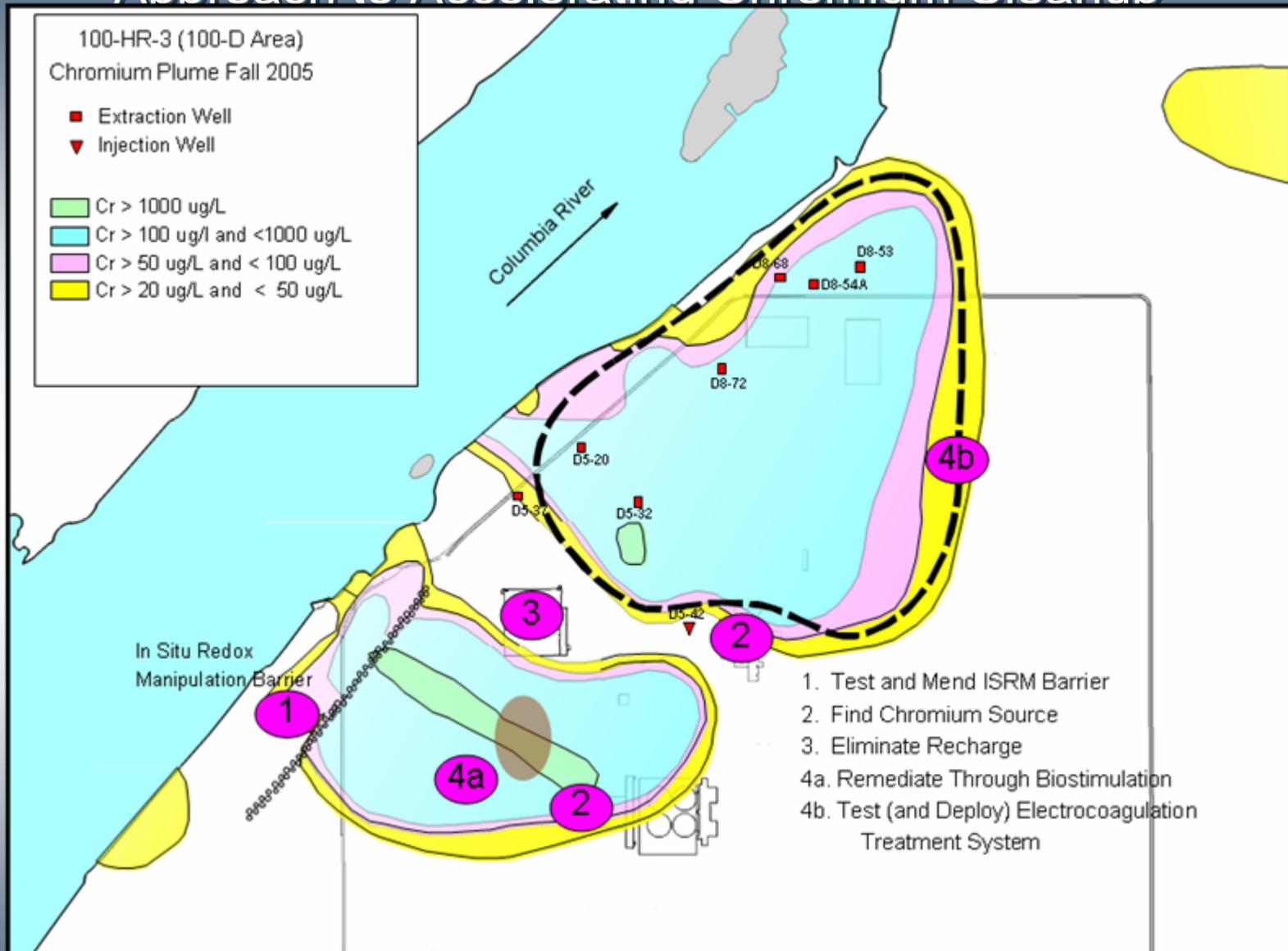


# Status of Three EM-20 Chromium Projects

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Fluor Hanford  
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# Approach to Accelerating Chromium Cleanup



# Accelerate Cleanup in 100-D: Mend the ISRM Barrier by Injecting Micron-size Iron

## Problem

Portions of the ISRM barrier are losing their reductive capacity, diminishing its effectiveness for intercepting chromium before it enters the river



