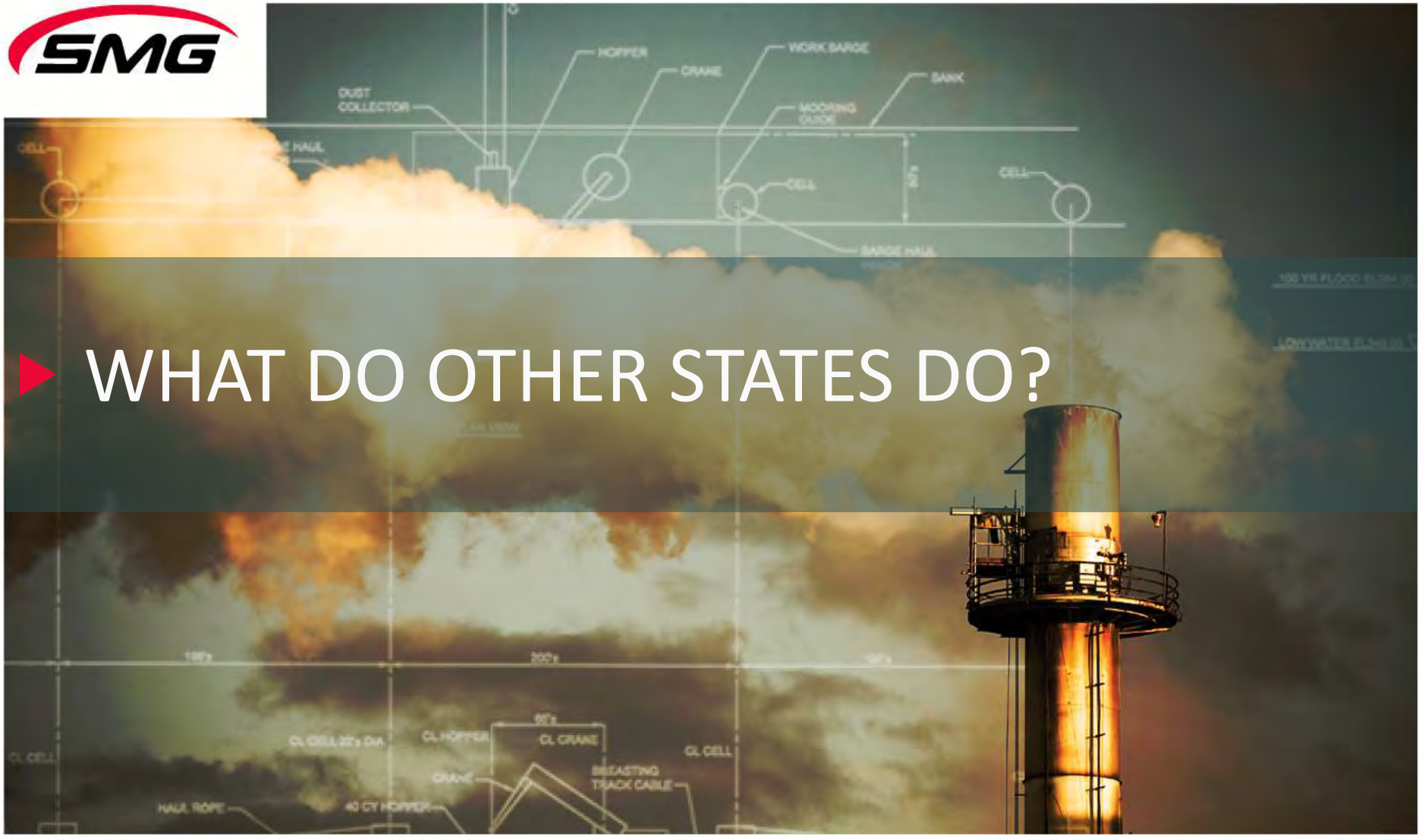
BEST MANAGEMENT PRACTICES

What Can Kentucky Learn?

KORI ANDREWS

NOVEMBER 7, 2014

WHAT DO OTHER STATES DO?



WHAT DO OTHER STATES DO?

Posters/Utah

http://www.deq.utah.gov

WHAT DO OTHER STATES DO?

Posters/Utah

Check List

Reduce Emissions During Drilling

- ☐ Use Reduced Emissions Completions (RECs), aka Green Completions to capture gas produced during well completions that is otherwise vented or flared. Electricity needed.

