPM Coordinator, Tort Claims Officer, Concessions Management Specialist, Recycling Coordinator, and Hazardous Materials Coordinator.
<i>Educational Technician</i> <i>Josh Johnson</i>	Serves as Chair of the Green Team, and has the lead to maintain the park's recycling program, and seasonal garden.
<i>Chief of Interpretation & Visitor Services</i> <i>Dave Wyrick</i>	Serves as SLT Liaison to the Green Team.
<i>Acting B & U Foremen,</i> <i>Scott Powell</i>	Supervises buildings and utilities maintenance operations. Serves as solid waste program coordinator.
Forever Resorts <i>Sarah Martin</i>	Serves as a member of the Green Team representing Forever Resorts.
<i>Chief Ranger</i> <i>Lora Peppers</i>	Manages resources and visitor protection operations and programs. Serves as alternate Emergency Spill Response Coordinator.
<i>Facilities Manager</i> <i>Steve Kovar</i>	Manages park facility maintenance operations and programs. Serves as alternate Emergency Spill Response Coordinator.
<i>Chief of Science & Resource Management</i> <i>Bob Carson</i>	Manages all culture & natural resource management, and scientific research activities in the park and promotes same with many outside agencies and partners.
<i>All Employees</i>	Have individual work site responsibility for implementing work activity related facets of the park environmental program and for complying with environmental

requirements.

DOCUMENT CONTROL, RECORDKEEPING AND REPORTING

EMS Documentation & Records

Document	Location	Document Number	Party Responsible for Update
EMS information	PARKDRIVE: <i>MACA EMS 2016</i> Mark Rich's Office	MACA- EMS-01-16	Mark Rich
EMS planning activities, implementation and operation procedures	Mark Rich's Office	Various	Mark Rich
EMS Roles and responsibilities	Park Drive <i>MACA EMS 2016</i>	MACA-EMS-05 and MACA-EMS-06	Mark Rich
Emergency Action Plan	Park Drive SOPs/ Emergency Operations Handbook Emergency Action Plan & Mark Rich's Office	Emergency Action Plan CH IX Rev 11-14	Mark Rich
Hazardous Communications Plan (HAZCOM)	Mark Rich's Office	NA	Mark Rich
Integrated Solid Waste Alternatives Program (ISWAP)	Park Drive: (<i>MACA ISWAP</i>) & Mark Rich's Office	NA	Mark Rich
Spill Prevention Control and Countermeasures (SPCC) Plan	Park Drive & Mark Rich's Office	NA	Mark Rich

Communication

To ensure that all appropriate parties that require information to manage environmental activities at Mammoth Cave National Park receive that information in a timely manner; to publicize the successes of the park's environmental management system, and to involve all interested parties in environmental management at the park.

Internal communication ensures that all staff and appropriate partners operating in the park are kept up to date on environmental matters, and are provided with the necessary information to perform their duties. Internal communication methods provide a venue for personnel to provide input on environmental performance.

External communication ensures the appropriate sharing of information with all parties interested in the operation of Mammoth Cave National Park. External communication is maintained through formal National Park Service public announcements, the general Service website www.nps.gov and the park website, press releases, briefings/presentations, public interfaces,

written correspondence, and other casual information sharing. All public announcements conform to Service protocol and regional standards. External parties vary considerably; they can be park support groups or interested visitors requesting information on park greening practices and energy and water conservation.

EMS Communication Strategy

Audience	Communication Type / Mechanism	Content	Responsibility
Park Personnel	Informal personal contacts Weekly Squad Notes Written policies & procedures All-Employee memoranda and/or e-mail messages Training sessions and Tailgate meetings All-Employee meetings	Information about park programs, policies, and issues News of incidents & actions; briefs on park programs and policies Park policies and procedures Park policies and procedures General orientation, as well as job-specific requirements Program orientation, policies, procedures, & goals Training/policies/procedures/goals	Division Chief and Supervisors
Partners and community groups	Personal briefings/presentations See General Public section	Information about park programs, policies, and issues to develop constituency and support, coordinate actions with partners and resolve problems	Public Information Officer, and other staff as assigned
Regulatory Agencies	Informal: telephone calls, e-mail, site visits Formal: compliance inspections, written correspondence	Inquiry, Information sharing, problem resolution. Transmission of required reports and response to official inquiries or notices.	Responsible party, i.e. Safety Officer interacts with OSHA
General Public	Informal personal contacts Press releases Educational programs Interpretive exhibits Environmental fairs	Sharing information about park programs, policies, issues and accomplishments to develop constituency and support	All employees Public Information Officer Interpretation and Visitor Services

TRAINING

Regular training is essential in order to provide park employees the tools and necessary environmental information they need to effectively carry out their duties.

