Update: Phosphate Mine Site Investigations and Cleanup in Southeast Idaho

Southeast Idaho Selenium Project

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Southeast Idaho is one of the world's major phosphate producing regions, and phosphate mining has been an important industry in the area since the early 20th century. However, it has also resulted in waste rock dumps and open pits at more than two dozen closed mines. Past studies in Caribou and adjacent counties – including voluntary mining company investigations, area-wide investigations, mine-specific studies and others – have identified waste rock dumps as sources of pollution that may pose a risk to human health and/or the environment. Rain and snowmelt can infiltrate through these areas, releasing selenium and other contaminants to the environment. These contaminants, if not managed properly, can potentially pollute nearby water, soil, sediments, or plants. The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), as well as state law, provides a framework to address these issues.

Investigations and planning for cleanup at several sites have been ongoing with the oversight of the U.S. Environmental Protection Agency (EPA), the U.S. 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.

Community Involvement

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. The agencies provide the latest updates about the progress at each of the mine sites through this factsheet, which contains contact information and website addresses.

Definitions of key words

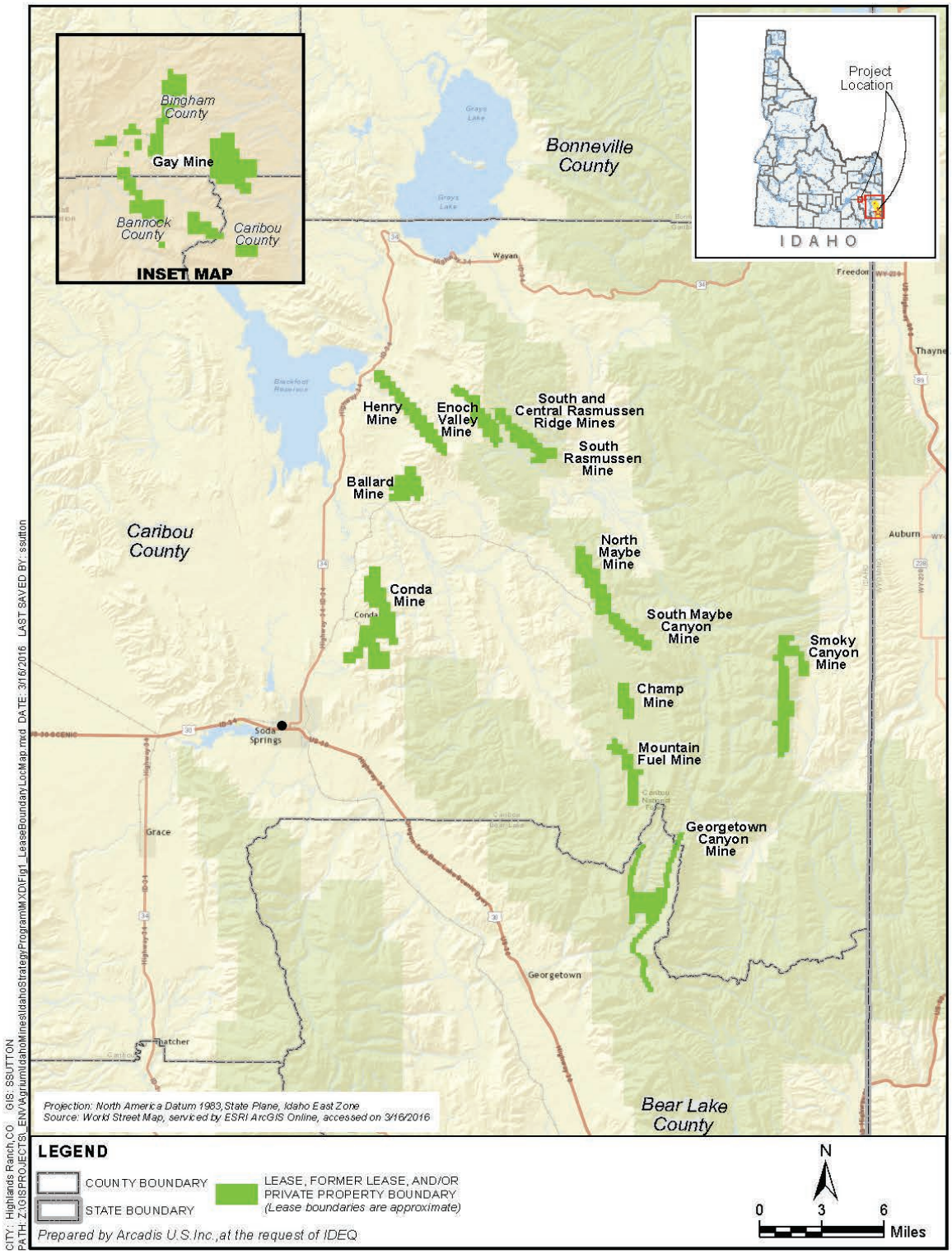
***Selenium**: A naturally occurring element that is not harmful in small doses but high levels can cause adverse effects in humans and animals.*

