

# Source Water Protection Program



**April 2016**

Drinking Water Bureau  
New Mexico Environment Department

# What is Source Water Protection?

- 💧 **Planning for protection of:**
  - Wellhead
  - Aquifer
  - Surface Water
- 💧 **Prevent loss of drinking water quality and quantity**
- 💧 **Focus on prevention to avoid cost and difficulty to replace source**

# Wellhead and Source Water Protection

- 💧 **The 1986 SDWA amendments provided for Wellhead Protection.**
- 💧 **The 1996 SDWA amendments provided for Source Water Protection.**

# Source Water Protection Program

- 💧 Source Water Assessment
- 💧 Source Water Protection Plan



# NMED's Partnership Role

- 💧 **Empower water systems and communities to monitor, manage and protect their water resources.**
- 💧 **Provide technical and administrative support to communities.**
- 💧 **NMED will not take sides in disputes over water rights, land use etc.**

# Source Water Issues:

- 💧 Drought
- 💧 Wildfires
- 💧 Floods
- 💧 Groundwater depletion
- 💧 Contamination





# Drought

## U.S. Drought Monitor

June 25, 2013

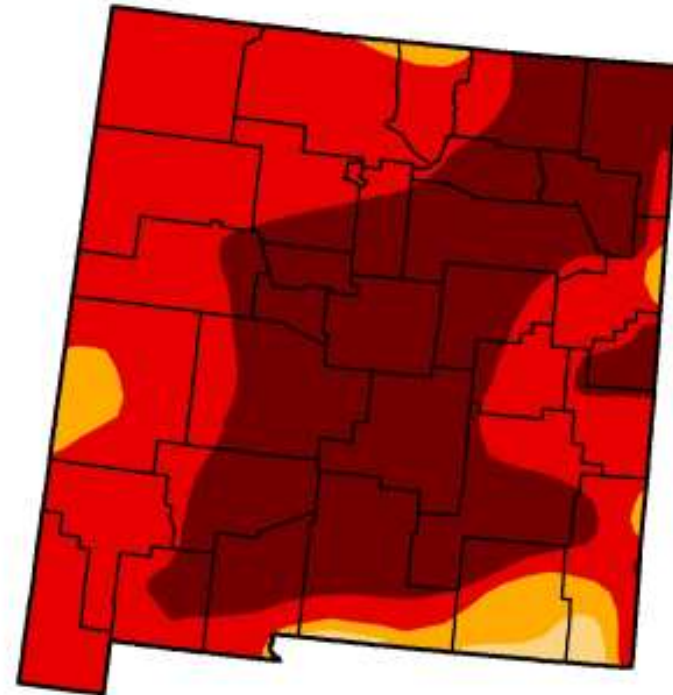
Valid 7 a.m. EST

### New Mexico

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	0.00	100.00	100.00	98.79	93.46	44.79
Last Week (06/18/2013 map)	0.00	100.00	100.00	98.49	90.18	44.13
3 Months Ago (03/26/2013 map)	0.23	99.77	98.47	89.85	49.97	4.36
Start of Calendar Year (01/01/2013 map)	0.00	100.00	98.83	94.05	31.88	0.97
Start of Water Year (09/25/2012 map)	0.00	100.00	100.00	62.56	12.25	0.66
One Year Ago (06/19/2012 map)	0.00	100.00	99.64	81.29	25.17	0.00

Intensity:



The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.

