Idaho Mining and Exploration, 2009

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Introduction

Idaho’s metal mines and mineral exploration projects returned to “high gear” in the second half of 2009 after starting the year in a slump caused by the sharp economic downturn of late 2008. However, most industrial mineral operations continued to suffer the effects of the nation-wide decreased industrial and construction activity. State government, including education and support for the minerals industry, was also in trouble. Overall, Idaho’s non-farm employment declined 6.1% in 2009, while mining employment declined about 25% to 2,065 mining jobs, according to the Idaho Division of Financial Management (DFM, Idaho Economic Forecast, January 2010). However, the second half of 2009 saw many metal prices rebound, especially precious metals, fueling exploration and development projects. Much of the activity was related to global demand for mineral resources, principally in industrializing or growth economies such as in China and Brazil, and benefited operating mines. In contrast, small junior companies reported difficulties in obtaining financing for exploration projects.

Strong economic activity and high commodity prices during most of 2008 resulted in a new record value for Idaho’s non-fuel mineral production. The 2008 total, based on yearly data collected by the U.S. Geological Survey, topped $1 billion for the first time ever. The 2008 value of $1,066,525,000 placed Idaho 24th for U.S. mineral production out of a national total of slightly over $71 billion. Idaho ranked third in silver, phosphate, industrial garnet, and lead production, and fourth in molybdenum production amongst the states. Figure 1 shows total Idaho production and several key commodities for 2000 to 2008. The 2008 total represents a 35% increase above the 2007 value. The high price and large volume (over 16 million pounds) of molybdenum, produced by the Thompson Creek mine in Custer County, was the greatest single contributor to the new record. The phosphate industry of southeastern Idaho and silver mines in northern Idaho also contributed significant production value. Figure 2 shows a breakdown by commodity for 2007 and 2008 mineral values, based on final revised information from the U.S. Geological Survey. Phosphate was the second highest value commodity in 2008. Metals accounted for 65% of Idaho’s production value, an increase from 54% in 2007. Information for 2009 is not yet available, and while silver, gold, and base metal prices strengthened considerably in the second half of the year, it is unlikely they were high enough to generate the billion dollars of mineral value that Idaho surpassed in 2008. National estimates of non-fuel mineral production for 2009 are down approximately 20%, according to the U.S. Geological Survey (USGS Mineral Commodity Summaries 2010).
Metal Mining

Idaho’s famous Coeur d’Alene District of northern Idaho had only two mines in operation, but a number of exploration and development projects. Since 1884, the famous Silver Valley has produced over 1.2 billion troy ounces of silver, 8.3 million tons of lead, 3.3 million tons of zinc, 207 thousand tons of copper, and 529,000 troy ounces of gold, according to a compilation by Don Springer and the Wallace Mining Museum (as well as records by the Idaho Geological Survey). The district is one of the world’s largest silver producers. Numerous deep mines have exploited rich quartz-siderite-sulfide veins hosted by the Proterozoic Belt Supergroup metasedimentary rocks. With silver prices reaching $17/ounce in the second half of 2009, there was a renewal of activity in the district.

Hecla Mining Company reported that the third quarter of 2009 was one of the best in its history, with a record number of tons and silver ounces mined at their Lucky Friday mine near Mullan. As a company, Hecla benefited from its recently acquired 100% stake in the Greens Creek mine in Alaska plus operational results from the Lucky Friday mine. The company was debt-free at the end of 2009. The record 2009 cash flow of $115 million from operations was a result of improving metal prices, increased production, and higher silver grades at the Lucky Friday and elsewhere. The Lucky Friday produced 3.5 million troy ounces of silver in 2009, a 23% increase over 2008’s total of 2.9 million ounces. Average total cash costs were reduced to $5.21 per ounce after byproduct credits were accounted for, while the full year silver price averaged $14.65 per ounce and averaged $17.58 in the fourth quarter. Mine production of 346,395 tons was an all-time high, and the improved mill circuit helped raise zinc production to 10,616 tons, and lead to 22,010 tons. Capital projects completed during 2009 included work at the water treatment plant and new #4 tailings facility, plus underground development and exploration. The company continued surface exploration in the district, including two holes on the Vindicator property, east of the Friday.

