



Jewel Cave National Monument

Modified Environmental Management System (MEMS) /

Climate Friendly Parks (CFP) Plan

FY 2013



Lawrence E. Johnson

Lawrence Johnson, Superintendent

1/15/13

Date

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1. INTRODUCTION

This MEMS / CFP Plan was developed by Jewel Cave National Monument's Environmental Management Team (or "Green Team"). The Green Team is an interdivisional employee organization, whose role is to guide sustainability projects, encourage green practices, and educate the staff and public. The Green Team sets annual sustainability goals, ensures that they are achieved, and reports progress to management. In this MEMS/CFP Plan, additional long-term sustainability goals will be identified, with targets for emissions reductions and plans for environmental education programs.

By using this system, JECA will be in compliance with local, state and Federal environmental regulations and requirements, Federal Executive Orders 13423 and 13514, and will meet Department of the Interior (DOI) and National Park Service (NPS) directives, plans, and strategies such as the Green Park Plan, the NPS and MWR Climate Change Response Strategy, and the NPS Midwest Region Green Environmental Management System (GEMS). The MEMS will also fulfill the requirements of the Climate Friendly Parks Program.

JECA's goals will contribute to the government-wide goals established by executive order:

Executive Order 13423

Reduce petroleum consumption in fleet by 2% annually through 2015 using a FY 2003 baseline

Increase alternative fuel consumption by 10% annually

Reduce energy intensity in buildings by 30% by 2015 using a FY 2003 baseline

At least 50% of required renewable energy comes from new renewable sources

Reduce water consumption 16% by FY 2015 using a FY 2007 baseline

Guiding Principles - sustainable buildings

Expand green procurement & electronic management

Reduce the use of chemicals and toxic materials - find alternatives

Executive Order 13514

Greenhouse Gas (GHG) Emissions: Develop and implement a FY 2020 percentage reduction target for GHG emissions relative to a FY 2008 baseline.

Fleet consumption of petroleum: Reduce use by 2% annually through FY 2020 relative to a FY 2005 baseline, 30% total (exempts those with <20 vehicles).

Water Use, Potable: Reduce use by 2% annually through FY 2020 or by 26% relative to a FY 2007 baseline.

Water Use, Non-Potable: Reduce use by 2% annually through FY 2020 or by 20% relative to a FY 2010 baseline.

Solid Waste: Divert 50% of the waste stream from landfills through FY 2015 relative to the FY 2005 baseline.

2. ENVIRONMENTAL SUSTAINABILITY COMMITMENT STATEMENT

Jewel Cave National Monument is already internationally recognized as a site of scientific importance and the extents of human discovery. Our vision is to additionally set an example of sustainability, and be recognized as a leader in resource conservation, by reducing emissions and waste, seeking alternative energy sources, and educating employees and the public.

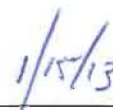
We are committed to managing operations in an efficient manner, and complying with the letter, spirit, and intent of all applicable statutes, regulations, and policies related to sustainability. We plan to accomplish our goals in a cooperative effort with all employees and partners, and work to:

- Exceed the federal, state, and local environmental laws, regulations, Executive Orders, and Department of Interior environmental policies.
- Integrate and implement environmentally sensitive Best Management Practices, including pollution prevention, into all monument operations.
- Select an environmentally low-impact alternative in planning, purchasing, and contracting.
- Educate and train employees, partners, and the public about the principles of “green” or sustainable practices.

Signed,



Lawrence Johnson,
Superintendent,
Jewel Cave National Monument



Date

3. GREEN TEAM AND STAFF ROLES & RESPONSIBILITIES

The Green Team is appointed by the park superintendent, and is representative of multiple park divisions. Members serve on the Green Team as a voluntary collateral duty, and supervisors should allow their employees a reasonable amount of time to work on Green Team projects and to attend meetings. While all JECA employees are not expected to be on the Green Team, they should be involved with Green Team activities by contributing ideas and assisting with the implementation of specific goals. The team will be most successful when it operates with input from all park staff, rather than in a vacuum.

Roles and Responsibilities:

Green Team –

The role of the Green Team is to develop the annual MEMS Plan, set achievable goals based on input from park staff, communicate with Division Chiefs and others to ensure that goals are met, research innovative ideas, and report progress to management.