<http://droughtmonitor.unl.edu>



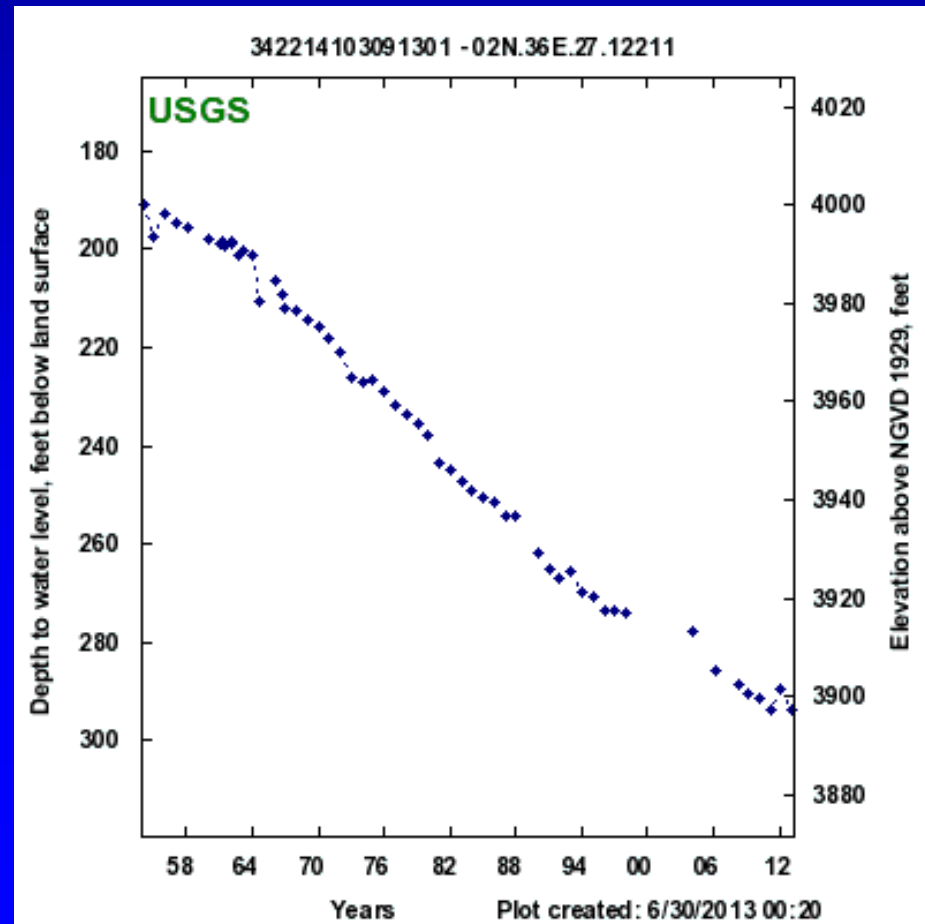
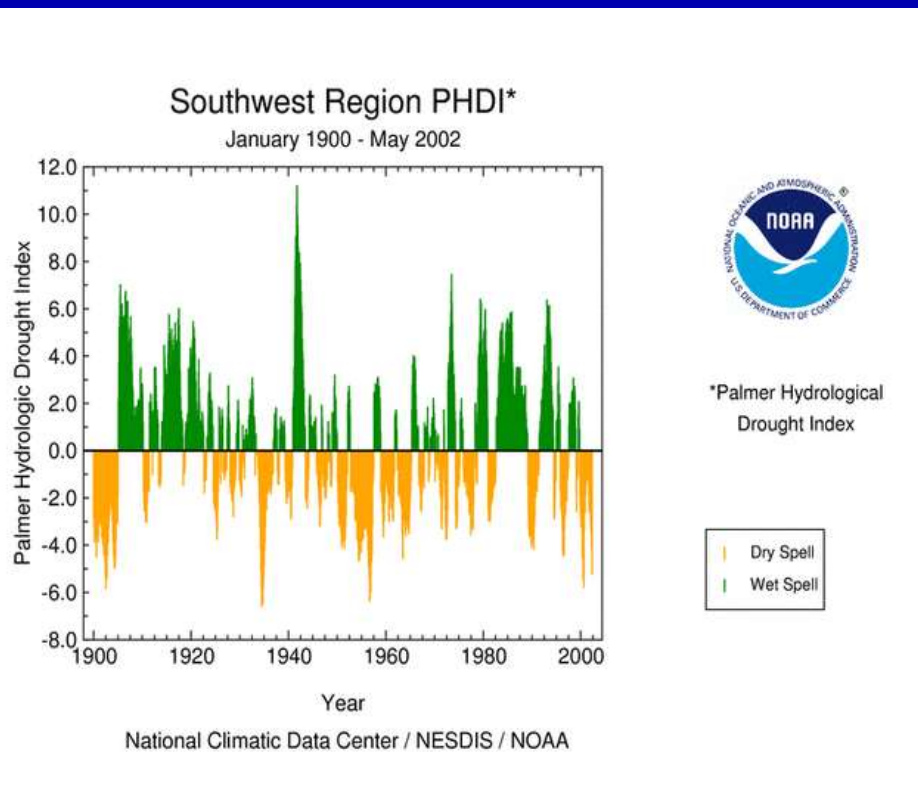
Released Thursday, June 27, 2013

