# CASINO MINING CORPORATION CASINO PROJECT



# 2013 GEOTECHNICAL SITE INVESTIGATION DATA REPORT MINE SITE

### **PREPARED FOR:**

Casino Mining Corporation 2050 - 1111 West Georgia St. Vancouver, BC, V6E 4M3

### **PREPARED BY:**

Knight Piésold Ltd. Suite 1400 – 750 West Pender Street Vancouver, BC V6C 2T8 Canada p. +1.604.685.0543 • f. +1.604.685.0147



VA101-325/16-1 Rev 0 January 24, 2014



# CASINO MINING CORPORATION CASINO PROJECT

# 2013 GEOTECHNICAL SITE INVESTIGATION DATA REPORT MINE SITE VA101-325/16-1

Rev	Description	Date	Approved
0	Issued in Final	January 24, 2014	KIB

# Knight Piésold Ltd.

Suite 1400 750 West Pender Street Vancouver, British Columbia Canada V6C 2T8 Telephone: (604) 685-0543 Facsimile: (604) 685-0147 www.knightpiesold.com





### EXECUTIVE SUMMARY

Knight Piésold Ltd. (KP) was retained by Casino Mining Corporation in 2013 to undertake geotechnical site investigations for the Casino Project. This data report presents the findings of the 2013 Geotechnical Site Investigation program at the Mine Site. KP also investigated the geotechnical conditions at the proposed Air Strip and Barge Landing sites in 2013, and conducted a hydrogeological investigation. The results of these investigations are reported in separate KP documents.

The primary focus of the 2013 Site Investigation in the Mine Site area was to determine the foundation conditions at the sites of the proposed ADR/SART facility, Crusher, Ore Stockpiles and Topsoil Stockpiles, and to delineate and characterize potential borrow sources for construction materials.

Fieldwork for the geotechnical site investigation program in the Mine Site area included:

- Excavation and logging of 83 test pits
- Drilling and logging of 9 geotechnical drillholes
- Installing standpipe piezometers in two drillholes (DH13-06 and DH13-07B)
- Installing solid PVC in one drillhole (DH13-05B) for future downhole geophysics testing
- One rising head hydraulic conductivity test
- Geophysics surveys along 11 lines
- Laboratory testing of 37 soil samples from test pits and drillholes, and
- Laboratory testing of 5 rock core samples from drillholes.

The sites of the proposed ADR/SART facility, Crusher, Ore Stockpiles and Topsoil Stockpiles are generally characterized by a topsoil layer of typically 0.3 m or less, comprising organic-rich sandy silt. Angular cobbles and boulders (blockfields) are found throughout the Ore Stockpile and Topsoil stockpile areas and are common at higher elevations including the sites of the proposed Topsoil Stockpile north of the Heap Leach Facility (HLF), the Low Grade Supergene Sulfide Ore Stockpile and the upslope part of the proposed Gold Ore Stockpile. The underlying soil is typically greyish brown colluvium overlying orange brown residual soil, although in several test pits only colluvium or residual soil was found. Alluvium was encountered near Casino Creek and near the unnamed drainage crossing the proposed Crusher Area.

The colluvium is typically less than 1 m thick and generally comprises loose silty sand with some angular gravel, cobbles and boulders, which at some locations is intermixed with organic material. The residual soil consists of loose to compact sand with varying amounts of silt and gravel and trace clay. The residual soil transitioned into highly weathered bedrock at depths up to 5 m. The highly weathered bedrock generally consists of extremely weak to very weak granodiorite, with meta-granodiorite or quartzite at some locations. The alluvium typically comprised subrounded cobbles, boulders and gravel, with some sand, and trace silt, but was locally less coarse, comprising red sands and gravels with some cobbles and trace silt. This horizon extended to a maximum depth of 4.3 m at the proposed Crusher Area.

Discontinuous zones of permafrost were recorded throughout the Mine Site area. Geotechnical logging of frozen overburden indicated that residual soils typically have lower excess ice contents than colluvium. Permafrost was prevalent at the site of the proposed Topsoil Stockpile to the north



of the HLF, the Low Grade Supergene Sulfide Ore Stockpile and the upslope part of the proposed Gold Ore Stockpile, where test pits were terminated at shallow depths in frozen colluvium. Permafrost is also widespread in the proposed Crusher area, but absent within close proximity (typically 5 m) of the drainage in this area. No frozen soils were encountered in the test pits and drillhole at the proposed ADR/SART facility, although the geophysics surveys identified zones of high resistivity, which may indicate permafrost. It is recommended that additional test pitting be undertaken in this area to investigate the possible presence of ice-rich permafrost. The soils at the proposed Topsoil Stockpile site to the south of the Tailings Management Facility (TMF) were generally well drained and dry to moist, except for an area at high elevation to the southeast of the TMF embankment where localized frozen soils were encountered with no visible excess ice.

The majority of the test pits did not encounter groundwater. A perched water table was observed directly below ground surface in several test pits with frozen soils. The static groundwater table was determined to be 8.2 m below ground surface in a standpipe piezometer installed at the proposed ADR/SART Facility. The rising head test conducted in this piezometer indicates a hydraulic conductivity of  $5 \times 10^{-6}$  cm/s in weathered bedrock. A small artesian flow of less than 1 l/min was observed from a standpipe piezometer installed at the proposed Crusher Area. Water was also witnessed flowing through a fault in an adjacent test pit.

Geotechnical logging of rock core was conducted on one drillhole at the proposed ADR/SART Facility site. Extremely weak, highly weathered granodiorite was encountered, extending to approximately 4 m below ground level. The underlying bedrock encountered is generally medium strong and moderately weathered, although a very weak, highly to completely weathered interval was encountered between 13.8 and 14.9 m depth.

Geotechnical logging of two drillholes at the site of the proposed Crusher revealed highly to moderately weathered, very weak to weak granodiorite from the base of the overburden to approximately 13 m depth. Slightly weathered, strong bedrock is predominant below this depth, with the exception of local zones of weathering caused by hydrothermal alteration and fault zones. The geophysics survey lines also identified possible fault zones and zones of hydrothermal alteration in the vicinity of the drillholes.

Residual, colluvial, and alluvial soils were investigated for use as earthworks construction materials. Test pits were completed in areas that had not been previously investigated, and drillholes and geophysics surveys were completed at potential borrow source locations where the depth to bedrock had not been established. Soil samples of potentially suitable materials have been subjected to index, compaction and permeability testing. Alluvial samples and fresh grandiorite rock samples were retrieved for specialized testwork to determine suitability for use as concrete aggregate. The locations and suitability of proposed borrow material sources are addressed in a separate report.



### TABLE OF CONTENTS

### PAGE

EXECUT	IVE SU	MMARY	1
TABLE (	OF CON	TENTS	i
1.1 1.2		ECT DESCRIPTION AND BACKGROUND E OF REPORT	
2 – PRE	VIOUS	SITE WORK	4
		ECHNICAL SITE INVESTIGATION PROGRAM	
3.1		RAL	
3.2		PITS	
3.3	DRILL	ING INVESTIGATIONS	9
	3.3.1	Geotechnical Drilling	9
	3.3.2	Geotechnical Logging	
	3.3.3	Rock Mass Classification	
3.4	HYDR	12	
	3.4.1	Standpipe Piezometer and PVC Pipe Installation	12
	3.4.2	Hydraulic Conductivity Testing	
3.5	GEOP	HYSICS SURVEYS	13
3.6	LABO	RATORY TESTING	13
	3.6.1	Soil Testing	13
	3.6.2	Rock Testing	16
4 – GEO	TECHN	ICAL CONDITIONS	
4.1		RAL	
4.2		HER AREA	
	4.2.1	Overburden	
	4.2.2	Weathered Bedrock	
	4.2.3	Slightly Weathered Bedrock	
	4.2.4	Permafrost	
	4.2.5	Hydrogeological Conditions	
4.3		SART FACILITY	
	4.3.1	Overburden	
	4.3.2	Weathered Bedrock	
	4.3.3	Permafrost	
	4.3.4	Hydrogeological Conditions	
4.4		STOCKPILE AREAS	
	4.4.1	Overburden	
	4.4.2	Bedrock	
	4.4.3	Permafrost	
2013 GEO	TECHNIC	AL SITE i of iii	VA101-325/16-1 Rev 0



		Hydrogeological Conditions	
4.5	TOPS	OIL STOCKPILE AREAS	
	4.5.1	Overburden	22
	4.5.2	Bedrock	22
	4.5.3	Permafrost	23
		Hydrogeological Conditions	
4.6	POTE	NTIAL BORROW SOURCE AREAS	23
5 – SUM	IMARY		26
6 – REFI	ERENCE	ES	
7 – CER	TIFICAT	-ION	

### TABLES

Table 1.1	Project Components and Site Investigation Documentation	.1
Table 3.1	Test Pit Summary	.7
Table 3.2	Geotechnical/Hydrogeological Drillhole Summary	10
Table 3.3	Laboratory Soil Test Results Summary	15
Table 3.4	Unconfined Compressive Strength Laboratory Test Results	16

### FIGURES

Figure 1.1	Project Location Map
rigule I.I	



### APPENDICES

Appendix A Reference Figures
Appendix B Test Pit Logs
Appendix B1 Test Pit Logs
Appendix B2 Previous Test Pit Logs
Appendix C Geotechnical Drillhole Data
Appendix C1 Geotechnical Drillhole Logs
Appendix C2 Geotechnical Drillhole Logging Data Sheets
Appendix C3 Previous Geotechnical Drillhole Logs
Appendix D Hydrogeological Drillhole Data
Appendix D1 Installation Completion Details
Appendix D2 Rising Head Hydraulic Conductivity Test Sheet
Appendix E Geophysical Investigations
Appendix F Laboratory Test Results
Appendix F1 Laboratory Soil Test Results
Appendix F2 Laboratory Rock Test Results
Appendix G Photographs
Appendix G1 Test Pit Photographs
Appendix G2 Drill Site Photographs
Appendix G3 Drill Core Photographs
Appendix G4 Drill Soil Sample Photographs



### 1 – INTRODUCTION

### 1.1 PROJECT DESCRIPTION AND BACKGROUND

Casino Mining Corporation (CMC) is currently developing the Casino Project, a proposed coppergold-molybdenum mine. The project is located in the Dawson Range Mountains of the Klondike Plateau approximately 300 km northwest of Whitehorse, Yukon Territory, Canada, as shown on Figure 1.1. This region is unique as it was not glaciated during the Wisconsin Advance. The layout of the project site is shown on Figure A.1 in Appendix A.

Knight Piésold Ltd. (KP) has been commissioned to provide geotechnical and hydrogeological support for the project. The current report presents the results of the 2013 geotechnical site investigations at the proposed Mine Site. KP also investigated the geotechnical conditions at the proposed Air Strip and Barge Landing in 2013, and conducted a hydrogeological investigation. The primary objective of the 2013 site investigations was to obtain geotechnical information to support detailed design.

### 1.2 SCOPE OF REPORT

The results and findings of the KP 2013 geotechnical site investigations are reported in several documents, each dedicated to particular project components. This facilitates the design works and leads to more concise reports. The project components and corresponding documents are summarised in Table 1.1.

Project component	KP document name	Reference
Mine Site, including:	This report:	VA101-325/16-1
Crusher Area	2013 Geotechnical Site Investigation Data	
ADR/SART Facility	Report – Mine Site	
Ore Stockpiles		
Topsoil Stockpiles, and		
Potential Borrow Source Areas		
Airstrip	Letter: The Casino Project - Findings of the	Cont. No.
	2013 Site Investigation for the proposed Air	VA13-02110
	Strip	
Barge Landing	Letter: The Casino Project - Findings of the	Cont. No.
	2013 Site Investigation for the proposed Barge	VA13-02120
	Landing Facility on the Yukon River	

Table 1.1	Project Components and Site Investigation Documentation
-----------	---

### NOTES:

1. ADR/SART = Adsorption Desorption and Recovery/Sulphidization Acidification Recycle and Thickening

The findings of the site investigation at the proposed ADR/SART facility and Crusher Area have also been summarized in the following letter: The Casino Project - Factual Report on the findings of the 2013 Site Investigation for the proposed Crusher and ADR/SART Facility (Cont. No. VA13-02144).

An evaluation of borrow sources and quantities will be presented in the Mine Site Borrow Materials Assessment report (Ref. No. VA101-325/16-3).

This report expands on previous geotechnical information collected by KP for the project between 1993 and 2012. Details of the previous investigations are available in the following KP reports:

- Report on Preliminary Surficial Geotechnical Investigations (Ref. No. 1831/1, March 1994).
- Data Compilation Report on 1994 Geotechnical and Hydrogeotechnical Investigations (Ref. No. 1832/2, February 1995).
- KP report "2010 Geotechnical Site Investigation Data Report" (Ref. No. VA101-325/3-4, November 2010).
- KP report "2011 Geotechnical Site Investigation Data Report Plant Site" (Ref. No. VA101-325/8-4, December 2012).
- KP report "2011 Geotechnical Site Investigation Data Report Waste Management Facilities" (Ref. No. VA101-325/8-5, December 2012).
- KP report "2011 Geomechanical Site Investigation Data Report Open Pit" (Ref. No. VA101-325/8-6, December 2012).
- KP report "2012 Geotechnical Site Investigation Data Report" (Ref. No. VA101-325/8-14, December 2012).

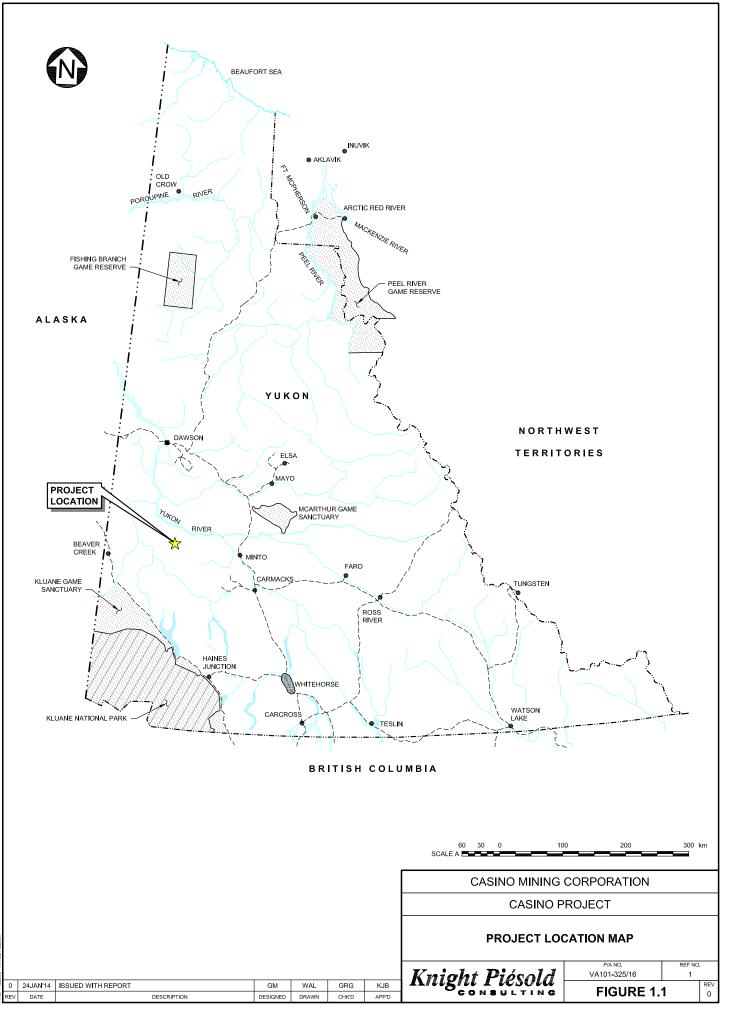
Details on hydrogeological information collected by AECOM between 2008 and 2010 are available in the AECOM report "Casino Project – Hydrogeological Technical Report – DRAFT" (Ref. No. 60146995-9, March 2011). A hydrogeological investigation has been conducted by KP in June 2013 and is documented in the KP report "2013 Hydrogeological Site Investigation Data Report" (Ref. No. VA101-325/17-1).

The 2013 geotechnical site investigation was undertaken to develop the understanding of ground conditions at the site, including permafrost conditions. The primary focus of the 2013 site investigations in the Mine Site area was to determine foundation conditions at the proposed ADR/SART facility, Crusher Area, Ore Stockpiles and Topsoil Stockpiles, and to delineate and characterize potential borrow sources for construction materials.

The 2013 geotechnical site investigation program for the Mine Site area included:

- Excavation and logging of test pits
- Drilling and logging of geotechnical drillholes
- Standpipe piezometer installation
- Installation of a solid PVC pipe for future downhole geophysics testing
- Hydraulic conductivity testing (rising head response testing)
- Electrical resistivity and induced polarization geophysics surveys, and
- Laboratory testing of select soil and rock samples from test pits and drillholes.

All geophysics survey data was processed and interpreted by Kryotek Arctic Innovation Inc. (Kryotek).



SAVED: M/1101100325116/MAcadiFIGSIA01\_0, 1/24/2014 1:05:46 PM , PPETKOVIC PRINTED: 1/24/2014 1:07:03 PM, A01, PPETKOVIC XBEFILIER: MAAFEILIER:



### 2 – PREVIOUS SITE WORK

Previous geotechnical site investigation programs were conducted in the project area in 1993 and 1994, and between 2010 and 2012. Geotechnical investigations completed by KP at the Mine Site include the following:

- A total of 122 geotechnical trenches were completed in 1993 in the Mine Site Area. 16 of the test trenches were undertaken near the proposed Ore Stockpile and Topsoil Stockpile areas. Exposed surficial materials were described and characterized, and representative samples selected for laboratory testing. Laboratory testwork was carried out on site by KP and included particle size analyses, natural moisture contents, Atterberg limits (plasticity), compaction tests and permeability tests. The results of the investigations are included in KP report "Report on Preliminary Surficial Geotechnical Investigations" (Ref. No. 1831/1, March, 1994).
- 24 geotechnical drillholes were completed in the Mine Site Area in 1994. Groundwater monitoring wells were installed in 15 of these drillholes, and thermistors installed in six other holes. In situ packer, falling head permeability tests, and shut-in pressure tests were conducted within the drillholes. The investigation program also included the excavation of 119 test pits for visual inspection and characterization of surficial materials. Six of the test pits and two drillholes were undertaken near the proposed Ore Stockpile areas. Three of the test pits were undertaken near the proposed Crusher area. Representative test pit samples were collected for laboratory testing. Laboratory testwork included particle size analyses, natural moisture contents, Atterberg limits and compaction tests. The results of the investigations are included in KP report "Data Compilation Report on 1994 Geotechnical and Hydrogeotechnical Investigations" (Ref. No. 1832/2, February 22, 1995).
- The 2010 site investigation program included nine geotechnical drillholes in the Mine Site Area. In situ packer and falling head permeability tests were conducted within the drillholes and piezometers. A test pit investigation was performed at the proposed Tailings Management Facility (TMF) embankment area and the proposed Plant Site (40 test pits) to determine the suitability, availability, and quantity of potential embankment construction materials, and foundation conditions. Three of these test pits were located close to a proposed Topsoil Stockpile location. Representative test pit samples were collected for laboratory test work. The soil samples were subjected to particle size analyses and natural moisture content, Atterberg limit, specific gravity, flexible wall permeability, triaxial shear and compaction tests. Additionally, AECOM conducted hydrogeological investigations, including installation of mini piezometer MP-02 downstream of the proposed TMF and a water level logger in drillhole 94-352 at the Heap Leach Facility (HLF) area. The results of the investigations performed by KP are included in the report "2010 Geotechnical Site Investigation Data Report" (Ref. No. VA101-325/3-4, November 2, 2010). The hydrogeological investigations by AECOM are summarized in the report "Casino Project - Hydrogeological Technical Report - DRAFT" (Ref. No. 60146995-9, March 2011).
- A total of 20 geotechnical drillholes were completed in the Mine Site Area in 2011. Standpipe piezometers were installed in twelve of these drillholes, and thermistors installed in two other holes. Solid 2-inch PVC pipe was installed in two drillholes, followed by downhole geophysics surveys. In situ packer and falling head permeability tests were conducted within the drillholes, as well as Standard Penetration Tests (SPT). A total of 177 test pits were excavated for visual inspection and characterization of surficial materials, of which two were undertaken near a



proposed Topsoil Stockpile site, eight in the proposed Ore Stockpile areas, and one was located in the proposed Crusher area. Laboratory testing on representative soil samples included particle size analyses, natural moisture content, organic content, Atterberg limits, specific gravity, flexible wall permeability, and compaction tests. Geophysical investigations comprised seismic refraction surveys along eight sections, Ground Penetrating Radar (GPR) surveys along five sections, and an EM31 conductivity survey along one section. The results of the investigations are included in KP report "2011 Geotechnical Site Investigation Data Report – Waste Management Facilities" (Ref. No. VA101-325/8-5, December, 2012), KP report "2011 Geotechnical Site Investigation Data Report – Plant Site" (Ref. No. VA101-325/8-4, December, 2012), and KP report "2011 Geomechanical Site Investigation Data Report – Open Pit" (Ref. No. VA101-325/8-6, December, 2012).

The 2012 site investigation included excavation and logging of 76 test pits and five geotechnical drillholes. Thermistors were installed in three of these drillholes, and a standpipe piezometer was installed in one drillhole. Five test pits were completed near a proposed Topsoil Stockpile site, 22 were carried out near the proposed Ore Stockpile sites, and one was undertaken in the proposed Crusher Area. Laboratory testing on representative soil samples included particle size analyses, natural moisture content, organic content, Atterberg limits, soluble salts, specific gravity, flexible wall permeability, and compaction tests. The results of the investigations are included in KP report "2012 Geotechnical Site Investigation Data Report" (Ref. No. VA101-325/8-14, December, 2012).

The locations of test pits, drillholes and geophysical surveys performed during previous geotechnical site investigation programs are shown on Figure A.2 in Appendix A. Test pit logs from previous investigations in the proposed Crusher Area, ADR/SART facility, Topsoil Stockpile and Ore Stockpile areas are presented in Appendix B2. Drillhole logs from previous site investigations in these areas are included in Appendix C3.



### 3 – 2013 GEOTECHNICAL SITE INVESTIGATION PROGRAM

### 3.1 GENERAL

Fieldwork for the geotechnical site investigation program in the Mine Site area was carried out during August and early September 2013, and included:

- Excavation and logging of 83 test pits
- Drilling and logging of 9 geotechnical drillholes
- Standpipe piezometer installation in DH13-06 and DH13-07B
- Installation of solid PVC pipe in DH13-05B for future downhole geophysics testing
- One rising head hydraulic conductivity test
- Geophysics surveys along 11 lines
- Laboratory testing of 37 soil samples from test pits and drillholes, and
- Laboratory testing of 5 rock core samples from drillholes.

The drillhole, test pit and geophysical survey locations were selected by KP based on the locations of the proposed ADR/SART facility, Crusher Area, Ore Stockpiles, Topsoil Stockpiles, and potential borrow sources, to provide a better understanding of the geotechnical and hydrogeological characteristics of the subsurface.

### 3.2 TEST PITS

A total of 83 test pits were excavated at the Mine Site using a CAT 322C excavator. The coordinates and elevations of the test pit locations were measured using a hand-held GPS (Garmin GPSmap 62s). Test pit depths ranged from 0.4 to 6.0 m and were generally terminated due to near surface bedrock, pit instability or frozen ground conditions. The test pit sites were accessed using prepared trails, and care was taken to minimize environmental disturbance. Wherever possible, the surface organic material and vegetation was stripped prior to excavating the test pit and stockpiled separately. The exposed soils in the pit walls and spoil piles were logged for geotechnical characteristics and select samples were collected and sealed in heavy duty plastic sample bags for laboratory testing. All of the test pits were backfilled and the surface was re-contoured upon completion. Wherever possible, the final activity at each site involved the replacement of the surface material and vegetation to recreate, as much as possible, the pre-investigation conditions.

A summary of the test pits, including their locations and depths, is presented in Table 3.1. The locations of the test pits are shown on Figure A.3 in Appendix A. Detailed logs of each test pit are presented in Appendix B and photographs of the test pit investigations are shown in Appendix G1.



### **TABLE 3.1**

### CASINO MINING CORPORATION CASINO PROJECT

### 2013 GEOTECHNICAL SITE INVESTIGATION DATA REPORT - MINE SITE TEST PIT SUMMARY

Coordinates Test Pit Depth Test Pit Area Northing Easting Elevation (masl) Date **Reason for Terminating Test Pit** (m) (m) (m) TP13-01 6,966,280 616,067 578 Barge Landing Access Road 7-Aug-13 4.5 Existing exposure TP13-02 West of Plant Site 6.956.337 611.425 1.122 7-Aug-13 2.0 Existing exposure TP13-03 West of Plant Site 6.956.325 611.309 1,131 7-Aug-13 6.0 Existing exposure TP13-04 West of Plant Site 6.956.528 611.372 1.160 4.0 8-Aug-13 Existing exposure TP13-05 West of Plant Site 6.956.667 611,455 1,182 8-Aug-13 6.0 Existing exposure TP13-06 Northeast of Open Pit 6,959,657 612,259 1,302 8-Aug-13 3.1 Bedrock TP13-07 6.959.600 612,500 1.292 2.5 Northeast of Open Pit 8-Aug-13 Bedrock and instability TP13-08 Northeast of Open Pit 6,959,375 612,357 1,271 8-Aug-13 2.0 Bedrock TP13-09 972 Tailing Management Facility 6,954,985 611,864 1.9 Permafrost and cobbles 9-Aug-13 TP13-10 Tailing Management Facility 6.954.649 611.926 929 9-Aug-13 1.8 Bedrock and permafrost TP13-11 Tailing Management Facility 612,100 935 6,954,197 9-Aug-13 1.8 Bedrock TP13-12 611,986 10-Aug-13 Tailing Management Facility 6,953,876 830 6.0 Bedrock TP13-13 Tailing Management Facility 6.953.842 612.413 775 10-Aug-13 1.8 Permafrost TP13-14 Tailing Management Facility 6.953.188 612.254 746 10-Aug-13 5.0 Excavator reach and instability TP13-15 South of Tailing Management Facility 611.286 739 6.952.189 10-Aug-13 1.8 Bedrock Excavator reach TP13-16 South of Tailing Management Facility 6.952.161 611,319 732 10-Aug-13 6.0 TP13-17 South of Tailing Management Facility 6.951.712 611.062 709 11-Aug-13 5.0 Bedrock TP13-18 610.887 Confluence of Brynelson and Casino Ck 6.951.232 700 11-Aug-13 0.4 Permafrost TP13-19 Confluence of Brynelson and Casino Ck 6,951,171 610,876 693 11-Aug-13 4.0 Instability TP13-20 Topsoil Stockpile South of TMF 6,951,200 612,790 947 1.9 11-Aug-13 Bedrock TP13-21 Topsoil Stockpile South of TMF 6.950.993 612,701 943 11-Aug-13 1.6 Bedrock TP13-22 Topsoil Stockpile South of TMF 612,491 939 6,950,803 11-Aug-13 1.0 Bedrock TP13-23 Topsoil Stockpile South of TMF 6,950,690 612,360 943 11-Aug-13 1.5 Bedrock TP13-24 Topsoil Stockpile South of TMF 6.951.680 612,190 935 11-Aug-13 1.5 Bedrock TP13-25 Southeast of TMF Main Embankment 6.952.020 613.939 1.069 12-Aug-13 1.3 Bedrock TP13-26 Southeast of TMF Main Embankment 1.069 1.5 6.951.899 614,104 12-Aug-13 Bedrock TP13-27 Southeast of TMF Main Embankment 6.951.588 614,172 1,021 12-Aug-13 3.0 Bedrock TP13-28 Southeast of TMF Main Embankment 6.951.286 614.190 983 13-Aug-13 2.0 Bedrock TP13-29 Southeast of TMF Main Embankment 6.951.017 614.248 972 13-Aug-13 1.2 Bedrock TP13-30 Southeast of TMF Main Embankment 6,951,154 614,236 978 13-Aug-13 1.9 Bedrock TP13-31 Southeast of TMF Main Embankment 6,951,806 614,238 1,057 13-Aug-13 3.0 Bedrock TP13-32 Southeast of TMF Main Embankment 6.952.180 614.372 1.125 13-Aug-13 2.3 Bedrock TP13-33 Southeast of TMF Main Embankment 6,952,083 614,540 1,105 13-Aug-13 2.6 Permafrost TP13-34 Southeast of TMF Main Embankment 6.952.173 614.097 1.106 13-Aug-13 1.9 Permafrost TP13-35 Northeast of TMF Main Embankment 6.953.390 613,992 1,111 14-Aug-13 2.0 Bedrock TP13-36 Northeast of TMF Main Embankment 6.953.374 613.798 1,087 14-Aug-13 3.0 Bedrock TP13-37 Northeast of TMF Main Embankment 613.502 1.059 6.953.500 14-Aug-13 2.4 Permafrost TP13-38 Northeast of TMF Main Embankment 6.953.361 613,271 1,014 14-Aug-13 2.0 Bedrock TP13-39 Southeast of Gold Ore Stockpile 6.956.447 614.905 1.162 15-Aug-13 2.2 Bedrock TP13-40 6.956.312 614,714 Southeast of Gold Ore Stockpile 1.137 15-Aug-13 1.1 Permafrost TP13-41 Southeast of Gold Ore Stockpile 614,821 1,118 4.5 Excavator reach 6,956,178 15-Aug-13 TP13-42 Southeast of Gold Ore Stockpile 6,956,247 614,920 1,138 3.0 15-Aug-13 Bedrock Southeast of Gold Ore Stockpile TP13-43 6,956,105 614,915 1,111 15-Aug-13 2.3 Bedrock TP13-44 Southeast of Gold Ore Stockpile 614,576 6.956.227 1.117 15-Aug-13 2.2 Bedrock TP13-45 Southeast of Gold Ore Stockpile 6.956.333 614.423 1.115 15-Aug-13 0.9 Permafrost TP13-46 Southeast of Gold Ore Stockpile 6.956.242 614.312 1,090 16-Aug-13 3.0 Bedrock TP13-47 Gold Ore Stockpile 6.957.821 613.363 1.043 16-Aug-13 4.0 Instability

Print Jan/24/14 10:09:16



### **TABLE 3.1 (CONTINUED)**

### CASINO MINING CORPORATION CASINO PROJECT

### 2013 GEOTECHNICAL SITE INVESTIGATION DATA REPORT - MINE SITE TEST PIT SUMMARY

Print Jan/24/14 10:09:16 Coordinates Test Pit Depth Test Pit Area Northing Easting Elevation (masl) Date **Reason for Terminating Test Pit** (m) (m) (m) TP13-48 Gold Ore Stockpile 6.957.889 613.461 1.059 16-Aug-13 3.4 Bedrock and permafrost TP13-49 Gold Ore Stockpile 6,957,993 613,586 1,079 16-Aug-13 4.5 Bedrock 1,151 2.8 TP13-50 Gold Ore Stockpile 6.958.239 613.580 16-Aug-13 Permafrost TP13-51 Gold Ore Stocknile 6 958 180 613 026 1 1 4 5 16-Aug-13 0.5 Permafrost TP13-52 Supergene Oxide/Low Grade Hyp. Ore Stockpile 6,956,648 612,223 1,180 17-Aug-13 0.7 Permafrost TP13-53 612.344 1.155 Supergene Oxide/Low Grade Hvp. Ore Stockpile 6.956.589 17-Aug-13 0.8 Permafrost TP13-54 Supergene Oxide/Low Grade Hyp. Ore Stockpile 6,956,387 612,324 1,144 17-Aug-13 0.6 Permafrost TP13-55 Supergene Oxide/Low Grade Hyp. Ore Stockpile 6,955,892 612,178 1,135 17-Aug-13 0.9 Permafrost TP13-56 6.955.609 611.841 Low Grade Supergene Oxide Ore Stockpile 1.083 17-Aug-13 1.6 Bedrock TP13-57 Low Grade Supergene Oxide Ore Stockpile 6,956,168 611,805 1,153 17-Aug-13 1.7 Bedrock TP13-58 Low Grade Supergene Sulfide Ore Stockpile 6,957,219 611,396 1,230 18-Aug-13 1.2 Permafrost TP13-59 Low Grade Supergene Sulfide Ore Stockpile 6.957.601 611.378 1.229 18-Aua-13 0.5 Permafrost TP13-60 611,364 1,225 0.7 Permafrost Marginal Grade Ore Stockpile 6,957,805 18-Aug-13 1,275 0.7 TP13-61 Low Grade Supergene Sulfide Ore Stockpile 6.957.768 611.094 18-Aua-13 Permafrost TP13-62 Northeast of Open Pit 6 959 303 611 818 1 255 23-Aug-13 0.9 Permafrost TP13-63 6,958,941 611,593 Northeast of Open Pit 1,209 23-Aug-13 2.7 Bedrock TP13-64 Northeast of Open Pit 6.959.162 611.447 1.252 23-Aug-13 1.2 Permafrost TP13-65 Northeast of Open Pit 6 959 300 611.591 1 269 23-Aug-13 3.0 Bedrock TP13-66 Northeast of Open Pit 6,959,220 611,204 1,265 23-Aug-13 0.9 Permafrost TP13-67 Northeast of Open Pit 6.959.030 611.245 1.232 23-Aug-13 0.8 Permafrost TP13-68 Topsoil Stockpile North of HLF 6,957,539 610,038 1,411 26-Aug-13 Bedrock 1.6 TP13-69 Topsoil Stockpile North of HLF 6,957,506 609,754 1,401 26-Aug-13 1.5 Bedrock TP13-70 609.793 1.406 Topsoil Stockpile North of HLF 6 957 228 26-Aua-13 2.5 Permafrost TP13-71 609,672 1,416 Topsoil Stockpile North of HLF 6,957,255 26-Aug-13 1.4 Permafrost TP13-72 Heap Leach Facility 6,957,024 609,737 1,390 2.5 Permafrost 26-Aug-13 TP13-73 Heap Leach Facility 6 956 809 609 684 1 369 26-Aua-13 18 Permafrost TP13-74 610,001 1,370 Heap Leach Facility 6,957,032 26-Aug-13 4.0 Bedrock 610.005 TP13-75 Topsoil Stockpile North of HLF 6.957.327 1.410 26-Aua-13 2.0 Bedrock TP13-81 ADR/SART Facility 6.955.164 610.796 1.032 2-Sep-13 25 Bedrock TP13-82 ADR/SART Facility 6,955,179 610,802 1,043 2-Sep-13 3.4 Bedrock TP13-83 Plant Site - Blasted Rock 6.956.486 611.907 2-Sep-13 Existing blasting site 1.188 N/A TP13-84 Barge Landing Access Road - Blasted Rock 6.961.400 612.888 1.068 2-Sep-13 N/A Existing blasting site TP13-85 Crusher Area 6,958,357 612,082 1,085 3-Sep-13 3.5 Instability TP13-86 6 958 341 612 060 Crusher Area 1 093 3-Sep-13 28 Permafrost TP13-87 Crusher Area 6,958,365 612,154 1,089 2.0 3-Sep-13 Instability TP13-88 Crusher Area 6,958,350 612,178 1,089 3-Sep-13 3.5 Bedrock and instability

\\VAN11\Prj\_file\1\01\00325\16\A\Report\1 - 2013 Geotech SI Report - Mine Site\Rev 0\Tables\{Table 3.1- Test Pit Summary\_rev 0.xlsx}]Table 3.1

NOTE:

1. UTM NAD 83 ZONE 7 Coordinates, measured using hand-held GPS.

 0
 24JAN'14
 ISSUED WITH REPORT VA101-325/16-1
 SB
 JEH
 KJB

 REV
 DATE
 DESCRIPTION
 PREPD
 CHK'D
 APPD



### 3.3 DRILLING INVESTIGATIONS

### 3.3.1 Geotechnical Drilling

A total of nine geotechnical drillholes were completed as part of the site investigation at the Mine Site. The holes were drilled under the supervision of KP field personnel. All drillholes were surveyed by Yukon Engineering Services to determine the drill site coordinates and elevations, except for drillhole DH13-12 which was located using a hand-held GPS (Garmin GPSmap 62s).

A heli-portable SDC150 sonic drillrig from Kryotek Arctic Innovation Inc. (Kryotek) was used to produce HQ-sized core samples. The sonic drilling technique has the benefit of not requiring a drilling fluid to flush out the cuttings. This results in minimal thermal disturbance of frozen soils, enhanced sample recovery, and no loss of 'fines' during overburden drilling. The drillrig was equipped with a Terex Halco Dominator 350 downhole hammer and diamond drill coring set-up to advance through cobbles, boulders and bedrock.

Drillholes DH13-08 through DH13-12 were drilled in potential borrow source areas at the proposed Open Pit Area and Gold Ore Stockpile to determine the overburden thickness. The drilling was conducted using the sonic drilling method until bedrock was encountered. The downhole hammer was used in DH13-09 and DH13-09B to confirm that bedrock was reached.

Drillholes DH13-05 and DH13-06 were drilled in the proposed Crusher area, and Drillhole DH13-07 was drilled at the proposed ADR/SART site, to assess the foundation conditions in these areas. Drillholes DH13-05 and DH13-07 were undertaken with the SDC 150 sonic rig until large cobbles were encountered, which the rig was unable to penetrate. The rotary core set-up could not generate sufficient torque and rotation to advance through the cobbles, boulders and bedrock effectively. The holes were re-drilled with a KD1000 drillrig of Kluane Drilling Ltd. (Kluane) as drillholes DH13-05B and DH13-07B, respectively. The Kluane rig was also used for Drillhole DH13-06. This rig advanced through overburden and rock using HTW-sized diamond drill coring. All three diamond coring drillholes were extended to a target depth of 40 m, using water as the drilling fluid.

Slotted standpipe piezometers were installed in drillholes DH13-06 and DH13-07B, upon completion, as detailed in Appendix D1. A rising head test was conducted in the standpipe piezometer installation in drillhole DH13-07B in order to determine the hydraulic conductivity of the bedrock. The result of the rising head test is presented in Appendix D2. Heat traced 2-inch solid PVC pipe was installed to the base of drillhole DH13-05B to facilitate future downhole seismic testing (proposed to be undertaken in 2014).

The soil and rock encountered in the drillholes were logged in the field. Information was also collected on the drilling conditions and hydrogeological characteristics, such as water levels and permafrost conditions.

A summary of the 2013 geotechnical drillhole locations, size, depth, installations, and hydraulic conductivity test results is presented in Table 3.2. The locations of the drillholes are shown on Figure A.3 in Appendix A.

The 2013 geotechnical drillhole logging data is presented in Appendix C. Photographs of the drill sites and core are shown in Appendices G2 and G3, respectively.

