



MINTO EXPLORATIONS LTD.

A Subsidiary of Capstone Mining Corp.

MINTO MINE
Erosion and Sediment Control Plan
VERSION 2011-01

Prepared for:
Minto Mine

Prepared by:
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Vancouver, British Columbia
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1 Introduction

Minto Explorations Ltd. (The Company), a wholly owned subsidiary of Capstone Mining Corporation (Capstone), owns and operates the Minto Project located 240 km (150 miles) northwest of Whitehorse, Yukon. The Minto Mine is a high-grade copper and gold mine with ongoing operations since October 2007. The Project area encompasses the Minto Creek Valley which collects and drains in to the Yukon River. The objective of the Minto Mine Erosion and Sediment Control Plan is to minimize local site impacts from erosion and prevent sedimentation to the receiving environment of Minto Creek.

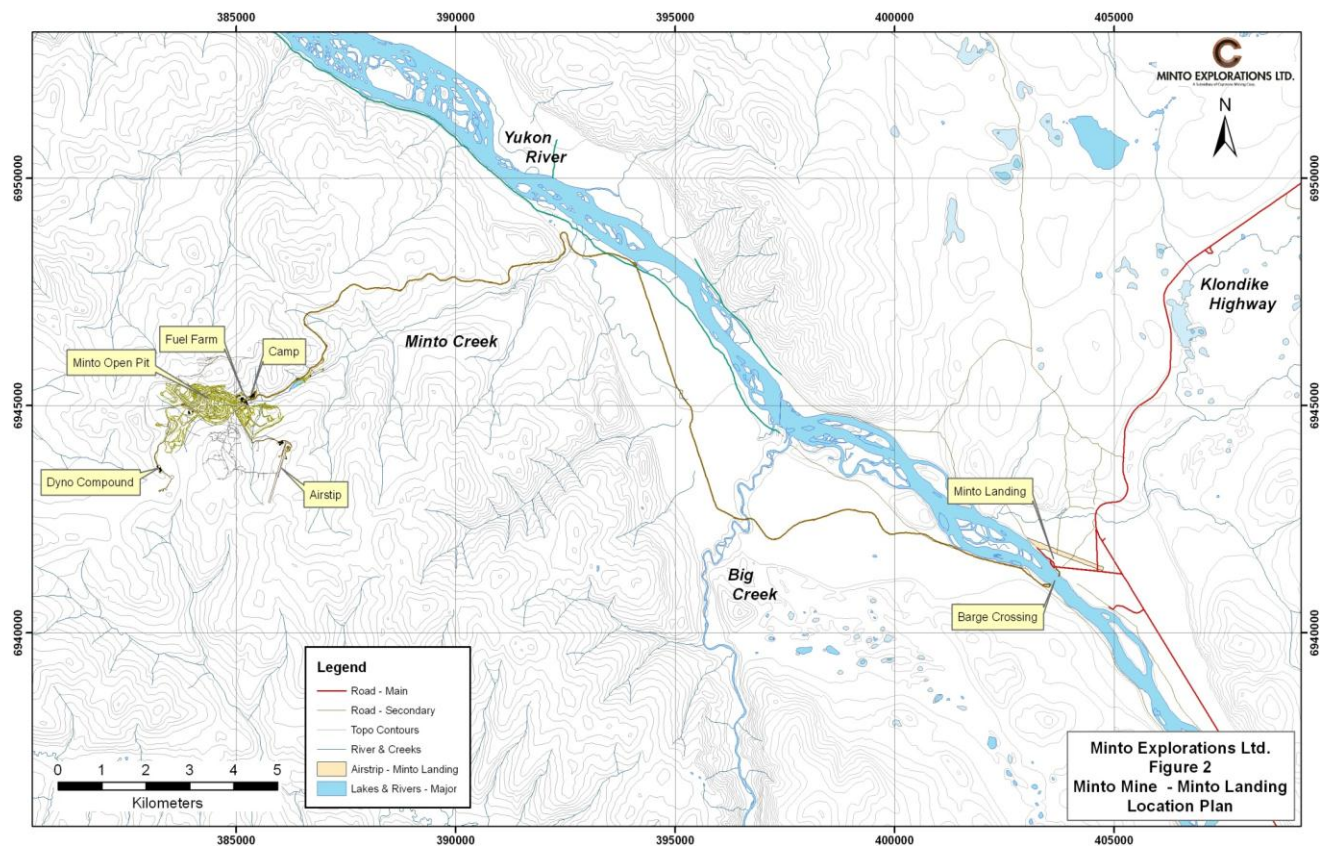


Figure 1: Minto Mine Location Map

Erosion is defined as the movement and transport of sediment. Sedimentation is the deposition of those transported materials. The prevention and management of erosion and sediment movement on an active mine site involves many critical paths including; planning and siting,

