



**COLORADO**

Division of Reclamation,  
Mining and Safety

Department of Natural Resources

# **Aggregate Industries – WCR, Inc.**

## **Hazeltine Mine**

### **DRMS File No. M–2004–031**

### **Enforcement Hearing**

#### **Possible Violation:**

Failure to minimize disturbance to the prevailing hydrologic balance in the surrounding area, and failure to protect areas outside the affected land from damage.

**Mined Land Reclamation Board**

March 25, 2015

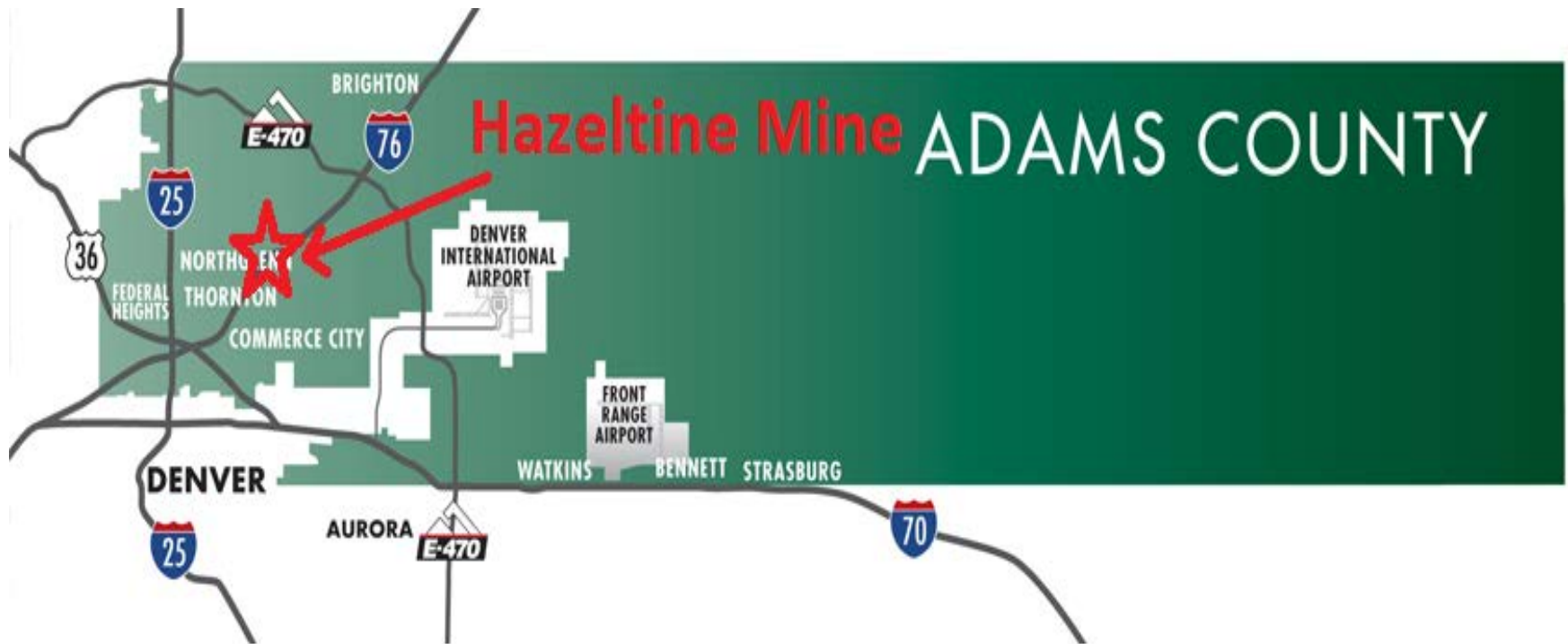
DRMS Staff Presentation by Tyler O'Donnell

Environmental Protection Specialist

# Hazeltine Mine Summary

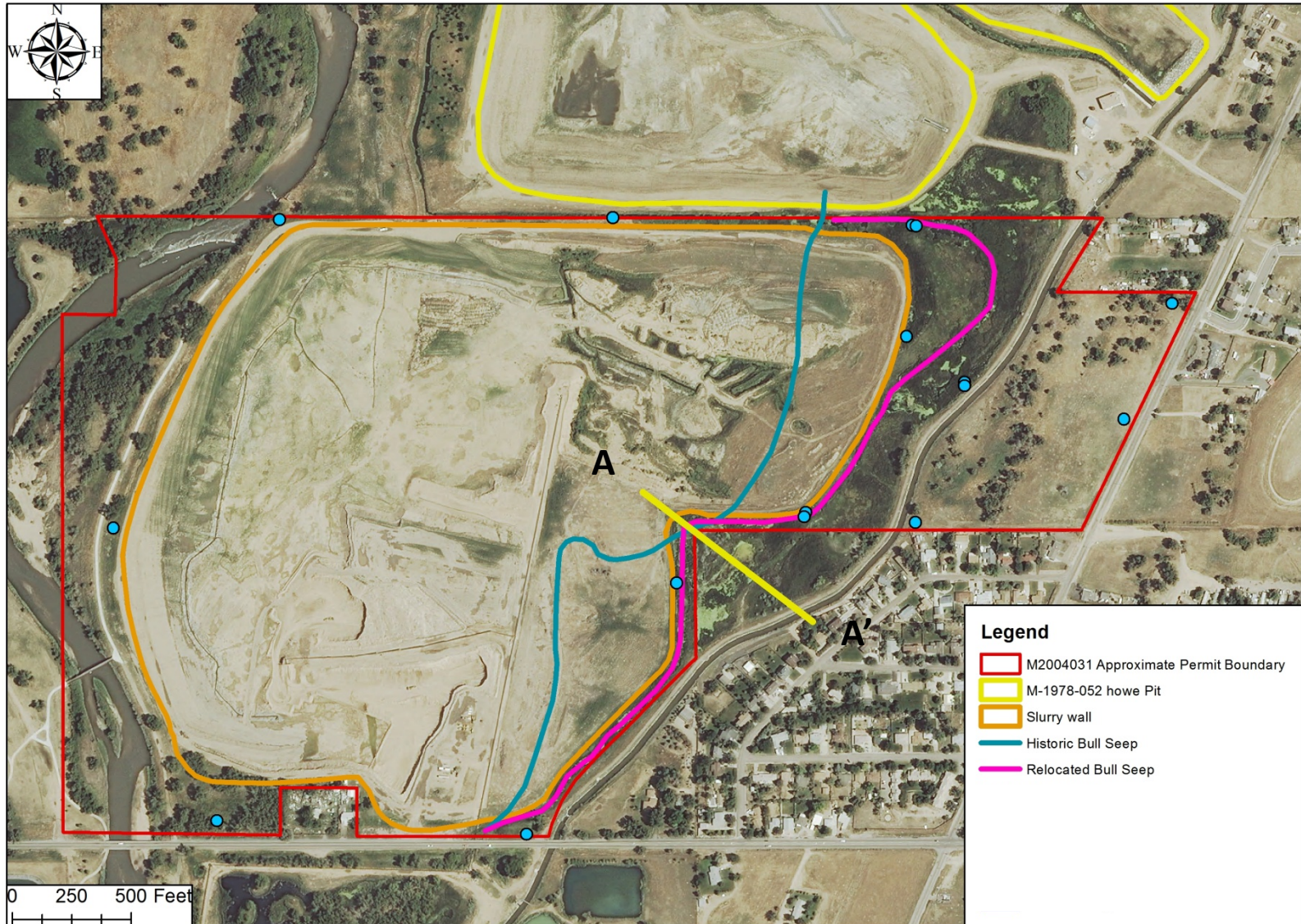
- Location: Adams County, 100 feet east of the South Platte River
- Permit area: 203.90 acres
- Post-mining land use: Water storage reservoir lined with a slurry wall (slurry walls are already installed)
  - A slurry wall is a liner that is installed around a pit for preventing water from flowing into the pit during mining.
  - A slurry wall also prevents water from flowing into the pit after mining when the pit is used for water storage.
  - A slurry wall is constructed by excavating a trench around the pit, and then placing a soil–bentonite slurry in the trench.

