

Agenda

6:30-6:45

Open House

6:45-7:45

EPA Presentation

- Overview of the Iron King Mine-Humboldt Smelter Site
- Overview of the Superfund Process
- Upcoming Residential Yard Removal
- Next Steps

7:45-8:00

Questions and Answers

8:00-8:30

Break and Open House

- Poster Viewing
- Staff available for one-on-one discussions



Iron King Mine-Humboldt Smelter Site



Public Meeting

August 31, 2011

Humboldt Elementary School

Introductions

- **EPA**
 - Monika O’Sullivan, Project Manager
 - Jeff Dhont, Project Manager
 - Craig Benson, On-Scene Coordinator
 - David Cooper, Community Involvement Coordinator
- **ADEQ**
 - Tina LePage, Project Manager
 - Wayne Miller, Project Hydrogeologist
 - Felicia Calderon, Community Involvement Coordinator
- **Technical Support**
 - Doug McReynolds, EA Engineering, Science, and Technology
- **Arizona Department of Health Services**
- **University of Arizona**
- **Community Coalition of Dewey-Humboldt**
- **Environmental Issues Advisory Committee**



Brief History of Operations

- Iron King Mine
 - Operated between 1880-1967
 - Produced gold, silver, lead, and zinc
 - Ore processing left behind:
 - Tailings (rock and sediment waste),
 - Heavy metals (e.g. Arsenic) in soils and sediments
 - Tailings and waste rock piles cover most of the site
 - “Large” tailings pile is about 6 million cubic yards
 - “Small” tailings pile is 20,000 cubic yards



Brief History of Operations

- Humboldt Smelter
 - Operated between 1870's-1937, processing silver, copper, and lead
 - Custom milling and smelting for 67 mines in the area
 - Smelter Property is spotted with
 - Ash (from bottom of furnaces)
 - Slag (cooled formerly molten material left after metals are removed from ore)
 - Tailings piles in Chaparral Gulch



