



MEETING MINUTES

Outreach / Environmental Management Public Information Review Effort (EMPIRE) Committee

January 13, 2009, DOE Nevada Support Facility
232 Energy Way, North Las Vegas, NV 89030

Members Present: Hal Sullivan, Co-Chair; Walt Wegst, Co-Chair; Kathy Bienenstein; Helen Neill (UNLV); Herb Spiegel; Stacy Standley; Jennifer Ward (UNLV)

Members not Present: Vernell McNeal

U.S. Department of Energy: Kelly Snyder, DDFO

Facilitator: Denise Rupp, Navarro Research and Engineering, Inc.

The Committee's meeting agenda and objectives were to:

- 1) Comment on review of CAB web site with recommendations for updates/revisions
- 2) Review and discuss the Oak Ridge Site Specific Advisory Board Educational Resource Kit and Operation Clean Desert Learning Trio Program
- 3) Receive update on Operation Clean Desert
- 4) Discuss consolidation of committees

The Committee discussed recommendations for updates/revisions to the CAB web site page by page (Attachment A). Denise Rupp will draft a recommendation letter outlining the requested changes and will distribute it to the committee for approval prior to the Full Board meeting on January 28, 2009. If approved, the recommendation letter will go before the Full Board for final approval.

Ms. Snyder distributed hard copies of the Nevada Site Office Environmental Management (NSO EM) web site for review. Members were asked to bring their updates/revisions to the next committee meeting for discussion and consensus.

The Oak Ridge Site Specific Advisory Board's *Stewardship Education Resource Kit* was briefly discussed and the kit's introductory video was viewed. Mr. Sullivan asked if there was DOE funding to develop a similar kit. While Ms. Snyder indicated funds were not available for a new program, it may be a feasible alternative to expand the existing Operation Clean Desert Learning Trio Program.

Ms. Snyder provided the Committee a detailed tracking of when and how the Operation Clean Desert Learning Trio Program was utilized in 2008 (Attachment B). A direct result of a previous CAB recommendation, recent improvements to the program include the addition of a lesson plan which adheres to the State of Nevada Department of Education Standards and was endorsed by the Clark County School District. The overview provided detailed information regarding distribution of the program; target audiences and venues; details of past and future events; and, the new lesson plan and test.

Possible ideas for expansion of Operation Clean Desert were discussed including related science projects and expansion of the program for high school. As a next step to preparing a formal recommendation on expansion, Mr. Sullivan asked members to bring up to five ideas to the next meeting for discussion.

Several Committee members expressed interest in viewing presentations of Operation Clean Desert. Seeing the DOE presentation to teachers would allow for review of the program while the teacher's presentation to the children would give perspective on actual response to the material. Ms. Snyder will check into the feasibility of such viewings.

Mr. Sullivan asked Dr. Neill about what, if any, relevant courses/programs are available at UNLV. There is a Health and Physics course relative to radiation as well as one undergraduate course that is not active. Dr. Neill will check to verify if there are other programs.

Mr. Spiegel suggested the possibility of an interactive computer "question and answer" forum to respond to CAB web site inquiries.

It was agreed the Committee would continue to function as a combined group with the deactivation of the EMPIRE Committee once their review of the NSO EM web site is complete. Discussion as to the specifics of consolidation was moved to the next meeting due to time constraints.

The next meeting is set for 5 p.m. on March 10, 2009. It will be held at the Atomic Testing Museum, 755 E. Flamingo Road, Las Vegas, NV 89119.

| Meeting adjourned at 6:50 p.m.

Attachment A

Outreach/EMPIRE Committee Meeting

January 13, 2009

Community Advisory Board for Nevada Test Site Programs Web Site Revision Recommendations

Home

About the CAB

Line 2 replace "appointed formal" with "federally appointed"

Who We Are

Line 12 after "Board," insert "while also"

Line 13 replace "or" with "and"

Liaisons

Line 1 replace "while not voting" with "who are not"

Line 5 replace "a variety of" with "two"

Line 6 replace "concern. Also, the CAB may independently" with
"concern, or, the CAB"

Line 6 replace "initiate issues for review that" with "initiate review of
environmental issues. The results of these reviews are then"

Line 9 replace "understand" with "review"

Lines 9 & 10 reverse order of last two sentences

Mission and Charter

Mission

Line 1 delete "will"

Line 1 replace "review" with "reviews"

Line 2 delete "will"

Line 2 replace "provide" with "provides"

Lines 3 & 4 replace "the DOE/NSO Environmental Management program" with
"these programs"

Meeting Minutes

Join Us at a CAB Meeting!