#### TABLE 3.2

#### CASINO MINING CORPORATION CASINO PROJECT

#### 2013 GEOTECHNICAL SITE INVESTIGATION DATA REPORT - MINE SITE GEOTECHNICAL/HYDROGEOLOGICAL DRILLHOLE SUMMARY

			С	oordinates <sup>1</sup>	l, 2			Depth to Highly					Piezomet	er Information			Print Jan/24/14 10:13:06
Drillhole ID	Rig	Location of Drillhole	Northing	Easting	Elevation	Hole Size	Total Depth <sup>3</sup>	Weathered Bedrock	Installation Type	Completio	n Zone (m)	Piezometer Diameter	Final Stickup Height	Static Water Level	Date of Static Water Level	Hydraulic Conductivity (Rising Head)	Notes (artesian conditions, fault zones, zones with circulation loss, etc.)
			(m)	(m)	(m)	Nominal	(m)	(m)		From	То	(inch)	(m)	(mbgs)	Measurement	(cm/s)	with chicalation 1033, etc.)
DH13-05	Kryotek	Propopsed Crusher Area	6,958,360	612,088	1,080	HQ Sonic	4.1	N/A	-	-	-	-	-	-	-	-	Permafrost is locally not present due to proximity to drainage. Heat trace installed
DH13-05B	Kluane	Propopsed Crusher Area	6,958,360	612,088	1,080	HTW Diamond	39.6	4.3	Solid 2-inch PVC	-	-	-	-	-	-	-	in the 2-inch solid PVC for future downhole geophysics testing.
DH13-06	Kluane	Propopsed Crusher Area	6,958,351	612,168	1,079	HTW Diamond	41.2	4.2	Piezometer	26.6	33.0	1	0.05	Artesian	1-Sep-13	-	Water slowly flowing from top of PVC pipe (artesian), less than 1 L/min.
DH13-07	Kryotek	Propopsed ADR/SART Facility	6,955,169	610,805	1,031	HQ Sonic	1.2	N/A	-	-	-	-	-	-	-	-	Refusal on cobble.
DH13-07B	Kluane	Propopsed ADR/SART Facility	6,955,169	610,805	1,031	HTW Diamond	39.6	1.1	Piezometer	9.9	15.8	1	0.25	8.20	3-Sep-13	5 x 10 <sup>-6</sup>	No permafrost observed.
DH13-08	Kryotek	Potential Borrow Area at Mine Site	6,957,812	613,239	1,057	HQ Sonic	4.5	4.3	-	-	-	-	-	Dry	5-Aug-13	-	Water level taken 30 min. after drilling completed, in open hole.
DH13-09	Kryotek	Potential Borrow Area at Mine Site	6,958,040	612,942	1,118	HQ Sonic / Downhole Hammer	4.4	1.5	-	-	-	-	-	3.80	4-Aug-13	-	Water level taken 15 min. after drilling completed, in open hole.
DH13-9B	Kryotek	Potential Borrow Area at Mine Site	6,958,073	612,915	1,122	HQ Sonic / Downhole Hammer	4.2	N/A	-	-	-	-	-	0.00	4-Aug-13	-	Water level taken 15 min. after drilling completed, in open hole. Depth to bedrock could not be established as fine grained material plugged up sonic corebarrel and downhole hammer.
DH13-10	Kryotek	Potential Borrow Area at Mine Site	6,958,715	611,615	1,170	HQ Sonic	7.5	7.3	-	-	-	-	-	4.80	2-Aug-13	-	Water level taken 30 min. after drilling completed, in open hole.
DH13-11	Kryotek	Potential Borrow Area at Mine Site	6,958,163	611,423	1,181	HQ Sonic	9.0	8.9	-	-	-	-	-	8.00	3-Aug-13	-	Water level taken 60 min. after drilling completed, in open hole. Difficult to measure due to clayey material on drillhole wall.
DH13-12	Kryotek	Potential Borrow Area at Mine Site	6,957,954	613,449	1,072	HQ Sonic	3.8	1.5	-	-	-	-	-	Dry	5-Aug-13	-	Water level taken 15 min. after drilling completed, in open hole.

\\VAN11\Prj\_file\1\01\00325\16\A\Report\1 - 2013 Geotech SI Report - Mine Site\Rev 0\Tables\[Table 3.2 - 2013 Drillhole Summary Rev 0.xisx]Table 3.2

#### NOTES:

1. UTM NAD 83 ZONE 7 coordinates.

2. Drillhole coordinates and elevations provided by Yukon Engineering Services, September 2013, except for DH13-12 which is measured using Garmin handheld GPS.

3. All depth measurements are taken with respect to ground surface level.

4. All drillholes are vertical.

0 24JAN14 ISSUED WITH REPORT VA101-325/16-1 SB JEH KJB REV DATE DESCRIPTION PREPD CHK'D APP'D



### 3.3.2 Geotechnical Logging

Geotechnical logging of the drill core was conducted to assess the soil characteristics and rock mass quality. The depth interval and core recovery was determined for each run.

The soils were described based on the following characteristics:

- Soil type based on particle size
- Particle shape
- Plasticity
- Colour and odour
- Soil fabric and structure
- Compactness (for cohesionless soils) or consistency (for fine grained soils)
- Moisture content or excess volumetric ice content
- Description of ice and soil phase for frozen soils, and
- The inferred soil unit.

The following information was routinely collected for rock core:

- Rock quality designation (RQD)
- Lithological description
- Rock material weathering
- Estimate of unconfined compressive strength (UCS)
- Number of discontinuities, and
- Discontinuity/joint condition (roughness, aperture, alteration, infilling, etc.).

### 3.3.3 Rock Mass Classification

The Rock Mass Rating (RMR) system, developed by Bieniawski (1989), was used to classify the rock conditions. RMR is frequently employed in geotechnical engineering to describe general rock mass conditions and identify zones of weakness where further investigation may be required. The RMR scheme comprises five major rock mass classes:

- VERY GOOD rock. RMR: 81 100
- GOOD rock. RMR: 61 80
- FAIR rock. RMR: 41 60
- POOR rock. RMR: 21 40, and
- VERY POOR rock. RMR <20.

The RMR system is based on determining values for the following five key rock mass parameters:

- Intact rock hardness and UCS The rock hardness and intact rock strength was estimated in the field.
- Rock Quality Designation (RQD) The RQD value was determined for each core run by summing up the lengths of all core pieces greater than 10 cm long and presenting this as a percentage of the drill run length.
- Discontinuity spacing An estimate of fracture spacing was determined by counting the number of natural fractures encountered per length of drill run.
- Discontinuity condition The fracture condition is based on an evaluation of fracture persistence, roughness, infilling, aperture and weathering. The persistence has been conservatively

assumed to have an RMR rating of 0, consistent with high persistence. The roughness, infilling, aperture and weathering were evaluated by examining the drill core.

Groundwater condition - A constant groundwater rating of 15, which corresponds to dry conditions, was used to calculate the RMR. This allows the RMR values to be consistent with geological strength index (GSI) values (Hoek et al, 1995) that can be used to estimate rock mass strengths at the Casino Project.

The geotechnical drillhole logs included in Appendix C1 contain soil descriptions and summarize the key properties and geology of the rock. Detailed geotechnical drillhole logging data sheets contain additional information regarding the specific rock core characteristics and are included in Appendix C2.

### 3.4 HYDROGEOLOGICAL INVESTIGATIONS

### 3.4.1 Standpipe Piezometer and PVC Pipe Installation

Standpipe piezometers (1" diameter) were installed in drillholes DH13-06 and DH13-07B after drilling was completed. The standpipe piezometer installation procedure involved selecting the completion zone and installing a Van Ruth plug to provide a base for the installation, approximately 3 m below the well screen. A bottom bentonite seal, approximately 2 m thick, was placed immediately above the bottom plug. A 1 m thick layer of coarse filter sand was placed above the bottom bentonite seal to isolate the well screen from the lower bentonite seal. The bottom end cap of the slotted PVC screen and PVC riser pipe assembly were placed upon the coarse filter sand layer. A sufficient volume of filter sand was then poured down the drillhole to fully encompass the screened section plus at least 1 m of riser pipe above the screened interval. A bentonite seal was constructed on top of the filter sand to form the top of the completion zone. The open annulus above the bentonite seal was backfilled with bentonite chips or grout. Material depths were monitored by continuous depth measurements, using a weighted tape. The standpipe piezometers were completed by installing PVC top caps and a properly seated steel protective monument over the exposed pipes. The Van Ruth plug was omitted in DH13-06, where the PVC was installed to the bottom of the drillhole.

The completion zones aimed to target high permeability zones in bedrock as identified by geotechnical logging. The static depths to groundwater and permafrost conditions were also taken into consideration to make sure that the completion zone was installed below the observed water table.

Heat traced 2-inch solid PVC pipe was installed in drillhole DH13-05B at the proposed Crusher area, to facilitate future downhole seismic testing. After lowering the 2-inch solid PVC pipe with bottom end cap to the bottom of the drillhole, the annular space was backfilled with a grout mixture. A heat trace was inserted in the PVC to allow for thawing any ice that may build up over time. The installation was completed by installing a properly seated steel protective monument over the exposed pipes.

A summary of the geotechnical drillhole and piezometer information is provided in Table 3.2. Installation completion details are included in Appendix D1.



### 3.4.2 Hydraulic Conductivity Testing

One rising head response test was conducted in the standpipe piezometer installed in DH13-07B. Response testing was not undertaken in the standpipe piezometer of Drillhole DH13-06 due to artesian conditions at this location. The rising head response test is performed by inserting a slug into the piezometer below the water level. The slug displaces the water and increases the water level instantaneously, followed by a gradual drop of the water level. The slug is left in place until the water level has stabilized. The slug is then removed to lower the piezometric head. Measurements of the water level are taken at regular time intervals as the water level returns to its original condition.

The results were analyzed using the Hvorslev (1951) method to calculate the hydraulic conductivity of the rock mass. The result of the rising head response test is included in Table 3.2 and the test calculation sheet is presented in Appendix D2.

### 3.5 GEOPHYSICS SURVEYS

Geophysics surveys were carried out by Kryotek between August 1 and August 13, 2013 as part of the site investigation program in the Mine Site area. The geophysics surveys were conducted to provide information on the permafrost conditions and the distribution and thickness of subsurface layers. The surveys comprised electrical resistivity and induced polarization measurements using a Lippmann 4-point Resistivity System, followed by data processing and interpretation. A total of 11 survey lines were completed: G13-01 through G13-05 at potential borrow areas, G13-13 through G13-16 at the proposed Crusher area, and G13-22 and G13-23 at the proposed ADR/SART Facility site.

The locations of the survey lines are shown on Figure A.3 in Appendix A. Detailed descriptions and results of the geophysical investigations are included in Appendix E.

### 3.6 LABORATORY TESTING

### 3.6.1 Soil Testing

A total of 25 representative test pit samples and 11 drillhole samples were selected for geotechnical laboratory soil testing. The test pit samples were sent for analysis at the Knight Piésold and Co. geotechnical soils laboratory in Denver, Colorado. The drillhole samples were tested at the Kryotek Laboratory in Whitehorse, Yukon.

All of the soil samples were analysed for the following tests:

- Natural Moisture Content (ASTM D2216)
- Particle Size Distribution (ASTM D422), and
- Hydrometer Analysis (ASTM D422).

A select number of samples were also analyzed for the following tests:

- Atterberg Limits (ASTM D4318)
- Specific Gravity (ASTM D854)
- Organic (Ash) Content (D2974 Method C)
- Standard Proctor Compaction (ASTM D698), and
- Permeability, Flexible Wall Permeameter (ASTM D5084).

The volumetric excess ice content was determined for sample DH13-11 FC-1. This undisturbed frozen soil sample was allowed to thaw and settle in a cylinder. The volumetric excess ice content was determined as the ratio of the volume of supernatant water to the total volume of water and soil.

Flexible wall permeability tests were conducted on four samples. Sample TP13-28 BU-1, TP13-41 BU-1 and TP13-48 BU-1 were tested at 400 and 800 kPa confining pressures after compacting to 95% Standard Proctor maximum dry density (MDD). Sample TP13-43 BU-1 was tested at 400, 800 and 1600 kPa confining pressures after compacting to 95% MDD.

Samples from TP13-01, TP13-14 and TP13-84 were sent to the Levelton Consultants laboratory in Richmond, B.C, for concrete aggregate suitability testing as per Canadian Standard Association (CSA) standard A23.1/2-09. Details and test results are reported in the Mine Site Borrow Materials Assessment report (Ref. No. VA101-325/16-3).

Sixteen test pit samples were selected for geochemical characterization by Lorax Environmental Services Ltd. and sent for analysis at SGS Canada Inc. in Burnaby, B.C.

The laboratory test results are summarized in Table 3.3 and detailed testing data are included in Appendix F1. Photographs of soil samples from the drillholes are presented in Appendix G4.



#### TABLE 3.3

#### **CASINO MINING CORPORATION CASINO PROJECT**

#### 2013 GEOTECHNICAL SITE INVESTIGATION DATA REPORT - MINE SITE LABORATORY SOIL TEST RESULTS SUMMARY

		De	epth	Natural	Organic	At	terberg Li	mits					Particle	Size Distrib	oution					Soil	Permeability	Compactio Pro		d	
Sample ID	Area	From (m)	To (m)	Moisture Content (%)	Content (%)	ш	PL	PI	% Cobbles		% Grave	1		% \$	Sand			% Fines		Specific Gravity (-)	Flexible Wall (cm/s)	Max. Dry Density	Optimum Moisture Content	Soil Type	Material Description
			. ,						+3"	Coarse	Fine	Total	Coarse	Medium		Total	Silt	Clay	Total			(t/m <sup>3</sup> )	(%)		
DH13-05 BU-1	Crusher Area	3.40	3.50	14.3			-	-	20.6	22.6	31.6	54.2	7.7	12.4	3.7	23.8		.5	1.5	-	-	-	-	Alluvium - Channel Deposit	Sandy GRAVEL, many cobbles, trace silt/clay
DH13-08 BU-1	Gold Ore Stockpile	2.60	2.80	10.0	-	-	-	-	0.0	0.0	25.1	25.1	27.4	31.7	12.1	71.2	3.7	0.0	3.7	-	-	-	-	Completely Weathered WRGD	Gravelly SAND, trace silt
DH13-08 BU-2	Gold Ore Stockpile	3.20	3.50	7.4	•	-	-	-	0.0	13.5	31.8	45.3	19.4	23.1	9.5	52.1	2.7	0.0	2.7	-	-	-	-	Completely Weathered WRGD	SAND and GRAVEL, trace silt
DH13-09 BU-1	Gold Ore Stockpile	2.00	2.20	27.0	-	-	-	-	0.0	4.9	39.8	44.8	20.1	20.6	11.2	51.8	3.4	0.0	3.4	-	-	-	-	Highly Weathered WRGD	SAND and GRAVEL, trace silt
DH13-09B BU-1	Gold Ore Stockpile	2.00	2.20	2.1	-	-	-	-	0.0	0.0	41.5	41.5	14.9	21.2	15.4	51.5		.0	7.0	-	-	-	-	Residual Soil	SAND and GRAVEL, trace silt/clay
DH13-10 BU-1	Open Pit	2.55	2.65	12.3	-	-	-	-	0.0	16.7	21.6	38.4	15.0	19.9	14.4	49.4	12.2	0.0	12.2	-	•	-	-	Residual Soil	SAND and GRAVEL, some silt
DH13-10 BU-2	Open Pit	3.70	3.90	13.0	-	-	-	-	0.0	20.9	33.6	54.5	15.8	15.7	9.3	40.7	4.8	0.0	4.8	-	-	-	•	Residual Soil	GRAVEL and SAND, trace silt
DH13-11 FC-1	Open Pit	1.80	2.00	30.7	-	-	-	-	0.0	5.3	19.4	24.7	28.2	27.7	12.5	68.5	6.9	0.0	6.9	-		-	-	Colluvium	Gravelly SAND, trace silt
DH13-11 BU-1	Open Pit	3.50	3.70	28.3	•		-	-	0.0	11.3	25.9	37.2	14.1	11.8	6.6	32.5	30.3	0.0	30.3 4.2	-	-	-	-	Colluvium Residual Soil	Sandy, silty GRAVEL
DH13-11 BU-2 DH13-12 BU-1	Open Pit	7.60	7.80	7.7	•		-	-	0.0	0.0	16.2 44.5	16.2 44.5	19.8 15.0	37.2	22.6	79.6 52.0				-	-	-	-		SAND, some gravel, trace silt/clay
TP13-03 BU-1	Gold Ore Stockpile West of Plant Site	2.00	1.50 2.20	11.0	3.6	- 26	20	6	0.0	0.0 4.8	44.5	21.8	15.0	24.3	12.8 16.1	52.0	13.7	4.9	3.5 18.6	-	-	-	-	Completely Weathered WRGD Residual Soil	SAND and GRAVEL, trace silt/clay Gravelly SAND, some silt, trace clay
TP13-03 BU-1 TP13-04 BU-1	West of Plant Site	2.00	3.00	3.1	3.0	26 NP	20 NP	NP	0.0	4.8	0.0	0.0	14.4	44.7	34.0	91.2	6.7	4.9	8.8	- 2.729	-	- 1.789	10.6	Completely Weathered WRGD	SAND, trace silt, trace clay
		Loose m	J																+	2.729	-	1.769	10.6		
TP13-04 BU-2	West of Plant Site	base of e	1	7.9		NP	NP	NP	0.0	0.5	1.3	1.8	14.6	45.3	28.5	88.4	8.7	1.1	9.8		-	-	-	Completely Weathered WRGD	SAND, trace gravel, trace silt, trace clay
TP13-07 BU-1	Northeast of Open Pit	1.20	1.40	18.6	-	30	22	8	0.0	1.6	9.5	11.1	18.6	33.4	19.5	71.5	12.4	5.0	17.4	-	-	-	-	Residual Soil	SAND, some silt, some gravel, trace clay
TP13-10 BU-1	Tailing Management Facility	0.60	0.80	11.3	-	NP	NP	NP	0.0	16.7	25.3	42.0	7.6	19.4	21.6	48.6	8.1	1.3	9.4	-	-	-	-	Residual Soil	SAND and GRAVEL, trace silt, trace clay
TP13-12 BU-1	Tailing Management Facility	0.50	0.70	9.8	-	25	19	6	0.0	25.2	20.7	45.9	9.8	12.6	7.8	30.2	20.3	3.6	23.9	-	-	-	-	Colluvium	Sandy, silty GRAVEL, trace clay
TP13-13 BU-1	Tailing Management Facility	1.40	1.60	14.6	-	31	22	9	0.0	16.8	18.9	35.7	6.6	14.0	9.5	30.1	28.7	5.5	34.2	-	-	-	-	Colluvium	Sandy, silty GRAVEL, trace clay
TP13-16 BU-1	South of Tailing Management Facility	3.00	3.20	22.7	-	24	22	2	0.0	0.0	1.4	1.4	5.3	10.1	5.4	20.8	73.8	4.0	77.8	-	-	-	-	Alluvium - Floodplain Deposit	Sandy SILT, trace clay, trace gravel
TP13-16 BU-2	South of Tailing Management Facility	5.00	5.70	23.9	5.1	32	30	2	0.0	0.0	2.9	2.9	11.3	20.6	10.0	41.9	51.7	3.5	55.2	-	-	-	-	Alluvium - Floodplain Deposit	SILT and SAND, trace clay, trace gravel
TP13-27 BU-1	Southeast of TMF Main Embankment	2.60	2.80	5.0	•	26	18	8	0.0	10.9	31.5	42.4	19.5	21.6	7.7	48.8	5.9	2.9	8.8	-	- 4.5E-07 (at 400 kPa, 95% MDD)	2.128	7.7	Completely Weathered WRGD	SAND and GRAVEL, trace silt, trace clay
TP13-28 BU-1	Southeast of TMF Main Embankment	1.40	1.60	6.7	2.2	22	18	4	0.0	5.6	25.3	30.9	19.5	25.4	8.0	52.9	12.8	3.4	16.2	-	4.5E-07 (at 400 kPa, 95% MDD) 6.2E-07 (at 800 kPa, 95% MDD)	2.024	10.1	Residual Soil	Gravelly SAND, some silt, trace clay
TP13-33 BU-1	Southeast of TMF Main Embankment	2.00	2.30	9.3	-	21	22	NP	0.0	1.7	11.4	13.1	16.9	32.3	21.5	70.7	14.2	2.0	16.2	2.743	-	-	-	Residual Soil	SAND, some silt, some gravel, trace clay
TP13-35 BU-1	Northeast of TMF Main Embankment	1.80	2.00	2.3	-	-	-	-	5.8	58.0	23.6	81.6	3.7	2.5	1.7	7.9	4	.7	4.7	2.746	-	-	-	Slightly Weathered Quartzite	GRAVEL, trace sand, trace cobbles, trace silt/clay (Bedrock sample)
TP13-41 BU-1	Southeast of Gold Ore Stockpile	2.00	2.20	12.0		34	19	15	0.0	0.6	5.1	5.7	9.3	30.8	22.0	62.1	23.7	8.5	32.2	-	2.8E-07 (at 400 kPa, 95% MDD) 6.9E-08 (at 800 kPa, 95% MDD)	1.899	12.3	Residual Soil	Silty SAND, trace clay, trace gravel
TP13-43 BU-1	Southeast of Gold Ore Stockpile	1.80	2.00	7.4	1.4	25	24	1	0.0	11.0	35.3	46.3	9.9	18.9	13.5	42.3	9.7	1.7	11.4	-	8.2E-05 (at 400 kPa, 95% MDD) 1.5E-05 (at 800 kPa, 95% MDD) 7.3E-07 (at 1600 kPa, 95% MDD)	2.027	9.7	Residual Soil	GRAVEL and SAND., trace silt, trace clay
TP13-48 BU-1	Gold Ore Stockpile	2.50	2.70	6.3	-	NP	NP	NP	0.0	5.9	16.5	22.4	20.1	32.3	14.4	66.8	8.4	2.4	10.8	2.728	6.2E-04 (at 400 kPa, 95% MDD) 2.8E-04 (at 800 kPa, 95% MDD)	1.974	11.2	Residual Soil	Gravelly SAND, trace silt, trace clay
TP13-56 BU-1	Low Grade Supergene Oxide Ore Stockpile	1.40	1.60	10.2	-	28	19	9	0.0	22.5	15.5	38.0	12.9	21.4	6.4	40.7	16.6	4.7	21.3	-	-	-	-	Highly Weathered WRGD	SAND and GRAVEL, some silt, trace clay
TP13-63 BU-1	Northeast of Open Pit	1.50	2.00	10.7	-	NP	NP	NP	0.0	15.3	14.0	29.3	21.1	21.1	14.1	56.3	12.8	1.6	14.4	-	-	-	-	Residual Soil	Gravelly SAND, some silt, trace clay
TP13-65 BU-1	Northeast of Open Pit	2.50	3.00	8.3	-		-	-	0.0	6.0	9.4	15.4	27.3	26.5	19.8	73.6	10.3	0.7	11.0	-	-	-	-	Completely Weathered WRGD	SAND, some gravel, some silt, trace clay
TP13-69 BU-1	Topsoil Stockpile North of HLF	1.30	1.50	16.6	-	29	20	9	10.2	16.3	1.7	18.0	5.5	19.6	12.1	37.2	28.1	6.5	34.6	-	-	-	-	Colluvium	Silty SAND, some gravel, some cobbles, trac clay
TP13-70 BU-1	Topsoil Stockpile North of HLF	2.30	2.50	11.2	4.1	-	-	-	0.0	6.6	13.0	19.6	21.5	27.7	10.4	59.6	16.6	4.2	20.8	-	-	-	-	Residual Soil (Fault)	SAND, some gravel, some silt, trace clay
TP13-73 BU-1	Heap Leach Facility	1.60	1.80	12.4	-	-	-	-	0.0	1.9	5.8	7.7	19.6	30.1	13.2	62.9	24.7	4.7	29.4	-	-	-	-	Colluvium	Silty SAND, trace gravel, trace clay
TP13-81 BU-1	ADR/SART Facility	1.00	1.20	11.5	-	30	19	11	0.0	0.0	1.4	1.4	11.2	37.7	20.3	69.2	19.4	10.0	29.4	2.659	-	-	-	Residual Soil	SAND, some silt, trace clay, trace gravel
TP13-86 BU-1	Crusher Area	1.20	1.40	14.1	3.1	27	21	6	0.0	3.6	4.3	7.9	21.4	25.8	8.3	55.5	30.8	5.8	36.6	-	-	-	-	Colluvium	Silty SAND, trace gravel, trace clay
TP13-86 BU-2	Crusher Area	2.60	2.70	10.7	4.8	NP	NP	NP	0.0	13.1	28.6	41.7	14.1	24.4	10.9	49.4	7.9	1.0	8.9	-	-	-		Alluvium - Channel Deposit	SAND and GRAVEL, trace silt, trace clay
TP13-88 BU-1	Crusher Area	1.70	1.90	19.0	-	NP	30	NP	0.0	1.8	5.8	7.6	11.5	37.3	21.9	70.7	17.9	3.8	21.7	2.643		-	-	Highly Weathered WRGD	SAND, some silt, trace gravel, trace clay

\\VAN11\Prj\_file\1\01\00325\16\A\Report\1 - 2013 Geotech SI Report - Mine Site\Rev 0\Tables\[Table 3.3 - Lab Tests Results\_rev 0.xisx]Table 3.3

#### NOTES:

1. Laboratory analyses for drillhole samples performed by Kryotek laboratory in Whitehorse, Yukon.

2. Laboratory analyses for test pit samples performed by Knight Plésold and Co. soils laboratory in Denver, Colorado.

3. Particle size distribution by percent of sample weight. 4. Organic content according to ASTM D 2974, method C.

5. Cobble content may vary in the field.

6. Standard proctor includes an oversize correction as per ASTM D 4718-87.

Flexible wall permeability according to ASTM D 5084. Samples compacted to 95% maximum dry density at optimum moisture content.
 Volumetric excess ice content for DH13-11 FC-1 is 15%.

0 24JAN14 ISSUED WITH REPORT VA101-325/16-1 ML S8 KJB REV DATE DESCRIPTION PREPD CHKTD APPD



### 3.6.2 Rock Testing

A total of five representative rock core samples were selected from drillholes at the Crusher and ADR/SART facility area and sent for analysis at the Rock Mechanics Laboratory of the Robert M. Buchan Department of Mining at Queen's University in Kingston, Ontario. The rock core samples were subjected to unconfined compressive strength (UCS) testing, including determination of the Young's modulus and Poisson's ratio.

The UCS specimens were prepared by diamond sawing, aiming for length-to-diameter ratios varying between 2-to-1 and 2.5-to-1. This was followed by lathing to obtain nearly parallel sample faces (within 0.025 mm). The ISRM (2007) procedure was followed to perform the UCS tests.

The rock laboratory test results are summarized in Table 3.4 and detailed results are included in Appendix F2.

Drillhole ID	Sample ID	Rock Type	Dept	h	Density	UCS	Young Modulus	Poisson Ratio
			From (m)	To (m)	(g/cm <sup>3</sup> )	(MPa)	Es (GPa)	
DH13-05B	UCS-01	Granodiorite - Slightly Weathered	15.84	16.09	2.75	123.5	22.09	0.10
DH13-05B	UCS-02	Granodiorite - Slightly Weathered	34.79	35.03	2.73	83.3	18.34	0.12
DH13-06	UCS-01	Granodiorite - Slightly Weathered	15.50	15.79	2.73	88.5	28.64	0.13
DH13-06	UCS-02	Granodiorite - Slightly Weathered	37.59	37.87	2.73	91.8	22.91	0.12
DH13-07B	UCS-01	Granodiorite - Moderately Weathered	26.32	26.52	2.66	55.0	13.38	0.24

 Table 3.4
 Unconfined Compressive Strength Laboratory Test Results

### NOTES:

1. Testing performed by the rock mechanics laboratory of the Robert M. Buchan Department of Mining at Queens University in Kingston, ON.



### 4 – GEOTECHNICAL CONDITIONS

### 4.1 GENERAL

This section provides an overview of the geotechnical conditions encountered at the Mine Site of the Casino Project. The areas investigated during the 2013 Site Investigation program include the following proposed project components:

- Crusher Area
- ADR/SART Facility site
- Ore Stockpile areas
- Topsoil Stockpile areas, and
- Potential borrow source areas.

### 4.2 CRUSHER AREA

The proposed Crusher site is located to the east of the deposit. The locations of test pits and drillholes completed during the 2013 and previous geotechnical site investigation programs at the proposed Crusher Area are shown on Figure A.4 in Appendix A.

The following geotechnical units were encountered at the proposed Crusher site:

- Overburden:
  - o Topsoil
  - SAND and GRAVEL, some cobbles, trace silt to silty (Colluvium)
  - COBBLES, BOULDERS, and GRAVEL, some sand, trace silt (Alluvium) along the drainage in the western part of the Crusher Area
  - SAND with varying amounts of silt and gravel, trace clay (Residual soil) in the eastern part of the Crusher Area
- Weathered Bedrock (Dawson Range Batholith Granodiorite), and
- Slightly Weathered Bedrock (Dawson Range Batholith Granodiorite).

The geotechnical characteristics of these units are described in the following sections.

### 4.2.1 Overburden

The topsoil at the proposed Crusher site is approximately 0.1 m thick and consists of dark brown to black organic silt with trace sand and many roots and plant remains. A surficial layer of colluvium was encountered below the topsoil in all of the drillholes and test pits. This material comprised greyish brown angular sand and gravel with some cobbles, and silt content varying from trace silt to silty. The colluvium was loose at locations where it was not frozen. The thickness of the colluvium horizon was found to range from 0.1 m (drillhole DH13-06) to 3.0 m (drillhole DH13-05). The drillholes and test pits near the creek in the western part of the crusher area (drillhole DH13-05B and test pits TP94-3, TP13-85 and TP13-86) encountered an underlying layer of very coarse alluvium. The alluvium typically comprised subrounded cobbles, boulders and gravel, with some sand, and trace silt, but was locally less coarse, comprising red sands and gravels with some cobbles and trace silt. This horizon extended to a maximum depth of 4.3 m in drillhole DH13-05. No alluvium was encountered to the east of the proposed Crusher site, at a greater distance from the drainage. Residual soil was underlying the surficial colluvium layer in test pits TP13-88, TP94-1, and TP94-2 in this area. The residual soil comprised angular orange to beige brown sand with varying amounts of



silt and gravel and trace clay. The residual soil transitioned into highly weathered bedrock at depths varying from 1.7 to 4.3 m.

### 4.2.2 Weathered Bedrock

The top of bedrock was encountered at approximately 4.2 m depth in the drillholes at the proposed Crusher site. Geotechnical logging revealed highly to moderately weathered Granodiorite from the top of bedrock to 13.7 and 12.4 m depth for drillhole DH13-05B and DH13-06, respectively. Below these depths predominantly slightly weathered rock was present, with the exception of local zones of weathering caused by hydrothermal alteration and fault zones.

Very weak, highly weathered granodiorite bedrock was encountered between 4.3 m depth and 12.5 m depth in drillhole DH13-05B. Medium strong, moderately weathered granodiorite bedrock was present from 12.5 m to 13.7 m depth.

Weak, moderately weathered granodiorite bedrock was encountered at 4.2 m depth in DH13-06. A fault breccia was present between 6.1 m and 6.7 m depth. The drillhole then revealed strong, slightly to moderately weathered granodiorite, extending to 9.3 m depth. A thin (approximately 0.2 m-wide) shear zone was encountered at 8.1 m. Another fault breccia was logged between 9.3 m and 10.7 m depth. The underlying bedrock was weak and moderately weathered to 12.4 m depth.

Moderately to highly weathered bedrock was encountered at 1.7 m depth at the north end of test pit TP13-88. A 4 m–wide fault zone was identified at the south end of the pit where residual soil extended to the base of the pit at 3.5 m depth.

The geophysics survey lines identified possible fault zones and zones of hydrothermal alteration in the vicinity of both drillholes.

The average RMR for weathered bedrock in the drillholes is approximately 37, indicating a POOR rock mass quality (Bieniawski, 1989).

### 4.2.3 Slightly Weathered Bedrock

The recovered core below 13.7 m in DH13-05B is generally described as medium strong to strong and slightly weathered granodiorite, although very weak and moderately weathered granodiorite was encountered between 21.3 and 25.3 m depth.

Strong, slightly weathered granodiorite bedrock was encountered for the majority of drillhole DH13-06 below 12.4 m depth. A very strong, dark grey, fine-grained mafic dyke was present between 20.05 m and 20.2 m depth, with altered, weak and moderately weathered bedrock below that to 23.1 m depth. Weak and moderately weathered Granodiorite was also present between 30.2 and 33.5 m depth.

The slightly weathered bedrock is generally strong with an average unconfined compressive strength (UCS) field estimate of 75 MPa. The laboratory rock testing of slightly weathered rock core samples revealed UCS-values ranging from 83 to 124 MPa. The average RMR is approximately 57, and is considered FAIR rock mass quality.



### 4.2.4 Permafrost

Frozen soil was encountered within 1 m of ground level in test pits TP13-86, TP13-88 and TP94-1. The geophysics survey lines indicate permafrost to be widespread in the overburden. Possible zones of ice-rich permafrost were identified up to approximately 5 m depth in the central portion of geophysics survey line G13-13 and the north part of geophysics survey line G13-16. Permafrost is absent within close proximity (typically 5 m) of the drainage near drillhole DH13-05B.

The frozen soils typically contained no visible excess ice, except for a colluvial layer of silty sand in test pit TP13-86. This soil contained ice layers of less than 1 mm thickness, with an estimated volumetric excess ice content of 15%.

### 4.2.5 Hydrogeological Conditions

Groundwater levels were observed between 0.1 and 1.8 m below ground surface at locations where no permafrost was encountered. A small artesian flow of less than 1 l/min was observed from the standpipe piezometer installed in drillhole DH13-06. Test pit TP13-88 is adjacent to drillhole DH13-06. Water was flowing through the fault into this test pit at a rate of approximately 3 l/min.

### 4.3 ADR/SART FACILITY

The proposed ADR/SART Facility is to be located to the south of the proposed Heap Leach Facility. No geotechnical site investigation programs were conducted in this area before 2013. The locations of the drillhole, test pits and geophysics surveys completed in 2013 are shown on Figure A.5 in Appendix A.

The following geotechnical units were encountered at the proposed ADR/SART Facility site:

- Overburden:
  - o Topsoil.
  - SILT to SAND, trace to many cobbles and gravel (Colluvium).
  - o SAND, some silt to silty, trace to some gravel, trace clay (Residual soil).
- Weathered Bedrock (Dawson Range Batholith Granodiorite).

The geotechnical characteristics of these units are described below.

### 4.3.1 Overburden

The site of the proposed ARD/SART facility is characterized by an approximately 0.2 m thick layer of vegetation and topsoil, overlying a colluvial veneer. The topsoil consists primarily of dark brown to black organic silt with trace sand and many roots. The colluvium extends to approximately 0.5 m depth and comprises greyish beige brown silt with some sand to silty sand, with varying amounts of gravel and cobbles. The colluvium was underlain by compact residual soil at most locations, which generally consists of orange to beige brown sand with some silt, trace to some gravel, and trace clay. Overburden extended to at most 1.8 m depth, where highly weathered bedrock was encountered.

### 4.3.2 Weathered Bedrock

Extremely weak, highly weathered granodiorite was encountered below the overburden, extending to 1.5 to 4.0 m below ground level. The underlying bedrock encountered was generally medium strong



and moderately weathered, although a very weak, highly to completely weathered interval was encountered between 13.8 and 14.9 m depth in drillhole DH13-07B. Moderately weathered granodiorite extended to the end of the drillhole.

The average RMR for weathered bedrock is approximately 50, indicating a FAIR rock mass quality.

### 4.3.3 Permafrost

No frozen soils were encountered in the test pits and drillhole at the proposed ADR/SART facility. Zones of high resistivity were identified at shallow depth in geophysics lines G13-22 and G13-23 to the south and west of drillhole DH13-07B, which may indicate frozen soils. It is recommended that additional test pitting be undertaken in this area to investigate the possible presence of ice-rich permafrost.

### 4.3.4 Hydrogeological Conditions

The groundwater table was measured in the standpipe piezometer installed in drillhole DH13-07B and determined to be 8.2 m below ground surface. The rising head test conducted in the piezometer indicates a hydraulic conductivity of  $5 \times 10^{-6}$  cm/s in weathered bedrock.

### 4.4 ORE STOCKPILE AREAS

The Ore Stockpiles are proposed to be located on south to east-facing slopes near the proposed Plant Site and Open Pit. Test pits were undertaken during the 2013 Geotechnical Site Investigation to complement previous investigations. Four shallow geotechnical drillholes, two geophysical lines and five test pits were completed at the Gold Ore Stockpile area 2 km north-east of the Plant Site. Four test pits were completed at the Low Grade Supergene Sulfide Ore Stockpile and Marginal Grade Ore Stockpile sites directly south of the deposit. Two test pits were undertaken at the Low Grade Supergene Oxide Ore Stockpile site south of the Plant Site, and four pits at the Supergene Oxide/Low Grade Hypogene Ore Stockpile area east of the Plant Site. The locations of test pits, drillholes and geophysics surveys completed during the 2013 and previous geotechnical site investigation programs are presented on Figure A.6 in Appendix A.

The Ore Stockpile areas have the following generalized stratigraphy:

- Overburden:
  - Topsoil with many cobbles and boulders
  - SILT with some sand to silty SAND, with some gravel, cobbles and boulders (Colluvium)
  - Silty to gravelly SAND (Residual Soil)
- Weathered Bedrock, and
- Fresh Bedrock.

The bedrock is predominantly comprised of Dawson Range Batholith Granodiorite, with Quartz Monzonite.occurring locally.

The geotechnical characteristics of these units are described in the following sections.



### 4.4.1 Overburden

The vegetation in the Ore Stockpile areas mainly comprises stunted black spruce with thin moss and forest litter cover. Some areas at lower elevations are characterized by well-drained sandy soils supporting stands of tall spruce and poplar. The topsoil thickness is typically less than 0.3 m, and comprises mostly dry to moist organic-rich sandy silt. Blockfields comprising angular cobbles and boulders are found throughout the stockpile areas and are common at higher elevations such as the Low Grade Supergene Sulfide Ore Stockpile site and the upslope part of the proposed Gold Ore Stockpile site. The underlying soil is typically greyish brown colluvium overlying orange residual soil, although in several test pits only colluvium or residual soil was found.

The colluvium typically comprises loose silty sand to sandy silt with some gravel, cobbles and boulders, at some locations intermixed with organic material. It is generally less than 1 m thick. The residual soil consists of loose to compact silty to gravelly sand, with an average thickness of about 0.8 m. The maximum overburden thickness encountered in the Low Grade Ore Stockpile areas is 3 m.

The test pits at the Low Grade Supergene Sulfide Ore Stockpile and the upslope part of the Gold Ore Stockpile area were terminated at shallow depths in frozen colluvium with high excess ice contents. The colluvium at this location was silt with some sand and gravel, and some to many cobbles and boulders. The downslope part of the Gold Ore Stockpile area was characterized by a thicker layer of residual soil than encountered in the other stockpile areas. The residual soil in the Gold Ore Stockpile area is on average about 2 m thick with a maximum thickness of 5 m, and was found to contain some clay locally.

### 4.4.2 Bedrock

The maximum total depth to highly weathered bedrock is 3 m, with an average depth of approximately 1 m. However, the overburden thickness is greater at lower elevations in the Gold Ore Stockpile area located east of the Open Pit. The average depth to weathered bedrock in this area is approximately 2.5 m with a maximum overburden thickness of approximately 5 m. Slightly to moderately weathered, strong bedrock is reached at an average depth of 2 m in the Low Grade Ore Stockpile areas. The depth to bedrock could not be determined in every test pit due to refusal on permafrost.

### 4.4.3 Permafrost

Discontinuous zones of permafrost were recorded throughout the proposed Ore Stockpile areas. Permafrost was prevalent at the Low Grade Supergene Sulfide Ore Stockpile site and the upslope part of the proposed Gold Ore Stockpile. Thin (1 to 10 mm) ice layers were found in fine grained colluvium, and interstitial ice crystals were observed in residual soils and completely to highly weathered bedrock. The volumetric excess ice contents of the colluvium and residual soils were estimated to be up to 60% and 30% respectively.

### 4.4.4 Hydrogeological Conditions

A perched water table was observed directly below ground surface in several test pits with frozen soils. The maximum depth of the groundwater table was recorded at three metres below ground surface. No groundwater was observed in the majority of the test pits and drillholes.