Mark Svoboda, National Drought Mitigation Center

# Groundwater Depletion is Typically a Steady Decline

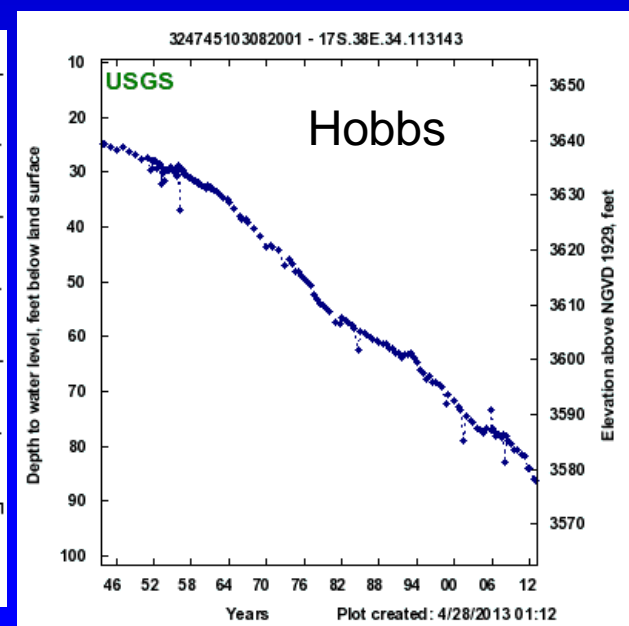
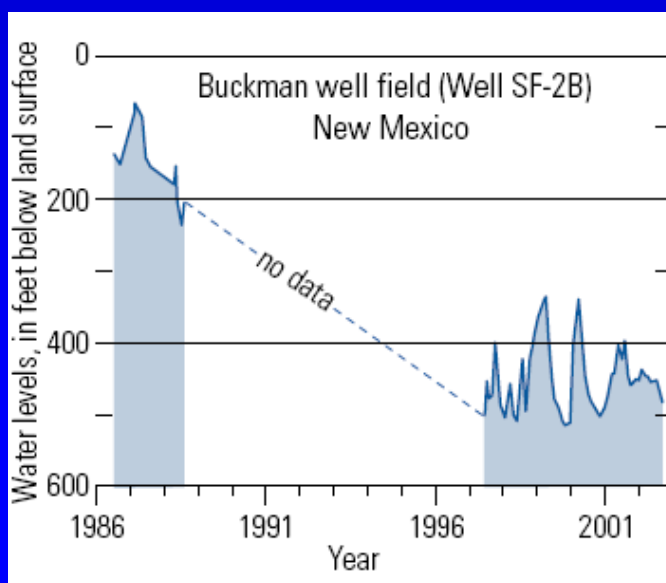
