



United States Department of the Interior



NATIONAL PARK SERVICE

Zion National Park
Springdale, UT 84767

C38 (ZION)

Memorandum

To: Regional Director, Intermountain Region

From: Superintendent, Zion National Park

Subject: Analysis of the Elimination of Sales of Water in Individual Disposable Containers


On December 14, 2011, Director Jarvis issued policy on the recycling and reduction of disposable plastic water bottles in parks. The policy stated "Parks that have already successfully implemented programs to install refill stations and eliminate the sale of disposable plastic beverage containers may continue, but must address the above factors – in writing – to their regional director, including a system for annual evaluation." By copy of this memorandum, Zion National Park is submitting an analysis of the specified factors.

Even with the elimination of the sale of water in individual disposable containers, Zion National Park still sees a large amount of single-use plastic bottles in the waste stream. Over 60% of the plastic recycled in Zion by weight is plastic bottles, as well as 3% of landfilled waste. The elimination of bottled water sales is one step in the park's goal to reduce these amounts to zero, resulting in a 14,000 pound reduction in recyclables and an 11,000 pound reduction in landfilled waste. In addition, plastic bottles are a major component of litter found in the park. A reduction in this litter would have a positive effect on the park's ecosystem, while also reducing the personnel costs associated with trash pick-up and removal.

Significant environmental and monetary costs are associated with the transport of waste and recyclables, disposal of non-biodegradable plastics in landfills, removal of litter, and recycling of plastics. As a fiscally responsible, Climate Friendly Park, Zion is interested in minimizing all these costs. Zion has a strong recycling and pollution prevention program, of which the elimination of the sale of water in individual disposable containers is but one part.

Attached please find the required analysis of the impacts and effects of the elimination of the sale of water in individual disposable containers in Zion National Park, per the Director's policy memorandum.

Attachments

Concur: 

Date: 4/16/12



Analysis of Impacts/effects of the Elimination of Bottled Water Sales in Zion Canyon in Compliance with Director's Order A5623 (0130)



Water filling station at Human History Museum – Zion National Park

In 2009, Zion National Park (ZION) eliminated the sale of bottled water in the Zion Canyon section of the park. This area hosts all concession operations and the main outlets of the cooperating association; it also receives 90% of the park's visitation. The cooperating association continues to sell bottled water at the Kolob Canyons Visitor Center in the northwest corner of the park due to concerns over nitrate levels in the tap water at that location. This document serves as an analysis of factors that contributed to the decision to eliminate the sale of single-use bottled water.

1. Amount of Waste Eliminated and Pros/Cons to Overall Park Operations

Despite the fact that ZION has an aggressive recycling and pollution prevention program, ZION still sees 61% of all plastic recycled as single-use plastic bottles, by weight (Solid Waste Audit, 2012). In fiscal year 2012, ZION recycled 178,961 pounds of recyclable commodities and an estimated 14,364 pounds of that total was single-use plastic bottles. Through the NPS's continued support of pollution prevention, ZION is hoping to reduce that number to 0. In the landfilled waste, 3% of the contents (by weight) are single-use plastic bottles (Solid Waste Audit, 2012). Again, the park would like to see that number reduced to 0.

Pros:

- Operational:
 - Decrease in total cost of solid waste to park operations. ZION operations and visitors are responsible for contributing 558,979 pounds of solid waste into the waste stream. Of that, 178,961 pounds go to recycling facilities located outside the park and 380,018 pounds go to the landfill. This waste contributes to the cost of operations for the park. With a total reduction of single-use plastic bottles, the park would see a reduction of 61% of the plastic recyclables and 3% of landfilled waste. In short, this waste source is a major contributor to the cost of supporting the recycle program at ZION.
 - Decreases in litter associated with disposable bottles within the park. Plastic bottles are a major contributor to the litter found on trails and roadsides. Additionally, plastic bottle debris in vault toilets increases the time and cost involved in emptying vault toilets.
 - Reduction in maintenance man-hours for waste, litter and recycling collection.
- Environmental
 - Decrease in plastics going to the landfill. ZION's landfilled waste consists of 3% single-use plastic bottles or 11,400 pounds (Solid Waste Analysis, 2010).
 - Reduction of resources used and Green House Gases (GHGs) released during the initial production of bottled water, and during the transportation of goods, waste and recyclables, to accommodate the relatively short useful lifespan of bottled water.
 - Reduces risk to wildlife. There are wildlife concerns with any kind of litter but special concerns for plastic bottles include entrapment, ingestion, blocked digestion, and choking.
 - Diminishes release of toxic chemicals such as bisphenol A (BPA). Toxins leached from plastics are known to have negative effects on wildlife and human health.
- Financial
 - Decreases in monetary costs to any visitor who would have purchased more than one bottle of water within the park. To ensure the safety of visitors, the park recommends one gallon of water, per person, per day. For a single person relying on single use bottled water, this would mean they would need to purchase over seven bottles of water daily. The cost of a single reusable water bottle quickly defers that cost for the visitor. Additionally, if our education efforts are successful, visitors may continue to save money as they continue to utilize their reusable bottles after they leave the park.

Cons:

- Financial
 - Bottled water is a high profit margin item for the park concessioners and partners. If reusable bottle sales (lower profit margin) do not make up for this, concessioners and partners could incur some financial loss. (See #6 for additional analysis)

2. Infrastructure Costs and Funding Source(s) for Filling Stations

ZION has always had water available for the public throughout the park using basic spigots and water fountains. In 2009, Xanterra constructed the first water filling station on the Zion Lodge Patio. By the end of 2009, ZION constructed two additional water filling stations in high profile areas, to further educate visitors about hydration and water bottle reuse. The cost of these three stations totaled \$447,200 with an additional \$12,700 for the educational back panels. The funding was provided from the parks' Integrated Solid Waste Action Plan Grant Moneys and concessioner Capital Improvement Account funds (for Lodge location). In 2011, construction of the fourth water filling station was written into a contract for the Temple of Sinawava comfort station rebuild and the cost to the park was significantly less, estimated at \$4,000.

3. Contractual Implications on Concessioners, Including Considerations of New Leaseholder Surrender Interest or Possessory Interest

Xanterra Parks & Resorts, Inc. is the only concessioner in ZION that sold bottled water prior to 2009. When Xanterra bid for the current contract (which covers the period 1/1/09 to 12/31/18), their proposal package included an offer to eliminate the sales of bottled water in their retail outlets. The policy of not selling bottled water was not imposed on the concessioner, but rather independently proposed and promoted by them. The park incorporated Xanterra's offer, among other environmental benefits proposed, into the contract operating plan and as an addendum for best management practices for environmental management.

Xanterra does not have any LSI in the current filling station because it was funded with Capital Improvement Account funds. There are currently no plans to construct additional filling stations within a concessioner's land assignment. If it is decided that additional filling stations are needed, they will be paid for using concessioner franchise fees, NPS base or project funds. This would eliminate the potential for the concessioner to incur leasehold surrender interests.

4. Operational Cost of Filling Stations Including Utilities and Regular Public Health Testing

Zion Canyon processes all potable water used by the park, concessions and visitors; the addition of water filling stations did not increase operational costs. Drinking water in the park is sampled as part of standard procedures in accordance with state and federal drinking water quality laws, these processes do not need to be altered for the addition of the filling stations. The four filling stations are closed each winter; the water flow is turned off and a sign is posted informing visitors of nearby drinking fountains¹. The process is reversed each spring when the danger of freezing has passed. These costs are minimal. Some additional costs come from the extra custodial work required to clean the basins, and from the additional water use, but these costs have not been specifically enumerated by the park's maintenance division.

5. Cost and Availability of BPA-free Reusable Containers:

Both Xanterra and the park's cooperating association (Zion Natural History Association, or ZNHA) sell a variety of BPA-free, reusable, souvenir bottles at a range of prices. Xanterra's lowest-priced water bottle is \$3.99 and is their biggest seller, followed by a \$10.99 foldable water bottle. ZNHA's lowest-priced water bottle is \$3.29; it is also their biggest seller.

¹ It should be noted that during the winter, water is still available to visitors through freeze-free spigots and water fountains throughout the park. The areas are marked in the Map and Guide.

6. Effect on Concessioner and Cooperating Association Sales Revenue

Sales information for Xanterra is provided below. Sales rose from 2009 to 2011, and then fell in 2012. Xanterra believes this decrease in sales may be attributable to spreading awareness among visitors of the need to have a water bottle with them while in the park. This may also be attributable to a wider cultural awareness by the public regarding the negative impacts to the environment that single use water bottles have.

Year	Units	Total Retail Sales
2009	4,039	\$29,930.13
2010	6,247	\$49,482.77
2011	6,528	\$56,754.52
2012	5,468	\$45,963.83

In 2007 (the most recent year for which data was provided), Xanterra sold \$78,000 worth of bottled water, so sales revenue has decreased for them following the elimination of bottled water from their retail outlets.

ZNHA has seen an increase in sales between bottled water and water bottle offerings. In FY2008, the last year that bottled water was sold in Zion Canyon, they grossed \$34,144 in water sales. In FY2012, they sold \$83,571 worth of water bottles.

7. Availability of Water within Concessioner Food Service Operations

All restaurants within the park provide tap water at the table on request. All cafeterias have water available at their beverage service stations. There is a water fountain in the Lodge lobby downstairs from the dining room.

8. Visitor Education in the Park and Online so that Visitors May Come Prepared With Their Own Water Bottles

Educational information about the filling stations and reusable water bottle promotion is available in the park newspaper under the header "Environmental Impact." The park's website also contains a safety message about drinking water in the desert environment, and provides locations where drinking water is available. The importance of drinking sufficient water is widely available. Within the park publications, one of the top four safety messages to the general public is the importance of "one gallon of water per person, per day." Information about water availability is offered in multiple locations in all publications, the Spring, Summer, Fall and Winter Map and Guides, and the park Wilderness Guide, as well as warnings against drinking surface water.

9. Results of Consultation with NPS Public Health Office

During the initial planning stages for the filling stations the NPS Public Health Officer was consulted. There were no concerns about the public's safety because of the availability of potable water and the small cost difference between bottled water and the most economical water bottle. The Lodge filling station is inspected during each public health assessment.

10. A Sign Plan so That Visitors Can Easily Find Filling Stations

All locations are near shuttle stops in highly-visited and visible locations. Large educational backboards accompany all dedicated water filling stations. Additionally, the Map and Guide handed to each visitor clearly marks all water filling locations accessible to the public. Also, there are improved signs in the Visitor Center complex.

11. Safety Considerations for Visitors Who May Resort to Not Carrying Enough Water or Drinking from Surface Water Sources with Potential Exposure to Disease

The majority of information provided to the public concerning water and hydration is specifically designed to educate visitors on proper hydration, preparedness and drinking safe water. There are a variety of safety messages in the park newspaper, on the website, and on the shuttle buses that encourage visitors to stay hydrated in the dry environment.

In a recent survey of park visitors performed by the National Center for Injury Prevention and Control, 49.7% of visitors to the park saw a safety message about drinking water in the park before they arrived, and that's with only 43% actively looking for risk or safety information. 85% of visitors received safety information from park staff; water and hydration were among the top 3 messages. 80% of people felt "completely or mostly prepared." 98% of those polled listed "bringing sufficient drinking water" as a safety measure they took upon their visit of the park.

Other operational controls are also used for the safety of the visitors. Filling stations are dispersed throughout the canyon and provide access to water to every visitor. Water is accessible at both campgrounds, the Visitor Center, the Zion Human History Museum, the Lodge, the Grotto, and the Temple of Sinawava. Water bottles are available for sale at the Visitor Center, Museum, and the Lodge. Water bottles are available for purchase with nearby filling stations at every site within the park that previously sold bottled water.

12. A System for Annual Evaluation of the Program, including Public Response, Visitor Satisfaction, Buying Behavior, Public Safety, and Plastic Collection Rates

On an annual basis the park will continue to monitor and collect the following data:

- Visitor satisfaction/public response by using the visitor comment forms – log in complaints/compliments (Public Response and Visitor Satisfaction).
- Filling stations will continue to be inspected by the NPS Public Health Officer.
- Canyon District staff will continue to track incidents/contacts related to water availability and dehydration (Public Safety).
- Concessions will track sales with Xanterra and ZNHA (Buying Behavior).
- Environmental Management System Coordinator will track collection rates with input from our contracted carrier (Collection Rates).
- Environmental Management System Coordinator will be designated as the "project manager" to analyze data on an annual basis, and make recommendation to park Superintendent on program.

13. Results of Consultation with Concessioners and Cooperating Associations

In 2007, ZION's interdivisional staff- and partner-based Green Team began discussions for water bottle filling stations. As members of the park's Green Team, representatives from Xanterra and ZNHA were involved from the beginning as the park began to move towards the elimination of bottled water sales. Separate meetings were held with our non-profit partner, ZNHA, to establish an agreement and elicit their help in finding affordable water bottles to sell. Xanterra even constructed the first filling station at their facility to support the program in 2009.

Both Xanterra and ZNHA supported ZION's decision and have worked with Park personnel to further ZION's commitment to sustainability. Xanterra has expressed their commitment even further by using the ZION example to influence their own corporate policy. ZNHA was initially given three years to phase out bottled water sales, but chose to eliminate it after a single season on their own accord. They also sent representatives to a major industry conference in 2012 to present a session on ZION's bottle filling stations and their role in the program.

ZION's partner organizations were not just consulted with on the bottled water elimination. They were involved in the decision-making process and as such have always been a great support to the program.

14. Timeline of Phase-in Period

Sales of bottled water within Zion Canyon were eliminated in 2009. The program has been successful from the start. Additionally, ZION hopes to serve as an example to other parks as they make the choice to serve as visible exemplars of sustainability and support reuse in our public places.