### 4.5 TOPSOIL STOCKPILE AREAS

Topsoil Stockpiles are to be located at hilltop areas to the north of the Heap Leach Facility and south of the Tailings Management Facility. Limited site investigation had been performed at these locations during previous field programs. Test pitting was undertaken during the 2013 Site Investigation with five test pits being carried out at the proposed Topsoil Stockpile site north of the HLF, and five pits at the proposed Topsoil Stockpile sites to the south of the TMF. The locations of test pits are presented on Figure A.6 in Appendix A.

The following generalized stratigraphy was encountered in the Topsoil Stockpile areas:

• Overburden:

•

- o Topsoil
- Silty to gravelly SAND with some cobbles and boulders (Colluvium)
- Sandy SILT with some gravel to gravelly SAND with trace silt (Residual Soil)
- Weathered Bedrock (Dawson Range Batholith Granodiorite), and
- Fresh Bedrock (Dawson Range Batholith Granodiorite).

### 4.5.1 Overburden

The proposed Topsoil Stockpile areas at the ridges to the south of the TMF are forested with mostly small spruce and poplar. A thin veneer of moss and topsoil is present at ground surface with a few localized boulders, and is typically less than 0.3 m thick. The topsoil consists primarily of organic silts to sands with many roots and locally some gravel and cobbles. Colluvium was underlying the topsoil in approximately half the test pits, with residual soil or highly weathered bedrock below. Residual soil was found below the topsoil at locations where colluvium was absent. The colluvium is on average 0.7 m thick in the area south of the TMF site and generally comprises loose brown silty sand with some angular gravel and cobbles. Little residual soil was encountered in the 2013 test pits, but previous investigations found thicknesses up to 3.2 m. The residual soils are derived from granodiorite bedrock and consist of orange brown sandy silt with some gravel to gravely sand with trace silt.

The vegetation in the proposed Topsoil Stockpile area to the north of the HLF comprises some shrubs with occasional small spruce. Blockfields comprising angular cobbles and boulders are common in this area. Topsoil is typically less than 0.2 m thick and comprises organic silt with some sand and many roots. The underlying soil generally consists of loose silty sand to sandy silt with some gravel, and occasional black organic inclusions. This material is interpreted to be colluvium and varies in thickness from 0.9 to 1.5 m.

### 4.5.2 Bedrock

The bedrock at the proposed Topsoil Stockpile areas comprises Dawson Range Batholith Granodiorite. The 2013 and previous site investigations indicate a maximum overburden thickness of 3.5 m in the area to the south of the TMF site, and 1.5 m in the area to the north of the HLF site. The average depth to bedrock is approximately 1.3 m in both areas.

The bedrock encountered was initially highly weathered and very weak to weak, but refusal of the excavator on medium strong, slightly to moderately weathered granodiorite occurred within 3 m of the bedrock surface. A band with completely weathered bedrock was encountered in test pit TP13-70, which was interpreted as a possible fault.



### 4.5.3 Permafrost

Permafrost is common at the proposed Topsoil Stockpile area to the north of the HLF site. Test pits TP13-70 and TP13-71 were terminated on permafrost at 2.5 and 1.4 m below ground surface, respectively. The soils in most other test pits in this area were wet, which may also be related to perched groundwater above shallow permafrost.

Localized permafrost was encountered at higher elevation to the southeast of the proposed TMF embankment site. Frozen soils were encountered in test pits TP13-33, TP13-44, TP13-49 and TP13-50. These frozen soils did not contain visible excess ice.

### 4.5.4 Hydrogeological Conditions

A perched water table was observed above the permafrost at 0.4 m depth in test pit TP13-71 and at 1.4 m depth in TP13-68 to the north of the HLF site.

The soils to the south of the proposed TMF site were generally well drained and dry to moist. No water table was encountered in any of the test pits in this area.

### 4.6 POTENTIAL BORROW SOURCE AREAS

Local borrow sources are required to provide materials for construction of the mine. The main types of borrow source materials required include:

- Earthworks construction materials, including:
  - Low permeability soil (for use as tailings embankment core zone and soil liners).
  - Filter and transition zone material.
  - General Fill.
- Fine and coarse aggregate for use in concrete.

The borrow materials have to be geochemically innocuous (non-reactive), free of organics, and non frost susceptible.

Previous site investigations identified potential borrow sources in colluvial veneer, residual soils, alluvial channel deposits, and bedrock. However, insufficient material was present at these locations to satisfy the required quantities.

South facing slopes within the project boundaries that had not been investigated previously were targeted as part of the 2013 geotechnical site investigation in search of fine grained residual soils. Test pits were also completed near previously identified potential borrow sources to determine the extent of these areas. Drillholes DH13-08 through DH13-12 were drilled in previously identified potential borrow areas in the proposed Open Pit and Gold Ore Stockpile area where the depth to bedrock had not been established.

Alluvial samples from TP13-01 and TP13-14, and fresh grandiorite rock samples from TP13-84 were sent to the Levelton Consultants laboratory in Richmond, B.C. These materials were subjected to specialized testwork to determine suitability for use as concrete aggregate as per CSA standard A23.1/2-09.

The locations of the borrow areas, and the suitability and quantity of the borrow source materials will be evaluated in the Mine Site Borrow Materials Assessment report (Ref. No. VA101-325/16-3).



The properties of alluvium, colluvium, and residual soils as determined from the 2013 laboratory tests are presented below.

### Alluvial channel deposits (two samples only):

- Natural Moisture Content = 12.5 % Average (10.7 to 14.3 %).
- Organic (Ash) Content = 4.8 % based on one test only.
- Particle Size Distribution:
  - Cobbles = 10 % Average (0 to 21 %).
  - Gravel = 48 % Average (42 to 54 %).
  - Sand = 36 % Average (24 to 49 %).
  - Silt = 5 % Average (1 to 8 %).
  - Clay = 1 % based on one test only.
- Atterberg Limits: Non plastic.

### Colluvium:

- Natural Moisture Content = 18.1 % Average (9.8 to 30.7 %).
- Organic (Ash) Content = 3.1 % based on one test only.
- Particle Size Distribution:
  - $\circ$  Cobbles = 2 % Average (0 to 10 %).
  - Gravel = 25 % Average (8 to 46 %).
  - Sand = 45 % Average (30 to 68 %).
  - Silt = 24 % Average (7 to 31 %).
  - Clay = 4 % Average (0 to 7 %).
- Atterberg Limits:
  - Liquid Limit (LL) = 28 Average for plastic soils (25 to 31).
  - Plastic Limit (PL) = 21 Average for plastic soils (19 to 22).
  - Plasticity Index (PI) = 7 Average for plastic soils (6 to 9).

### Residual soil:

- Natural Moisture Content = 10.7 % Average (2.1 to 18.6 %).
- Organic (Ash) Content = 2.8 % Average (1.4 to 4.1 %).
- Particle Size Distribution:
  - Gravel = 26 % Average (1 to 55 %).
  - Sand = 59 % Average (41 to 80 %).
  - Silt = 12 % Average (4 to 24 %).
  - Clay = 3 % Average (0 to 10 %).
- Atterberg Limits:
  - Liquid Limit (LL) = 27 Average for plastic soils (non-plastic to 34).
  - Plastic Limit (PL) = 21 Average for plastic soils (non-plastic to 24).
  - Plasticity Index (PI) = 8 Average for plastic soils (non-plastic to 15).
- Soil Specific Gravity = 2.71 Average (2.66 to 2.74).
- Standard Proctor:
  - Maximum Dry Density =  $1.98 \text{ t/m}^3$  Average (1.90 to 2.03 t/m<sup>3</sup>), and
  - $\circ$  Optimum Moisture Content = 10.8 % Average (9.7 to 12.3 %).
- Triaxial Flexible Wall Permeability (TP13-28 BU-1, compacted to 95 % MDD):
  - $\circ$  4.5 x 10<sup>-7</sup> cm/s Average (4.3 x 10<sup>-7</sup> to 4.8 x 10<sup>-7</sup> cm/s) at 400 kPa confining pressure.



- $\circ$  6.2 x 10<sup>-7</sup> cm/s Average (6.1 x 10<sup>-7</sup> to 6.4 x 10<sup>-7</sup> cm/s) at 800 kPa confining pressure.
- Triaxial Flexible Wall Permeability (TP13-41 BU-1, compacted to 95 % MDD):
  - $\circ$  2.8 x 10<sup>-7</sup> cm/s Average (2.8 x 10<sup>-7</sup> to 2.9 x 10<sup>-7</sup> cm/s) at 400 kPa confining pressure.
  - $\circ$  6.9 x 10<sup>-8</sup> cm/s Average (6.8 x 10<sup>-8</sup> to 7.0 x 10<sup>-8</sup> cm/s) at 800 kPa confining pressure.
- Triaxial Flexible Wall Permeability (TP13-43 BU-1, compacted to 95% MDD):
  - $\circ$  8.2 x 10<sup>-5</sup> cm/s Average (7.8 x 10<sup>-5</sup> to 8.7 x 10<sup>-5</sup> cm/s) at 400 kPa confining pressure.
  - $\circ$  1.5 x 10<sup>-5</sup> cm/s Average (1.3 x 10<sup>-5</sup> to 1.6 x 10<sup>-5</sup> cm/s) at 800 kPa confining pressure.
  - $\circ$  7.3 x 10<sup>-7</sup> cm/s Average (7.0 x 10<sup>-7</sup> to 7.6 x 10<sup>-7</sup> cm/s) at 1600 kPa confining pressure.
  - Triaxial Flexible Wall Permeability (TP13-48 BU-1, compacted to 95% MDD):
    - $\circ$  6.2 x 10<sup>-4</sup> cm/s Average (5.8 x 10<sup>-4</sup> to 6.7 x 10<sup>-4</sup> cm/s) at 400 kPa confining pressure.
    - $\circ$  2.8 x 10<sup>-4</sup> cm/s Average (2.7 x 10<sup>-4</sup> to 3.2 x 10<sup>-4</sup> cm/s) at 800 kPa confining pressure.



### 5 – SUMMARY

Knight Piésold Ltd. completed a site investigation program in 2013 to collect geotechnical information at the proposed Mine Site for the Casino Project to support detailed design. The objectives were to determine ground conditions at the proposed ADR/SART facility, Crusher Area, and Ore and Topsoil Stockpiles, and to delineate and characterize potential borrow sources for construction materials.

The 2013 Geotechnical Site Investigation data have been incorporated into the existing geotechnical and hydrogeological databases.

The findings of the 2013 Site Investigation are summarized below:

### Crusher Area

The proposed Crusher site is located to the east of the Open Pit. The following geotechnical units were encountered at the proposed Crusher site:

- Overburden:
  - o **Topsoil**
  - SAND and GRAVEL, some cobbles, trace silt to silty (Colluvium)
  - COBBLES, BOULDERS, and GRAVEL, some sand, trace silt (Alluvium) along the drainage in the western part of the Crusher Area
  - SAND with varying amounts of silt and gravel, trace clay (Residual soil) in the eastern part of the Crusher Area
- Weathered Bedrock (Dawson Range Batholith Granodiorite), and
- Slightly Weathered Bedrock (Dawson Range Batholith Granodiorite).

The topsoil at the proposed Crusher site is approximately 0.1 m thick and consists of dark brown to black organic silt with trace sand and many roots and plant remains. A surficial layer of colluvium was encountered below the topsoil in all drillholes and test pits. This material comprised greyish brown angular sand and gravel with some cobbles, and silt content varying from trace silt to silty. The colluvium encountered was loose at locations where it was not frozen. The thickness of the colluvium horizon ranged from 0.1 m to 3.0 m. The drillholes and test pits near the creek in the western part of the crusher area encountered an underlying layer of very coarse alluvium. The alluvium typically comprised subrounded cobbles, boulders and gravel, with some sand, and trace silt, but was locally less coarse, comprising red sands and gravels with some cobbles and trace silt. This horizon extended to a maximum depth of 4.3 m.

No alluvium was encountered to the east of the proposed Crusher site, at a greater distance from the drainage. Residual soil was underlying the surficial colluvium layer at several locations in this area. The residual soil comprised angular orange to beige brown sand with varying amounts of silt and gravel and trace clay. The residual soil transitioned into highly weathered bedrock at depths varying from 1.7 to 4.3 m.

The top of bedrock was encountered at approximately 4.2 m depth in the drillholes at the proposed Crusher site. Geotechnical logging revealed highly to moderately weathered Granodiorite from the top of bedrock to 13.7 and 12.4 m depth for drillhole DH13-05B and DH13-06, respectively. Below these depths predominantly slightly weathered was present, with the exception of local zones of weathering caused by hydrothermal alteration and fault zones. The average RMR for weathered bedrock in the drillholes is approximately 37, indicating a POOR rock mass quality. The slightly

weathered bedrock is generally strong with an average unconfined compressive strength (UCS) field estimate of 75 MPa, and laboratory UCS-values ranging from 83 to 124 MPa. The average RMR for slightly weathered bedrock is approximately 57, and is considered FAIR rock mass quality.

Drillhole DH13-06 included two zones of fault breccia and a shear zone in the top 10.7 m. This drillhole also included a very strong, dark grey, fine-grained mafic dyke between 20.05 m and 20.2 m depth, with altered, weak and moderately weathered bedrock below that to 23.1 m depth. A 4 m-wide fault zone was identified in the adjacent test pit TP13-88. The geophysics survey lines identified possible fault zones and zones of hydrothermal alteration in the vicinity of the drillholes.

Frozen soil was encountered within 1 m below ground level in several test pits. The geophysics surveys indicate permafrost to be widespread in the overburden, including possible zones of ice-rich permafrost. Permafrost is absent within close proximity (typically 5 m) of the drainage near drillhole DH13-05B.

The frozen soils typically contained no visible excess ice, except for a colluvial layer of silty sand in test pit TP13-86. This soil contained ice layers of less than 1 mm thickness, with an estimated volumetric excess ice content of 15%.

Groundwater levels were observed between 0.1 and 1.8 m below ground surface at locations where no permafrost was encountered. A small artesian flow of less than 1 l/min was observed from the standpipe piezometer installed in drillhole DH13-06. Water was also flowing through a fault in a test pit adjacent to this drillhole.

### ADR/SART Facility

The proposed ADR/SART Facility is to be located to the south of the proposed Heap Leach Facility. The following geotechnical units were encountered at the proposed ADR/SART Facility site:

- Overburden:
  - o Topsoil.
  - SILT to SAND, trace to many cobbles and gravel (Colluvium).
  - o SAND, some silt to silty, trace to some gravel, trace clay (Residual soil).
- Weathered Bedrock (Dawson Range Batholith Granodiorite).

The site of the proposed ARD/SART facility is characterized by an approximately 0.2 m thick layer of vegetation and topsoil, overlying a colluvial veneer. The topsoil consists primarily of dark brown to black organic silt with trace sand and many roots. The colluvium extends to approximately 0.5 m depth and comprises greyish beige brown silt with some sand to silty sand, with varying amounts of gravel and cobbles. The colluvium was underlain by compact residual soil at most locations, which generally consists of orange to beige brown sand with some silt, trace to some gravel, and trace clay. Overburden extended to at most 1.8 m depth, where highly weathered bedrock was encountered.

Extremely weak, highly weathered granodiorite was encountered below the overburden, extending to 1.5 to 4.0 m below ground level. The underlying bedrock encountered was generally medium strong and moderately weathered, although a very weak, highly to completely weathered interval was encountered between 13.8 and 14.9 m depth in drillhole DH13-07B. Moderately weathered granodiorite extended to the end of the drillhole. The average RMR for weathered bedrock is approximately 50, indicating a FAIR rock mass quality.

The groundwater table was measured in the standpipe piezometer installed in drillhole DH13-07B and determined to be 8.2 m below ground surface. The rising head test conducted in the piezometer indicates a hydraulic conductivity of  $5 \times 10^{-6}$  cm/s in weathered bedrock.

No frozen soils were encountered in the test pits and drillhole at the proposed ADR/SART facility. Zones of high resistivity were identified at shallow depth in geophysics lines G13-22 and G13-23 to the south and west of drillhole DH13-07B, which may indicate frozen soils. It is recommended that additional test pitting be undertaken in this area to investigate the possible presence of ice-rich permafrost.

### Ore Stockpile areas

The Ore Stockpiles are proposed to be located on south to east-facing slopes near the proposed Plant Site and Open Pit. The Ore Stockpile areas have the following generalized stratigraphy:

- Overburden:
  - Topsoil with many cobbles and boulders
  - SILT with some sand to silty SAND, with some gravel, cobbles and boulders (Colluvium)
  - Silty to gravelly SAND (Residual Soil)
- Weathered Bedrock, and
- Fresh Bedrock.

The vegetation in the stockpile areas mainly comprises stunted black spruce with thin moss and forest litter cover. Some areas at lower elevations are characterized by well-drained sandy soils supporting stands of tall spruce and poplar. The topsoil thickness is typically less than 0.3 m, and comprises mostly dry to moist organic-rich sandy silt. Blockfields comprising angular cobbles and boulders are found throughout the stockpile areas and are common at higher elevations such as the Low Grade Supergene Sulfide Ore Stockpile site and the upslope part of the proposed Gold Ore Stockpile site. The underlying soil is typically greyish brown colluvium overlying orange residual soil, although in several test pits only colluvium or residual soil was found.

The colluvium typically comprises loose silty sand to sandy silt with some gravel, cobbles and boulders, at some locations intermixed with organic material. The residual soil consists of loose to compact silty to gravelly sand. The average overburden thickness encountered in the Low Grade Ore Stockpile areas is approximately 1 m, with a maximum of 3 m, except for the downslope part of the Gold Ore Stockpile area which was characterized by a thicker layer of residual soil. The residual soil in the Gold Ore Stockpile area is on average about 2 m thick with a maximum thickness of 5 m, and was found to contain some clay locally.

The bedrock is predominantly comprised of Dawson Range Batholith Granodiorite, with Quartz Monzonite.occurring locally. Highly weathered, weak bedrock with an average thickness of 1 m overlies slightly to moderately weathered, strong bedrock. The depth to bedrock could not be determined in every test pit due to refusal on permafrost.

Discontinuous zones of permafrost were recorded throughout the proposed Ore Stockpile areas. Permafrost was prevalent at the Low Grade Supergene Sulfide Ore Stockpile site and the upslope part of the proposed Gold Ore Stockpile, where test pits were terminated at shallow depths in frozen colluvium. Thin (1 to 10 mm) ice layers were found in fine grained colluvium, and interstitial ice crystals were observed in residual soils and completely to highly weathered bedrock. The volumetric



excess ice contents of the colluvium and residual soils were estimated to be up to 60% and 30% respectively.

A perched water table was observed directly below ground surface in several test pits with frozen soils. The maximum depth of the groundwater table was recorded at three metres below ground surface. No groundwater was observed in the majority of the test pits and drillholes.

### Topsoil Stockpile areas

Topsoil Stockpiles are to be located at hilltop areas to the north of the proposed Heap Leach Facility (HLF) and south of the Tailings Management Facility (TMF). The following generalized stratigraphy was encountered in the Topsoil Stockpile areas:

- Overburden:
  - o Topsoil
  - Silty to gravelly SAND with some cobbles and boulders (Colluvium)
  - Sandy SILT with some gravel to gravelly SAND with trace silt (Residual Soil)
- Weathered Bedrock (Dawson Range Batholith Granodiorite), and
- Fresh Bedrock (Dawson Range Batholith Granodiorite).

The proposed Topsoil Stockpile areas at the ridges to the south of the TMF are forested with mostly small spruce and poplar. A thin veneer of moss and topsoil is present at ground surface with a few localized boulders, and is typically less than 0.3 m thick. The topsoil consists primarily of organic silts to sands with many roots and locally some gravel and cobbles. Colluvium was underlying the topsoil in approximately half the test pits, with residual soil or highly weathered bedrock below. Residual soil was found below the topsoil at locations where colluvium was absent. The colluvium is on average 0.7 m thick in the area south of the TMF site and generally comprises loose brown silty sand with some angular gravel and cobbles. The residual soils are up to 3.2 m thick and consist of orange brown sandy silt with some gravel to gravelly sand with trace silt.

The vegetation in the proposed Topsoil Stockpile area to the north of the HLF comprises some shrubs with occasional small spruce. Blockfields comprising angular cobbles and boulders are common in this area. Topsoil is typically less than 0.2 m thick and comprises organic silt with some sand and many roots. The underlying soil generally consists of loose silty sand to sandy silt with some gravel, and occasional black organic inclusions. This material is interpreted to be colluvium and varies in thickness from 0.9 to 1.5 m.

The bedrock at the proposed Topsoil Stockpile areas comprises Dawson Range Batholith Granodiorite. The maximum overburden thickness is 3.5 m in the area to the south of the TMF, and 1.5 m in the area to the north of the HLF. The average depth to bedrock is approximately 1.3 m in both the areas.

The bedrock encountered was initially highly weathered and very weak to weak, but refusal of the excavator on medium strong, slightly to moderately weathered granodiorite occurred within 3 m of the bedrock surface. A band with completely weathered bedrock was encountered in test pit TP13-70, which was interpreted as a possible fault.

The soils to the south of the TMF site are generally well drained and dry to moist, except for an area at higher elevation to the southeast of the TMF embankment site, where localized permafrost was encountered. These frozen soils did not contain visible excess ice.

Two test pits to the north of the HLF site were terminated on permafrost at depths less than 2.5 m below ground surface. Perched water tables and wet to saturated conditions were observed in several test pits, which may be caused by poor drainage conditions due to permafrost.

## Potential Borrow Source areas

Local borrow sources are required to provide materials for construction of the mine. The main types of borrow source materials required include:

- Earthworks construction materials, including:
  - Low permeability soil (for use as tailings embankment core zone and soil liners).
  - Filter and transition zone material.
  - General Fill.
- Fine and coarse aggregate for use in concrete.

The borrow materials have to be geochemically innocuous (non-reactive), free of organics, and non frost susceptible.

Residual, colluvial, and alluvial soils were investigated for use as earthworks construction materials. Test pits were completed in areas that had not been previously investigated, and drillholes and geophysics surveys were completed at potential borrow source locations where the depth to bedrock had not been established. Soil samples of potentially suitable materials have been subjected to index, compaction and permeability testing.

Alluvial samples and fresh grandiorite rock samples were retrieved for to specialized laboratory test work to determine suitability for use as concrete aggregate. The locations and suitability of proposed borrow material sources are addressed in the Mine Site Borrow Materials Assessment report (Ref. No. VA101-325/16-3).



## 6 – REFERENCES

Bieniawski, Z.T., 1989, Engineering Rock Mass Classifications, Wiley, New York.

- Canadian Standards Association (CSA), 2009, standard A23.1-09/A23.2-09, Concrete materials and methods of concrete construction/test methods and standard practices for concrete.
- Hoek, E., Kaiser, P. K., and Bawden, W. F., 1995, Support of Underground Excavations in Hard Rock, A. A. Balkema, Rotterdam.
- Hvorslev, M.J., 1951, Time lag and soil permeability in groundwater observation, U.S. Army Corps of Engineers, Waterways Experimental Station, Vicksburg, Mississippi, Bulletin 36, 50 p.
- Ulusay, R., and Hudson, J.A. (Editors), 2007, The Complete ISRM (International Society of Rock Mechanics) Suggested Methods for Rock Characterization, Testing and Monitoring: 1974-2006. April, 2007 Edition. Prepared by the Commission on Testing Methods of the International Society for Rock Mechanics. Suggested Methods for Determining the Uniaxial Compressive Strength and Deformability of Rock Materials, pp. 151-156. (Associated Reference ASTM D 3148-72)

CASINO MINING CORPORATION CASINO PROJECT



## 7 - CERTIFICATION

E. HALEY # 33730

27 2014

This report was prepared, reviewed and approved by the undersigned.

Prepared:

Sanne Brinkman, M.Sc.

Geological Engineering

Reviewed:

James Haley, P.Eng. Senior Geotechnical Engineer

Approved:

Ken J. Brouwer, P.Eng

President

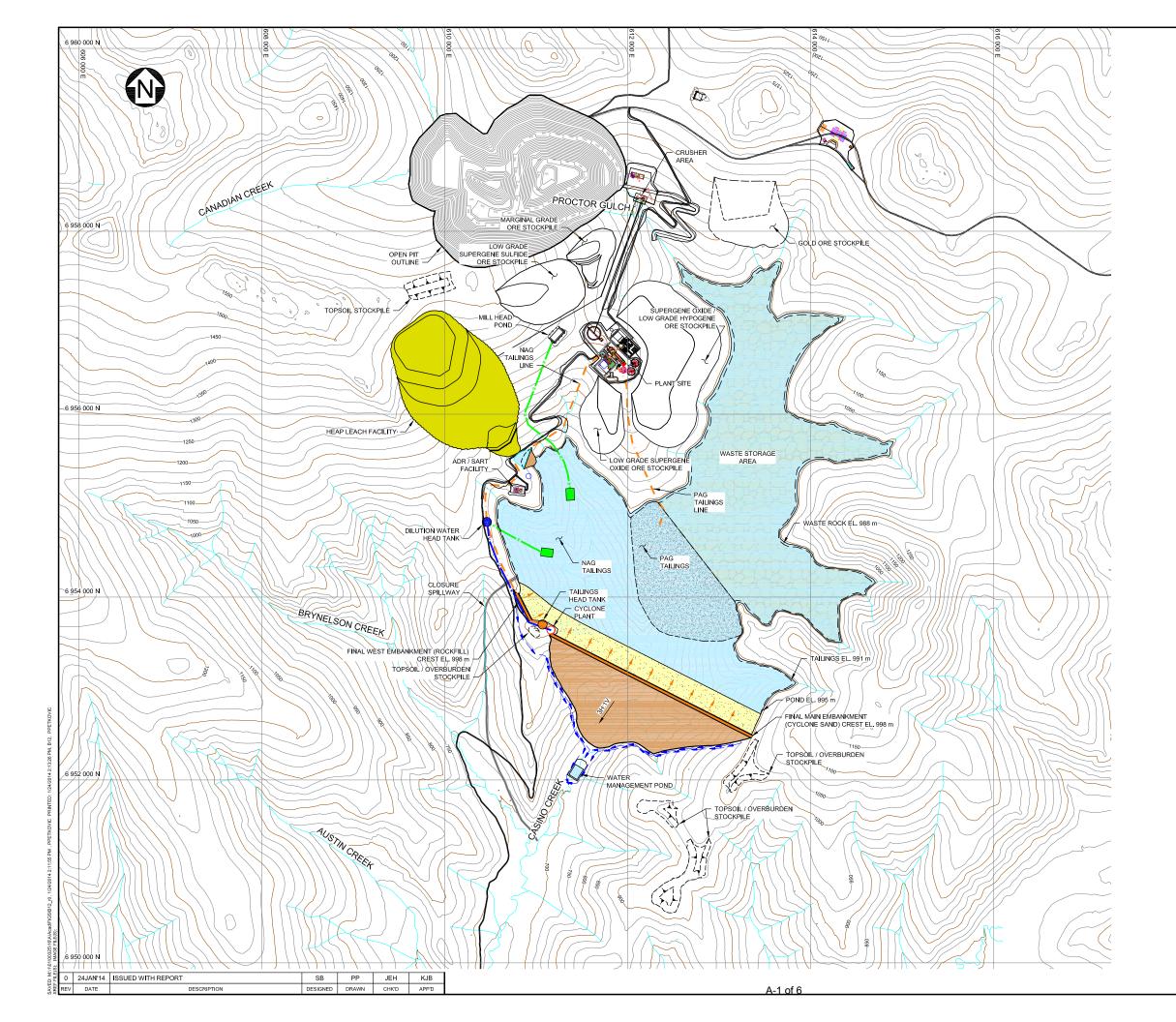
This report was prepared by Knight Piésold Ltd. for the account of Casino Mining Corporation. Report content reflects Knight Piésold's best judgement based on the information available at the time of preparation. Any use a third party makes of this report, or any reliance on or decisions made based on it is the responsibility of such third parties. Knight Piésold Ltd. accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions based on this report. This numbered report is a controlled document. Any reproductions of this report are uncontrolled and might not be the most recent revision.



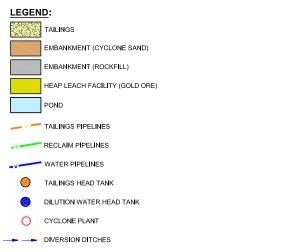
# APPENDIX A

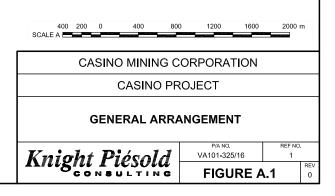
## **REFERENCE FIGURES**

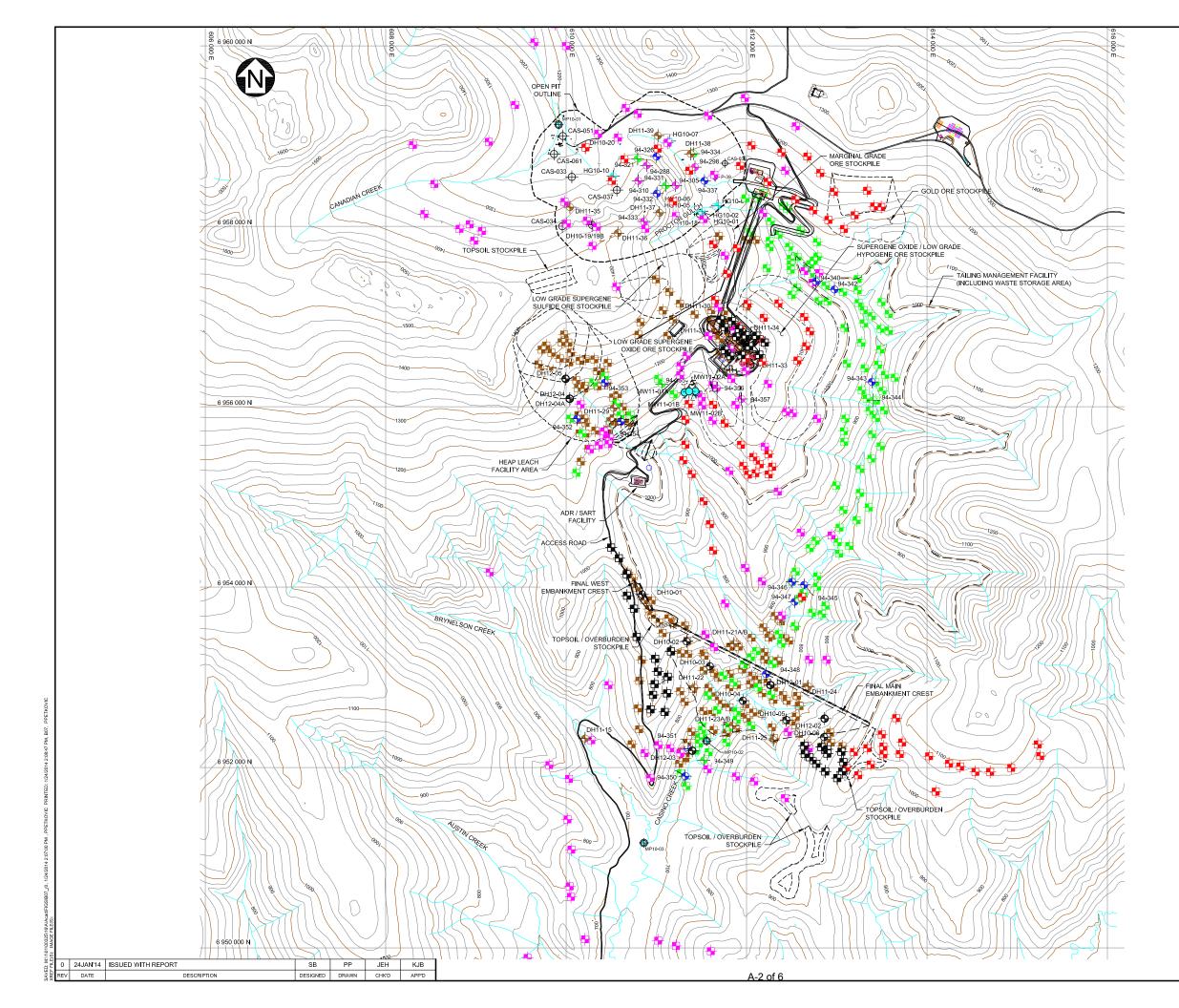
(Pages A-1 to A-6)



- 1. COORDINATE GRID IS UTM (WGS84/NAD83) ZONE 7 (m).
- 2. CONTOUR INTERVAL IS 25 METRES.
- 3. DIMENSIONS ARE IN METRES UNLESS NOTED.
- 4. OPEN PIT AS PROVIDED BY CASINO MINING CORPORATION (NOVEMBER 2012).
- 5. PLANT SITE AND CRUSHER LAYOUT PROVIDED BY M3 ENGINEERING AND TECHNOLOGY CORPORATION (OCTOBER 4, 2012).
- 6. ORE AND TOPSOIL STOCKPILES ARE SHOWN AT THEIR MAXIMUM SIZE DURING OPERATIONS.



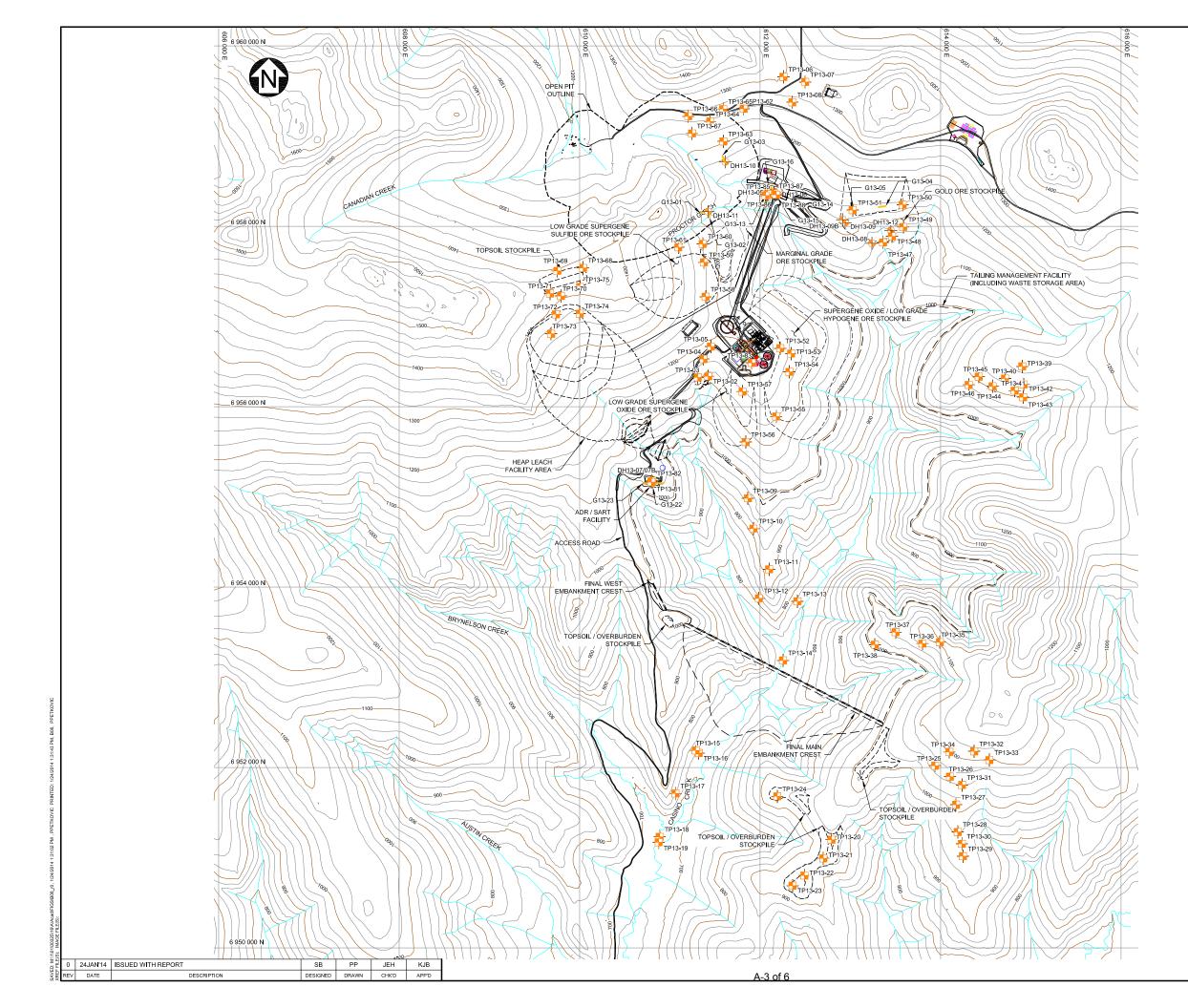




2012 GEOTECHNICAL DRILLHOLE
2011 GEOTECHNICAL DRILLHOLE
2011 MONITORING WELL
MINI PIEZOMETER
2010 HYDROGEOLOGICAL DRILLHOLE
2010 GEOTECHNICAL DRILLHOLE
EXPLORATION DRILLHOLE WITH PIEZOMETER OR THERMISTOR
1994 GEOTECHNICAL DRILLHOLE
1994 GEOTECHNICAL DRILLHOLE WITH THERMISTOR
1994 GEOTECHNICAL DRILLHOLE WITH 50 mm DIA. WELL
2012 TEST PIT LOCATION
2011 TEST PIT LOCATION
2010 TEST PIT LOCATION
1994 TEST PIT LOCATION
1993 TEST TRENCH LOCATION
2011 SEISMIC REFRACTION LINE
2011 GROUND PENETRATING RADAR (GPR) LINE
2011 EM31 LINE

- 1. COORDINATE GRID IS UTM (WGS84/NAD83) ZONE 7 (m).
- 2. CONTOUR INTERVAL IS 25 METRES.
- 3. DIMENSIONS ARE IN METRES UNLESS NOTED.
- 4. OPEN PIT IS SHOWN AT ITS FINAL OUTLINE AS PROVIDED BY CASINO MINING CORPORATION (NOVEMBER 2012).
- 5. PLANT SITE AND CRUSHER LAYOUT PROVIDED BY M3 ENGINEERING AND TECHNOLOGY CORPORATION (OCTOBER 4, 2012).
- 6. HEAP LEACH PAD IS SHOWN AT ITS MAXIMUM SIZE.
- 7. ORE AND TOPSOIL STOCKPILES ARE SHOWN AT THEIR MAXIMUM SIZE DURING OPERATIONS.