Division Chiefs –

Within the MEMS, division-specific tasks may be assigned to Division Chiefs. Division Chiefs will manage tasks by assigning staff members to projects, and overseeing completion. Division Chiefs will keep records of completed tasks and report to the Green Team on finalized projects to ensure that goals have been met.

Superintendent –

The superintendent will advise and provide support and direction to the Green Team, by keeping the team informed on regional and servicewide goals and directives, and when feasible, soliciting or allocating funds to support Green Team activities. The superintendent will review and approve goals and plans in a timely manner.

Meetings:

Meetings will generally be held quarterly, depending on current needs and projects. Before each meeting, the Green Team committee chair will inform all employees of the goals of the meeting and solicit ideas from park staff. Meeting notes will be distributed to the staff in a timely manner after each meeting. Division Chiefs may attend Green Team meetings to report on the progress of division-specific tasks, or may submit a brief progress report to the Green Team before the meeting.

Green Team Composition and Turnover:

If a member of the Green Team steps down, they should work with their Division Chief to nominate a replacement representative from that division. New Green Team members will be approved by the superintendent. Although it will not always be feasible, the ideal number of Green Team members will be five (one from each division). Seasonal employees may serve on the Green Team, and a division may have two seasonal representatives (summer and winter) to ensure year-round involvement. Tasks should be divided among members, so that not all of the workload falls on one person.

There are currently four members of the Green Team:

Jewel Cave National Monument - 2013 Green Team Members	
Division	Name
Resource Management	Rene Ohms (Chair)
Administration	Beckie Carder
Interpretation	Tyler Devine (winter season)
Maintenance	Dave Tashner

All park staff have specific roles and responsibilities, which need to be fulfilled to ensure the success of Green Team goals and activities:

Staff Roles and Responsibilities	
Role	Responsibility
Superintendent Lawrence Johnson <i>Management Team</i>	Overall responsibility for park operations, programs, policy, projects and partnerships. Advises and provides support and direction to the Green Team. Solicits or allocates funds to support Green Team activities. Reviews and approves plans and goals.
Facility Manager John Black <i>Management Team</i>	Manages all facilities and maintenance and facility related programs, including hazardous materials and waste, fleet vehicles, and energy / fuel systems. Manages the maintenance budget, work requests, and a variety of facilities projects.
Chief of Resource Management Mike Wiles <i>Management Team</i>	Manages natural and cultural resources, and coordinates NEPA and section 106 compliance. Implements monitoring plans to determine baseline resource condition, develops projects to maintain or restore condition in accordance with monument and servicewide goals, and supports scientific research.
Chief of Interpretation Bradley Block <i>Management Team</i>	Works to communicate the mission of the NPS and the significance of Jewel Cave National Monument to the public. Educates the public and partners on Green Team projects, through printed materials and interpretive programs and contacts.
Chief Ranger David Yim <i>Management Team</i>	Manages law enforcement and emergency response. Upholds state and national law. Works with neighboring law enforcement and rescue agencies to provide and receive support. Oversees HAZCOM program and training.
Administrative Officer Katie Keil <i>Management Team</i>	Manages administrative functions, including budget, personnel, purchasing, and housing. Ensures compliance with green purchasing policies.
Green Team Chair Rene Ohms <i>Physical Science Tech</i>	Organizes Green Team meetings. Solicits input on Green Team projects from all staff. Records and distributes meeting notes. Responsible for overall review and editing of MEMS / CFP Plan and related documents. Oversees all Green Team activities, and delegates tasks to team members and other staff. Ensures compliance with MWRO and WASO requirements and replies due.

Staff Roles and Responsibilities

Role	Responsibility
Green Team Member Beckie Carder <i>Administrative Assistant</i>	Serves as member of the Green Team. Develops new and innovative ideas. Reviews plans and other documents. Contacts companies to remove employees from mailing lists. Advises team on green products.
Green Team Member Dave Tashner <i>Maintenance Worker</i>	Serves as member of the Green Team. Advises team on feasibility and cost of proposed Green Team projects. Develops new and innovative ideas. Reviews plans and other documents. Writes proposals for facility-related projects.
Green Team Member Tyler Devine <i>Interpretive Guide</i>	Serves as member of the Green Team. Develops new and innovative ideas. Reviews plans and other documents. Educates the public and staff on Green Team projects, and edits Green Team e-newsletter.
All Staff	Discusses green strategies with supervisor, and provides input to Green Team. Works to implement Green Team tasks.