Line 3 replace "agenda, any handouts that were given and minutes." with
"agendas, materials distributed to the Board and minutes of the
meetings."

Meeting Listings 1) use name of location facility as well as address
2) add maps to meeting locations

Letters

CAB Recommendations

Lines 2 & 3 replace "communicate on a routine basis" with "routinely
communicate"

Line 4 replace "Listed below are the formal correspondence" with
"The following list includes copies of these communications."

Committees

CAB Committees and Work Plans

Line 2	replace “has developed” with “includes”
Lines 6-9	replace “Other than...currently active” with “for its review and approval before transmitting the recommendation to the DOE. All committees are standing committees except Budget and Membership which are activated as pertinent issues arise.”
Committee Listing	add Executive Committee description – Executive Committee – Made up of the CAB Chair, Vice-Chair, and all committee chairs. The committee meets on a regular basis to discuss issues related to CAB operations.
Outreach	add “DOE” before “Environmental Management”
T/W	replace “discuss” with “provide recommendations regarding”
UGTA	replace “discuss” with “provide recommendations regarding”

Reference

Reference Material

Title	replace “Material” with “Materials”
Line 1	replace “material” with “materials”
Line 1	replace “has” with “have been”

Public Reading Room

- 1) add “Dina Titus Public Reading Room”
- 2) add “Frank Rogers Science and Technology Building”
- 3) add hours
- 4) add map
- 5) remove “C” from street address

Monthly Reports

EM Monthly Reports

Title	replace “EM” with “Environmental Management”
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Members

CAB Members and Staff

CAB Members	move chair and vice-chair to top
CAB Liaisons	replace “Stephen Mellington” with “Janet Appenzeller-Wing” and add her bio
CAB Staff	remove Dr. Helen Neill and create new “Technical Advisory Staff” including “Dr. Helen Neill, UNLV” and “Jennifer Ward, UNLV”
Bios	replace “Tom Oom” with “Ted Oom”
Bios	correct all doctorate references

Links

- 1) add identification to NSO as local site
- 2) add WIMS site (<http://wims.arc.fiu.edu/wims/default.aspx>)

**Environmental Management
Operation Clean Desert Outreach Overview
2008-2009***Per January 13, 2009***Contents**

- I. Overview
- II. Event Details
- III. Scheduled Upcoming Events
- IV. Operation Clean Desert Worksheet
- V. Operation Clean Desert Answer Key
- VI. Operation Clean Desert Lesson Plan

I. OVERVIEW

In calendar year 2008, the Operation Clean Desert learning trio (display, activity book, and game CD) has extended its reach through the greater Southern Nevada region, partnering with public schools, homeschool organizations, and museums.

The Operation Clean Desert display was exhibited for a total of 106 days (96 of those through a partnership with Lied Discovery Children's Museum).

97 teacher packets (containing an introductory letter, several Environmental Management brochures, and the Operation Clean Desert activity book and game CD) were distributed in the Southern Nevada region, as well as Carson City and several out-of-state locations.

1,887 activity books and 1,672 game CDs were distributed through both Operation Clean Desert display events, and in response to emailed requests. These totals include the activity books and CDs distributed as part of the teacher packets.

New elements have been developed and added to the Operation Clean Desert program this year, to facilitate and encourage its use by educators. These elements include a worksheet and answer key based on information contained in the activity book. This provides a ready-made learning-based activity for instructors that promotes investigation of the activity book content. The other new element of the Operation Clean Desert program is a lesson plan for grades 3-8, developed by a certified State of Nevada science teacher, and adhering to State of Nevada Department of Education Standards. This lesson plan provides an incentive to educators to take advantage of the Operation Clean Desert program, as the lesson plan fulfills Nevada Science Objectives.

GEOGRAPHIC FOCUS:

- Communities adjacent to the Nevada Test Site: Amargosa Valley, Beatty, Indian Springs, Tonopah. Focused on extended placement within public libraries and county offices.