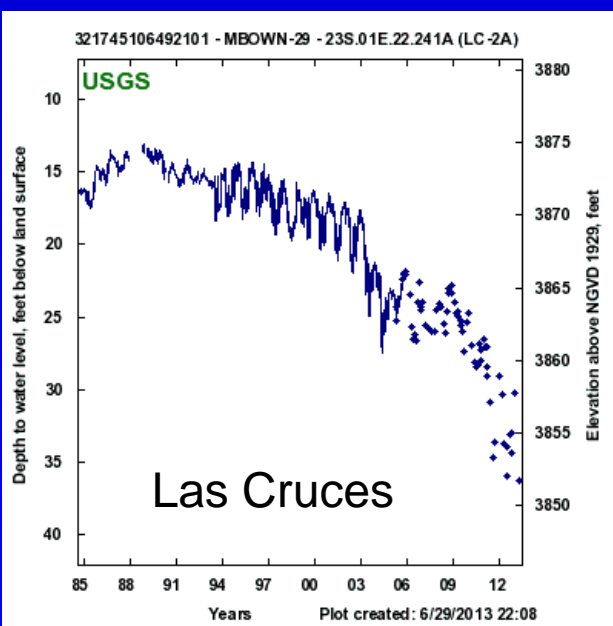
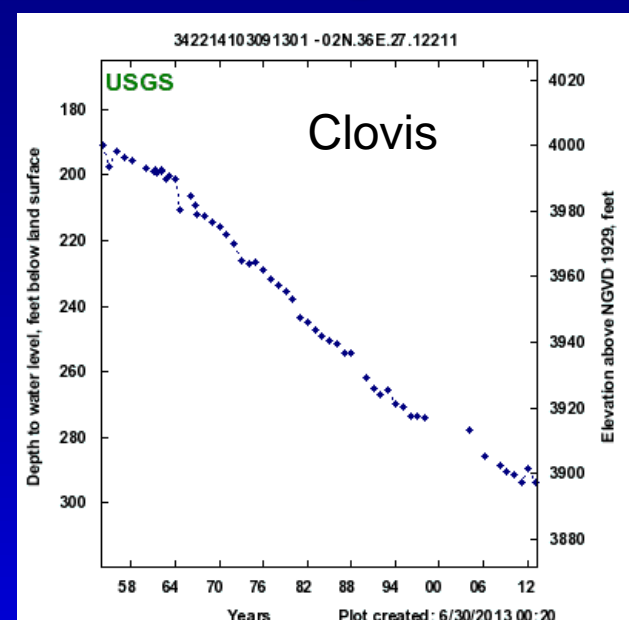
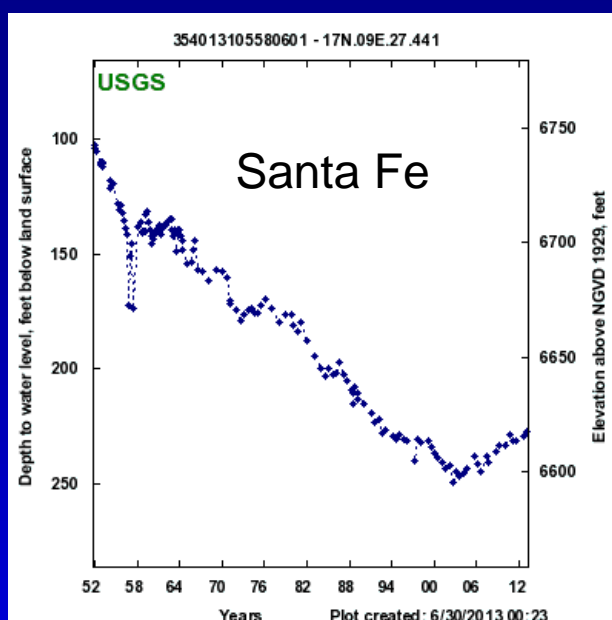
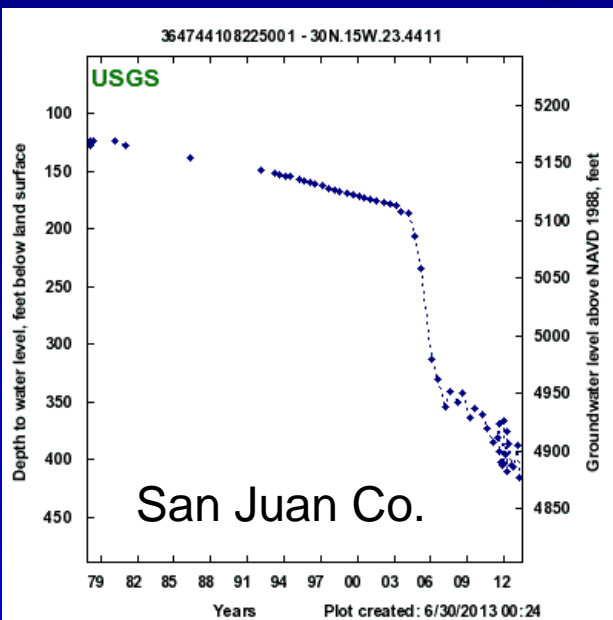
## No Fluctuation with Wet and Dry Cycles

