EAGLE GOLD PROJECT

MINE DEVELOPMENT, OPERATIONS AND MATERIAL MANAGEMENT PLAN

Version 2017-01

JULY 2017

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DOCUMENT CONTROL

Submission History

Version Number	Version Date	Document Description and Revisions Made
2014-01	July 2014	Original submission in support of an application to the Yukon Water Board for a Type A Water Use License for the full Construction, Operation and Closure of the Project. Version 2014-01 was also submitted to the Department of Energy, Mines and Resources in support of an application for a Quartz Mining Licence allowing the full Construction, Operation and Closure of the Project.
2017-01	July 2017	Revisions made to reflect the current site general arrangement and submitted to the Department of Energy, Mines and Resources and the Yukon Water Board in advance of Project Construction.

Version 2017-01 of the Mine Development, Operations and Material Management Plan (the Plan) for the Eagle Gold Project has been revised in July 2017 to update Version 2014-01 submitted in July 2014. The table below is intended to identify modifications to the Plan and provide the rationale for such modifications

Version 2017-01 Revisions

Section	Revision/Rationale
1.1 Project Overview	▪ Updated text to better describe the Project based on optimizations required to comply with license conditions.
1.2 Mine Facilities	▪ Updated text to better describe the Project based on optimizations required to comply with license conditions.
1.3 Table of Concordance	▪ Updated text to reflect additional design refinements and ongoing data collection and analysis relevant to the Terms and Conditions or Recommendation and Proponent Commitments.
Figure 1.1-1 Process Flowsheet	▪ Updated process flowsheet based ongoing engineering for the Project.
Figure 1.2-1 Site General Arrangement	▪ Updated figure to show the optimized site layout.
2.1.3 Ore Reserve Estimates	▪ Complete revision to show the current reserve estimate.
2.1.4 Open Pit Mine Plan	▪ Updated text to explain the optimized open pit mine plan.
2.2.4 Bench Design Analyses 2.3 Interramp/Overall Slope Stability Analyses 2.4	▪ Rearrangement of sections and updated text to explain updated mine planning for the open pit.

Section	Revision/Rationale
Pit Slope Design Parameters	
2.5 Geotechnical Assessment for Mine Site Infrastructure	▪ Minor text updates to reflect the collection of additional geotechnical information.
Table 2.3-1 Permanent Cut Slope Angles - By Facility	▪ Updated text to reflect the optimized distances between facilities. ▪ Removal of reference to the Dublin Gulch Diversion Channel.
Figures 2.1-1 to 2.1-16	▪ Updated figures to reflect the optimized site layout.
3 Design and Construction 3.1.1 Stage 1 3.1.2 Stage 2	▪ Updated text to describe the current construction schedule.
3.2.1 Vegetation Clearing and Grubbing	▪ Updated text to describe refined management strategies for cleared timber and brush.
Table 3.2-1 Management Strategies	▪ Updated text to include the management strategies refined in the updated Frozen Materials Management Plan as required by license conditions.
3.2.4.1 Borrow Requirements	▪ Minor text updates to reflect the collection of additional geotechnical information.
3.2.4.2 Borrow Sources	▪ Minor text updates to reflect the collection of additional geotechnical information.
3.2.5 Foundations	▪ Minor text updates to reflect the optimized site layout.
3.4 Material Release Schedule	▪ Updated text to reflect the changes in cut and fill volumes due to the optimized site layout.
3.5.1 Crusher and Conveyor System Overview	▪ Updated text to reference the requirement to develop an Agglomeration Test Plan. ▪ Updated text to describe the refinement of the winter stacking and subsequent blending of ore back into the crushing circuit.
3.5.2 Primary Crushing and Conveying 3.5.3 Secondary Crushing and Conveying 3.5.4 Tertiary Crushing and	▪ Minor text updates to show the changes in location of facilities.

Section	Revision/Rationale
Conveying	
Figures 3.2-1, 3.2-2 and 3.5-1	▪ Updated figures to reflect the optimized site layout.
4.3 Transmission Line and Substation	▪ Updated text to include Proponent Commitments. ▪ Updated text to describe the facility design based on further engineering.
4.5 Fuel Storage	▪ Updated text to reflect the optimized site layout.
Figures 4.3-1, 4.3-2 and 4.4-1	▪ Updated figures to reflect the optimized site layout.
5.1 Open Pit Construction Sequencing	▪ Updated text to describe the updated open pit development.
5.2 Depressurization	▪ Minor text update to ensure water routing from the pit is consistent with the updated Water Management Plan
5.3 Ground Movement Monitoring	▪ Updated text to reflect the frequency of monitoring.
5.4 Blasting and Wall Control	▪ Updated text to describe refinements to drill hole diameter, spacing, and powder factors.
5.5 Haul Roads	▪ Updated description of mine haul roads to ensure consistency with the updated Road Construction Plan.

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1 INTRODUCTION

1.1 PROJECT OVERVIEW

The Project will involve open pit mining at a production rate of approximately 10 million tons per year (Mt/y) ore over the life of the mine. Gold extraction will continue to occur for 1-2 years upon cessation of active mining operations depending upon metallurgical results (gold recovery rates) and market conditions. The current plan is to mine 92 Mt of leachable ore. No more than 132 Mt of waste rock will be stored in the Waste Rock Storage Areas (WRSAs) adjacent to and south (Platinum Gulch) and north (Eagle Pup) of the open pit. The refinement of the HLF design to reconcile issues identified during licensing has resulted in the storage capacity of the HLF being reduced from 92MT to 77MT. This reduction in storage capacity will necessitate the construction and operation of a secondary HLF prior to year 8 of the mine life (and an amendment to the existing licences).

Ore will be crushed to 80 percent passing (P80) a particle size of 6.5 mm in a three stage crushing process. All three crushing stages will be located north of the open pit. Ore will be conveyed between each crushing stage by covered conveyor. After the tertiary crushing stage, ore will be transported by covered conveyor into the heap leach facility (HLF) area and will be stacked on the heap leach pad by mobile stacking conveyors.

Gold extraction will utilize cyanide heap leaching technology with process solution containing cyanide applied to the ore to extract gold that is then collected by the HLF leachate collection and recovery system.

Gold-bearing pregnant leach solution (PLS) will be pumped from the heap to the gold recovery plant. Gold will be recovered from the PLS by activated carbon adsorption and pressurized caustic desorption, followed by electro-winning onto steel anodes, and on-site smelting to gold Dore. The gold-barren leach solution that remains after passing through the carbon columns will be re-circulated back to the HLF.

Figure 1.1-1 provides the overall process flow sheet for the Project.

1.2 MINE FACILITIES

The Eagle Gold Mine will be comprised of the following five major facilities as shown on Figure 1.2-1.

- **Open Pit**: Economic gold-bearing ore and uneconomic barren waste rock will be removed from the Eagle deposit by conventional drill, blast, shovel and truck mining. The footprint of the final open pit will have a surface area of approximately 67 ha, and an ultimate pit size of approximately 1,300 m long and 550 m wide. Based on the surface topography, the open pit will be scalloped-shaped with a lower west highwall. The minimum elevation of the pit is estimated to be 810 masl with a maximum crest elevation along the east highwall of approximately 1,390 masl, The west highwall crest elevation is estimated at 915 masl.

- **Waste Rock Storage Areas**: Uneconomic barren waste rock will be deposited in one of two waste rock storage areas (WRSAs) or utilized in the construction of various mine facilities. During the first several years of operations, waste rock will be delivered to both the Platinum Gulch WRSA and the Eagle Pup WRSA. For the remainder of the life of the Project, waste rock will be trucked to the Eagle Pup WRSA.

Details regarding the development and operation of the WRSAs are described in the Waste Rock and Overburden Facility Management Plan.

- **Crusher and Conveyor System**: Ore will be delivered by haul truck to the primary crusher, located adjacent to the northern rim of the open pit, at a rate of 29,500 tonnes per day (tpd). Ore will be crushed and then conveyed by covered conveyor to the coarse ore transfer station. From the coarse ore transfer station, the primary crushed ore will either be conveyed to the coarse ore stockpile and then to the secondary crusher, secondary screens and tertiary crushers and screens or, during an approximate 90-day period during each winter, temporarily stored on a prepared pad following primary crushing. The stored ore will be blended back into the crushing circuit over an approximate 275-day period so that the total ore delivery rate to the HLF will be approximately 39,155 tonnes tpd.

  During the construction phase of the project, a portable crushing and screening plant will be developed to process select construction materials.

- **Heap Leach Facility**: Crushed ore will be delivered and stacked on a lined solution collection pad. Process solution containing cyanide will be applied to the ore to extract gold and collected by the HLF pad leachate collection and recovery system. The HLF pad will consist of a composite liner system in the upper and lower reaches of the facility. The lower section of the HLF pad acts as an 'in-heap pond' for primary storage of pregnant solution. A lined pond external to the HLF will be constructed to temporarily store excess process solution during rare upset events, and/or freshet events as needed, and normal precipitation that occurs on the pond; any solution contained in the pond will be recycled back into the heap leach circuit. Details regarding the development and operation of the HLF are described in the Heap Leach and Process Facilities Plan.

- **Process Plant**: PLS collected from the HLF will be processed via conventional gold recovery methods. Gold-bearing solution will be pumped from the in-heap pond to the process plant via heat traced pipes. Solution will be recycled back to the HLF after gold recovery. The process plant area will be located west of the HLF. Details regarding the development and operation of the Process Plant are described in the Heap Leach and Process Facilities Plan.

The mine will be supported by additional mine infrastructure including water management facilities, a truck shop and maintenance buildings, fuel storage facilities, an explosives and magazine storage facility, a main access road and laydown areas, and a transmission line and substation.

Water management facilities including the main control pond and sediment basins, diversion and interceptor ditches, as well as pumping and piping systems have been developed to proactively manage sediment-laden, contact and non-contact water throughout the construction, operation and closure phases of the Project. Further, pumping and piping infrastructure has also been developed for the distribution of fresh groundwater and/or surface water runoff to meet various process and potable water requirements. Details regarding the development and operation of the water management facilities are described in the Water Management Plan. The Water Management Plan has several functional components including a construction water management plan, a sediment and erosion control plan, and an operational water management plan. Closure and post-closure water management are considered in the Reclamation and Closure Plan. Each plan was developed from specific design bases and criteria, and supported by the integration of baseline studies and various water-related modeling exercises.

A mine water treatment plant (MWTP) will be constructed and commissioned prior to loading ore on Phase 2 of the HLF to treat contact water and later during closure, process water to meet effluent quality criteria for discharge to Haggart Creek. Details regarding the development and operation of the MWTP is found in Linkan (2014).

1.3 TABLES OF CONCORDANCE

The following two tables of concordance summarize how applicable commitments made by StrataGold during the environmental assessment process, including the decision document terms and conditions and our project commitments, have been addressed.

Table 1.3-1: Table of Concordance for the Project Decision Document Relevant to this Plan

No.	Terms and Conditions	Where Addressed
To ensure proper function of the sediment control ponds and minimize the potential for release of water with high concentrations of Total Suspended Solids:		
45.	The Proponent shall ensure that sediment control ponds are sized adequately to meet Total Suspended Solids concentration effluent criteria.	See Section 4.0 (Design Basis and Criteria) of the Water Management Plan
To reduce risks associated with the Dublin Gulch Diversion Channel:		
46.	Where portions of the Dublin Gulch Diversion Channel and Velocity Reduction Pond abut critical mine site infrastructure, the Proponent shall ensure armouring more durable than turf reinforced armouring is constructed to account for a 500-year, 24-hour storm event.	To address concerns raised during the regulatory process, the design of the HLF has been optimized to negate the need to divert Dublin Gulch, so the Dublin Gulch Diversion Channel (DGDC) is no longer a proposed water management facility.
47.	The Proponent shall design and construct the Dublin Gulch Diversion Channel using more natural features such as step pool features rather than concrete block armouring. If the construction of more natural features is not possible, prior to the regulatory approval process the Proponent shall provide responsible regulators with: appropriate rationale for the use of concrete block armouring; a detailed analysis of stability; and a monitoring and maintenance plan.	To address concerns raised during the regulatory process, the design of the HLF has been optimized to negate the need to divert Dublin Gulch so the Dublin Gulch Diversion Channel (DGDC) is no longer a proposed water management facility.
48.	The Proponent shall use Type III Antecedent Moisture Content (AMC), rather than Type II AMC to compute the Inflow Design Flood of the Dublin Gulch Diversion Channel.	To address concerns raised during the regulatory process, the design of the HLF has been optimized to negate the need to divert Dublin Gulch so the Dublin Gulch Diversion Channel (DGDC) is no longer a proposed water management facility.
To ensure stability of diversion ditches and interceptor ditches:		
49.	The Proponent shall ensure temporary diversion or interceptor ditches are sized to account for infilling of sediments. This includes increasing the minimum depth from 300 mm where conditions warrant (e.g. ditches constructed with minimal to no grade).	See Section 4.0 (Design Basis and Criteria) and in particular Section 4.2.3 Monitoring Strategies of the Water Management Plan
50.	The Proponent shall ensure that lined temporary and permanent diversion or interceptor ditches that are lined in a manner that is stable.	See Section 4.0 (Design Basis and Criteria) and in particular Section 4.2.3 Monitoring Strategies of the Water Management Plan Section 3.3 of this Plan; is part of Construction

No.	Terms and Conditions	Where Addressed
		Quality Assurance and Quality Control Plan
51.	The Proponent shall ensure that temporary and permanent diversion or interceptor ditches that convey water away from key mine site infrastructure (e.g. the HLF, WRSAs, and event ponds) are sized to accommodate a 100-year, 24-hour design storm event.	See Section 4.0 (Design Basis and Criteria) of the Water Management Plan
To minimize the likelihood of inaccurate water quality model predictions leading to effects on the aquatic ecosystems		
52.	As proposed, the Proponent shall ensure that a revised groundwater model is submitted to responsible regulators during the regulatory approval process.	See Eagle Gold Project Numerical Hydrogeological Model (BGC 2014) As per condition 156 of the Type A Water Use License QZ14-041 the groundwater model will be updated within 90 days of entering the Production Phase.
53.	The Proponent shall, in discussions with responsible regulators, ensure groundwater monitoring occurs at appropriate locations down gradient from potential sources of contamination to enable early detection and timely intervention of potential groundwater contamination.	See Section 4.3 (Groundwater Quantity) and 5.4 (Groundwater Quality) of the Environmental Monitoring, Surveillance and Adaptive Management Plan
To decrease variability around geochemical characterization and validate hydrogeochemical predictions:		
54.	The Proponent shall complete geochemical characterization of the expanded open pit including representative rock units for the total amount of waste rock and ore being mined (132 million tonnes of waste rock and 92 million tonnes of ore). This characterization should include kinetic testing to predict metal leaching potential.	See Final Report: Geochemical Characterization – Eagle Gold Project (SRK 2014)
55.	The Proponent shall incorporate results of the new geochemical characterization into the overall geochemical characterization of rock units to be excavated by the Project and revise the source term predictions accordingly. The Proponent shall ensure that this information is available prior to the regulatory approval process.	See Final Report: Geochemical Characterization – Eagle Gold Project (SRK 2014); See Mine Waste Geochemical Source Term Predictions – Model Description and Results (Lorax 2014a) See Update of Geochemical Source Terms (Lorax 2017a)
56.	The Proponent shall update the water quality model and predictions using the revised geochemical characterization and source term predictions prior to the regulatory approval process.	See Water Quality Model Report (Lorax 2014b) See 2017 Water Quality Model Update Report (Lorax 2017b)
57.	The Proponent shall conduct appropriate testing of on-site materials to compare on-site materials to analog site materials. The Proponent shall consider additional on-site testing results as well as long-term trends at analog sites to provide confidence that the analog site data used to bound upper limits of source term concentrations accurately reflect the characteristics of the Eagle Gold Mine material. The Proponent shall ensure that this information is available prior to the regulatory approval process.	See Mine Waste Geochemical Source Term Predictions – Model Description and Results (Lorax 2014a) See Update of Geochemical Source Terms (Lorax 2017a)
58.	The Proponent shall conduct monitoring of water quantity and quality from contact waters during operations, closure and post-closure to characterize contact waters from the different sources, verify assumptions and inform the site closure plan. The monitoring program should specify routine surface water monitoring from waste rock storage areas, the open pit, and the	See Sections 2 and 3 in the Environmental Monitoring, Surveillance and Adaptive Management Plan

No.	Terms and Conditions	Where Addressed
	HLF. The data should be reviewed periodically to update loading assumptions for constituents of particular concern in the site water balance and water quality models.	
To minimize potential effects due to metal leaching from waste rock used as construction material:		
60.	The Proponent shall ensure waste rock used to construct on-site infrastructure does not contribute to exceedance of water quality guidelines due to metal leaching. The Proponent shall actively segregate waste rock based on metal leaching potential so that it is used appropriately.	See Final Report: Geochemical Characterization – Eagle Gold Project (SRK 2014) See Section 6.0 (Geochemical Monitoring Program) in the Environmental Monitoring, Surveillance and Adaptive Management Plan
To minimize the likelihood of inaccurate water quality model predictions leading to effects on the aquatic ecosystems:		
68.	The Proponent shall conduct monitoring of water quantity and quality from contact waters (e.g. waste rock storage areas) and non-contact waters (e.g. reference locations) during operations, closure and post-closure to verify assumptions and inform the site closure plan.	See Sections 2 and 3 in the Environmental Monitoring, Surveillance and Adaptive Management Plan
To ensure the effectiveness of passive treatment systems for the protection of aquatic ecosystems during post-closure		
69.	The Proponent shall provide responsible regulators with updated long-term, post-closure water quality predictions based on updated water quality modeling, water balance modeling, and groundwater modeling.	See Water Quality Model Report (Lorax 2014b) See 2017 Water Quality Model Update Report (Lorax 2017b)
71.	The Proponent shall ensure that the proposed approach for developing the passive treatment follow a phased approach that includes laboratory scale, bench scale, pilot scale, and full scale testing.	See Section 10.0 (Reclamation and Closure Research Programs) of the Reclamation and Closure Plan
72.	The Proponent shall ensure that the passive treatment system development and testing begins early enough in the Project development to ensure that detailed plans are submitted, reviewed and accepted by responsible regulators prior to decommissioning.	See Section 10.0 (Reclamation and Closure Research Programs) of the Reclamation and Closure Plan
73.	The Proponent shall ensure that the passive treatment system development includes a monitoring plan with follow-up on the performance and predicted longevity of the systems and a maintenance plan in the case that the performance and/or longevity of the systems are somehow compromised.	See Section 10.0 (Reclamation and Closure Research Programs) of the Reclamation and Closure Plan
To mitigate significant adverse effects to fish and fish habitat:		
79.	The Proponent shall construct the parking and staging areas along the access road in a manner that: a) where possible, avoids impacts to riparian vegetation within 30 m of the high water mark; b) where possible, avoids impacts to stream channels; and c) avoids the introduction of sediments into surface waters.	See Section 4.2 of the Road Construction Plan.
80.	The overhead transmission line shall be constructed in a manner that: a) applies the mitigation measures described in the Fisheries and Oceans Canada Operational Statement for Overhead Line Construction;	Section 4.3 of this Plan; will be part of the design basis incorporated into the final design for the overhead transmission line.

No.	Terms and Conditions	Where Addressed
	b) to the extent possible, ensures watercourse crossings to occur as close to the road crossing as possible to minimize the amount of riparian area clearing; c) to the extent possible, ensures short riparian shrubs and grasses are left undisturbed; d) ensures riparian trees and tall shrubs are topped as opposed to completely removed; e) ensures a qualified environmental professional (QEP) is on-site at the time of final pole location selection, and while the clearing is taking place for Haldane Creek, North Star Creek, South McQuesten River, Bighorn Creek, Secret Creek and Haggart Creek; and f) ensures the QEP is tasked with ensuring minimal disturbance of riparian vegetation and avoiding a harmful alteration, disruption or destruction to fish habitat as a result of the clearing.	
To mitigate significant adverse effects related to permafrost degradation on environmental quality:		
81.	As proposed, the Proponent shall submit the consolidated results from its subsurface investigations in conjunction with their applications for a Quartz Mining License and Type A Water Use Licence.	See the following: 2011 Geotechnical Investigation for Mine Site Infrastructure Factual Data Report (BGC 2012a). 2011 Geotechnical Investigation for Mine Site Infrastructure Foundation Report. Final Report (BGC 2012b). Geotechnical Assessment and Design of the Waste Rock Storage Areas (BGC 2012c) 2012 Geotechnical Investigation for Mine Site Infrastructure Factual Data Report (BGC 2012e) 2016 Heap Leach Facility Geotechnical Investigation (BGC 2017) Geotechnical Design Ice-Rich Overburden Storage Area Berms (NELPCo 2013). Geotechnical Design Update and IFC Drawings Haggart Creek Ice-Rich Overburden Storage Area (NELPCo 2017a).
82.	The Proponent shall ensure sufficient storage is available for temporary containment, management, and thawing of excavated ice rich soils/permafrost.	See Frozen Material Management Plan and Geotechnical Design Ice-Rich Overburden Storage Area Berms (NELPCo 2013). Geotechnical Design Update and IFC Drawings Haggart Creek Ice-Rich Overburden Storage Area (NELPCo 2017a).
To mitigate significant adverse effects to air quality:		
93.	As proposed, the Proponent shall cover ore conveyance equipment.	Section 3.5 of this Plan. This has been included in the design criteria for final design.
94.	The Proponent shall cover equipment where ore is loaded or discharged onto conveyors and other equipment. This is referenced in the Executive Summary to the proposal but not itemized in the Fugitive Dust Control Plan.	Section 3.5 of this Plan. This has been included in the design criteria for final design.

No.	Terms and Conditions	Where Addressed
To eliminate, reduce or control significant adverse effects from the Project on bird injury/mortality, the following mitigative measures are required:		
105.	If nests are discovered, the Proponent shall record these locations and avoid them until they are no longer in use by birds.	See Wildlife Protection Plan
106.	The Proponent shall avoid clearing vegetation during the migratory bird nesting season (approximately May 1st to July 31st). If clearing must occur during this period, the Proponent shall ensure nest surveys are conducted by qualified and experienced personnel prior to clearing. If active nests or migratory birds are discovered, the Proponent shall postpone activities in the nesting area until nesting is completed.	See Wildlife Protection Plan

Table 1.3-2: Table of Concordance for Project Commitments (made June 2011) Relevant to this Plan

No.	Proponent Commitments	Where Addressed
Surficial Geology, Terrain, and Soils		
1	Victoria Gold Corp. (VIT) will complete geotechnical investigations as part of detailed mine planning during the permitting stage, prior to construction. Once exact locations for Project infrastructure have been identified, qualified professionals will carry out on-site terrain stability assessments in areas identified as having potential terrain stability issues.	See the following: 2011 Geotechnical Investigation for Mine Site Infrastructure Factual Data Report (BGC 2012a). 2011 Geotechnical Investigation for Mine Site Infrastructure Foundation Report. Final Report (BGC 2012b). 2012 Geotechnical Investigation for Mine Site Infrastructure Factual Data Report (BGC 2012e) 2016 Heap Leach Facility Geotechnical Investigation (BGC 2017) Geotechnical Design Ice-Rich Overburden Storage Area Berms (NELPCo 2013). Geotechnical Design Update and IFC Drawings Haggart Creek Ice-Rich Overburden Storage Area (NELPCo 2017a).
2	VIT will establish a program to monitor permafrost conditions adjacent to cleared areas within the Project footprint once mine infrastructure is constructed. Downslope movement and soil moisture will be monitored. Monitoring frequency will be sufficient to assess the effects of freshet, large storm events, and other weather conditions that may affect terrain stability.	See Frozen Material Management Plan See Heap Leach Facility Foundation Improvement Plan See Section 15 of the Environmental Monitoring, Surveillance and Adaptive Management Plan
3	A qualified environmental professional/technician with appropriate knowledge and training will monitor Project construction and closure activities. The professional/technician will: 1) ensure that soil material suitable for reclamation is salvaged and stored; and 2) evaluate topsoil volumes, based on soil stockpile dimensions, to determine whether there is sufficient material for reclamation. If a shortage is calculated, additional areas of overburden salvage will be identified. If the quality of topsoil does not meet the requirements of the Conceptual Closure and Reclamation Plan (Appendix 24),	Section 3.3 of this Plan; is part of Construction Quality Assurance and Quality Control Plan

No.	Proponent Commitments	Where Addressed
	additional areas of soil salvage will need to be identified.	
4	Soil stockpiles will be checked regularly, after storm events, and during/following freshet to ensure vegetation cover is maintained and erosion control measures are effective.	See Environmental Monitoring, Surveillance and Adaptive Management Plan See Sections 4.0 (Design Basis and Criteria) and 6.0 (Construction Water Management) of the Water Management Plan See Waste Rock and Overburden Management Plan
5	VIT will monitor the effectiveness of soil mitigation to evaluate compaction, rutting, drainage and re-contouring prior to re-vegetation.	See Section 6.3 (Soils) of the Environmental Monitoring, Surveillance and Adaptive Management Plan See Waste Rock and Overburden Management Plan
7	VIT will implement a monitoring program (e.g., for vegetation vigour and growth, soil moisture and groundwater levels) in areas outside the mine footprint that are expected to be affected by changes in groundwater levels. These monitoring sites will be established prior to the commencement of construction activities (to establish baseline conditions) and continue through the post-closure monitoring phase.	See Sections 4 (Groundwater Quantity), 12 (Vegetation) and 13 (Soils) in the Environmental Monitoring, Surveillance and Adaptive Management Plan
8	VIT will establish long-term soil and vegetation monitoring sites, outside the Project footprint, to monitor for element concentrations, in particular arsenic, in soil and foliage. These monitoring sites will be established prior to construction activities (to establish baseline conditions) and continue until Year 8 of operations (when dusting is complete). Approximately 10 sites will be established throughout the area of predicted arsenic exceedance from metal loading.	See Sections 12 (Vegetation) and 13 (Soils) of Environmental Monitoring, Surveillance and Adaptive Management Plan
9	VIT will implement an Erosion and Sediment Control Plan for the footprint area during construction, operations and closure and reclamation (Environmental Management Plans – Appendix 30).	See Water Management Plan
Water Quality and Aquatic Biota		
14	VIT will implement codified erosion prevention and sediment control practices and the Water Management Plan (Appendix 18) to prevent sediment release during construction (sediment control ponds).	See Water Management Plan
16	VIT will construct and maintain diversion channels to keep non-contact water away from mine activities. These will be built with erosion protection measures and designed to convey large runoff volumes. Design criteria will be determined based on water license requirements.	See Water Management Plan
17	Sediment control ponds will be constructed and maintained to allow fine sediments to settle out. Permanent sediment control ponds will be sized for a 1:200 year 24-hour flood event and temporary sediment control ponds will be sized for a 1:100 year 24-hour flood event.	See Section 4.0 (Design Basis and Criteria) of Water Management Plan
Vegetation Resources		
31	VIT makes the following commitments to mitigate against	Section 3.3 of this Plan; is part of Construction

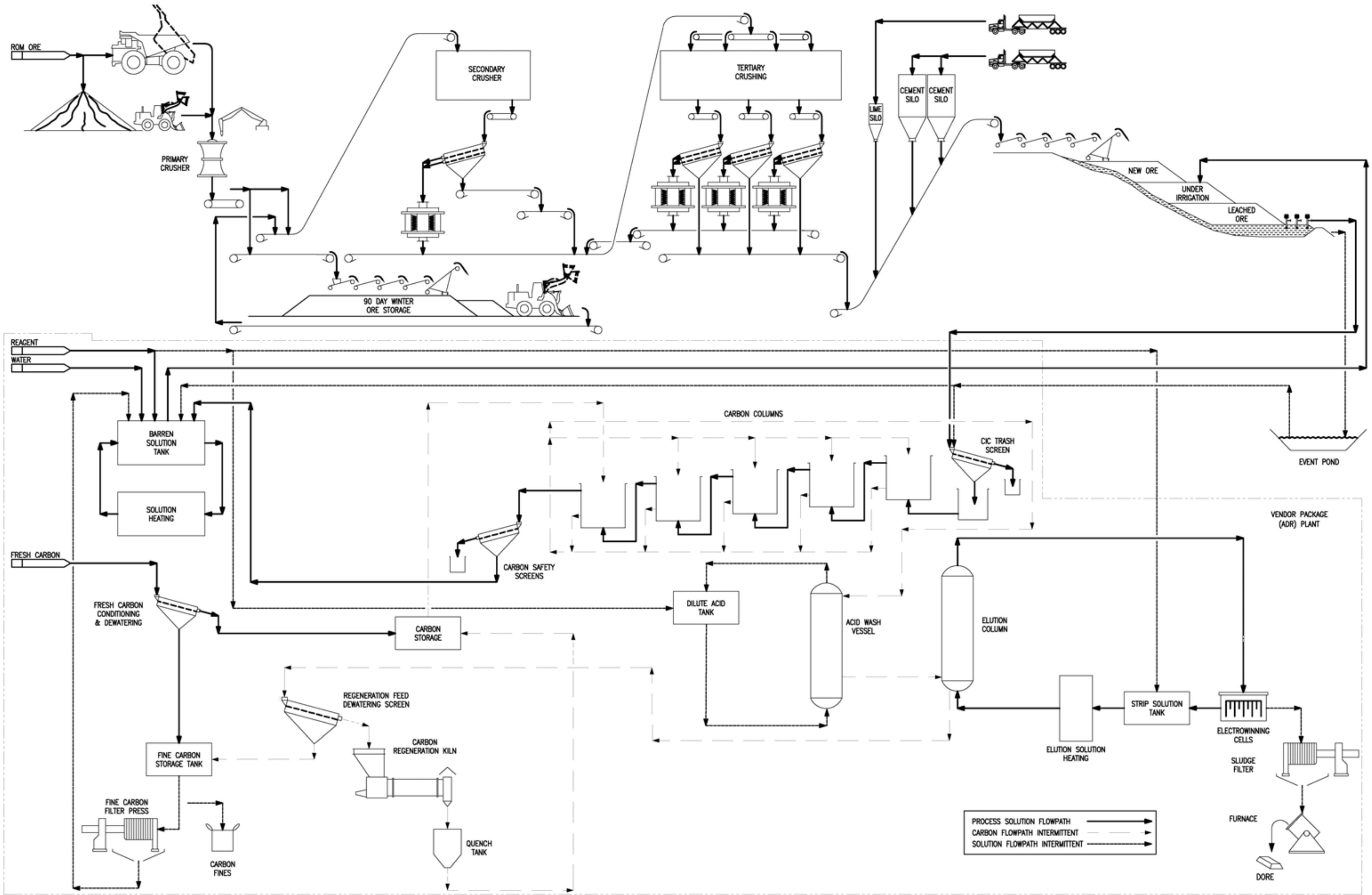
No.	Proponent Commitments	Where Addressed
	invasive species: a) Vegetation communities adjacent to Project disturbance will be monitored throughout all Project phases to ensure that populations of invasive plant species are promptly identified as they become established and that appropriate control measures are applied in a timely manner. b) Follow guidelines to prevent the introduction and spread of invasive plants as per the Invasive Plants Management Plan during all Project phases (Appendix 24 – Eagle Gold Conceptual Closure and Reclamation Plan). c) Minimize the extent of grubbing, soil stripping, and the removal of shrubs and herbaceous species, where possible, to reduce the area of bare ground potentially subject to invasive plant establishment. d) Mitigate against the establishment of invasive species and reduce erosion potential by re-establishing native vegetation on disturbed areas as soon as possible. e) Ensure that construction equipment is clean and free of soil and seeds before mobilizing to the Project site f) Use native species, to the greatest extent possible, during all Project phases, but most specifically during closure and reclamation phases to re-vegetate disturbed sites.	Quality Assurance and Quality Control Plan See Section 6.2 (Vegetation) in the Environmental Monitoring and Adaptive Management Plan
32	VIT makes the following commitments to minimize potential effects of clearing on vegetation resources: a) Flag and stake known rare plant locations near the maximum disturbance boundary and instruct equipment operators to avoid these areas. Conduct regular monitoring of these sites during construction and operations. b) Reduce vegetation loss in areas around the footprint perimeter by adhering closely to construction plans, and avoiding off- site machine use. c) Clear the necessary trees and tall shrubs within the transmission line RoW during periods when the ground is frozen and snow-covered to minimize the disturbance to low shrubs, the moss layer, and topsoil. d) Minimize the extent of grubbing, stripping, and the removal of shrubs and herbaceous species where possible. e) When clearing is required, retain the humus layer and vegetation root mat, when possible. f) Re-vegetation of disturbed soils where appropriate to encourage slope stability and minimize soil degradation and erosion.	Section 3.3 of this Plan; is part of Construction Quality Assurance and Quality Control Plan See Section 6.2 (Vegetation) in the Environmental Monitoring and Adaptive Management Plan
33	VIT makes the following commitments to minimize potential effects on wetlands and riparian areas: a) Minimize disturbance in sensitive areas by implementing best management practices including the creation and maintenance of buffer zones around riparian and wetland ecosystems. b) Maintain existing drainage patterns to and from wetlands in areas outside of the disturbance footprint. c) When clearing is required, retain the humus layer and vegetation root mat to the extent practical, to reduce the potential for soil erosion and deposition in riparian and wetland ecosystems.	Section 3.3 of this Plan; is part of Construction Quality Assurance and Quality Control Plan

No.	Proponent Commitments	Where Addressed
	d) Employ hand cutting of vegetation near access road and transmission line stream crossings to reduce disturbance to riparian areas during construction of the transmission line.	
Wildlife		
38	VIT will implement the following clearing practices to minimize potential effects on wildlife: a) Minimize Project footprint. Site clearing will be minimized to only the area needed to safely construct and operate the Project. Before clearing, wildlife habitat features (e.g., mineral licks, dens, nest trees, snags, rocky outcrops, small ponds/seepages) will be identified and evaluated to determine if they can be maintained. Even if small, these patches will benefit wildlife and contribute to reclamation. b) Clear vegetation outside of the breeding bird windows. Where this is not possible, VIT will consult with the appropriate regulators (Yukon Government, CWS) and develop management strategies. These strategies are likely to include surveying the area to be cleared for nests a maximum of one week prior to clearing. Bird nests will be identified and protected until nesting has completed.	See Section 3.3 of this Plan; is part of Construction Quality Assurance and Quality Control Plan See Wildlife Protection Plan
40	Implement a progressive Conceptual Closure and Reclamation Plan (Appendix 24). VIT will: a) re-vegetate reclamation areas with native species consistent with surrounding vegetation, except where regulatory agencies indicate that natural succession is preferable; and b) maximize use of direct placement techniques (minimizing stockpiling) to minimize the loss of biological activity in reclamation capping materials.	See Section 8.0 (Progressive Reclamation) of the Reclamation and Closure Plan
Accidents and Malfunctions		
97	VIT will implement the following to maximize road and transport safety: a) Work with the Department of Highways and Public Works to ensure both public and private portions of the access road are properly maintained and upgraded as required b) Enforce speed limits for all Project vehicles c) Ensure trucking/hauling contractors have appropriate driver training, radio contact capabilities, vehicle maintenance requirements, and spill response capabilities d) Ensure all hazardous materials are transported and handled in accordance with the Transportation of Dangerous Goods Act and Regulations e) Require bulk carriers to carry two-way radios to communicate with the mine site f) Post signage along Haggart Creek Road (a two-way, one-lane radio controlled access road with regular vehicle pull-outs to allow passing) and ensure non-Project traffic is aware of radio protocols g) Identify wildlife migration corridors and crossings along the road and provide signage in high risk areas h) Plow wildlife crossing and escape points in the access	See Section 4.2 of this Plan and the Road Construction Plan

No.	Proponent Commitments	Where Addressed
	road snow banks (i.e., 0.5 m or less at regular intervals).	
98	VIT commits to the following spill prevention and response measures: a) If there is any doubt regarding the size of a spill, material involved, and whether it is reportable, VIT will err on the side of caution and report the spill. b) Caches of spill response materials will be placed along the access road as required by the Spill Contingency Plan (Appendix 30), including at the Haggart Creek crossing. c) Project staff will have appropriate emergency response and spill contingency training and knowledge. Equipment, materials, and procedures will be maintained to limit the consequences of releases to the environment through prompt containment and clean-up. d) Fuels, hydrogen peroxide, and other hazardous liquids will be transferred from tanker trucks to storage tanks by enclosed lines, hoses, and pumps equipped with pressure transducers and volume counters to ensure tanks cannot be overfilled. e) No lubrication, refueling or maintenance of equipment will occur within 30 m of wetlands or watercourses. f) All fuelling and lubrication of construction equipment will be carried out in a manner that minimizes the possibility of spills. All containers, hoses, and nozzles will be free of leaks and all fuel nozzles equipped with functional automatic shut-offs. g) Where stationary equipment cannot be relocated more than 30 m from a watercourse, it will be situated in a designated area that has been bermed and lined with an impermeable barrier with a holding capacity equal to 125% of the largest tank within the berm. Equipment operators will be appropriately trained in spill response procedures and carry spill kits capable of handling spills on land and water.	See Section 4.5 of this Plan and the Spill Response Plan
98	VIT commits to the following spill prevention and response measures: h) If there is any doubt regarding the size of a spill, material involved, and whether it is reportable, VIT will err on the side of caution and report the spill. i) Caches of spill response materials will be placed along the access road as required by the Spill Contingency Plan (Appendix 30), including at the Haggart Creek crossing. j) Project staff will have appropriate emergency response and spill contingency training and knowledge. Equipment, materials, and procedures will be maintained to limit the consequences of releases to the environment through prompt containment and clean-up. k) Fuels, hydrogen peroxide, and other hazardous liquids will be transferred from tanker trucks to storage tanks by enclosed lines, hoses, and pumps equipped with	See Section 4.5 of this Plan and the Spill Response Plan

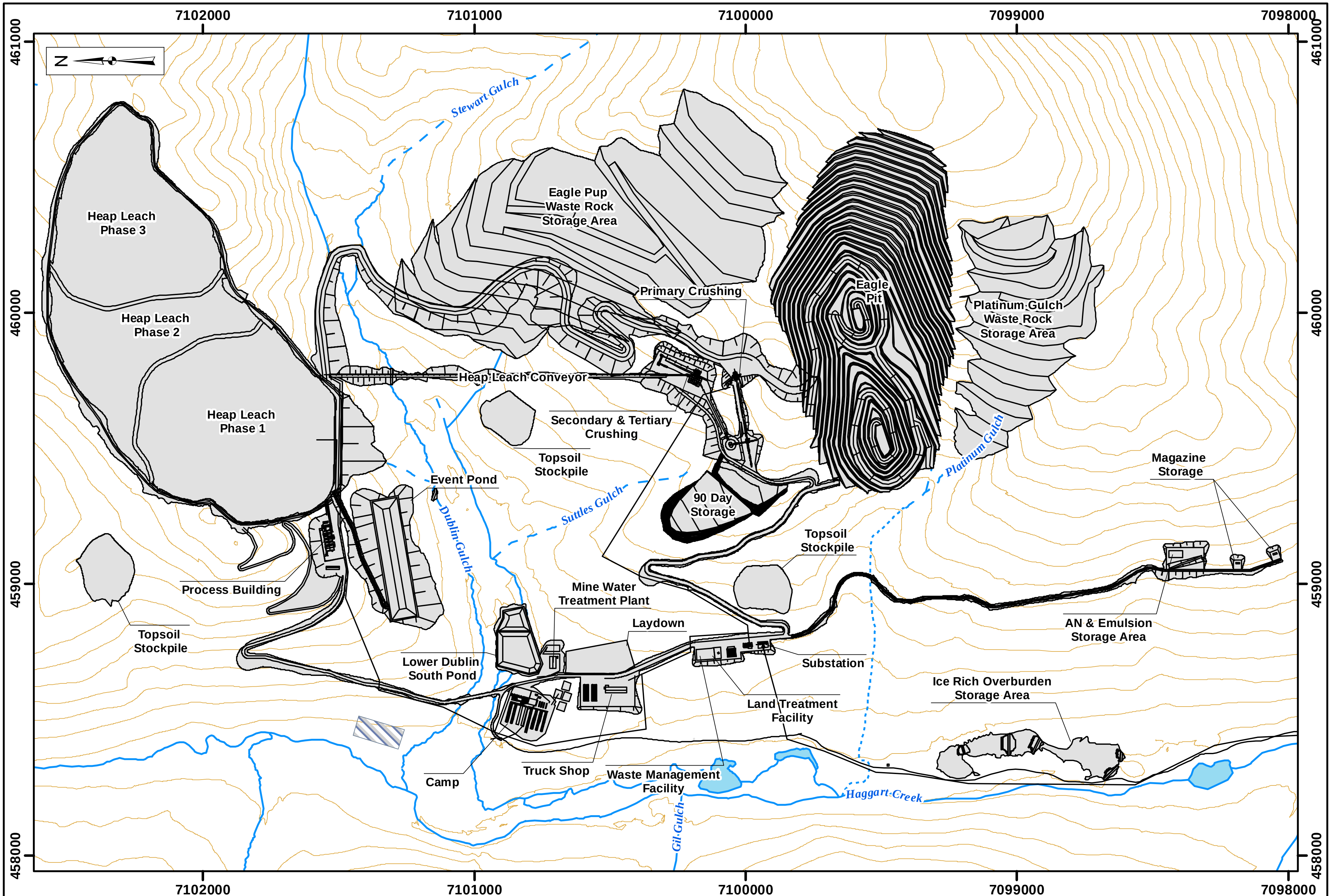
No.	Proponent Commitments	Where Addressed
	pressure transducers and volume counters to ensure tanks cannot be overfilled. l) No lubrication, refueling or maintenance of equipment will occur within 30 m of wetlands or watercourses. m) All fuelling and lubrication of construction equipment will be carried out in a manner that minimizes the possibility of spills. All containers, hoses, and nozzles will be free of leaks and all fuel nozzles equipped with functional automatic shut-offs. n) Where stationary equipment cannot be relocated more than 30 m from a watercourse, it will be situated in a designated area that has been bermed and lined with an impermeable barrier with a holding capacity equal to 125% of the largest tank within the berm. o) Equipment operators will be appropriately trained in spill response procedures and carry spill kits capable of handling spills on land and water.	
100	VIT will store and handle explosives in accordance with a magazine license issued by Natural Resources Canada. Explosives and blast caps will be stored in separate facilities, away from operational areas.	See Section 4.4 of this Plan and the Explosives Management Plan
Conceptual Closure and Reclamation Plan		
105	During construction, an environmental monitor will be on site to monitor activities and to verify compliance with the provisions of all applicable permits, licenses and approvals. The environmental monitor will: a) Conduct monitoring programs as required under the respective permits, licenses, and approvals, and report the results of such programs, as required b) Ensure that soil salvage and replacement activities are completed appropriately to meet reclamation objectives c) Ensure that vegetative erosion control cover is established on soil stockpiles and on any other areas of disturbance, as appropriate d) Provide direction and recommend implementation measures aimed at avoiding or minimizing adverse environmental effects Implement erosion control measures such as installation of riprap, erosion control blankets, silt fences and filter fabrics.	Section 3.3 of this Plan; is part of Construction Quality Assurance and Quality Control Plan See Environmental Monitoring, Surveillance and Adaptive Management Plan
105	During construction, an environmental monitor will be on site to monitor activities and to verify compliance with the provisions of all applicable permits, licenses and approvals. The environmental monitor will: e) Conduct monitoring programs as required under the respective permits, licenses, and approvals, and report the results of such programs, as required f) Ensure that soil salvage and replacement activities are completed appropriately to meet reclamation objectives g) Ensure that vegetative erosion control cover is established on soil stockpiles and on any other areas of disturbance, as appropriate h) Provide direction and recommend implementation measures aimed at avoiding or minimizing adverse	Section 3.3 of this Plan; is part of Construction Quality Assurance and Quality Control Plan See Environmental Monitoring, Surveillance and Adaptive Management Plan

No.	Proponent Commitments	Where Addressed
	environmental effects i) Implement erosion control measures such as installation of riprap, erosion control blankets, silt fences and filter fabrics.	
106	As soon as reclamation areas become available, VIT will establish trials testing plant species suitable for reclamation in the Project footprint and trials testing vegetation establishment/growth on various topsoil depths and waste rock material. Information obtained from the trials/monitoring programs will be used to adjust reclamation activities or methods that will be best suited for reclaiming remaining mine disturbance areas.	See Section 10 (Reclamation and Closure Research Programs) of the Reclamation and Closure Plan
Environmental Management Plans		
110	VIT is committed to developing and implementing Environmental Management Plans (Appendix 30) with the following components: a) Erosion and Sediment Control Plan b) Fugitive Dust Control Plan c) Combustion Source Control Plan d) Vegetation Management Plan e) Wildlife Protection and Management Plan f) Environmental Monitoring Plan g) Schedule of Environmentally Sensitive Activity h) Heritage Resources Protection Plan i) Traffic and Access Management Plan j) Occupational Health and Safety Plan k) Cyanide Transportation Management Plan l) Spill Contingency Plan m) Noise Abatement Plan n) Waste Management Plan o) Water Management Plan p) Closure and Reclamation Plan.	See the following: Water Management Plan Dust Control Plan Wildlife Protection Plan Environmental Monitoring, Surveillance and Adaptive Management Plan Spill Response Plan Solid Waste and Special Waste Management Plan Cyanide Management Plan Heritage Resources Protection Plan Reclamation and Closure Plan Traffic Management Plan



StrataGold Corporation

Projection:	Drawn By:	**EAGLE GOLD PROJECT YUKON TERRITORY**
Date: 2017/06/01	Figure: 1.1-1	**Process Flowsheet**



Legend:

Facility
Reserved Area
Perennial
Ephemeral
Intermittent
Waterbody
Contour (25m)

StrataGold Corporation

Projection: NAD 83 UTM Zone 8N

Drawn By: HC

0 125 250 500
Metres

Date: 2017/07/12

Figure: 1.2-1

EAGLE GOLD PROJECT
YUKON TERRITORY

Site General Arrangement

2 DESIGN BASIS AND CRITERIA

2.1 ORE QUANTITIES

2.1.1 Geology Overview

2.1.1.1 Property Geology

The Property is located on the northern limb of the McQuesten Antiform and is underlain by Proterozoic to Lower Cambrian-age Hyland Group metasediments and the Dublin Gulch intrusion, a granodioritic stock. The stock has been dated at approximately 93 Ma, and is assigned to the Tombstone Plutonic Suite (Figure 2.1-1)

The Hyland Group is comprised of interbedded quartzite and phyllite. The quartzite is variably gritty, micaceous, and massive. The phyllite is composed of muscovitesericite and chlorite. Limestone is a relatively minor constituent of this stratigraphic sequence.

The Dublin Gulch anticline, located midway between Dublin Gulch and Lynx Creek to the south, has folded the metasediments about an axis that trends at an azimuth of 070° and plunges gently to the west-southwest.

The metasediments are the product of greenschist-grade regional metamorphism. Proximal to the Dublin Gulch stock, they have undergone metasomatism and contact metamorphism. A hornfelsic thermal halo surrounds the stock and within the halo, the coarse clastic components of the Hyland Group have been altered to quartzbiotite; the argillaceous components to sericite-biotite-chlorite schist and the carbonates to marble, wollastonite-quartz skarn and pyroxenite skarn. The halo extends from 80 to 200 m outward from the intrusive.

The Dublin Gulch stock is comprised of four phases, the most significant of which is granodiorite. Quartz diorite, quartz monzonite, leucogranite and aplite comprise younger intrusive phases that occur predominantly as dikes and sills and cut both the granodiorite and surrounding country rocks. The stock has intruded the Hyland Group metasediments near their contact with the underlying Upper Schist.

The granodiorite stock is elongate, measuring approximately 5 km in length and trends 070°. It has a maximum width of approximately 2 km. The long axis of the stock is coincident with the axis of the interpreted Dublin Gulch anticline. Sheet-like sills of granodiorite extend from the stock and cut the metasedimentary strata at low angles.

The intrusive-metasediment contact dips shallowly to steeply to the north and northwest on the northern side of the intrusive, and steeply to the north or south along its southern margin. No chilled margin is apparent at the contact.

At least four periods of faulting have been documented in the Dublin Gulch area including low-angle thrusting and bedding-plane faults and normal faults with north, northeast, northwest, and easterly trends. North-trending faults are inferred to have displaced portions of the Dublin Gulch stock and one of these is interpreted to form the eastern boundary of the Eagle Zone.

2.1.1.2 Deposit Geology

Geologically the deposit can be simplified and described as an intrusive suite, predominantly granodiorite in composition, emplaced within a metasediment package, predominantly phyllitic in nature (Figure 2.1-2). The granodiorite has been subdivided into three units, an oxidized unit, an altered unit and an unaltered unit, though geochemical differences in these three units are minimal. Alteration tends to be dominated by albite, potassium feldspar, sericite, carbonate and chlorite and only occurs very locally around veining. While mineralization is associated with the intrusive stock, it is not spatially limited to the intrusive. Gold-bearing veins are found in all of the main geological units including the metasediments.

2.1.2 Ore Zone

Gold occurs primarily as pure gold and in association with very small amounts of metallic bismuth [Bi] and arsenopyrite [FeAsS]. Other vein minerals include pyrite/marcasite [FeS_2] > pyrrhotite [$Fe_{1-x}S$] >> sphalerite [(Zn,Fe)S], chalcopyrite [$CuFeS_2$], galena [PbS], molybdenite [MoS_2] and iron oxides/hydroxides as well as metallic bismuth, Pb-Sb-(Cu,Zn) sulphosalts (e.g. bournonite [$PbCuSbS_3$] and boulangerite [$Pb_5Sb_4S_{11}$]) and tetrahedrite [$Cu_{12}Sb_4S_{13}$].

A range of geologic, economic and geotechnical inputs were used to develop the final open pit design for the Project to maximize value while minimizing potential risk.

2.1.3 Ore Reserves Estimate

The mineral reserve documented in this section was estimated based on Canadian Institute of Mining (CIM) guidelines that defines Mineral Reserves as “the economically mineable part of a Measured or Indicated Mineral Resource demonstrated by at least a Preliminary Feasibility Study. This Study must include adequate information on mining, processing, metallurgical, economic and other relevant factors that demonstrate, at the time of reporting, that economic extraction can be justified. A mineral reserve includes diluting materials and allowances for losses that may occur when the material is mined.”

Mineral Reserves are those parts of Mineral Resources which, after the application of all mining factors, result in an estimated tonnage and grade which, in the opinion of the Qualified Person(s) making the estimates, is the basis of an economically viable project after taking account of all relevant processing, metallurgical, economic, marketing, legal, environment, socio-economic and government factors. Mineral Reserves are inclusive of diluting material that will be mined in conjunction with the Mineral Reserves and delivered to the treatment plant or equivalent facility. The term ‘mineral reserve’ need not necessarily signify that extraction facilities are in place or operative or that all governmental approvals have been received. It does signify that there are reasonable expectations of such approvals.

To convert Mineral Resources to Mineral Reserves, estimates of gold price, mining dilution, process recovery, refining/transport costs, royalties, mining costs, processing, and general and administration costs were used to estimate cut-off grades (COG). Along with geotechnical parameters, the COG formed the basis for the selection of economic mining blocks.

A summary of the Mineral Reserves for the project are shown in Table 2.1-1.

Table 2.1-1: Mineral Reserves

Classification	Ore (Mt)	Diluted Grade (g/t)	Contained Gold (koz)
Proven	27	0.80	685
Probable	90	0.62	1,778
Total	116	0.66	2,463

NOTES:
Mineral Reserves are included within Mineral Resources
Source: JDS (2016)

2.1.4 Open Pit Mine Plan

Over the life of the Project, the open pit will be advanced in four major stages with an ultimate pit size of approximately 1,300 m long and 550 m wide. The minimum elevation of the pit is 810 masl and there will be a maximum crest elevation at approximately 1,390 masl, giving the pit a depth of 475 m along the east highwall. Based on the surface topography, the open pit is scalloped-shaped with a lower west highwall. The west highwall crest elevation is approximately 915 masl. To maintain access to the primary crusher, a haul road spirals down to the western side of the pit. This haul road will also connect to the external access road that leads to the truck shop. No ramps will be maintained inside the final pit above the crusher elevation to minimize stripping requirements.

During a pre-production period, a total of 2.1 Mt of waste material will be mined and this material will be used to develop haul roads, the HLF embankment and for other construction purposes. Following the pre-production period, ore production will increase to the nominal production rate of 29,500 t/d.

Using the designed phases and cut-off grade strategy, a detailed production schedule was developed. Operational constraints were added to ensure realistic mining sequences with scheduling conducted quarterly for the first two years of production, and then annually. Table 2.1-2 provides a summary of the mine production schedule.

The refinement of the HLF design to reconcile issues identified during licensing has resulted in the storage capacity of the HLF being reduced from 92MT to 77MT. This reduction in storage capacity will necessitate the construction and operation of a secondary HLF prior to year 8 of the mine life (and an amendment to license). Mining development phases, assuming that a secondary HLF is constructed prior to year 8 of the mine life, are shown in Figure 2.1-3 through Figure 2.1-16. Further purposes of the currently held regulatory approvals, mining of the open pit and stacking the HLF is only considered to the end of year 7.

Assuming an average mine production rate of 29,500 t/d of ore for 365 d/a (10.76 Mt/a) over the life of the Project, a cut-off optimized production schedule was produced using Gemcom Whittle™. The estimated mining production schedule with diluted averages is provided in summarized in Table 2.1-2

Table 2.1-2: Mine Production Schedule

	←Construction		Operations →									Future Project Expansion*			
Year	**-2**	**-1**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**Total**	8	9	**10**	Total
ORE MINED															
Ore to Crusher (kt)	0	16	8,760	10,950	10,949	10,950	10,950	10,950	10,951	2,524	**77,000**	8,376	10,300	5,600	**101,276**
Ore Grade (g/t)	-	0.49	0.75	0.81	0.77	0.78	0.80	0.71	0.62	0.61	**0.731**	0.61	0.58	0.71	**0.714**
Contained (koz)	0	0	212	287	272	275	282	251	218	49	**1,846**	164	192	128	**2,330**
Expected Recovery (%)	-	-	72.9%	72.9%	72.9%	72.9%	72.9%	72.9%	72.9%	72.9%	**72.9%**	72.9%	72.9%	72.9%	**72.9%**
Recovered (koz)	0	0	155	209	198	200	206	183	159	36	**1,346**	119	140	93	**1,699**
WASTE MINED															
Eagle Pup Waste (kt)	0	255	4,177	9	9,083	15,320	10,026	7,745	7,791	3,158	**57,564**	6,133	11,928	2,125	**77,750**
to Low Grade Stockpile (kt)	0	9	1,104	1,642	1,517	367	1,391	1,712	2,213	1,814	**11,769**	0	2,535	788	**15,092**
Platinum Gulch Waste (kt)	0	1,810	2,709	14,062	3,039	0	0	0	0	0	**21,620**	0	0	0	**21,620**
Total Waste Mined (kt)	-	2,074	7,990	15,712	13,639	15,686	11,418	9,458	10,003	4,972	**90,953**	6,133	14,462	2,913	**114,462**
TOTAL MATERIAL MINED (kt)	-	2,090	16,751	26,663	24,588	26,636	22,367	20,408	20,954	7,496	**167,953**	14,510	24,762	8,513	**215,738**
ORE TO HEAP LEACH PAD (kt)	-	-	8,760	10,950	10,949	10,950	10,950	10,950	10,951	2,524	**77,000**	8,376	10,300	5,600	**101,276**
STRIP RATIO (wt:ot)	-	-	0.91	1.43	1.25	1.43	1.04	0.86	0.91	1.97	**1.18**	0.73	1.40	0.52	**1.13**

NOTES:

* For purposes of the currently held regulatory approvals, mining of the open pit and stacking the HLF is only considered to year 8. Future Project expansion requiring additional heap leaching capacity is shown in grey text.

2.2 OPEN PIT GEOTECHNICAL ASSESSMENT

2.2.1 Methods to Assess Rock Mass Quality

Geotechnical investigations to support the final open pit design were supported by field work undertaken in 2009, 2010 and 2011 and included geotechnical mapping, geotechnical drilling, oriented core measurements, one borehole televiewer survey, hydrogeologic (packer) testing, installation of borehole instrumentation to measure groundwater pressures and laboratory testing of rock core samples. Thirteen geotechnical diamond drillholes were completed over three field seasons, and approximately 3,320 m of rock core was logged. All core logged for geotechnical purposes was oriented using the Reflex ACE Core Orientation Tool. Historical geotechnical data, as well as outcrop mapping and geotechnical logging of exploration holes, were also used for the open pit design (Appendix A).

Rock core samples were selected from geotechnical drillholes for geomechanical laboratory testing, including uniaxial compressive strength, Brazilian tensile strength, small-scale direct shear, and index tests. Eight of the geotechnical drillholes were instrumented with grouted-in vibrating wire piezometers (VWPs) to measure groundwater elevations in the proposed open pit area. An additional six VWPs were installed in two instrument nests installed specifically for hydrogeological characterization of the rock mass.

Geotechnical assessments for the pit included rock mass characterization, structural geology interpretations, and slope stability analyses (Appendix A). The rock mass of the Project pit area was divided into six geotechnical units, following the main geological units and weathering/alterations patterns, as follows:

- fault zones
- surface weathered intrusives
- clay altered intrusives
- intrusives
- surface weathered metasediments
- metasediments.

2.2.2 Rock Mass Quality

The unweathered/unaltered rocks, which make up the majority of the rock mass in the open pit, are medium strong to very strong; the quality of the rock mass varies from “fair” to “good”. The surface weathered rocks are medium strong to very strong; the quality of the rock mass varies from “poor” to “good”. The clay altered intrusive rocks are weak to very strong; the rock mass quality varies from “poor” to “fair”. The metasedimentary rocks are strongly foliated with the foliation dipping on average approximately 30° to the west-southwest. For the purpose of design, the intrusive rocks were grouped together and the metasedimentary rocks have been grouped together, as the primary control on the stability of the pit slopes is structural discontinuity orientation, which is consistent within the primary rock type.

Geomechanical design parameters were estimated for each geotechnical unit from core logging, point load testing and laboratory testing results. These parameters include: intact rock strength, discontinuity frequency/spacing (RQD and fracture intercept), blockiness index (indicates block size), and the average condition of each discontinuity surface (JC). Table 2.2-1 summarizes the upper, lower and median (design) values of the various geomechanical properties of the geotechnical units used to estimate the rock mass ratings.

Table 2.2-1: Rock Mass Properties

Geotechnical Unit[1]	Length Obsd (m)	Case	RQD (%)	FI (m)	Blockiness Index	Intact Strength				Joint Condition ('76)	RMR'76	
						Is50[2] (MPa)	UCS[2] (MPa)	Description	Rating		Rating	Descrip
Fault Zones FLTZ	120	Lower Quartile	0	0.02	9	0.3	7	Weak	2	0	21	Poor
		Median	**14**	**0.05**	**12**	**0.4**	**9**	**Weak**	**2**	**0**	**23**	**Poor**
		Upper Quartile	36	0.12	17	0.7	16	Weak	2	6	35	Poor
Surface Weathered Intrusives SINT	277	Lower Quartile	12	0.05	11	2.3	53	Strong	6	9	36	Poor
		Median	**32**	**0.10**	**16**	**5.9**	**135**	**Very strong**	**12**	**12**	**49**	**Fair**
		Upper Quartile	59	0.17	23	9.3	214	Very strong	15	14	61	Good
Clay Altered Intrusives CINT	450	Lower Quartile	24	0.08	14	0.6	14	Weak	2	6	32	Poor
		Median	**46**	**0.11**	**19**	**2.2**	**51**	**Strong**	**6**	**12**	**47**	**Fair**
		Upper Quartile	72	0.21	25	4.7	108	Very strong	10	14	59	Fair
Intrusives INT	1451	Lower Quartile	40	0.12	17	2.5	57	Strong	6	6	39	Poor
		Median	**73**	**0.20**	**25**	**5.9**	**135**	**Very strong**	**12**	**12**	**59**	**Fair**
		Upper Quartile	90	0.35	33	9.3	213	Very strong	15	16	74	Good
Surface Weathered Metasediments SSED	422	Lower Quartile	16	0.05	12	1.4	34	Medium Strong	4	6	32	Poor
		Median	**36**	**0.09**	**16**	**3.1**	**76**	**Strong**	**8**	**7**	**41**	**Fair**
		Upper Quartile	60	0.14	21	4.4	106	Very strong	10	12	53	Fair
Metasediments SED	940	Lower Quartile	42	0.09	17	1.9	45	Medium Strong	5	12	44	Fair
		Median	**64**	**0.14**	**22**	**3.5**	**83**	**Strong**	**8**	**15**	**55**	**Fair**
		Upper Quartile	82	0.22	28	6.0	143	Very strong	12	18	68	Good

NOTES:
1. INT unit includes unaltered and clay altered intrusives. CINT is a subset of INT that was not used specifically for design.
2. Is50 and UCS values of INT were applied to the SINT, as relatively few (69) point load tests were conducted for SINT and these were biased towards more competent pieces of core in the SINT unit.
3. Groundwater rating of 10 has been assumed in all cases to estimate the RMR'76 value.
4. RQD – rock quality designation, FI – fracture intercept, Is_{50} – point load test data, UCS – uniaxial compressive strength, RMR'76 – rock mass rating system published in 1976 by Bieniawski
5. Source: BGC (2012d). Eagle Gold Project, Feasibility Study Open Pit Slope Design

The median value of each geomechanical parameter for each geotechnical unit has been used for design. For intact rock strength estimation, Is_{50} is considered to have greater precision and accuracy than field estimates or laboratory UCS tests. Therefore, Is_{50} values have been used to estimate the design UCS of each geotechnical unit using the following intact strength correlation factors:

- Metasedimentary Rocks: UCS = 17 x DTS, UCS = 24 x Is_{50}
- Intrusive Rocks UCS = 20 x DTS, UCS = 23 x Is_{50}

Design uniaxial compressive strengths for each geotechnical unit and sub-unit were then estimated from the point load Is_{50} values.

2.2.3 Point Load Strength Index

Field point load testing of the core, packer testing of the rock mass, and piezometer installations were carried out at the site during drilling. A laboratory testing program to support core logging information and improve the estimates of rock mass properties in the Project area was also conducted on rock core samples collected following the site investigation program.

Point load testing was completed as described in Appendix A at the site using a RocTest PIL7 point load testing machine. Point load testing results are provided on the geotechnical logs in Appendix A of Appendix A and were used to estimate rock mass strength ratings.

Point load testing provides an index value (Is_{50}) that can be used to predict uniaxial compressive strength, where site specific correlation factors have been estimated through laboratory testing. Diametral (i.e. perpendicular to core axis) point load testing was conducted on rock samples from all core holes during the 2009, 2010 and 2011 drilling programs. Test locations were selected based on suitability of the core for testing and whether they provided representative point load values for each geotechnical unit. Testing standards described in the 'Standard Test Method for Determination of the Point Load Strength Index and Application to Rock Strength Classifications' (ASTM D5731 - 08) were used.

Point load results are plotted on Drawing 12 of Appendix A. Average Is_{50} values are summarized in Table 2.2-2. There is general consistency between the point load index strengths and field grade strengths estimated during core logging, however, the Is_{50} strength estimates have a higher degree of precision than the field estimations and have therefore been used to estimate in-situ rock strength properties for design.

Table 2.2-2: Intact Rock Properties

Geotechnical Unit	Average Lab UCS[1] (MPa)	Median Is_{50} (MPa)	k^2	Design UCS [2,3] (MPa)	Y (KN/m^3)	BTS (MPa)	DTS (MPa)	m_i
FLTZ		0.4	23	9	27.0			15
SINT		5.9	23	135	26.4			20
CINT		2.2	23	51	26.4			15
INT	141	5.9	23	135	26.4	12.1	7.1	20

Geotechnical Unit	Average Lab UCS[1] (MPa)	Median Is_{50} (MPa)	k^2	Design UCS [2,3] (MPa)	Y (KN/m^3)	BTS (MPa)	DTS (MPa)	m_i
SSED		3.1	24	76	27.3			17
SED	85	3.5	24	83	27.3	10.6	6.3	17

NOTES:
1. Insufficient laboratory testing was available to warrant breaking out the sub-units of the intrusive and metasedimentary units. As a result, the results shown include all tests in the primary rock units.
2. Is50 values are based on field index testing. Design UCS values for each unit are derived from k values according to UCS results in Drawing 13 of BGC (2012).
3. Is50 and UCS values of unaltered intrusive (INT) were applied to the surface weathered intrusives (SINT). Point load testing in SINT unit was based on relatively few tests (69) which were likely biased toward remaining corestones, estimating a higher than reasonable UCS value.
4. UCS – uniaxial compressive strength, Is50 - , k - , Y - , BTS - , DTS - , m -
5. Source: BGC (2012)

2.2.4 Bench Design Analyses

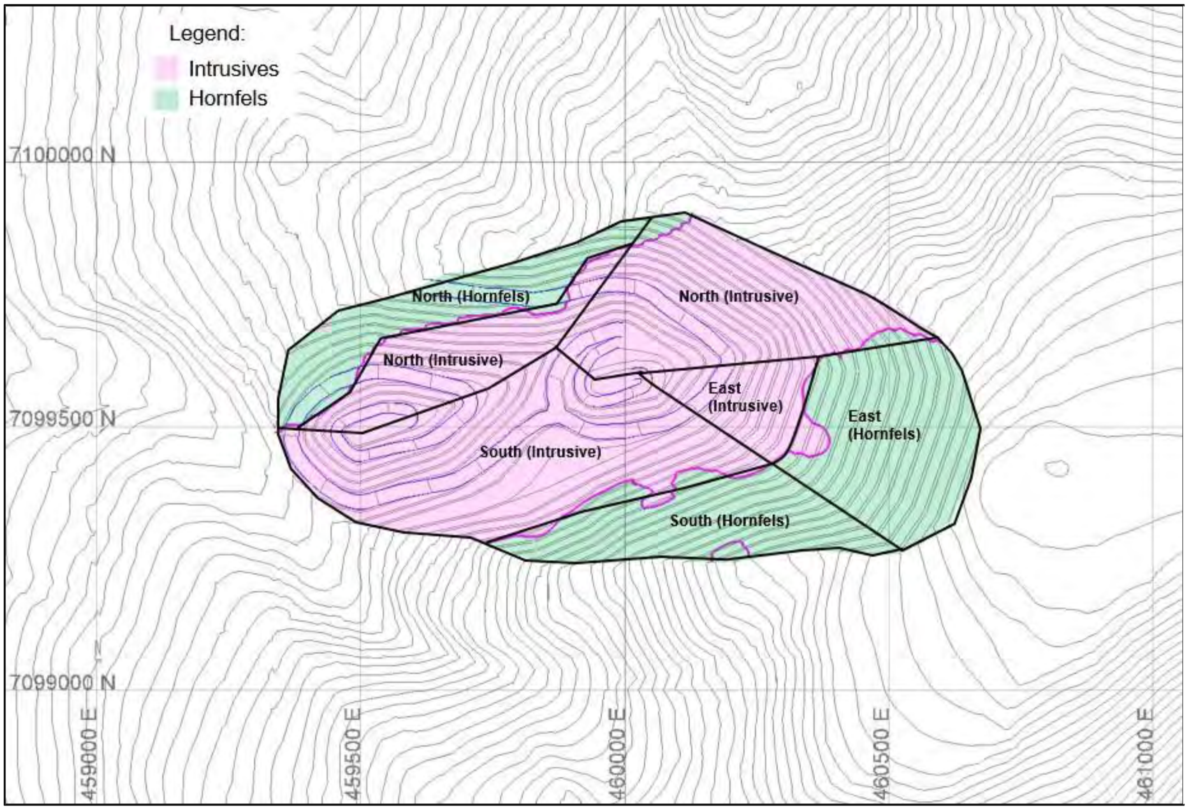
Recent bench design analyses related to pit wall stability were conducted by SRK (2016) (Appendix A) and are summarized in this section. The analyses included the delineation of geomechanical domains and pit design sectors, and the modeling of plane shear and simple wedge failures. The stability of bench scale and lower interramp slopes was modeled stochastically using the software program SBlock Ver.2.023.1 (Esterhuizen, 2004). SBlock is based on the keyblock theory developed by Goodman & Shi (1985) and uses probabilistic distributions of joint set properties (orientation, spacing and length) to simulate a large number of potential 3D blocks and calculates their removability from a given open pit bench face orientation. It is assumed that a block may contain smaller blocks combined to form larger blocks which are limited in size only by the length of the joints.

Geomechanical domains define reasonably large volumes where rock mass quality and discontinuity patterns are sufficiently similar that they can be grouped together for analysis. Domains are most commonly bound by major faults and/or lithological contacts. Geomechanical domains for Eagle and Olive pits were based primarily on lithology (i.e., metasediments and intrusives). The surficial weathered rock across the site is very shallow and represents an insignificantly small portion of the pit walls and as such, was not separated into its own domain.

Stable pit slope angles are influenced not only by geologic structure, rock mass strength and porewater pressures, but also by pit wall orientation. As such, pit slopes were divided into regions of similar structural characteristics and pit slope orientation called “design sectors”, delineating regions which are expected to exhibit similar response to pit development. A total of seven pit design sectors were delineated for the ultimate pit design for the Eagle pit. Pit design sectors are shown in Figure 2.2-1.

Domain and sector boundaries for the Eagle pit were very similar to the previous (BGC 2012a) boundaries except where they were revised based on the updated pit geometry.

Figure 2.2-1: Location of Slope Design Sectors



Source: Appendix A

Model input parameters included orientation, domain length, domain spacing and overall rock mass strength as summarized in Table 2-1 in Appendix A. For each combination of slope dip and dip direction for each domain, model outputs included the probability of failure (PF), average effective bench width after crest loss (W'), average failure volume, a cumulative distribution of the effective bench widths calculated and a plot of joint activity showing the frequency at which each joint set contributed to single plane or double plane (wedge) failures or as a back release. An acceptability criterion of a probability of failure (PF) of <30% and an 80% reliability was adopted for the project based on recommendations by Read & Stacey (2009).

The results of the final SBlock analyses are summarized in Table 2-2 in Appendix A. The probability of failure (PF), average effective bench width (W') and the effective bench width with an 80% reliability are summarized for each bench face angle analyzed. The recommended bench slopes at the Eagle are based on the average effective bench width and a maximum 30% probability of failure. Catch bench widths are designed to meet or exceed those suggested by the Modified Ritchie Criteria as described by Call (1992).

The following was concluded from the analyses:

- Based on the current final pit design and the structural trends identified to date, a majority of the Eagle pit is not anticipated to be significantly impacted by structurally controlled instabilities. A maximum achievable bench face of 70° was estimated based on data uncertainties and operational constraints;

- The highest risk of bench and possibly low interramp scale instabilities at Eagle pit were found to be in northeast dipping walls in the intrusives (far western edge of the South Sector on Figure 2-3). These walls have a high likelihood of planar instabilities (Set J2 on Figure A- 1a) as well as wedges formed by the intersection of two discontinuity sets (J3 and J6 on Figure A-1a). However, walls oriented in this direction represent a very small portion of the overall pit design;
- Stable bench and possibly lower interramp scale slope angles of the Eagle pit south wall intrusives (South sector on Figure 2-3) are anticipated to be controlled by wedges formed by the intersection of two discontinuity sets (J2 and J5 on Figure A-1a);
- The Eagle pit metasediments are anticipated to have a high likelihood of bench and possibly lower interramp slope scale instabilities along north-northwest dipping walls due to planar instabilities (Set J4 on Figure A-2a) as well as wedges formed by the intersection of two discontinuity sets (J3 and J4 on Figure A-2a). The dominant foliation trend (FOL set on Figure A-2a) may also result in localized bench scale instabilities along the Eagle pit upper east (west facing) wall in metasediments; and

It should be noted that the bench stability analyses are based solely on geologic structure and do not directly consider effects of weathering, alteration, blasting or excavation techniques. Depending on the quality of blasting and excavation techniques, achievable bench face angles might be reduced from the theoretical angles determined by these analyses. When taking these operational effects into consideration, it is rare to achieve effective bench face angles greater than about 70° to 75° unless there is a steeper structure controlling the bench geometry. Increasing bench face angles to greater than about 70° to 75° may be achievable but usually requires more rigorous drilling and blasting effort and specialized controlled blasting techniques than are commonly practiced.

2.3 INTERRAMP/OVERALL SLOPE STABILITY ANALYSES

Based on the results of the bench design analyses, recommendations for bench configurations and the resulting maximum interramp slope design were developed for initial detailed pit designs that incorporated necessary ramps and infrastructure. The stability of the high interramp and overall slopes of the initial detailed pit designs were then evaluated. Based on the results of the geomechanical characterization program and initial detailed pit design geometries, critical slope stability cross-sections were selected for analysis. A total of four critical sections were selected to verify stability of the ultimate pit designs. Critical sections were selected at locations where slope stability conditions were anticipated to be the most adverse such as where the slope height is at its maximum, pit wall materials are low strength and/or pore water pressures may be the highest. The traces of the critical sections are shown on Figures 3-1 in Appendix A (SRK 2016).

The four critical cross-sections were analyzed using the slope stability modeling software, Slide 6.035 (Rocscience, 2015b), which uses two-dimensional, limited equilibrium methods with output in terms of safety factors. Spencer's method of slices was used for the analyses due its consideration of both force and moment equilibrium. The non-circular, "path" search method was used in all cases.

To construct the model geometries, vertical cross sections were cut through the respective final pit designs and the primary structures using Vulcan mine planning software (Maptek, 2015). Multiple failure modes were analyzed including overall and interramp slopes and localized failures associated with geological contacts and/or faults.

Based on accepted engineering experience, interramp/overall slope designs that yield factors of safety (FS) of 1.3 for slopes with high failure consequences and 1.2 for low failure consequences are appropriate for most open pit mines. Slopes of high failure consequence are generally those slopes that are critical to mine operations, such as those on which major haul roads are established, those providing ingress or egress points to the pit, or those underlying infrastructure such as processing facilities or structures. Given the location of the ramp system, an acceptability criteria of a 1.3 safety factor was used for all sections.

The results of the overall and interramp slope stability analysis are summarized in Table 3-2 in Appendix A (SRK 2016) for each of the four critical sections analyzed. Graphical output files showing the critical failure and minimum FOS calculated by Slide for each individual analysis are presented in Appendix D of Appendix A.

Results of the overall/interramp slope stability analyses demonstrate that the bench configuration based slope angles either meet or exceed the minimum acceptable safety factor of 1.3. For two of the sections , the critical failure was semi planar and controlled by the foliation anisotropy in the metasediments. Critical failure surfaces were generally pseudo-rotational in the other two sections due to the isotropic strength models. Individual output plots for the critical failure surfaces are contained in Appendix D of Appendix A.

The results indicate that, with the exception of the upper east wall of the Eagle pit in metasediments, the stability of pit slopes is anticipated to be controlled mostly by achievable bench face angles and not the stability of overall slopes. Calculated safety factors may be considered relatively high for typical open pit slope designs; however, steepening of the interramp slope angles would require either steeper bench face angles or reducing the design catch bench width which will be determined as the pit advances based on detailed structural information when it becomes available. With detailed geomechanical/geological bench mapping and good quality wall control blasting practices during operation, opportunity may exist to steepen the interramp angles based on the newly acquired and more accurate information.

2.4 PIT SLOPE DESIGN PARAMETERS

Pit slope design parameters are summarized in Table 2.4-1 and shown on Figure 2.4-1. The proposed pit slope designs are based on dip direction of the pit wall (e.g. for an east-west trending wall, facing south, the slope dip direction would be 180° azimuth).

The proposed geometries for Eagle pit are based on full depressurization occurring to a minimum distance of 125 m behind the pit wall as was recommended by BGC (2012a and 2014), and included the installation of 250 m horizontal drains to accomplish the 125 m depressurized zone and provides additional specifications for horizontal drain construction and installation.

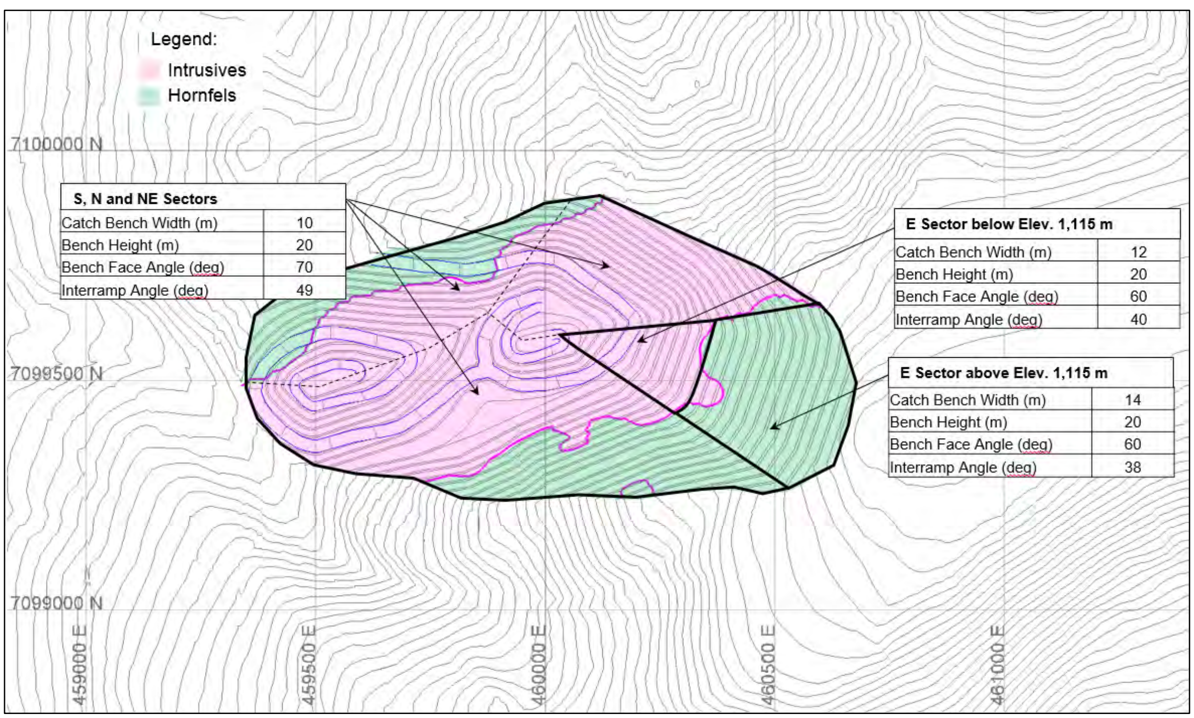
Table 2.4-1: Recommended Pit Slope Design Parameters

Sector	Max. Slope Height (m)	Wall Dip Direction		Bench Face Angle (°)	Bench Height (m)	Bench Width (m)	Max. ISA[1] (°)
		From (°)	To (°)				
North	225	130	200	70	20	10	49
Northeast	280	200	265	70	20	10	49
East (above elev. 1,115 m)	280	265	305	60	20	14	38
East (below elev. 1,115 m)	210	265	305	60	20	12	40
South	375	350	85	70	20	10	49

Source: Appendix A
1 ISA indicates Interramp Slope Angle.

Double benching is recommended as being more favorable in fresh, competent rock. The double (20 m total height) benching will permit the incorporation of more adequately-sized berms for rockfall control, provided that drilling and, to a greater extent, blasting practices meet best practice standards, thereby reducing the number of crests and toes that are subject to potential damage.

Figure 2.4-1: Location of Slope Design Sectors



Source: Appendix A

It should be noted that bench design analyses, and subsequent recommendations, are based solely on orientations of geologic structure and do not directly consider effects of weathering, alteration, blasting or excavation techniques. Depending on the quality of blasting and excavation techniques, achievable bench face angles might be greatly reduced from the theoretical angles determined by these analyses. Field trials will be performed of various controlled basting techniques, carefully documenting the results to confirm that the actual slope designs are being achieved or, if necessary, to serve as the basis of slope angle refinements.

Based on review of available geotechnical logging information and core photographs reviewed for select holes, the rock quality outside the mineralized ore body (i.e., rock anticipated to comprise final pit slopes) appears to be higher with larger block sizes and fewer major fault structures. Consequently, SRK does not recommend using increasing slope angles for interior pit phases until the early stages of development when additional information will be available from bench exposures.

2.4.1 Seismic Design Events

A seismic hazard analysis (SHA) was conducted for the Project site (Appendix C in Tetra Tech 2014a). The SHA establishes results from both deterministic and probabilistic methods. Deterministic analyses were performed using five equally weighted attenuation relationships to evaluate seismic hazards for the Property resulting from a maximum credible earthquake (MCE). A MCE, by definition, has no specific recurrence interval and is the largest reasonably conceivable earthquake that appears possible along a recognized fault or within a geographically defined tectonic province, under the presently known or presumed tectonic framework. Theoretically, no ground motion should occur which exceeds that of the MCE. A deterministic analysis therefore allows for a more conservative approach to the determination of risks associated with identified seismic hazards. Data published by NRCan were used in the probabilistic analysis to estimate the probability of exceedance of peak ground accelerations (PGA) at the site for various return periods.

Considering the level of conservatism inherent in a deterministic analysis, and the added conservatism discussed in the SHA, Tetra Tech recommends a design PGA of 0.27 g for high hazard facilities, based on an MCE of moment magnitude 7.0 generated in the Ogilvie Mountains area. This PGA is anticipated to reflect the current tectonic environment with greater accuracy than a low probability value based on the very short historic seismic record available, such as a 5,000-year event would produce. For facilities requiring a PGA based on a return period of 1,000 years or less, the mean National Building Code of Canada (NBCC) values provided in Table 2.4-2 may be used.

Table 2.4-2: Probabilistic Ground Motions for the Project Site

Probability of Exceedance in 50 Years (%)	Approximate Equivalent Return Period (a)	Median Peak Ground Acceleration (g)
10	475	0.14
5	975	0.18
2	2,475	0.25

Note: *NRCan 2005 NBCC Seismic Hazard Interpolation

While the SHA applies generally to the Project Site, no specific seismic stability analysis was carried out for the open pit. Most of the proposed overall slopes have relatively high safety factors and FOS of the overall slopes ranges from 1.3 to 1.8. Since pit walls would normally be designed for a FS of 1.0 to 1.1 under seismic loading, it is unlikely that the seismic design event for this area would result in a FS below 1.0. Thus, a seismic stability assessment specifically for the open pit is not warranted.

2.5 GEOTECHNICAL ASSESSMENT FOR MINE INFRASTRUCTURE

Geotechnical site investigation programs were undertaken in 2009, 2010, 2011, 2012, 2016 and 2017 to investigate subsurface conditions at selected mine facilities and support the design basis and criteria for Project site infrastructure including the crushers, truck shop, process and mine water treatment plant, HLF, the ice rich overburden storage area (IROSA) and the Lower Dublin South Pond (LDSP) (BGC 2010, 2011a, 2012a, 2012b, 2016 and NELPCo 2017a and 2017b). Field work included geotechnical outcrop mapping, geotechnical drilling, oriented core measurements, plate load testing, installation of borehole instrumentation to measure groundwater pressures and ground temperature and laboratory testing of rock core samples. Detailed boring and test pit logs for the sub surface conditions at the minesite infrastructure locations are found in BGC 2010, 2011a, 2011b, 2012a, 2012b,2012c, 2016 and NELPCo 2017a and 2017b.

2.5.1 Site Grading Cuts

Slope geometry for cut slopes associated with site facilities are provided in Table 2.5-1 and specific slope material are provided in Table 2.5-2.

Table 2.5-1: Permanent Cut Slope Angles – By Facility

Area	Overburden		Slope Below Overburden		Notes
	Thickness (m)	Steepest Cut Angle	Material	Steepest Cut Angle[1]	
Crushers	2 - 4	2.5H:1V	Type 1, 2, 3 rock	1.75H:1V	Design FS = 1.5; maximum slope height ~107 m; slope angle controlled by dip of foliation at about 30 to 32 degrees; benched slopes to be used where feasible; 8 m maximum bench height; 13 m minimum bench width; 0.25H:1V bench face angle.
Temporary Ore Stockpile	3 - 4	2.5H:1V	Type 2, 3 rock	1.75H:1V	Design FS = 1.3; slope angle controlled by dip of foliation at about 30 to 32 degrees. Benched slope design as detailed above for primary crusher
Truck Shop	5 - 8	2.5H:1V	Type 3 rock	1.75H:1V	Design FS = 1.5; maximum slope height = ~22 m; slope angle controlled by dip of foliation. Recommend 5 m wide bench at rock-overburden contact for slope maintenance.
Process Plant	3 - 7	2.5H:1V	Highly to completely weathered rock	2H:1V	Design FS = 1.5; maximum slope height ~35 m; assume a 5 m wide bench at rock-overburden contact for slope maintenance.

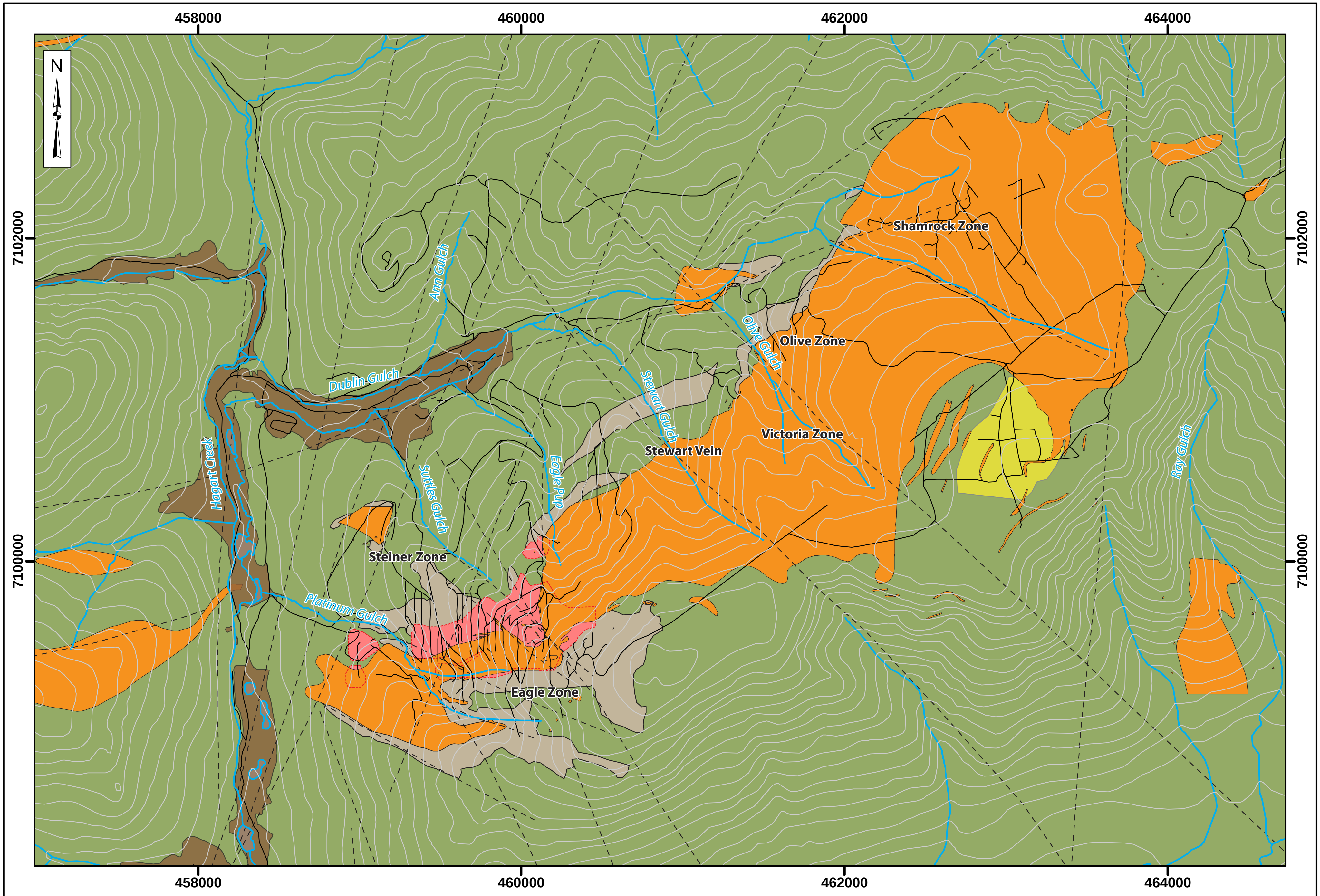
Notes: [1]Maximum overall slope angle in the slope materials below the overburden depth. Overall slope angle defined by the line that connects the toe of the slope with the slope crest at the rock-overburden contact.

[2]The FS for the upper cuts associated with the temporary ore stockpile is 1.5 due to its proximity to the coarse ore processing area and potential to undermine them in case of failure. FS = 1.3 is to be used when the cut (on any lower cuts) is moved 80 to 100 m further from the crushers, however, the overall slope angle will still be controlled by the dip of the foliation and cannot be steepened significantly.

Table 2.5-2: Permanent Cut Slope Angles – By Lithology

Slope Material	Maximum Cut Slope Angle[1]	Maximum Cut Slope Height	Notes
Colluvium	2.5H:1V	10 m	-
Till	2H:1V	10 m	-
Highly to completely weathered rock (excavatable)	2H:1V	10 m	-
Type 3 rock (generally excavatable)	1.5H:1V	10 m	May have to decrease to as flat as 1.75H:1V to avoid undercutting adverse geologic structure, if it is encountered
Type 2 rock (generally rippable)	1H:1V	10 m	May have to decrease to as flat as 1.75H:1V to avoid undercutting adverse geologic structure, if it is encountered
Type 1 rock (may require blasting)	0.5H:1V	10 m	May have to decrease to as flat as 1.75H:1V to avoid undercutting adverse geologic structure, if it is encountered

Note: [1]Maximum cut slope angles assume the slope is < 10 m high, unsaturated, and without adverse geologic structure.