***Administrative Agreement/Consent Order**: A negotiated agreement of the parties involved to address potential cleanup sites.*

***Non-time critical removal action**: A removal action is a response to actual or threatened releases of a pollutant or contaminant that poses a threat to public health or the environment. A NTCRA occurs if a planning period of at least six months is available before on-site activities must begin.*

***Remedial Investigation/Feasibility Study**: The methodology established by CERCLA to characterize the nature and extent of contamination, and assess risks to evaluate potential remedial options. The remedial investigation is the mechanism for collecting data to characterize site conditions, determine the nature of the waste/contamination, assess risk to human health and the environment, and conduct treatability testing; the feasibility study is the mechanism for the development, screening, and detailed evaluation of alternative remedial actions.*

Mine cleanup sites in Southeast Idaho.



Site Investigations

Investigations are progressing at several southeast Idaho sites:

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

Ballard, Henry, and Enoch Valley Mines

Remedial investigation completed for Ballard Mine; feasibility study in progress for Ballard Mine.

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 and feasibility study reports (or cleanup plans) for each of the three mine sites.

A detailed remedial investigation/feasibility study work plan was completed for the Ballard Mine in 2011. Since then, investigation work at these three mine sites was completed to evaluate 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. In 2011, a pilot study was also performed to evaluate a semi-passive treatment method to remove selenium from mine-contaminated water. The results of this testing showed promise.

In 2014, the remedial investigation report was completed for the Ballard Mine Site. This report included a risk assessment and site characterization. Later in the year, the site characterization was enhanced by collection of supplemental background data for soils with results reported in early 2015.

In March 2015, the first part of the feasibility study was prepared. The draft report presents key characterization and risk assessment findings, and identifies and evaluates available remedial (cleanup) technologies. The second part of the feasibility study (alternative screening), anticipated in early 2016, will assemble, evaluate, and compare a range of cleanup alternatives.

Once the Ballard remedial investigation and feasibility study reports are complete, the agencies will propose a cleanup plan, seek input from the public, and then select a cleanup alternative to be implemented. The proposed cleanup plan is expected to be released for public comment later in 2016.

A similar process will follow for the Henry and Enoch Valley Mine Sites, using the methods and approaches developed for Ballard as a guide. The Henry Mine Site remedial investigation report is anticipated to be completed in 2016, with a feasibility study report and Proposed Plan to follow in 2017. At the Enoch Valley Mine, P4 has re-entered a portion of the mine site to recover ore under existing mine and reclamation plans. These mining activities may delay the schedule for developing a cleanup plan at Enoch Valley.

Ballard Mine Area.

Champ Mine

Remedial investigation/feasibility study in progress.

Field work associated with the remedial investigation at the Champ Mine continued in 2015. Groundwater was sampled in the spring and fall, and an additional groundwater monitoring well was installed in 2015. Sediment, surface water and aquatic invertebrate sampling, as well as soil and terrestrial invertebrate sampling occurred in 2015. The Baseline Ecological Risk Assessment to analyze the risks from contamination to wildlife is planned to begin in 2016. The remedial investigation will continue in 2016 and 2017. The feasibility study will be completed following the investigation.

Conda/Woodall Mountain Mine

Remedial investigation/feasibility study in progress; some cleanup actions completed.

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. 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).

In 2015, Simplot submitted the draft final remedial investigation report for review by the agencies. The draft site-specific Human Health Risk Assessment and the draft site-specific Ecological Risk Assessment were also submitted and reviewed in 2015. In addition, a draft site-specific Livestock Risk Assessment was submitted for review in December 2015. All three site-specific risk assessments are scheduled to be finalized in 2016. In addition, a supplemental groundwater investigation for the western side of the mine was completed in 2015. Results from the supplemental groundwater investigation will also be incorporated into the final remedial investigation report.

