April 17, 2018

Vasquez Boulevard and I-70 Superfund Site  
Operable Unit 2  
Overview of the 2009 Remedial Investigation
Topics Covered

- Overview of 2009 Remedial Investigation (RI)
- 2009 Remedial Investigation findings
- Soils
- Groundwater
- Surface Water
- Waste Materials
- Additional information sources
- Process for updating the RI
- Questions/Discussion
Topics Not Covered

- Results of investigations subsequent to 2009
- Results of Globeville Landing Outfall Project investigations and data
- Feasibility Study (FS)
- Human Health Risk Assessment (HHRA)
The Superfund Process

- Preliminary Assessment and Site Inspection
- Site Discovery
- Site Evaluation
- Record of Decision (ROD) and Responsiveness Summary
- NPL Listing
- Remedial Investigation (RI)
- Feasibility Study (FS)
- Remedial Design (RD)
- Remedial Action (RA)
- Operation and Maintenance
- Proposed Plan
- Public Comments
- HRS Score*
- NPL Deletion

* Hazard Ranking System
2009 Remedial Investigation (RI)

Goals
- Summarize prior investigations.
- Determine the nature and extent of contamination at or from the site. The potential sources of chief concern are historic smelting-related solid wastes.
- Assess arsenic and lead occurrences in surface and subsurface soil.

History
- 2008 AOC between EPA and Denver governing performance of RI/FS for OU2
  - “…determine the nature and extent of contamination… caused by the release… at or from the Site…”
  - “The potential sources of chief concern are… historic smelting-related solid wastes…”
Soil

What is the degree and extent of soil contamination with smelter-related contaminants?
Soils

- Samples taken from depths of 1-5’, 5-10’, >10’, composite
- 290 soil samples
- Parameters sampled and carried forward
  - Arsenic concentrations ranged from 0.68 – 1500 ppm
  - Lead concentrations ranged from 1.1 – 100000 ppm
- Additional metals analyzed and screened out
  - Cadmium, zinc, silver, chromium, barium, mercury, selenium were detected below levels of concern
- Organics (volatiles, PAHs) – analyzed and screened out. The observed levels were at or below detection limits and/or common constituents of asphalt
- More detail: see CAG presentation of February 2018
Wastes

What is the physical extent and types of waste materials found at the site?
Wastes

- Municipal solid waste
- Building debris (bricks, roofing materials, wood, etc.)
- Coal and coal ash
- Metals-contaminated soils
- Slag fragments
- Tree and yard waste
- Depth of waste from 2’ to 22’ (2009 RI findings)
- Geographic extent
Groundwater

What is the degree and extent of groundwater contamination at the site due to historic operations?
Groundwater

- 5 groundwater monitoring wells, 4 cooling wells
- Measured water elevations
- Parameters and findings
- Metals
  - Arsenic exceeded drinking water standards in one well (MW-2)
  - All other metals results below drinking water standards
- Volatiles
  - Screened out in 2009 RI
- Additional information - see 12/17 CAG presentation
Surface Water and Sediment

Are site-related contaminants impacting the river?
Surface Water and Sediment

- Sampling: Upstream and downstream locations in the river
- Four sampling events, trace metals (As, Pb, Cd, Zn)
- Surface water results: No significant difference between upstream and downstream
- Sediment results: No significant difference between upstream and downstream
Next Steps – Updated RI/FS

• Risk Assessment prepared by EPA in 2006.
• 2009 RI approved by EPA, Denver agreed to update.
• 2010 Feasibility Study approved by EPA, Denver agreed to update.
• Next steps:
  • Denver submits draft conceptual workplan for RI/FS update to EPA
  • Present draft workplan to CAG; CAG advises EPA
  • Denver revises workplan in accordance with EPA requirements
  • Denver completes work
  • RI/FS completed
  • Proposed Plan prepared and released for public comment
  • Record of Decision documents selected remedy
  • Denver implements remedy
### Additional Information Sources