Legend:

- Granodiorite
- Eagle Deposit
- Placer Workings
- Wolf Tungsten Deposit
- Hyland Group Metasediments
- Hornfelsed Sediments
- Contour (100ft Interval)
- Interpreted Geologic Fault

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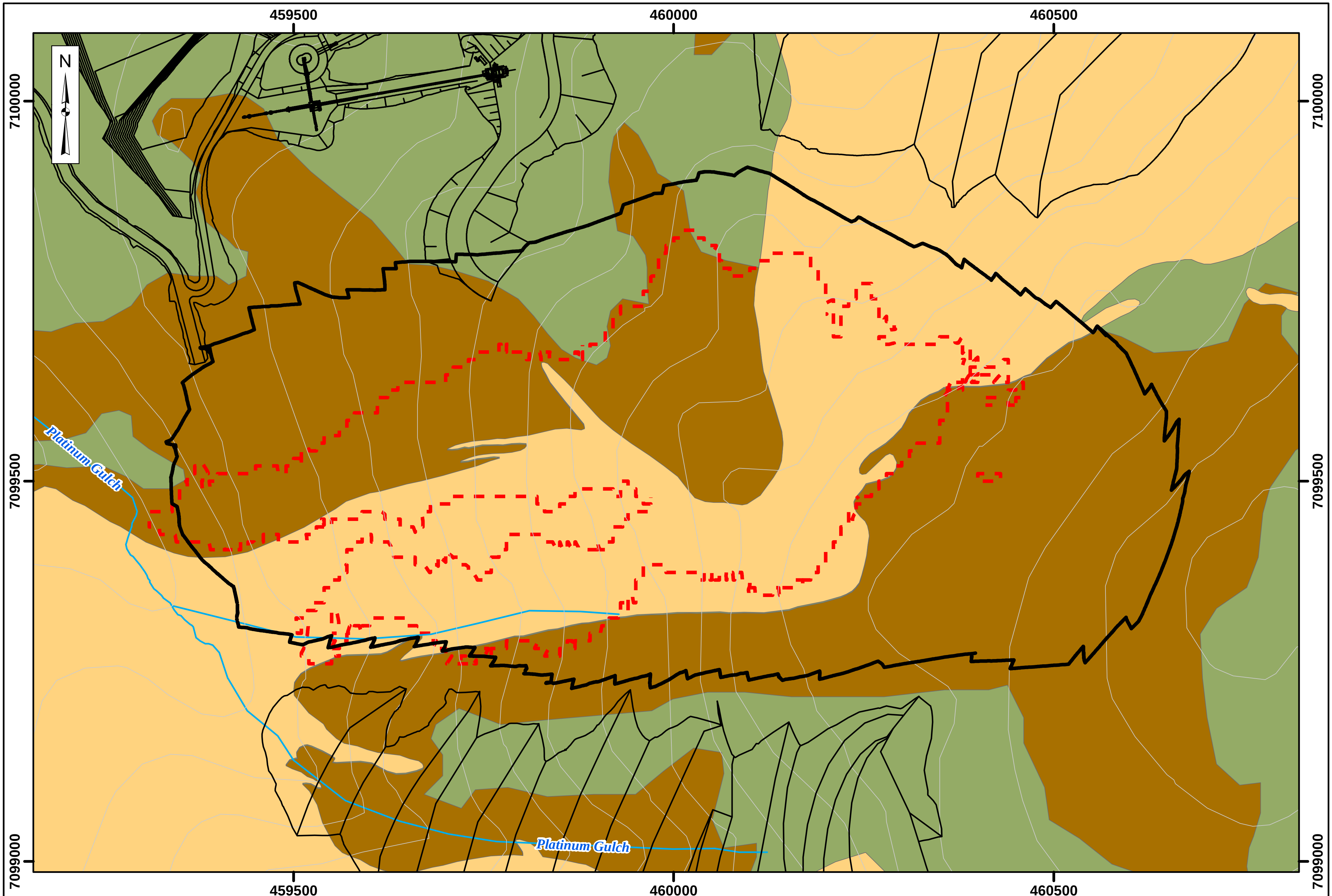
0 0.5 1
Kilometres
Scale = As Shown

Projection:	Drawn By:	EAGLE GOLD PROJECT YUKON TERRITORY
NAD83 UTM Zone 8N	SS	
Date: 2014/07/16	Figure: 2.1-1	Property Geology



Legend:

- Granodiorite
- Hornfelsed Sediments
- Hyland Group Metasediments
- Eagle Resource (100m Intersect)
- Facility
- Eagle Pit Outline
- contours 100ft
- Watercourse

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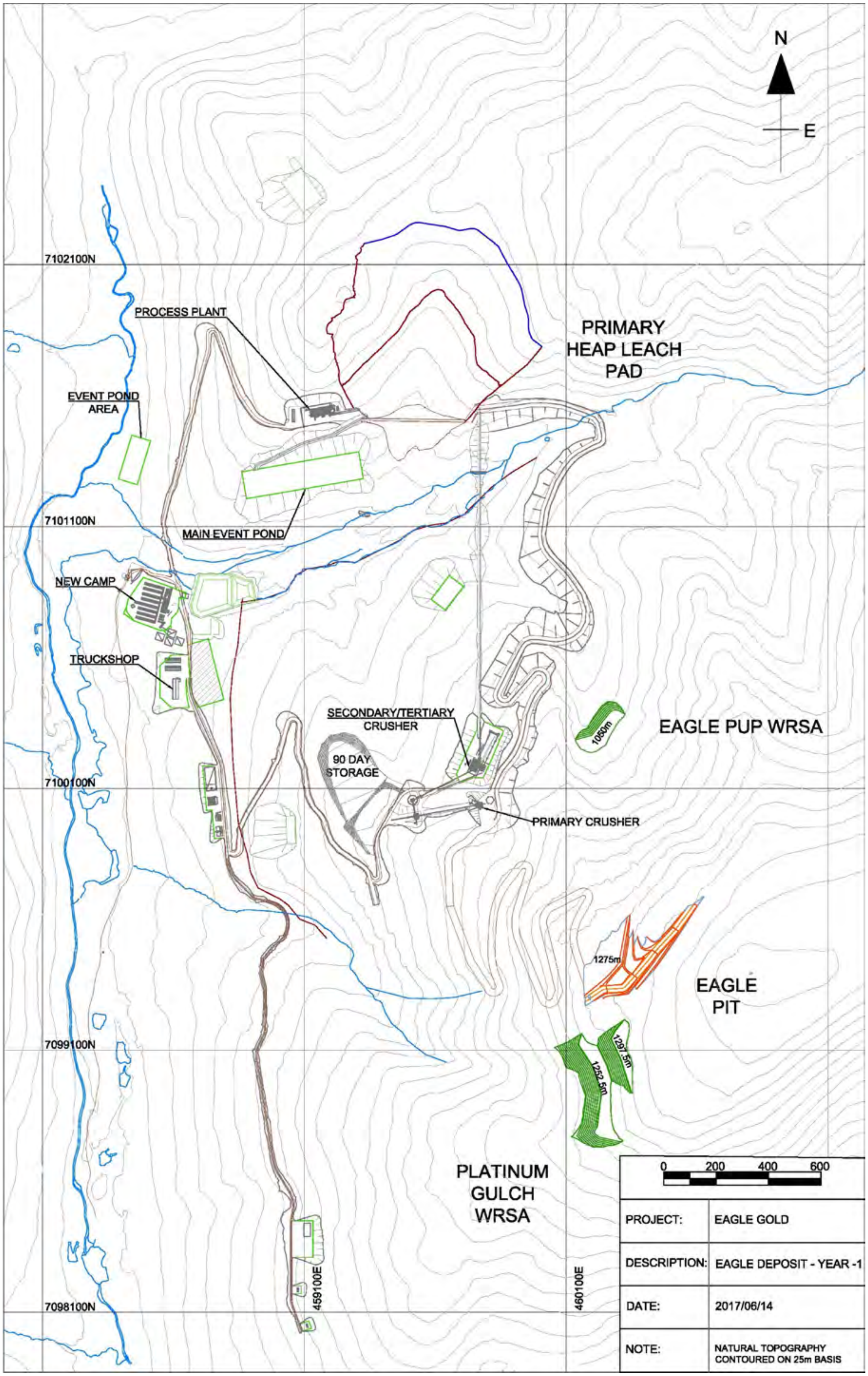
0 50 100 200
Metres

Projection: NAD 83 UTM Zone 8N	Drawn By: HC	EAGLE GOLD PROJECT YUKON TERRITORY
Date: 2017/07/12	Figure: 2.1-2	**Deposit Geology**



PROJECT:	EAGLE GOLD
DESCRIPTION:	EAGLE DEPOSIT - YEAR -1
DATE:	2017/06/14
NOTE:	NATURAL TOPOGRAPHY CONTOURED ON 25m BASIS

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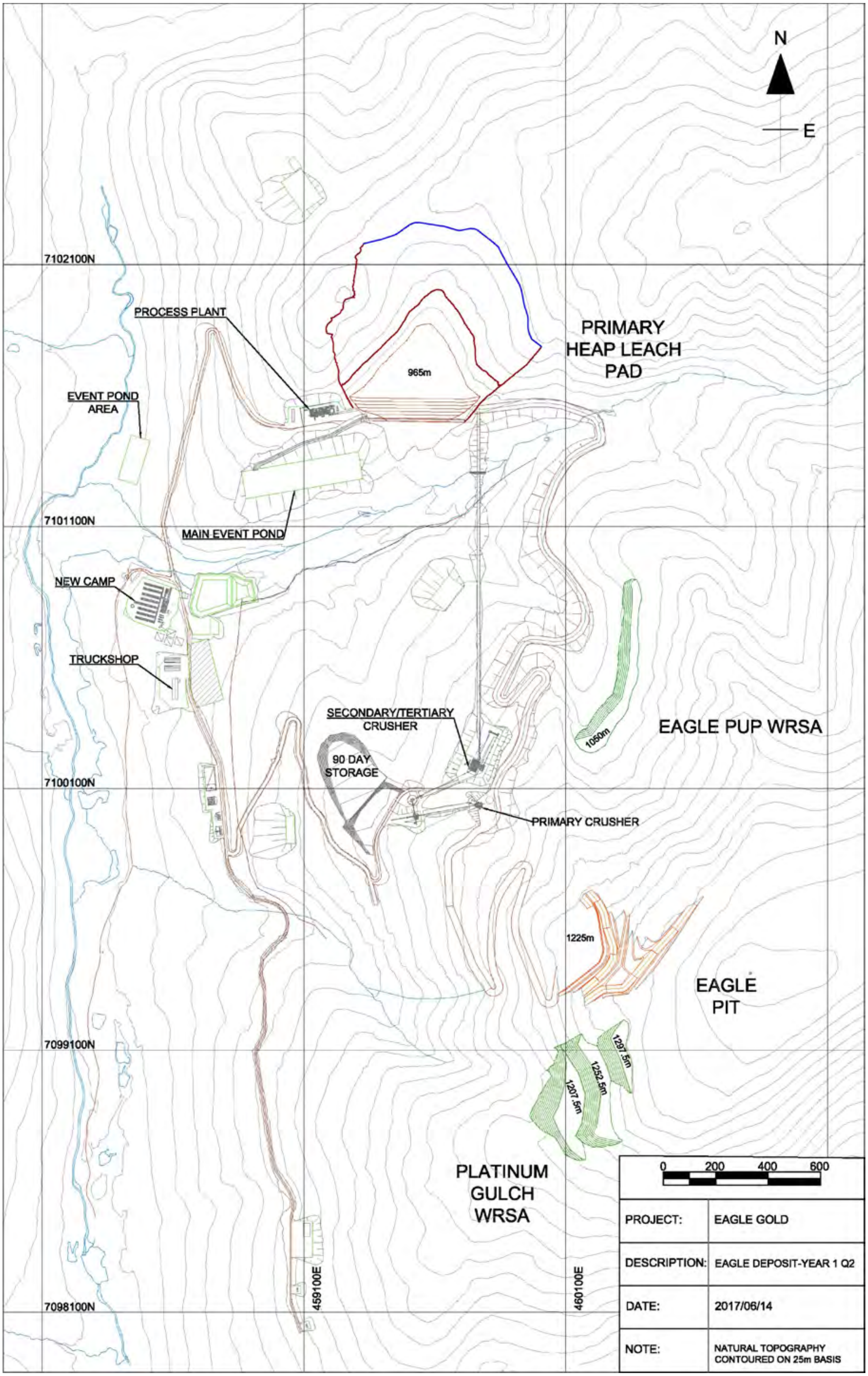
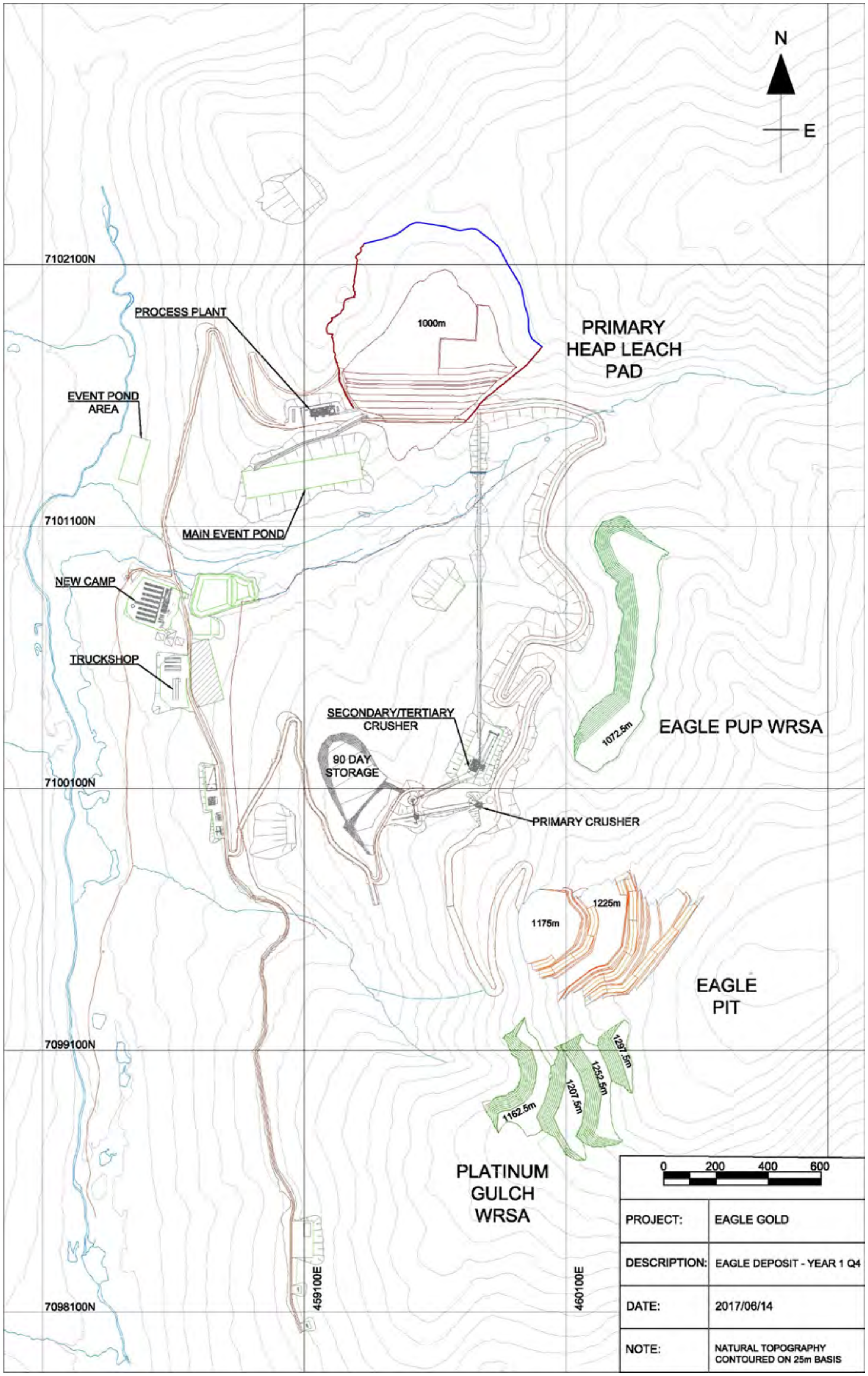
Projection:	Drawn By:	EAGLE GOLD PROJECT YUKON TERRITORY
NAD 83 UTM Zone 8N		
Date: 2017/07/12	Figure: 2.1-3	Mine Development Phases End of Construction



PROJECT:	EAGLE GOLD
DESCRIPTION:	EAGLE DEPOSIT-YEAR 1 Q2
DATE:	2017/06/14
NOTE:	NATURAL TOPOGRAPHY CONTOURED ON 25m BASIS

StrataGold Corporation

Projection:	Drawn By:	EAGLE GOLD PROJECT YUKON TERRITORY
NAD 83 UTM Zone 8N		
Date: 2017/07/12	Figure: 2.1-4	Mine Development Phases End of Year 1 Q 2



PROJECT:	EAGLE GOLD
DESCRIPTION:	EAGLE DEPOSIT - YEAR 1 Q4
DATE:	2017/06/14
NOTE:	NATURAL TOPOGRAPHY CONTOURED ON 25m BASIS

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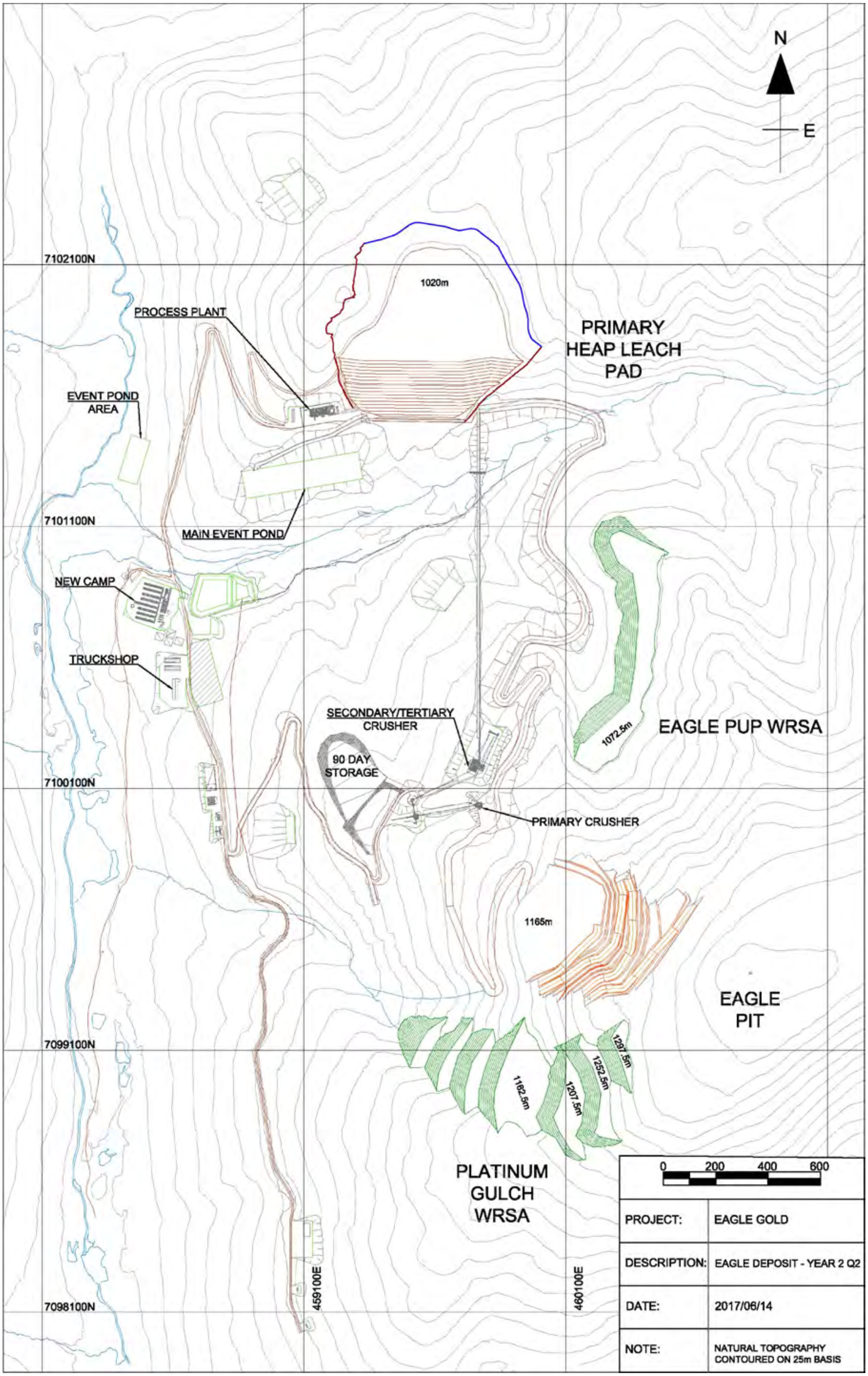
Projection:	Drawn By:	EAGLE GOLD PROJECT YUKON TERRITORY
NAD 83 UTM Zone 8N		
Date: 2017/07/12	Figure: 2.1-5	Mine Development Phases End of Year 1 Q 4



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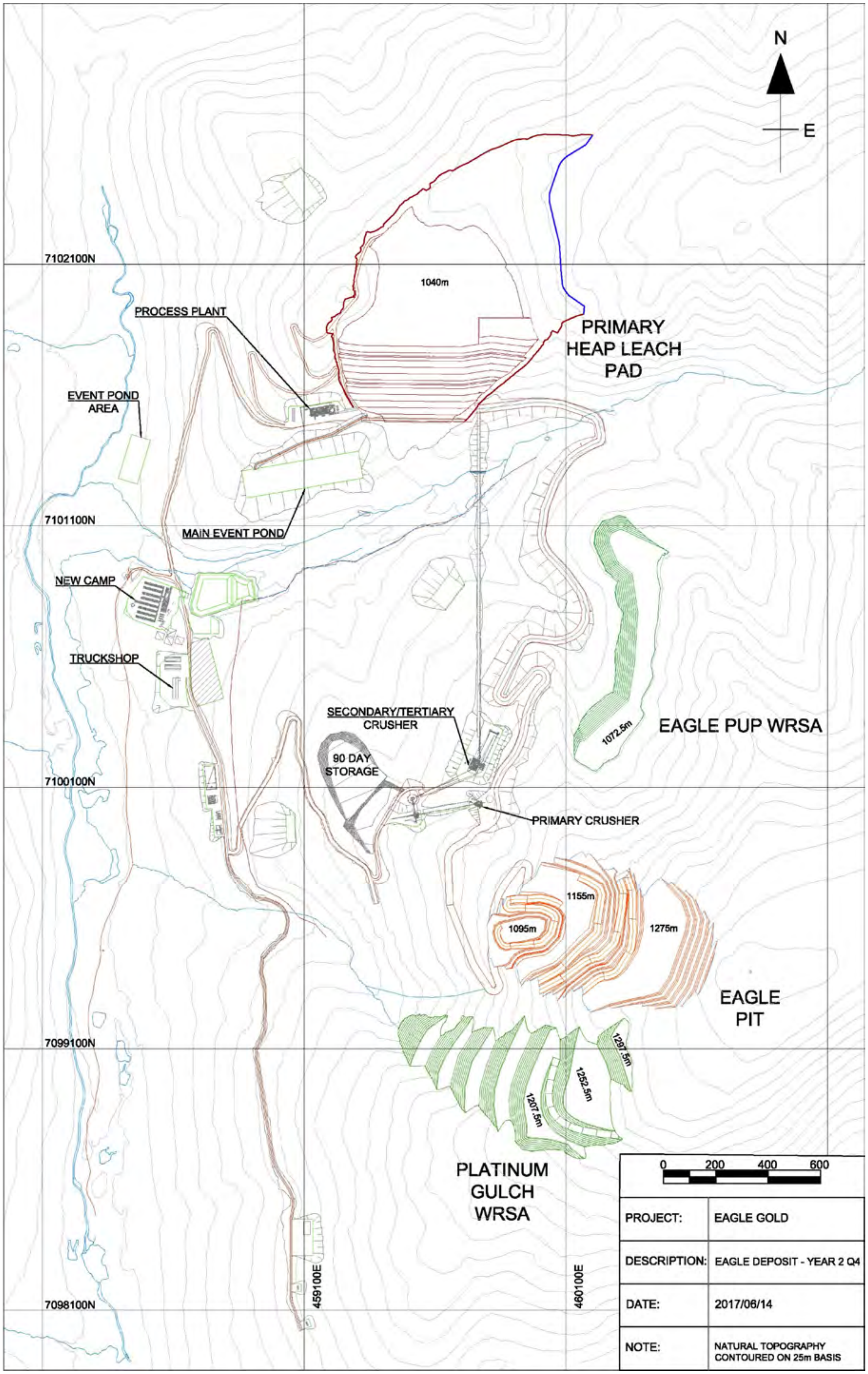
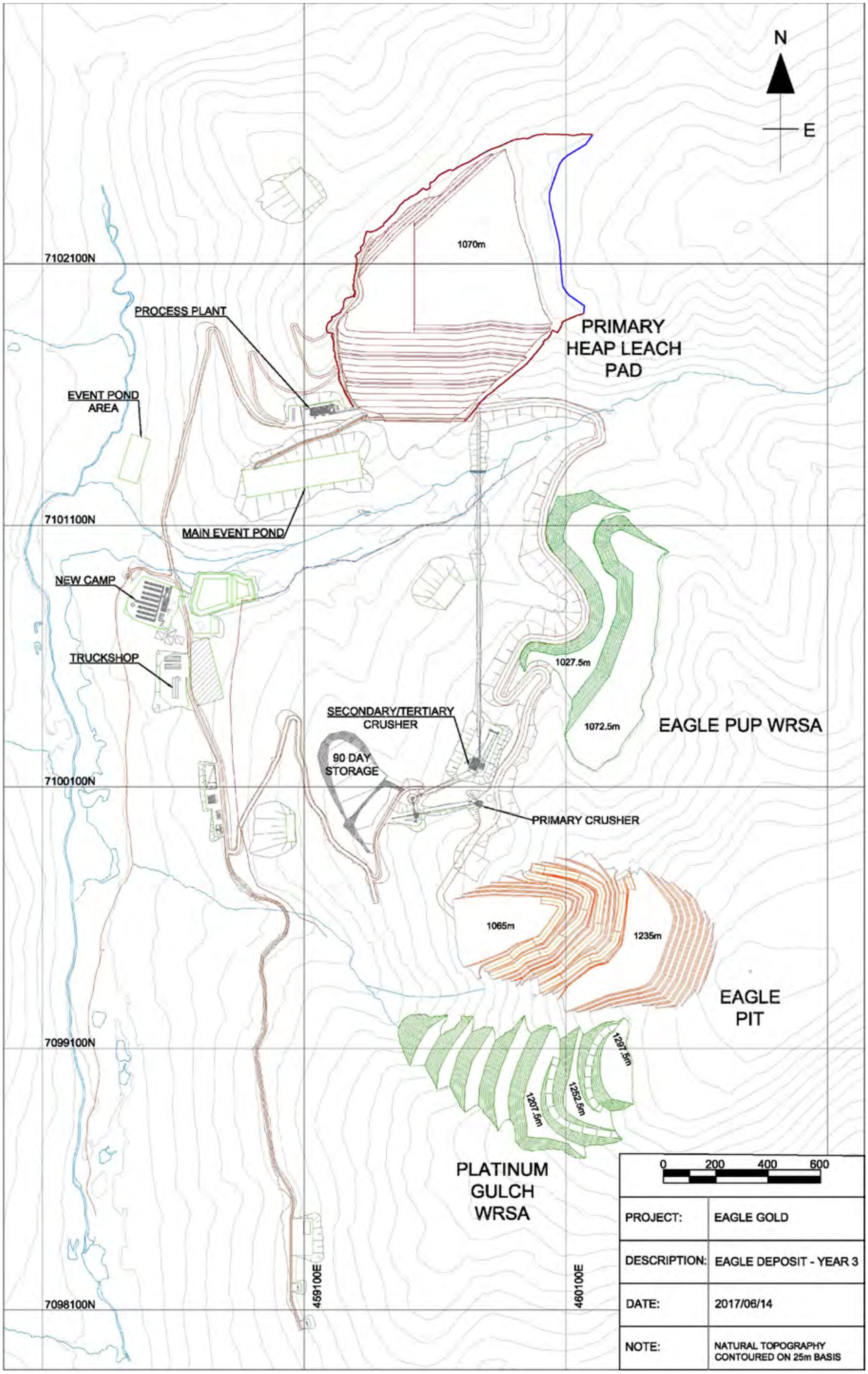
Projection: NAD 83 UTM Zone 8N	Drawn By:	EAGLE GOLD PROJECT YUKON TERRITORY
Date: 2017/07/12	Figure: 2.1-6	Mine Development Phases End of Year 2 Q 2



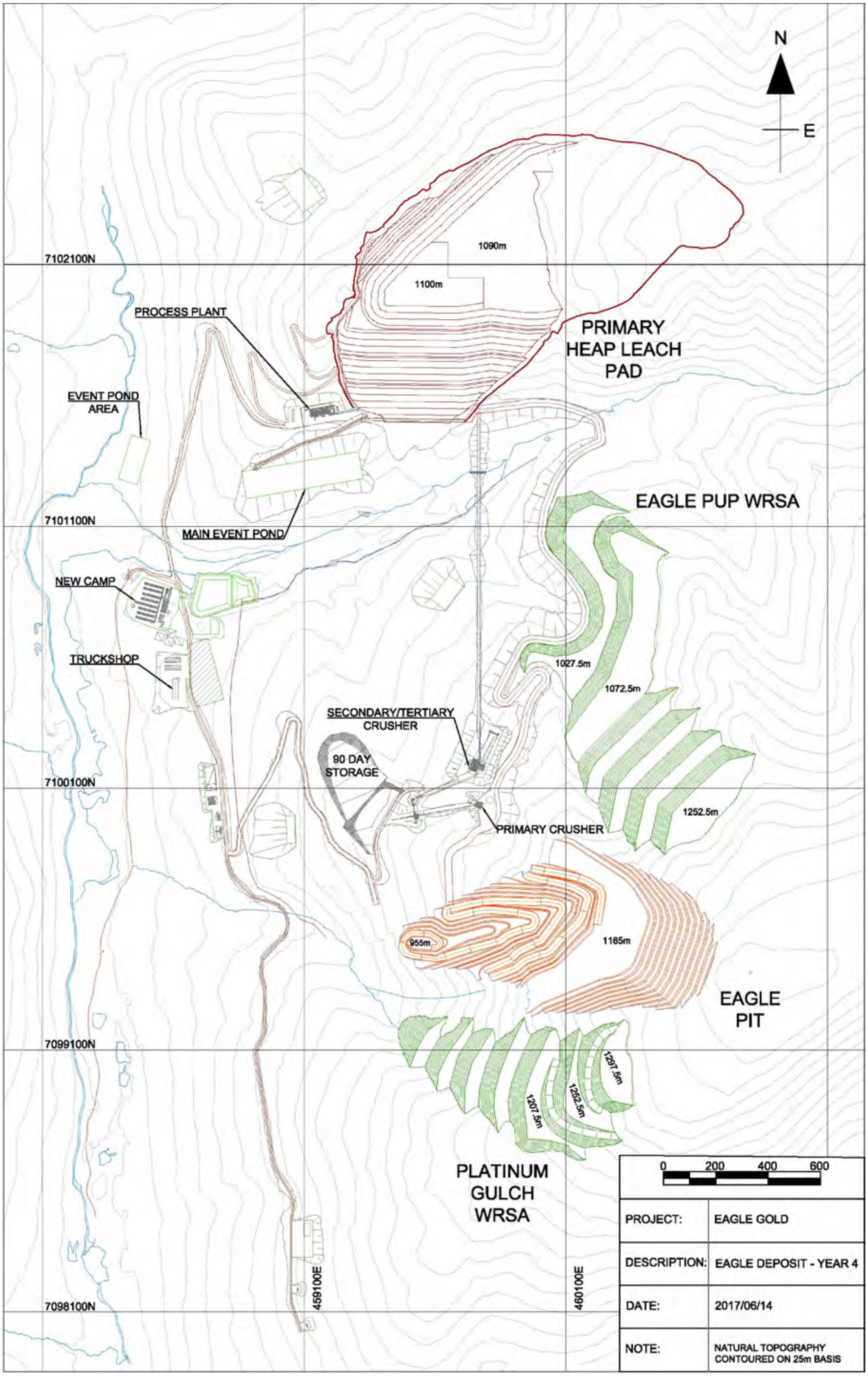
PROJECT:	EAGLE GOLD
DESCRIPTION:	EAGLE DEPOSIT - YEAR 2 Q4
DATE:	2017/06/14
NOTE:	NATURAL TOPOGRAPHY CONTOURED ON 25m BASIS

StrataGold Corporation

Projection:	Drawn By:	EAGLE GOLD PROJECT YUKON TERRITORY
NAD 83 UTM Zone 8N		
Date: 2017/07/12	Figure: 2.1-7	Mine Development Phases End of Year 2 Q 4



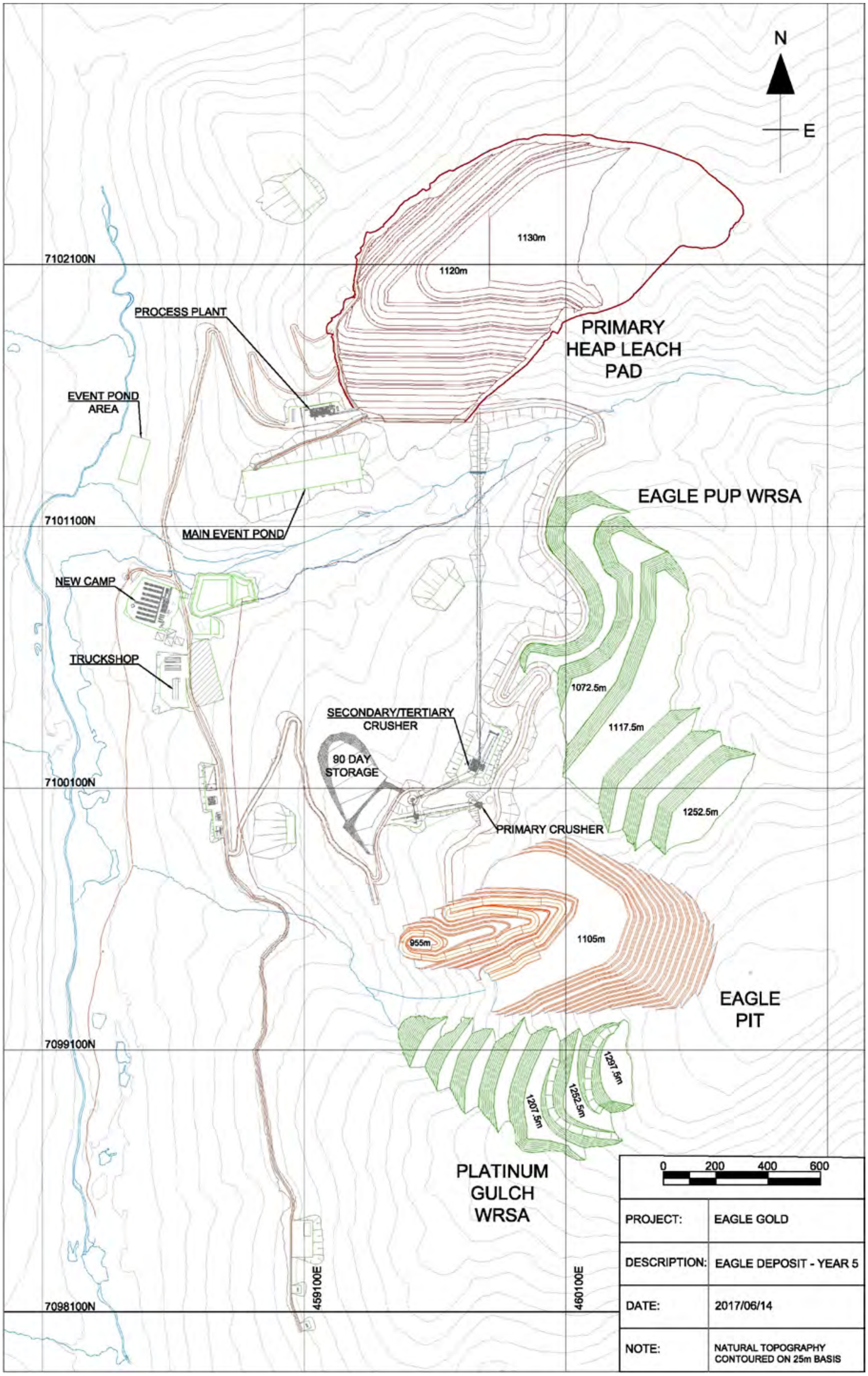
StrataGold Corporation	Projection: NAD 83 UTM Zone 8N	Drawn By:	**EAGLE GOLD PROJECT YUKON TERRITORY**
	Date: 2017/07/12	Figure: 2.1-8	**Mine Development Phases End of Year 3**



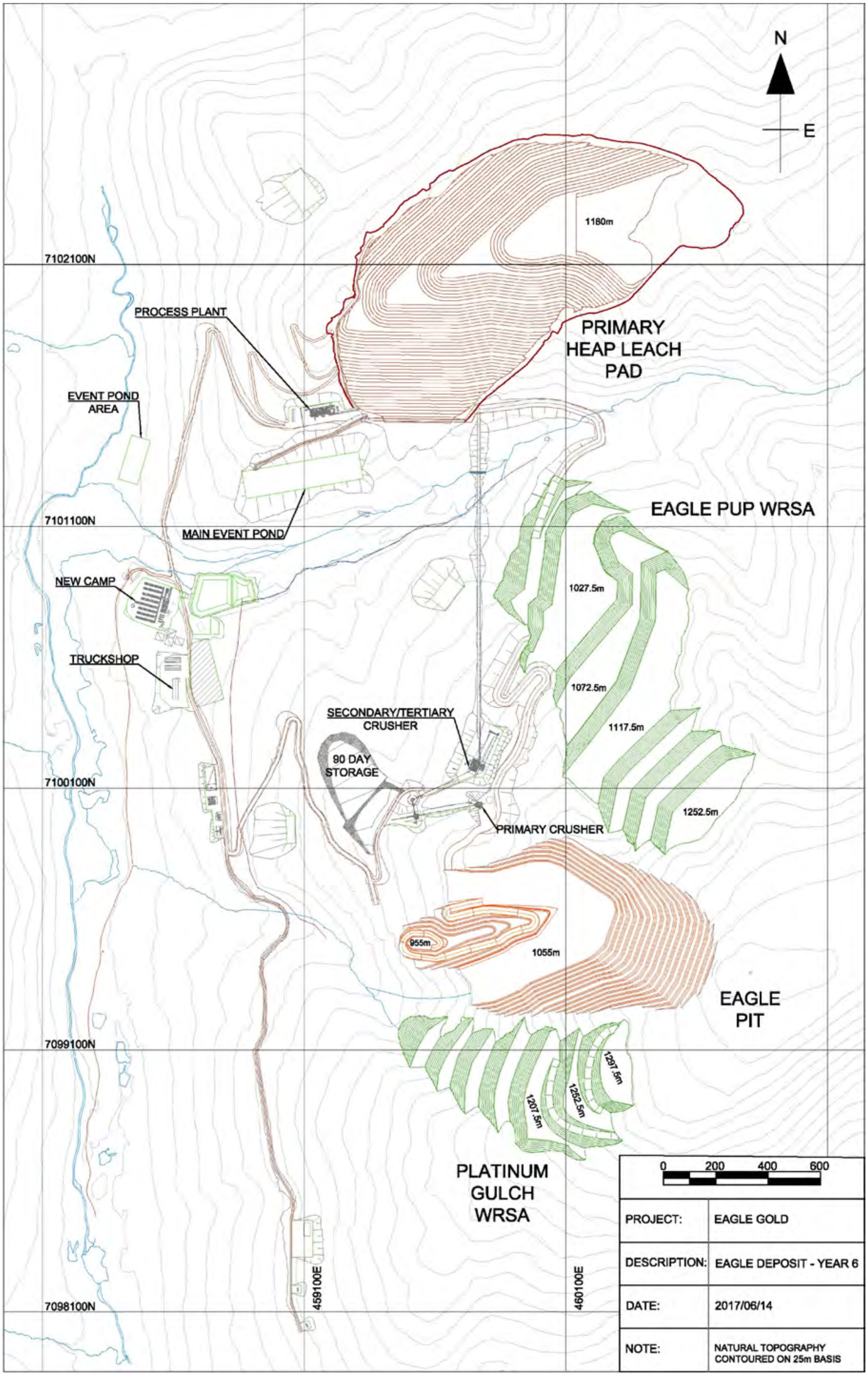
PROJECT:	EAGLE GOLD
DESCRIPTION:	EAGLE DEPOSIT - YEAR 4
DATE:	2017/06/14
NOTE:	NATURAL TOPOGRAPHY CONTOURED ON 25m BASIS

StrataGold Corporation

Projection: NAD 83 UTM Zone 8N	Drawn By:	EAGLE GOLD PROJECT YUKON TERRITORY
Date: 2017/07/12	Figure: 2.1-9	Mine Development Phases End of Year 4



StrataGold Corporation	Projection: NAD 83 UTM Zone 8N	Drawn By:	**EAGLE GOLD PROJECT YUKON TERRITORY**
	Date: 2017/07/12	Figure: 2.1-10	**Mine Development Phases End of Year 5**



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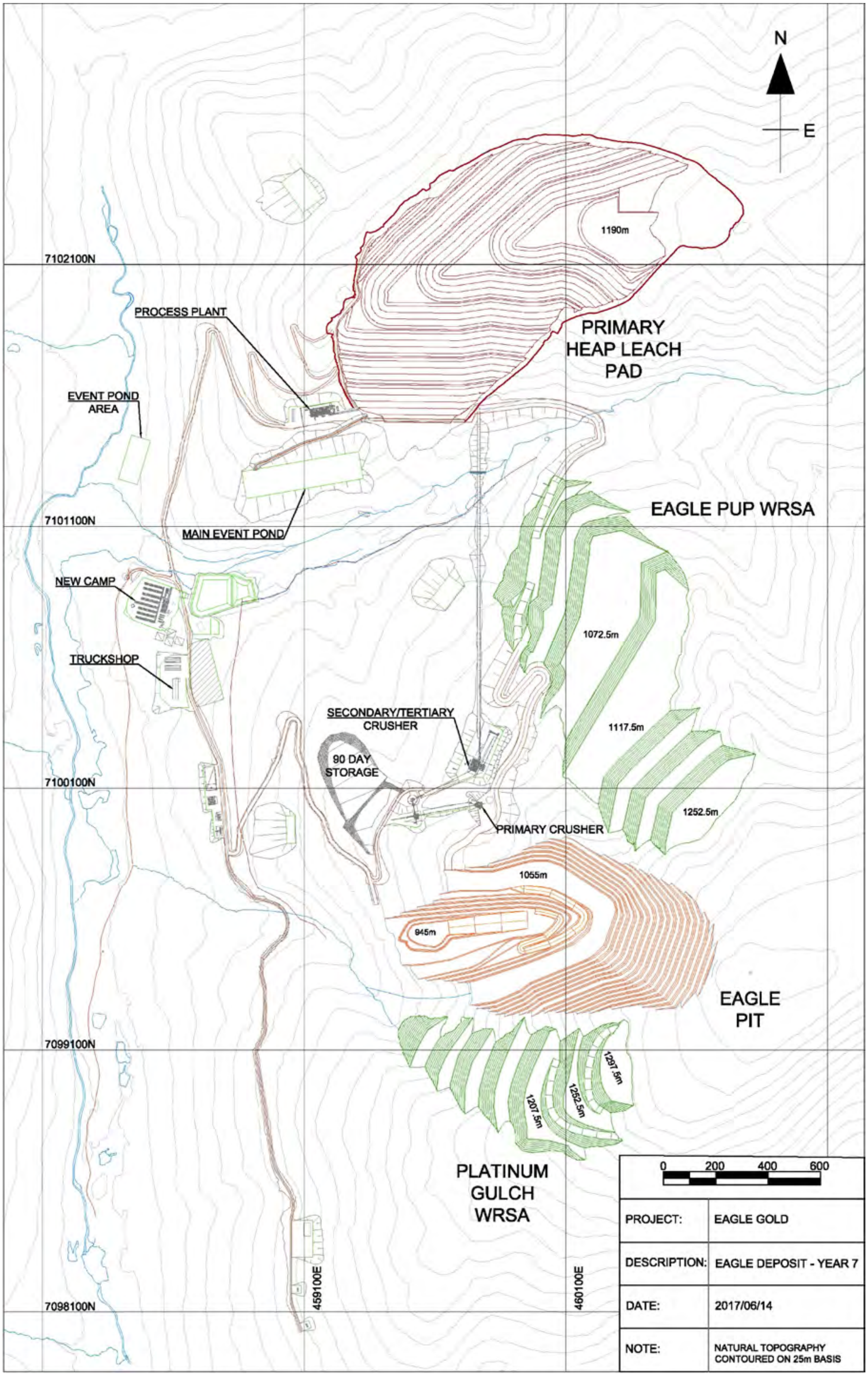
DATE:	2017/06/14
NOTE:	NATURAL TOPOGRAPHY CONTOURED ON 25m BASIS

StrataGold Corporation

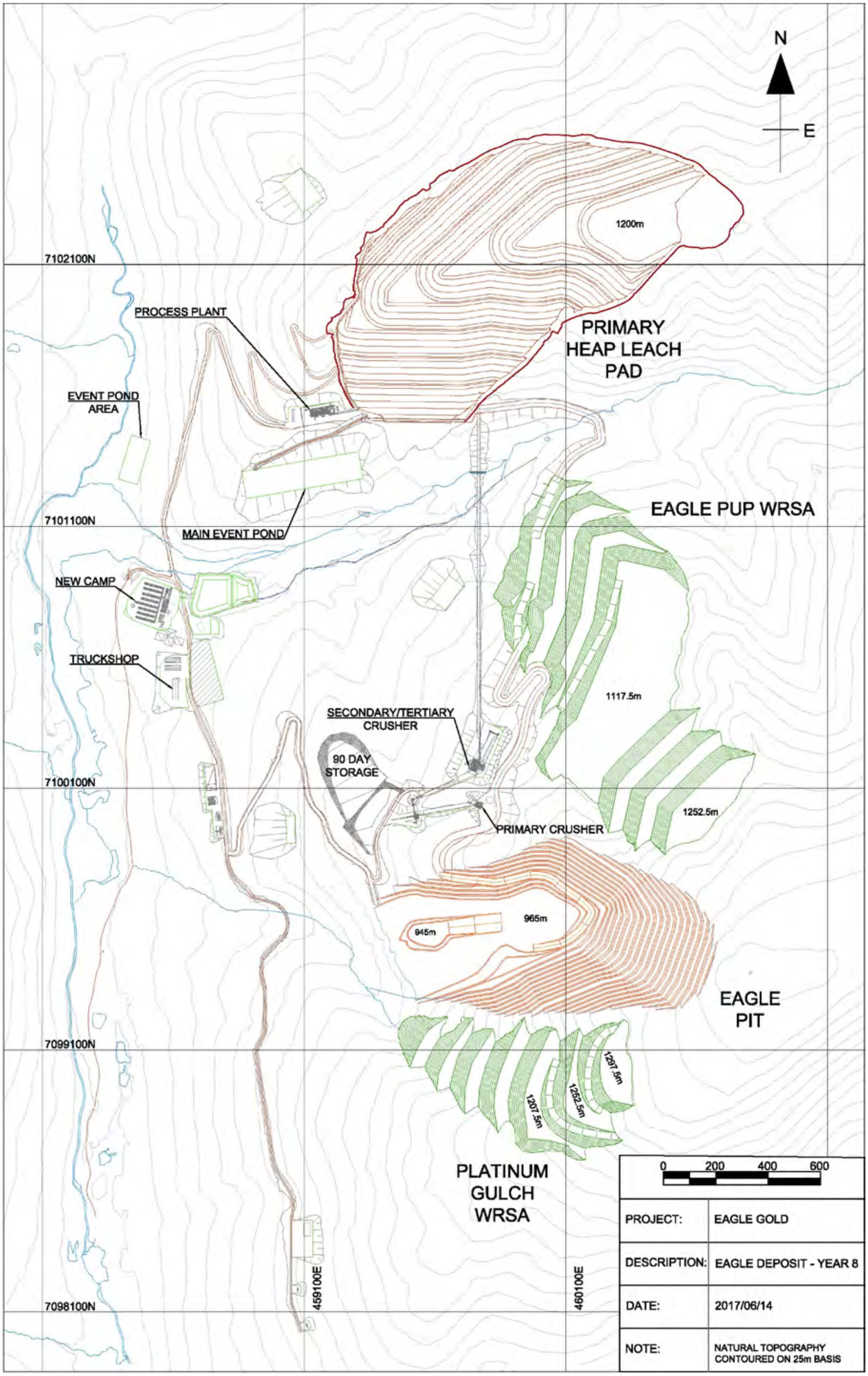
Projection:	Drawn By:	
NAD 83 UTM Zone 8N		**EAGLE GOLD PROJECT YUKON TERRITORY**
Date: 2017/07/12	Figure: 2.1-11	**Mine Development Phases End of Year 6**



PROJECT:	EAGLE GOLD
DESCRIPTION:	EAGLE DEPOSIT - YEAR 7
DATE:	2017/06/14
NOTE:	NATURAL TOPOGRAPHY CONTOURED ON 25m BASIS

StrataGold Corporation

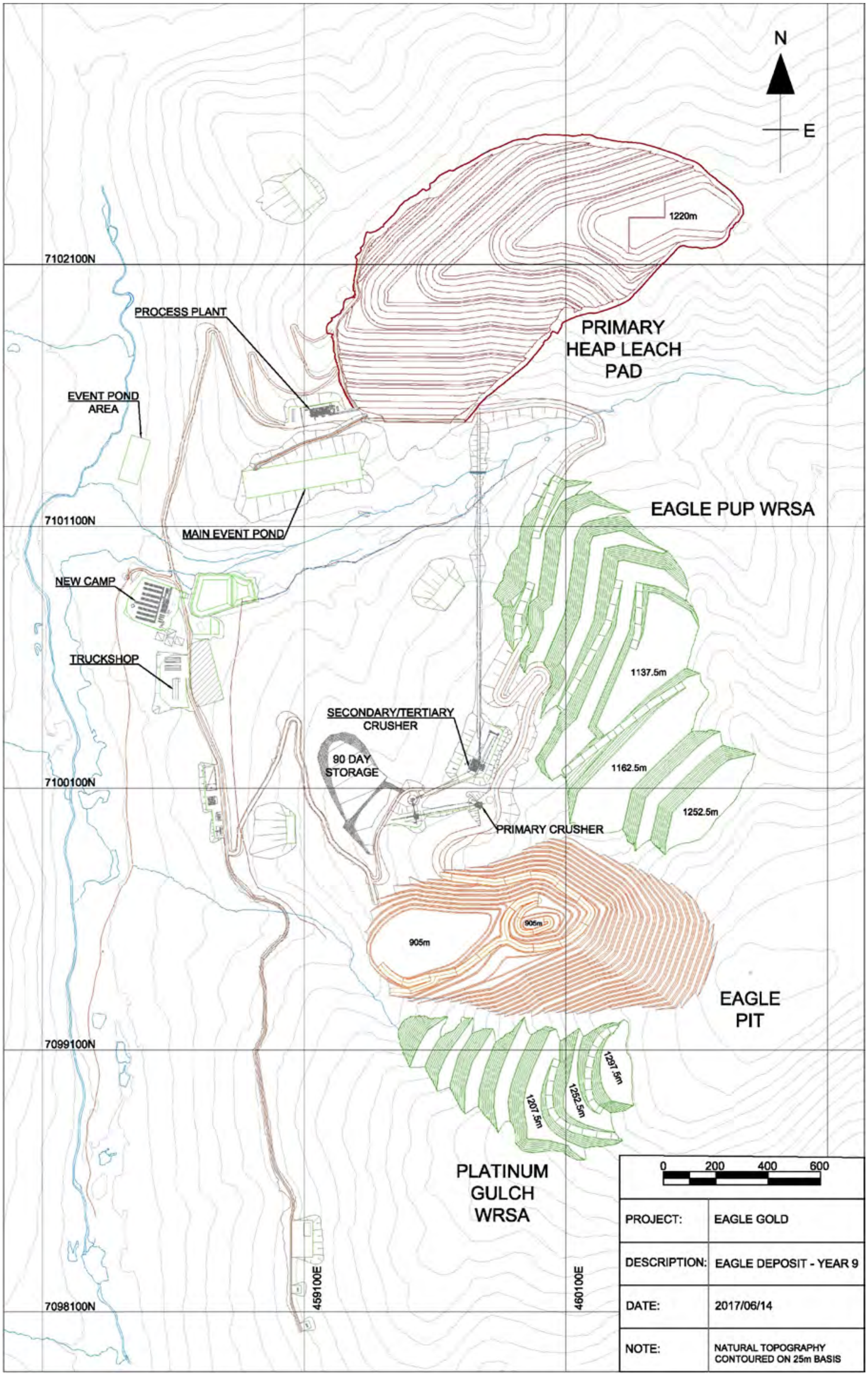
Projection: NAD 83 UTM Zone 8N	Drawn By:	**EAGLE GOLD PROJECT YUKON TERRITORY**
Date: 2017/07/12	Figure: 2.1-12	**Mine Development Phases End of Year 7**



PROJECT:	EAGLE GOLD
DESCRIPTION:	EAGLE DEPOSIT - YEAR 8
DATE:	2017/06/14
NOTE:	NATURAL TOPOGRAPHY CONTOURED ON 25m BASIS

StrataGold Corporation

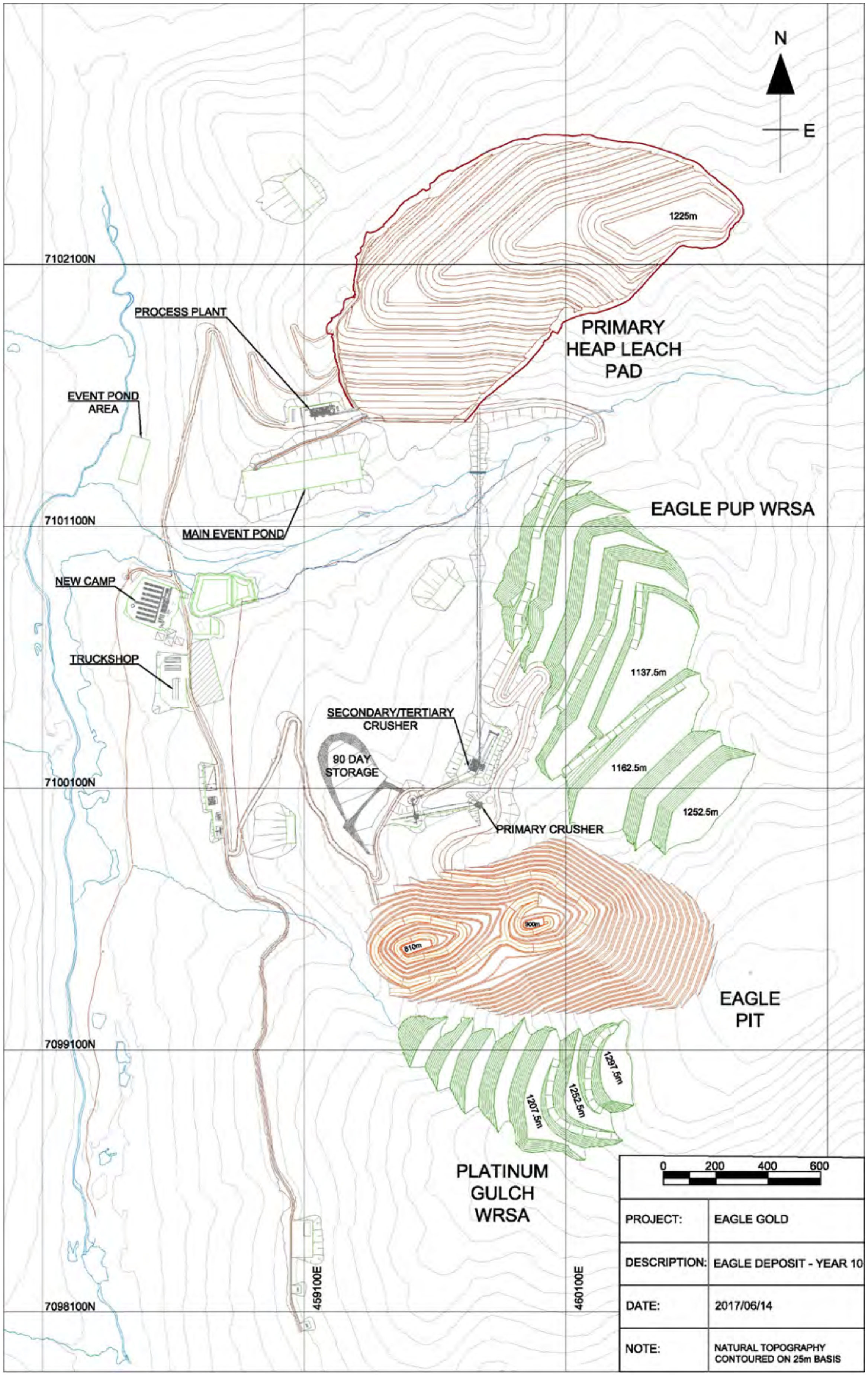
Projection: NAD 83 UTM Zone 8N	Drawn By:	EAGLE GOLD PROJECT YUKON TERRITORY
Date: 2017/07/12	Figure: 2.1-13	Mine Development Phases End of Year 8



PROJECT:	EAGLE GOLD
DESCRIPTION:	EAGLE DEPOSIT - YEAR 9
DATE:	2017/06/14
NOTE:	NATURAL TOPOGRAPHY CONTOURED ON 25m BASIS

StrataGold Corporation

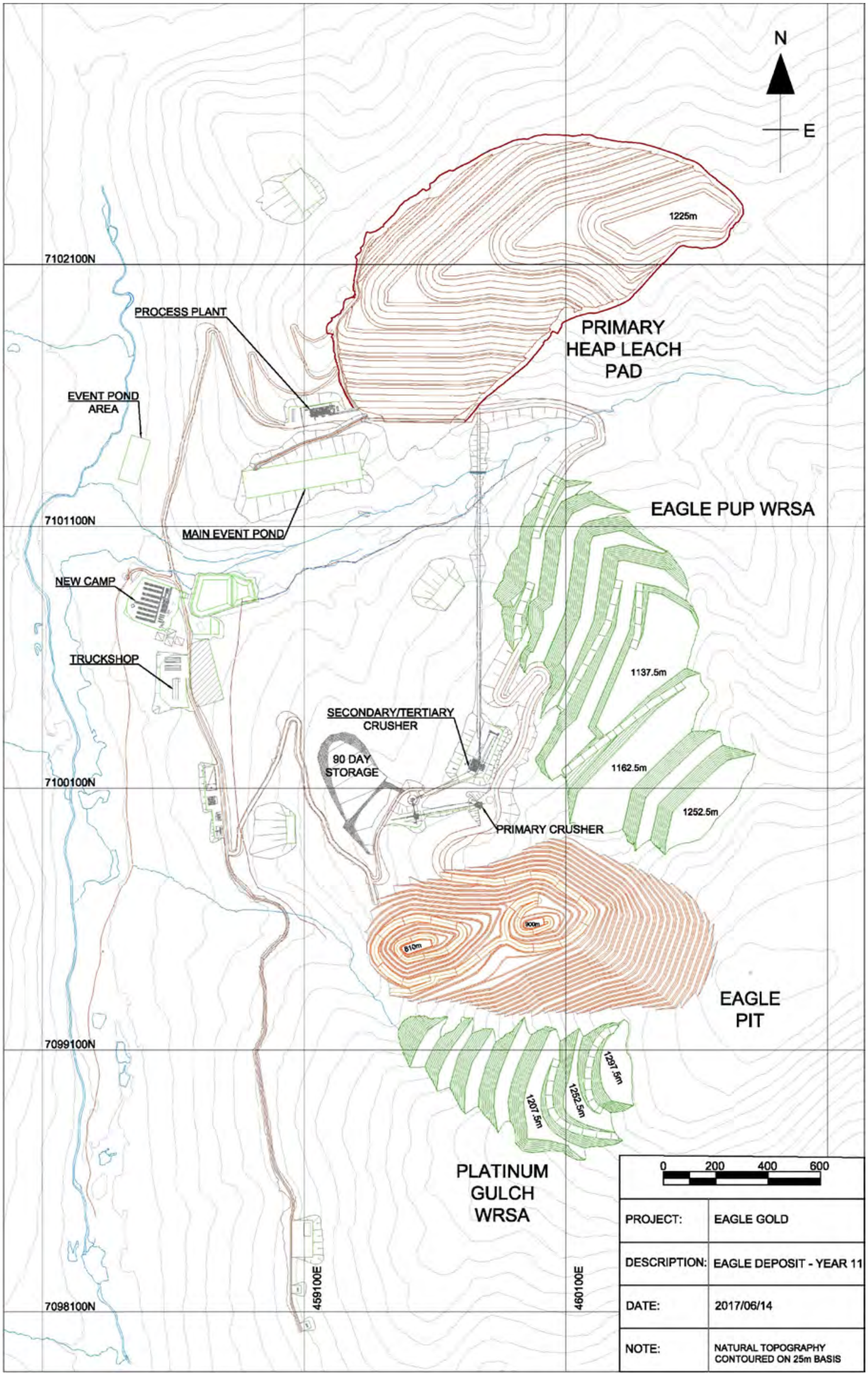
Projection: NAD 83 UTM Zone 8N	Drawn By:	**EAGLE GOLD PROJECT YUKON TERRITORY**
Date: 2017/07/12	Figure: 2.1-14	**Mine Development Phases End of Year 9**



PROJECT:	EAGLE GOLD
DESCRIPTION:	EAGLE DEPOSIT - YEAR 10
DATE:	2017/06/14
NOTE:	NATURAL TOPOGRAPHY CONTOURED ON 25m BASIS

StrataGold Corporation

Projection: NAD 83 UTM Zone 8N	Drawn By:	**EAGLE GOLD PROJECT YUKON TERRITORY**
Date: 2017/07/12	Figure: 2.1-15	**Mine Development Phases End of Year 10**



PROJECT:	EAGLE GOLD
DESCRIPTION:	EAGLE DEPOSIT - YEAR 11
DATE:	2017/06/14
NOTE:	NATURAL TOPOGRAPHY CONTOURED ON 25m BASIS

StrataGold Corporation

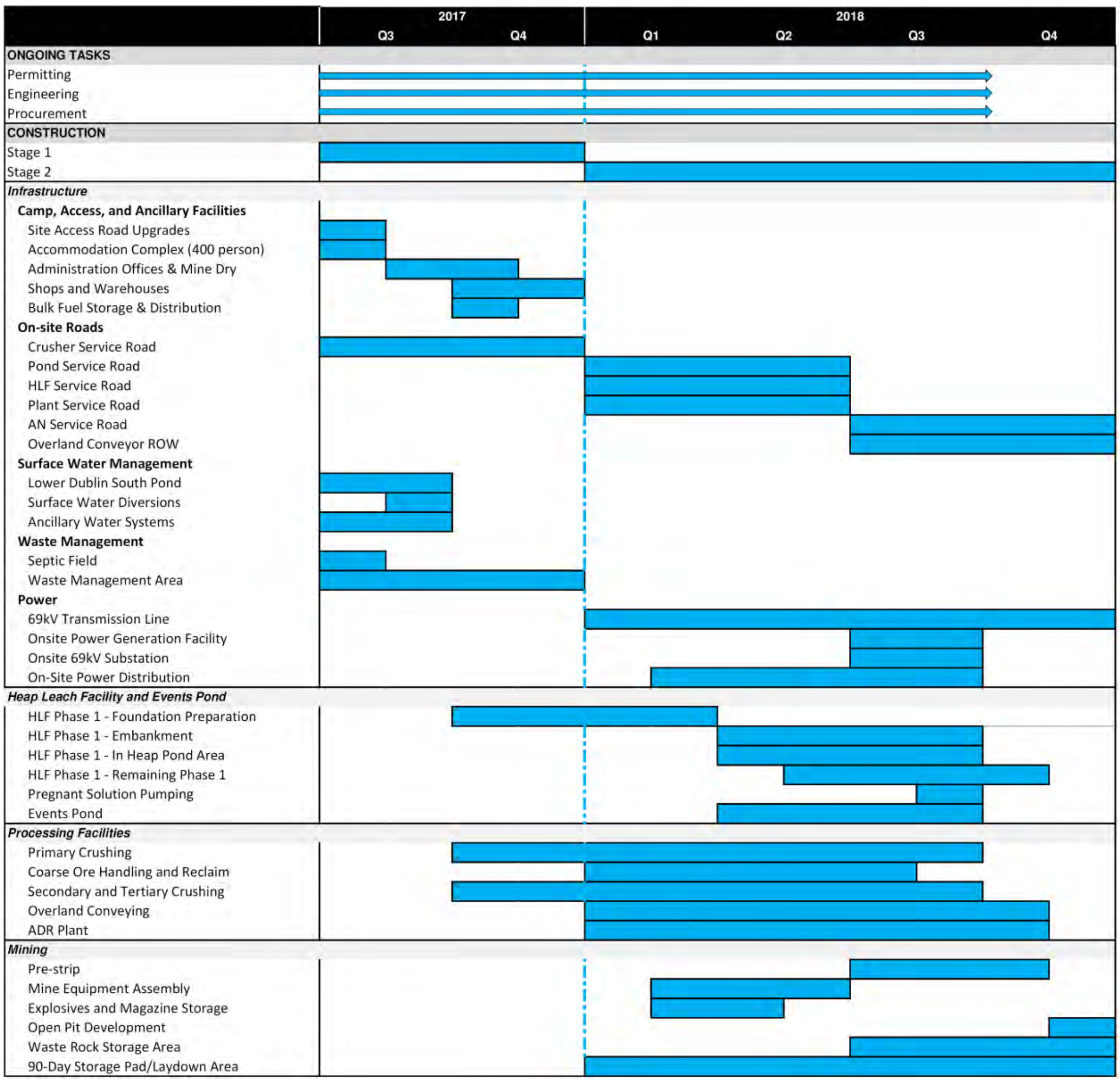
Projection: NAD 83 UTM Zone 8N	Drawn By:	EAGLE GOLD PROJECT YUKON TERRITORY
Date: 2017/07/12	Figure: 2.1-16	Mine Development Phases End of Year 11

3 DESIGN AND CONSTRUCTION

Construction is currently assumed to begin in Q3 2017, pending receipt of final regulatory approvals, project financing and contractor availability. Activities planned for 2017 include site clearing and grubbing, road upgrades, civil earthworks, construction of water management infrastructure including the LDSP, and camp expansion. The remaining construction activities are expected to be completed by Q4 2018.

A construction schedule is provided in Table 3.1-1.

Table 3.1-1: Construction Schedule



3.1.1 Stage 1

Stage 1 Construction activities are currently scheduled to begin Q3 2017 and include camp expansion, access road upgrades, site road construction, diversions and ditching, pond construction, clearing and grubbing, civil earthworks, septic system upgrade, and borrow source development.

Stage 1 Construction will include:

- Upgrades to the Haggart Creek Road that includes minor realignments, construction of pullouts, grading, resurfacing and drainage improvements
- Enlargement of camp and associated facilities.
- Clearing, grubbing and grading for site infrastructure and ancillary facilities including substation and fuel storage pads and crushing facilities.
- Fuel storage and distribution systems for propane, diesel, gasoline and waste oil
- Upgrade of existing site access roads by widening and grading to provide access to construction areas, and construction of temporary construction trails, site roads and haul roads.
- Construction of water management and sediment control features including the Lower Dublin South Pond and associated ditches and structures.
- Ancillary water systems including installation and commissioning of a potable water treatment plant
- Septic field expansion Construction of a solid waste storage area that includes an incinerator
- Construction of a hazardous waste storage area for temporary storage of hazardous waste prior to either hauling offsite for final disposal in approved facilities or, in the case of waste oil, use in a waste oil heater.
- Initial heap leach facility embankment foundation preparation.

3.1.2 Stage 2

Stage 2 Construction activities will begin upon approval of development and operations plans as required under the *Quartz Mining Act,* and upon authorization under section 35 (2) of the *Fisheries Act* as required by Fisheries and Oceans Canada (DFO).

Stage 2 Construction will include:

- Continued construction of on-site roads including haul roads.
- Transmission line from Silver Trail tap point to site including clearing and grubbing of right of way (RoW), and pole installation.
- Construction of the sub-station and the site electrical distribution system.

- Heap Leach Facility Phase I
  - Groundwater drainage system installation (geotextile, gravel and piping)
  - Construction of the HLF confining embankment earth and rock fill placement
  - Geosynthetic Clay Liner (GCL) installation
  - In-heap pond secondary geomembrane liner installation
  - Leak Collection and Recovery System installation
  - Overliner installation (crushed rock for drainage and cushion layer)
  - In-heap pond primary geomembrane liner installation
  - In-heap pond upper secondary geomembrane liner installation
  - Phase 1 heap leach piping installation
  - Solution collection system (primary and secondary piping) installation
- Events Pond
  - Subgrade preparation
  - Bedding layer placement
  - Primary Geomembrane liner installation
  - Pumps and sampler installation
  - Leak detection and recovery system
  - Upper secondary geomembrane liner installation
- Erections of buildings including mechanical, piping, electrical and instrumentation for the following:
  - Crushing and Screening Plant
  - Overland Conveying System
  - Cement and Lime Silos
  - Adsorption, Desorption and Recovery Plant, Metallurgical Laboratories, Administration Office and Reagent Storage Buildings, Truck shop, warehouse and mine offices
  - ANFO, Emulsion Plant and Detonator Storage
- Water Distribution Systems
  - Process water for ADR
  - Crusher dust suppression systems
  - Water for road dust control
  - Fire water including ring main, hydrants, and pumps
- Pre-stripping and open pit development.

- Clearing and grubbing, bulk earthworks, rock drain and toe berm construction for the Eagle Pup and Platinum Gulch Waste Rock Storage Areas
- Clearing and grubbing and bulk earthworks for the 90-day Ore Stockpile pad and the coarse ore transfer area.

During Stage 2 Construction, a part of the open pit surface area will be cleared and grubbed progressively to enable the identification of and then quarrying of durable and non-durable rock for various construction material needs. Overburden and extremely weathered or altered material will be mined by ripping or excavation with bulldozers and backhoes.

3.2 SITE PREPARATION

This section provides a general description of site preparation activities during construction, which will include:

- Vegetation clearing and grubbing for infrastructure and mine site facilities
- Bulk earthworks for foundation preparation
- Overburden management (frozen and non-frozen material)
- Borrow requirements and the development of one or more construction borrow source sites, and
- Foundation requirements.

3.2.1 Vegetation Clearing and Grubbing

Vegetation will be cleared as required from infrastructure and facility areas prior to earthworks and or construction activities. Clearing will be done on an as needed basis sequentially to reduce erosion and sediment as well as permafrost degradation during construction. Figure 3.2-1 depicts the maximum extent of cleared area that will occur as part of site preparations and also depicts the existing conditions on the Project site.

It is estimated that a volume of approximately 20,000 m^3 of timber will be available from areas cleared for Project activities. This includes approximately 15,000 m^3 of wood cleared during site construction and 5,000 m^3 of wood associated with clearing of the road and transmission corridor.

Trees will be cleared and harvested, as feasible, using best management practices and methods suitable to the terrain and timber size. The majority of timber will be harvested by mechanical methods. Hand falling (chainsaws) may be used in specific areas as required (i.e., steep slopes, riparian areas).

Timber not required for Project uses will be removed from the cleared areas within the mine site and during stage 1 construction activities will be either burned or placed in temporary piles. During the subsequent phases of the Project, open burning of timber may cease and the material will be placed in temporary stockpiles. These temporary timber stockpiles on the mine site will be chipped or ground in-situ prior to hauling wood chips or mixed material to the reclamation material storage areas on site.

During the period of construction when grubbing and clearing of vegetation will take place along the access road and transmission line, SGC will work with their contractors to, where logistically feasible, stockpile timber deemed appropriate for fuel wood. Upon completion of construction and/or when the SGC Manager of Health and Safety and/or Site Manager determines that it is safe for the public to access the timber stockpiles, SGC will provide written notification to the First Nation of Na-Cho Nyäk Dun and the village of Mayo so that interested parties may salvage timber for fuel wood.

Timber and brush cleared from the access road and transmission line that is not claimed for fuel wood from the access road right of way will be processed using standard methods including whole tree drum chippers, tub grinders or horizontal wood grinders. Mixed wood and topsoil feedstock will provide a blend of organic material that will be transported to the reclamation storage areas.

Topsoil and organic matter will be stripped and hauled to designated reclamation material storage areas. Further detail with reclamation uses for this material is provided in the Reclamation and Closure Plan.

3.2.2 Foundation Preparation - Bulk Earthworks

Bulk earthworks will include general cut excavation, rock blasting excavation, general fill, structural fill, screening and stockpiling of surfacing and concrete aggregate, and grading. General cut excavation shall include the excavation of roads, pads, embankment foundations, diversion ditches embankment abutments, placer tailings and placer material. General cut will include rippable rock, which is defined as material that can be ripped with a D10T track-type tractor or equivalent. Non-rippable rock will be blasted using drilling and blasting followed by excavation. Blasted rock will be sized and stockpiled for rip rap.

Construction of infrastructure pads will involve clearing the overburden soil and, if required, blasting the bedrock to the desired elevation. Gravel and broken blast rock fill will be used to extend the desired pad width and to grade the pad to the design elevation. The fill used to create the infrastructure pads will be placed and compacted to support foundations for buildings and equipment.

General fill will be hauled and placed as required in suitable locations. A temporary, portable crushing and screening plant(s) will be located in the Haggart Creek and/or Dublin Gulch valley to produce suitable structural fill, surfacing aggregate and concrete aggregate to design specifications. Structural fill will be constructed in layers of uniform thickness and compacted to a desired unit density in a manner to control the compressibility, strength, and hydraulic conductivity of the fill. Structural fill will be produced via crushing and screening of excavated on site material. Surfacing and concrete aggregate will be sourced on site via multiple borrow sources, crushed screened, stockpiled and placed as required.

3.2.3 Overburden Management

The topography of the Property area is characterized by rolling hills and plateaus and is drained by deeply incised creeks. The ground surface is covered by colluvium, weathered rock, and felsenmeer. Outcrops are rare, generally less than two percent of the surface area, and are limited to ridge tops and creek walls. Lower elevations are vegetated with black spruce, willow, alder and moss, and higher elevations by sub-alpine vegetation.

Construction will require the management of various types of overburden including organic top soil, colluvium, weathered metasedimentary and granodiorite bedrock, durable rock, placer tailings (poorly sorted cobble to silt materials), silt, and frozen material. Waste rock and overburden quantities, including a summary of cut and fill materials balance, are described in the Waste Rock and Overburden Facility Management Plan.

3.2.3.1 Frozen Soil

The Project will be constructed and operated in a region of widespread discontinuous permafrost. Previous geotechnical investigations have confirmed the sporadic presence of frozen ground, some of which contains excess ice that will require some level of management depending on ice content during construction. The term “excess ice” is used to describe ice that occupies a larger pore space in the soil than water in an unfrozen state. When this ice thaws, the resulting water exceeds the water holding capacity of the soil and excess water will be present. Some of the frozen soil with excess ice, hereafter called “ice rich”, may become unstable upon thawing, particularly if it is fine-grained and excess pore water pressure cannot drain readily. Some of these materials, which could potentially be useful in closure activities (e.g. as cover for reclamation) while thawing and draining, may require temporary containment during construction and operation of the mine.

A Frozen Materials Management Plan has been developed to support Stage 1 and Stage 2 Construction. The plan provides the sources and estimated volumes of frozen materials, management approach to various types of frozen soil, and engineering design of containment berms for ice-rich material that requires on site disposal. Details regarding the site investigation and engineering design of containment berms for ice-rich material is provided in the Frozen Materials Management Plan.

Project design has been optimized to minimize disturbance of ice-rich soils during construction, and ice-rich materials that are excavated will be drained and dried and re-used as much as possible. The excavated ice-rich materials will derive from several different lithological units, including till, colluvium, alluvium and weathered rock. These materials vary in grain size and natural moisture content, or ice content. Difficulties in handling thawing ice-rich materials will vary depending primarily on grain size and ice content. Coarser soils, like sand and gravel, will tend to drain more freely on thawing, and will thus be less difficult to handle than finer soils, which will drain more slowly, and retain excess pore pressures, and lower strength, for longer periods.

Frozen ground, where encountered, contains varying amounts of ice, and in some cases can be considered as “excess ice” (as defined above), as described in the detailed records of test pits and cored geotechnical drillholes used to characterize the site. Based on this previous work, it is apparent that frozen ground will be encountered during construction of a number of proposed project facilities, primarily on north-facing slopes. Frozen soils will be identified as one of five material management types using initially previous data, confirmed in the field during clearing, grubbing and general earthworks activities, and then managed as described in Table 3.2-1.

Table 3.2-1: Management Strategies for Frozen Soils

Material Type for license considerations	Material Management Type	Frozen Material Type	Strategy	Management Description
Non ice-rich soils	I	Fine and/or coarse-grained colluvial/alluvial soils or weathered bedrock with little or no ice content	Used as Fill or Stockpiled for Closure	Used as general fill or if excess to a local fill requirement stored for reclamation.

Material Type for license considerations	Material Management Type	Frozen Material Type	Strategy	Management Description
	II	Coarse-grained sands and gravels with limited zones (layers) of variable ice content	Used as Fill	Exposed and readily thawed and drained, and then used as general fill within embankments and platforms.
	III	Fine-grained soils with relatively thin zones (layers) of low proportions of “excess ice”,	Stockpiled for closure	Separated and co-disposed with other non-frozen soils within stockpiles to be used for reclamation.
Ice-rich soils	IV	Fine-grained silty and clayey soils with relatively thick zones (layers) of highly visible “excess ice”	To IROSA	Segregated at excavation site based on prior field data/information, and additional observations during excavations, excavated and hauled to the ice-rich overburden storage area located in the Haggart Creek valley.
	V	Small quantities of ice-rich soils (fine or coarse)	Locally stored	Disposed of adjacent to excavation sites where thawing and drainage can be managed locally rather than hauled to the IROSA.

The management strategies described in Table 3.2-1 recognizes that the excavation of frozen ground, particularly ice-rich frozen ground, requires additional effort and care beyond that required for typical excavation of unfrozen ground, or for ice-poor frozen ground. Well-bonded, ice-rich material will be difficult to excavate and for planning purposes, is assumed to require some degree of ripping. Consideration will be given to the thaw behavior of this material, and allowances made for adequate drainage and associated erosion and sediment control, as well as additional time and effort for the work. The strategy for managing drainage and sediment is described in the Water Management Plan. Exposure of ice-rich material, particularly thick soil horizons, and the associated thaw may result in wet, muddy, soft ground, and poor trafficability, along with local slumping and other nuisance effects. Each of these effects related to exposure of ice-rich material requires consideration in the planning, design, and construction of mine site infrastructure. When ice-rich fine-grained soils are excavated and stockpiled, they may become unstable while thawing, and may stand at only very gentle slopes of a few degrees. Water draining from the thawing soil must also be managed, along with any associated sediment load.

3.2.3.2 Non–Frozen Overburden Material

Bulk earthworks during construction will require multiple material types that meet specific geotechnical criteria. Construction materials will be sourced from available placer spoils, overburden, silt borrow pits and rock excavations located on site and from the access road alignment as required. Top soil will be salvaged and transported for storage at reclamation material stockpiles in the Dublin Gulch valley for reclamation purposes.

Non–frozen overburden material produced by construction will be transported for use as fill for cut/fill balance in excavation areas and/or an area for screening and temporary storage for construction material. The material will be further processed (crushed or screened) and used as engineered fill where this is required. An area within reclamation material stockpile area B will be utilized for non-ice-rich overburden management. This area will include a screening plant, crusher plant, bins and feeders along with portable transfer and stacking conveyors. The area will be used to process materials and temporarily store them by material type. Screened materials will then be used in various construction applications. Borrow material types stored in this location include rock fill, silt, general fill, rip rap, road base and resurfacing material, concrete aggregate etc.

3.2.4 Borrow Materials

Bulk earthworks will require multiple material types that meet specific geotechnical criteria. Construction materials will be sourced from available placer spoils, overburden, silt borrow pits and rock excavations located on site and from the access road alignment as required.

3.2.4.1 Borrow Requirements

Extensive field investigations in support of geotechnical recommendations for mine site infrastructure have been completed on the Project site (BGC 2011a and 2012a). The work involved the excavation of test pits, drilling (diamond drillholes and auger holes), and mapping of outcrops (natural exposures, existing road cuts and drill pads cuts) to characterize subsurface conditions relevant for foundation and earthworks design. Samples were taken from selected test pits and drillholes for index testing of soil and rock. Bulk samples of rock and placer tailings were also analyzed for a range of parameters related to the potential for re-use as select fill or aggregate. Downhole and surface geophysical investigations were completed, and plate load tests were conducted at selected locations of proposed building and equipment foundations.

Borrow material types required for the Project include the following:

- ***Silt -*** These are fine-grained fills that can be used as a barrier for chemical and physical migration of fluids. Preliminary design criteria for silt liner materials would contain a minimum of 35% passing the No. 200 sieve and be free of all deleterious materials including oversize clasts of 75 mm or greater, frozen soils, and organics.
- ***Rock Fill -*** Rock fill can be classified as one of two types: 1) that derived from strong rock, yielding durable rock fragments larger than gravel size and containing sand and gravel with minimal fines when excavated/blasted; and, 2) that derived from weak, fissile rock, generating non-durable rock fragments. The first type may be placed and compacted as a rock fill in 1 m lifts, whereas the second type placed and compacted in thinner lifts, with watering and compaction similar to that required for an earth fill.
- ***Structural Fill -*** Structural Fill is an engineered soil material placed and compacted for use beneath lightly to moderately loaded structures to provide a uniform bearing surface with tolerable movements under load through the life of the structure.

  Materials that do not satisfy the specifications for structural fill may be used as structural fill in specific applications, at the discretion of the design engineer. For example, locally excavated weathered rock that contain more than 8% fines may serve as structural fill provided compaction objectives can be met and drainage/frost susceptibility issues are less important, e.g., used only at depth in thick fills.

- ***General Fill -*** General Fill is an inorganic granular material used for general site grading, thermal insulation cover and/or protection of pipes, or similar applications. General fill will be compacted to yield a stiff surface and will not be used for support of settlement-sensitive structures.
- ***Grading Fill -*** This is a soil material used as an intermediate layer between in-situ soil or rock subgrade and higher quality engineering materials above, such as road base, for example. Any granular material that can be placed and compacted to 95 % Modified Proctor maximum dry density (MPMDD) to provide a uniform bearing surface may be suitable for this purpose. Selected materials should have a maximum particle size of 150 mm. Oversize materials may be screened out, or can be removed from the surface of placed materials by hand. Suitable materials would include materials identified as suitable for structural fill or general fill, and may include local colluvium.
- ***Rip rap -*** Riprap consists of cobble and boulder size rock fragments, typically angular or sub-angular as derived from blasting or crushing, and is used as a protective barrier from erosion and scour due to water currents and/or ice. Material should consist of hard, durable rock fragments free from splits, seams or defects that could impair its soundness. Thicknesses of riprap layers typically vary from 1.0 to 1.5 times the maximum rock size. Riprap is typically specified by the median particle size, D50. Additional grain size criteria may be presented if the riprap needs to be either well graded or uniformly graded, depending on the specific application.
- ***Drainage Material -*** This is an open or gap-graded granular material intended for allowing free drainage of fluids to pipes and/or seepage collection systems. Drainage material should consist of crushed or uncrushed screened rock or gravel free of fines and flat, elongated particles. Grain size requirements depend on the specific drainage application.
- ***Filter/transition Material -*** Filters are a transition zone material used for preventing soil migration due to fluid flow between granular materials, and/or between rock fill and finer silt and clay layers. Filter material gradations are generally designed based on the specific material gradations that they will transition. Filter materials can be derived from rock excavations or gravel borrow areas, and may require crushing, screening and/or washing to attain the necessary gradations.
- ***Concrete Aggregate -*** Concrete aggregate includes fine and coarse aggregate meeting CSA A23.1 specifications for designing and proportioning concrete mix. Aggregates can be derived from crushed durable rock or gravel such as placer tailings.
- ***Road Base and Surfacing Material -*** This is an engineered material, consisting of a well-graded, hard, durable, sand and gravel or rock. Material should be free of flat and elongated pieces.

3.2.4.2 Borrow Sources

SGC and predecessor companies involved with development of quartz mining at Dublin Gulch have engaged in numerous and extensive site investigations which have examined subsurface conditions at the locations of proposed mine site infrastructure, using a variety of field and laboratory techniques. Given the presence of discontinuous permafrost in the area, close attention was given to observing and describing frozen ground in all of these investigations, including observations of excess ice where encountered. These investigations have resulted in reasonably accurate volume estimates of borrow sources and ice-rich material throughout the Project site.

Site subsurface conditions observed at the Project site have been described in several reports as follows:

- Report on 1995 Geotechnical Investigations for Four Potential Heap Leach Facility Site Alternatives, First Dynasty Mines, Dublin Gulch Property. (Knight Piésold, 1996a).
- Report on Feasibility Design of the Mine Waste Rock Storage Area, First Dynasty Mines, Dublin Gulch Property. (Knight Piésold, 1996b).
- Field Investigation Data Report, Dublin Gulch Project, New Millennium Mining. (Sitka Corp, 1996).
- Hydrogeological Characterization and Assessment, Dublin Gulch Project, New Millennium Mining. (GeoEnviro Engineering, 1996).
- BGC Engineering Inc. 2009. Site Facilities Geotechnical Investigation Factual Data Report. Eagle Gold Project, Victoria Gold Corporation.
- Stantec. 2011. Project Proposal for Executive Committee Review. Pursuant to the Yukon Environmental and Socio-Economic Assessment Act. Eagle Gold Project, Victoria Gold Corp. June 2011.
- BGC Engineering Inc. 2011a. 2010 Geotechnical Investigation for Mine Site Infrastructure, Factual Data Report. Eagle Gold Project, Victoria Gold Corporation.
- BGC Engineering Inc. 2011b. Eagle Gold – Borrow Evaluation Report, Project Memorandum, April 21, 2011; Appendix 34 in Stantec 2011. Eagle Gold Project, Victoria Gold Corporation.
- BGC Engineering Inc. 2012a. 2011 Geotechnical Investigation for Mine Site Infrastructure, Factual Data Report. Eagle Gold Project, Victoria Gold Corporation.
- BGC Engineering Inc. 2012b. 2012 Geotechnical Investigation for Mine Site Infrastructure, Factual Data Report. Eagle Gold Project, prepared for Victoria Gold Corporation, December 2012.
- BGC. 2017. 2016 Heap Leach Facility Geotechnical Investigation – Draft. Prepared for Victoria Gold Corp. February 22, 2017

Sources of borrow material have been identified via previous geotechnical investigations.

Durable meta-sedimentary rock (quartzite) and relatively un-weathered granodiorite is available from certain cut areas (e.g., HLF Phase 1 pad, crusher pads, stockpile areas, plant site, large road cuts, etc.), and from some of the placer tailings in the Dublin Gulch valley.

Most construction materials can be derived from local sources, including placer tailings and overburden stripped during mine development, and silt near the laydown area. Some processing will be required to manufacture select materials, including crushing, screening and/or washing. Some of the placer tailings are suitable for use as concrete aggregate.

The sources and approximate volumes of borrow materials are listed in Table 3.2-2. Borrow material sources are depicted in Figure 3.2-2.

Table 3.2-2: Summary of Borrow Material Availability

Borrow Source	Material Types	Comments
Open Pit Pre-strip	Durable rock fill Non-durable rock fill	Source consists of weathered granodiorite and weathered silicified metasedimentary rock (i.e. typically quartzite).

Borrow Source	Material Types	Comments
	Concrete aggregate Heap overliner Rip rap	Materials to be source prior to mining activities. Most near surface weathered rock suggests majority of excavated block size of approximately 100-300 mm. Larger block size for rip-rap may be possible.
Large road cuts, crusher pads, stockpile areas	Durable rock fill Non-durable rock fill Concrete aggregate Heap overliner Rip rap	Source consists of weathered granodiorite and weathered silicified metasedimentary rock (i.e. typically quartzite). Materials to be sourced prior to mining activities. Most near surface weathered rock suggests majority of excavated block size of approximately 100-300 mm. Larger block size for rip-rap may be possible.
Ann Gulch Central Knob	Mostly non-durable rock fill	None
Steiner Zone	Durable rock fill Non-durable rock fill Concrete aggregate Heap overliner Rip rap	Assumes quarry depth of 5 m.
Dublin Gulch Placer Tailings/Stockpile Areas	General Fill Structural Fill Concrete Aggregate Heap overliner Rip rap	Material types from placer tailings are highly variable, and will require processing through screening, crushing, and/or washing to develop the required material specifications. Oversized materials (> 75 mm) screened from the tailings may be suitable for use after crushing, as heap overliner, or concrete aggregate. Rip rap is expected from the screened oversize material; however the quantity of 500-600 mm particles is expected to be small.
Haggart Creek Placer Tailings	General Fill Structural Fill	
Laydown area/LDSP Area	Silt liner	Available silt materials are frozen and ice-rich, and will require thawing and drying prior to use.

3.2.5 Foundations

Buildings will be founded on horizontal conventional spread footings or other mass concrete foundations, covering a layer (minimum 150 mm thick) of compacted free-draining sand and gravel above subgrades. Foundations will be constructed below the maximum estimated 3 m depth for frost protection, or be insulated by sufficient Styrofoam or polystyrene insulation, between two layers of bedding sand. Buildings should be set back a minimum of 10 m from the crest of fill slopes. Conveyor foundations will primarily be construction on earth fill with some portions constructed on concrete-filled steel pipe piles socketed into rock.