# Hazeltine Mine Location Map



# Site Map

Hazeltine Mine





# Chronology

- 2004 – DRMS issued the Hazeltine 112 Permit.
- Summer 2005 – Slurry wall was installed and completed.
- September 13, 2011 – Complaint from adjacent landowner (Orr) next to Hazeltine Mine.
- October 5, 2011 – DRMS Inspection Report.
  - Found groundwater mounding and saturated conditions on the historically dry property. Operator submitted pumping plan, but later was found infeasible.

# Chronology (continued)

- May 15, 2012 – DRMS Inspection Report
  - Found groundwater mounding and saturated conditions on the historically dry Orr property.
- May 30, 2013 – DRMS Inspection Report
  - Found groundwater mounding and saturated conditions on the historically dry Orr property.
- July 1, 2013 – Approval of TR-02
  - Installation of an Aggridrain to control maximum water level.

# Chronology (continued)

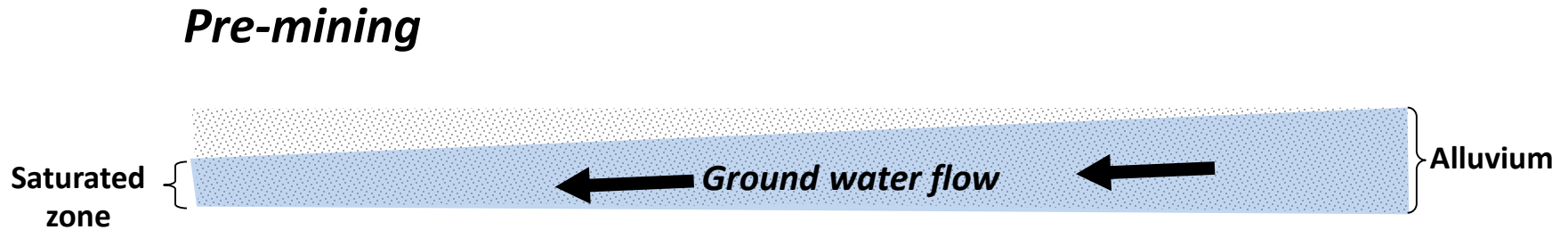
- March 27 and May 27, 2014 – DRMS Inspections
  - Found groundwater mounding and saturated conditions on the historically dry Orr property.
- May 15, 2014 – Approval of TR-03
  - New screen and Agridrain monitoring.

# Chronology (continued)

- October 31, 2014 – DRMS Inspection Report
  - Found groundwater mounding and saturated conditions on the historically dry Orr property.
  - DRMS required submittal of ground water mounding mitigation by Nov. 25, 2014
- February 3, 2015 – RTB letter mailed to Aggregate industries, regarding flooding of Orr property.