<table>
<thead>
<tr>
<th>YEAR:</th>
<th>REPORT TITLE:</th>
<th>REPORT ANALYSIS:</th>
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</thead>
<tbody>
<tr>
<td>1992</td>
<td>Omaha and Grant Smelter Site, Preliminary Assessment</td>
<td>Soils and groundwater sampled</td>
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<tr>
<td>1996</td>
<td>Initial Site Assessment Update for I-70 Modifications Washington Avenue to High Street</td>
<td>Soils and groundwater sampled</td>
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<tr>
<td>1997</td>
<td>Site Investigation Phase I Construction I-70 Modifications North Washington Street to Humboldt Avenue</td>
<td>Soils and groundwater sampled</td>
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<tr>
<td>2001</td>
<td>OU-1 Remedial Investigation</td>
<td>Residential soils in Operable Unit 1 sampled</td>
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<td>2001 and 2002</td>
<td>Pepsi Property Investigations</td>
<td>Soils in Pepsi Bottling Property sampled</td>
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<td>2002</td>
<td>Globeville Landing Park Soil Sampling Plan and Results</td>
<td>Soils sampled</td>
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<td>2003 - 2004</td>
<td>Brighton Boulevard Targeted Brownfield Assessment</td>
<td>Soils and groundwater sampled</td>
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<td>2004 - 2005</td>
<td>ASARCO Environmental Investigations</td>
<td>Soils and groundwater sampled</td>
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<td>2005 - 2006</td>
<td>Surface Water and Groundwater Sampling</td>
<td>Soils and groundwater sampled</td>
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<td>2008 - 2009</td>
<td>Remedial Investigation - On-Site Soils, Former Omaha and Grant Smelter</td>
<td>Soils sampled</td>
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<td>2009</td>
<td>Screening-Level Ecological Risk Assessment for the Vasquez Boulevard and Interstate 70 Site, Operable Unit 2</td>
<td>Findings used in a planning or analysis document</td>
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<td>2009</td>
<td>Baseline Human Health Risk Assessment for the Vasquez Boulevard and Interstate 70 Site, Operable Unit 2</td>
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<td>2010</td>
<td>High Street Limited Subsurface Investigation</td>
<td>Soils and groundwater sampled</td>
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<td>2010</td>
<td>Feasibility Study, Vasquez Boulevard / Interstate 70 Superfund Site, Operable Unit 2 - On-Site Soils, Former Omaha and Grant Smelter</td>
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<tr>
<td>2010</td>
<td>Limited Phase II Environmental Site Assessment, 40th Street Outfall, South Platte River to Blake Street</td>
<td>Soils and groundwater sampled</td>
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<td>2011 - 2013</td>
<td>Supplemental Geotechnical Investigation, 40th Street Outfall Northwest of 40th and Blake Streets to Globeville Landing Park</td>
<td>Soils sampled and analyzed</td>
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<td>2012 - 2014</td>
<td>Quarterly Groundwater Sampling of R and CTL-Thompson wells</td>
<td>Groundwater sampled</td>
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<td>2013</td>
<td>Limited Phase II Environmental Site Assessment, 40th Street Outfall Landfill Test Pits</td>
<td>Soils sampled</td>
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<td>2013</td>
<td>Groundwater Data Summary Report, Vasquez Boulevard/Interstate 70 Superfund Site, Operable Unit 2</td>
<td>Groundwater sampled</td>
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<td>2014</td>
<td>Supplemental Sampling Program Quality Assurance Project Plan, Vasquez Boulevard/Interstate 70 Superfund Site, Operable Unit 2 (Omaha and Grant Smelter)</td>
<td>Findings used in a planning or analysis document</td>
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<td>2014</td>
<td>Groundwater Data Summary Report - Appendix Addendum, Vasquez Boulevard/Interstate 70 Superfund Site, Operable Unit 2</td>
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<td>2015</td>
<td>Administrative Settlement Agreement and Order on Consent for Removal Action</td>
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<td>2015</td>
<td>Removal Action Work Plan (RAWP) High Street Outfall and 40th Avenue Storm Sewer System, Vasquez Boulevard/Interstate 70 Site, Operable Unit 2</td>
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<td>Materials Management Plan for the Removal Action, High Street Outfall and 40th Avenue Storm Sewer System, Vasquez Boulevard/Interstate 70 Site, Operable Unit 2</td>
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<td>Health and Safety Plan for the Removal Action, High Street Outfall and 40th Avenue Storm Sewer System, Vasquez Boulevard/Interstate 70 Site, Operable Unit 2</td>
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<td>Data Summary Report, Environmental Conditions Investigation, High Street Outfall and 40th Avenue Storm Sewer System, Vasquez Boulevard/Interstate 70 Site, Operable Unit 2 - Removal Action</td>
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<td>Final Materials Management Plan, Globeville Landing Outfall Project, Vasquez Boulevard/Interstate 70 Site, Operable Unit 2 Removal Action</td>
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<td>2015</td>
<td>Final Design Report, Environmental Components for Globeville Landing Outfall Project, Vasquez Boulevard/Interstate 70 Site, Operable Unit 2 Removal Action</td>
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<td>2010</td>
<td>USEPA Approval Letter for the Final Design Report for Vasquez Boulevard I-70 Operable Unit 2 Removal Action</td>
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<td>2016</td>
<td>Addendum 1 - Data Summary Report, Environmental Conditions Investigation, High Street Outfall and 40th Avenue Storm Sewer System, Vasquez Boulevard/Interstate 70 Site, Operable Unit 2 Removal Action</td>
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<td>Feb 2016 with updates</td>
<td>Quality Management Plan (Rev 0), Globeville Landing Outfall Project, Vasquez Boulevard/Interstate 70 Site, Operable Unit 2 Removal Action</td>
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Additional information on Denver’s and EPA’s websites
Thank you

Questions and discussion