13 OPERATIONS: EXPLORATION

Numerous mineral prospects have been identified in the District over the past 100 years using a variety of methods; some of these prospects were developed into mines, while others remain undeveloped. Many exploration targets remain in the District that may, one day, warrant consideration for development, if they can be proven viable after additional exploration, environmental, socio-economic, metallurgical, engineering, and other appropriate studies. Additional future expansion of mining activities would require supplemental permitting and approvals.

Midas Gold will continue exploration and mine development drilling work throughout the Project's life to further target and delineate potential mineralized resource areas. Exploration activities on National Forest lands in the District will be conducted in accordance with this PRO as well as existing approved exploration plans that remain in effect under the January 2016 Forest Service Decision Notice and Finding of No Significant Impact (U.S. Forest Service, 2016) (**2016 DN/FONSI**) that was accompanied by an exploration environmental assessment.

Approved and current exploration plans for National Forest lands in the Project area are filed at the Forest Service Krassel Ranger District office and on file with IDL. With this PRO, Midas Gold is seeking approval for an additional exploration area (see Figure 13-1).

13.1 SURFACE EXPLORATION DRILLING

Midas Gold will use appropriate drilling equipment (helicopter-delivered rigs, truck or crawler-mounted rigs) and the same or similar drilling methods and environmental protection measures that have been used successfully at the Project site. These measures were approved in the 2016 DN/FONSI. New drill sites will be established with other selected drill sites being reclaimed concurrently as drill targets are evaluated.

Exact locations of the exploration drill pads have not been determined. However, as part of this Plan, Midas Gold requests an additional 5 acres of temporary road disturbance (10,500 linear feet of drill road at an average width of 20 feet) and 8 acres of drill site disturbance (140 drill pads at an average area of 2,500 ft^2) on National Forest lands at the Project site. Each drill pad could have between one and 5 drill holes each depending on site location and geological exploration needs. Placement of drill pads would be guided by exploration requirements, geotechnical studies, and geochemical sampling. The roads and drill pads would be as much as practicable sited on historical disturbance, avoid any identified cultural resources, and avoid disturbance of candidate and sensitive species. The proposed maximum exploration disturbance is based on reclamation of exploration sites as soon as practicable following data collection and allows for a minimum 3 growing seasons for financial assurance release of the reclaimed acreage. If reclamation is successful, the released exploration disturbance amount of acres would become available for future exploration activities and no additional disturbance beyond what is approved would be required. This is, in essence, a "rolling maximum" disturbance during any three-year window.

New drill pad disturbance will be kept to the minimum necessary for safe access and working area for equipment and crews. Drill pad sizes will vary depending on the type of drilling. Truck-mounted or crawler-mounted drill rigs typically require a working area of approximately 75-100 feet long by 50-60 feet wide (<0.15 acres), while pads where the drill rigs and supplies are delivered by helicopter can require a smaller working area of approximately 45 feet long by 35 feet wide (<0.05 acres). The drill

pad size is dependent on the type of rig required to drill the depth of the hole and the number and orientation of drill holes required off of each drill pad. The type of drill pad also depends on its location to existing roads and the steepness of the topography at each drill pad (see Section 17.2 for a typical drill pad photo).

Sediment basins and traps (sumps and/or portable tanks) will be used at each drill site to collect drill cuttings and to manage and circulate drilling fluids. Typical dimensions for a helicopter supported drill sump are approximately 12 feet long by 6 feet wide by 3 feet deep while road supported drill sumps are generally 16 feet long by 8 feet wide by 8 feet deep. Larger and/or additional sumps will be installed as needed to appropriately manage excess water. At least one side of the sump is constructed at a shallow grade to create a ramp for egress in the event wildlife enters the sump; other sides of the sump are constructed at steeper angles, but such that the banks are safe and stable. Sumps will be backfilled and reclaimed when no longer needed for drilling.

Depending on the location of the drill site, Midas Gold will use portable (helicopter-delivered), truck mounted, track-mounted, or articulated buggy mounted reverse circulation and core drill rigs and support equipment. Some drill holes will reach 1,500 feet or more, but the average drill-hole depth will be approximately 800 feet. Drill holes will be both vertical and angled. Exploration activities may also include water exploration and monitoring well installation.

Reverse-circulation rotary or sonic drilling equipment may be used to drill pre-collars for some of the core holes that will be drilled to test deeper targets. All pre-collared holes will have appropriate surface completions/seals and be capped. Pre-collared holes will only be associated with track or truck-mounted drilling equipment.

