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United States Environmental Protection Agency

2017 Project Update

ANACONDA SMELTER SUPERFUND SITE

EPA Region 8, Montana Office | April 2017

Site Overview

The Anaconda Smelter Site (Site), in Deer Lodge Valley, covers roughly **300 square miles** of land that was impacted by smelter emissions and ore-processing wastes. It includes the towns of Anaconda and Opportunity.

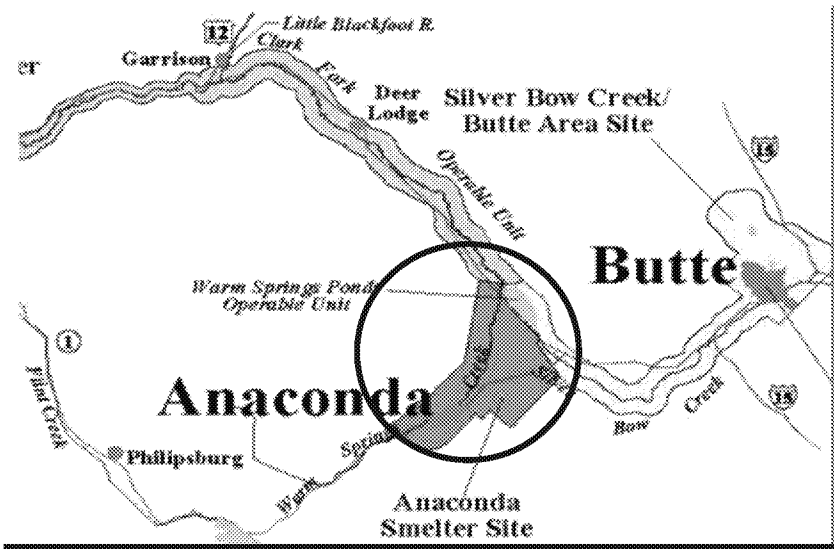
Anaconda Copper Mining Company and its predecessors began copper concentrating and smelting operations in 1884. The company was purchased by Atlantic Richfield in 1977 and smelter operations ended in 1980. The only major feature remaining is the 585-foot tall brick smelter stack and the slag pile.

Over 100 years of operations, vast amounts of arsenic and metals have been spread site-wide. This includes over **260 million cubic yards of mill tailings, furnace slag, and flue dust**. Over **20,000 acres of soils** were severely contaminated by emissions, and large portions of local groundwater aquifers were polluted. This contamination posed potential risks to human health and plants and animals.

The Site was placed on EPA's National Priorities List in 1983. Atlantic Richfield was identified as the potentially responsible party and has since been actively involved in conducting investigations and performing cleanup work. EPA is the lead agency and the Montana Department of Environmental Quality (DEQ) is the support agency.

Because of Site's size, length of operating history, large volume of wastes, and wide area of contamination, it has been divided into smaller and more manageable operable units (OUs), subareas, and remedial design units (RDUs) to make cleanup and long-term management more efficient.

This fact sheet gives a brief overview of the OUs, work conducted or ongoing, any update since the 2015 five-year review, and next steps. For more information, please visit the EPA's website or contact one of the individuals on the back page.



Location of the Anaconda Smelter Superfund Site.