Data collection continued for a third year on the five-year Plant Uptake Field Scale Pilot Study at the Conda/Woodall Mountain Mine. The pilot study evaluates uptake of selenium into vegetation with various soil cover types, as well as uptake into vegetation that are planted directly on ODA materials. Information generated from the pilot study will be used in a site-specific feasibility study to determine the appropriate cover thickness to help reduce risks to animals from eating plants that take up selenium.

The Pedro Creek ODA Non Time-Critical Removal Action (NTCRA) was completed in 2015. The ODA at the head waters of Pedro Creek was polluting the creek and the shallow groundwater with selenium. The cleanup included:

- Excavating nearly 1.6 million cubic yards of overburden,
- Re-grading the ODA,
- Placing a clean soil cover on the ODA,
- Seeding the clean soil cover with shallow-rooted, low selenium accumulating grasses,
- Constructing ditches to divert clean water around the ODA
- Building two infiltration basins and four storm-water/sediment control basins to collect the clean water and manage contaminated water from toe seeps at the ODA,
- Installing four monitoring wells downgradient of the ODA

Also in 2015, a Post Removal Action Site Control Plan was finalized to monitor and maintain the cleanup.

Following completion of the remedial investigation and feasibility study, a proposed cleanup plan will be presented for public comment. After considering public comment on the plan, a Record of Decision that selects the final cleanup actions (including any additional actions at the Pedro Creek ODA) will be issued.

Pedro Creek ODA in 2010 prior to Removal Action; overburden was exposed at the ground surface, and the very steep side slopes were unstable and prone to erosion and slumping.

After Removal Action; steep edges have been flattened and grasses are growing on a new soil cover that was placed on the overburden; new storm water basins and run-on/run-off control ditch are in the foreground.

Gay Mine

Remedial investiagtion/feasibility study initiated.

Located within the Fort Hall Reservation of the Shoshone-Bannock Tribes, the Gay Mine produced phosphate ore from 1946 through 1993.

In 2010, J.R. Simplot Company and FMC Corporation, the mine operators at Gay Mine, agreed to conduct a remedial investigation and feasibility study with oversight by EPA and the Tribes. The BLM, the Bureau of Indian Affairs, and FWS are support agencies for the process.

The remedial investigation should be completed in 2017, and the feasibility study is scheduled to be completed in 2018. These studies will determine contaminant distribution and preferred cleanup alternatives to protect human health and the environment emphasizing cultural use of resources at the Gay Mine. A Community Involvement Plan was published in 2013 reflecting the community's concerns and describing how EPA will keep the community informed during the remedial investigation/feasibility study process.

Georgetown Canyon Mine

Remedial investigation/feasibility study in progress.

The Consent Order/Administrative Settlement was signed by DEQ, USFS, Shoshone-Bannock Tribes, Nu-West, and CF Industries in May 2014 to conduct a remedial investigation and feasibility study for the Georgetown Canyon Mine Site. Field work in 2015 included groundwater, surface water, sediment, soil, vegetation, and aquatic biota sampling. A cultural resources survey, avian (bird) nest clearance survey, and a waters/wetlands delineation were also performed. As part of the groundwater monitoring program, four new shallow (alluvial) wells along with two bedrock (Dinwoody and Wells Formation) wells were installed in 2015. The feasibility study will be completed following the investigation.

Georgetown Canyon Mine drainage Pit 1.

Small pit in southern most drainage, Georgetown Canyon Mine.

Mountain Fuel Mine

Remedial investigation/feasibility study in progress.

Field work associated with the remedial investigation at the Mountain Fuel Mine continued in 2015. Groundwater was sampled in the spring and fall. Sediment, surface water and aquatic invertebrate sampling, as well as soil and terrestrial invertebrate sampling occurred in 2015. The Baseline Ecological Risk Assessment to analyze the risks from contamination to wildlife is planned to begin in 2016. The remedial investigation will continue in 2016 and 2017. The demolition of the Mountain Fuel shop is anticipated to begin in 2017. The feasibility study will be completed following the investigation.

