Update: Phosphate Mine Site Investigations and Cleanup in Southeast Idaho

Southeast Idaho Selenium Project

July 2014

Phosphate mining in southeast Idaho over the last 100 years has left waste rock dumps and open pits at more than two dozen closed mines. If not managed properly, selenium and other hazardous substances can potentially pollute the nearby water, soil, sediments or plants. The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) provides the framework to address these issues. Investigations and planning for cleanup at several sites are ongoing under the oversight of the U.S. Environmental Protection Agency (EPA) and/or the USDA Forest Service (USFS) and/or the Idaho Department of Environmental Quality (DEQ), exercising its authorities under state law. The Bureau of Land Management (BLM), Shoshone-Bannock Tribes and U.S. Fish and Wildlife Service (FWS) are participating as support agencies.

Selenium: Widely present in nature in most rocks and soils, selenium is associated with waste rock dumps and other mining practices. Selenium can have both beneficial and harmful health effects: low doses help to maintain good health, but exposure to high levels can cause adverse effects in humans and animals. Elevated levels of selenium and potentially hazardous metals have been detected in soil, water and plants on and near phosphate mines in southeast Idaho.

CERCLA and Community Involvement

CERCLA community involvement guidelines say that members of the public affected by a cleanup site have a right to know about activities taking place in their community and to be involved in the decision-making process.

The agencies, Tribes and mining companies participating in the investigations in southeast Idaho welcome public involvement throughout the process because they believe it ultimately produces better cleanup decisions.

Site History and Environmental Background

Southeast Idaho is one of the world's major phosphate producing regions, and phosphate mining has been an important industry here since the early 20th century. Past studies in Caribou and adjacent counties – including voluntary mining company investigations, area-wide investigations, mine-specific studies and others – have identified the waste rock dumps as sources of pollution that may pose a risk to human health and/or the environment. Rain and snowmelt infiltrate through the waste rock in these dumps, releasing high levels of selenium and other contaminants to the environment. As a result, these contaminants are known or suspected to be present in groundwater, surface water, sediment, soils and plants in the area, and can be transported beyond former mining areas.

Site Investigations Progress

The investigation process is progressing at several southeast Idaho sites:

- Ballard, Henry, and Enoch Valley Mines
- Champ Mine
- Conda/Woodall Mountain Mine
- Gay Mine
- Georgetown Canyon Industrial Site
- Mountain Fuel Mine
- North Maybe Mine
- Smoky Canyon Mine
- South Maybe Canyon Mine
- South and Central Rasmussen Ridge
- South Rasmussen.

Ballard, Henry, and Enoch Valley Mines

Field investigations completed, treatability studies completed, RI/FS in progress.

Field investigations at the Ballard, Henry, and Enoch Valley mines – collectively referred to as the P4 mines – were performed between 2004 and 2009.

In 2009, P4 Production LLC entered into a voluntary agreement with the EPA, DEQ, USFS, BLM and the Shoshone-Bannock Tribes to complete investigations and develop remedial investigation (RI)/feasibility study (FS) reports (or clean-up plans) for each of the three mine sites. A detailed work plan was completed in 2011. Since then, investigation work at these mines has been completed, which evaluated the nature and extent of contamination in groundwater, surface water, soils, plants and other media. Some additional monitoring will continue as data gaps are identified.

A study was completed at the Ballard mine to test and evaluate a treatment method to remove selenium from contaminated water. The method is a semi-passive treatment system that involves piping water into a series of tanks (or bio-reactors) where selenium is removed from the water. The results of this testing appear promising.

In 2014, a remedial investigation report, including a risk assessment and site characterization, will be completed for Ballard Mine. A feasibility study will then be developed to evaluate cleanup alternatives. Once the Ballard RI/FS reports are complete, the agencies will propose a cleanup plan, seek input from the public, and then select a cleanup alternative. Following the Ballard Mine, the process will continue for the Henry Mine and then the Enoch Valley Mine.

Champ Mine

RI/FS in progress.

The RI for the Champ Mine began in 2013. During 2013, 26 shallow (alluvial) wells and boreholes were installed and sampled; in addition eight deep (bedrock) wells were installed and sampled. Surface water was sampled in the spring and fall. Vegetation was sampled in the spring, summer and fall. Soil samples were taken in the summer and sediment samples were taken in the fall. The RI will continue through 2014 and into 2015. The FS is planned to start in 2015 and to be completed in early 2016.

Conda/Woodall Mountain Mine

RI/FS in progress. Some cleanup actions completed.