material source selection, soil composition, equipment handling, seed selection and risk management, even weather and economics. For this plan, erosion control within the active mine site and portions of the access road, will attempt to focus on source control. If properly managed this is the most effective solution since sediment control will be reduced or unnecessary. Sediment control, when needed within the active mine site, will focus on supplementing where erosion control methods have been insufficient or erosion occurred in unexpected areas. Multiple control methods will be discussed to provide options that can be tailored to the type of erosion and sedimentation to be prevented or reduced.

Incorporated in to the Site Erosion and Sediment Control Plan are sediment control structures downstream of the impacted project area at the Minto Creek Detention Structure (W37) and at the Water Storage Pond (W16). These two structures control sediment transport in to the lower reaches of Minto Creek which hold sensitive habitat for a variety of local fish and wildlife species. These two measures are necessary as the project site has a network of haulage roads, exploration trails and an expansive area stripped of top soil and vegetation making it prone to the effects of erosion and consequent sediment transport. These two structures form the cornerstone of protecting the receiving environment.

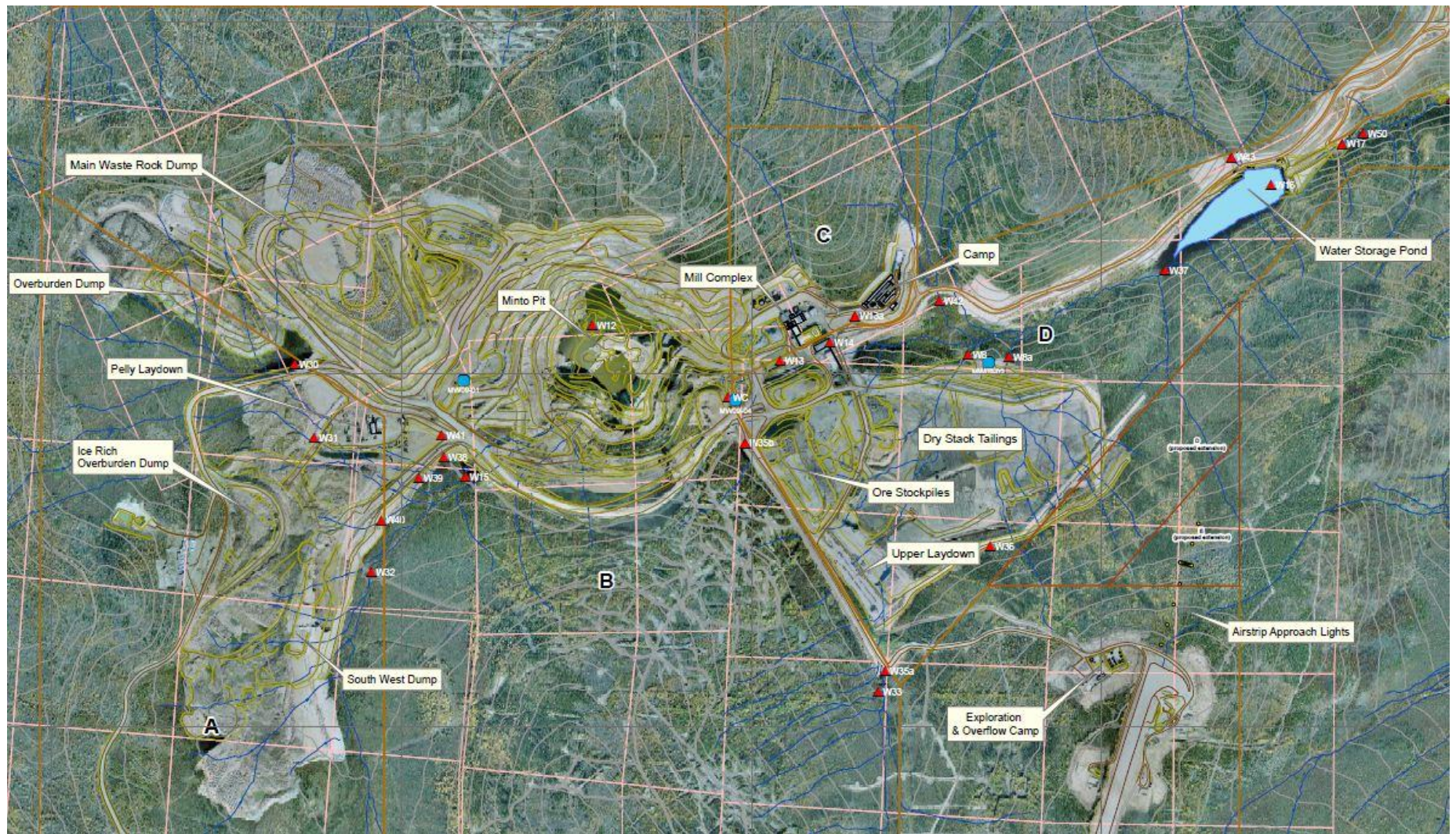


Figure 2: Site Features for sediment control showing the location of the Water Storage Pond, W17 and W37.

2 Erosion and Sediment Control Plan Objectives

The objective of this plan is to identify problem areas that are susceptible to erosion and develop measures to minimize its effects at those sites. Steep slopes are present on site, and those areas have the greatest potential for severe wind and water induced erosion. Through source control we intend to minimize the initial mobilization of sediment and with our two retention structures located before our site discharge point we have a redundant level of safety. Our intent is to establish intercepting ditches at the crest of steep and susceptible disturbed sites and to establish a vegetative mat on problem areas before the problem develops. In addition these sites will either divert runoff to armoured channels or use benching and coarse debris to slow down water velocity, prevent rilling and moderate erosion. This will involve an evaluation of the longer cut and fill slopes along the access road as well as driving the design of reclamation work on the Main Waste Dump and Dry Stack Tailings Facility.

3 Monitoring Strategies

Evidence of initial erosion can be visually inspected by searching for light surface material (litter or soil) movement, while sedimentation resulting from erosion can be found by searching for deposition of soil particles at the bottom of slopes and depressions. Rilling, gullying, pedestalling, unusual compaction, hoof shearing and trailing are also indicators of erosion problems.