Reduce Emissions During Production

- ☐ Minimize venting and/or use closed loop process where possible during "blow downs."
- ☐ Convert to low-emitting engines.
- ☐ Tighten connections and replace packing to minimize leaks and fugitive emissions.
- ☐ Use and maintain proper hatches, seals, and valves to minimize air emissions.
- ☐ Reduce emissions of unburned hydrocarbons by routing emissions to flare or combustor or routing dehydrator still emmisions to first stage compression.
- ☐ Lower glycol circulation rate to avoid over-dehydrating.

Conserve Water

- ☐ Utilize on-site water treatment facilities, such as a 3-phase (liquids, condensate, and gas) separator on the flowback fluid.
- ☐ Use carefully planned well completions.

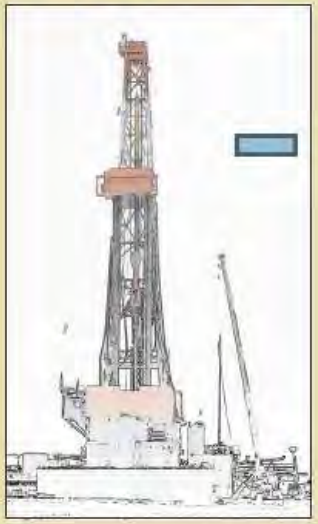
Less Toxic Materials

- ☐ Substitute organic additives, polymers, or biodegradable additives for oil-based mud to reduce toxicity.
- ☐ Lubricate with mineral oil and lubra-beads instead of diesel oil.

Reuse Resources

- ☐ Recover and reuse weighting materials and drilling fluids. Waste drilling mud can be reused at other locations for spudding or plugging and abandoning operations.

A Checklist Of Actions That Oil And Gas Operators Can Take To Reduce Waste And Air Emissions



For more information on Pollution Prevention and Oil and Gas BMPs, contact:

Utah Department of Environmental Quality

BizHelp.utah.gov

Environmental Hotline: 1-800-458-0145

High Efficiency Equipment

- ☐ Replace high bleed valves with compressed air, electric valves, or low bleed valves.
- ☐ InInstall or convert gas operated pneumatic devices to electric, solar, or compressed air driven devices or controllers.

Monitoring & Maintenance

- ☐ Implement a Directed Inspection and Maintenance program to identify and repair fugitive gas leaks from leaking compressors, valves, connectors, seals, and open-ended lines using infrared cameras, organic vapor analyzers, soap solutions, and ultrasonic leak detectors.

Dust & Tailpipe Emissions

- ☐ Apply water or chemical treatment, such as magnesium chloride, calcium chloride, lignin sulfonate, or asphalt emulsion.
- ☐ Restrict vehicle speeds to 10 mph on site.
- ☐ Cover or reclaim excavated or inactive storage piles after activity ceases. Eliminate unnecessary vehicle idling.

System Design

- ☐ Improve operational efficiencies by consolidating production, e.g., operating multiple wells from a production site.

Construction & Reclamation

- ☐ Use diversion dikes, containment diking, and curbing to reduce exposure of storm water runoff to cuttings and other waste storage areas.
- ☐ Segregate stormwater drainage from liquid storage, loading/unloading facilities, and operations areas from unimpacted areas.
- ☐ Use sediment traps, swales, and mulching during construction activities to reduce loss of sediment and contamination of runoff.
- ☐ Accelerate reclamation of site.
- ☐ Reclaim disturbances.

WHAT DO OTHER STATES DO?