Favorable deep drilling results on the Gold Hunter vein system prompted much excitement by management and enabled the reserve boundary to be extended down by 500 feet to the 7000 level of the mine. Particularly noteworthy was the increase in silver grades intersected in some of the deep drilling on the Gold Hunter deposit (Figure 3). Hecla completed approximately 48,600 feet of underground drilling at the Lucky Friday in 2009. Drilling focused on the eastern portion of the deposit and included deep (7600+ level) high-grade intercepts such as 39.9 ounces/ton silver and 28% combined lead-zinc over 9.1 feet on the 60 vein. Reserves at the Friday increased 77% to 38.6 million ounces of silver. Engineering and cost studies to evaluate a deep infrastructure development were underway with a decision expected in 2010.

U.S. Silver Corporation reported record silver and lead production at their Galena mine in the Silver Valley. For the full year, 2009, the mine produced 2,427,156 troy ounces of silver and over 6.4 million pounds of lead and 1 million pounds of copper. The silver
total represented a 40.9% increase over 2008. Operational improvements during the downturn and increased grades allowed re-opening in April of the Coeur mill to treat the Ag-Pb ores while the Galena mill processed Cu-Ag tetrahedrite ores. A major project, the rehabilitation of the Galena shaft, restarted in July and was nearing completion at the end of 2009. The shaft caved in 1998 between the 2400 and 3200 levels because of a fault zone. The caved area was mucked out and a circular concrete shaft lining installed (Figure 4). At year’s end, the concrete had been poured to the 3200 station, leaving only 30 more feet of lining and a new station to be installed to finish the job in early 2010. The additional hoisting capability will facilitate mining operations. Exploration and development targeted multiple veins, including the footwall of the deep Silver Vein, and the 114 vein on the 2400 level.

The Sunshine mine remained closed for the year. Sterling Mining filed for Chapter 11 bankruptcy in March. Sterling had reopened the mine, but suspended production in September, 2008, and put the mine on care and maintenance. Several other companies, including Sunshine Precious Metals, Inc., Minco Silver, and SNS Silver Corporation, have all been involved in legal proceedings during the year over access and ownership of the Sunshine mine and surrounding property. In November, Alberta Star Development Corporation announced that it too had reached an agreement with Sterling to acquire 100% of Sterling and thus, its prized asset, the Sunshine mine. The bankruptcy case was scheduled to go to court again in early 2010 to determine who will own the mine. The mine has produced over 360 million ounces of silver since 1884; a N.I. 43-101 complaint 2007 report by Behre Dolbear & Company estimates a remaining measured and indicated resource of 31.5 million ounces of silver with additional inferred resources.

New Jersey Mining Company put operations at its small mines, the Golden Chest gold mine at Murray and the newly permitted Silver Strand mine, on hold due to financial limitations.

Thompson Creek Metals Company reduced personnel and production slightly during the first half of 2009 at their molybdenum mine in Custer County due to the 2008 economic recession and lower molybdenum prices. However, by fall, prices were rising (back to about $15/pound in December) and the large open pit mine returned to full production. Mining of Phase 6 ore was concurrent with Phase 7 stripping to push back the eastern high wall. The company’s annual report listed 328 employees at the mine as of the end of 2009. Thompson Creek mine produced 17.8 million pounds of molybdenum oxide/disulfide in 2009. The company has done considerable exploration drilling at the Cretaceous-age, quartz monzonite hosted deposit in central Idaho. In November, the company announced an updated reserve and mine plan (Phases 6-8), that increased the mineable resource over 30%. The mine plan, which goes until mid-2025, is based on a new reserve of 160.4 million tons at 0.083% Mo. Both the east and west high walls will be pushed back in the expansion.
Kinross Gold Corporation received the 2009 Hardrock Mineral Environmental Award from the Bureau of Land Management for their closure work at the DeLamar mine in Owyhee County. For example, Kinross constructed a geotech-engineered water management pond in 2008 to assist in dewatering the tailings pond.