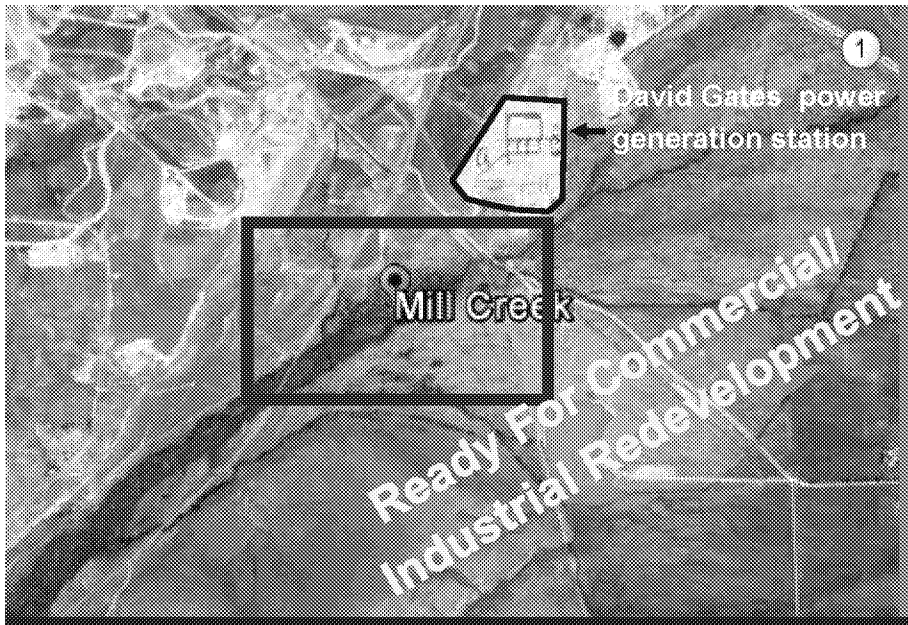
The Site has five OUs:

- Mill Creek
- Flue Dust
- Old Works/East Anaconda Development Area
- Community Soils
- Anaconda Regional Water, Waste, and Soils

Highlights for each are provided inside.

The U.S. Environmental Protection Agency's mission is to protect human health and the environment.

Mill Creek (OU 15)



Site Facts

Mill Creek was a rural development of about 120 acres built from 1902 to 1918.

Ten families were relocated in 1986 due to very high arsenic levels in children (2 to 6 years).

Relocated children were retested and their arsenic levels were typical of children in uncontaminated areas.

Based on this success, an additional 27 families were relocated.

Location of Former Mill Creek Community (approximate removal boundary in red)

Location and Description

OU 15 is located east of Anaconda between Mill Creek Road (589) and Highway 1. The area was a suburban community that was adjacent to and down wind of the Smelter complex.

Work to Date

The primary threat in Mill Creek was exposure to very high arsenic levels in soils. In 1986, EPA and the Federal Emergency Management Agency relocated residents, focusing on families with young children and individuals with health problems. EPA signed record of decision for Mill Creek in 1987, and EPA entered into a consent decree with Atlantic Richfield to implement permanent relocation of residents. Relocation, home demolition, and site stabilization were finished by the end of 1988. Debris and contaminated soils were disposed of on Smelter Hill, foundations were buried, and the area was regraded and vegetated. Atlantic Richfield transferred this property to Anaconda-Deer Lodge County in 1994. The area is zoned as industrial and is ready for reuse, such as that at the adjacent David Gates power generation station.

Ongoing Work

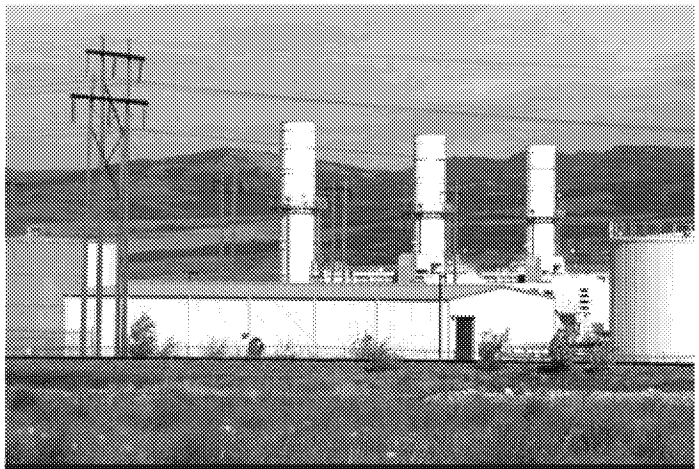
Atlantic Richfield continues to conduct monitoring and maintenance and discusses the findings in the annual vegetation monitoring report.