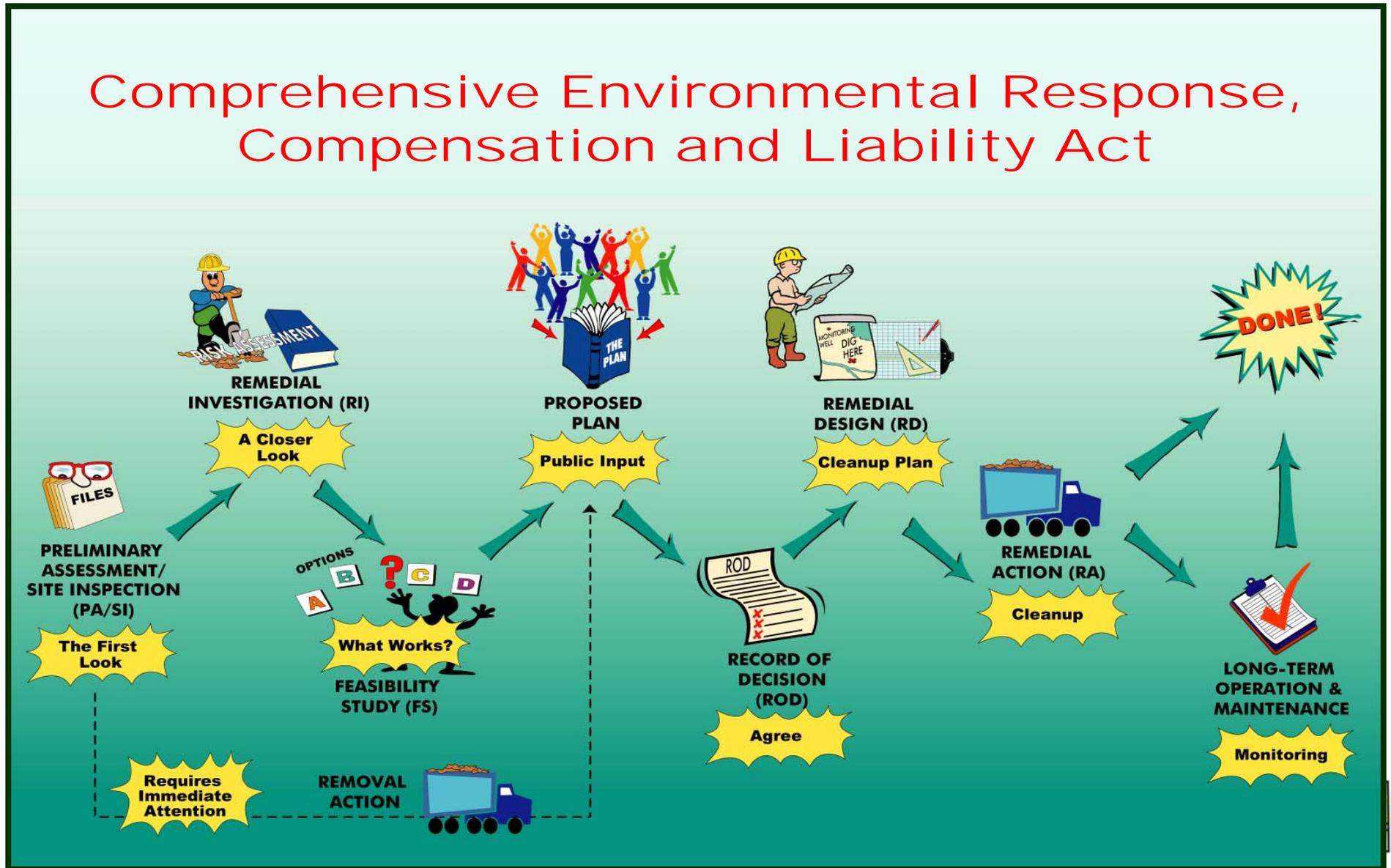
Regulatory History

- 1989: Arizona Department of Environmental Quality (ADEQ) involved
- 2004: Preliminary Assessment completed by ADEQ for Superfund Program
- 2006: EPA sampled 17 residential yards and contaminated soils were removed from 4 yards
- 2008: Site listed on the National Priorities List (the national list of Superfund sites)
- 2008: EPA, with ADEQ support, initiates Remedial Investigation and Feasibility Study
- 2008- Present: EPA and ADEQ continue RI/FS



What is the Superfund Process?