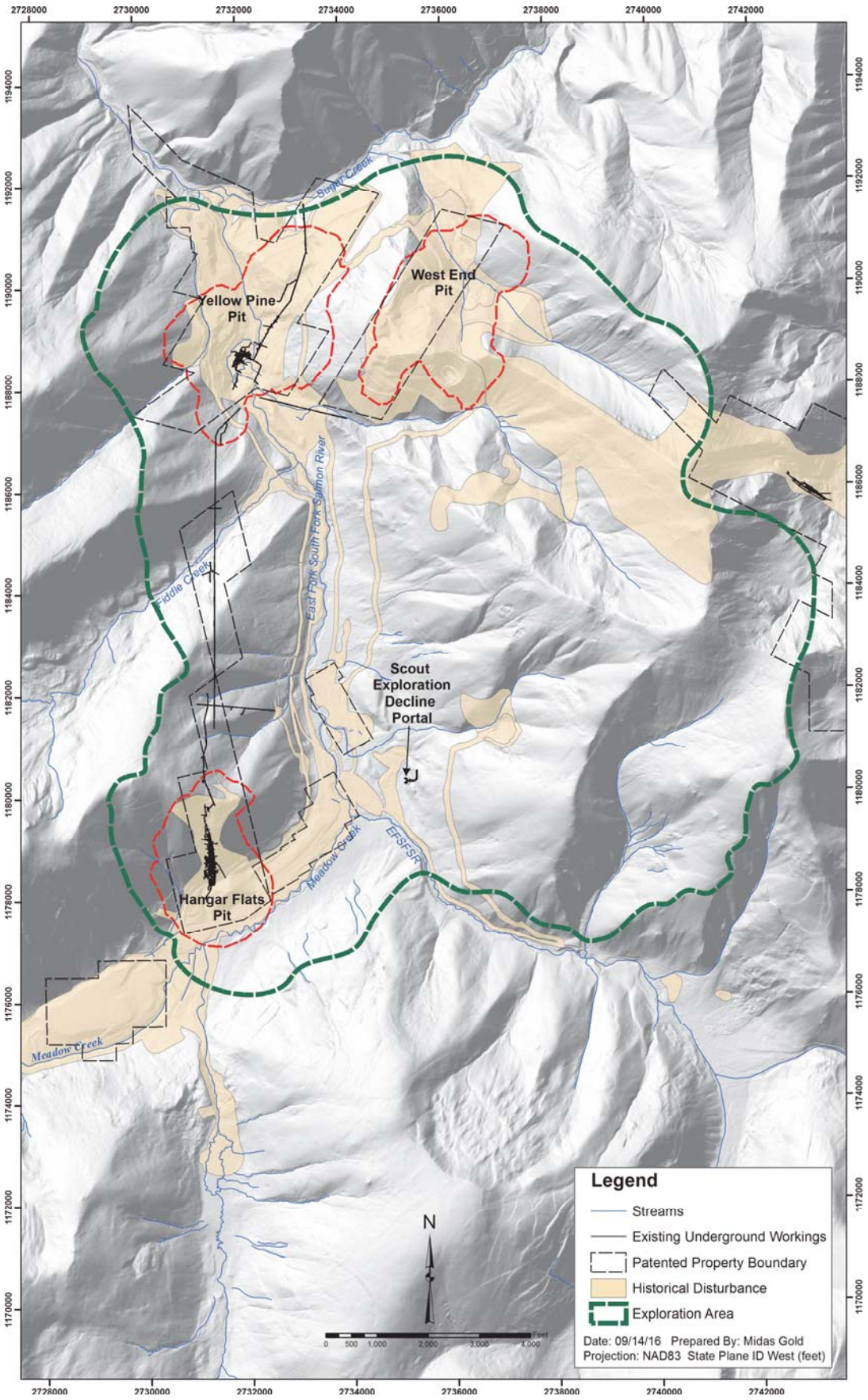
Water and non-toxic approved drilling fluids will be utilized for all drilling. Midas Gold will obtain water for drilling from existing and planned new sources in the Project area subject to existing and future water appropriations and rights (see Section 8.11).

Standard drilling procedures require drill rig crews consisting of a drill operator and one or two helpers. A geologist oversees the drilling activities, with the responsibility of compliance with permit requirements, environmental protection and safety.

For helicopter-supported exploration, helicopter support only occurs during daylight hours but drilling activities will typically occur on a 24-hour per day schedule.