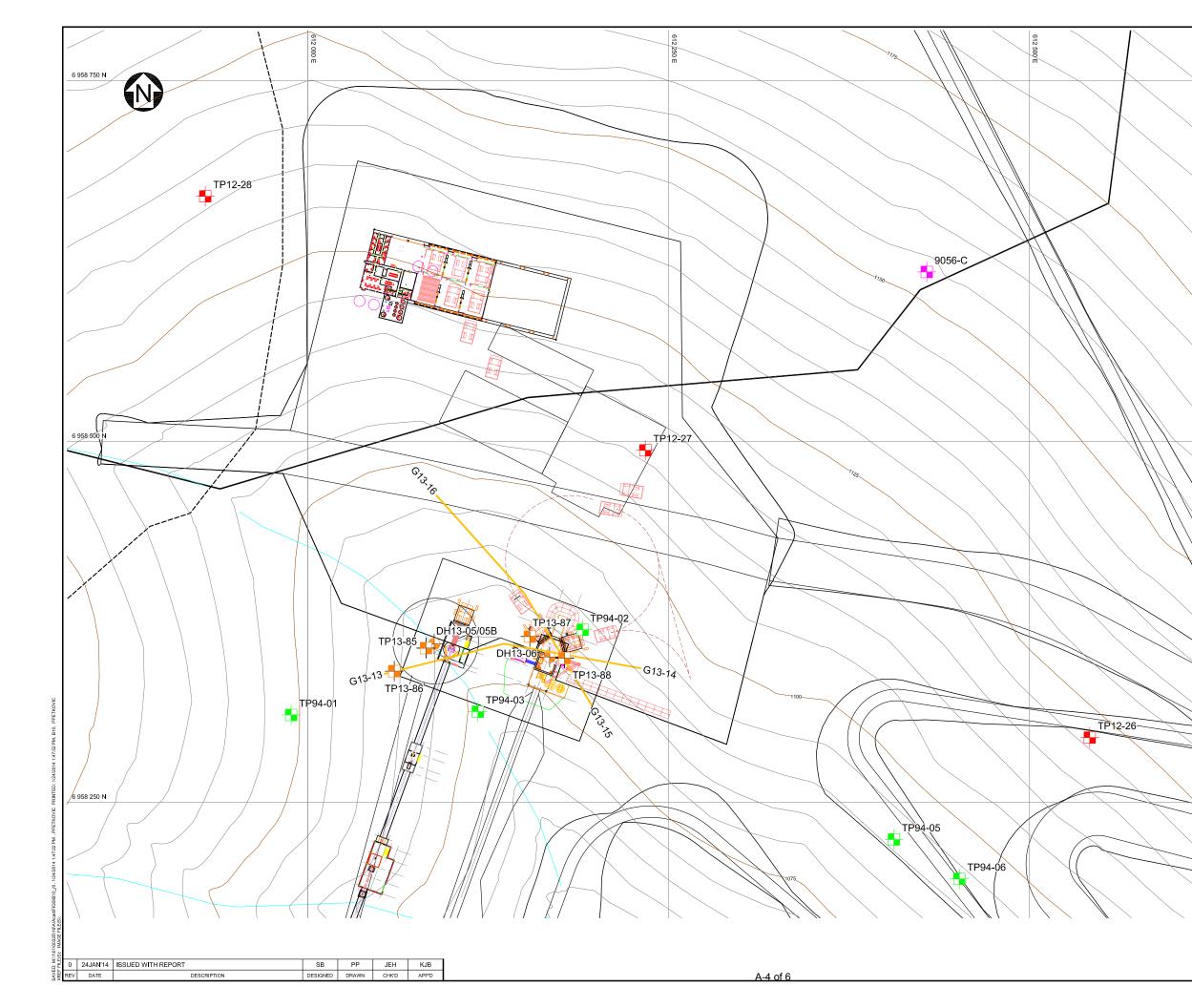
400 200 0 400 800 SCALE A	) 1200 1600	2000 m								
CASINO MINING C	CASINO MINING CORPORATION									
CASINO PR	OJECT									
PREVIOUS GEOTECHNICAL SITE INVESTIGATIONS MINE SITE										
Knight Piácold VA101-325/16 1										
Knight Piésold VA101-325/16 1 FIGURE A.2										

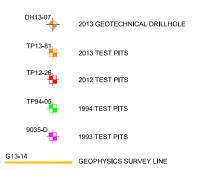


TP13-81 DH13-07 2013 GEOTECHNICAL DRILLHOLE 2013 GEOPHYSICS SURVEY LINE

- 1. COORDINATE GRID IS UTM (WGS84/NAD83) ZONE 7 (m).
- 2. CONTOUR INTERVAL IS 25 METRES.
- 3. DIMENSIONS ARE IN METRES UNLESS NOTED.
- 4. OPEN PIT IS SHOWN AT ITS FINAL OUTLINE AS PROVIDED BY CASINO MINING CORPORATION (NOVEMBER 2012).
- PLANT SITE AND CRUSHER LAYOUT PROVIDED BY M3 ENGINEERING AND TECHNOLOGY CORPORATION (OCTOBER 4, 2012).
- 6. HEAP LEACH PAD IS SHOWN AT ITS MAXIMUM SIZE.
- 7. ORE AND TOPSOIL STOCKPILES ARE SHOWN AT THEIR MAXIMUM SIZE DURING OPERATIONS.

400 200 0 400 80 SCALE A	) 1200 1600	2000 m						
CASINO MINING C	ORPORATION							
CASINO PR	OJECT							
2013 GEOTECHNICAL SITE INVESTIGATION MINE SITE								
Knight Piágold VA101-325/16 1								
Knight Piésold CONBULTING FIGURE A.3								





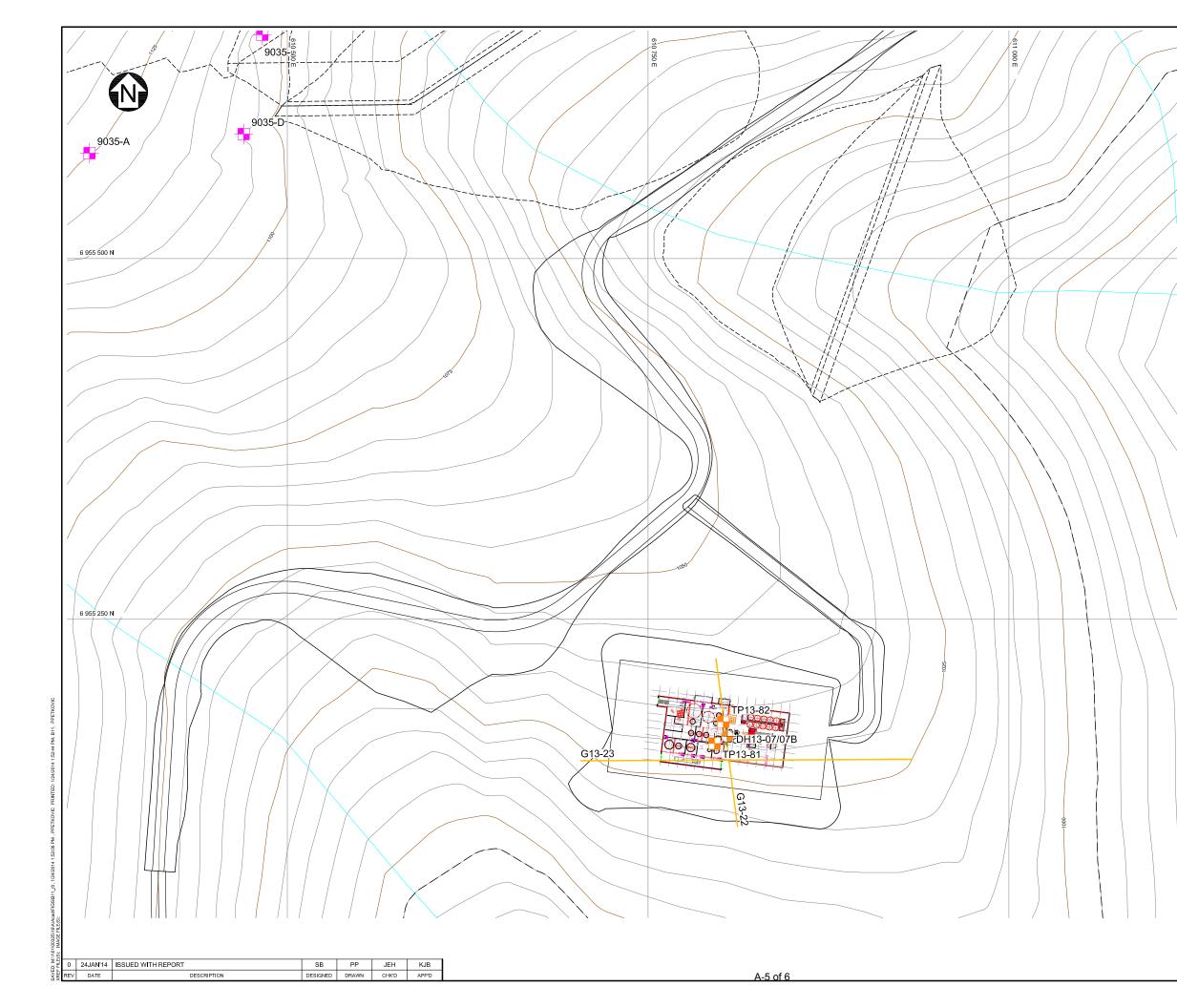
### NOTES:

7

\_\_\_\_

- 1. COORDINATE GRID IS UTM (WGS84/NAD83) ZONE 7 (m).
- 2. CONTOUR INTERVAL IS 5 METRES.
- 3. DIMENSIONS ARE IN METRES UNLESS NOTED.
- 4. CRUSHER LAYOUT PROVIDED BY M3 ENGINEERING AND TECHNOLOGY CORPORATION (OCTOBER 4, 2012).

	Knight Piésold	VA101-325/16	REF NO. 1 .4 0							
<	GEOTECHNICAL SITE INVESTIGATIONS CRUSHER AREA									
~	CASINO PROJECT									
	CASINO MINING C	ORPORATION								
<pre>/ - 1 / / / / / / / / / / / / / / / / /</pre>	25 12.5 0 25 50 SCALE A	) 75 100	125 m							



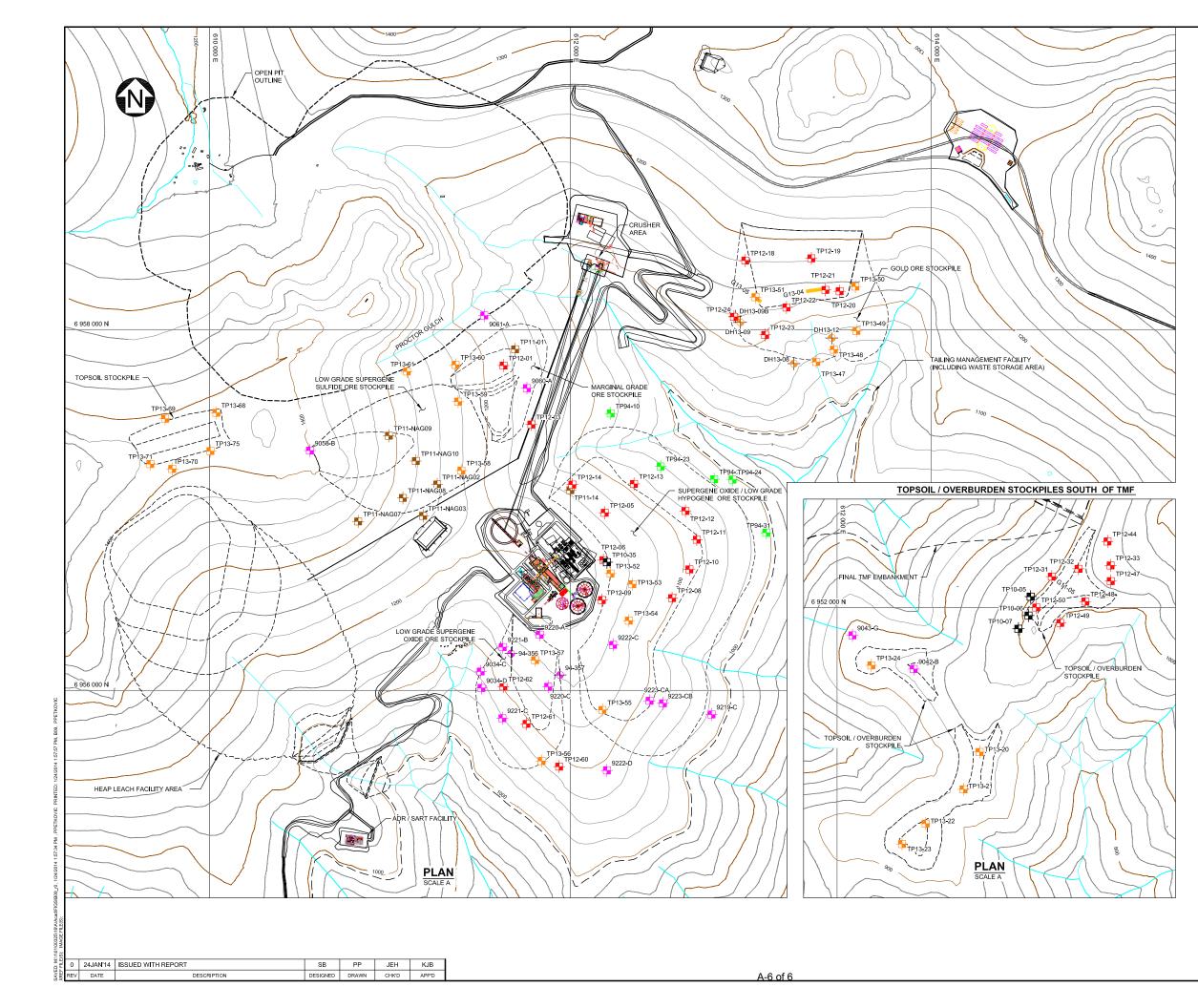


#### NOTES:

- 1. COORDINATE GRID IS UTM (WGS84/NAD83) ZONE 7 (m).
- 2. CONTOUR INTERVAL IS 5 METRES.
- 3. DIMENSIONS ARE IN METRES UNLESS NOTED.
- 4. CRUSHER LAYOUT PROVIDED BY M3 ENGINEERING AND TECHNOLOGY CORPORATION (OCTOBER 4, 2012).

GEOPHYSICS SURVEY LINE

25 12.5 0 25 50 SCALE A	75 100	125 m					
CASINO MINING C	ORPORATION						
CASINO PR	OJECT						
GEOTECHNICAL SITE INVESTIGATIONS ADR/SART FACILITY							
Knight Piésold	P/A NO. VA101-325/16	REF NO. 1					
CONSULTING	FIGURE A	<b>.5</b>					



↔ DH13-0*	I 2013 GEOTECHNICAL DRILLHOLE
<del>- 1</del>	2013 TEST PIT LOCATION
-	2012 TEST PIT LOCATION
-	2011 TEST PIT LOCATION
-∰-	2010 TEST PIT LOCATION
<del>\$</del>	1994 TEST PIT LOCATION
<b>-</b>	1993 TEST TRENCH LOCATION
	2013 GEOPHYSICS SURVEY LINE

- 1. COORDINATE GRID IS UTM (WGS84/NAD83) ZONE 7 (m).
- 2. CONTOUR INTERVAL IS 25 METRES.
- 3. DIMENSIONS ARE IN METRES UNLESS NOTED.
- 4. OPEN PIT IS SHOWN AT ITS FINAL OUTLINE AS PROVIDED BY CASINO MINING CORPORATION (NOVEMBER 2012).
- 5. PLANT SITE AND CRUSHER LAYOUT PROVIDED BY M3 ENGINEERING AND TECHNOLOGY CORPORATION (OCTOBER 4, 2012).
- 6. HEAP LEACH PAD IS SHOWN AT ITS MAXIMUM SIZE.
- 7. ORE AND TOPSOIL STOCKPILES ARE SHOWN AT THEIR MAXIMUM SIZE DURING OPERATIONS.

200 100 0 200 400 SCALE A	600 800	1000 m							
CASINO MINING CORPORATION									
CASINO PR	OJECT								
GEOTECHNICAL SITE INVESTIGATIONS TOPSOIL AND ORE STOCKPILE AREAS									
Knight Piésold	P/A NO. VA101-325/16	REF NO. 1							
Knight Piésold	FIGURE A	<b>1.6</b> 0							



# APPENDIX B

## **TEST PIT LOGS**

Appendix B1	Test Pit Logs
Appendix B2	Previous Test Pit Logs



# **APPENDIX B1**

# **TEST PIT LOGS**

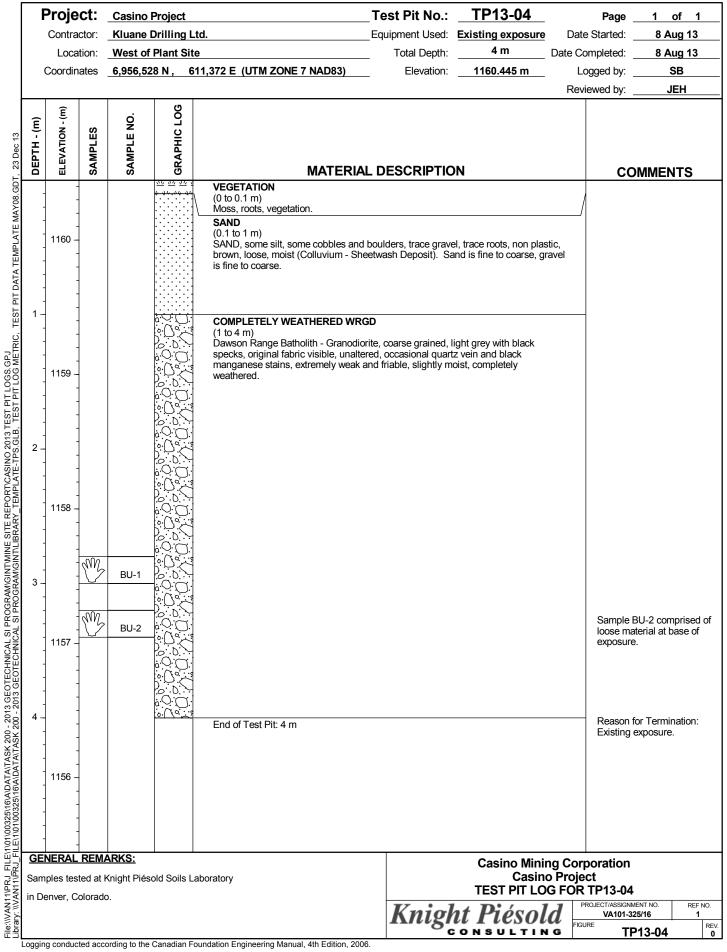
(Pages B1-1 to B1-88)

Ρ	roje	ct:	Casino	Project		Test Pit No.:	TP13-01		Page	1 of 1
(	Contra	ctor:	Kluane	Drilling L	td.	_Equipment Used:	Existing exposure	Date	e Started: _	7 Aug 13
	Loca	tion:	Barge L	anding A	ccess Road	_ Total Depth:	4.5 m	Date Co	ompleted:	7 Aug 13
С	Coordir	ates	6,966,28	80 N, 6 <sup>.</sup>	16,067 E (UTM ZONE 7 NAD83)	_ Elevation:	578.135 m	-	ogged by: _	
								Revi	iewed by: _	JEH
DEPTH - (m)	ELEVATION - (m)	SAMPLES	SAMPLE NO.	GRAPHIC LOG	MATERIA	L DESCRIPTIC	DN		со	MMENTS
_				6 80 86 80 80 80 80 80	VEGETATION				00	
1	578 -	Sun Sun	BU-0 BU-3 BU-1	0.00.00.00.00.00.00 0.00.00.00.00.00 0.00.00.00.00 0.00.00.00 0.00.00 0.0	(0 to 0.15 m) Moss, roots, vegetation. <b>TOPSOIL</b> (0.15 to 0.55 m) Sandy SILT, roots, low plasticity, dar decreases to the east to 0 m. <b>SAND</b> (0.55 to 0.85 m) SAND, trace to some gravel, trace si compact to dense, stratified in 2 cm is fine to medium, subangular. <b>SAND AND GRAVEL, MANY COBE</b> (0.85 to 4.5 m) SAND and GRAVEL, many cobbles, massive. Sand is fine to coarse, sub gravel and cobbles are subrounded including Granodiorite, Schist and m slightly weathered (Alluvium - Creek	It, poorly graded, nor ayers, moist (Alluviu BLES no to trace silt, well bangular to subround to rounded and cons letamorphic rocks, ve	n plastic, yellowish bro m - Creek Deposit). S graded, compact to de ed, gravel is fine to co ist of various rock type	wn, sand nse, arse, es	but exposing years and according operator.	previously frozen ed for several thawed out to excavator Some low dark brown silty migrated out of
3	575 -	M.	BU-2						soil after t	hawing. I thickness ~10 m nearby
4	574 -				End of Test Pit: 4.5 m					or Termination:
									Existing e Potential aggregate	
GEN		REM4	ARKS:				0			
				old Soils La	aboratory		Casino Mini Casin	ng Corj o Proje		
-		olorado	-				TEST PIT LC	G FOR	TP13-01	
	., .					Knig	ht Piésol	ld 🖻	ROJECT/ASSIGNME VA101-32	5/16 1
							ONSULTI	I G	IRE TP	13-01 RE

	Pr	roje	ct:	Casino I	Project		_Test Pit No.:	TP13-02		Page	1 of 1
	С	contrac	ctor:	Kluane Drilling Ltd. Equipment Used: Existing exposure		Date	e Started:	7 Aug 13			
		Locat		West of Plant Site Total Depth: 2 m				2 m			
	Co	oordina	ates							ogged by: _	
									Rev	iewed by: _	JEH
T, 23 Dec 13		ELEVATION - (m)	SAMPLES	SAMPLE NO.	GRAPHIC LOG	MATERIA	L DESCRIPTIC	DN		CO	MMENTS
	- - - - - - - - - - - - - - - - - - -					SAND (0 to 2 m) SAND, some silt, some gravel, trace greyish brown, loose, massive, mois derived from Residual soil). SAND i	t, derived from Grand	diorite (Antropogenic soi		Antropoge confirmed geologist,	enic origin I by project material was sal off an old adit.
INTILIBRARY_TEMPLATE-TPS.GL	<sup>2</sup> - 1 - - - - - -	-  120 - - - - - - - - - - - -				End of Test Pit: 2 m				Existina e	or Termination: xposure. ised to seal off an
3 GEOTECHNICAL SI PROGRAMM	3 - 1 - - - - - - -	- - - - - - - - - - - - -									
E110100325164/DATATASK 200 - 201	- 1 - 1  - - - - - - - - - - -	-  118 - - - - - - - - - - - - - - - - - - -									
	ENE	ERAL	REM	ARKS:				Casino Mining	Cor	noration	
11\PR.	ample	es test	ed at l	Knight Piéso	old Soils L	aboratory		Casino	Proje	ct	
in	Denv	ver, Co	olorado	D.			<b>T</b> 7 • 1	TEST PIT LOG		TP13-02 ROJECT/ASSIGNME	ENT NO. REF NO.
rary: V							Knigl	<i>t Piésola</i>		VA101-32	5/16 1
	ning c	Conduct	ed acc	ording to the	Canadian E	oundation Engineering Manual, 4th Edition, 200		ONSULTING		TP	<b>13-02</b>

Proje	ct:	Casino	Project		_Test Pit No.:	TP13-03	Page	1 of 2
Contra	ctor:	Kluane	Drilling L	td.	_Equipment Used:	Existing exposure	Date Started:	7 Aug 13
Loca		West of			_ Total Depth:		Date Completed:	
Coordin	ates	6,956,32	25 N, 6	11,309 E (UTM ZONE 7 NAD83)	_ Elevation:	1131.24 m	Logged by:	
							Reviewed by:	JEH
DEPTH - (m) ELEVATION - (m)	SAMPLES	SAMPLE NO.	GRAPHIC LOG	MATERIA	L DESCRIPTIC	N	C	OMMENTS
	••			GRAVELLY SAND		/1 <b>1</b>		
1 - 1 1	- Carlos - C	BU-1		(0 to 3 m) Gravelly SAND, some silt, trace clay Granodiorite (Residual Soil). Sand i and clay with white patches or dark r alteration. No vegetation or topsoil.	s fine to coarse, grave	el is fine. Locally more	silt	
3			0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,	<b>COMPLETELY WEATHERED WRO</b> (3 to 5 m) Dawson Range Batholith - Granodio (clayey) and black (manganese) pat weak, friable, completely weathered.	rite, coarse grained, o	prange brown with white or alteration, extremely	3	
GENERAL Samples test	ted at I	Knight Piés		aboratory	Knig	Casino	g Corporation Project G FOR TP13-0: d PROJECT/ASSIGN VA101- FIGURE T	B MENT NO. REF N

F	Proje	ct:	Casino I	Project		_Test Pit No.:	TP13-03		Page	2 of 2
	Contra	ctor:	Kluane [	Drilling L	td.					
	Loca	tion:	West of	Plant Site	9	_ Total Depth:	6 m			
(	Coordin	ates								
			1					Revi	iewed by: _	JEH
DEPTH - (m)	ELEVATION - (m)	SAMPLES	SAMPLE NO.			L DESCRIPTIO	N		со	MMENTS
-	- - - - - - - - - - - - -				WEATHERED WRGD (5 to 6 m) Dawson Range Batholith - Granodio Locally less deeply weathered, indic	rite, as above but hig ating an irregular wea	hly weathered, weak. athering profile.			
- 0 - - - - -	- - - - - - -				End of Test Pit: 6 m					or Termination: xposure.
- 7 - - - - - - - - - - - - -	- - - 1124 - - - - -									
- 8 - 8    	- - - - 1123 – - - - -									
- - 9 - - - - - - - - - - - - - - - - -	- - - - - - - - - - - - - - - - - - -									
<u>GEI</u>	NERAL	REM	ARKS:				Casino Mini	ng Corp	ooration	
				old Soils La	aboratory		Casine TEST PIT LO	o Proje G FOR	ct TP13-03	
in De	enver, C	olorado	ο.			Knig			ROJECT/ASSIGNME VA101-32	
	DEPTH - (m)	Contrac Loca Coordin	(ii)       (iii)       (iii)         HL4       1126       -         1125       -       -         1125       -       -         1124       -       -         1124       -       -         1124       -       -         1124       -       -         1124       -       -         1124       -       -         1124       -       -         1124       -       -         1124       -       -         1122       -       -         1122       -       -         Samples tested at I       -       -         In Denver, Colorado       -       -	Contractor:       Kluane I         Location:       West of         Coordinates       6,956,32         1126       1         1126       1         1125       1         1125       1         1124       1         1125       1         1126       1         1127       1         1128	Contractor: Kluane Drilling L Location: West of Plant Site Coordinates 6,956,325 N, 6 Image: state of the state of t	Contractor:       Kluane Drilling Ltd.         Location:       Yest of Plant Site         Coordinates       6.956,325 N.       611,309 E (UTM ZONE 7 NAD83)         Image: Coordinates       Signature       MATERIA         Image: Coordinates       Signature       Material         Image: Coordinates       Signature       Material       Material       Material         Image: Coordinates       Signature       Material       Material       Material         Image: Coordinates       Signature       Material       Material       Material         Image: Coordinates       Signature <th>Contractor:       Kluane Drilling Ltd.       Equipment Used:         Location:       West of Plant Site       Total Depth:         Coordinates       6,956,325 N.       611,309 E (UTM ZONE 7 NAD83)       Elevation:         Image: Coordinates       0,956,325 N.       611,309 E (UTM ZONE 7 NAD83)       Elevation:         Image: Coordinates       0,956,325 N.       01,309 E (UTM ZONE 7 NAD83)       MATERIAL DESCRIPTION         Image: Coordinates       0,900 High Site Coordinates       0,900 High Site Coordinates       MATERIAL DESCRIPTION         Image: Coordinates       0,900 High Site Coordinates       0,900 High Site Coordinates       MATERIAL DESCRIPTION         Image: Coordinates       0,900 High Site Coordinates       0,900 High Site Coordinates       MATERIAL DESCRIPTION         Image: Coordinates       0,900 High Site Coordinates       0,900 High Site Coordinates       MATERIAL DESCRIPTION         Image: Coordinates       0,900 High Site Coordinates       0,900 High Site Coordinates       MATERIAL REMARKS:         Image: Coordinates       0,900 High Site Coordinates       0,900 High Site Coordinates       End of Test Pit: 6 m         Image: Coordinate Site Site Coordinates       0,900 High Site Coordinates       0,900 High Site Coordinates       0,900 High Site Coordinates         Image: Coordinate Site Site Coordinates       0,900 High Site Coordinates</th> <th>Contractor:       Kluane Drilling Ltd.       Equipment Use:       Existing exposure         Location:       West of Plant Site       6 m         Coordinates       5,956,325 N., 611,309 E (UTM ZONE 7 NADB3)       Elevation:       1131.24 m         Image: Site of Plant Site       Site of Plant Site       MATERIAL DESCRIPTION         Image: Site of Plant Site       MATERIAL DESCRIPTION       WEATHERED WROB (5 to 6 m)         Image: Site of Plant Site       Material Description (5 to 6 m)       Dawoon Range Batholith - Granodicrite, as showe but highly weathered, weak.         Image: Site of Plant Site       Image: Site of Plant Site       End of Test Pit 6 m         Image: Site of Plant Site       Image: Site of Plant Site       End of Test Pit 6 m         Image: Site of Angle Plant Site       Casino Minit Casing Image: Site of Angle Plant Site       Casino Minit Casing Plant Site         Site of Plant Site       Image: Site of Angle Plant Site       Casino Minit Casing Plant Site       Casino Minit Casing Plant Site         Image: Image: Image: Image: Site of Angle Plant Site       Image: Site of Angle Plant Site       Casing Minit Casing Plant Site         Site of Angle Plant Site       Image: Site of Angle Plant Site       Casing Minit Casing Plant Site       Casing Minit Casing Plant Site         Site of Angle Plant Site       Image: Site of Angle Plant Site       Site of Angle Plant Site       Casin</th> <th>Contractor:       Kuano Drilling Ltd.       Equipment Used:       Existing exposure       Date QL         Coordinate       6,956,328 N.       611,399 E. (UTM ZONE 7 NADB3)       Elevation:       1131.24 m.       Note QL         Image: Second and the second and t</th> <th>Kurse Drilling Ld.       Equipment Uset:       Existing exposure Total Depth:       Date Completed: 0 m       Date Completed: Date Completed: 1331.2 m       Date Completed: 1331.2 m</th>	Contractor:       Kluane Drilling Ltd.       Equipment Used:         Location:       West of Plant Site       Total Depth:         Coordinates       6,956,325 N.       611,309 E (UTM ZONE 7 NAD83)       Elevation:         Image: Coordinates       0,956,325 N.       611,309 E (UTM ZONE 7 NAD83)       Elevation:         Image: Coordinates       0,956,325 N.       01,309 E (UTM ZONE 7 NAD83)       MATERIAL DESCRIPTION         Image: Coordinates       0,900 High Site Coordinates       0,900 High Site Coordinates       MATERIAL DESCRIPTION         Image: Coordinates       0,900 High Site Coordinates       0,900 High Site Coordinates       MATERIAL DESCRIPTION         Image: Coordinates       0,900 High Site Coordinates       0,900 High Site Coordinates       MATERIAL DESCRIPTION         Image: Coordinates       0,900 High Site Coordinates       0,900 High Site Coordinates       MATERIAL DESCRIPTION         Image: Coordinates       0,900 High Site Coordinates       0,900 High Site Coordinates       MATERIAL REMARKS:         Image: Coordinates       0,900 High Site Coordinates       0,900 High Site Coordinates       End of Test Pit: 6 m         Image: Coordinate Site Site Coordinates       0,900 High Site Coordinates       0,900 High Site Coordinates       0,900 High Site Coordinates         Image: Coordinate Site Site Coordinates       0,900 High Site Coordinates	Contractor:       Kluane Drilling Ltd.       Equipment Use:       Existing exposure         Location:       West of Plant Site       6 m         Coordinates       5,956,325 N., 611,309 E (UTM ZONE 7 NADB3)       Elevation:       1131.24 m         Image: Site of Plant Site       Site of Plant Site       MATERIAL DESCRIPTION         Image: Site of Plant Site       MATERIAL DESCRIPTION       WEATHERED WROB (5 to 6 m)         Image: Site of Plant Site       Material Description (5 to 6 m)       Dawoon Range Batholith - Granodicrite, as showe but highly weathered, weak.         Image: Site of Plant Site       Image: Site of Plant Site       End of Test Pit 6 m         Image: Site of Plant Site       Image: Site of Plant Site       End of Test Pit 6 m         Image: Site of Angle Plant Site       Casino Minit Casing Image: Site of Angle Plant Site       Casino Minit Casing Plant Site         Site of Plant Site       Image: Site of Angle Plant Site       Casino Minit Casing Plant Site       Casino Minit Casing Plant Site         Image: Image: Image: Image: Site of Angle Plant Site       Image: Site of Angle Plant Site       Casing Minit Casing Plant Site         Site of Angle Plant Site       Image: Site of Angle Plant Site       Casing Minit Casing Plant Site       Casing Minit Casing Plant Site         Site of Angle Plant Site       Image: Site of Angle Plant Site       Site of Angle Plant Site       Casin	Contractor:       Kuano Drilling Ltd.       Equipment Used:       Existing exposure       Date QL         Coordinate       6,956,328 N.       611,399 E. (UTM ZONE 7 NADB3)       Elevation:       1131.24 m.       Note QL         Image: Second and the second and t	Kurse Drilling Ld.       Equipment Uset:       Existing exposure Total Depth:       Date Completed: 0 m       Date Completed: Date Completed: 1331.2 m       Date Completed: 1331.2 m



	F	Proje	ct:	Casino	Project		_Test Pit No.:	TP13-05		Page	1 of 2
		Contra	ctor:	Kluane	Drilling L	td.	_Equipment Used:	Existing exposure	Date	e Started:	
		Loca	tion:	West of	f Plant Sit	9	_ Total Depth:	6 m	Date Co	mpleted:	8 Aug 13
	(	Coordin	ates	6,956,6	67N, 6	11,455 E (UTM ZONE 7 NAD83)	Elevation:	1181.609 m	Lo	ogged by: _	SB
									Revi	ewed by:	JEH
, 23 Dec 13	DEPTH - (m)	ELEVATION - (m)	SAMPLES	SAMPLE NO.	GRAPHIC LOG	MATERIA	L DESCRIPTIC	DN		со	MMENTS
GDT					<u> </u>	VEGETATION					
ESI PIT LOGS.GPJ TEST PIT LOG METRIC, TEST PIT DATA TEMPLATE MAY08.GDT,	- - - - - - - - - - - - - - - - - - -	- - - - - - - - - - - - - - - - - - -				(0 to 0.2 m) Moss, roots, vegetation. <b>SAND</b> (0.2 to 0.7 m) SAND, some silt, some cobbles, trac loose, moist (Colluvium), locally only fine to coarse. <b>SAND</b> (0.7 to 1.7 m) SAND, some gravel, trace silt and cla Granodiorite (Residual Soil). Sand is	y 0.2 m thick. Sand i	s fine to coarse, gravel	is		
TEMPLATE-TPS.GLB, TEST PIT LOG	2 -	- - 1180 - - - - - - - - - - - - - - - - - - -				<b>COMPLETELY WEATHERED WRC</b> (1.7 to 2.7 m) Dawson Range Batholith - Granodio brown with black specks, original fab friable, dry, completely weathered. E	rite, medium grained pric visible, unaltered	, extremely weak and	ıду		
GRAMIGIN I WINE STIE KIROGRAMIGIN TULIBRARY		- 1179 - - - - -				WEATHERED WRGD (2.7 to 6 m) As above but highly to moderately w weak to medium strong, rock mass is laterally.					
0- 2013 GEOTECHNICAL SI PROGRAMIGIN I MINE SI IE REPORTI CASINO 2013 I 200 - 2013 GEOTECHNICAL SI PROGRAMIGINTLIBRARY_TEMPLATE-TPS.GLB,	-	- - - 1178 – - - -									
ile:\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	4	- - - - - - - - - - - - - - -									
	GEN	NERAL	REM	ARKS				• • ·			
J FRJ					sold Soils L	aboratory		Casino Minii Casino	ng Corp o Proje		
AN11		enver, Co		-	5010 00118 L	accidenty		TEST PIT LO	G FOR	TP13-05	
ary: //V		, 0		-			Knigl	nt Piésol	<i>d</i>	ROJECT/ASSIGNMI VA101-32	5/16 1
느니ㄴ			ad -	andia - t "	Car - " -	oundation Engineering Manual, 4th Edition, 2006	- C	ONSULTIN	FIGU	TP	13-05 REV.