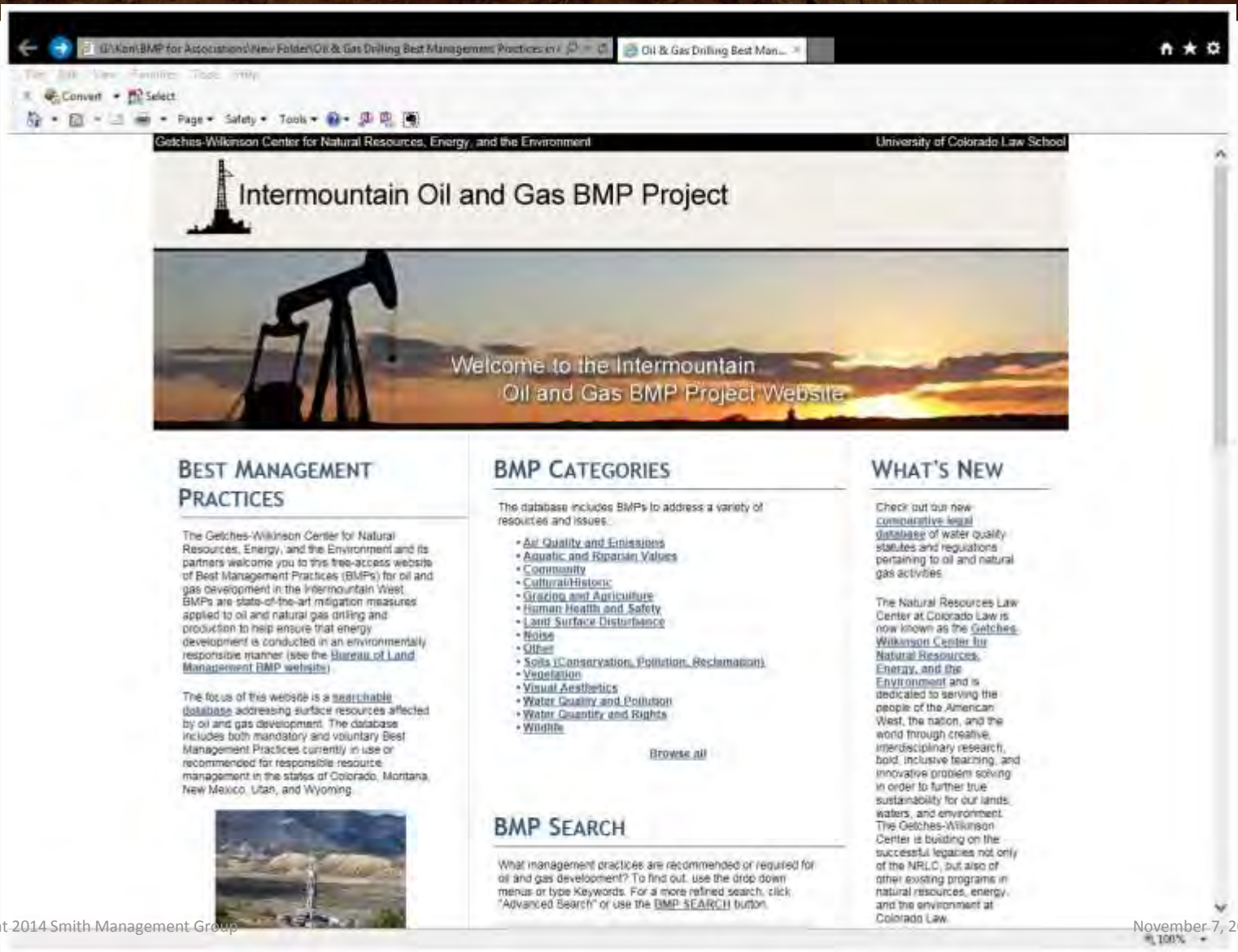
Posters/Utah

WHAT ARE THEY?

1. Reduce Emissions During Drilling/Completions
2. Reduce Emissions During Production
3. Conserve Water
4. Less Toxic Materials
5. Reuse Materials
6. High Efficiency Equipment
7. Monitoring and Maintenance
8. Dust and Tailpipe Emissions
9. System Design
10. Construction and Reclamation

WHAT DO OTHER STATES DO?

Web sites/Intermountain Oil and Gas



WHAT DO OTHER STATES DO?