Drilling support equipment includes helicopters, water trucks, crew trucks, portable mud tanks, pipe trucks or skids, portable toilets, light plants, portable generators, motor graders, excavators, dozers, and product storage pallets. Midas Gold will maintain a helipad for exploration (and Medevac) in an area adjacent to the administration offices and warehouse facilities for mining and ore processing.

Figure 13-1, Proposed Exploration Area



13.2 UNDERGROUND EXPLORATION

Midas Gold plans to conduct underground exploration activities at the Project site to characterize mineralized zones inaccessible by surface exploration or mining methods. A mineralized zone known as the Scout Prospect (and Scout Extension) has been identified for underground exploration activities (see Figure 13-1) hereinafter referred to as the "Scout Prospect". Forest Service regulation is limited to operations affecting National Forest surface resources, but all underground as well as surface activities in support of underground exploration are described in this section.

The Scout Prospect will be accessed from a portal facility located south of the planned ore processing facility. The location of this portal area is illustrated on Figure 10-2 and Figure 13-1.

13.2.1 Portal Face-Up & Excavation

Midas Gold will access the Scout Prospect with a decline and ramps developed through a portal. The portal will be temporarily supported with a combination of rock bolts, wire mesh, and shotcrete. As necessary, portal construction may require steel arch sets or corrugated steel liner (see Section 17.2 for a typical portal photo). It may also be necessary to secure the area above the portal with fencing, shotcrete and a catch bench.

To construct the portal, Midas Gold will cut into the hillside to develop a "face-up" area. When the face-up is ready, the actual development of the portal will use conventional underground drill and blast operations with mechanized equipment. A drill jumbo (underground drilling machine, see Section 17.2 for a typical drill jumbo photo) will be used to drill a series of small diameter horizontal holes around the perimeter of the planned portal opening on close spacing, as well as a pattern of holes within the perimeter; this will create a smooth perimeter after blasting the inner pattern of holes.

The areas beyond the portal will also be drilled with the drill jumbo to a pattern suitable to break the rock and minimize damage to the perimeter of the decline. The drill holes near the portal will be loaded and blasted to minimize over break outside the planned portal perimeter. Removal of broken rock will be accomplished using diesel-powered rubber-tired loaders.

Portal development is anticipated to be complete approximately 2 months after mobilization of the contractor equipment and infrastructure.

13.2.2 Main Decline Excavation

A decline is a tunnel with a downward gradient from the surface into a target underground area; it can be thought of as a tunnel with only one opening to the surface. Access to the Scout mineralized zones will be through a decline with a downward grade that could reach up to 18%, but typically averages 12%. It is through this main decline, and the subsequent ramps[16] and drifts located semi-parallel to and within the footwall of the Scout deposit, that workers, equipment, supplies and ventilation will reach the underground, mineralized zones. Midas Gold will employ standard underground techniques to advance the decline, ramps and drifts required to reach the mineralized zones[17]:

[16] Ramps are generally spiral passageways that connect levels of the underground workings, and these ramps can reach gradients of 18% with flattening on curves and through intersections, resulting in a typical average grade of 12%. Nominal curve radius for these underground ramps will typically range between 80 to 100 feet.

[17] The techniques described in this section are the same methods that will be used to construct the EFSFSR diversion tunnel discussed in Section 8.1.

- Drilling;
- Blasting;
- Mucking (removal of the rock) and haulage; and,
- Ground support (as necessary).

The drill jumbo will be utilized to drill a pattern of blast holes in the rock face. The cross-sectional size of the decline and ramps will be approximately 15-16 feet wide by 17-18 feet high. These dimensions allow the use of ventilation ducting in the upper portion of the opening. Drill holes in the decline and ramps will typically be 8-14 feet long, depending on ground conditions. Each 8-14 foot advance is typically referred to as a "round".

Once the face has been drilled, the holes will be loaded with explosives and blasted. Blasting will be conducted once a round has been loaded with explosives and the area is secured.

The broken rock will be loaded by underground front-end loaders onto trucks that will deliver the rock to the surface, where it may be used for construction of the surface pad at the portal area, hauled to the ore stockpile area for subsequent processing, or hauled for storage in a DRSF. Any mechanical support necessary for rock stability will be installed prior to initiating the next round of drilling activities. Ground control or support will involve a variety of techniques including rock bolting, screening, steel sets and shotcrete.