Comprehensive Environmental Response, Compensation and Liability Act

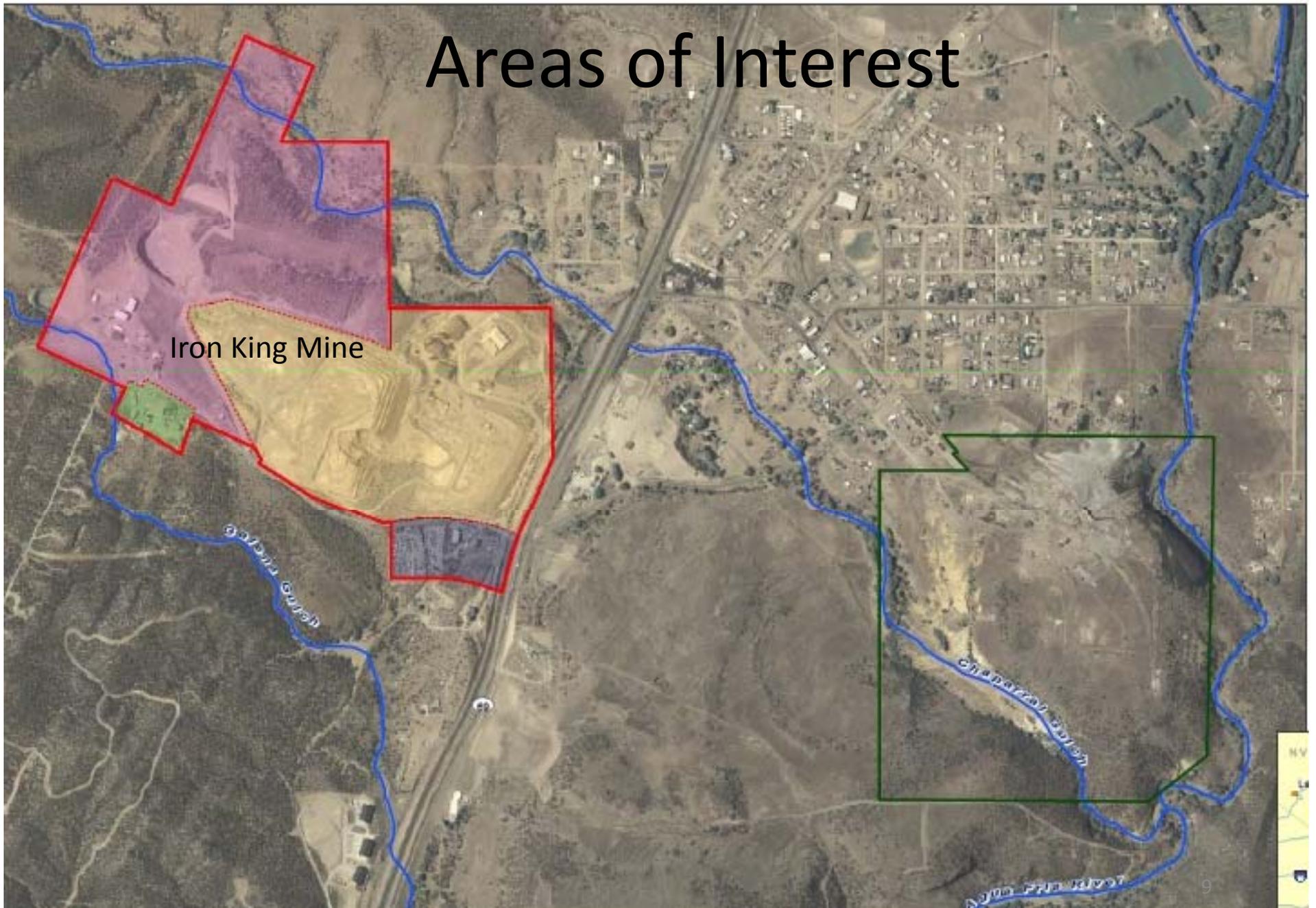


Remedial Investigation

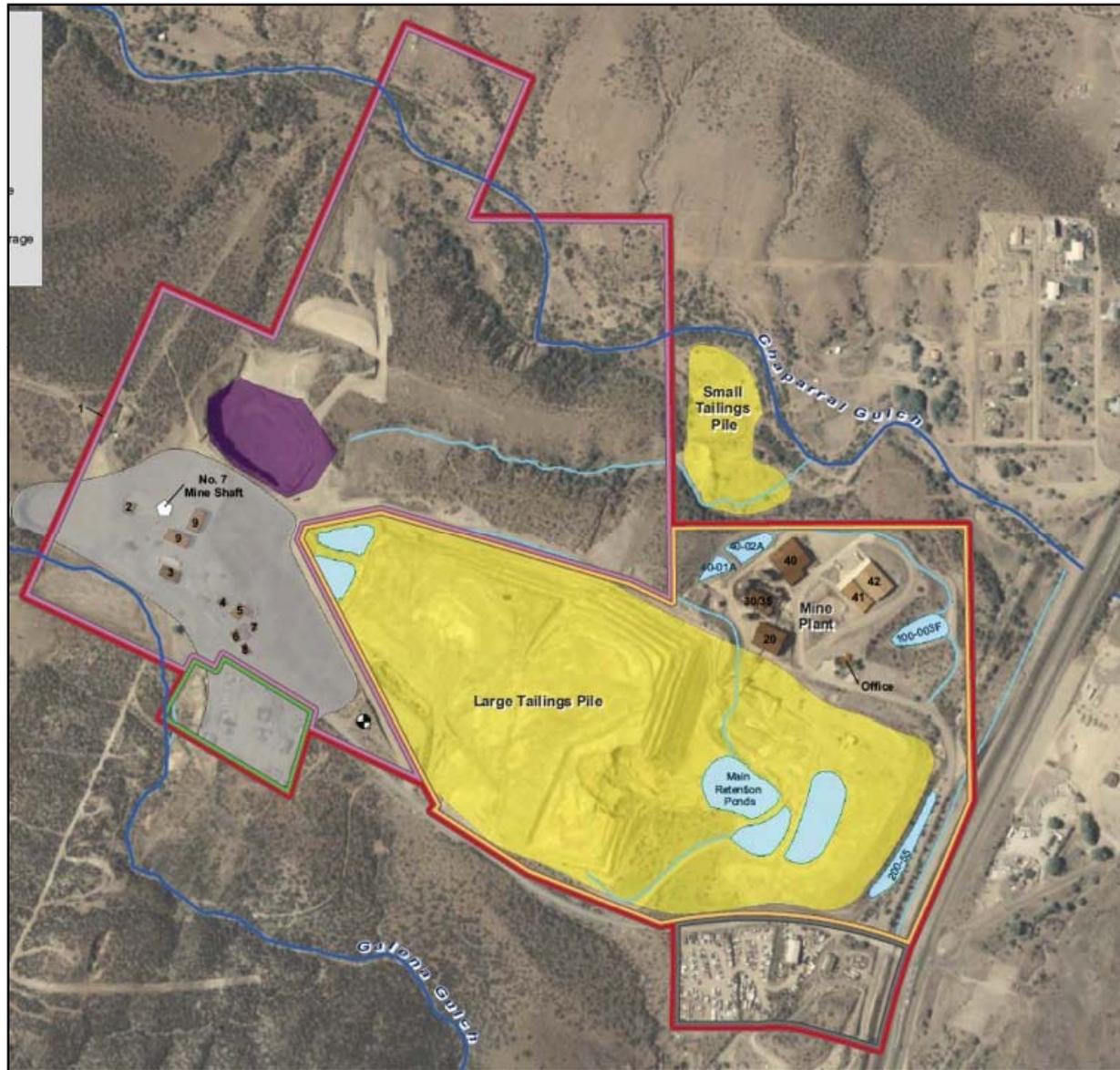
- The RI focuses on:
 - Where is the contamination ?
 - How much contamination and what risks does it pose?
 - How did it get where it is ?
 - How is contamination moving?
- Remedial Investigation began in 2008
 - Historical data gathering
 - Sampling to determine nature and extent of contamination
 - Conduct a risk assessment
 - Identify contaminants of concern
 - Identify five areas of interest