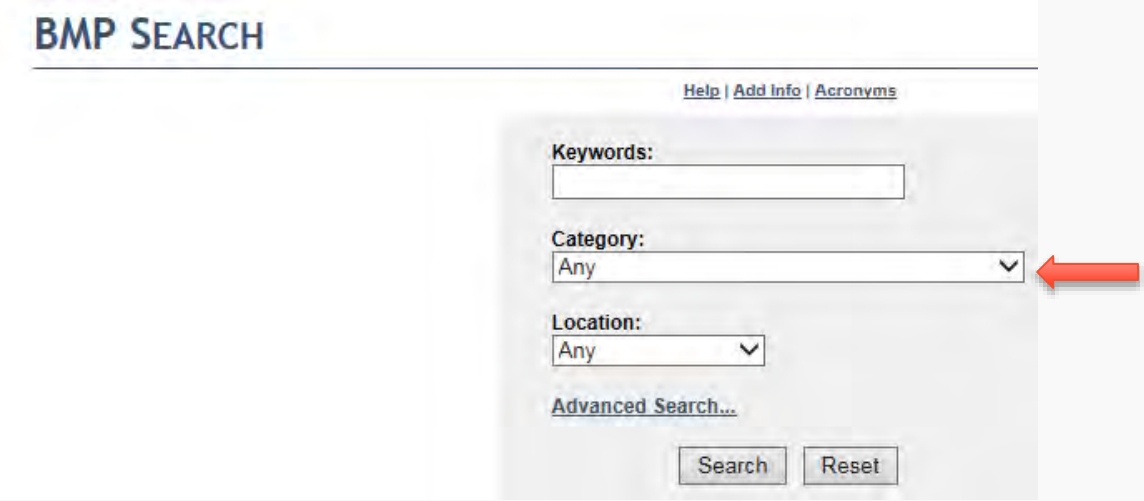
Web sites/Intermountain Oil and Gas

- Includes mandatory and voluntary BMPs
- For Colorado, Montana, New Mexico, Utah and Wyoming
- Maintained through a part of the University of Colorado Law School
- Receives information from the public on
  - Comments on BMPs already listed in the database
  - Supplemental documents (including monitoring reports, case studies, data sets) on BMPs already included in the database
  - New BMPs
  - New Glossary entries
  - New Acronyms
  - New Laws, regulations, ordinances, guidelines, policies
  - New Links to organizations' websites

WHAT DO OTHER STATES DO?

Web sites/Intermountain Oil and Gas

Searchable database



Any
Air Quality
Aquatic and Riparian Values
Community
Cultural/Historical
Grazing and Agricultural
Human Health and Safety
Land Surface Disturbance
Noise
Other
Soils
Vegetation
Visual Aesthetics
Water Quality and Pollution
Water Quantity and Rights
Wildlife

WHAT DO OTHER STATES DO?