The primary crusher will be located on Type 1 rock subgrade, with an allowable bearing pressure of 1,000 kPa. The secondary and tertiary crushers will be located on Type 2 rock subgrade with allowable bearing pressures of 400 kPa. Conveyors from the tertiary crusher to the HLF will be placed on bents on appropriately sized footings. Rock type definitions and allowable bearing pressures for ancillary facilities is provided in Table 3.2-3 and Table 3.2-4, respectively.

Table 3.2-3: Rock Type Definitions

Rock Type	Weathering Grade	Intact Rock Strength	GSI - RMR_{76} - RQD*	Core Recovery	Comments
3	W4 or better for all rock types 1,	> R0, ie. UCS ≥ 1 MPa for all	N/A	N/A	It is expected that Type 3 rock can be excavated with

	2 or 3	rock types 1, 2 or 3			normal excavating equipment.
2			GSI or RMR_{76} ≥ 30; or RQD > 10	≥ 50% for rock types 1 or 2	It is expected that Type 2 rock will require ripping.
1			GSI or RMR_{76} ≥ 40; or RQD > 40		It is expected that Type 1 rock may require blasting.

Notes: (*) RQD criterion can be used on the absence of Geological Strength Index (GSI) or Rock Mass Rating 1976 (RMR76).

Table 3.2-4: Allowable Bearing Pressures for Ancillary Facilities

Bearing Stratum	Allowable Bearing Capacity (kPa)	
	Up to 2m x 2m Pad Footing	Up to 2m x 20m Strip Footing
Structural Fill[1]	250	150
Highly to Completely Weathered Rock	250	150
Type 3 Rock	500	300
Type 2 Rock	1,000	600
Type 1 Rock	1,500	1,000

Notes: [1]Footings founded on structural fill require a minimum of 1.5 m of embedment (depth of bottom of footing below surrounding grade) to obtain the indicated allowance bearing capacity. Separate consideration of frost protection may be necessary.

A concrete batch plant consisting of a bulk storage silo, cement weigh batcher, twin shaft mixer, controls and motor control center, water weigh batcher and holding tank, mixer charging conveyor, aggregate feed system and generator will be located in a convenient location along the main mine road. Sumps will be constructed to contain, settle solids, and then reuse all concrete wash water with zero discharge to watercourses.

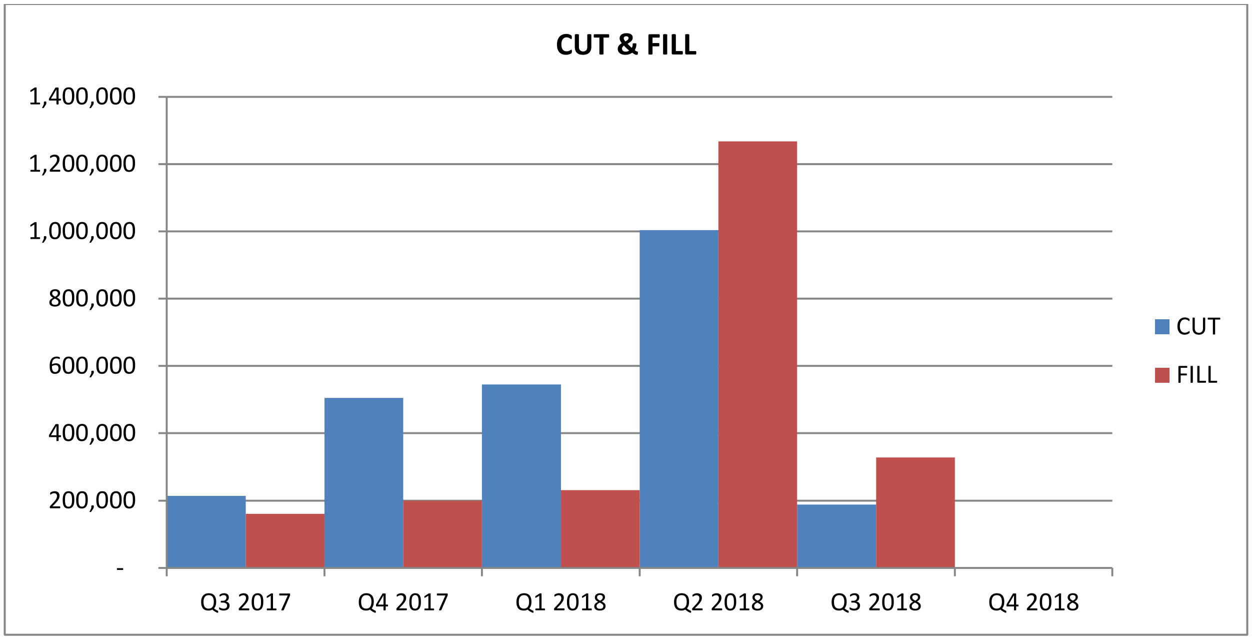
3.3 CONSTRUCTION QUALITY ASSURANCE / QUALITY CONTROL

A construction quality assurance and quality control plan is being developed as part of the detailed design and will be packaged with issued for construction drawing packages for specific infrastructure components.

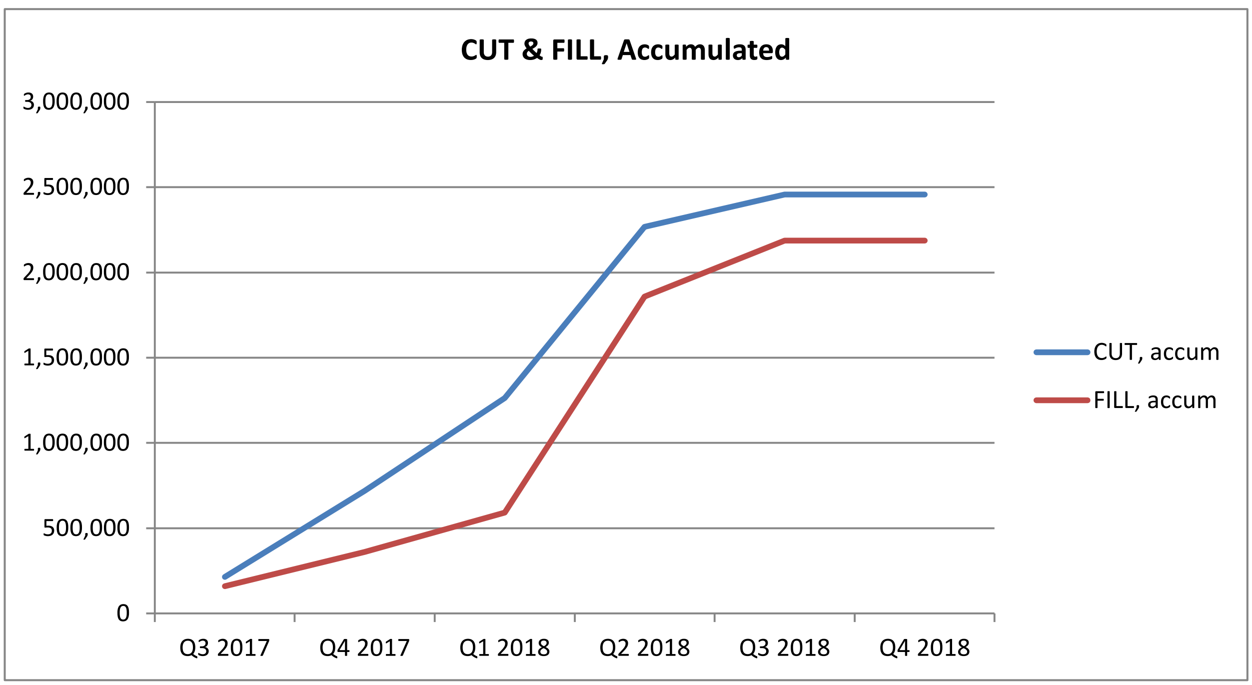
Detailed specifications and quality control measures will be part of the preparation of Issued for Construction design drawing packages.

3.4 MATERIAL RELEASE SCHEDULE

The Project will involve the movement of large quantities of earth and rock fill in a relatively short construction period and within a limited footprint. Infrastructure pads will generally be constructed as cut and fill operations when the material requirements described in Section 3.2.4 can be met. The figure below depicts the currently planned cut and fill operations for the initial construction phase of the project.



It is anticipated that there will be an excess of approximately 270,000 m^3 of cut material during the first phase of construction, as shown below. The excess cut material includes approximately 200,000 m^3 of topsoil with colluvium and weathered bedrock forming the remaining portion of cut material. This excess material will be stored in the reclamation stockpiles for use during the closure phase of the Project as discussed in the Closure and Reclamation Plan.



The Waste Rock and Overburden Facility Management Plan provide the various material types removed from the pit by year and to each destination (waste material to Eagle Pup or Platinum Gulch WRSAs and ore to primary crusher, temporary ore stockpile and HLF).

3.5 ORE HANDLING PROCEDURES

3.5.1 Crusher and Conveyor System Overview

Ore will be mined and delivered to the primary crusher at an average rate of 29,500 t/d (10.76 Mt/a). The remaining crusher units, conveyor and portable stacking system are designed to crush and place ore at a rate of 39,200 t/d. The locations of the crushing system are shown on Figure 3.5-1.

The HLF will operate year-round. During most of the year (275 d/a) ore will be crushed, agglomerated (during the first two years of HLF stacking or as required based on the Agglomeration Test Plan required by QZ14-041 prior to loading ore on the HLF), stacked and leached using a 1,219 mm wide conveyor stacking system. Primary crushed ore will be stockpiled on the temporary ore stockpile during the coldest 90 d each winter while leaching continues on the HLF.

A temporary ore stockpile will be developed to store up to approximately 3.0 Mt (i.e., assuming 90 days) of crushed ore (primary only) during the coldest 90 days of each winter (November to March). Ore from the temporary ore stockpile will be reclaimed back into the crushing circuit, so that the secondary and tertiary crushers will process 39,200 t/d. The locations and design of the temporary ore stockpile are described in the Waste Rock and Overburden Facility Management Plan.

Ore will first be delivered by haul truck to the primary crusher, located north of the open pit. During regular operations (275 d/a), the ore will be transported by covered conveyor from the primary crusher to the coarse ore transfer station. Ore will then be transported to the secondary crushers and following crushing onto the tertiary crushers. The ore processing plant will include secondary and tertiary cone crushers and associated conveyors, feeders, chutes, bins, screens, head sampler, dust collection system, overhead cranes and ancillary equipment, including but not limited to plant air, lube systems, heating, and lighting. For the gyratory crusher a storage area/stand for a fully dressed main–shaft is to be provided with appropriate crane coverage to facilitate crusher maintenance. Chutes and chute liners are designed to allow for easy liner replacement, with a pre-engineered replacement liner system. The dust collection system is designed together with all chute transfers, crusher and screen covers and conveyor skirting to reduce dust generation and optimize dust collection.

During the coldest part of winter (90 d/a), the primary crushed ore will be conveyed from the coarse ore transfer station to the temporary ore stockpile. Once climate conditions meet operational criteria for HLF pad stacking, the ore stored on the temporary ore stockpile will be reclaimed and fed back into the crushing system to the secondary crushing plant. The crushing system will produce an average particle size P80 6.5 mm.

The crushed ore will then be transported by covered conveyor to the heap leach pad for stacking. Agglomeration will occur during the first two years of HLF stacking (or as dictated by the future Agglomeration Test Plan) using lime and cement. After which only lime will be added to the ore before it is stacked on the heap leach pad. The cement and lime, if required, will be added to the ore on the conveyor feeding the heap leach pad from the final transfer station located immediately east of the HLF embankment. Ore will be stacked on a composite liner system in 10 m lifts using a stacking conveyor system.

3.5.2 Primary Crushing and Conveying

The primary crushing and screening plant will have a gyratory primary crusher with ore dump pocket having a capacity of 300 metric tonnes, and the ability to truck dump from two sides. The Project will employ a mobile rock breaker. Primary crusher capacity will be to crush run-of-mine ore (at a maximum nominal size of 1,000 mm) at a rate of not less than 29,500 metric tonnes per day, feeding a fine ore crushing and screening plant. The primary crusher dump pocket will be located at 1,062 masl, just over 200 m north of the final open pit rim. During regular operations, run-of-mine (ROM) ore will be direct-dumped into the dump pocket. The primary crushed ore will be collected in the discharge pocket below the primary crusher. A belt feeder will regulate the discharge rate of the primary crushed ore, nominally at 1,756 t/h onto the 1,524 mm wide primary crushing discharge conveyor. The conveyors will be fitted with covers.

3.5.3 Secondary Crushing and Conveying

The primary crushing discharge conveyor will deliver the primary crushed ore to the coarse ore stockpile via the stockpiles diverter. The ore is reclaimed from the coarse ore stockpile through two vibrating feeders on to the secondary crushing feed conveyor. The two vibrating feeders will regulate the ore feed rate from the coarse ore stockpile to a nominal rate of 1,402t/h each (to accommodate primary crushed ore reporting from current mining operations and reclaimed ore coming from the temporary stock pile), to an inclined double deck vibrating screen (secondary screen) with apertures of 100 mm and 38 mm, respectively. The two separation decks produce a coarse and a fine product.

The coarse product material will discharge to secondary crushers with a closed side setting of 35 mm.The undersize material from the secondary screen will report directly to the tertiary crushing feed bin.

The combined secondary crusher discharge product and screen undersize will be transported by a secondary crushing discharge conveyor to the tertiary crusher feed bins. The discharge conveyor will be equipped with a magnet to remove any tramp steel that may be mixed in with the ore that may damage the conveyor belts and crushers. The conveyors will be fitted with covers.

3.5.4 Tertiary Crushing and Conveying

Ore from the secondary crushing circuit will be conveyed to a feed bin prior to the final crushing stage. Material from the feed bin will be fed, in parallel, to three inclined double deck vibrating screens. The screen oversize material from the three screens will be fed to tertiary crushers operating in a closed circuit.

Screen undersize material will be conveyed directly to a series of conveyors and then to the heap leach pad. The tertiary crusher discharge will be fed back to the vibratory screens thereby completing the closed circuit. The final crushed ore will be reduced to a P80 size of 6.5 mm.

Various ancillary equipment will include a dust collection system, overhead cranes, weightometers, samplers, maintenance hoists, and lubrication units for the crushers.

Legend:

- Cleared Area
- Facility
- Reserved Area
- Perennial
- Ephemeral
- Intermittent
- Waterbody
- Contour (25m)

StrataGold Corporation

0 125 250 500
Metres

Projection: NAD 83 UTM Zone 8N

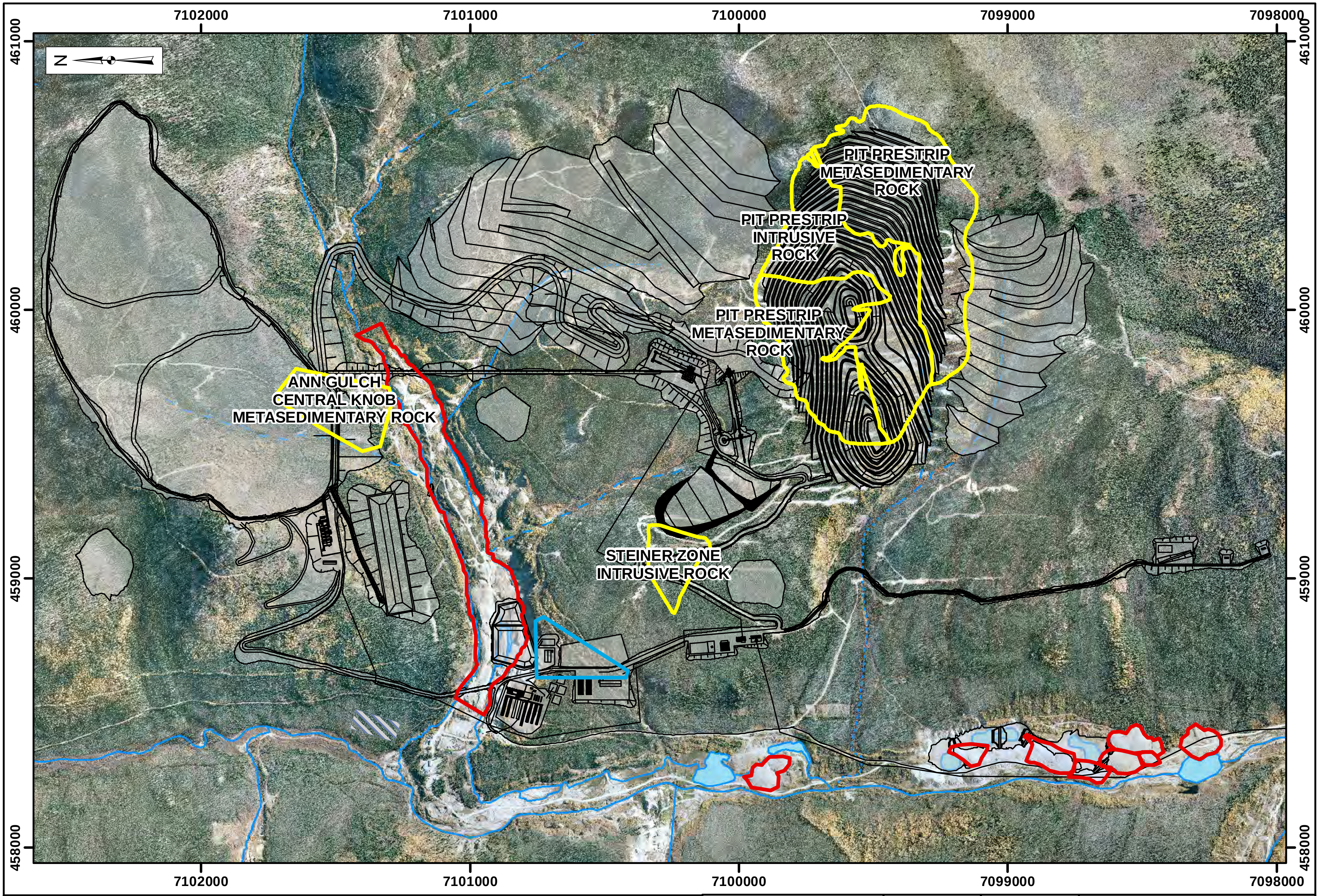
Drawn By: HC

Date: 2017/07/12

Figure: 3.2-1

EAGLE GOLD PROJECT
YUKON TERRITORY

Site Clearing Extent



Legend:

Placer Tailings	Facility	Perennial
Rock Material Source	Reserved Area	Ephemeral
Silt Material Source		Intermittent

StrataGold Corporation

0 125 250 500
Metres

Projection: NAD 83 UTM Zone 8N

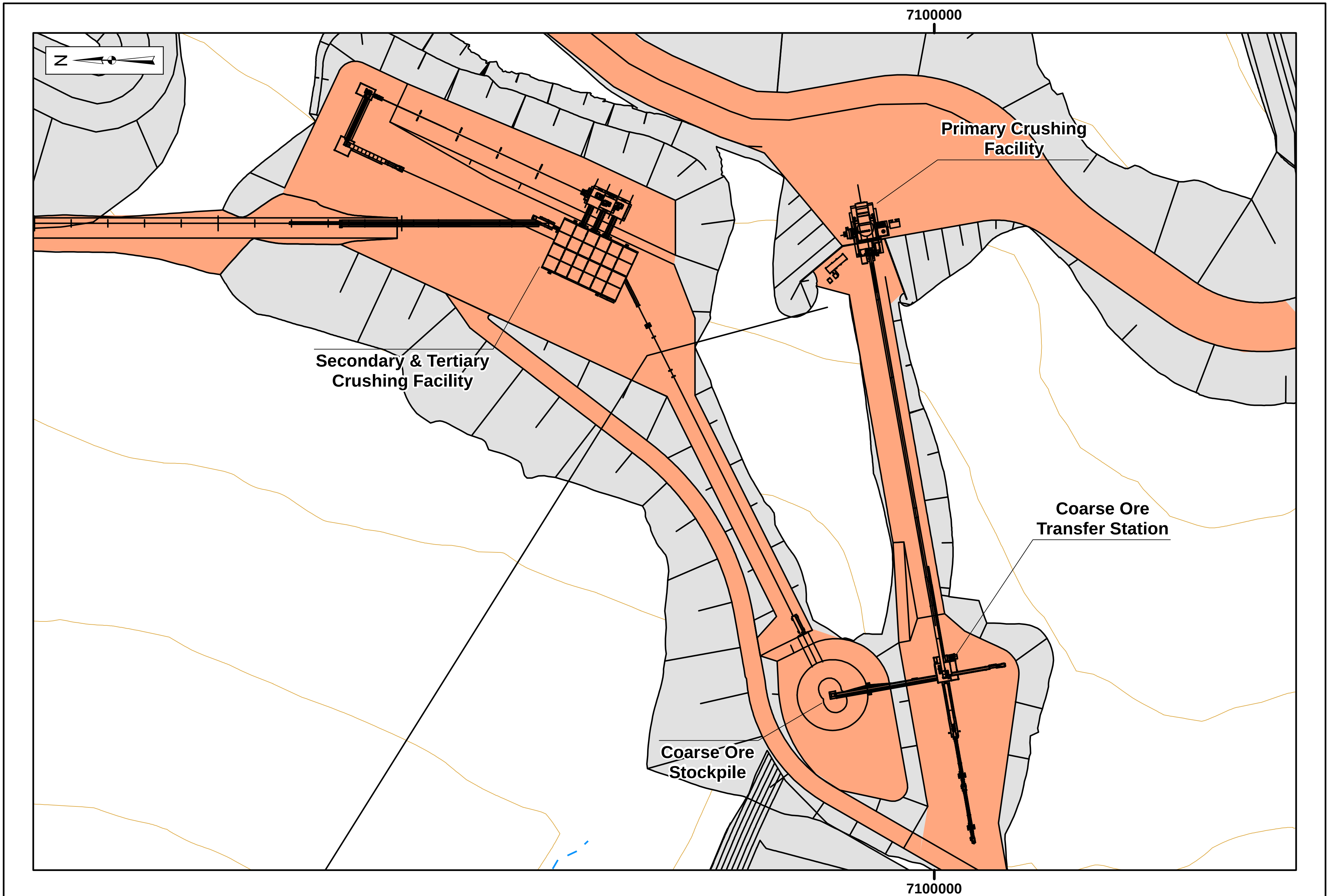
Drawn By: HC

Date: 2017/07/12

Figure: 3.2-2

EAGLE GOLD PROJECT
YUKON TERRITORY

Construction Borrow Material Locations



Legend:

Facility	Cut & Fill Extent
Pads & Road Bed	Contour (25m)

StrataGold Corporation

0 20 40 80
Metres

Projection: NAD 83 UTM Zone 8N	Drawn By: HC	EAGLE GOLD PROJECT YUKON TERRITORY
Date: 2017/07/12	Figure: 3.5-1	Crushing and Screening

4 ASSOCIATED MINE SERVICES AND INFRASTRUCTURE

The Eagle Gold Mine will be supported by ancillary infrastructure, and industrial complex and fuel storage facilities. All infrastructure associated with the mine is shown on Figure 1.2-1.

4.1 BUILDINGS

The Project will include permanent accommodations for at least 250 people and temporary accommodations for an additional 150 people during construction (total peak construction camp capacity at 400 people). The camp will consist of modular dorm units, washroom facilities, a kitchen and dining area, and laundry facilities. Administration, mine offices, and camp dry will be integrated into the camp complex.

A modular assay laboratory, mine truck shop, truck scale, and guardhouse will also be developed.

4.2 ACCESS ROAD AND LAYDOWN AREAS

From Mayo, access to the Project site is along approximately 85 km of existing paved and gravel roads. Roads from Mayo to the site include the Silver Trail (Highway 11) and via the existing South McQuesten Road (SMR) and the Haggart Creek Road (HCR). All but the HCR is government maintained road. The HCR will be upgraded to a single lane, radio controlled gravel surface road with pullouts appropriately spaced. The HCR will require minor alignment and drainage upgrades to support construction and operations phase traffic.

StrataGold will implement the following to maximize road and transport safety:

a) Work with the Department of Highways and Public Works to ensure both public and private portions of the access road are properly maintained and upgraded as required

b) Enforce speed limits for all Project vehicles

c) Ensure trucking/hauling contractors have appropriate driver training, radio contact capabilities, vehicle maintenance requirements, and spill response capabilities

d) Ensure all hazardous materials are transported and handled in accordance with the Transportation of Dangerous Goods Act and Regulations

e) Require bulk carriers to carry two-way radios to communicate with the mine site

f) Post signage along Haggart Creek Road and ensure non-Project traffic is aware of radio protocols

g) Identify wildlife migration corridors and crossings along the road and provide signage in high risk areas

h) Plow snow at wildlife crossing and escape points in the access road snow banks (i.e., 0.5 m or less at regular intervals).

4.3 TRANSMISSION LINE AND SUBSTATION

Power to the site will be supplied by a new 43.5 km transmission line connection to the Yukon Energy Corporation grid, routed along the access road (Figure 4.3-1). The 69 kV transmission line will feed a main substation on site (Figure 4.3-2) to provide power to mine site infrastructure and related loads. The transmission line will be constructed in accordance with the Department of Fisheries and Oceans Canada Operational Statement for Overhead Line Construction and any clearing activities will be under the supervision of a qualified environmental professional to ensure that SGC commitments to reduce or mitigate environmental disturbance are observed.

The site main 69 kV step-down substation will contain an incoming line termination structure, a main incoming circuit switcher (combined breaker and motorized isolating switch) and areal 69 bus work to deliver 69 kV power to two step-down transformers, each with a primary circuit switcher. The transformers will be connected to the secondary 13.8 kV metalclad switchgear via cable bus. This switchgear, located in the diesel power plant modular E-house, will include the transformer main secondary circuit breakers, and in addition to the diesel plant generator circuit breakers, will include circuit breakers for site 13.8 kV power distribution via overhead lines to the crushing and processing plants, pumping installations, and ancillary facilities.

4.4 EXPLOSIVES AND MAGAZINE STORAGE FACILITIES

Explosives will be stored and handled in accordance with a magazine license issued by Natural Resources Canada. Explosives and blast caps will be stored in separate facilities, away from operational areas. Two containers will be placed to house explosives components. Both of these structures will be located southwest of the open pit (Figure 4.4-1). One container will house explosives, while the other magazine storage facility will house blasting caps.

4.5 FUEL STORAGE

The largest fuel storage facility will be located near the substation and power generation facility in a bermed containment area and will contain three 100,000 L diesel fuel tanks, one 75,000 L diesel tank, and one 25,000 L gasoline storage tank. A 100,000 L fuel tank will be also located near the primary crushing plant. A 10,000 L storage tank that will store waste lubricating oil collected from mine equipment will be located near the ADR plant, as well. Three 5,000 gallon capacity propane tanks will be located adjacent to the permanent camp. The camp fuel storage capacities assume a reserve storage of two weeks to last during winter operations.

SGC will implement the following spill prevention and response measures:

a) If there is any doubt regarding the size of a spill, material involved, and whether it is reportable, SGC will err on the side of caution and report the spill.

b) Caches of spill response materials will be placed along the access road as required by the Spill Response Plan, including at the Haggart Creek crossing.

c) Project staff will have appropriate emergency response and spill contingency training and knowledge. Equipment, materials, and procedures will be maintained to limit the consequences of releases to the environment through prompt containment and clean-up.

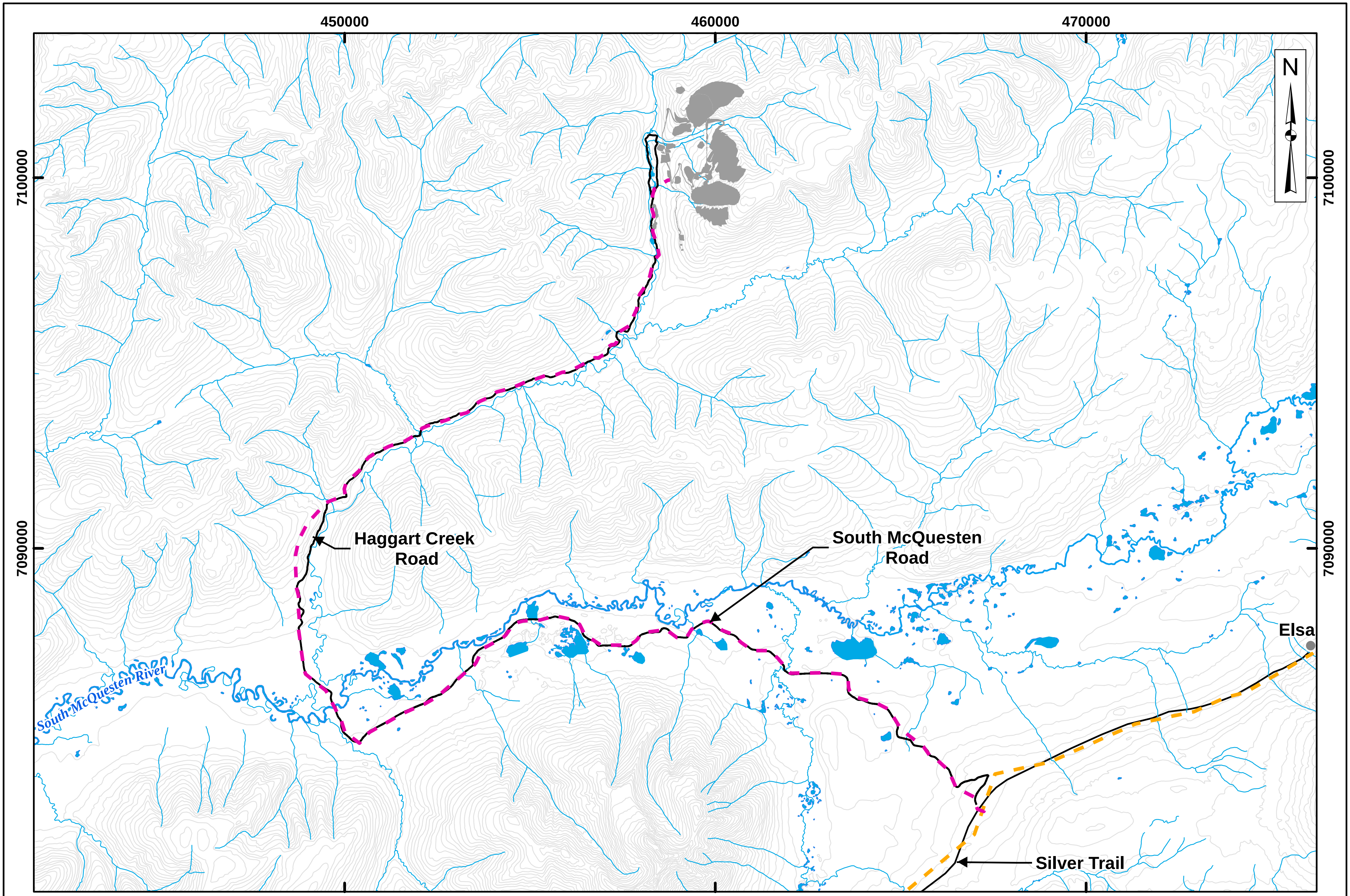
d) Fuels, hydrogen peroxide, and other hazardous liquids will be transferred from tanker trucks to storage tanks by enclosed lines, hoses, and pumps equipped with pressure transducers and volume counters to ensure tanks cannot be overfilled.

e) No lubrication, refueling or maintenance of equipment will occur within 30 m of wetlands or watercourses.

f) All fuelling and lubrication of construction equipment will be carried out in a manner that minimizes the possibility of spills. All containers, hoses, and nozzles will be free of leaks and all fuel nozzles equipped with functional automatic shut-offs.

g) Where stationary equipment cannot be relocated more than 30 m from a watercourse, it will be situated in a designated area that has been bermed and lined with an impermeable barrier with a holding capacity equal to 125% of the largest tank within the berm.

h) Equipment operators will be appropriately trained in spill response procedures and carry spill kits capable of handling spills on land and water.



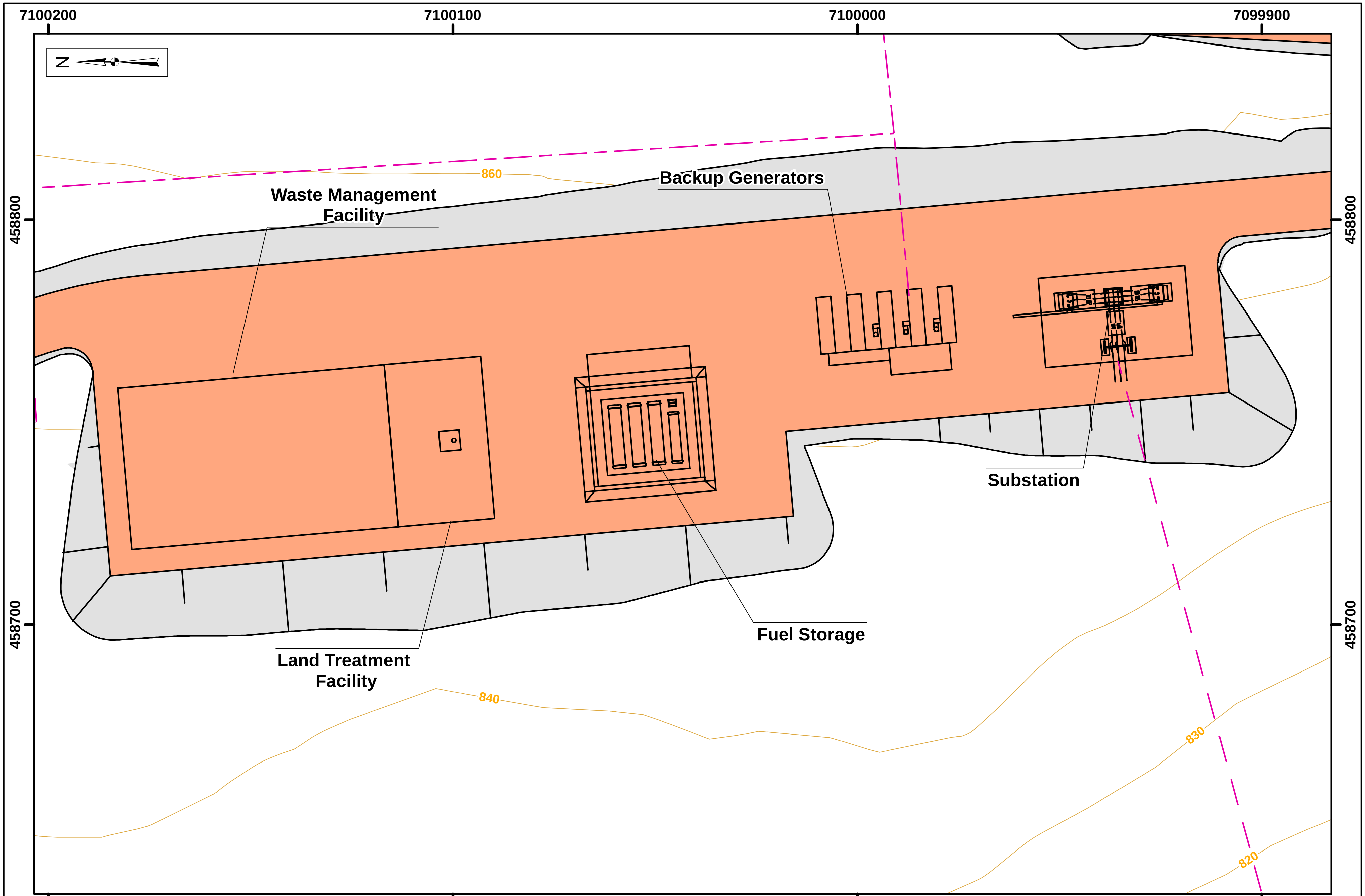
Legend:

- Eagle Gold Transmission Line
- Existing Transmission Line
- Eagle Gold Project
- Road
- Watercourse
- Contour (100ft)
- Town / Village

StrataGold Corporation

Projection:	Drawn By:	EAGLE GOLD PROJECT YUKON TERRITORY
NAD 83 Zone 8N	HC	
Date: 2017/07/16	Figure: 4.3-1	Transmission Line

0 1 2 4 Kilometres

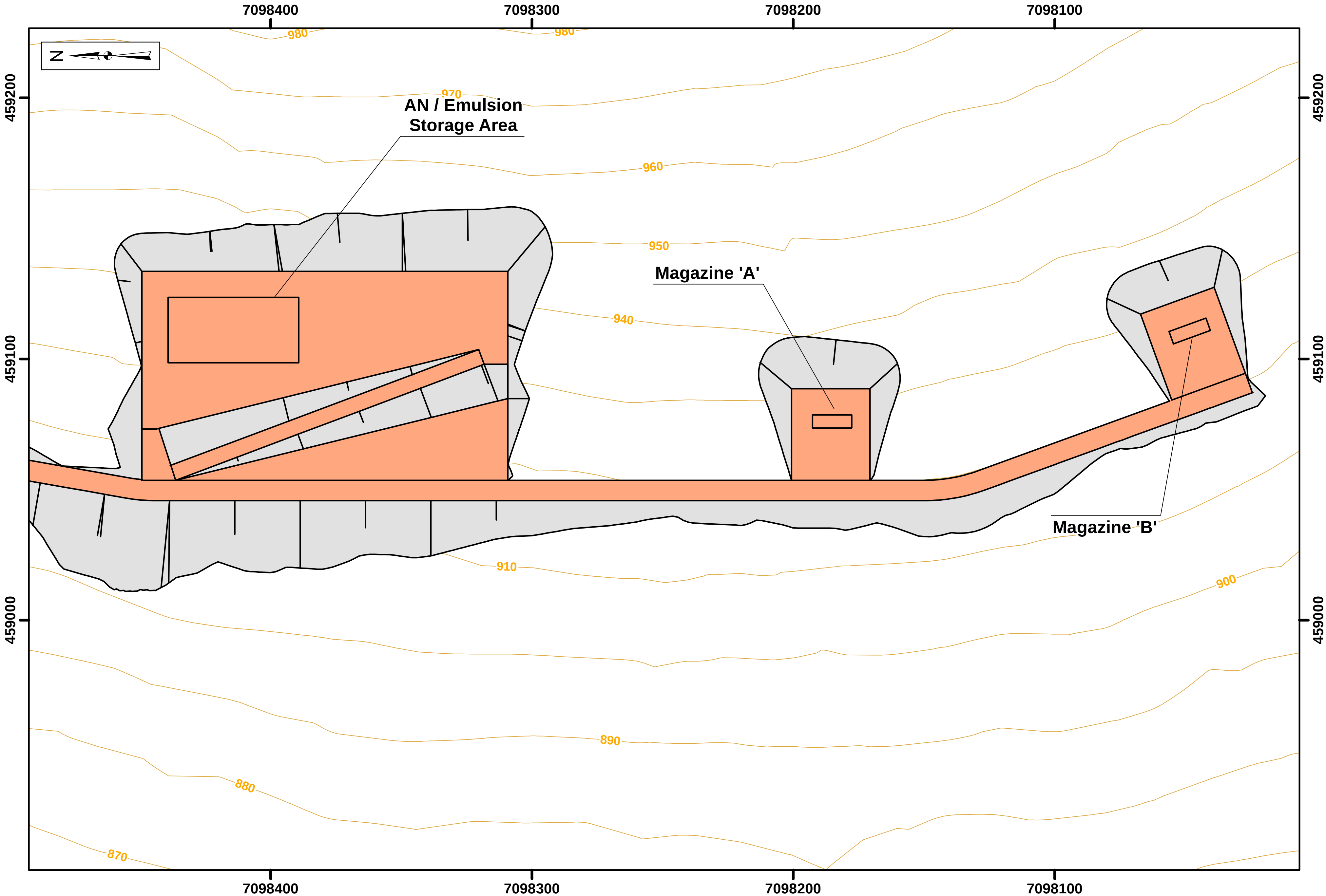


Legend:
- Facility
- Transmission Line
- Site Power Distribution
- Pads & Road Bed
- Cut & Fill Extent
- Contour (10m)

StrataGold Corporation

0 10 20 40 Metres

Projection:	Drawn By:	EAGLE GOLD PROJECT YUKON TERRITORY
NAD 83 UTM Zone 8N	HC	
Date: 2017/07/12	Figure: 4.3-2	Substation



Legend:

Facility	Cut & Fill Extent
Pads & Road Bed	Contour (10m)

StrataGold Corporation

0 15 30 60
Metres

Projection: NAD 83 UTM Zone 8N	Drawn By: HC	**EAGLE GOLD PROJECT YUKON TERRITORY**
Date: 2017/07/12	Figure: 4.4-1	**Explosives and Magazine Storage Area**

5 ADDITIONAL OPEN PIT DESIGN CONSIDERATIONS

5.1 OPEN PIT CONSTRUCTION SEQUENCING

During Stage 2 Construction, a part of the open pit will be cleared and grubbed progressively to enable the quarrying of durable and non-durable rock to develop the haul roads and for other facility construction materials. Overburden and extremely weathered or altered material will be mined by ripping or excavation with bulldozers and backhoes. Standard drill and blast technology will then be used to advance the pit.

Following the construction period, the open pit will be mined initially in 10 m benches and then double-benched as mining proceeds towards the final highwall. The open pits are designed with 10 m benches in both waste and ore headings with adequate phase geometry to achieve a maximum production rate of 29 Mt/year. Given the required production rate and pit geometries, vertical advance rates average eight benches per year, with frequent requirement for ramp development and opening of new benches.

5.2 DEPRESSURIZATION

The open pit slope angles have been developed assuming varying levels of depressurization to maintain the stability of the walls. Achieving the open pit slope design parameters will require the installation of a sufficient amount of horizontal drainholes to depressurize the pit wall approximately 125 m horizontally from the pit wall face. It is currently estimated that it could take approximately 41 km of horizontal drains, or approximately 300 drainholes, each assumed to be 150 m in length, to depressurize the pit walls over LoM. Vertical depressurization wells will likely not be required throughout the majority of the pit due to the relatively low hydraulic conductivity of the bedrock. If areas of enhanced permeability are encountered as the pit advances, increased rates of groundwater inflow could occur and it may be advantageous to install a number of depressurization wells to aid in managing the groundwater. It is estimated that approximately 10 vertical pumping wells may be required as a contingency to support the horizontal drain depressurization through LoM. The number and location of the drainholes will be adapted in the field to match conditions observed as the open pit is excavated.

Water collected within the open pit footprint, including pit wall runoff, water from the depressurization wells, and groundwater inflows, will be gathered at a common open pit sump and then transferred to Ditch B and then to the Lower Dublin South Pond. The Surface Water Balance Model Report provides estimates for the volume of water that will need to be managed from the open pit during all phases of the Project. Further discussion on routing and management of open pit water can be found in the Water Management Plan.

5.3 GROUND MOVEMENT MONITORING

Ground movement monitoring of the open pit will consist of visual observations by Project staff and the use of theodolites (robotic or manual) and a network of survey prisms. Approximately 20 to 40 prisms will be installed around the pit perimeter, including three backsights (control points), during the mine start-up to establish the initial survey monitoring system. These initial prisms will be monitored with a single theodolite surveying from two or three locations around the pit. The selected monitoring locations will be stable with good visibility of the prisms. During the development and expansion of the pit, another 50 to 100 prisms may be required, with higher prism density in the east pit wall area.

If areas of instability have been identified either through visual inspections or surveying, specific locations within the failure areas may require more detailed monitoring that could include installation of time domain reflectometry (TDR) cables, slope inclinometer, or extensometers to measure displacements across specific features such as shear zones or cracks.

Visual inspections of the open pit slopes will be undertaken daily. Weekly surveys will be carried out on the survey prisms until a stable baseline is established for each prism and then the survey frequency will be reduced to monthly. If potentially unstable areas are noted during operations, prism density and survey frequency will be increase as directed by the mine’s geotechnical engineer.

More detailed inspections of the open pit walls will be completed on a monthly basis by the mine’s geotechnical engineer or a competent person who has appropriate geotechnical experience and is familiar with the technical aspects of the open pit design, construction and monitoring.

5.4 BLASTING AND WALL CONTROL

Controlled blasting will be utilized to protect the highwall from blast damage, thereby achieving the geotechnical recommendations for drained steep slopes. Controlled blasting requires a series of techniques to minimize damage to the rock at the limits of open pit mines and excavations due to the action of ground shock wave generated during the blast. Controlled blasting is used to preserve the natural strength and integrity of the rock at the perimeter of the pit. The range of techniques that may be employed includes presplitting, trim blasting, buffer blasting and line drilling. The common feature of controlled blasting techniques is a row of holes drilled at reduced spacing along, or just in front of the final wall usually loaded with smaller amount of charge.

Primary rotary blasthole drills will be 229 mm in diameter and have a spacing of 6.2 m by 7.4 m in order to provide suitable fragmentation for the loading equipment. A diesel powered hydraulic track drill with a 191 mm diameter drill bit will be used for secondary drilling and highwall slope work.

Blasting will be performed using bulk ANFO as the main explosive, with plastic hole liners in wet conditions. The average powder factor for the holes is expected to be 0.30 kg/tonne with an average annual consumption of 6,500 tonnes. Further detail regarding blasting operations on the Project site is provided in the Explosives Management Plan.

5.5 HAUL ROADS

Ramp widths used in the designs were three times the maximum truck width plus a berm and ditch. A width of 21 m running surface plus allowance for a berm was calculated for 150 t class haul trucks and designed at a maximum gradient of 10% with flat turning surfaces, where practical, at switchback locations to reduce road maintenance and wear to the haulage trucks. Ramp widths at the base of the pit are single carriageways and steepened to 12% to minimize overall waste stripping volumes.

Switch-backs will be strategically located within the various phase designs to maintain constant access points to the surrounding WRSAs. From these access points, two dump lifts can be built by either ramping up or down.

The following standards, in order of highest to lowest priority, apply to rights-of-way at any area not controlled by traffic signs:

- Emergency vehicles - when lights flashing
- Trucks transporting dangerous goods (TDG):
    - Explosives transport vehicles
    - Reagent transport trucks
    - Fuel trucks
    - Other TDG trucks
- Haul trucks
- Bulk carriers (non-TDG)
- Heavy equipment - from large to small
- All other vehicles

When two comparable trucks/vehicles meet, the blind side vehicle has the right-of-way.

Passing is permitted only when safe to do so. Radio or visual contact must be made before passing any heavy equipment.

6 REFERENCES

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APPENDIX A

Feasibility Update Pit Slope Geotechnical Report Eagle Gold Project Yukon Territory, Canada. prepared November 30, 2016 by SRK Consulting (U.S.) Inc. Denver, CO for Victoria Gold Corp., Vancouver, BC.

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Feasibility Update
Pit Slope Geotechnical Report
Eagle Gold Project
Yukon Territory, Canada

Report Prepared for

Victoria Gold Corp.

Report Prepared by

srk consulting

SRK Consulting (U.S.), Inc.
SRK Project Number 251000-050
November 30, 2016

Feasibility Update
Pit Slope Geotechnical Report
Yukon Territory, Canada

Victoria Gold Corp.

Suite 584 – 1055 Dunsmuir Street
Vancouver, B.C. V7X 1K8
Canada

SRK Consulting (U.S.), Inc.
1125 Seventeenth Street, Suite 600
Denver, CO 80202

e-mail: denver@srk.com
website: www.srk.com

Tel: +1.303.985.1333
Fax: +1.303.985.9947

SRK Project Number 251000-050

November 30, 2016

Authors:
Michael Levy, M.Sc., P.E., P.G., Principal Consultant (Geotechnical)
Felipe González, Senior Consultant (Rock Mechanics)

Reviewed by:
John Tinucci, P.E., Ph.D., Practice Leader, Principal Consultant (Geotechnical)

Table of Contents

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List of Abbreviations

The metric system has been used throughout this report. Tonnes are metric of 1,000 kg, or 2,204.6 lb.

Abbreviation	Unit or Term
2D	two-dimensional
3D	three-dimensional
°	degree (degrees)
ASTM	American Society for Testing and Materials
BGC	BGC Engineering Inc.
bgs	below ground surface
cm/sec	centimeter per second
cm^3	cubic centimeter
ESM	equivalent strength material
FOS	factor of safety
g/t	grams per tonne
GSI	geologic strength index
FSU	feasibility study update
kg/m^3	kilogram per cubic meter
km	kilometer
kN/m^3	kilonewton per cubic meter
kPa	kilopascal
m	meter
m^2	square meter
m^3	cubic meter
MP	Mining Plus Canada Ltd.
MPa	megapascal
Mt	million tonnes
oz	ounce
%	percent
RQD	rock quality designation
RMR	rock mass rating (according to the Bieniawski 1976 criteria)
t	tonne
t/d	tonnes per day
UCS	uniaxial compressive strength

Executive Summary

SRK Consulting (U.S.), Inc. (SRK) was retained by Victoria Gold Corp. (Victoria Gold) and its subsidiary StrataGold Corporation (StrataGold) provide pit slope design criteria for a feasibility study update (FSU) on Victoria Gold's wholly owned, Eagle Gold Project. As part of a prior (Wardrop, 2012) feasibility study, a significant amount of geotechnical work had already been completed which served as the basis for the FSU pit slope design recommendations. No additional field data collection or laboratory testing were conducted as part of the FSU .As commissioned, the work was conducted to a feasibility-level of accuracy and in accordance with NI43-101 guidelines.

Slope Stability Analyses

During the review of the previous work, opportunities were identified that could advance the previous work, potentially resulting in less conservative slope angles and reduced stripping. Detailed probabilistic bench design analyses were conducted incorporating the natural variability in discontinuity properties through statistical distributions that were defined based primarily on the original BGC (2012a) discontinuity characterization and strength testing information. The probabilistic analyses demonstrated that less conservative bench design parameters could be used while still demonstrating that bench stability can be maintained.

Bench design analyses were accomplished using the software program SBlock (Esterhuizen, 2004) and an acceptability criteria of a maximum probability of failure of 30% and approximately the 80th percentile bench width (i.e. an 80% reliability). The primary conclusions from the analyses follow:

- Based on the current final pit design and the structural trends identified to date, a majority of the Eagle and Olive pits are not anticipated to be significantly impacted by structurally controlled instabilities. A maximum achievable bench face of 70° was used based on data uncertainties and operational constraints;
- The highest risk of bench and possibly low interramp scale instabilities at Eagle pit were found to be in northeast dipping walls in the intrusives. Walls in this orientation and area have a high likelihood of planar instabilities and wedges formed by the intersection of two discontinuity sets. However, walls oriented in this direction represent a very small portion of the overall pit design;
- Metasediment bench face and lower interramp slope angles along west dipping pit walls at Eagle pit are anticipated to be controlled by the dominant foliation discontinuities as well as wedges formed by the intersection of two discontinuity sets; and
- Achievable bench face and lower interramp slope angles in the Olive Pit Northwest Intrusive Sector are anticipated to be controlled by the intersection of various combinations of two discontinuity sets.

It should be noted that the bench stability analyses are based solely on geologic structure and do not directly consider effects of weathering, alteration, blasting or excavation techniques. Depending on the quality of blasting and excavation techniques, achievable bench face angles might be reduced from the theoretical angles determined by these analyses. When taking these operational effects into consideration, it is rare to achieve effective bench face angles greater than about 70° to 75° unless there is a steeper structure controlling the bench geometry. Increasing bench face angles to greater than about 70° to 75° may be achievable but usually requires more rigorous drilling and blasting effort and specialized controlled blasting techniques than are commonly practiced.

Limit equilibrium slope stability analyses were then conducted using the modeling software package, Slide (Rocscience, 2015b) to confirm physical stability of the high interramp/overall slope angles that resulted from strictly on the detailed bench design criteria. Rock mass shear strengths were developed for each rock type based largely on the BGC (2012a) investigation and assuming the Hoek-Brown (Hoek, et al., 2002) rock mass shear strength criteria. Results of the overall slope stability analyses for the bench configuration based slope angles indicated safety factors between 1.3 and 1.8 for Eagle pit and 1.3 and 3.4 for Olive pit which either meet or exceed the minimum acceptable safety factor of 1.3.

Pit Slope Design Recommendations

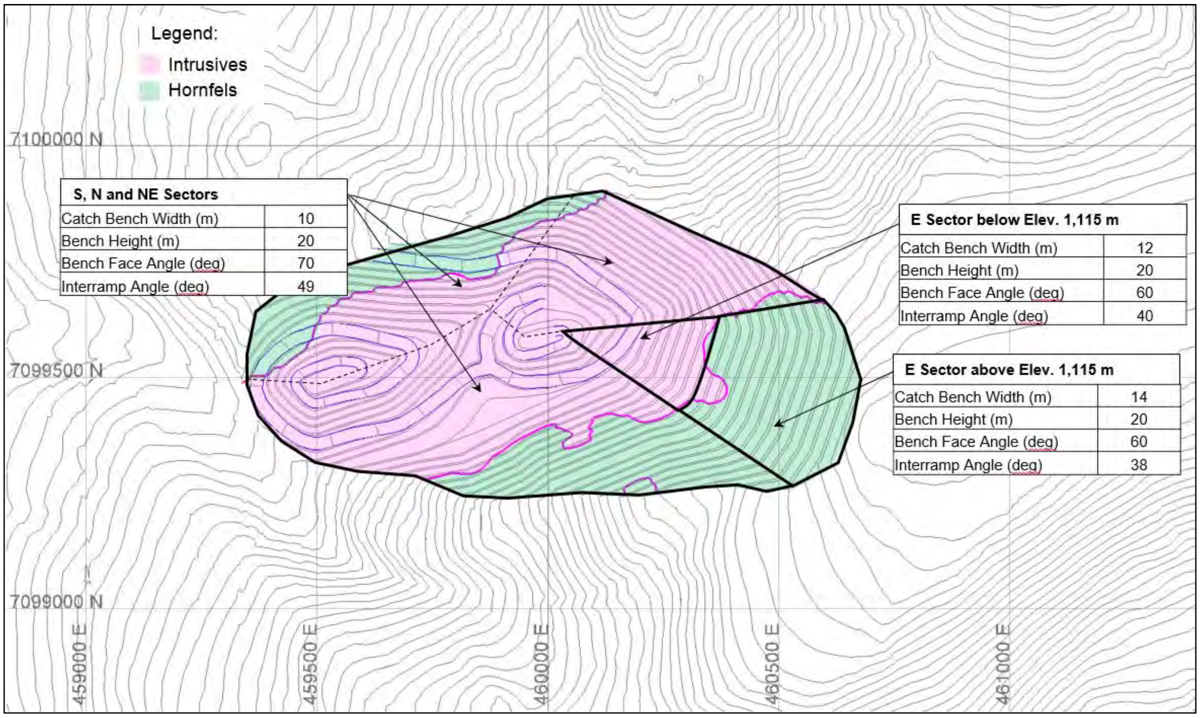
Based on the results of the bench design and overall slope stability analyses, recommended pit slope design parameters are summarized in Table 1 and shown graphically on Figure 1. The recommendations in Table 1 are based on dip direction of the pit wall (e.g., for an east-west trending, south facing, the slope dip direction would be 180° azimuth).

The recommendations for Eagle pit are based on full depressurization occurring to a minimum distance of 125 m behind the pit wall as was recommended by BGC as part of the previous (2012) feasibility study. BGC (2012a and 2014) recommends the installation of 250 m horizontal drains to accomplish the 125 m depressurized zone and provides additional specifications for horizontal drain construction and installation. SRK has relied upon the previous BGC hydrogeological work and on BGC's conclusion that the 250 m horizontal drains as described by BGC (2014) will sufficiently depressurize the rock mass.

Table 1: Recommended Pit Slope Design Parameters

Pit	Sector	Max. Slope Height (m)	Wall Dip Direction		Bench Face Angle (°)	Bench Height (m)	Bench Width (m)	Max. ISA[1] (°)
			From (°)	To (°)				
Eagle	North	225	130	200	70	20	10	49
	Northeast	280	200	265	70	20	10	49
	East (above elev. 1,115 m)	280	265	305	60	20	14	38
	East (below elev. 1,115 m)	210	265	305	60	20	12	40
	South	375	350	85	70	20	10	49
Olive	Southeast	180	090	260	70	20	10	49
	Northwest	110	260	090	70	20	10	49

(1) ISA indicates Interramp Slope Angle.



Source: SRK, 2016

Figure 1: Pit Slope Design Recommendations

Recommendations for Additional Geotechnical Work

Beyond major mineralization controlling structures, the structural geology of the project is not well understood. Major geologic structures not currently included in the 3D structural model or whose existence is unknown could have an adverse impact on mine stability (e.g., a slope failure fostered by structure(s) that have not been accounted for in the 3D structural model or SRK stability analyses. SRK recommends additional structural geology work be completed to develop a pit-scale 3D structural model. It is anticipated that this can be accomplished based primarily on the existing drillhole database with minimal, if any, additional drilling required. As part of the structural geologic interpretation, additional work should also be conducted to evaluate the potential for large scale faults paralleling foliation in the Eagle pit metasediments and to further delineate the spatial extent of the "clay-altered intrusive" rock described by BGC (2012a).

A thorough geological and geomechanical bench face mapping program should be undertaken beginning in the early stages of development to verify that the geologic structural conditions encountered are consistent with the assumptions and estimates used in the analyses, and to identify local variations in structural conditions that might increase the risk of localized instabilities. The data collection should concentrate on developing geomechanical databases that will facilitate further refinement of the bench design and optimization of interramp and overall slope angles. Particularly important information will include discontinuity persistence, spacing and variations in orientation as well as assessments of blast performance.

A slope monitoring program should be designed to ensure that the slopes are behaving as anticipated and warn if significant movements occur. The monitoring program should include, at a minimum, a network of survey prisms monitored that are analyzed regularly.

1 Introduction and Scope of Work

SRK Consulting (U.S.), Inc. (SRK) was retained by Victoria Gold Corp. (Victoria) and its subsidiary StrataGold Corporation (StrataGold) to provide feasibility-level pit slope design criteria for a feasibility study update (FSU) on Victoria Gold's wholly owned Eagle Gold Project. The project is located in central Yukon Territory, Canada. As commissioned, the work was conducted to a feasibility level of accuracy and in accordance with NI43-101 guidelines.

1.1 Project Background

The Eagle Gold project is located in the central Yukon Territory, Canada, approximately 375 kilometers (km) north of the capital city of Whitehorse, and approximately 85 km from the town of Mayo. The area consists of low mountainous terrain with steep valleys and rounded ridges, typical of central Yukon. The elevation of the mine site is approximately 1,200 m above sea level.

The project consists of two separate open pits mined by conventional shovel and truck methods at a nominal ore mining rate of 33,700 tonnes per day (t/d) over its ten year mine-life. The ratio of waste to ore is 0.95 to 1 with a total of 116 million tonnes (M)t of waste material. A total of 123 Mt of ore will be processed with an average diluted grade of 0.67 grams per tonne (g/t) producing a total of 2.66 million ounces (Moz) of gold. The project will have three permanent waste rock storage areas, a heap leach pad and supporting infrastructure facilities and roadways.

1.2 Scope of Work

SRK's original scope of work for the Feasibility Study Update (FSU) included the following:

- Review of the previous BGC Engineering, Inc. (2012a) Eagle geotechnical pit slope work and provide pit slope design recommendations for the three interim phased pits and for the FSU. The previous (2012) Eagle pit feasibility study final pit slope angles were also reviewed for the update;
- Review of the Mining Plus Canada Ltd. (2015) geotechnical report and other available sources of geotechnical information for the Olive pit. Final pit slope design criteria appropriate for a feasibility level of study were developed based on the previous investigations;
- Prepare letter report describing conclusions and recommendations for the Eagle and Olive pits;
- Provide relevant sections regarding pit slope stability for the NI 43-101 Technical Report and Feasibility Study reports;
- The scope of work did not include geotechnical review or analyses associated with the plant site, water management structures, heap leach pad and/or site permafrost; and
- This scope of work is based solely on existing information and did not include additional field investigation or laboratory testing.

During the review of the BGC (2012a) work, several opportunities were identified that could advance the previous works potentially resulting in less conservative slope angles and reduced stripping. Details regarding SRK's review and recommendations for advancement of previous work were provided in a letter report to Victoria Gold (SRK, 2016). Subsequent to the review, SRK's scope of work was revised to include the following:

- Detailed probabilistic bench design analyses for the Eagle and Olive final pits;
- Limit equilibrium slope stability analyses to confirm physical stability of the high interramp/overall slope angles that resulted based strictly on the detailed bench design criteria; and
- The additional detailed analyses were based on the original BGC (2012a) rock mass and discontinuity characterization and strengths.

Engineering and analyses conducted by SRK as part of this scope have relied upon several inputs that were provided by others during the previous (2012) Feasibility Study and the current Feasibility Study Update including:

- Project hydrogeology and pit depressurization studies completed by BGC (2012a and 2014);
- Geotechnical field data collection and laboratory strength testing as provided by BGC (2012a);
- Geotechnical characterization and domaining as presented by BGC (2012a);
- Project geologic, structural and alteration models and information provided by AVM Consulting LLC (2016) and Victoria Gold; and
- Raw core orientation and logging data for Olive pit as provided in Mining Plus (2015) report.

2 Bench Design Analyses

The consequences of an overall or high interramp slope failure on a final pushback commonly produce significant impact on mine economics, in that a substantial quantity of ore is frequently rendered uneconomic by the additional, unanticipated cost of removing the resulting failed wall material. The evaluation of the anticipated stability of final design slopes is therefore necessary and must be incorporated into final design recommendations. Of similar importance and impact on the project economics, though not nearly as dramatic as large scale slope failures, are the design and excavation of the benches and bench stacks; i.e., those slopes comprised of two to three benches. This is a result of the fact that overall slope designs cannot be successfully realized if benches cannot be safely and effectively established as per their design.

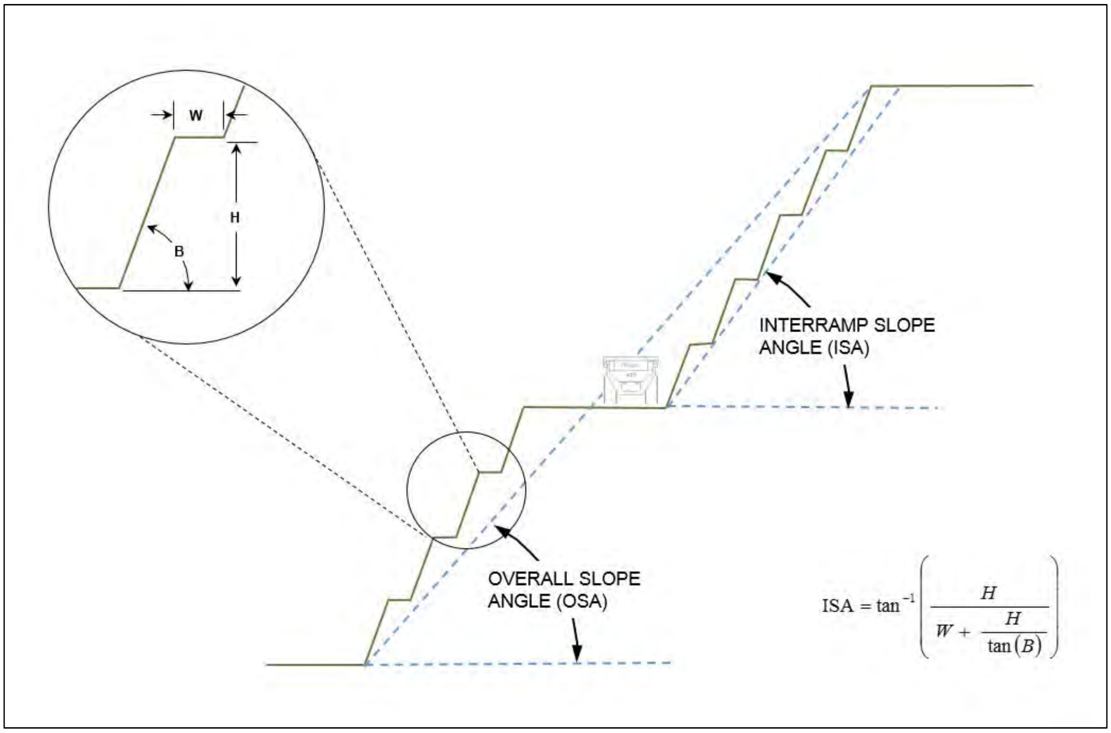
Although the expected performance of the overall and higher interramp slopes comprising the open pit can best be predicted and subsequently examined using rock mass failure models, the anticipated behavior of the bench and lower interramp slopes is most realistically assessed using analytical models that incorporate structurally controlled failure mechanisms. This is because rock structure; i.e., joints and other non-fault discontinuities, will most likely facilitate structurally controlled failures, whenever the site materials have relatively high rock mass strengths.

In relatively strong, competent rock masses such as anticipated at Eagle, the development of rock mass failure in benches and in lower height interramp slopes is essentially precluded. Consequently, the evaluation of structurally controlled or kinematic failure potential of benches and lower height interramp slopes is the dominant consideration in the formulation of bench design recommendations.

In recognition of the documented tolerance of lower-height slopes to earthquake-induced ground accelerations on the order of those reasonably expected at the site, only static analyses were conducted. The presence of groundwater and resultant pore pressure development is not expected to influence bench-scale slope stability at Eagle, for which it is anticipated that production blasting typical to open pits will induce additional fracturing such that any groundwater that might exist will drain sufficiently freely.

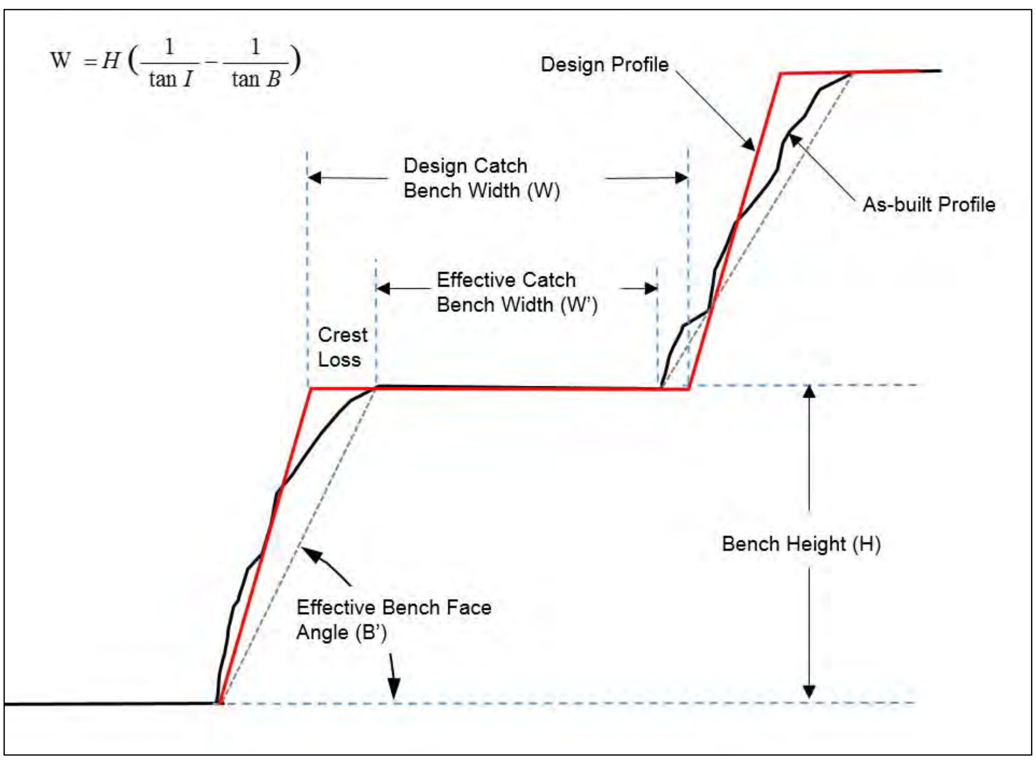
2.1 Pit Slope Design Terminology

Slope design involves analysis of the three major components of an open pit slope; i.e., bench configuration, interramp slope angle (ISA) and overall slope angle (OSA) as shown in Figure 2-1. The bench configuration, which is defined by the bench face angle (B), bench height (H) and berm width (W), defines the interramp slope angle. The overall slope angle consists of interramp slope sections separated by wide step-outs for haul roads, mine infrastructure or geomechanical purposes. The overall slope angles at Eagle will be approximately equal to the corresponding interramp angles except in areas where a haul road exists. The individual bench design components are defined further on Figure 2-2.



Source: SRK, 2015

Figure 2-1: Pit Slope Design Components



Source: SRK, 2016

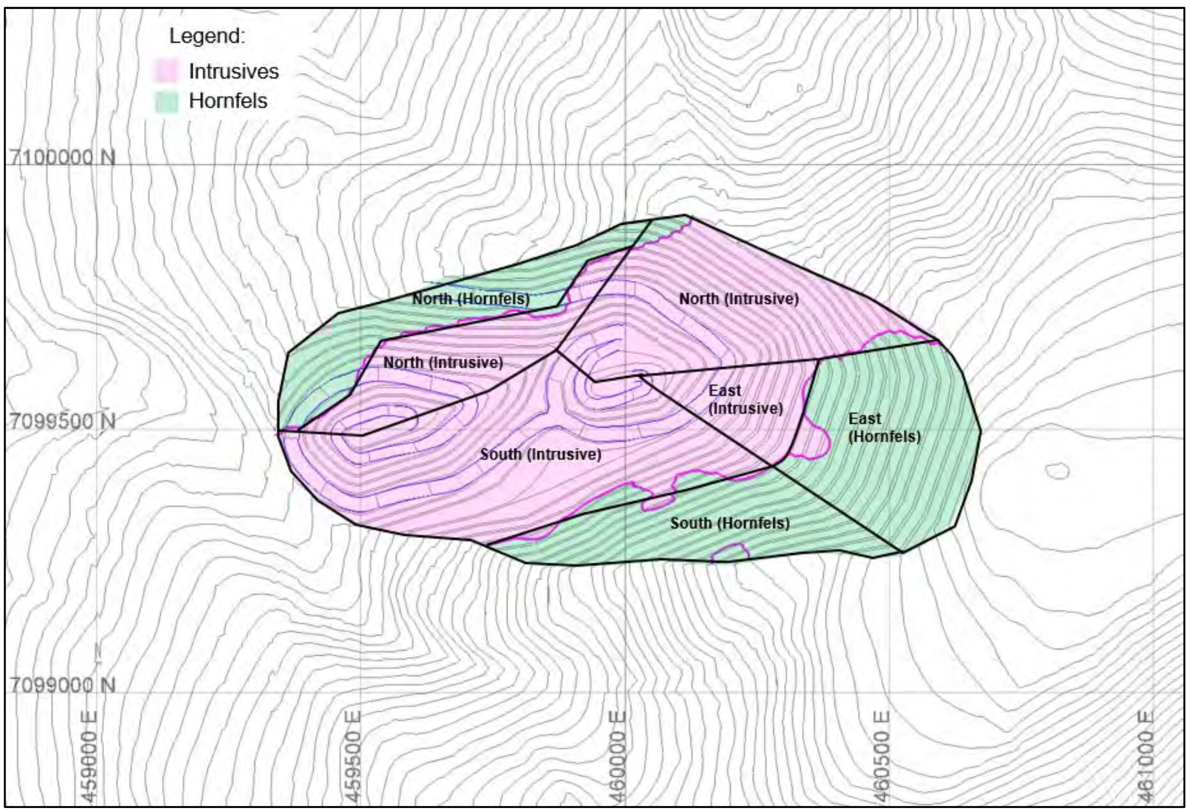
Figure 2-2: Explanation of Bench Design Terminology

2.2 Geomechanical Domains and Pit Design Sectors

Geomechanical domains define reasonably large volumes where rock mass quality and discontinuity patterns are sufficiently similar that they can be grouped together for analysis. Domains are most commonly bound by major faults and/or lithological contacts. Geomechanical domains for Eagle and Olive pits were based primarily on lithology (i.e., metasediments and intrusives). The surficial weathered rock across the site is very shallow and represents an insignificantly small portion of the pit walls and as such, was not separated into its own domain.

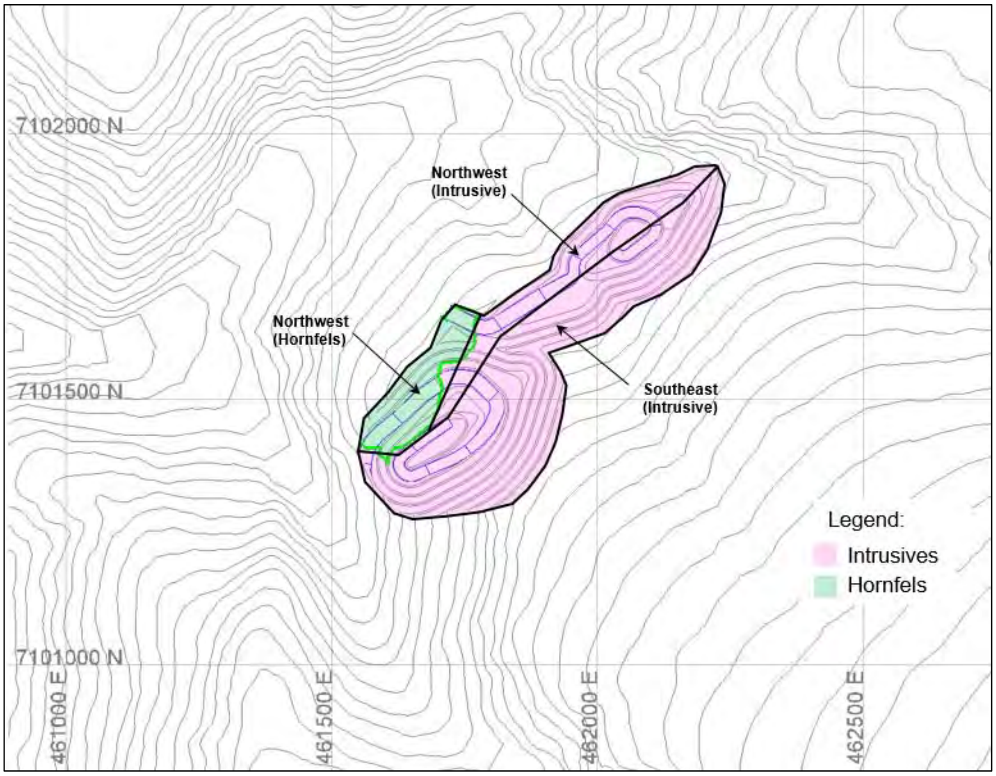
Stable pit slope angles are influenced not only by geologic structure, rock mass strength and porewater pressures, but also by pit wall orientation. As such, pit slopes were divided into regions of similar structural characteristics and pit slope orientation called “design sectors”, delineating regions which are expected to exhibit similar response to pit development. A total of seven pit design sectors were delineated for the Eagle FSU ultimate pit design for the Eagle pit and three sectors for Olive. Pit design sectors are shown in Figures 2-3 and 2-4 for the Eagle and Olive pits, respectively.

Domain and sector boundaries for the Eagle pit were very similar to the previous (BGC 2012a) boundaries except where revised for slight revisions to the updated pit geometry.



Source: SRK, 2016

Figure 2-3: Location of Slope Design Sectors - Eagle Pit



Source: SRK, 2016

Figure 2-4: Location of Slope Design Sectors - Olive Pit

2.3 Description of Models Used

The primary potential structurally-controlled failure mechanisms at Eagle can be simplified into two categories:

- Plane Shear failure, defined as translation or sliding of a block on a single geologic structure striking essentially parallel (within approximately ±20˚) to the slope. Release surfaces which provide negligible resistance to sliding or tension must define the lateral boundaries of the block. Alternatively, failure can occur on a single plane passing through the convex "nose" of a slope; and
- Simple Wedge failure, defined as translation of a tetrahedral-shaped block bounded by the bench face, the essentially flat catch bench above and two intersecting geologic structures, each oriented obliquely to the slope face. The wedge slides down the line of intersection of the two intersecting structures.

In both instances, the failure mechanism is only viable if:

- A geologic structure is present in a plane shear orientation relative to the slope, or if two geologic structures are present and oriented relative to each other and to the slope in such a manner that wedge tetrahedron is formed;
- Either the plane or the wedge line of intersection (between the two geologic structures) is "daylighted"; i.e., if the potential plane shear surface or the wedge line of intersection intersects the bench face and the flat catch bench slope above; and

- The plunge of either the plane shear structure or the line of intersection of the two wedge forming structures, in the plane perpendicular to the slope face, is flatter than the slope angle.

Once it is determined that a viable potential failure mass does exist, the likelihood of sliding or failing can be assessed by determining if the maximum shear resistance that can be developed along the potential failure surface or surfaces is greater than the driving forces acting to destabilize the mass.

The maximum available shear resistance is a function of both the structure continuity and its shear strength. For failure to occur along a discontinuous geologic structure, the non-fractured rock forming the intact portion(s) of the potential failure surface must fail. Intact rock strength for all but the weakest of rock tends to be higher than the stresses developed in bench and lower height interramp slopes; consequently, the strength of intact rock is rarely exceeded. Seldom do failures of such scale occur along surfaces that are not comprised of through-going, continuous geologic structures. The models used to analyze stability of the bench and lower height interramp slopes assume that failures can only develop along geologic structures which are continuous through the slopes. The available shear resistance, then, becomes a function solely of the discontinuity shear strength along the surface, given that continuous structures are present.

The overall probability of a structurally controlled bench or lower height interramp slope simplifies, becoming a function of the following:

1. The probability that geologic structure(s) occur and in the required location and orientation relative to the slope and, in the case of wedge failure, to each other to define a kinematically viable block ($P_{occurrence}$);
2. The probability of a geologic structure or, in the case of wedges, the line of intersection of two structures being continuous and daylighting in both the bench face and the flat catch bench above ($P_{continuity}$); and,
3. The probability that the shear stresses along the potential failure surface(s) exceed the maximum available shear resistance or strength of the discontinuities ($P_{strength}$).

The probability of failure (P_f) for a single occurrence of a particular failure mode is the probability that mechanism is kinematically viable and that its shear strength will be exceeded or:

$$P_f = \left(P_{occurrence}\right) \times \left(P_{continuity}\right) \times \left(P_{strength}\right) \quad (1)$$

2.4 Bench Design Analyses

The stability of bench scale and lower interramp slopes was modeled stochastically using the software program SBlock Ver.2.023.1 (Esterhuizen, 2004). SBlock is based on the keyblock theory developed by Goodman & Shi (1985) and uses probabilistic distributions of joint set properties (orientation, spacing and length) to simulate a large number of potential 3D blocks and calculates their removability from a given open pit bench face orientation. It is assumed that a block may contain smaller blocks combined to form larger blocks which are limited in size only by the length of the joints.

Once removability has been established, the program uses vector methods to determine the sliding direction, normal and shear forces on the sliding planes and the safety factor of each block. Sliding can occur along a single plane (planar failure) or along two planes (wedge failure) and occasionally along three planes. The user does not have to identify which type of sliding and failure mode to consider, the program identifies blocks and determines whether they can slide out of the face and the sliding mode. The program automatically looks for combinations of different joints and checks for potential sliding failure modes.

The program repeatedly draws joint surfaces from distributions of orientation, spacing and length developed from the user provided statistical inputs. The joint surfaces drawn are tested to determine whether a block is formed. A block can be any convex shape with up to 8 facets. Multiple block runs, such as those used for the Eagle analyses, are based on a 200 m bench length. Each time joints are selected, they are analyzed to determine if they intersect “scan lines” that are located at mid-height of the bench face. The number of joints intersecting the “scan line” is verified against the expected joint frequency along the scan line. When a sufficient number of joints have been sampled along the scan line, a new bench is started. Statistics are accumulated for each bench for the number of potentially unstable blocks, the volume of failure, safety factors, probability of failure, average effective bench width, allowing users to evaluate the relative stability of different bench face slope angles, orientations and heights. Several applications of SBlock used in operating mines have been presented by Hormazabal (2013).

A SBlock model was constructed for each sector using available discontinuity set information for the respective sectors. The wall dip direction was varied for each model depending on the range of expected wall orientations within each pit sector. With the exception of the Eagle pit east wall in metasediments, each model and wall orientation was evaluated with a design bench face angle (B) of 65° and 70° and bench height (H) of 10 m and 20 m to determine the probabilities of failure and amount of crest expected for a given geometry. The Eagle pit east wall was analyzed with design bench face angles of 55° and 60° due to the pervasive foliation within the metasediments.

For the final analyses, double (20 m high) benches were analyzed instead of single (10 m high) benches because properly executed double benches result in steeper effective bench face angles due primarily to the confinement on the lower lift(s). The upper bench lift, adjacent to a design catch bench, is unconfined or free-faced in the upward direction and, consequently, some level of crest loss is unavoidable; however, for the lower lift(s), where there will not be a catch bench left adjacent to the blast, the confinement from the rock above effectively eliminates the potential for crest loss, assuming proper controlled blasting procedures are followed.

In addition, the double bench option was examined in recognition of the fact that, unless the mean lengths of the geologic structure appreciably exceed the height of the benches, bench stacking can produce remaining bench widths in excess of those that would be achieved with single benching. This is because unless the geologic structures are long when compared with the bench height, it becomes less likely that a structure will be sufficiently long to daylight near the toe of a slope and extend to daylight at the crest of the slope, thereby delineating a viable failure. The fact that most open pit benches degrade primarily in their upper reaches and, usually, not from the toe of the bench to the top further demonstrates this principle.

Wider catchments are more likely to retain rock fall and provide access to benches for cleaning. Careful cleaning and scaling is required for double benches which, considering the bench height relative to scaling equipment reaching capabilities, must be done after each lift.

2.5 Model Inputs and Assumptions

Joint set properties such as orientation, length, spacing and shear strength are input into SBlock and used by the software to define probabilistic distributions. The orientation (dip and dip direction) of joint sets are represented by normal distributions using the average value and an estimate of the range or variability. Joint spacing and length are both assumed to follow truncated negative exponential distributions. The inputs required to define spacing and lengths include the mean, minimum and maximum values. It is assumed by the model that every joint truncates against another joint. Shear strengths of the joints between blocks are modeled using the linear, Mohr-Coulomb criteria with friction angle and cohesion as inputs.

Spacings of discontinuities were developed based on drillhole data while lengths of discontinuities had to be estimated given the lack of outcrop exposure at the site. Discontinuity lengths were estimated based on mapping experience at other operating open pit mines as well as the frequency of occurrence of each set identified from the (BGC, 2012) drillhole data. Very prominent discontinuity sets such as foliation and sets that are parallel to regional fault trends were assigned longer mean lengths and tighter (closer) spacings. Less prominent or secondary joint sets were modeled with shorter mean lengths and wider spacings. The shear strength assigned to each joint set was selected for the respective lithology and discontinuity types based on the previous (BGC, 2012) laboratory testing and characterization work.

Joint orientation data obtained by BGC (2012a) were analyzed within each of the slightly revised domains for the FSU pit using Dips v. 6.0 software (Rocscience, 2015a). For the Eagle pit, the BGC (2012a) drillhole discontinuity orientation dataset was used to develop discontinuity sets for analysis. The discontinuity sets identified from the joint orientation data were closely compared to the fault sets that were identified by BGC (2012a) and found to be very similar in orientation. The Olive pit sets were based on the 2016 resource drillcore orientation data.

Stereonets were plotted for each individual area with joint, foliation and fault discontinuities represented separately and are included in Appendix A. Table 2-1 contains a summary of the average set orientations as well as the various other model input parameters for each of the domains or sectors.

Table 2-1: Summary of Input Parameters per Geomechanical-Structural Domain

Domain/ Sector	Set ID	Orientation (°)			Length (m)			Spacing (m)			Strength	
		Dip	Dip Dir.	Range	Avg.	Min.	Max.	Avg.	Min.	Max.	ϕ (°)	Coh. (kPa)
Olive Pit: Southeast Wall Intrusives	**J1**	**79**	**299**	**30**	**20**	**5**	**50**	**1.5**	**0.5**	**4**	**34**	**0**
	J2	**87**	**167**	**30**	**25**	**5**	**50**	**1**	**0.25**	**3**	**34**	**0**
	J3	83	53	30	20	5	50	1.5	0.5	4	34	0
	J4	85	257	30	15	5	30	2	1	5	34	0
Olive: NW Wall Metasediments	**FOL**	**36**	**312**	**40**	**30**	**5**	**100**	**0.5**	**0**	**2**	**30**	**0**
Olive Pit: Northwest Wall Intrusives	**J2**	**71**	**174**	**30**	**25**	**5**	**50**	**1**	**0.25**	**3**	**34**	**0**
	J3	74	114	30	20	5	50	1.5	0.5	4	34	0
	J4	74	219	30	20	5	50	1.5	0.5	4	34	0
	J5	85	257	30	15	5	30	2	1	5	34	0
Eagle Pit: North Wall Intrusives	**J1**	**51**	**85**	**30**	**25**	**10**	**50**	**1.5**	**1**	**3.5**	**34**	**0**
	J2	74	166	30	25	10	50	1.5	1	3.5	34	0
	J3	62	259	30	25	10	50	1.5	1	4	34	0
	J4	34	352	30	15	8	50	2	1	4.5	34	0
	J5	88	84	30	15	8	50	2.0	1	6	34	0
Eagle Pit: East & South Wall Intrusives	J1	82	25	30	15	8	50	2	1	6	34	0
	J2	**49**	**52**	**30**	**25**	**10**	**50**	**1.5**	**1**	**3.5**	**34**	**0**
	J3	**47**	**106**	**30**	**25**	**10**	**50**	**1.5**	**1**	**3.5**	**34**	**0**
	J4	66	269	30	15	8	50	1.5	1	4	34	0
	J5	59	312	30	20	10	50	2	1	4	34	0
	J6	68	348	30	15	8	50	2	1	6	34	0
Eagle Pit: Metasediments	**FOL**	**29**	**267**	**30**	**30**	**15**	**100**	**0.5**	**0**	**2**	**30**	**0**
	J2	72	355	30	15	8	50	2	0.5	6	30	0
	J3	56	45	30	15	8	50	2	0.5	6	30	0
	J4	45	338	30	15	8	50	2	0.5	6	30	0

Note: Bold text indicates the principal or most dominant sets in each domain based on the set's frequency of occurrence.

As illustrated in Table 3-1, up to six discontinuity sets were included in each model which is generally considered conservative; however, each set was verified at one or more locations within each sector. Given the relatively high dip angle (greater than 70°) of many of sets, the inclusion of the high number of joint sets in the models is may not significantly impact the results.

2.6 Modeling Results

For each combination of slope dip and dip direction for each domain, model outputs included the probability of failure (PF), average effective bench width after crest loss (W'), average failure volume, a cumulative distribution of the effective bench widths calculated and a plot of joint activity showing the frequency at which each joint set contributed to single plane or double plane (wedge) failures or as a back release. An acceptability criterion of a probability of failure (PF) of <30% and an 80% reliability was adopted for the project based on recommendations by Read & Stacey (2009).

The results of the final SBlock analyses are summarized in Table 2-2 for Eagle pit, Table 2-3 for Olive pit. The probability of failure (PF), average effective bench width (W') and the effective bench width with an 80% reliability are summarized for each bench face angle analyzed. SRK recommends designing the bench slopes at the Eagle and Olive pits be based on the average effective bench width and a maximum 30% probability of failure. Catch bench widths are designed to meet or exceed those suggested by the Modified Ritchie Criteria as described by Call (1992).

Table 2-2: SBlock Analysis Result for Eagle Pit

Domain	Slope Dip Direction	Bench Design Inputs				Bench Width Results			PF (%)
		H	B	W	IRA	W' (m)	Bench Width Required (m)	Cumulative Distribution of Bench Width >80%	
Eagle Pit: Metasediments	150	20	70	10.0	49	10.0	0.0	9.2	0.0
	165	20	70	10.0	49	10.0	0.0	9.2	0.0
	185	20	70	10.0	49	10.0	0.0	9.2	0.0
	270	20	60	12.0	40	12.0	0.1	11.0	0.0
		20	60	14.0	38	14.0	0.1	13.0	0.0
	290	20	60	12.0	40	12.0	0.0	11.0	0.0
		20	60	14.0	38	14.0	0.1	13.0	0.0
	305	20	60	12.0	40	12.0	0.2	11.0	0.1
		20	60	14.0	38	14.0	0.5	13.0	0.1
	338	20	70	10.0	49	9.9	1.8	9.2	2.0
	345	20	70	10.0	49	9.9	2.3	9.2	4.0
Eagle Pit: North Wall Intrusives	160	20	70	10.0	49	9.9	2.0	9.2	2.3
	180	20	70	10.0	49	9.9	2.2	9.2	3.0
	185	20	70	10.0	49	9.9	2.1	9.2	3.1
	213	20	70	10.0	49	9.8	3.1	9.2	5.9
	230	20	70	10.0	49	9.8	3.2	9.2	6.7
Eagle Pit: East & South Wall Intrusives	40	20	70	10.0	49	9.4	5.3	9.0	17.3
	290	20	70	10.0	49	9.8	3.7	9.2	9.0
		20	60	12.0	40	12.0	1.1	11.0	1.1
		20	60	14.0	38	14.0	1.0	13.0	1.3
	305	20	70	10.0	49	9.7	4.0	9.1	10.6
	315	20	70	10.0	49	9.6	4.3	9.1	11.4
	340	20	70	10.0	49	9.6	4.6	9.1	12.3
	348	20	70	10.0	49	9.6	4.2	9.1	10.7

Notes:
H = Bench height (m)
B = Design bench face angle (°)
W' = Average effective bench width (m)
W = Design bench or berm width (m)
IRA = Interramp slope angle (°)
PF = Probability of failure (%)

Table 2-3: SBlock Analysis Result for the Olive Pit

Domain	Slope Dip Direction	Bench Design Inputs				Bench Width Results			PF (%)
		H	B	W	IRA	W' (m)	Bench Width Required (m)	Cumulative Distribution of Bench Width >80%	
Olive: NW Wall Metasediments	105	20	70	10.0	49	9.9	2	9.2	2.0
	133	20	70	10.0	49	9.8	2.9	9.2	5.5
	180	20	70	10.0	49	9.9	1.9	9.2	2.3
Olive Pit: Southeast Wall Intrusives	10	20	70	10.0	49	9.9	1.7	9.2	2.0
	55	20	70	10.0	49	9.9	2.5	9.2	4.3
	287	20	70	10.0	49	10.0	0.9	9.2	0.7
	300	20	70	10.0	49	10.0	0.6	9.2	0.3
	305	20	70	10.0	49	10.0	0.5	9.2	0.3
	320	20	70	10.0	49	10.0	0.7	9.2	0.6
	330	20	70	10.0	49	10.0	1.1	9.2	1.5
	345	20	70	10.0	49	10.0	1.6	9.2	2.3
Olive: NW Wall Intrusives	136	20	70	10.0	49	9.8	2.9	9.2	6.0
	170	20	70	10.0	49	9.6	4.1	9.1	11.6
	200	20	70	10.0	49	9.7	3.7	9.1	11.7

Notes:
H = Bench height (m)
B = Design bench face angle (°)
W' = Average effective bench width (m)
W = Design bench or berm width (m)
IRA = Interramp slope angle (°)
PF = Probability of failure (%)

The following was concluded from the analyses:

- Based on the current final pit design and the structural trends identified to date, a majority of the Eagle and Olive pits are not anticipated to be significantly impacted by structurally controlled instabilities. A maximum achievable bench face of 70° was estimated based on data uncertainties and operational constraints;
- The highest risk of bench and possibly low interramp scale instabilities at Eagle pit were found to be in northeast dipping walls in the intrusives (far western edge of the South Sector on Figure 2-3). These walls have a high likelihood of planar instabilities (Set J2 on Figure A-1a) as well as wedges formed by the intersection of two discontinuity sets (J3 and J6 on Figure A-1a). However, walls oriented in this direction represent a very small portion of the overall pit design;
- Stable bench and possibly lower interramp scale slope angles of the Eagle pit south wall intrusives (South sector on Figure 2-3) are anticipated to be controlled by wedges formed by the intersection of two discontinuity sets (J2 and J5 on Figure A-1a);
- The Eagle pit metasediments are anticipated to have a high likelihood of bench and possibly lower interramp slope scale instabilities along north-northwest dipping walls due to planar instabilities (Set J4 on Figure A-2a) as well as wedges formed by the intersection of two discontinuity sets (J3 and J4 on Figure A-2a). The dominant foliation trend (FOL set on Figure A-2a) may also result in localized bench scale instabilities along the Eagle pit upper east (west facing) wall in metasediments; and
- Achievable bench face and lower interramp slope angles in the Olive Pit Northwest Intrusive Sector (Figure 2-4) are anticipated to be controlled by the intersection of various combinations of two discontinuity sets (J2 through J5 on Figure A-3a).