Ditches will be examined during heavy runoff and the outlets of culverts and pipes visually inspected to ensure that roads and other permanent structures are not being compromised and sediment loads are not becoming excessive. Turbidity and total suspended solids (TSS) is continually measured on site at various monitoring stations as part of the routine *Water Quality Surveillance Program* as outlined in *Water Use License QZ96-006-Amendment 7*. Movement of the lighter and finer top soils before vegetation has taken root on reclaiming plots will be monitored closely and mitigation efforts employed to prevent compromising the seed and soil.

As part of the *Water Quality Surveillance Program*, turbidity and TSS at W17 water monitoring site will be inspected during heavy runoff to ensure site activities are not impacting the receiving environment from this perspective.

4 Erosion and Sediment Sources

There are numerous sources for Erosion and Sediment Transport. We will focus on 4 key areas of concern:

- Steep slopes are present on site, and those areas have the greatest potential for physical mechanisms of erosion like wind and water induced erosion.
- Areas where permafrost has been exposed and the vegetative mat removed will expose previously covered frozen areas to ambient air temperatures and sunlight. The thawing process can create runoff and fluidized movement of soils and overburden.
- Heavy rainfall events and large discharges of water during freshet will also create problem areas where they did not exist before, which can create additional difficulties if not properly managed.
- Finally, heavily trafficked areas and land disturbance caused by heavy equipment can be a continuous source of soil displacement and compaction. With compaction infiltration is reduced and surface water has a greater potential for erosion. Planning of activities before commencing heavy equipment and construction work can help limit the disturbed footprint and mitigate erosion potential. During unusually heavy events oversaturated soils exacerbate the problem further.

5 Erosion and Sediment Control Best Management Practices

Multiple control methods will be discussed to provide options that can be tailored to the type of erosion and sedimentation to be prevented or reduced. On site applications will be determined based on a variety of factors and discussed in the final section of this plan.

5.1 Ditching and Damming

During heavy rainfall and thawing events, water movement on site can be significant. Strategically placed ditches and runoff collection structures can help direct water movement on site by reducing the total amount of water and reducing its interaction with erosion prone sites.

