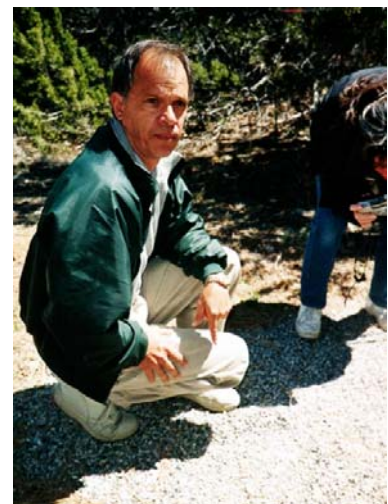


NPS Greening Charrette -- Bandelier National Monument Executive Summary & Final Report

This report is a summary of the *NPS Bandelier Greening Charrette* Conducted in Santa Fe, New Mexico on April 8-10, 2003

**Funding and coordination provided by:
U.S Environmental Protection Agency
National Park Service
Bandelier National Monument**

Final Report prepared by:
Joel A. Todd and Gail A. Lindsey, FAIA



**Bandelier National Monument
Greening Charrette
April 8-10, 2003
Santa Fe, New Mexico
Executive Summary**

Bandelier National Monument is located northwest of Santa Fe, New Mexico. It contains cliff dwellings and other structures built by Puebloan ancestors as well as more recent buildings constructed by the Civilian Conservation Corps in the 1930s. In addition, there are almost 33,000 acres of wilderness, served by only three miles of public road and 70 miles of trails.



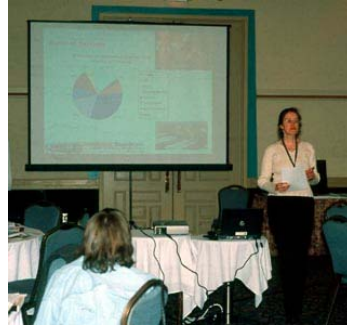
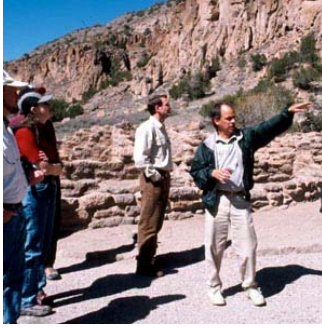
The park has already taken steps to “green” its operations, but important issues remain. These include crowded parking lots and lines of cars waiting to enter the park, maintenance and updating of the historic CCC buildings including the Visitor Center, renovation of the snack bar and renegotiation of the concessions contract, and construction of a new maintenance facility at the current “boneyard.”



This workshop and charrette was the third in a series co-sponsored by the National Park Service and the U.S. Environmental Protection Agency. Participants included the Bandelier Superintendent and staff as well as personnel from other national parks, state parks, and experts from around the country.



The day before the event, there was a tour of the park, designed to introduce participants to issues at Bandelier. Shawn Norton, National Park Service Environmental Leadership Coordinator and Superintendent Steven Bone welcomed the group. Presentations followed on the importance and value of sustainability in the NPS, an overview of Bandelier, and an overview of key principles and opportunities in the topics to be addressed in the charrette: planning and environmental leadership, transportation, facilities design and construction, operations and maintenance, concessions, interpretation and education, and procurement. Participants formed small work groups to address topics most relevant to Bandelier. Each group developed a vision, established a “baseline” of current conditions and key issues, and suggested short-term, mid-term, and long-term goals and strategies, as well as



“champions” to carry these goals forward. Superintendent Steve Bone agreed that these actions were high priority. These priorities are listed in the table below.