Status of Issues from Five-Year Review

The five-year review confirmed the OU is protective of human health and the environment. Long-term effectiveness of the county's institutional controls program was the only issue identified. The *Institutional Controls Implementation and Assurance Plan* is anticipated to be completed in 2017.

Next Steps/Schedule

Atlantic Richfield and Anaconda-Deer Lodge County continue to negotiate the institutional controls plan, including funding, which should be completed in 2017.



David Gates Power Generation Station

Flue Dust (OU 11)

Location and Description

Flue dust is a by-product of copper smelting and contains high levels of metals and arsenic. Roughly 316,500 cubic yards of flue dust was stockpiled at nine locations on and near Smelter Hill and posed a danger to the environment through leaching into groundwater.

Work to Date

EPA signed the record of decision in 1991 and entered into an agreement with Atlantic Richfield to implement the flue dust clean up in 1992. By the end of 1994, all stockpiled and other flue dust (~500,000 cubic yards) had been treated and placed in a newly-constructed, lined and capped repository on Smelter Hill.

Ongoing Work

Long-term operation and maintenance began in 1995. It includes vegetation and erosion monitoring and maintenance, evaluation of the repository storm water channel, monitoring ground water and repository leachate levels, and pumping and disposing of leachate, as needed. Atlantic Richfield provides an annual monitoring report to EPA, and the only significant issue is the production of unexpected leachate. Additional investigation and work is being conducted to reduce leachate production.

Status of Issues from 2015 Five-Year Review

The five-year review confirmed that the OU remains protective. Atlantic Richfield has completed needed upgrades to the stormwater system, which seem to have reduced leachate production, and they are currently designing an evaporation system to manage remaining leachate collected in summer months.

Next Steps/Schedule

Atlantic Richfield will construct a leachate treatment and evaporation system and will continue long-term operation and maintenance.

Flue Dust Repository Under Construction

Site Facts

Flue dust was deposited when super hot emissions from smelting furnaces traveled up the masonry flues leading to the smelter stacks.

Over the operating life of the smelters, flue dust was regularly scraped out of the flue and deposited in nearby stockpiles. Think of scraping a VERY dirty chimney.

Because of high metal concentrations, the dust was sometimes reprocessed to extract the metals.

Masonry Flue Leading to Smelter Stack

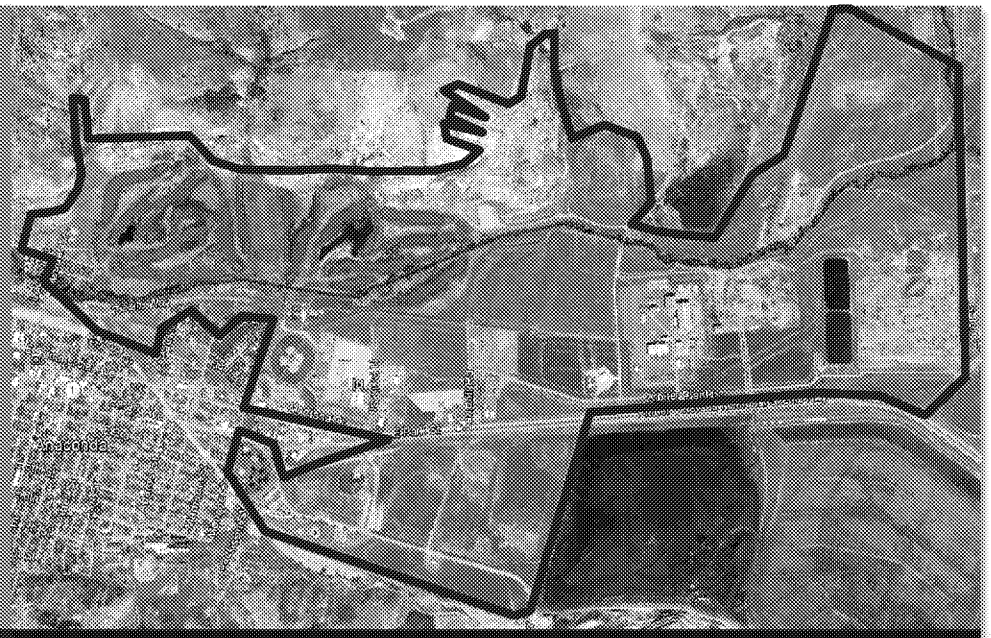
Old Works/East Anaconda Development Area (OU 7)

Site Facts

Lower grade ore was crushed, screened, and jigged (agitated) to concentrate it. Jig tailings were left on the floodplain.