Areas of Interest



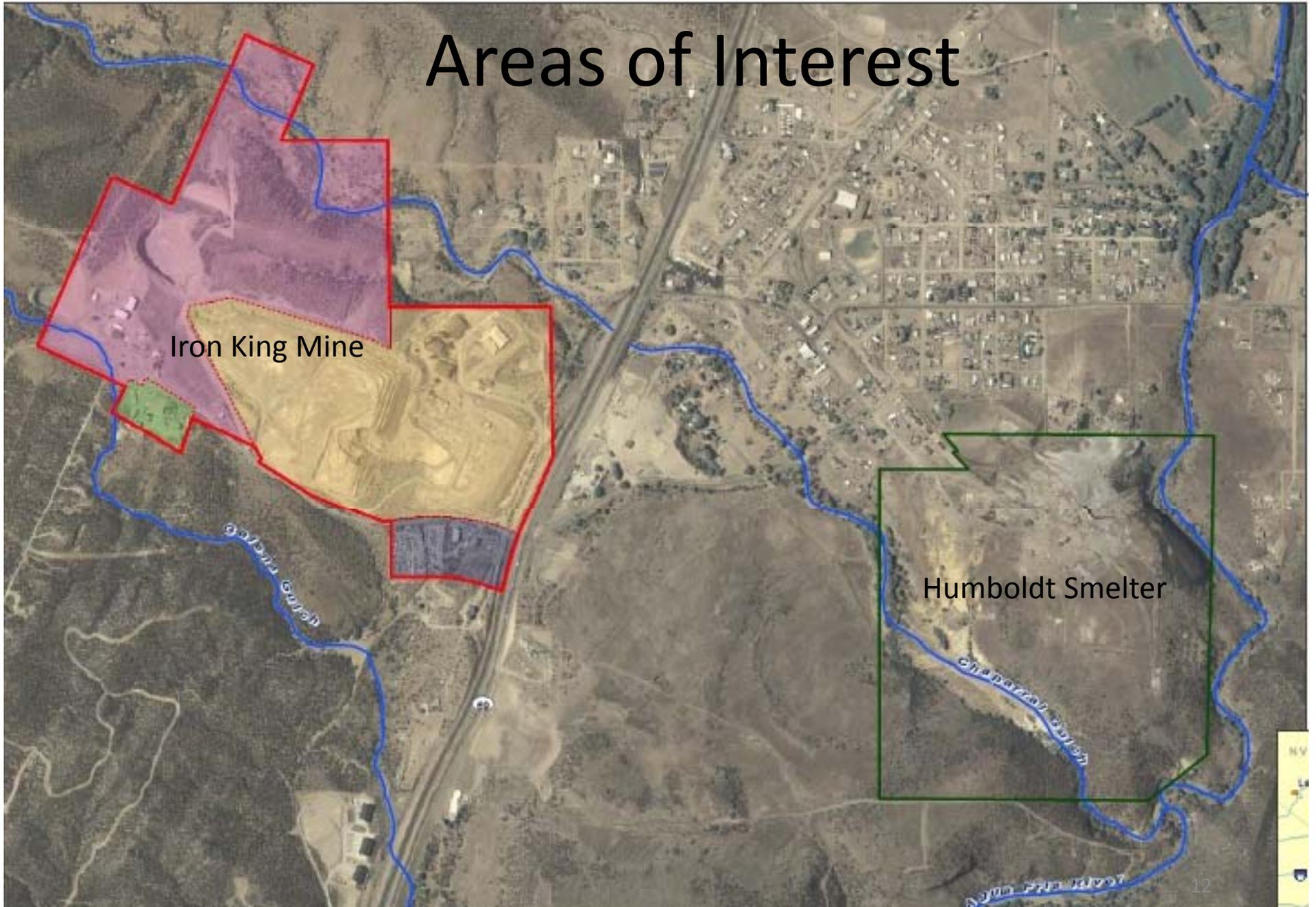
Iron King Mine Area of Interest



Iron King Mine Area of Interest



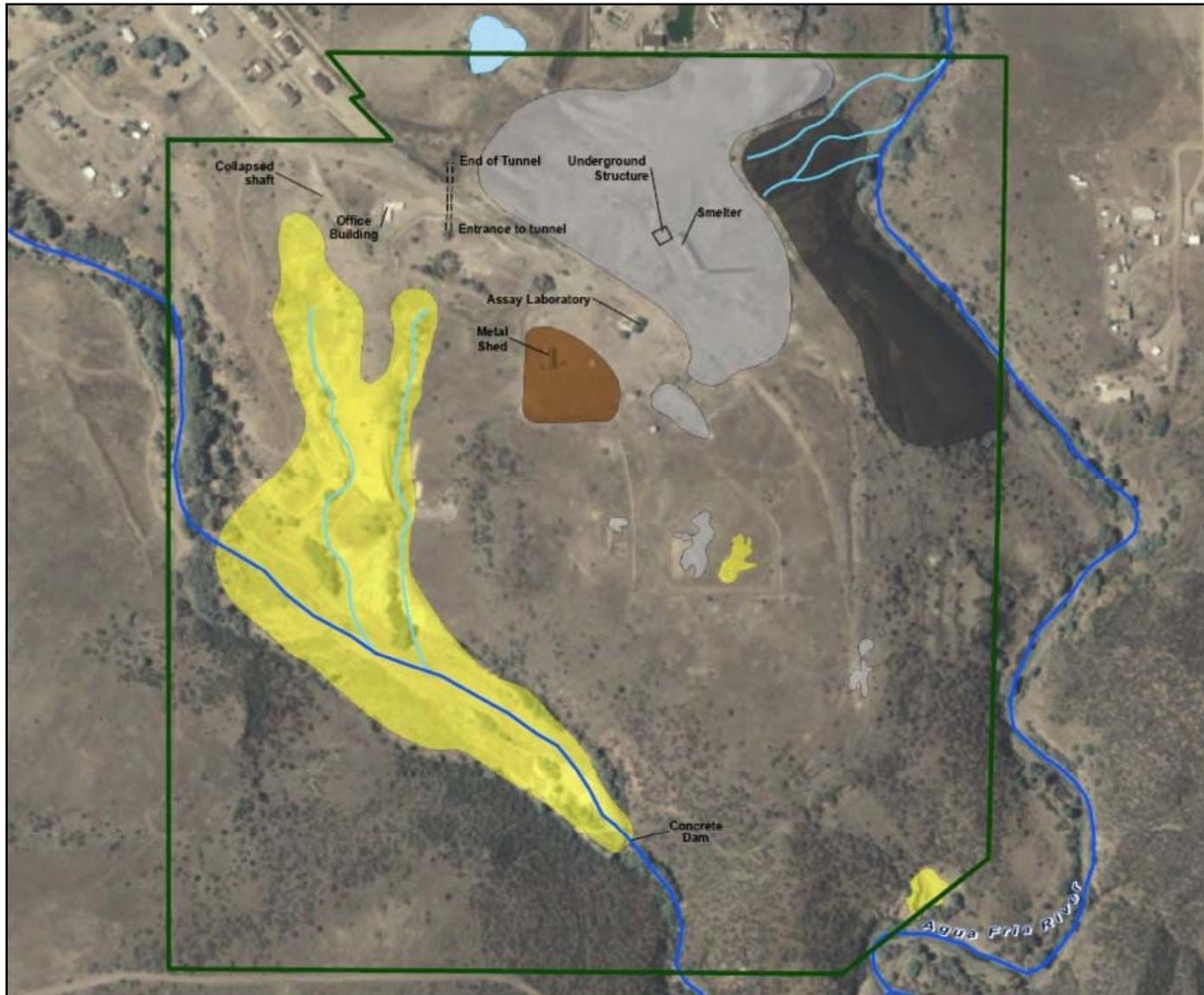
Areas of Interest