Priority Actions	
Actions	Champions
<i>Environmental Leadership/Planning:</i> Create a team to follow-up on Green Zia planning process, in partnership with Los Alamos National Lab	Ray Kremer Denny Hjeresen
<i>Transportation:</i> Establish keyhole visitor experience, with access to canyon provided by Frey Trail and shuttle back to mesa top	Glenn Ryan
<i>Facilities:</i> Conduct a Greening Charrette for the Visitor Center in September	Vito Spinale
<i>Operations and Maintenance:</i> Reduce energy use in housing and other facilities	Lauryl Mack John Mack
<i>Procurement:</i> Conduct green procurement training for park staff	Barbara Romero Ray Kremer
<i>Concessions:</i> Evaluate concessions operations to identify and recommend green strategies	Barbara Romero Ray Kremer
<i>Interpretation and Education:</i> Transform Earth Day Week into kick-off for sustainability activities	Lynne Dominy
<i>Interpretation and Education:</i> Interpret all priority sustainability actions	Lynne Dominy

The final report presents a more detailed description of the workshop and charrette as well as the results of the discussions.

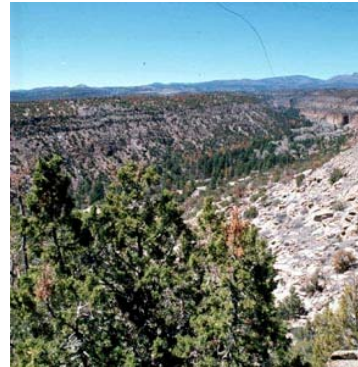
Before concluding, the group developed a list of suggestions for greening the Hilton Hotel in which the event was held. The suggestions will be presented to the hotel management.



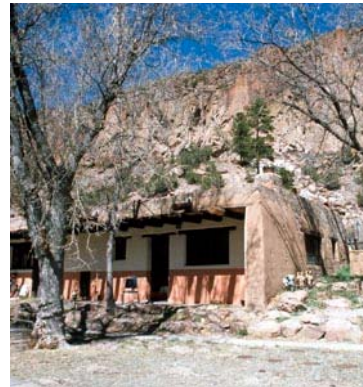
**Bandelier National Monument
Greening Charrette
April 8-10, 2003
Santa Fe, New Mexico
Final Report**

Background

Bandelier National Monument is located northwest of Santa Fe, New Mexico. It contains cliff dwellings and other structures built by Puebloan ancestors as well as more recent buildings constructed by the Civilian Conservation Corps in the 1930s. In addition, there are almost 33,000 acres of wilderness, served by only three miles of public road and 70 miles of trails.

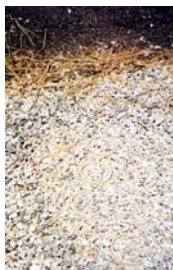


The park has already taken steps to “green” its operations, but important issues remain. Increased visitation has created crowded parking lots and lines of cars waiting to enter the park at peak times. Management of traffic has become a major issue for the park. Maintenance and updating of the historic CCC buildings also is an issue; the Visitor Center will be renovated and the park is planning to incorporate sustainable features, including landscaping with native plants. There is also consideration of moving administrative functions out of the historic buildings in Frijoles Canyon. Other planned activities that could incorporate sustainable elements include renovation of the snack bar, a new concessions contract, and construction of a new maintenance facility at the current “boneyard.”



This workshop and charrette was the third in a series co-sponsored by the National Park Service and the U.S. Environmental Protection Agency. Participants included the Bandelier Superintendent and staff as well as personnel from other national parks, state parks, and experts from around the country.

Charrette Overview



The event began with a tour of the park, designed to introduce participants to issues at Bandelier. The tour began at the entrance station, with its new employee rest room that uses a composting toilet; the path to the rest room uses a permeable stone surface hardened with recycled plastic “cups” in a matrix. At the Visitor Center, participants saw the areas currently planted in turf grass that will be landscaped in native plants as well as the areas of the facility that will be redesigned and renovated. The group then toured the CCC buildings where issues

include peeling mud plaster that is leaving exposed mortar joints and walls that preclude new wiring to support office equipment needs. The group walked to the Tyuoni structures, saw recycled plastic benches now used in the park along with older wooden benches, and considered possible alternatives to asphalt for the heavily-used trail. The tour ended at the boneyard, where a new maintenance facility will be constructed. As the park staff clean out the boneyard, they are making an effort to donate and recycle as much material as possible.



The workshop began with welcomes from Shawn Norton, National Park Service Environmental Leadership Coordinator, and Superintendent Steven Bone. In addition to greening opportunities presented by the Visitor Center renovation, the Superintendent also stressed the strong links between sustainability and maintenance of cultural resources as well as partnerships between Bandelier and the Los Alamos National Laboratory and the new Valles Caldera Preserve.