Heap roast slag (partially vitrified or glassy slag) was made in an air cooling process.

Tailings and slag were sluiced over the creek to form the Red Sands area. Portions of which were reworked on several occasions to extract metals.



Old Works/East Anaconda Development Area (approximate boundary in red).

Location and Description

OU 7 has large volumes of waste and debris from the milling, smelting, and refining (1884 to 1902) at the "Old Works." The area had a concentrator, boiler house, houses, and factories. Smelters were connected to brick stacks on adjacent hills by masonry flues. The area was dismantled by 1906 when work moved to the Washoe Works at Smelter Hill leaving over 1,372,000 cubic yards of floodplain wastes, heap roast slag, red sands, and miscellaneous wastes.

Work to Date

The record of decision for cleanup was finalized in 1994 and property was conveyed to the county for redevelopment by Atlantic Richfield. Atlantic Richfield implemented cleanup activities from 1994 with the capping of the waste areas was completed by 2000, including the Jack Nicklaus Old Works Golf Course. Approximately 900 acres have been cleaned up and are ready for reuse. To date, nearly 20 new businesses have developed in the area. Additionally, the county has used the area for its operations, including a Class III landfill.

Ongoing Work

Atlantic Richfield conducts vegetation monitoring and reports results annually to EPA. Long-term operations and maintenance is ongoing over most of the OU.

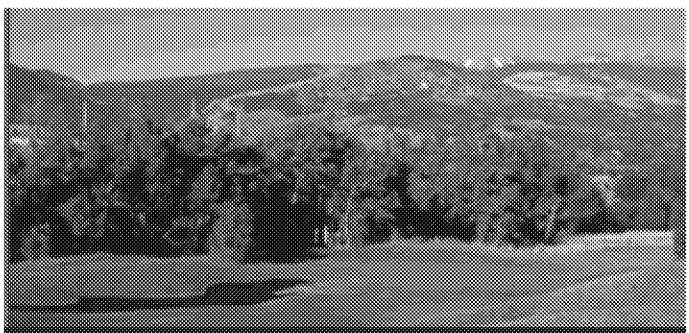
Status of Issues From 2015 Five-Year Review

The review found cleanup to date has addressed the exposure pathways that could result in unacceptable risk. When complete, cleanup is expected to be protective. Remaining work includes:

- Cleanup of remaining 3 commercial parcels.
- Control access to the Historic Structure Area and upgrade stormwater controls.
- Develop and implement an institutional controls plan and a golf course operations and management plan (including funding).

Next Steps/Schedule

Atlantic Richfield will continue long-term operation and maintenance and will implement the first two bullets (above) by 2020. They and Anaconda-Deer Lodge County will continue to negotiate the institutional controls plan, which should be completed in 2017.



Old Works Golf Course (www.oldworks.org)

Community Soils (OU 16)

Location and Description

OU16 includes residential yards, commercial properties, and abandoned railroads in Anaconda, Opportunity, and rural areas site-wide.

Work to Date

The record of decision for cleanup was signed in 1996. Approximately 350 yards were cleaned up for arsenic between 2002 and 2010. An additional 38.6 acres of commercial property were also cleaned up. Cleanup included contaminated soil/waste removal, backfilling with clean soil, and revegetating or installing gravel or similar materials (depending on the use of the property). Capping of the in-town railroad line, including the east and west yards, was completed in 2015.