- Communities within or adjacent to radioactive waste transportation routes: Amargosa Valley, Ely, Pahrump, West Wendover. Focused on extended placement within public libraries and county offices.
- The greater Las Vegas metropolitan region. Focused on extended placement within public libraries and county offices (on occasion at museum facilities if available or appropriate). Will include public educational facilities at all levels as well as home-school organizations and public & private colleges.

VENUE FOCUS:

- Continuation of existing Public Outreach events: Public outreach events feature NSO Environmental Management exhibits and displays -- traditionally promoted to and requested by schools -- and also placed at public libraries, as well as specific educational conferences, trade conferences and museum exhibits.
- Extension of Public Outreach events: Public outreach events feature NSO Environmental Management exhibits and displays should extend also to university campuses and technical colleges, in order to reach audiences apart from the general public -- specifically, engineering students and environmental management students.

There are currently four (4) Operation Clean Desert events confirmed for 2009, and another in discussion. These events include the Southern Nevada Math and Science Teachers Conference, Roy Martin Middle School (Las Vegas), Rosemary Clarke Middle School (Pahrump) and Bass Elementary School (Las Vegas).

II. EVENT DETAILS

01/02/2008

School/Venue: Latter Day Saints Pahrump Homeschoolers

City: Pahrump

Packet: NA

Activity Books: 25

CDs: 20

Display: 01/02/2008

01/23/2008

School/Venue: Advanced Technologies Academy

City: Las Vegas

Packet: NA

Activity Books: 6

CDs: 6

Display: NA

01/31/2008

ATTACHMENT B

Outreach/EMPIRE Committee Minutes
January 13, 2009

School/Venue: Nevada State Library and Archives
City: Carson City
Packet: NA
Activity Books: NA
CDs: 2
Display: NA

02/09/2008
School/Venue: 2008 Math & Science Conference
City: Las Vegas
Packet: 24
Activity Books: 15
CDs: 5
Display: 02/09/2008

02/11/2008
School/Venue: Regional Professional Development Program (hosted at) Snyder
Elementary
City: Las Vegas
Packet: 6
Activity Books: NA
CDs: NA
Display: NA

02/13/2008
School/Venue: William E. Ferron Elementary
City: Las Vegas
Packet: NA
Activity Books: 60
CDs: 60
Display: NA

04/07/2008
School/Venue: Lady's Island Middle School
City: Beaufort, SC
Packet: NA
Activity Books: 1
CDs: NA
Display: NA

04/10/2008 and 04/11/2008
School/Venue: Rosemary Clarke Middle School
City: Pahrump
Packet: NA
Activity Books: 600
CDs: 600
Display: 04/10/2008 and 04/11/2008

04/17/2008
School/Venue: CHIEFS Homeschool Group and Cornerstone Christian Academy

ATTACHMENT B

Outreach/EMPIRE Committee Minutes
January 13, 2009

City: Las Vegas
Packet: NA
Activity Books: 95
CDs: 95
Display: 04/17/2008

04/24/2008
School/Venue: Nevada Site Office "Take Your Daughters and Sons to Work Day"
City: Las Vegas
Packet: NA
Activity Books: 48
CDs: 48
Display: 04/24/08

04/24/2008
School/Venue: Stoller-Navarro Joint Venture "Take Your Daughters and Sons to Work Day"
City: Las Vegas
Packet: NA
Activity Books: 15
CDs: 15
Display: NA

04/25/2008
School/Venue: Jerome D. Mack Middle School
City: Las Vegas
Packet: 3
Activity Books: NA
CDs: NA
Display: NA

04/26/2008
School/Venue: Atomic Testing Museum (Amusement Park Science Exhibit launch)
City: Las Vegas
Packet: NA
Activity Books: 11
CDs: 13
Display: 4/26/08

07/02/2008
School/Venue: Community Advisory Board -- Outreach and EMPIRE Committees
City: Las Vegas
Packet: NA
Activity Books: 10
CDs: 10
Display: 07/02/2008

07/26/2008
School/Venue: Cambridge Recreation Center
City: Las Vegas

ATTACHMENT B

Outreach/EMPIRE Committee Minutes
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Packet: NA
Activity Books: 35
CDs: 35
Display: NA

