1198958 - R8 SDMS

Montana Department of Environmental Quality

WELCOME
East Helena Asarco Plant
RCRA Update
May 1, 2008

DISCUSSION POINTS

- Groundwater contamination status
- Monitoring efforts
- 2008 Update
  - State AOC through 2007
  - CAMU construction
  - State AOC work 2008
  - Phase 2 RFI characterization & Risk Assessment
- Future work

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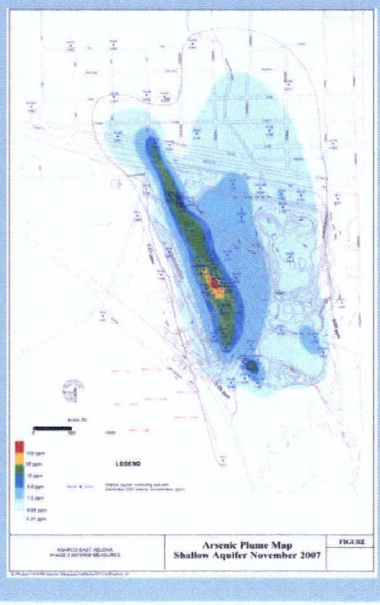
GROUNDWATER CONTAMINATION STATUS

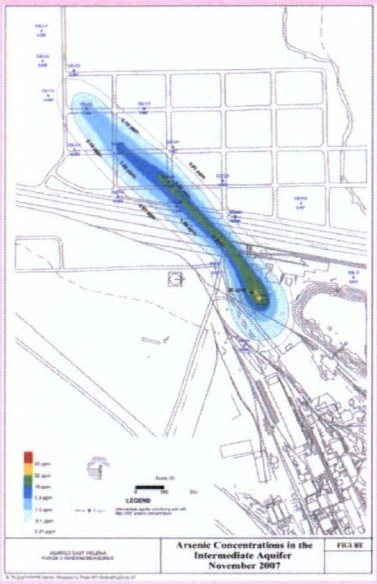
- Shallow and Intermediate aquifers in
  - Arsenic plume
  - Selenium plume

Arsenic Plume: Shallow Aquifer



Fall 2007
Concentration contours
Red: 100 ppm
Yellow: 50 ppm
Green: 10 ppm
Blue: 5.0 ppm
Light Blue: 1.0 ppm
Pale Blue: 0.05 ppm
Clear: 0.01 ppm (MCL)

Arsenic Plume: Intermediate Aquifer

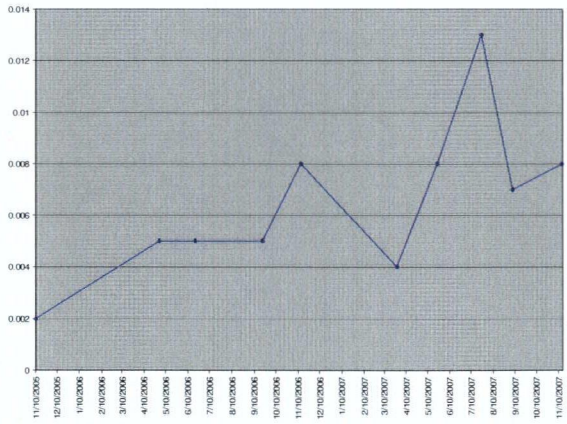


Fall 2007
Concentration contours
Red: 100 ppm
Yellow: 50 ppm
Green: 10 ppm
Blue: 5.0 ppm
Light Blue: 10 ppm
Pale Blue: 0.05 ppm
White: 0.01 ppm (MCL)

Arsenic Intermediate Aquifer (ppm)

Well - EH-117

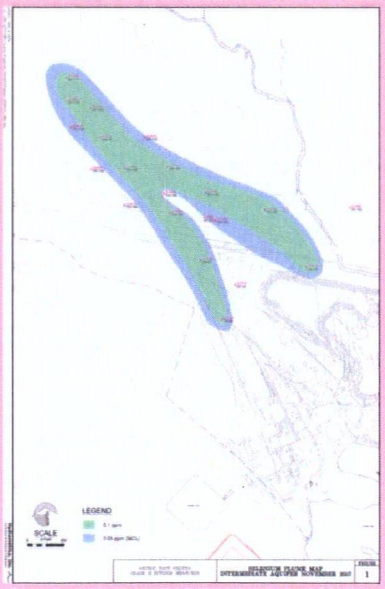
MCL→ Drinking Water Standard



SELENIUM ISSUE

- Selenium contamination discovered in off-site groundwater wells in Fall 2006
- Added selenium to list of monitored chemicals
- Additional work to determine sources on-site and plume extent off-site
- Complicates options for boundary control and groundwater treatment