Work progresses on the South Maybe Canyon Cross Valley Fill.

North Maybe Mine

Remedial investigation/feasibility study in progress.

Field work for the North Maybe Mine remedial investigation and feasibility study will continue in 2016. In 2015, field activities included surface water, groundwater, soil, sediment, and vegetation sampling; a gain-loss survey of the Blackfoot River adjacent to the North Maybe Mine; and habitat, plant, and wildlife surveys. Field work for 2016 is anticipated to include surface water, groundwater sampling, wildlife, vegetation, and habitat surveys.

A Time Critical Removal Action to provide clean water and forage on Bear Lake Grazing Association property was completed in in late 2014.

A remedial investigation/focused feasibility study report for the East Mill Dump is planned to begin in 2016, and will summarize investigation results and evaluate potential remedial alternatives for the East Mill Dump. The remedial investigation report for the West Ridge portion of the North Maybe Mine will be completed in 2016. The Baseline Ecological Risk Assessment to analyze risks from contamination to wildlife in the North Maybe Mine Open Pit is planned to begin in 2016.

South Maybe Canyon Mine

Remedial investigation/feasibility study in progress.

In 2015, field work for the South Maybe Canyon Mine Open Pits remedial investigation and feasibility study included surface water, soil, sediment, and vegetation sampling, as well as habitat, plant, and wildlife surveys. Field work for 2016 is anticipated to include surface water sampling and habitat, wildlife, and vegetation surveys.

The Baseline Ecological Risk Assessment, which will analyze risks to wildlife in the South Maybe Canyon Mine Open Pit, is planned to begin in 2016.

The design for the cap on the Cross Valley Fill was approved in late 2014. Construction started in 2015 with the completion of construction anticipated in late 2016. Sampling of groundwater and surface water is anticipated to begin in 2016 to determine the effectiveness of the cap. The remedial investigation/feasibility study for Maybe Creek is planned to begin in late 2016 after construction of the cap for the South Maybe Canyon Mine Cross Valley Fill is completed.

Work progresses on the South Maybe Canyon Cross Valley Fill.

South and Central Rasmussen Ridge Mine Infiltration Pond.

Smoky Canyon Mine

Remedial investigation completed in 2014; feasibility study to begin in 2016.

The Smoky Canyon Mine remedial investigation was completed in 2014. The human health and ecological risk assessments were completed in 2015 and the livestock risk assessment was completed in January 2016. Construction on the cover for the Pole Canyon ODA was initiated in 2015 and is substantially complete. A treatability study to evaluate an innovative technology to address selenium in surface water was initiated in 2015. The feasibility study will begin in 2016.

South and Central Rasmussen Ridge Area

Consent Order signed in 2013; remedial action plan in progress.

The South and Central Rasmussen Ridge Mines are located on Caribou-Targhee National Forest land. Phosphate mining began at the South Rasmussen Ridge Mine 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. As Nu-West was completing reclamation at Central Rasmussen Ridge, sampling conducted by Nu-West documented exceedances of surface water standards in the South Fork of Sheep Creek. A Consent Order was signed in April 2013 between the State of Idaho and Agrium/Nu-West. To identify potential sources of contamination to the groundwater, the South Fork Sheep Creek, and No Name Creek, Nu West completed a Final Preliminary Source Characterization Report in June 2015. It is anticipated that the final Source Characterization Report will be approved in 2016 and a remedial action plan is anticipated in early 2017.

Looking southwest at west side slopes of the ODA. In the foreground, midground and background, dozers are pushing chert.

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. A source characterization report for the Horseshoe Overburden Area (HOA) was completed in August 2013. In 2014, an HOA source characterization data gaps investigation and a points of compliance determination were finished. In 2015, the HOA remedial action plan was completed, as well as the Wells Formation groundwater contaminant investigation work plan and the alluvial groundwater contaminant investigation work plan. Investigation of high contaminant levels in certain alluvial and Wells Formation wells also continued in 2015. P4/Monsanto installed nine new wells in 2015. Currently, they are finalizing a remedial design and implementation plan for the HOA with work on the remedy to be completed in 2016.

@ ***Prefer to receive updates electronically?***
Send a note to Jordan Davies (jdavies@northwindgrp.com) and future updates will be emailed to you.

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Georgetown Canyon Mine, fall foliage.