08/13/2008
School/Venue: Third Annual Educator Appreciation Day (at The Mirage)
City: Las Vegas
Packet: NA
Activity Books: 104
CDs: 87
Display: 08/13/2008

08/13/2008
School/Venue: Clark County School District New Licensed Personnel Orientation (UNLV Campus)
City: Las Vegas
Packet: 36
Activity Books: 5
CDs: 5
Display: NA

08/14/2008
School/Venue: Clark County School District New Licensed Personnel Orientation (UNLV Campus)
City: Las Vegas
Packet: 28
Activity Books: NA
CDs: NA
Display: NA

09/30/2008
School/Venue: M.J. Christensen Elementary School
City: Las Vegas
Packet: NA
Activity Books: 100
CDs: 100
Display: 09/30/2008

10/06/2008
School/Venue: Tennessee Department of Environment and Conservation DOE-Oversight
City: Oak Ridge, TN
Packet: NA
Activity Books: NA
CDs: 1
Display: NA

10/03/2008 to 01/06/2009

ATTACHMENT B

Outreach/EMPIRE Committee Minutes
January 13, 2009

School/Venue: Lied Discovery Children's Museum

City: Las Vegas

Packet: NA

Activity Books: 291

CDs: 283

Display: 10/03/2008 to 01/06/2009 (15,167 people had access to the display)

10/23/2008

School/Venue: Nevada Support Facility (National Security Technologies)

City: Las Vegas

Packet: NA

Activity Books: 6

CDs: 6

Display: NA

10/24/2008

School/Venue: Stoller-Navarro Joint Venture Staff (area Girl Scout Troop)

City: Las Vegas

Packet: NA

Activity Books: 20

CDs: 20

Display: NA

10/27/2008

School/Venue: Cram Middle School

City: Las Vegas

Packet: NA

Activity Books: 5

CDs: 5

Display: NA

11/01/2008 and 11/08/2008

School/Venue: Nevada Support Facility and Nevada Test Site (National Security Technologies Open House)

City: Las Vegas and Mercury

Packet: NA

Activity Books: 337

CDs: 154

Display: NA

12/10/2008

School/Venue: Advanced Technologies Academy

City: Las Vegas

Packet: NA

Activity Books: 1

CDs: 2

Display: NA

12/11/2008

Outreach/EMPIRE Committee Minutes
January 13, 2009

School/Venue: Advanced Technologies Academy
City: Las Vegas
Packet: NA
Activity Books: NA
CDs: 3
Display: NA

III. SCHEDULED UPCOMING EVENTS

01/24/2009

School/Venue: Southern Nevada Math and Science Teachers Conference (Rancho High School)
City: Las Vegas
Packet: TBD
Activity Books: TBD
CDs: TBD
Display: 1/24/2009

01/27/2009

School/Venue: Roy Martin Middle School
City: Las Vegas
Packet: NA
Activity Books: 150
CDs: 150
Display: 01/27/2009

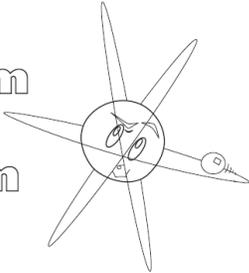
05/20/2009 and 05/21/2009

School/Venue: Rosemary Clarke Middle School
City: Pahrump
Packet: NA
Activity Books: TBD (estimated 300)
CDs: TBD (estimated 300)
Display: 05/20/2009 and 05/21/2009

05/28/09 – 7/7/2009

School/Venue: Bass Elementary School
City: Las Vegas
Packet: NA
Activity Books: TBD (estimated 900)
CDs: TBD (estimated 400)
Display: 05/28/09 – 7/7/2009

Adam
the
Atom



IV. Operation Clean Desert Worksheet

**OPERATION
CLEAN DESERT**

Doctor
Proton

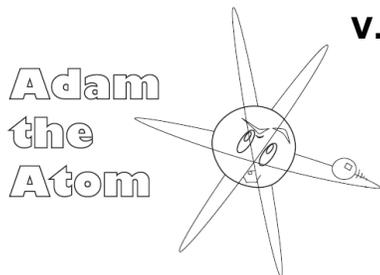


NAME: _____ DATE: _____ TEACHER: _____

***Using the Operation Clean Desert activity book,
find the answers to these questions:***

1. How far away and in what direction from Las Vegas, Nevada is the Nevada Test Site located?
2. What is made up of atoms? Give some examples.
3. What do you call the hole or cavity created when there were nuclear explosions underground? List the four steps that create this hole.
4. During which years did scientists conduct nuclear tests at the Nevada Test Site?
5. _____ nuclear tests were conducted above ground and _____ nuclear tests were conducted underground. Did these tests damage the environment?
6. What is groundwater, and how does it get there?
7. How do scientists determine if groundwater has been contaminated?