4. HISTORY OF MEMS AT JEWEL CAVE

The Environmental Management Team was formed at Jewel Cave National Monument in 2010. Since that time, the team has completed annual MEMS Plans for fiscal years 2010, 2011, and 2012, and the monument has achieved several sustainability goals:

2010:

- Evaluated energy-saving LED lighting at two test sites in the cave.
- Installed double pane windows in two park buildings.
- Replaced two gas powered maintenance utility vehicles with electric carts.

2011:

- Submitted an application to participate in the Climate Friendly Parks Program.
- Began recycling more items, and purchased new recycling bins for office areas.
- Removed unnecessary water heaters and replaced one water heater with an on-demand system.
- Replaced fluorescent bulbs in the cave elevators with T8 LEDs.
- Contacted dozens of companies to remove employees from catalog mailing lists.

2012:

- Completed baseline greenhouse gas inventories for 2008-2011.
- Hosted a Climate Friendly Parks workshop in Rapid City.
- Developed and presented Green Team training for new employee orientation in May 2012.
- Created a JECA Green Team e-Newsletter, and distributed the first issue to all employees.
- Submitted a PMIS funding proposal to renovate two park buildings with grid-tie solar systems.
- Sponsored an all-employee home energy usage contest, and awarded prizes to the resident(s) with the lowest per-capita energy consumption.

5. KEY EMISSIONS METRICS AND 2008 BASELINE

Jewel Cave National Monument has completed baseline inventories for 2008-2011, using the Climate Leadership in Parks (CLIP) tool. This has been instrumental in giving JECA a broader and more long-term perspective, and has allowed the monument to set targets for reducing its environmental impact in discrete and quantifiable ways.

2008 will be used as the baseline year for comparison as JECA develops its long-term goals.

2008 EMISSION RESULTS BY SECTOR AND PARK UNIT

In metric tons carbon dioxide equivalent (MTCO₂E)

Park Unit	<i>Stationary Combustion</i>	<i>Purchased Electricity</i>	<i>Mobile Combustion</i>	<i>Waste</i>	<i>Wastewater Treatment</i>	<i>Refrigeration</i>	<i>Park Employee Commuting</i>	Total Emissions
<i>Park Operations</i>	70	270	27	28	0	1	9	405
<i>Visitors</i>	0	NA	12	NA	NA	0	NA	12
Total Emissions	70	270	39	28	0	1	9	417

Propane Usage (Contributes to stationary combustion emissions): 11,650 gallons

Purchased Electricity: 365,213.3 kWh

Vehicle Usage (Mobile combustion emissions):

Park Operations: 9,309 miles (cars), 12,190 miles (trucks), and 2,408 miles (heavy duty vehicles)

Visitors: 18,395 miles (cars), 6,307 miles (trucks), -263 miles (heavy duty vehicles), and 788 miles (motorcycles)

Waste:

Total waste: 37 short tons

Landfilled waste: 31 short tons

Recycled: 6 short tons

Refrigeration: 13 refrigerated appliances

Employee Commuting:

Miles traveled driving alone: 70,843

Miles traveled carpooling: 12,736

Miles traveled biking/walking/running/other non-emissive: 2,203

6. ACTIVITIES, IMPACTS, AND RANKINGS TABLE

Activity	Environmental Impact	Ranking (Low to High impact on the environment)
Energy consumption, through lighting, heating, cooling, elevators, and office equipment.	Energy use, greenhouse gas emissions, air pollution, and natural resource use. Generating energy consumes non-renewable resources, creates air and water pollution. Energy-related infrastructure is expensive and unsightly.	High
Vehicle use.	Greenhouse gas emissions, air pollution, potential for oil and fuel spills. Hydrocarbons can leach into cave system.	High
Solid waste generation, storage, and transportation.	Waste generated by employees and visitors. Collection, transportation, and disposal are expensive. Some recyclable items not recycled. Waste goes to landfill.	High
Procurement: Purchase of paper, office products, chemicals, equipment, and materials.	Possible tremendous impact on resources depending on the product, packaging, and usage. Much of what is purchased later becomes solid waste.	Med
Water usage.	Natural resource use and wastewater generation.	Med
Building maintenance.	Natural resource use, waste generation, chemical use, and energy use.	Med
Site maintenance: Use of salt and sand on roadways.	Salt deposits impact water quality and karst system from runoff. Salt not used by JECA, but SD-DOT uses chemicals on highway.	Med
Site maintenance: Turf management (mowing, watering) and pesticide use.	Use of water resources, noise and air pollution from equipment, application of pesticides.	Med
Custodial services : Use of chemicals, cleaners, solvents, and generation of solid waste.	Solid and hazardous waste generation, water use, chemical use, and natural resource use.	Med
Employee travel	Natural resource use related to fuel, air pollution/emissions, and solid waste generated while on travel.	Med

Activity	Environmental Impact	Ranking (Low to High impact on the environment)
Vehicle fueling and maintenance	<ul style="list-style-type: none"> • Transportation of fuel into and throughout the park poses potential for fuel spills. • Automotive wastes related to maintenance, natural resources use, and solid waste generation. 	Med
Contracts and agreements should include environmentally friendly language addressing materials used or recycling as appropriate.	Wastes going to landfill; use of less desirable materials; non-adherence to EO 13423.	Med
Park agreements with partners, concessionaires, vendors, non-profits, and others that provide services.	The park has input into partner agreements. These influences should ensure environmental issues are addressed for positive results.	Low
Office equipment use and maintenance	Energy use, air pollution, hazardous waste generation and natural resource use to manufacture equipment	Low

7. GOALS AND IMPLEMENTATION

Jewel Cave National Monument has developed long term sustainability and education goals, and will implement specific actions to achieve them by the close of FY 2016.

Climate Friendly Park Goals (Long Term) - Jewel Cave National Monument					
Goal	Result Expected	Implementation	Goal Leader(s)	Applicable Policies and Directives	Target Completion Date
By end of FY 2016, achieve a 3% greenhouse gas emissions reduction, as compared to 2008 GHG baseline levels.	Annual greenhouse gas emissions are reduced by 12.5 metric tons of CO2 equivalent by end of FY 2016.	Reduce energy consumption and GHG emissions. Pursue installation of LED lights in cave, and research feasibility of regenerative drive elevators. Wherever feasible, address 2012 visitor center energy audit findings to reduce energy usage. Encourage employee carpooling and alternative work schedules to reduce commuter effects.	John Black / Dave Tashner	Green Parks Plan, NPS and MWR NPS and MWR Climate Change Response Strategy, A Call to Action, EO 13423, Energy Policy Act of 2005, Energy Independence and Security Act of 2007.	9/30/2016
By end of FY 2016, achieve a 5% reduction in landfilled waste generation, as compared to 2008 baseline levels.	Annual solid waste production (to landfill) is reduced by 1.5 short tons by end of FY 2016.	Increase recycling availability and awareness, for both staff and public. Decrease waste by encouraging reuse of materials. Remove employees from mailing lists to reduce accumulation of unwanted catalogs and other mailings.	John Black / Dave Tashner	Green Parks Plan, NPS and MWR Climate Change Response Strategy, A Call to Action, EO 13514.	9/30/2016

Increase public awareness of sustainability, climate change, and JECA's greening efforts.	Public are made aware of sustainability and climate change issues, how these affect JECA, and actions they can take to make a difference.	Ensure that at least one article related to sustainability or climate change is included in each issue of the park newspaper. Create a sustainability page on the JECA web site, and update it with information on current Green Team activities. Work with the park's already-adopted local Custer School Class of 2016, to provide educational programming on climate change and the park's response strategies.	Bradley Block (public awareness & education) / Tina Frankenberry (web site)	Green Parks Plan, NPS and MWR Climate Change Response Strategy, A Call to Action	September 30, annually
Ensure that all employees receive EMS and Environmental Purchasing (EP) training, and provide purchasers with lists of environmentally friendly alternatives.	All employees receive annual training on EMS and EP. Hazardous waste is reduced through environmental purchasing.	Include session on sustainability, climate change, and Green Team activities in annual new-employee training. Develop annual EMS and EP training, and ensure it is completed by all employees. Distribute green products lists to division chiefs and purchasers.	Green Team	Green Parks Plan, NPS and MWR NPS and MWR Climate Change Response Strategy, A Call to Action, EO 13423.	November 30, annually

