Attached is a copy of the 2021 updated overview factsheet for phosphate mine site investigations and cleanup in southeast Idaho. The Idaho Department of Environmental Quality (DEQ), along with the U.S. Environmental Protection Agency (EPA) and the U.S. Forest Service (USFS) prepared this factsheet to outline the latest progress at each of the mine sites.

If you prefer to receive future information and updates via email, or if you would like to be removed from the mailing list, please contact Jordan Davies, jdavies@northwindgrp.com, 720.452.7379.
Southeast Idaho is one of the world’s major phosphate producing regions. Phosphate mining has been an important industry in the area since the early 20th century. In 2020, phosphate mining and manufacturing directly contributed an estimated 1,367 industry jobs, $138.1 million in payroll and benefits, and $567.6 million to the gross state product. Mining royalties and taxes continue to provide millions in revenue to the State of Idaho, which funds education and other local programs.*

The rapid death of tiny organisms such as algae and diatoms living in what was once a shallow sea approximately 250 million years ago created the presence of phosphate ore. The concentrated phosphorous in their bodies did not have time to dissolve back into the sea water.

Consequently, the phosphate and other materials (e.g., selenium) were trapped in the seabed shales, siltstones, and other sedimentary rocks that are mined today in this area.

Phosphate mining has resulted in some adverse ecological consequences. For example, waste rock dumps and open pits act as pathways that can transport selenium and other contaminants to the environment through ground and surface water.

The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), as well as state law, provides a framework to address these issues, which occur at some phosphate mines in the region. Investigations and planning for cleanup at mining sites are ongoing with oversight from the U.S. Environmental Protection Agency (EPA), U.S. Forest Service (USFS), Idaho Department of Environmental Quality (DEQ), Bureau of Land Management (BLM), Shoshone-Bannock Tribes, and U.S. Fish and Wildlife Service (FWS).

The agencies, Tribes, and mining companies participating in the investigations welcome public involvement throughout the process because it produces better cleanup decisions. The agencies have provided updates about the progress at each of the mine sites at a booth during the Caribou County Fair and through this fact sheet, which contains contact information and website addresses for additional information.

* 2020 Idaho Mining Association Direct Estimated Employment and gross state product.
Phosphate Cleanup Sites in Southeast Idaho

Key Terms

Administrative Settlement Agreement/Order on Consent
A negotiated agreement between the party and a regulatory agency to address potential cleanup sites.

Removal Action
A response to actual or threatened releases of a pollutant or contaminant that pose a threat to public health or the environment.

Overburden
A mining term for waste rock or soil overlying a mineral deposit.

Remedial Investigation /Feasibility Study
The Remedial Investigation (RI) is the mechanism for collecting data to characterize site conditions, determine the nature and extent of the waste and contamination, assess risk to human health and the environment, and conduct treatability testing, if needed. The Feasibility Study (FS) is the mechanism used for the development, screening, and detailed evaluation of alternative remedial actions.

Proposed Plan
A brief summary of the alternatives studied to conduct the remedial response for a site. The Proposed Plan, as well as the RI and FS, form the basis for the lead agency’s preferred alternative. It is made available for public comment.

Phosphate cleanup sites in Southeast Idaho are highlighted in green. The Blackfoot Reservoir is approximately 15 miles north of Soda Springs.
CERCLA Remedial Action Sites

Sites led by federal agencies, such as EPA, and USFS, or with state co-leads where cleanup is governed by the method established by CERCLA to characterize the nature and extent of contamination and assess risks to evaluate potential remedial options.

Ballard, Enoch Valley, and Henry Mines

Active Status: Record of Decision (ROD) for Ballard Mine issued, draft FS submitted for Henry Mine, Enoch Valley Mine on hold.

EPA issued a ROD for P4 Production’s (now Bayer) Ballard Mine on October 1, 2019, completing the RI/FS process. As identified in the ROD, a final cleanup plan was selected for this historic mine site that includes partial backfilling and grading of mine pits and mine dumps, constructing a cover system, treating contaminated groundwater and seepage, and other elements. The ROD also accommodates recovery of phosphate ore from the site during implementation of the remedy.

During 2020, EPA worked on a Consent Decree (a legal agreement with P4/Bayer) for Remedial Design and Remedial Action. The agreement was signed by EPA on January 15, 2021 and was available for public comment until April 5. EPA did not receive any adverse comments.

P4 will prepare design documents for the site that will include all of the elements of the final cleanup plan in order to close the site to protect human health and the environment. Because the remedy will include ore recovery during implementation, BLM is required to follow the phosphate lease process; in late November 2020, P4 obtained the required phosphate mineral lease. BLM will review and approve a mine and reclamation plan for ore recovery.

For the Henry Mine, a draft FS was submitted for EPA review in October 2018. P4 plans to submit a revised FS in December 2021.

