

RECLAMATION

Managing Water in the West

The Brackish Groundwater National Desalination Research Facility (BGNDRF)

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Facility Manager



U.S. Department of the Interior
Bureau of Reclamation



Where Is It?



BGNDRF

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Whose Is It?

- Bureau of Reclamation
 - The mission of the Bureau of Reclamation is to manage, **develop**, and protect water and related resources in an environmentally and economically sound manner in the interest of the American public.

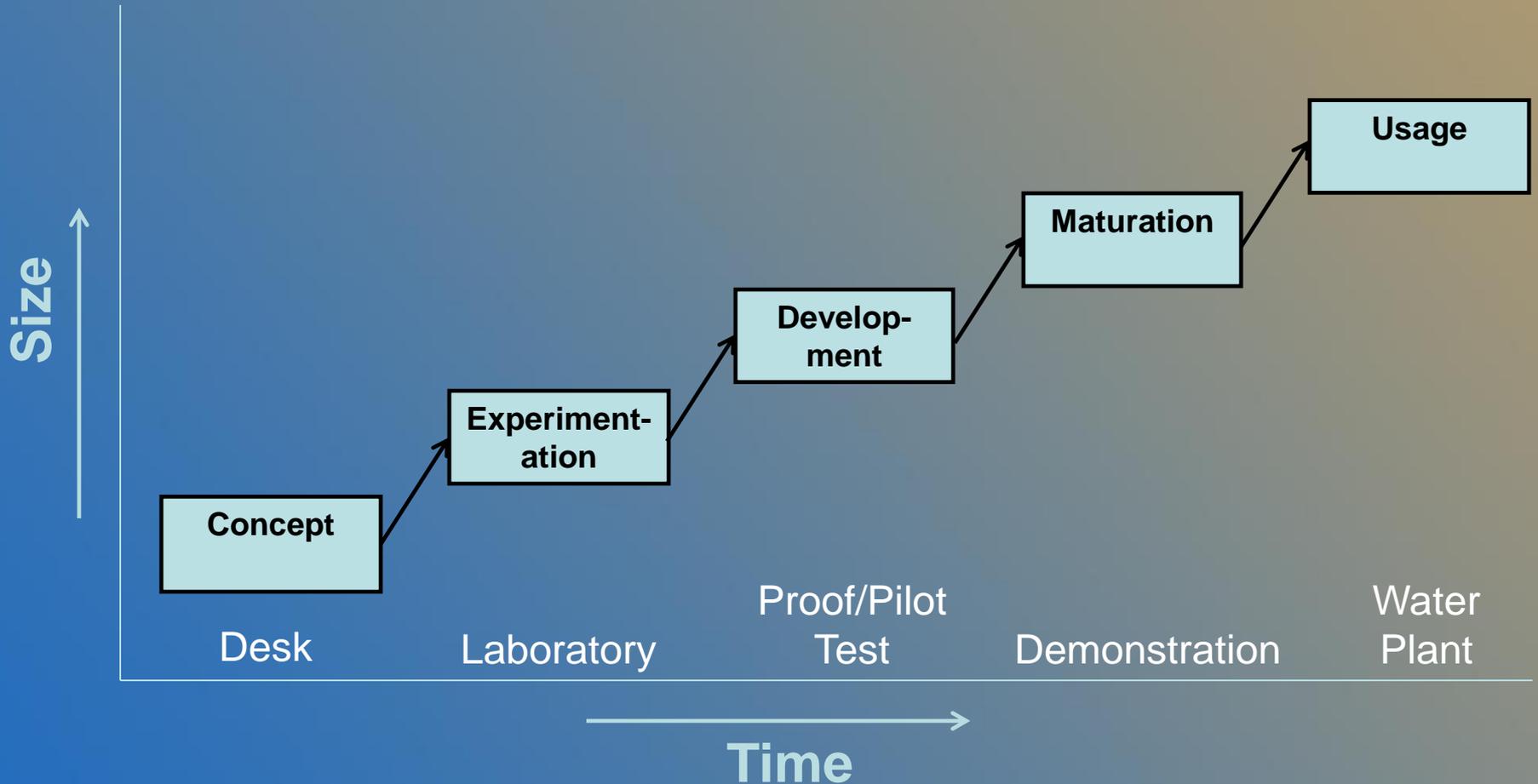


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BGNDRF - What Is It's Focus?