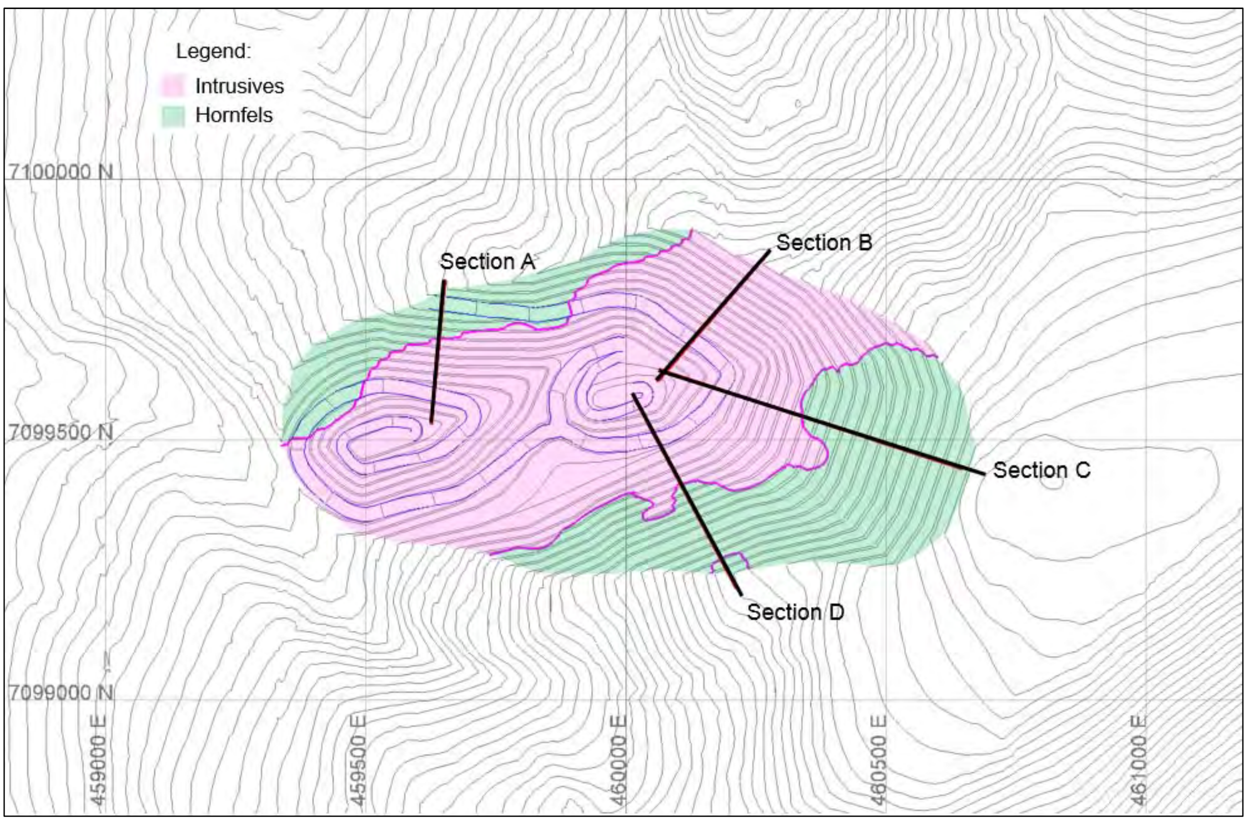
It should be noted that the bench stability analyses are based solely on geologic structure and do not directly consider effects of weathering, alteration, blasting or excavation techniques. Depending on the quality of blasting and excavation techniques, achievable bench face angles might be reduced from the theoretical angles determined by these analyses. When taking these operational effects into consideration, it is rare to achieve effective bench face angles greater than about 70° to 75° unless there is a steeper structure controlling the bench geometry. Increasing bench face angles to greater than about 70° to 75° may be achievable but usually requires more rigorous drilling and blasting effort and specialized controlled blasting techniques than are commonly practiced.

3 Interramp/Overall Slope Stability Analyses

Based on the results of the bench design analyses, recommendations for bench configurations and the resulting maximum interramp slope design were provided to JDS for development of initial detailed pit designs incorporating necessary ramps and infrastructure. The stability of the high interramp and overall slopes of the initial detailed pit designs were then evaluated.

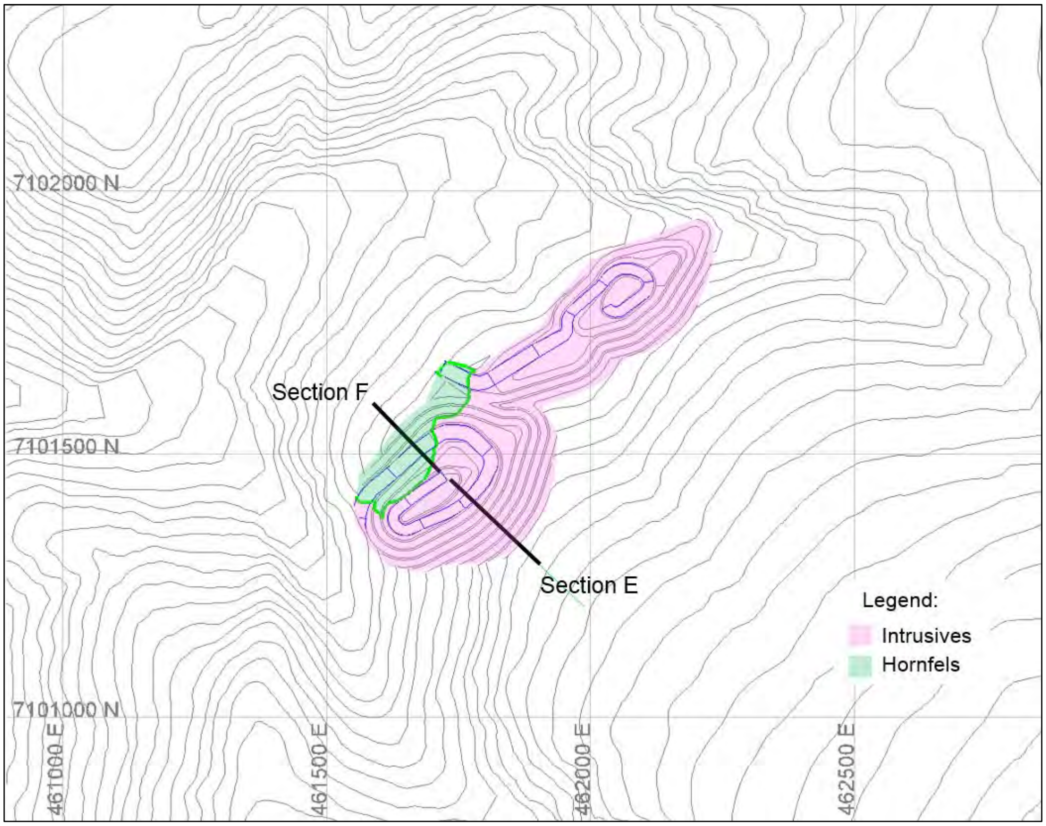
3.1 Slope Stability Sections

Based on the results of the geomechanical characterization program and initial detailed pit design geometries, critical slope stability cross-sections were selected for analysis. A total of six critical sections were selected to verify stability of the ultimate pit designs; four at Eagle and two at Olive. Critical sections are selected at locations where slope stability conditions are anticipated to be the most adverse such as where the slope height is at its maximum, pit wall materials are low strength and/or pore water pressures may be the highest. The traces of the critical sections are shown on Figures 3-1 and 3-2 for the Eagle and Olive pits, respectively, with the geometry of each individual section shown in Appendix D.



Source: SRK, 2016

Figure 3-1: Location of Critical Slope Stability Cross Sections - Eagle Pit



Source: SRK, 2016

Figure 3-2: Location of Critical Slope Stability Cross Sections - Olive Pit

3.2 Methodology

The six critical cross-sections were analyzed using the slope stability modeling software, Slide 6.035 (Rocscience, 2015b), which uses two-dimensional, limited equilibrium methods with output in terms of safety factors. Spencer's method of slices was used for the analyses due its consideration of both force and moment equilibrium. The non-circular, "path" search method was used in all cases.

To construct the model geometries, vertical cross sections were cut through the respective final pit designs and the primary structures using Vulcan mine planning software (Maptek, 2015). Multiple failure modes were analyzed including overall and interramp slopes and localized failures associated with geological contacts and/or faults.

3.3 Geomechanical Properties

The Hoek-Brown (Hoek, et al., 2002) criteria was used to represent the rock mass shear strength–normal stress relationship for slope stability modeling. With the exception of the Hoek-Brown Disturbance factor (D) the rock mass properties, soil overburden and discontinuity shear strengths were taken from the previous (BGC, 2012) work.

The disturbance factor, D, depends on the degree of disturbance that the rock mass is expected to be subject to as a result of blast damage and stress relaxation caused by excavation of the pit. The disturbance factor ranges from zero, for wholly undisturbed, confined rock masses, to 1 for very disturbed rock masses. For surface mining operations, Hoek et al. (2002) recommends a D of 0.7 for carefully controlled blasting and a D of 1 for heavy large-scale production blasting.

The use of a disturbance factor "D" equal to 0.7 for the entire rock mass is considered conservative given that blast damage and relaxation typically only extends a maximum distance of up to approximately 50 m to 100 m, depending on wall height and blasting procedures. Beyond this disturbed zone, a D factor of zero is appropriate which would result in a significantly higher rock mass strength. However, given that the critical surfaces produced by the models are typically within or near the approximate disturbed zone limits the more conservative approach was used.

For sections where dominant geologic structure such as rock mass jointing or foliation was oriented such that it could potentially impart a strength anisotropy, an anisotropic strength model was used applying a weakened shear strength in the direction parallel to the structure. An equivalent strength material approach was used to develop shear strengths along the dominant joint and foliation directions based on Jennings' (1972) equations:

$$c_{eq} = (1-k)c + kc_j \tag{2}$$

$$tan(\phi_{eq}) = (1-k)\tan(\phi) + k\tan(\phi_j) \tag{3}$$

Where c and ϕ are the cohesion and friction angle, respectively, of the intact rock bridges (c_i and ϕ_i) and the discontinuities (c_j and ϕ_j) and k is the coefficient of continuity along the failure plane. Given the lack of discontinuity length information at this stage of the project, reasonably conservative estimates were made for the continuity coefficient with k = 0.5 when incorporating joints and k = 0.8 for foliation. Equivalent Mohr-Coulomb linear shear strengths were fit to the respective Hoek-Brown rock mass strength envelopes and conservatively used to represent the intact rock bridges in the equivalent strength material calculations. The rock mass and equivalent strength material (ESM) parameters are summarized in Table 5-1. Diagrams illustrating which sections were modeled with anisotropic strengths and which directions the anisotropic strengths were applied are contained in Appendix D.

Table 3-1: Geomechanical Properties for Eagle Pit

Geomechanical Unit	Mohr-Coulomb		Continuity Coefficient k	Generalized Hoek-Brown				Unit Weight (kN/m³)
	Phi (deg)	Coh. (kPa)		GSI	UCS (MPa)	m_i	D	
CINT[1] Rock Mass	-	-		47	51	15	0.7	26.4
CINT[1] Rock Mass ESM (Joint Strength)	32	431	0.5	-	-	-	-	26.4
Metasediments Rock Mass	-	-	-	55	83	17	0.7	27.3
Metasediments Rock Mass ESM (Fol. Strength)	34	179	0.8	-	-	-	-	27.3
Soil Overburden	35	0	-	-	-	-	-	20.0
Fault Zone	30	0	-	-	-	-	-	19.0

[1] CINT = Clay-Altered Intrusive based on BGC (2012a).

As discussed in SRK (2016), the application of the CINT rock mass strength to the entire intrusive rock mass as was originally done by BGC (2012a) is considered conservative given the very small percentage of the overall rock mass that this material represents. However, given the uncertainty in exactly where this material may be encountered as well as the overall lack of a thorough understanding of geologic structures at the site, SRK also conservatively assumed the 'clay-altered intrusive' strength for the entire intrusive body. While the term clay-altered was used by BGC (2012a) to describe this particular rock mass, SRK understands from Victoria Gold that the deposit actually has very little, if any, true clay alteration and that sericite alteration may be a better description for the material.

Groundwater levels for the models were estimated for the Eagle Pit based on the BGC (2012a and 2014) hydrogeology and depressurization investigations. Consistent with the BGC (2012a) methodology, a conservatively high water table was initially used for the analyses as a "base case" and then a second case was analyzed for each section assuming a 125 m depressurization distance from the face. For the depressurized case, the models conservatively assumed a Ru coefficient of 0.09 corresponding to approximately 25% saturation.

Based on anecdotal evidence that earthquake ground accelerations are not known to have been the cause of any rock slope failures in mining and that there is little or no experience to suggest that rock slope stability is susceptible to seismic loading, a seismic (or pseudostatic) stability analysis was not performed. This is a common industry assumption for mining rock slope stability.

As discussed in SRK (2016), the previous geotechnical investigation for Olive was considered inadequate in terms of rock mass characterization. As such, core photographs and available resource core logging information was used to approximate rock mass strength parameters for the Olive pit. Given the overall shallow pit depth (mostly less than 125 m), the fact that it accounts for less than one year of mining and at the end of the project life, and its minor contribution to the overall reserves, SRK considers this adequate for the feasibility study update.

The metasediments represent a small portion of the overall rock mass to be exposed within the Olive pit and the dip of its foliation is favorable for slope stability (dipping into the pit wall). As such, the Eagle pit anisotropic metasediments rock mass strength was assumed for the Olive metasediments. The intrusive rock mass at Olive was conservatively assigned the Eagle pit "clay-altered intrusive" rock mass. Both sections analyzed for Olive pit incorporated a conservatively high, near saturated groundwater level. A second scenario was analyzed with a Ru factor of 0.09 instead of a water surface corresponding to approximately 25% saturated.

3.4 Results of Interramp/Overall Stability Analysis

Based on accepted engineering experience, interramp/overall slope designs that yield factors of safety (FS) of 1.3 for slopes with high failure consequences and 1.2 for low failure consequences are appropriate for most open pit mines. Slopes of high failure consequence are generally those slopes that are critical to mine operations, such as those on which major haul roads are established, those providing ingress or egress points to the pit, or those underlying infrastructure such as processing facilities or structures. Given the location of the ramp system, an acceptability criteria of a 1.3 safety factor was used for all sections.

The results of the overall and interramp slope stability analysis are summarized in Table 5-2 for each of the six critical sections analyzed. Graphical output files showing the critical failure and minimum FOS calculated by Slide for each individual analysis are presented in Appendix D.

Table 3-2: Results of Overall/Interramp Slope Stability Modeling: Eagle Pit

Pit	Section	Slope[1]	Slope Design		Safety Factor			
			Height[2] (m)	Angle[2] (°)	FOS (Ru=0.9)	Approx. Depth[3] (m)	FOS (125 m depress.)	Approx. Depth[3] (m)
Eagle	A	**OSA**	235	43	1.8	70	1.8	75
		ISA	175	49	1.7	50	-	-
	B	**OSA**	290	42	1.7	75	1.6	80
		ISA	200	49	1.7	50	-	-
	C	**OSA**	470	39	1.3	130	1.4	140
		ISA	410	39	1.3	130	-	-
	D	**OSA**	380	44	1.5	150	1.4	280
		ISA	305	49	1.4	60	-	-

[1] OSA indicates Overall Slope Angle and ISA indicates Interramp Slope Angle.
[2] Slope heights and slope angle reported for ISA include the geotechnical berms in the measurements.
[3] Number reported is approximate horizontal distance between slope face and critical failure surface.

Table 3-3: Results of Overall/Interramp Slope Stability Modeling: Olive Pit

Pit	Section	Slope[1]	Slope Design		Safety Factor			
			Height[2] (m)	Angle[2] (°)	FOS (Ru=0.9)	Approx. Depth[3] (m)	FOS (high H2O)	Approx. Depth[3] (m)
Olive	E	**OSA**	180	48	1.8	55	1.3	80
		ISA	140	49	1.8	40	1.4	70
	F	**OSA**	110	38	3.2	50	2.5	45
		ISA	60	48	3.4	15	2.9	35

[1] OSA indicates Overall Slope Angle and ISA indicates Interramp Slope Angle.
[2] Slope heights and slope angle reported for ISA include the geotechnical berms in the measurements.
[3] Number reported is approximate horizontal distance between slope face and critical failure surface.

Results of the overall/interramp slope stability analyses demonstrate that the bench configuration based slope angles either meet or exceed the minimum acceptable safety factor of 1.3. For Sections C and D, the critical failure was semi planar and controlled by the foliation anisotropy in the metasediments. Critical failure surfaces were generally pseudo-rotational in Sections A and B due to the isotropic strength models. Individual output plots for the critical failure surfaces are contained in Appendix D.

The results indicate that, with the exception of the upper east wall of the Eagle pit in metasediments, the stability of pit slopes is anticipated to be controlled mostly by achievable bench face angles and not the stability of overall slopes. Calculated safety factors may be considered relatively high for typical open pit slope designs; however, steepening of the interramp slope angles would require either steeper bench face angles or reducing the design catch bench width which SRK does not recommend at the feasibility level due to the lack of outcrop to record actual structural information. With detailed geomechanical/geological bench mapping and good quality wall control blasting practices during operation, opportunity may exist to steepen the interramp angles based on the newly acquired and more accurate information.

4 Recommendations and Conclusions

4.1 Pit Slope Design Parameters

Pit slope design parameters are summarized in Table 4-1 and shown on Figure 4-1. The recommendations in Table 1 are based on dip direction of the pit wall (e.g. for an east-west trending wall, facing south, the slope dip direction would be 180° azimuth).

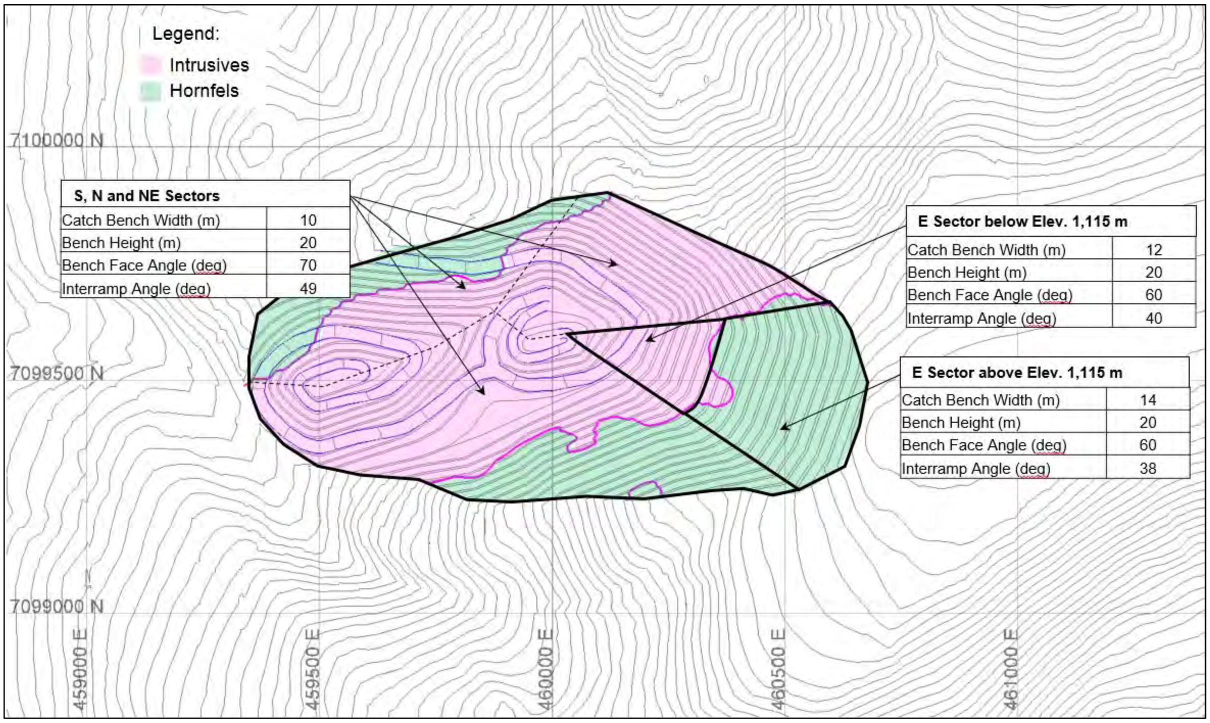
The recommendations for Eagle pit are based on full depressurization occurring to a minimum distance of 125 m behind the pit wall as was recommended by BGC as part of the previous (2012) feasibility study. BGC (2012a and 2014) recommends the installation of 250 m horizontal drains to accomplish the 125 m depressurized zone and provides additional specifications for horizontal drain construction and installation. SRK has not revisited the previous hydrogeologic work or slope depressurization recommendations as part of this scope.

Table 4-1: Recommended Pit Slope Design Parameters

Pit	Sector	Max. Slope Height (m)	Wall Dip Direction		Bench Face Angle (°)	Bench Height (m)	Bench Width (m)	Max. ISA[1] (°)
			From (°)	To (°)				
Eagle	North	225	130	200	70	20	10	49
	Northeast	280	200	265	70	20	10	49
	East (above elev. 1,115 m)	280	265	305	60	20	14	38
	East (below elev. 1,115 m)	210	265	305	60	20	12	40
	South	375	350	85	70	20	10	49
Olive	Southeast	180	090	260	70	20	10	49
	Northwest	110	260	090	70	20	10	49

[1] ISA indicates Interramp Slope Angle.

Double benching is recommended as being more favorable in fresh, competent rock. The double (20 m total height) benching will permit the incorporation of more adequately-sized berms for rockfall control, provided that drilling and, to a greater extent, blasting practices meet best practice standards, thereby reducing the number of crests and toes that are subject to potential damage.



Source: SRK, 2016

Figure 4-1: Pit Slope Design Recommendations

It should be noted that bench design analyses, and subsequent recommendations, are based solely on orientations of geologic structure and do not directly consider effects of weathering, alteration, blasting or excavation techniques. Depending on the quality of blasting and excavation techniques, achievable bench face angles might be greatly reduced from the theoretical angles determined by these analyses. It is recommended that field trials be performed of various controlled basting techniques, carefully documenting the results to confirm that the actual slope designs are being achieved or, if necessary, to serve as the basis of slope angle refinements.

Based on review of available geotechnical logging information and core photographs reviewed for select holes, the rock quality outside the mineralized ore body (i.e., rock anticipated to comprise final pit slopes) appears to be higher with larger block sizes and fewer major fault structures. Consequently, SRK does not recommend using increasing slope angles for interior pit phases until the early stages of development when additional information will be available from bench exposures.

4.2 Recommendations for Additional Geotechnical Work

SRK recommends the following be completed during project detailed design studies:

- Beyond major mineralization controlling structures, the structural geology of the project is not well understood. Major geologic structures not currently included in the 3D structural model or whose existence is unknown could have an adverse impact on mine stability. SRK recommends additional structural geology work be completed sufficient to develop a 3D structural model. It is anticipated that this can be completed based primarily on the existing drillhole database with minimal if any additional drilling required;

- As part of the structural geologic interpretation, additional work should be conducted to evaluate the potential for large scale faults paralleling foliation in the metasediments and further delineate the spatial extent of the “clay-altered intrusives” rock mass described by BGC (2012a);
- Drill and geotechnically log at least one drillhole in the Olive metasediments which are expected to outcrop in the west end of the northern pit wall (Figure 2-4). Currently there is very little information regarding rock mass quality or geologic structure in this area. This should take place prior to mining Olive pit; and
- Re-analyze the previous (2015) Olive geotechnical drilling data as discussed in SRK (2016). If this is not possible, additional geotechnical drillholes will be required prior to the commencement of mining at Olive.

The following are recommended to be considered during the permitting, construction and early development phases of the project:

- A thorough geological and geomechanical bench face mapping program should be undertaken, on a continuing basis, beginning in the early stages of development to verify structural conditions are consistent with assumptions presented herein and to identify local variations in structural conditions that might increase the risk of localized instabilities. The geomechanical data collection should concentrate on providing important data such as discontinuity persistence, spacing and variations in orientation that will allow further refinement of the bench design. The data collected should be used to confirm parameters used in the geotechnical models contained herein and, if determined to be other than assumed in this study, to further refine the analyses providing more accurate estimates of anticipated slope behavior.
- As part of the geologic mapping program, any significant structures or fault zones encountered should be mapped and digitized electronically in 3D and incorporated into the 3D fault model. This will allow projection of such structures to future pit slopes, highlighting areas of potentially instability and allow refinements to the slope design, if necessary. The accurate orientation and projection of fault structures is difficult based strictly on core drilling unless the structures cause a significant offset in mineralization or a marker horizon is present. As such, the identification, mapping and analysis of fault structures of identified in pit walls will be a necessary and ongoing process during pit development.
- A slope monitoring program should be designed to ensure that the slopes are behaving as anticipated and warn if significant movements occur. The monitoring program should include, at a minimum, a network of survey prisms monitored and analyzed regularly. If significant movements are noted, additional prisms should be installed along with extensometers to monitor any tension cracking. Additional details regarding monitoring are discussed below.

4.3 Monitoring

All slopes move and have potential for instabilities fostered by unpredicted geotechnical and geologic conditions such as previously unidentified faults, joint sets, heavy rock mass alteration or weathering and/or elevated groundwater pressures. Most common are localized instabilities and that only affect one or two benches but large instabilities impacting entire bench stacks or overall slopes also occur unexpectedly.

With proper monitoring programs, many large open pits continue to operate safely with moving slopes, with very little impact on the efficiency or economics of the operations. Alternatively, even a relatively small failure in the wrong location can have a serious impact on even a large operation. A well-planned and implemented monitoring program is required in order to provide advanced warning of the onset of potential instabilities and monitor displacement rates and accelerations of on-going displacements, should they occur. Monitoring programs must be included in operational plans and budgets from the earliest stages of development.

There are two primary systems commonly used to monitor open pit slopes: geodetic survey (prisms or hubs) and radar. The use of a system of survey prisms or hubs is a proven, cost effective method that can provide accurate monitoring of slope displacements over large distances. Robotic total stations have the ability to survey prisms near continuously and automatically sound alarms when a displacement exceeds set tolerances. However, displacements can only be detected at the exact prism locations leaving the area between prisms unmonitored. There is a high likelihood that a bench-scale failure or smaller precursor displacements to a large slope failure could go undetected until failure using prisms.

Successful monitoring with geodetic survey methods also depends on the long term serviceability of the prisms which can be easily disturbed by normal rock weathering and sloughing, rock fall occurrences and/or weather and atmospheric conditions. If benches can be safely re-accessed, new prisms can be installed to replace inactive or disturbed prisms. However, the adjustment or replacement of prisms during their intended operational life disrupts the continuous, baseline records which are critical to identifying and monitoring changes in displacement rates (i.e. acceleration).

Slope stability radar has the advantage that the full pit wall area specified can be monitored near real time without the reliance on reflectors or prims and with minimal impact from very atmospheric or weather conditions. As the system does not require the installation of reflectors or instrumentation on the slopes, there is not a need for mine personnel to access potentially hazardous locations for installation and maintenance of slope monitoring equipment. The radar system can be set up to trigger various alarms when user set thresholds are reached. In many cases the employment of a slope stability radar system allows additional production in higher risk areas compared to other monitoring systems due to its accurate and nearly continuous monitoring coverage.

SRK feels that slope stability radar would be the most suitable monitoring alternative for the Eagle pit due to the overall size of the pit. Survey prisms or hubs are still recommended to be installed and monitored in addition to the radar in order to maintain long term displacement records of final walls.

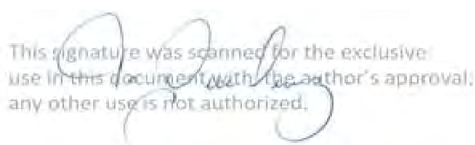
5 Closure

Analyses and recommendations presented herein are based on ultimate pit designs and resource as described in this report, and, as such, any significant changes to mine plans or pit configuration should be reviewed by SRK to verify that recommendations will remain valid for the new plans.

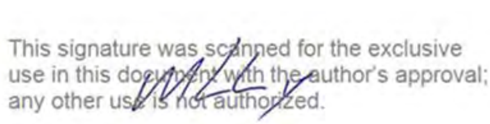
SRK is pleased to have the opportunity to be of service to Victoria Gold Corp. and trusts that we have addressed the pertinent issues related to the Eagle project feasibility pit slopes at this time. Should you, however, have any queries or comments on our visit or on the contents of this report, please do not hesitate to contact us.

Signed on this 26th day of September, 2016.

Prepared by

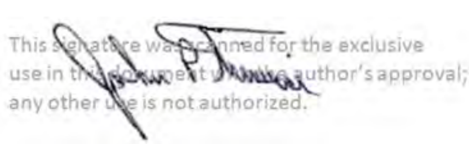


Felipe González
Senior Consultant (Rock Mechanics)



Michael Levy, M.Sc., P.E., P.G.
Principal Consultant (Geotechnical)

Reviewed by



John Tinucci, P.E., Ph.D.
Practice Leader, Principal Consultant (Geotechnical)

All data used as source material plus the text, tables, figures, and attachments of this document have been reviewed and prepared in accordance with generally accepted professional engineering and environmental practices.

6 References

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Disclaimer

The opinions expressed in this Report have been based on the information supplied to SRK Consulting (U.S.), Inc. (SRK) by Victoria Gold Corp. (Victoria Gold). These opinions are provided in response to a specific request from Victoria Gold to do so, and are subject to the contractual terms between SRK and Victoria Gold. SRK has exercised all due care in reviewing the supplied information. Whilst SRK has compared key supplied data with expected values, the accuracy of the results and conclusions from the review are entirely reliant on the accuracy and completeness of the supplied data. SRK does not accept responsibility for any errors or omissions in the supplied information and does not accept any consequential liability arising from commercial decisions or actions resulting from them. Opinions presented in this report apply to the site conditions and features as they existed at the time of SRK's investigations, and those reasonably foreseeable. These opinions do not necessarily apply to conditions and features that may arise after the date of this Report.

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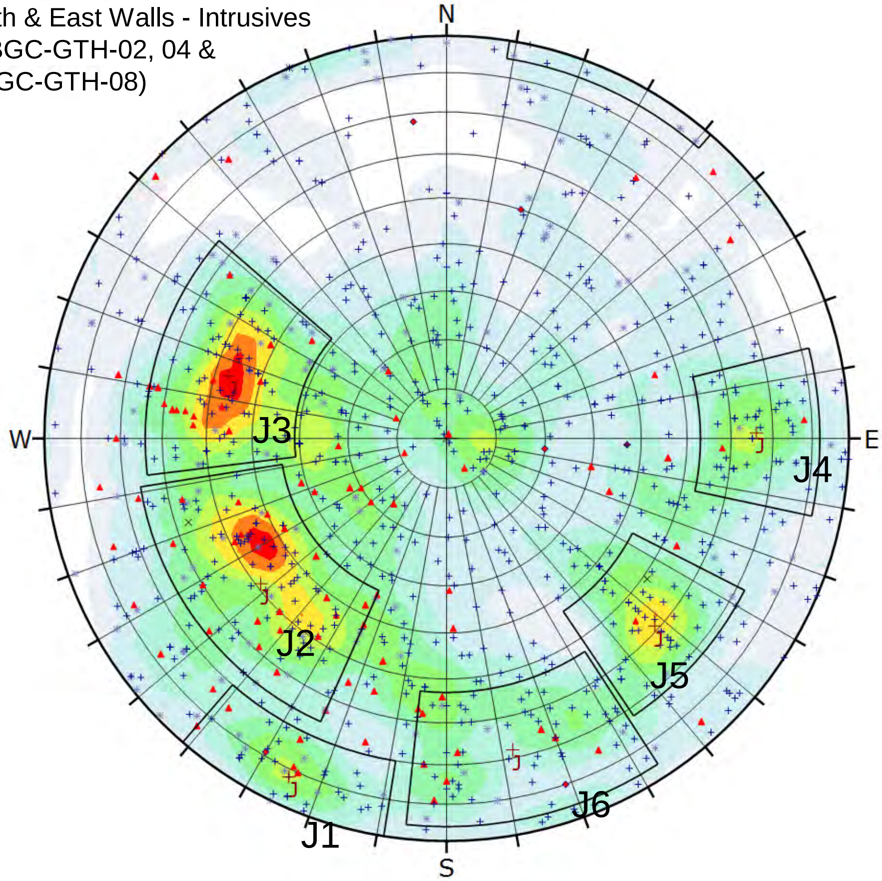
Appendices

Appendix A: Sector Stereonets

Eagle Pit:
South & East Walls - Intrusives
(09BGC-GTH-02, 04 &
10BGC-GTH-08)



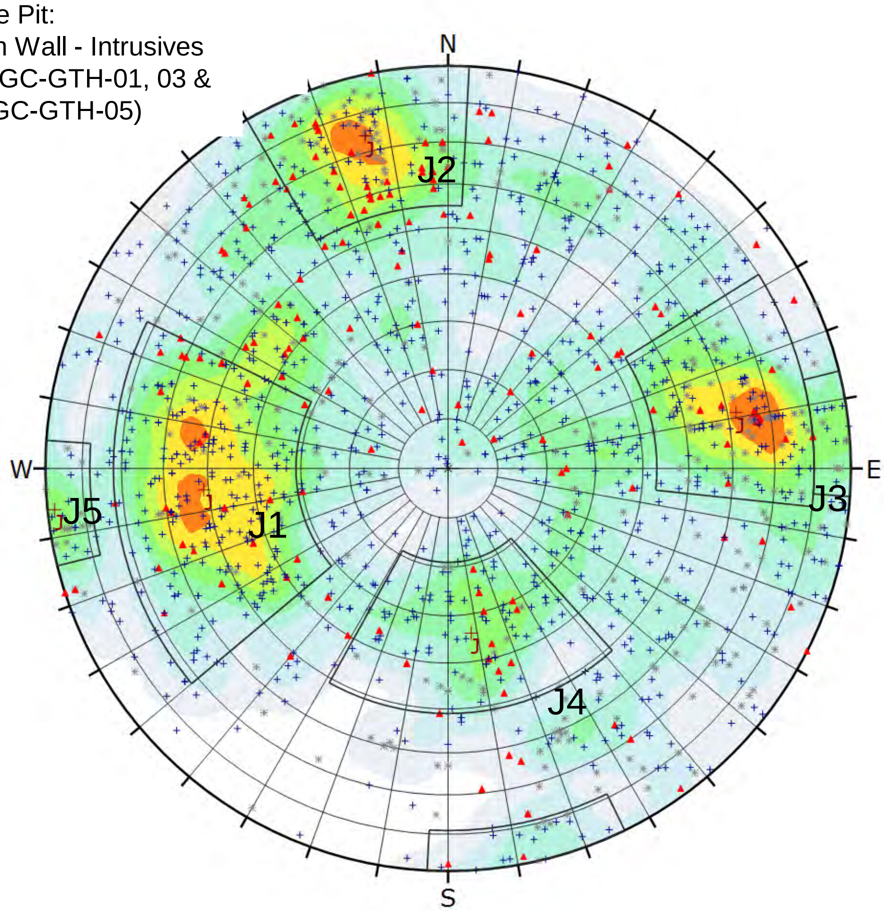
Symbol	TYPE	Quantity
×	C	3
▲	F	29
+	J	489
◆	J-V	6
▲	S	47
*	V	111
▲	f	17
+	j	241
+	j-v	4
▲	s	3

Color	Density Concentrations
	0.00 - 0.32
	0.32 - 0.64
	0.64 - 0.96
	0.96 - 1.28
	1.28 - 1.60
	1.60 - 1.92
	1.92 - 2.24
	2.24 - 2.56
	2.56 - 2.88
	2.88 - 3.20
Maximum Density	3.13%
Contour Data	Pole Vectors
Contour Distribution	Fisher
Counting Circle Size	1.0%

Plot Mode	Pole Vectors
Vector Count	950 (950 Entries)
Hemisphere	Lower
Projection	Equal Area

A-1a

Eagle Pit:
North Wall - Intrusives
(09BGC-GTH-01, 03 &
10BGC-GTH-05)



Symbol	TYPE	Quantity
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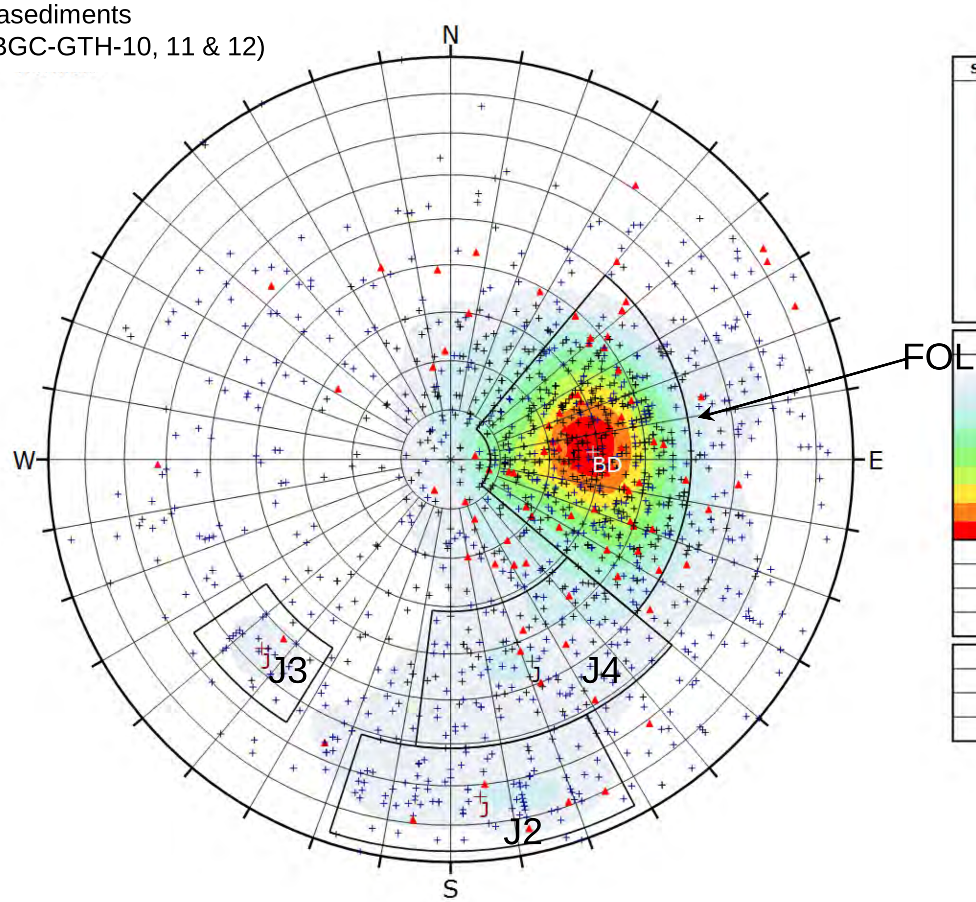
+	J	478
▲	S	107
*	V	283
▲	f	19
+	j	550
▲	s	4
*	v	6

Color	Density Concentrations
	0.00 - 0.30
	0.30 - 0.60
	0.60 - 0.90
	0.90 - 1.20
	1.20 - 1.50
	1.50 - 1.80
	1.80 - 2.10
	2.10 - 2.40
	2.40 - 2.70
	2.70 - 3.00
Maximum Density	2.76%
Contour Data	Pole Vectors
Contour Distribution	Fisher
Counting Circle Size	1.0%

Plot Mode	Pole Vectors
Vector Count	1475 (1475 Entries)
Hemisphere	Lower
Projection	Equal Area

A-1b

Eagle Pit:
Metasediments
(11BGC-GTH-10, 11 & 12)



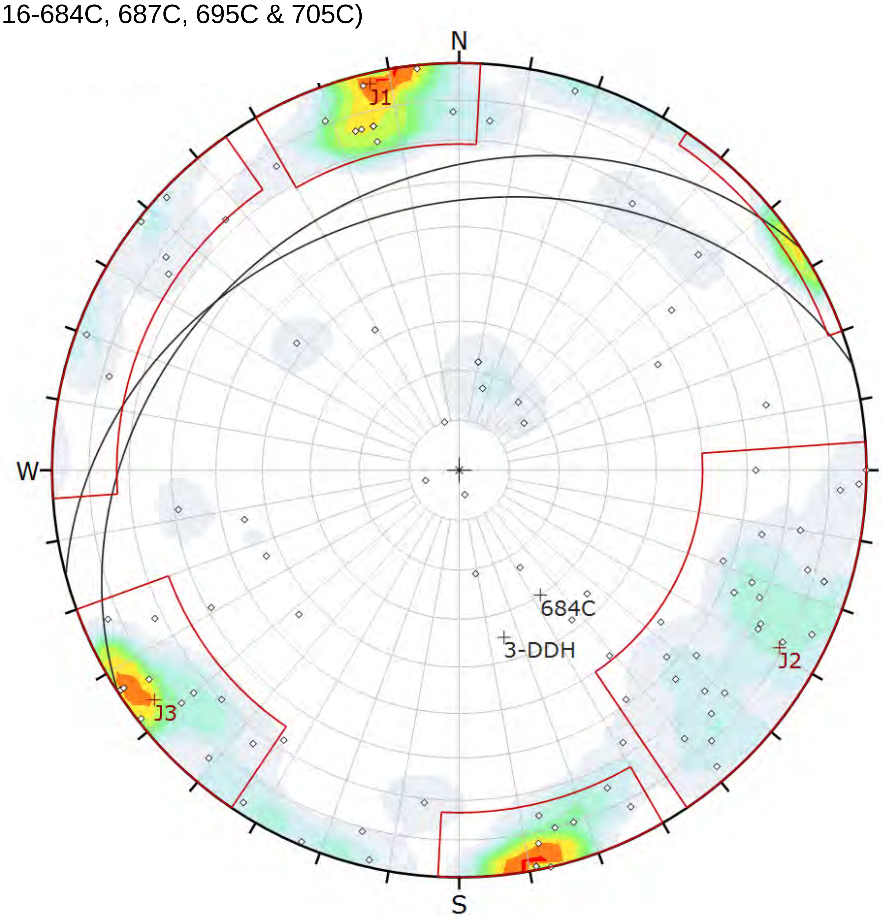
Symbol	TYPE	Quantity
▲	F	40
▲	F-FW	12
▲	F-HW	8
▲	F-O	23
▲	F-V	1
+	J	689
+	J-O	615
+	J-V	20
▲	S	5
▲	S-O	9

Color	Density Concentrations
	0.00 - 0.90
	0.90 - 1.80
	1.80 - 2.70
	2.70 - 3.60
	3.60 - 4.50
	4.50 - 5.40
	5.40 - 6.30
	6.30 - 7.20
	7.20 - 8.10
	8.10 - 9.00
Maximum Density	8.80%
Contour Data	Pole Vectors
Contour Distribution	Fisher
Counting Circle Size	1.0%

Plot Mode	Pole Vectors
Vector Count	1422 (1422 Entries)
Hemisphere	Lower
Projection	Equal Area

A-2a

Olive Pit:
Southeast Wall - Intrusives
(DG16-684C, 687C, 695C & 705C)



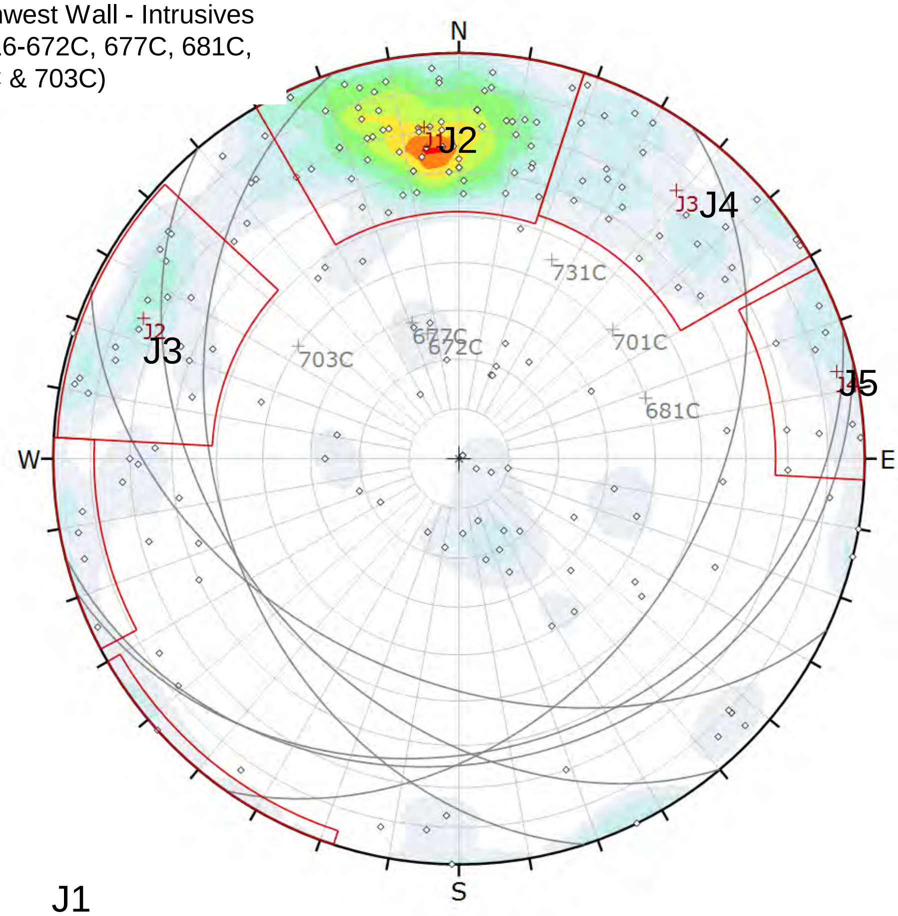
Symbol	Feature
◇	Pole Vectors

Color	Density Concentrations
	0.00 - 1.10
	1.10 - 2.20
	2.20 - 3.30
	3.30 - 4.40
	4.40 - 5.50
	5.50 - 6.60
	6.60 - 7.70
	7.70 - 8.80
	8.80 - 9.90
	9.90 - 11.00
Maximum Density	10.27%
Contour Data	Pole Vectors
Contour Distribution	Fisher
Counting Circle Size	1.0%

Plot Mode	Pole Vectors
Vector Count	427 (100 Entries)
Terzaghi Weighting	Minimum Bias Angle 15°
Hemisphere	Lower
Projection	Equal Area

A-2b

Olive Pit:
Northwest Wall - Intrusives
(DG16-672C, 677C, 681C, 701C & 703C)



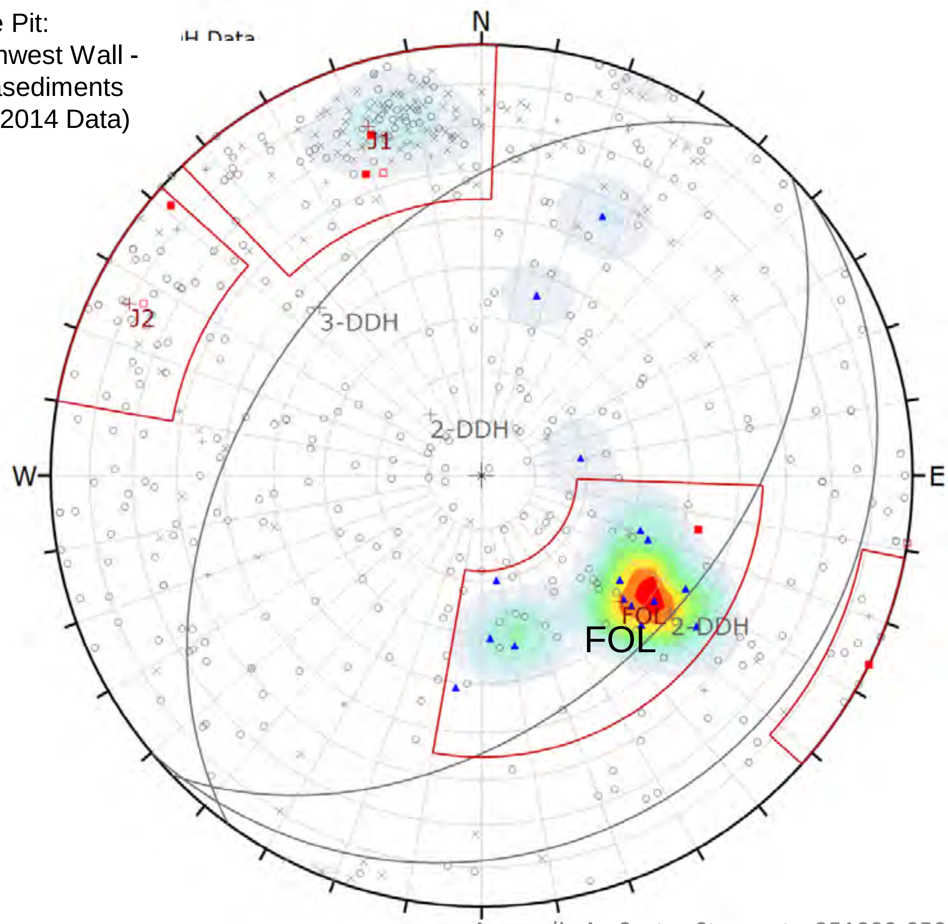
Symbol	Feature
◇	Pole Vectors

Color	Density Concentrations
	0.00 - 1.00
	1.00 - 2.00
	2.00 - 3.00
	3.00 - 4.00
	4.00 - 5.00
	5.00 - 6.00
	6.00 - 7.00
	7.00 - 8.00
	8.00 - 9.00
	9.00 - 10.00
Maximum Density	9.23%
Contour Data	Pole Vectors
Contour Distribution	Fisher
Counting Circle Size	1.0%

Plot Mode	Pole Vectors
Vector Count	912 (196 Entries)
Terzaghi Weighting	Minimum Bias Angle 15°
Hemisphere	Lower
Projection	Equal Area

A-3a

Olive Pit:
Northwest Wall -
Metasediments
(MP 2014 Data)



Symbol	TYPE	Quantity
▲	FO	1401
○	JN	1106
×	VN	416
■	fl	11
□	jn/fl	32
+	jn/vn	58
+	vn/jn	32

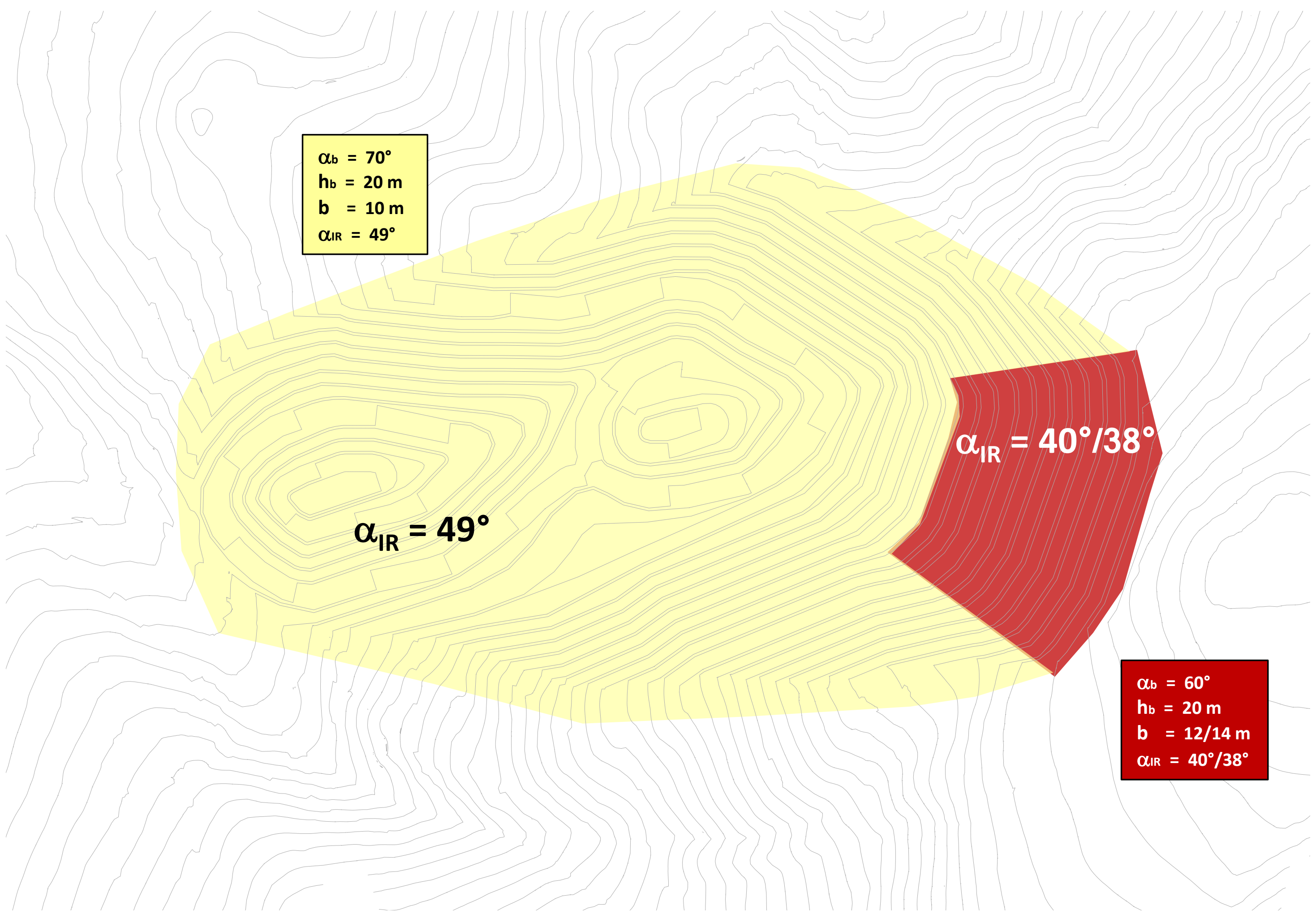
Color	Density Concentrations
	0.00 - 1.90
	1.90 - 3.80
	3.80 - 5.70
	5.70 - 7.60
	7.60 - 9.50
	9.50 - 11.40
	11.40 - 13.30
	13.30 - 15.20
	15.20 - 17.10
	17.10 - 19.00
Maximum Density	18.47%
Contour Data	Pole Vectors
Contour Distribution	Fisher
Counting Circle Size	1.0%

Plot Mode	Pole Vectors
Vector Count	3056 (522 Entries)
Terzaghi Weighting	Minimum Bias Angle 15°
Hemisphere	Lower
Projection	Equal Area

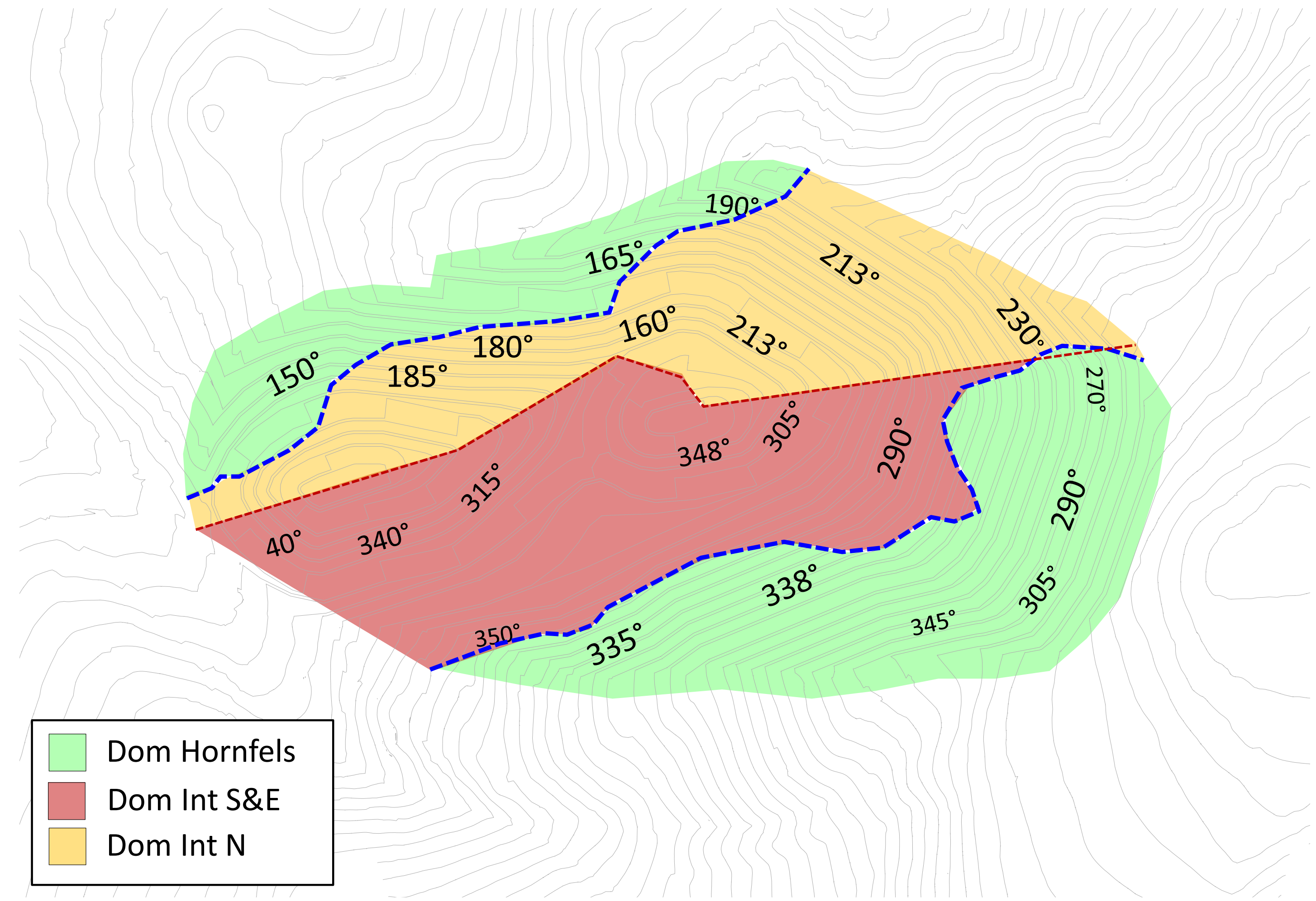
A-3b

Appendix B: Kinematic Analyses

Design and Domain Eagle Gold Project



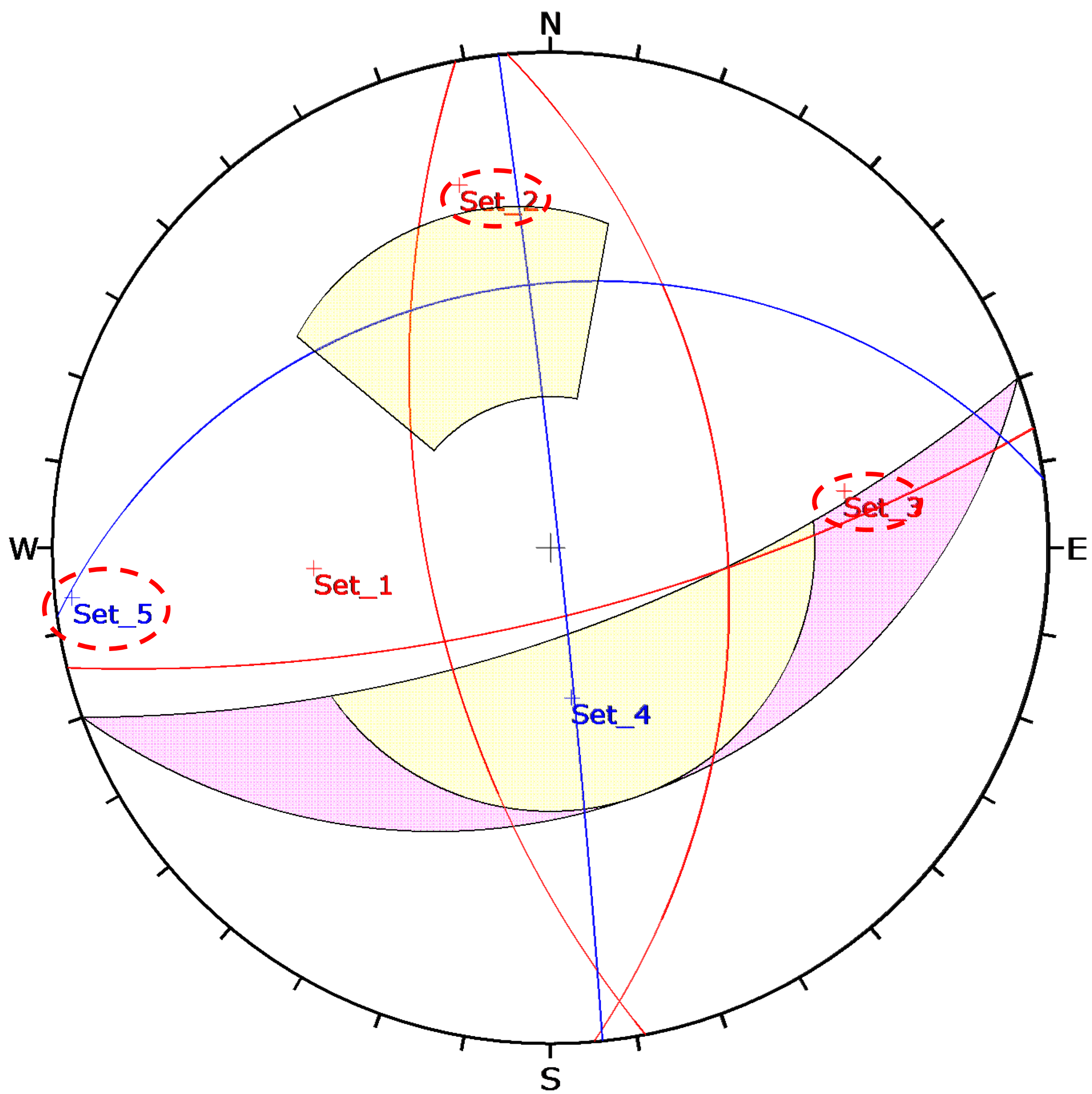
Design



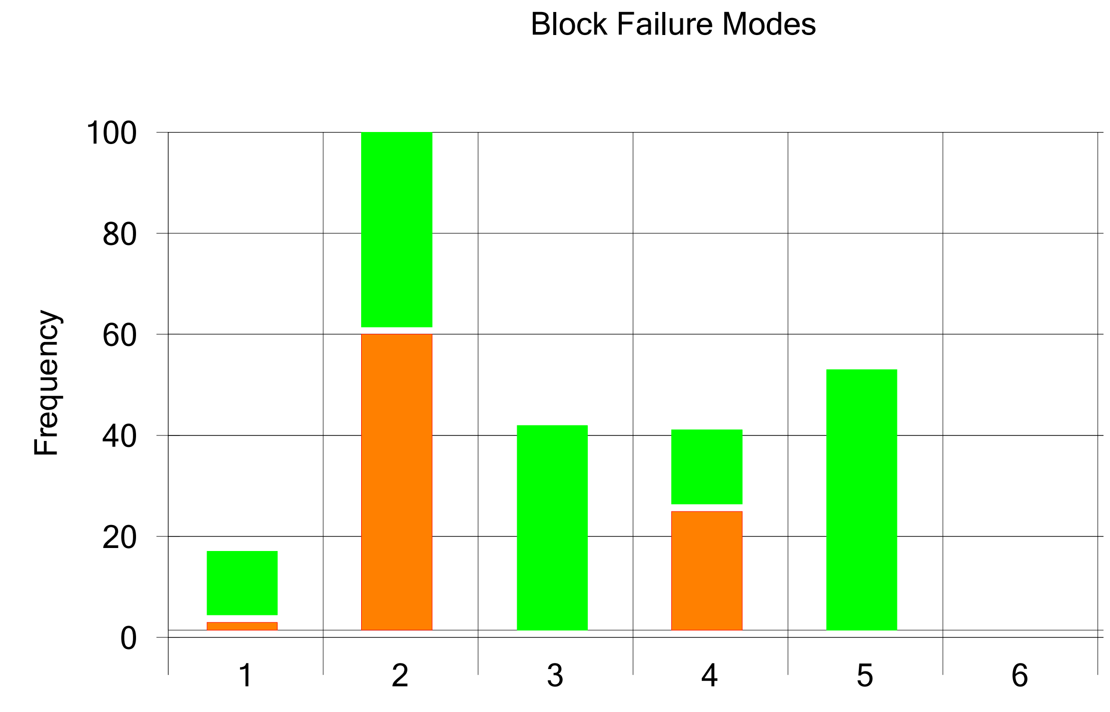
Domain & Slope Orientation

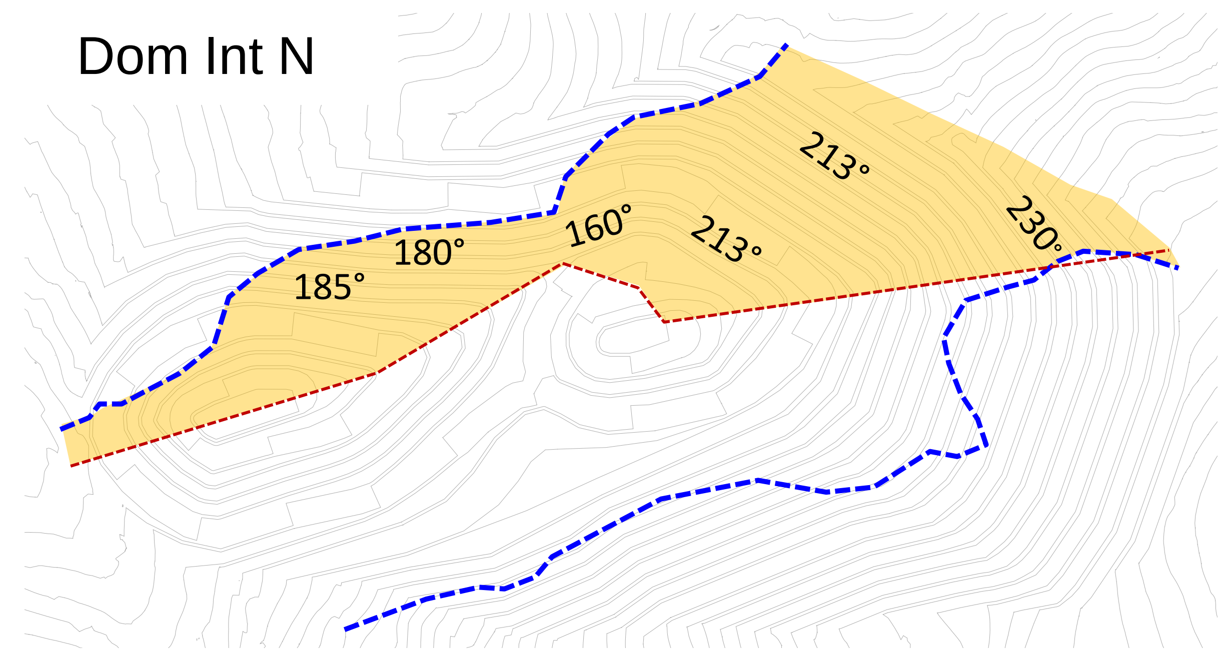
srk consulting	Eagle Gold Project	Kinematic Analysis
		Design, Domain and Slope Orientation
Job No: 251000.050 Filename:	Bench Berm Analysis Eagle Pit	Date: 08.22.2016 / Approved: ML / Figure: 1

Domain Int N Dip Dir 160°



	Color	Dip	Dip Direction	Label
		User Planes		
1	red	51	85	Set_1
2	red	74	166	Set_2
3	red	62	259	Set_3
4	blue	34	352	Set_4
5	blue	88	84	Set_5





srk consulting

Eagle Gold Project

Kinematic Analysis

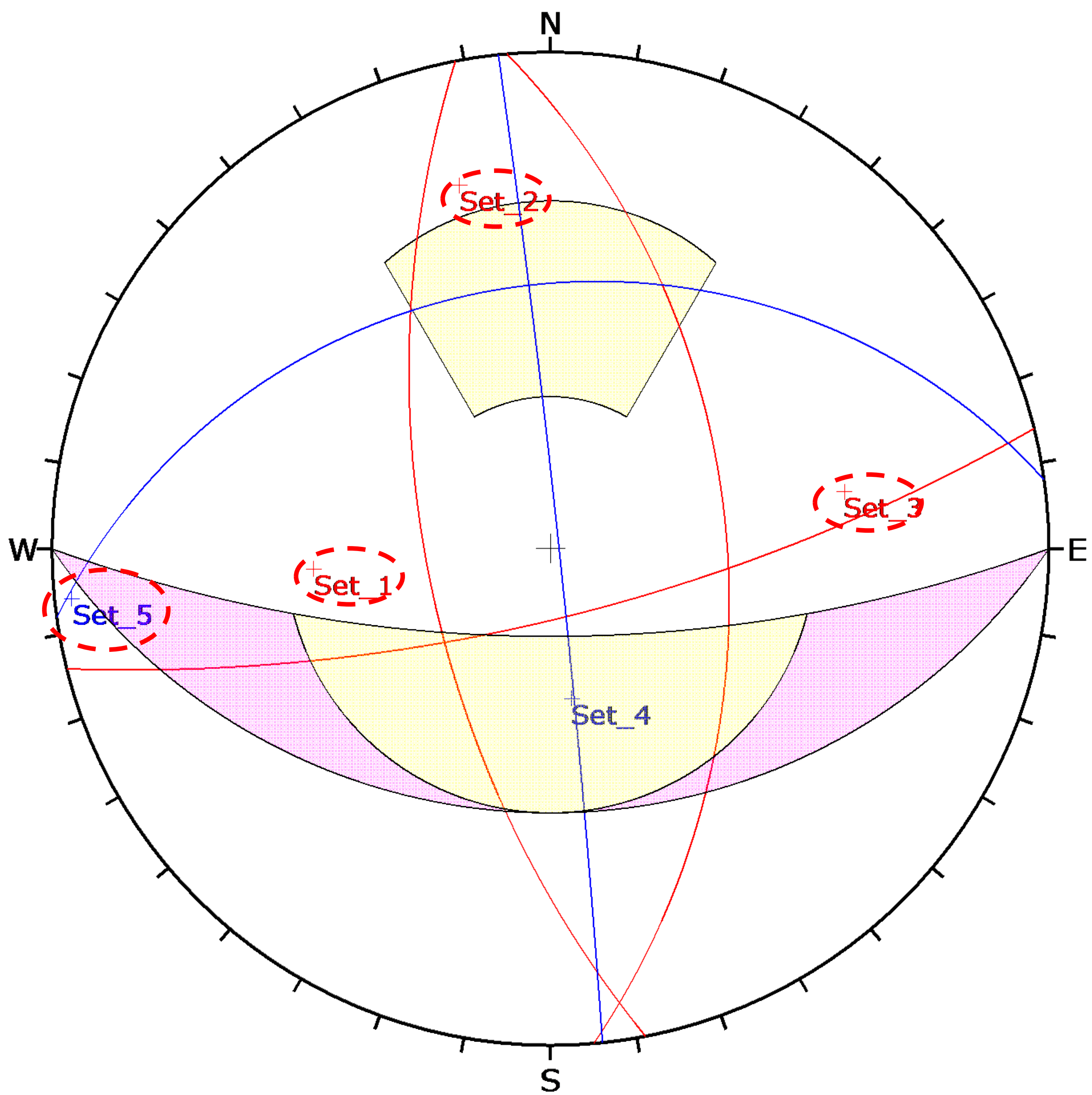
Domain Int N
DipDir 160°

Job No: 251000.050
Filename:

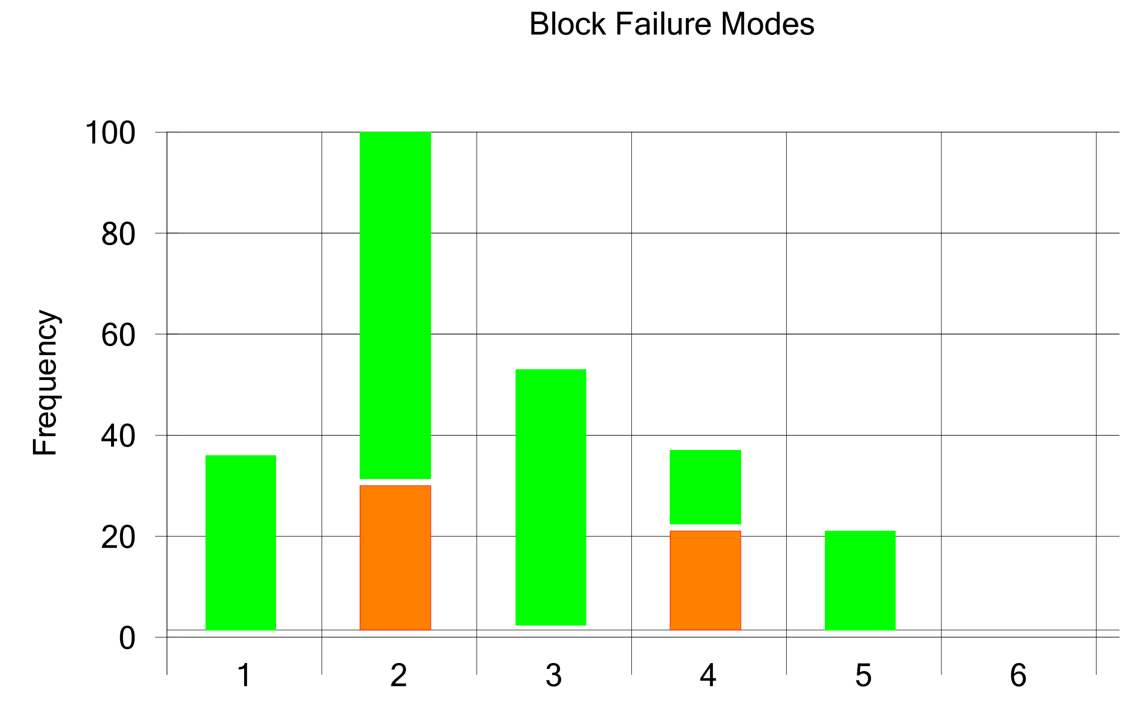
Bench Berm Analysis Eagle Pit

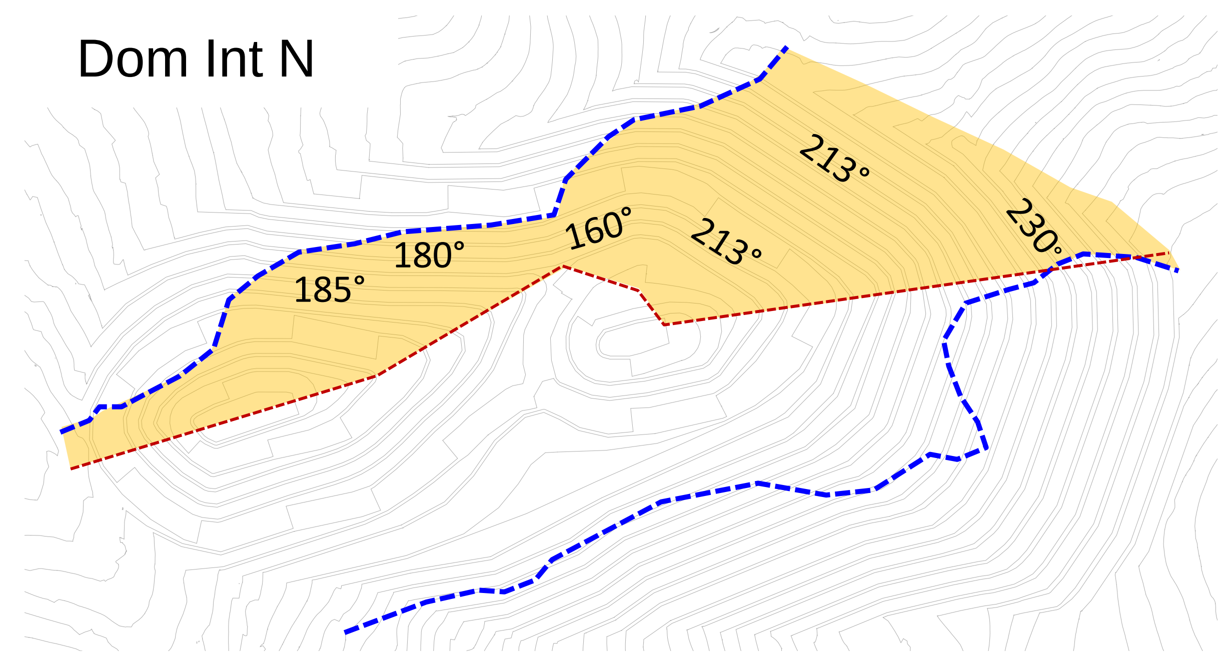
Date: 08.22.2016 | Approved: ML | Figure: 2

Domain Int N Dip Dir 180°



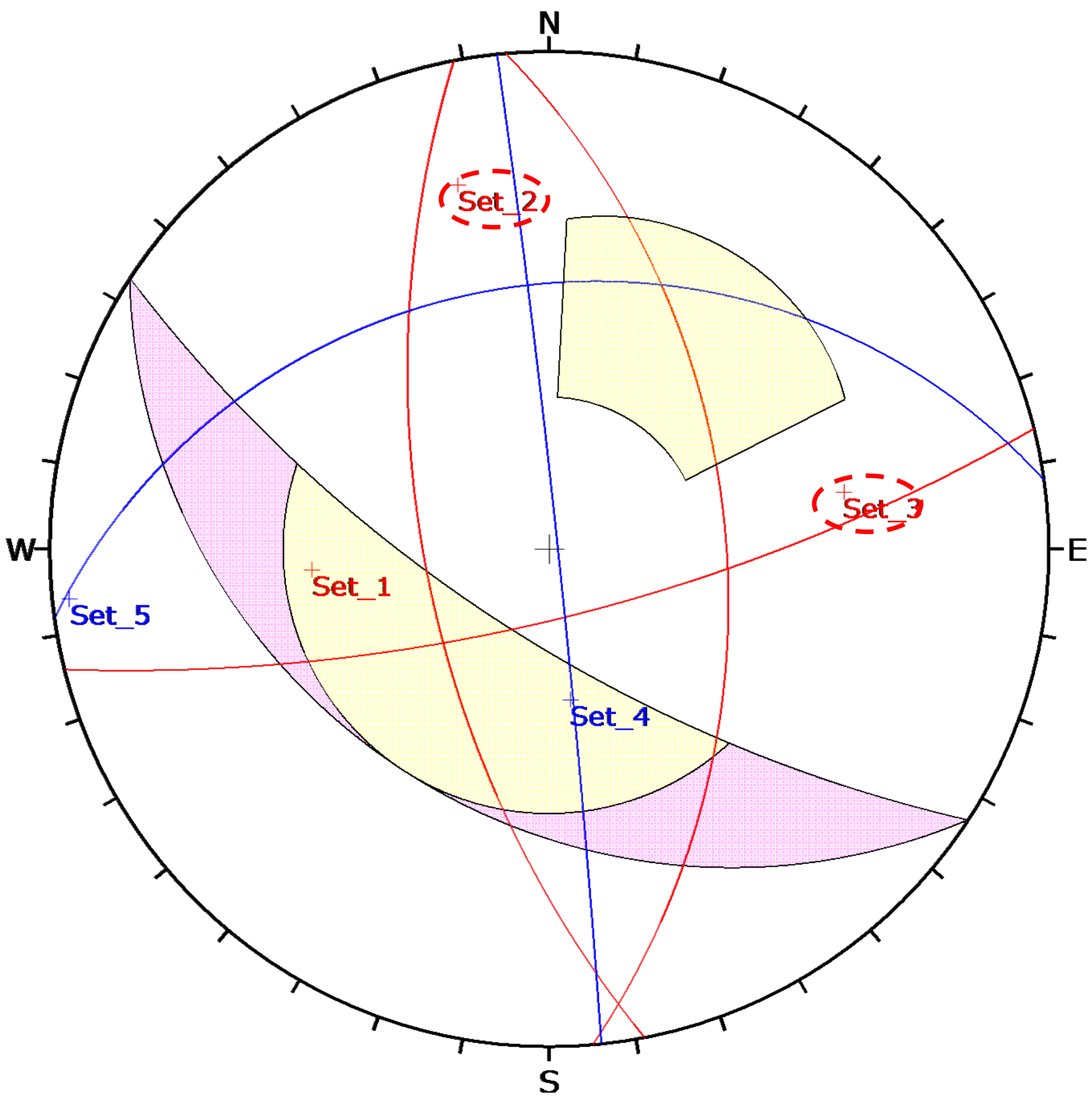
	Color	Dip	Dip Direction	Label
		User Planes		
1	Red	51	85	Set_1
2	Red	74	166	Set_2
3	Red	62	259	Set_3
4	Blue	34	352	Set_4
5	Blue	88	84	Set_5



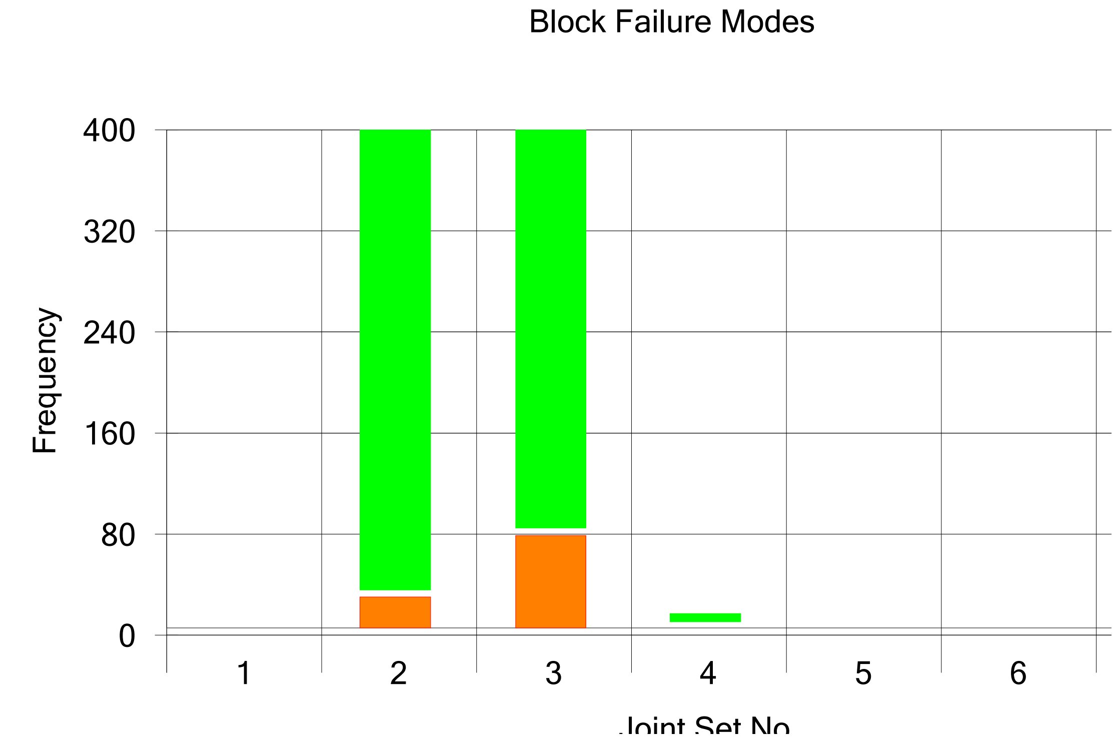


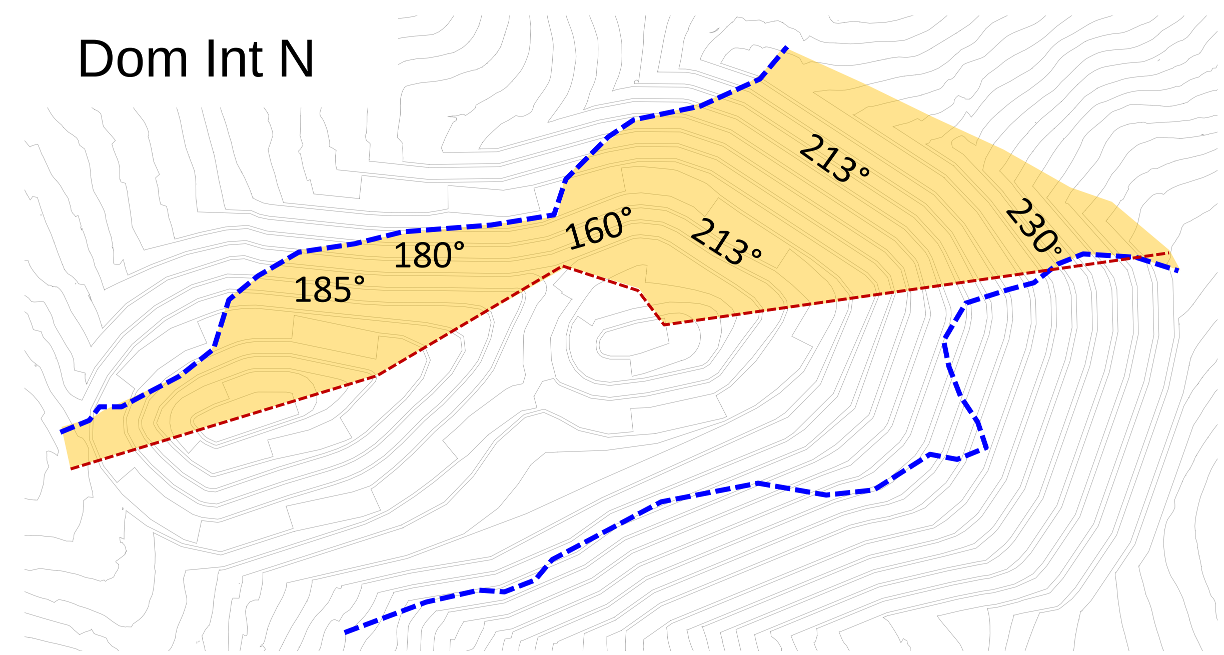
srk consulting	Eagle Gold Project	Kinematic Analysis
		Domain Int N DipDir 180°
Job No: 251000.050 Filename:	Bench Berm Analysis Eagle Pit	Date: 08.22.2016 / Approved: ML / Figure: 3