The Conda/Woodall Mountain Mine is one of the oldest and largest mines in eastern Idaho, producing phosphate ore under various mine operators from 1906 through 1984. The J.R. Simplot Company became the primary operator around 1960. During open-pit mining, overburden (waste rock) was removed from the mine pits and placed in overburden disposal areas (ODAs).

The Conda/Woddall Mountain Mine RI/FS began in 2008. The investigation is complete for most parts of the mine and a draft RI report was submitted and reviewed in 2013. A draft final RI report will be submitted and reviewed this year.

The Conda/Woodall Mountain Mine is one of the oldest and largest mines in eastern Idaho, producing phosphate ore under various mine operators from 1906 through 1984.

A draft Baseline Risk Assessment will be submitted in early 2015 and a draft FS evaluating cleanup alternatives will be submitted in 2017. A supplemental groundwater investigation in one part of the mine will be conducted in 2014 and 2015, and the results incorporated into a final RI report in 2016 and the final risk assessment in 2016.

A Plant Uptake Field Scale Pilot Study is in progress to support the FS. The study evaluates the uptake of selenium into vegetation with various soil cover types, as well as uptake into vegetation that are planted directly on ODA materials. In 2012 a small ODA was re-graded and 21 test plots were constructed on the reworked surface. The test plots consist of 7 cover types of varying thickness. The test plots were seeded in 2012 with low selenium accumulating grasses. The vegetation and cover materials are sampled annually to determine the ability of each cover system to minimize the uptake of selenium. The study will be used in the FS to determine the appropriate cover thickness to address risks to animals from eating plants that uptake selenium.

Some clean-up work has already been completed. The Pedro Creek ODA consists of several million cubic yards of overburden materials located in the upper reaches of the Pedro Creek drainage.

The ODA had very steep side slopes and was unstable. Rain and snowmelt pooling on, and infiltrating through, the ODA contaminated Pedro Creek and shallow groundwater with high levels of selenium and other contaminants above state water quality standards. The DEQ, EPA, BLM and Simplot accelerated the Pedro Creek ODA as an early clean up action called a Non Time-critical Removal Action (NTCRA) to address the instability of the ODA and the contamination to Pedro Creek and shallow groundwater. As part of the NTCRA, the following construction activities were completed during 2013: approximately 1.6 million cubic yards of overburden was excavated and re-graded

After seeking and considering public comment following completion of the RI/FS, final cleanup actions (including any additional actions at the Pedro Creek ODA) will be selected in a Final Record of Decision.

to re-shape the ODA, steep side slopes were flattened to no steeper than 3:1, a clean soil cover with a minimum thickness of 18 inches on the side slopes and 12 inches on the flatter areas was placed over the ODA and seeded with shallow-rooted, low selenium accumulating grasses, water run-on and run-off ditches to divert clean water around the ODA, four stormwater/sediment control basins, and two infiltration basins were constructed to manage water that runs-on and off the ODA, two seep control basins were built to manage contaminated toe seeps, and four new groundwater monitoring wells were installed downgradient of the ODA. Additional work will be done in 2014 to complete the construction phase of the NTCRA. A draft Post Removal Action Site Control Plan is currently under review. This plan includes a Long Term Effectiveness Monitoring Plan and an Operations and Maintenance Plan.

After seeking and considering public comment following completion of the RI/FS, final cleanup actions (including any additional actions at the Pedro Creek ODA) will be selected in a Final Record of Decision.

Gay Mine

RI/FS initiated.

Located within the Fort Hall Reservation of the Shoshone-Bannock Tribes, the Gay Mine produced phosphate ore from 1946 through 1993. Because of high levels of selenium and other metals found at other phosphate mines, EPA and the Shoshone-Bannock Tribes are overseeing an investigation to determine if these pollutants are creating a risk to human health and the environment at the Gay Mine.

In 2010, the JR Simplot Company and the FMC Corporation, the mine operators at Gay Mine, agreed to study the contamination by conducting and paying for an RI/FS, with oversight by EPA and the Tribes with support from the BLM, the Bureau of Indian Affairs and FWS.

The RI should be completed in 2015 and the FS is scheduled to be completed in 2016. These studies will determine how wide-spread contaminants are and how to clean up the site so Tribal members can use these areas. The EPA project manager and staff visited the Fort Hall Reservation in 2012 to discuss the study and to learn about any community concerns at the Gay Mine.

Georgetown Canyon Mine

Consent Order signed in 2014; initiating RI/FS.