Additionally, Jewel Cave National Monument has developed discrete goals to achieve over the course of this year. Many of these goals are tiered off of the longer-term goals listed above, and will contribute to their implementation.

FY2013 MEMS Goals - Jewel Cave National Monument					
Goal	Result Expected	Implementation	Goal Leader(s)	Applicable Policies and Directives	Target Completion Date
Add double doors to main visitor center entrance.	Decrease heating and cooling costs (and GHG emissions) by allowing less air to escape.	Move main visitor entrance to front of building, as part of visitor center remodel scheduled for 2013. Incorporate double doors in entryway.	John Black / Dave Tashner	Green Parks Plan, NPS and MWR Climate Change Response Strategy, A Call to Action, EO13514, EO 13423, Energy Policy Act of 2005, Energy Independence and Security Act of 2007.	5/1/2013
Acquire new recycling bins for public use areas.	Increase recycling and waste diversion, by making recycling more accessible to public. Pursue crushing cans to allow for more cans per load (decreased emissions / transportation costs).	Acquire four new recycling bins, through parking lot replacement contract.	John Black / Dave Tashner	Green Parks Plan, NPS and MWR Climate Change Response Strategy, A Call to Action, EO 13514.	9/30/2013
Implement recycling at JECA apartments in Custer.	Increase recycling and waste diversion, by making recycling more accessible to employees living in park housing.	Work with Sander Sanitation and/or U.S. Forest Service to implement recycling; or, acquire a JECA recycling trailer for apartment building.	Green Team / John Black	Green Parks Plan, NPS and MWR Climate Change Response Strategy, A Call to Action, EO 13514.	9/30/2013

Install bottle-filling station at visitor center.	Reduce use of bottled water and disposal of plastic bottles.	Install bottle-filling station / water fountain in visitor center, as part of visitor center remodel scheduled for 2013.	John Black / Green Team	Green Parks Plan, NPS and MWR Climate Change Response Strategy, A Call to Action, EO13514, EO 13423, Energy Policy Act of 2005, Energy Independence and Security Act of 2007.	1/10/2013
Research and write PMIS proposal to convert cave tour lights to LED.	Seek funding for LED light replacement project, for FY15.	Create PMIS proposal to replace cave tour lights with energy-efficient LEDs. Proposal is expected to be submitted in FY13, and depending on funding, project could be implemented in FY15.	Mike Wiles / John Black	Green Parks Plan, NPS and MWR Climate Change Response Strategy, A Call to Action, EO13514, EO 13423, Energy Policy Act of 2005, Energy Independence and Security Act of 2007.	9/30/2013
Research regenerative drive elevators and determine feasibility of installation at JECA. If project is feasible, write PMIS proposal to convert cave elevators to regenerative drive.	Seek funding for regenerative drive elevator system.	Research regenerative drive systems, obtain cost estimate, and if project is feasible, create PMIS proposal to convert cave elevators to regenerative drive system. Proposal is expected to be submitted in FY14, and depending on funding, project could be implemented in FY16.	John Black / Dave Tashner	Green Parks Plan, NPS and MWR NPS and MWR Climate Change Response Strategy, A Call to Action, EO13514, EO 13423, Energy Policy Act of 2005, Energy Independence and Security Act of 2007.	9/30/2013
Complete Milestone 4 of Climate Friendly Parks Program and become a Climate Friendly Park.	Recognition as a Climate Friendly Park.	Complete MEMS / CFP Plan.	Green Team	Green Parks Plan, NPS and MWR Climate Change Response Strategy, A Call to Action, Climate Friendly Parks Program.	1/31/2013

8. MEMS DOCUMENTS, RECORDS, AND REPORTS

MEMS	Requirement or Regulation	Responsible Person	Location	Review Frequency or Due Date	Distribution
Environmental Commitment Statement	DO 13A, EO 13423, MWR GEMS	Regional Director / Superintendent	EMS / CFP Plan on JECA Server X:\EMSS	Annual	All Staff
Goals and Implementation	DO 13A, EO 13423 MWR GEMS	Green Team	EMS / CFP Plan on JECA Server X:\EMSS	Annual	All Staff
Roles, Responsibilities, and Green Team Members	DO 13A, EO 13423 MWR GEMS	Green Team	EMS / CFP Plan on JECA Server X:\EMSS	Annual	All Staff
Training Table	DO 13A, EO 13423 MWR GEMS	Green Team	EMS / CFP Plan on JECA Server X:\EMSS	Annual	All Staff
Documents, Meeting Notes, and Reports	DO 13A, EO 13423 MWR GEMS	Green Team	JECA Server X:\EMSS	Quarterly	Green Team / All Staff
Environmental Permits & Registrations	Requirement or Regulation	Responsible Person	Location	Review Frequency or Due Date	Distribution
NPDES Storm Water Permit	Clean Water Act	Facility Manager	Facility Manager Office	Annual	Maintenance Division
Aboveground Storage Tank (AST) Registration	State Agency	Facility Manager	Facility Manager Office	Annual	Maintenance Division
Notices of Violation	State Agency	Superintendent	AO Office	On Occurrence	Superintendent / Designated Staff
Drinking Water Permit	State Agency	Facility Manager	Facility Manager Office	Annual	Maintenance Division

Environmental Records & Reports	Requirement or Regulation	Responsible Person	Location	Review Frequency or Due Date	Distribution
Hazardous Waste Generation and Accumulation Records	40 CFR 261	Facility Manager	Facility Manager Office	Log hazardous waste when it becomes a waste (not when it is disposed of). Accumulate in a designated storage area on site no more than 1 year.	Maintenance Division
Hazardous Waste Disposal Manifests OR Inventory Lists and Receipts from Drop-offs at Community Hazardous Waste Collection Center	40 CFR 261	Facility Manager	JECA Server / Facility Manager Office	Enter total monthly (even if total is 0)	Maintenance Division
Recycling Spreadsheet	To help complete Sustainability Report	Facility Manager	JECA Server	Pounds of recycled materials logged when recycling is dropped off.	Maintenance Division, Green Team
Sustainability Report	EO 13423, RCRA, Federal Regulation 40 CFR 260	Facility Manager	JECA Server / Facility Manager Office	DUE February (each year)	MWRO (Jim Conroy)
MEMS Reporting Survey	DO 13A, EO 13423, MWR GEMS	Green Team	MWRO	November 15, annually	MWRO (Jim Conroy)

9. ENVIRONMENTAL TRAINING TABLE

Training	Format	Provided By	Frequency	Staff
MEMS	Employee orientation session; PowerPoint with certificate	Green Team	Annually	All
Environmental Purchasing	PowerPoint with certificate	Green Team	Annually	All (included in MEMS training), + additional PPT for purchasers
Hazard Communication (HazCom)	Meeting / tailgate / other	Chief Ranger	Annual	As applicable
HAZWOPER	Certified instructor - Classroom	MWR	24-hour initial / 8 hour refresher annually	As applicable (LE, maintenance)
SPCC or Spill Plan	Meeting / tailgate / other	Supervisor	Annual	As applicable for chemical use (maintenance, resource mgmt)
Pesticide application	State certification	South Dakota	Bi-annually	Vegetation crew / RM
Hazardous Waste Training	Meeting / tailgate	Hazardous Waste Coordinator	Once - Annual Refresher recommended	As applicable, for handling hazardous waste
Universal Waste Training	Meeting / tailgate	Hazardous Waste Coordinator	Once - Annual Refresher recommended	As applicable, for handling universal waste
Solid Waste & Recycling Training	Meeting / tailgate	Facility Manager / Green Team	As needed	All
Cave and Karst Stewardship	Employee orientation session / tailgate	Resource Management Staff	Annual	All new staff