Domain Int N Dip Dir 213°



	Color	Dip	Dip Direction	Label
		User Planes		
1	red	51	85	Set_1
2	red	74	166	Set_2
3	red	62	259	Set_3
4	blue	34	352	Set_4
5	blue	88	84	Set_5





srk consulting

Eagle Gold Project

Kinematic Analysis

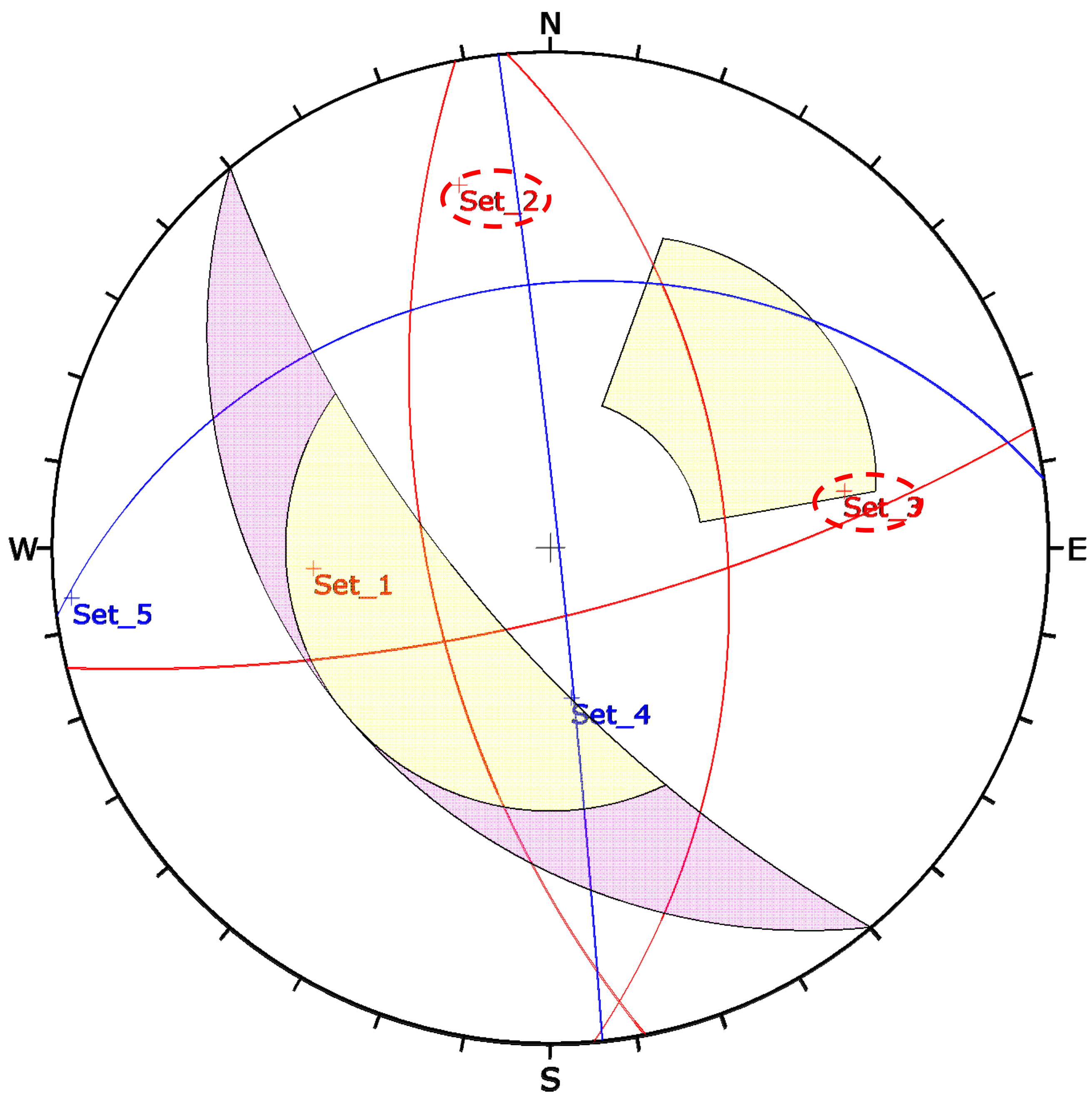
Domain Int N
DipDir 213°

Job No: 251000.050
Filename:

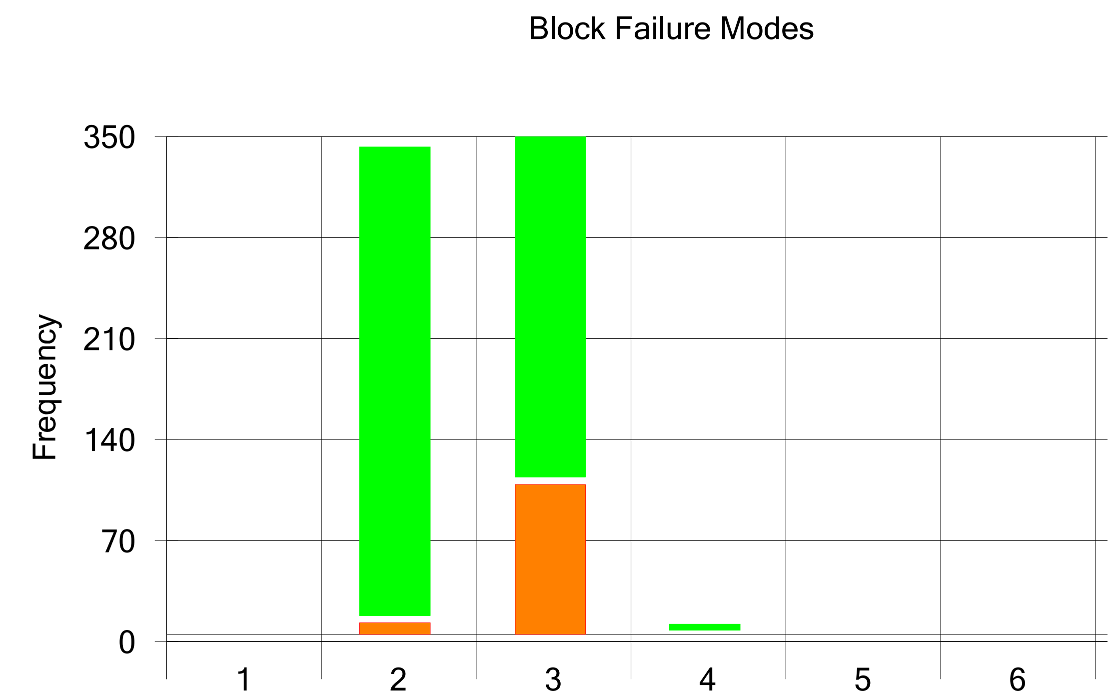
Bench Berm Analysis Eagle Pit

Date: 08.22.2016 | Approved: ML | Figure: 4

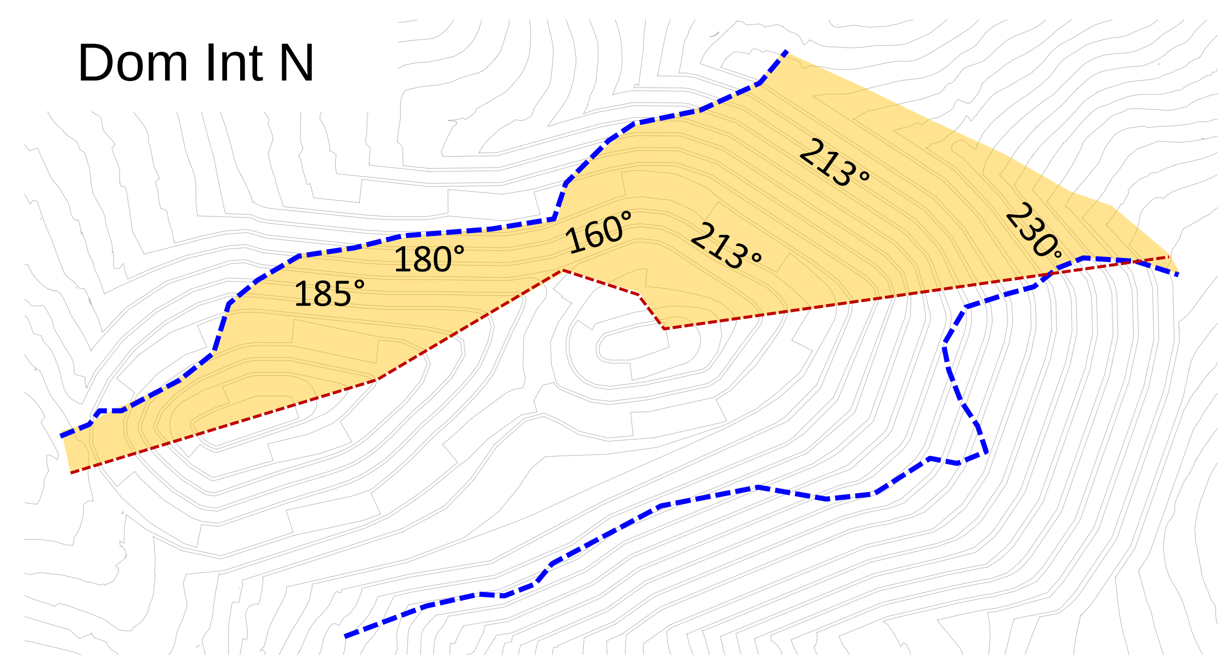
Domain Int N Dip Dir 230°



	Color	Dip	Dip Direction	Label
		User Planes		
1	Red	51	85	Set_1
2	Red	74	166	Set_2
3	Red	62	259	Set_3
4	Blue	34	352	Set_4
5	Blue	88	84	Set_5

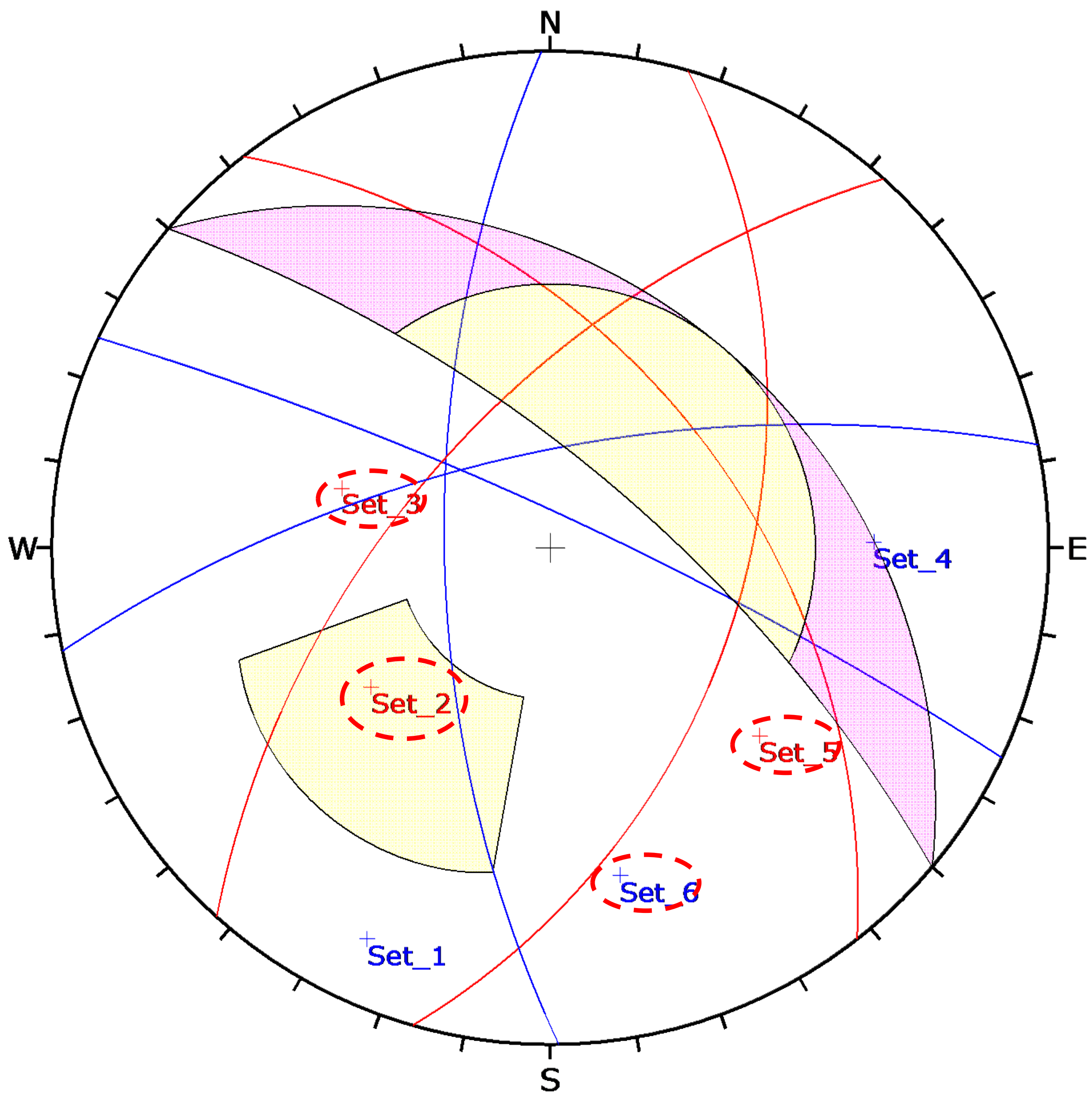


Dom Int N

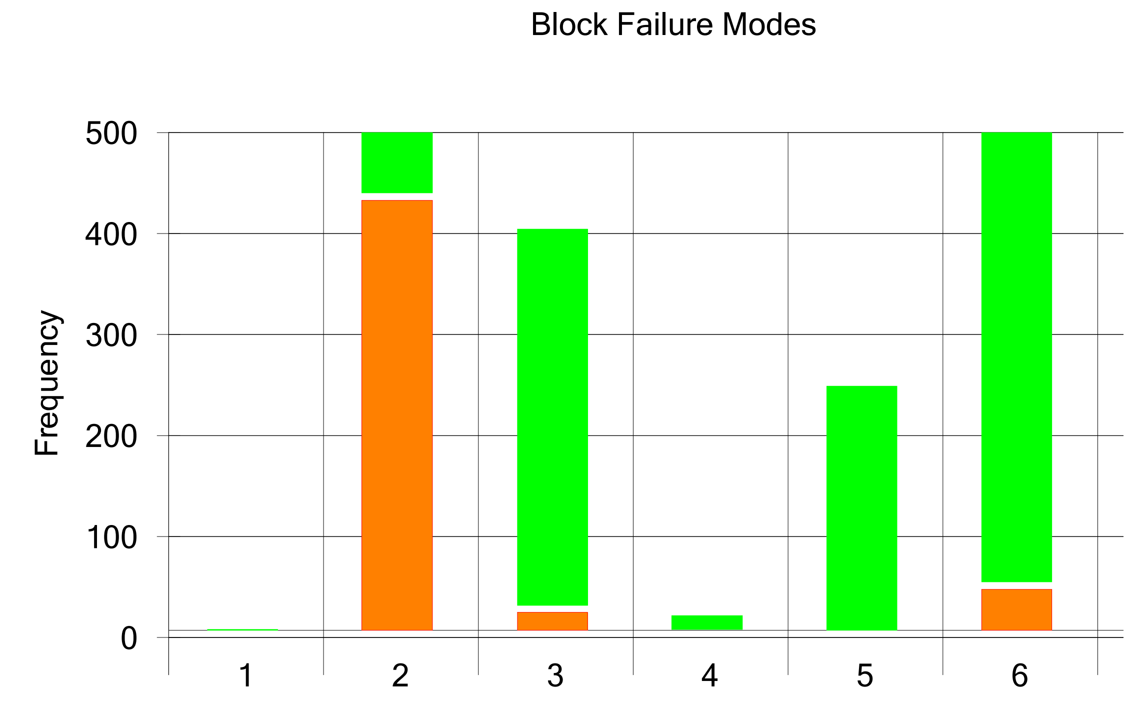


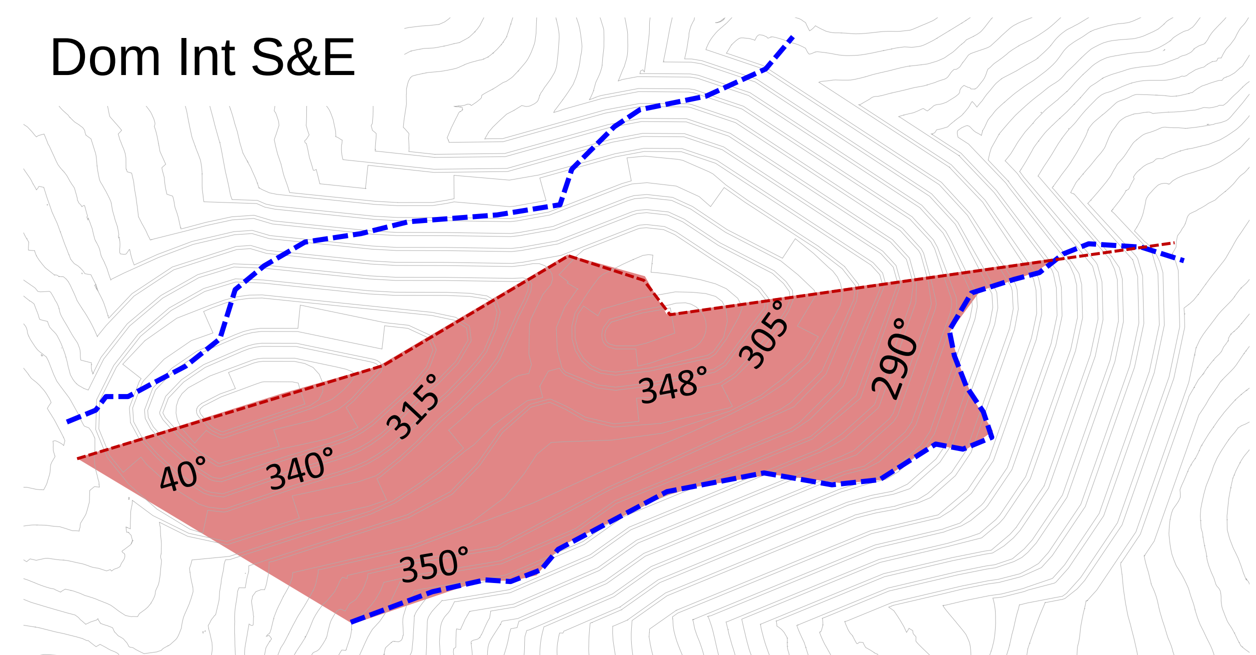
srk consulting	Eagle Gold Project	Kinematic Analysis
		Domain Int N DipDir 230°
Job No: 251000.050 Filename:	Bench Berm Analysis Eagle Pit	Date: 08.22.2016 / Approved: ML / Figure: 5

Domain Int S&E Dip Dir 40°



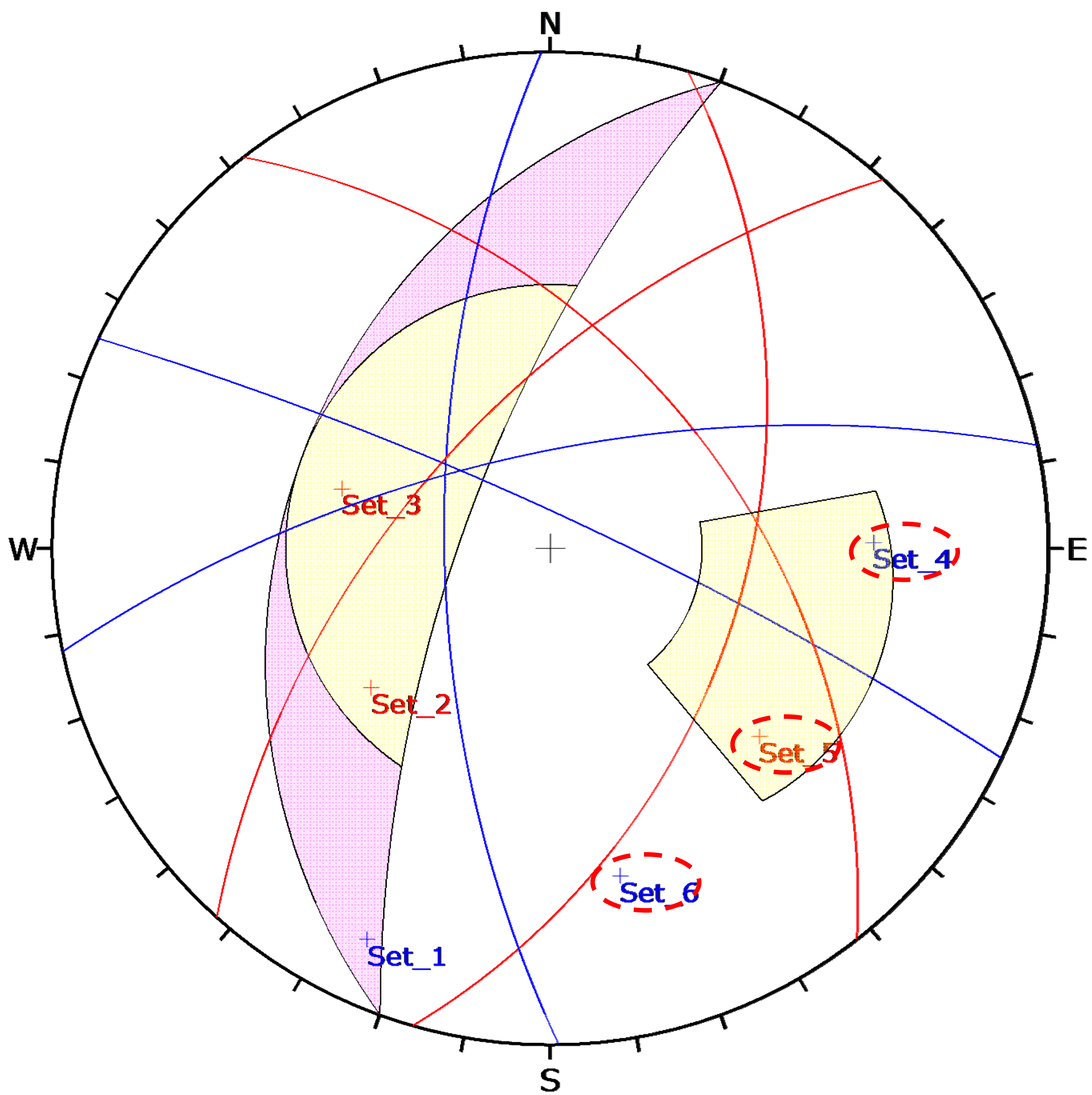
	Color	Dip	Dip Direction	Label
		User Planes		
1	Blue	82	25	Set_1
2	Red	49	52	Set_2
3	Red	47	106	Set_3
4	Blue	66	269	Set_4
5	Red	59	312	Set_5
6	Blue	68	348	Set_6



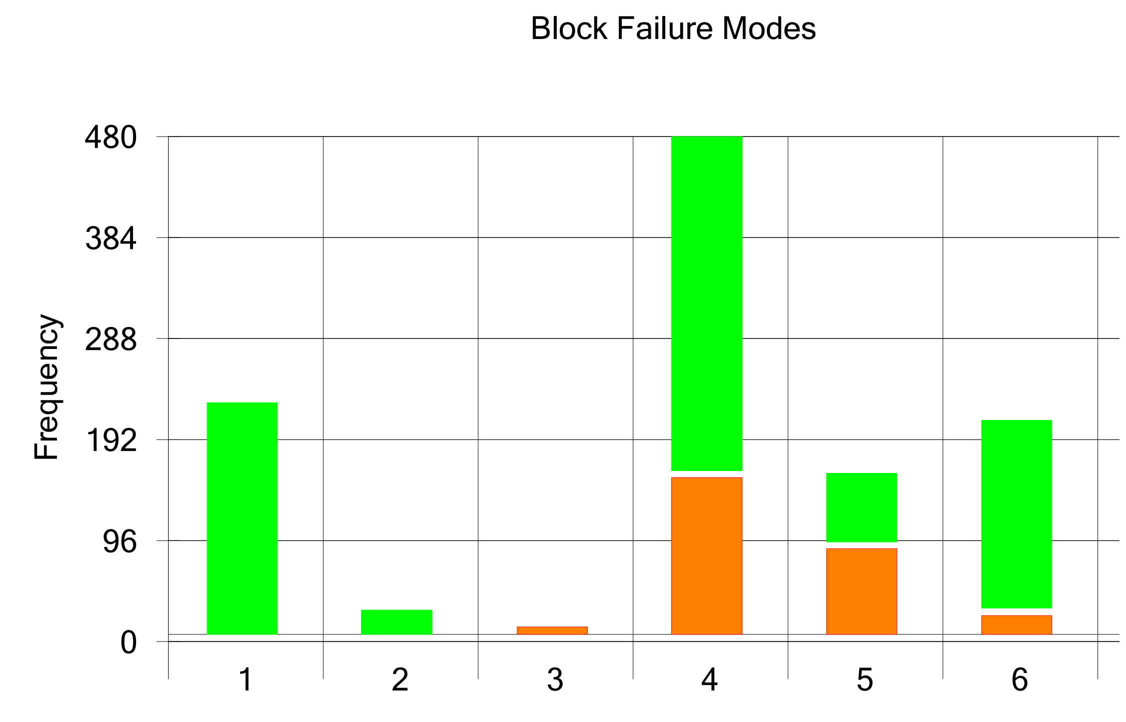


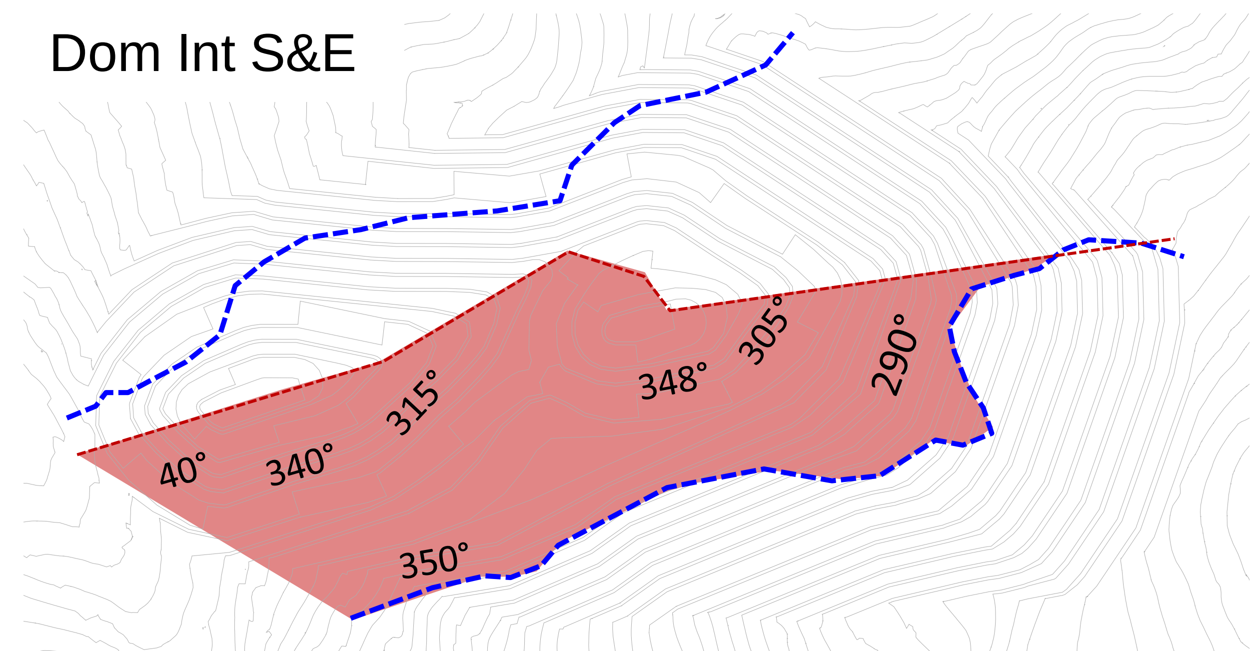
srk consulting	Eagle Gold Project	Kinematic Analysis
		Domain Int S&E DipDir 40°
Job No: 251000.050 Filename:	Bench Berm Analysis Eagle Pit	Date: 08.22.2016 / Approved: ML / Figure: 6

Domain Int S&E Dip Dir 290°



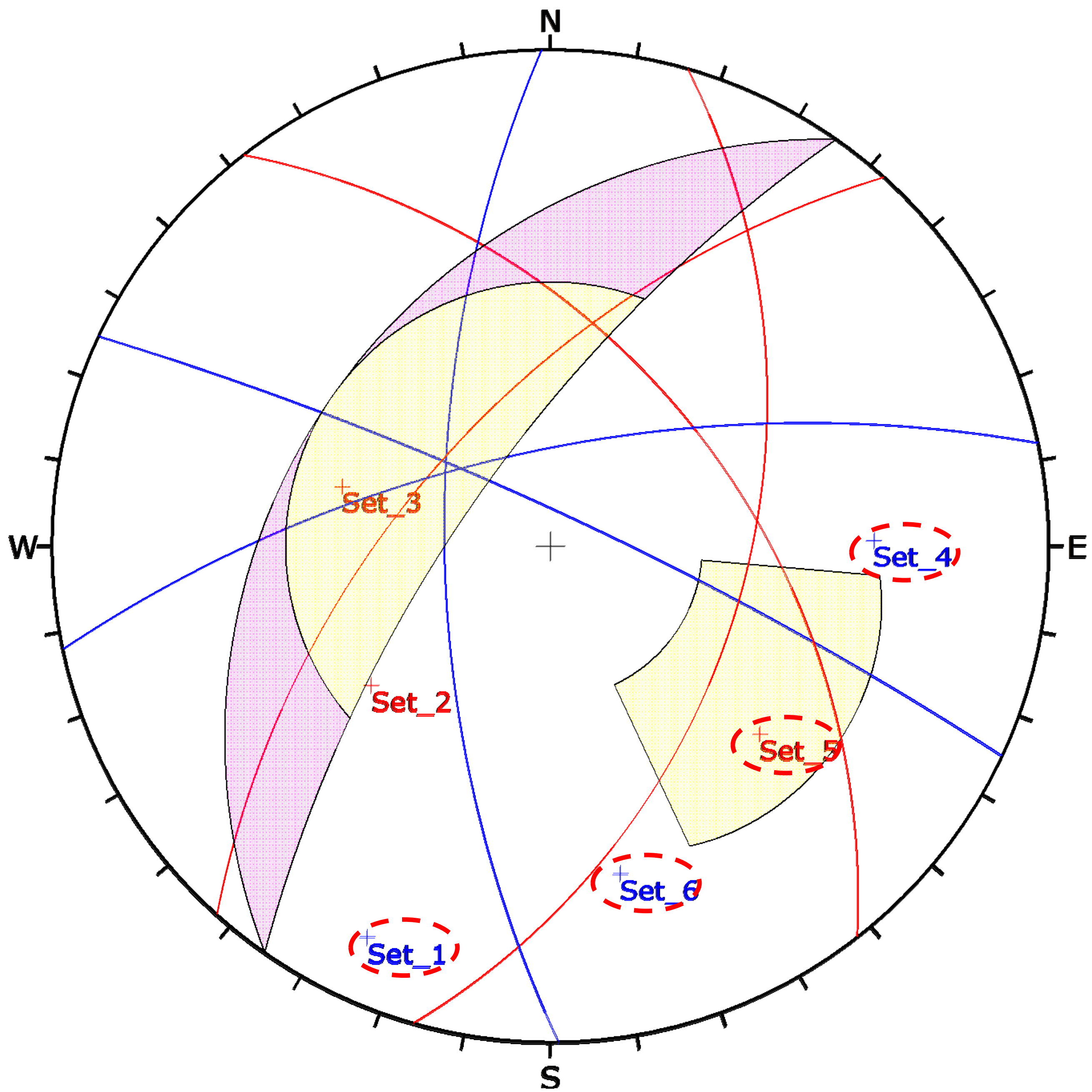
	Color	Dip	Dip Direction	Label
		User Planes		
1	Blue	82	25	Set_1
2	Red	49	52	Set_2
3	Red	47	106	Set_3
4	Blue	66	269	Set_4
5	Red	59	312	Set_5
6	Blue	68	348	Set_6



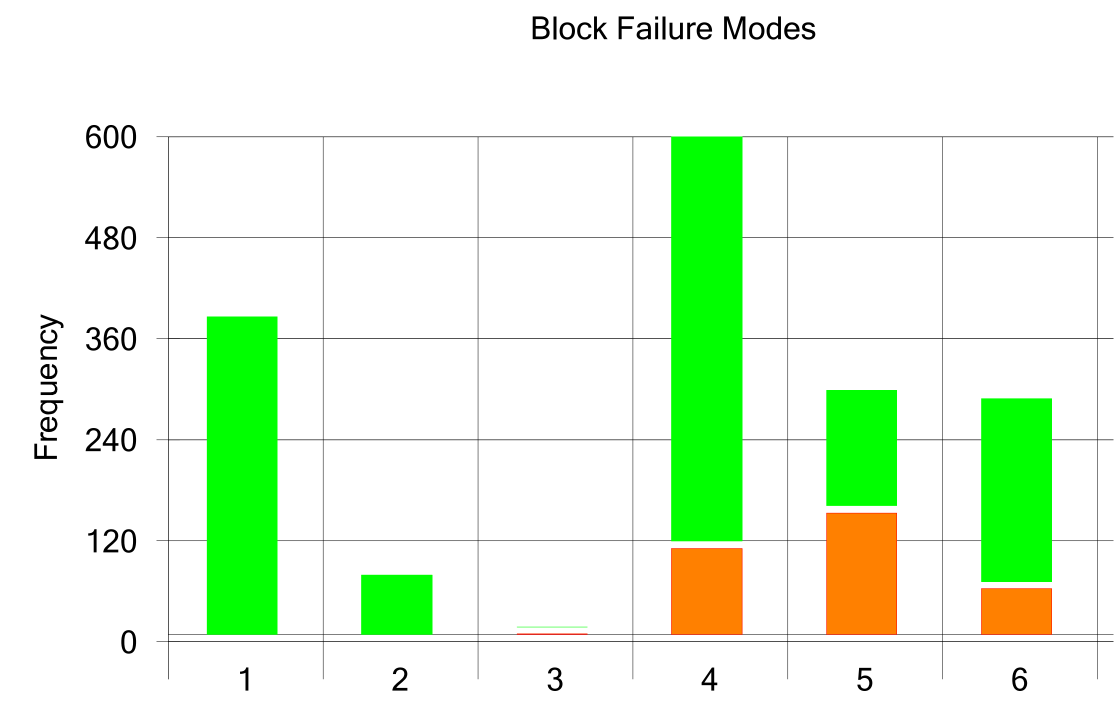


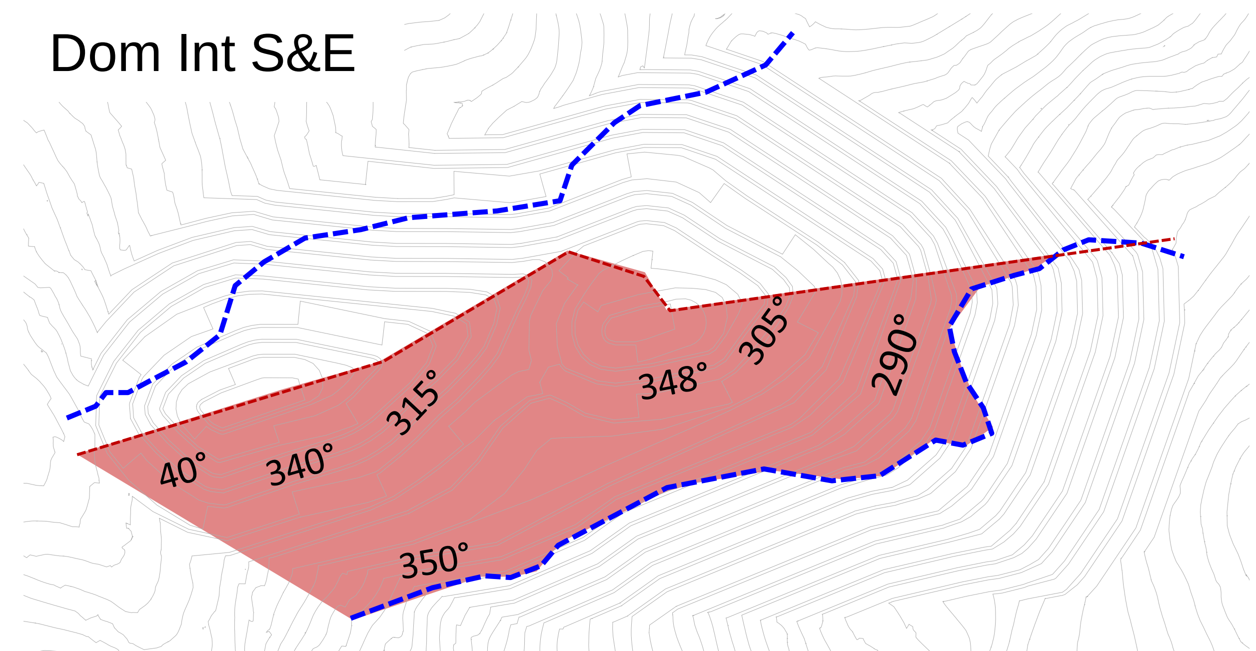
srk consulting	Eagle Gold Project	Kinematic Analysis
		Domain Int S&E DipDir 290°
Job No: 251000.050 Filename:	Bench Berm Analysis Eagle Pit	Date: 08.22.2016 · Approved: ML · Figure: 7

Domain Int S&E Dip Dir 305°



	Color	Dip	Dip Direction	Label
User Planes				
1	Blue	82	25	Set_1
2	Red	49	52	Set_2
3	Red	47	106	Set_3
4	Blue	66	269	Set_4
5	Red	59	312	Set_5
6	Blue	68	348	Set_6





srk consulting

Eagle Gold Project

Bench Berm Analysis Eagle Pit

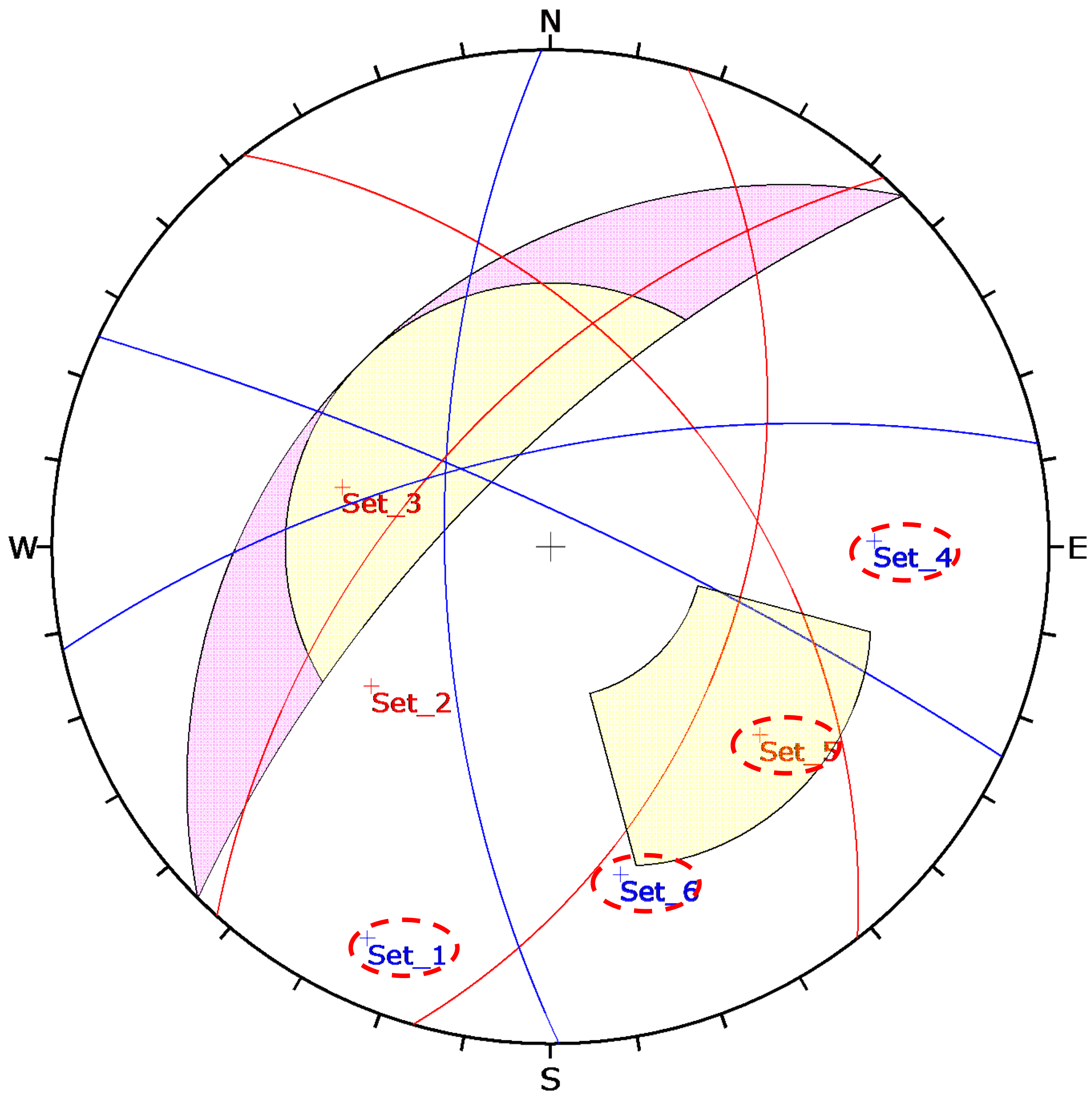
Kinematic Analysis

Domain Int S&E
DipDir 305°

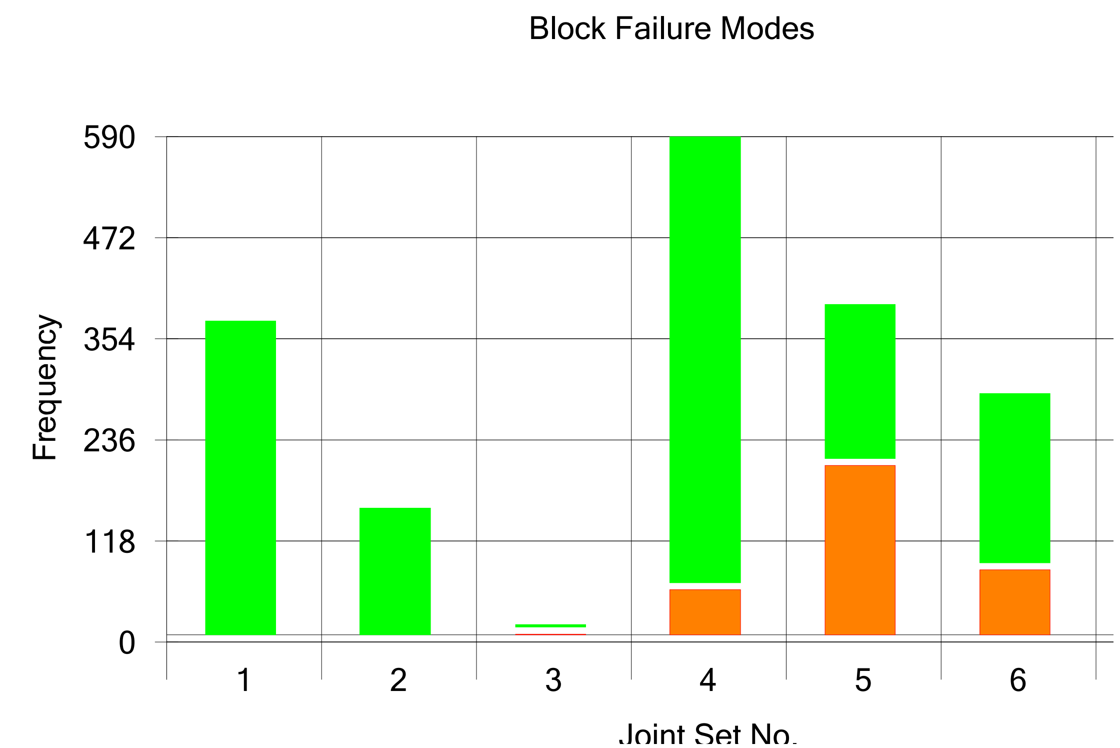
Job No: 251000.050
Filename:

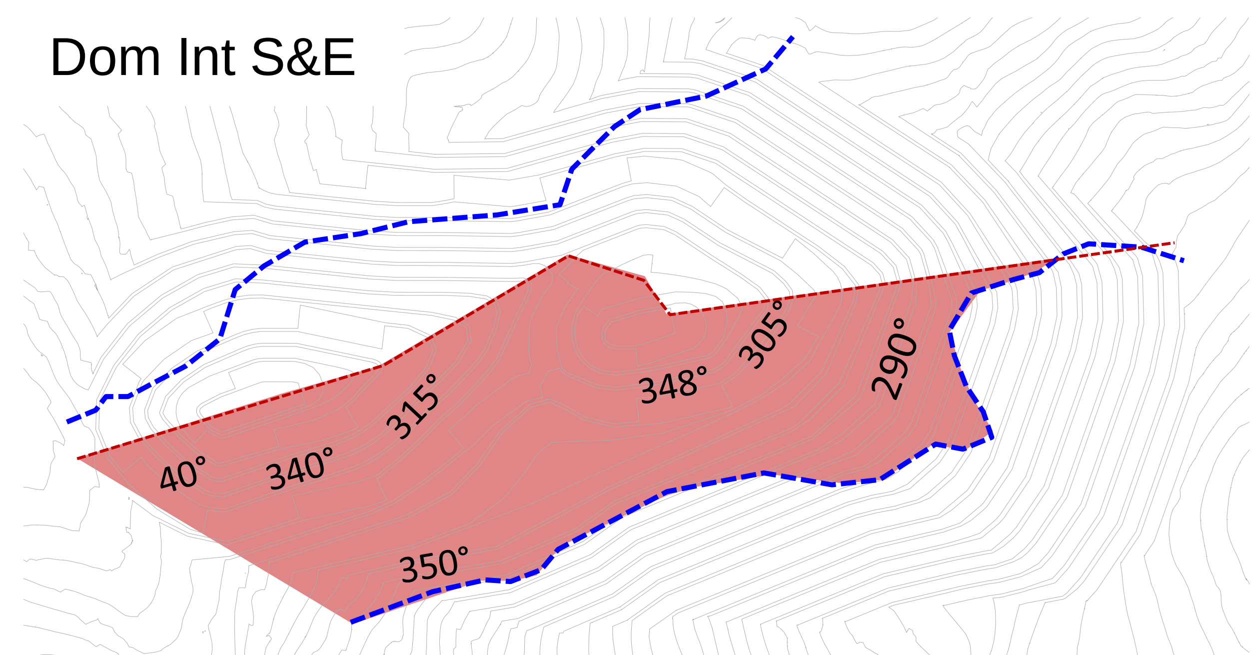
Date: 08.22.2016 | Approved: ML | Figure: 8

Domain Int S&E Dip Dir 315°



	Color	Dip	Dip Direction	Label
		User Planes		
1	Blue	82	25	Set_1
2	Red	49	52	Set_2
3	Red	47	106	Set_3
4	Blue	66	269	Set_4
5	Red	59	312	Set_5
6	Blue	68	348	Set_6





srk consulting

Eagle Gold Project

Kinematic Analysis

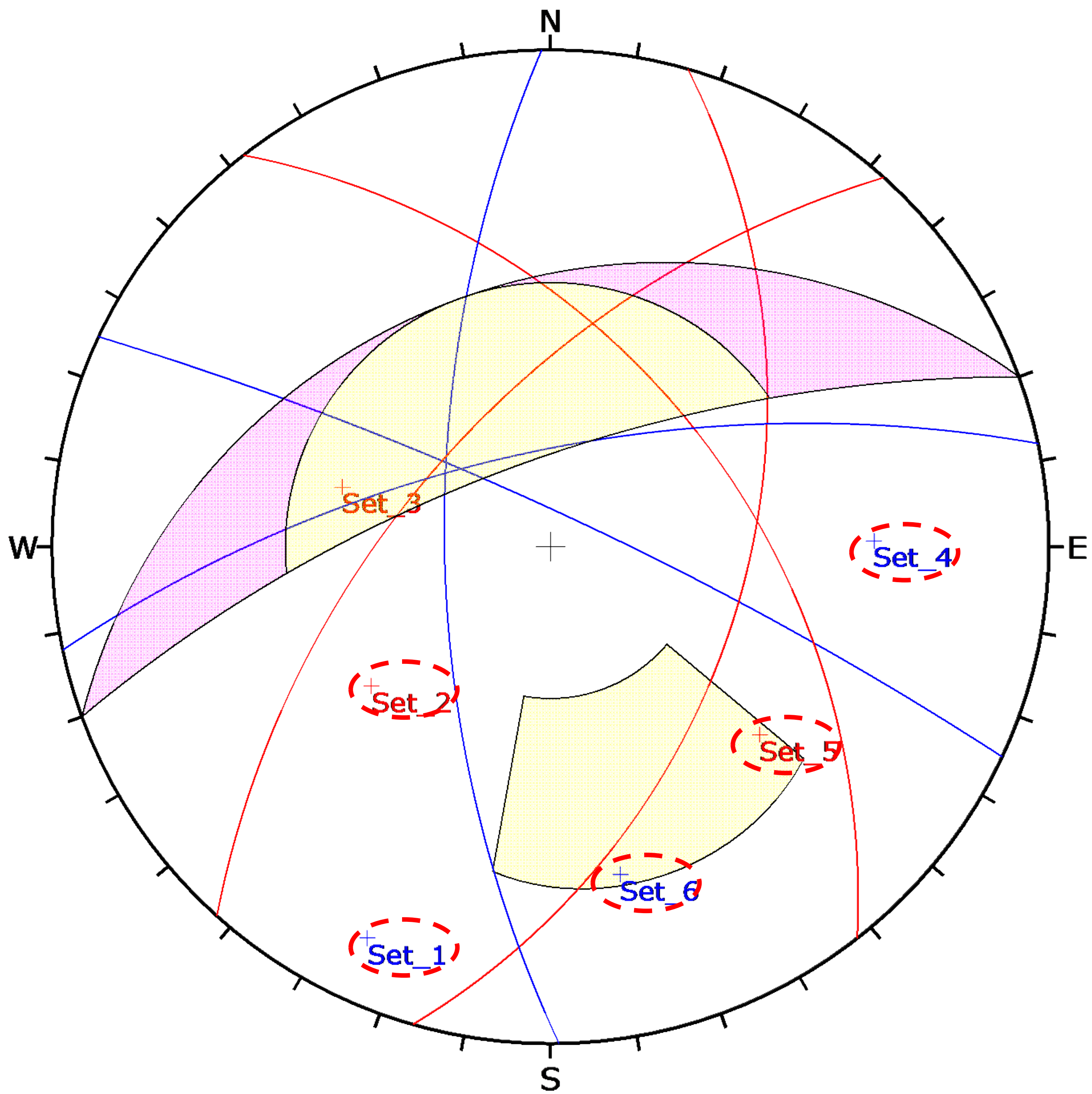
Domain Int S&E
DipDir 315°

Job No: 251000.050
Filename:

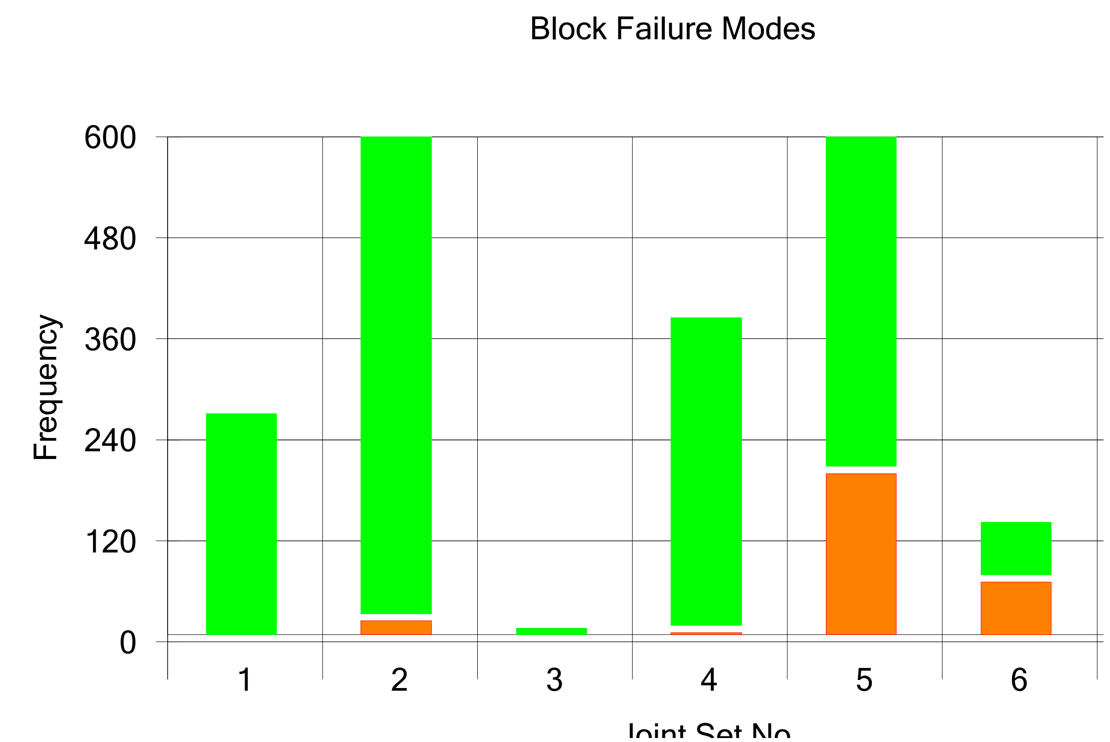
Bench Berm Analysis Eagle Pit

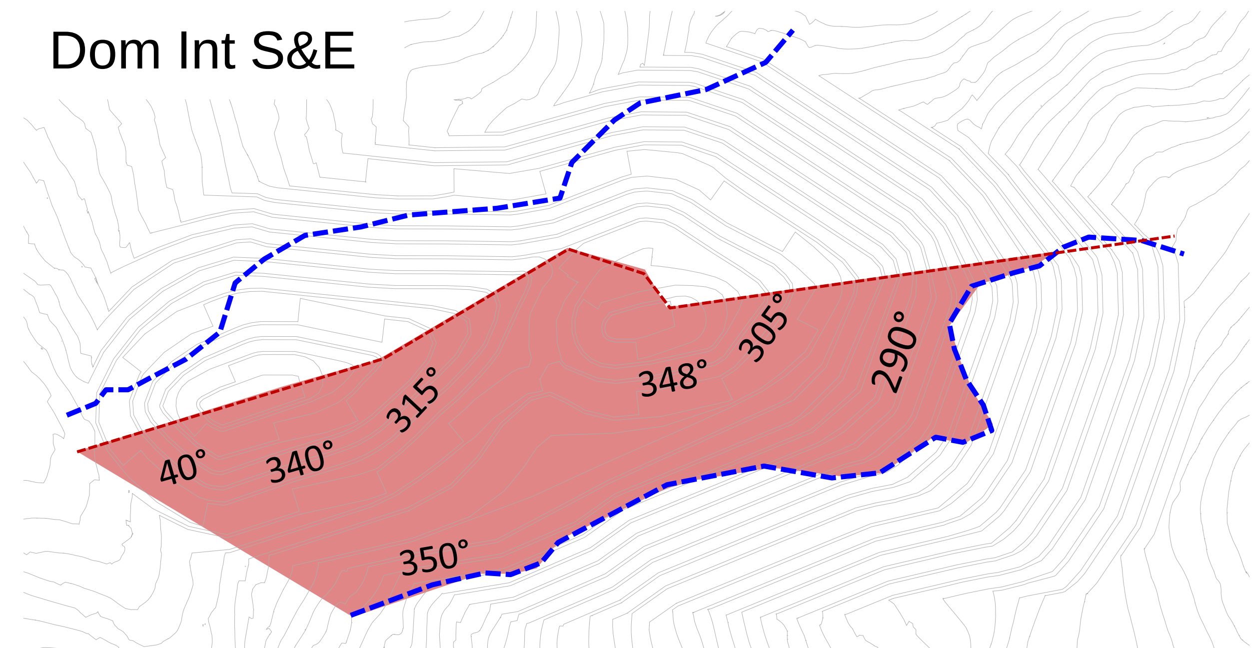
Date: 08.22.2016 | Approved: ML | Figure: 9

Domain Int S&E Dip Dir 340°



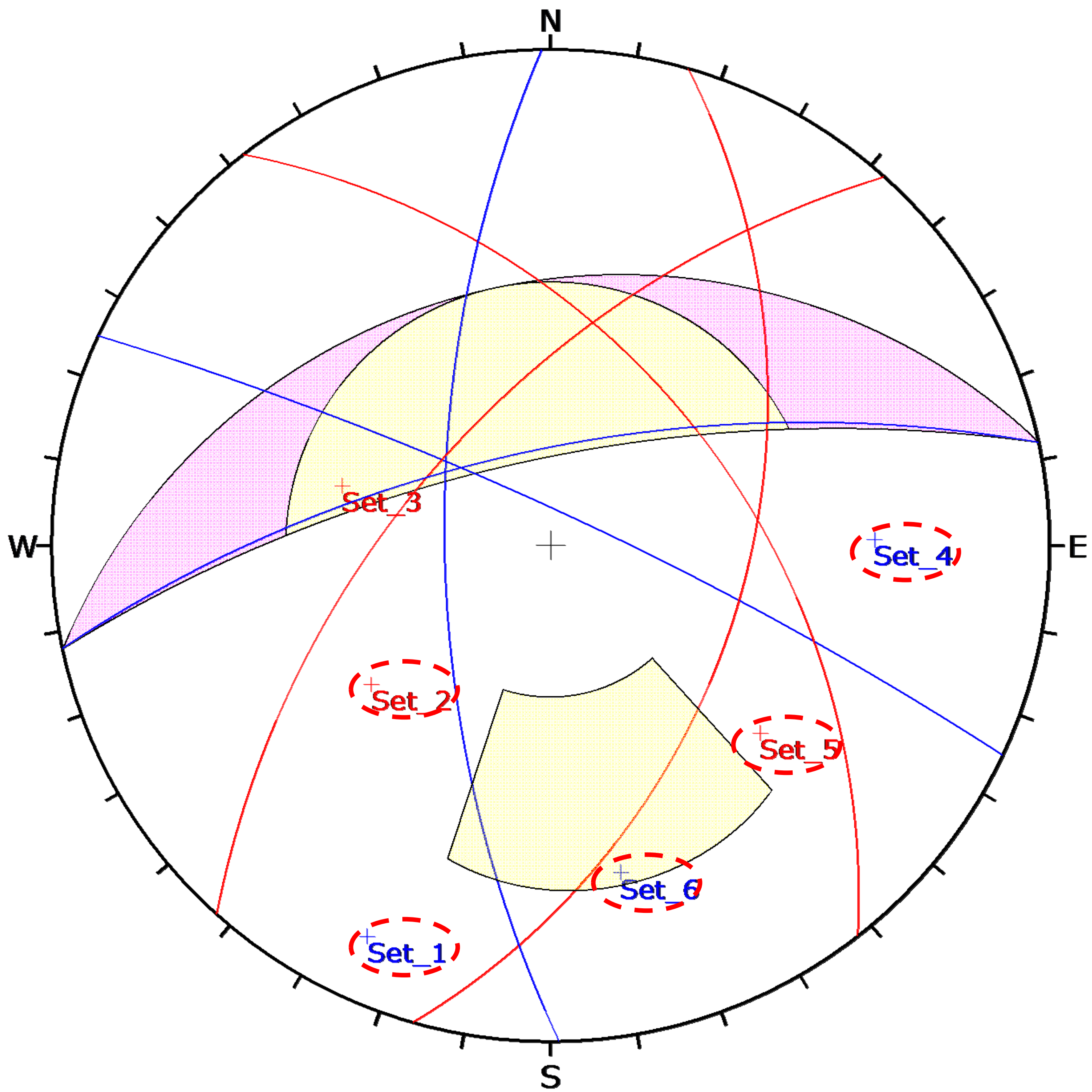
	Color	Dip	Dip Direction	Label
		User Planes		
1	Blue	82	25	Set_1
2	Red	49	52	Set_2
3	Red	47	106	Set_3
4	Blue	66	269	Set_4
5	Red	59	312	Set_5
6	Blue	68	348	Set_6



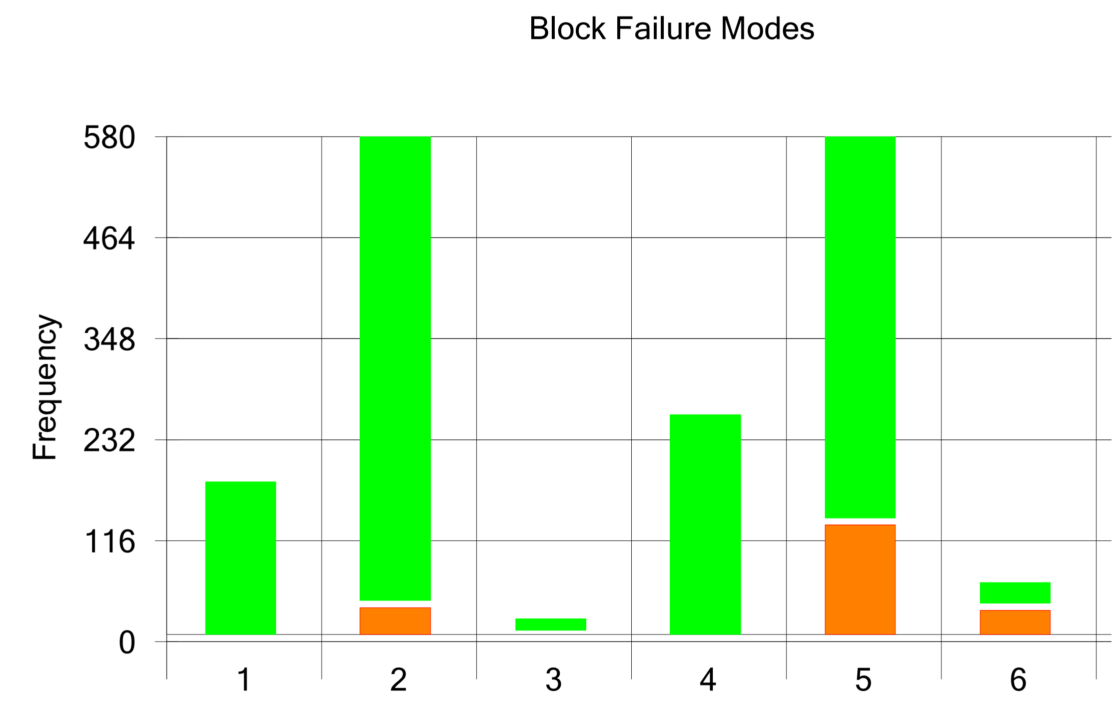


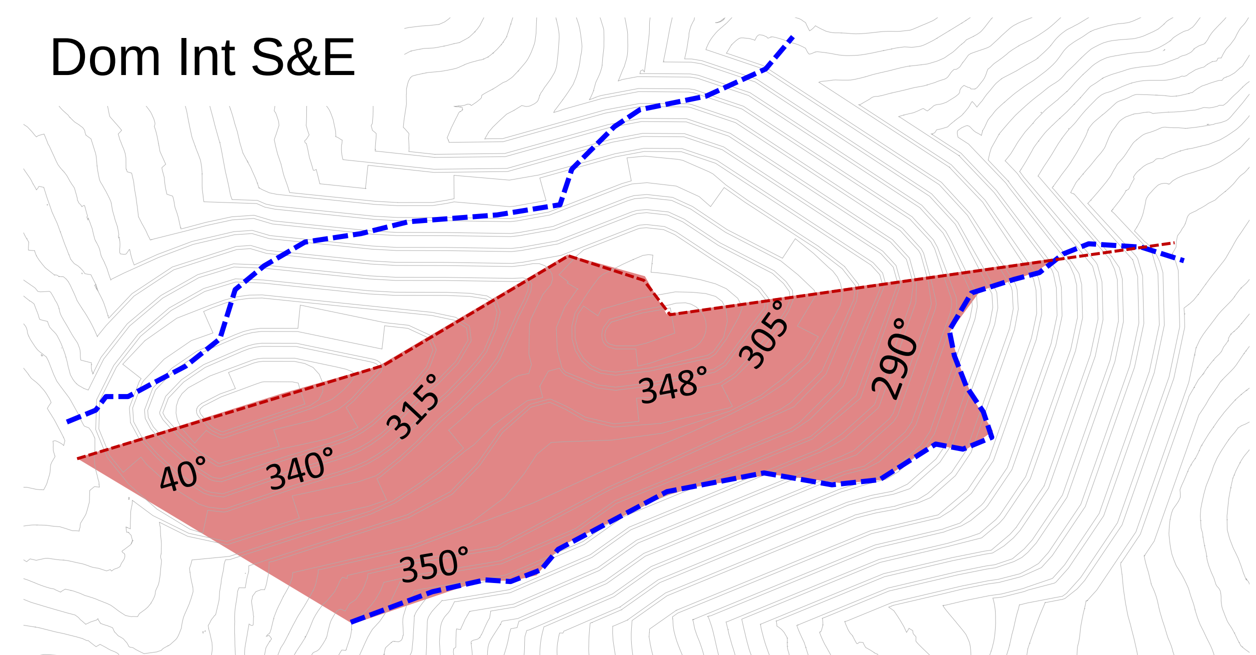
srk consulting	**Eagle Gold Project**	**Kinematic Analysis**
		Domain Int S&E DipDir 340°
Job No: 251000.050 Filename:	Bench Berm Analysis Eagle Pit	Date: 08.22.2016 · Approved: ML · Figure: **10**

Domain Int S&E Dip Dir 348°



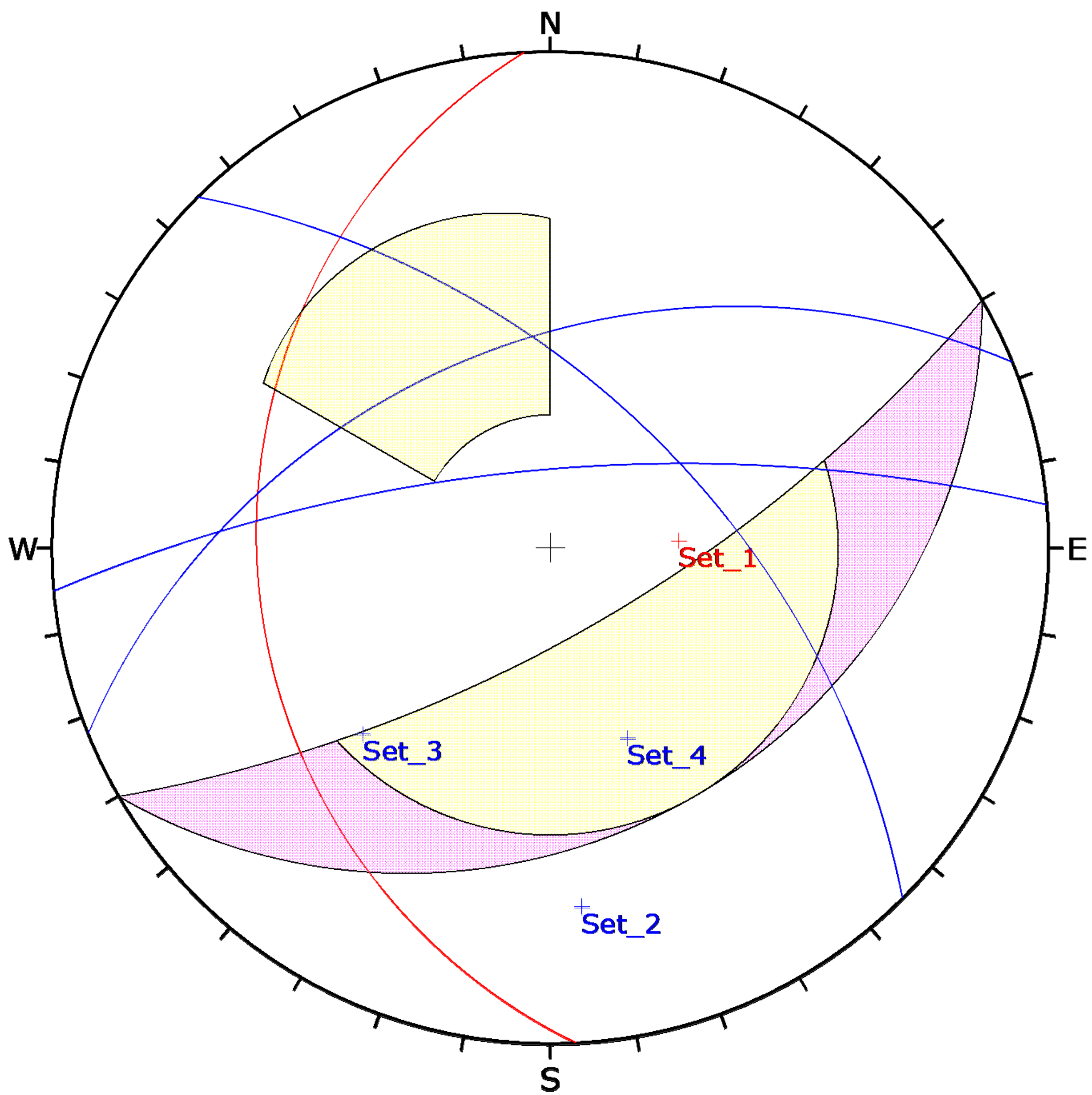
	Color	Dip	Dip Direction	Label
		User Planes		
1	Blue	82	25	Set_1
2	Red	49	52	Set_2
3	Red	47	106	Set_3
4	Blue	66	269	Set_4
5	Red	59	312	Set_5
6	Blue	68	348	Set_6



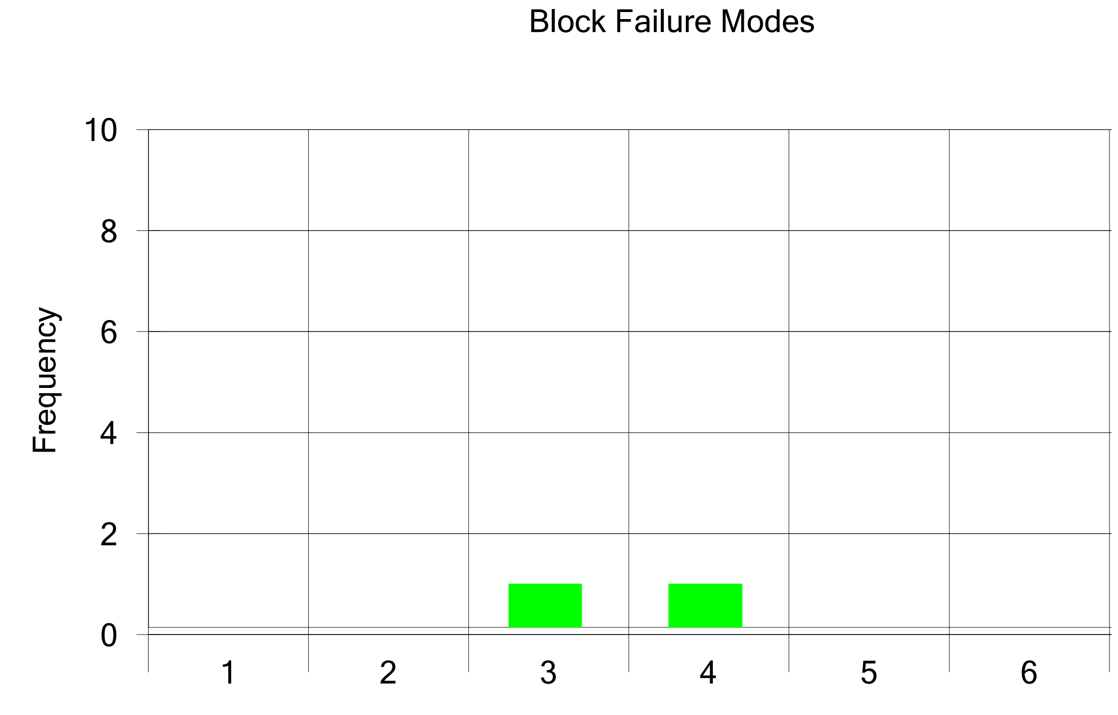


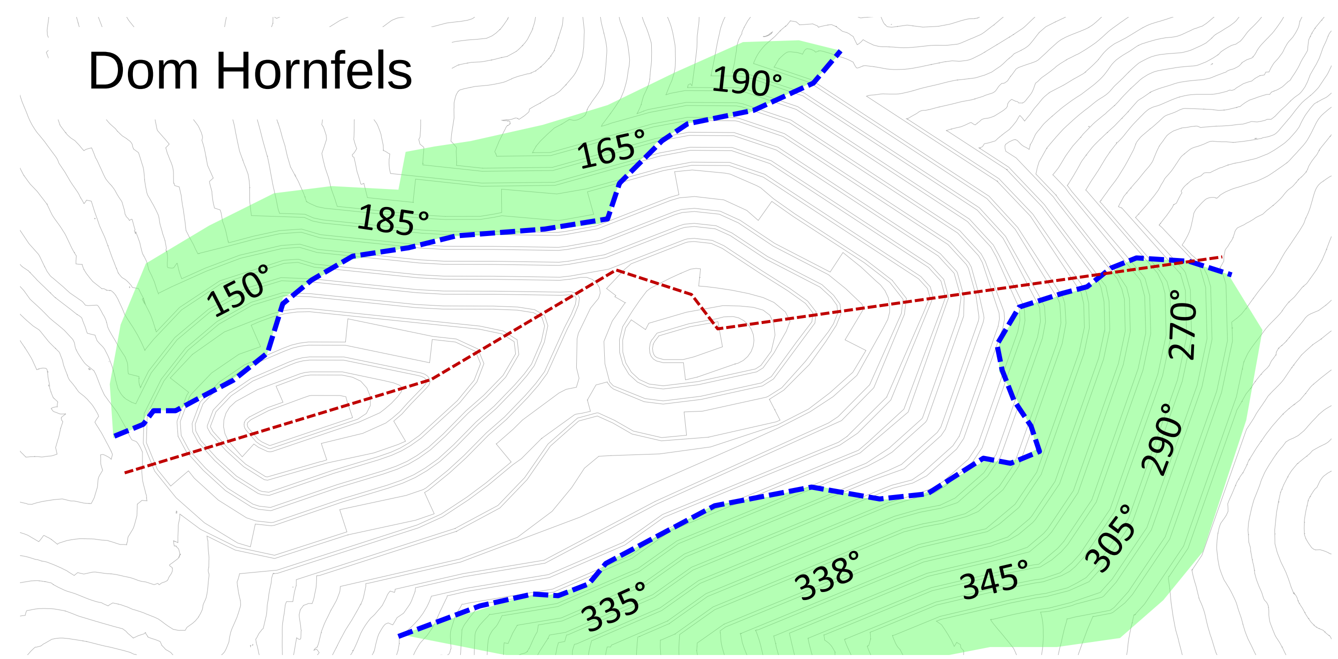
srk consulting	Eagle Gold Project	Kinematic Analysis
		Domain Int S&E DipDir 348°
Job No: 251000.050 Filename:	Bench Berm Analysis Eagle Pit	Date: 08.22.2016 / Approved: ML / Figure: 11

Domain Hornfels Dip Dir 150°



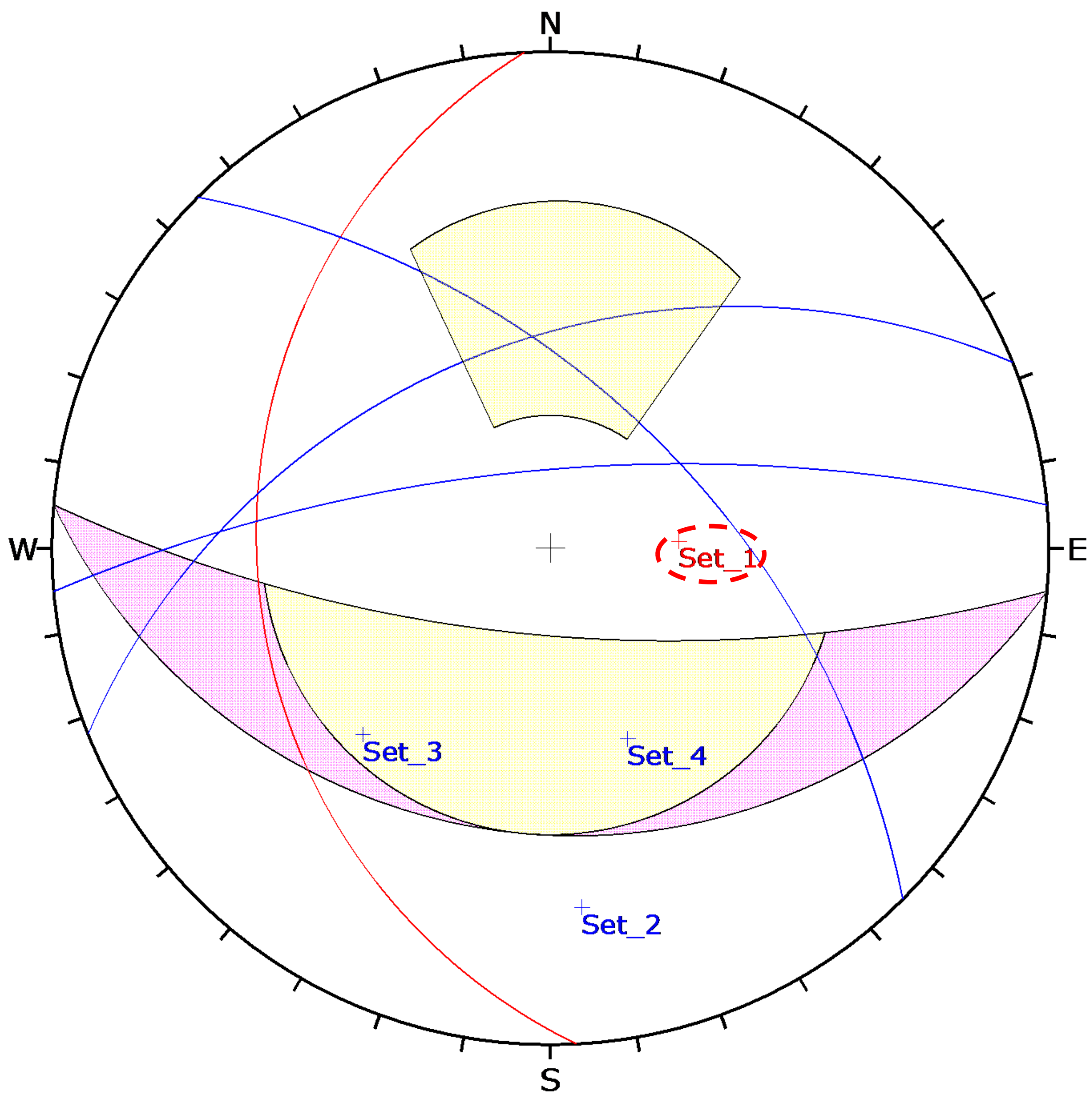
	Color	Dip	Dip Direction	Label
		User Planes		
1	red	29	267	Set_1
2	blue	72	355	Set_2
3	blue	56	45	Set_3
4	blue	45	338	Set_4



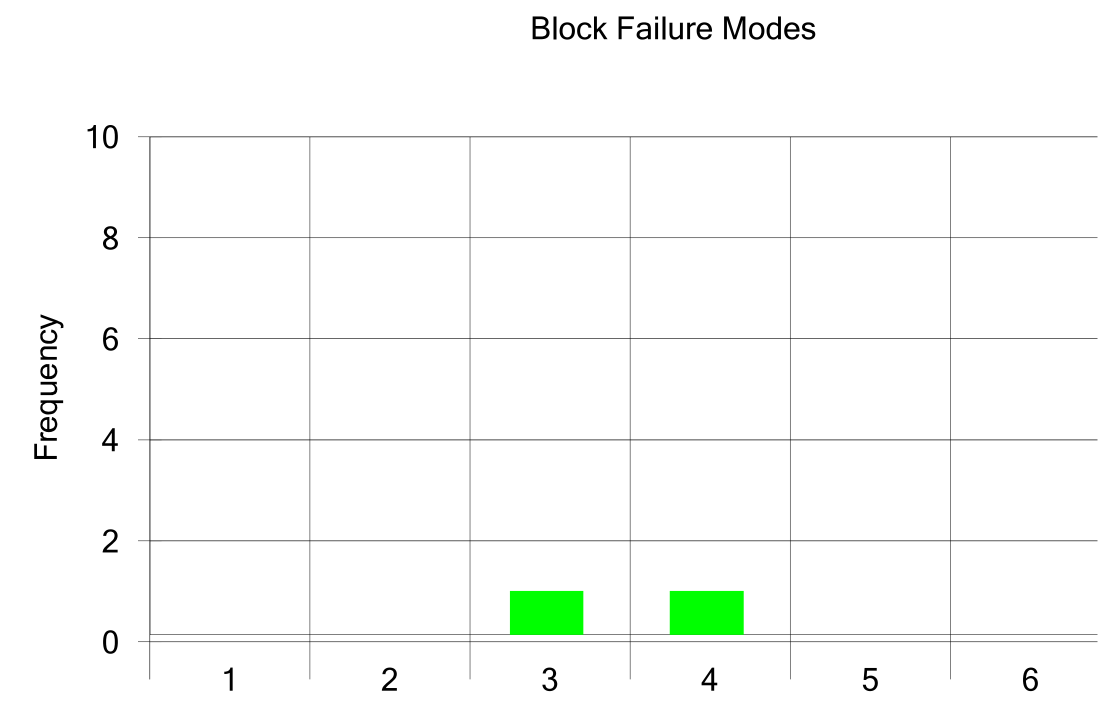


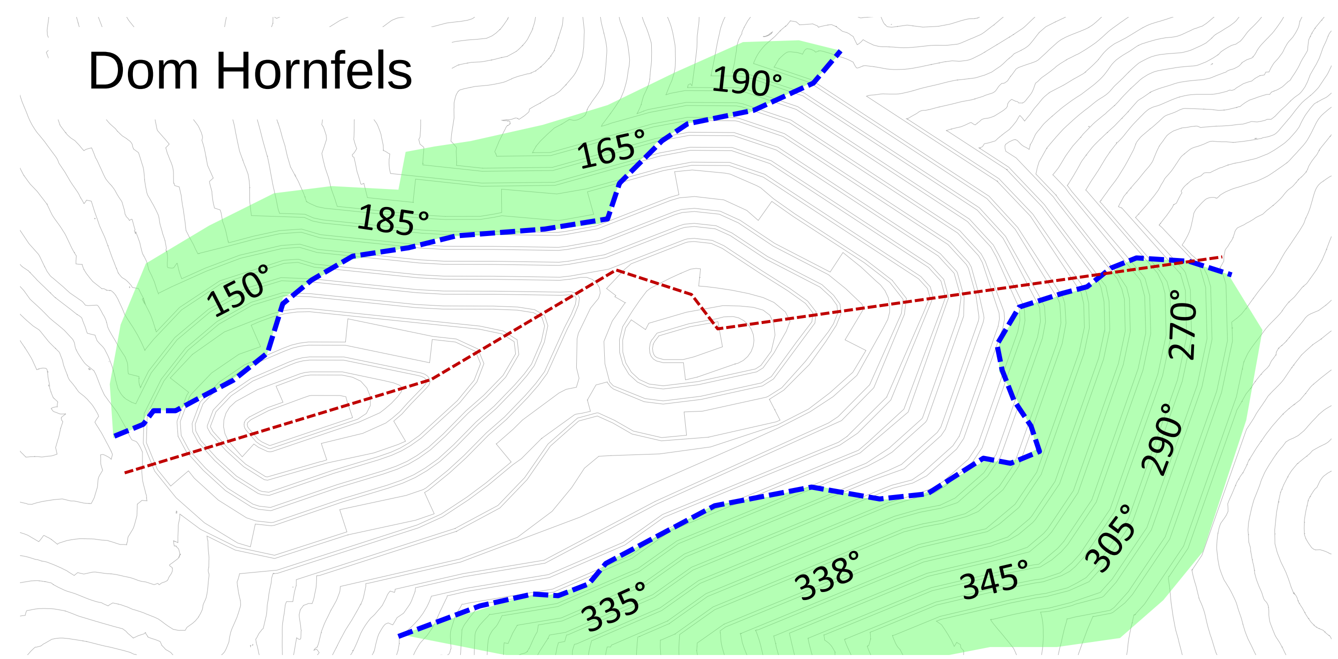
srk consulting	**Eagle Gold Project**	**Kinematic Analysis**
		Domain Hornfels DipDir 150°
Job No: 251000.050 Filename:	Bench Berm Analysis Eagle Pit	Date: 08.22.2016 · Approved: ML · Figure: 12

Domain Hornfels Dip Dir 185°



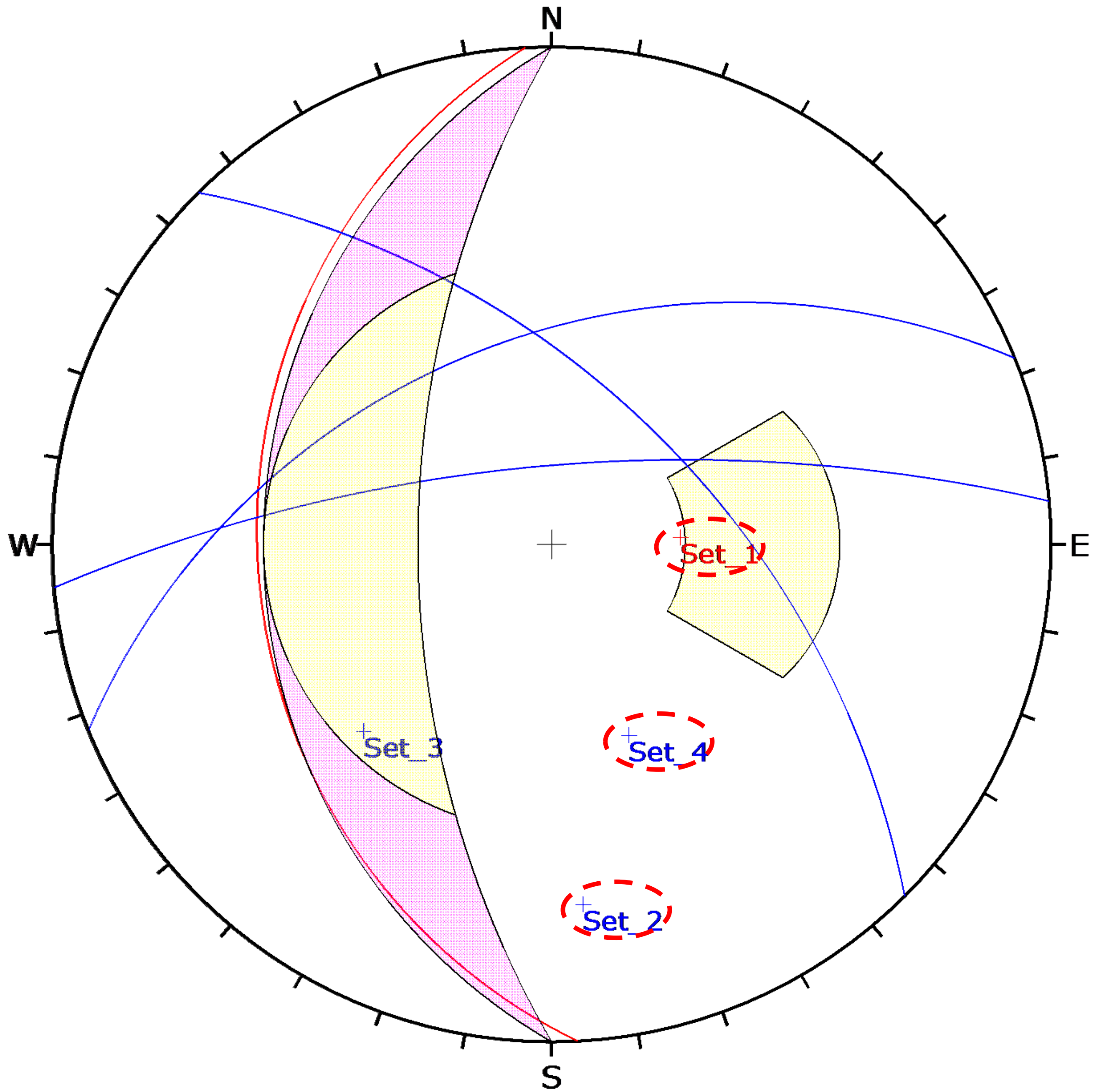
	Color	Dip	Dip Direction	Label
		User Planes		
1		29	267	Set_1
2		72	355	Set_2
3		56	45	Set_3
4		45	338	Set_4