To set the stage, Julie Shannon, U.S. Environmental importance and value of sustainability to the NPS. Vito Spinale, Bandelier, discussed the major issues and opportunities facing the park, including traffic congestion, building renovation and new construction, recycling and waste management by visitors, and trail renovation. The workshop facilitator, Gail Lindsey, FAIA, introduced the sustainability topics that would be the focus of

the workshop: environmental leadership and planning, transportation, facilities, operations and maintenance, concessions, interpretation and education, and procurement. Following lunch, NPS experts described specific greening examples and strategies from the national park system – Patrick Shea, transportation; James Crockett, facilities; Kent Bullard, operations and maintenance; and Jacque Lavelle, concessions.

Participants then broke into small work groups to discuss these topics. The groups created a vision for their topic, discussed the current status and established a baseline, and proposed short-term goals that could be accomplished within one year. The groups returned the final day to continue work on these topics, develop mid-term and long-term goals, and to select their top priorities. The groups also assigned a “champion” for each priority action. At the conclusion of the charrette, the groups presented their



priorities and Superintendent Steve Bone identified those that should be implemented immediately and those that might require more planning.

Highlights of Discussion

Environmental Leadership and Planning



Team: Carl Newman, John Mack, Ben Hawkins, Denny Hjeresen, Jake Barrow, Shawn Norton

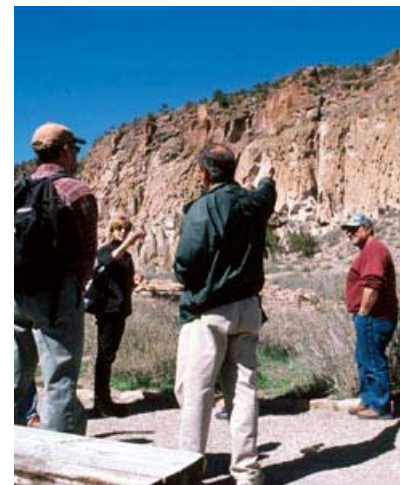
Vision: A unified strategic plan for Bandelier that addresses business, development, and sustainability in a continuous process of improvement.

Current Status/Baseline Conditions:

1. Documents exist but are outdated and need revision.
2. These documents do not address sustainability directly.
3. There is no EMS, no environmental audit.
4. Documents include:
 - Master Plan (1970)
 - Development Concept Plan (DCP) (1992)
 - GPRA Strategic Plan (1998)
 - Resource Management Plan (1995-1998)
 - Business Plan (2001) – the Business Plan drives park management, and the Resource Management Plan and GPRA Strategic Plan support the Business Plan.
5. Sustainability language in plans includes support for making the park more efficient in the Business Plan and ecosystem restoration in the Resource Management Plan.
6. One constraint is the designation of the facilities in Frijoles Canyon as a National Historic District (Landmark) which limits changes that can be made.
7. There is an MOU for xeriscaping.
8. A management team and process exist to address short- to long-term issues.

Short-Term Goals

1. Identify and establish multidisciplinary planning team (3-5 people) with catalysts to assist process
 - Develop planning process (goals, time frames, partners, etc.)
 - Develop marketing approach (get buy-in from critical players, such as Mike Snyder)
2. Conduct document review and gap analysis



- Which issues are missing/interwoven?
 - Explore sustainability overlay
 - Begin GMP process – develop interim GMP/Strategic Plan that will lead to a long-term plan (think about process, time frame, funding)
3. Collect better baseline data
 - Use Green Zia as a tool/process (this is a state program)
 - Conduct a market survey of visitors, transportation, etc.
 4. Establish a framework for communications
 - Internal, external (community), etc.
 - Visibility – partners, Green Zia, community outreach

Transportation



Team: Tessa Edelen, Glenn Ryan, Dave Hayes, Michael Terzich, Patrick Shea

Vision: Provide a visitor experience that increases alternative access opportunities by providing a smooth transition into the Ancestral Pueblo worldview.