But droughts can have a cumulative impact on GW depletion.

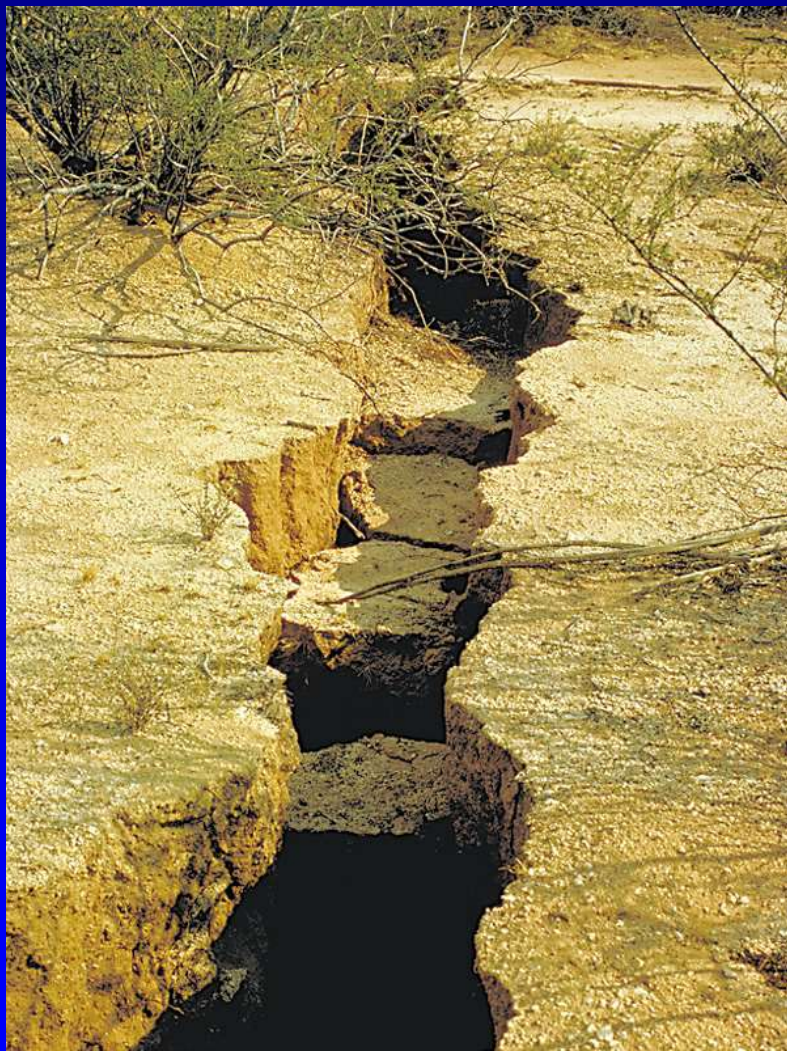




# Declining Water Table Examples



# Subsidence

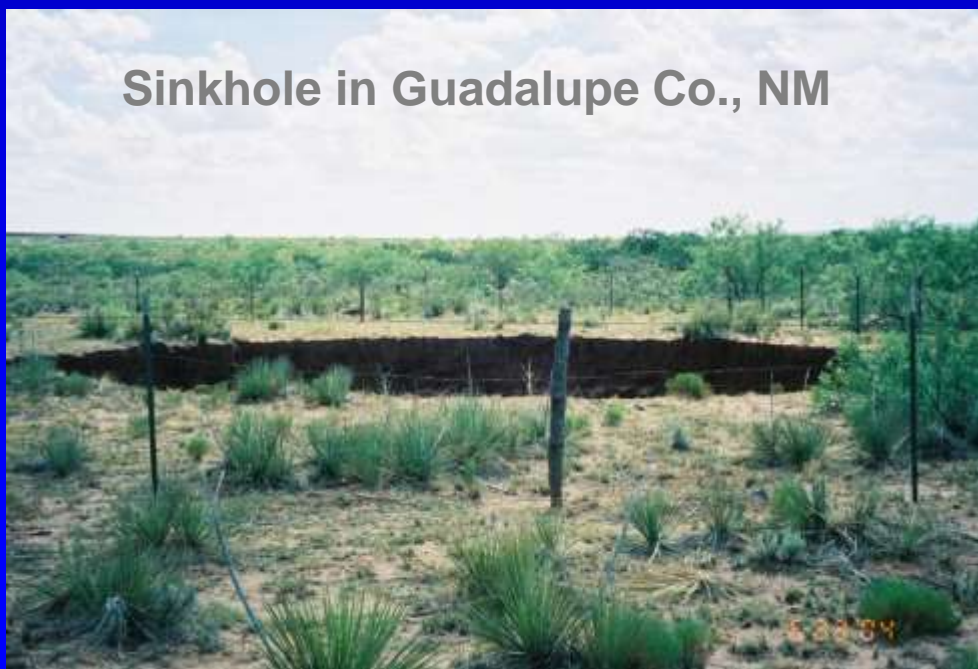


**Land Fissures in Southern Arizona  
And Deming, NM**



Areas where subsidence has been attributed to ground-water pumpage (Land Subsidence in the United States, USGS Circular 1182)

**Sinkhole in Guadalupe Co., NM**





# Little Bear Wildfire

2012

16 Public Water  
Systems  
Damaged



## Bonito Lake

25% of Alamogordo  
water supply lost to fire  
damage



2012/07/09

# Natural Drinking Water Contaminants

- Arsenic
- Fluoride
- Nitrate
- Selenium
- Uranium
- Microbiological



Uranium in Sandstone near Espanola



# Anthropogenic (Manmade) Contaminants

Deadly crash, overturned tanker clog roads to Taos 9/17/97



Firefighters, wearing oxygen tanks, work on closing the overturned tanker and the surrounding gas spill Tuesday morning on N.M. 60 just north of Embudo Station.



# Water System Intrusion



- Perimeter fence and razor wire cut.
- Locks cut on ladder and on two access hatches on top of 3,000,000 gal tank that serves 32,000 persons.
- Tank isolated by valves. (In other intrusions, the pump was reversed to flow from distribution into the tank.)



- Multi-agency response.
- Extensive testing for biological and chemical contaminants.
- Sampling personnel wore Level C PPE.
- Criminal investigation.
- All tests were negative and tank was returned to service.



# Sources of Contamination

- ◆ **Industrial and commercial activities**
- ◆ **Animal feeding operations**
- ◆ **Agriculture**
- ◆ **Septic systems and cesspools**
- ◆ **Underground storage tanks**
- ◆ **Landfills and surface impoundments**
- ◆ **Nonpoint source pollution**