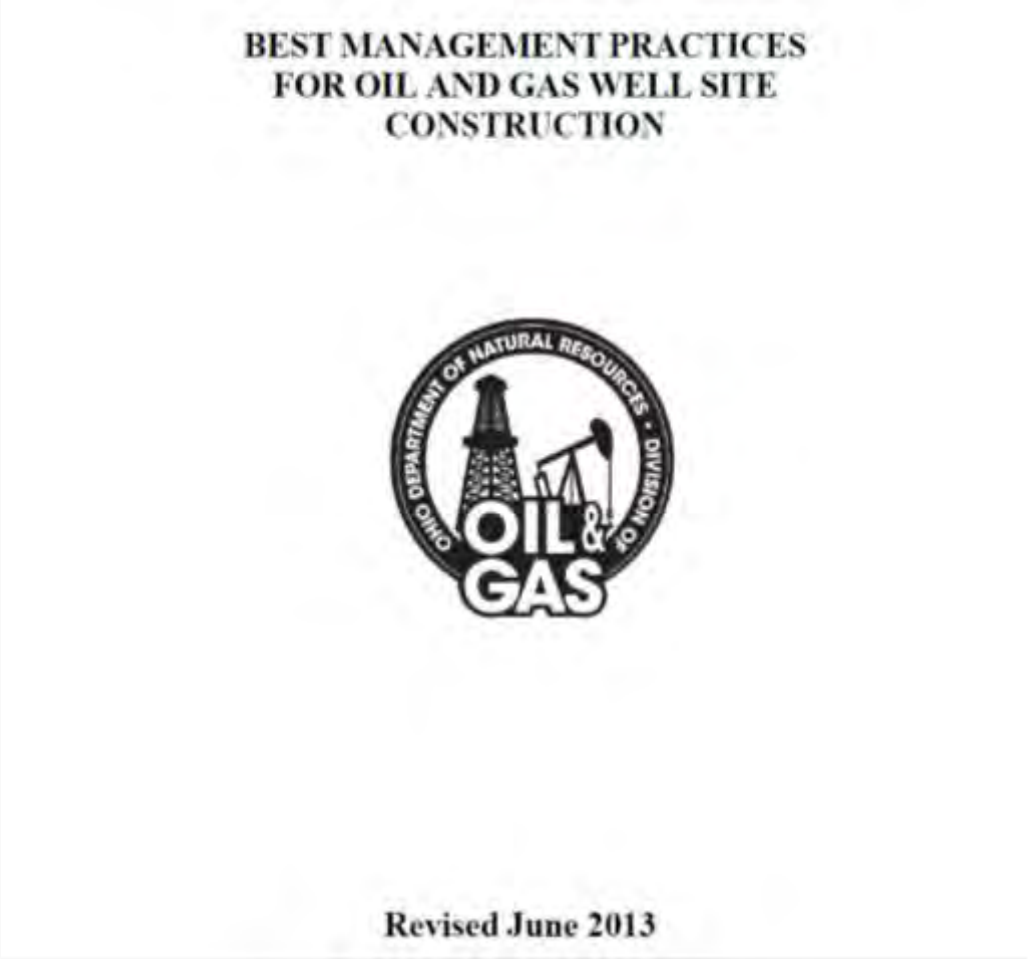
Web sites/Intermountain Oil and Gas

VIEW BMP

BMP ID:	1296
Title:	Apply erosion control measures for roads
Text:	"To control or reduce sediment from roads, guidance involving proper road placement and buffer strips to stream channels, graveling, proper drainage, seasonal closure, and in some cases, redesign or closure of old roads will be developed when necessary."
Source Publication Name:	Pinedale Anticline Oil & Gas Exploration & Development Project Record of Decision
Citation Section:	Appendix A: Mitigation Guidelines and Standard Practices for Surface-Disturbing and Disruptive Activities
Citation Page:	A-7
Supplemental Documents:	
Usage Type:	Recommended
Timing:	• Planning / Environmental Review
Oil / Gas Field:	Pinedale Anticline Project (GREATER GREEN RIVER)
Surface Ownership:	• Federal
Mineral Ownership:	• Federal
Primary Contact:	BLM - Pinedale Field Office 1625 West Pine St., PO Box 768 Pinedale, Wyoming 82941 United States Phone: (307) 367-5300 Alt. Phone: Fax: E-mail: WyMail_Jonah_Infill@blm.gov
Alternate Contact:	
Categories:	Water Quality and Pollution Land Surface Disturbance Aquatic and Riparian Values
Location:	Wyoming
Species:	
Vegetation Types:	
General Comments:	
Cost-Benefit Analysis:	
BMP Efficacy:	
Date Entered:	2009-02-04 13:40 MDT
Last Updated:	2011-06-07 15:19 MDT

WHAT DO OTHER STATES DO?

Paper Manuals / Ohio & New Mexico



BEST MANAGEMENT PRACTICES
FOR OIL AND GAS WELL SITE
CONSTRUCTION

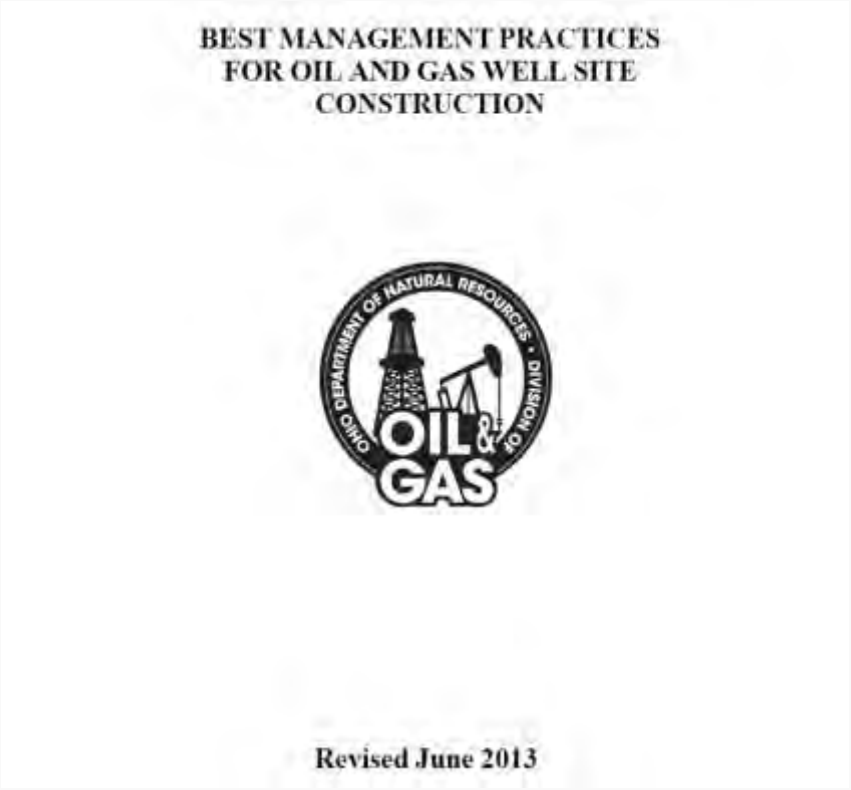
OHIO DEPARTMENT OF NATURAL RESOURCES • DIVISION OF
OIL & GAS

Revised June 2013

WHAT DO OTHER STATES DO?