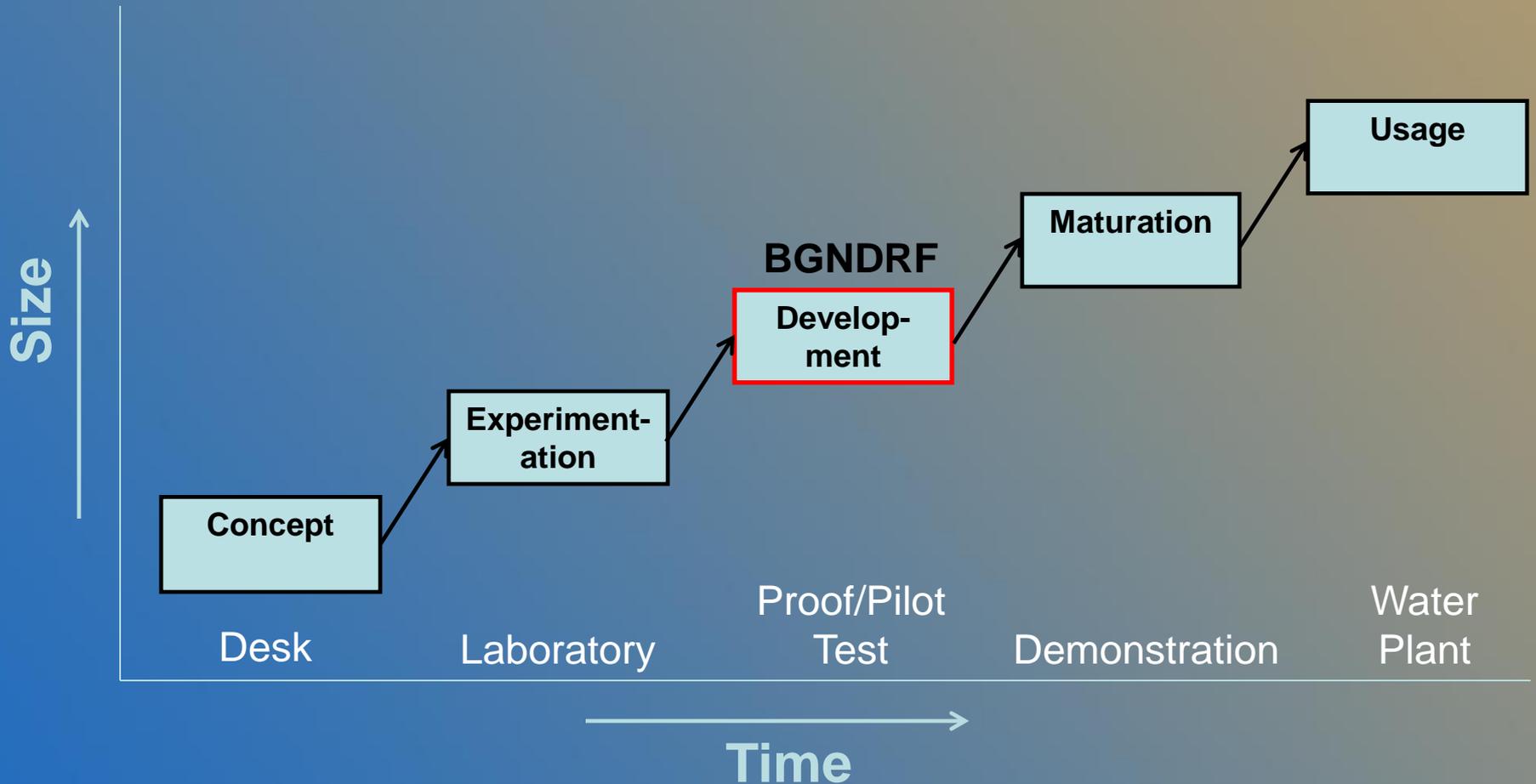
- **Concentrate Management**
- **Renewable Energy/Desalination Hybrids**
- **Produced Water Desalination Technologies**
- **Small Scale Systems**
- **Public Outreach and Education**