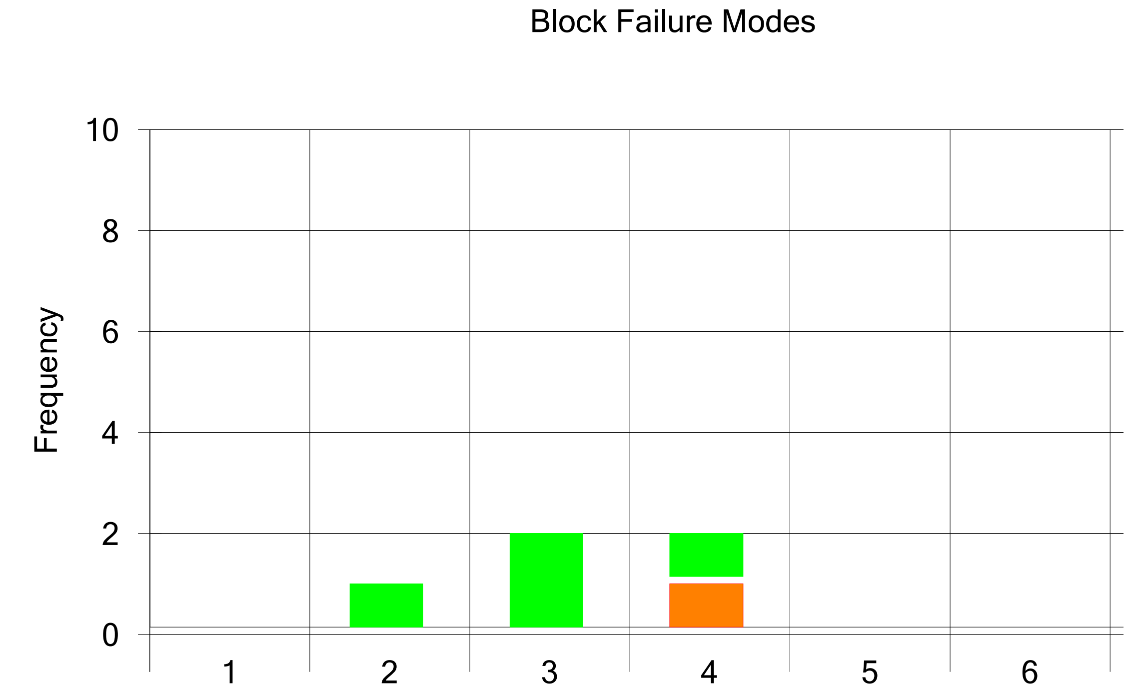


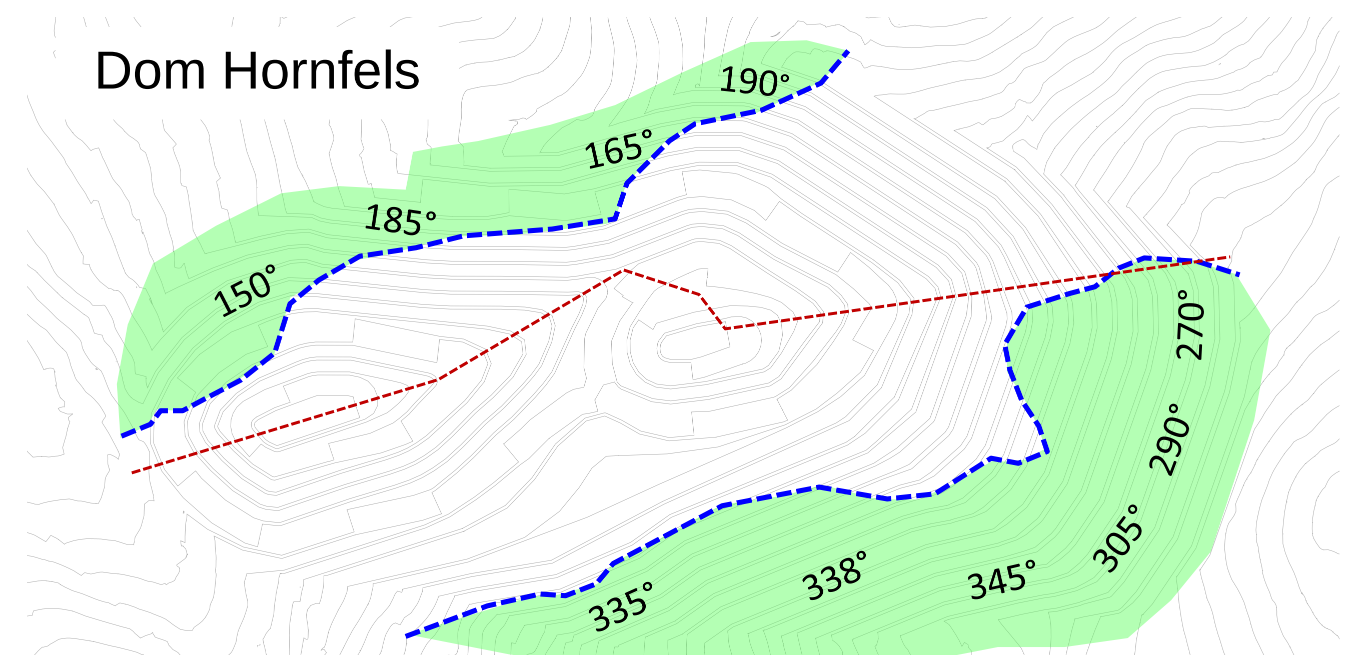
srk consulting	**Eagle Gold Project**	**Kinematic Analysis**
		Domain Hornfels DipDir 185°
Job No: 251000.050 Filename:	Bench Berm Analysis Eagle Pit	Date: 08.22.2016 | Approved: ML | Figure: 13

Domain Hornfels Dip Dir 270°



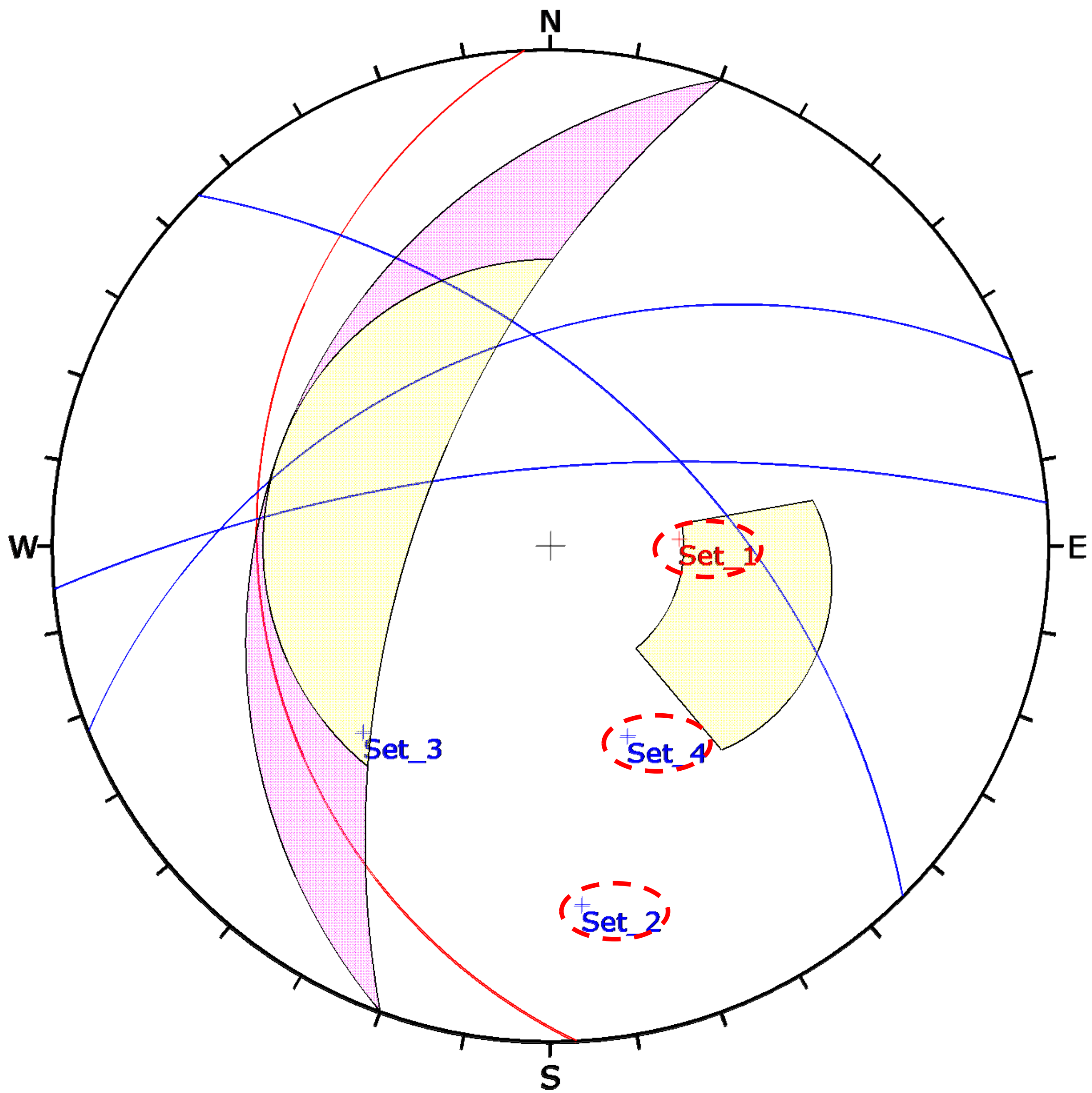
	Color	Dip	Dip Direction	Label
User Planes				
1	Red	29	267	Set_1
2	Blue	72	355	Set_2
3	Blue	56	45	Set_3
4	Blue	45	338	Set_4



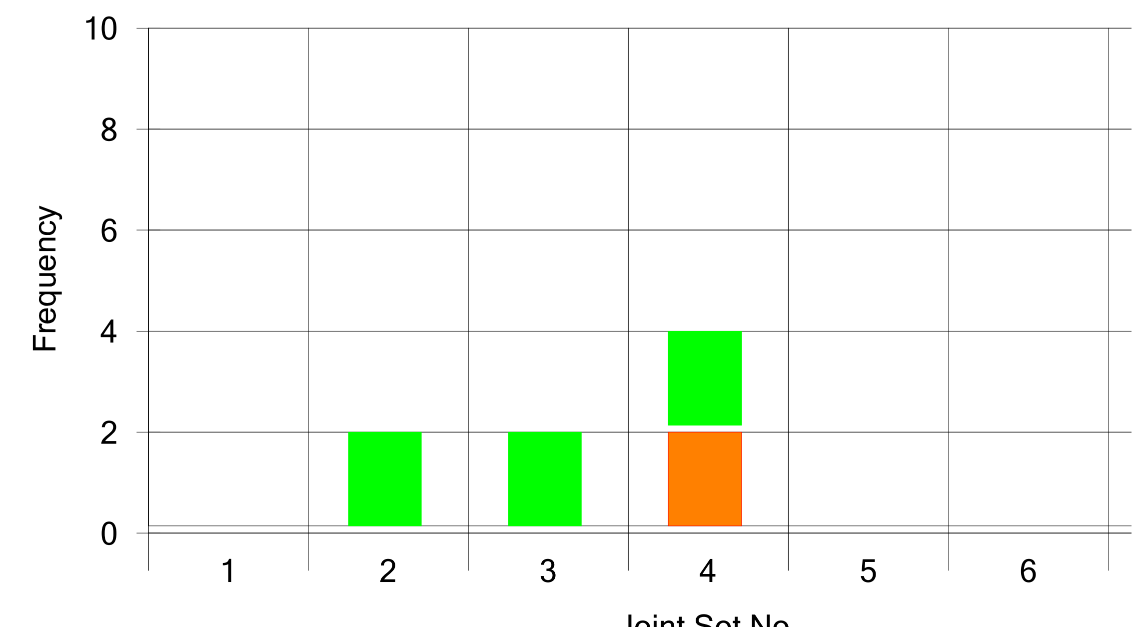


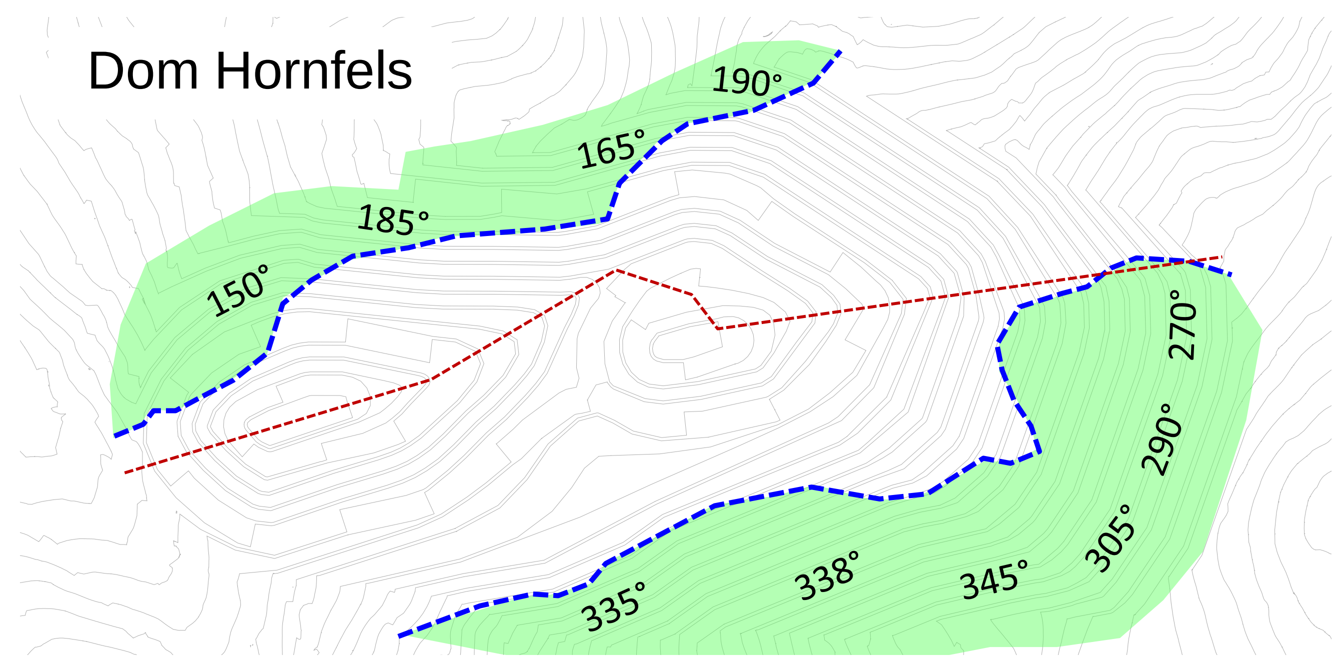
srk consulting	**Eagle Gold Project**	**Kinematic Analysis**
		Domain Hornfels DipDir 270°
Job No: 251000.050 Filename:	Bench Berm Analysis Eagle Pit	Date: 08.22.2016 · Approved: ML · Figure: **14**

Domain Hornfels Dip Dir 290°



	Color	Dip	Dip Direction	Label
		User Planes		
1	red	29	267	Set_1
2	blue	72	355	Set_2
3	blue	56	45	Set_3
4	blue	45	338	Set_4





srk consulting

Eagle Gold Project

Kinematic Analysis

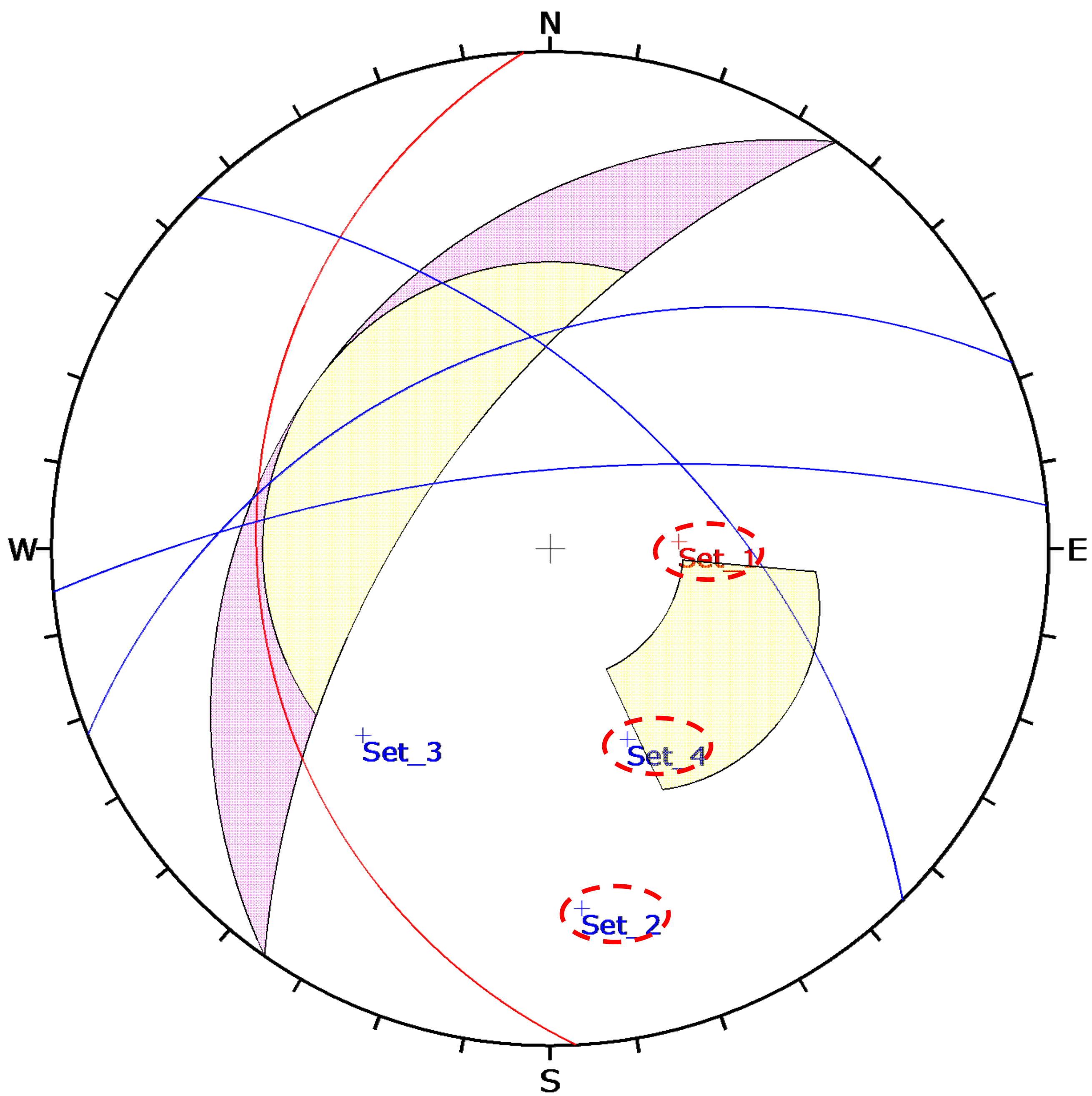
Domain Hornfels
DipDir 290°

Job No: 251000.050
Filename:

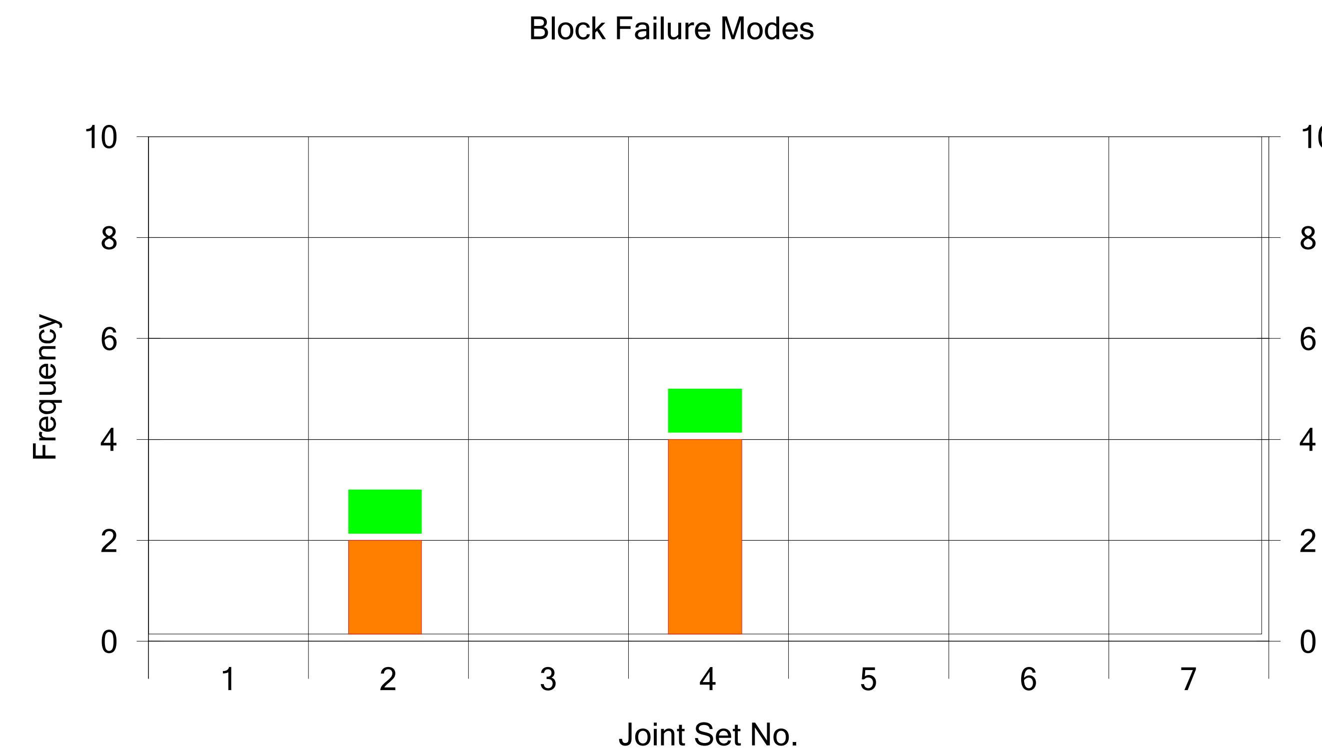
Bench Berm Analysis Eagle Pit

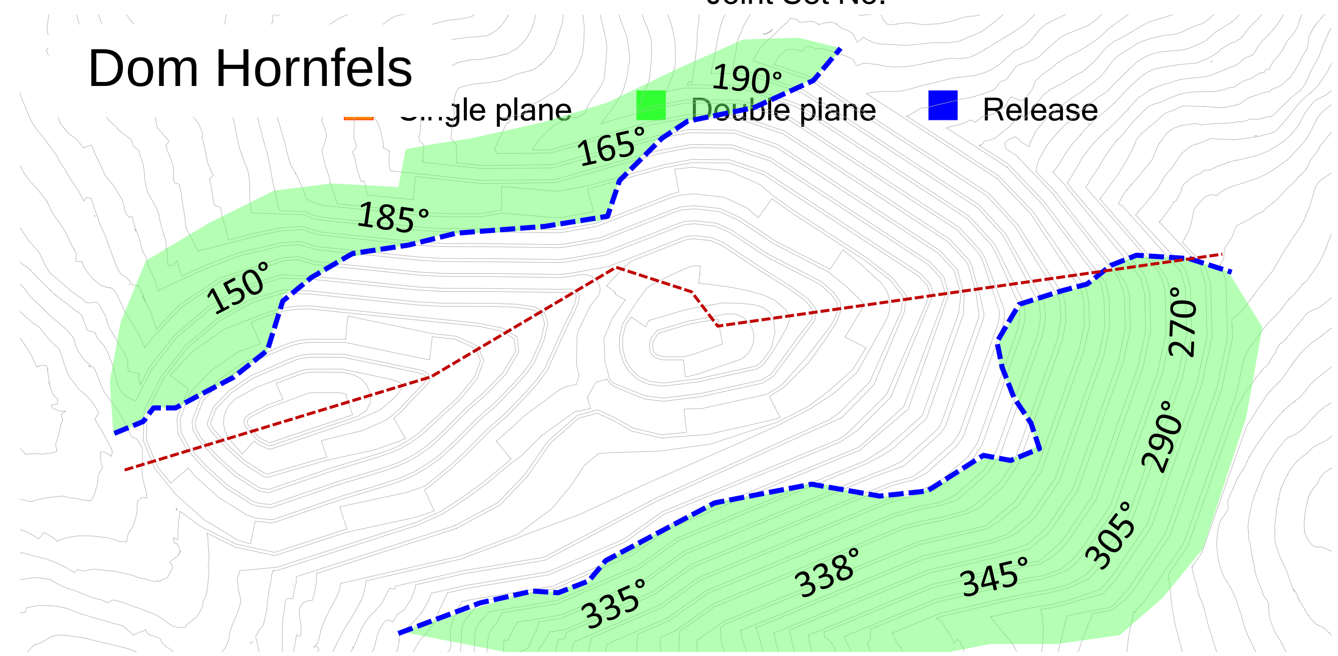
Date: 08.22.2016 | Approved: ML | Figure: 15

Domain Hornfels Dip Dir 305°



	Color	Dip	Dip Direction	Label
		User Planes		
1	(red)	29	267	Set_1
2	(blue)	72	355	Set_2
3	(blue)	56	45	Set_3
4	(blue)	45	338	Set_4





srk consulting

Eagle Gold Project

Kinematic Analysis

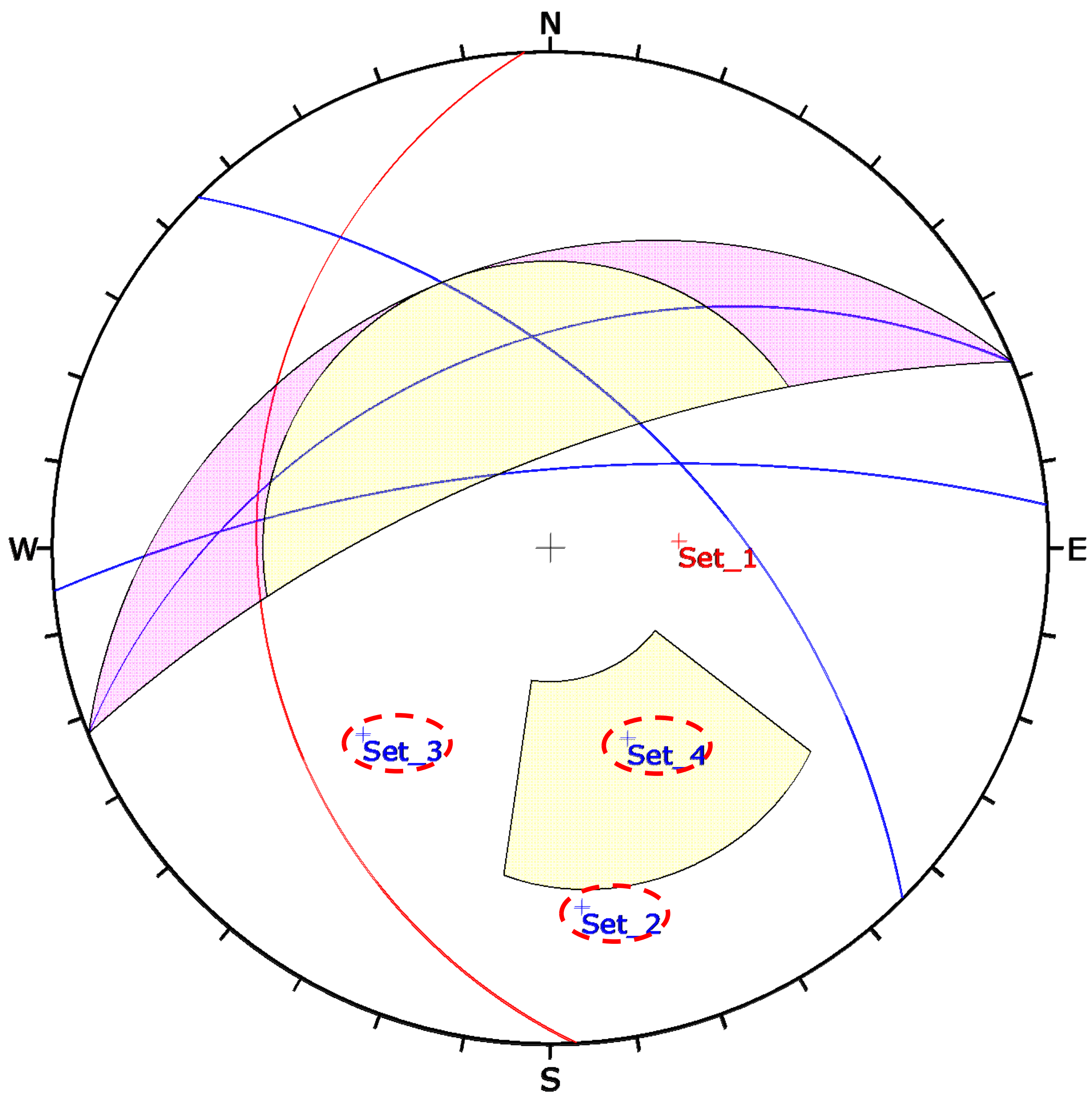
Domain Hornfels
DipDir 305°

Job No: 251000.050
Filename:

Bench Berm Analysis Eagle Pit

Date: 08.22.2016 | Approved: ML | Figure: 16

Domain Hornfels Dip Dir 338°



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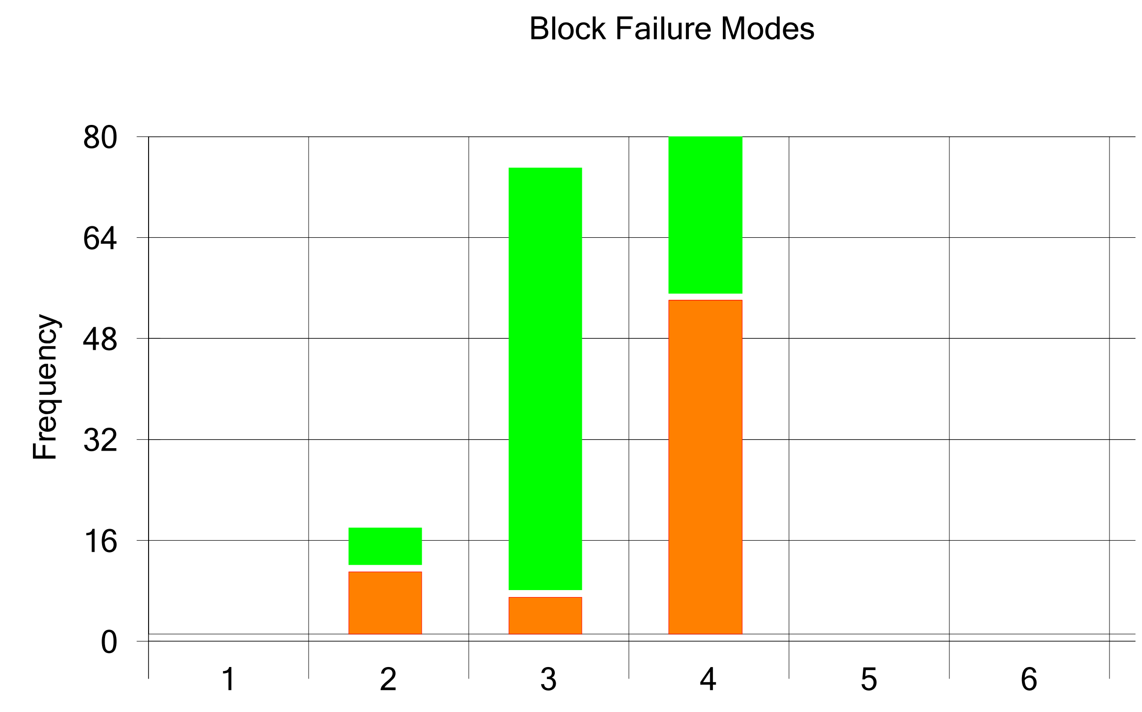
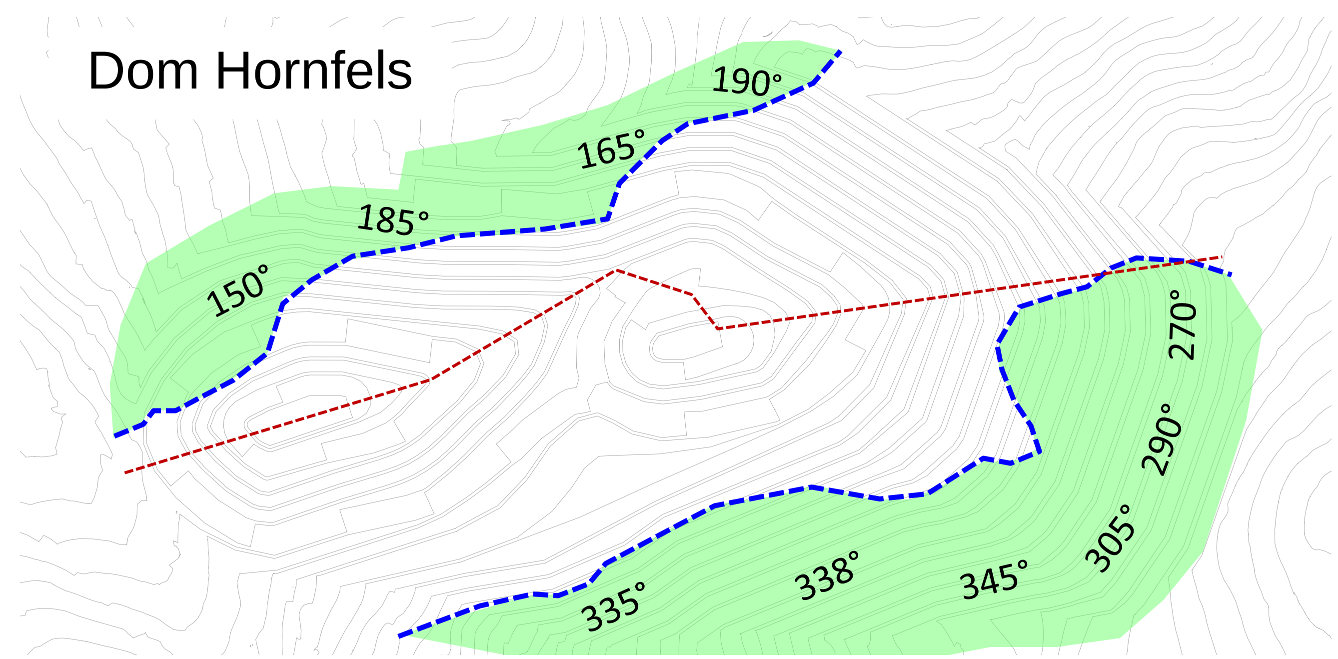
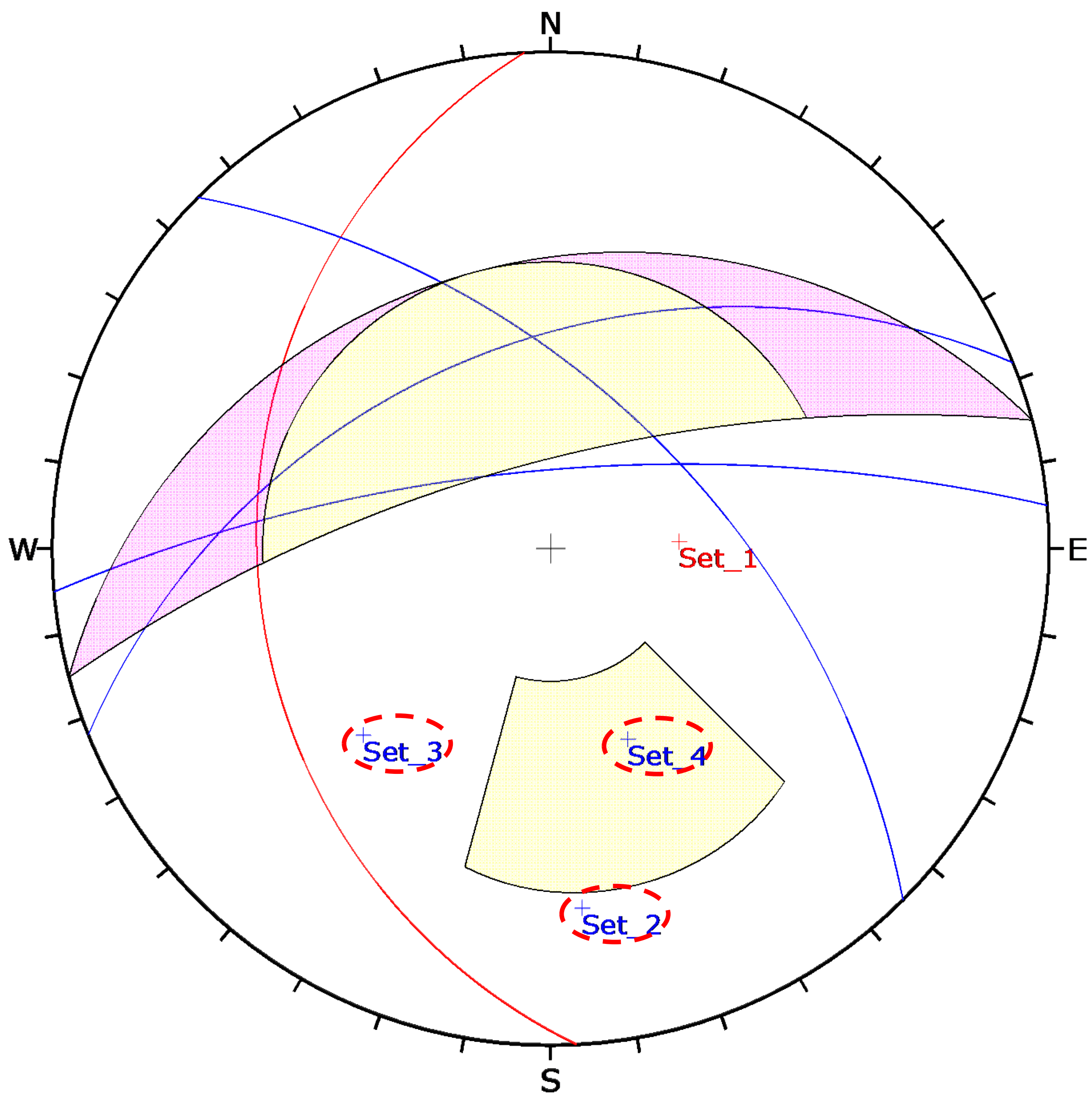
		User Planes		
1	(red)	29	267	Set_1
2	(blue)	72	355	Set_2
3	(blue)	56	45	Set_3
4	(blue)	45	338	Set_4



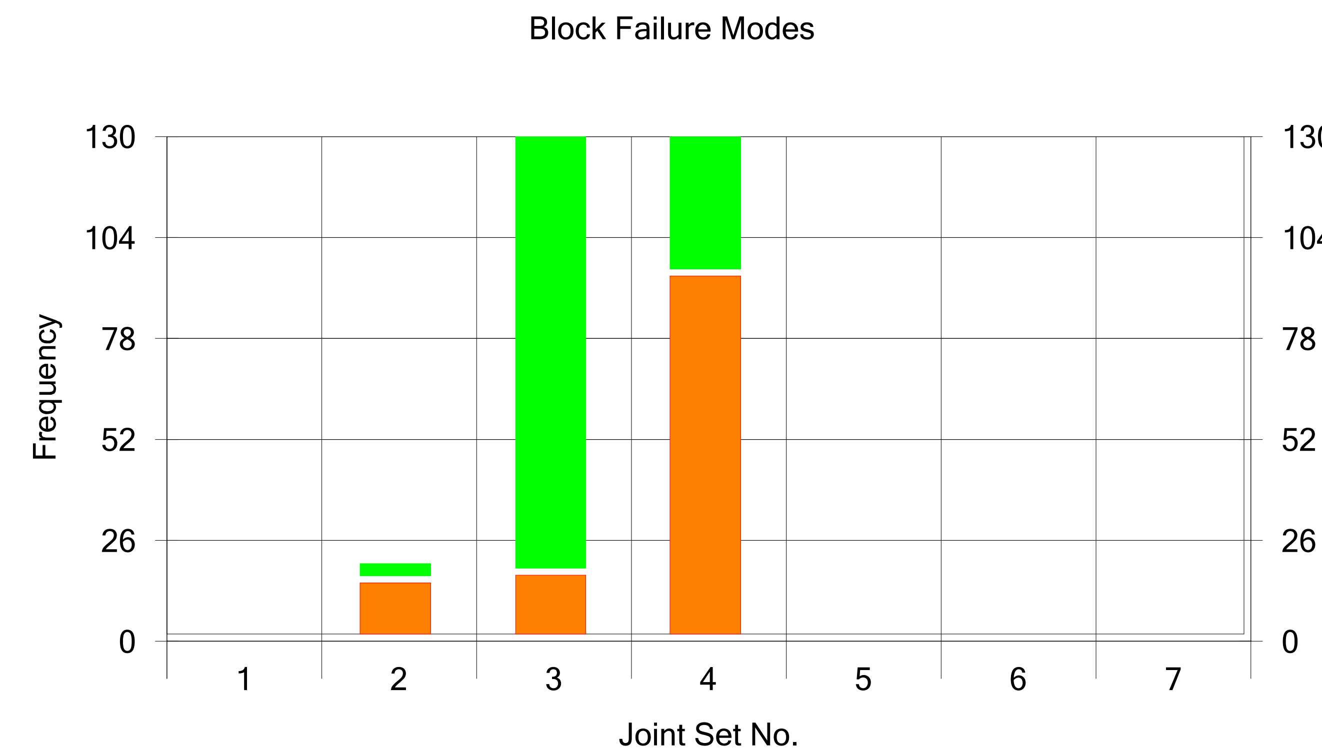


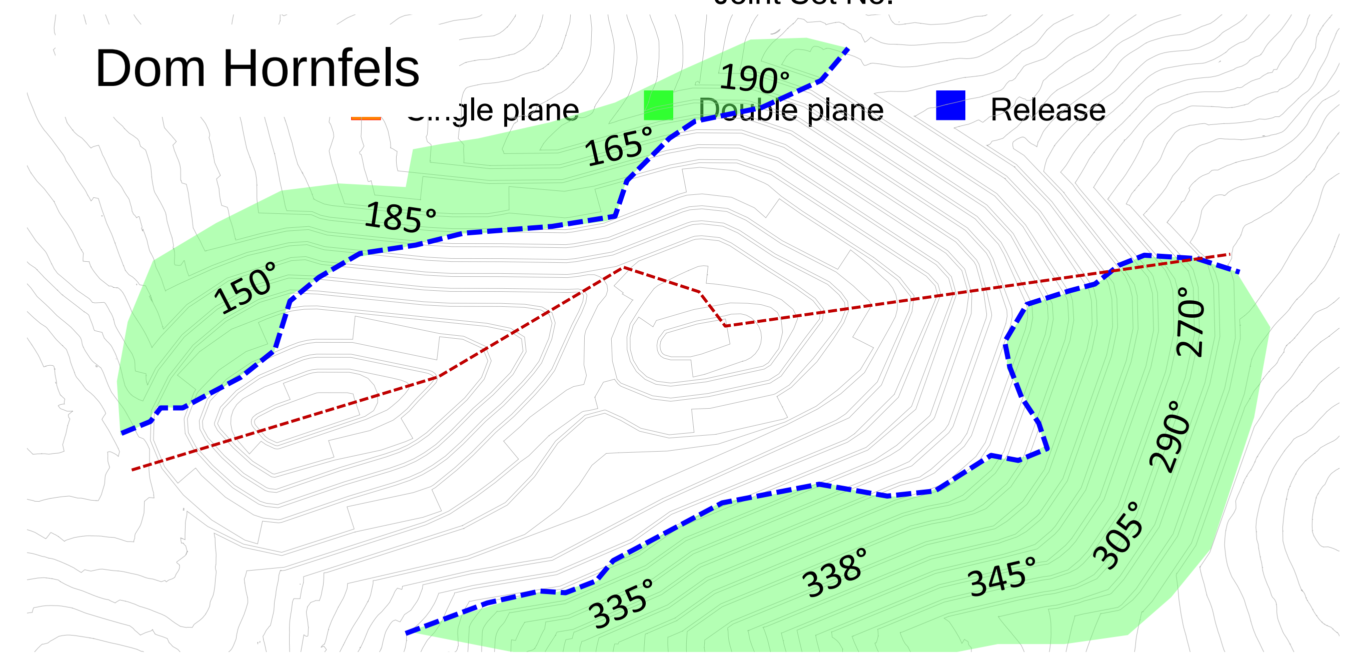
srk consulting	Eagle Gold Project	Kinematic Analysis
		Domain Hornfels DipDir 338°
Job No: 251000.050 Filename:	Bench Berm Analysis Eagle Pit	Date: 08.22.2016 · Approved: ML · Figure: 17

Domain Hornfels Dip Dir 345°



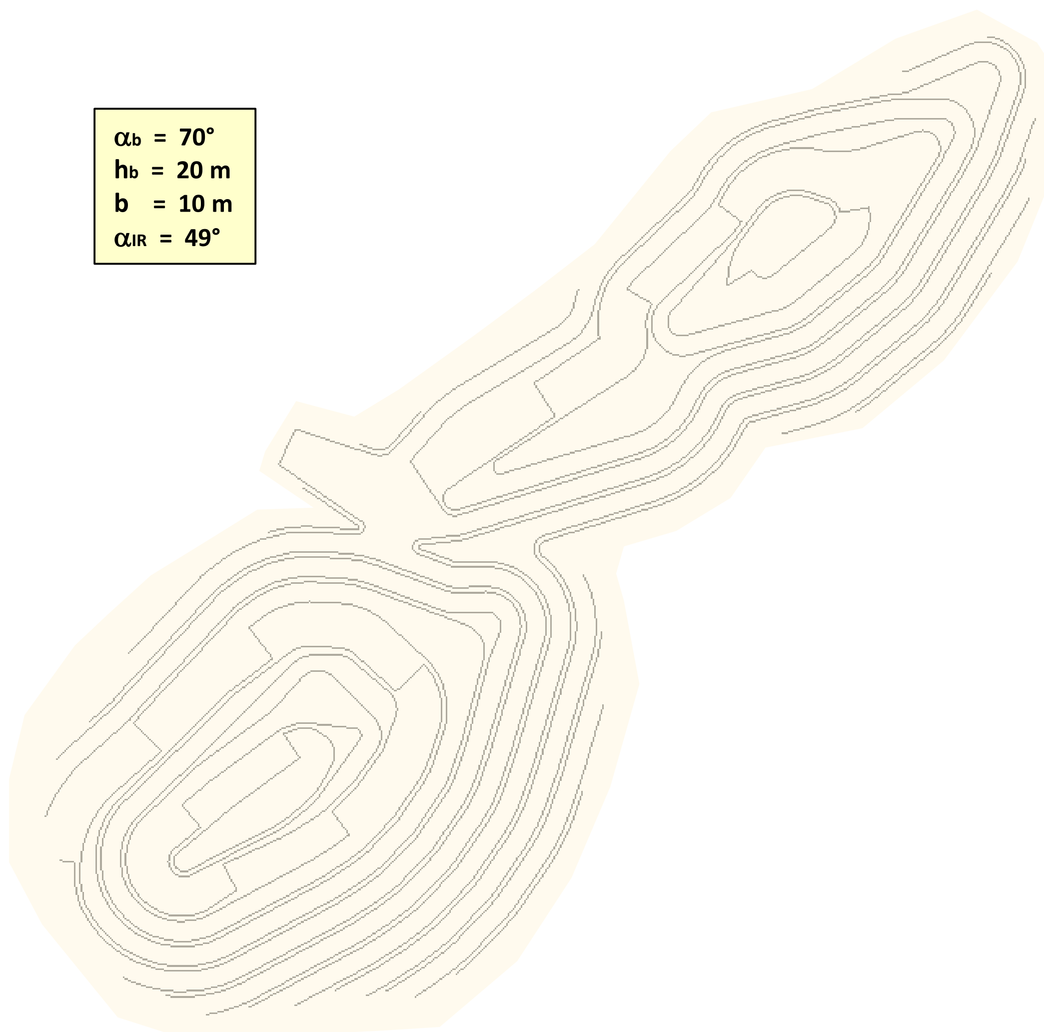
	Color	Dip	Dip Direction	Label
		User Planes		
1	red	29	267	Set_1
2	blue	72	355	Set_2
3	blue	56	45	Set_3
4	blue	45	338	Set_4



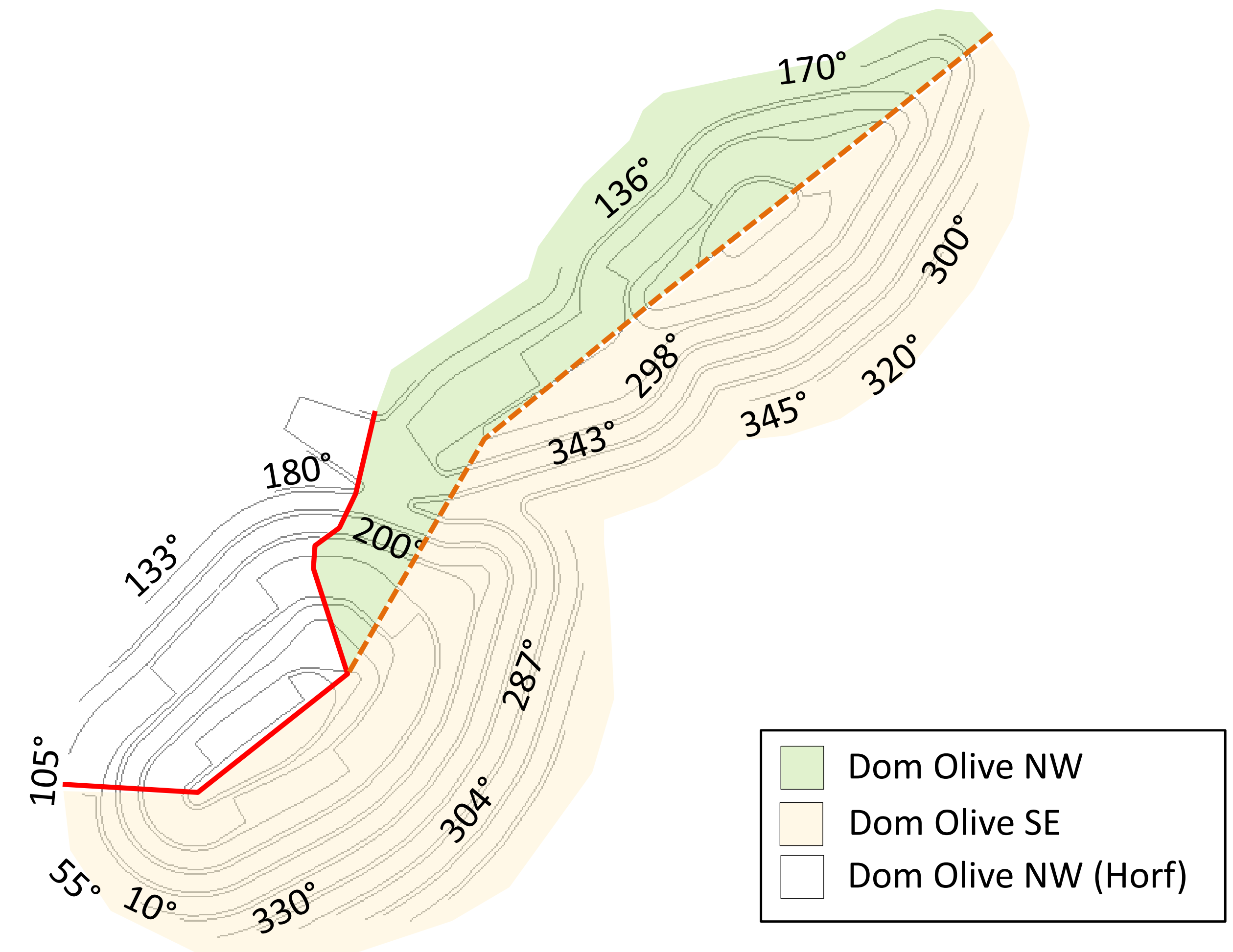


srk consulting	Eagle Gold Project	Kinematic Analysis
		Domain Hornfels DipDir 345°
Job No: 251000.050 Filename:	Bench Berm Analysis Eagle Pit	Date: 08.22.2016 / Approved: ML / Figure: 18

Design and Domain Olive Project



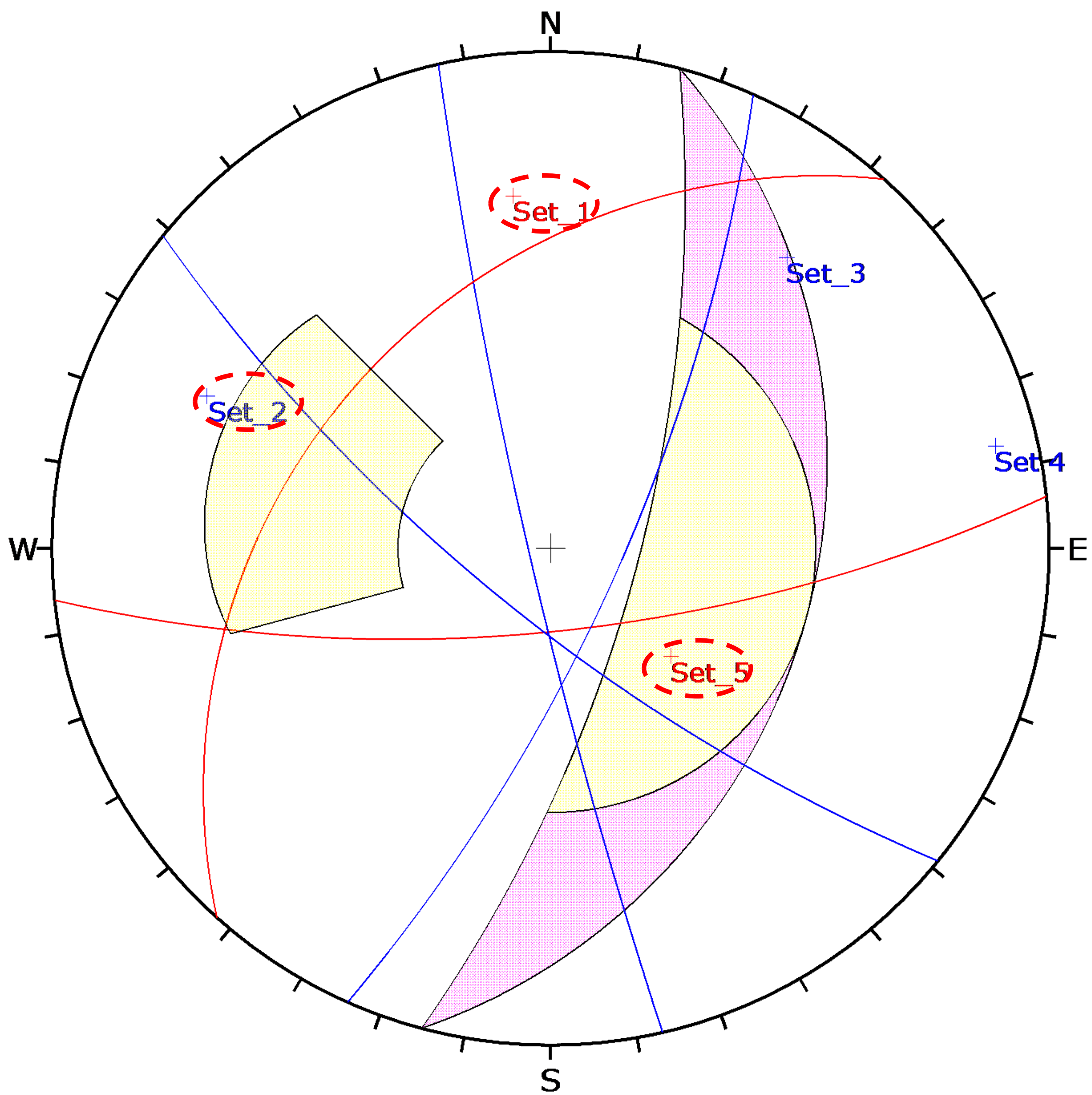
Design



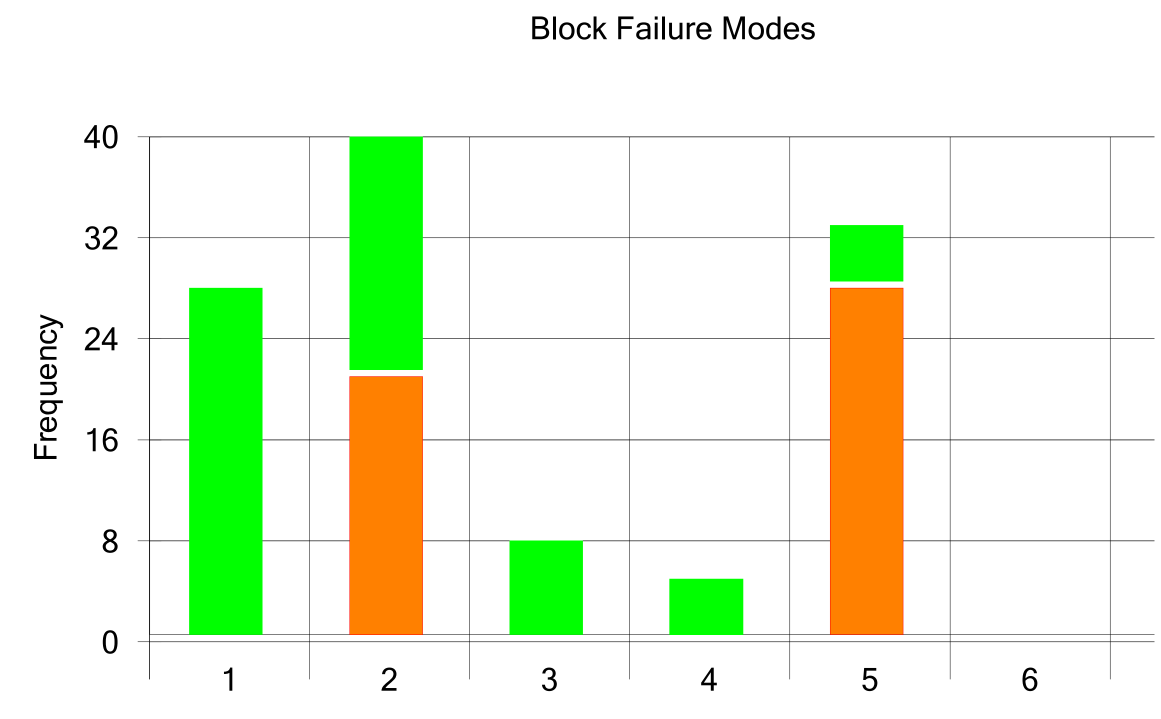
Domain & Slope Orientation

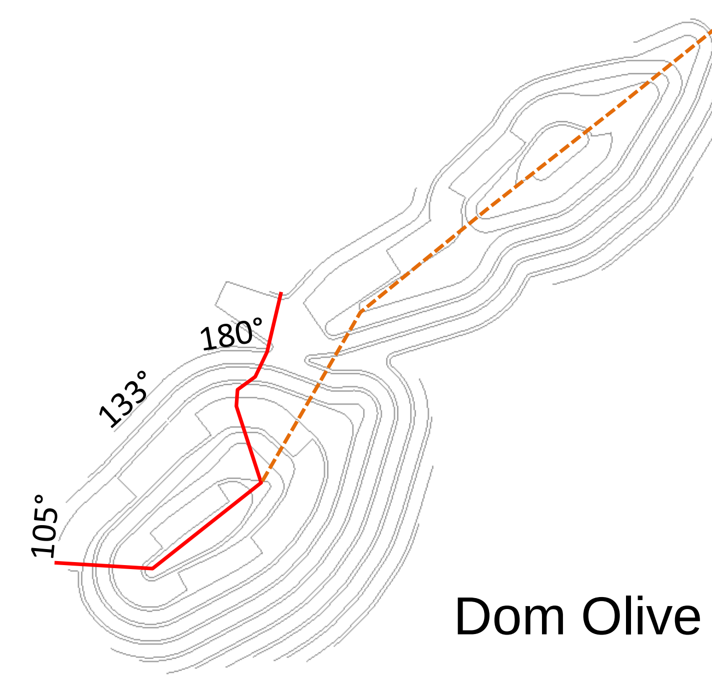
srk consulting	Eagle Gold Project	Kinematic Analysis		
		Design, Domain and Slope Orientation		
Job No: 251000.050 Filename:	Bench Berm Analysis Olive Pit	Date: 08.22.2016	Approved: ML	Figure: 19

Domain Olive NW & Foliation Dip Dir 105°



	Color	Dip	Dip Direction	Label
		User Planes		
1	red	71	174	Set_1
2	blue	74	114	Set_2
3	blue	74	219	Set_3
4	blue	85	257	Set_4
5	red	36	312	Set_5

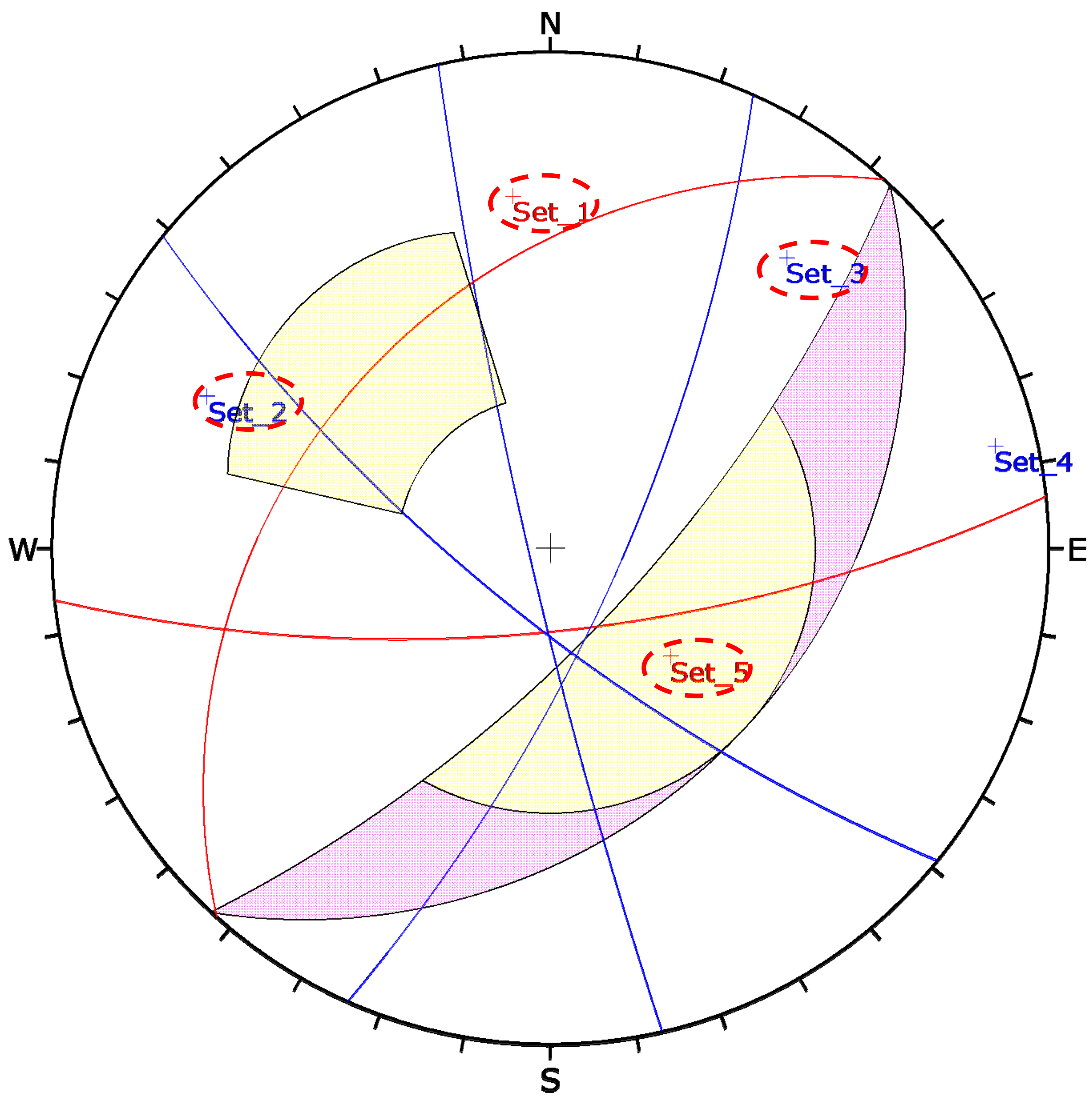




Dom Olive NW & Foliation

srk consulting	Eagle Gold Project	Kinematic Analysis		
		Domain Olive NW & Fol DipDir 105°		
Job No: 251000.050 Filename:	Bench Berm Analysis Olive Pit	Date: 08.22.2016	Approved: ML	Figure: 20

Domain Olive NW & Foliation Dip Dir 133°



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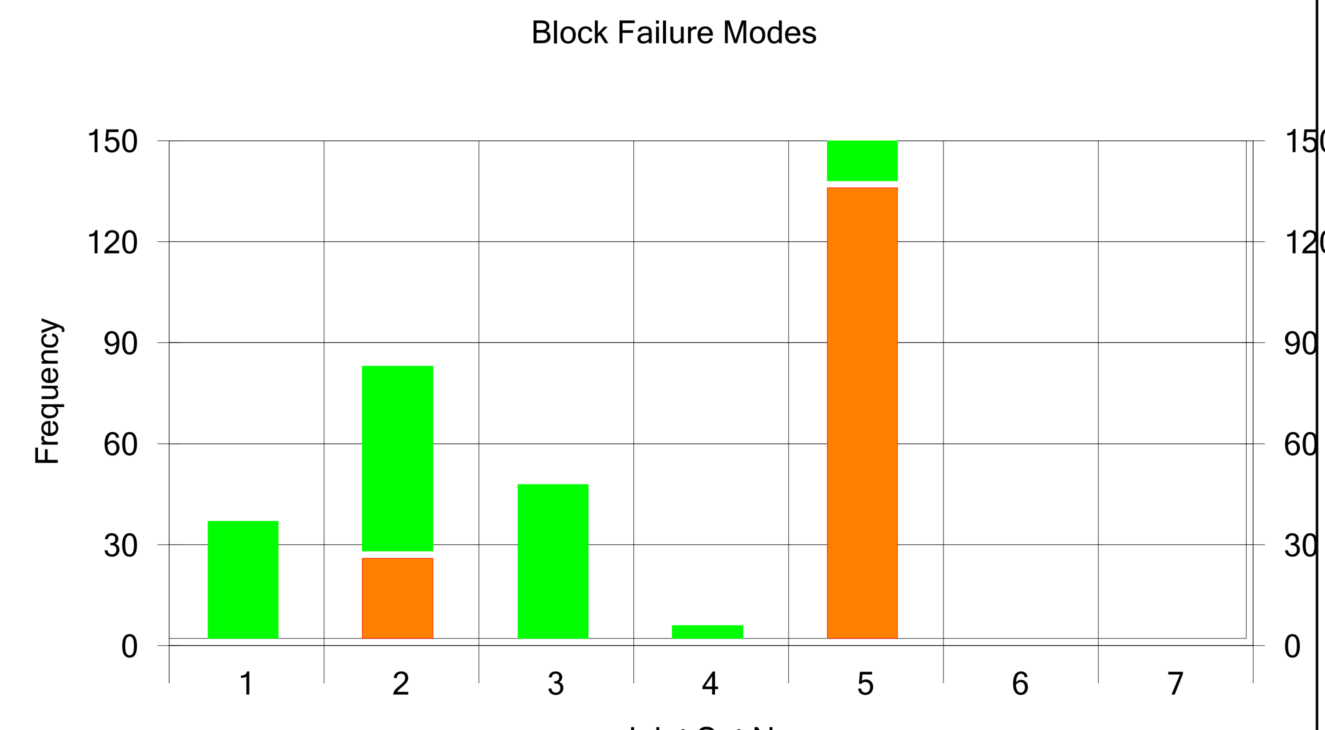
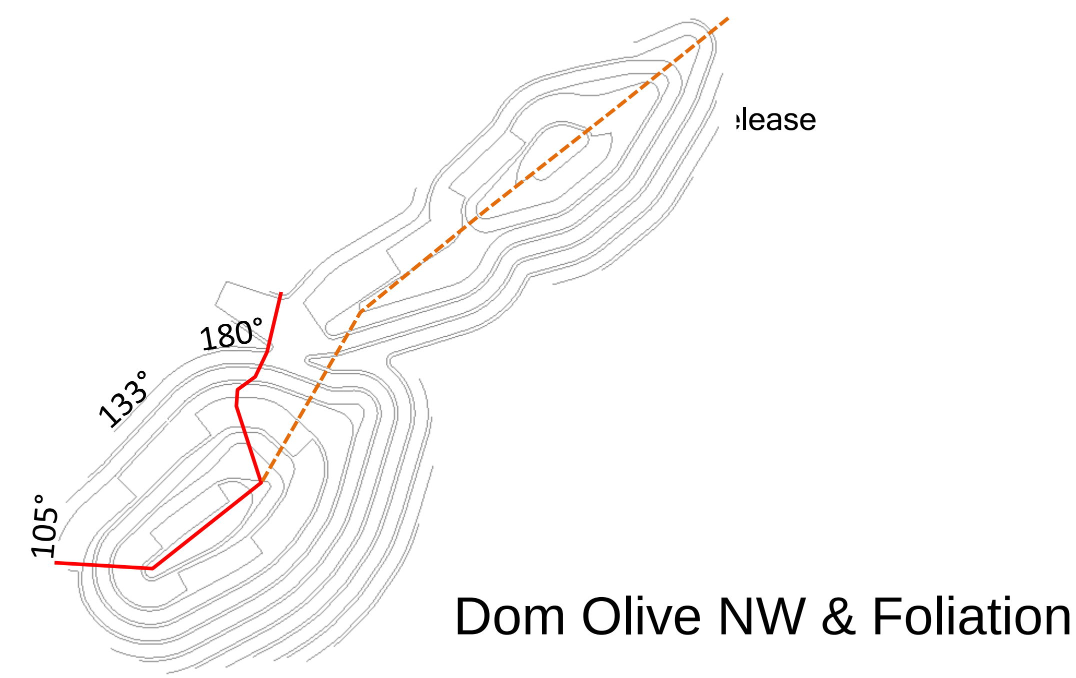
		User Planes		
1	Red	71	174	Set_1
2	Blue	74	114	Set_2
3	Blue	74	219	Set_3
4	Blue	85	257	Set_4
5	Red	36	312	Set_5





srk consulting

Eagle Gold Project

Kinematic Analysis

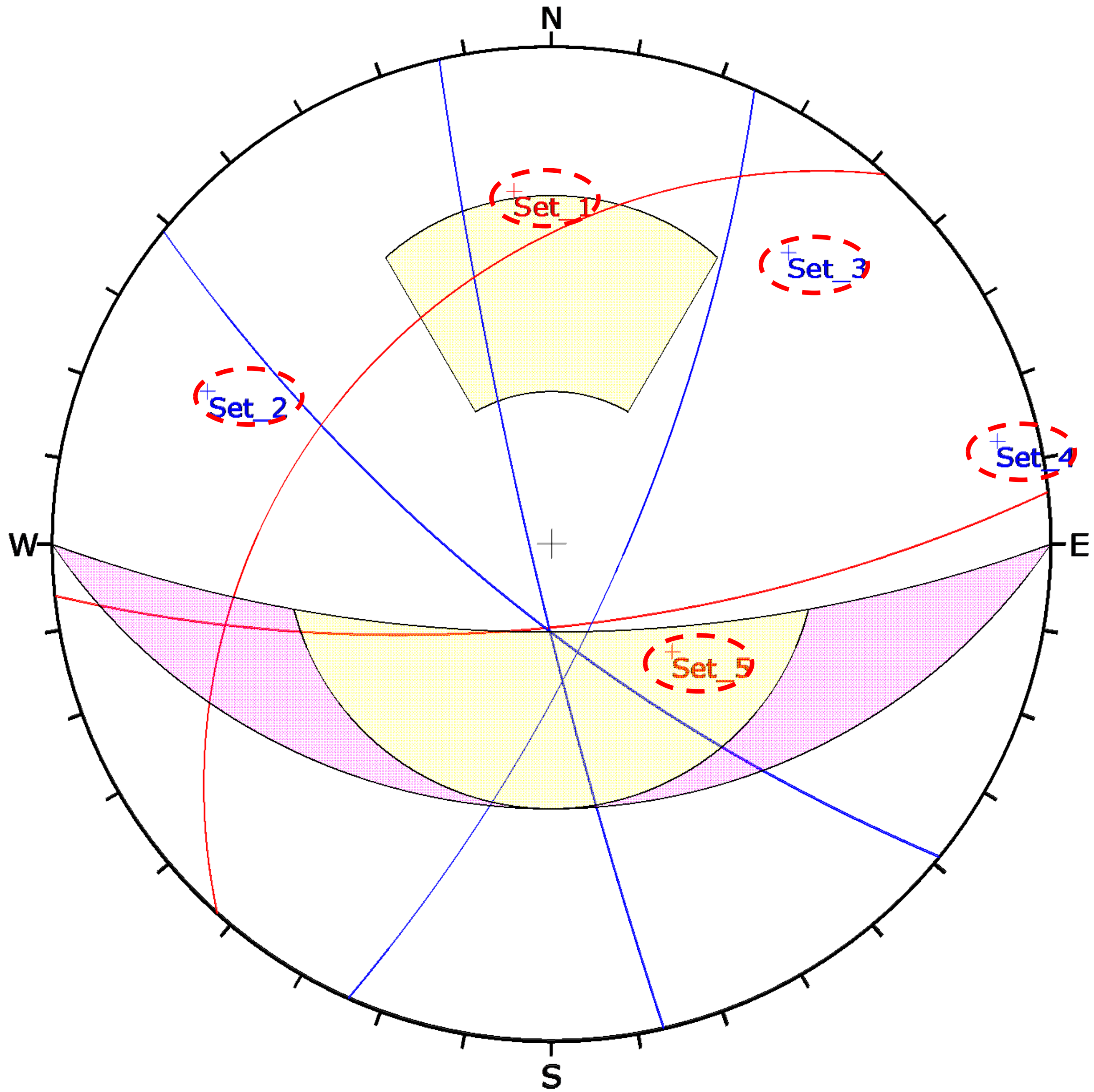
Domain Olive NW & Fol
DipDir 133°

Job No: 251000.050
Filename:

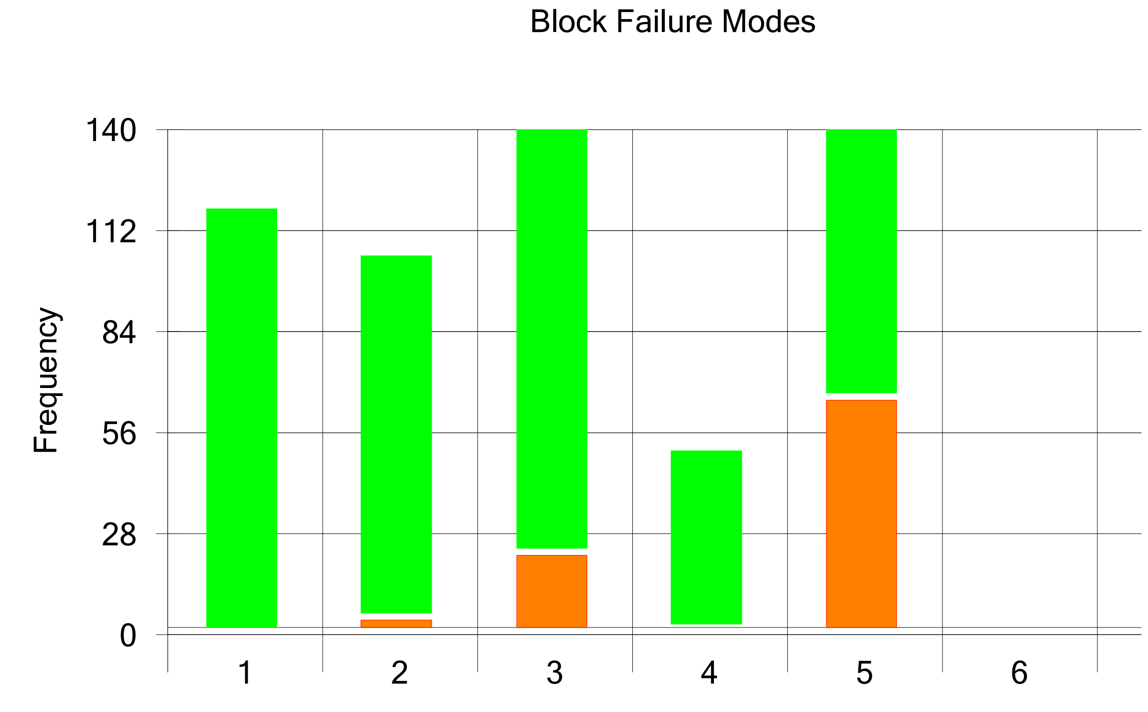
Bench Berm Analysis Olive Pit

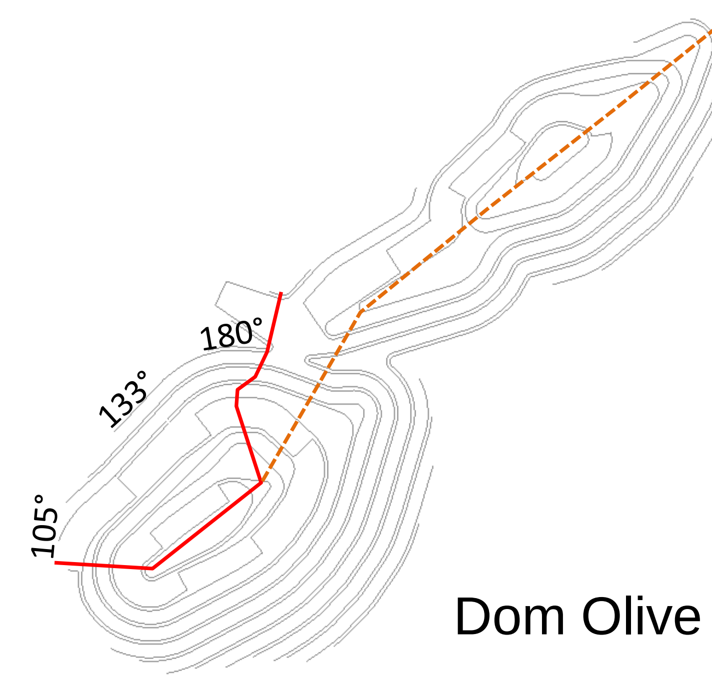
Date:	Approved:	Figure:
08.22.2016	ML	21

Domain Olive NW & Foliation Dip Dir 180°



	Color	Dip	Dip Direction	Label
		User Planes		
1	red	71	174	Set_1
2	blue	74	114	Set_2
3	blue	74	219	Set_3
4	blue	85	257	Set_4
5	red	36	312	Set_5

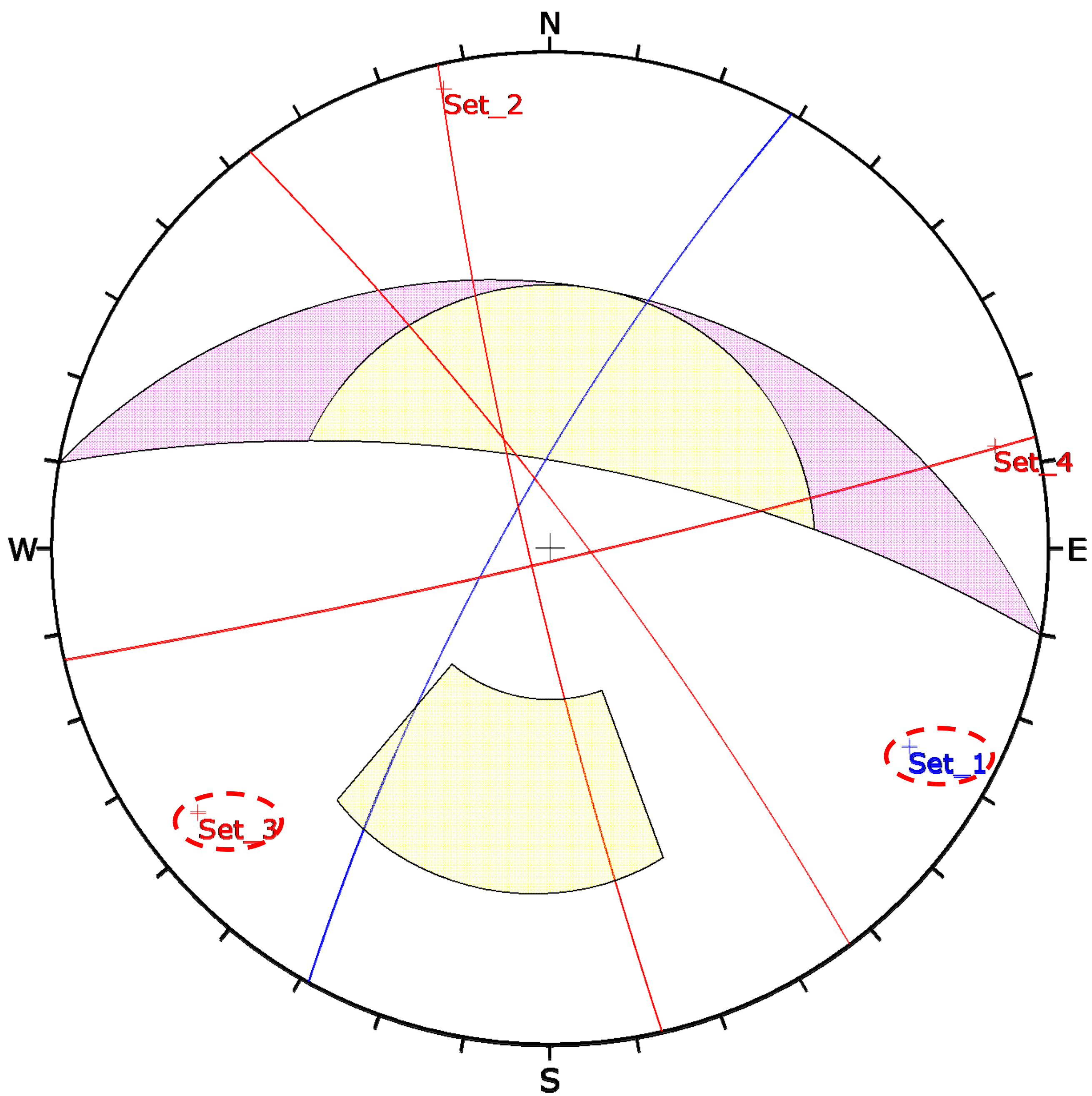




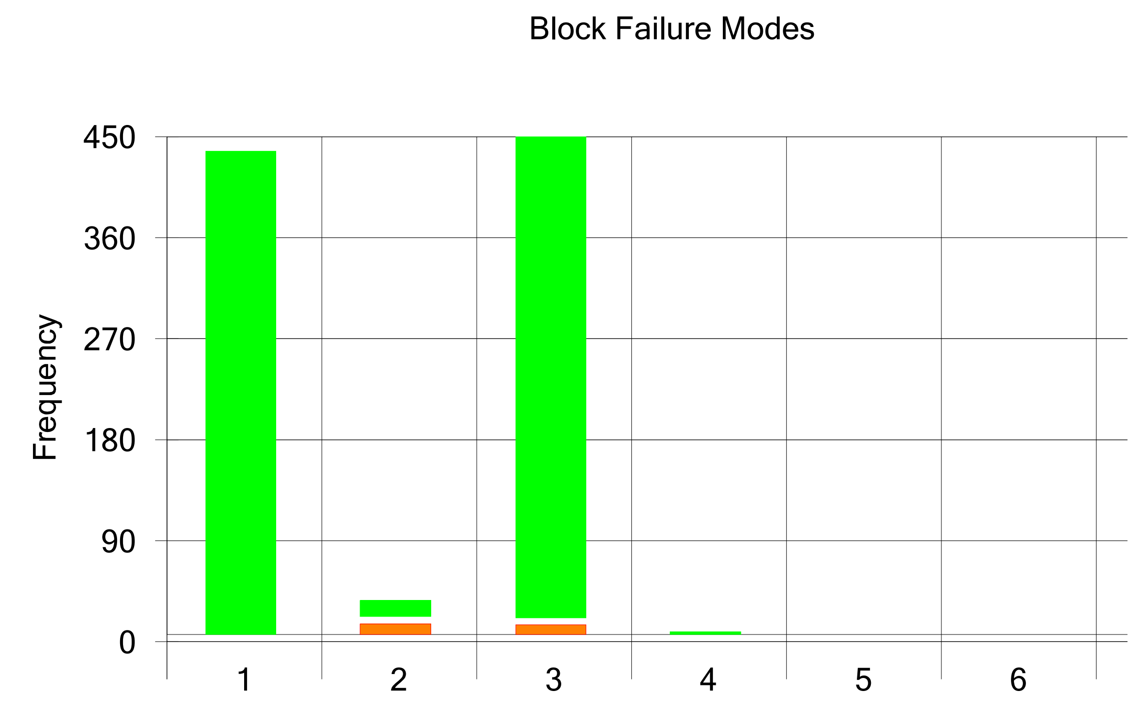
Dom Olive NW & Foliation

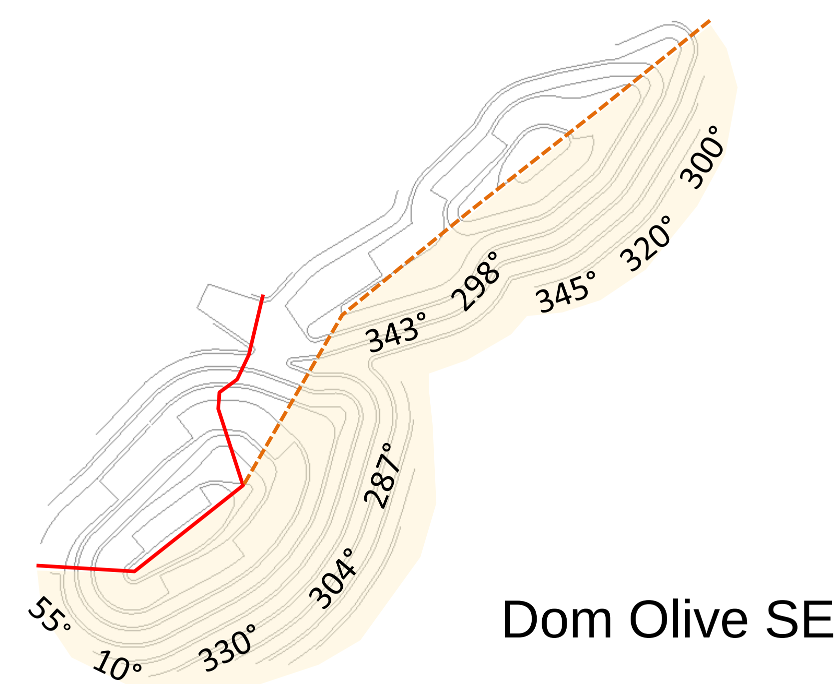
srk consulting	Eagle Gold Project	Kinematic Analysis
		Domain Olive NW & Fol DipDir 180°
Job No: 251000.050 Filename:	Bench Berm Analysis Olive Pit	Date: 08.22.2016 | Approved: ML | Figure: 22

Domain Olive SE Dip Dir 10°



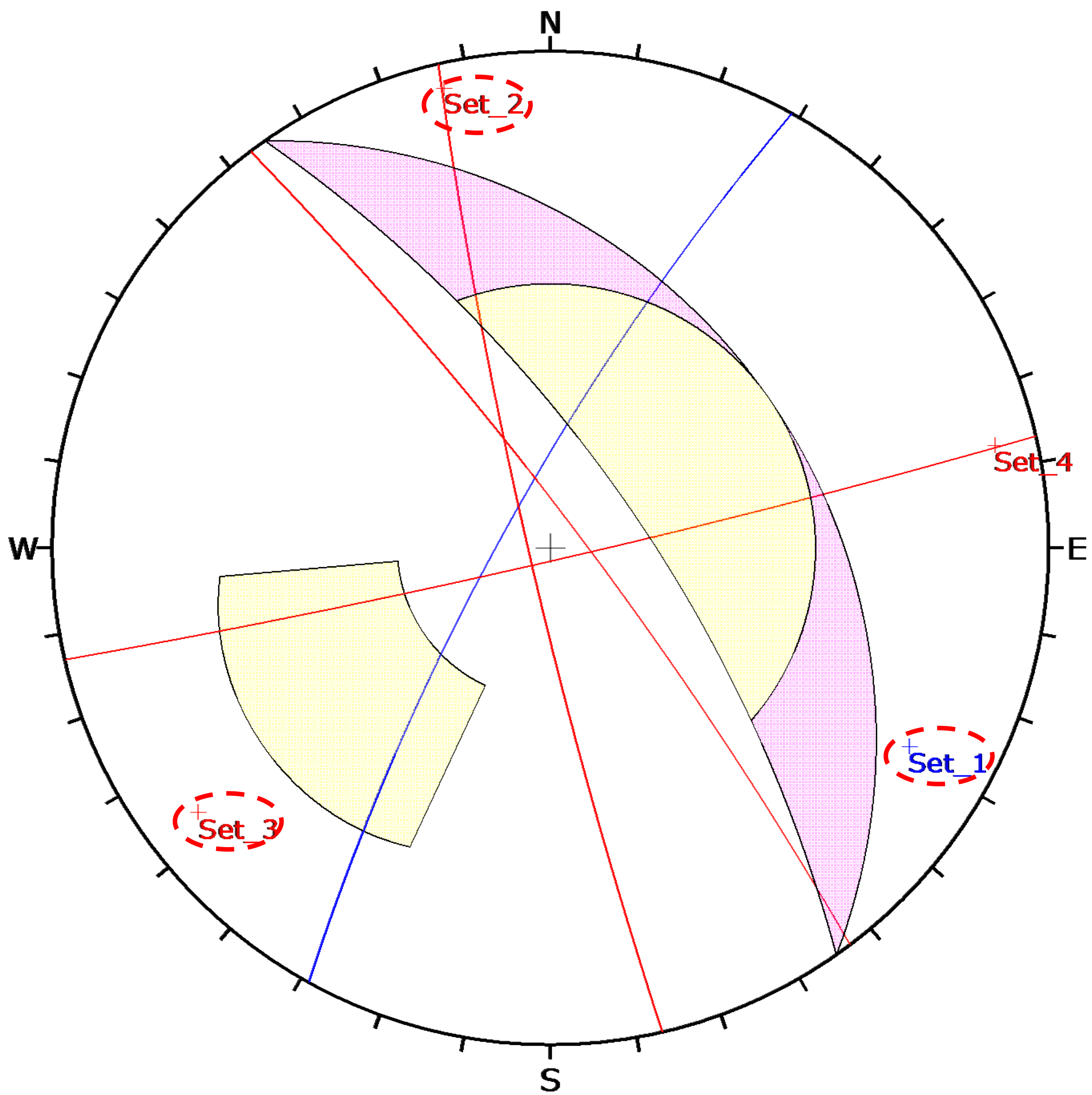
	Color	Dip	Dip Direction	Label
		User Planes		
1	Blue	79	299	Set_1
2	Red	87	167	Set_2
3	Red	83	53	Set_3
4	Red	85	257	Set_4