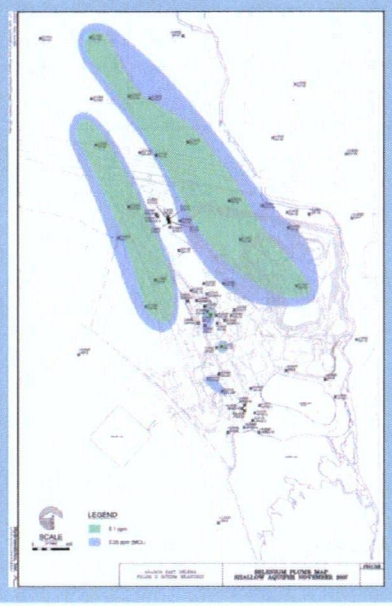
Selenium Plume: Intermediate Aquifer



Fall 2007

Blue: MCL-0.05 ppm
Green: > 0.1 ppm

Selenium Plume: Shallow Aquifer

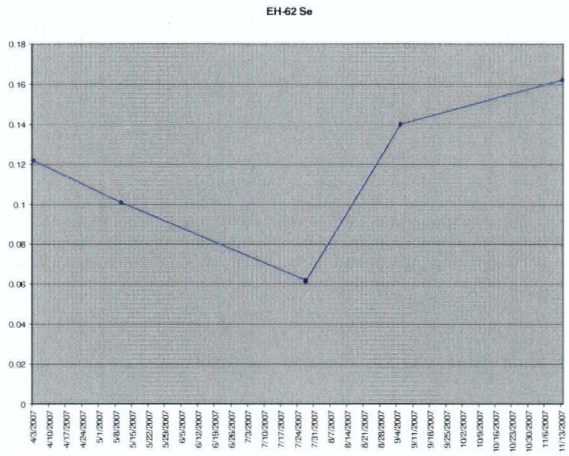


Fall 2007
Concentration contours
Green: > 0.1 ppm
Blue: 0.05 ppm (MCL)

Selenium Concentration Trends

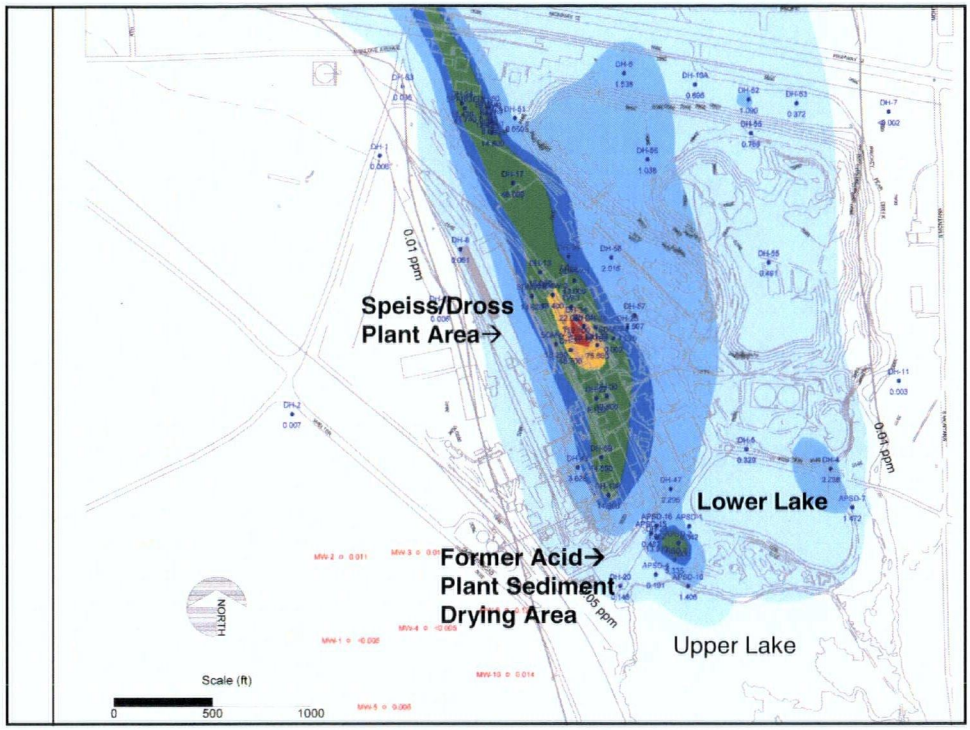
- Added to off-site monitoring program in 2006
- Limited historical data set
- Expanding monitoring network, including new wells to determine extent