Our Niche in Technology Progression



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Our Niche in Technology Progression



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Grand Opening 2007



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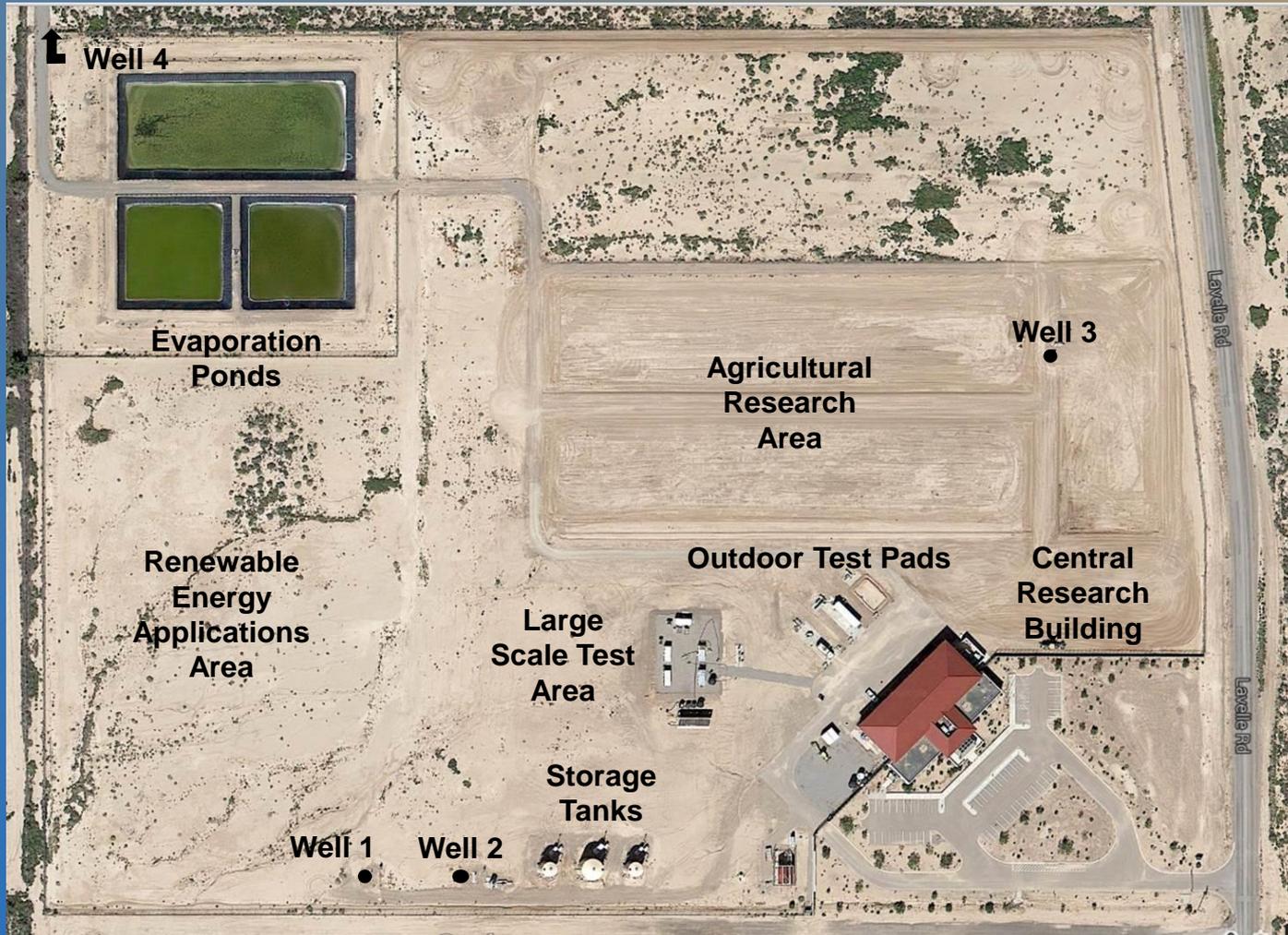
Who Works There?