The administrative Settlement Agreement and Order on Consent was signed by DEQ, USFS and Nu-West in May 2014 to conduct a RI/FS for the Georgetown Canyon Mine Site. Sampling results since 1996 have indicated elevated levels of selenium and other hazardous substances in the waste rock, soils, vegetation, surface water and groundwater. The investigation is scheduled to start this summer. The FS will be completed following the investigation. In 2010, cleanup actions were completed at the Georgetown Canyon industrial site. An agreement is now being negotiated for the RI/FS at the Georgetown Canyon mine site.

Mountain Fuel Mine

RI/FS in progress.

The RI for the Mountain Fuel Mine began in 2013. During 2013, 17 shallow (alluvial) wells and boreholes were installed and sampled; in addition 10 deep (bedrock) wells were installed and sampled. Surface water was sampled in the spring, summer and fall, as was vegetation. Soil and

sediment samples were taken in the summer. The RI will continue through 2014 and into 2015. The FS is planned to start in 2015 and to be completed in early 2016.

North Maybe Mine

RI/FS in progress.

Field work for the North Maybe Mine (NMM) RI/FS began in 2013 and will continue in 2014. Past field work at NMM included surface water, groundwater, soil, sediment, a gain loss survey of Maybe and Dry Valley Creeks, and vegetation sampling. Field work for 2014 is anticipated to include surface water sampling, groundwater sampling, a habitat survey, and a gain/loss survey of East Mill Creek. A draft Baseline Risk Assessment describing risks to human health and the environment at East Mill Dump is currently under review. A RI/Focused FS report for East Mill Dump is planned to be completed in 2015, which will summarize investigation results and evaluate potential remedial alternatives for the East Mill Dump.

Smoky Canyon Mine

RI/FS in progress.

Work is continuing under the 2009 Administrative Settlement Agreement to conduct a RI/FS. The majority of the site characterization is complete and a revised draft RI report was issued in May 2014. Construction on the cover for the Pole Canyon ODA, authorized under the 2013 Administrative Settlement Agreement to conduct a NTCRA, should begin later this year.

South Maybe Canyon Mine

RI/FS initiated.

Field work for the South Maybe Canyon Mine (SMCM) Open Pits RI/FS began in 2013 and included surface water, soil, sediment and vegetation sampling. Field work for 2014 includes surface water sampling, vegetation sampling and a habitat survey. Once sampling is completed, a RI/FS report will summarize investigation results and evaluate potential remedial alternatives for the SMCM Open Pits. The RI/FS for Maybe Creek will begin after construction of the cap for the SMCM Cross Valley Fill is completed.

The field investigation for the Cross Valley Fill Cap design was conducted in summer 2013 and

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is currently in the design phase until mid-July. Construction is planned to begin in August 2014 and be completed by Fall 2015. Spring and Fall sampling of ground and surface water is planned for 2014 and after construction to determine the effectiveness of the cap.

South and Central Rasmussen Ridge

The South and Central Rasmussen Ridge Mines are located on Caribou Targhee National Forest land. Phosphate mining began at South Rasmussen Ridge in 1991, operated by Rhone-Poulenc. In 1996 the South Rasmussen Ridge Mine was expanded to include the Central Rasmussen Ridge Mine. In 1998, Nu-West purchased the Rasmussen Ridge Leases. South Rasmussen Drainage, now called the West Fork of Sheep Creek, has documented exceedances of surface water standards.

All work on the South Central Rasmussen Ridge Area is coordinated with the BLM who oversees the Mine and Reclamation Plan and the Forest Service the public land owner.

Downgradient groundwater monitoring wells at the Rasmussen Ridge lease boundary in West Fork Sheep Creek also show an exceedance of standards. To address these concerns, Nu-West Mining entered into a Consent Order on August 17, 2013 with the DEQ to address the identified groundwater and interconnected surface water contamination for the South Central Rasmussen Ridge Area. The Consent Order requires Nu-West Mining to provide a Source Characterization Report and a Remedial Action Plan. The Source Characterization Report will identify the nature and extent of contamination and the Remedial Action Plan identifies measures that Nu-West Mining will take to bring the groundwater and interconnected surface water back into compliance with water quality standards. All work on the South Central Rasmussen Ridge Area is coordinated with the BLM, who oversees the Mine and Reclamation Plan. and the USFS, the public land owner.