**Phosphate Industry**

Mining continued as usual at southeast Idaho’s three open pit phosphate mines in Caribou County (Figure 5). Three processing plants also operated, including North America’s only elemental phosphorus plant, owned by Monsanto and located at Soda Springs. Monsanto’s production is used to manufacture Roundup, their trademarked herbicide. Simplot’s Don Plant in Pocatello and Agrium’s plant at Conda produce phosphoric acid fertilizer. Market prices for fertilizer dropped to more typical levels after the spike in 2008. The phosphate rock mined is part of the Meade Peak member of the Permian Phosphoria Formation, a phosphatic black shale deposit. Ore typically averages 25-30% $P_2O_5$; both ore and especially the waste shale may carry other elements, including selenium, which are naturally enriched in the rock.

Monsanto’s plant operated at a lower than usual capacity for part of the year due to the economy, but by fall demand was up and the plant resumed full production. The company took the opportunity to do necessary maintenance and improvements. Ore is trucked by triple trailers from the South Rasmussen mine. The West Limb Pit, located on a steep hillside, was mined, backfilled and reclaimed with over 17,000 feet of straw wattles used for erosion control. A major objective achieved was the BLM’s release in July of the Draft Environmental Impact Statement (DEIS) for the proposed Blackfoot Bridge mine. The area is especially sensitive due to its location near the upper Blackfoot River, which is affected by selenium from historic mining and is listed under Section 303d of the Clean Water Act. Monsanto’s proposal includes a geosynthetic liner cap over part of the reclaimed site. The objective is to minimize oxidation and water infiltration through backfilled pits or overburden piles.

J.R. Simplot Company mined panel E, the last phase of the existing Smoky Canyon mine, and awaited judicial decisions on the fate of panels F and G in the southward expansion of the mine (Figure 5). Ore is crushed and sent by an 87-mile long slurry pipeline to their Don plant in Pocatello for manufacturing into fertilizer. The Forest Service and BLM approved the expansion in mid-2008, but the Record of Decision was appealed to the Ninth Circuit Court of Appeals by the Greater Yellowstone Coalition and other environmental groups. The existing mine was scheduled to run out of ore in 2009. The Ninth Circuit Court put a stay on development but subsequently lifted it in June, 2009. The District Court decided in August that the project had been properly reviewed and that economic hardship would ensue to the community if mining did not continue. That decision was also appealed with briefs due to the Ninth Circuit Court in December, 2009. Meanwhile, mining began on Panel F in July after logging timber and construction of a
road and culvert installation to cross Sage Creek and access the new area (Figure 6). Major issues in the project have been roadless areas, water quality, and fisheries. The proposed expansion would provide an additional 16 years of mine life. Simplot reclaimed Panel E with a cap of Dinwoody Shale and planted 19,000 trees.

Agrium’s Dry Valley mine provides feed for its phosphoric acid plant at Conda. The Canadian agribusiness and public company reported fertilizer prices for 2009 that were substantially lower due to the global economy, but it expected a rebound for 2010. Agrium was mining the final stages of the Dry Valley mine, including D pit, the furthest to the south, while it reclaimed C pit. The company was preparing to transition operations back to the previously permitted North Rasmussen Ridge mine as the Dry Valley ores were exhausted.

Other Industrial Minerals

Aggregate, in the form of construction sand and gravel and crushed stone, is one of the most widespread mineral industries in Idaho. It was hurt significantly by the downturn in the construction industry, especially the residential housing market in the state; virtually all of the numerous small to medium-size industrial mineral operations were negatively impacted by the economy in 2009 (Figure 7). Reports of markets down 30-50% were common, though most companies were “hanging on,” but with a reduced workforce. For aggregate, the only bright spot was several highway projects, including the US-95 bypass in Sandpoint and work on I-84 in the Boise Valley.