- Government Agencies
- Universities
- Private Sector



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The BGNDRF Complex



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Capacitive Deionization



UTEP and Voltea

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Closed System Reverse Osmosis (RO)



Texas Tech University

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Pressure Retarded Osmosis (PRO)



University of Nevada at Reno

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Reverse Osmosis (Patented Control)



Water Standard; Houston, TX

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Land Application of Concentrate



University of Arizona

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Upcoming Projects

- **Ion Exchange Process for Converting Dissolved Salts into Fertilizer Products**
 - Trailblazer Technologies
- **Monovalent Selective Ion Exchange Membranes for Desalination and Reuse Enhancement**
 - NMSU
- **Photovoltaic Electrodialysis**
 - California State Polytechnic University, Pomona
- **Electromagnetic Desalination**
 - Dr. Mohan Venkataramana

The Desal Prize

- Contest to incentivize the development of small scale, renewable energy based, desalination
- Semi-finalist Competition: BGNDRF April 7-12, 2015
- Finalist Competition in Jordan
- Grand Prize: \$250,000
- www.thedesalprize.org

Website

www.usbr.gov/research/AWT/BGNDRF/index.html

The screenshot shows a web browser window displaying the website for the Bureau of Reclamation's Advanced Water Treatment Research (AWT) and Brackish Groundwater National Desalination Research Facility (BGNDRF). The browser's address bar shows the URL: http://www.usbr.gov/research/AWT/BGNDRF/index.html. The website header includes the U.S. Department of the Interior and Bureau of Reclamation logos, along with navigation links for "Contact Us" and "Site Map". The main content area features a large banner with the word "RECLAMATION" and the tagline "Managing Water in the West". Below the banner, there is a search bar and a navigation menu on the left side. The main content area is titled "Advanced Water Treatment Research --> Research Facilities" and "Brackish Groundwater National Desalination Research Facility". The text describes the facility as a focal point for developing technologies for the desalination of brackish and impaired groundwater found in the inland states. It is located in Alamogordo, New Mexico, and was opened on August 16, 2007. The facility brings together researchers from other Federal government agencies, universities, the private sector, research organizations, and state and local agencies to work collaboratively and in partnership. Below the text, there is a section for "More information about BGNDRF:" with a list of links: "History and Objectives", "Fact Sheet (180 K, pdf) (updated for 2012)", "October 2011 BGNDRF well water analysis Full report (7M pdf), analysis (58K pdf), Excel spreadsheet", and "May 2011 BGNDRF well water analysis Full report (4M pdf)". There is also a "Newsletter" section with links for "Newsletter, June 2012 (46K, pdf)" and "Newsletter, November 2011 (49 K, pdf)". The browser's taskbar at the bottom shows various icons, including the Start button and several application icons.

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Advanced Water Treatment Research --> Research Facilities

Brackish Groundwater National Desalination Research Facility

The Research Facility is a focal point for developing technologies for the desalination of brackish and impaired groundwater found in the inland states. It is located in Alamogordo, New Mexico. It was opened on August 16, 2007. This facility brings together researchers from other Federal government agencies, universities, the private sector, research organizations, and state and local agencies to work collaboratively and in partnership.

More information about BGNDRF:

- [History and Objectives](#)
- [Fact Sheet \(180 K, pdf\)](#) (updated for 2012)
- October 2011 BGNDRF well water analysis [Full report \(7M pdf\)](#), [analysis \(58K pdf\)](#), [Excel spreadsheet](#)
- May 2011 BGNDRF well water analysis [Full report \(4M pdf\)](#)

Newsletter

- [Newsletter, June 2012 \(46K, pdf\)](#)
- [Newsletter, November 2011 \(49 K, pdf\)](#)

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Desalination Reports

www.usbr.gov/research/AWT/DWPR/DWPR_Reports.html

The screenshot shows a web browser window displaying the Bureau of Reclamation's website. The page is titled "Desalination and Water Purification Research Publications" and features a navigation menu on the left, a search bar, and a list of reports. The main content area includes a header for "Advanced Water Treatment --> Grants and Funding --> Desalination and Water Purification Program" and a section for "Desalination and Water Purification Research Publications". Below this, there is a list of reports with columns for Report Title, Performing Agency, Date, Report #, and See Also. The reports listed are "The Desalting and Water Treatment Membrane Manual: A Guide to Membranes for Municipal Water Treatment" and "National Desalting and Water Treatment Needs Survey".