# Accelerate Cleanup in 100-D: Mend the ISRM Barrier by Injecting Micron-size Iron

## Solution

Inject micron-size iron into deteriorating parts of the ISRM barrier

## Approach

- A turnkey contract (competitive bid) was awarded to MSE Technology application of Butte, MT, to accomplish this work. This includes laboratory work, modeling, and injection through existing barrier wells into more permeable layers
- Post-injection monitoring and verification will be conducted by Fluor Hanford

# Status of Iron Injection

- MSE is performing column tests to determine the effect of iron on groundwater composition and potential effects of iron injection on permeability
- Pre-injection characterization will be performed with the Electromagnetic Borehole Flowmeter in April
- Modeling work is underway
- Treatability Test Plan due on May 18, 2007
- Field work begins on 7/2/2007
- Monitoring of injection site through October 2007
- Treatability Test Report on 12/21/2007



# Accelerate Cleanup in 100-D: Test Electrocoagulation

## Problem

The current treatment system is preventing chromium from entering the river but is not significantly shrinking the plume.

## Solution

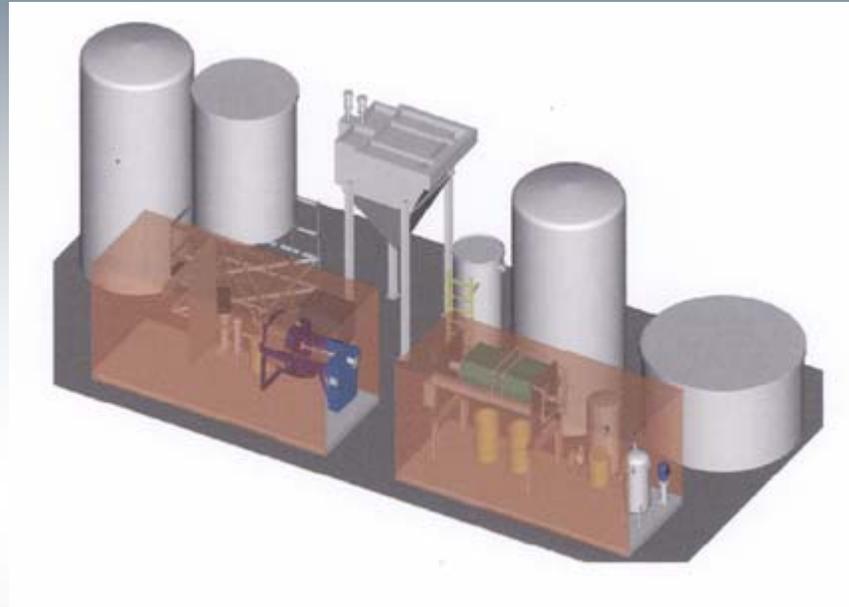
Remediation needs to be accelerated by increasing treatment rate. The current ion exchange technology is not cost-effective for removing high levels of chromium at high pumping rates



# Accelerate Cleanup in 100-D: Test Electrocoagulation

## Approach

Test and deploy electrocoagulation, a technology capable of treating high volumes of groundwater contaminated with relatively high concentrations of chromium



- Field test will be performed at ~ 40 gpm to demonstrate that this technology satisfies the design criteria/design basis. If this is successful, then
  - Install higher capacity system (up to 500 gpm) in the area of the northeastern chromium plume to accelerate the cleanup in that area.
  - As part of the overall expansion, additional extraction/injection wells will be required.

# Status of Electrocoagulation

- EC unit and associated equipment will be delivered to the site this week, with startup testing beginning the middle of April
- The injection well will be completed this week
- The system will be run for at least 4 months to gather sufficient information on essential factors, among them:
  - Chromium removal efficiency
  - Cost of operation
  - Ease of operation
  - Reliability

# Accelerate Cleanup in 100-D: Refine Location of the Chromium Source

## Problem

Groundwater data show that there is a continuing source of chromium feeding the ISRM plume. The source needs to be identified and treated before a final ROD can be enacted.



# Accelerate Cleanup in 100-D: Refine Location of the Chromium Source

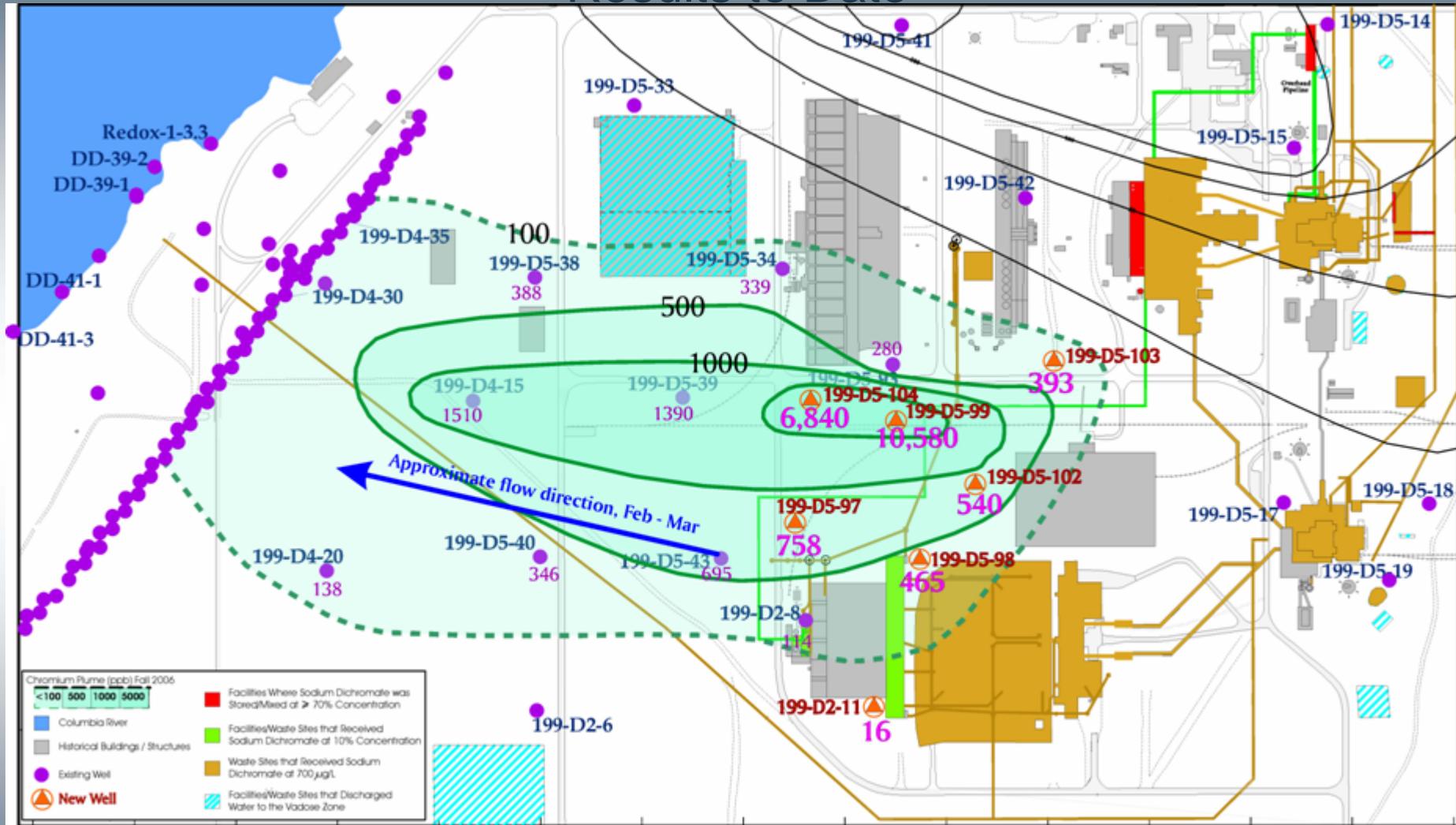
## Solution

Refine the source location. Geophysical methods are unable to do this, so physical samples must be obtained.

## Approach:

- Drill 7 boreholes near the origin of the groundwater plume
- Collect and analyze vadose zone samples for chromate
- Monitor chromium concentrations and groundwater levels in the wells for 6 months
- Evaluate the data using geostatistics to refine the source location.

# Results to Date



Hexavalent chromium values in parts per billion (ug/L)