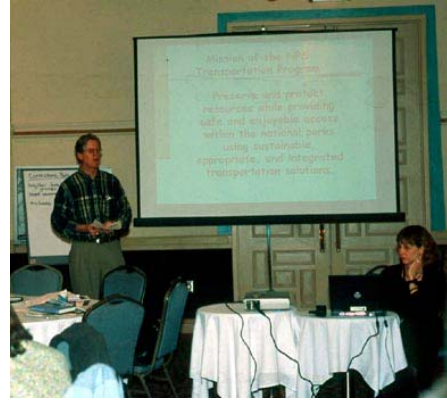
Current Status/Baseline Conditions

1. Congestion is a problem – more parking is needed and a shuttle should be considered. This affects the visitor experience as well as the employee experience and also creates a safety problem.
2. There are about three miles of road and 70 miles of trail.
3. Parking is needed for trail heads.
4. Alternative fuels are not used now.
5. Current partners include Los Alamos National Laboratory (LANL) (which has a larger fleet), the pueblos, US Forest Service, Caldera, State, county, and the public.
6. Transportation issues in the park affect air quality, wildlife, water quality and noise.

Short-Term Goals

1. Fuels
 - Change bar oil and hydraulic oil to soy-based product
 - a Barriers – none
 - b Strategies – need only management endorsement
 - c Champions – Glenn, Vito, Tessa
 - Use used oil for oil changes
 - a Barriers – none

- b Strategies – need only management endorsement
- c Champions – Glenn, Vito, Tessa
- Identify alternative fuel sources and develop biodiesel fuel station to be used by park and partners
 - a Barriers – partner buy-in, locate station, supply/ delivery source
 - b Strategies – tie-in with LANL
 - c Champions – Denny at LANL and Larry
 - d Funding – would be required in the beginning



2. Modes

- Obtain training on how/ why we desire alternative fuels
- Identify partners for fuels and coordinate discussion/ actions (LANL, Caldera, US Forest Service, State and county)
- Assess baseline of existing fleet – fuel use, vehicle type, emissions
- Identify shuttle options (gravel yard, Frey trail head, Los Alamos, and possible car free days or weekends)

3. Pathways

- Provide a keyhole experience to encourage people to get out of their cars to experience Bandelier – use the Frey Trail to hike down into the canyon and arrange a shuttle to take people back up to the top
 - a Barriers – will require maintenance on the Frey Trail and education for staff and visitors
 - b Opportunities – timing is good because there will be some road closures during construction – do some experiments
 - c Strategies – must consider incentives for walking down – is there a difference in entrance fee for walk-ins? What about alternative fuel vehicles?
- Disperse visitor access – provide options and other trails
- Open the Cerro Grande area for trails
- Put employee parking – seasonal and long term – in the gravel yard



Mid-Term Goals

1. Develop a Transportation Management Plan

- The key is how to manage demands on park resources – the number of visitors is not the problem, the number of cars is the problem. Ideas to consider include placing information in different places to intercept visitors before they arrive, developing an overflow agreement with LANL or another partner.

Facilities

Team: Vito Spinale, James Crockett, Kim, Larry, Greg MacGregor, Andre Perrera

Vision: All projects involving the built environment will adhere to green principles and practices which will minimize impacts to resources and visitors.



Current Status/Baseline Conditions:



1. Administration and facility management functions affect visitor experience and cultural resources – goal is to remove the functions from Frijoles Canyon to the mesa top.
2. Historic structures are used inappropriately – goal is to restore historic uses of structures.
3. The Support Office handles contracts above \$100,000 and those above \$500,000 must meet LEED criteria. Bandelier can procure its own A/E firms up to \$100,000 – goal is for Bandelier and the Support Office to select LEED accredited designers and 8a contractors who embrace LEED principles for contracts up to \$500,000 as well as those over \$500,000.

