

# Update: Phosphate Mine Site Investigations and Cleanup in Southeast Idaho

*Southeast Idaho Selenium Project*

**December 2012**



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 a 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 have a say 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 the former mining areas.

## **Site Investigations Progress**

The investigation process is progressing at several southeast Idaho sites:

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

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## **Georgetown Canyon Industrial Site**

*Industrial site cleanup complete.*

Nu-West Mining, Inc. and Nu-West Industries, Inc. (Nu-West) completed cleanup actions at the Georgetown Canyon industrial site in 2010 under a Resource Conservation and Recovery Act (RCRA) Consent Judgement. These actions were designed to prevent contamination from migrating from the former industrial site and surrounding areas. Caps were constructed on several features, including the slurry pit, the arc furnace, and the clarifier pond. Nu-West removed all remaining phosphate ore from the site and redirected Georgetown Creek from a culvert to an aboveground stream. Public access is restricted with signs and fences, and future land use is limited at the former industrial site.

An agreement is now being negotiated for the Remedial Investigation and Feasibility Study (RI/FS) at the Georgetown Canyon mine site.

## **Conda/Woodall Mountain Mine**

*Agreement for early action at Pedro Creek signed in 2012; mine RI/FS in progress.*

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. During open-pit mining, overburden (waste rock) was removed from the mine pits and placed in overburden disposal areas (ODAs).

The RI/FS at the Conda/Woodall Mountain Mine began in 2008. Data compiled for the RI/FS identified the Pedro Creek ODA as one of the most significant ODAs on the mine site because parts of it are very steep and unstable, and because it has contaminated groundwater and surface water at concentrations exceeding water quality standards for drinking water and aquatic life. Therefore, in 2011, DEQ and EPA decided to conduct an early clean up action (also called a non time-critical removal action) at the Pedro Creek ODA. In October 2012, EPA, DEQ, and the BLM entered into a Settlement Agreement/Consent Order with the J.R. Simplot Company to conduct the Pedro Creek ODA early action.

The early action will stabilize the ODA and reduce releases of contaminants to groundwater and surface water. This will be achieved by consolidating and re-grading the ODA to flatten steep slopes and eliminate large depressions where rain and snowmelt can pool above the waste rock. The early action also includes installing run-on and run-off controls, installing and seeding a soil cover with mostly native plants that have a low affinity for selenium uptake, and conducting monitoring to ensure effective performance of the action. This work is in the design phase and construction will begin in 2013.

The RI/FS for the Conda/Woodall Mountain Mine continues and will be used to determine the cleanup actions necessary to address any contamination resulting from the entire Conda/Woodall Mountain Mine Area. The RI/FS will also evaluate whether additional cleanup actions are needed at the Pedro Creek ODA to address residual water contamination as well as plant uptake. As a part of the RI/FS, construction activities for a field-scale pilot study were completed in 2012. The pilot study will evaluate using plants with a low affinity for selenium uptake and other soil covers to reduce plant-selenium concentrations on ODAs. This information will be used to design protective final cleanup actions that minimize releases from, and plant uptake of, contaminants from the ODAs.

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

## **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 remedial investigation should be completed in 2015, and the feasibility study is scheduled to be completed in 2016. These studies will determine if there is a risk from contaminants and, if so, the best way to protect people, animals, and the environment. The EPA project manager and staff visited the Fort Hall Reservation in October 2012 to discuss the study and to learn about any community concerns at the Gay Mine.

## **Ballard, Henry, and Enoch Valley Mines**

*Ballard field investigation completed; treatability study initiated.*

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

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In 2009, P4 Production LLC entered into a voluntary agreement with the EPA, DEQ, USFS, BLM, and the Shoshone-Bannock Tribes to investigate and remediate the Ballard, Henry, and Enoch Valley mines. The Ballard RI/FS work plan was completed in 2011 and a treatability study was initiated. Field investigation work is complete, although some ongoing monitoring will continue.

During the next year, a risk assessment and site characterization report will be completed for Ballard Mine, and a feasibility study will be conducted to evaluate cleanup alternatives. Once the Ballard RI/FS is complete, the agencies will propose a cleanup plan, seek input from the public, and then select a cleanup alternative.

Following Ballard Mine, the process will continue for the Henry Mine and then the Enoch Valley Mine.