	F	Proje	ct:	Casino I	Project		_Test Pit No.:	TP13-05		Page	2 of 2
		Contra		Kluane [		td.	Equipment Used:	Existing exposure	Date	e Started:	8 Aug 13
		Loca		West of			Total Depth:	<u>6 m</u>		mpleted: _	-
	(	Coordin	ates	6,956,66	7N, 6	11,455 E (UTM ZONE 7 NAD83)	Elevation:	1181.609 m		ogged by: _	
ļ					,				Revi	ewed by: _	JEH
)T, 23 Dec 13	DEPTH - (m)	ELEVATION - (m)	SAMPLES	SAMPLE NO.	GRAPHIC LOG	MATERIA	AL DESCRIPTIO	N		co	MMENTS
	- - - - - - - - - - - - - - - - - - -	- - - - - - - - - - - - - - - - - - -				End of Test Pit: 6 m				Reason fo Existing e	or Termination: xposure.
PLATE-TPS.GLB, TEST PIT LOG M	- - - - 7 - -	- 1175 - - - - - -									
PROGRAM/GINT/LIBRARY_TEM	- - - 8 - -	- 1174 - - - - - -									
TANTASK 200 - 2013 GEOTECHNICAL SI TA	- - - - 9 - - - - - -	- - - - - - - - - - - - - - - - - - -									
FILE/1/01/00325/16/A/DA1	- - - - - - - - - - - - - - - - - - -	- 1172 - - - - <b>NERAL</b>	REM/	ARKS:				Casino Mini	ng Corr	poration	
: \\\VAN11\P		ples tes enver, C		Knight Piéso o.	old Soils L	aboratory	Vaiol	Casine TEST PIT LO	o Proje G FOR	CT TP13-05 ROJECT/ASSIGNME	
	oggin	aconduc	ted acc	ording to the	Canadian Er	oundation Engineering Manual, 4th Edition, 200		nt Piésol	a G	VA101-32	5/16 1 13-05 0

	F	Proje	ct:	Casino	Project		_Test Pit No.:	TP13-06		Page	1 of 1
		Contra	ctor:	Kluane	Drilling L	.td.	_Equipment Used:	CAT 322C	Date	e Started:	8 Aug 13
		Loca	tion:	Northea	ast of Ope	en Pit	Total Depth:	3.1 m	Date Co	ompleted:	8 Aug 13
	(	Coordin	ates	6,959,6	57N, 6	12,259 E (UTM ZONE 7 NAD83)	Elevation:	1301.715 m	L	ogged by: _	SB
				1					Rev	iewed by: _	JEH
r, 23 Dec 13	DEPTH - (m)	ELEVATION - (m)	SAMPLES	SAMPLE NO.	GRAPHIC LOG	MATERIA	L DESCRIPTIO	N		CO	MMENTS
GDT.	_	-			$h \cap O$	VEGETATION, COBBLES AND BO	DULDERS				
KAMIGINTUBRARY_TEMPLATE-TPS.GLB, TEST PIT LOG METRIC, TEST PIT DATA TEMPLATE MAY08.GDT,		1301 - - - - - - - - - - - - - - - - - - -				(0 to 0.2 m) Moss, cobbles and boulders of suba SILT AND SAND, MANY COBBLE (0.2 to 2 m) SILT and SAND, many cobbles and loose, moist (Colluvium). Sand is fit weathered with orange brown to pink st weathered, very weak. Joints filled and gravel, fine.	angular, fresh to slightly <b>S AND BOULDERS</b> I boulders, trace gravel, ne to coarse, gravel is f bound of the state of	low plasticity, brown ine to coarse. ight grey with black e joint spacing, highl	, , У		
DEXIVANTITIEND FILENTINU03201040041A1A5X 200 - 2013 GEOTECHNICAL SI PROGRAM	4	1298 - - - - - - - - - - - - - - - - - - -		ADKS		WEATHERED WRGD (3 to 3.1 m) As above but moderately weathered End of Test Pit: 3.1 m	I, weak to medium stror		]	Bedrock.	or Termination:
L L L L L		GENERAL REMARKS:				Casino Mini	ng Cor	poration			
N11/F		Samples tested at Knight Piésold Soils Laboratory in Denver, Colorado.						Casin TEST PIT LO	o Proje G FOR	ct TP13-06	
N/A	in De	enver, C	olorad	D.			Knich			ROJECT/ASSIGNME	
ibrary							Millin	t Piésol		IRE	13-06 REV.
	oggin	a conduc	ted acc	ording to the	Canadian F	oundation Engineering Manual, 4th Edition, 200				18	0

	F	Proje	ct:	Casino	Project		_Test Pit No.:	TP13-07	_	Page	1 of 1
		Contra	ractor: Kluane Drilling cation: Northeast of Op			td.	_Equipment Used:	CAT 322C	_ Date	e Started: _	8 Aug 13
		Loca	tion:	Northea	st of Ope	n Pit	_ Total Depth: _	2.5 m	_ Date Co	ompleted:	8 Aug 13
	(	Coordin	ates	6,959,60	0N, 6	12,500 E (UTM ZONE 7 NAD83)	_ Elevation:	1292.234 m	_ L	ogged by: _	SB
									Rev	iewed by:	JEH
T, 23 Dec 13	DEPTH - (m)	ELEVATION - (m)	SAMPLES	SAMPLE NO.	GRAPHIC LOG	MATERIA	L DESCRIPTION	N		со	MMENTS
og METRIC, TEST PIT DATA TEMPLATE MAY08.GD	- - - - - - - - - - - - - - - - - - -	- 1292 - - - - - - - - - - - - - - - - - - -	en s	BU-1		VEGETATION (0 to 0.2 m) Moss, roots, vegetation. TOPSOIL (0.2 to 0.4 m) Organic sandy SILT, dark greyish br SANDY SILT (0.4 to 0.8 m) Sandy SILT, some roots, low plastici SAND (0.8 to 1.4 m) SAND, some silt, some gravel, some compact, saturated (Residual soil). fine grained. WEATHERED WRGD	ty, brown, stiff, wet (Cc e cobbles, trace clay, or	ange brown, loose	/	. ⊻ Water slo pit wall be	wly seeping from low 0.8 m depth.
REVENUASINU 2013 LEST PIT LUC SARY_TEMPLATE-TPS.GLB, TEST PIT LUC	2	- - - - - 1290 – - - -				(1.4 to 2.5 m) Dawson Range Batholith - Granodio specks with orange brown to pinkish joint spacing, highly to moderately w residual gravelly sand. End of Test Pit: 2.5 m	red hematite staining,	weak, saturated, c	lose		or Termination: and instability.
AL SI PROGRAMIGINI MINE S NICAL SI PROGRAMIGINT/LIBI	- - 3 - - -	- - - 1289 – -									
FIRE/IVANTITERS FLEXING/0032516/6A/DATAXTASK 201- 2013 GEOTECHNICAL SI PROGRAMGINT/LIBRARY_TEMPLATE-TPS/GLB, TEST PIT LOGS/GFJ Library: \\VANTITIPRJ_FLEXI01/0032516/6A/DATAXTASK 200 - 2013 GEOTECHNICAL SI PROGRAMGINT/LIBRARY_TEMPLATE-TPS/GLB, TEST PIT LOG METRIC, TEST PIT DATA TEMPLATE MAY08.GDT,	4	- - - - - - - - - - - - - - - - - - -									
	<u>G</u> EI	NERAL	<u>RE</u> M/	ARKS:				Casina Mir	ning Cor	poration	
1/PRJ				Knight Piés	old Soils L	aboratory	Casino Mining Corporation Casino Project				
AN1		enver, C		-			TEST PIT LOG FOR TP13-07				
ary: \\\		, -					Knigh	t Piéso	ld <sub>EGI</sub>	PROJECT/ASSIGNME VA101-32	5/16 1
	oggie	aconduc	tod acc	ording to the	Canadian	oundation Engineering Manual, 4th Edition, 200	C C	ONSULTI	NG	TP	13-07 REV. 0

	F	Proje	ct:	Casino	Project		Test Pit No.:	TP13-08	_	Page _	1 of 1
		Contra	ctor:	Kluane	Drilling L	td.	_Equipment Used:	CAT 322C	_	e Started: _	
		Loca			st of Ope		Total Depth:	2 m	_ Date C	ompleted: _	_
	(	Coordin	ates	6,959,37	′5N, 6	12,357 E (UTM ZONE 7 NAD83)	_ Elevation:	1271.167 m		ogged by: _	
					· · · ·				Rev	iewed by:	JEH
r, 23 Dec 13	DEPTH - (m)	ELEVATION - (m)	SAMPLES	SAMPLE NO.	GRAPHIC LOG	MATERIA	L DESCRIPTION	N		со	MMENTS
.GDT		-			h	VEGETATION, COBBLES AND BO	ULDERS				
ESI PIT LOGS GPJ TEST PIT LOG METRIC, TEST PIT DATA TEMPLATE MAY08.GDT,	- - - - - 1 - - - - - - - - - - - - - -	1271 - - - - - - - - - - - - - - - - - -				<ul> <li>(0 to 0.4 m) Moss, roots, vegetation, cobbles and</li> <li>TOPSOIL</li> <li>(0.4 to 0.7 m) Silty SAND with many cobbles and b greyish brown, saturated (Topsoil)</li> <li>SANDY SILT, FROZEN (NBN) (0.7 to 2 m) Sandy SILT, some gravel, some cob filled with ice), frozen, Nbn (Colluviu</li> </ul>	boulders, many roots a		/	through T	ws into pit opsoil, above st at 0.6 m depth.
TEMPLATE-TPS.GLB,	- - - 2 - - - - - - - - - - - - - - -	- - - - 1269 - - - - - - - - - - - - - - - - - -			(中)年代 (王)年(王) (王)(王) (王)(王) (王) (王) (王) (王) (王) (王	WRGD (2 to m) Dawson Range Batholith - Granodio specks, slightly weathered to fresh, s End of Test Pit: 2 m		ight grey with black	<.	- Reason fr Bedrock.	or Termination:
ICAL SI PROGRAM/GIN1/MINE CHNICAL SI PROGRAM/GINT/LII	- - 3 - - - -	- - 1268 – - -									
IIE://WANTI/PRJ_FILE/1/01/00325/16/ALDATA/TASK.200 - 2013 GEOTECHNICAL SI PROGRAM/GINTI/URINE SITE K ibrary: //VAN11/PRJ_FILE/1/01/00325/16/ALDATA/TASK.200 - 2013 GEOTECHNICAL SI PROGRAM/GINTI/UBRARY.	- - - 4 - - - - - - - - - - - -	- - - - - 1267 - - - - - - - - - - - - - - - - - - -									
001100	]	-									
ILEV1											
L L L L L L L	GE	GENERAL REMARKS: Samples tested at Knight Piésold Soils Laboratory					Casino Mining Corporation				
		-		-	old Soils L	aboratory	Casino Project TEST PIT LOG FOR TP13-08				
NAI	in De	enver, C	olorado	0.			TZ • 1 / D• / 11 PROJECT/ASSIGNMENT NO. REF NO.				
e:////							Knigh	t Pleso	ld FIGI	VA101-32	DEV
	oggin	a conduc	ted acc	ording to the	Canadian Fr	oundation Engineering Manual, 4th Edition, 2000	⊂ c	ONSULTI	NG	TP	13-08

	Proj	ect:	Casino	Project		_Test Pit No.:	TP13-09	_	Page _	1 of 1
	Cont	ractor:	Kluane	Drilling L	td.	_Equipment Used:	CAT 322C	_ Date	e Started:	9 Aug 13
	Lo	cation:	Tailing	Managem	ent Facility	Total Depth:	1.9 m	_ Date Co	ompleted:	9 Aug 13
	Coord	inates	6,954,9	85N, 6	11,864 E (UTM ZONE 7 NAD83)	Elevation:	972.043 m		ogged by: _	
								Rev	iewed by:	JEH
DT, 23 Dec 13	(m) - (m) ETENATION - (m) 972	SAMPLES	SAMPLE NO.	CRAPHIC LOG			N		со	MMENTS
08.GL	9/2	-			VEGETATION (0 to 0.1 m)			,		
TPS.GLB, TEST PIT LOG METRIC, TEST PIT DATA TEMPLATE MAY08.GDT, C	971				Moss, roots, vegetation. TOPSOIL (0.1 to 0.25 m) SAND and SILT, many roots and pl SANDY SILT, FROZEN (NBN) (0.25 to 1 m) Sandy SILT, some gravel, some root frozen, Nbn (Colluvium). GRAVELLY SAND, FROZEN (NBN (1 to 1.9 m) Gravelly SAND, some cobbles, trac (Colluvium). Sand is coarse, cobble COBBLES, FROZEN (NBN) (1.9 to m) COBBLES, some silty SAND, frozei	ots, locally black organic •) e to some silt, greyish b e content increases with	pockets, greyish t			or Termination: st and cobbles.
SI PROGRAM/GINT/LIBRARY_TEMPLATE-TPS.GLB, 60 C	969				End of Test Pit: 1.9 m	, non (conditionity.				
ibrary: \\VAN111\PRJ_FILE\1\01\00325\16\A\DATATASK 200 - 2013 GEOTECHNICAL SI PROGRAM\GINT\LIBRARY = & D \\ 5 & D \\ 5 \\ 5 \\ 5 \\ 5 \\ 5 \\ 5 \\ 5 \\	968									
E G	ENERA		ARKS:				Casino Mir		noration	
ad∖t Sa				sold Soils L	aboratory	Casino Mining Corporation Casino Project				
u III III	Denver,	Colorad	lo.			Knigh	test pit l t <b>Piéso</b>		ROJECT/ASSIGNM VA101-32	5/16 1
		ucted as	ording to the	Canadian F	pundation Engineering Manual, 4th Edition, 200	- C	ONSULTI	N G	JRE TP	P13-09

	F	Proje	ct:	Casino	Project		_Test Pit No.:	TP13-10	_	Page	1 of 1
		Contra	ctor:	Kluane I	Drilling L	.td.	_Equipment Used:	CAT 322C	_ Date	e Started:	9 Aug 13
		Loca	tion:	Tailing I	Managem	ent Facility	_ Total Depth: _	1.8 m	_ Date Co	ompleted:	9 Aug 13
	(	Coordin	ates	6,954,64	19N, 6	11,926 E (UTM ZONE 7 NAD83)	Elevation:	928.542 m	_ Lo	ogged by: _	SB
									Rev	iewed by: _	JEH
23 Dec 13	DEPTH - (m)	ELEVATION - (m)	SAMPLES	SAMPLE NO.	GRAPHIC LOG	MATERIA	L DESCRIPTION	J		CO	MMENTS
SDT,	-		0,	0,	<u> ~ ~ ~ ~</u>	VEGETATION		•			
TEST PIT LOG METRIC, TEST PIT DATA TEMPLATE MAY08.GDT,	- - - - - - - - - - - - - -	928 - - - - - - - - - - - - - - - - - - -	M.	BU-1		(0 to 0.1 m) Moss, roots, vegetation. SAND AND GRAVEL (0.1 to 1 m) SAND and GRAVEL, trace silt, trace cm thick layer with dark (manganese (Residual soil). Sand is fine to coars depth. WEATHERED WRGD	e?) minerals, loose to c	ompact, stratified, r	noist		
U - I	- - - - - - -	- - - - - - - - - - - -				(1 to 1.8 m) Dawson Range Batholith - Granodic specks, extremely close joint spacin filled with orange brown residual gra GRAVEL and SAND, many cobbble brown, frozen, Vx, clear ice crystals End of Test Pit: 1.8 m	g, highly weathered, ve wel and sand. Betweer s, coarsening downwar	ry weak, frozen. Jo 1 1.00 and 1.20 m d, angular, orange	pints	Reason fo	r Termination:
RAMIGIN MINE SITE REPORTICASINO 2013 1 ROGRAMIGIN TILIBRARY_TEMPLATE-TPS.GLB,	- 2	- - - - 926 - - - -	· · · ·							Bedrock a	nd permafrost.
DIECHNICAL SI PROGRAMIGIN	3	- - - - - - - - - - - - - -	-								
LIBENDANTITYEN FILENTUTYUUSSITIDAADATATASK 200 - 2013 GEOTECHNICAL SI FRUG LIBEARY: NVANTITIPRJ_FILENTUTY00325/16AIDATATASK 200 - 2013 GEOTECHNICAL SI PF	- - 4 - -	-									
11/01/00325/16/4/DA	-	924 - - - -									
	GE	ENERAL REMARKS:						Casino Min	ing Cor	poration	
				Knight Piés	old Soils L	aboratory	Casino Project TEST PIT LOG FOR TP13-10				
ibrary: \\VAN	in De	enver, C	olorado	0.			Knigh	t Piéso		ROJECT/ASSIGNME VA101-325	
	oggin	a conduc	ted acc	ording to the	Canadian F	oundation Engineering Manual, 4th Edition, 200				11	

	F	Proje	ct:	Casino	Project		Test Pit No.:	TP13-11	_	Page	1 of 1
		Contra	ctor:	Kluane	Drilling L	.td.	_Equipment Used:	CAT 322C	_ Date	e Started: _	9 Aug 13
					_	nent Facility	Total Depth:	1.8 m	_ Date Co	ompleted:	
	(	Coordir	ates	6,954,1	97 N, 6	12,100 E (UTM ZONE 7 NAD83)	_ Elevation:	934.957 m		ogged by: _	
╞									Rev	iewed by: _	JEH
)T, 23 Dec 13 I	DEPTH - (m)	ELEVATION - (m)	SAMPLES	SAMPLE NO.	GRAPHIC LOG		L DESCRIPTION	N		со	MMENTS
		934 -			$ \begin{array}{c} \left  \begin{array}{c} \left  \begin{array}{c} \left  \begin{array}{c} \left  \end{array}\right  \\ \left  \end{array}\right  \\ \left  \begin{array}{c} \left  \end{array}\right  \\ \left  \end{array}\right  \\ \left  \end{array}\right  \\ \left  \end{array}\right  \\ \left  \begin{array}{c} \left  \end{array}\right  \\ \left  \end{array}\right  \\ \left  \end{array}\right  \\ \left  \end{array}\right  \\ \left  \begin{array}{c} \left  \end{array}\right  \\ \left  \end{array}\right  \\ \left  \end{array}\right  \\ \left  \begin{array}{c} \left  \end{array}\right  \\ \left  \end{array}\right  \\ \left  \end{array}\right  \\ \left  \begin{array}{c} \left  \end{array}\right  \\ \left  \end{array}\right  \\ \left  \end{array}\right  \\ \left  \begin{array}{c} \left  \end{array}\right  \\ \left  \end{array}\right  \\ \left  \end{array}\right  \\ \left  \begin{array}{c} \left  \end{array}\right  \\ \left  \end{array}\right  \\ \left  \begin{array}{c} \left  \\\right  \\ \left  \end{array}\right  \\ \left  \end{array}\right  \\ \left  \begin{array}{c} \left  \\\right  \\ \left  \end{array}\right  \\ \left  \end{array}\right  \\ \left  \begin{array}{c} \left  \\\right  \\ \left  \\\right  \\ \left  \end{array}\right  \\ \left  \begin{array}{c} \left  \\\right  \\ \left  \\\left  \\\right  \\ \left  \\\left  \\\right  \\ \left  \\\left  \\\right  \\ \left  \\\right  \\ \left  \\\right  \\ \left  \\\left  \\\left  \\\right  \\\left  \\\right  \\ \left  \\\left  \\\left  \\\right  \\ \left  \\\left  \\\left  \\\right  \\ \left  \\\right  \\ \left  \\\right  \\ \left  \\\left  \\\left  \\\right  \\\left  \\\right  \\ \left  \\\right  \\ \left  \\\left  \\\left  \\\right  \\\left  \\\right  \\\left  \\\left  \\\right  \\\left  \\\left  \\\left  \\\right  \\\left  \\\left  \\\left  \\\right  \\\left  \\\left  \\\right  \\\left  \\\left  \\\left  \\\right  \\\left  \\\left  \\\right  \\\left  \\\left  \\\left  \\\right  \\\left  \\\left  \\\left  \\\left  \\\left  \\\left  \\\left  \\\left  \\\left  \\\left$	VEGETATION (0 to 0.15 m) Moss, roots, vegetation. TOPSOIL (0.15 to 0.2 m) Organic SiLT, many roots and plant SILTY SAND (0.2 to 0.3 m) Silty SAND, fine to coarse, many roo (Residual soil). WRGD (0.3 to 1.8 m) Dawson Range Batholith - Granodic specks and orange staining, unalter fragments, more competent with dep with strong individual rock fragment silt, slightly moist. End of Test Pit: 1.8 m	remains, dark brown, s ots, non plastic, light br prite, medium grained, l ed, highly fractured into oth, slightly weathered,	slightly moist (Tops own, loose, moist ight grey with blact o gravel to cobble s very weak rock ma	k sized ass		or Termination:
UT00225/16/ANDATATASK 200 - 2013 GEOTECHNICAL SI INCURVENT	- - - - - - - - - - - - - - - - - - -	931 -									
	GE	930 - NERAL	REM	ARKS:				Oneline III			
1/PRJ					sold Soils L	aboratory		Casino Mir Casi	no Proje	ct	
/AN1		enver, C		-				TEST PIT L	OG FOR	TP13-11	
Library: ///							Knigh	t Piéso	ld EG	ROJECT/ASSIGNME VA101-32 JRE TP	
┶┙Ĺ	oaain	a conduc	ted acc	ording to the	e Canadian F	oundation Engineering Manual, 4th Edition, 200	- C	ONSULTI	NG	TP	13-11

	Project: Contractor: Location:			Test Pit No.:     TP13-12     Pa       Iuane Drilling Ltd.     Equipment Used:     CAT 322C     Date Start						
					d. ent Facility	Equipment Used: _ Total Depth: _	CAT 322C 6 m	_	e Started: _ ompleted:	10 Aug 13 10 Aug 13
C	Coordin				1,986 E (UTM ZONE 7 NAD83)	Elevation:	830.193 m	_	ogged by:	SB
-				,				_	iewed by: _	
	Ê			U						
(E) -	-) - N	S	Š	C						
έ	ΑΤΙΟ	L P L	LE	HIG						
DEPTH	elevation - (m)	SAMPLES	SAMPLE NO.	GRAPHIC LOG	ΜΔΤΕΡΙ	AL DESCRIPTION	J			MMENTS
-				<u> </u>	VEGETATION		•			
-	830 -	-			(0 to 0.1 m) Moss, roots, vegetation.			/		
	-				SANDY, SILTY GRAVEL (0.1 to 1.8 m)					
	-	-000			Sandy, silty GRAVEL, some cobble slightly orangy brown, loose, stratifi	es, trace clay, coarsening	downward, well g	raded,		
-	-	m	BU-1	0.0	Sand and gravel are fine to coarse,	cobbles and gravel con	sist of angular, slig	htly		
]	-				weathered Granodiorite.					
	-			0.0.						
	-	-								
-	829 -			0.0.						
	-			$[0, \bigcirc 0, \bigcirc 0]$						
-	-			6.0.V						
1	-									
-	-			<u>6.0.7</u>	SANDY GRAVEL				-	
2 -	-			0.00°.	(1.8 to 2.1 m) Sandy GRAVEL, trace silt, angular,	orange brown, compac	t moist (Pesidual s	(iii)		oad, thermal
-	-	-			YMGD			ion).	disturban occurred,	ce may have but expected to
1	828 -				(2.1 to 6 m) Dawson Range Batholith - Meta-Gr	anodiorito, grov with ora	ngo staining stron	a	have neve	er been frozen.
-	-	-			(UCS 50 to 75 MPa), fractured into	very angular gravel to c	obble sized fragme	g ents,		
1	-				extremely close joint spacing, more Joints filled with residual brown sar	e competent with depth, s ad, trace silt, slightly moi	slightly weathered.			
-	-	-								
-	-			111211						
3 -	-									
-	- 827 –									
	- 120	-								
-	-									
	-									
-	-									
	-	1								
4 -	-	-								
	- 826 -	1								
-	-	-								
	-	1								
-	-	-								
	-	1								
4	-									
GEN	NERAL	REM	ARKS:	اح ش حا			Casino Min	ing Cor	poration	
Samp	ples tes	ted at	Knight Piés	old Soils La	boratory	Casino Project TEST PIT LOG FOR TP13-12				
in De	enver, C	olorad	D.			17			ROJECT/ASSIGNME	
						Knigh	t Piéso	la FIGI	VA101-32	•
					undation Engineering Manual, 4th Edition, 20	⊂ c	ONSULTI	NG	TP	13-12

	F	Proje	ct:	Casino	Project		_Test Pit No.:	TP13-12	_	Page	2 of 2
		Contra	ctor:	Kluane I	Drilling L	td.	Equipment Used:	CAT 322C	_ Dat	e Started: _	10 Aug 13
						ent Facility	Total Depth:	6 m		ompleted:	
	(	Coordir	ates	6,953,87	6N, 6	11,986 E (UTM ZONE 7 NAD83)	Elevation:	830.193 m		ogged by: _	
				1					Rev	iewed by: _	JEH
3DT, 23 Dec 13	DEPTH - (m)	ELEVATION - (m)	SAMPLES	SAMPLE NO.	GRAPHIC LOG	MATERI	AL DESCRIPTION	N		co	MMENTS
г РІТ DATA TEMPLATE MAY08.С	- - - - - - - -	825 -	· · · ·								
3 IESI MI LUGS.GEJ -B, TEST PIT LOG METRIC, TES	6	824 -	· · · ·			End of Test Pit: 6 m				Reason fo Bedrock.	or Termination:
INTIBRARY_TEMPLATE-TPS.GL	7	823 -									
GEOTECHNICAL SI PROGRAMICIN	- 8 - - - - - - - - - - - - - - -	822 -	· · · ·								
FIG:WANTITER, FLEXIMUM022010ADALAVIASK 201 - 2013 GEOLECHNICAL SI FROGRAMIGINTMIRE SI E KEPORTICASINO 2013 LEST PIT LOGS GFJ LIBRAY, WANTITER, FLEXIMUM03251616AIDATATASK 200 - 2013 GEOTECHNICAL SI PROGRAMIGINTLIBRARY, TEMPLATE-TPS GLB, TEST PIT LOG METRIC, TEST PIT DATA TEMPLATE MAY08.GDT, 23 Dec 13	- 9 - - - - - - - - - - - - - - - - - -	821 -									
	<u>G</u> E	NERAL	REM	ARKS:				Casina Mir	ing Co-	poration	
		Samples tested at Knight Piésold Soils Laboratory					Casino Mining Corporation Casino Project				
VAN1		enver, C					Casino Project TEST PIT LOG FOR TP13-12				
Library: \\\							Knigh	Project Assignment No.         REF NO.           Va101-325/16         1           Figure         TP13-12           0         0			
	loggin	a conduc	tod acc	ording to the	Canadian E	oundation Engineering Manual, 4th Edition, 20					· *

	F	Proje	ct:	Casino	Project		_Test Pit No.:	TP13-13	_	Page	1 of 1
		Contra	ctor:	Kluane	Drilling L	td.	_Equipment Used:	CAT 322C	_ Date	e Started:	10 Aug 13
		Loca	ition:	Tailing	Managem	ent Facility	Total Depth:	1.8 m	_ Date Co	mpleted:	10 Aug 13
	(	Coordir	ates	6,953,84	42 N, 6	12,413 E (UTM ZONE 7 NAD83)	Elevation:	775.211 m	_ Lo	ogged by: _	SB
									Revi	ewed by:	JEH
, 23 Dec 13	DEPTH - (m)	ELEVATION - (m)	SAMPLES	SAMPLE NO.	GRAPHIC LOG	MATERIA	L DESCRIPTION	N		CO	MMENTS
GDT					6 84 86 84 86 86 86 8	VEGETATION					
TEST PIT LOGS GPJ TEST PIT LOG METRIC, TEST PIT DATA TEMPLATE MAY08.GDT,	- - - - - - - - - -	775 -	· · · ·		7.0.0 0 0 0 0 0	(0 to 0.2 m) Moss, roots, vegetation. TOPSOIL (0.2 to 0.3 m) Organic SILT, many roots and plant SAND AND GRAVEL (0.3 to 0.8 m) SAND and GRAVEL, trace silt, angumoist (Colluvium). Sand is fine to o SANDY, SILTY GRAVEL, FROZEN (0.8 to 1.8 m)	ular, non plastic, grey b oarse, gravel is fine to c	rown, loose, slightl	y		
TEST PIT LOG METRIC, TE	-	774 -	- MA	BU-1		Sandy, silty GRAVEL, trace clay, gr thick, Vs, and individual ice crystals (Colluvium). Sand is fine to coarse,	close to coarse fragme	nts, Vx, ~10% exce	1 mm ess ice	Reason fr	or Termination:
KAMIGINI MINE SITE KEPURI IGASINU ZUTS I QOGRAMIGINTILIBRARY_TEMPLATE-TPS.GLB,	2	773 -				YMGD (1.8 to m) Dawson Range Batholith - Meta-Gra (UCS 50 to 75 MPa), slightly to mod End of Test Pit: 1.8 m			ığ	Permafros	
	- 3 - - - - - -	772 -									
LIB://WAN11/PRJ_FILE/1/01/00325/16/01/DATAI/ASK 200 - 2013 GEOTECHNICAL SI PROG	- 4 - - - - - - - - - - -	771 -									
	GE	NERAL	REM	ARKS:				Casino Mir	ning Corr	oration	
1   	Sam	ples tes	ted at I	Knight Piés	old Soils L	aboratory	Casino Mining Corporation Casino Project				
VAN1		enver, C		-				TEST PIT L	OG FOR	TP13-13	
brary: ///							Knigh	t Piéso	ld _	ROJECT/ASSIGNME VA101-32	5/16 1 REV.
	oggin	a conduc	ted acc	ording to the	Canadian Fo	oundation Engineering Manual, 4th Edition, 200		CROULII		17	13-13 0

	Proje	ect:	Casino	Project		_Test Pit No.:	TP13-14	-	Page	1 of 2
	Contra	actor:	Kluane	Drilling L	td.	Equipment Used:	CAT 322C	Dat	e Started: _	10 Aug 13
	Loca	ation:	Tailing	Managem	ent Facility	Total Depth:	5 m	Date Co	ompleted:	10 Aug 13
	Coordi	nates	6,953,1	88 N, 6	12,254 E (UTM ZONE 7 NAD83)	Elevation:	745.992 m	-	ogged by: _	
L								Rev	iewed by: _	JEH
DEPTH - (m)	ELEVATION - (m)	SAMPLES	SAMPLE NO.	GRAPHIC LOG		AL DESCRIPTION	N		со	MMENTS
	-	-			VEGETATION (0 to 0.1 m)					
					Moss, roots.			/		
	-	-		P. O. C	(0.1 to 0.2 m) Cobbly, silty SAND, dark brown (To	nosoil)				
					GRAVELLY SANDS AND COBBL		ZEN	]		
2		1		0.0.	(0.2 to 3 m) Gravelly SANDS and COBBLES, tr	ace silt, poorly graded,	dry to saturated but	a to	but expos	previously frozen ed for several
	745	-			originally frozen (previously expose coarse, subrounded to subangular, coarse, subrounded to rounded, co	quartz rich, brown to co	olourless, gravel is fi	ne to	according	thawed out to excavator
1-	745 -	1			rounded, various host rocks, fresh,		neter, subrounded ti	J	operator.	
	-	1		0. 0. 0. 0. 0. 0. 0.						
	]	-								
	1									
	-	-								
		1		Po 0						
2 -	744	1		0, 0, 0, 0						
	1	]		0.0.						
		1								
	-	-								
		1		0.00						
	-	1		0.0. 						
3 -	743				GRAVELLY SANDS AND COBBL	ES EROZEN			Ţ	
•	-			0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0	(3 to 4.8 m)		lluvium Crookbod			ws fast into pit
	-	-		6.0.X	As above but frozen, material sloug Deposit).	ns during excavation (A				es instability
	1	1 m	BU-1	0.00						
			BU-1	0.0.0. 						
		-		2.0.0 0.0						
4 -	742	1		0.0						
	-	-		0.0.						
	1	1								
	-	]		6.0.V						
•		-		0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0						
	1			0.0.						
	-	-			GRAVELLY SANDS AND COBBL (4.8 to 5 m)	ES, FROZEN				
GE	NERAL	REM	ARKS:				Casino Mini			
Sam	-		-	sold Soils L	aboratory		Casir TEST PIT LC	o Proje OG FOR	Ct TP13-14	
in D	enver, C	Colorad	0.			Knich			PROJECT/ASSIGNME VA101-32	
						Migh	t Piésol			9/13-14
	na condu	cted acc	ordina to the	e Canadian F	oundation Engineering Manual, 4th Edition, 20				••	

	F	Proje	ct:	Casino F	roject		Test Pit No.:	TP13-14	_	Page	2 of 2
	Contractor:		ctor:				_Equipment Used:	CAT 322C	Date Started:		10 Aug 13
		Loca	tion:	Tailing N	lanagen	nent Facility	Total Depth:	5 m	_ Date C	ompleted:	10 Aug 13
	(	Coordir	ates	6,953,188	3N, 6	12,254 E (UTM ZONE 7 NAD83)	Elevation:	745.992 m	_ L	ogged by:	SB
									Rev	viewed by:	JEH
T, 23 Dec 13	DEPTH - (m)	ELEVATION - (m)	SAMPLES	SAMPLE NO.	<b>GRAPHIC LOG</b>	MATERIA	AL DESCRIPTION	N		co	MMENTS
8.GD	-					As above but frozen with some silt Creekbed Deposit).	and clay, and dark red s	ands (Alluvium -			
		740 -				End of Test Pit: 5 m					
AM/GINT/LIBRARY_TEMPLATE-TP	- - - - - - - - - - - - - - - -	738 -									
013 GEOTECHNICAL SI PROGR											
LE/1/01/00325/16/A/DATA/TASK 200 - 2	9	737 -									
	GE	NERAL	REM	ARKS:				Casino Mir	ning Cor	poration	
11/PR	Sam	ples tes	ted at	Knight Piéso	ld Soils L	aboratory		Casi	Logged by: <u>JEH</u> Reviewed by: JEH     COMMENTS     Reason for Termination:   Excavator reach and   instability.     Instability.     ining Corporation   sino Project   LOG FOR TP13-14		
VAN VAN	in De	enver, C	olorad	D.			77 4 7				NT NO. REF NO
Jrary: \							Knigh	t Piéso	ld FIG	VA101-32	5/16 1
	ongin	a oondur	tod ooo	ording to the (	Considian E	oundation Engineering Manual, 4th Edition, 20		UNBULTI	NG	11	13-14 0

	F	Proje	ct:	Casino	Project		_Test Pit No.:	TP13-15	_	Page _	1 of 1
		Contra					Equipment Used:			e Started: _	
						Management Facility	Total Depth:	1.83 m		ompleted:	
	(	Coordin	ates	6,952,1	89 N, 6	11,286 E (UTM ZONE 7 NAD83)	Elevation:	738.53 m	_	ogged by: _	
┟									Rev	iewed by: _	JEH
0T, 23 Dec 13	DEPTH - (m)	ELEVATION - (m)	SAMPLES	SAMPLE NO.	GRAPHIC LOG		AL DESCRIPTION	4		со	MMENTS
IB://VANTIFRA_FILEN/01/00325/16/01DATATASK 200 - 2013 GEOTECHNICAL SI PROGRAMIGIN NIME SITE REPORTIVASION 2013 TEST PIT LOGS GPJ Dray: //VAN11/PRJ_FILEN101/00325/16/01DATATASK 200 - 2013 GEOTECHNICAL SI PROGRAMIGINTLIBRARY_TEMPLATE-TPS.GLB, TEST PIT LOG METRIC, TEST PIT DATA TEMPLATE MAY08.GDT, 23 Dec 13		738 -			$ \begin{array}{c}    \\    \\    \\    \\    \\    \\    \\   $	VEGETATION (0 to 0.1 m) Moss, roots, vegetation. GRAVELLY SAND (0.1 to 0.8 m) Gravelly SAND, trace silt, roots, and compact, massive, slightly moist (C WRGD/YMGD (0.8 to 1.8 m) Dawson Range Batholith - Granodid light grey with black specks, to grey and some red hematite staining, ver very weak to weak rock mass, medi filled with orange brown residual grad End of Test Pit: 1.83 m	olluvium). Sand is fine prite and Meta-Granodic with brown staining, so ry close joint spacing, m um strong individual roo	to coarse, gravel is prite, medium graine me pink quartz veir ioderately weathere	ed, ns	Reason fo Bedrock.	or Termination:
KUGKAMIGINI IMINE ALLE REFORTI WAVING SI PROGRAM/GINT/LIBRARY TEMPLATE-TPS.	2	- - - 736 - - - - - - - - - - - - - - - - - - -									
- 2013 GEOTECHNICAL SLP 200 - 2013 GEOTECHNICAL S		- 735 - - - - - -									
1/01/00325/16/A/DATA/TASK	- - - - - - - - - - - - -	- - - 734 - - - - -									
	GE	NERAL	REM	ARKS:				Casino Min			
	Sam	ples tes	ted at	Knight Piés	sold Soils L	aboratory			10 Proje	ct	
Library: \\\VAN	in De	enver, C	olorad	0.			Knigh	t Piéso		ROJECT/ASSIGNME VA101-32	

	Proje		Casino			Test Pit No.:	TP13-16	_ Page Date Started:		1 of 2	
	Contra			Drilling Lt f Tailing N	a. Management Facility	Equipment Used: _ Total Depth: _	CAT 322C 6 m	-	Completed: _	10 Aug 1 10 Aug 1	
(	Coordir				11,319 E (UTM ZONE 7 NAD83)	Elevation:	732.183 m		Logged by:		10
	Coordin	lateo		,, ,			702.100 m	-	viewed by: _	JEH	
DEPTH - (m)	ELEVATION - (m)	SAMPLES	SAMPLE NO.	GRAPHIC LOG	MATERI	AL DESCRIPTION	4		CO	MMENTS	5
	732 -	-			VEGETATION (0 to 0.1 m) Moss, roots, vegetation. SILTY SAND (0.1 to 1.5 m) Silty SAND, some roots, trace grav (Colluvium). Sand is fine to coarse	el, non plastic, grey brov , gravel is fine.	vn, loose, moist		<u>}</u>		
- - - - - - -	731 -	-									
	730 -	-		(1) (1) (1) (1) (1) (1) (1) (1) (1) (1)	SANDY SILT (1.5 to 5 m) Sandy SILT, trace clay, trace grave (iron oxide), firm, slightly moist. Sa quartz rich, various host rocks and	ind is subangular, fine to	ith some brown stai coarse, gravel is fi	ning ne,			
3 -	729 -		· BU-1								
- - - 4 - - - -	728 -			· · · · · · · · · · · · · · · · · · ·							
Sam		sted at		+ + + + + + + +	aboratory		TEST PIT LO	no Proj DG FOI	ect R TP13-16		
						Knigh	t Piéso	ld 🛛	PROJECT/ASSIGNME VA101-32		1 REF 1
							ONSULTI			13-16	

	Project:		ct:	Casino	Project		_Test Pit No.:	<b>TP13-16</b> CAT 322C		Page	2 of 2
		Contra	ctor:	Kluane	Drilling L	td.	Equipment Used:	_ Dat	Date Started:10 Aug 13		
		Loca	tion:	South of	Tailing	Management Facility	Total Depth:	6 m	_ Date C	ompleted:	10 Aug 13
	(	Coordir	ates	6,952,16	1N, 6	11,319 E (UTM ZONE 7 NAD83)	Elevation:	732.183 m	_ L	ogged by: _	SB
									Rev	viewed by: _	JEH
T, 23 Dec 13	DEPTH - (m)	ELEVATION - (m)	SAMPLES	SAMPLE NO.	GRAPHIC LOG		AL DESCRIPTION	N		COI	MMENTS
T PIT DATA TEMPLATE MAY08.GD		727 -	- CUN	BU-2		ORGANIC SILT AND SAND (5 to 6 m) Organic SILT and SAND, trace clay odd organic smell, moist (Alluvium gravel is fine.	r, trace gravel, slightly p - Floodplain Deposit). S	lastic, dark grey, firi Sand is fine to coars	m, ;e,		
3 IEST MITLUGS METRIC, TEST .B, TEST PITLOG METRIC, TEST	6 - - - - -	726 -	· · · ·		<u>(, , , , , , , , , , , , , , , , , , , </u>	End of Test Pit: 6 m				Reason fo Excavator	or Termination: reach.
WINE OF LE REPORT WANTELERARY TEMPLATE-TPS.GLI	7 - - - - - - - -	725 -									
GEOTECHNICAL SI PROGRAMIGINI	- 8 - - - - - - - - - -	724 -									
FIREWANTITER. FILENWINDSZEIGANDATANASK 201- 2013 GEOLECHNICAL SI PROGRAMIGINTURE SI E KEPORTICASINO 2013 TEST PIT LOGS GFJ LIDRAY. WANTITERJ FILEN1010032516/ADATATASK 200 - 2013 GEOTECHNICAL SI PROGRAMIGINTURBARY TEMPLATE-TPS/GLB, TEST PIT LOG METRIC, TEST PIT DATA TEMPLATE MAY08/GDT, 23 Dec 13	- 9 - - - - - - - - - - - - - - - - - -	723 -	· · · ·								
	_										
RJ_F		NERAL						Casino Min	ing Cor	poration	
N11/F				Knight Piés	old Soils L	aboratory		Casir TEST PIT LO	10 Proje	ect TP13-16	
-ibrary: \\\VA	in De	enver, C	olorado	ο.			Knigh	t Piéso		VA101-325	
	oggin	a conduc	ted acc	ording to the	Canadian F	oundation Engineering Manual, 4th Edition, 200			-		

	F	Proje	ct:	Casino	Project		Test Pit No.:	TP13-17	Pa	ge <u>1 of 1</u>
		Contra	ctor:	Kluane	Drilling L	td.	_Equipment Used:	CAT 322C	Date Starte	ed: 11 Aug 13
		Loca	ition:	South c	of Tailing I	Management Facility	Total Depth:	5 m	Date Complete	ed: 11 Aug 13
	(	Coordir	ates	6,951,7	12 N, 6	11,062 E (UTM ZONE 7 NAD83)	Elevation:	709.016 m	Logged I	by:SB
									Reviewed I	y:JEH
ſ		(m) -			g					
_	Ē	) - N	S.	N N	CLO					
23 Dec 13	Ξ	ATIC	PLE	ЬГЕ	H					
	DEPTH - (m)	ELEVATION	SAMPLES	SAMPLE NO.	GRAPHIC LOG	MATERIA	L DESCRIPTION	J		COMMENTS
OR METRIC, TEST PIT DATA TEMPLATE MAY08.GDT,	-				21 24 24 2	VEGETATION		•		
Y08.	]					(0 to 0.1 m) Moss, roots, vegetation.			/	
ΕMA	-		-			TOPSOIL			/	
LATI	-		-			(0.1 to 0.25 m) SAND, some silt, some roots, sand is	s fine to medium graine	ed dark brown slightl	v	
EMP	]				o.O.O.	moist (Topsoil).			<b>,</b>	
TA T	-		-		0.00	GRAVELLY SAND (0.25 to 1.5 m)				
ΤDΑ	-		-			Gravelly SAND, some cobbles, to sa	ndy GRAVEL and COL	BBLES, angular, beig	e	
ST PI	1_	708 -			o O o	brown to brown, loose (Colluvium).	sand is fine to coarse, rtz rich, moderately we	eathered Granodiorite.	Э,	
Ë,	-	100 -								
TRIC	-		-		0.0°					
Ϋ́́Ε, C	_		1		0.0					
22	-				<u> </u>					
TPIT	-		-			WEATHERED YMGD (1.5 to 2.5 m)				
TEST						Dawson Range Batholith - Meta-Gra white with black specks, some orang				
LB, T	-		1			close joint spacing, highly weathered	l rock mass. Extremely	y weak rock mass of		
PS.G	2 -	707 -	-		111211	GRAVEL size rock fragments with sa consists of quartz rich, moderately w				
			-					-		
TEMPLATE-TPS.GL			1							
ЪЩ	-		-							
ARY =			-			YMGD				
GRAM/GINT/LIBRARY	-		1			(2.5 to 5 m) Dawson Range Batholith - Meta-Gra	nodiorite, coarse grain	ed, pinkish orange to		
	-		-		111\\\\\\\\\	white with black specks, some orang ~75 MPa), very close joint spacing, r	e iron oxide staining, c	uartz rich, strong (UC	s	
AM/O	3 -	700	-			~75 MPa), very close joint spacing, i		vealhereu.		
OGR	Ŭ.	706 -	1							
	-		-							
N N	-		1							
HNIC	]		1		111211					
	-		-							
10 10 10 10	-									
2013 2013	]		1							
28	4 -	705 -	-							
SK 2	-		-							
AJTA	]									
DAT	-		-		111211					
16/A	-		-							
01101			1							
01/0(	-		-						Rea	son for Termination:
	-		-						Bed	
1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	GE	NERAL	REM	ARKS:		End of Test Pit: 5 m		Casino Minin		on
24 14 14 14 14 14 14 14 14 14 14 14 14 14	Sam	ples tes	ted at I	Knight Pié	sold Soils La	aboratory		Casino	Project	
VAN VAN	in De	enver, C	olorado	Э.				TEST PIT LOC	000 1507 14	-17 SIGNMENT NO. REF NO.
IE://ANTI/PRJ_FILE/1/01/00325/16/AUDALAN_XXX 200 - 2013 GEOTECHNICAL SI PROG brary: \\VAN11/PRJ_FILE/101/00325/16/AUDATA/TASK 200 - 2013 GEOTECHNICAL SI PF							Knigh	t Piésol		01-325/16 1
Libra							c	ONSULTIN	G	TP13-17 0