The Scout exploration decline would include approximately 1 mile of underground development. It would be developed in a single heading (i.e. one working face); therefore, only one crew will be underground at a given time. Assuming a development rate of one 10-ft round per shift, and one shift per day, the decline would be developed over a 1.5-year period. The decline could be developed in approximately half the time (i.e. 9 months) if 2 crews operating 24 hours per day were utilized. Approximately 100,000 tons of rock would be excavated from the decline for 1 mile of development.

13.2.3 Underground Emergency Egress & Safety

The decline and ramp will provide for access and fresh air intake (ventilation) to the underground areas, as well as the principle means of emergency egress.

To further underground safety (i.e. both ventilation exhaust and secondary escape), Midas Gold will install a ventilation/escape raise as part of the Scout underground exploration program (see Figure 10-2). The ventilation/escape raise will be vertical, approximately 6 to 10 feet in diameter, and will connect underground workings to the surface (see Section 17.2 for a typical emergency egress raise photo). For additional details on underground ventilation facilities see Section 13.2.4.5.

Midas Gold will construct the main ventilation/escape raise utilizing a raise boring machine. A small diameter drill hole or "pilot hole" will be drilled from the surface to the selected area underground. Once established, a drilling raise bore with rock cutting mechanisms or "reamer" will be rotated while being "pulled" back to the drilling platform, allowing rock to be cut and fall into the underground workings. From there, rock will be removed, hauled to the portal and placed in one of the DRSFs. If needed, the raise borehole can be supported with rock bolts and mesh or shotcrete.

Midas Gold will comply with applicable MSHA health and safety requirements and regulations for underground hardrock mining, as well as its own internal company policies and procedures. Underground exploration areas will be equipped with emergency warning and communication systems, such as stench gas, mine phones and portable radios. In the event of an emergency, phone service from

the surface escape raise site to the underground area at the bottom of the raise and mine communication system can be powered by battery or electric power.

13.2.4 Surface Facilities for Underground Exploration

The Scout portal area will include maintenance and administration facilities, a miner changing facility (known by miners as a "**dry**"), ventilation fan, compressor, fuels storage, batch plant, storage of underground supplies (steel sets, rock bolts, ventilation tubing, wire mesh or screen, piping, timber, tires, cable, etc.), run-off containment ditches, and a parking area for underground mining equipment.

13.2.4.1 Portal Pad Access Roads

Access to the Scout portal will be on roads from the Project's administration and ore processing facility areas. These roads will be maintained to provide safe and efficient year-round access to the surface portal facility areas and to accommodate off-highway trucks (such as the Caterpillar 730 articulating truck).

13.2.4.2 Administrative Offices

Temporary trailers or modular buildings will be used as office space for underground exploration personnel for the duration of underground exploration. These facilities will be used by management, engineering and safety personnel.

13.2.4.3 Dry Facility

Separate trailers or modular buildings will be installed at the Scout portal area for use as the men's and women's dry facilities. These facilities will have a capacity for approximately 50-60 underground workers and will include lockers, lavatories and showers; these facilities will tie into the existing water and septic facilities used for the surface mine operations.

13.2.4.4 Maintenance Shop & Storage Area

Underground equipment will require regular maintenance. A maintenance shop will be installed near the Scout portal; this facility will be a modular structure or a prefabricated fabric-covered "rigid tent" structure, with adjoining shipping containers for warehouse storage of small parts and tools. Materials and supplies for immediate use can be brought from the main warehouse facility.

Additional maintenance bays will be developed in the underground workings to provide for preventive maintenance capabilities closer to the underground exploration areas. Similarly, underground areas will be set aside for storage of mine supplies, close to the point of use.

13.2.4.5 Ventilation Facilities

Ventilation is a vital aspect of the health and safety program for underground activities. Ventilation fans will be installed to ensure proper airflow to underground working faces and spaces.

The primary ventilation fan for the Scout exploration program will be initially located at the surface portal area, and ventilation tubing will be installed in the upper reaches of the decline to deliver fresh air to the workings. As underground exploration progresses, Midas Gold will install a ventilation/escape raise. A second exhaust fan system would be installed near the bottom (or top) of the ventilation/escape raise. Propane heaters would be installed on ventilation systems to heat intake air during freezing conditions.

The air volumes will comply with or exceed MSHA ventilation requirements for underground exploration activities to ensure the health and safety of the workers.