8. What are the two types of contamination that workers at the Nevada Test Site are looking for?
9. Give an example of a radioactive atom.
10. When an atom gives off extra energy, what is it called?
11. Is radiation harmful?
12. What is it called when a radioactive atom is located where it is not supposed to be?
13. How is the dirt tested for contamination at the Nevada Test Site, and what are the workers looking for in the samples?
14. How is contaminated trash or nuclear waste disposed?
15. List at least five contaminated items stored in drums or boxes.
16. What are hydraulic shears used for?
17. How do 'cool suits' work?
18. What tool is used to help clean up the Nevada Test Site that can detect harmful materials in the dirt and groundwater?
19. List and describe several things you can do to help the environment:
 - a)
 - b)
 - c)
 - d)
 - e)



V. Operation Clean Desert Answer Key

**OPERATION
CLEAN DESERT**



NAME: _____ DATE: _____ TEACHER: _____

ANSWER KEY - ANSWER KEY

20. How far away and in what direction from Las Vegas, Nevada is the Nevada Test Site located?

65 miles northwest.

21. What is made up of atoms? Give some examples.

Everything - including animals, plants, and air – is made of atoms.

22. What do you call the hole or cavity created when there were nuclear explosions underground? List the four steps that create this hole.

The holes are craters. The four steps that create craters are: explosion, cavity forms, cavity collapses, crater forms at the surface above the cavity.

23. During which years did scientists conduct nuclear tests at the Nevada Test Site?

Nuclear tests were conducted from 1951-1992.

24. **100** nuclear tests were conducted above ground and **828** nuclear tests were conducted underground. Did these tests damage the environment?

Yes, the tests and other projects caused damage in the form of radioactive contamination.

25. What is groundwater, and how does it get there?

Groundwater is water in the ground. Rain soaks in through the dirt and rock layers and collects in spaces between dirt and rock particles.

26. How do scientists determine if groundwater has been contaminated?

The scientists drill, collect groundwater samples and test the samples for contamination.

27. What are the two types of contamination that workers at the Nevada Test Site are looking for?

The workers test for chemical and radioactive contamination.

28. Give an example of a radioactive atom.

Extra energy in atoms because of too many neutrons is an example of a radioactive atom.

29. When an atom gives off this extra energy, what is it called?

Radiation.

30. Is radiation harmful?

Most small amounts of radiation are harmless, but larger amounts of radiation can make people sick.

31. What is it called when a radioactive atom is located where it is not supposed to be?

Contamination.

32. How is the dirt tested for contamination at the Nevada Test Site, and what are the workers looking for in the samples?

Dirt is dug up, put in jars and analyzed. Workers look for chemicals, metals, fuels, and radioactive contamination.

33. How is contaminated trash or nuclear waste disposed?

It is placed in drums and boxes below the surface, and then buried.

34. List at least five contaminated items stored in drums or boxes.

Examples of stored items are gloves, work clothes, dirt, chemicals, sponges, paint.

35. What are hydraulic shears used for?

Hydraulic shears are used to cut up contaminated buildings.

36. How do 'cool suits' work?

Cool suits move cold water through tubes that travel all over the suit.

37. What tool is used to help clean up the Nevada Test Site that can detect harmful materials in the dirt and groundwater?

Sensors detect harmful materials.