	F	Proje	ct:	Casino	Project		_Test Pit No.:	TP13-18	_	Page	1 of 1
		Contra	ctor:	Kluane I	Drilling L	td.	_Equipment Used:	CAT 322C	_ Date	e Started: _	11 Aug 13
		Loca	tion:	Conflue	nce of Br	vnelson and Casino Ck	Total Depth:	0.4 m	_ Date Co	ompleted:	11 Aug 13
	(	Coordin	ates	6,951,23	2N, 6 <sup>.</sup>	10,887 E (UTM ZONE 7 NAD83)	Elevation:	700.399 m	_ L	ogged by: _	SB
									Rev	iewed by:	JEH
, 23 Dec 13	DEPTH - (m)	ELEVATION - (m)	SAMPLES	SAMPLE NO.	GRAPHIC LOG	MATERIA	L DESCRIPTION	l		со	MMENTS
GDT,					<u> </u>	VEGETATION		-			
EST PIT DATA TEMPLATE MAY08.	- - - - - - - - - -	- 700 - - - - - - - - - - -			2 2 4 5 7 2 3 7 4 4 7 4 7 4 7 4 7 4 7 4 7 4 7 4 7 4 7	(0 to 0.1 m) Moss, vegetation. <b>TOPSOIL</b> (0.1 to 0.2 m) Organic SILT, many roots and plant <b>SILT</b> (0.2 to 0.3 m) SILT, trace roots, low plasticity, grey <b>SILT, FROZEN (VS)</b> (0.3 to 0.4 m) SILT, grey, frozen, Vs, ~30% excess (Collivium)	r, soft, moist (Colluvium	).		Brynelsor	or Termination:
2013 TEST PIT LOGS.GPJ S.GLB, TEST PIT LOG METRIC, T		- - 699 - - - - - -				(Colluvium). End of Test Pit: 0.4 m					
NT/MINE SITE REPORT/CASINO I\GINT\LIBRARY_TEMPLATE-TP9	-	- - 698 - - - -									
OTECHNICAL SI PROGRAM/GI GEOTECHNICAL SI PROGRAM	3 -	- - - 697 - - - -									
FIIe://VAN11PRJ. FILE1/101/0032516/ADATATASK 200 - 2013 GEOTECHNCAL SI PROGRAMGINTMINE SITE REPORTCASINO 2013 TEST PIT LOGS GPJ Lbrary: //VAN11/PRJ_FILE1/101/0032516/a/IDATATASK 200 - 2013 GEOTECHNICAL SI PROGRAMGINT/LIBRARY_TEMPLATE-TPS.GLB, TEST PIT LOG METRIC, TEST PIT DATA TEMPLATE MAY08.GDT, 23 Dec 13	4	- - - 696 - - - - -									
/01/U .E/1/C	-	-									
	GEN	NERAL	REM/	ARKS:	<u>ı                                     </u>			Casino Min	ina Cor	poration	
711/PR	Sam	ples test	ed at k	Knight Piés	old Soils La	aboratory		Casii	10 Proje	ct	
ile:\\\VAN11\F ibrary: \\VAN1	in De	enver, Co	olorado	).			Knigh	TEST PIT LO	ld FIGU	PROJECT/ASSIGNME VA101-32	
	ogging	a conduct	ed acco	ording to the	Canadian Fo	oundation Engineering Manual, 4th Edition, 200		_	I	••	

Project: Contractor: Location: Coordinates		Casino P Kluane D	rilling L	td. ynelson and Casino Ck	_ <b>Test Pit No.:</b> _ _Equipment Used: _ 	<b>TP13-19</b> CAT 322C 4 m	_ Date S	Page		
					10,876 E (UTM ZONE 7 NAD83)	Elevation:	693.142 m	_	iged by: _	
								Review	wed by:	JEH
DEPTH - (m)	ELEVATION - (m)	SAMPLES	SAMPLE NO.	GRAPHIC LOG	MATERIA	L DESCRIPTION	l		COI	VMENTS
	693 -	-			VEGETATION (0 to 0.1 m) Roots, vegetation. TOPSOIL (0.1 to 0.2 m) Organic SILT, many roots and plant GRAVELLY SAND, MANY COBBL (0.2 to 0.5 m) Gravelly SAND, many COBBLES, li Deposit). Sand is subrounded to su	<b>ES</b> ght beige, loose, moist ibangular, coarse, quart	Alluvium - Creekbe z rich, brown to	11		
- 1 - - - - - - -	692 -	-			colourless, gravel is fine to coarse, o host rocks, fresh, strong. ORGANIC SILTY SAND (0.5 to 0.7 m) Organic silty SAND, fine grained, or Floodplain Deposit). SAND (0.7 to 1 m) SAND, some gravel, some silt, trace subrounded to subangular, coarse,	angy grey to black, loos cobbles, loose, moist ( quartz rich, brown to co	e, moist (Alluvium Alluvium). Sand is lourless, gravel is fi	- ne to		
2	691 -	-			<ul> <li>coarse, gravel and cobbles are subr strong.</li> <li>GRAVELLY SAND, MANY COBBL</li> <li>(1 to 1.2 m) Gravelly SAND, many cobbles, som Creekbed Deposit). Sand is subrou brown to colourless, gravel is fine to rounded, various host rocks, fresh, s</li> <li>SAND (1.2 to 1.5 m) SAND, some gravel, some silt, trace subrounded to subangular, coarse.</li> </ul>	ES ne silt, trace cobbles, loc inded to subangular, fin o coarse, gravel and cob strong.	se, wet (Alluvium - e to coarse, quartz bles are subrounde luvium). Sand is	rich, ed to	and cause below 2 m	vs fast into pit is instability depth. Some ains observed ir vater.
3 -	690 -	-			coarse, gravel and cobbles are subr strong. GRAVELLY SAND, MANY COBBL (1.5 to 2 m) GRAVEL and SAND, many COBBL (Alluvium - Creekbed Deposit). Sar quartz rich, brown to colourless, gra subrounded to rounded, various hos	ES, light beige with loca d is subrounded to sub	ious host rocks, fre ally red sands, loose angular, fine to coa	sh, e, wet irse,	Potential c aggregate	concrete borrow source
- - - - - - - - - - - - - - - - - - -	689 -				(2 to 3 m) As above but saturated (3 to 4 m) As above but saturated, with some s End of Test Pit: 4 m	silt.			Reason fo Instability.	r Termination:
Sam		sted at	ARKS: Knight Piéso o.	ld Soils L	aboratory		TEST PIT LO	no Project	t	NT NO. REF N
					oundation Engineering Manual, 4th Edition, 200	C (	t Piéso		VA101-325	

	Proj	ect:	Casino	Project		_Test Pit No.:	TP13-20	_	Page	1 of 1
	Contr	actor:	Kluane	Drilling L	.td.	_Equipment Used:	CAT 322C	_ Date S	tarted:	11 Aug 13
	Loc	ation:	Topsoil	Stockpil	e South of TMF	Total Depth:	1.9 m	_ Date Com	pleted:	11 Aug 13
	Coord	nates	6,951,20	00N, E	12,790 E (UTM ZONE 7 NAD83)	_ Elevation:	947 m	Logg	ged by:	SB
								Review	ved by:	JEH
, 23 Dec 13	ELEVATION - (m)	SAMPLES	SAMPLE NO.	GRAPHIC LOG	MATERIA	L DESCRIPTION	N		COI	MMENTS
MIGINTILIBRARY_TEMPLATE-TPS.GLB, TEST PIT LOG METRIC, TEST PIT DATA TEMPLATE MAY08.GDT C	- 946 - 945 - 945 - 944				VEGETATION (0 to 0.1 m) Moss, roots, vegetation. TOPSOIL (0.1 to 0.15 m) SILT, some sand, roots, light brown SILT, trace sand, light grey, very so SAND (0.2 to 0.2 m) SAND, some gravel, trace silt, orang Granodiorite, sand is coarse. COMPLETELY WEATHERED WR (0.3 to 0.5 m) Dawson Range Batholith - Granodic specks and orange brown staining, completely weathered, extremely we depth, dry.	, slightly moist (Topsoil ft, slightly moist (Volcar ge, loose, dry (Residual GD prite, coarse grained, lig unaltered, extremely cl eak, more competent ar y weak, very close joint weathered, weak to me	). soil). Derived from th grey with black use joint spacing, id less weathered to spacing.	with		r Termination:
NPRJ_FILE(1)01/00325/16/AN	ENERA		ARKS: Knight Piés	sold Soils L	aboratory			ning Corpo ino Project		
ui 0	Denver,		-			Knigh	TEST PIT L	OG FOR TI	P13-20 ECT/ASSIGNME VA101-325	5/16 1
	ning condu	unted and	ording to the	Canadian E	oundation Engineering Manual, 4th Edition, 200	C	UNSULTI	NG	19	13-20 0

	F	Proje	ct:	Casino	Project		Test Pit No.:	TP13-21	_	Page	1 of 1
		Contra	ctor:	Kluane	Drilling L	td.	_Equipment Used:	CAT 322C	_ Date	Started:	11 Aug 13
		Loca	tion:	Topsoil	Stockpile	e South of TMF	Total Depth:	1.6 m	_ Date Co	mpleted:	11 Aug 13
	(	Coordir	ates	6,950,99	93N, 6	12,701 E (UTM ZONE 7 NAD83)	_ Elevation:	942.591 m	_ Lo	gged by:	SB
									Revie	ewed by: _	JEH
T, 23 Dec 13	DEPTH - (m)	ELEVATION - (m)	SAMPLES	SAMPLE NO.	GRAPHIC LOG	MATERIA	L DESCRIPTION	N		CO	MMENTS
		942 - 941 - 941 - 940 - 940 - 939 - 938 -				VEGETATION (0 to 0.1 m) Roots, moss, vegetation. TOPSOIL (0.1 to 0.15 m) Organic SILT, trace sand, roots, darl SILTY SAND (0.15 to 0.35 m) Silty SAND, some gravel, some cobl moist (Colluvium). Sand is fine to co COMPLETELY WEATHERED WRG (0.35 to 0.8 m) Dawson Range Batholith - Granodio black specks, original structure visib weathered, extremely weak. WRGD (0.8 to 1.6 m) Dawson Range Batholith - Granodio specks and orange staining, very clo decreases with depth from highly to End of Test Pit: 1.6 m	bles, non plastic, grey b barse, gravel is fine to c <b>GD</b> rite, coarse grained, lig le, friable into sand, so rite, coarse grained, lig se joint spacing, degre	brown, loose, sligh coarse. ht beige to orange me silt, completely ht grey with black se of weathering	with	Reason fo Bedrock.	or Termination:
	GE	NERAL	REM	ARKS:				Casino Mi	ning Corr	oration	
11/PRJ					sold Soils L	aboratory		Casino Miı Casi	no Projec	ct	
VAN	in De	enver, C	olorad	0.			<b>TT A -</b>	TEST PIT L		IP13-21 OJECT/ASSIGNME	ENT NO. REF NO.
brary: \\							Knigh	t Piéso		VA101-32	5/16 1
	oaain	a conduc	ted acc	ording to the	Canadian Fo	oundation Engineering Manual, 4th Edition, 200		UNSULTI	NG	IP	13-21

F	Proje	ct:	Casino P	roject		_Test Pit No.:	TP13-22	_	Page _	1 of 1
	Contra	ctor:	Kluane D	rilling L	td.	Equipment Used:	CAT 322C	_	e Started:	
	Loca	tion:	Topsoil S	Stockpile	South of TMF	Total Depth:	1 m	_ Date Co	mpleted: _	11 Aug 13
(	Coordin	ates	6,950,803	3N, 6 <sup>,</sup>	12,491 E (UTM ZONE 7 NAD83)	Elevation: _	938.559 m		bgged by: _	
			1					Revi	ewed by:	JEH
DEPTH - (m)	ELEVATION - (m)	SAMPLES	SAMPLE NO.	GRAPHIC LOG		AL DESCRIPTION	1		со	MMENTS
	-				VEGETATION (0 to 0.1 m)			1		
	- - - - - - - - - - - - - - - - - - -				Roots, moss, vegetation. TOPSOIL (0.1 to 0.15 m) Organic sandy SILT, roots, dark broc WEATHERED WRGD (0.15 to 1 m) Dawson Range Batholith - Granodic specks and brown staining, close jo gravelly sand, some silt, degree of v moderately weathered to fresh, med End of Test Pit: 1 m	orite, coarse grained, lig int spacing, joints filled weathering decreases w	ht grey with black with orangy brown ith depth from			ulders on surface.
	937 - - - - - - - - - - - - - - - - - - -									
	- 936 - - - - - -									
	- - - - - - - - -									
	- - - - 934 - - - -									
GEI	NERAL	REM	ARKS:				Casino Min	ina Cor	oration	
Sam	ples tes	ted at I	Knight Piéso	ld Soils La	aboratory		Casii	no Proje	ct	
	enver, C	olorado	D.			Knigh	TEST PIT LO		ROJECT/ASSIGNMI VA101-32	

	F	Proje	ct:	Casino	Project		Test Pit No.:	TP13-23	_	Page	1 of 1
		Contra	ctor:	Kluane	Drilling L	td.	_Equipment Used:	CAT 322C	_	e Started: _	
		Loca	tion:	Topsoil	Stockpil	e South of TMF	Total Depth:	1.5 m	_ Date Co	ompleted: _	11 Aug 13
	(	Coordin	ates	6,950,69	0N, 6	12,360 E (UTM ZONE 7 NAD83)	Elevation:	943 m	_	ogged by: _	
				1					Rev	iewed by: _	JEH
<sup>-</sup> , 23 Dec 13	DEPTH - (m)	ELEVATION - (m)	SAMPLES	SAMPLE NO.	GRAPHIC LOG	MATERIA		N		со	MMENTS
GDT	_				<u> </u>	VEGETATION					
FIG://VAN11/PRJ_FILE1/01/00325/16/ADATA/TASK 200 - 2013 GEOTECHNICAL SI PROGRAMGINTMINE SITE REPORTICASINO 2013 TEST PIT LOGS GPJ Libray: \\VAN11/PRJ_FILE1/101/00325/16/AIDATA/TASK 200 - 2013 GEOTECHNICAL SI PROGRAMGINT/LIBRARY_TEMPLATE-TPS GLB, TEST PIT LOG METRIC, TEST PIT DATA TEMPLATE MAY08.GDT, 23 Dec 13	- - - - - - 1 - - - - - - - -	- - - - - - - - - - - - - - - - - - -			$\begin{array}{c} 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 $	(0 to 0.1 m) Roots, moss, vegetation. SILTY SAND, MANY COBBLES AI (0.1 to 0.6 m) Silty SAND, many cobbles and boul (Colluvium). Sand is fine to coarse, WRGD (0.6 to 1.5 m) Dawson Range Batholith - Granodic specks and brown staining, close jo degree of weathering decreases wit strong, dry. The top of bedrock is lo gravel, trace silt, angular, orange br	Iders, some gravel, brow gravel is fine to coarse prite, coarse grained, lig int spacing, joints filled h depth from highly weath pocally completely weath	ht grey with black with brown silty sa athered to fresh, we	nd, vak to	Some boo	ulders on surface.
TESI און בטפאיט. א, TEST PIT LOG א	-	-				End of Test Pit: 1.5 m				Reason fo Bedrock.	or Termination:
MINE SITE REPORTICASINO 2013 INTILIBRARY_TEMPLATE-TPS.GLF	2	941 - - - - - - - - - - - - - - - -									
I ECHNICAL SI PROGRAMIGINI SEOTECHNICAL SI PROGRAMIG	3	940 - - - - - - - - - - - - - - -									
1/00325/16/AUATA/TASK 200 - 2013 GEC /1/01/00325/16/A/DATA/TASK 200 - 2013 C	- 4	939 -									
	65	NERAL	REM					<b>.</b>			
J FR _				ARNS: Knight Piés	old Soile I	aboratory		Casino Mir Casi	ing Cor no Proje		
AN11		enver, C		-	010 00118 L	addi attir y		TEST PIT L	OG FOR	TP13-23	
e://VAN1	DC		5.5.40				Knigh	t Piéso	ld _	ROJECT/ASSIGNMI VA101-32	5/16 1
	oggin	a conduc	ted acc	ording to the	Canadian F	oundation Engineering Manual, 4th Edition, 200	- C	ONSULTI	NG	TP	13-23

Contractor:       Kluane Drilling Ltd.       Equipment Used:       CAT 322C       Date Started:         Location:       Topsoil Stockpile South of TMF       Total Depth:       1.5 m       Date Completed:         Coordinates       6,951,680 N,       612,190 E (UTM ZONE 7 NAD83)       Elevation:       935 m       Logged by:         Reviewed by:       0       0       0       0       0       Reviewed by:       Reviewed by:         Cordinates       O       O       O       O       O       O       O       O       O       O       Reviewed by:         (u)       U       N       N       S       N       N       N       Cordinates       Cordinate	11 Aug 13 SB
Coordinates       6,951,680 N, 612,190 E (UTM ZONE 7 NAD83)       Elevation:       935 m       Logged by:         Reviewed by:       Elevation:       935 m       Coordinates       1000 Coordinates         Elevation:       935 m       Coordinates       1000 Coordinates       1000 Coordinates         Elevation:       935 m       Coordinates       Coordinates       1000 Coordinates         Elevation:       935 m       Coordinates       Coordinates       1000 Coordinates         Elevation:       935 m       Coordinates       Coordinates       Coordinates         Elevation:       Elevation:       Elevation:       Elevation:       Coordinates         Elevation:       Elevation:       Elevation:       Elevation:       Elevation:         Elevation:       Elevation:       Elevation:       Elevation:       Elevation:         Elevation:       Elevation:	SB JEH
	JEH
ET SUBJE       ON       SILTY SAND (0 to 0.1 m) Roots, moss, vegetation.       SULTY SAND (0.1 to 0.3 m) Silty SAND, some gravel, some cobbles, angular, brown, loose, slightly moist (Colluvium). Sand is fine to coarse.       Completely weathered, some cobbles, angular, brown, loose, slightly moist (Colluvium). Sand is fine to coarse.       Completely weathered, some cobbles, angular, brown, loose, slightly moist (Colluvium). Sand is fine to coarse.         1       934       934       WRGD (0.5 to 1.5 m)       WRGD (0.5 to 1.5 m)	OMMENTS
UPUTUAL       VEGETATION (0 to 0.1 m) Roots, moss, vegetation.         SILTY SAND (0.1 to 0.3 m) Silty SAND, some gravel, some cobbles, angular, brown, loose, slightly moist (Colluvium). Sand is fine to coarse, gravel is fine to coarse.         COMPLETELY WEATHERED WRGD (0.3 to 0.5 m) Dawson Range Batholith - Granodiorite, coarse grained, slightly altered, white with black specks and pinkish orange and black staining, friable to coarse sand and silt, completely weathered, extremely weak, slightly moist.         WRGD (0.5 to 1.5 m)	
Dawson Range Batholith - Granodiorite, coarse grained, light grey with black         Dawson Range Batholith - Granodiorite, coarse grained, light grey with black         Specks, brown to dark red surface staining, joints filled with brown silty sand, highly         to slightly weathered, less weathered with depth, large lateral variation in         V//         V//	n for Termination: ck.
GENERAL REMARKS: Casino Mining Corporation	n
Samples tested at Knight Piésold Soils Laboratory	
TEST PIT LOG FOR TP13-24	
Knight Piésold	-325/16 1
Logging conducted according to the Canadian Foundation Engineering Manual, 4th Edition, 2006.	TP13-24 0

	F	Proje	ct:	Casino	Project		_Test Pit No.:	TP13-25	_	Page _	1 of 1
		Contra	ctor:	Kluane	Drilling L	td.	_Equipment Used:	CAT 322C	_ Date	e Started: _	12 Aug 13
		Loca	tion:	Southea	ast of TMI	F Main Embankment	Total Depth:	1.3 m	_ Date Co	ompleted:	12 Aug 13
	(	Coordin	ates	6,952,02	20N, 6	13,939 E (UTM ZONE 7 NAD83)	_ Elevation:	1069.422 m	_ Lo	ogged by: _	SB
									Revi	iewed by: _	JEH
T, 23 Dec 13	DEPTH - (m)	ELEVATION - (m)	SAMPLES	SAMPLE NO.	GRAPHIC LOG		L DESCRIPTION	J		со	MMENTS
ULATE-TPS.GLB, TEST PIT LOGS GFJ LATE-TPS.GLB, TEST PIT LOG METRIC, TEST PIT DATA TEMPLATE MAY08.GDT,		- - - - - - - - - - - - - - - - - - -				VEGETATION (0 to 0.1 m) Moss, grass, roots. TOPSOIL (0.1 to 0.25 m) Organic SILT, many roots and plant SANDY SILT AND GRAVEL (0.25 to 1.3 m) Sandy SILT and GRAVEL, some col moist (Colluvium). Sand is fine to co cobbles consist of slightly weathered YMGD (1.3 to m) Dawson Range Batholith - Meta-Gra specks, orange brown surface staini strong. End of Test Pit: 1.3 m	bbles, angular, low plas parse, gravel is fine to o d Meta-Granodiorite.	sticity, brown, loose coarse, gravel and ed, light grey with h	black	Reason fr Bedrock.	or Termination:
KAMIGINI MINE SI LE KEPOKI (CASINO 2013) (OGRAM/GINT/LIBRARY_TEMPLATE-TPS.GLB)	- - - - -	- 1067 - - - -									
EOTECHNICAL SI PROGRAM	3	- - - 1066 - - -									
LIB://WAN11/FKJ_FILE/1/01/00325/16/ALDATA/TASK 200 - 2013 GEOTECHNICAL SI PROG Library: //VAN11/FRJ_FILE/1/01/00325/16/ALDATA/TASK 200 - 2013 GEOTECHNICAL SI PR	- 4 - - - - - - - - - - - - - - - - -	- - - - - - 1065 - - - - - - -									
	GEI	NERAL	REM								
PR.					old Soile I	aboratory		Casino Mir Casi	ning Corj no Proje	poration	
N111				-	old Soils L	aboratoly		TEST PIT L	OG FOR	TP13-25	
Library: ////	in De	enver, Co	Joradi	υ.			Knigh	t Piéso		ROJECT/ASSIGNMI VA101-32	

	P	roje	ct:	Casino	Project		_Test Pit No.:	TP13-26		Page	1 of 1
	C	Contra	ctor:	Kluane	Drilling L	td.	_Equipment Used:	CAT 322C	_ Date	e Started: _	12 Aug 13
		Loca	tion:	Southe	ast of TM	Main Embankment	Total Depth:	1.5 m	_ Date Co	ompleted:	12 Aug 13
	C	oordin	ates	6,951,8	99 N, 6	14,104 E (UTM ZONE 7 NAD83)	Elevation:	1068.895 m	_ Lo	ogged by: _	SB
									Revi	iewed by: _	JEH
)T, 23 Dec 13	DEPTH - (m)	ELEVATION - (m)	SAMPLES	SAMPLE NO.	に の の の の の の の の の の の の の		L DESCRIPTION	N		CO	MMENTS
TEST PIT LOG METRIC, TEST PIT DATA TEMPLATE MAY08.GDT,		- - - - - - 1068 - - - - - - - - - - - - - - - - - -	en s	BU-1		VEGETATION (0 to 0.1 m) Moss, roots, vegetation. TOPSOIL (0.1 to 0.2 m) Organic SILT, many roots and plant SILT (0.2 to 0.4 m) SILT, some sand, trace gravel, trace moist (Colluvium). Sand is fine to co SILTY SAND AND COBBLES (0.4 to 1.5 m) Silty SAND and COBBLES, some gi Sand is fine to coarse, gravel is fine slightly to highly weathered Granodi (Colluvium). Minor orange brown re downslope.	e cobbles, many roots, a parse, gravel is fine to o ravel, some roots, angu to coarse, cobbles con orite, light grey to orang	angular, brown, loc coarse. Ilar, brown, loose, sist of coarse grair ge with black spec	moist. ied	Descent	or Tormination
GLB,	2 -	- - - - - - - - - -				WRGD (1.5 to m) Dawson Range Batholith - Granodic specks, slightly weathered, strong. End of Test Pit: 1.5 m	rite, coarse grained, lig	ht grey with black		Reason fo Bedrock.	or Termination:
AL SI PROGRAMIGINTUR SI LE L'ANICAL SI PROGRAMIGINTULIBRARY	3 -	- - 1066 - - - - -									
	4	- - - 1065 - - - - - - - - - - -									
AN11/PRJ_FILE/1/01/00	GENI Sampl	les tes		-	sold Soils L	aboratory		Casino Miı Casi TEST PIT L	no Proje	ct	
						oundation Engineering Manual, 4th Edition, 200	C	t Piéso		ROJECT/ASSIGNME VA101-32	

	Ρ	roje	ct:	Casino	Project		_Test Pit No.:	TP13-27	_	Page	1 of 1
	C	Contra	ctor:	Kluane	Drilling L	.td.	Equipment Used:	CAT 322C	_ Date	e Started: _	12 Aug 13
		Loca	tion:	Southe	ast of TMI	F Main Embankment	Total Depth:	3 m	_ Date Co	ompleted:	
	С	oordin	ates	6,951,5	88 N, 6	14,172 E (UTM ZONE 7 NAD83)	Elevation:	1020.517 m		ogged by: _	
				1					Rev	iewed by: _	JEH
0T, 23 Dec 13	DEPTH - (m)	ELEVATION - (m)	SAMPLES	SAMPLE NO.	GRAPHIC LOG		AL DESCRIPTION	N		со	MMENTS
OGRAMICINTURARY_TEMPLATE-TPS.GLB, TEST PIT LOG METRIC, TEST PIT DATA TEMPLATE MAY08.GDT,	1		env.	BU-1		VEGETATION (0 to 0.1 m) Moss, roots, vegetation. TOPSOIL (0.1 to 0.2 m) Organic SILT, many roots and plan SAND AND SILT (0.2 to 1.4 m) SAND and SILT, some gravel, som brown, loose, slightly moist to dry (0 to coarse. COMPLETELY WEATHERED WR (1.4 to 2.2 m) Dawson Range Batholith - Granodi specks and orange brown staining, extremely weak. Excavated materia cobbles, trace silt, trace clay, well g fine to coarse. WEATHERED WRGD (2.2 to 3 m) As above, but with lateral variatiabil weathered, extremely weak to weak	e cobbles, some roots, a Colluvium). Sand is fine terms of the source of the source of the source end of the source of the sourc	angular, non plasti e to coarse, gravel ht grey with black veathered, friable, I GRAVEL, some ne to coarse, grave	c, is fine el is		
ILEVI0100325/16/ANDATA/TASK 200 - 2013 GEOTECHNICAL SI PR	4					WRGD (3 to m) As above, but slightly weathered to End of Test Pit: 3 m	fresh, strong, close join			Bedrock.	or Termination:
RJ FI	GEN	ERAL	REM	ARKS:				Casino Mir			
	Sampl	les tes	ted at I	Knight Pié	sold Soils L	aboratory			no Proje	ct	
ibrary: \\VAN	n Der	nver, C	olorado	Э.			Knigh	t Piéso		ROJECT/ASSIGNME VA101-32	
	aaina	conduc	ted acc	ording to the	Canadian F	oundation Engineering Manual, 4th Edition, 200				11	

	F	Proje	ct:	Casino I	Project		_Test Pit No.:	TP13-28	_	Page	1 of 1
		Contra	ctor:	Kluane I	Drilling L	_td.	_Equipment Used:	CAT 322C	_ Date	e Started:	13 Aug 13
		Loca	tion:	Southea	st of TM	F Main Embankment	Total Depth:	2 m	_ Date Co	mpleted:	13 Aug 13
	(	Coordir	ates	6,951,28	6N, 6	614,190 E (UTM ZONE 7 NAD83)	Elevation:	982.916 m		ogged by: _	
				1					Revi	ewed by:	JEH
DT, 23 Dec 13	DEPTH - (m)	ELEVATION - (m)	SAMPLES	SAMPLE NO.	GRAPHIC LOG			٧		CO	MMENTS
KAMIGINTUBRARY_TEMPLATE-TPS.GLB, TEST PIT LOGS.GFJ XOGRAMIGINTUBRARY_TEMPLATE-TPS.GLB, TEST PIT LOG METRIC, TEST PIT DATA TEMPLATE MAY08.GDT, 23 Dec 13	- - - - - - - - - - - - - - - - - - -	982 -	Sun	BU-1		VEGETATION (0 to 0.05 m) Moss, roots, vegetation. TOPSOIL (0.05 to 0.15 m) Organic SILT, many roots and plant SILT (0.15 to 0.45 m) SILT, some sand, some gravel, ang moist (Colluvium). GRAVELLY SAND (0.45 to 1.8 m) Gravelly SAND, some silt, trace clay (Residual soil). Sand is fine to coar present in extremely weak, friable g	ular, well graded, low p /, angular, orange brow se, gravel is fine. Some	lasticity, brown, sli n, compact, slightl e of the material is	ghtly		
Y_TEMPLATE-TPS.GLB, TEST PIT		981 - - - - - - - - - - - - - - - - - - -				WEATHERED WRGD (1.8 to 2 m) Dawson Range Batholith - Granodic specks and orange brown staining, strong to strong. End of Test Pit: 2 m				Reason fc Bedrock.	or Termination:
AL SI PROGRAMIGIN I WINE SI IE VICAL SI PROGRAMIGINTILIBRAI		980 -									
Library: \\VAN11\PRJ_FLE(1)01\00325\16\ALATATASK 200 - 2013 GEOTECHNICAL SI PROG	- - - 4 - - - - - - - - - - - - - - - - - -	979 -									
PRILEVINU NUCCE		978 - NERAL						Casino Mir	ning Corr	ooration	
		-		Knight Piéso	oid Soils L	aboratory		TEST PIT L	no Proje OG FOR	TP13-28	
ibrary: \\\//	III DE	enver, C	olorado	J.			Knigh	t Piéso		ROJECT/ASSIGNME VA101-32	
	oggin	a conduc	ted acc	ording to the	Canadian F	oundation Engineering Manual, 4th Edition, 200	)6			11	0

	Pro	oje	ct:	Casino I	Project		_Test Pit No.:	TP13-29	_	Page	1 of 1
	Со	ontrac	tor:	Kluane I	Drilling L	td.	_Equipment Used:	CAT 322C	_ Dat	te Started:	13 Aug 13
		Locat		Southea	st of TM	F Main Embankment	_ Total Depth: _	1.2 m	_ Date C	ompleted:	13 Aug 13
	Coc	ordina	ates	6,951,01	7N, 6	14,248 E (UTM ZONE 7 NAD83)	_ Elevation:	972.387 m	_ L	ogged by:	SB
									Rev	viewed by: _	JEH
, 23 Dec 13	UEPIH - (M)	ELEVATION - (m)	SAMPLES	SAMPLE NO.	GRAPHIC LOG	MATERIA	L DESCRIPTION	1		со	MMENTS
GDI		_				VEGETATION				1	_
EST PITLOG METRIC, TEST PIT DATA TEMPLATE MAY08.GDT, TEST PITLOG METRIC, TEST PIT DATA TEMPLATE MAY08.GDT,	- 97 - - - - - - - - - - - - - - - - - -	- 72				(0 to 0.05 m) Moss, roots, vegetation. <b>TOPSOIL</b> (0.05 to 0.15 m) Organic SILT, trace sand, many root (Topsoil). <b>SILTY SAND</b> (0.15 to 0.8 m) Silty SAND, some gravel, some cobl angular, non plastic, brown, loose, s coarse, gravel is fine to coarse, grav Granodiorite as below. <b>WEATHERED WRGD</b> (0.8 to 1.2 m)	bles, trace boulders, so lightly moist (Colluvium	me roots, well grad			obles and on surface. or Termination:
LATE-TPS.GLB, TEST PIT LOG MET	2 -	- 71 - - - - - - - - - - -				<ul> <li>Dawson Range Batholith - Granodic brown with black specks, fractured t moderately to highly weathered, very</li> <li>WRGD (1.2 to m) Dawson Range Batholith - Granodic specks, competent, slightly weathere End of Test Pit: 1.2 m</li> </ul>	o angular cobble and b y weak to weak, joints fi rite, coarse grained, lig	oulder sized rock, lled with silty SANI		Bedrock.	
REAVIGINTULIBRARY TEMPLATE-TPS.GLB,	97	70 - - - - -									
AL SI PROGRAM	3 -	- - - 69 -									
15. WAN IN TAT FLEND NOUZSANGA VAN TAKAN KUG ZUNG VERTERMUNUNUNUNUNUNUNUNUNUNUNUNUNUNUNUNUNUNUN	- - - - - 4 - -	68 -									
NTECTION 00325/16/4	- - - - - - - - - - - - - - - - - - -	- - - - - - -	REM	ARKS:				Casino Min	ing Co	poration	
SI SI	amples	s test	ed at I	Knight Piéso	old Soils L	aboratory		Casi	no Proje	ect	
brary: ///AN1	Denve	er, Co	lorado	D.			Knigh	TEST PIT LO	ld	PROJECT/ASSIGNME VA101-32	5/16 1
	aina co	anduct	ed acc	ording to the	Canadian E	oundation Engineering Manual, 4th Edition, 200		CROULII		18	13-29

	F	Proje	ct:	Casino	Project		_Test Pit No.:	TP13-30	_	Page	1 of 1
		Contra	ctor:	Kluane	Drilling L	td.	_Equipment Used:	CAT 322C	Date	e Started:	13 Aug 13
		Loca	tion:			Main Embankment	Total Depth:	1.9 m	_ Date Co	ompleted:	13 Aug 13
		Coordir	ates	6,951,15	54N, 6	14,236 E (UTM ZONE 7 NAD83)	Elevation:	978.345 m		ogged by: _	
									Rev	iewed by: _	JEH
JT, 23 Dec 13	DEPTH - (m)	ELEVATION - (m)	SAMPLES	SAMPLE NO.	GRAPHIC LOG		AL DESCRIPTION	N		CO	MMENTS
TEST PIT LOGS OF JEST PIT DATA TEMPLATE MAY08 GDT, 23 Dec 13	- - - - - - - - - - - - - - - - - - -	978 - 977 -				VEGETATION (0 to 0.05 m) Moss, roots, vegetation. TOPSOIL (0.05 to 0.15 m) Organic SILT, trace sand, many roo (Topsoil). SAND AND SILT (0.15 to 0.5 m) SAND and SILT, some gravel, trace grey brown, loose, slightly moist (Co to coarse. COMPLETELY WEATHERED WR (0.5 to 1.9 m) Dawson Range Batholith - Granodic with black specks, original structure weak, slightly moist. Excavated ma trace clay.	e cobbles, some roots, a olluvium). Sand is fine GD prite, coarse grained, or e visible, completely wea	ingular, low plastic to coarse, gravel is ange brown and w athered, friable, ex	tity, s fine /hite tremely	varies thre preferentia	weathering oughout pit due to al weathering. coarsening t.
KAMIGINI WINE SITE KEPUKI (CASINU 2013 TES OGRAMIGINT/LIBRARY_TEMPLATE-TPS.GLB, TE	- 2 - - - - - -	976 -				WRGD (1.9 to m) Dawson Range Batholith - Granodic with black specks, orange brown su strong. End of Test Pit: 1.9 m				- Reason fo Bedrock.	or Termination:
CHNICAL SI PROGRAM/GINT/LIB	- - - - - - - - - - - - - -	975 -									
LIBERINAN LITERA FILETI NU 10032511640 AUA AN ASA 200 - 2013 GEOTECHNICAL SI FROG	- - - - - - - - - - - - - - - - - - -	974 -									
E/1/0	-										
	GE	NERAL	REM	ARKS:	1			Casino Mi	ning Cor	poration	
11/PF	Sam	ples tes	ted at	Knight Piés	old Soils L	aboratory			ino Proje	ct	
NAN :	in De	enver, C	olorad	0.			Knich			ROJECT/ASSIGNME	
ibrary:							<b>N</b> nign	t Piéso		VA101-32	REV.
	oggin	a conduc	ted acc	ording to the	Canadian F	oundation Engineering Manual, 4th Edition, 200		CROVEII		15	13-30 0

	F	Proje	ct:	Casino	Project		_Test Pit No.:	TP13-31	_	Page	1 of 1
		Contra	ctor:	Kluane	Drilling L	td.	Equipment Used:	CAT 322C	_ Date	e Started:	13 Aug 13
		Loca	tion:	Southea	st of TM	F Main Embankment	Total Depth:	3 m	_ Date Co	ompleted:	13 Aug 13
	(	Coordin	ates	6,951,80	)6N, 6	14,238 E (UTM ZONE 7 NAD83)	Elevation:	1056.688 m	_ Lo	ogged by:	SB
									Rev	iewed by: _	JEH
, 23 Dec 13	DEPTH - (m)	ELEVATION - (m)	SAMPLES	SAMPLE NO.	GRAPHIC LOG	MATERIA	L DESCRIPTION	1		co	MMENTS
.GDT		-			<u> </u>	VEGETATION					
KAMGINI WINE SITE KEPORTICASINO 2013 TEST PIT LOGS GPJ COGRAMIGINTULIBRARY_TEMPLATE-TPS.GLB, TEST PIT LOG METRIC, TEST PIT DATA TEMPLATE MAY08.GDT,		- - - - - - - - - - - - - - - - - - -				(0 to 0.1 m) Moss, roots, vegetation. <b>TOPSOIL</b> (0.1 to 0.25 m) Organic SILT, many roots and plant <b>GRAVELLY SILT AND SAND</b> (0.25 to 1 m) Gravelly SILT and SAND to silty SA plasticity, brown, loose, slightly mois fine to coarse. Cobbles and gravel dark red stained Granodiorite, slight <b>WEATHERED YMGD</b> (1 to 2 m) Dawson Range Batholith - Meta-Gra extremely weak, consists of gravely preferential weathering causes varia <b>WEATHERED YMGD</b> (2 to 3 m) Dawson Range Batholith - Meta-Gra aphanitic, medium strong (UCS ~35)	ND and GRAVEL, trace st (Colluvium). Sand is consist of red to green I ly to moderately weather anodiorite, coarse grain SILT and SAND with n ibility in gradation, oran	e cobbles, angular, fine to coarse, grav Vleta-Granodiorite a ered. ed, highly weathere nany cobbles, ge brown, slightly r ed, red to green,	low vel is ind		
ECTECHNICAL SI PROGRAMIGII	3	- - - - - - - - - - - - - - - - - - -			<u> </u>	YMGD (3 to m) As above but slightly weathered, str End of Test Pit: 3 m	ong.			Reason fo Bedrock.	or Termination:
13 GI	-	-									
FIIE://WAN11/FKJ_FILE/1/01/00255/16/AUAAAAA200 - 2013 GEOTECHNICAL SI PROG	4 - - - - - - - - - - - - - - - - - -	- - - - - - - - - - - - - - - - - - -									
	GE	NERAL	REM	ARKS:				Casino Min		oration	
H PR.				Knight Piés	old Soils L	aboratory		Casir	10 Proje	ct	
VAN1	in De	enver, C	olorad	0.				TEST PIT LO		TP13-31 ROJECT/ASSIGNME	
ary: //							Knigh	t Piéso	ld 上	VA101-32	5/16 1
	000	a	tod	ordina to th	Concilian	oundation Engineering Manual, 4th Edition, 200	C	ONSULTI	N G	TP	13-31 REV.