13.2.4.6 Batch Plant

Underground exploration activities will require shotcrete and cemented rock fill; a batch plant to mix aggregate, and/or crushed or screened development rock with cement will be located near the portal. Material from the batch plant will be trucked underground for use as structural support and as backfill to eliminate voids and prevent surface subsidence. The plant will include bins, conveyors and silos for concrete, fly ash, and sand storage.

13.2.4.7 Power Supply for Underground Exploration

The Scout portal site and underground development work will be powered by electricity from the surface mine electric power system. Although electric service will provide primary power to the site, Midas Gold will maintain an onsite generator to provide backup electric power for times of interrupted or reduced power supply in order to ensure worker safety.

13.2.4.8 Compressor Facility

An air compressor will be installed near the Scout portal to supply compressed air for drilling and initial construction requirements. The compressor will be sheltered from the weather in a structure with siding to muffle sound, and compressed air will be supplied to the underground workings through a 6-8 inch diameter pipe in the decline.

13.2.4.9 Fuel Storage for Underground Exploration

Mobile underground mining and surface support equipment will use diesel fuel. Propane may also be required for air heating systems during winter months to reduce freezing conditions for the underground ventilation system.

Midas Gold plans to use above ground tanks for storage of diesel fuel and propane. The liquid fuel storage tanks will be of double-walled construction and placed within secondary containment with a minimum of 110% capacity of the largest individual tank. Midas Gold will plan to store approximately 10,000 to 15,000 gallons of diesel fuel and approximately 2,500 gallons of propane at the portal site. Midas Gold will maintain a Spill Prevention Control and Countermeasure Plan that establishes procedures for responding to accidental spills and releases of petroleum products.

The diesel fuel and propane storage tank facility will be located near the underground maintenance shop. Similar to the fuel required for surface mine operations, diesel fuel and propane will be delivered to the underground portal area on a routine basis. Midas Gold will contract with local or regional suppliers to deliver the required fuel as part of regular project related fuel deliveries and in accordance with Midas Gold fuel haul policies and applicable Federal and State laws and regulations.

13.2.4.10 Storage of Explosives used for Underground Exploration

Explosives will be used in the underground development process. Initially, these materials will be stored at the same location as explosives used for the surface mining activity, although the explosives used for underground activities will be stored in separate magazines, sized and designed to meet MSHA requirements. When underground development provides sufficient room, Midas Gold may establish a second explosive magazine and storage area in the underground workings for the explosive supplies and material to be used underground.

13.2.5 Water Management

13.2.5.1 Water Handling & Management

Midas Gold expects to encounter groundwater in the Scout underground workings and will install underground sumps, tanks and pipelines to collect and pump water from workings to provide for safe and efficient operations. Water inflow into the underground workings is expected to be variable, consistent with a fracture flow hydrology of meteoric water.

Drilling will be used to test areas in advance of underground exploration development to ensure unexpected or unmanageable water pressures are not intersected. Water will be utilized in the underground drilling or pumped from the collection point to the surface through pipelines in the decline and/or in main ventilation/escape raise. Upon reaching the surface, this water will be piped to the ore processing facility.

13.2.5.2 Water Use & Management

Midas Gold expects the need to use water from the fresh water supply system for underground exploration activities (see Section 8.11.3.6). This water will be used by underground equipment (i.e. drills, rock bolters, etc.) and for dust control; some of this water will be used at the batch plant to make shotcrete or cemented rockfill material. Midas Gold will reuse water collected within the underground workings, haul water in a water truck to a water tank at the portal or may install a water pipeline from the nearby ore processing facility to the Scout portal area, along with a storage tank, from which an approximate 2-4 inch diameter water pipe will be installed down the decline and connecting into the various drifts.

13.2.6 Underground Equipment

The mobile underground equipment to be used at the Project is listed in Table 13-1. This equipment may be modified during the Project execution, depending on site-specific conditions and needs.