Emerald Creek Garnet, a subsidiary of WGI Heavy Minerals, used the market slowdown to make operational improvements at their industrial garnet mine near Fernwood in northern Idaho. They increased production flows, cut costs, and focused on customer service. The result was an improved market and process outlook by the third quarter. The company also hired a geologist to better understand the mineral deposit and explore for additional garnet deposits. The Emerald Creek mine processes alluvial garnets using two wash plants and the flat screens that were installed in 2008. Other than aggregate, it is one of the few industrial mineral operations in northern Idaho.

L and W Stone Corporation received the final Environmental Impact Statement and approval for expansion of their Three Rivers Stone Quarry near Clayton in Custer County. The analysis included computer simulations of the visual characteristics of the expanded quarry, which is adjacent to a highway and the Salmon River. Production was down for the year. Rockworks mined slate at their Ramshorn quarry nearby. Oakley stone was produced in Cassia County and sandstone from Ada County.

In Idaho Falls, Rocky Mountain Travertine increased its marketing efforts but still had sales drop considerably as a result of the economic and construction downturn. The
company, formerly Idaho Travertine, has special oversized saws and equipment to work with large blocks of travertine from its own quarry or to cut other stone materials.

Hess Pumice, a locally-owned company in Malad, also reported significantly lower sales volume and a 43% drop in pumice production, due to the near-demise of the construction market. The company had to reduce the number of employees but used the downturn year to remodel the grinding plant for newer products such as filler. Hess has been a leader in aggressively marketing the pumice for a wide variety of uses domestically and internationally; that effort has helped reduce the effect of a slumping construction industry, which uses the pumice for lightweight aggregate. They also conducted research and development testing on alkali-resistant concrete. Idaho Minerals, also owned by Hess, saw perlite sales drop slightly. The perlite is used largely in potting soil.

Bear River Zeolite, a subsidiary of U.S. Antimony Corporation, continued to operate the zeolite mine and plant at Preston in southeastern Idaho. They too have been aggressive in marketing their material for a variety of uses, including filtration, agricultural feeds and carriers, pozzolans, home and animal deodorizers, and others. Value and tonnage of production declined very slightly in 2009 and the company managed to decrease costs. They added silos and conveyors at the plant.

**Exploration**

The bright spot of the minerals industry was in the precious metals sector. Buoyed by near-record gold and silver prices during 2009, exploration for those commodities overcame much of the tight credit markets and economic malaise of the first half of the year. In Idaho, there were some exciting projects being drilled (Figure 8). Some base metal and specialty metal prices also rebounded, and there was a resurgence of interest in energy exploration. Standard Steam drilled a geothermal property in eastern Idaho and Agua Caliente was drilling near Crane Creek in Washington County. US Geothermal’s power plant at Raft River was in full operation and the Boise-based company was doing additional exploration there and at other prospects in the west. Bridge Resources announced plans to drill for oil and gas in the “Boise Basin,” following up reports of natural gas in old wells in the western Snake River Plain.

In northern Idaho, Azteca Gold Corporation did further drilling and analysis on their closely watched discovery at the Two Mile prospect in the Silver Valley. In late 2008, Azteca, in a joint venture with Silver Royal Apex, intersected massive sulfide mineralization in a deep drillhole, DDH-005A, at 7950-foot depth on the property near Osburn in Shoshone County. Assays reported in January, 2009, included a massive zone of 4.7 m (15.5 ft) averaging 40% zinc and 7.4% lead with 4.1 oz/st silver. Azteca continued drilling with wedge-off holes DDH-005B and DDH-006B drilling to depths below 10,000 (3,048 m) and 11,000 feet (3,353 m), respectively when the company halted the drilling in September to conduct down-hole geophysical surveys. DDH-006
discovered a carbonate-bearing zone at 11,081 feet (3,377 m), but additional massive sulfides zones have remained elusive. The down-hole gravity survey, conducted by Scintrex, revealed several anomalies, including some in shallower portions near 4,400 feet (1,341 m.) and 8,500 feet (2,591 m.) depths in the drillhole. Those intervals were not previously assayed. Azteca was in the process of doing additional assay work, reviewing prior IP geophysics, and further evaluating target options at the end of the year.