Ongoing Work

A 2013 record of decision amendment required additional cleanup of residential soils for lead as well as attic dust. Previously sampled residential properties with limited available "screening level" lead data above the action level will be resampled to verify concentrations and to assess the need for cleanup based on lead, instead of arsenic. This sampling began in 2016. Other residences will be sampled at the landowner's request. Anyone in the Superfund Overlay District can request sampling of their yards or accessible attic dust for arsenic and lead. Sampling of requested residences is expected to begin in 2019.

Status of Issues from 2015 Five-Year Review

The five-year review found that the cleanup of the OU is *not* protective. because exposure to lead in residential soil and dust is not controlled.

The following actions were called out:

- Implement the *2015 Residential Soil/Dust Remedial Action Work Plan*
- Complete and implement (including long-term funding) a final institutional controls implementation and assurance plan.

Next Steps/Schedule

Atlantic Richfield has begun implementing the 2015 work plan (above). In 2017, almost 500 yards will be cleaned up and another 500 will be sampled. Sampling and yard removals are expected to be complete by 2020.

The institutional controls management plan is expected to be completed in 2017. Atlantic Richfield and Anaconda-Deer Lodge County continue to negotiate the institutional controls implementation and funding, which should also be completed in 2017.

Typical Anaconda Yard Before and After Cleanup

Site Facts

When the *Community Protective Measures Program* is in place, residents will be able to:

- **Request home inspections to identify sources of residential contamination.**
- **Obtain renovation kits to reduce contamination from home improvement projects and/or borrow high-efficiency particulate arrestance (HEPA) vacuums to cleanup any residual contamination.**
- **Obtain clean soils for existing or proposed vegetable gardens and play areas.**

Anaconda Regional Water, Waste and Soils (OU 4)

Location and Description

Final cleanup for the Site is being completed under OU4 and addresses all remaining contamination and impacts to surface and ground water, waste source areas, and non-residential soils not cleaned up under work in other OUs. This OU is the largest at the Site and includes over 200 square miles of land impacted by smelter emissions and transport of mine waste in creeks (see map). Contamination consists of elevated arsenic and metals. For cleanup efficiency, the OU has been divided 15 RDUs.

Work to Date

The record of decision was signed in 1998 and amended in 2011. Cleanup is intended to minimize or eliminate contaminant movement to surface and ground water through re-establishment of functioning ecosystems. As of 2015, this has included:

- 4,000 acres of waste areas have been closed.
- 12,000 acres of soils have been treated.
- 3,000,000 cubic yards of waste areas have been consolidated into waste management units.
- 30,000 feet of stream have been stabilized. *That's almost a 10K race.*
- 140,000 feet of engineered stormwater controls have been placed. *That's 26.5 miles - or slightly longer than a marathon.*

The Site is covered by the Domestic Well Monitoring Program and over 600 wells have been sampled, resulting in 36 being replaced or put on treatment units. Several properties have been remediated to support redevelopment, including a regional prison and gas power plant.

Ongoing Work

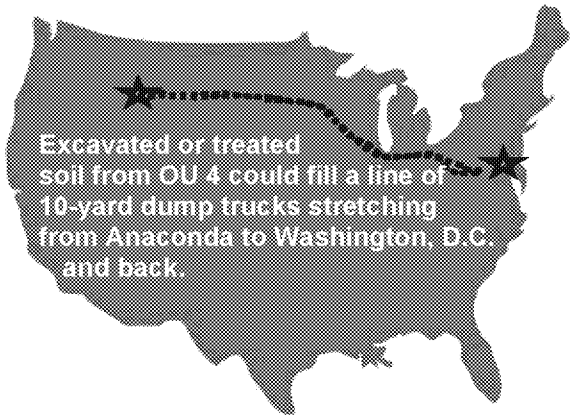
Cleanup continues at Warm Springs Creek, Smelter Hill, and West Galen and monitoring and maintenance work continue across the OU.

Site Facts

Revegetation has been so successful that motorists have complained about elk crossing where they have not been before instead of complaining about dust from the dry ponds.