For example, cut and fill slopes created during road construction leave long runs of exposed soils that are prone to erosion. Creating an intercepting ditch above the cut slope, will catch water and direct it to less erosion prone areas, thereby reducing runoff over sensitive regions. For the Mino Mine Site, the fate of diverted water containing high sediment loads is the detention structure at W37 and the settling pond at the WSP, where water velocity is reduced and sediments can settle out of solution.

Coarse rock and equipment to build ditches and dams are easily obtained on site, and requires little further maintenance, making them effective improvements. However, clean rock must be used and clay layers incorporated to make water retaining structures impermeable.

5.2 Re-contouring and Surface Features

The accumulation of water and its movement over the soil surface can trigger soil particle movement offsite. The impact is largely dependent on runoff velocity. Re-contouring methods can reduce this effect by shortening the length and decreasing the angle of the slope. Roughing up and loosening the surface area will impede water infiltration and improve its absorptive capacity. Creating undulations or troughs parallel to steep slopes will also reduce overland water movement velocity.

These types of improvements are beneficial on site for multiple reasons and incorporating these features can improve the effectiveness of other best management practices. With heavy equipment available they are easily planned and constructed on site, however, re-contouring and site preparation is only the first step in establishing successful permanent structures.

5.3 Revegetation

Establishing a vegetative layer is critical to sites where there are exposed slopes and once established eliminates the need for continual monitoring and maintenance by protecting the lighter, organic soil fractions from being displaced, retaining moisture, and preventing slope destabilization. Establishing permanent areas of vegetation, or the temporary seeding of hardy, fast growing species, can offer short or long term erosion control.

The choice of vegetation species will depend on many factors, such as availability, hardiness and emergence. Two important factors in choosing vegetation well suited specifically for erosion control are those that provide roughness on the site surface, and have extensive rooting systems that will break up the top layer of soil. Both of these factors will improve water infiltration into the soil.

Seedbed preparations for vegetation establishment on steep slopes will have to be considered for those sites where it is determined to be a concern, and could include slope stabilization, stream course protection through the use of mats and mulch or organic matter application. Soil properties including organic matter content and nutrient level must also be addressed to promote successful re-vegetation.

5.4 Silt Fencing

Installing silt fence as a sediment control method is a common method employed for level areas with diffuse erosion potential from sheeting on light soils. Geotextile materials, stretched along stakes, are used to protect downslope areas and prevents further movement of the sediment as it is being transported. Settling of coarser material occurs as the runoff ponds upstream of the fence. Silt fencing, is not appropriate for heavy flow areas and requires continuous maintenance.

5.5 Sheeting

Impermeable polyethylene sheets can offer immediate and temporary erosion control. Their use is suited for emergency responses or for short term protection in an area where the sheets will not be disturbed, because they are susceptible to tearing or movement by wind and heavy rainfall events. Also, they require inspection and maintenance until more permanent erosion measures can be implemented. However, properly installed and anchored, they can provide complete isolation of the erodible surfaces from the effects of wind and water erosion.

6 Conclusions and Recommendations

The Minto Mine Site has a unique set of properties and mixed terrain that will need to incorporate a host of best management practices for effective erosion and sediment control. There will be two main focuses of operation; site improvements and reclamation.

Firstly, site improvements include upgrades to the current infrastructure and an evaluation of roadside ditches on the access road and haul roads in conjunction with slope stabilization on cut and fill slopes. In addition permafrost crests overhanging cut slopes will have the trees bucked to prevent tearing of the vegetative mat as the melting soils undercut the bank.

Secondly, progressive reclamation and reclamation test plots on the Main Waste Dump and the Dry Stack Tailings Facility will involve re-contouring and ditching along with the placement of a natural cover to prevent infiltration in to the waste rock. This will present many challenges to erosion and sediment control and will involve careful selection of grasses and shrubs for the re-vegetation program. More detailed information is available in the April 2011, *Minto Explorations Ltd. Minto Mine, Yukon Territory Decommissioning, and Reclamation Plan-Revision 3.1*.

Previous and ongoing projects in the Yukon and northern jurisdictions will be used as a source of site relevant information that can be incorporated into the control plan to improve site methods. Other mine projects in Canada and internationally can also offer innovative ideas and practices.