Project: Contractor: Location: Coordinates	ctor:		Drilling Lt	d. Main Embankment	_ <b>Test Pit No.:</b> _Equipment Used: Total Depth:	<b>TP13-32</b> CAT 322C 2.3 m	-	Page _ Started: _ npleted: _			
(	Coordin	ates	6,952,18	60 N, 61	4,372 E (UTM ZONE 7 NAD83)	Elevation:	1124.556 m	_	gged by: _	SB JEH	
DEPTH - (m)	ELEVATION - (m)	SAMPLES	SAMPLE NO.	C C C C C C C C C C C C C C C C C C C	MATERIA VEGETATION (0 to 0.1 m)	L DESCRIPTION	I			MMENTS	
1       1       Moss, roots, vegetation.         TOPSOIL       (0.1 to 0.25 m)         Organic SILT, many roots and plant remains, dark brown, moist (Topsoil).         SILTY, GRAVELLY SAND         (0.25 to 2.1 m)         Silty, gravelly SAND, some cobbles, some roots, angular, non plastic to low         plasticity, brown, loose, moist (Colluvium).         Sand is fine to coarse, gravel is fine         coarse.         Coarse.										bles and on surface.	
2 -	- - - - - - - - - - - - - - - - - - -				WEATHERED WRGD (2.1 to 2.3 m)						
	- - 1122 - - - - - - - - - - - - -				Dawson Range Batholith - Granodic black specks, orange brown staining weathered. WRGD (2.3 to m) Dawson Range Batholith - Granodic specks, orange brown surface staini End of Test Pit: 2.3 m	g, fractured to fine grave	el size, very weak, h	lighly	Reason to Bedrock.	r Termination:	
	- - - - - - - - - - - - - -										
-	- - 1120 – - -										
	NERAL				horator.			ing Corp 10 Projec	Corporation		
	pies tes enver, C		-	old Soils La	υσταιθηγ	Knioh	TEST PIT LO	OG FOR	PROJECT/ASSIGNMENT NO.         REF NO.           VA101-325/16         1		
					undation Engineering Manual, 4th Edition, 200	C	DNSULTI	N G	TP	13-32	

	-		Casino I					—		1 of 1 13 Aug 13
	Loca	ation:		st of TMF	d. Main Embankment I4,540 E (UTM ZONE 7 NAD83)	Total Depth:	2.6 m 1105.408 m	Date Completed:		13 Aug 13 SB
DEPTH - (m)	ELEVATION - (m)	SAMPLES	SAMPLE NO.	GRAPHIC LOG	MATERIA	AL DESCRIPTION	1			MMENTS
	1105 -				VEGETATION (0 to 0.1 m) Moss, roots, vegetation. TOPSOIL (0.1 to 0.3 m) Organic SILT, many roots and plan SILTY SAND (0.3 to 1.3 m) Silty SAND, some gravel, trace cob (Colluvium). Sand is fine to coarse	bles, angular, brown, lo	ose to compact, mo	ist		
	1104 - - - - -				SAND AND COBBLES (1.3 to 1.6 m) SAND and COBBLES, some silt, so (Colluvium). Sand is fine to coarse SAND (1.6 to 2.3 m) SAND, some silt, some gravel, well wet (Residual soil). Sand is fine to orange Meta-Granodiorite / Quartzit	, gravel is fine to coarse graded, angular, beige coarse, gravel is fine an	brown. compact. m	oist to		
-	1103 -	EN.	BU-1		SAND, FROZEN (VC) (2.3 to 2.6 m) As above but frozen, Vc, sporadic c ice estimated. End of Test Pit: 2.6 m	lear ice around coarse p	particles, < 5% exce	I	Reason for Permafros	r Termination: t.
3 -	1102 -	-								
4	- - - - -	-								
-	- 1101 - - - - -	-								
Sam	NERAL ples tes enver, C	sted at I	Knight Piése	L Soils La	aboratory	Knigh	Casino Min Casin TEST PIT Lo <i>t Piéso</i>	no Project OG FOR TF	P13-33 ECT/ASSIGNMEN VA101-325	

	F	Proje	ct:	Casino	Project		_Test Pit No.:	TP13-34	_	Page	1 of 1
		Contra	ctor:	Kluane	Drilling L	td.	_Equipment Used:	CAT 322C	_ Date	e Started: _	13 Aug 13
		Loca				F Main Embankment	_ Total Depth:	1.9 m	_ Date Co	ompleted:	13 Aug 13
	(	Coordin	ates	6,952,17	73N, 6	14,097 E (UTM ZONE 7 NAD83)	_ Elevation:	1106.356 m	_	ogged by: _	
									Revi	iewed by: _	JEH
T, 23 Dec 13	DEPTH - (m)	ELEVATION - (m)	SAMPLES	SAMPLE NO.	GRAPHIC LOG	MATERIA	L DESCRIPTION	N		co	MMENTS
		1106 - - - - - - - - - - - - - - - - - - -				VEGETATION (0 to 0.1 m) Moss, roots, vegetation. TOPSOIL (0.1 to 0.3 m) Organic SILT, trace sand, many root (Topsoil). SAND AND GRAVEL (0.3 to 1.2 m) SAND and GRAVEL, some silt, som moist (Colluvium). Sand is fine to co consist of slightly weathered Meta-G GRAVEL, COBBLES AND SANDY (1.2 to 1.7 m) GRAVEL, COBBLES and sandy SIL moist (Colluvium). Rock fragments Meta-Granodiorite, weak, orange wit GRAVEL, COBBLES AND SANDY (1.7 to 1.9 m) As above but frozen, Vc, clear, soft, particles, ~10 % excess ice estimate End of Test Pit: 1.9 m	ts and plant remains, d be cobbles, some roots, barse, gravel is fine to o franodiorite, beige brow <b>SILT</b> .T, angular, massive, b consist of moderately to th black spots. <b>SILT, FROZEN (VC)</b> thin (<1 mm) ice coatin	ark brown, moist angular, brown, loc coarse. Rock fragm on to orange, aphar eige brown, compa o highly weathered	nents hitic.		or Termination:
		-									
л Г Г Г	GE	NERAL	REM	ARKS:				Casino Min			
11/P				Knight Piés	sold Soils L	aboratory		Casi TEST PIT L	no Proje OG FOR	ct TP13-34	
NAN NAN	in De	enver, C	olorad	0.			12			ROJECT/ASSIGNME	
brary:							Knigh	t Piéso		VA101-32	BEV
	oaain	a conduc	ted acc	ording to the	Canadian F	oundation Engineering Manual, 4th Edition, 200	6.	UNSULTI	NG	IP	13-34 0

Location:       Northeast of TMF Main Embankment       Total Depth:       2 m       Date Complete:       14 Aug 12         Condition:       5,853,99 N       613,922 E (UTM ZONE 7 MAD83)       Elivation:       1110.85 m       Logged by:       98         Reviewed by       JEH       JEH       MATERIAL DESCRIPTION       COMMENTS         1       100 ULD       State		Proje	ct:							1 of 1	
Coordinates       0.983,380 N.       813,982 E (UTM ZONE 7 NAD63)       Elevation:       110.85 m       Logget by:       38.         1       100       0 <t< th=""><th></th><th>Contra</th><th>ctor:</th><th>Kluane</th><th>Drilling L</th><th>.td.</th><th>_Equipment Used:</th><th>CAT 322C</th><th>_ Date</th><th>e Started: _</th><th>14 Aug 13</th></t<>		Contra	ctor:	Kluane	Drilling L	.td.	_Equipment Used:	CAT 322C	_ Date	e Started: _	14 Aug 13
Redeviced by:		Loca	ition:	Northea	ast of TM	F Main Embankment	Total Depth:	2 m	_ Date Co	ompleted:	14 Aug 13
Image: Section of the section of th		Coordir	ates	6,953,3	90 N, 6	13,992 E (UTM ZONE 7 NAD83)	Elevation:	1110.95 m	_ L	ogged by: _	SB
Commence in the second se									Rev	iewed by: _	JEH
a       1109       Will       BU-1       Will       End of Test Pit: 2 m         a       1108       Feason for Termination:       Bedrock.         b       Feason for Termination:       Bedrock.       Bedrock.         a       1108       Feason for Termination:       Bedrock.         b       Feason for Termination:       Bedrock.       Bedrock.         a       1108       Bedrock.       Bedrock.       Bedrock.         b       Feason for Termination:       Bedrock.       Bedrock.       Bedrock.         b       Feason for Termination:       Bedrock.       Bedrock.       Bedrock.         b <th>T, 23 Dec 13 DEPTH - (m)</th> <th>ELEVATION - (m)</th> <th>SAMPLES</th> <th>SAMPLE NO.</th> <th></th> <th>MATERIA</th> <th>L DESCRIPTION</th> <th>N</th> <th></th> <th>со</th> <th>MMENTS</th>	T, 23 Dec 13 DEPTH - (m)	ELEVATION - (m)	SAMPLES	SAMPLE NO.		MATERIA	L DESCRIPTION	N		со	MMENTS
Image: Provide the second of the second o	. CD	-									
2       1109       With BU1       End of Test Pit 2 m       Reason for Termination:         3       1108       1108       Interview of the second se	IAY08	-							/		
2       1109       Will       BU-1       Find of Test Pit: 2 m       Reason for Termination:         3       1108       1108       Interview of the second secon	ΠE	- I	-								
2       1109       Will       BU-1       Find of Test Pit: 2 m       Reason for Termination:         3       1108       1108       Interview of the second secon	MPLA					Organic SILT, many roots and plant	remains, dark brown, r	noist (Topsoil).			
Image: Provide the second of the second o	A TE	1									
2       1109       With BU1       End of Test Pit 2 m       Reason for Termination:         3       1108       1108       Interview of the second se	DAT	1.	-			Dawson Range Batholith - Meta-Gra			ery		
2       1109       With BU1       End of Test Pit 2 m       Reason for Termination:         3       1108       1108       Interview of the second se	PIT	1110 -				moderately weathered, strong, grave	el to cobble sized angul	lar rock fragments,	joints		
2       1109       With BU1       End of Test Pit 2 m       Reason for Termination:         3       1108       1108       Interview of the second se	LES 1 -	1	-			nied with brown subangular fine to	coarse sand, roots up to	0 0.45 M, ary.			
2       1109       With BU1       End of Test Pit 2 m       Reason for Termination:         3       1108       1108       Interview of the second se	SIC,	-	1								
2       1109       Will       BU-1       Find of Test Pit: 2 m       Reason for Termination:         3       1108       1108       Interview of the second secon	METI	-	1			YMGD				-	
2       1109       Will       BU-1       Find of Test Pit: 2 m       Reason for Termination:         3       1108       1108       Interview of the second secon	00	<u> </u>	-			(1.3 to 2 m)	andiarita (Quartrita d		umla		
2       1109       Will BU-1       End of Test Pit 2 m       Reason for Termination:         3       1108       1108       Intervention       Reason for Termination:         3       1108       Intervention       Reason for Termination:       Reason for Termination:         4       1107       Intervention       Reason for Termination:       Reason for Termination:         4       1107       Intervention       Reason for Termination:       Reason for Termination:         GENERAL REMARKS:       Samples tested at Knight Plesoid Soils Laboratory       Reason for Termination:       Reason for Termination:         In Derver, Colorado.       Colorado.       Casino Mining Corporation       Casino Project         TEST PIT LOG FOR TP13-35       TEST PIT LOG FOR TP13-35       Reason for Termination:	PIT I	-				to orange oxidation with some greer	tones, strong (UCS ~7	75 MPa), close join			
2       1109       Will       BU-1       Find of Test Pit: 2 m       Reason for Termination:         3       1108       1108       Interview of the second secon	EST		1			spacing, joints filled with brown san	d, slightly weathered, d	ry.			
2       1109       B0-1       IIII       End of Test PIt 2 m       Reason for Termination:         3       1108       1108       IIII       IIIII       IIIIII       IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII	цн П	- -	an								
4       1107         1       1 <t< td=""><td>10. S 2 -</td><td>1109 -</td><td></td><td>BU-1</td><td></td><td>End of Toot Dit: 2 m</td><td></td><td></td><td></td><td>Reason fo</td><td>or Termination:</td></t<>	10. S 2 -	1109 -		BU-1		End of Toot Dit: 2 m				Reason fo	or Termination:
Image: Sector and Sector		1	-			End of rest Fit. 2 m				Bedrock.	
Image: second of the second	PLAT	1.	-								
Image: second	TEM	-									
Image: second	<u>γ</u>	-									
Image: Sector and Sector	IBR/	1.									
4       1107         1       1 <t< td=""><td></td><td>-</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></t<>		-									
4       1107         1       1 <t< td=""><td>DIMI</td><td>1108 -</td><td>]</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></t<>	DIMI	1108 -	]								
Image: State of the second	3 - 790	1.	-								
Image: State of the second	PRO	-									
Image: Second	AL SI	-	]								
Image: state of the second	INIC	1.	-								
Image: state of the state	Ц Ц С Ш	-	1								
4       1107         4       1107         1       1         1       1         1       1         1       1         1       1         1       1         1       1         1       106         1       106         1       106         1       106         1       106         1       106         1       106         106       Casino Mining Corporation Casino Project TEST PIT LOG FOR TP13-35         In Denver, Colorado.       PROJECTIVASIONMENT NO. VA101-325/16         PROJECT VA101-325/16       PROJECT VA101-325/16	<u>3EO</u>	-	1								
4       1107       1	013 (	1.	-								
Image: Several Remarks:         Samples tested at Knight Piésold Soils Laboratory         in Denver, Colorado.             PROJECT/ASSIGNMENT NO.             PROJECT/ASSIGNMENT NO.             PROJECT/ASSIGNMENT NO.	o 4 -	1107 -	1								
Image: state of the state	SK 2	-	]								
GENERAL REMARKS:         Samples tested at Knight Piésold Soils Laboratory         in Denver, Colorado.             PROJECT/ASSIGNMENT NO.             PROJECT/ASSIGNMENT NO.             PROJECT/ASSIGNMENT NO.             PROJECT/ASSIGNMENT NO.	A/TA:	1 .	-								
General Remarks:         Samples tested at Knight Piésold Soils Laboratory         in Denver, Colorado.         PROJECT/ASSIGNMENT NO.         Ref         Valua-325/16         PROJECT/ASSIGNMENT NO.	DAT	-	1								
GENERAL REMARKS:         Samples tested at Knight Piésold Soils Laboratory         in Denver, Colorado.         PROJECT/ASSIGNMENT NO.         Ref         Knight Piésold         PROJECT/ASSIGNMENT NO.         Ref         FIGURE	16/A/	-	]								
Image: Section of Control of Contro	325	1.	-								
1106       Indext       Casino Mining Corporation         GENERAL REMARKS:       Casino Mining Corporation         Samples tested at Knight Piésold Soils Laboratory       Casino Project         In Denver, Colorado.       TEST PIT LOG FOR TP13-35         Knight Piésold       VA101-325/16         FIGURE       FIGURE	01/00	-	1								
GENERAL REMARKS: Samples tested at Knight Piésold Soils Laboratory in Denver, Colorado. Casino Mining Corporation Casino Project TEST PIT LOG FOR TP13-35 Knight Piésold	LE/1/	1106 -	1								
Samples tested at Knight Piésold Soils Laboratory in Denver, Colorado.		NERAL	REM	ARKS:				Casino Mir	ning Cor	poration	
in Denver, Colorado.  TEST PIT LOG FOR TP13-35  Knight Piésold FIGURE FIGURE FIGURE	San	nples tes	ted at I	Knight Piés	sold Soils L	aboratory		Casi	no Proje	ct	
Knight Piésold	in D	enver, C	olorado	<b>D</b> .							
	ary: //						Knigh	t Piéso	ld 🗆	VA101-32	5/16 1
Logging conducted according to the Canadian Foundation Engineering Manual, 4th Edition, 2006.							C	ONSULTI	N G	JRE TP	13-35 REV.

	F	Proje	ct:	Casino	Project		Test Pit No.: <b>TP13-36</b>			Page	1 of 1
		Contra	ctor:	Kluane	Drilling L	td.	_Equipment Used:	CAT 322C	_ Date	e Started: _	14 Aug 13
		Loca	tion:	Northea	ast of TMF	Main Embankment	Total Depth:	3 m	_ Date Co	ompleted: _	14 Aug 13
	(	Coordin	ates	6,953,37	74N, 6	13,798 E (UTM ZONE 7 NAD83)	Elevation:	1087.427 m	_ L	ogged by: _	SB
									Rev	iewed by: _	JEH
T, 23 Dec 13	DEPTH - (m)	ELEVATION - (m)	SAMPLES	SAMPLE NO.	GRAPHIC LOG	MATERIA	L DESCRIPTION	N		со	MMENTS
GD.	_	-				VEGETATION (0 to 0.05 m)					
EST PIT LOGS.GPJ TEST PIT LOG METRIC, TEST PIT DATA TEMPLATE MAY08.GDT,	- - - - - - - - - - - - - - - - - - -	- - - - - - - - - - - - - - - - - - -				Moss, roots, vegetation. TOPSOIL (0.05 to 0.1 m) Organic SILT, many roots and plant GRAVELLY COBBLES AND SANE (0.1 to 1.5 m) Gravelly COBBLES and SAND, som (Colluvium). Sand is fine to coarse, angular, strong, moderately weather	) ne silt, some roots, ang gravel is fine to coarse	ular, massive, brov			
ORT/CASINO 2013 T EMPLATE-TPS.GLB,	- - - 2 - -	- - - - - - - - - - - - - - - - 			$ \begin{array}{c} \begin{array}{c} \begin{array}{c} \end{array} \\ \end{array} \\ \end{array} \\ \end{array} \\ \begin{array}{c} \end{array} \\ \end{array} \\ \end{array} \\ \end{array} \\ \begin{array}{c} \end{array} \\ \end{array} \\ \end{array} \\ \end{array} \\ \begin{array}{c} \end{array} \\ \end{array} \\ \end{array} \\ \end{array} \\ \begin{array}{c} \end{array} \\ \end{array} \\ \end{array} \\ \end{array} \\ \begin{array}{c} \end{array} \\ \end{array} \\ \end{array} \\ \end{array} \\ \end{array} \\ \begin{array}{c} \end{array} \\ \end{array} \\ \end{array} \\ \end{array} \\ \begin{array}{c} \end{array} \\ \end{array} \\ \end{array} \\ \end{array} \\ \begin{array}{c} \end{array} \\ \end{array} \\ \end{array} \\ \end{array} \\ \begin{array}{c} \end{array} \\ \end{array} \\ \end{array} \\ \end{array} \\ \begin{array}{c} \end{array} \\ \end{array} \\ \end{array} \\ \end{array} \\ \begin{array}{c} \end{array} \\ \end{array} \\ \end{array} \\ \end{array} \\ \end{array} \\ \begin{array}{c} \end{array} \\ \begin{array}{c} \end{array} \\ \end{array} $	WEATHERED YMGD (1.5 to 2.5 m) Dawson Range Batholith - Meta-Gra dark red and orange oxidation, very close joint spacing, fractured into mo sized rock fragments, joints filled wit Top 0.2 m more highly weathered an	weak to weak rock mas oderately weathered, st th subangular fine to co	s, extremely to ver rong, gravel to cob	y ble		
KAM/GINT/MINE SLIE KEP OGRAM/GINT/LIBRARY_TE						COMPLETELY WEATHERED YMC (2.5 to 3 m) As above but highly to completely w broken down by excavator to sandy YMGD	eathered, orange and r		eak,	Reason fo	or Termination:
CHNICAL SI PROGRA DTECHNICAL SI PROG	-	- - - 1084 - - -				(3 to m) As above but slightly to moderately End of Test Pit: 3 m	weathered, strong, com	petent bedrock.		Bedrock.	
ASK 200 - 2013 GEO IL ATASK 200 - 2013 GE	4 -										
File://VAN11/PRJ_FILE/1/01/00325166AUATA/TASK 200 - 2013 GEOTECHNICAL SI PROG Library: //VAN11/PRJ_FILE/1/01/00325166AUATA/TASK 200 - 2013 GEOTECHNICAL SI PR	-	- - 1083 - - - -									
FILE/	65	NERAL									
PRJ					old Soile !	aboratory	Casino Mining Corporation Casino Project				
111X		pies tes enver, C		-	old Soils L	abordiory	TEST PIT LOG FOR TP13-36				
ile://VAN1 ibrary: //V/	III DE	Silvel, C	oloradi	υ.			Knigh	t Piéso	ld <sub>EGI</sub>	ROJECT/ASSIGNME VA101-32 JRE TP	5/16 1 REV.
	oggin	a conduc	ted acc	ording to the	Canadian F	oundation Engineering Manual, 4th Edition, 200		CREDEII		18	13-36 0

	F	Proje	ct:	Casino	Project		Test Pit No.:	TP13-37	_	Page	1 of 1
		Contra	ctor:	Kluane	Drilling L	.td.	_Equipment Used:	CAT 322C	_ Date	e Started:	14 Aug 13
		Loca	tion:	Northea	st of TMF	- Main Embankment	_ Total Depth:	2.4 m	_ Date Co	ompleted:	14 Aug 13
	(	Coordin	ates	6,953,50	00N, 6	13,502 E (UTM ZONE 7 NAD83)	Elevation:	1058.516 m	Lo	ogged by: _	SB
									Rev	iewed by: _	JEH
T, 23 Dec 13	DEPTH - (m)	ELEVATION - (m)	SAMPLES	SAMPLE NO.	GRAPHIC LOG	MATERIA	L DESCRIPTION	١		со	MMENTS
LABINO 2013 TEST PIT LOGS: GPJ LATE-TPS.GLB, TEST PIT LOG METRIC, TEST PIT DATA TEMPLATE MAY08.GDT,		- - - - - - - - - - - - - - - - - - -				VEGETATION (0 to 0.1 m) Moss, roots, vegetation. TOPSOIL (0.1 to 0.15 m) Organic SILT, many roots and plant GRAVELLY SAND AND SILT (0.15 to 1.3 m) Gravely SAND and SILT, some cob plasticity, beige brown, loose, massi gravel is fine to coarse. Cobbles an weathered, dark grey Meta-Granodic COMPLETELY WEATHERED YMC (1.3 to 2.3 m) Dawson Range Batholith - Meta-Gra very weak, lateral variation in degree very close joint spacing. Completely silty to gravelly SAND, trace clay, mo	bles, some roots, gap ( ve, moist (Colluvium). d gravel consist of med orite with orange red sta <b>GD</b> anodiorite / Quartzite, b e of weathering, highly y weathered bedrock is	graded, angular, lo Sand is fine to coa lium strong, moder aining. eige orange, extrer to completely weat	arse, rately mely to hered,		
KAMIGINI MINE SI LE KEPOKI (CASINO 2013) OGRAMIGINT/LIBRARY_TEMPLATE-TPS.GLB,		- - - - - - - -				COMPLETELY WEATHERED YMC (2.3 to 2.4 m) As above but frozen, Vs, < 1 mm lan End of Test Pit: 2.4 m		5% excess ice.	/	Reason fo Permafros	or Termination: st.
013 GEOTECHNICAL SI PRUGRAM	- - - - - - -	- - - 1055 - - - -									
FIIE://WAN.11/FXJ_FILE/1/01/00325/16/AUDATA/TASK 200 - 2013 GEOTECHNICAL SI FROG	4	- - - - 1054 - - - - -									
	GE	NERAL	REM	ARKS:				Cooline Mt	aine Car		
IVPRJ				Knight Piés	old Soils I	aboratory	Casino Mining Corporation Casino Project				
AN11		enver, C		-		·····,		TEST PIT L	OG FOR	TP13-37	
-lie://vAN		, 0					Knigh	t Piéso		ROJECT/ASSIGNME VA101-32	
	oggin	a conduc	ted acc	ording to the	Canadian F	oundation Engineering Manual, 4th Edition, 200	6.				

	Proje		Casino F					_	Page	
			Kluane E				CAT 322C 2 m	_		14 Aug 13
	Loca Coordin				Main Embankment 13,271 E (UTM ZONE 7 NAD83)		1014.097 m		pietea: _ ged by: _	14 Aug 13 SB
,	JUUIUII	ales	0,955,50	IN, 0	13,271 E (UTMIZONE 7 NAD63)		1014.097 11		ved by: _	
DEPTH - (m)	ELEVATION - (m)	SAMPLES	SAMPLE NO.	GRAPHIC LOG		AL DESCRIPTION	4		COI	MMENTS
	1014 - - - - - - - - - - - - - - - - - - -				VEGETATION (0 to 0.1 m) Moss, roots, vegetation. TOPSOIL (0.1 to 0.15 m) Organic SILT, many roots and plan GRAVELLY SILT AND SAND (0.15 to 0.5 m) Gravelly SILT and SAND, some roo (Colluvium). Sand is fine to coarse COMPLETELY WEATHERED WR (0.5 to 2 m) Dawson Range Batholith - Meta-Gr with black specks, extremely to ver close joint spacing, rich in quartz, h dark grey to black SAND, some gra cobbles. WRGD (2 to m) Dawson Range Batholith - Meta-Gr with black specks, strong, compete End of Test Pit: 2 m	ots, low plasticity, beige, e, gravel is fine to coarse <b>RGD</b> ranodiorite, coarse grain y weak, highly to comple iomblende and micas. I avel, trace silt with trace	grey ry is veak		r Termination:	
	- - - - 1011 - - - - - -									
- - - 4 - - - - - - - -	- - - - - - - - - - - - - - - - - - -									
Sam		ted at	ARKS: Knight Piésc o.	old Soils La	aboratory	Knigh	Casino Min Casi TEST PIT Lo <b>t Piéso</b>	no Project OG FOR TI	P13-38 ECT/ASSIGNME VA101-325	

	F	Proje	ct:	Casino	Project		_Test Pit No.:	TP13-39		Page	1 of 1
		Contra	ctor:	Kluane	Drilling L	td.	_Equipment Used:	CAT 322C	_ Date	e Started:	15 Aug 13
		Loca	tion:	Southe	ast of Gol	d Ore Stockpile	Total Depth:	2.2 m	_ Date Co	ompleted:	15 Aug 13
	(	Coordin	ates	6,956,4	47 N, 6	14,905 E (UTM ZONE 7 NAD83)	Elevation:	1161.779 m	_ Lo	ogged by:	SB
									Revi	iewed by: _	JEH
, 23 Dec 13	DEPTH - (m)	ELEVATION - (m)	SAMPLES	SAMPLE NO.	GRAPHIC LOG	MATERIA	L DESCRIPTION	N		CO	MMENTS
GDT,	-				<u> </u>	VEGETATION		•			
ELTPS.GLB, TEST PIT LOGS.GPJ E-TPS.GLB, TEST PIT LOG METRIC, TEST PIT DATA TEMPLATE MAY08.GDT,		- - - - - - - - - - - - - - - - - - -			$\begin{array}{c} \begin{array}{c} \begin{array}{c} \begin{array}{c} \end{array} \\ \end{array} \end{array} \\ \begin{array}{c} \end{array} \\ \end{array} \\ \end{array} \\ \end{array} \\ \begin{array}{c} \end{array} \\ \end{array} \\ \end{array} \\ \end{array} \\ \begin{array}{c} \end{array} \\ \end{array} \\ \end{array} \\ \end{array} \\ \begin{array}{c} \end{array} \\ \end{array} \\ \end{array} \\ \end{array} \\ \begin{array}{c} \end{array} \\ \end{array} \\ \end{array} \\ \end{array} \\ \begin{array}{c} \end{array} \\ \end{array} \\ \end{array} \\ \end{array} \\ \end{array} \\ \begin{array}{c} \end{array} \\ \end{array} \\ \end{array} \\ \end{array} \\ \begin{array}{c} \end{array} \\ \end{array} \\ \end{array} \\ \end{array} \\ \begin{array}{c} \end{array} \\ \end{array} \\ \end{array} \\ \end{array} \\ \begin{array}{c} \end{array} \\ \end{array} \\ \end{array} \\ \end{array} \\ \begin{array}{c} \end{array} \\ \end{array} \\ \end{array} \\ \end{array} \\ \end{array} \\ \begin{array}{c} \end{array} \\ \begin{array}{c} \end{array} \\ \end{array} \\ \end{array} \\ \end{array} \\ \end{array} \\ \end{array} \\ \begin{array}{c} \end{array} \\ \end{array} $	(0 to 0.1 m) Roots, vegetation. <b>GRAVEL AND COBBLES</b> (0.1 to 0.15 m) Coarse GRAVEL and small COBBL Meta-Granodiorite, many roots, angu- rich, loose. <b>TOPSOIL</b> (0.15 to 0.2 m) Organic SILT, many roots and plant <b>SILT AND GRAVEL</b> (0.2 to 1.4 m) SILT and GRAVEL, some sand, trac dark organic matter, gap graded, low Cobbles and gravel consist of mode <b>WEATHERED WRGD</b> (1.4 to 2.2 m) Dawson Range Batholith - Granodic weathering from moderately to comp bedrock is extremely weak, friable, r clay, low plasticity, orange to beige, coarse. Moderately weathered bedr brown staining, weak to medium stre SAND, some gravel.	ular, white to orange wi remains, dark brown, s e cobbles, angular, sor v plasticity, beige, loose rately weathered Meta- prite, beige orange, late lotety weathered. Con ecovered as silty SANL ecovered as silty SANL moist, sand is fine to co ock is light grey with bl	th black specks, qu slightly moist (Tops me roots and pock e, moist (Colluvium Granodiorite. ral variation in deg npletely weathered o, some gravel, trav oarse, gravel is fine ack specks, orang	soil). ets of i). ree of ce e to e		
RAMIGIN MINE SITE REPORTICASINO 2013 I ROGRAMIGIN TILIBRARY_TEMPLATE-TPS.GLB,	- - - -	- - - - - - - - - - - - - - - - - - -				WRGD (2.2 to m) Dawson Range Batholith - Granodic specks, strong, competent, slightly v End of Test Pit: 2.2 m		ight grey with blac	ĸ	Reason fo Bedrock.	or Termination:
NICAL SI PROGRAMIGINI CHNICAL SI PROGRAMIG	3										
FIIE///WAN11/PRJ_FILE/1/01/00325/16/01/ATAI/ASK 200 - 2013 GEOTECHNICAL SI PROG	- - - 4 - - - -	1158 - - - - - - -									
3 FILE/1/01/00325/16/0325/16		- 1157 - - - - - - - - - - - - - - - - - - -			sold Soils L	aboratory		Casino Mir Casi	no Proje	ct	
VAN11/PI		enver, C		-	-	-	Knioh	TEST PIT L	OG FOR	TP13-39 ROJECT/ASSIGNME VA101-32	
							C	ONSULTI	N G	IRE TP	13-39 REV. 0
ī	oaain	a conduc	ted acc	ording to the	Canadian Fo	oundation Engineering Manual, 4th Edition, 200	16				

	F	Proje	ct:	Casino	Project						1 of 1
		Contra	ctor:	Kluane	Drilling L	td.	_Equipment Used:	CAT 322C	_ Date	e Started:	15 Aug 13
		Loca	tion:	Southea	st of Gol	d Ore Stockpile	_ Total Depth: _	1.1 m	_ Date Co	ompleted:	15 Aug 13
	(	Coordin	ates	6,956,31	2N, 6	14,714 E (UTM ZONE 7 NAD83)	_ Elevation:	1137.038 m	_ L	ogged by: _	SB
									Rev	iewed by: _	JEH
T, 23 Dec 13	DEPTH - (m)	ELEVATION - (m)	SAMPLES	SAMPLE NO.	GRAPHIC LOG	MATERIA	L DESCRIPTION	4		со	MMENTS
8.GD	-	1137 -			######################################	VEGETATION (0 to 0.1 m)					
TEST PIT LOGS GPJ	- - - - - - - - - - - - - - - - - - -	- - - - - - - - - - - - - - - - - - -				Moss, roots, vegetation. TOPSOIL (0.1 to 0.25 m) Organic SILT, many roots and plant SANDY SILT (0.25 to 0.45 m) Sandy SILT, trace gravel, trace cobb wet (Colluvium). Cobbles and grave states. SILTY SAND, FROZEN (VS, VX) (0.45 to 1.1 m) Silty SAND, some gravel, trace cobb ~25% excess ice, clear ice in horizou spacing, and some clear 1 mm rand consist of Granodiorite in various we End of Test Pit: 1.1 m	eles, low plasticity, grey I consist of Granodiorit les, greyish beige, froz ntal laminations of 1 mr omly oriented ice crysta	ish beige, soft to fi e in various weath en, Vs with some ` n thickness, 1 cm als. Gravel and co	ering √x,	Reason fr Permafro	or Termination: st.
KAMIGIN TWINE SHE REPORTICASINO 2013 TES OGRAMIGIN TILIBRARY_TEMPLATE-TPS.GLB, TE	2 - - - - - - - - - - - -	- - - - - - - - - - - - - - - - - - -									
I ECHNICAL SI PROGRAM/GIN IN EOTECHNICAL SI PROGRAM/GIN	3 - - - - - -	- 1134 - - - - - - -									
FIIE://WAN11/PKJ_FILE/1/01/00325/16/AUDATA/TASK 200 - 2013 GEOTECHNICAL SI PROG Library: //VAN11/PRJ_FILE/1/01/00325/16/AIDATA/TASK 200 - 2013 GEOTECHNICAL SI PR	- 4	- - - - - - - - - - - - - - - - - - -									
	GF	NERAL	REM	ARKS:				Ocaliz - M			
				Knight Piés	old Soils L	aboratory		Casino Mir Casi	no Proje	ct	
AN1		enver, C		-		-		TEST PIT L	OG FOR	TP13-40	
ary: ///							Knigh	t Piéso		ROJECT/ASSIGNM VA101-32	5/16 1
	oggin	a conduc	ted and	ording to the	Canadian E	oundation Engineering Manual, 4th Edition, 200	C	ONSULTI	NG	TP	13-40 REV.