Short-Term Goals

1. Raise awareness among all park employees of Green Building
 - Barriers – time required for gathering all employees together
 - Opportunities – staff meetings
 - Strategies – show the Pennsylvania video and review the LEED checklist
 - Champion – Vito
 - Funding – costs are minimal
2. Use the Visitor Center renovation as a pilot project – conduct a Greening Charrette for this project in September 2003
 - Barriers – the cost of obtaining experts, gathering the right players, and organizing/coordinating the event
 - Opportunities/ strategies – this event is already planned
 - Champions – Lynne, Vito
3. In A/E selection, use LEED for all projects over \$500,000 as required by the NPS
 - Barriers – Support Office employees' lack of awareness of LEED
 - Opportunities – 3-5 projects planned
 - Strategy – hold a pre-design meeting to talk about LEED and the scorecard and to discuss NPS mandate
 - Champions – Vito and Larry

- Funding – will be required
4. Involve historic preservation staff early and raise their awareness – their buy-in is necessary.
 - Barriers – unaware champion, business as usual – change is hard
 - Opportunities – staff meeting
 - Strategies – take time during this meeting to address green concerns and issues of historic renovation considerations and continue ongoing exchanges
 - Champion – Rory
 - Funding – minimal



Mid-Term Goals

1. Send Larry (and others?) to NPS LEED Training
2. Evaluate and obtain feedback on actions

Operations and Maintenance



Team: Lauren Meyer, Eytan Krasilovsky, Shawn Baker, Mary Slater, Owen Red Shirt, Carrie Thompson, Richard Gibbs, Kent Bullard

Vision: Through sustainable practices, make the park a healthy environment for all users, including visitors, employees, external customers, etc.

Current Status/Baseline Conditions

1. Hazardous Materials: old paints, solvents, oil, and lubricants – goal is to follow through on Environmental Audit to manage and dispose of hazardous materials
 - Barriers – proper disposal methods and locations
 - Opportunities – partner with LANL
 - Strategies – Appoint HazMat Coordinator to create a program for purchasing sustainable products, developing Hazardous Communications training, conducting periodic audits, managing hazmat disposal
 - Champions – Larry, with Vito

2. Operations Efficiency: frequent trips between mesa and canyon during maintenance project work – goal is to reduce fossil fuel use through use of efficient methods and materials

- Barriers – old habits die hard!
- Opportunities – obtain surplus equipment from LANL, state, Federal government
- Strategies – use portable locked trailers to store tools and materials at work site, use alternative fuels and lubricants
- Champion – Larry



3. Sustainable Landscaping: non-native turf grasses at Visitor Center, cabin areas – goal is to reduce use of water and fuel for mowing by xeriscaping, mulching, and using ground covers

- Barriers – public perception of xeriscaping as “zeroscaping” (dry, brown, not pretty)
- Opportunities – partner with local horticultural, permaculture, native plant organizations to design and install sustainable plants
- Strategies – Develop and use a vegetation management plan to identify desirable plants, identify benefits of turf grass and try to obtain same benefits with sustainable landscaping, install interpretive signage
- Champion – Brian Jacobs

4. Energy Use in Park Facilities and Housing: energy waste through poorly functioning doors and windows, water utilities; computers left on when not in use – goal is to reduce energy use through repair of doors and windows, implementing “quick fixes” (such as low-flow toilets and shower heads, occupancy sensors and timers, programmable thermostats)

- Barriers – employee awareness and buy-in on energy saving habits, funding for alternative energy systems
- Opportunities – partner with PNM, state, and local alternative energy organizations
- Strategies – use energy saving products (e.g., compact fluorescent bulbs), identify energy waste by monitoring meters and plug loads, educate employees, investigate solar, start a Green Team
- Champion – Lauryl and John Mack



5. Recycling Program: current program is limited and staff and visitors do not always recycle properly – goal is to expand the recycling program and maximize local recycling.

- Barriers – awareness, education

- Opportunities – partner with local groups (e.g., Boy Scouts) to keep profits local (e.g., on aluminum), offer local products made from recycled materials for sale in gift shop
- Strategies – pulverize glass to sell or give locally for reuse or use in park, implement Recycling at Work Program
- Champion – John Mack

Short-Term Goals

1. Establish a “green team”
2. Initiate audit process
3. Initiate “quick fixes” for energy efficiency (low-flow toilets and shower heads, etc.)
4. Purchase sustainable cleaning products and lubricants



Mid-Term Goals

1. Develop a Greening Plan for employee housing in the park
2. Pursue funding for green programs in visitor facilities, park housing, and park operations (offices, etc.)
3. Investigate use of alternative fuels
4. Create and use partnerships

Long-Term Goals

1. Constantly evaluate Greening Plan, every day operations and practices

Concessions and Procurement



Team: Mary Alice Owensby, Ray Kremer, Barbara Romero, Karen Reese, Julie Shannon, Jacque Lavelle

Vision: Greening is part of every decision about requirements, including scope of work statements, sources of supply, merchandise, and daily operations, with consideration given to product life cycle and sustainable design

Current Status/Baseline Conditions: Procurement

1. Recycling containers are unclear about what is permitted
2. Purchasing is decentralized
3. There is a lack of education on green products or green purchasing
4. C.O. has responsibility to make sure purchases get best value
5. There is no green team at the park.

Current Status/Baseline Conditions: Concessions

1. Trash is collected by NPS – concessioners need to pay their way
2. Time is NOW – contract has expired
3. Existing concessioner had not been asked or required to use green practices
4. New contract will have new requirements for greening.



Short-Term Goals: Procurement

1. Purchase recycled content copy paper
 - Barriers – get best product value, cost, availability, timeliness, convenience, delivery
 - Opportunities – look for small business, women-owned, or minority source
 - Time frame – July purchase
 - Champion – Barbara
2. Conduct Greening Training session for all staff and hand out CD to Division Chiefs
 - Barriers – get attendance from target audience
 - Opportunities – all employee meetings
 - Time frame – April staff meeting
 - Champions – Ray and Barbara, Mary Alice
3. Update park Web site Internet and Intranet to educate users on green products and research posting CD on Intranet Web site
 - Barriers – Elaine’s schedule
 - Opportunities – provide access to all employees
 - Time frame – May
 - Champion – Elaine Jacobs
4. Develop baseline information on purchases and set priorities for sources for FY03
5. Change order for flower bed – drip irrigation (snack bar contract)

Short-Term Goals: Concessions

1. Research soy ink for prospectus package and print “recycled paper” on prospectus package
 - Barriers – cost, source, servicewide barrier – GPO roadblock,
 - Opportunities – walk the talk
 - Time frame – October 1
 - Champion – Karen
2. Invite concessioner to Green Training session
 - Barriers – concessioner’s schedule



- Opportunities – manager leaving store, prepare for new park direction and evaluation
 - Time frame – April
 - Champion – Ray
3. Conduct periodic evaluation of the concession to recommend greening practices and evaluate concessioner to get them thinking about greening
 - Barriers – receptiveness of and cost to concessioner, cost to Bandelier/IMR, education of concessioner
 - Time frame – June (IMR), July (Bandelier)
 - Champions – Ray, Karen



Mid-Term Goals: Procurement

1. Place green facts information on green products (e.g., “x” plastic bottles diverted from landfill by this bench)
2. Evaluate need for purchasing authority for each division (credit card holders) in FY04
3. Find other green products
4. Request IMRO to do Environmental Audit for park/purchasing

Mid-Term Goals: Concessions

1. Use periodic evaluation information/baseline in drafting prospectus to include green practices

Interpretation and Education

Team: Lynne Dominy, Sandra Massengill, Diane Liggett, Kim Sorvig, Joel Ann Todd

Vision: Visitors and NPS staff are inspired to examine their own lifestyles by comparing our present stewardship of natural and cultural resources with the Ancestral Puebloan way of life and CCC activities at Bandelier



Overall Goal:

Interpretation of sustainability to be integrated into all park planning and operations

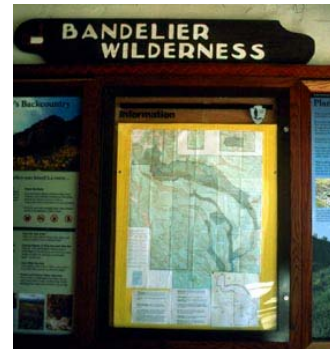
Current Status/Baseline Conditions

1. Comprehensive Interpretive Plan (CIP) is less than three years old and serves as a living document that guides daily planning and activities.
2. Consultations with Pueblos occur regularly and have resulted in minimal to no signage restrictions.

3. Staff includes chief interpreter, three permanent field interpreters and one fire specialist plus 22 volunteers to reach 350,000 visitors per year (staff includes skilled artists and sign makers).
4. Concept of sustainability is inherent in the three interpretive themes of the CIP (continuity with ancestral people, health of ecosystems and ecosystem restoration, CCC resources) but specific subthemes must be developed to relate to present and future generations.
5. Funding is available due to successful grant writing.
6. Current interpretation includes park newspaper, Visitor Center contacts, ranger-led programs, permanent and temporary Visitor Center exhibits, trailhead bulletin boards.
7. Internal communications are enhanced by an interpretive presence at all employee meetings.

Short-Term Goals

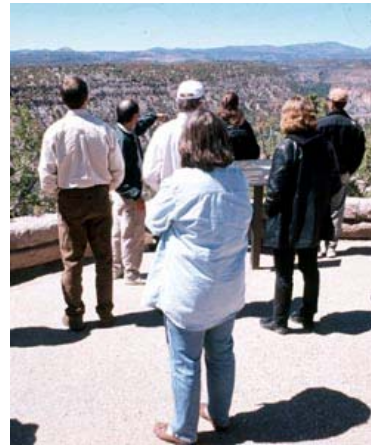
1. Develop interpretive elements for each priority action from the charrette – market successes
 - Barriers – time if not already planned, have to wait for actions to occur or be underway, funding will be required for signs, publications, training, etc.
 - Opportunities – share “champion” responsibilities with division champion, training in May for all employees (4 days), upcoming staff meetings (April 22 for managers “walkaround” and April 23 for all staff)
 - Strategies for identified priorities
 - a Operations and Maintenance – reduce energy use in housing and other facilities
 - 1) Develop a checklist or find an existing checklist for employees to use to reduce energy in homes through “quick fixes”
 - 2) Give checklist to visitors
 - b Facilities – conduct greening charrette for Visitor Center renovation
 - 1) Educate park staff about process and involve appropriate staff in charrette
 - 2) Share success stories about process and final products
 - c Procurement – conduct green procurement training
 - 1) Provide training for all staff with credit card or other purchasing authority
 - 2) Demonstrate success – by interpreters and newspaper stories
 - d Concessions – evaluate concessioners and recommend green strategies
 - 1) Tell story of green concessions strategies through signs, printed napkins and cups, table tents
 - e Environmental Leadership and Planning – establish planning team with outside catalyst



- 1) Add short sustainability messages to each monthly staff meeting to raise awareness
- 2) Help with outreach strategy and process
- 3) Market final plan
- f Transportation – develop transportation management plan and hub/shuttle system, starting with keyhole experience
 - 1) Market alternative transportation system plan to community, tourists, schools
 - 2) Market new entry system on Frey Trail to park visitors and employees to access work stations (at an employee meeting, have a group hike and shuttle back up to demonstrate system)
2. Transform “Earth Day Week” into “Sustainability Week” to kick off these activities – develop a brochure for visitors, include messages in employee meetings, initiate a logo competition

Conclusions

1. The park staff has agreed that the formation of a green team is needed to address the many opportunities that face Bandelier as it moves towards a “greener” future.
2. The use of partnering with Green Zia (state) and LANL/Sandia (federal) provides significant opportunities to accelerate the changes that Bandelier desires.
3. The major issues that need to be addressed for a greener Bandelier include: better transportation options, a new green Visitor Center, numerous sustainable education opportunities, and park planning that is comprehensive and focused on a sustainable future.



Superintendent Bone thanked the group and speakers for a very productive event. He restated his commitment to sustainability and to carrying through with actions suggested during the charrette. Vito Spinale thanked all the folks who helped create and implement the event as well as the diverse group of participants for their time and input. Shawn Norton also thanked the group for its enthusiastic participation and said that he looked forward to following up with the park to learn about its successes.



Special Thanks to Vito Spinale and Lauryl Mack for all their tremendous efforts and energy in making this event a success!