# What is Groundwater Mounding?

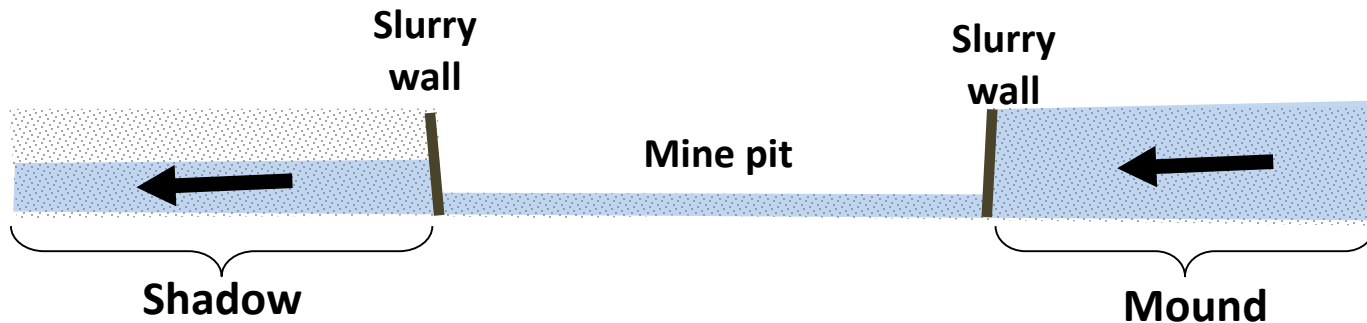


# What is Groundwater Mounding?

## *Pre-mining*

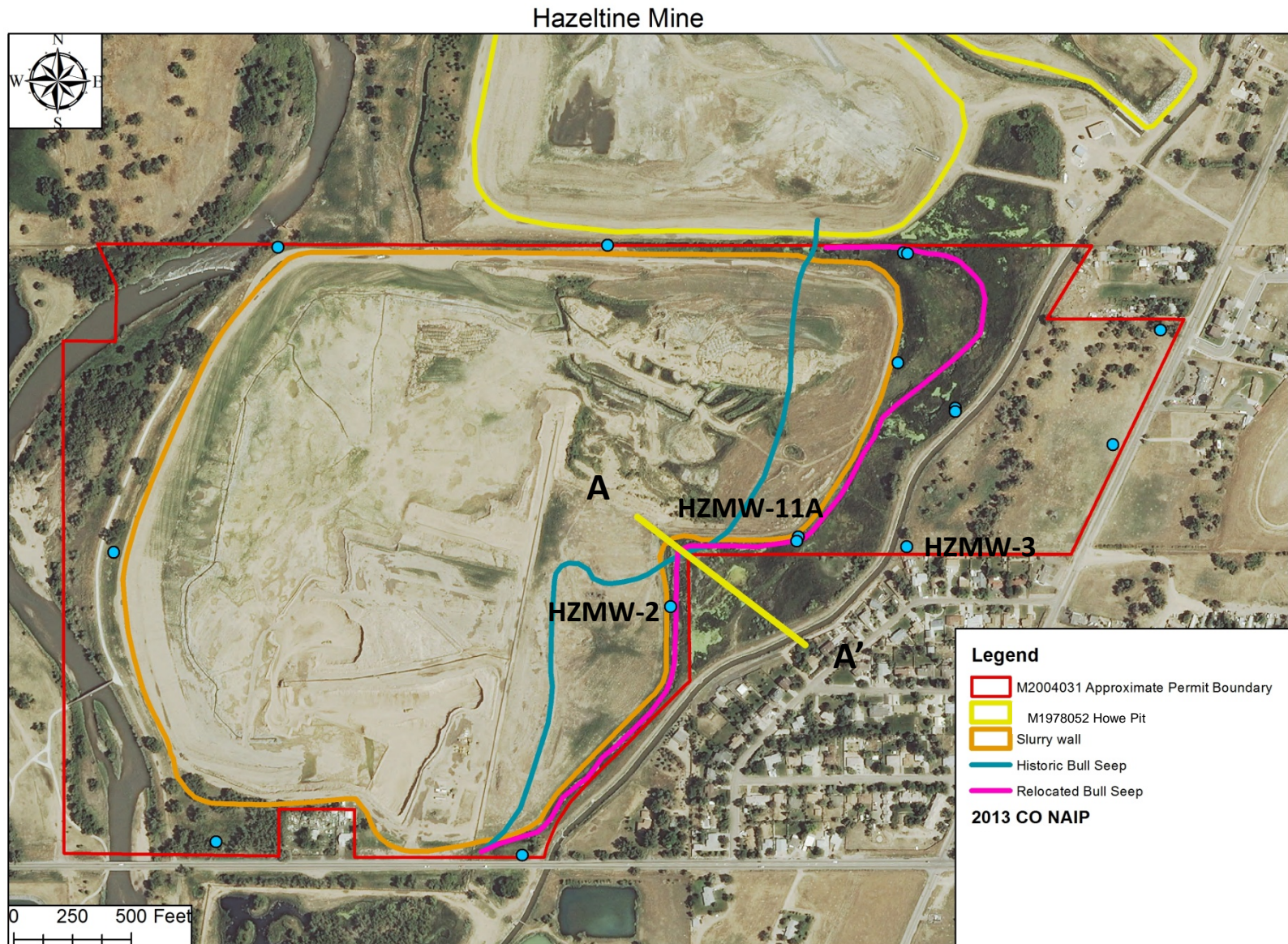


## *Post-mining*



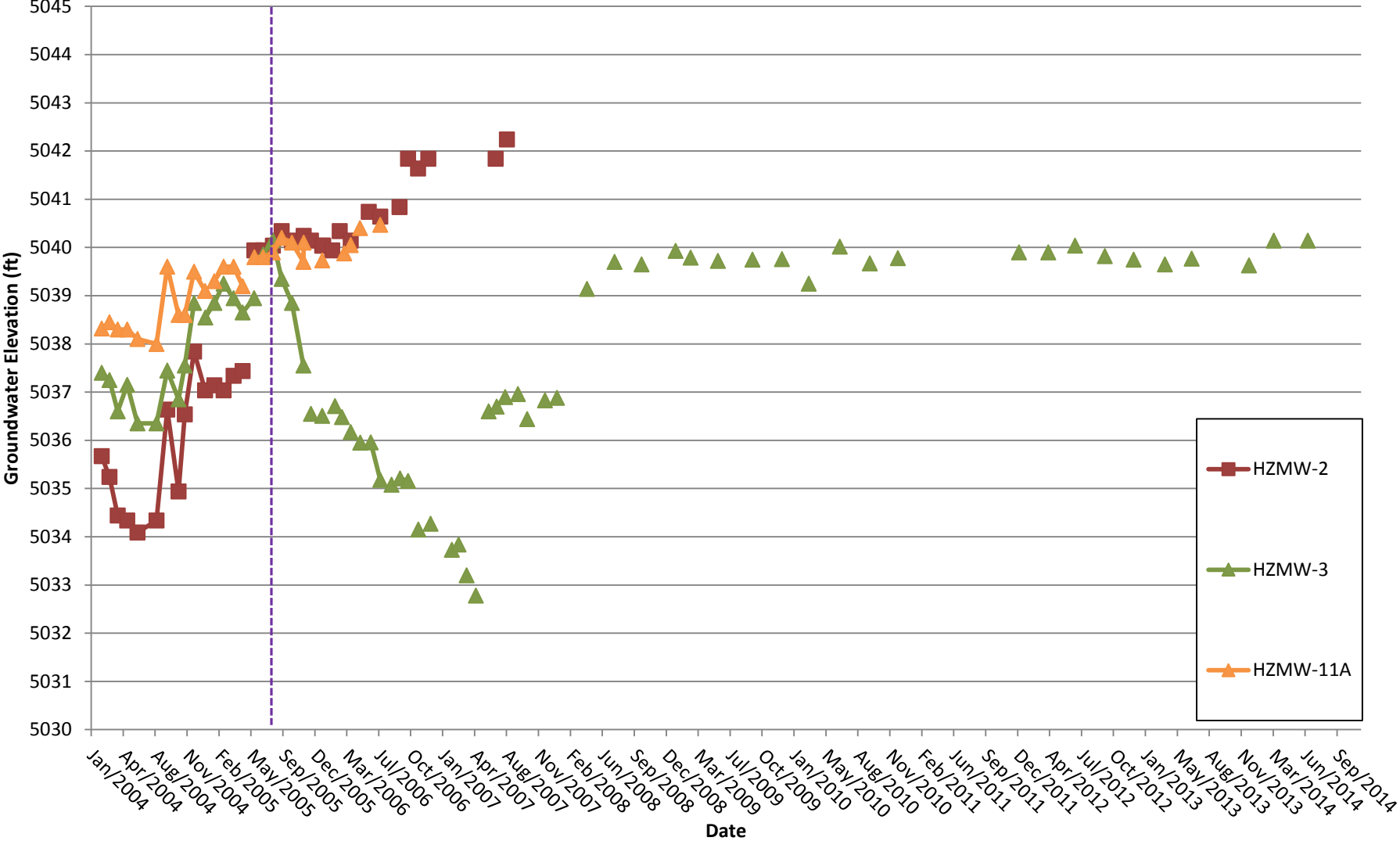
No scale intended

# Groundwater wells Near Orr Property



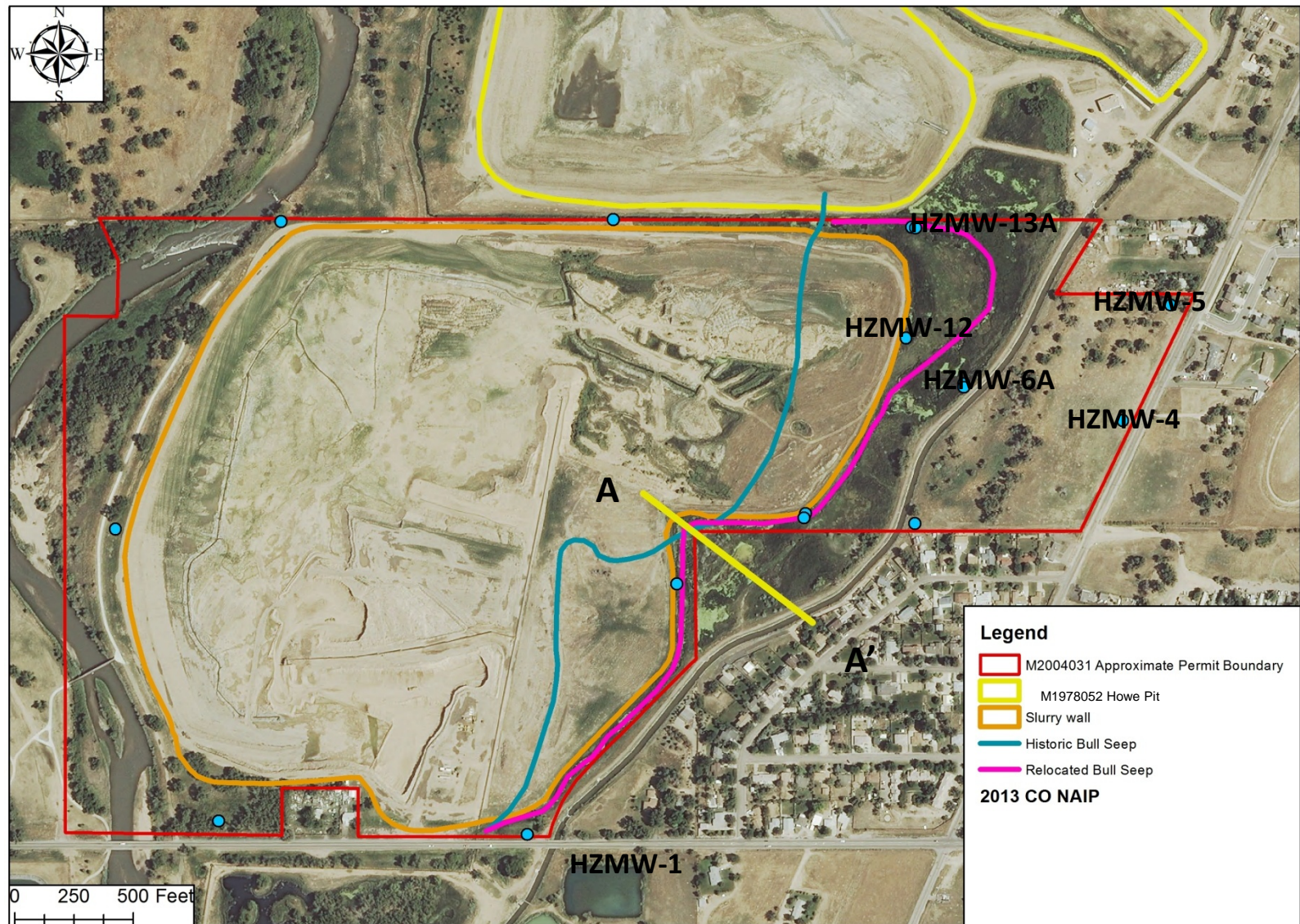
# Groundwater elevation in wells near Orr Property