Iron King Mine

Humboldt Smelter

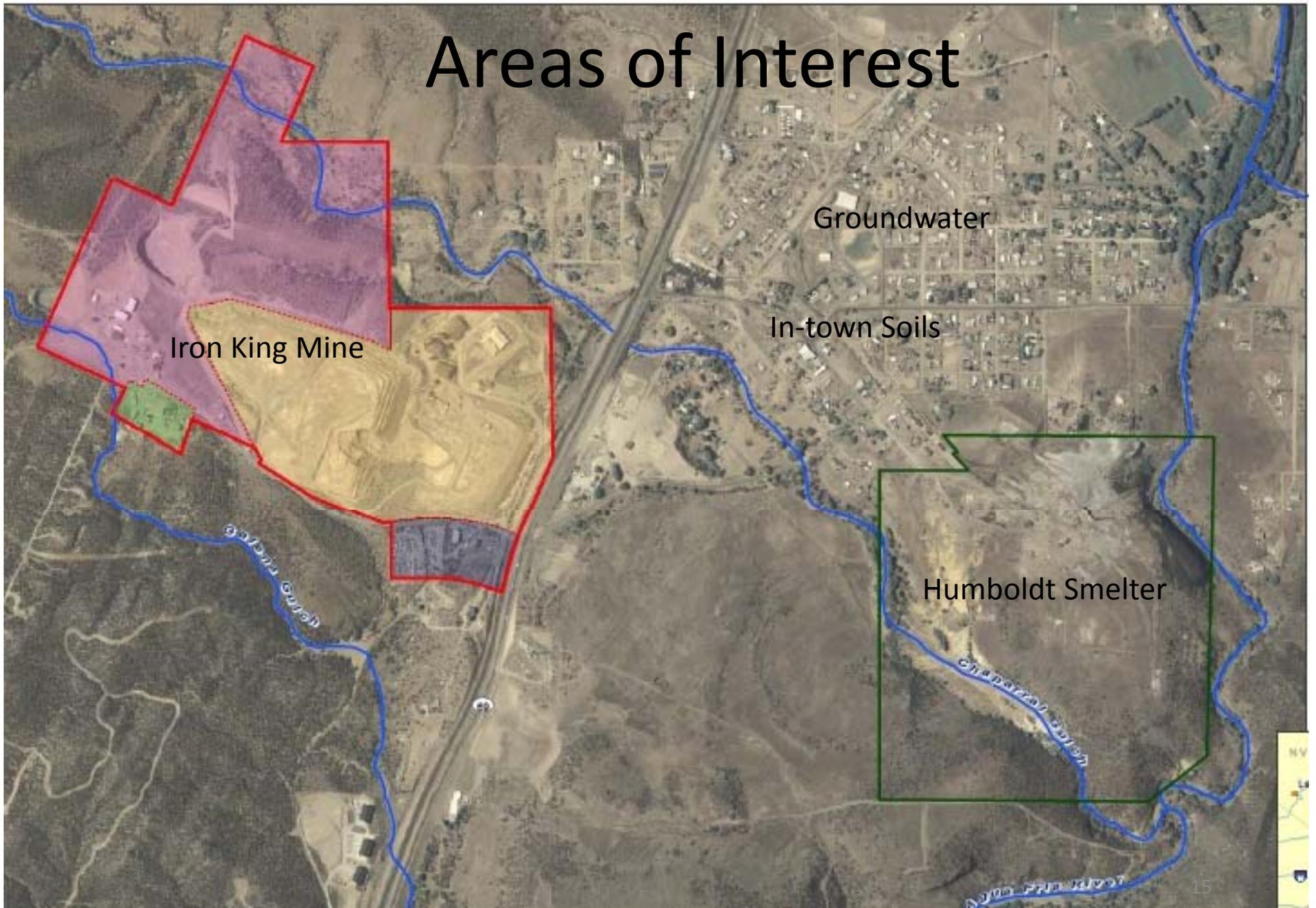
Humboldt Smelter Area of Interest



Humboldt Smelter Area of Interest



Areas of Interest



Iron King Mine

Groundwater

In-town Soils

Humboldt Smelter

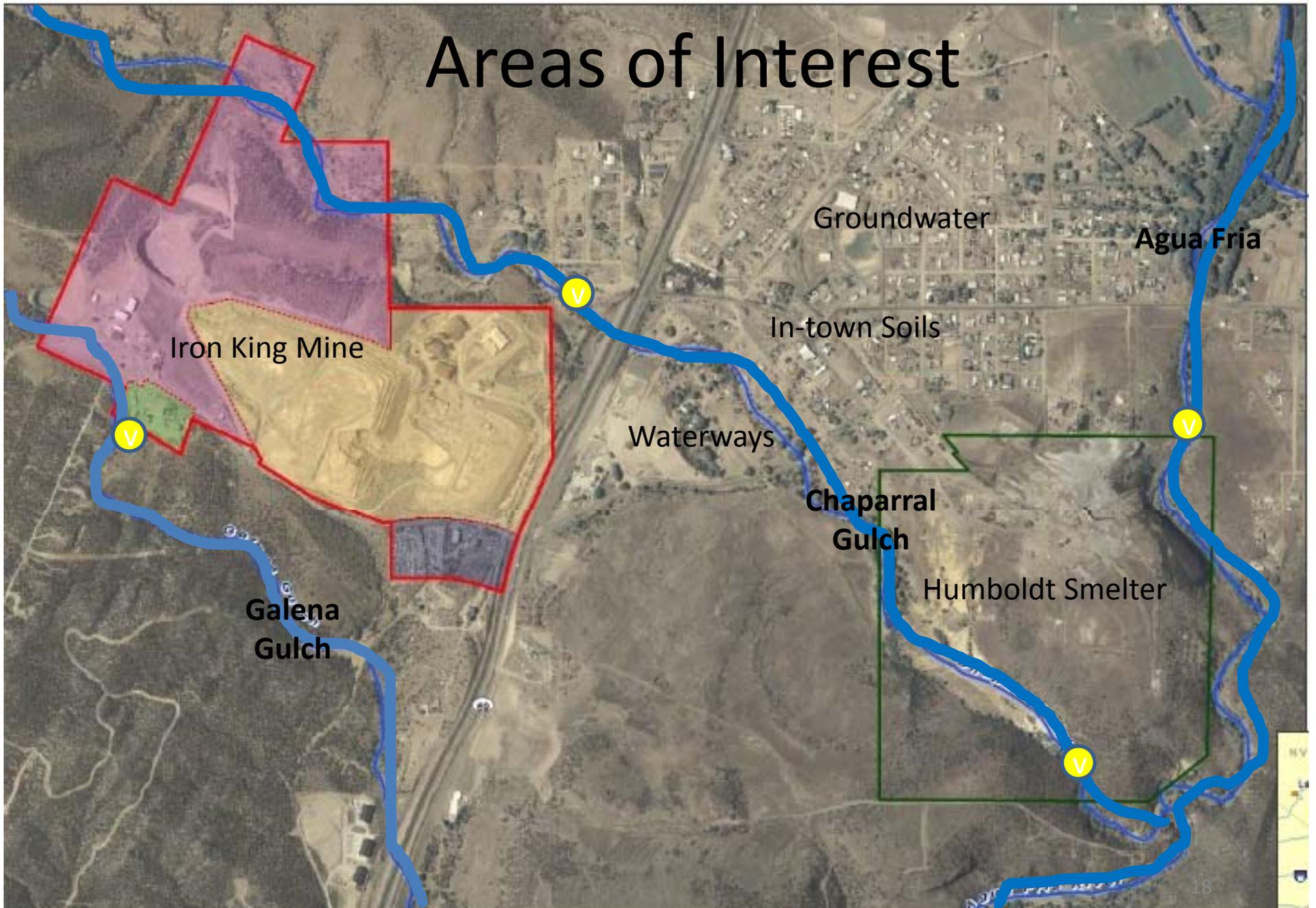
Iron King Mine Area of Interest
Humboldt Smelter Area of Interest
In-Town Soils Area of Interest



In-Town Soils Area of Interest



Areas of Interest



Waterways Area of Interest Galena Gulch



Waterways Area of Interest Chaparral Gulch



Waterways Area of Interest Agua Fria



Activities to Date

- Residential Soil Sampling 2008-2011
 - EPA sampled about 190 privately-owned, residential parcels and one elementary school playground
 - Background soil sampling
- Air Monitoring completed 2008-2009
- Groundwater Monitoring Events 2008-2010
 - Sampling included private wells
 - Installation and sampling of EPA monitoring wells



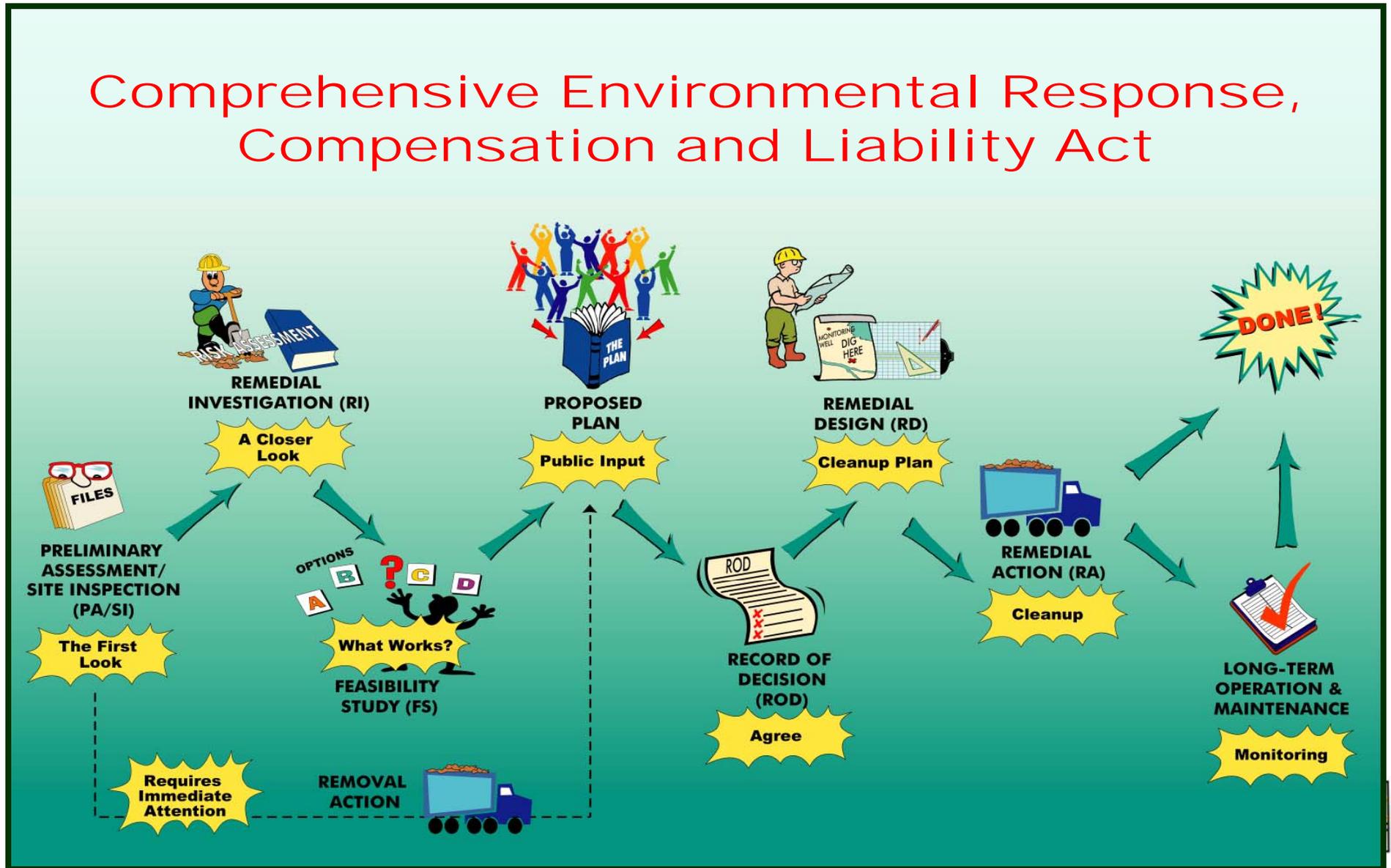
Activities to Date, continued

- Interim Work Completed
 - Removal action at 4 homes in 2006
 - Temporary dust suppression
 - Ash Pile Sealant applied at Humboldt Smelter by property owner in Summer 2010
 - Woodchips applied to parts of Iron King Mine Tailings Pile by property owner in 2010
 - Temporary sealant to be re-applied as part of our planned removal action



What is the Superfund Process?

Comprehensive Environmental Response, Compensation and Liability Act



What is a “Removal Action?”