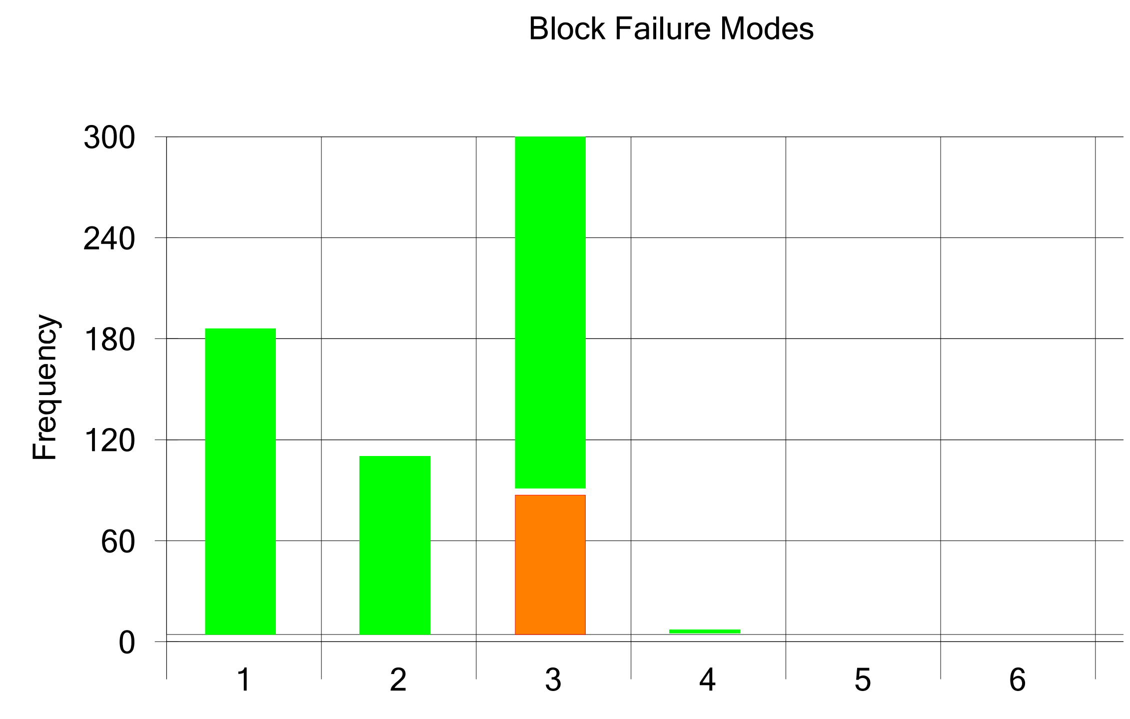


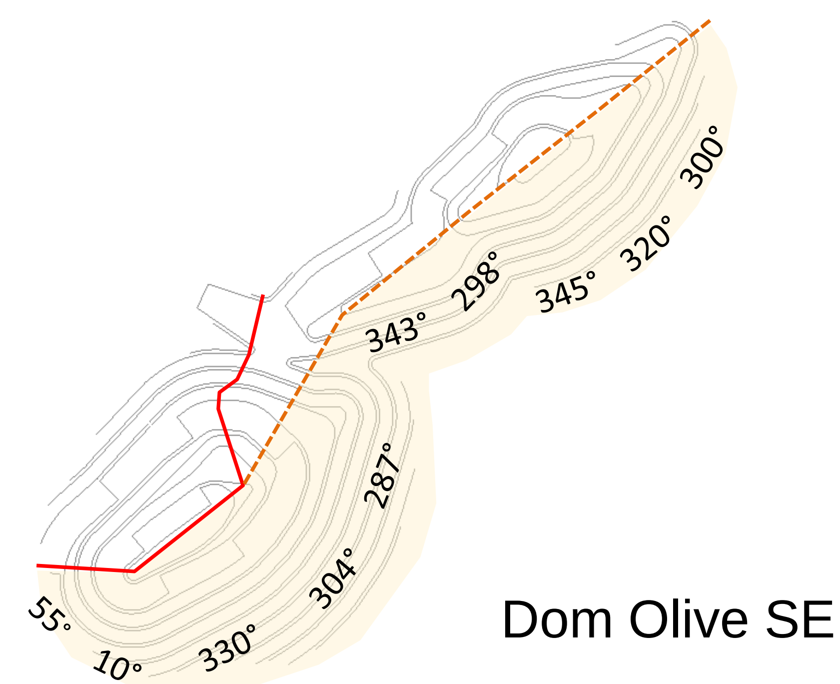
srk consulting	Eagle Gold Project	Kinematic Analysis
		Domain Olive SE DipDir 10°
Job No: 251000.050 Filename:	Bench Berm Analysis Olive Pit	Date: 08.22.2016 · Approved: ML · Figure: 23

Domain Olive SE Dip Dir 55°



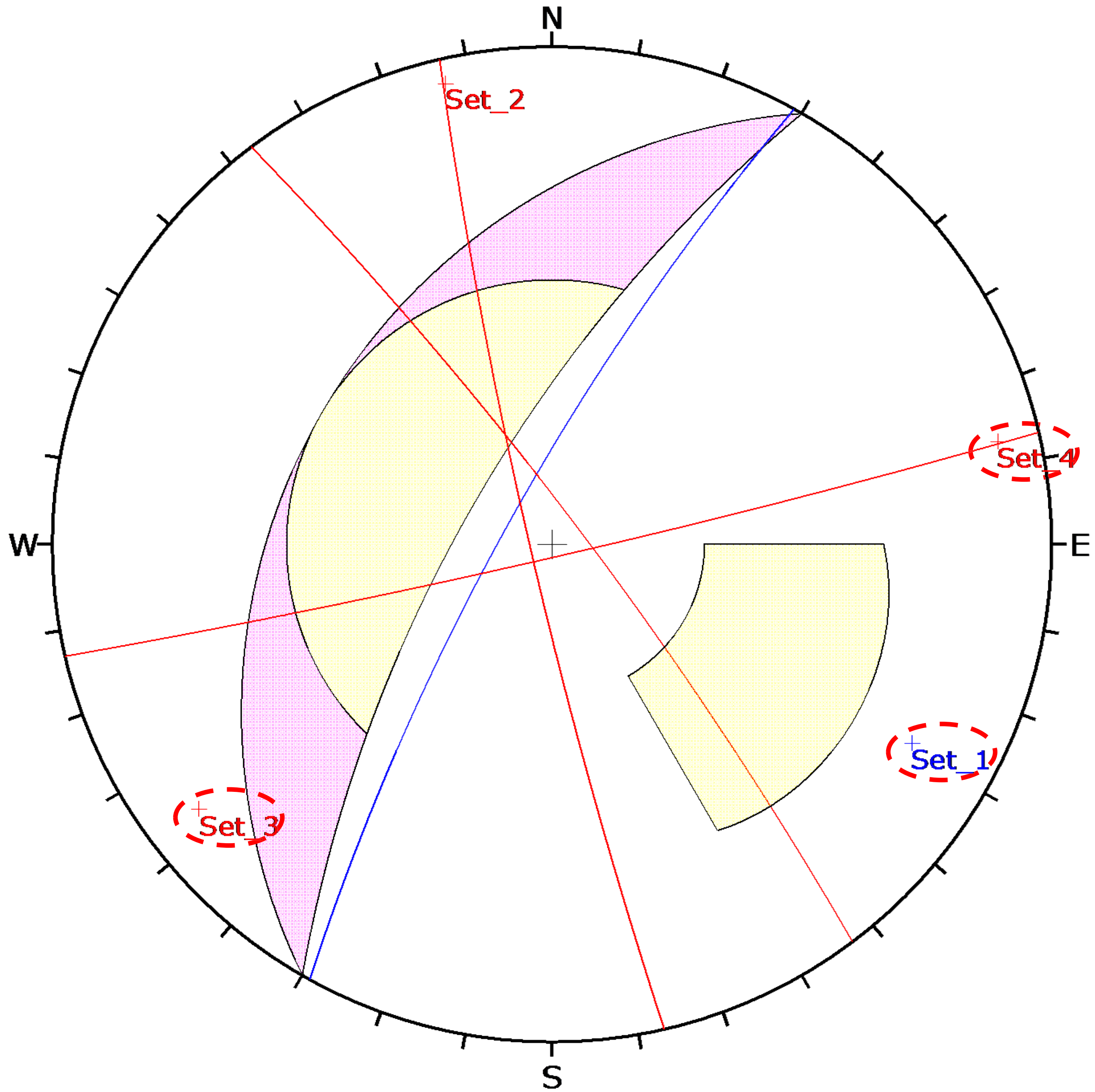
	Color	Dip	Dip Direction	Label
		User Planes		
1	Blue	79	299	Set_1
2	Red	87	167	Set_2
3	Red	83	53	Set_3
4	Red	85	257	Set_4



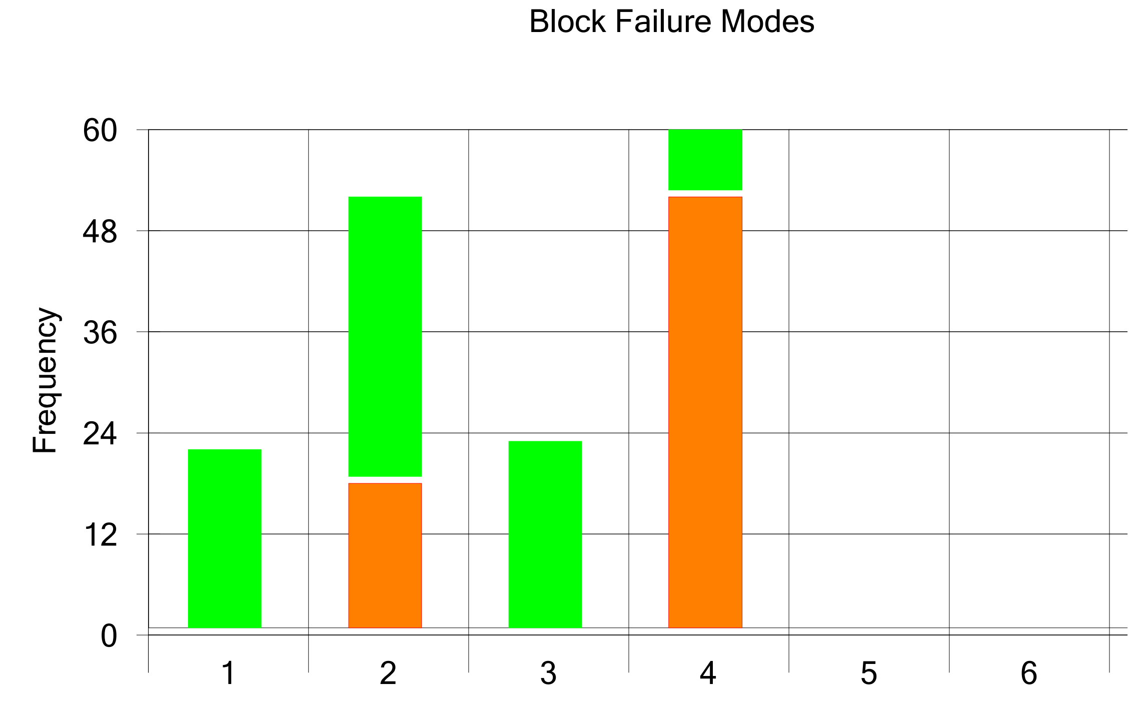


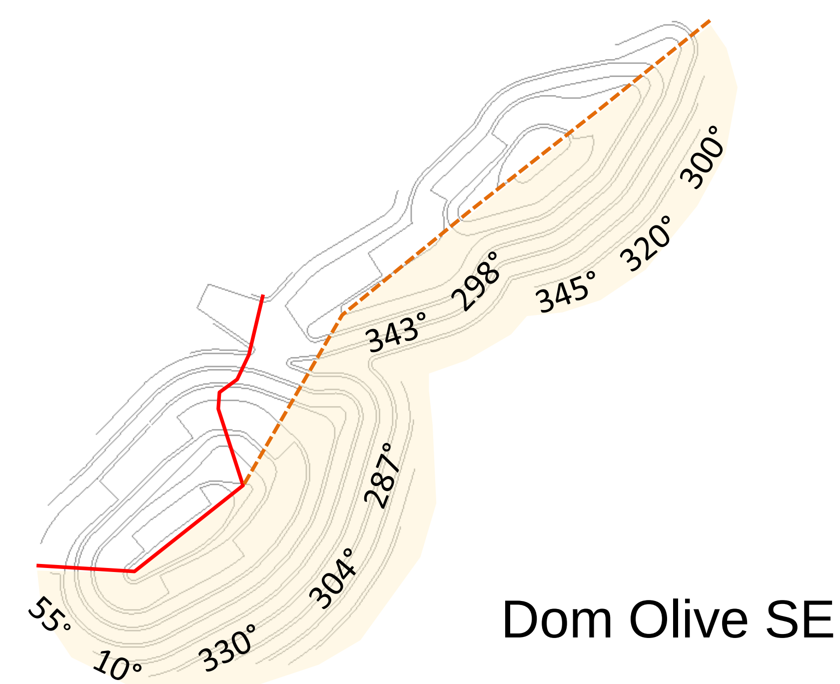
srk consulting	**Eagle Gold Project**	**Kinematic Analysis** Domain Olive SE DipDir 55°
Job No: 251000.050 Filename:	Bench Berm Analysis Olive Pit	Date: 08.22.2016 / Approved: ML / Figure: 24

Domain Olive SE Dip Dir 300°



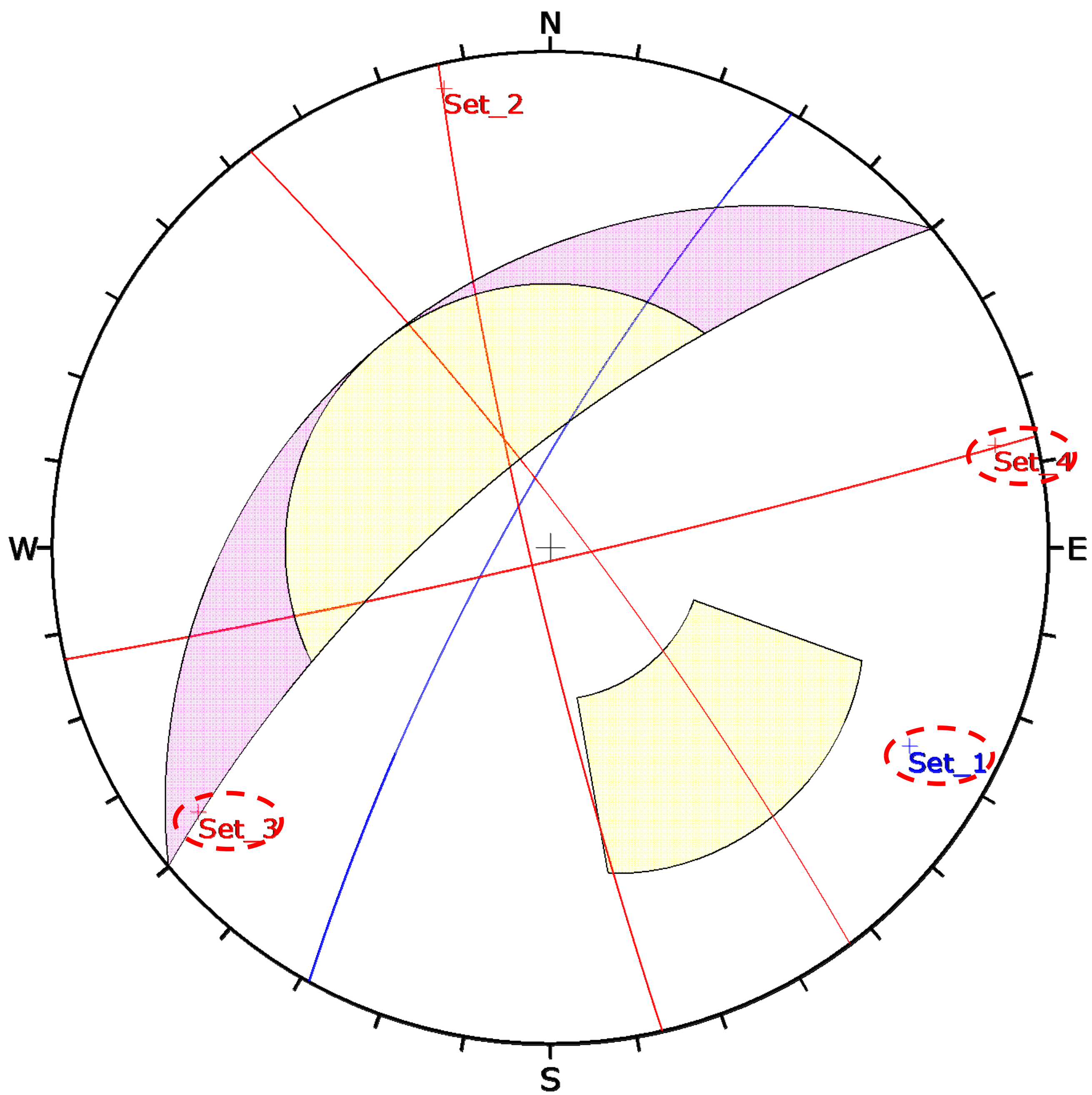
	Color	Dip	Dip Direction	Label
		User Planes		
1	Blue	79	299	Set_1
2	Red	87	167	Set_2
3	Red	83	53	Set_3
4	Red	85	257	Set_4





srk consulting	Eagle Gold Project	Kinematic Analysis
		Domain Olive SE DipDir 300°
Job No: 251000.050 Filename:	Bench Berm Analysis Olive Pit	Date: 08.22.2016 / Approved: ML / Figure: 25

Domain Olive SE Dip Dir 320°



	Color	Dip	Dip Direction	Label
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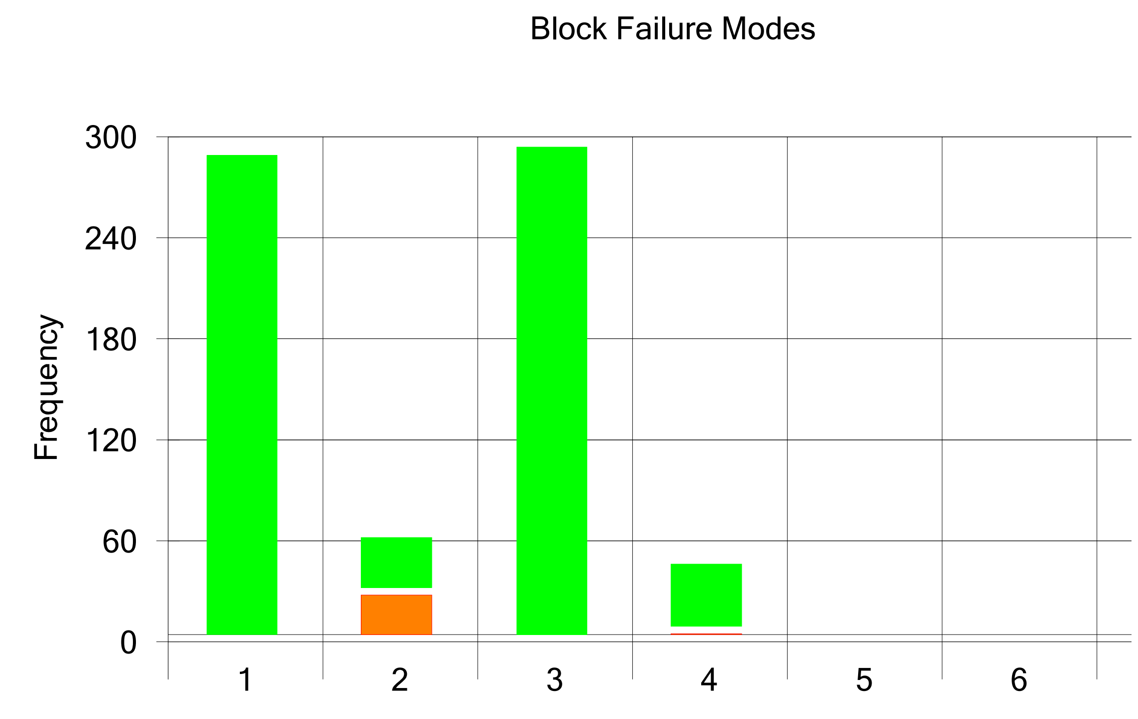
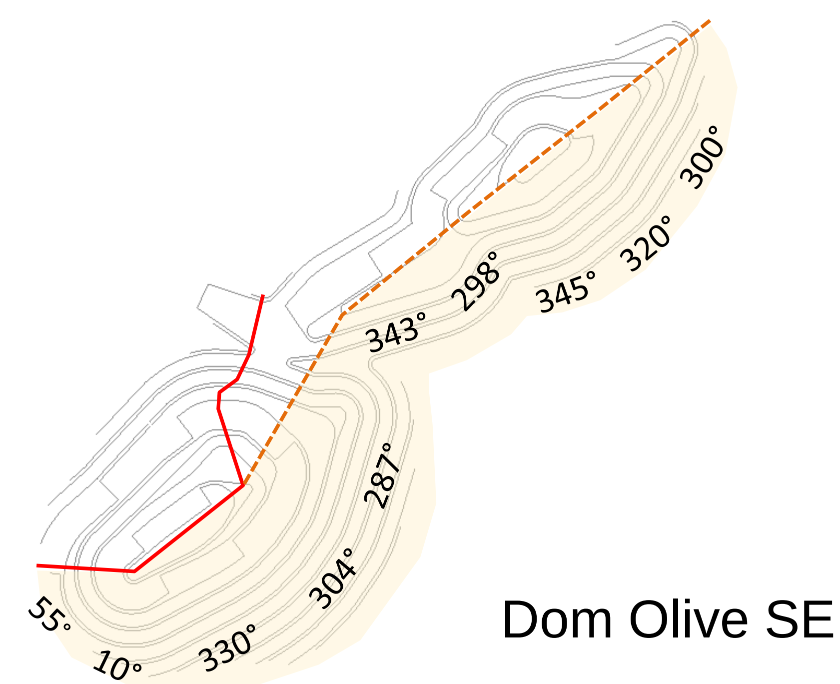
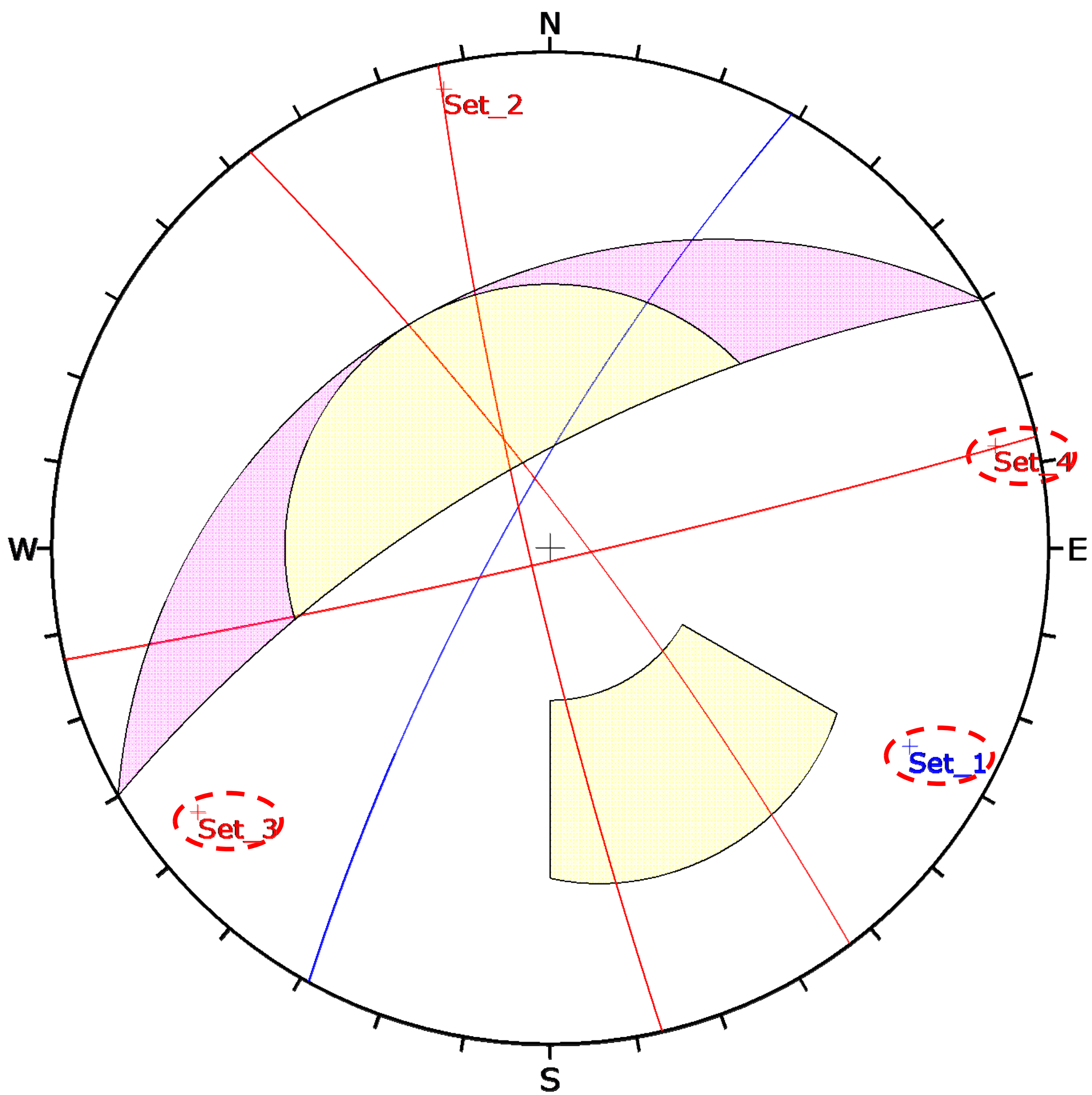
2	Red	87	167	Set_2
3	Red	83	53	Set_3
4	Red	85	257	Set_4





srk consulting	Eagle Gold Project	Kinematic Analysis Domain Olive SE DipDir 320°
Job No: 251000.050 Filename:	Bench Berm Analysis Olive Pit	Date: 08.22.2016 / Approved: ML / Figure: 26

Domain Olive SE Dip Dir 330°



	Color	Dip	Dip Direction	Label
		User Planes		
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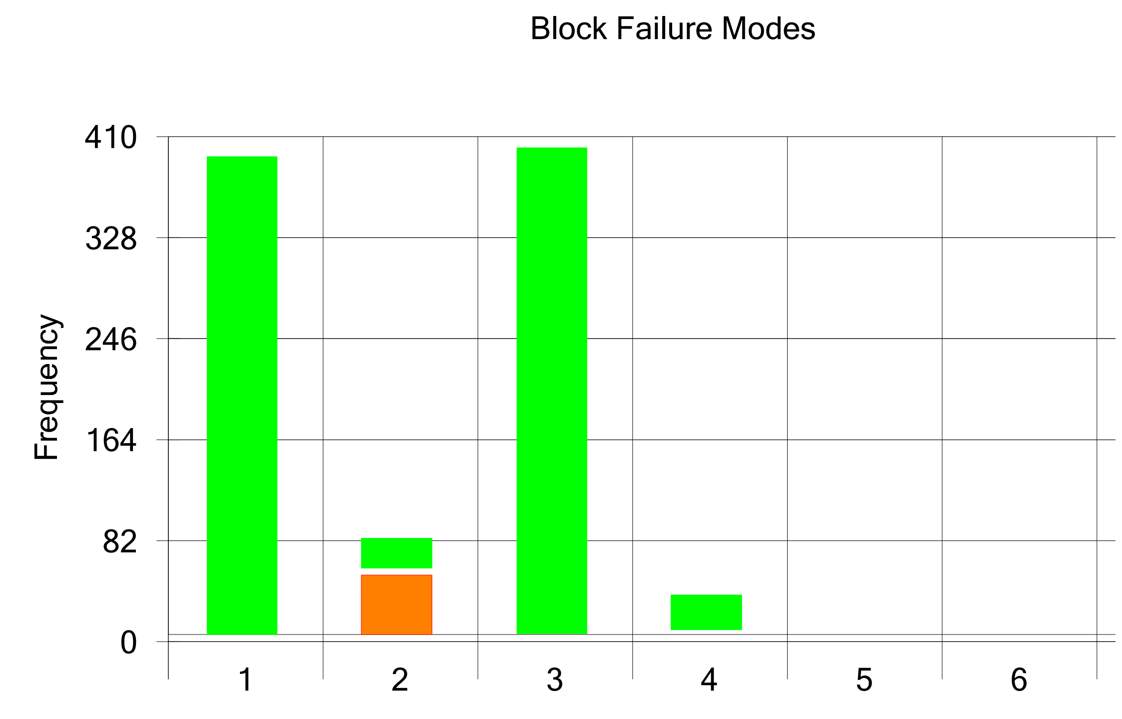
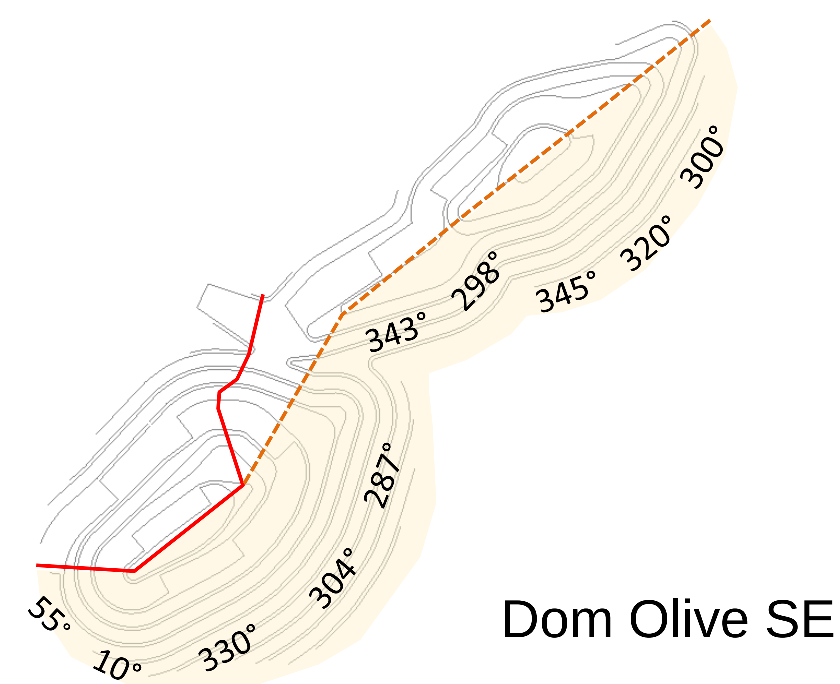
2	Red	87	167	Set_2
3	Red	83	53	Set_3
4	Red	85	257	Set_4





srk consulting

Eagle Gold Project

Kinematic Analysis

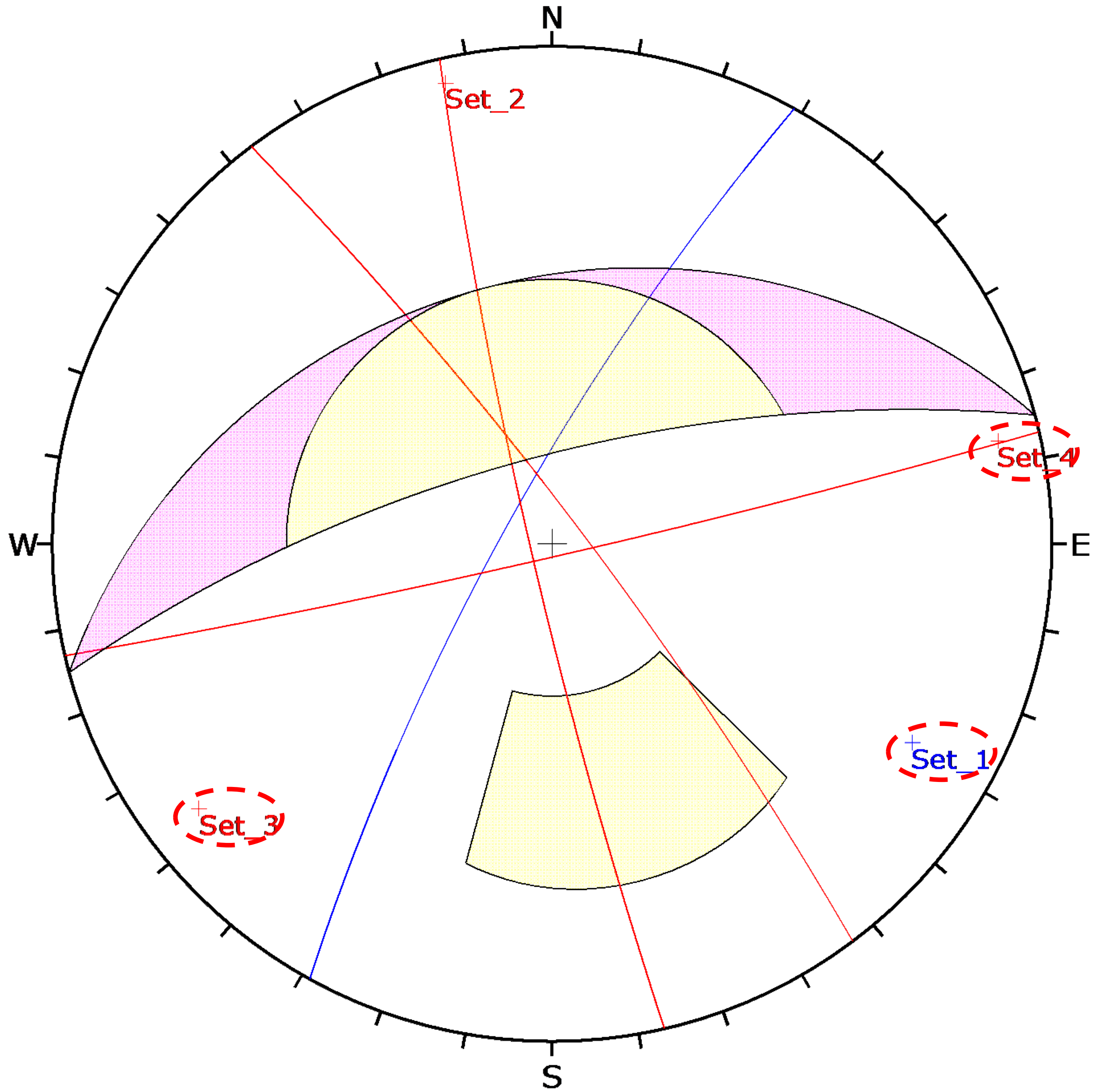
Domain Olive SE
DipDir 330°

Job No: 251000.050
Filename:

Bench Berm Analysis Olive Pit

Date: 08.22.2016 | Approved: ML | Figure: 27

Domain Olive SE Dip Dir 345°



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		User Planes		
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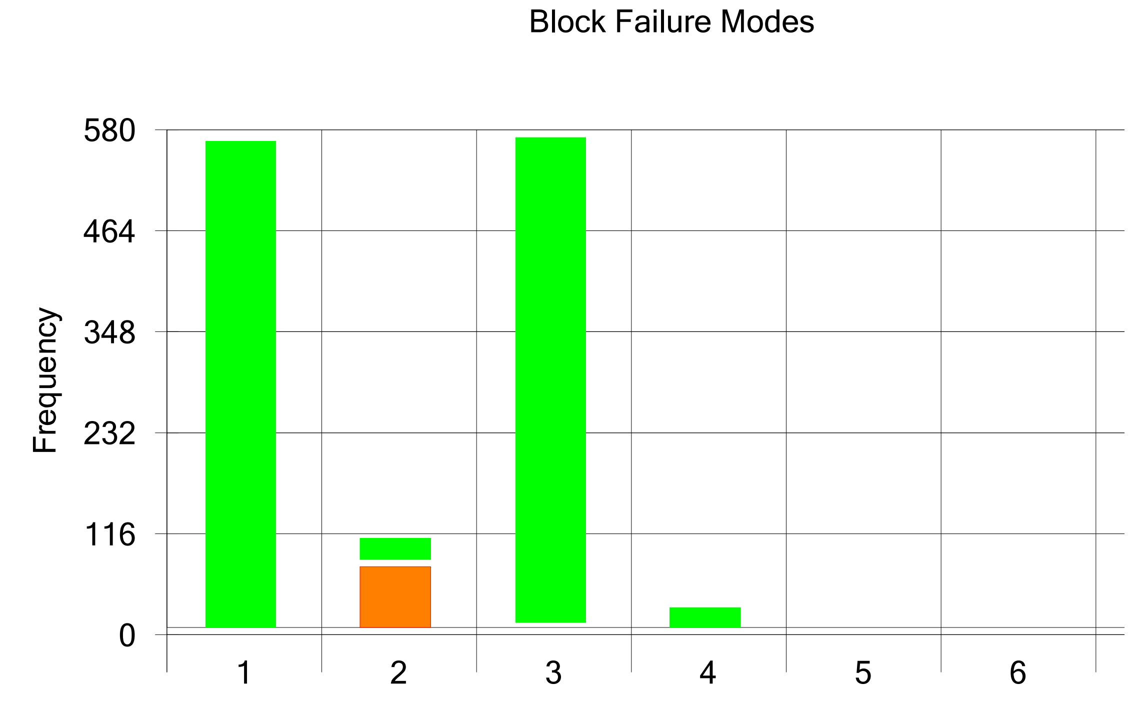
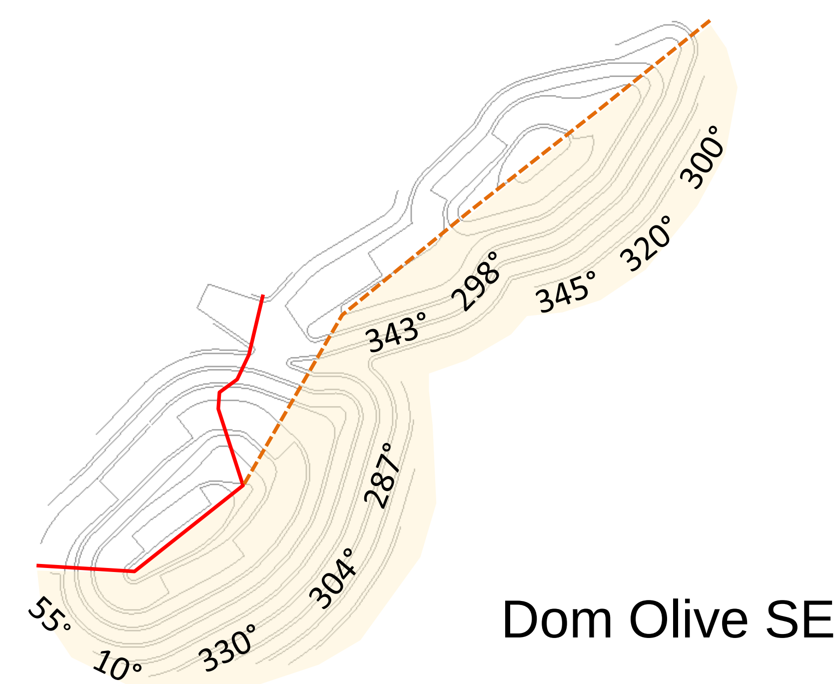
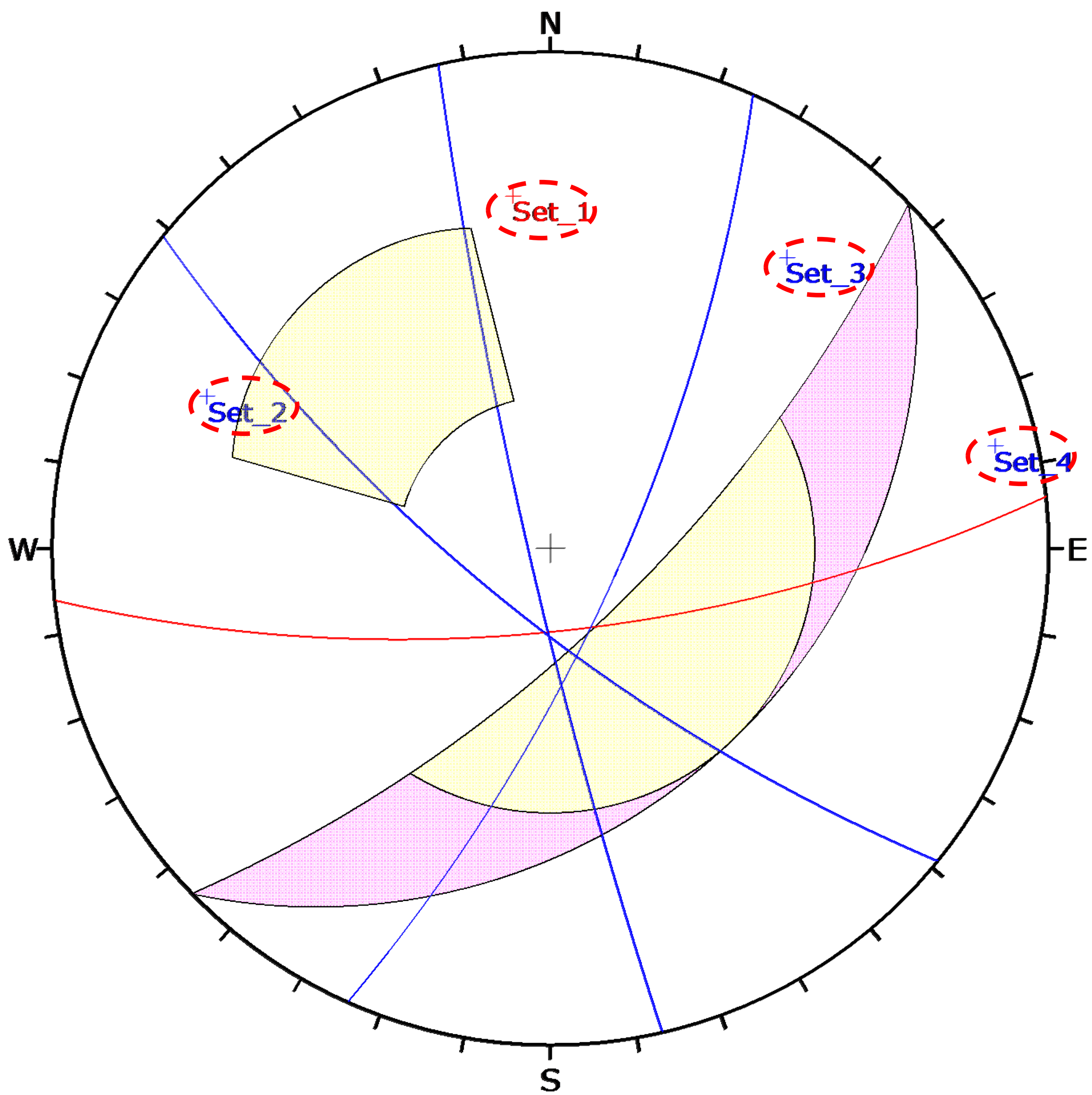
2	Red	87	167	Set_2
3	Red	83	53	Set_3
4	Red	85	257	Set_4





srk consulting	Eagle Gold Project	Kinematic Analysis
		Domain Olive SE DipDir 345°
Job No: 251000.050 Filename:	Bench Berm Analysis Olive Pit	Date: 08.22.2016 / Approved: ML / Figure: 28

Domain Olive NW Dip Dir 136°



	Color	Dip	Dip Direction	Label
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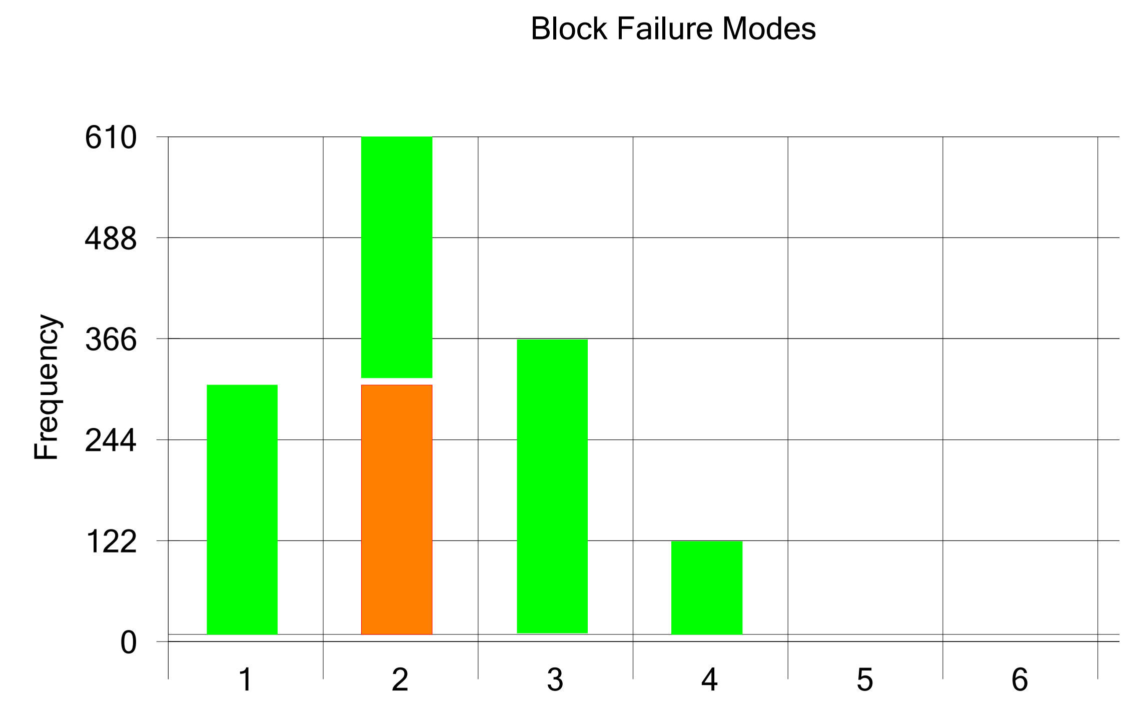
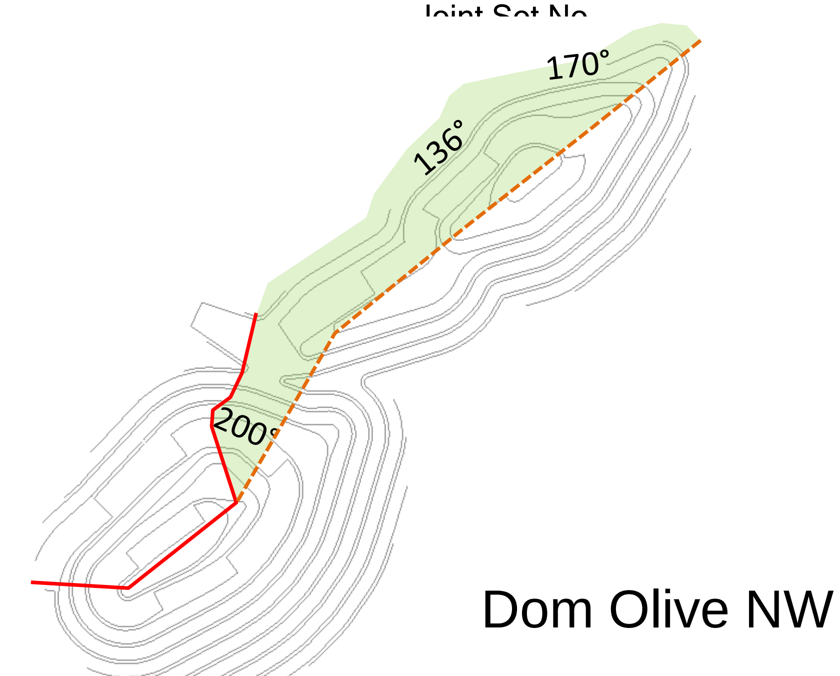
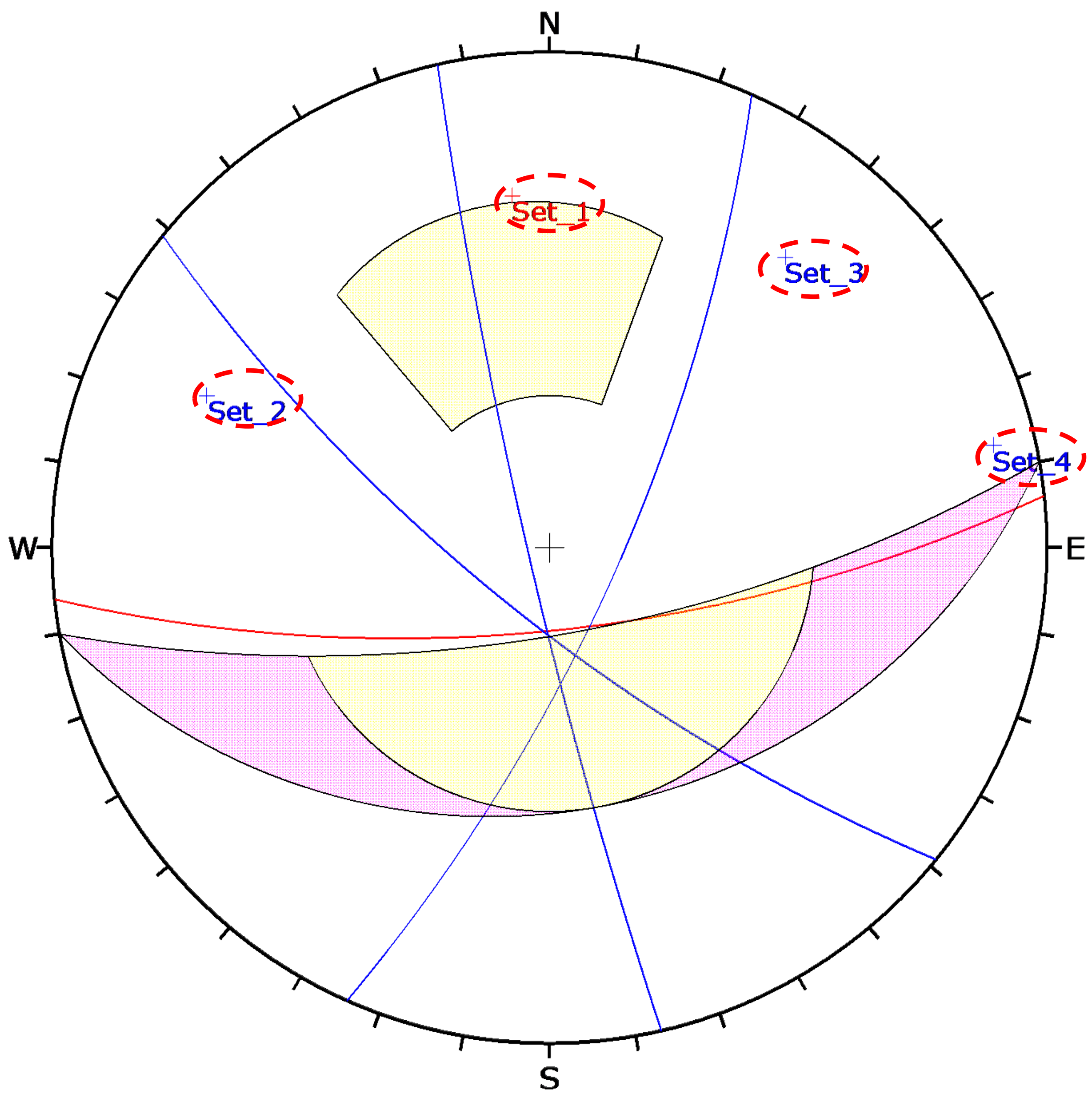
1	Red	29	267	Set_1
2	Blue	72	355	Set_2
3	Blue	56	45	Set_3
4	Blue	45	338	Set_4



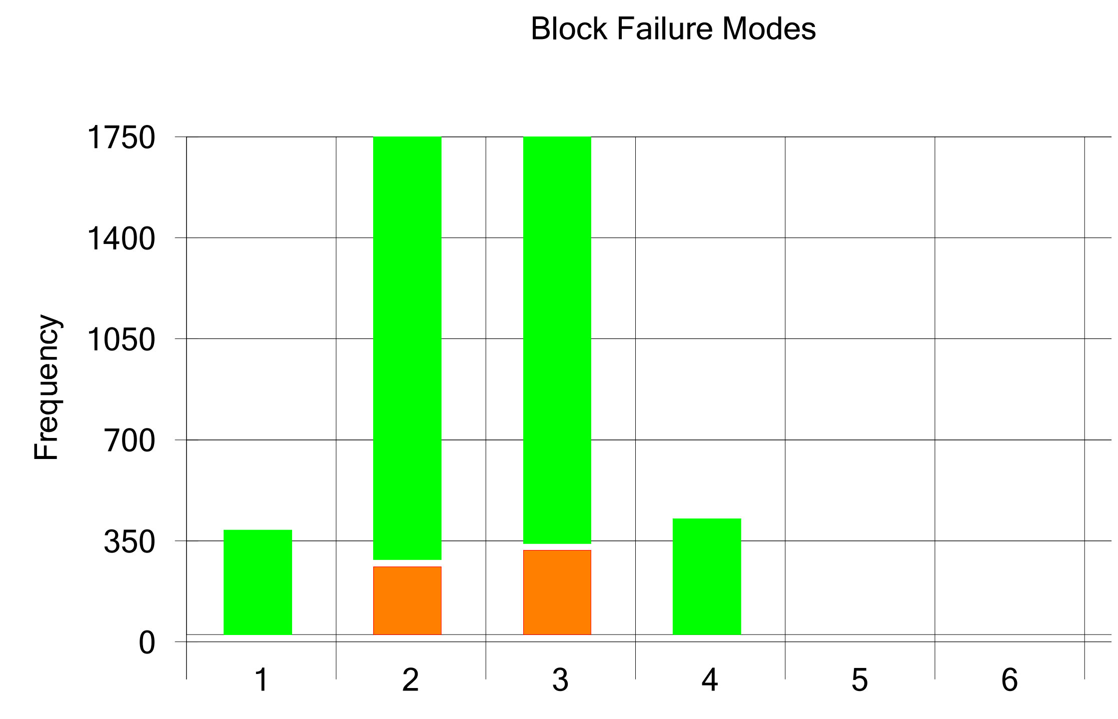


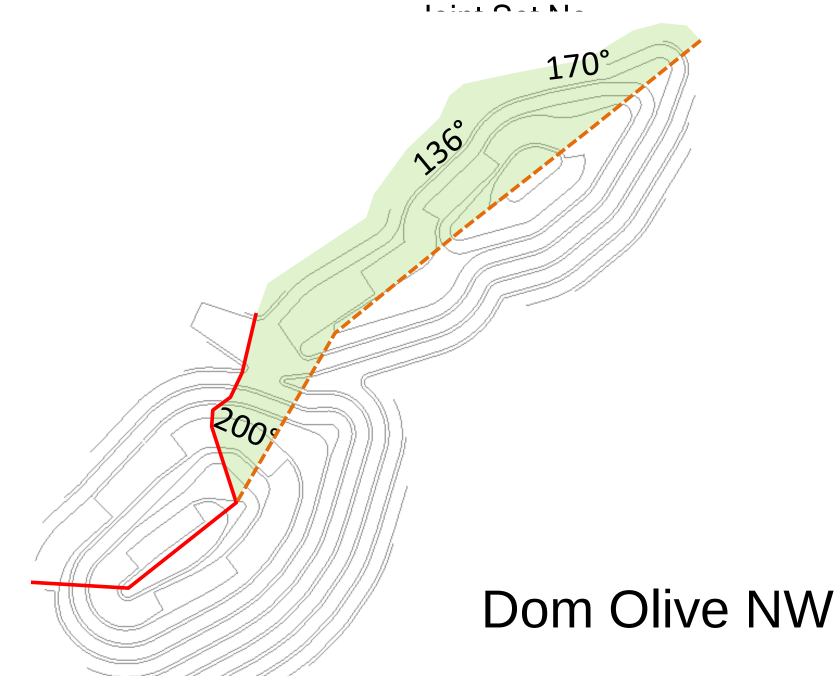
srk consulting	Eagle Gold Project	Kinematic Analysis
		Domain Olive NW DipDir 136°
Job No: 251000.050 Filename:	Bench Berm Analysis Olive Pit	Date: 08.22.2016 | Approved: ML | Figure: 29

Domain Olive NW Dip Dir 170°



	Color	Dip	Dip Direction	Label
		User Planes		
1	(red)	29	267	Set_1
2	(blue)	72	355	Set_2
3	(blue)	56	45	Set_3
4	(blue)	45	338	Set_4





srk consulting

Eagle Gold Project

Kinematic Analysis

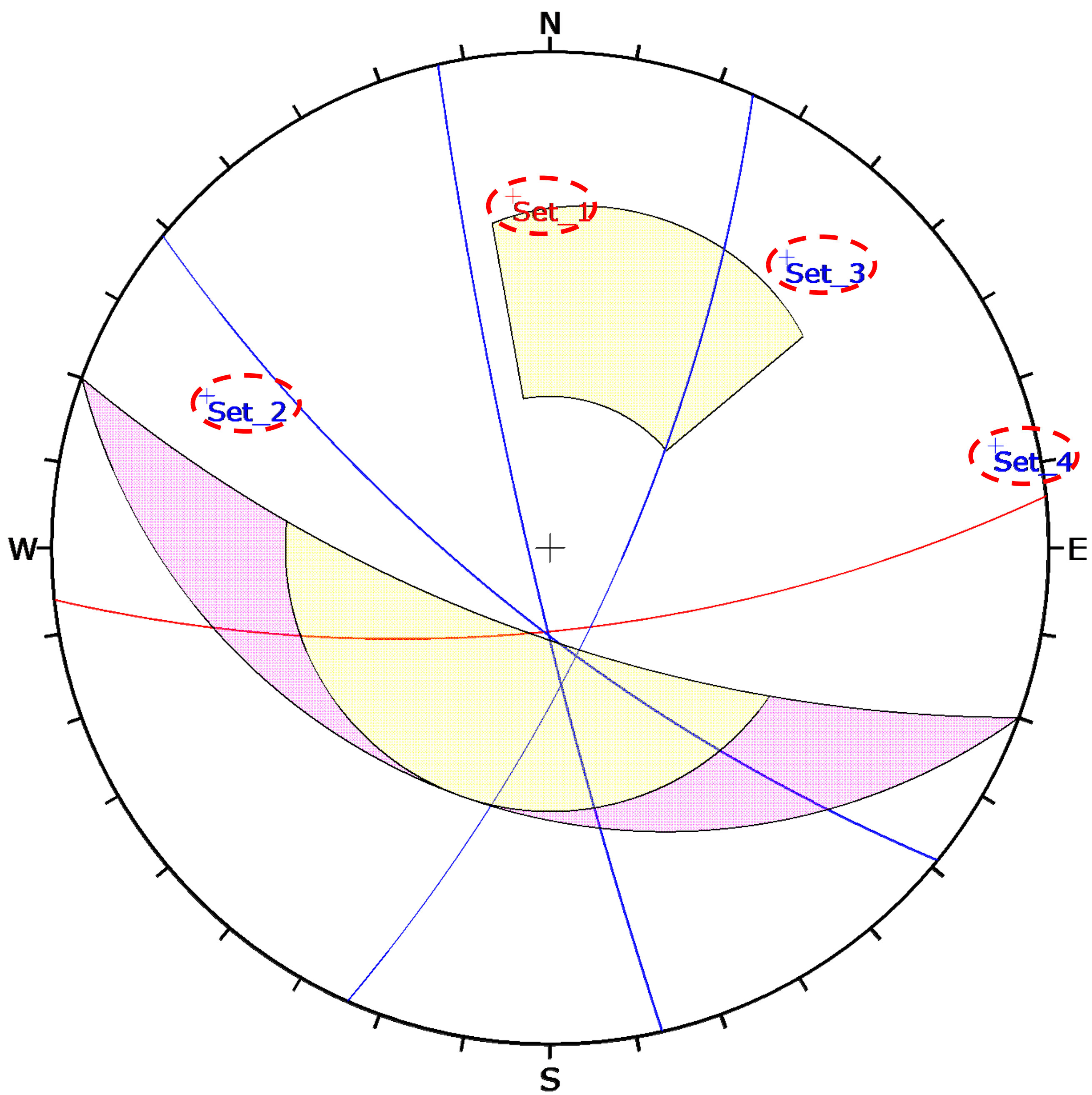
Domain Olive NW
DipDir 170°

Job No: 251000.050
Filename:

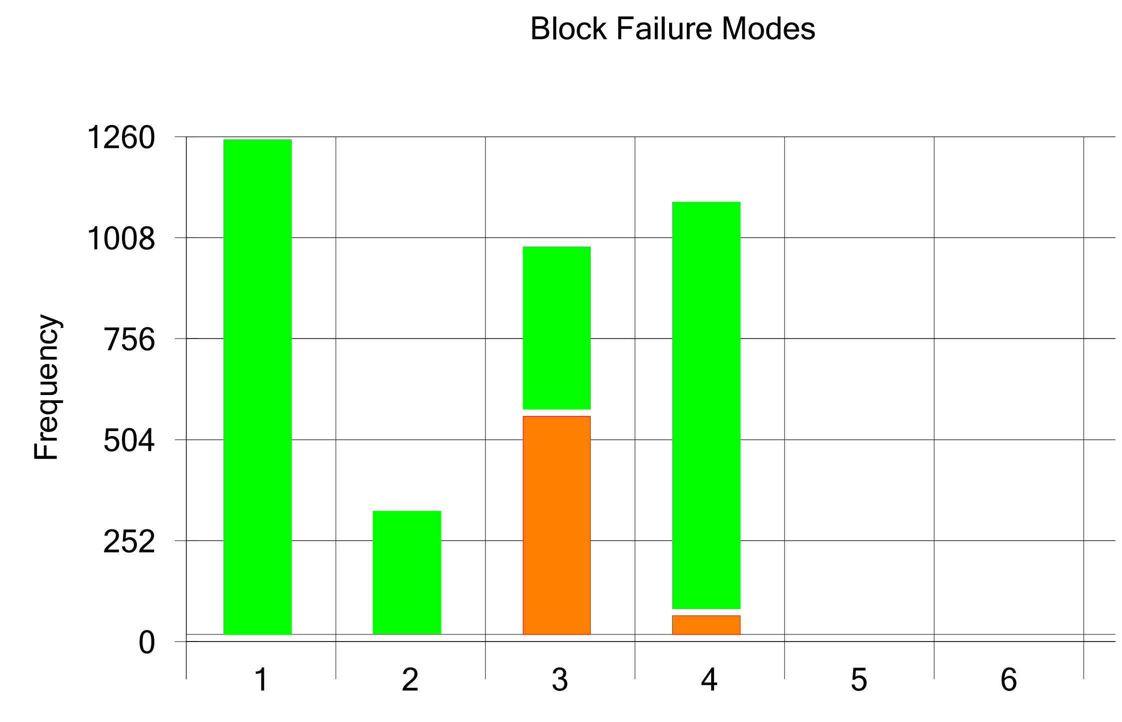
Bench Berm Analysis Olive Pit

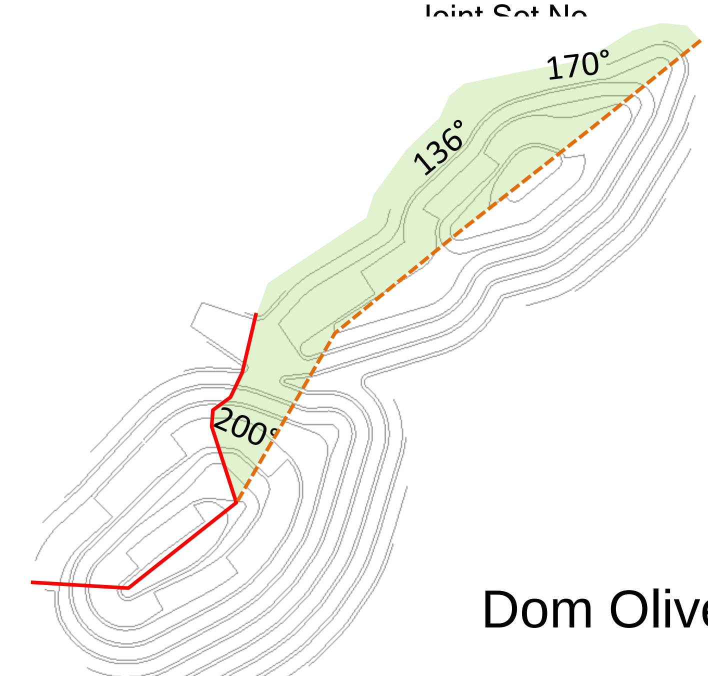
Date: 08.22.2016 | Approved: ML | Figure: 30

Domain Olive NW Dip Dir 200°



	Color	Dip	Dip Direction	Label
User Planes				
1	Red	29	267	Set_1
2	Blue	72	355	Set_2
3	Blue	56	45	Set_3
4	Blue	45	338	Set_4





Dom Olive NW

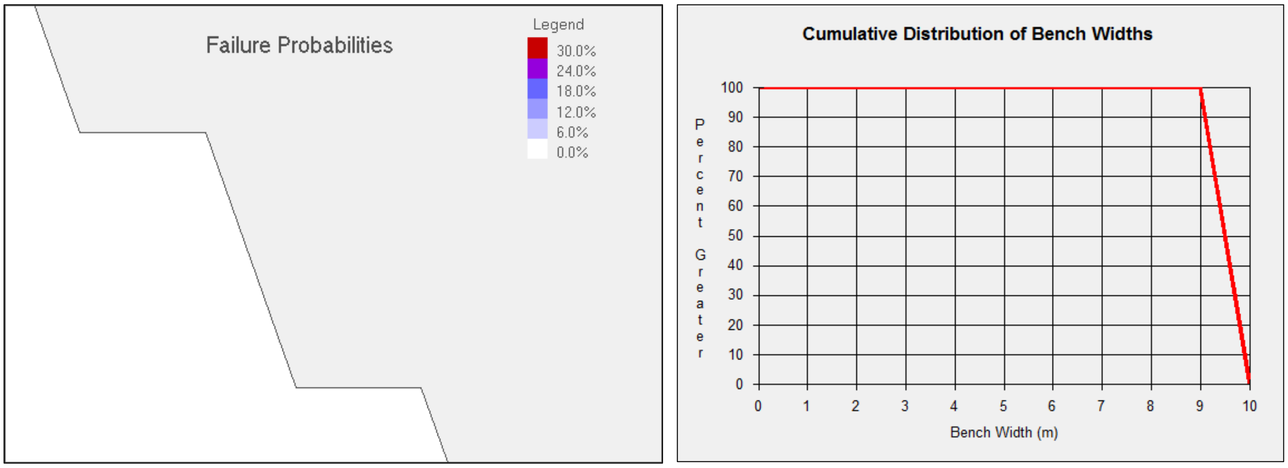
srk consulting	Eagle Gold Project	Kinematic Analysis
		Domain Olive NW DipDir 200°
Job No: 251000.050 Filename:	Bench Berm Analysis Olive Pit	Date: 08.22.2016 / Approved: ML / Figure: 31

Appendix C: SBlock Results

APPENDIX C-1

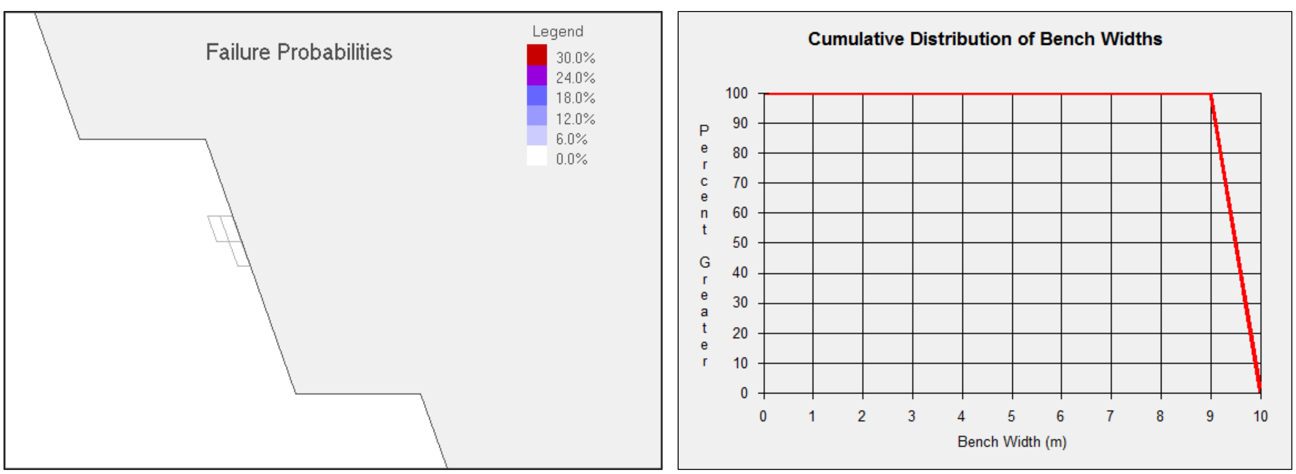
Eagle Pit Bench-Berm Results

Bench-Berm Result for the design Eagle Pit									
Domain	Dip Dir Slope	Bench Design				Berm Width			PF (%)
		h_b	α_b	Berm	α_{IR}	Effective	Required	Cumulative Distribution of Bench Width>80%	
Dom Hornfels	150	20	70	10	49	10	0.0	9.2	0.0
	165	20	70	10	49	10	0.0	9.2	0.0
	185	20	70	10	49	10.0	0.0	9.2	0.0
	270	20	60	12	40	12.0	0.1	11.0	0.0
		20	60	14	38	14.0	0.1	13.0	0.0
	290	20	60	12	40	12.0	0.2	11.0	0.0
		20	60	14	38	14.0	0.1	13.0	0.0
	305	20	60	12	40	12.0	0.2	11.0	0.1
		20	60	14	38	14.0	0.5	13.0	0.1
	338	20	70	10	49	9.9	1.8	9.2	2.0
	345	20	70	10	49	9.9	2.3	9.2	4.0
Dom Int-N	160	20	70	10	49	9.9	2.0	9.2	2.3
	180	20	70	10	49	9.9	2.3	9.2	3.0
	185	20	70	10	49	9.9	2.1	9.2	3.1
	213	20	70	10	49	9.8	3.1	9.2	5.9
	230	20	70	10	49	9.8	3.2	9.2	6.7
Dom Int S&E	40	20	70	10	49	9.4	5.3	9.0	17.3
	290	20	70	10	49	9.8	3.7	9.2	9.0
		20	60	12	40	12.0	1.1	11.0	1.1
		20	60	14	38	14.0	1.0	13.0	1.3
	305	20	70	10	49	9.7	4.0	9.1	10.6
	315	20	70	10	49	9.6	4.3	9.1	11.4
	340	20	70	10	49	9.6	4.6	9.1	12.3
	348	20	70	10	49	9.6	4.2	9.1	10.7



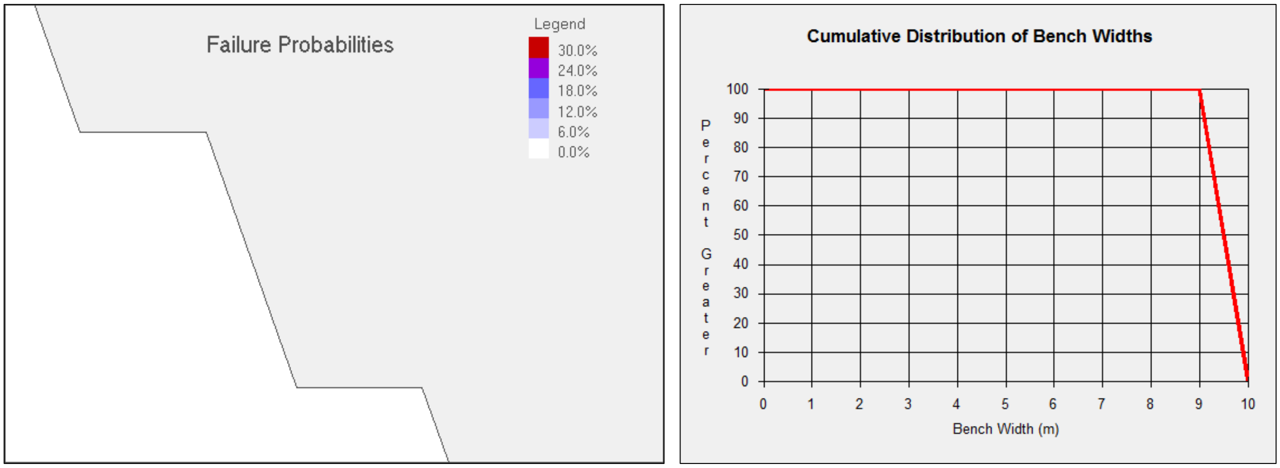
Maximun Failure Probabilities (%)	=	0.0	Cumulative Distribution of Bench Width >80%	=	9.2
Bench Face Height (m)	=	20	Average Effective Bench Width (m)	=	10
Design Bench Width (m)	=	10	Average Required Bench Width (m)	=	0.0
Bench Face Dip (°)	=	70			

Figure C1-1: Results of Sblock Analysis for Hornfels Domain and 150° Dip Direction.



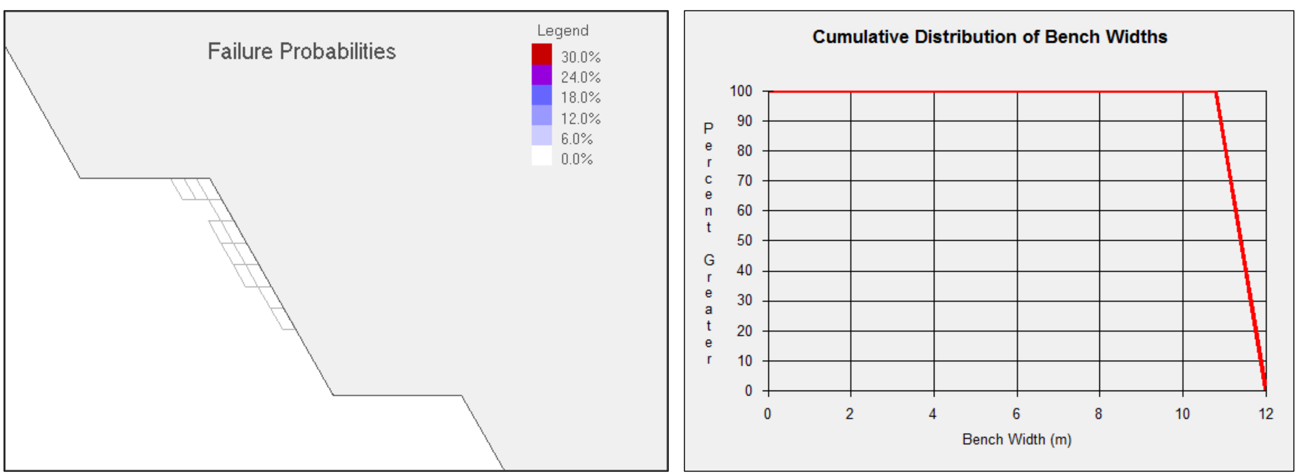
Maximun Failure Probabilities (%)	=	0.0	Cumulative Distribution of Bench Width >80%	=	9.2
Bench Face Height (m)	=	20	Average Effective Bench Width (m)	=	10
Design Bench Width (m)	=	10	Average Required Bench Width (m)	=	0.0
Bench Face Dip (°)	=	70			

Figure C1-2: Results of Sblock Analysis for Hornfels Domain and 165° Dip Direction.



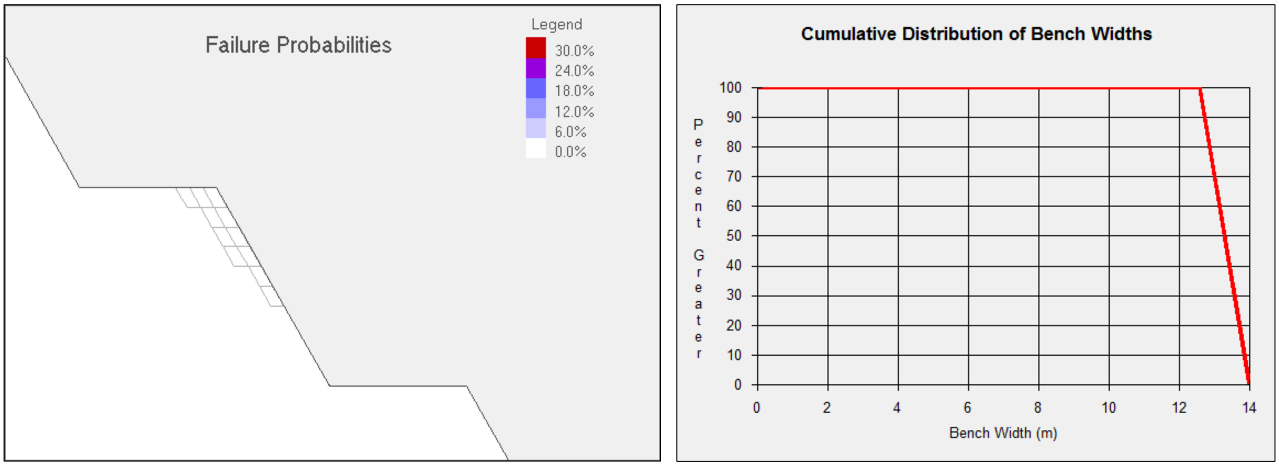
Maximun Failure Probabilities (%)	= 0.0		Cumulative Distribution of Bench Width >80%	=	9.2
Bench Face Height (m)	= 20		Average Effective Bench Width (m)	=	10
Design Bench Width (m)	= 10		Average Required Bench Width (m)	=	0.0
Bench Face Dip (°)	= 70				

Figure C1-3: Results of Sblock Analysis for Hornfels Domain and 185° Dip Direction.



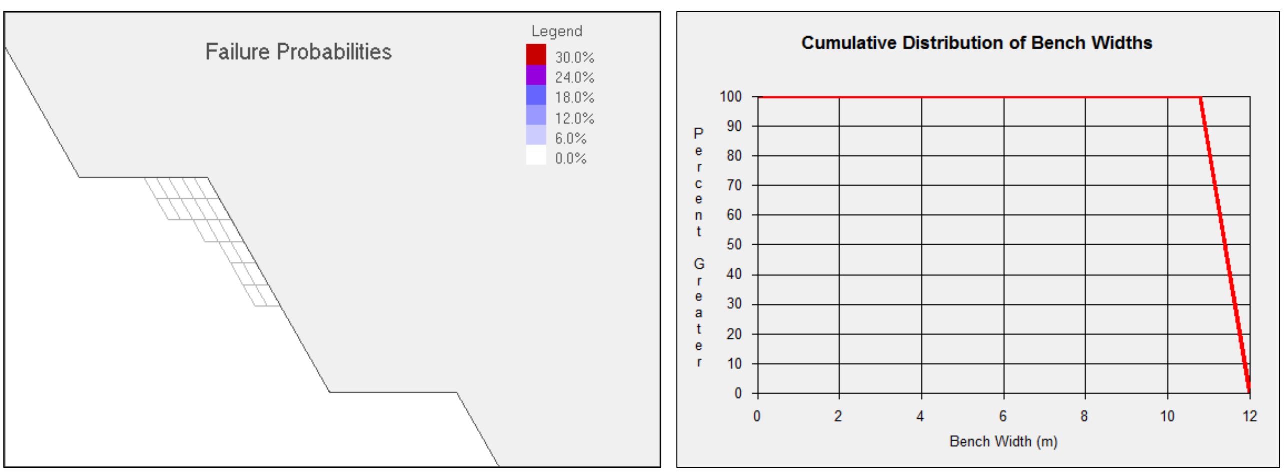
Maximun Failure Probabilities (%)	= 0.0		Cumulative Distribution of Bench Width >80%	=	11
Bench Face Height (m)	= 20		Average Effective Bench Width (m)	=	12
Design Bench Width (m)	= 10		Average Required Bench Width (m)	=	0.1
Bench Face Dip (°)	= 60				

Figure C1-4: Results of Sblock Analysis for Hornfels Domain and 270° Dip Direction case berm 12 m.



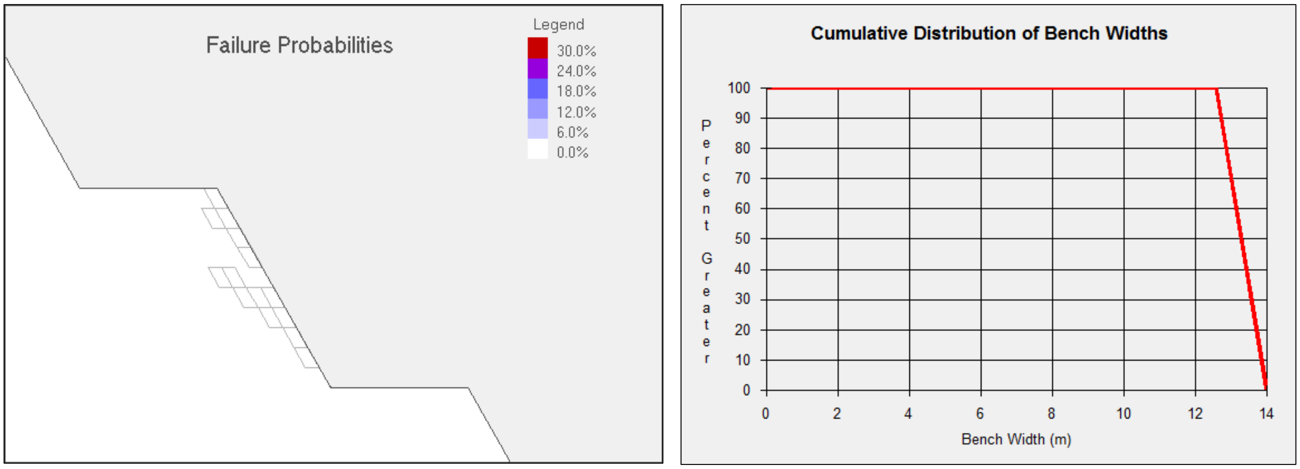
Maximun Failure Probabilities (%)	= 0.0		Cumulative Distribution of Bench Width >80%	=	13
Bench Face Height (m)	= 20		Average Effective Bench Width (m)	=	14
Design Bench Width (m)	= 14		Average Required Bench Width (m)	=	0.1
Bench Face Dip (°)	= 60				

Figure C1-5: Results of Sblock Analysis for Hornfels Domain and 270° Dip Direction case berm 14 m.



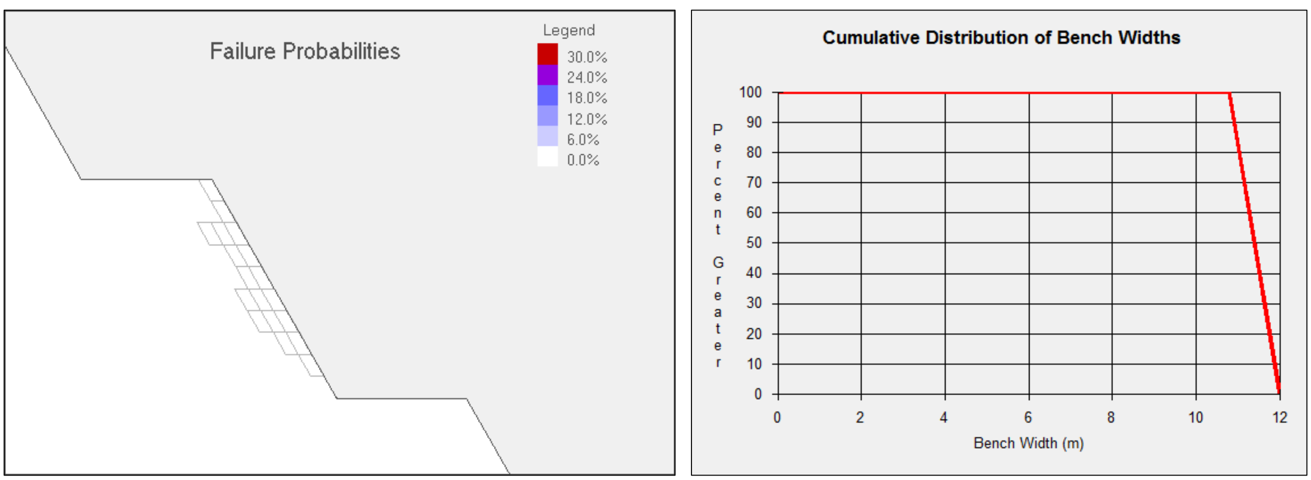
Maximun Failure Probabilities (%)	= 0.0		Cumulative Distribution of Bench Width >80%	=	11
Bench Face Height (m)	= 20		Average Effective Bench Width (m)	=	12
Design Bench Width (m)	= 12		Average Required Bench Width (m)	=	0.2
Bench Face Dip (°)	= 60				

Figure C1-6: Results of Sblock Analysis for Hornfels Domain and 290° Dip Direction case berm 12 m.



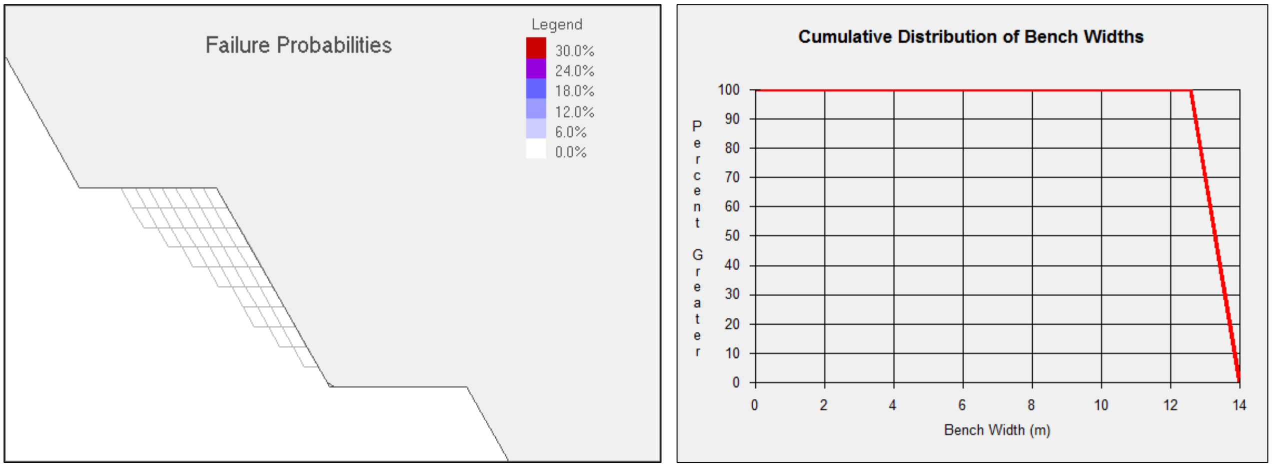
Maximun Failure Probabilities (%)	=	0.0	Cumulative Distribution of Bench Width >80%	=	13
Bench Face Height (m)	=	20	Average Effective Bench Width (m)	=	14
Design Bench Width (m)	=	14	Average Required Bench Width (m)	=	0.1
Bench Face Dip (°)	=	60			

Figure C1-7: Results of Sblock Analysis for Hornfels Domain and 290° Dip Direction case berm 14 m.



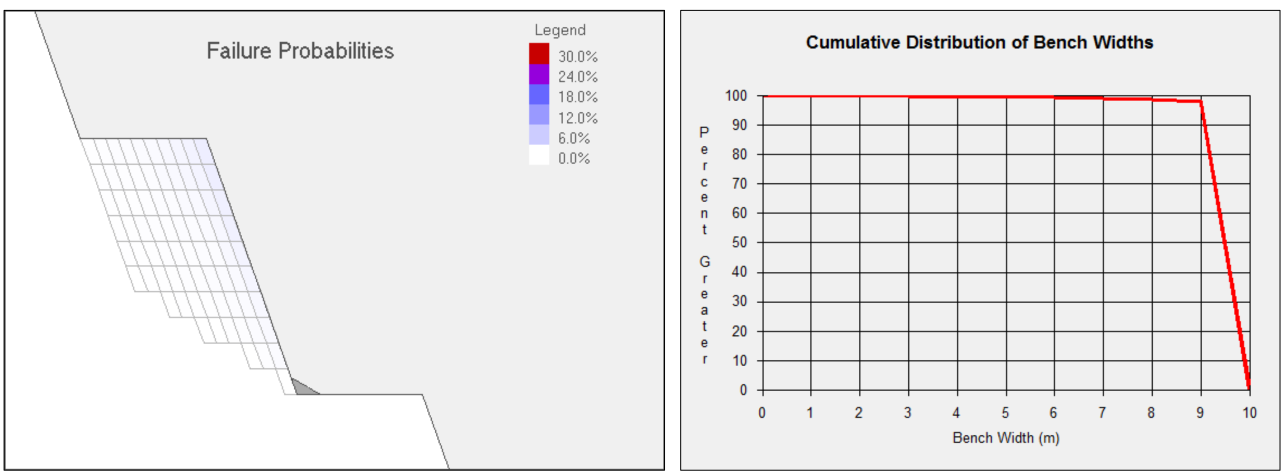
Maximun Failure Probabilities (%)	=	0.1	Cumulative Distribution of Bench Width >80%	=	11
Bench Face Height (m)	=	20	Average Effective Bench Width (m)	=	12
Design Bench Width (m)	=	12	Average Required Bench Width (m)	=	0.2
Bench Face Dip (°)	=	60			

Figure C1-8: Results of Sblock Analysis for Hornfels Domain and 305° Dip Direction case berm 12 m.



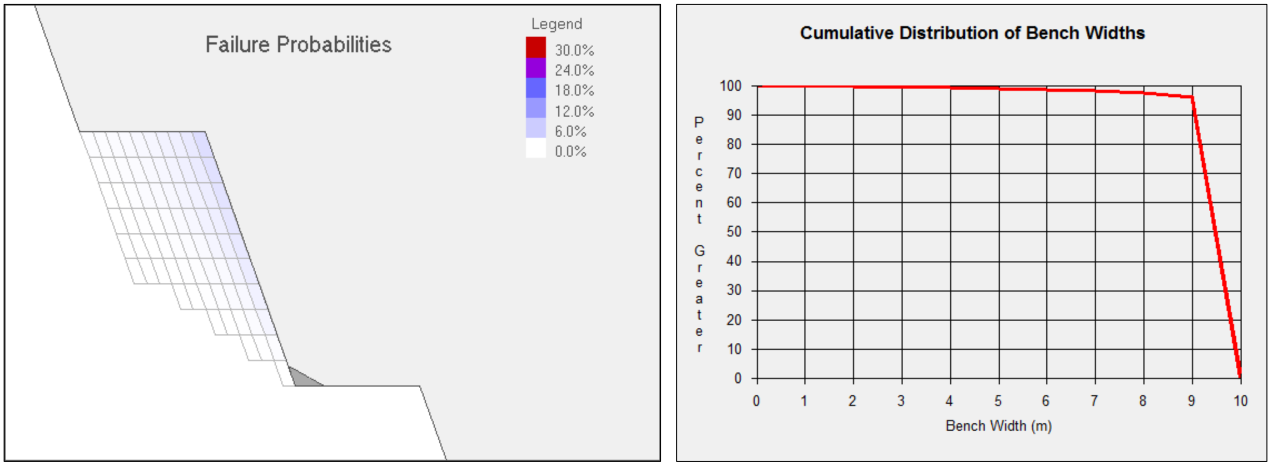
Maximun Failure Probabilities (%)	=	0.1	Cumulative Distribution of Bench Width >80%	=	13
Bench Face Height (m)	=	20	Average Effective Bench Width (m)	=	14
Design Bench Width (m)	=	14	Average Required Bench Width (m)	=	0.5
Bench Face Dip (°)	=	60			

Figure C1-9: Results of Sblock Analysis for Hornfels Domain and 305° Dip Direction case berm 14 m.