US Minerals processes and ships 25,000 tons of slag annually (5 full-time local jobs). Atlantic Richfield is seeking additional slag developers.

The Dutchman Creek area is the largest natural wetlands complex in the Upper Clark Fork Watershed and the Opportunity Borrow Areas are the largest constructed wetlands in the nation. Both have been preserved by Atlantic Richfield with public access.



Excavated or treated soil from OU 4 could fill a line of 10-yard dump trucks stretching from Anaconda to Washington, D.C. and back.

Antelope Enjoying The New Vegetation in Cleaned Up Areas

Status of Issues from 2015 Five-Year Review

The review confirmed that cleanup to date has addressed all exposure pathways that could result in unacceptable risks at the OU. The entire cleanup, when finished, is expected to be protective.

Remaining work includes:

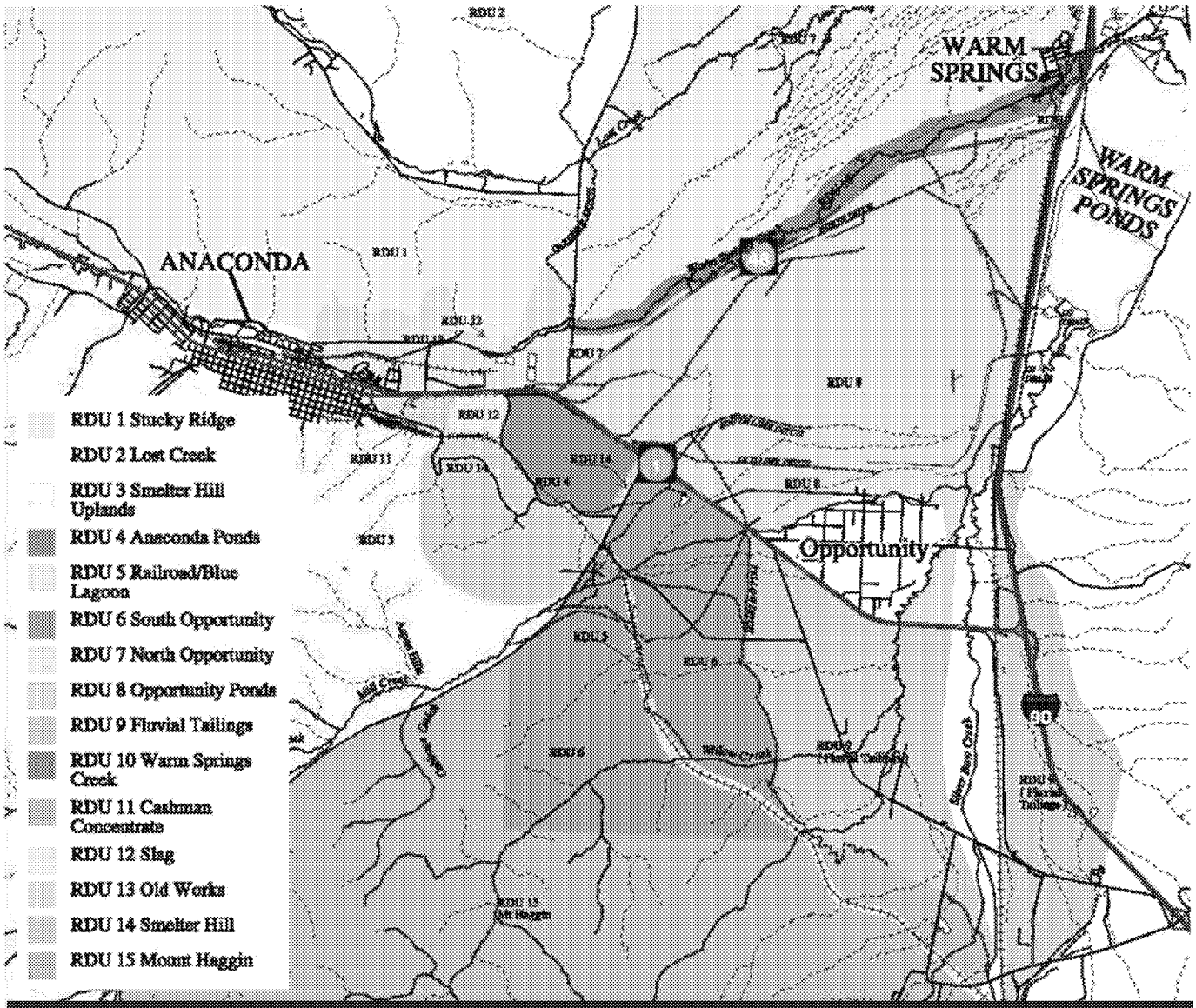
- Finish soil reclamation and storm water controls for RDUs 1, 2, 3, 6, 7, 9, 14, 15, and West Galen.
- Remove tailings along Warm Springs Creek.
- Complete and implement either a re-use or closure plan for the remaining slag piles (Main Granulated Slag, West Stack Slag, and landfill).
- Develop and implement a final institutional controls plan (including long-term funding).