38. List and describe several things you can do to help the environment:
- a) ***Conserve electricity by turning off lights***
 - b) ***Car-pool or ride a bike to conserve fuel and reduce pollution***
 - c) ***Recycle paper, glass, and metal to save resources***
 - d) ***Save water by turning off the faucet when brushing your teeth***
 - e) ***Use 'green' cleaners***

VI. Operation Clean Desert Lesson Plan

Operation Clean Desert Lesson Plan

Grade Level(s): 3 – 8
Science

Subject:

Created by: Kim Syverson and Carol Hunn

Date: November 5, 2008

Nevada Science Objectives Covered:

- ◇ (N.8.B.1) Students understand that consequences of technologies can cause resource depletion and environmental degradation, but technology can also increase resource availability, mitigate environmental degradation, and make new resources economical.
- ◇ (E.8.C.7) Students know the characteristics, abundances, and location of renewable and nonrenewable resources found in Nevada. E/S
- ◇ (E.8.C.8) Students know soils have properties, such as color, texture, and water retention, and provide nutrients for life according to how they form. E/S
- ◇ (P.5.C.3) Students know heat is often produced as a byproduct when one form of energy is converted to another form (e.g., when machines and living organisms convert stored energy to motion). E/S
- ◇ (P.8.C.3) Students know physical, chemical, and nuclear changes involve a transfer of energy. E/S
- ◇ (P.8.C.5) Students know heat energy flows from warmer materials or regions to cooler ones through conduction, convection, and radiation. E/S
- ◇ (P.5.A.6) Students know materials are composed of parts that are too small to be seen without magnification. E/S
- ◇ (P.8.A.2) Students know elements can be arranged in the periodic table which shows repeating patterns that group elements with similar properties. E/S

- ◇ (P.8.A.6) Students know matter is made up of tiny particles called atoms. E/S
- ◇ (P.8.A.7) Students know the characteristics of electrons, protons, and neutrons. E/S
- ◇ (L.5.C.3) Students know changes to an environment can be beneficial or detrimental to different organisms. E/S
- ◇ (L.5.C.4) Students know all organisms, including humans, can cause changes in their environments. E/S
- ◇ (L.8.C.3) Students will evaluate how changes in environments can be beneficial or harmful. E/S

Lesson Objectives and Goals:

- Students will be able to explain, in their own words, the groundwater sampling and characterization activities at the Nevada Test Site.
- Students will be able to list equipment used in the various environmental management projects at the Nevada Test Site.
- Students will be able to define the parts of an atom.
- Students will be able to locate the Nevada Test Site on a map (*Nevada State Content Standards: Social Studies – Geography*).

Required Materials and Equipment:

- Maps of Nevada and Nevada Test Site groundwater sampling sites
- Pencil, Pen, and/or Crayons
- Operation Clean Desert Activity Book
- Operation Clean Desert Worksheet
- Operation Clean Desert Traveling Display(s)

Anticipatory Set (approximate time, 5 minutes):

- Locate the Nevada Test Site on a map and discuss the location in relation to the school.
- Discuss why environmental management work at the Nevada Test Site is important for your area.
- If there is a large number of students involved, students can be divided into 3 groups to rotate through the different aspects of the lesson (direct instruction, guided practice, and independent practice) simultaneously.

Direct Instruction (approximate time, 20 minutes):

- Operation Clean Desert presenter explains the history of the Nevada Test Site, the work currently performed at the site, and describes the environmental management work performed at the site in response to the effects of historic nuclear tests. Presenter answers questions; a possible Nevada Test Site PowerPoint and video may be incorporated in the

presentation for the older grade levels, detailing the history of the Nevada Test Site and radioactive contamination.

Guided Practice (approximate time, 20 minutes)

Students visit the Operation Clean Desert Display(s) and ask questions of the accompanying presenter(s). In addition to the display(s), students are also to be shown the Nevada Test Site Environmental Management project posters, to learn more specifically the work accomplished by each project to remediate environmental damage.

Closure (approximate time, 5 minutes):

- Have students explain or write, in their own words, what they have learned. What are the environmental management projects at the Nevada Test Site? Why is it necessary? What events lead to the environmental changes? What are the environmental impacts of historic nuclear testing?, etc.

Independent Practice:

- Operation Clean Desert Activity Book (younger grade levels can independently color the activity book while older grade levels can independently read the information in the book to do the activities).

Assessment and Follow-Up:

- Operation Clean Desert Worksheet (by reviewing the activity book, students can find answers to Nevada Test Site subject matter questions and science questions asked in the worksheet).

Extension:

- Operation Clean Desert: An Interactive Adventure (CD ROM game).