New Jersey Mining Company focused efforts on their Toboggan joint venture with Newmont in the Murray area. The large property position hosts several gold prospects and Newmont drilled two holes each on the following: Mineral Ridge, Golden Reward, and Gold Butte. Gold targets were identified from previous geochemical sampling of soils and rock chips, geophysical surveys, and geologic mapping. The six holes totaled 1,359 meters (4,459 feet). The best intercept was on the Gold Butte structure where a 4 meter interval assayed 2.52 grams per tonne. Mineralization at Gold Butte is hosted in a breccia with potassic alteration, pyrite, and anomalous Te in the Precambrian Prichard Formation (Figure 9). Additional work is planned for 2010.

SNS Silver Corp. had an extensive drilling program in 2008 at the Crescent mine up Big Creek, across from the Sunshine mine near Kellogg. SNS has completed over 21,400 meters (70,210 feet) of drilling from surface and underground on the South and Alhambra vein systems. SRK Consulting calculated a Canadian N.I. 43-101 compliant resource indicating about 500,000 tons of over 18 oz/ton silver material on the two vein structures, for a total of approximately 10 million ounces silver, indicated and inferred. Available infrastructure and mining access are good. In September, SNS and Syringa Exploration, Inc., signed a letter of intent to form a joint venture to reopen the Crescent mine. Syringa agreed to spend $8.16 million over three years to earn a 50% interest in the project. However, in an agreement on December 30, 2009, SNS broadened the deal to include United Mine Services, Inc., as well as Syringa, with a due date of May 31, 2010, for completion of the reorganization and exploration earn-in agreement.

Elsewhere in northern Idaho, Premium Exploration reported some excellent results from its two-phase drilling program at the Friday-Petsite gold project in the Elk City area. Historic drilling intersected high-grade gold along the Orogrande shear zone, near the old prospects, but the earlier work was principally looking for bulk tonnage mineralization and resulted in a resource of over 500,000 troy ounces gold. Premium’s Phase One program followed up a gold-in-soil anomaly and drilled seven holes, including some which extended the mineralized zone southward. Phase Two drilling included six HQ core holes and intersected down-dip, high-grade values below the bulk-tonnage target. For example, PFR2009-10 returned 2.66 g/t gold over 198.4 meters (650.9 feet), which included a 1.8 meter (6.0 feet) interval of 30.6 g/t gold at 240 meters depth. Phase Two’s six holes totaled 1,969.9 meters (6,463 feet) of core drilling.

In March, Shoshone Silver completed a merger with Kimberly Gold Mines, Inc., and thus acquired the Rescue gold mine and mill and the Kimberly mine in the Warren Mining
District, plus other properties. The company decided to change its name to Shoshone Silver/Gold Mining Company and focus on restoring operations at the Rescue mill and mine. Shoshone installed a Nelson concentrator at the mill, a tailings pond liner, and made other improvements to make it MSHA compliant and ready for use. They also did test runs on stockpiled ore.

Formation Capital Corp., USA, was in the final stages of receiving permits for its Idaho Cobalt project in Lemhi County. The company has proposed a new underground copper-cobalt-gold mine to develop its RAM discovery in the Blackbird Mining District. The eagerly awaited Record of Decision from the Salmon-Challis National Forest was issued in January with additional environmental permits completed later in 2009. In September, a District Court judge granted easement on the main access road across private patented ground. In December, Formation completed discussions with the Forest Service over bond requirements and other details, receiving approval to start construction. The project, which would produce about 1,500 tons annually of super-alloy grade, high-purity cobalt metal has a minimum ten-year mine life with considerable potential for additional reserves. The company has been stockpiling needed equipment, making plans for timber removal, and outlining initial site preparation over the winter while it pursues mine financing. In addition, the parent company changed its name to Formation Metals, Inc. In an innovative move prior to the NEPA approvals, Formation negotiated an agreement with the Idaho Conservation League and other groups to supply funding for local environmental projects through a Conservation Action Program, separate from any federal reclamation costs. As part of that program, Formation helped fund a local group, Salmon Valley Stewardship, who used horses for logging and other work as part of a local stream restoration project completed during the summer.