Division chiefs and supervisors should annually assess all positions under their control at Mammoth Cave National Park to determine the associated training requirements for these positions, and ensures that personnel are provided with the knowledge and skills to safely, competently, and legally fulfill their EMS and other environmental responsibilities.

Every effort is made to invite, or partner with, third parties within the park such as contractors and concessionaires where appropriate to leverage training resources, and to encourage collaboration and foster understanding by all parties with the park.

OPERATIONAL CONTROL AND MONITORING

To ensure the best opportunity to achieve the set goals, objectives, and targets and other environmental management responsibilities within Mammoth Cave National Park; to correct efforts where needed, and provide guidance and assistance to those involved in achieving positive outcomes in environmental management in the park.

This section describes the various assessments undertaken to ensure the performance of the environmental management activities, and those of other parties operating within the park, meet the standards set in the EMS Plan.

The Green Team conducts an annual Environmental Performance Review (EPR). The EPR will be led by the EMT leader and will determine whether the park has achieved the environmental goals, objectives, and targets described in Section 3 of this Manual. The results of the EPR will be listed in 8.5.2 of this section.

If no progress has been made towards the stated goals, objectives and target, the Green Team determines why, and implements new operating procedures that encourage appropriate personnel at Mammoth Cave National Park to achieve the stated environmental goals, objectives and targets.

The Green Team meets at least quarterly (usually more often) to review how well the park is doing in achieving the goals, objectives and targets, and other EMS requirements. These reviews are designed to allow for “mid-course” corrections to be effected if it is determined that suitable progress towards achieving the goals, objectives, and targets has not been made and their final achievement is unlikely.

A designated Buildings & Utilities (B&U) employee conducts monthly inspections of fuel tanks.

Green Team members may conduct site specific inspections and audits at any time.

The park Safety Committee, which generally meets monthly, conducts inspections of various park facilities on a quarterly basis.

All employees are encouraged to report environmental concerns to their supervisor through a documented reporting system. Reported concerns are forwarded to the Green Team for review and investigation, if needed.

Every four or five years the park receives a follow-up audit from the region using the NPS Environmental Audit protocol. The Green Team Chair coordinates the audit with appropriate regional personnel.

As necessary and required by permits or established by an SOP, additional day-to-day or regulatory driven monitoring and measurements are completed and documented by the responsible party. Records are maintained in accordance with established document and record control requirements.

The specific responsibilities for monitoring and reporting are dependent on the involvement of individuals in specific goals, objectives and targets. The overall responsibility for ensuring the monitoring and reporting activities described in Section 8.1 take place lies with the Green Team.

Monitoring and Measurement

This section contains the following:

The monitoring and measurement summary matrix (including overall EMS and specific goals, objectives and target responsibilities).

The annual Environmental Performance Review for the previous year's Environmental Management Plan.

Monitoring and Measurement Summary Matrix

Monitoring and Measurement

Review Event	Frequency	Responsibility	Results Due To
Individual site inspections or audits	Various	Green Team	Green Team and Superintendent
Annual Environmental Performance Review (EMS assessment)	Annually	Green Team	Superintendent
Fuel tank inspections	Monthly	B&U Foreman	Facilities Manager
Chemical Inventory	Annually	Safety Officer	HAZCOM Plan
Concession evaluation	Annually	Concessions Specialist	Superintendent
Energy audit	Every 3-5 years	Facilities Manager	Superintendent
Environmental Audit	Every 4-5 years	Regional Office	Superintendent
ISWAP	Annually	Green Team	Superintendent
SPCC Plan	Every 5 years	Safety Officer	Superintendent

Environmental Performance Review

Each year the Mammoth Cave National Park Green Team reviews the park's progress in achieving annual EMP goals. This performance review serves as a progress status report that in turn is used to develop goals for the following year. The following table shows the status of all objectives, included in the goals for 2015.

Environmental Goals, Objectives & Targets Action Plan 2015

Facility Activity: Goals and Tasks	Responsible Party	Results
<p>1. FINALIZE REQUIREMENTS TO DESIGNATE MAMMOTH CAVE NATIONAL PARK AS A CLIMATE FRIENDLY PARK.</p> <p><i>Goal Champion: Bob Carson & Johnny Merideth</i></p> <p><u>Objectives:</u></p> <p>a. Resolve Clip2 tool issue.</p>	Bob Carson	Not Achieved: Progress was made and should be completed in 2016.