Paper Manuals / Ohio & New Mexico

- Provides **minimal guidelines** that prepare for **average conditions** by looking at the following topics:
  - **Planning Well Sites**
  - **Erosion, Sedimentation Control, Access Roads**
  - **Water Bars/Broad Based Dips**
  - **Pipe Culverts**
  - **Access Roads**
  - **Surface Drains**
  - **Construction Guidelines**
  - **Vegetative Practices/Seeding**
  - **Mulch/Fertilizer**



WHAT DO OTHER STATES DO?

Paper Manuals/ Ohio & New Mexico

About The Pocket Guide

The Pollution Prevention/Best Management Practices Pocket Guide for the New Mexico Oil and Gas Industry is a quick lookup reference for common oil and gas pollution prevention and waste management practices. The Guide, a supplement to the two-volume Pollution Prevention/ Best Management Practices Manual, will help identify ways to prevent pollution and manage wastes effectively in oil and gas field operations. While the manual promotes the development of a pollution prevention plan through an evaluation of waste-generating processes, the pocket guide stresses the quick but effective solution that would not require a plan to implement.

Appreciation is extended to the U.S. Environmental Protection Agency, the Railroad Commission of Texas, the Interstate Oil and Gas Compact Commission, and Texaco Exploration and Production for researching and developing information for this pocket guide. Also, representatives of the New Mexico oil and gas industry participated in reviewing this pocket guide and provided valuable suggestions and comments.

WHAT DO OTHER STATES DO?

Paper Manuals / Ohio & New Mexico

WASTE		ALTERNATIVES
Stormwater	*Source Reduction:*	♦ Improve work process and properly maintain equipment and facilities to reduce leaks, spills, etc. ♦ Cover facilities to eliminate contamination of stormwater. ♦ Segregate stormwater drainage from liquid storage, loading/ unloading facilities and, operations areas from unimpacted areas. ♦ Clean up spills and leaks promptly to minimize stormwater contamination.
	Recycling:	♦ Use stormwater as make-up water in the process. For example, use contaminated stormwater for first stage washing of equipment, use stormwater as make-up water in drilling/ completion operations, and use stormwater for process water and agricultural purposes.
Sulfur recovery unit wastes, including sulfur-contaminated	*Source Reduction:*	♦ Substitute a less hazardous catalyst in the Scot Tailgas process of a sulfur recovery plant. Nonhazardous spent catalyst waste can result, thereby resulting in disposal cost savings.
	Special considerations: Use appropriate PPE. Avoid eye and skin contact. Consult MSDS for additional guidance for specific chemical.	
Tank bottoms (basic	*Source Reduction:*	♦ Recycle back through treatment system, with no additional

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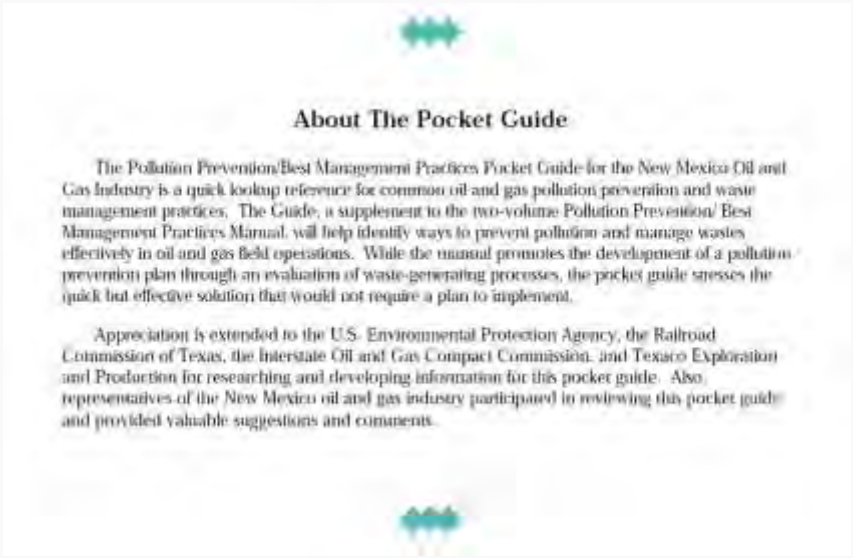
WHAT DO OTHER STATES DO?