Work at the Enoch Valley Mine is on hold. Enoch Valley Mine closure will be complete in August 2022. P4 plans to submit the draft Remedial Investigation Sampling and Analysis Plan in August 2022.

Next Steps for Ballard Mine:
1. Feasibility Study
2. Proposed Plan
3. Public Comment Period
4. Record of Decision
5. Remedial Design

Next Steps for Henry Mine:
1. Feasibility Study
2. Proposed Plan
3. Public Comment Period
4. Record of Decision
5. Remedial Design

Sampling along the Little Blackfoot River at the Henry Mine in June 2019.
**Champ Mine**

*Active Status: RI, Ecological, Human Health, and Livestock Risk Assessments.*

Field work conducted by Nu-West to support the RI, which included groundwater and surface water sampling, continued. Ecological and human health risk assessments are under review by the Agencies. The livestock risk assessment was completed in 2020.

**Next Steps:**

1. Remedial Investigation
2. Feasibility Study
3. Proposed Plan
4. Public Comment Period
5. Record of Decision

**Conda/Woodall Mountain Mine**

*Active Status: FS, Operations and Maintenance*

Work continued on completing the FS for the site. As a continuation of the Field-Scale Permeable Reactive Barrier (PRB) Pilot Study, J.R. Simplot modified the Seep Treatment Cell (STC) portion of the treatment system to enhance flow-through and contain partially treated water seeping from the surface of the STC in places. An interim report containing results from the Pilot Study through 2020 was completed in February 2021, with a final report to be issued later in the year.

Snow fencing installed in 2019 was modified to increase the height of one test fence to provide increased snow retention and reduce infiltration from the accumulated snow melt.

Simplot completed a slope stability analysis for the toe of the overburden disposal pile near the PRB area. As a result, additional piezometers were installed to monitor pore pressure in the slope.

Operations and maintenance activities continued on the Pedro Creek Overburden Disposal Area Removal Action cover and associated water management features that were constructed during 2013-2015. Site-wide groundwater and surface water monitoring continued through the year, in support of the FS.

**Next Steps:**

1. Feasibility Study
2. Proposed Plan
3. Public Comment Period
4. Record of Decision
5. Remedial Design

*Constructing an overflow channel between infiltration trenches on the Seep Treatment Cell at Conda/Woodall Mountain Mine.*
Gay Mine

Active Status: RI, Ecological, Human Health, and Livestock Risk Assessments

The EPA, Shoshone-Bannock Tribes, FMC Corporation, and J.R. Simplot Company agreed on a plan to sample soil from all disturbed areas of the Gay Mine that have not already been sampled. This ambitious effort will determine the contaminant concentrations across more than 2,600 acres. Sampling will target four soil types: overburden materials; mill shale piles containing low-grade phosphate ore; haul roads; and other areas, including the bottom and side walls, where accessible, of open pits.

The sampling program uses an incremental sampling methodology approach, collecting 60 incremental samples from a grid covering each sampling area, then combining the increments into one composite sample. Sampling began in 2020 and will conclude in 2021.

The program will measure the concentrations of 21 metals in soil (including arsenic, lead, mercury, and selenium), and 10 radionuclides (including uranium, thorium, and radium). Soil will be sampled at two depth intervals: 0-3 inches and 3-12 inches below ground surface. The ongoing site characterization effort also includes groundwater and surface water sampling.

Next Steps:

1. Remedial Investigation
2. Feasibility Study
3. Proposed Plan
4. Public Comment Period
5. Record of Decision
**Georgetown Canyon Mine**

*Active Status: RI, Ecological, Human Health, and Livestock Risk Assessments*

The RI was approved in September 2020. Arcadis, consultants for Nutrien and CF Industries on the project, is currently working on risk assessment documents, including a Screening Level Human Health and Ecological Risk Assessment which includes a Preliminary Baseline Problem Formulation. In order to have a record of representative seasonal data for the site, surface water and groundwater sampling is conducted annually during high-flow (May) and low-flow (September) periods.

**Next Steps:**

1. Screening Level Risk Assessment
2. Feasibility Study
3. Proposed Plan
4. Public Comment Period
5. Record of Decision

**Mountain Fuel Mine**

*Active Status: RI, Ecological, Human Health, and Livestock Risk Assessments*

Field work conducted by Nu-West to support the RI with groundwater and surface water sampling continued. Ecological and human health risk assessments are under review by the Agencies. The livestock risk assessment was completed in 2020.

**Next Steps:**

1. Remedial Investigation
2. Feasibility Study
3. Proposed Plan
4. Public Comment Period
5. Record of Decision
North Dry Valley Mine

Active Status: Administrative Settlement Agreement/Order on Consent

BLM, DEQ and the Tribes have been drafting a proposed settlement agreement and statement of work for conducting a remedial investigation and feasibility study for the site.

North Maybe Mine

Active Status: RI/FS, Ecological, Human Health, and Livestock Risk Assessments

Nu-West conducted field activities associated with the North Maybe Mine RI/FS that included surface water and groundwater sampling. The Baseline Ecological Risk Assessment and the Livestock Risk Assessments are approved for the Open Pit Sub-Operable Unit (OPSOU). Nu-West is continuing work on the Focused FS for the East Mill Dump, as well as human health risk assessment for the OPSOU.

Next Steps:
1. Remedial Investigation
2. Feasibility Study
3. Proposed Plan
4. Public Comment Period
5. Record of Decision

South Maybe Canyon Mine

Active Status: RI, Ecological, Human Health, and Livestock Risk Assessments, Operations and Maintenance

Nu-West performed field activities at the site, including surface water and groundwater sampling. Nu-West continued operations and maintenance activities on the Cross Valley Fill. The Baseline Ecological Risk Assessment and the Livestock Risk Assessments are approved for the Open Pits Operable Unit (OPOU). Work on the OPOU human health risk assessment for the site continues. Conditions in Maybe Creek continued to improve after capping was completed at the Cross Valley Fill. Surface water concentrations measured near the containment area have declined 97 percent since cleanup work began.

Next Steps:
1. Remedial Investigation
2. Feasibility Study
3. Proposed Plan
4. Public Comment Period
5. Record of Decision
In 2020, the J.R. Simplot Company’s Smoky Canyon Mine optimized operation of its state-of-the-art Pilot Water Treatment Plant, which uses advanced technologies (including Ultra Filtration, Reverse Osmosis, and Fluidized Bed Reactors) to treat mining-impacted spring or stream water. Water is pumped through the system at approximately 1,800 gallons per minute. Iron co-precipitation was added to the treatment process to further enhance removal of selenium from the impacted water. Treatment efficiency improved with the addition of iron co-precipitation from approximately 84 percent to 93 percent.

Did you know?
Since full-scale operations began in early December 2017, approximately 2.6 billion gallons of impacted water have been treated. The mass of selenium removed from December 2017 through January 2021 is approximately 2,736 pounds.

Next Steps:
1. Feasibility Study
2. Proposed Plan
3. Public Comment Period
4. Selection of Remedy
5. Record of Decision
State Remedial Action Sites

Differ from CERCLA remedial action sites in that measures taken in response to degradation are in accordance with the Idaho Environmental Protection and Health Act (Idaho Code § 39101 et. seq.).

South Central Rasmussen Ridge Mine Area

Active Status: Remedial Action Plan, Remedial Design, and Remedial Action

Nu-West submitted a Draft Final Remedial Action Plan (DFRAP) on April 28, 2020. Additional agency comments arose preventing the release of the DFRAP for public comment. DEQ and BLM are working with Nu-West to make the DFRAP available for public comment in 2021. According to the 2013 Consent Order, the DFRAP will go through a 30-day public comment period for input and possible changes prior to DEQ approval.

The current components of the DFRAP consist of:
- Completion of reclamation activities at the neighboring 2017/2018 closed North Rasmussen Ridge Mine in the No Name Creek Drainage.
- Re-establishing diverted surface water drainage back to the No Name Creek area.
- Reclamation of no-longer-needed haul roads and stormwater retention ponds.

Proposed remedial actions in the No Name Creek and South Fork Sheep Creek areas include:
- A geosynthetic cover on the external South Dump.
- Restoration/removal of the five stormwater retention ponds capturing the water flow of the upper reaches of South Fork Sheep Creek.
- Identification of groundwater site-specific points of compliance in the No Name Creek and South Fork Sheep Creek Drainages.

Notice of the public comment period and instructions to provide comments to the DEQ will be provided in 2021.

Next Steps:

1. DFRAP
2. RAP Approval
3. Remedial Action Design
4. Remedial Action Construction
5. Long-term Monitoring

Collecting flow rate measurement along Angus Creek.
Active Status: Remedial Action and Remedial Monitoring

P4 continued monitoring the permeable reactive barrier and point of compliance wells. Additional groundwater and stilling wells were installed in the fall of 2019 in Watershed B to help identify possible sources of contamination in several shallow wells in the wetland area of the Horseshoe Overburden Area (HOA). These wells were sampled for the first time in the spring of 2020, as P4 continues with its investigation into sources of selenium found in Watershed B groundwater. Work continues on developing a “vertical treatment pond” to treat contaminated runoff water from a haul road, which eventually finds its way into a storm water pond before infiltrating into groundwater. A second year of examining the potential to intercept clean surface flow and interflow water prior to its infiltration into the HOA was concluded. The ability to capture that flow does not look promising. P4 started last fall, and will finish this spring, grading at the HOA to improve storm water drainage by rerouting clean water away from contaminated areas.

Next Steps:

Planned location of vertical treatment pond at South Rasmussen Mine.
Locating triplicate soil sample locations near Gay Mine (Golder Associates photo 2020).
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Ore loading facility at Gay Mine (EPA photo 2019).