Table 13-1, Projected Mobile Underground Equipment List

Mobile Underground Equipment	Estimated Number of Units(1)
Loaders – 4 to 6 cubic yards capacity (Caterpillar R1600G or equivalent)	2-3
Haul Trucks – 20 to 30 ton capacity (Caterpillar AD30 or equivalent)	2-3
Drill Jumbos (Atlas Copco M2C or equivalent)	1-2
Powder Truck (Normet Charmec MF 605 DA or equivalent)	1-2
Rock Bolter (Atlas Copco Boltec MC or equivalent)	1-2
Water Truck (GMC C6500 or equivalent)	1-2
Fork Lift (JLG SkyTrak 10054 or equivalent)	1-2
Front End Loader - 7-8 cubic yards (Caterpillar 966M or equivalent)	1-2
Flatbed/Supply Truck (GMC C6500 or equivalent)	1-2
Exploration Drills (Atlas Copco U8 or equivalent)	2-3
Lube Truck (Normet Multimec 6600 or equivalent)	1-2
Scissor-Lift Truck (Normet Utilift MF 540 or equivalent)	1-2

Notes:

(1) The range in the number of units is due to equipment service requirements. The lower number represents the typical number of active units whereas the higher number represents the additional units that may be required while the primary unit is undergoing service at the site.

13.2.7 Underground Exploration Drilling

One of the principal objectives of an underground exploration and development program is to collect information about the mineralization. Drilling will be conducted from drill stations located in drifts on the footwall[18] side of the vein structures. These holes will be drilled into mineralized zones at various angles. None of the drill holes will breach the topographic surface above.

Midas Gold will use drill rigs especially configured for underground drilling. Each rig will be supplied with compressed air, fresh or recycled water, a drain line, and electricity.

A drilling contractor will furnish the underground drilling equipment and personnel. Core or selected cuttings will be removed from underground for geologic logging and laboratory studies; these will include geological analyses, geotechnical evaluation, metallurgical studies, environmental testing, and assaying.

To prevent the potential of different subsurface water zones from intermingling, drill holes would be grouted in accordance with prior practices used by Midas Gold for abandoned drill holes and in compliance with state requirements.

13.2.8 Underground Bulk Sampling

Midas Gold will collect bulk samples of mineralized material from the underground workings for testing and study. Part of this work will be undertaken to analyze potential mining methods and ground stability for future mining. Other work will include geologic mapping, chip sampling, geochemical test work, metallurgical testing, and geotechnical studies.

Bulk samples for metallurgical and ore processing tests will be collected and removed to the surface. Samples will be shipped off site for testing.

13.2.9 Underground Test Mining

Many considerations go into the planning for commercial underground mining. These include geologic, structural and mineralogical information that is used by mine engineers to determine the optimal mining method, stope geometry, rate of production, type of mine equipment, and level of workforce. The mine planning culminates with an economic assessment of the mine plans, referred to as a mine feasibility study.

Similar to exploration, mine planning and economic assessments involve an iterative process that requires the examination of many methods to determine the most optimal approach. These evaluations must also yield a positive economic outcome.

Underground exploration work (mapping, drilling, sampling, and analytical work) of the mineralized rock is essential for the Midas Gold engineers to develop comprehensive mine plans, but nothing can replace the knowledge gained from actual underground test mining. From a mining point of view, with a clear focus on safety considerations, the reasons for test mining are compelling and will allow Midas Gold to:

- Verify expected ore continuity, thus eliminating potential future surprises;
- Allow rock strength to be assessed accurately, which will allow prudent planning and sizing of the commercial mine opening;

[18] The footwall is the underlying side of the mineralized zone (i.e.., the rock that is located beneath an inclined vein.)

- Allow mining efficiency and productivity to be verified as it relates to drilling, blasting, ground support, and materials handling;
- Allow more reliable study of the nature of mine water inflows, which will allow for adequate water-handling equipment to be installed;
- Better quantify mine ventilation friction factors and requirements;
- Confirm the character of the development rock and how such rock can be handled during a commercial operation;
- Determine best methods of mine backfill, and the amount of cement to provide the most appropriate support needed in the backfilled areas;
- Demonstrate the ability to control the operation in such a manner that it will not harm the environment;
- Improve the ability to make more accurate capital, operating and labor cost estimates on the basis of better knowledge of the planned mining, as well as the ability to prepare a more accurate schedule on the basis of unit productivities;
- Lower the overall risk of the Project; and,
- Provide for safe underground mining at the Scout Prospect.

Test mining and underground exploration related activities will also provide access to materials and conditions not readily available from the surface to facilitate geochemical testing, hydrologic condition evaluation, geotechnical evaluation and testing, as well as metallurgical testing and mining method evaluation.

Test mining is required to properly evaluate the commercial underground mining potential of the Scout Prospect. Test mining will involve a limited amount of underground development that would extract a small percentage of the overall mineralized zone. The results of the test mining will be used to evaluate the feasibility of commercial operations at Scout. If the feasibility of commercial production is demonstrated, supplemental permitting and approvals would be required.