Selenium Shallow Aquifer (ppm)



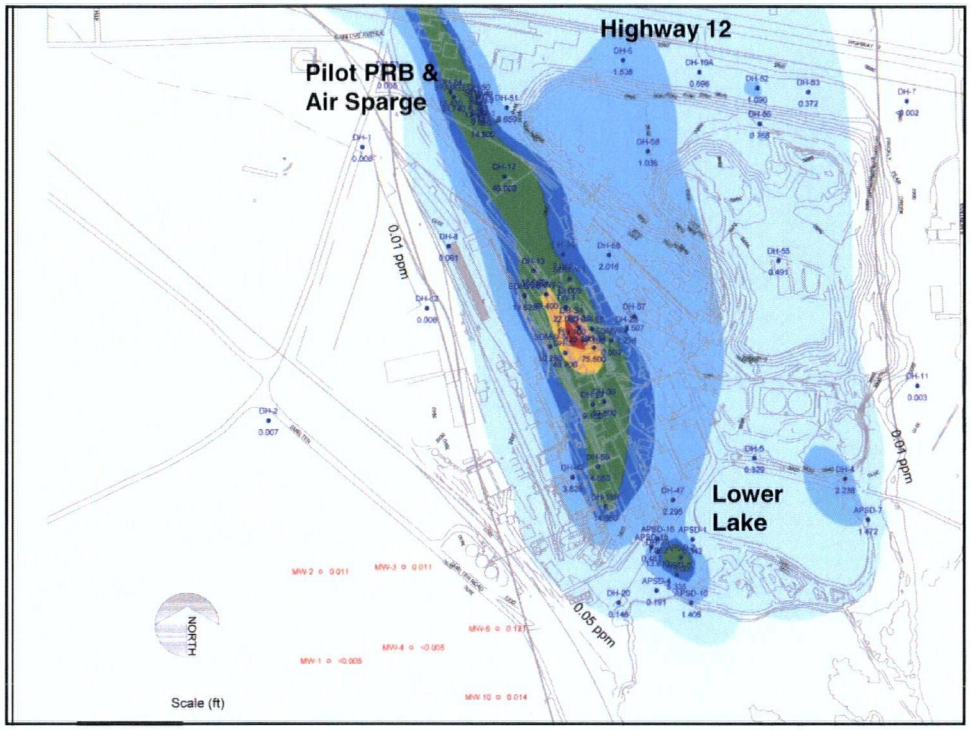
ARSENIC INTERIM MEASURES

- 2 Source area measures
  - Former acid plant sediment drying area (Fall 2006)
  - Former speiss/dross plant area (Fall 2007)



ARSENIC PLUME TREATMENT MEASURES EVALUATED

- Air sparge, evaluated by Asarco
- Pilot Permeable Reactive Barrier
  - Passive treatment
  - In-ground trench filled with iron filings
  - Works for arsenic removal
  - Potential interference by sulfate
  - Full-scale put on hold pending future work to see if it can be effective on selenium



HOW DOES THIS IMPACT ME?

ARSENIC (As) and SELENIUM (Se)

DRINKING

- **Avoid drinking groundwater which exceeds the MCL (10 ppb) for Arsenic or the non-cancer risk based concentration (180 ppb) for Selenium**

  [Assumption: consumption of 2 liters of water/day for 30 years]

SHOWERING

- **As and Se are not considered to be volatile and should not pose inhalation concern from showering.**
- **Typically, As and Se are not absorbed well dermally (through your skin): BUT, if arsenic concentrations are >50 to 100 ppb, dermal absorption may occur.**

Other Impacts

GARDENING

- **Below 10 ppb for Arsenic or 180 ppb for Selenium, it's okay to use the water for irrigation.**

  When Arsenic concentrations exceed 50--100 ppb and Selenium levels exceed 200 to 300 ppb, we recommend against using the water for irrigation.