Next Steps/Schedule

Atlantic Richfield is responsible for completing the work identified in the first three bullets (above), and the anticipated timeline for completion is 2025.

Atlantic Richfield and Anaconda-Deer Lodge County continue to negotiate an institutional controls plan and this work should be completed in 2017.

EPA, DEQ, and Atlantic Richfield will continue to negotiate the final consent decree to provide for long-term operations and maintenance.

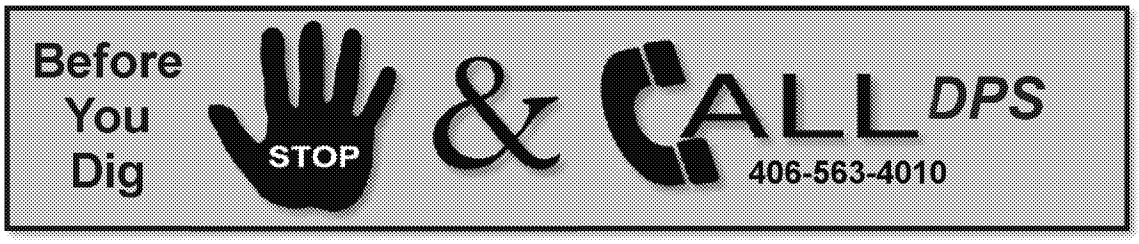


Layout of Anaconda Regional Water, Waste, and Soils Operable Unit

You Are The Key to Long-Term Protection!

Residents will be key to making sure the remedy stays protective. Some contamination will remain underground, secured by several feet of soil, and the most important thing you can do is to respect the soil barrier by using the Development Permit System (DPS). **The DPS was put in place to keep your community safe** and using it is easy and free.

If you have a digging project, ***before you schedule your backhoe or contractor***, take these two simple steps:



DPS will ☑ to see if your soil needs to be handled carefully and disposed of safely.

If needed, DPS will replace contaminated soil with clean soil at MONEY to you.

If everyone uses the DPS when they plan to expose buried soils, contamination will stay in a safe place. You, your family, your neighbors, and the environment will be protected, which is good for everyone.

Agency and Local Government Contacts

U.S. Environmental Protection Agency:

- Charlie Coleman, Remedial Project Manager, 406-457-5038, coleman.charles@epa.gov
- Robert Moler, Community Involvement Coordinator, 406-457-5037 moler.robert@epa.gov

Montana Department of Environmental Quality

- Joel Chavez, Project Officer , 406-444-6407, jchavez@mt.gov

Anaconda-Deer Lodge County:

- Superfund Coordinator, Carl Nyman, 406-563-7019, www.adlc.us/departments/planning/

Need More Information?

- Visit EPA's website for the Site: www.epa.gov/superfund/anaconda-co-smelter
- Contact the Technical Assistance Grant Group, Arrowhead Foundation, P.O. Box 842, Anaconda, 406-563-5538, www.anacondasuperfund.com/