- The remedial process includes the investigation, feasibility study, final decision, etc.:
 - Is comprehensive and covers the whole site
 - Usually takes significant time
- A “removal action”:
 - Can be done “within” the longer process
 - Allows for quicker action at locations with the most significant contamination
 - Applies to simpler situations where we can “get in and get out”



Upcoming Removal Action

- Upcoming Removal Action will address a subset of sampled yards and the Small Tailings Pile
 - Targets the highest contamination first
 - Arsenic levels at these yards are about 10 times higher than at any other yards sampled
 - These levels are significantly above background levels
 - Evidence of human activity at the Small Tailings Pile



In The Immediate Future...

- Interim Residential Removal Action
 - Will address a subset of yards with significantly elevated levels of arsenic and lead
 - Homes not cleaned up in this removal action continue to be evaluated and may be subject to clean up in the future
- Temporary dust suppression from Main Tailings Pile and the Humboldt Smelter ash piles





In-town Soil Parcels and Properties Proposed for Removal Action in 2011

Remedial Investigation/Feasibility Study
 Iron King Mine - Humboldt Smelter Superfund Site
 Dewey-Humboldt, Yavapai County, Arizona





01.06.2009



01.06.2009



01.28.2009



01.28.2009

Upcoming Remedial Activities

- Soil sampling
 - Continue to investigate extent of contamination
 - Continue to evaluate background levels of arsenic and lead in the area
- Groundwater analysis
- Stability Testing on Tailings Pile



Upcoming Remedial Activities, cont.

- Remedial Investigation Addendum
 - A supplement to the March 2010 RI to include the nature and extent of residential soil contamination for all sampling
- Feasibility Study
 - Detailed comparative analysis of cleanup alternatives



Later Activities in the Process

- Proposed Plan- Fall/Winter 2012
 - Presents EPA's preferred remedial alternatives for public review and comment
- Record of Decision- planned for Spring 2013
- Remedial Design and Remedial Action to follow



Community Involvement

- Community Involvement Plan (2009)
- Community Technical Assistance Grant (Dec 2010)
- Upcoming Community Activities
 - Factsheet with summary of Remedial Investigation Addendum and Feasibility Study
 - Community meeting for Proposed Plan
 - Other factsheets and community meetings as needed



Completed Documents

- Reuse Assessment, June 2010
- Remedial Alternatives Evaluation Technical Memorandum, October 2010
- Cover alternatives Evaluation for Iron King Mine Main Tailings Pile, October 2010

<http://www.epa.gov/region09/ironkingmine>



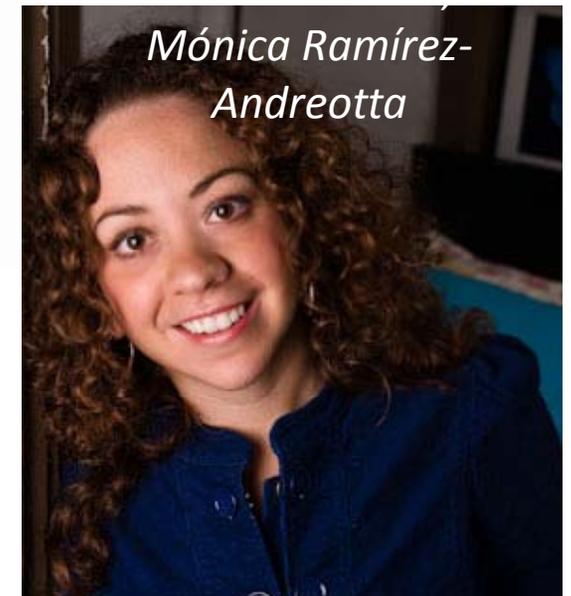
Gardenroots:

Citizen Scientists from Dewey-Humboldt collect soil, water and vegetable samples from their garden for analysis to determine the levels of metals in their home-grown vegetables.



For more information visit:

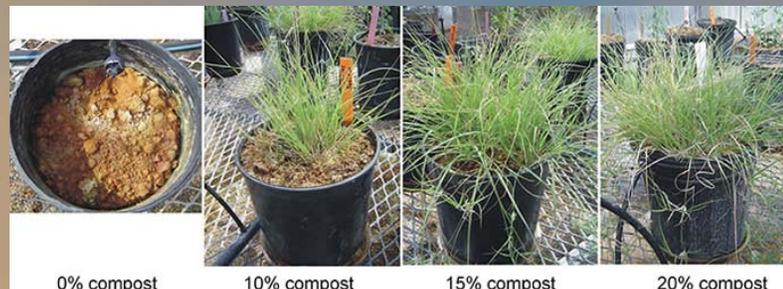
<http://garden-roots.org/>



Phytostabilization of mine tailings in the Southwest: plant-soil-microbe interactions and metal speciation dynamics



Dr. Raina Maier



Project to develop a re-vegetation strategy for the phytostabilization of metal contaminants in mine tailing piles in arid and semi-arid ecosystems and to assess the impact of this approach on the physical, biological and chemical properties of the mine tailings.

For more information visit: <http://superfund.pharmacy.arizona.edu/>

Characterization of wind-blown dust from tailings and other mining operations in the Southwest

Project to assess the role of atmospheric dust in the transport of metal contaminants from mine operations.



Dr. Eric Betterton



For more information visit:

<http://superfund.pharmacy.arizona.edu/>

Project Team Contact Information

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QUESTIONS?