MONITORING EFFORTS

- Additional wells to determine sources and plume extent
- Current monitoring network

Additional Wells

- 4 wells on-site
- 9 wells off-site

CURRENT MONITORING NETWORK

- Monthly: 4 wells on Gail Street
- Quarterly: 55 wells (including 13 new wells)
- Semi-annual: 120 wells & 6 surface water sites
- Annual: 22 private and municipal wells in addition to semi-annual program

Do you want your well sampled?

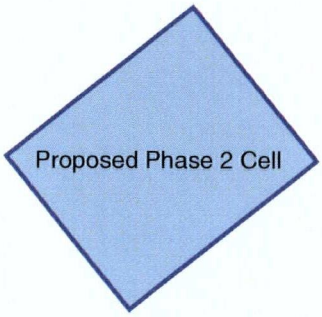
- Asarco has a standing offer to sample private wells.
- Contact: Mr. Jon Nickel, Asarco
  227-4529

CORRECTIVE ACTION MANAGEMENT UNIT (CAMU)

- Equivalent to RCRA landfill
- GW monitoring and cover inspection required
- Up to 3 landfill storage cells approved by EPA in 1999
- First CAMU completed in 2001
- Second CAMU cell being built for demolition wastes & corrective action wastes

SECOND CAMU CELL

- Located to south and east of first cell for demolition wastes, including asbestos, and corrective action wastes.



Approximately 70,000 cubic yards of waste

Covers 5 acres

Bottom 8 feet below ground surface

Cap about 17 feet above ground surface

SECOND CAMU CELL CONSTRUCTION

- **Design developed in 2007**
- **Financial assurance for construction and final cover established in October 2007**
- **EPA approved construction in January 2008**
- **Contractor mobilized March 2008**
- **Work is ongoing**
- **Waste placement targeted for June 2008**
- **Place temporary cap for Winter in October 2008**

RCRA FACILITY INVESTIGATION PHASE 2 WORK

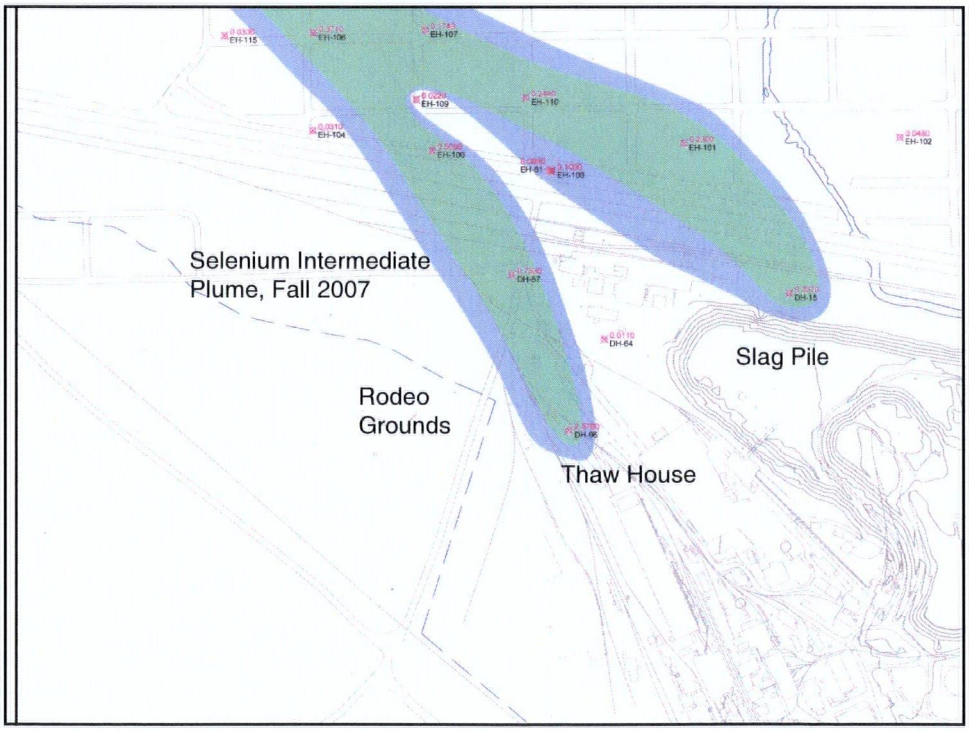
- Soils, sediment, biota characterization
- Groundwater studies
- Risk Assessment