Paper Manuals / Ohio & New Mexico

- Quick lookup reference
- Supplement for a larger document
- Stresses quick but effective solution that does not require a specific plan to implement
- Helps identify ways to prevent specific types of pollution and manage specific wastes
- Guidance only
- Produced by funds from USDOE and the New Mexico Energy, Minerals and Natural Resources Department



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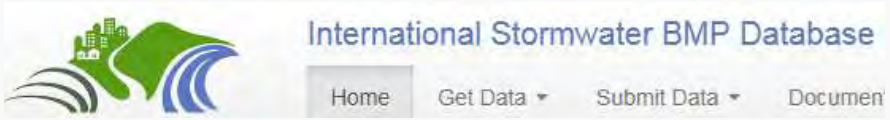
WHAT DO OTHER STATES DO?

International Stormwater BMP Database

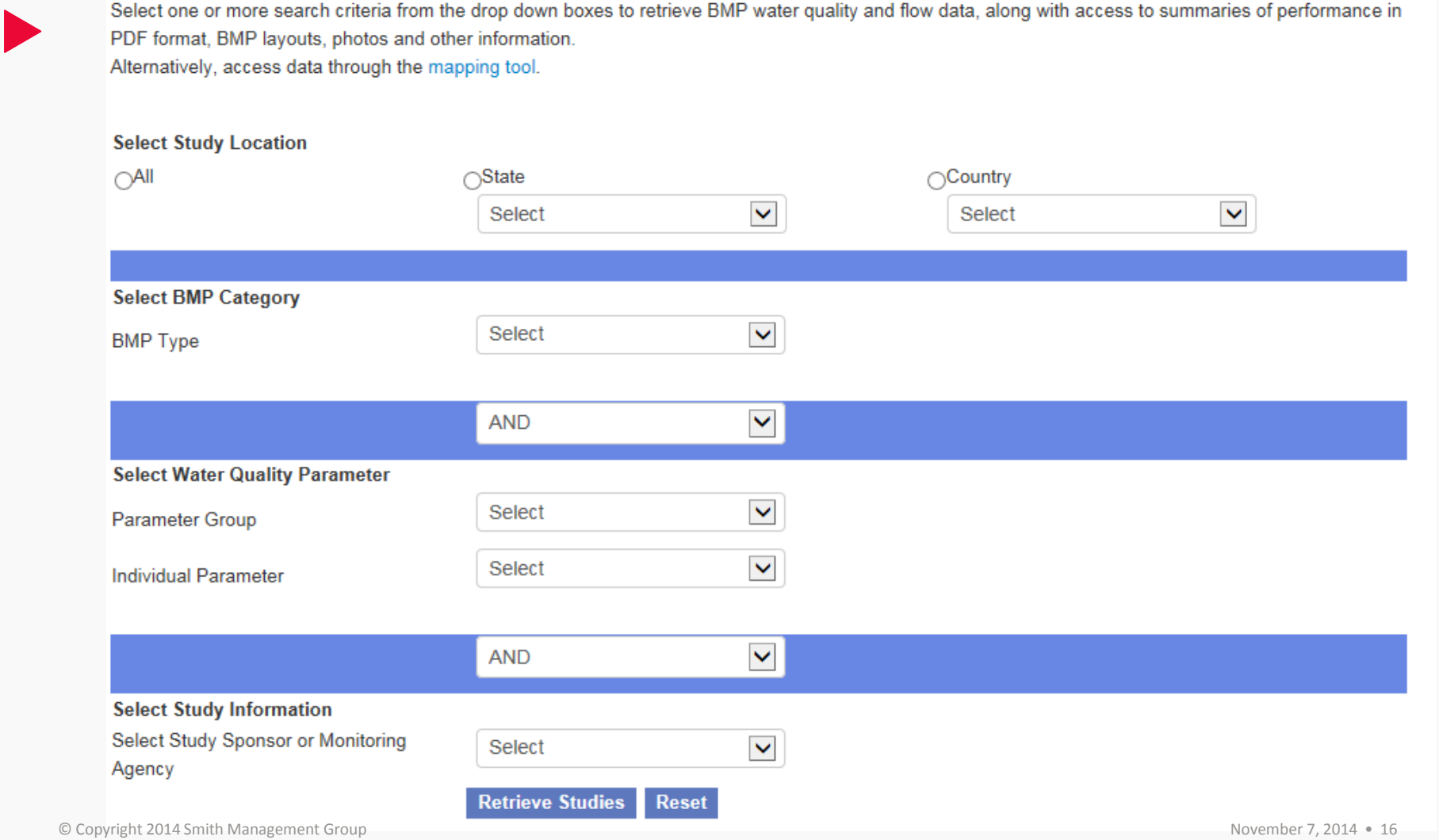
- The International Stormwater Best Management Practices (BMP) Database project website features a database of over **530 BMP studies**, **performance analysis results**, **tools for use in BMP performance studies**, **monitoring guidance** and other study-related publications.



http://www.bmpdatabase.org/

WHAT DO OTHER STATES DO?

International Stormwater BMP Database



WHAT DO OTHER STATES DO?

International Stormwater BMP Database

Searchable by

- **State**

- **BMP Type** (Biofilter, Bioretention, Composite, Control, Detention Basin, Green Roof, Infiltration Basin, LID, Maintenance Practice, Manufactured Device, Media Filter, Percolation Trench/ Well, Porous Pavement, Retention Pond, Wetland Basin, Wetland Chanel)

- **Water Quality Parameter** (Biological, General, Metals, Nutrients, Organics, Solids)

BEWARE!

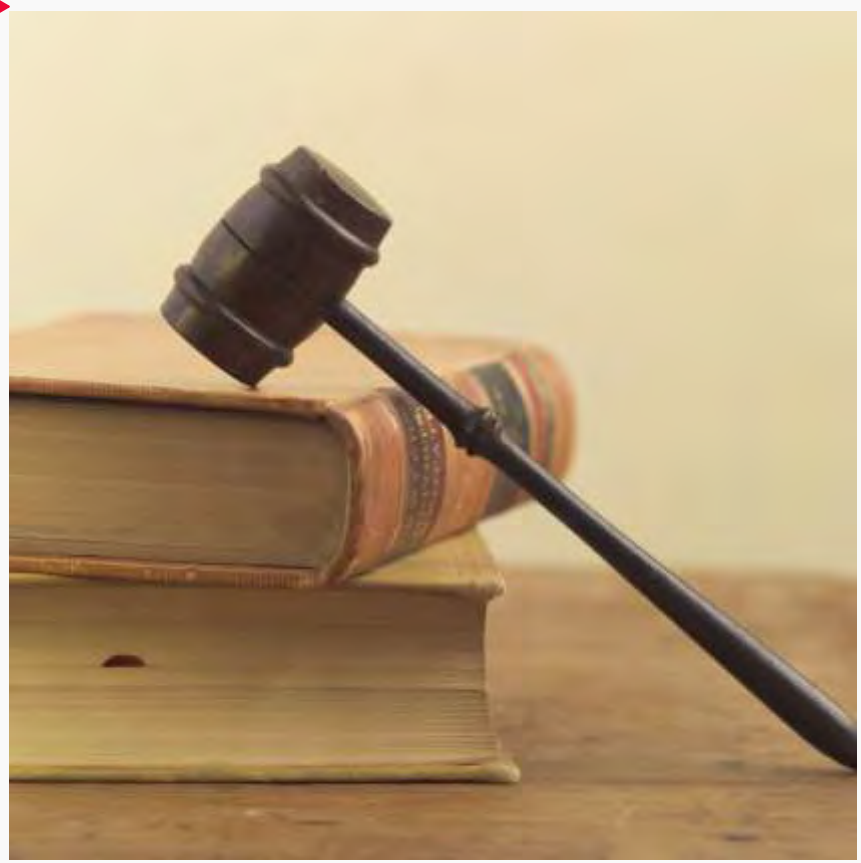
You do not want lawmakers to use specific BMPs to determine if you are in compliance or not.

HOW TO CREATE A BMP

HOW TO CREATE A BMP

Regulatory Considerations

- State stormwater permitting (NPDES)
- Local erosion prevention and sediment control programs
- Clean Water Act Sections 401 and 404 Requirements



HOW TO CREATE A BMP

Things to Consider…

- Erosion Prevention & Sediment Control
- Housekeeping and Other Control Measures
- Principles for Selecting Runoff Controls
- Inspections and Maintenance
- Make your BMPs specific enough to address issues but general enough to be used in all of your locations

CONTACT

Questions?

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THANK YOU

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