Slurry wall completed

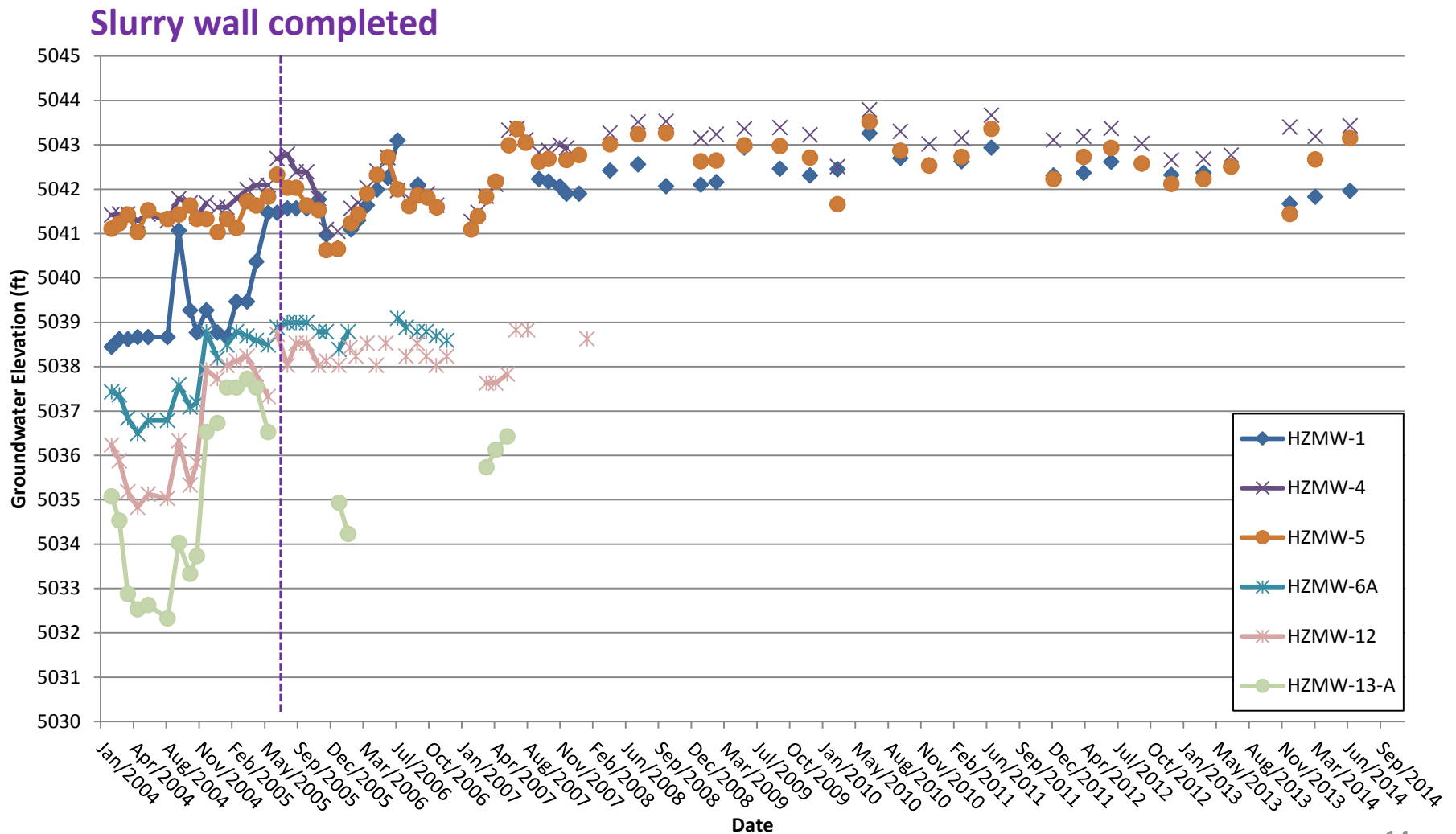




# Groundwater elevation in wells East of the Hazeltine Mine

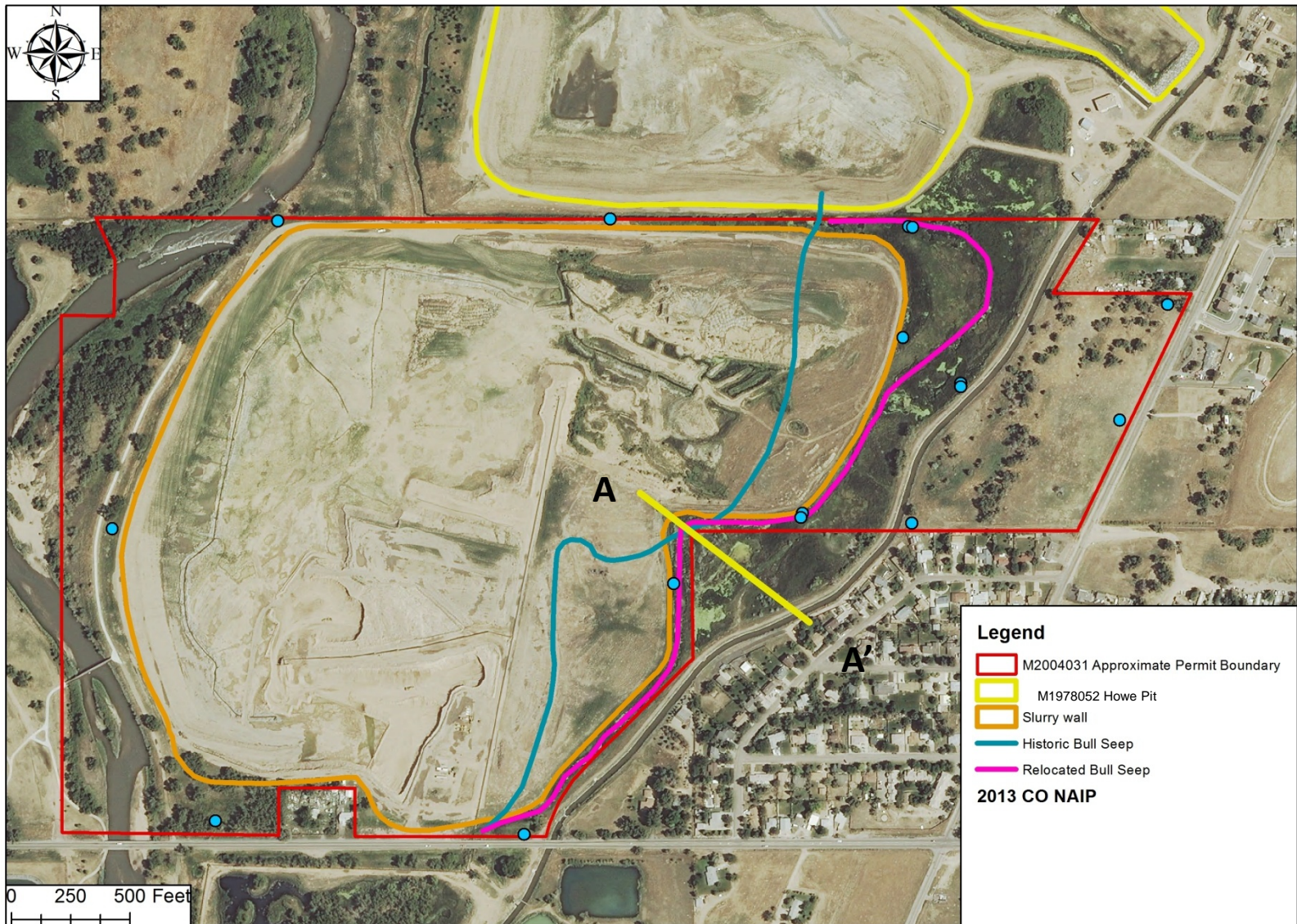


# Groundwater elevation in wells east of the Hazeltine Mine





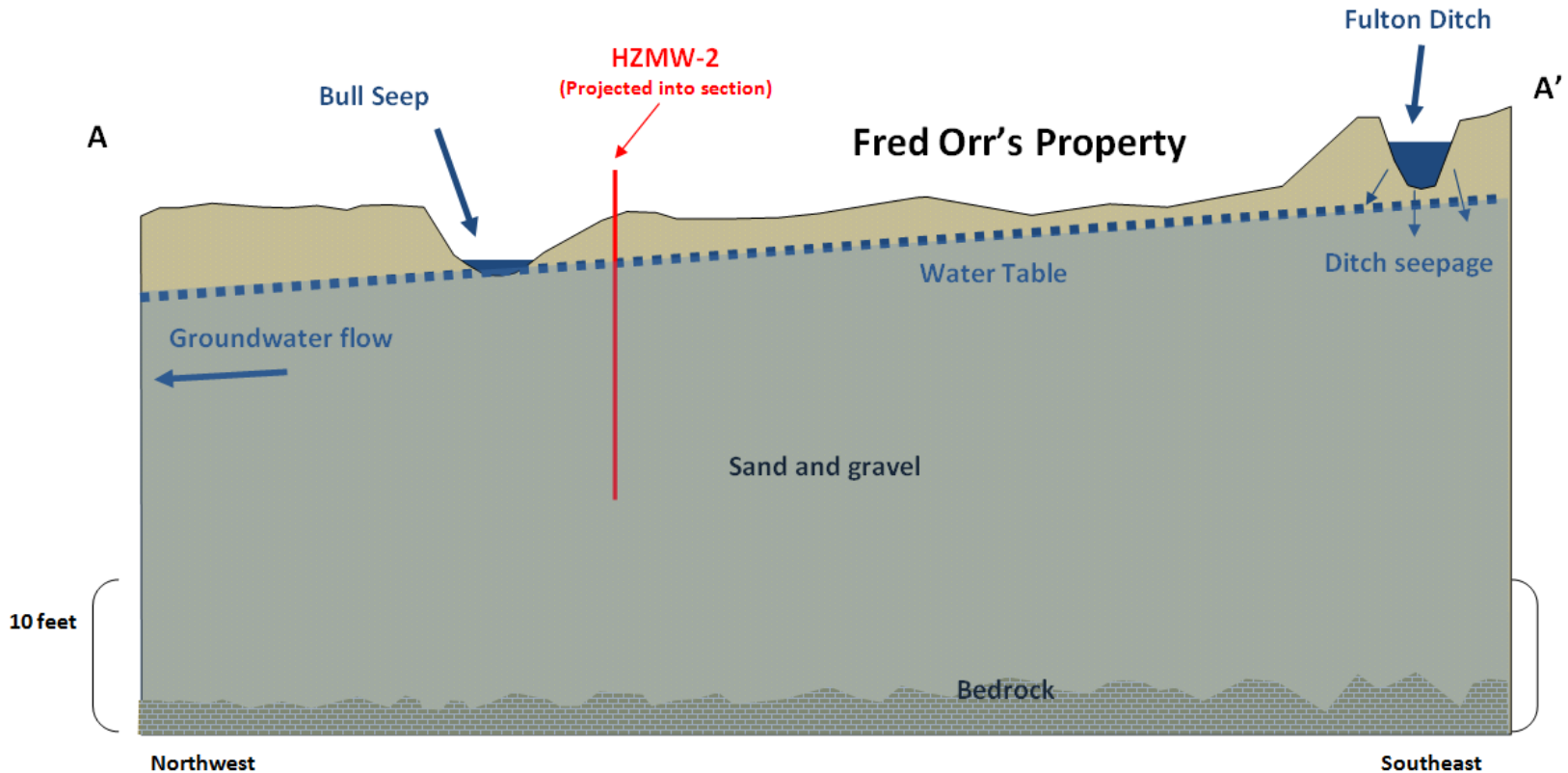
# Groundwater mounding at Hazeltine Mine



# Groundwater mounding at the Hazeltine Mine

Pre-mining, 2004

Result: Groundwater table below the land surface throughout most of the cross-section.

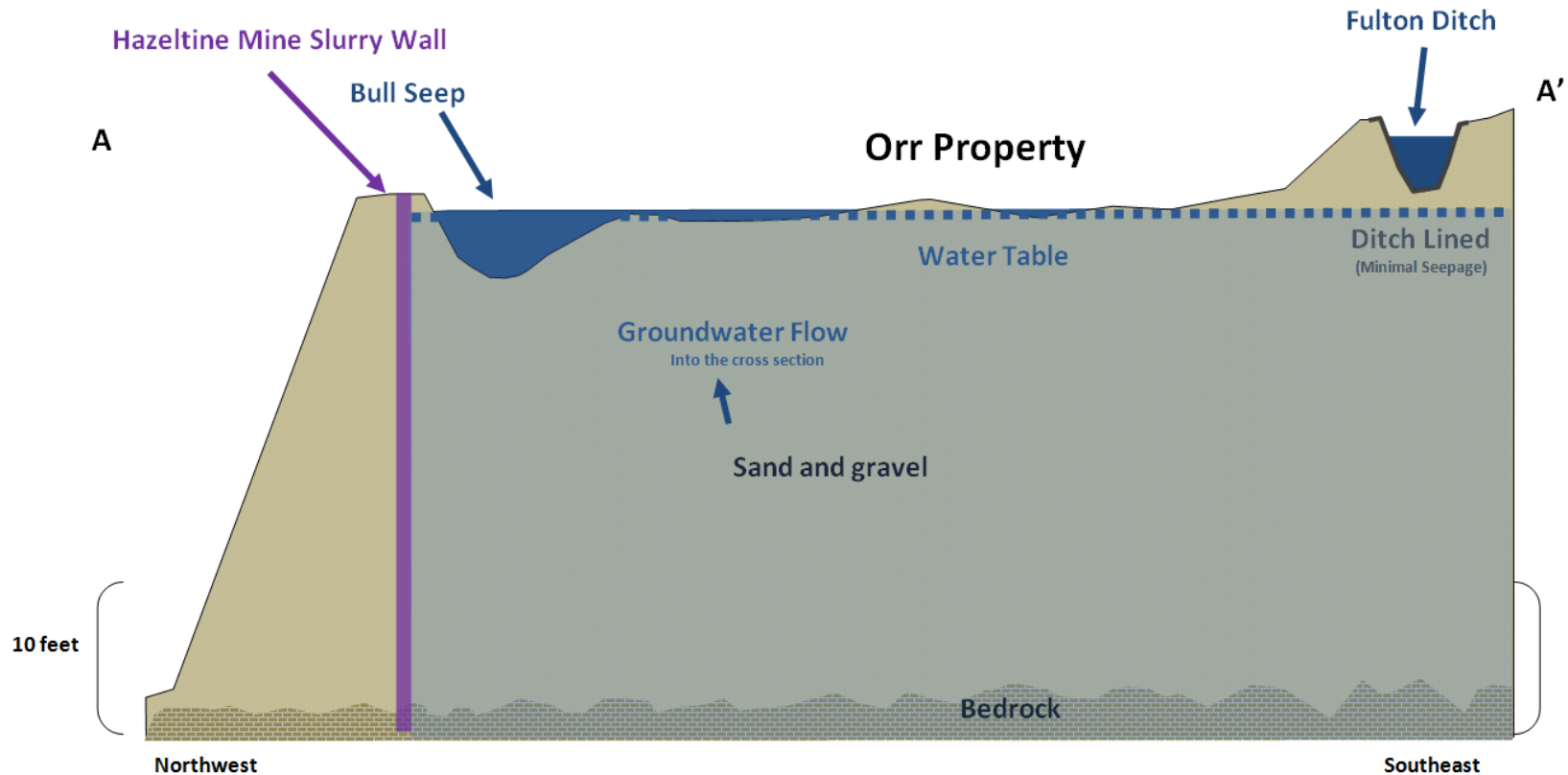




# Groundwater mounding at the Hazeltine Mine

Post-mining, 2014

Result: Groundwater table above the land surface throughout most of the Orr property.



# Pre-mining Map

Hazeltine Mine





# Pre-mining Map

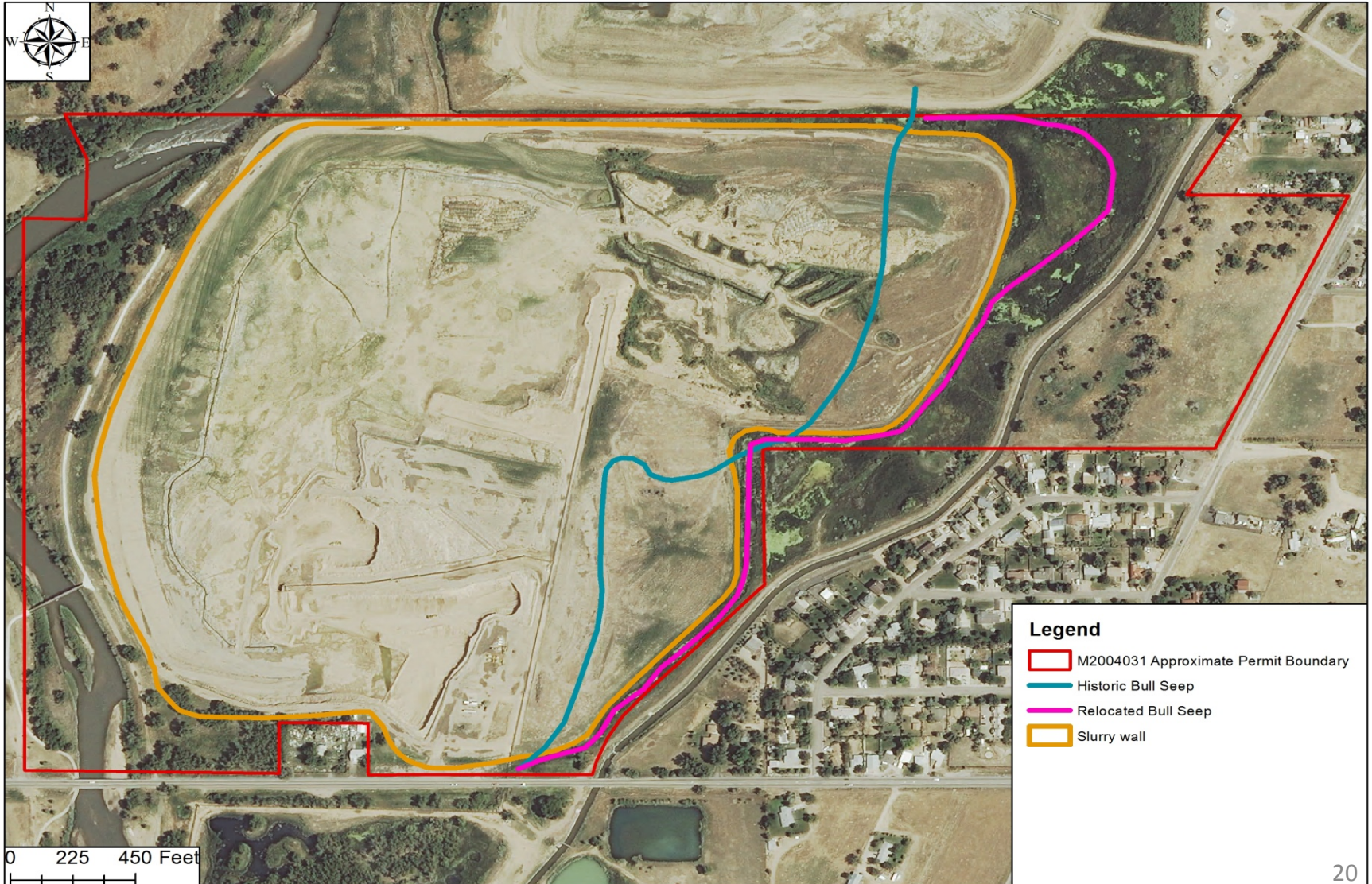
Hazeltine Mine





# Post-mining Map

Hazeltine Mine





# 2002 - Orr Property, Pre-Mining



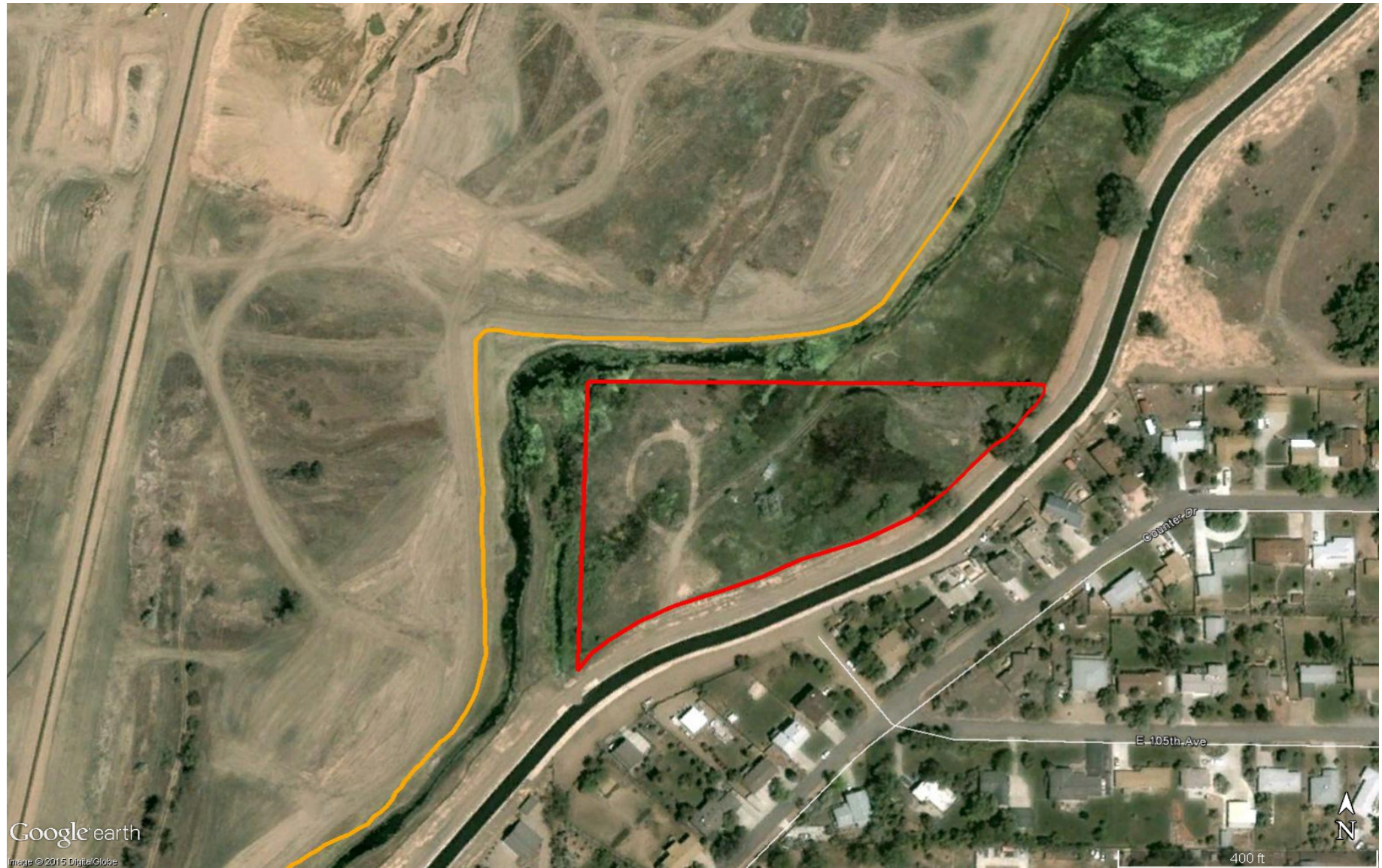


# 2005 - Orr Property





# 2006 - Orr Property





# 2008- Orr Property





# 2010 - Orr Property





# 2012 - Orr Property





# 2014 - Orr Property





# Inspection May 27, 2014





# Inspection March 27, 2014





# Inspection October 31, 2014





# Inspection October 31, 2014





# Inspection October 31, 2014



# **C.R.S. 34-32.5-116(4)**

- (h) Disturbances to the prevailing hydrologic balance of the affected land and of the surrounding area and to the quality and quantity of water in surface and groundwater systems, both during and after the mining operation and during reclamation, shall be minimized.
- (i) Areas outside of the affected land shall be protected from slides or damage occurring during the mining operation and reclamation.



## **Evidence for violation of C.R.S. 34–32.5–116(4)**

- Observed flooding in Orr pasture.
- Flooding is caused by groundwater mounding.
- Hazeltine Mine is a major cause of the groundwater mounding, as indicated by the hydrogeologic model (cross-section) and historical data.

# Division Recommendations

## Violation:

Find the Operator in violation of:

- C.R.S. 34–32.5–116(4)(h) for failure to minimize the disturbance to the prevailing hydrologic balance in the surrounding area, and
- C.R.S. 34–32.5–116(4)(i) for failure to protect areas outside of the affected land from damage.
- Violation of a statute constitutes violation of permit provision 1.



# Division Recommendations (continued)

## Civil Penalties:

- Pursuant to C.R.S. 34–32.5–124(7) a person who violates any provision of a permit shall be subject to a civil penalty of not less than \$100.00 per day, nor more than \$1,000.00 per day for each day during which such violation occurs.
- In this matter, the Board may assess a civil penalty of \$14,500.00 to \$145,000.00 for 145 days of violation at \$100.00 to \$1,000.00 per day.

# Division Recommendations (continued)

## Civil Penalties:

- Assess a civil penalty of \$750.00 per day of violation for 145 days for the time period extending from the October 31, 2014 inspection to the date this matter is scheduled for a hearing (March 25, 2015), for a civil penalty amount of \$108,750 with all but \$\_\_\_\_\_ suspended if the Operator complies with the corrective actions.
  - Note:
    - Failure to submit the unsuspended portion of the civil penalty by the date specified in the Board Order will result in immediate submittal of those penalties to State collections.
    - Payment of a civil penalty is due within thirty (30) days of the date the signed Board Order is mailed, unless otherwise specified by the Board in the Board Order.



# Division Recommendations (continued)

- Basis for Recommended unsuspended Civil Penalty amount:
  - Significant environmental damage has occurred.
  - The Operator could have prevented the environmental damage.
  - The Operator did not take significant action to correct the environmental damage when notified in the October 31, 2014 inspection report.

# Division Recommendations (continued)

## Corrective actions:

1. Submit a Temporary Groundwater Mounding Mitigation Plan (“Temporary Plan”) to the Division within 30 days of the mailing date of the Board Order.
  - A. The Temporary Plan shall be submitted in an approvable form, as a technical revision, and implementation of that temporary plan shall commence (“Temporary Plan Commencement”) within 5 days of Division’s approval of the Technical Revision.
  - B. The Temporary Plan shall eliminate flooded conditions on the adjacent Orr property within 60 days of commencement, by controlling groundwater mounding.
  - C. The Temporary Plan shall include weekly monitoring and reporting to the Division of water table elevations in wells HZMW 1 through 7 and 11 through 12, from the time of Temporary Plan Commencement until implementation of the Permanent Groundwater Mounding Mitigation Plan is commenced.
  - D. Weekly monitoring reports shall be submitted to the Division within one week of data collection. De-watering methods may be active (pumping) and/or passive.



# Division Recommendations (continued)

## Corrective actions - continued

2. Submit a Permanent Groundwater Mounding Mitigation Plan (“Permanent Plan”) to the Division within 90 days of the effective date of the Board Order.

The Permanent Plan shall be submitted in an approvable form, as an Amendment, and implementation of that permanent plan shall commence (“Permanent Plan Commencement”) within 30 days of the Division’s approval of the Amendment. The Permanent Plan shall be designed to permanently eliminate groundwater mounding on the south and east sides of Hazeltine Mine within 180 days after Permanent Plan Commencement. De-watering methods shall be passive (no pumps).

# **Division Recommendations (continued)**

## **Corrective actions - continued**

### **Permanent Groundwater Mounding Mitigation Plan – continued**

The Permanent Plan shall include, but not be limited to, the following items:

- a. A detailed narrative description of the plan;
- b. A plan view drawing showing baseline land and water elevations on the Orr property as they exist prior to Temporary Plan Commencement;
- c. A plan view drawing showing all components of the plan;
- d. A groundwater table monitoring plan for verifying success of the Permanent Plan, consisting of one or more wells, and that provides sampling and reporting to the Division on a weekly basis until less frequent sampling and reporting is approved in writing by the Division. Weekly monitoring reports shall be submitted to the Division within one week of data collection;
- e. All supporting calculations, with explanations, of groundwater flow rates through the Orr property before, during, and after plan implementation, with identification of data sources for assumed or measured hydraulic properties of rock and alluvium;
- f. Construction specifications (dimensions, materials, and capacities) for all components of the plan.



# Questions?



## South Platte Decision Support System Alluvial Groundwater Model Report

April 2013

Prepared for  
the Colorado Water Conservation Board  
and Colorado Division of Water Resources

**CDM  
Smith**




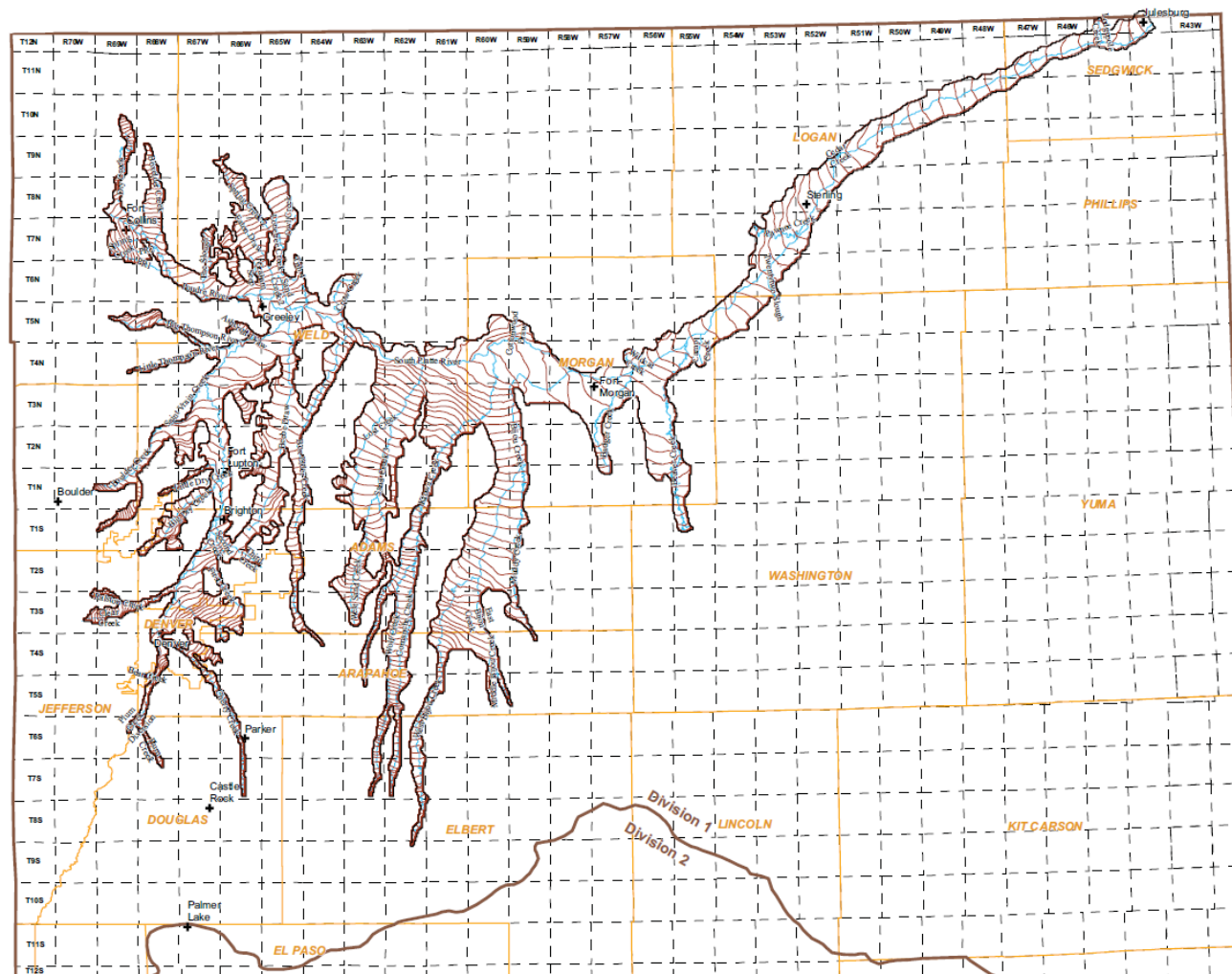
### Figure 4-3: Simulated Water Table Surface August 2004