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[Advanced Water Treatment --> Grants and Funding --> Desalination and Water Purification Program](#)

Desalination and Water Purification Research Publications

[Program Description](#) || [Solicitations](#) || [Published Reports](#) || [Results](#) || [Cost Share](#)

This program has generated about 150 research reports. A firm requirement for each project is the submission of a detailed final technical report (listed here). This collection is a treasure trove of ideas concerning desalination. Reports are listed below.

| Report Title | Performing Agency | Date | Report # | See Also |
|---|--|--------|----------|--|
| The Desalting and Water Treatment Membrane Manual: A Guide to Membranes for Municipal Water Treatment | Bureau of Reclamation; Denver CO and Boulder City NV | Sep-93 | 1 | Decision Support |
| National Desalting and Water Treatment Needs Survey | Bureau of Reclamation; Denver CO | May-93 | 2 | Decision Support, Water Supply |

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BGNDRF Newsletter

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Vol 1 Issue 2
June 2012

Brackish Groundwater National Desalination Research Facility (BGNDRF) Newsletter



From the Manager: We are pleased to present the second issue of our periodic newsletter. It is designed to be a brief, information-filled page that will be of interest to our customers and friends. Feedback is welcome. Please contact me at (575) 443-6553 or email me at: rshaw@usbr.gov.
Kind Regards, Randy Shaw, PE

Highlights of Current Research

Water Standard:

Water Standard, is piloting its H2Ocean Spectrum™ Technology for water-based enhanced oil recovery (EOR). "The H2Ocean Spectrum™ Technology allows producers to customize water quality in real time to further optimize EOR performance once in the field, and meet challenging water requirements." "Water Standard is also piloting and evaluating a new generation of experimental and commercial reverse osmosis and nanofiltration membrane technologies." Water Standard's pilot tests use artificial seawater using RO permeate provided by BGNDRF. This is unique for BGNDRF where feed water is typically brackish water from one of four source water wells. For more information go to: <http://waterstandard.com/>

KII, Inc.:

Mr. Hill Kemp of KII, Inc. is testing his recently patented Suns-River Solar Still. The still is a departure from the classic still by incorporating a falling film of water on a tilted adsorption surface almost normal to incident solar radiation. Condensation is enhanced through heat exchanger tubing cooled by the brackish feed water. For more information go to: <http://suns-river.com/>

More Information About BGNDRF:

<http://www.usbr.gov/research/AWT/BGNDRF/index.html>

NMSU - New Mexico State University
GE - General Electric
UNR - University of Nevada at Reno
DOE - Department of Energy

UTEP - University of Texas at El Paso
UNR - University of Nevada at Reno
TTU - Texas Tech University
DOI - Department of Interior

More Current Research at BGNDRF

NMSU/GE: Electro-Dialysis Reversal (EDR) and Reverse Osmosis (RO) with Nanofiltration (NF)

UNR: Pressure Retarded Osmosis Assisted Desalination

TTU: Small Scale RO with High Recovery

Up-Coming Research at BGNDRF

UTEP/Veolia: Zero Discharge Desalination

OTHER NEWS

BGNDRF:
Top 8 Finalist



President Obama challenged the private and public sectors to make rapid investments in creating a more sustainable, energy-efficient workplace. Associated with that challenge, the White House and DOE challenged Federal agencies to nominate competitors for this year's Better Buildings Award. BGNDRF was selected as a finalist representing the DOI. Mr. Steve Holland, BGNDRF Electronic Technician, is to be commended for his work in making this possible. For more information about the top 8 finalists go to: <http://www1.eere.energy.gov/femp/services/betterbuildings.html>

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Tours



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Questions



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<http://hiddenunseen.blogspot.com/2012/04/top-9-unusual-deserts.html>

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