Watershed Planning to Protect and Restore New Mexico Waters with 319(h) Grant Funding

Lower Rio Grande
Watershed Tour
November 19, 2010

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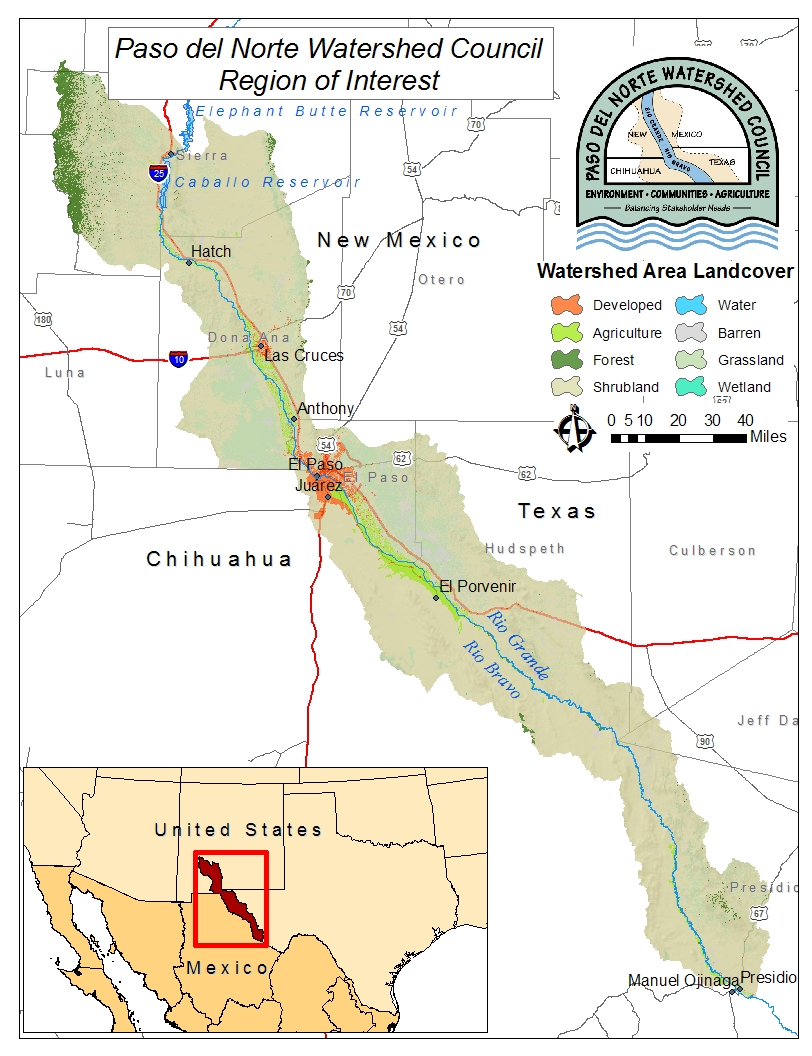
Presentation Topics

- The Paso del Norte Watershed Council
- EPA's Elements A, B, C
- Lower Rio Grande Watershed Planning (Phase I and Phase II)
- Brief overview of today's tour

Paso del Norte Watershed Council

The purpose of the Council is to ***investigate, develop, and recommend options for watershed planning*** *and management, and to explore how water-related resources can best be balanced to benefit the Paso del Norte watershed ecosystem and the interests of all watershed stakeholders.*



Watershed Council – Member entities

- Chihuahuan Desert Wildlife Rescue
- City of Las Cruces
- El Paso League of Women Voters
- Frontera Land Alliance
- New Mexico Department of Agriculture
- New Mexico State University
- New Mexico Water Resources Research Institute
- Rio Grande Council of Governments
- Rio Grande Restoration
- Southwest Environmental Center
- Texas AgriLife Research Center at El Paso
- Universidad Autonoma de Ciudad Juarez
- University of Texas at El Paso
- U.S. Bureau of Land Management
- U.S. Bureau of Reclamation
- U.S. Environmental Protection Agency
- U.S. Fish and Wildlife Service
- U.S. International Boundary and Water Commission
- Ysleta del Sur Pueblo

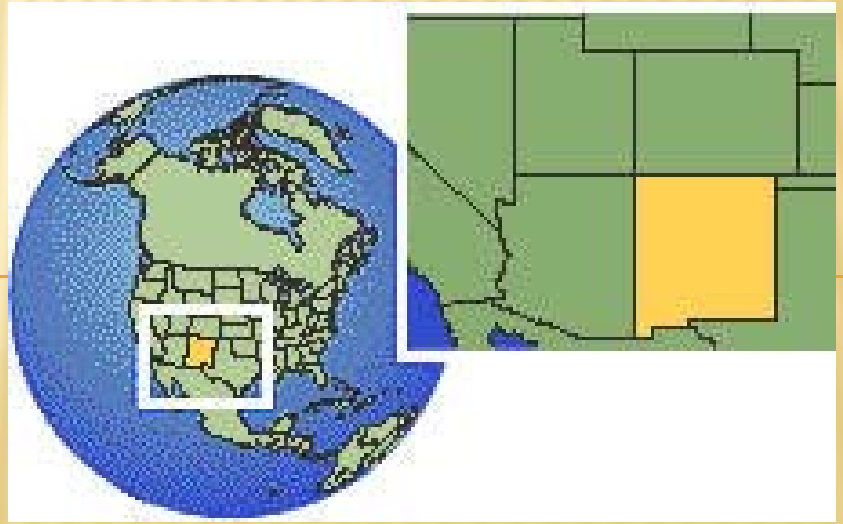
www.pdnwc.org

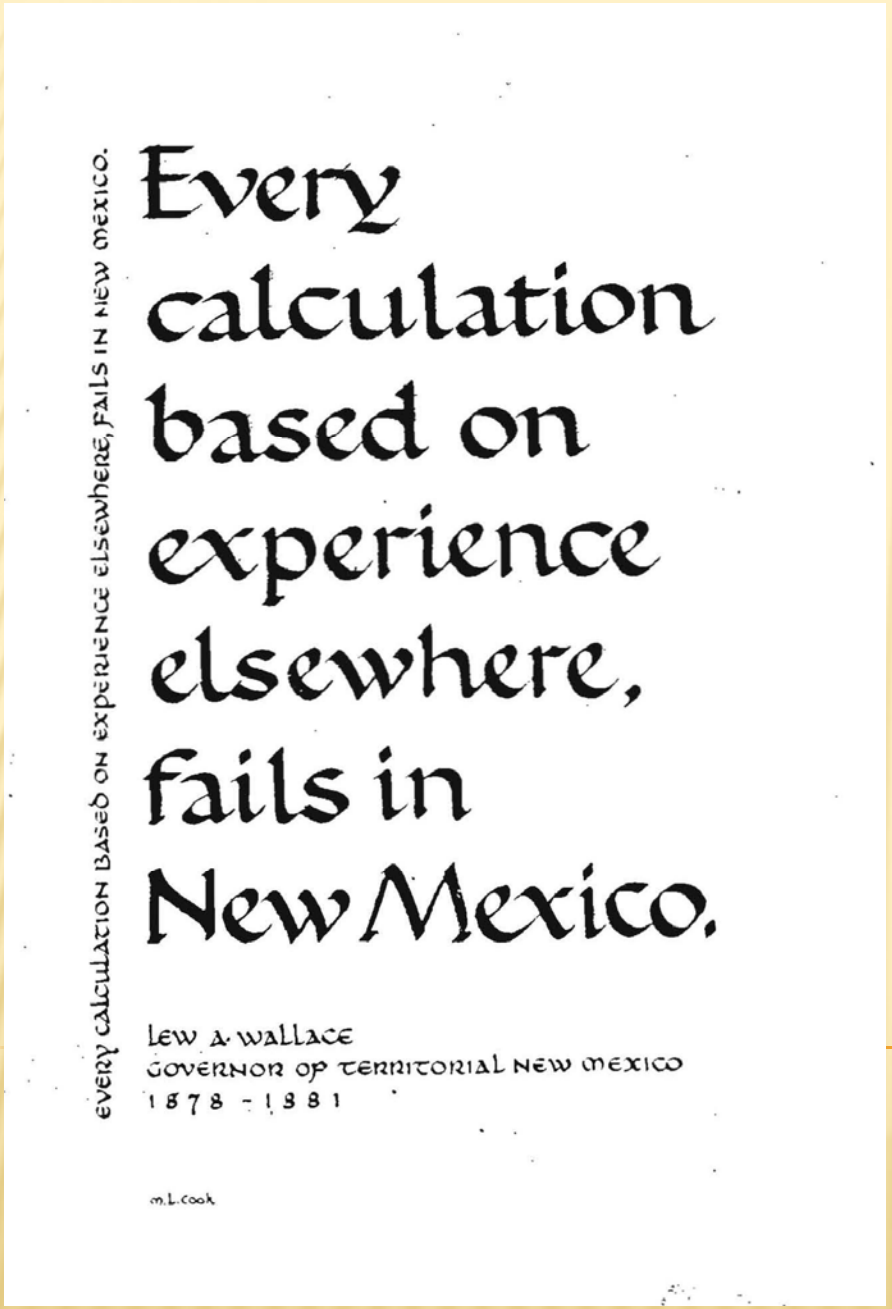
Watershed Planning with 319(h) Funds

Watershed planning can take multiple forms

Ie. NRCS, BLM, USFS, EPA

We will review the foundation of watershed planning utilizing U.S. EPA 319(h) funding in New Mexico. This can vary state to state within the same EPA region.





The 319(h) planning process results in specialized, data-driven watershed restoration that is targeted for meeting local/regional water quality goals.

TOTAL MAXIMUM DAILY LOAD DEFINITION

A specified maximum amount of a pollutant that a waterbody can receive on a daily basis without exceeding state water quality standards.

Also known as a target capacity value.

LOWER RIO GRANDE WATER QUALITY REGULATORY HISTORY

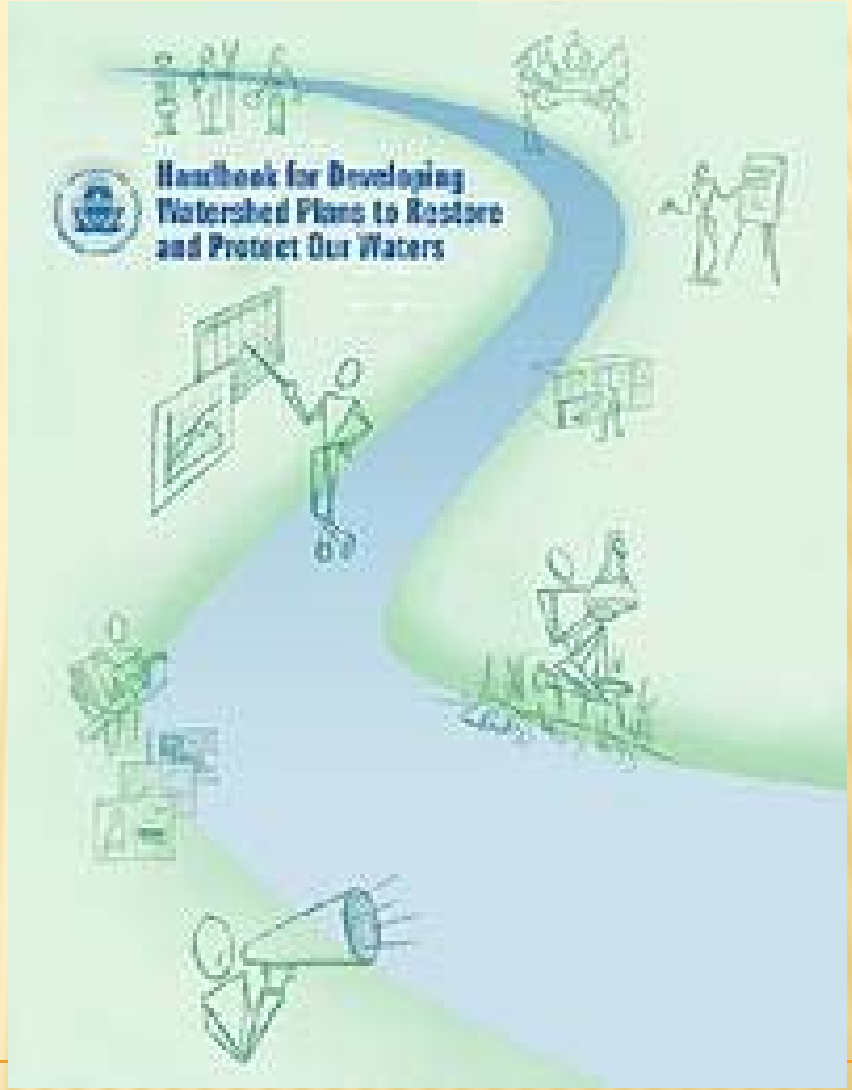
Feb-Nov 2004	LRG Water Quality Survey
April 2006	Survey Report
Feb 23, 2007	Draft LRG TMDL
	45 day comment period
April 9, 2007	Las Cruces public meeting
May 8, 2007	TMDL approval by NM WQCC
June 11, 2007	TMDL approval by EPA

The Nine Elements of 319(h) Planning

a. Identification of causes and sources
b. Estimate of needed load reductions
c. Description of management measures
d. Estimate of technical and financial assistance
e. Information / education component
f. Schedule for implementation
g. Description of measureable milestones
h. Criteria developed to determine if load reductions are achieved
i. Monitoring component to evaluate effectiveness

CWA Section 319(h) Grant Guidelines:
http://www.epa.gov/owow_keep/NPS/cwact.html

U.S. EPA Handbook for Developing Watershed Plans to Restore and Protect Our Waters



http://water.epa.gov/polwaste/nps/handbook_index.cfm

Element a
IDENTIFICATION OF CAUSES AND SOURCES

The **cornerstone** for all elements of watershed based planning.

Watershed characterization:

- Physical and natural features
- Land use and activities
- Population
- Existing data/baseline data

Element a
IDENTIFICATION OF CAUSES AND SOURCES

Gather and inventory baseline water quality data.

Analyze data! ID data gaps, develop sampling programs.

Tools:

- GIS (Geographic Information Systems)
- Databases
- Statistics
- Models
- Google Earth
- Ground-truthing

Pollutant Causes and Sources

CAUSE = TMDL (the documented water quality exceedance)

The TMDL allocates the load between point sources and nonpoint sources, but **does not quantify the nonpoint sources.**

Identifying and quantifying NPS is a main task for Element a.

SOURCE = has geographic location, may be attributed to an activity in the watershed, may have seasonal or climatic fluxes

Pollutant Causes and Sources, Con't

Ask the questions:

Where are the greatest sources of the pollutant located?

Define on sub-watershed/site scale.

What land use activity is related to the pollution?

Examine local land use activity.

Geographical definition and source-specific identification are critical.

Element b
ESTIMATE OF NEEDED LOAD REDUCTIONS

Based on source identification, water quality goals, and the effectiveness of management measures (MMs).

Two separate components:

1. Planning: estimate reductions needed to meet water quality goals. (Do goals equal WQ standards?)
2. MM Implementation: estimate expected reductions based on implementing management measures (Element c). Consider synergistic effects.

Element b
ESTIMATE OF NEEDED LOAD REDUCTIONS

MM = management measure

Process (planning component):

1. Allocate load estimates per source
2. Choose suite of MMs (Element c), determine utility and location of implementation
3. Estimate load reductions per MM

Resources: stakeholder input, local knowledge base, technical expertise, data management, modeling

Element b
ESTIMATE OF NEEDED LOAD REDUCTIONS

An inexact science!

Factors: natural variability in water quality, MM performance, time-consuming process.

Others: access to data and technical expertise.

Element c
DESCRIPTION OF MANAGEMENT MEASURES

What measures are appropriate and effective for achieving your goals?

Depends on pollutants of concern and sources of pollution.

Lots of choices for MMs.

Recommendations could look at an integrated combination of management and restoration.

240 Filter Strip

TMDL Practice Sheet

LEVEL 200: ACTIVE MANAGEMENT

DESCRIPTION

A strip or area of herbaceous vegetation situated between cropland, grazing land, or disturbed land (including forest land) and environmentally sensitive areas.

PURPOSE

A filter strip removes pollutants from runoff before the material enters a body of water. It also serves as a buffer between water and the fields above the water so that pesticides and other chemicals are not applied directly adjacent or into the water body. Filter strips also reduce sedimentation of streams, lakes and other bodies of water.

PRACTICE CATEGORIES

Stream Bank Protection
Recreation Management
Construction Site Management
Stormwater Control
Mining Lands Management
Cropland Management

TMDL SOURCES TREATED

Animal Feeding Operations
Disturbed Areas
Stream Erosion
Agricultural Practices

POLLUTANTS ADDRESSED

Sediments
Salinity
Pesticides
Pathogens
Nutrients & Organics
Heavy Metals
Low Dissolved Oxygen

LOAD REDUCTION POTENTIAL

○ LOW ○ MEDIUM ◉ HIGH

ESTIMATED TIME FOR LOAD REDUCTION

○ IMMEDIATE ◉ MONTHS-2 YEARS ○ > 2 YEARS

EXPECTED MAINTENANCE

◉ LOW ○ MEDIUM ○ HIGH

240 Filter Strip

TMDL Practice Sheet (cont.)

LEVEL 200: ACTIVE MANAGEMENT

POTENTIAL TREATMENT AREAS

Agricultural Lands
Developed Lands

ASSOCIATED TMDL PRACTICES

Exotic Removal
Seeding
Fencing

PERMITTING REQUIREMENTS

None

APPLICABLE NRCS/OTHER REFERENCES

NRCS-FOTG
393 Filter Strip

PLANNING CONSIDERATIONS

Filter strips should be strategically located to reduce runoff, and increase infiltration and ground water recharge throughout the watershed.

Filter strips for the single purposes of wildlife/beneficial insect habitat or to enhance watershed function should be strategically located to intercept contaminants thereby enhancing the water quality of the watershed.

To avoid damage to the filter strip consider using vegetation that is somewhat tolerant to herbicides used in the upslope crop rotation.

Consider using this practice to enhance the conservation of declining species of wildlife, including those that are threatened or endangered.

Consider using this practice to protect National Register listed or eligible (significant) archaeological and traditional cultural properties from potential damaging contaminants.

Filter strip size should be adjusted to a greater flow length to accommodate harvest and maintenance equipment.

Element c
DESCRIPTION OF MANAGEMENT MEASURES

Are they socially acceptable?

Other factors for selection:

Location (land ownership, access), estimated load reductions (MM effectiveness), legal/regulatory requirements, costs, unintended consequences.

Lower Rio Grande

319(h) Project Area = 29,267 mi^2

with 107 river miles

Varied land use

35% BLM

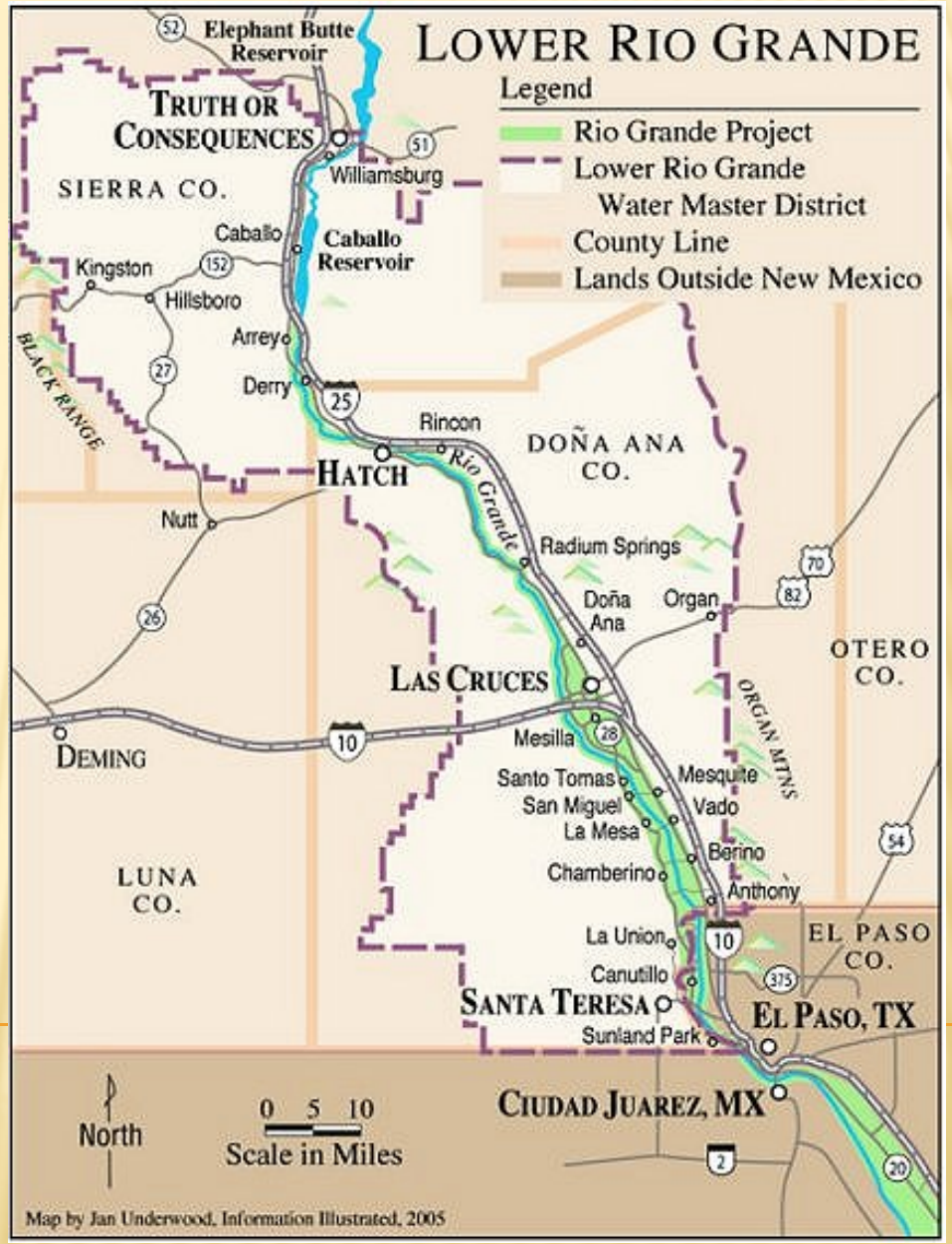
32% private

18% USFS

12% state

2% BOR

Less than 1% DOD



Las Cruces Population – 86,268

Doña Ana County Population – 206,419

Rio Grande Canalization Project
130 miles of levees

Seldon Canyon – 8.6 miles
No levees

457 miles of agricultural drains.
The only perennial tributaries in the watershed.

457 miles of agricultural drains.
The only perennial tributaries in the watershed.

Rincon Arroyo

Photos by Brian Hanson

July 2010 storm

Lower Rio Grande Watershed Based Plan

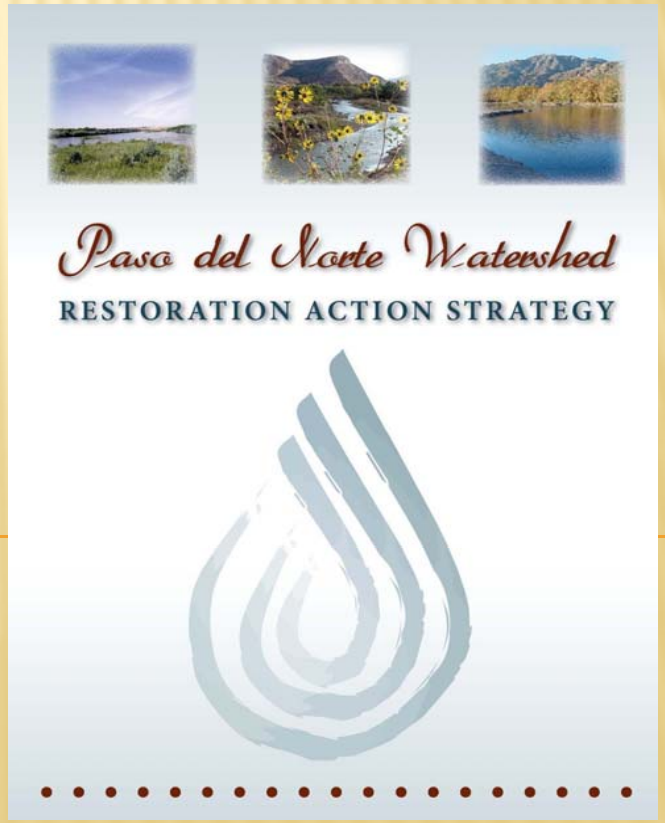
- The Paso del Norte Watershed Council received 319(h) grants in 2006 (Phase I) and 2010 (Phase II)
- The Clean Water Committee

(Includes Council members,

Project contractors and other

participants.)

- NMDA as fiscal agent
- NMED as project officer



Phase I

- Phase I activities included data and biological analyses as well as community outreach
- Resulted in Watershed Restoration Action Strategy
- Phase I conclusion: insufficient data for spatial and temporal characterization of bacteria

Phase I Recommendations

Water Quality Sampling Program

Continued development of BMP recommendations and long-term monitoring strategy

Continued stakeholder outreach and education

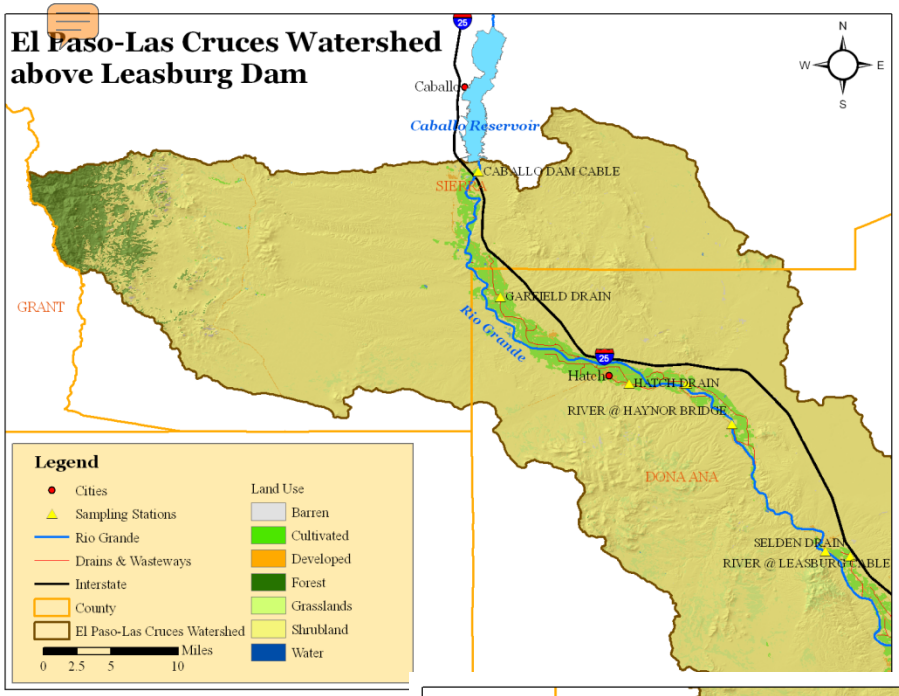
Phase II

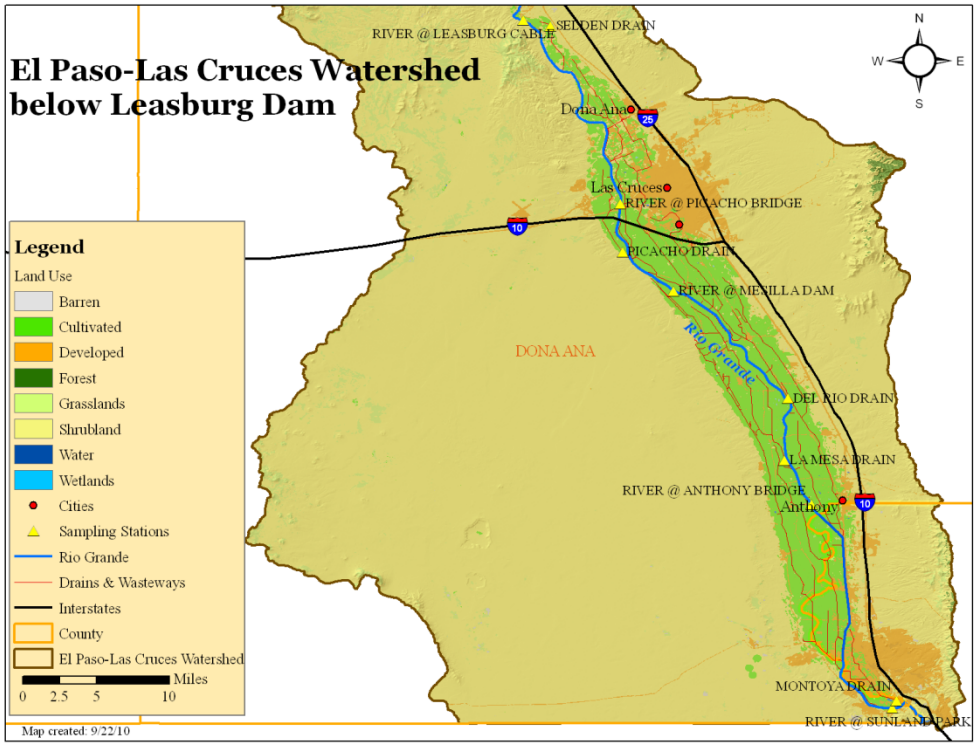
Activities:

- Water quality sampling and monitoring program
- Bacterial source tracking study
- Data analyses
- Outreach and education program

Contractors include the Elephant Butte Irrigation District, Dr. Phil King and Dr. Geof Smith of NMSU.

Brian Hanson (NMDA) is the watershed coordinator.


El Paso-Las Cruces Watershed above Leasburg Dam
Caballo
Caballo Reservoir
CABALLO DAM CABLE
SIERRA
GRANT
GARFIELD DRAIN
Rio Grande
Hatch
HATCH DRAIN
RIVER @ HAYNOR BRIDGE
DONA ANA
SELDEN DRAIN
RIVER @ LEASBURG CABLE
N
W
E
S
Legend
Cities
Sampling Stations
Rio Grande
Drains & Wasteways
Interstate
County
El Paso-Las Cruces Watershed
Miles
0 2.5 5 10
Land Use
Barren
Cultivated
Developed
Forest
Grasslands
Shrubland
Water


El Paso-Las Cruces Watershed below Leasburg Dam
RIVER @ LEASBURG CABLE
SELDEN DRAIN
Dona Ana
Las Cruces
RIVER @ PICACHO BRIDGE
PICACHO DRAIN
RIVER @ MESILLA DAM
Rio Grande
DONA ANA
DEL RIO DRAIN
LA MESA DRAIN
RIVER @ ANTHONY BRIDGE
Anthony
MONTOYA DRAIN
RIVER @ SUNLAND PARK
N
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E
S
Legend
Land Use
Barren
Cultivated
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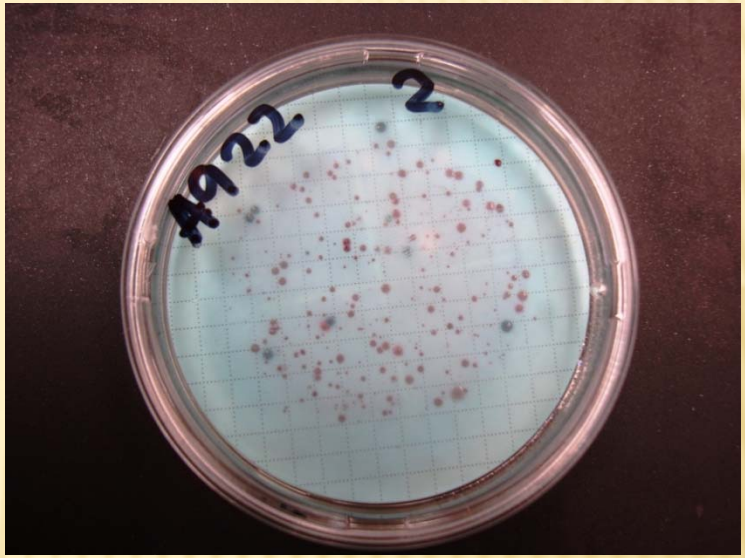
El Paso-Las Cruces Watershed
Miles
0 2.5 5 10
Map created: 9/22/10

Element a
IDENTIFICATION OF CAUSES AND SOURCES

Monitoring program consists of sampling the Rio Grande, agricultural drain return flows, and opportunistic stormwater sampling.

LRG BST Samples, October 2010



Photos by Hilary Brinegar

Element a
IDENTIFICATION OF CAUSES AND SOURCES

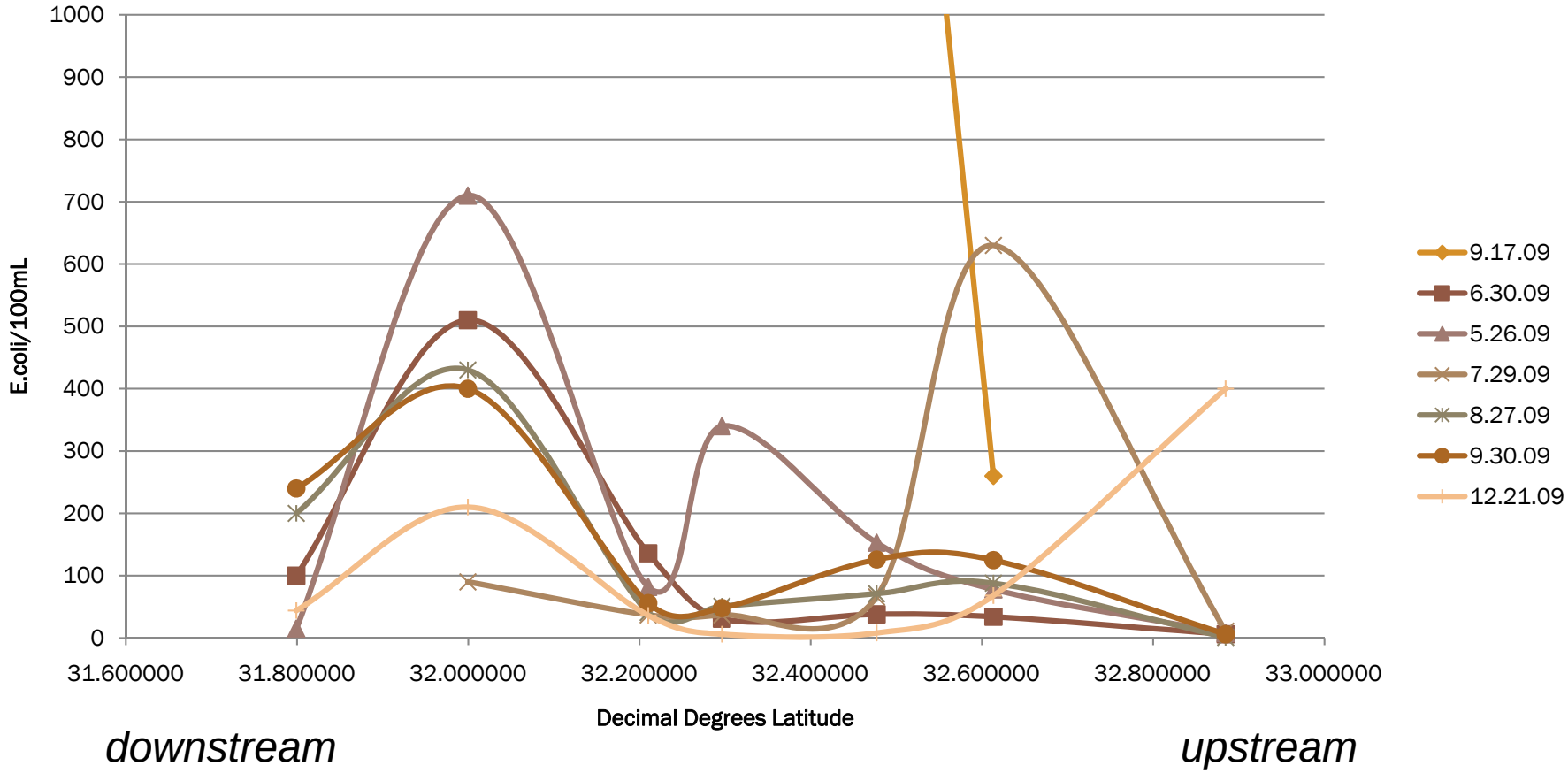
Phase II

Data is being analyzed for trends, looking for “hotspots”, utilizing BASINS model.

Identified source areas will be evaluated for land use activities.

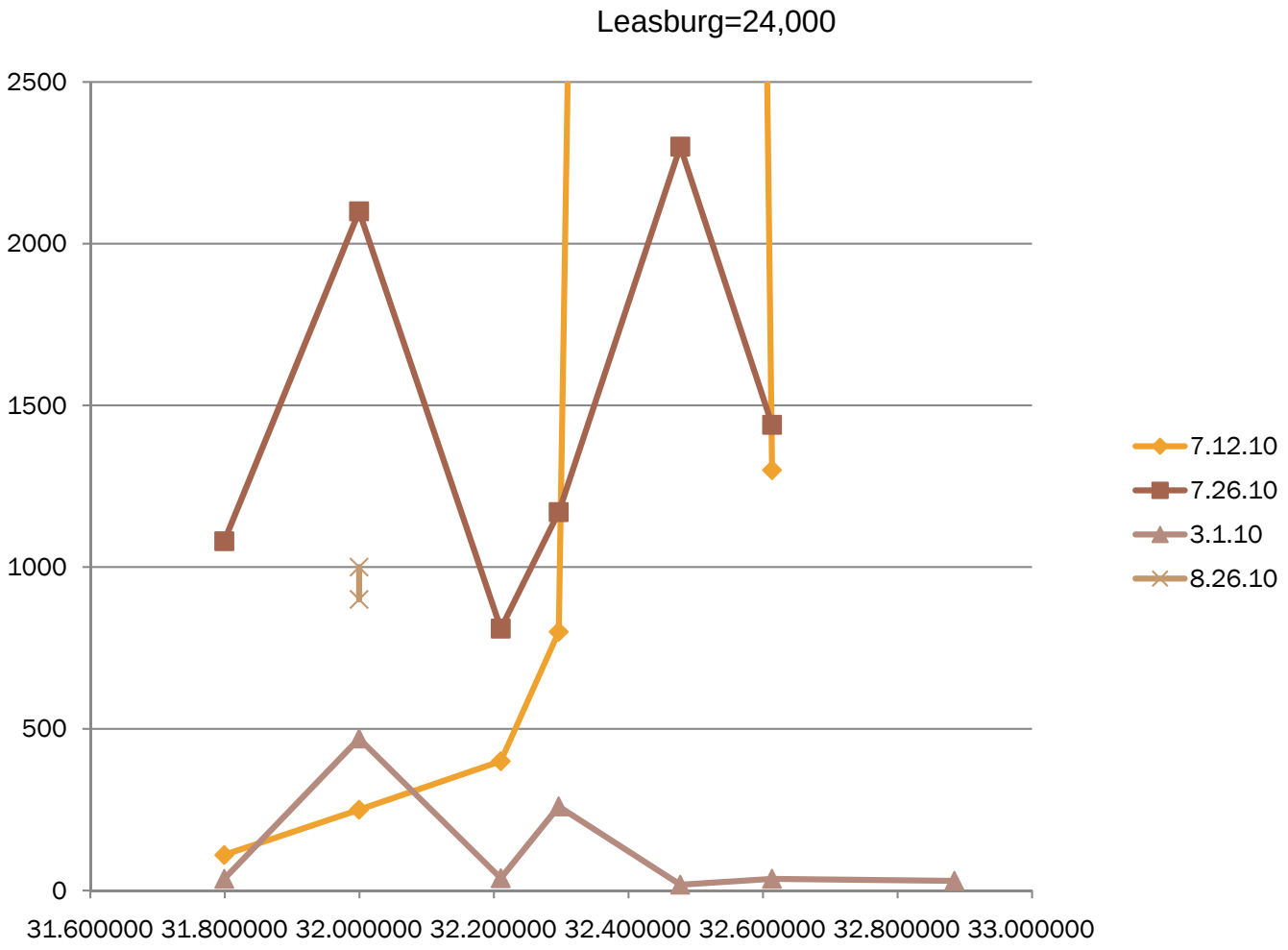
Four sites will be chosen for microbial source tracking analysis (two were selected in September 2010).

2009 River Timepoints Greater than 400 E.coli/100mL



downstream *upstream*

2010 River dates where > 400 E.coli/100 mL observed



2 of 3 “peaked” at Anthony Bridge. Added duplicate samples on Aug. 26

NEXT STEPS FOR LOWER RIO GRANDE

- Continued analysis of water quality data
- Identify two additional source tracking sites
- Land use analysis and watershed characterization
- Completing BASINS *E. coli* model analysis
- Utilizing source identification results to estimate loading and determine mitigation practices
- Continued stakeholder outreach and watershed education

References

U.S. EPA *Handbook for Developing Watershed Plans to Restore and Protect Our Waters*

http://water.epa.gov/polwaste/nps/handbook_index.cfm

U.S. EPA Region 6

Texas Watershed Planning Short Course

May 10-14, 2010 in Bandera, Texas

Clean Water Act Section 319:
http://www.epa.gov/owow_keep/NPS/cwact.html

This presentation will be available at www.pdnwc.org

Today's Tour

Stop 1	Rodeo Arena
Stop 2	Broad Canyon
Stop 3	Selden Drain Test Bed
Stop 4	IBWC Restoration Site
Stop 5	Picacho Bridge (lunch site)

Logistics

Drivers?

Questions? Comments?

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Paso del Norte Watershed Council
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