Journey Resources Corp. drilled ten reverse circulation holes, totaling 625 meters (2,050 feet) at its Musgrove Creek gold project in Lemhi County. The target area, named the Johny Northwest, was based on gold-in-soil geochemical anomalies on trend from prior drill intercepts. Gold mineralization was intersected at shallow depths (50-240 feet) in eight holes with assays of 1 to 11 g/t gold.

Thorium Energy changed its name to U.S. Rare Earths, Inc., but remained a private company based in Utah. They also changed their focus to concentrate on rare earth element exploration and did additional surface work and claim staking in Lemhi County. The company holds land in the Lemhi Pass and Diamond Creek Th-REE districts and elsewhere.

Gentor Resources, Inc. continued to hold and maintain the IMA mine molybdenum-tungsten-silver property at Patterson in Lemhi County. Drilling in 2008 confirmed an inferred resource of 5.7 million tons grading 0.15% Mo with exploration potential, but funding limitations restricted activities in 2009.
Midas Gold, a private company, acquired the Stibnite property held by Gold Crest Mines in early 2009; Midas named it the “Golden Meadows” project. Midas geologists compiled results from the 134,500 meters (441,273 feet) of past drilling from 15 deposits in their portion of the district into a regional and district database. They ran geophysics, including an aeromagnetic survey and 8 line-kilometers of IP, trenched, and drilled 2,650 meters (8,694 feet) of HQ core (Figure 10). They also started collection of baseline environmental data. Drill results were very encouraging and outlined a sizeable zone of mineralization along the Meadow Creek fault south of the Yellow Pine deposit. Hole MG09-9 intersected 183 feet of 0.117 opt gold and 45 feet that assayed 0.042 opt.

The Yellow Pine District of Valley County is one of Idaho’s largest historic gold producers, with approximately 650,000 ounces of recorded gold production, plus tungsten and antimony.

Otis Gold Corp. continued work at their Kilgore gold project in Clark County, Idaho, with completion of a 12-hole diamond drilling program that totaled 3,122 meters. Drill results include bulk-tonnage intercepts like 64 meters (210 feet) of 1.89 g/t gold in hole 09 OKC-206, which includes a high-grade interval. Drilling was principally in the Mine Ridge core target area. Otis and contractor Zonge Geosciences also conducted a CSAMT (controlled-source audio-frequency magnetotellurics) survey in October, with 8.5 line-kilometers of coverage over the Dog Bone Ridge target area. Numerous significant resistivity anomalies were located for additional drill testing. Late in the year, Otis acquired claims and did trench sampling on the Buckhorn silver property, a high-grade silver manto target south of Salmon.

Silver Falcon Mining continued with plans to process waste dump and tailings material from historic bonanza precious metal mines on War Eagle Mountain in Owyhee County. The company had a mill in Melba but decided to construct a new mill at Diamond Creek near Murphy, closer to the mines. Silver Falcon acquired claims and ownership of the Sinker Tunnel which cuts through the base of War Eagle Mountain. By year’s end, the actual mill circuit had been moved from Melba to the new site at Diamond Creek and was being assembled.

Atlanta Gold Inc. changed their mine plan in response to both the increased price of gold and local community opposition to a large open pit at the Atlanta gold-silver deposit in Elmore County. The company announced in April that they would focus exploration on a mini-open pit and underground mining operation scenario. The updated measured and indicated resource is 3 million tons grading 0.154 oz/ton, or 460,000 troy ounces, gold plus over a million ounces of silver. Over 166,000 feet (50,597 meters) of reverse circulation drilling and 62,000 feet (18,898 meters) of diamond drilling has been done at the deposit by Atlanta and its predecessor, Twin Resources, since 1985. Atlanta was also looking into a potential tungsten by-product, and purchased several mine buildings, generators, and other facilities from Newmont.
Thunder Mountain Gold, Inc., discovered a large, new gold anomaly at their flagship South Mountain property in Owyhee County, Idaho. After drilling the marble-hosted polymetallic skarn in 2008, Thunder Mountain continued surface mapping and rock chip and soil sampling around the historic mines on their 868-acres of private land. The gold-bearing rock, with assay values up to 5.8 ppm gold, is a previously unexplored, multilithic intrusive breccia. The breccia contains sulfidized and potassic-altered fragments of quartz monzonite and sediments. Follow-up soil and rock-chip sampling outlines an anomalous area that is approximately one mile by 1.5 miles in size, based on precious and base metal geochemistry. It is interpreted as leakage from a porphyry system at depth.

Elsewhere in southern Idaho, Western Standard Metals, Ltd., acquired 100% of the Almaden gold property from Freegold Ventures Ltd., in exchange for shares and debt assumption. The hot spring gold property is at the historic Idaho-Almaden cinnabar mine in Washington County. A number of companies drilled the project from 1979-1992 and Freegold completed 16,500 meters (54,134 feet) of drilling after optioning the property in 1995. A gold resource of over 800,000 ounces is reported in silicified arkosic sands; higher grade feeder veins are present locally and constitute an underground target.

Mosquito Consolidated Gold Mines Limited had at least two diamond drills working all season on the giant 100% owned CUMO molybdenum-copper deposit in Boise County. The property, discovered in 1963 by Amax, is in the headwaters of Grimes Creek in the gold-producing “Boise Basin” of southwestern Idaho. Nine deep holes were collared and seven completed for a total of 16,606 feet (5,062 meters). Mosquito’s geologists have now recognized an earlier porphyry copper system that was overprinted by a later molybdenum-dominant system. Assay results from Hole 53-09, drilled to test the copper zone, include 509.3 meters (1671 feet) grading 0.19% Cu and 0.91% MoS2 (Figure 11). Mineralization starts near the surface and typically continues down for over 1500 feet (497 meters). Results are being entered into an updated N.I. 43-101 resource calculation and can be viewed in an interactive model on their website (www.mosquitogold.com). The company submitted a draft of an environmental assessment to the Forest Service for permitting additional drill sites, and it has started preliminary baseline studies. In November, Mosquito released a preliminary economic assessment and scoping study that used 598 million tonnes of indicated resource grading 0.11% Mo oxide and 0.06% copper as ore. The study, authored by Ausenco, looked at throughput rates of 50,000 tpd (tons per day) to 200,000 tpd, for the 2 billion plus ton deposit. A likely mining rate would be 100,000 - 125,000 tons per day, which would create one of the world’s largest open pit molybdenum mines. By-products Cu, Ag, W, Re and sulphuric acid could pay for a significant portion of the production cost. Capital costs for such a large mine would top $2 billion. In June, a Hong Kong billionaire investor bought a 15% stake in Mosquito.
State Activities

The Idaho Geological Survey (IGS) continued its USGS Statemap-funded geologic mapping activities. IGS published 17 digital geologic maps and ten additional publications in 2009. They continued to index, preserve, and scan old mine files, mine maps, and oil well logs through funding from the U.S. Geological Survey and the Idaho Department of Lands. They also ran an annual summer teacher workshop, initiated a hydrogeological mapping project for the Idaho Department of Water Resources, prepared earthquake liquefaction hazard maps for the Idaho Bureau of Homeland Security, and answered numerous inquiries from the public on old mines, rocks, energy and mineral resources, and other topics.
FIGURES

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