<p>2. CONTINUE INTERNAL ENVIRONMENTAL AUDIT OF PARK FACILITIES</p> <p><i>Goal Champion</i> Mark Rich</p> <p><u>Objectives:</u></p> <ul style="list-style-type: none"> a. Continue to inspect park facilities using the same criteria used by auditors who conduct the environmental audit every 4-5 years. b. Address environmental finding in quarterly facilities report. c. Address findings from 2015 internal environmental audit. 	<p>Mark Rich Josh Johnson</p> <p>Mark Rich Josh Johnson</p> <p>Mark Rich Josh Johnson</p>	<p>Achieved-This is an ongoing goal that will be maintained from year to year.</p> <p>Achieved</p> <p>Achieved</p>
<p>3. CONTINUE IMPLEMENTATION OF PARK INTEGRATED SOLID WASTE ALTERNATIVES PROGRAM (ISWAP) & RECYCLING</p> <p><i>Goal Champion:</i> Mark Rich</p> <p><u>Objectives:</u></p> <ul style="list-style-type: none"> a. Continue educating park staff about the benefits of complying with the ISWAP. b. Provide periodic all employee messages to support sustainable activities. c. Continue to purchase Green and recycled products, for use by park staff, when possible. d. Continue collaborative efforts between NPS and Forever Resorts to utilize the park's plastics bailer, and cardboard compactor to facilitate a reduction in solid waste. e. Update and provide list of items that can be recycled for use by all employees. 	<p>Green Team</p> <p>Green Team</p> <p>David Vanarsdall</p> <p>Mark Rich Dove Brown Sarah Martin</p> <p>Green Team</p> <p>Green Team</p>	<p>Achieved</p> <p>Achieved</p> <p>Achieved: This is an ongoing goal that will be maintained from year to year</p> <p>Achieved: This is an ongoing goal that will be maintained from year to year</p> <p>Achieved</p> <p>Partially Achieved</p>

<ul style="list-style-type: none"> f. Continue to designate and train recycling champions for each building/operation. g. Revise draft ISWAP, make comments, and finalize. h. Seasonal Support of Recycling i. Expand recycling program to educate area students, teachers, and visitors. j. Identify recycling bins in need of repair/replacement 	<p>Mark Rich Green Team Facilities Management</p> <p>Mark Rich Cheryl Messenger Josh Johnson</p> <p>EE Staff</p> <p>Josh Johnson Mark Rich</p>	<p>Achieved</p> <p>Achieved</p> <p>Achieved: This will be an on-going goal</p> <p>Achieved: Bins were identified, next step is to repair or replace</p>
<p>4. OUTREACH AND EDUCATION</p>		
<p><i>Goal Champion</i> <i>Vickie Carson & Bob Carson</i></p>		
<p><u>Objectives:</u></p>		
<ul style="list-style-type: none"> a. Continue effort to sustain the Mammoth Cave Area Biosphere Reserve Program. b. Ensure Environmental Leadership initiatives receive publicity and visibility. c. Don't Mess With Mammoth Days. 	<p>Bruce Powell Bob Carson Rick Toomey</p> <p>Vickie Carson</p> <p>Rick Olson</p>	<p>Achieved</p> <p>Achieved</p> <p>Achieved</p>

<p>5. INCORPORATE CONCESSIONERS ACTIVITIES INTO PARK GOALS WHERE PRACTIAL</p> <p><i>Goal Champion Sarah Martin</i></p> <p><u>Objectives:</u></p> <ul style="list-style-type: none"> a. Continue to support parkwide recycling effort. b. Continue to actively participate as member of park's Green Team. c. Include Mammoth Cave Hotel's Environmental Leadership successes in marketing activities. 	<p>Dove Brown Sarah Martin</p>	<p>Achieved</p> <p>Achieved</p> <p>Partially Achieved</p>
<p>6. EMPHASIZE USE OF LOCALLY GROWN FOOD PRODUCTS</p> <p><u>Objectives:</u></p> <p><i>Goal Champion Mark Rich:</i></p> <ul style="list-style-type: none"> a. Maintain garden plots at seasonal apartments for use by residents. b. Work with Mammoth Cave Hotel to increase use of locally grown food products. c. Investigate ways to expand composting program. 	<p>Green Team</p> <p>Mark Rich Josh Johnson</p> <p>Mark Rich Josh Johnson</p>	<p>Achieved</p> <p>Partially Achieved</p> <p>Achieved: This is an ever evolving goal that the park plans to work with the concessioner to expand going forward.</p>