## Champ Mine

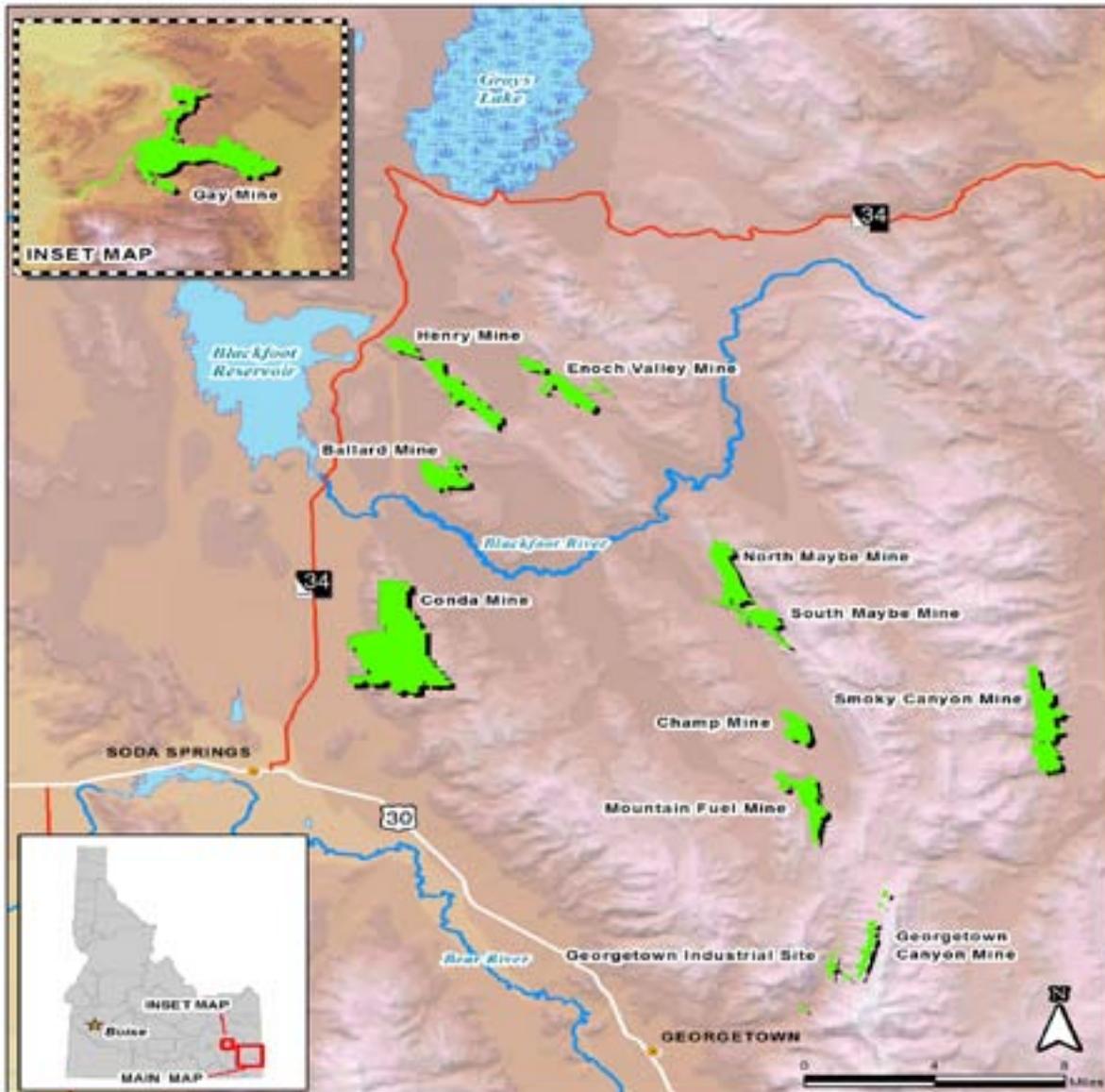
*RI/FS initiated.*

An Administrative Settlement Agreement and Order on Consent/Consent Order was signed in August 2012 by USFS and Nu-West to conduct an RI/FS. The FWS, DEQ, and the Shoshone-Bannock Tribes are designated as support agencies to this agreement. Field work is anticipated to begin in 2013.

## Mountain Fuel Mine

*RI/FS initiated.*

An Administrative Settlement Agreement and Order on Consent/Consent Order was signed in August 2012 by USFS and Nu-West to conduct an RI/FS. The FWS, DEQ, and Shoshone-Bannock Tribes are designated as support agencies to this agreement. Field work is anticipated to begin in 2013.



*Selenium mine cleanup sites in Southeast Idaho.*

## South Maybe Canyon Mine

*Design work in progress.*

An Administrative Settlement Agreement and Order on Consent/Consent Order for a non-time critical removal action was signed in August 2012 by the USFS and Nu-West to cap the Cross Valley Fill waste rock dump. The FWS, DEQ, and the Shoshone-Bannock Tribes are designated as support agencies to this agreement. Preliminary design work for the cap is underway.

## North Maybe Mine

*RI/FS in progress.*

An RI/FS is underway at the North Maybe Mine. Field work to support the investigation on the East Mill portion of the site is planned for 2013. A removal action to address the contamination in the sedimentation ponds was conducted in 2009.

## Smoky Canyon Mine

*RI/FS in progress.*

An investigation at the Smoky Canyon phosphate mine site indicates that the Pole Canyon ODA is a source of contamination at the mine. Selenium and other hazardous substances are present in both groundwater and surface water at concentrations that exceed Idaho water quality standards for drinking water and aquatic life.

An engineering evaluation/cost analysis (EE/CA) evaluated four options for addressing contamination at the Pole Canyon ODA. The preferred option identified in the EE/CA is a 5-ft thick layered geologic cover. During September and October, the USFS requested public comments on the EE/CA. A previous removal action completed in 2008 diverted water from Pole Canyon Creek around the ODA.

## For more information:

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