South Rasmussen Mine

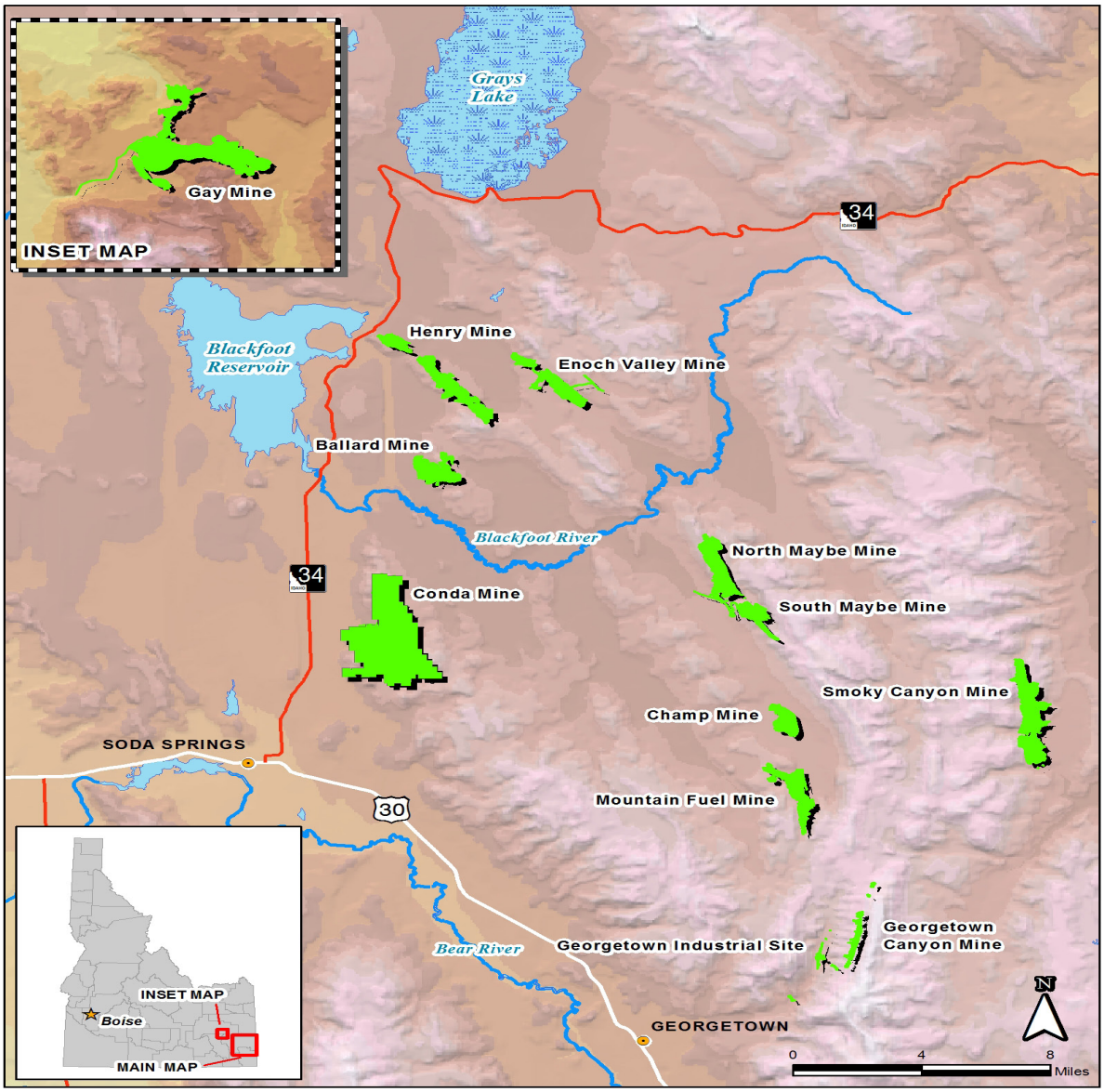
Consent Order signed in 2012; remedial action plan in progress.

A Consent Order between the State of Idaho and P4/Monsanto to address groundwater concerns at the mine site was signed in June 2012.

Since that time P4/Monsanto has completed a Site Characterization Report for the Horseshoe Overburden Area (HOA) of the mine and is in the process of finishing a data gaps investigation report for the HOA. Concurrently, they are working on a remedial action plan for addressing groundwater problems associated with the HOA.

P4/Monsanto also has submitted an application for establishing Points of Compliance for the mine site.

Selenium mine cleanup sites in Southeast Idaho.



Upcoming Open Houses

Please join the agencies at one of the upcoming open houses. Information about each of the mine sites will be provided and representatives from the Idaho Department of Environmental Quality, Environmental Protection Agency, and U.S. Forest Service will be available to answer your questions.

Tuesday, July 29, Soda Springs

Tigert Middle School
250 East 2nd South
Soda Springs, ID

Thursday, July 31, Pocatello

U.S. Forest Service
4350 S. Cliffs Dr.
Pocatello, ID