# Leaking drums Valencia County





# Waste Valencia County





# Cesspool in Peralta



# Sewage discharge from daycare center near public water supply





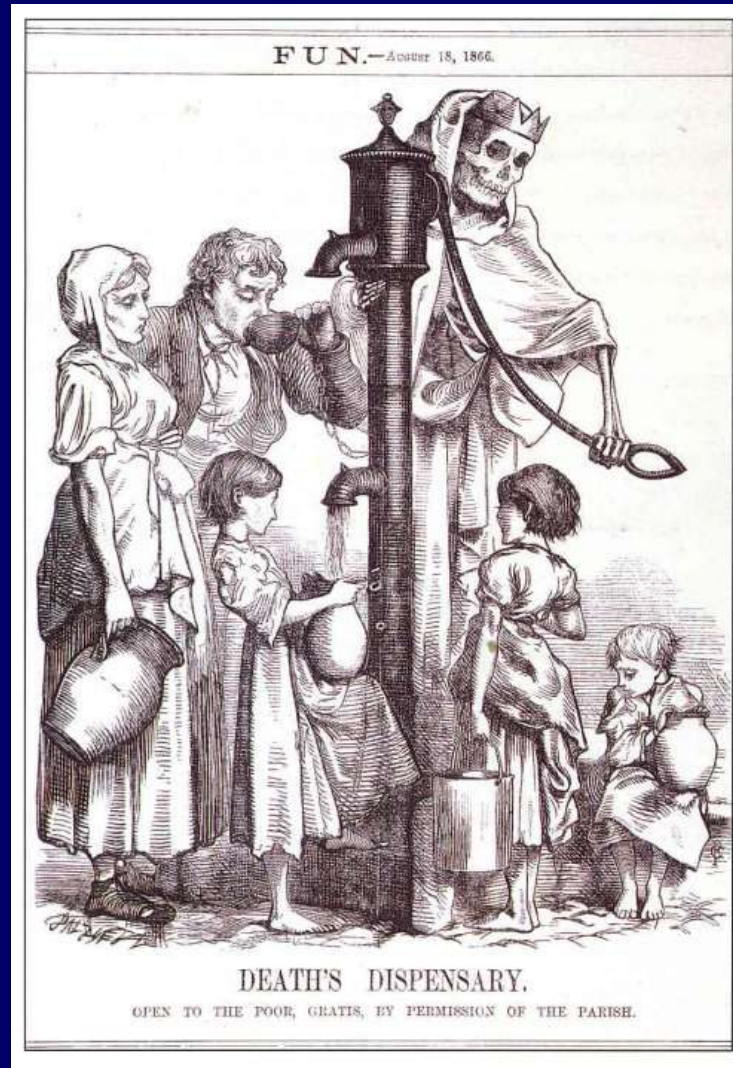
# Waterborne Illness

	USA	Worldwide
People living without indoor plumbing	2,010,000 (0.64%)	3,100,000,000 (43%)
Diarrheal Illness deaths (children/year)	375	1,500,000
Cholera cases/year	0 to 5	4,000,000
Cholera deaths/year	0 to 2	120,000
Typhoid Fever cases/year	5,700	21,500,000
Typhoid Fever deaths/year	0 to 2	200,000



# London 1854

Cholera outbreak resulting in hundreds of deaths traced to drinking water contaminated with sewage from the Broad Street pump



ON THE  
MODE OF COMMUNICATION  
OF  
CHOLERA.

BY  
JOHN SNOW, M.D.,  
MEMBER OF THE ROYAL COLLEGE OF PHYSICIANS, FELLOW OF THE  
ROYAL MED. AND CHIR. SOCIETY, FELLOW AND VICE-  
PRESIDENT OF THE MEDICAL SOCIETY  
OF LONDON.

Second Edition, much Enlarged.

LONDON:  
JOHN CHURCHILL, NEW BURLINGTON STREET.

M.DCCCLV.

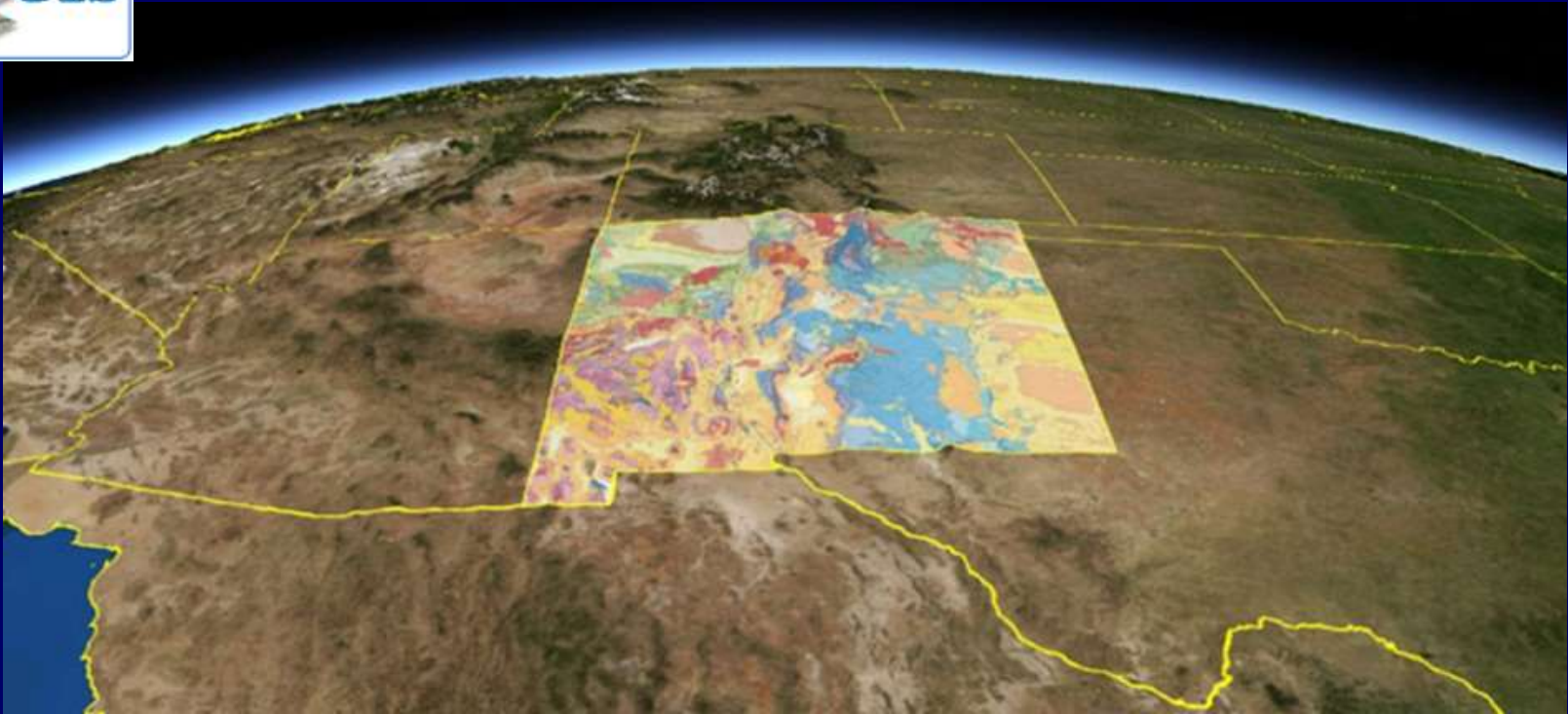
# 7 Steps to a Source Water Protection Plan

- 1. Create a source water protection team
- 2. Assemble and review Information on regional hydrogeology and on the water system
- 3. Identify source water resource(s) and protection area

# 7 Steps to a Source Water Protection Plan

- 4. Inventory Potential Sources of Contamination (PSOCs) within protection Area
- 5. Develop a Source Water Protection Plan with actions
- 6. Submit Proposed Source Water Protection Plan to NMED
- 7. Implement Plan

# Source Water Protection Atlas

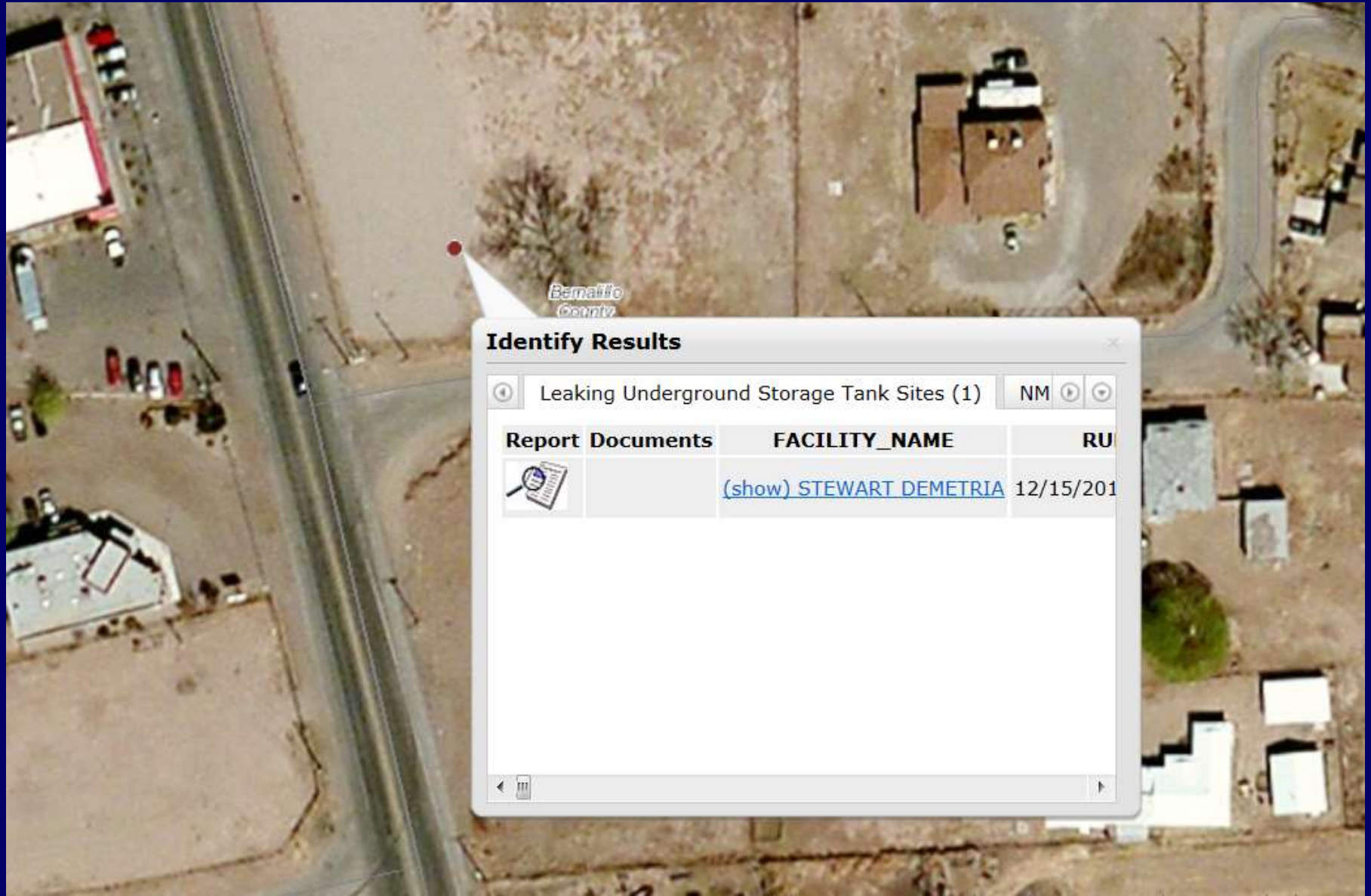


<https://gis.web.env.nm.gov/SWPA/>

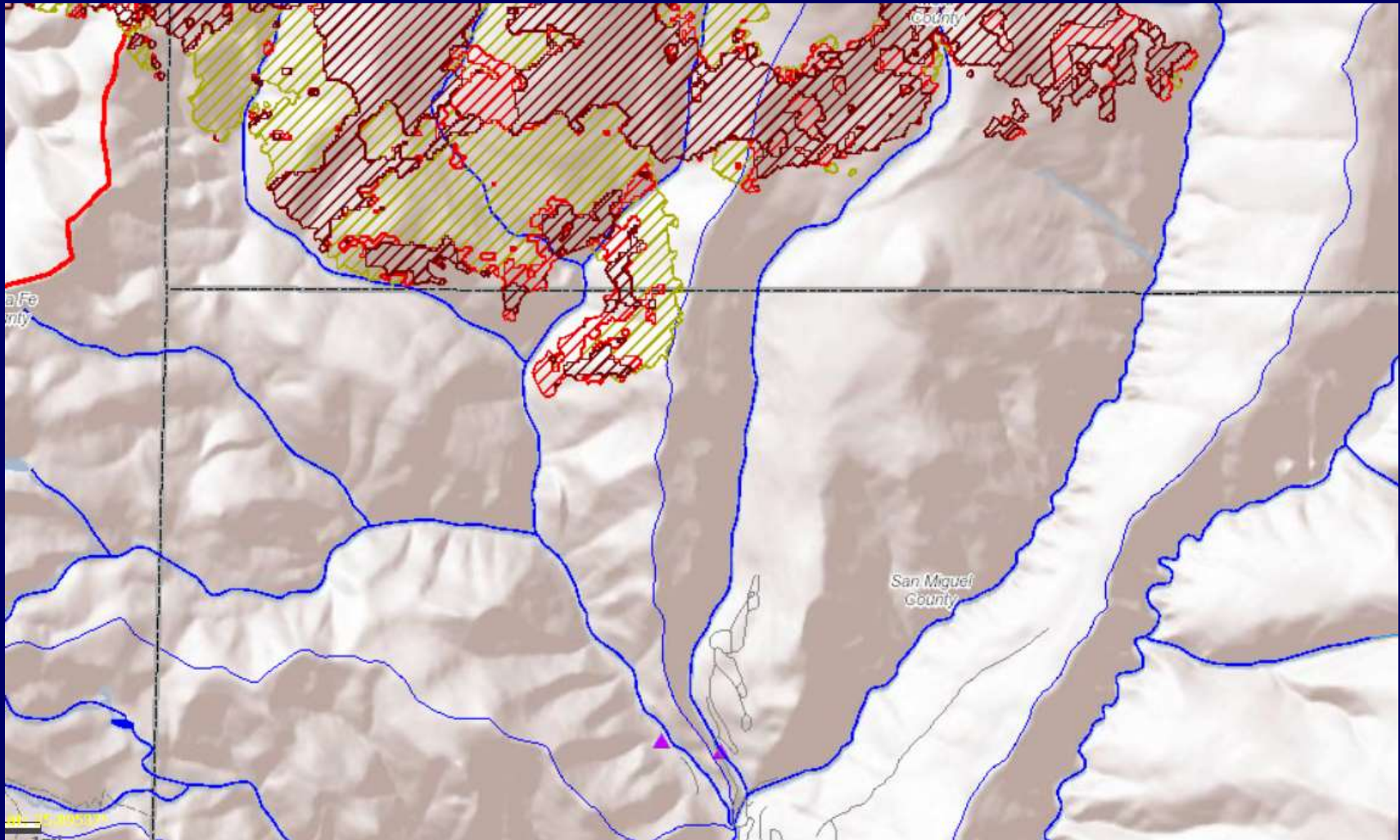




# Identify Feature tool



# Combinations of layers and base maps can address a variety of issues





# Water Conservation

- 💧 **Develop water conservation plan with actions**
- 💧 **System optimization**
- 💧 **Asset Management Plan**
- 💧 **Conservation rate structure**
- 💧 **Monitor static water levels**
- 💧 **Monitor source and service meters regularly**

# Public Education and Outreach

- 💧 **Informational meetings**
- 💧 **Advertisements, flyers, and posters**
- 💧 **Questionnaires**
- 💧 **Demonstration projects**
- 💧 **Community and school events**
- 💧 **Consumer Confidence Reports**

# **Benefits of a Source Water Protection Plan**

**Source protection is first line of  
defense in “multiple-barrier”  
protection approach**

- **Economic benefits**
- **Public health protection**
- **Prevent emergencies**
- **Environmental benefits**
- **Public confidence**

# Treating Contaminated Well Water Is Expensive

Carbon Filters



Air Stripper



# Contacts

- ◆ **Danielle Shuryn: Sustainable Water Infrastructure Group (SWIG) Manager**  
**(505)476-8637**  
**[danielle.shuryn@state.nm.us](mailto:danielle.shuryn@state.nm.us)**
- ◆ **David Torres: Source Water Protection Specialist (505)841-5306**  
**[david.torres@state.nm.us](mailto:david.torres@state.nm.us)**



Thank you!

Questions?