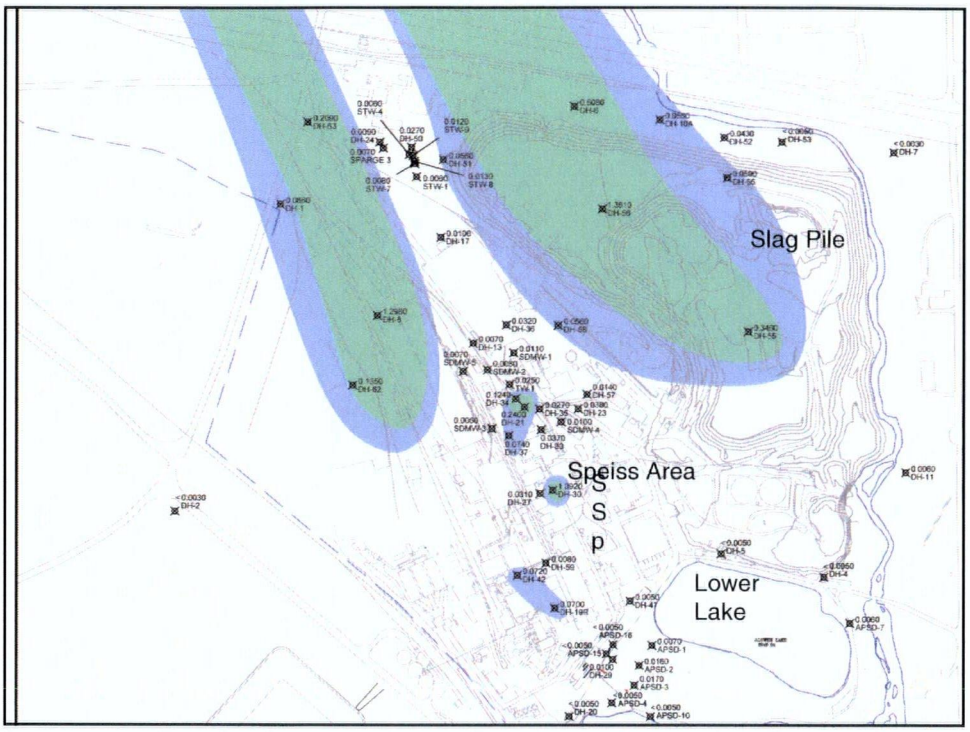
SOILS AND SEDIMENT CHARACTERIZATION

- Samples will be tested for more metals.
- Re-sampling of some areas.
- New samples from areas that are now accessible since demolition occurred.
- Additional sampling of Upper Lake and Lower Lake and Prickly Pear Creek sediments.

GROUNDWATER STUDIES

- **Installation of 13 additional wells (possibly more if needed) to determine extent of plumes and selenium sources**
- **Modeling and design for boundary control alternatives**
- **Water usage study**
- **Additional studies of treatment media**





RISK ASSESSMENT

- Baseline Risk Assessment
- Site conceptual model
- Risks to human health
- Risks to ecological receptors
  (birds, fish, deer, plants, etc.)
- Potential pathways
- Possible land re-use scenarios

CORRECTIVE MEASURES STUDY

- Identification and testing of possible treatment technologies
- Evaluation of alternatives considering future land use
- Selection and proposal of remedies
- 30-60 day public comment period

FACTORS AFFECTING GROUNDWATER REMEDY SELECTION

- Modeling results
- Water usage
- Physical constraints (railroad line, slag pile, Prickly Pear Creek, other structures, highway)
- Permitting
- Reliability
- Siting issues for treatment system
- Costs: capital and O&M

FUTURE WORK

- Completion of characterization work, including identification of selenium sources
- Completion of Risk Assessment
- Begin evaluation of treatment alternatives and possible remedies in Corrective Measures Study
- Select remedy for contaminated areas and address groundwater contamination

THANK YOU FOR COMING OUT TONIGHT!

- Please provide your name and address if you'd like to be on the mailing list. (Card or sign-in-sheet)

- Feel free to contact us with questions:
  - Linda Jacobson, EPA Project Manager
    (303) 312-6503 toll-free at 1-800-227-8917 ext.312-6503
  - --Iver Johnson, MDEQ Hazardous Waste Specialist
    (406) 444-5852
  - --Denise Kirkpatrick, MDEQ Hazardous Waste Specialist
    (406) 444-3983
  - --Wendy Thomi, Community Involvement Coordinator
    (406) 457-5037
  - --Jon Nickel, Asarco Project Manager
    (406) 227-4529