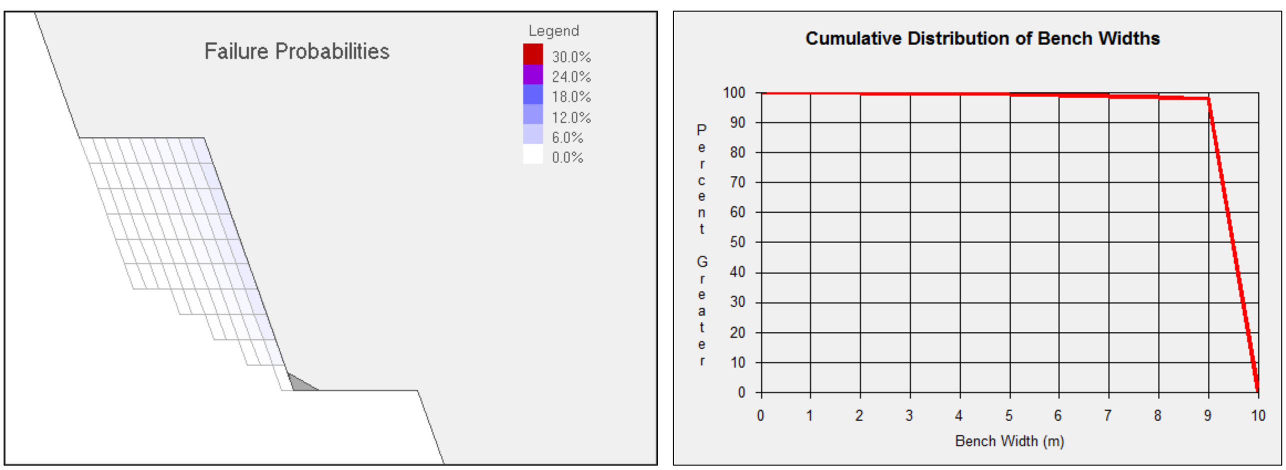
Maximun Failure Probabilities (%)	=	2.0	Cumulative Distribution of Bench Width >80%	=	9.2
Bench Face Height (m)	=	20	Average Effective Bench Width (m)	=	9.9
Design Bench Width (m)	=	10	Average Required Bench Width (m)	=	1.8
Bench Face Dip (°)	=	70			

Figure C1-10: Results of Sblock Analysis for Hornfels Domain and 338° Dip Direction.



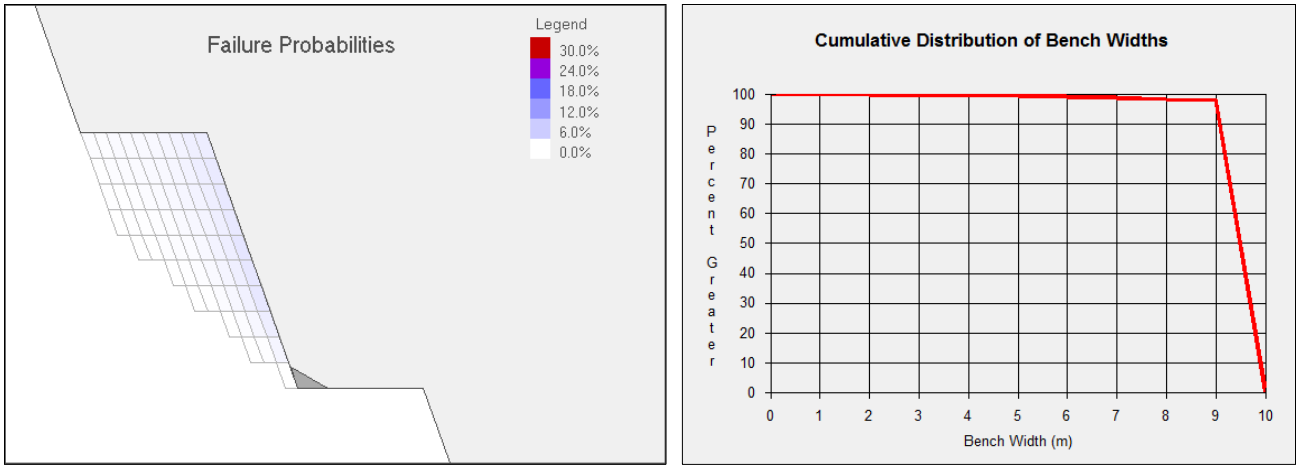
Maximun Failure Probabilities (%)	=	4.0	Cumulative Distribution of Bench Width >80%	=	9.2
Bench Face Height (m)	=	20	Average Effective Bench Width (m)	=	9.9
Design Bench Width (m)	=	10	Average Required Bench Width (m)	=	2.3
Bench Face Dip (°)	=	70			

Figure C1-11: Results of Sblock Analysis for Hornfels Domain and 345° Dip Direction.



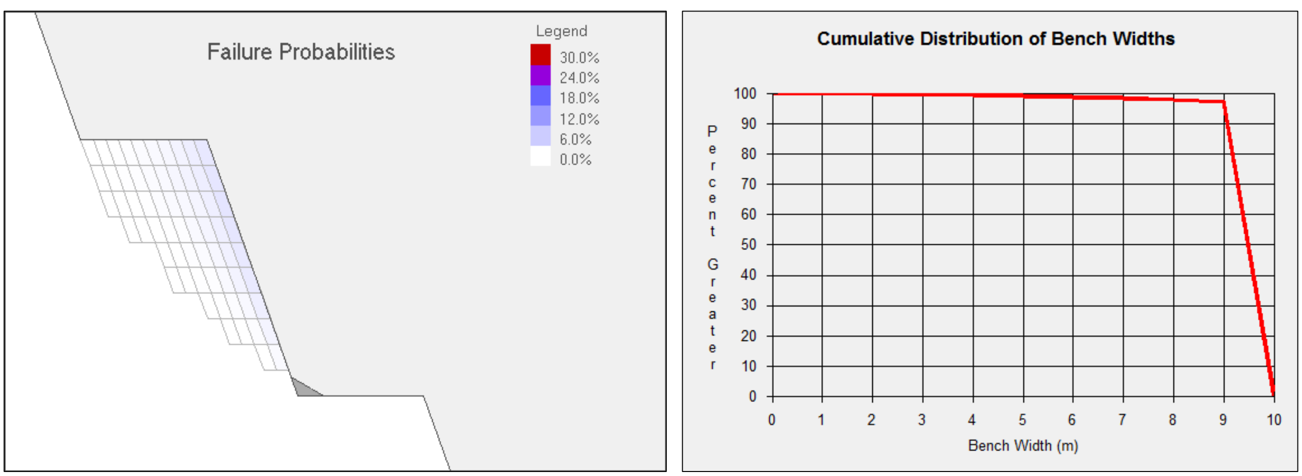
Maximun Failure Probabilities (%)	=	2.3	Cumulative Distribution of Bench Width >80%	=	9.2
Bench Face Height (m)	=	20	Average Effective Bench Width (m)	=	9.9
Design Bench Width (m)	=	10	Average Required Bench Width (m)	=	2.0
Bench Face Dip (°)	=	70			

Figure C1-12: Results of Sblock Analysis for Int-N Domain and 160° Dip Direction.



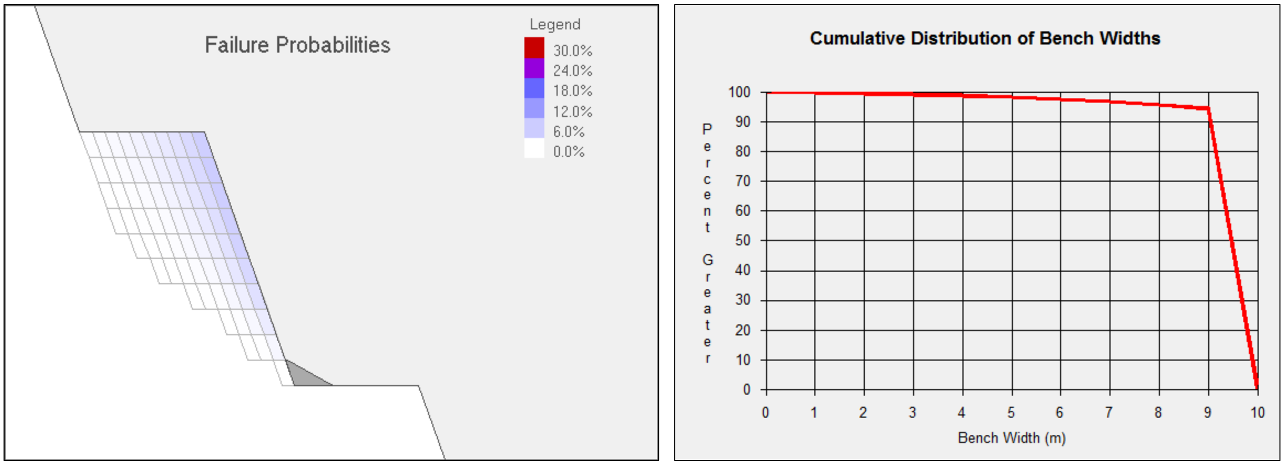
Maximun Failure Probabilities (%)	= 3.0		Cumulative Distribution of Bench Width >80%	=	9.2
Bench Face Height (m)	= 20		Average Effective Bench Width (m)	=	9.9
Design Bench Width (m)	= 10		Average Required Bench Width (m)	=	2.3
Bench Face Dip (°)	= 70				

Figure C1-13: Results of Sblock Analysis for Int-N Domain and 180° Dip Direction.



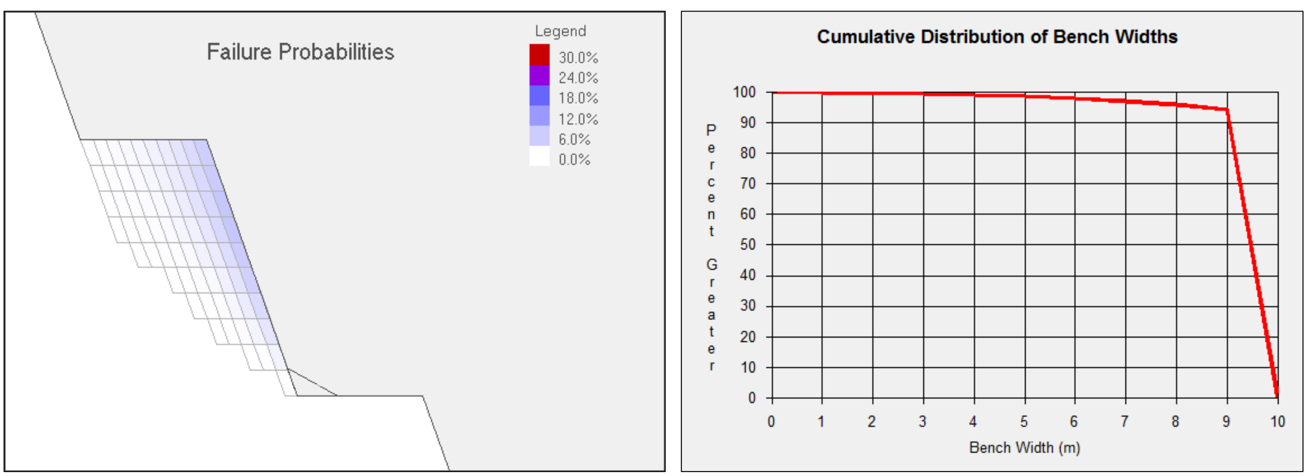
Maximun Failure Probabilities (%)	= 3.1		Cumulative Distribution of Bench Width >80%	=	9.2
Bench Face Height (m)	= 20		Average Effective Bench Width (m)	=	9.9
Design Bench Width (m)	= 10		Average Required Bench Width (m)	=	2.1
Bench Face Dip (°)	= 70				

Figure C1-14: Results of Sblock Analysis for Int-N Domain and 185° Dip Direction.



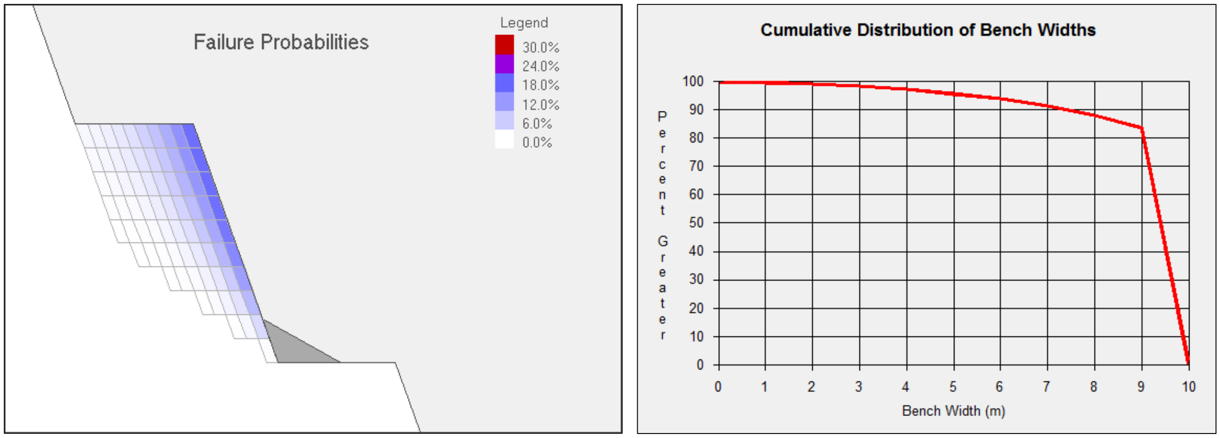
Maximun Failure Probabilities (%)	=	5.9	Cumulative Distribution of Bench Width >80%	=	9.2
Bench Face Height (m)	=	20	Average Effective Bench Width (m)	=	9.8
Design Bench Width (m)	=	10	Average Required Bench Width (m)	=	3.1
Bench Face Dip (°)	=	70			

Figure C1-15: Results of Sblock Analysis for Int-N Domain and 213° Dip Direction.



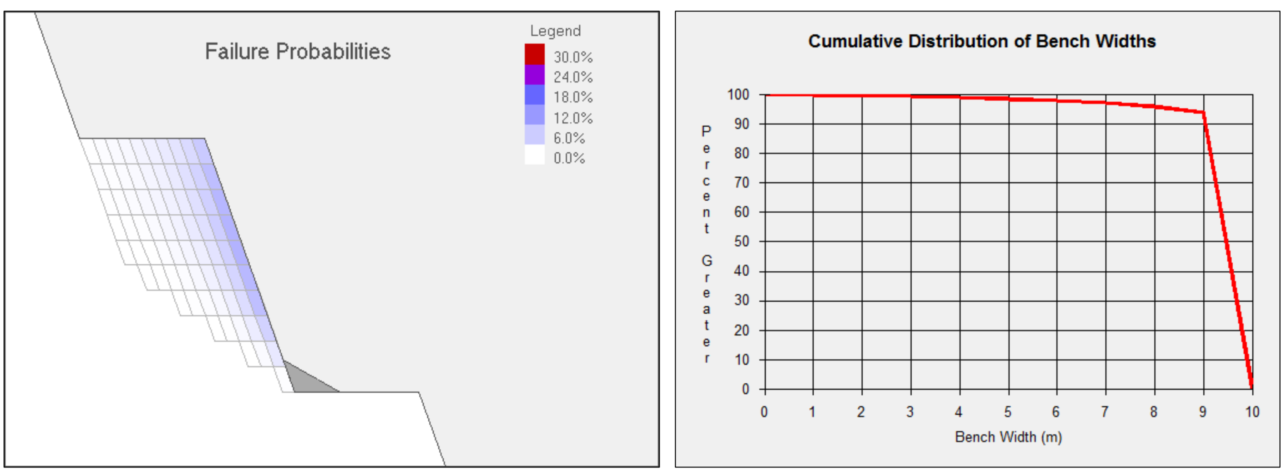
Maximun Failure Probabilities (%)	=	6.7	Cumulative Distribution of Bench Width >80%	=	9.2
Bench Face Height (m)	=	20	Average Effective Bench Width (m)	=	9.8
Design Bench Width (m)	=	10	Average Required Bench Width (m)	=	3.2
Bench Face Dip (°)	=	70			

Figure C1-16: Results of Sblock Analysis for Int-N Domain and 230° Dip Direction.



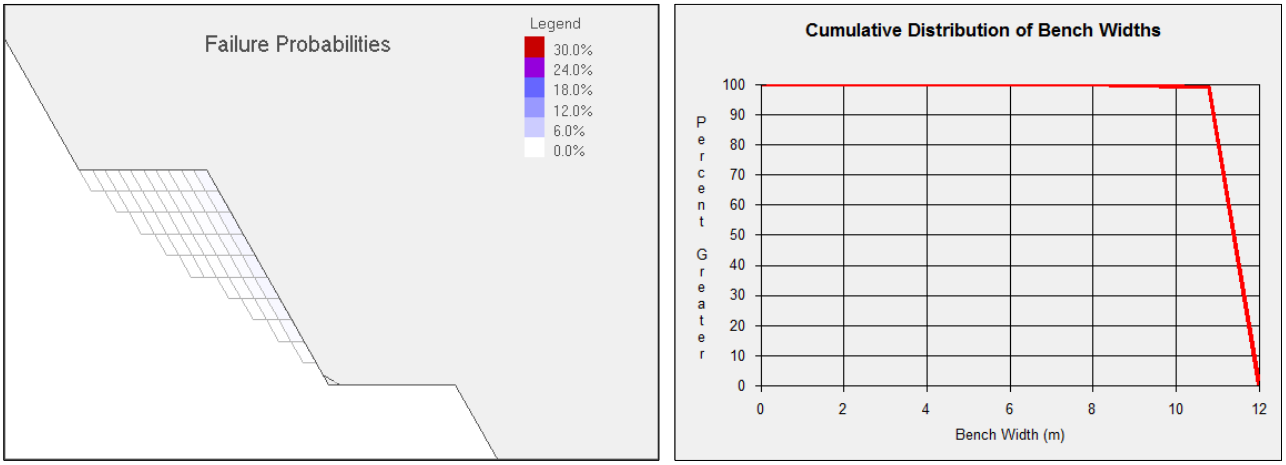
Maximun Failure Probabilities (%)	= 17.3	Cumulative Distribution of Bench Width >80%	=	9.0
Bench Face Height (m)	= 20	Average Effective Bench Width (m)	=	9.4
Design Bench Width (m)	= 10	Average Required Bench Width (m)	=	5.3
Bench Face Dip (°)	= 70			

Figure C1-17: Results of Sblock Analysis for Int S&E Domain and 40° Dip Direction.



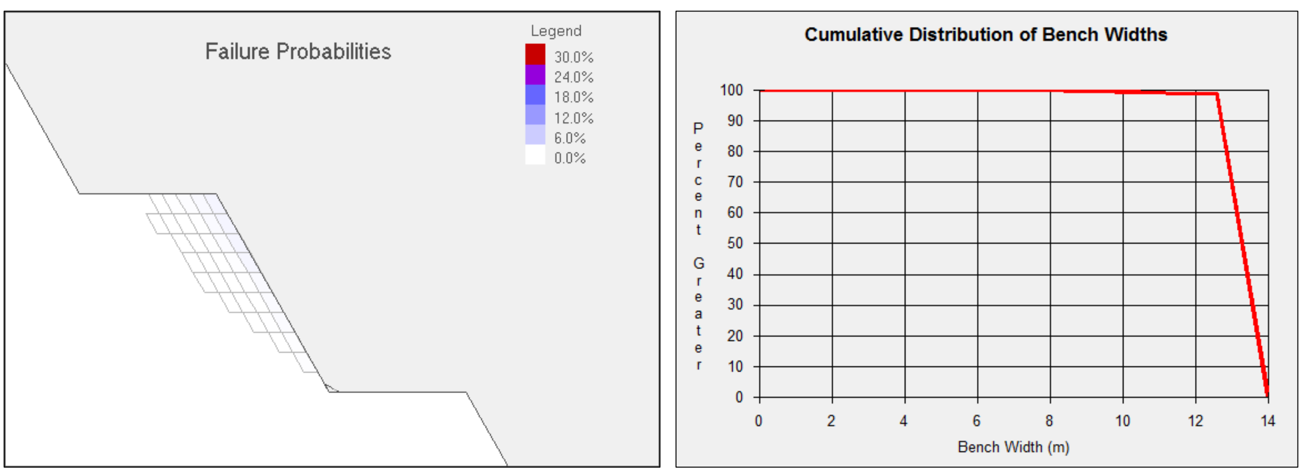
Maximun Failure Probabilities (%)	= 9.0	Cumulative Distribution of Bench Width >80%	=	9.2
Bench Face Height (m)	= 20	Average Effective Bench Width (m)	=	9.8
Design Bench Width (m)	= 10	Average Required Bench Width (m)	=	3.7
Bench Face Dip (°)	= 70			

Figure C1-18: Results of Sblock Analysis for Int S&E Domain and 290° Dip Direction case 10 m berm.



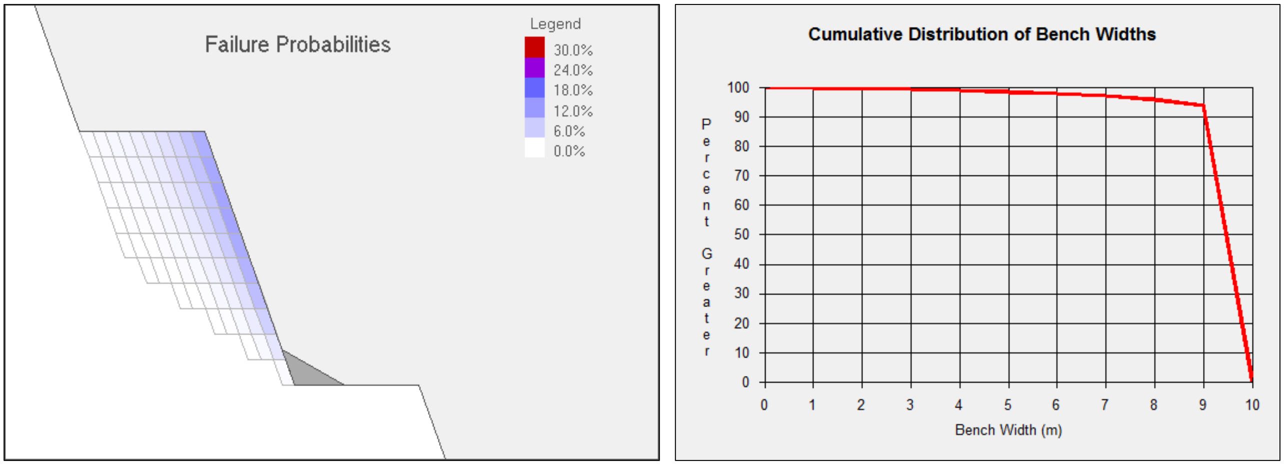
Maximun Failure Probabilities (%)	= 1.1	Cumulative Distribution of Bench Width >80%	=	11.0
Bench Face Height (m)	= 20	Average Effective Bench Width (m)	=	12
Design Bench Width (m)	= 12	Average Required Bench Width (m)	=	1.1
Bench Face Dip (°)	= 60			

Figure C1-19: Results of Sblock Analysis for Int S&E Domain and 290° Dip Direction case 12 m berm.



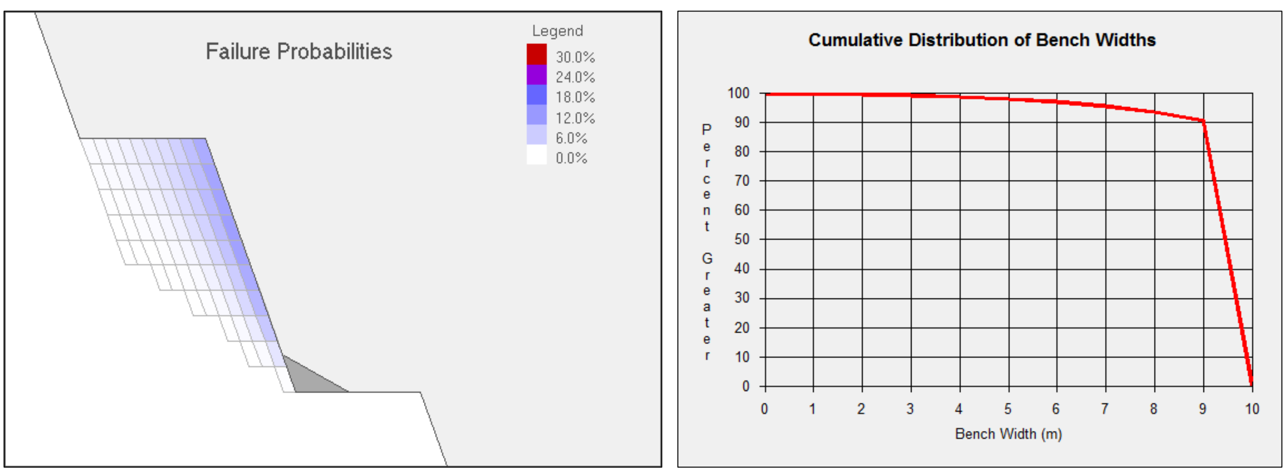
Maximun Failure Probabilities (%)	= 1.3	Cumulative Distribution of Bench Width >80%	=	13
Bench Face Height (m)	= 20	Average Effective Bench Width (m)	=	14
Design Bench Width (m)	= 14	Average Required Bench Width (m)	=	1.0
Bench Face Dip (°)	= 60			

Figure C1-20: Results of Sblock Analysis for Int S&E Domain and 290° Dip Direction case berm 14 m.



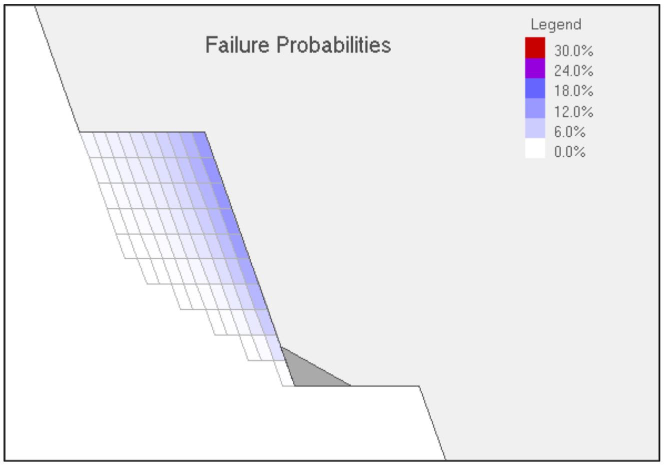
Maximun Failure Probabilities (%)	=	10.6	Cumulative Distribution of Bench Width >80%	=	9.1
Bench Face Height (m)	=	20	Average Effective Bench Width (m)	=	9.7
Design Bench Width (m)	=	10	Average Required Bench Width (m)	=	4.0
Bench Face Dip (°)	=	70			

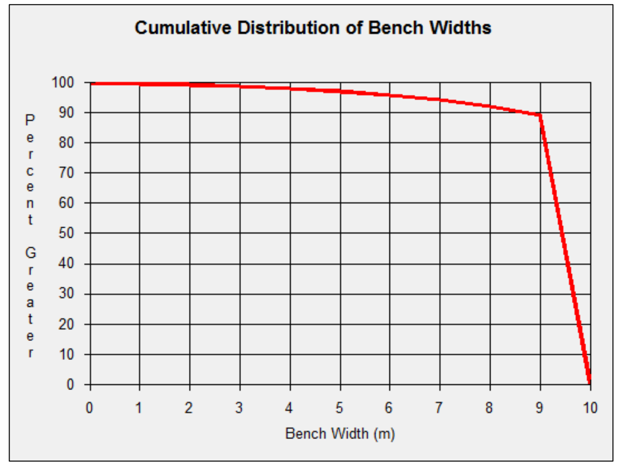
Figure C1-21: Results of Sblock Analysis for Int S&E Domain and 305° Dip Direction.



Maximun Failure Probabilities (%)	=	11.4	Cumulative Distribution of Bench Width >80%	=	9.1
Bench Face Height (m)	=	20	Average Effective Bench Width (m)	=	9.6
Design Bench Width (m)	=	10	Average Required Bench Width (m)	=	4.3
Bench Face Dip (°)	=	70			

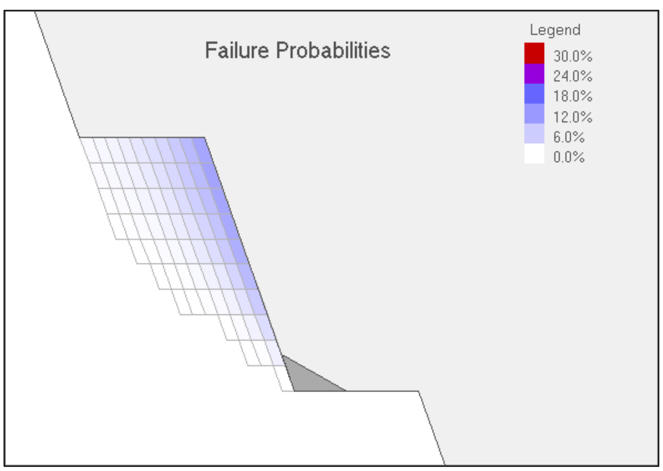
Figure C1-22: Results of Sblock Analysis for Int-S&E Domain and 315° Dip Direction.

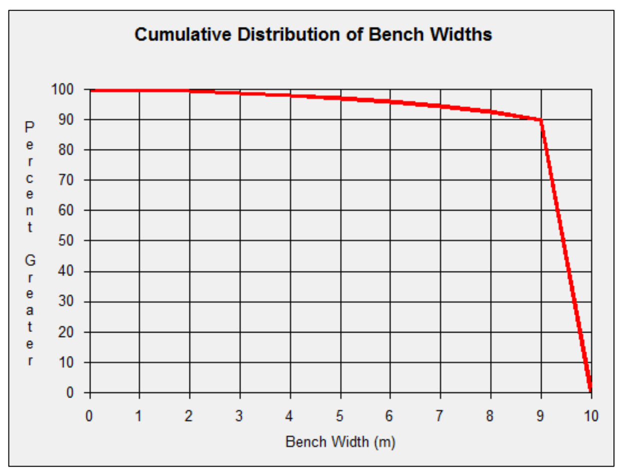




Maximun Failure Probabilities (%)	= 12.3		Cumulative Distribution of Bench Width >80%	=	9.1
Bench Face Height (m)	= 20		Average Effective Bench Width (m)	=	9.6
Design Bench Width (m)	= 10		Average Required Bench Width (m)	=	4.6
Bench Face Dip (°)	= 70				

Figure C1-23: Results of Sblock Analysis for Int-S&E Domain and 340° Dip Direction.





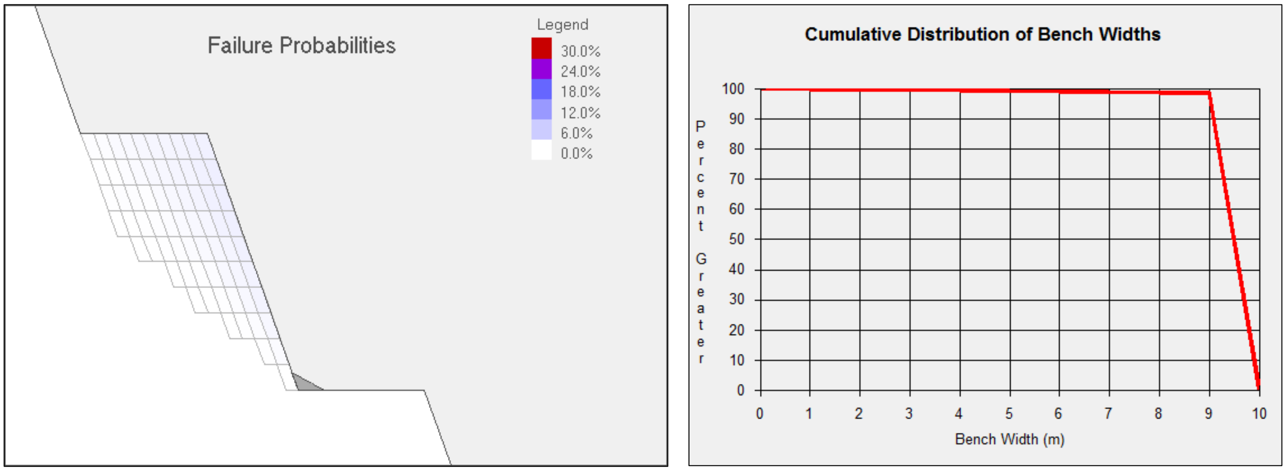
Maximun Failure Probabilities (%)	= 10.7		Cumulative Distribution of Bench Width >80%	=	9.1
Bench Face Height (m)	= 20		Average Effective Bench Width (m)	=	9.6
Design Bench Width (m)	= 10		Average Required Bench Width (m)	=	4.2
Bench Face Dip (°)	= 70				

Figure C1-24: Results of Sblock Analysis for Int-S&E Domain and 348° Dip Direction.

APPENDIX C-2

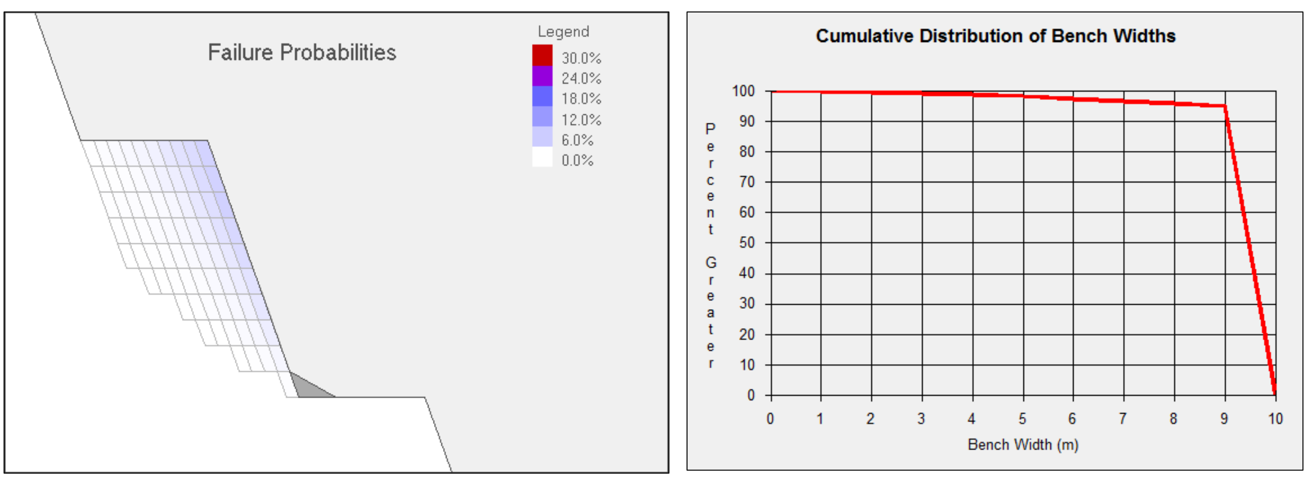
Olive Pit Bench-Berm Results

Bench-Berm Result for the design Eagle Pit									
Domain	Dip Dir Slope	Bench Design				Berm Width			PF (%)
		h_b	α_b	Berm	α_{IR}	Effective	Required	Cumulative Distribution of Bench Width>80%	
Olive NW& Fol	105	20	70	10.0	49	9.9	2	9.2	2
	133	20	70	10.0	49	9.8	2.9	9.2	5.5
	180	20	70	10.0	49	9.9	1.9	9.2	2.3
Olive SE	10	20	70	10.0	49	9.9	1.7	9.2	2.0
	55	20	70	10.0	49	9.9	2.5	9.2	4.3
	287	20	70	10.0	49	10.0	0.9	9.2	0.7
	300	20	70	10.0	49	10.0	0.6	9.2	0.3
	305	20	70	10.0	49	10.0	0.5	9.2	0.3
	320	20	70	10.0	49	10.0	0.7	9.2	0.6
	330	20	70	10.0	49	10.0	1.1	9.2	1.5
	345	20	70	10.0	49	10.0	1.6	9.2	2.3
Olive NW	136	20	70	10.0	49	9.8	2.9	9.2	6.0
	170	20	70	10.0	49	9.6	4.1	9.1	11.6
	200	20	70	10.0	49	9.7	3.7	9.1	11.7



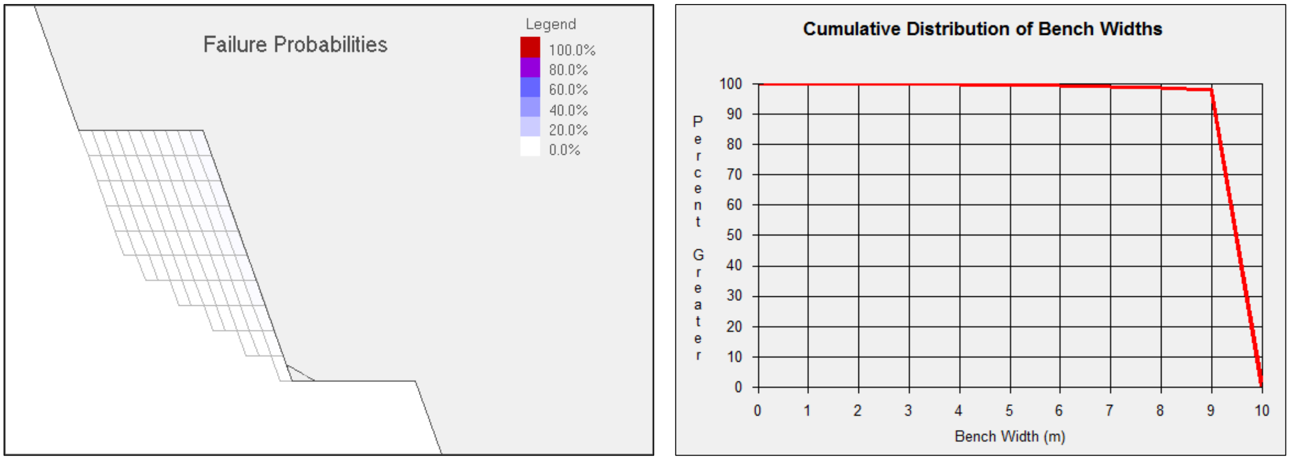
Maximun Failure Probabilities (%)	=	2.0	Cumulative Distribution of Bench Width >80%	=	9.2
Bench Face Height (m)	=	20	Average Effective Bench Width (m)	=	9.9
Design Bench Width (m)	=	10	Average Required Bench Width (m)	=	2.0
Bench Face Dip (°)	=	70			

Figure C2-1: Results of Sblock Analysis for Olive NW & Fol Domain and 105° Dip Direction.



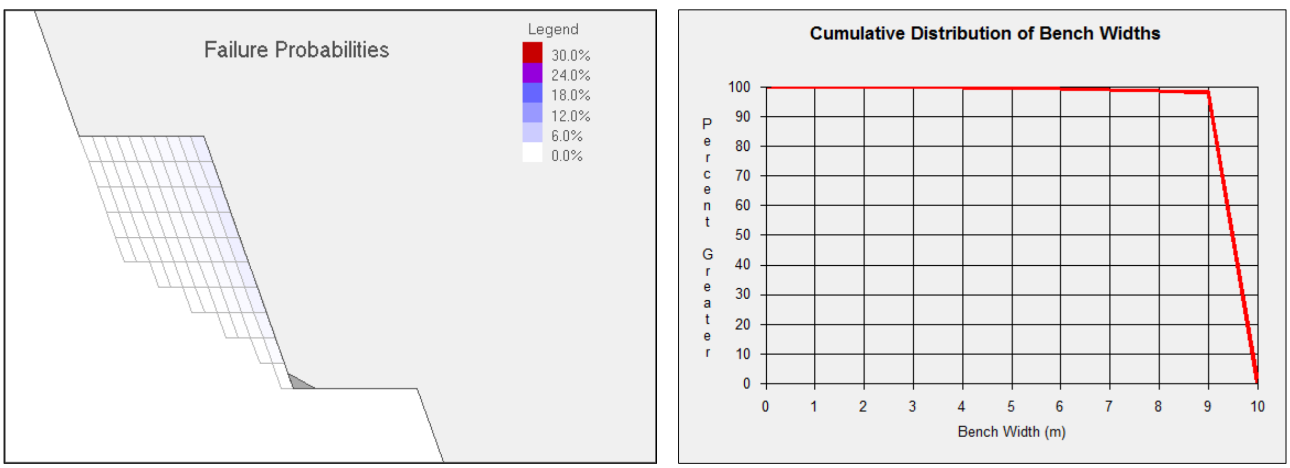
Maximun Failure Probabilities (%)	=	5.5	Cumulative Distribution of Bench Width >80%	=	9.2
Bench Face Height (m)	=	20	Average Effective Bench Width (m)	=	9.8
Design Bench Width (m)	=	10	Average Required Bench Width (m)	=	2.9
Bench Face Dip (°)	=	70			

Figure C2-2: Results of Sblock Analysis Olive NW & Fol Domain and 133° Dip Direction.



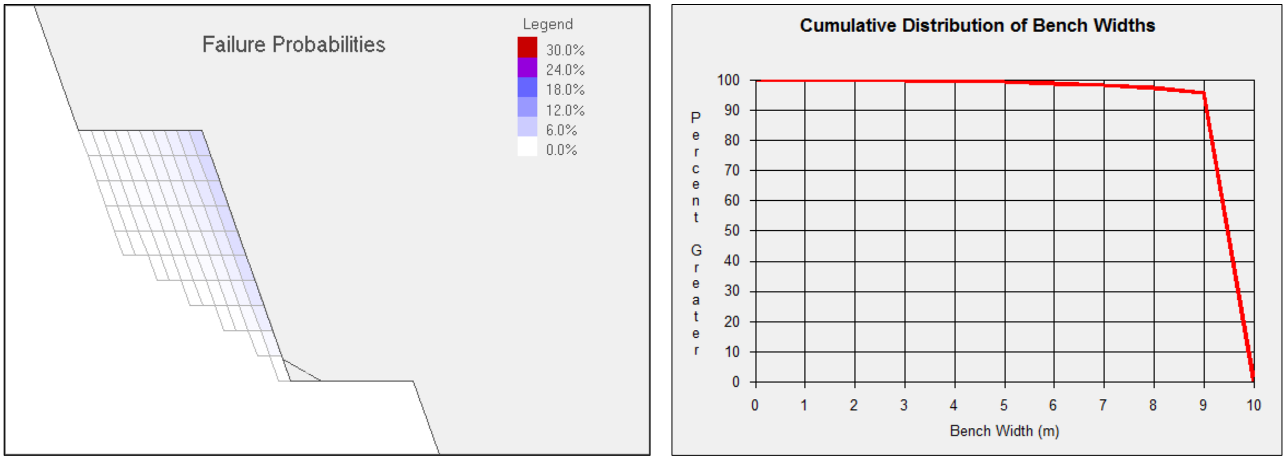
Maximun Failure Probabilities (%)	=	2.3	Cumulative Distribution of Bench Width >80%	=	9.2
Bench Face Height (m)	=	20	Average Effective Bench Width (m)	=	9.9
Design Bench Width (m)	=	10	Average Required Bench Width (m)	=	1.9
Bench Face Dip (°)	=	70			

Figure C2-3: Results of Sblock Analysis for Olive NW & Fol Domain and 180° Dip Direction.



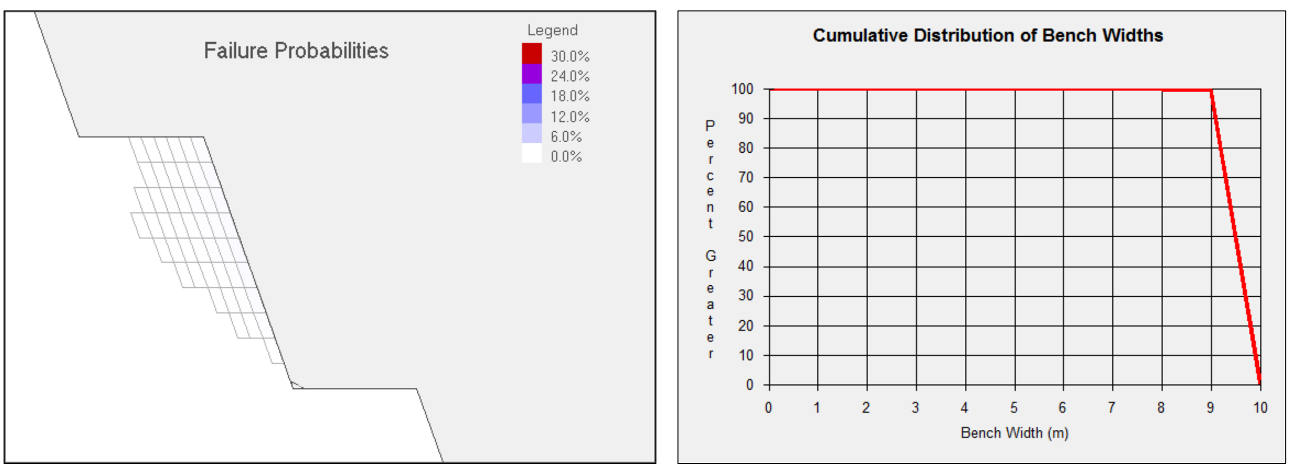
Maximun Failure Probabilities (%)	=	2.0	Cumulative Distribution of Bench Width >80%	=	9.2
Bench Face Height (m)	=	20	Average Effective Bench Width (m)	=	9.9
Design Bench Width (m)	=	10	Average Required Bench Width (m)	=	1.7
Bench Face Dip (°)	=	70			

Figure C2-4: Results of Sblock Analysis Olive SE Domain and 10° Dip Direction.



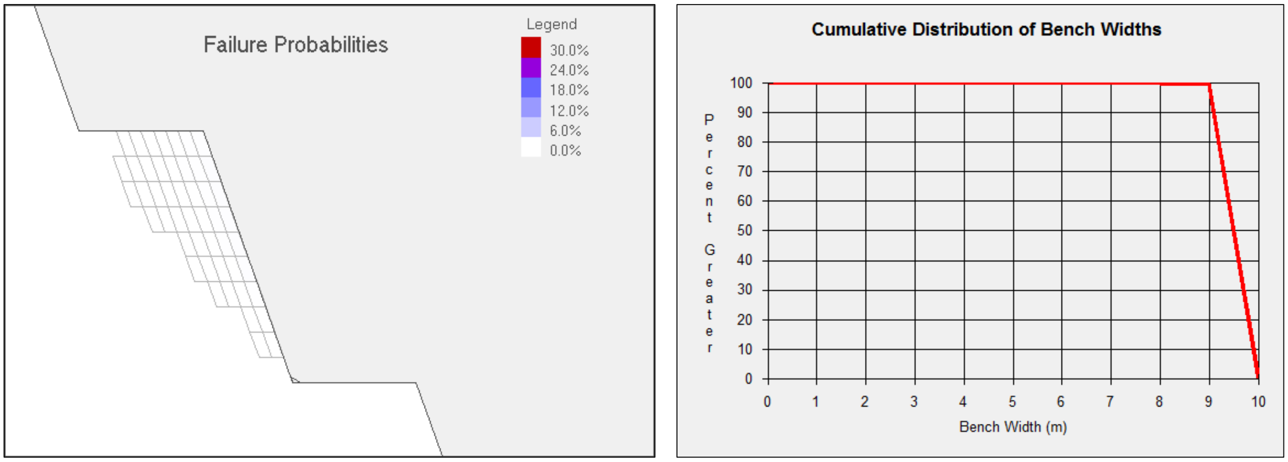
Maximun Failure Probabilities (%)	= 4.3		Cumulative Distribution of Bench Width >80%	=	9.2
Bench Face Height (m)	= 20		Average Effective Bench Width (m)	=	9.9
Design Bench Width (m)	= 10		Average Required Bench Width (m)	=	2.5
Bench Face Dip (°)	= 70				

Figure C2-5: Results of Sblock Analysis for Olive SE Domain and 55° Dip Direction.



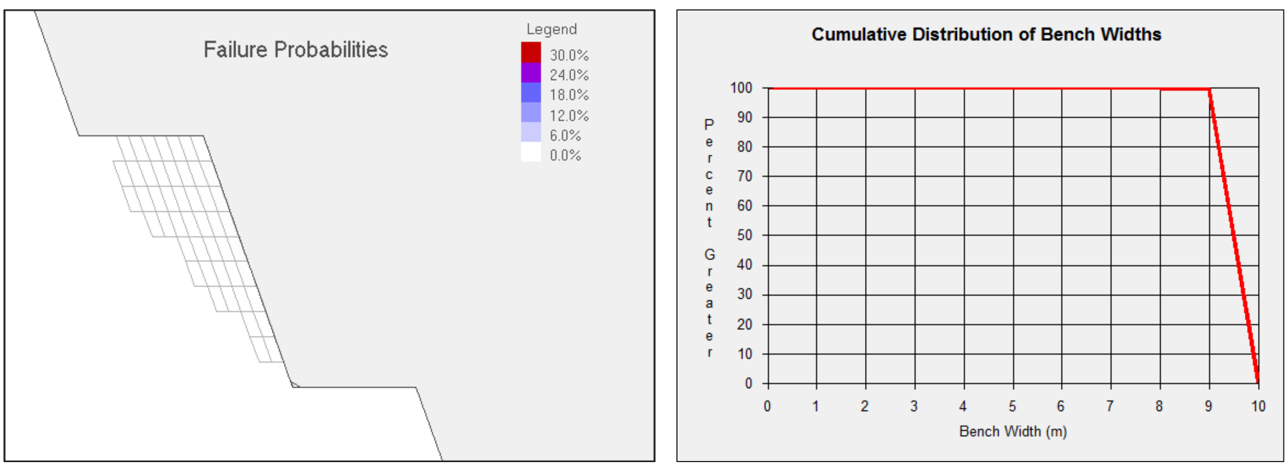
Maximun Failure Probabilities (%)	= 0.7		Cumulative Distribution of Bench Width >80%	=	9.2
Bench Face Height (m)	= 20		Average Effective Bench Width (m)	=	10
Design Bench Width (m)	= 10		Average Required Bench Width (m)	=	0.9
Bench Face Dip (°)	= 70				

Figure C2-6: Results of Sblock Analysis Olive SE Domain and 287° Dip Direction.



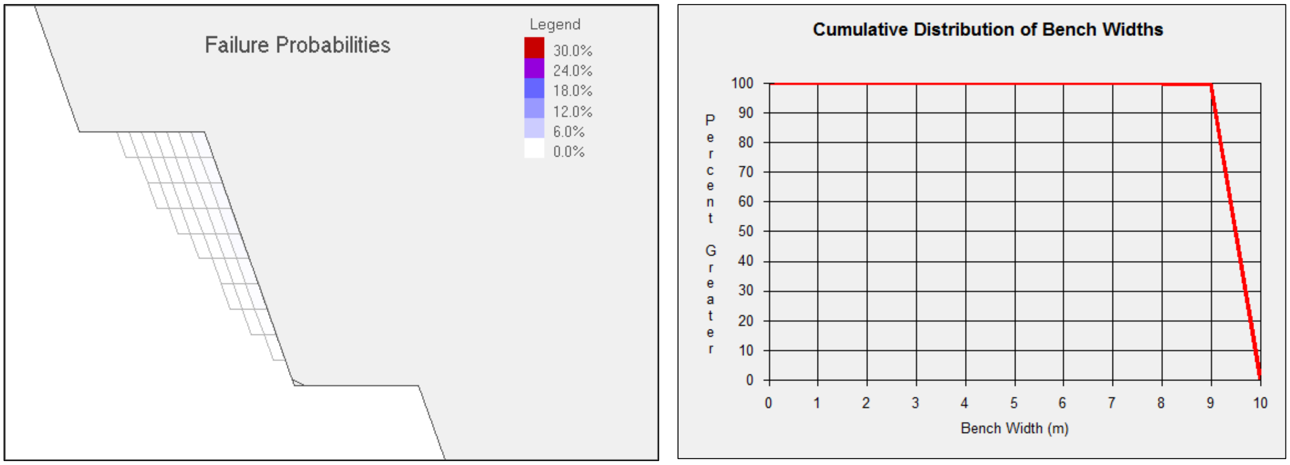
Maximun Failure Probabilities (%)	=	0.3	Cumulative Distribution of Bench Width >80%	=	9.2
Bench Face Height (m)	=	20	Average Effective Bench Width (m)	=	10
Design Bench Width (m)	=	10	Average Required Bench Width (m)	=	0.6
Bench Face Dip (°)	=	70			

Figure C2-7: Results of Sblock Analysis for Olive SE Domain and 300° Dip Direction.



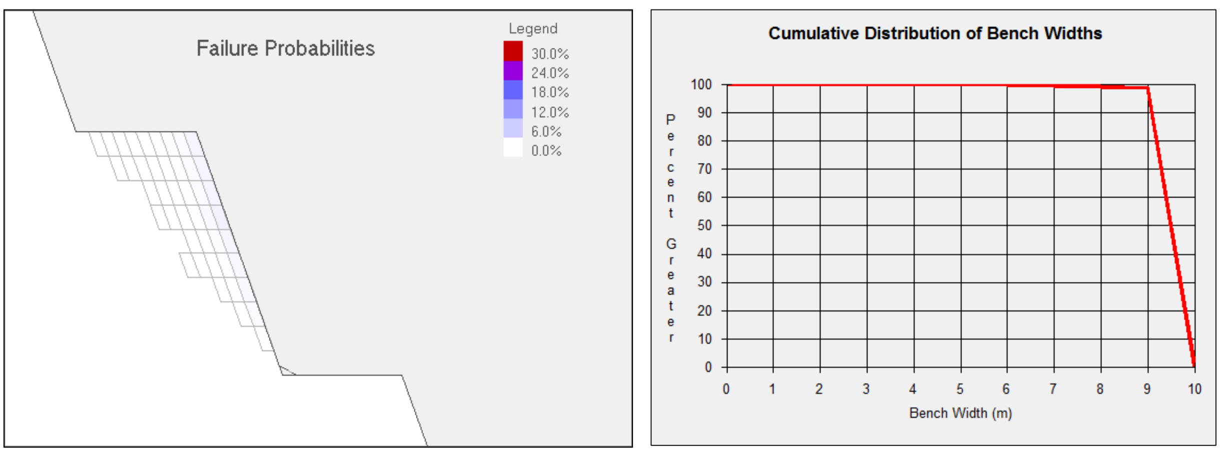
Maximun Failure Probabilities (%)	=	0.3	Cumulative Distribution of Bench Width >80%	=	9.2
Bench Face Height (m)	=	20	Average Effective Bench Width (m)	=	10
Design Bench Width (m)	=	10	Average Required Bench Width (m)	=	0.5
Bench Face Dip (°)	=	70			

Figure C2-8: Results of Sblock Analysis Olive SE Domain and 305° Dip Direction.



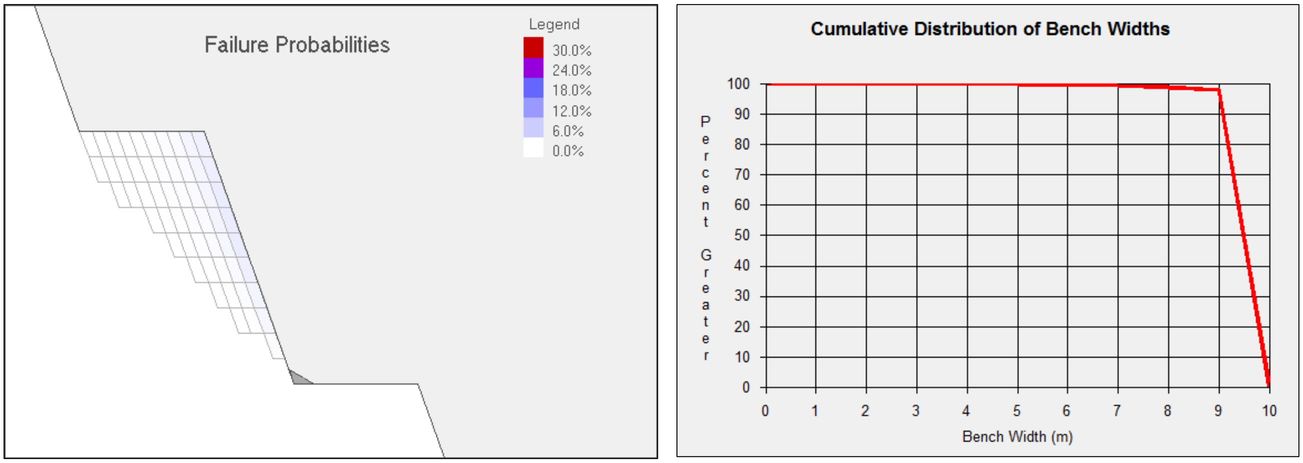
Maximun Failure Probabilities (%)	=	0.6	Cumulative Distribution of Bench Width >80%	=	9.2
Bench Face Height (m)	=	20	Average Effective Bench Width (m)	=	10
Design Bench Width (m)	=	10	Average Required Bench Width (m)	=	0.7
Bench Face Dip (°)	=	70			

Figure C2-9: Results of Sblock Analysis for Olive SE Domain and 320° Dip Direction.



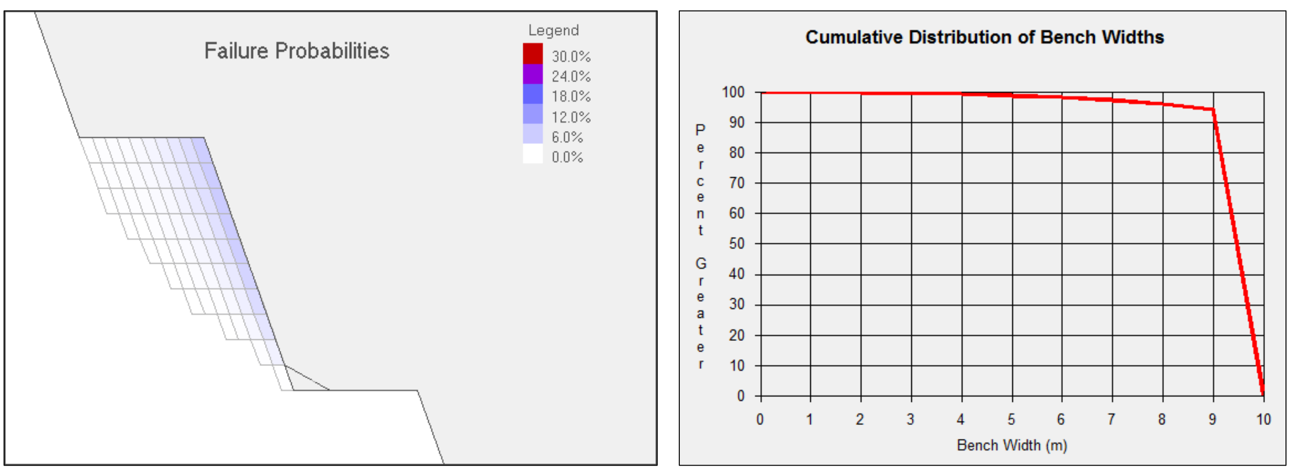
Maximun Failure Probabilities (%)	=	1.5	Cumulative Distribution of Bench Width >80%	=	9.2
Bench Face Height (m)	=	20	Average Effective Bench Width (m)	=	10
Design Bench Width (m)	=	10	Average Required Bench Width (m)	=	1.1
Bench Face Dip (°)	=	70			

Figure C2-10: Results of Sblock Analysis Olive SE Domain and 330° Dip Direction.



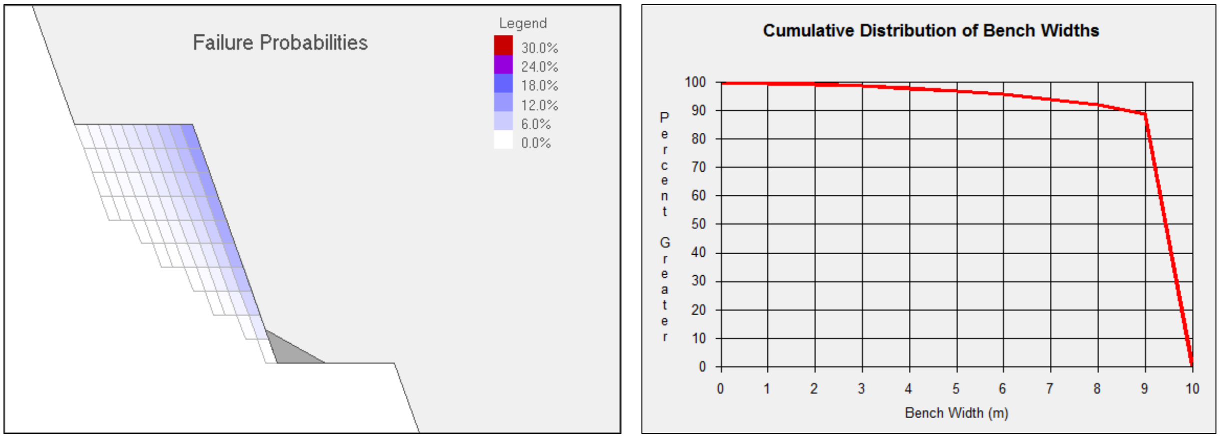
Maximun Failure Probabilities (%)	= 2.3		Cumulative Distribution of Bench Width >80%	=	9.2
Bench Face Height (m)	= 20		Average Effective Bench Width (m)	=	10
Design Bench Width (m)	= 10		Average Required Bench Width (m)	=	1.6
Bench Face Dip (°)	= 70				

Figure C2-11: Results of Sblock Analysis for Olive SE Domain and 345° Dip Direction.



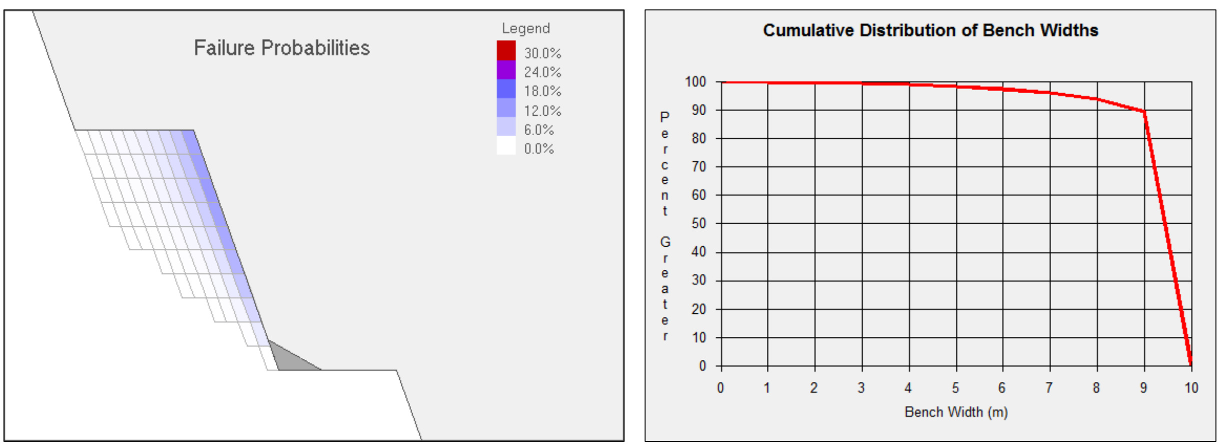
Maximun Failure Probabilities (%)	= 6.0		Cumulative Distribution of Bench Width >80%	=	9.2
Bench Face Height (m)	= 20		Average Effective Bench Width (m)	=	9.8
Design Bench Width (m)	= 10		Average Required Bench Width (m)	=	2.9
Bench Face Dip (°)	= 70				

Figure C2-12: Results of Sblock Analysis Olive NW Domain and 136° Dip Direction.



Maximun Failure Probabilities (%)	= 11.6		Cumulative Distribution of Bench Width >80%	=	9.1
Bench Face Height (m)	= 20		Average Effective Bench Width (m)	=	9.6
Design Bench Width (m)	= 10		Average Required Bench Width (m)	=	4.1
Bench Face Dip (°)	= 70				

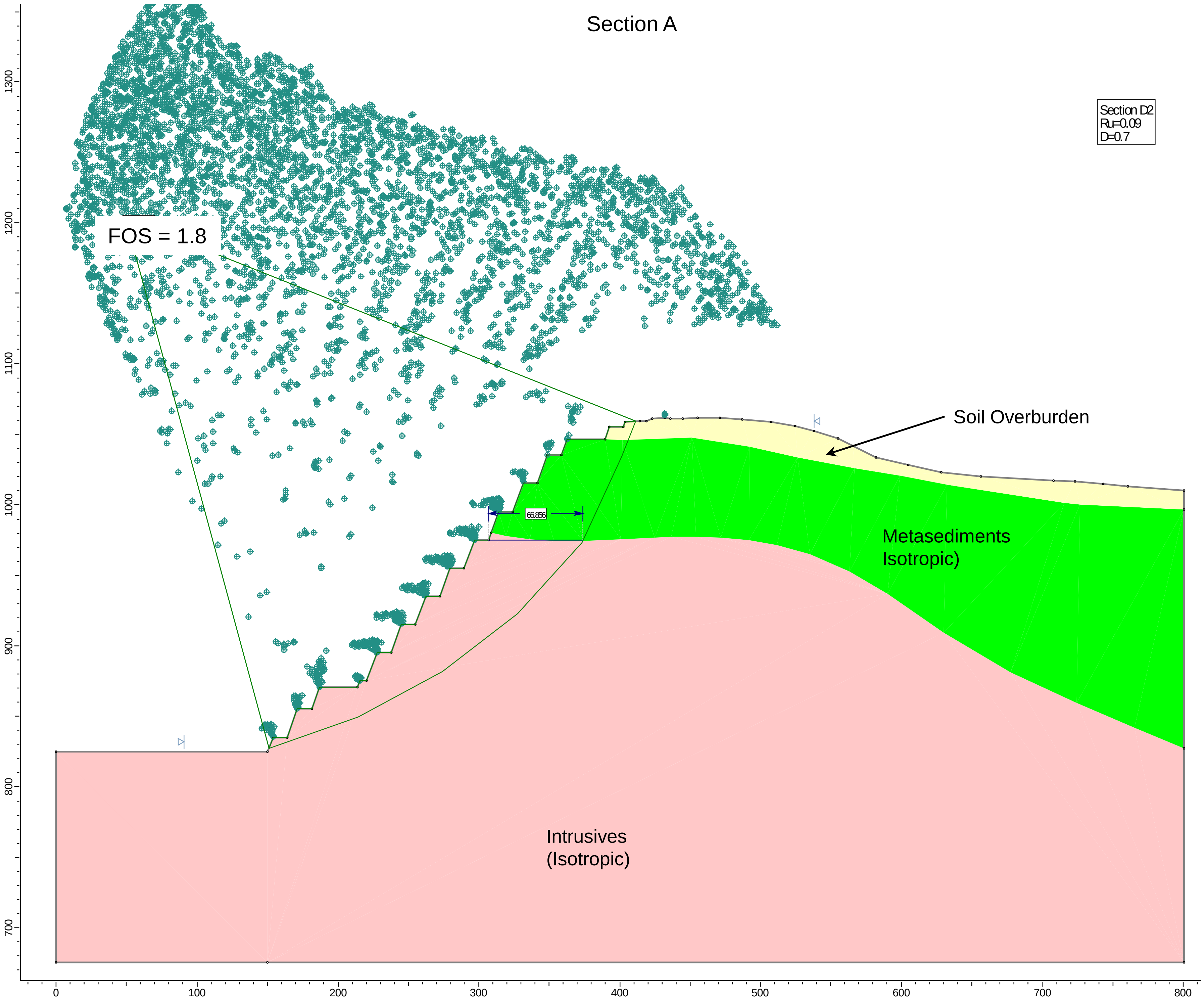
Figure C2-13: Results of Sblock Analysis for Olive NW Domain and 170° Dip Direction.

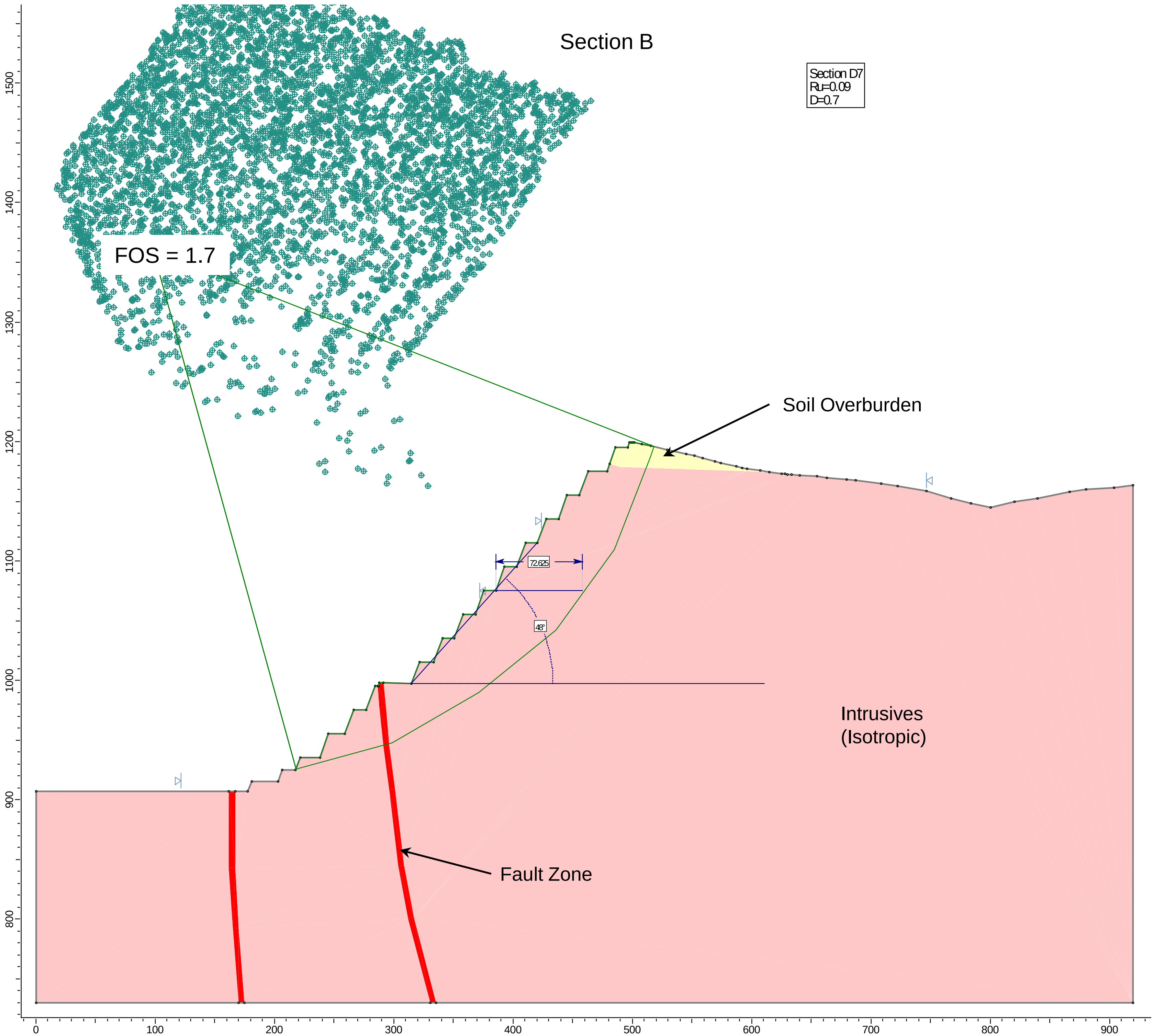


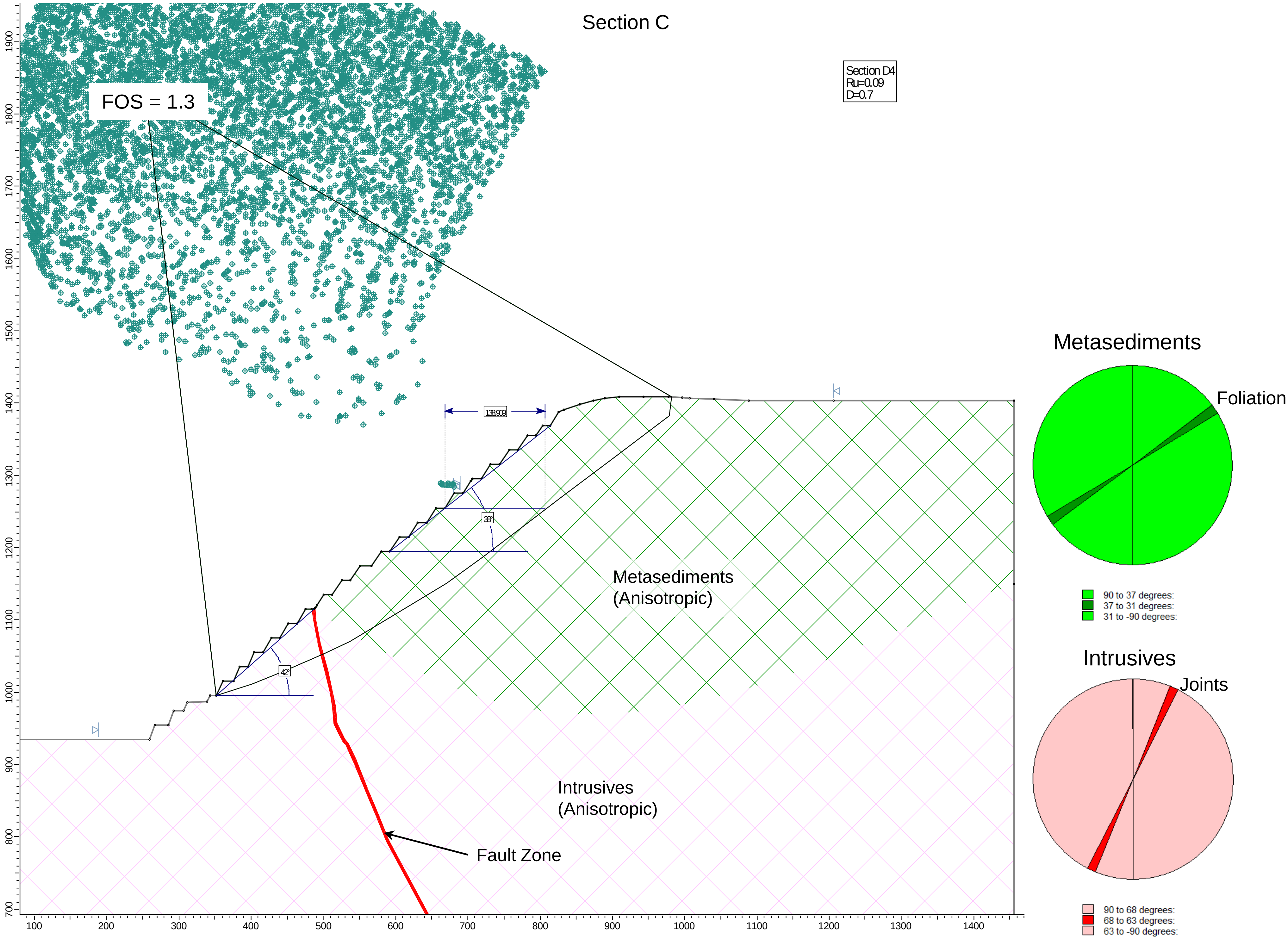
Maximun Failure Probabilities (%)	= 11.7		Cumulative Distribution of Bench Width >80%	=	9.1
Bench Face Height (m)	= 20		Average Effective Bench Width (m)	=	9.7
Design Bench Width (m)	= 10		Average Required Bench Width (m)	=	3.7
Bench Face Dip (°)	= 70				

Figure C2-14: Results of Sblock Analysis Olive NW Domain and 200° Dip Direction.

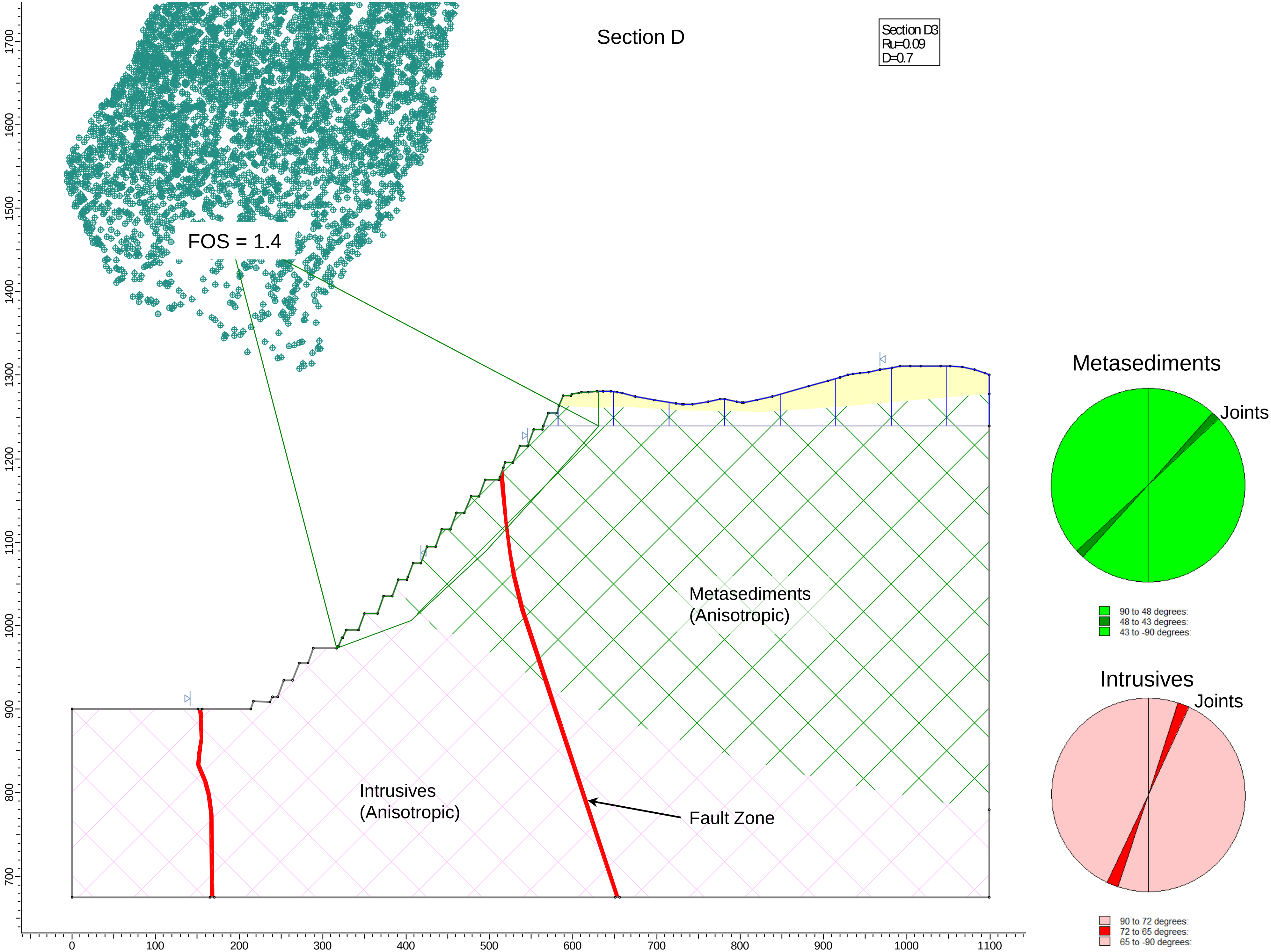
Appendix D: Interramp/Overall Analyses

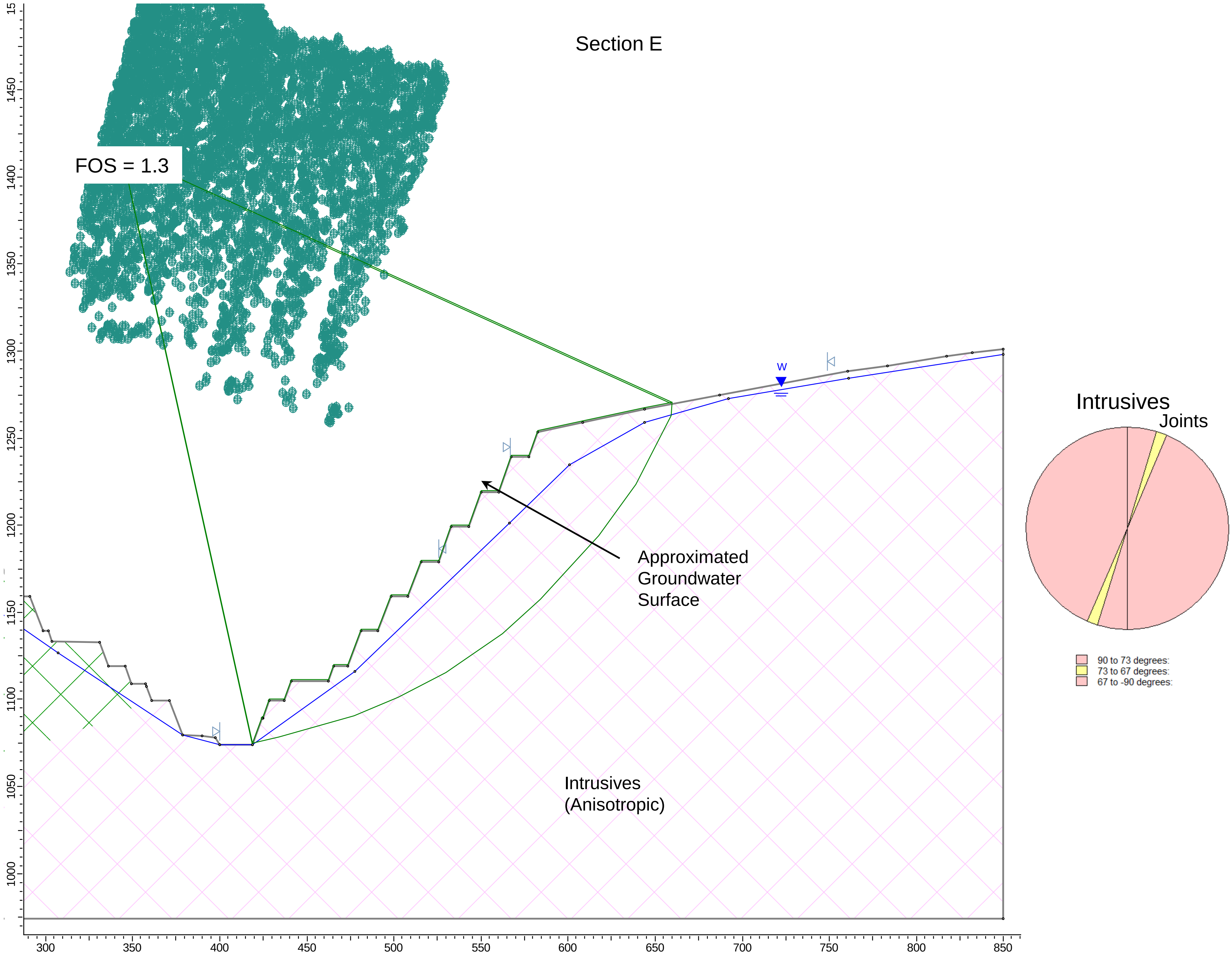

Section A
Section D2
Ru=0.09
D=0.7
FOS = 1.8
66.856
Soil Overburden
Metasediments
Isotropic)
Intrusives
(Isotropic)
1300
1200
1100
1000
900
800
700
0
100
200
300
400
500
600
700
800

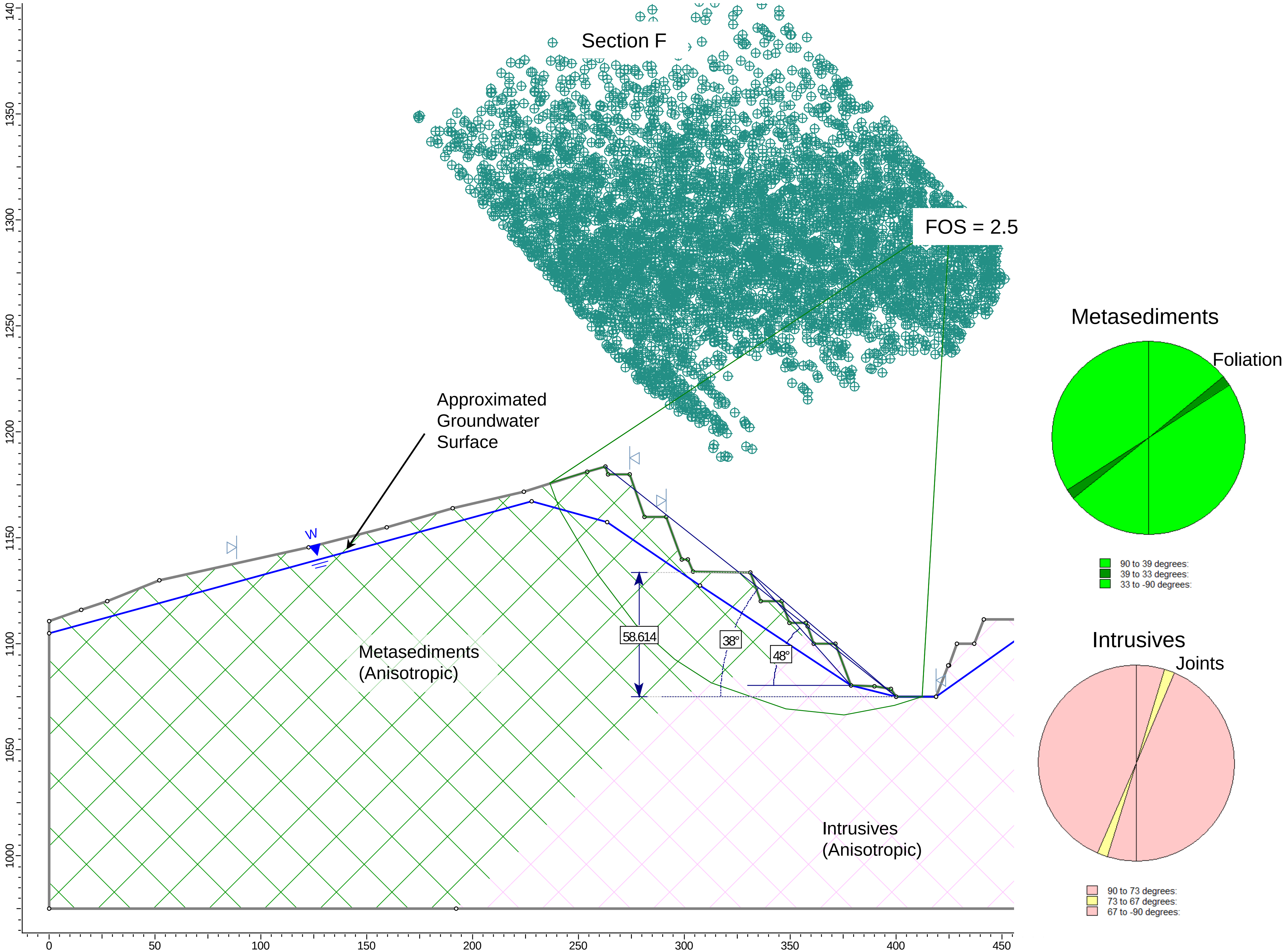

Section B
Section D7
Ru=0.09
D=0.7
FOS = 1.7
Soil Overburden
72.625
48°
Intrusives
(Isotropic)
Fault Zone
1500
1400
1300
1200
1100
1000
900
800
0
100
200
300
400
500
600
700
800
900



Section C
Section D4
Ru=0.09
D=0.7
FOS = 1.3
138.09
38°
42°
Metasediments
(Anisotropic)
Intrusives
(Anisotropic)
Fault Zone
Metasediments
Foliation
90 to 37 degrees:
37 to 31 degrees:
31 to -90 degrees:
Intrusives
Joints
90 to 68 degrees:
68 to 63 degrees:
63 to -90 degrees:


Section D
Section D3
Ru=0.09
D=0.7
FOS = 1.4
Metasediments
(Anisotropic)
Intrusives
(Anisotropic)
Fault Zone
1700
1600
1500
1400
1300
1200
1100
1000
900
800
700
0
100
200
300
400
500
600
700
800
900
1000
1100
Metasediments
Joints
90 to 48 degrees:
48 to 43 degrees:
43 to -90 degrees:
Intrusives
Joints
90 to 72 degrees:
72 to 65 degrees:
65 to -90 degrees:


Section E
FOS = 1.3
W
Approximated
Groundwater
Surface
Intrusives
(Anisotropic)
Intrusives
Joints
90 to 73 degrees:
73 to 67 degrees:
67 to -90 degrees:
1500
1450
1400
1350
1300
1250
1200
1150
1100
1050
1000
300
350
400
450
500
550
600
650
700
750
800
850


Section F
FOS = 2.5
Approximated
Groundwater
Surface
W
58.614
38°
48°
Metasediments
(Anisotropic)
Intrusives
(Anisotropic)
1400
1350
1300
1250
1200
1150
1100
1050
1000
0
50
100
150
200
250
300
350
400
450
Metasediments
Foliation
90 to 39 degrees:
39 to 33 degrees:
33 to -90 degrees:
Intrusives
Joints
90 to 73 degrees:
73 to 67 degrees:
67 to -90 degrees: