



U.S.-Mexico Border Environmental Health Initiative & U.S.-Mexico Border Geographic Information System

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Presenter
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<http://borderhealth.cr.usgs.gov>

Project Background

The border region of the United States and Mexico encompasses a vast and diverse array of physical settings and habitats that are unique in terms of the diversity of their water, mineral, and biological resources.

Wetlands, Riparian Areas, and Resacas



Mountains and Rangelands

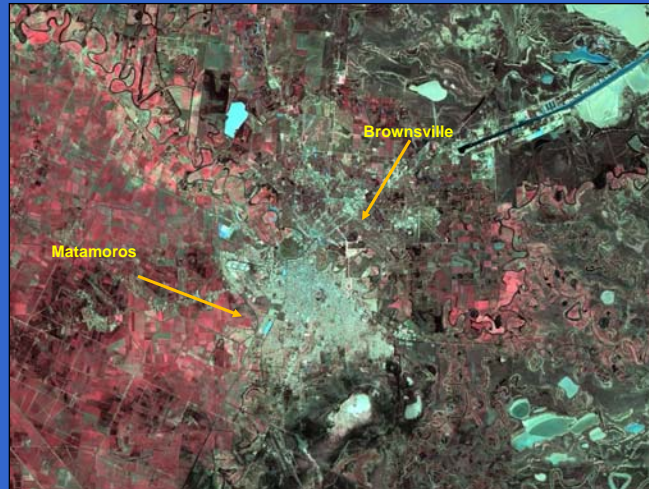


Chihuahuan and Sonoran Deserts



Environmental Stressors

Rapid population growth, economic development, and land-use changes threaten the quality of life in the region and raise concerns about the interdependence of environmental quality and human health.



The Internet Mapping Service showing Matamoros and Brownsville in a LANDSAT 7 ETM+ scene captured in spring of 2003, 432 band combination



The Border Environmental Health Initiative goals

- 1) To provide science data in support of Environmental Health studies in the U.S.-Mexico Border region to enable scientists, public health officials, resource managers, and concerned citizens to make informed decisions.
- 2) To develop methodology to binationally integrate National level base digital cartographic and environmental data from the United States and Mexico and provide public access to the datasets along the U.S.-Mexico Border.
- 3) *Investigate linkages between the condition of the physical environment and environmental and human health issues.*

Project Area



Eight major watershed regions of the U.S.-Mexico border as delineated by the Department of the Interior Field Coordinating Committee

U.S. – Mexico Border Environmental Health website and Internet Map Service <http://borderhealth.cr.usgs.gov>

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science for a changing world

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U.S. - Mexico Border Environmental Health Initiative (BEHI)

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U.S.-Mexico Border Environmental Health Initiative

Scale Information
Scale = 1:34,175

- Places
- Structures
- Boundaries
- Transportation
- Weather / Climate
- Hydrography
- Hydrogeology
- Contaminants
- Geology
- Census
- Infections
- Disease / Health Inventory
- Orthoregistry
- Land Cover
- Elevation

Accessibility FOIA Privacy Policies and Notices

U.S. Department of the Interior | U.S. Geological Survey
URL: <http://borderhealth.cr.usgs.gov/>
Page Contact Information: gs-w-tx_webmaster@usgs.gov
Page Last Modified: June 26, 2009

FIRSTGov.gov
Take Pride in America

GIS DATA DOWNLOAD SITE
<http://borderhealth.cr.usgs.gov/datalayers.html>

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Select Categories

- Places (Names)
- Structures
- Boundaries
- Transportation
- Weather/Climate
- Hydrography
- Hydrogeology
- Contaminants
- Geology
- Infectious Disease/Health Inventory
- Orthoimagery
- Land Cover
- Elevation

Details of Selected Layers (It may be necessary to scroll down to view all data)

Places (Names) Layers

Layer Name	Description	Data Sources	Downloads
Major Cities: Binational	This dataset contains only major cities and city pairs in the US Mexico Border Region as defined by the Border Environmental Health Initiative Study Area. Sources included the National Atlas and Mexico Instituto Nacional de Estadística, Geografía, e Informática (INEGI).	USGS, INEGI	Geodatabase Shapefile KML Metadata Status Map
Cities: Binational	This dataset contains points for cities within the Border Environmental Health Initiative project area. City points are divided into three size categories and contain names.	USGS, INEGI	Geodatabase Shapefile KML Metadata Status Map not Available
Urban Area Extents: Binational	This dataset contains urban area data for the U.S. and Mexico. For the U.S., the extent of the Texas data is the entire state, while the extent for California, Arizona, and New Mexico is restricted to the Border Environmental Health Initiative (BEHI) study area. The extent of the Mexico data is also restricted to the	TNRIS, U.S. Census Bureau, INEGI	Geodatabase Shapefile KML

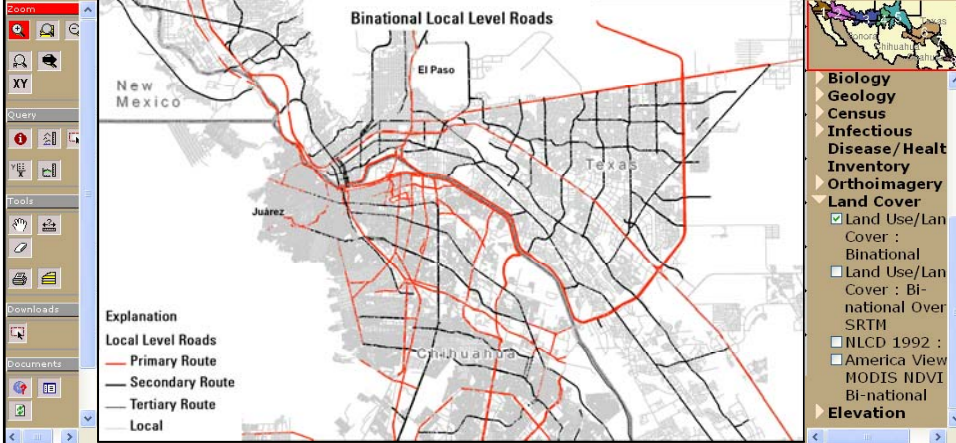
Binational Partnership

- USGS – U.S. - Multi-disciplinary science (geology, geography, biology and hydrology) and National Mapping Agency
- INEGI – Mexican National Geography and Census Bureau
- Unique agreement to share data and provide integrated datasets to the public for the border region
- Sharing capacity building and new technology for geospatial datasets

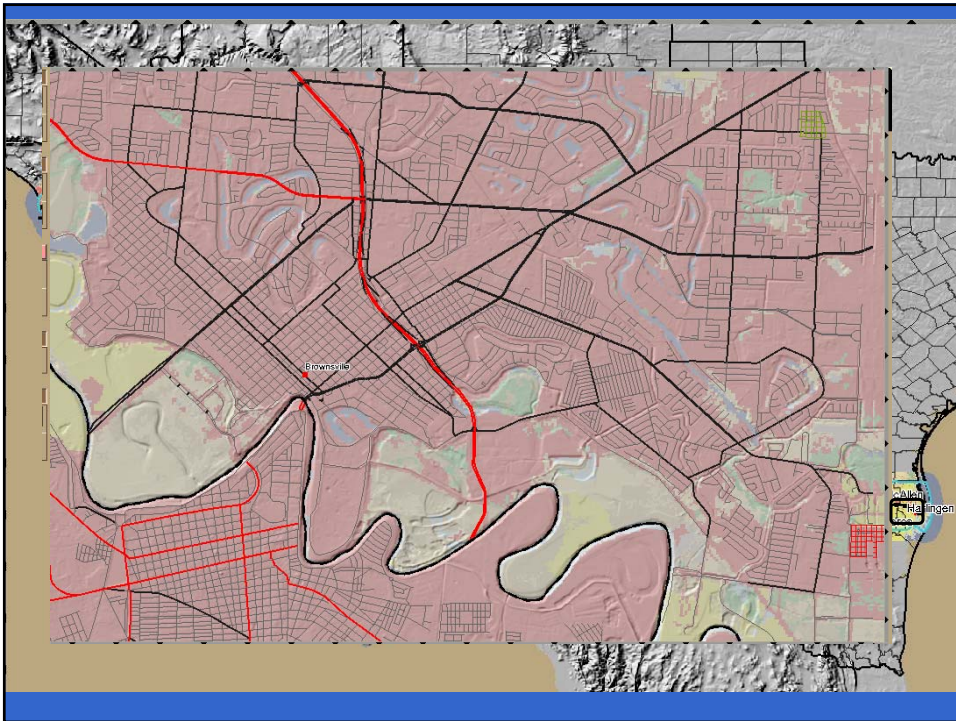
Multi-Scale Transportation



U.S.-Mexico Border Environmental Health Initiative [Back to Main Page](#)

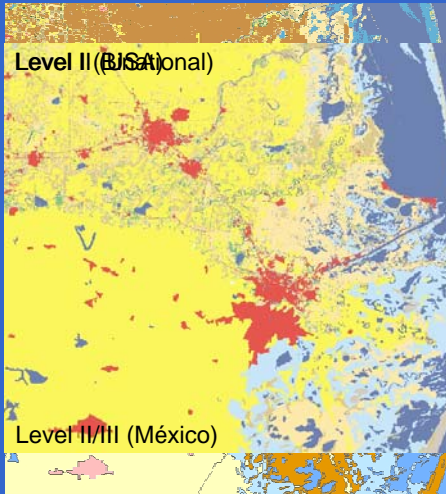


[U.S. Department of the Interior](#) | [U.S. Geological Survey](#) | [USGS for Earth Resources Observation and Science \(EROS\)](#)
URL: [Arbores/BorderHealth/LLR/LLR_Update_March_2006](#) | [Main Page](#) | [Comments and Suggestions](#) | [Disclaimer](#)





Binational Land Use And Land Cover



Sources:

- USGS National Land Cover Dataset 1992 and 2001
- INEGI Series II and Series III
- Uso de Suelo 1993, 2002

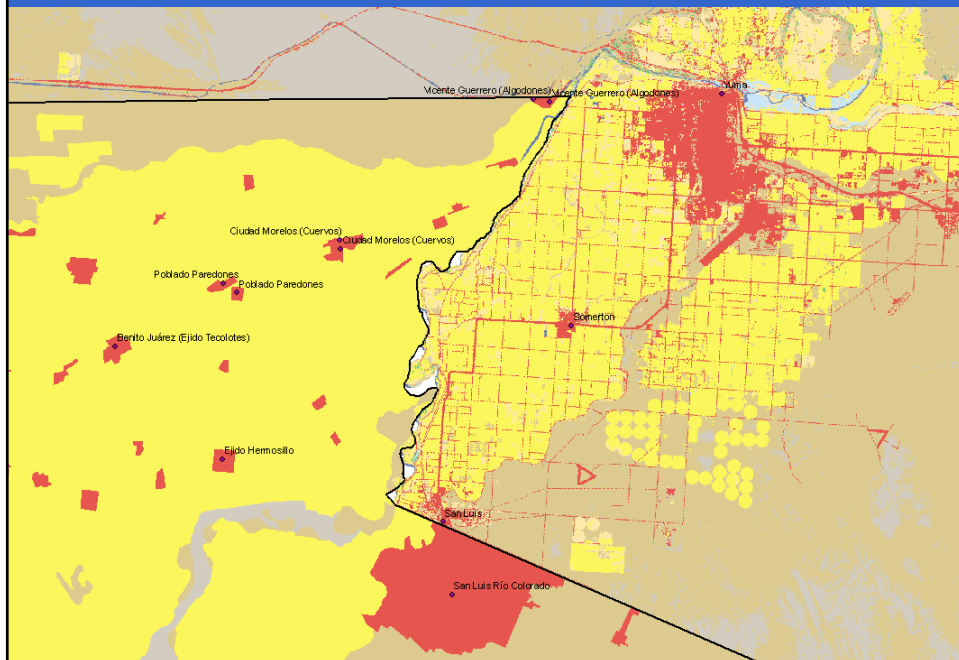
Level II
Urban, high intensity
Urban, medium intensity
Urban, low intensity

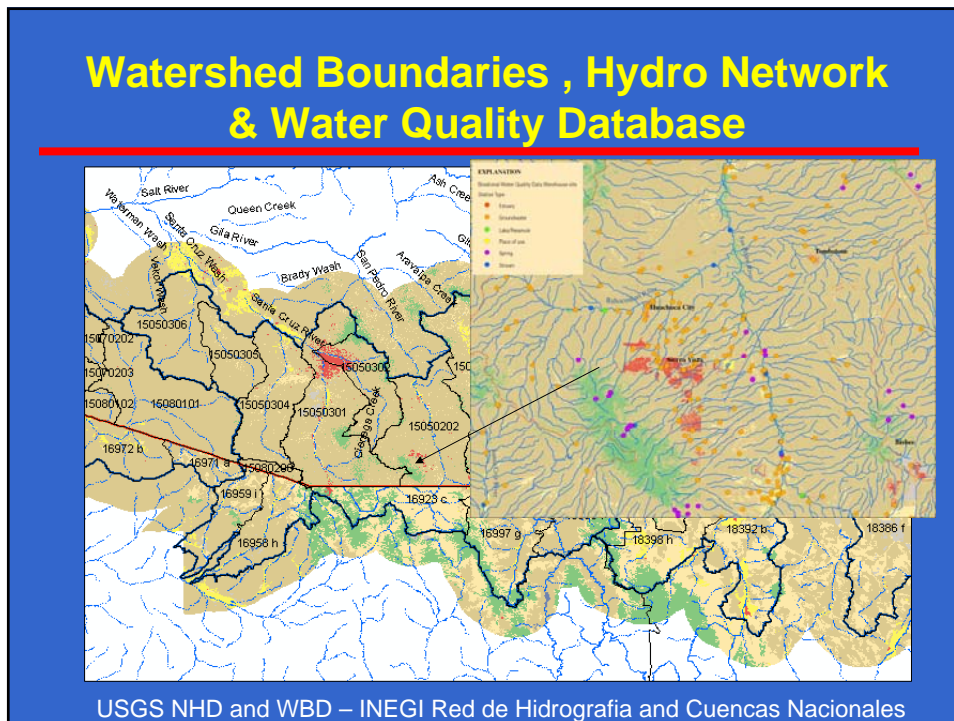
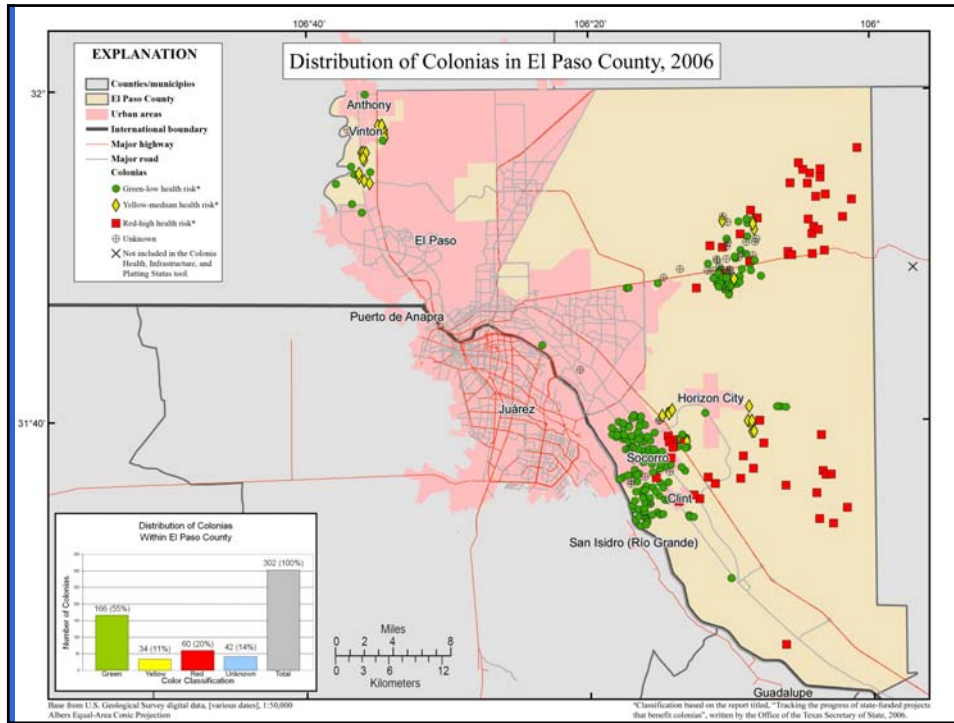
} Level I
Urban

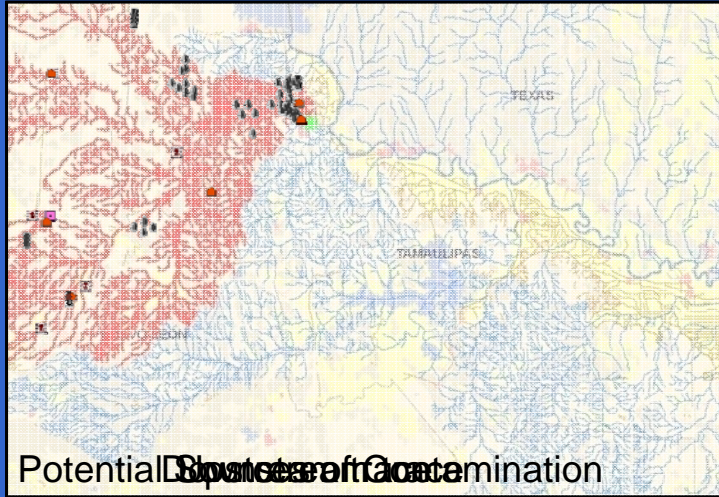
specific → general

Colorado River 1992

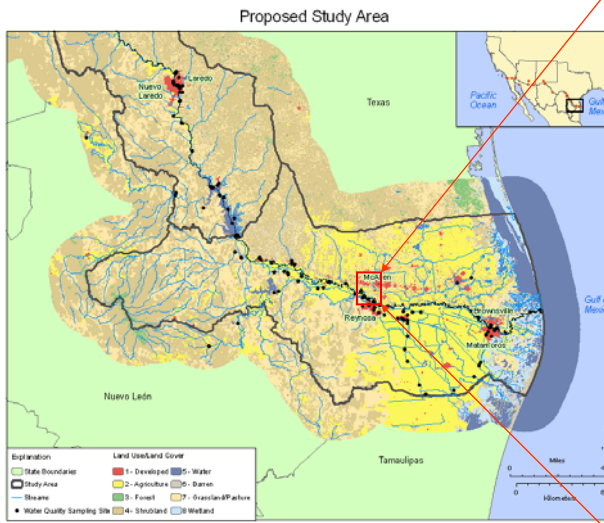
Developed	Forest	Water	Grassland/Pasture
Agriculture	Shrubland	Barren	Wetland







Potential Sources of Contamination
Hydrography Drainage Network



USGS Water Quality Samples - 1 sites found - Microsoft Internet Ex...

http://www.waterdata.usgs.gov/cgi-bin/pub/data/water_index.html?2008agency...

USGS
USGS Internal Access State Category: Water Quality Geographic Area: United States

Water Quality Samples for the Nation
USGS 05461300 USGS Rio Grande-M Falcon Dam, TX

Available data for this site: Water-Quality Discrete samples

Starr County, Texas
Latitude 26°33'25"
Longitude 99°10'05" NAD83
Elev datum: 235 feet above sea level
NOVD29
Site Type: Stream or River

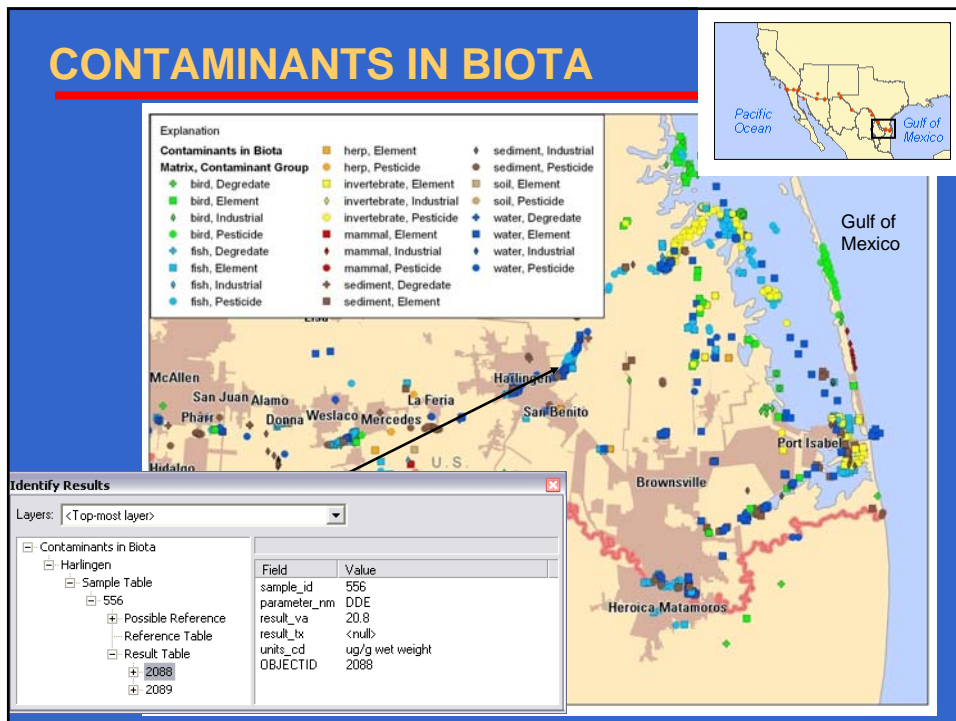
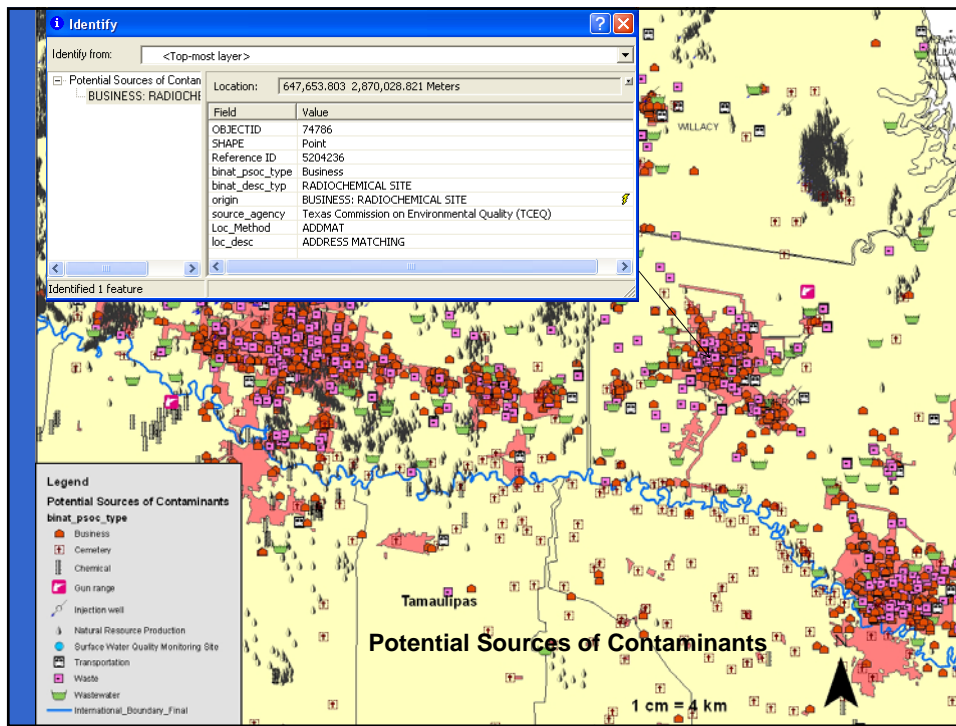
Period of record
From To Count
1964-10-01 2004-08-24 350

Choose Output Format

Retrieve Water quality samples for Selected Sites
Choose one of the following options for displaying data for the sites meeting criteria above:

Parameter Group: Period of Record table
 Retrieve data from [] to [] (YYYY-MM-DD -- HTML data)
 Table of data Excel-width text format
 Inventory of water-quality data (For printing)
 Tab-separated inventory of water-quality data (Save to file)
 Tab-separated data (YYYY-MM-DD) (Save to file)

Water Quality Trends





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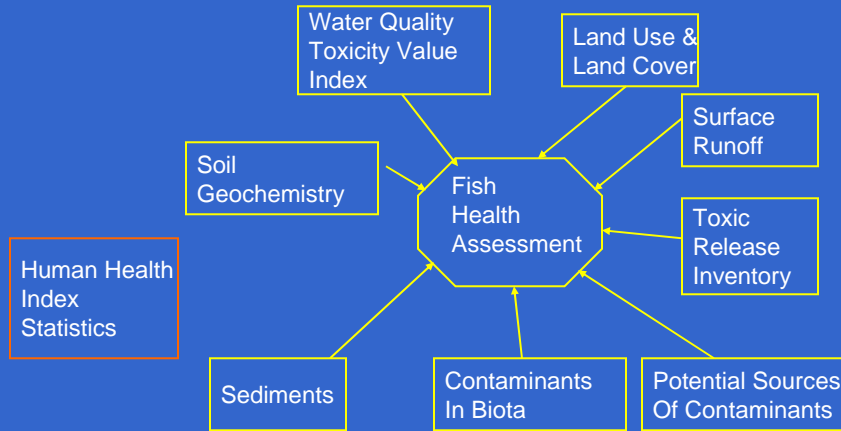
Cooperative Partnership Pan American Health Organization (PAHO)

**“Investigate the Relationships
Between Environmental
Changes, Contaminant Trends,
and Human and Wildlife Health
Along the Rio Grande from
Laredo, Texas, to the Gulf of
Mexico”**

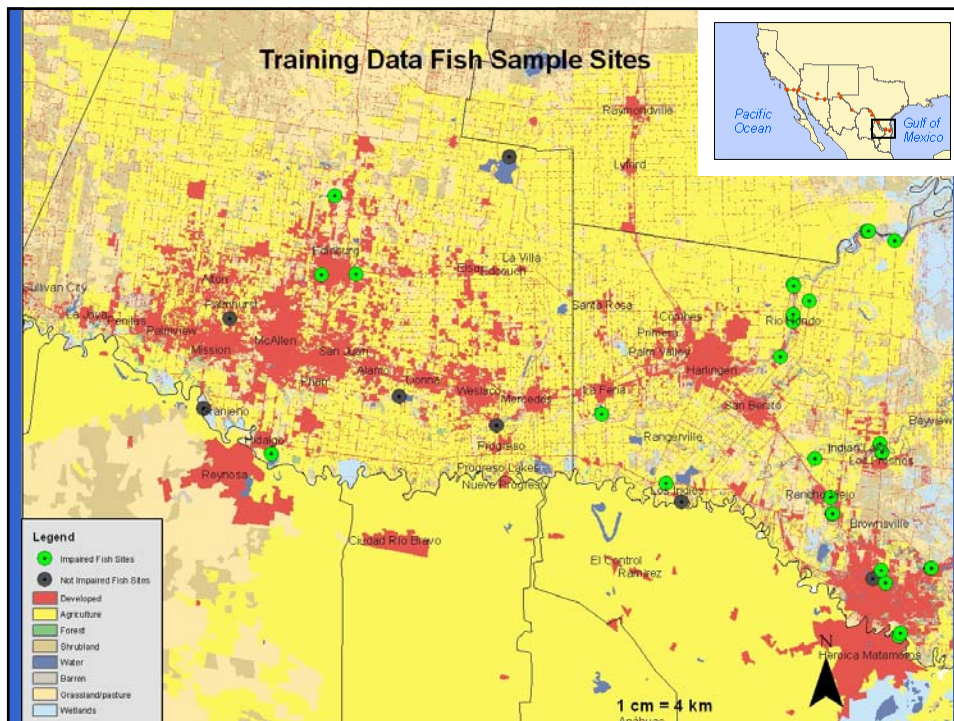


Weights of Evidence – Weighted Logistical Regression GIS Analysis

Inputs to the Arc Spatial Data Model * WOE/WLR



* Maintained by Gary Raines

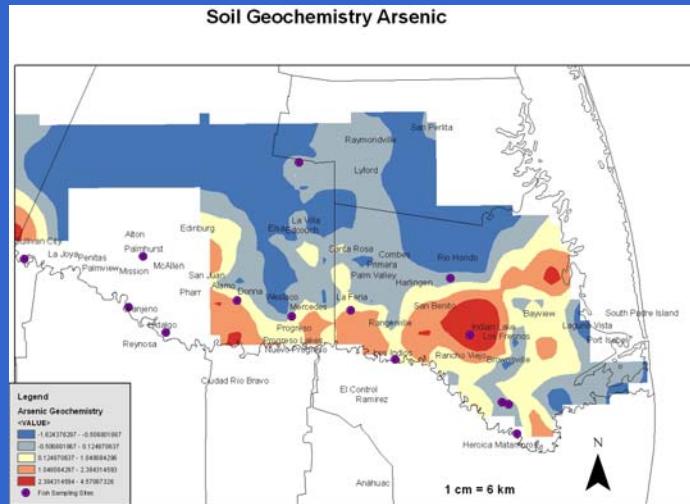




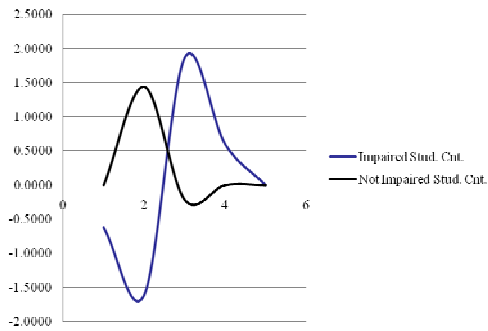
Soil Geochemistry

Priority Layers

Arsenic
Cobalt
Chromium
Copper
Nickel
Lead
Zinc



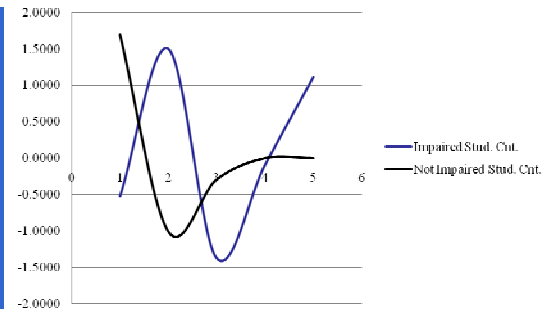
Cu - geochem



Initial Model Results

Studentized Contrast
For Copper in Geochemistry
And Contaminants in Biota

Cu - Bio





U.S.-Mexico Border Environmental Health Team

- Diana Papoulias - Biologist
- Jean Parcher – Geographer
- Sylvia Wilson – Geographer
- James Callegary - Hydrologist
- Laura Norman - Geographer
- Marie Socha - Epidemiologist
- Ric Page - Geologist
- Jim Stefanov - Hydrologist
- Manuel Mavila - Hydrologist
- Brian Reece - Hydrologist
- Natalie Houston - Geographer
- Helen Folgers - Geologist
- Sally Holl- Geographer