### Legend

- Water Table Surface - August 2004**


 Scale  
 1:1,000,000  
 0 5 10 20 Miles  
 NAD 1983 UTM Zone 13N

Prepared by: **CDM**

Prepared in cooperation with the City of Fort Lupton and the City of Brighton

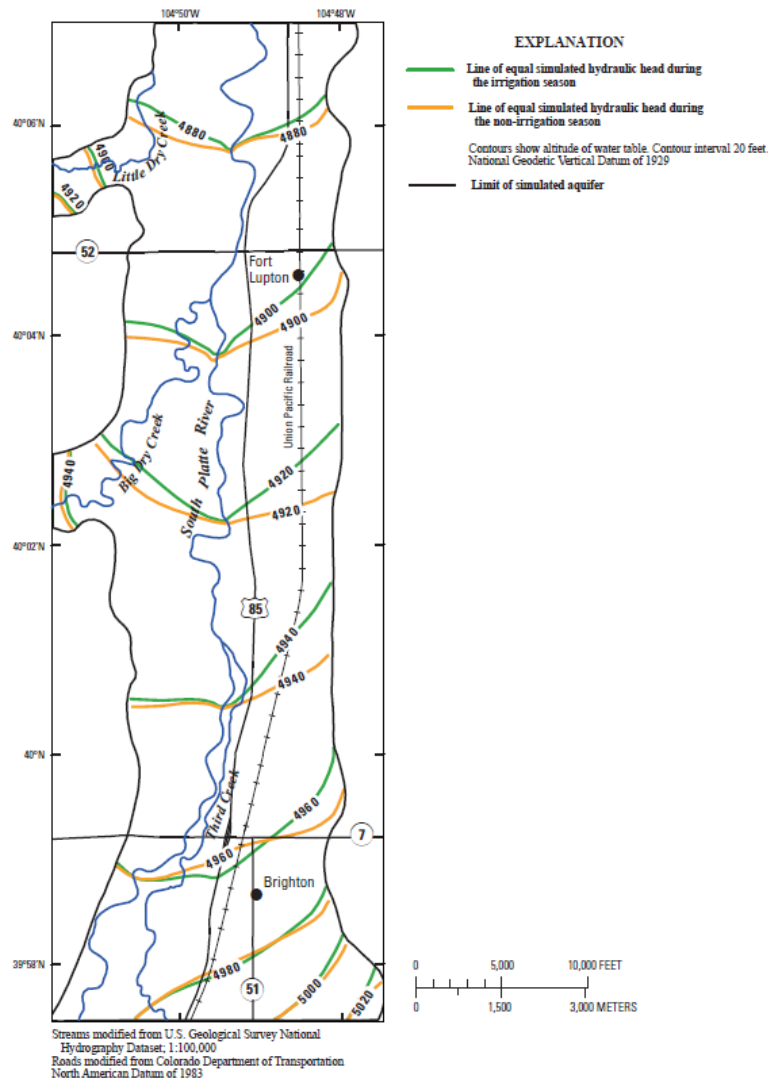
## **Land-Use Analysis and Simulated Effects of Land-Use Change and Aggregate Mining on Groundwater Flow in the South Platte River Valley, Brighton to Fort Lupton, Colorado**



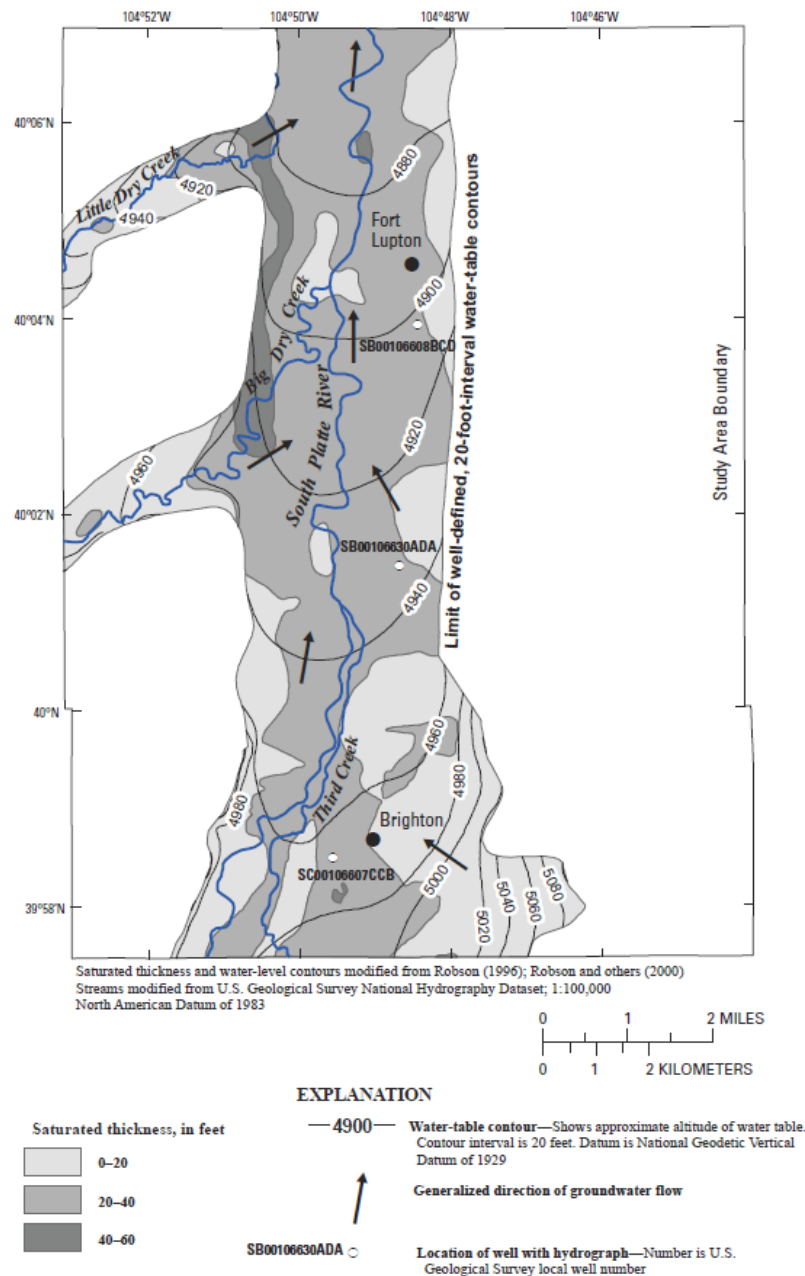
Scientific Investigations Report 2010–5019

U.S. Department of the Interior  
U.S. Geological Survey





**Figure 29.** Simulated steady-state distributions of hydraulic head in the South Platte alluvial aquifer during the irrigation and non-irrigation seasons in 2000, Brighton to Fort Lupton, Colorado.



**Figure 9.** Saturated thickness and generalized water-table conditions of the South Platte alluvial aquifer, Brighton to Fort Lupton, Colorado.



# Hazeltine Mine