	F	Proje	ct:	Casino	Project		Test Pit No.:	TP13-41	Pag	e <u>1 of 1</u>
		Contra	ctor:	Kluane	Drilling L	td.	_Equipment Used:	CAT 322C	Date Starte	t: 15 Aug 13
		Loca				d Ore Stockpile	_ Total Depth:	4.5 m	_ Date Complete	
	(	Coordin	ates	6,956,17	78N, 6	14,821 E (UTM ZONE 7 NAD83)	Elevation:	1117.685 m	_ Logged b	
┟									Reviewed b	/: <u>JEH</u>
T, 23 Dec 13	DEPTH - (m)	ELEVATION - (m)	SAMPLES	SAMPLE NO.	GRAPHIC LOG		L DESCRIPTION	J		COMMENTS
8.GD	-	-			<u> </u>	VEGETATION (0 to 0.1 m)				
	- - - - - - - - - - - - - - - - - - -	- - - - - - - - - - - - - - - - - - -				Moss, roots, vegetation. TOPSOIL (0.1 to 0.2 m) Organic SILT, many roots and plant SILT AND SAND (0.2 to 0.5 m) SILT and SAND, trace gravel, trace loose, moist (Colluvium). Sand is fin SILTY SAND (0.5 to 4.5 m) Silty SAND, trace clay, trace gravel, (Residual Soil). Sand is fine to coar derived from Granodiorite, plagiocla and trace clay. North end of pit is sl	cobbles, some roots, lo ne to coarse, gravel is fi well graded, orange to se, gravel is fine graine se has completely weat	w plasticity, brown, ine to coarse. beige, compact, mo		
D ZUI3 IESI FII LU PS.GLB, TEST PIT L		- - 1116 - -	SWZ		× × ×					
PROGRAM/GINT/LIBRARY_TEMPLATE-1		- - - - - - - - - - - - - - - - - - -		BU-1						
ATALTASK 200 - 2013 GEOTECHNICAL SI FIC	- - - - - - - - - - - - - - - - - - -	- - - - - - - - - - - - - - - - - - -								
=\1\01\00325\16\A\L	-	- - 1113 - -			*	End of Test Pit: 4.5 m				on for Termination: /ator reach.
	GE	NERAL	REM	ARKS:				Casino Min	ing Corporatio	'n
1\PR.					old Soils La	aboratory		Casir	ng Corporation No Project NG FOR TP13-	// I
ibrary: WAN1	in De	enver, C	olorado	D.			Knigh	TEST PIT LO		
	oggin	a oonduo	ted acc	ording to the	Canadian Fo	oundation Engineering Manual, 4th Edition, 200				

F	Proje	ct:	Casino	Project		_Test Pit No.:	TP13-42	_	Page	1 of 1
	Contra	ctor:	Kluane	Drilling L	td.	Equipment Used:	CAT 322C	_ Date	Started:	15 Aug 13
	Loca				d Ore Stockpile	Total Depth:	3 m	_	mpleted:	
(	Coordin	ates	6,956,24	47 N, 6	14,920 E (UTM ZONE 7 NAD83)	Elevation:	1137.958 m	-	gged by:	
								Revi	ewed by:	JEH
Ê	ELEVATION - (m)		Ň	GRAPHIC LOG						
Ξ	VTION	LES	LE	HC						
DEPTH - (m)	TEV/	SAMPLES	SAMPLE NO.	RAF		AL DESCRIPTION			0.01	
	ш -	0	0 O				N		CO	MMENTS
	-			× ×	(0 to 0.05 m) Moss, roots, vegetation.					
	-			× ·	TOPSOIL (0.05 to 0.15 m)					
-	-			×···×	Organic SILT, many roots and plant	t remains, dark brown, r	noist (Topsoil).			
	-			*	SAND AND SILT (0.15 to 2 m)					
-	-				SAND and SILT, trace gravel, trace brown, loose, moist (Colluvium). Sa	and is fine to coarse, gra	ngular, low plasticity avel is fine to coarse	у, Э,		
1_	1137 –			× × ×	cobbles consist of moderately weath	nered Granodiorite.				
-	-			× × ×						
	-			× ×						
-	-			×××						
	-			* *						
-	-			×××						
	1100			× × ×						
2 -	1136 – -				WEATHERED WRGD					
	-			0.0°	(2 to 3 m) Dawson Range Batholith - Granodio					
	-			0.0. 0.0.	variation in degree of weathering fro weathered bedrock is extremely we					
-	-				some silt, trace clay, beige orange, weathered bedrock is light grey with	sand is fine to coarse, g	ravel is fine. Highly	y I		
	-				weak to weak, very close joint spaci gravel.	ing, joints filled with SA	ND, some silt, some			
-	-			0.0	-					
3 -	1135 –				WROD				Reason fo	or Termination:
-	-				WRGD (3 to m)				Bedrock.	
	-				Dawson Range Batholith - Granodic specks, competent, medium strong					
j	-				End of Test Pit: 3 m					
]	-									
	-									
	- 1134 –									
4 -										
-	-									
	-									
-	-									
	-									
	-									
GEI	1133 - NERAL	REM	ARKS:				Casina Min	ing Corr	oration	
				sold Soils La	aboratory		Casino Min Casir	no Proje	ct	
	enver, C		-				TEST PIT LO	OG FOR	TP13-42 ROJECT/ASSIGNME	NT NO. REF I
						Knigh	t Piéso	ld FIGU	VA101-325	5/16 1
			andina ta tha	Canadian E	oundation Engineering Manual, 4th Edition, 200	C	ONSULTI	NG	TP	13-42

B1-47 of 88

	F	Proje	ct:	Casino	Project		_Test Pit No.:	TP13-43	_	Page	1 of 1
		Contra	ctor:	Kluane	Drilling L	td.	_Equipment Used:	CAT 322C	_ Date	e Started:	15 Aug 13
		Loca	tion:	Southea	ast of Gol	d Ore Stockpile	Total Depth:	2.3 m	_ Date Co	mpleted:	15 Aug 13
	(	Coordin	ates	6,956,10	)5N, 6	14,915 E (UTM ZONE 7 NAD83)	Elevation:	1110.799 m	_ Lo	ogged by:	SB
									Revi	ewed by:	JEH
r, 23 Dec 13	DEPTH - (m)	ELEVATION - (m)	SAMPLES	SAMPLE NO.	GRAPHIC LOG	MATERIA	L DESCRIPTION	٧		CO	MMENTS
GDT.	_	-			<u> </u>	VEGETATION					
FIIE://WANTI/PRJ. FILE/10/100325/16/ADATA/TASK 200 - 2013 GEOTECHNICAL SI PROGRAMIGINT/LIBRARY_TEMPLATE-TPS.GLB, TEST PIT LOGS.GPJ LIBrary. IV/ANT1/PRJ_FILE/101/00325/16/AIDATA/TASK 200 - 2013 GEOTECHNICAL SI PROGRAMIGINT/LIBRARY_TEMPLATE-TPS.GLB, TEST PIT LOG METRIC, TEST PIT DATA TEMPLATE MAY08.GDT, 23 Dec 13	- - - - - - - - - - - - - - - - - - -	- - - - - - - - - - - - - - - - - - -				(0 to 0.1 m) Moss, roots, vegetation. SAND AND SILT (0.1 to 0.6 m) SAND and SILT, some gravels and plasticity, dark greyish brown with m (Colluvium). Sand is fine to coarse, <b>GRAVEL AND SAND</b> (0.6 to 2 m) GRAVEL and SAND, trace silt, trace wet (Residual soil). Sand is fine to o laminations and finer grained at top sized completely weathered granodi friable, and rich in white plagioclase	ninor orange band, loos gravel is fine to coarse e clay, well graded, grey coarse, gravel is fine to of interval. Trace coars iorite fragments that are	e, slightly moist / to beige, loose, m coarse, some se gravel and cobb e are extremely wea	noist to le ak,		
E-TPS.GLB, TEST PIT I	- - - 2 -	- - 1109 - -	en S	BU-1		WEATHERED WRGD ▼ (2 to 2.3 m)				below 2.2 causing p	eps from pit walls m depth, onding to occurs of pit, somewhat
		- - - - - - - - - - - - - - - - - - -				<ul> <li>Dawson Range Batholith - Granodic specks, very weak to weak, highly w</li> <li>WRGD (2.3 to m) Dawson Range Batholith - Granodic specks, competent, medium strong, End of Test Pit: 2.3 m</li> </ul>	veathered.	ht grey with black	/	-	or Termination:
ALLASK 200 - 2013 GEOTECHNICA DATA\TASK 200 - 2013 GEOTECHN	4	- - - - - - - - - - - - - - - - - - -									
11/PRJ_FILE/1/01/00325/16/A/L		- - 1106 - - - - - - - - - - - - - - - - - - -		ARKS: Anight Piés	old Soils L	aboratory		Casino Mir Casi	no Proje	ct	
brary: \\VAN11\P	in De	enver, C	olorado	D.			Knigh	TEST PIT L <i>t Piéso</i>		ROJECT/ASSIGNME VA101-32	5/16 1
	oggin	a conduc	ted acco	ording to the	Canadian F	oundation Engineering Manual, 4th Edition, 200		CROULII		19	13-43

P	roje	ct:	Casino	Project		_Test Pit No.:	TP13-44	_	Page	1 of 1
(	Contra	ctor:	Kluane	Drilling L	.td.	_Equipment Used:	CAT 322C	_	e Started: _	
	Loca				d Ore Stockpile	Total Depth:	2.2 m			15 Aug 13
C	Coordin	ates	6,956,2	27N, 6	14,576 E (UTM ZONE 7 NAD83)	Elevation:	1117.345 m	_	ogged by: _	
			1					Rev	iewed by: _	JEH
DEPTH - (m)	ELEVATION - (m)	SAMPLES	SAMPLE NO.	GRAPHIC LOG		L DESCRIPTION	N		CO	MMENTS
	- - - - - - - - - - - - - - - - - - -			$ \begin{array}{c}    &    &    &    &    &    &    \\    &    &    &    &    &    \\    &    &    &    &    &    \\    &    &    &    &    \\    &    &    &    &    \\    &    &    &    \\    &    &    &    \\    &    &    &    \\    &    &    \\    &    &    \\    $	VEGETATION (0 to 0.15 m) Moss, roots, vegetation. TOPSOIL (0.15 to 0.3 m) Organic SiLT, many roots and plant SILTY SAND (0.3 to 1.1 m) Silty SAND, some gravel, some cob brown, loose, moist (Colluvium). Sa Cobbles and boulders consist of slig SILTY SAND (1.1 to 1.2 m) Silty SAND, trace clay, orange beige to coarse. WEATHERED WRGD (1.2 to 2.2 m) Dawson Range Batholith - Granodic specks and orange brown surface s close joint spacing, joints filled with	bles and boulders, ang and is fine to coarse, gra phtly weathered, very st e, compact, moist (Resi prite, coarse grained, lig taining, strong, modera	ular, non plastic, gr avel is fine to coars rong Granodiorite. dual Soil). Sand is ht grey with black tely to slightly weat	fine		on surface.
	- - 1115 - - - - -				WRGD (2.2 to m) Dawson Range Batholith - Granodic specks, competent, very strong, slig End of Test Pit: 2.2 m	prite, coarse grained, lig htly weathered.	ht grey with black		Reason fo Bedrock.	r Termination:
	- - - 1114 - -									
	- - - - - - - - - - - - - - - - - - -									
	-									
GEN	IERAL	REM	ARKS:				Casino Min	ing Cor	poration	
E Samp			-	sold Soils L	aboratory		Casi TEST PIT L	no Proje	ct TP13-44	
in Dei	nver, Co	olorad	0.			Knich	t Piéso		ROJECT/ASSIGNME VA101-32	
Dia							0 N S U L T I		IRE	13-44 REV 0

	Proje	ct:	Casino	Project		_Test Pit No.:	TP13-45	_	Page	1 of 1
	Contra	ctor:	Kluane	Drilling L	td.	_Equipment Used:	CAT 322C	_ Date	e Started: _	15 Aug 13
	Loca	tion:	Southea	st of Gol	d Ore Stockpile	Total Depth:	0.9 m			15 Aug 13
	Coordin	ates	6,956,33	3N, 6	14,423 E (UTM ZONE 7 NAD83)	Elevation:	1114.967 m		ogged by: _	
			1					Rev	iewed by:	JEH
DEPTH - (m)	ELEVATION - (m)	SAMPLES	SAMPLE NO.	下 の の の の の の の の の の の の の		AL DESCRIPTION	N		со	MMENTS
	1114 - 11114 -				VEGETATION (0 to 0.2 m) Moss, roots, vegetation. TOPSOIL (0.2 to 0.4 m) Organic SILT, many roots and plant boulders at surface (Topsoil). SAND AND SILT (0.4 to 0.7 m) SAND and SILT, some cobbles, sor low plasticity, beige brown, loose to SAND AND SILT, FROZEN (VX) (0.7 to 0.9 m) As above, but frozen, Vx, ~5% exce End of Test Pit: 0.9 m	ne boulders, some root compact, moist (Colluv	s, angular, gap gra ium).	/		on surface. or Termination:
TLIBRARY_TEMPLATE-TPS.GLB, TES	1113 - 1113 - - - - - - - - - - - - - - - - - - -									
EOTECHNICAL SI PROGRAM/GIP										
\1\01\00325\16\A\DATA\TASK 200 - 2013 G										
	1110 - NERAL	REM	ABKS.							
San			Knight Piés	old Soils L	aboratory		Casino Mir Casi	ning Cor no Proje		
in D	enver, C		-	5.4 5016 E	200, 200 y		TEST PIT L	OG FOR	TP13-45	
ary: //	., 0					Knigh	t Piéso	ld FIGU	ROJECT/ASSIGNME VA101-32	5/16 1
				<u> </u>	oundation Engineering Manual, 4th Edition, 200		ONSULTI	N G	TP	13-45 <sup>REV</sup> 0

	F	Proje	ct:	Casino	Project		Test Pit No.:	TP13-46	_	Page	1 of 1
		Contra	ctor:	Kluane	Drilling L	td.	_Equipment Used:	CAT 322C	Dates	Started:	16 Aug 13
						d Ore Stockpile	Total Depth:	3 m	-	npleted:	
	(	Coordin	ates	6,956,24	42 N, 6	14,312 E (UTM ZONE 7 NAD83)	Elevation:	1089.711 m		iged by: _	
									Revie	wed by:	JEH
	(E	ELEVATION - (m)	6	Š	GRAPHIC LOG						
23 Dec 13	DEPTH - (m)	ATIO	SAMPLES	SAMPLE NO.	PHIC						
	DEP	ELEV,	SAM	SAM	GRA	MATERIA		N		CO	MMENTS
GDT,	_				7 77 77 77 77 77 77	VEGETATION		<u>_</u>			
AY08.	-	-			<u> </u>	(0 to 0.15 m) Moss, roots, vegetation.					
TE M		-				TOPSOIL (0.15 to 0.2 m)					
MPLA	-	-			× · · · · · · · · · · · · · · · · · · ·	Organic SILT, many roots and plant	remains, dark brown to	o black, moist (Tops	oil).		
'A TE		- 1089 –			···★ ··· ///≳ //	SAND (0.2 to 0.5 m)					
T DA1	-					SAND, some silt, some gravel, trace (Colluvium). Sand is fine to coarse,	gravel is fine to coarse		a		
ST PI	1_	-				consist of moderately weathered Gra SILTY SAND	anodiorite.		/		
Ϊ	-	-				(0.5 to 0.6 m) Silty SAND, some gravel, orange to	beige brown compact	moist (Residual soi	р		
ETRIC		-			21112	Sand is fine to coarse, gravel is fine			.,.		
5 W	-	-				WEATHERED WRGD (0.6 to 3 m)					
PITLO		-				Dawson Range Batholith - Granodic specks and orange surface staining	, very weak to weak, hig	ghly weathered,			
SI PI	-	1088 -			21112	extremely close joint spacing, increa orange brown, sand and gravel, son		spacing, joints fille	d with		
13 19 19		-									
02.0 PS.G	2 -	-									
ATE-T	-	-									
MPL/	-	-									
REP. ™_TE		-									
SLIE BRAF	-				2112						
MINE		- 1087									
FIIE://WAN11/PRJ. FILE1/01/00325116A/DATATASK 200 - 2013 GEOTECHNICAL SI PROGRAMGINTMINE SITE REPORTICASINO 2013 TEST PIT LOGS GPJ Libray: \\VAN11/PRJ_FILE1/101/00325116A\DATATASK 200 - 2013 GEOTECHNICAL SI PROGRAMGINT/LIBRARY_TEMPLATE-TPS GLB, TEST PIT LOG METRIC, TEST PIT DATA TEMPLATE MAY08.GDT,	2	-									
OGRA	3 -	-				End of Test Pit: 3 m				Reason fo Bedrock.	r Termination:
SI PR	-	-									
CAL	-	-									
CHN	-	-									
EOTE		- - 1086									
13 GI	-	-									
2013 10 - 20	4 -	-									
200 - SK 20	-	-									
ASK AJTA		-									
	-	-									
5/16/	-	-									
11/622	-	1085 -									
11/01		-									
	GE	NERAL	REM	ARKS:				Casino Min	ing Corp	oration	
KJ FI 1∖PR.					sold Soils L	aboratory		Casir	no Project	t	
VAN1	in De	enver, C	olorad	0.				TEST PIT LO		P13-46	NT NO. REF NO.
e:///Ar							Knigh	t Piéso		VA101-325	5/16 1
	oggin	a conduc	ted acc	ording to the	Canadian E	oundation Engineering Manual, 4th Edition, 200	- C	ONSULTI	NG	TP	13-46 0

F	Proje	ect:	Casino	Project		_Test Pit No.:	TP13-47	_ Page	
	Contra			Drilling Lt		Equipment Used: _	CAT 322C	_ Date Started	
				e Stockpil		Total Depth:	4 m		: <u>16 Aug 13</u>
(	Coordin	ates	6,957,82	21 N, 61	3,363 E (UTM ZONE 7 NAD83)	Elevation:	1043.25 m	_ Logged by	
				(7)				Reviewed by	: <b>JEH</b>
(u	ELEVATION - (m)	S	ÖN	C LOG					
DEPTH - (m)	EVATIO	SAMPLES	SAMPLE NO.	GRAPHIC					
ā	<u> </u>	\7\$	7S	<u> </u>		AL DESCRIPTION		C	OMMENTS
-	- 1043 –	-		× · · · · · · · · · · · · · · · · · · ·	(0 to 0.1 m) Moss, roots, vegetation.			/	
-	-	-			SILTY SAND (0.1 to 0.3 m)			1	
-	-	1		0.0.	Silty SAND, some gravel, trace cob moist (Colluvium). Sand is fine to c	bles and boulders, low p coarse, gravel is fine to c	blasticity, brown, lo coarse.	ose,	
	-	-			SILTY SAND (0.3 to 2.5 m)			/	
-	-	1		Po . 0	Silty SAND, some gravel, orange br	rown, loose, wet to satur	ated (Residual soil	).	
1 -	-	-			Sand is fine to coarse, gravel is fine Granodiorite.	to coarse. Gravel cons	ists of nighty weat	lerea	
-	-	1		0.0					
-	1042 -	+							
-	-	1		6.0.					
	-	-		$[0, \bigcirc, \bigcirc,$					
-	-	1		10.0.7					
	-	-		0.0°C					
2 -	-	1							
	-	-							
-	- 1041	1							
	-			0.00. d					
-	-	1			WEATHERED WRGD (2.5 to 4 m)				
	-	-			Dawson Range Batholith - Granodio highly weathered, close joint spacin	orite, coarse grained, or a, joints filled with silty	ange brown, weak, SAND, some grave	a.	
-	-	1		$\geq 111 \geq$	saturated.				
3 -	-	-			Ţ			Vater	flows fast into pit
-	- 1040 –							below	3 m depth, ~1 L/s
]		-							
-	-								
]	-	-							
-	-								
4	-	-							
	-				End of Test Pit: 4 m			Reaso Instab	n for Termination: ility.
-	- 1039 –	-							
]	-	1							
-	-	]							
	-	-							
	-								
GEN	NERAL	REM	ARKS:				Casino Mir	ning Corporatio	n
Sam	ples tes	ted at	Knight Piés	old Soils La	boratory		Casi	no Project	
in De	enver, C	olorad	0.			¥7 A -			
						Knigh	t Piéso		1-325/16 1
		4 I		0	undation Engineering Manual, 4th Edition, 200	C	ONSULTI	NG	TP13-47

F	Proje Contra	ictor:		Drilling Lt		_ Test Pit No.:	<b>TP13-48</b> CAT 322C	Page Date Started:	1 of 1 16 Aug 13
(	Loca Coordin			r <u>e Stockpil</u> 39 N,61	e 3,461 E (UTM ZONE 7 NAD83)	_ Total Depth: _ Elevation:	3.4 m 1059.291 m	_ Date Completed: _ Logged by:	16 Aug 13 SB
								Reviewed by:	JEH
DEPTH - (m)	ELEVATION - (m)	SAMPLES	SAMPLE NO.	GRAPHIC LOG	MATERIA VEGETATION (0 to 0.1 m)	L DESCRIPTION	I	co	MMENTS
- - - - - 1 - - -	1059 -				Moss, roots, vegetation. <b>TOPSOIL</b> (0.1 to 0.2 m) Organic SILT, many roots and plant <b>SILTY SAND</b> (0.2 to 1.5 m) Silty SAND, some gravel, some cob moist (Colluvium). Sand is fine to c boulders are subrounded, gravel is and black Granodiorite.	bles and boulders, brov oarse, gravel is fine to c	vn, loose to compa oarse. Cobbles ar	ct, nd	
2 -	1058 - - - - - - - - - - - - - - - - - - -				<b>GRAVELLY SAND</b> (1.5 to 2.8 m) Gravelly SAND, trace silt, trace clay orange brown, compact, moist (Res	, well graded, subround idual soil).	ed to subangular,		
- - - - - - - - - - - - - -	- - - - - - - - - - - - - - - - - - -		BU-1		WEATHERED WRGD (2.8 to 3.2 m) Dawson Range Batholith - Granodic brown surface staining, weak, highly with gravel and sand. WEATHERED WRGD (3.2 to 3.4 m) As above but frozen, Vs, ~10% exce End of Test Pit: 3.4 m	y weathered, very close		s filled	or Termination: and permafrost.
- 4 - - - - - - -	- - - - - - - - - - - - - - - - - - -								
	NERAL			old Soils La	boratory			ning Corporation no Project	
	enver, C		-		20.200, y	** * *	TEST PIT L	OG FOR TP13-48	ENT NO. REF
						Knigh	t Piéso	ld VA101-32	

	F	Proje	ct:	Casino	Project		_Test Pit No.:	TP13-49		Page	1 of 1
		Contra	ctor:	Kluane	Drilling L	td.	_Equipment Used:	CAT 322C	Date	Started:	16 Aug 13
		Loca	tion:	Gold O	re Stockpi	le	Total Depth:	4.5 m	Date Cor	mpleted:	16 Aug 13
	(	Coordin	ates	6,957,9	93 N, 6	13,586 E (UTM ZONE 7 NAD83)	_ Elevation:	1078.703 m		gged by: _	
									Revie	ewed by:	JEH
	(	(E)		ġ	00						
13	- (n	NOL	ES	Z   Щ	<u>-</u>						
TEST PIT DATA TEMPLATE MAY08.GDT, 23 Dec 13	<b>DEPTH - (</b> m)	ELEVATION - (m)	SAMPLES	SAMPLE NO.	GRAPHIC LOG						
0T, 23	DE	E	SA	SA	В		L DESCRIPTION	N		CO	MMENTS
08.GD	-	-				VEGETATION (0 to 0.05 m)			l		
MAYO	-				o. O o - o	Moss, roots, vegetation.			/		
ATE	-	-			0.0.V	TOPSOIL (0.05 to 0.1 m)					
EMPL	-	-			o Co c	Organic SILT, some sand, many roo (Topsoil).	ots and plant remains, c	lark brown, moist			
TA TE	-	1078 -				WEATHERED WRGD					
T DA	-	-			o O o	(0.1 to 3.7 m) Dawson Range Batholith - Granodic					
ST PI	- 1 -					grey and white minerals, extremely joint spacing. Recovered as gravell	weak, highly weathered y SAND and COBBLES	l, extremely to very clo S, some silt, subangul	ose lar		
Ϊ		-			o.Co.c	to angular, orange brown, moist. Sa	and is fine to coarse, gra	avel is fine to coarse.			
TRIC	-	-			0.0.						
G ME	-				o O o						
	-	-			10.0.1 0.0.1						
STPI	-	1077 -			0.						
, TES	-	-			0.0						
2013 3.GLB	2 -	-			0. 0. 0.						
TPS	-				.0.0.						
LATE	-	-			0.						
EMP	-				0.0.						
RAEF 1	-	-			0.0						
BRA	-	- 1076 -			0.0.						
	-	- 1070			0						
AM/G	- -	-			0.0						
ZAM/	3 -				$[0, \bigcirc, \bigcirc,$						
R OGF	-	-			6.0.						
SI PF	-	-			[0, ], [0, ],						
HNIC	-				Po: 0.						
DTEC	-	4075			$\dot{o}$						
3 GE(	-	1075 -				WEATHERED WRGD					
13 GI	-	-				(3.7 to 4.5 m) Dawson Range Batholith - Granodic			vith		
200.	4 -	-				some dark grey and white minerals, close to close joint spacing.	weak, moderately to hi	ghly weathered, very			
R 20C	-					, J					
ATAN	-	-									
	-									Reason fo	r Termination:
16/A/I	-	-				End of Test Pit: 4.5 m				Bedrock.	
1/003	-	1074 -									
E/1/0C	-										
	GE	NERAL	REM	ARKS:				Casino Minir	ng Corn	oration	
FIIE://VANTITPRJ. FILE/1/01/00325/16/ALDATATASK 200 - 2013 GEOTECHNICAL SI PROGRAM/GINTURNE SITE REPORT/CASINO 2013 TEST PIT LOGS GFU LIbrary: //VANT1/PRJ_FILE/1/01/00325/16/ALDATATASK 200 - 2013 GEOTECHNICAL SI PROGRAM/GINT/LIBRARY_TEMPLATE-TPS/GLB, TEST PIT LOG METRIC,	Sam	ples tes	ted at	Knight Piés	sold Soils L	aboratory		Casino TEST PIT LO	Projec	t	
VAN1	in De	enver, C	olorad	0.			** • -			TP13-49 DJECT/ASSIGNME	NT NO. REF NO.
ary: //							Knigh	<i>t Piésol</i>		VA101-325	5/16 1
	oggin	a oonduo	tod ago	ording to the	Canadian E	oundation Engineering Manual, 4th Edition, 200		ONSULTIN	G	<u> </u>	13-49 0

	F	Proje	ct:	Casino	Project		Test Pit No.:	TP13-50	_	Page _	1 of 1
		Contra	ctor:	Kluane	Drilling L	.td.	_Equipment Used:	CAT 322C	_ Date	e Started: _	16 Aug 13
					re Stockp		Total Depth:	2.8 m	_ Date Co	ompleted: _	16 Aug 13
	(	Coordin	ates	6,958,2	39 N, 6	13,580 E (UTM ZONE 7 NAD83)	Elevation:	1150.842 m		ogged by: _	
									Rev	iewed by: _	JEH
, 23 Dec 13	DEPTH - (m)	ELEVATION - (m)	SAMPLES	SAMPLE NO.	GRAPHIC LOG	MATERIA	L DESCRIPTION	J		со	MMENTS
GDT	_	-			6 70 70 70 70 70 70 70	VEGETATION					
KAMGINI WINE SITE REPORTIZASINO 2013 IEST PIT LOGS.GPJ GOGRAMIGINT/LIBRARY_TEMPLATE-TPS.GLB, TEST PIT LOG METRIC, TEST PIT DATA TEMPLATE MAY08.GDT,	- - - - - - - - - - - - - - - - - - -	- - - - - - - - - - - - - - - - - - -				(0 to 0.2 m) Moss, roots, vegetation. <b>TOPSOIL</b> (0.2 to 0.4 m) Organic SILT, some silt, many roots (Topsoil). <b>BOULDERS AND COBBLES</b> (0.4 to 1 m) BOULDERS and COBBLES, some is subangular, brown, loose, dry (Colluc coarse. Boulders, cobbles and grav Granodiorite, boulders up to 2 m dia <b>SAND AND COBBLES</b> (1 to 1.8 m) SAND and COBBLES, some gravel, in, greyish brown, loose, dry (Colluv coarse.	sand, some gravel, trac ivium). Sand is fine to el consist of slightly we imeter.	e organic silt, coarse, gravel is fir athered, very stror	ne to g/ nixed	Boulders	on surface.
SITE REPORT CASINO 2013 TEST RARY_TEMPLATE-TPS.GLB, TES		- 1149 - - - - - - - - - - - - -				WEATHERED WRGD (1.8 to 2.6 m) Dawson Range Batholith - Granodic some dark grey and white minerals, spacing, discontinuities filled with de	weak, highly weathered	d, very close joint	<i>v</i> n with		
ICAL SI PROGRAMIGINI MINE ( CHNICAL SI PROGRAMIGINT/LIE	- - 3 - - - -	- 1148 - - - - - - - -				(2.6 to 2.8 m) As above, but frozen, Nbn, no exces End of Test Pit: 2.8 m	•		/	Reason fo Permafro	or Termination: st.
FIIE://WAN11/PKJ_FILE/1/01/00325/16/AUDATA/TASK 200 - 2013 GEOTECHNICAL SI PROG Library: //VAN11/PRJ_FILE/1/01/00325/16/AIDATA/TASK 200 - 2013 GEOTECHNICAL SI PR	- - - 4 - - - -	- - - - - - - - - - - - - - - - - - -									
11PRJ_FILE/1/01/00325/16/AU/ 1011/PRJ_FILE/1/01/00325/16/	Sam		ted at	Knight Piés	sold Soils L	aboratory		Casino Mir Casi TEST PIT L	no Proje	ct	
brary: ////	in De	enver, C	uorad	υ.			Knigh	t Piéso	ld F	ROJECT/ASSIGNME VA101-32	5/16 1 REV.
	oggin	a conduc	ted acc	ording to the	Canadian E	oundation Engineering Manual, 4th Edition, 200				18	13-50 0

	F	Proje	ct:	Casino	Project		_Test Pit No.:	TP13-51	_	Page	1 of 1
		Contra	ctor:	Kluane	Drilling L	td.	_Equipment Used:	CAT 322C	_ Date	e Started:	
		Loca		Gold Or			_ Total Depth: _	0.5 m	_	ompleted:	
	(	Coordin	ates	6,958,18	80N, 6	13,026 E (UTM ZONE 7 NAD83)	_ Elevation: _	1144.782 m	_	ogged by:	
┟				1					Rev	iewed by: _	JEH
T, 23 Dec 13	DEPTH - (m)	ELEVATION - (m)	SAMPLES	SAMPLE NO.	GRAPHIC LOG	MATERIA	L DESCRIPTION	4		со	MMENTS
MAY08.GD	-	-			A 44 44 44 44 A 44 44 44 44 A 44 44 44 44 A 44 44 44 44 A 44 44 44 44	VEGETATION (0 to 0.2 m) Moss, roots, vegetation. TOPSOIL			/		ext to geophysics ne G13-05.
FIRE/IVANTITER, FILE/INT/0032516/AUAI/AVIASK 201-2013 GEOTECHNICAL SI FROGRAMGINT/URINE SITE KEPORTICASINO 2013 TEST PIT LOGS GFJ Library: //VANTITIPRJ_FILE/1101/0032516/AIDATATASK 200 - 2013 GEOTECHNICAL SI PROGRAMGINT/LIBRARY_TEMPLATE-TPS/GLB, TEST PIT LOG METRIC, TEST PIT DATA TEMPLATE MAY08.GDT,	- - - - - - - - - - - - - - - - - - -	- - - - - - - - - - - - - - - - - - -			+++++	<ul> <li>(0.2 to 0.35 m)</li> <li>Organic SILT, many roots and plant</li> <li>SILT</li> <li>(0.35 to 0.45 m)</li> <li>SILT, some sand, some cobbles and plasticity, saturated, beige brown, so fine to coarse. Cobbles and boulder light grey with dark grey specks, very SILT, FROZEN (VS, VC)</li> <li>(0.45 to 0.5 m)</li> <li>As above, but frozen, ~60% excess i mostly in layers with 1-10 mm thickm</li> <li>End of Test Pit: 0.5 m</li> </ul>	I boulders, trace gravel off (Colluvium). Sand is s consist of slightly we y strong, up to 1 m diar ice, some around coars	, some roots, low fine to coarse, gra athered Granodiori neter. ee particles, Vc, but	te,	Reason f Permafro	or Termination: st.
MPLATE-TPS.GLB, TEST PIT I		- - - - - - - - - - - - - - -									
SI PROGRAMIGINI MINE SI IE REPU SAL SI PROGRAMIGINTILIBRARY_TEI	- - - - - - - - - -	- - - - - - - - - - - - - - - - - - -									
ATANTASK 200 - 2013 GEOTECHNICAL	4	- - - - - - - - - - - - - - - - -									
J_FILE/1/01/00325/16/AUF		- - - - - - - - - - - - - - - - - - -			old Soils I	aboratory		Casino Min Casi	ing Cor	poration	
brary: \\VAN11\PK		ples tes enver, C		Knight Piés o.	ua solis L	aboratory	Knigh	TEST PIT LO t Piéso		TP13-51 ROJECT/ASSIGNM VA101-32	25/16 1 REV.
	oggin	a conduc	ted acc	ordina to the	Canadian F	oundation Engineering Manual, 4th Edition, 200				15	13-51 0

F	Proje	ct:	Casino	Project		_Test Pit No.:	TP13-52	_	Page	1 of 1
	Contra		Kluane I	Drilling L	td.	_Equipment Used:	CAT 322C	_ Date	e Started: _	
	Loca				/Low Grade Hyp. Ore Stockpile	_ Total Depth: _	0.7 m		ompleted:	
	Coordin	ates	6,956,64	8N, 6	12,223 E (UTM ZONE 7 NAD83)	Elevation:	1179.636 m		ogged by: _	
			1	<u> </u>				Rev	iewed by: _	SB
л, 23 Dec 13 DEPTH - (m)	ELEVATION - (m)	SAMPLES	SAMPLE NO.	GRAPHIC LOG		L DESCRIPTION	J		со	MMENTS
					VEGETATION (0 to 0.2 m) Moss, roots, vegetation. TOPSOIL (0.2 to 0.3 m) Organic SILT, some sand, many roo amorphous, saturated (Topsoil). SAND (0.3 to 0.4 m) SAND, some silt, some gravel, trace brownish grey, loose, saturated (Co coarse, subangular, cobbles are sut SAND, FROZEN (VS) (0.4 to 0.7 m) Same as above, but frozen, Vs. Ice sand, hard, clear, with silt inclusions End of Test Pit: 0.7 m	e cobbles, some root inc lluvium). Sand is fine to bangular. is present in 1 cm thick	elusions, massive, o coarse, gravel is	fine to		or Termination:
IPLATE-TPS.GLB, TEST PIT LOG	- 1178 - - - - - - - - - - - - - - - - - - -				End of Test Pit: 0.7 m					
SI PROGRAM/GINT/LIBRARY_TEM										
ATA/TASK 200 - 2013 GEOTECHNICAL	- - - - - - - - - - - - - - - - - - -									
NPRJ_FILEV100100325/160AID	- 1175 - - - - - - - - - - - - - - - - - - -			old Soile I	aboratory		Casino Mir Casi	ning Corp	poration	
ibrary: ///AN11/	ipies tes enver, C		Knight Piéso D.	010 30115 L	αυσι αι σι γ	Knigh	TEST PIT L		TP13-52 ROJECT/ASSIGNME VA101-32	

	F	Proje	ct:	Casino	Project		_Test Pit No.:	TP13-53	_	Page _	1 of 1
		Contra	ctor:	Kluane	Drilling L	td.	Equipment Used:	CAT 322C	_ Date	e Started: _	17 Aug 13
		Loca				/Low Grade Hyp. Ore Stockpile	Total Depth:	0.8 m	_ Date Co	ompleted:	17 Aug 13
	(	Coordin	ates	6,956,58	89 N, 6	12,344 E (UTM ZONE 7 NAD83)	Elevation:	1154.83 m		ogged by: _	
									Rev	iewed by: _	SB
DT, 23 Dec 13	DEPTH - (m)	ELEVATION - (m)	SAMPLES	SAMPLE NO.	际 GRAPHIC LOG		AL DESCRIPTION	٧		со	MMENTS
	- - - - - - - - - - - - - - - - - - -	- - - - - - - - - - - - - - - - - - -				VEGETATION (0 to 0.2 m) Moss, roots, vegetation. TOPSOIL (0.2 to 0.3 m) Organic SILT, some sand, many ro amorphous, saturated (Topsoil). SILT AND SAND, FROZEN (NBN) (0.3 to 0.8 m) SILT AND SAND, some gravel, sor to blue to brown, frozen, Nbn (Collu coarse, subangular, boulders are a End of Test Pit: 0.8 m	ne boulders, some root i uvium). Sand is fine to c	inclusions, massive	e, grey	Reason fo Permafros	or Termination: st.
Y_TEMPLATE-TPS.GLB, TEST PIT L	- - 2 _ - - - -	- - - - - - - - - - - - - - - - - - -									
VICAL SI PROGRAM/GINT/LIBRAR	- - - 3 - - - -	- - - - - - - - - - - - - - - - - - -									
A/DATA/TASK 200 - 2013 GEOTECHN	- - - 4 - - - -	- - - - - - - - - - - - - - - - - - -									
WAN11/FRJ_FILE/1/01/00325/16/2	Sam	1150 - - - - - - - - - - - - - - - - - - -	ted at I	Knight Piés	sold Soils L	aboratory	Vaial	TEST PIT L	no Proje OG FOR	Ct TP13-53 ROJECT/ASSIGNME	
	oggin	a conduc	ted acc	ording to the	Canadian	oundation Engineering Manual, 4th Edition, 20	C	t Piéso	IA NG	VA101-32	5/16 1 13-53 0

	F	Proje	ct:	Casino	Project		_Test Pit No.:	TP13-54	_	Page _	1 of 1
		Contra	ctor:	Kluane I	Drilling L	td.	_Equipment Used:	CAT 322C	_ Date	e Started:	17 Aug 13
		Loca	tion:	Superge	ne Oxide	/Low Grade Hyp. Ore Stockpile	_ Total Depth: _	0.6 m	_ Date Co	mpleted:	17 Aug 13
	(	Coordin	ates	6,956,38	7N, 6	12,324 E (UTM ZONE 7 NAD83)	Elevation:	1144.294 m	_ Lo	ogged by: _	JAB
									Revi	ewed by: _	SB
T, 23 Dec 13	DEPTH - (m)	ELEVATION - (m)	SAMPLES	SAMPLE NO.	GRAPHIC LOG	MATERIA	L DESCRIPTION	4		со	MMENTS
8.GD	-	-			<u> </u>	VEGETATION (0 to 0.2 m)					
T DATA TEMPLATE MAY08	- - - - - -	- - 1144 - - - - -				Moss, roots, vegetation. TOPSOIL (0.2 to 0.4 m) Organic SILT, some sand, many roc amorphous, saturated (Topsoil). SILT AND SAND, FROZEN (NBN, ' (0.4 to 0.6 m) SILT AND SAND, some gravel, trace	VX) e boulders, massive, gr	ey to orangy brown	] ,	Reason fo Permafro	or Termination: st.
GS.GPJ .OG METRIC, TEST PI	- 1 - - - -	- - - 1143 - -				frozen, Nbn to Vx with random opaq coarse, gravel is fine to coarse, angu End of Test Pit: 0.6 m			)		
	2	- - - - - - - - - - - - - - - - - - -									
ECHNICAL SI PROGRAM/GIN1/WINE	- - 3 - - - -	- - - - - - - - - - - - - - - - - - -									
325/16/4/DATA/TASK 200 - 2013 GEOTE	4	- - - - - - - - - - - - - - - - - - -									
WITNERS FILEN WINUSE	Sam	NERAL ples tes enver, Co	ted at I	Knight Piés	bld Soils La	aboratory	77 4 7	TEST PIT LO	no Proje DG FOR	ct	ENT NO. REF NO.
		a aardu	to d	andina t- th	Constitute 5	bundation Engineering Manual, 4th Edition, 200	C	t Piéso	ld _	VA101-32	

F	Proje	ct:	Casino	Project		Test Pit No.:	TP13-55	_	Page	1 of 1
	Contra	ctor:	Kluane	Drilling L	td.	Equipment Used:	CAT 322C	_ Date	e Started: _	17 Aug 13
	Loca	tion:	Superge	ene Oxide	/Low Grade Hyp. Ore Stockpile	Total Depth:	0.9 m	_ Date Co	ompleted: _	17 Aug 13
	Coordin	ates	6,955,89	2N, 6	12,178 E (UTM ZONE 7 NAD83)	Elevation:	1134.857 m	Lo	ogged by: _	JAB
			1					Rev	iewed by: _	SB
DEPTH - (m)	ELEVATION - (m)	SAMPLES	SAMPLE NO.	GRAPHIC LOG		AL DESCRIPTION	١		со	MMENTS
- HLdago	1134 -			$\begin{array}{cccccccccccccccccccccccccccccccccccc$	VEGETATION (0 to 0.2 m) Moss, roots, vegetation. TOPSOIL (0.2 to 0.4 m) Organic SILT, some sand, many rowet to saturated (Topsoil). SILT, FROZEN (NBN, VX) (0.4 to 0.9 m) SILT, some sand, trace cobbles an frozen, Nbn to Vx, opaque random to coarse, cobbles are subangular, End of Test Pit: 0.9 m	d boulders, poorly grade y oriented ice crystals (C	d, grey brown, ma	ssive,	, Reason fo Permafro	or Termination: st.
2	1133 -									
	1132 -									
- - - - - - - - - - - - - - - -	1131 - - - - - - - - - - - - - - - - - - -									
GE	NERAL	REM	ARKS:				Casino Mir		noration	
Sam			Knight Piés	old Soils L	aboratory		Casi	no Proje	ct	
in De	enver, C	olorado	D.			<b>X7</b> • <b>T</b>	TEST PIT L		TP13-55 ROJECT/ASSIGNME	ENT NO. REF NO.
						Knigh	t Piéso		VA101-32	5/16 1
		4		Canadian 5	oundation Engineering Manual, 4th Edition, 20		ONSULTI	NG	TP	13-55 <sup>REV</sup> 0

	Pro	ojeo	ct:	Casino	Project		_Test Pit No.:	TP13-56	_	Page	1 of 1
	Co	ntrac	tor:	Kluane	Drilling L	td.	_Equipment Used:	CAT 322C	_ Date	e Started:	17 Aug 13
	L	ocati	ion:	Low Gra	ade Super	gene Oxide Ore Stockpile	Total Depth:	1.6 m	_ Date Co	ompleted:	17 Aug 13
	Coo	ordina	ates	6,955,60	09N, 6	11,841 E (UTM ZONE 7 NAD83)	Elevation:	1083.261 m	_ L	ogged by: _	JAB
									Rev	iewed by:	SB
r, 23 Dec 13		ELEVATION - (m)	SAMPLES	SAMPLE NO.	GRAPHIC LOG	MATERIA	L DESCRIPTION	٧		CO	MMENTS
GDT		-			6 80 80 80 20 20 20 2	VEGETATION					
	- 104 	- - - - - - 82 - -	En S	BU-1		(0 to 0.2 m) Moss, roots, vegetation. <b>TOPSOIL</b> (0.2 to 0.3 m) Organic SILT, some sand, many root saturated (Topsoil). <b>SILTY SAND</b> (0.3 to 0.6 m) Silty SAND, trace gravel, trace cobb loose, moist (Colluvium). Sand is fir subangular, cobbles are subangular <b>WEATHERED WRGD</b> (0.6 to 1.6 m) Dawson Range Batholith - Granodic black specks, very weak, highly wead discontinuities filled SAND and GR4 is fine to coarse, gravel is fine to coarse. End of Test Pit: 1.6 m	les, poorly graded, oran the to coarse, gravel is f write, coarse grained, ar thered, very close to cl AVEL, some silt, trace c	ngy brown, massive ine to coarse, ngular, light grey wi ose joint spacing,	e, th	Reason fr	or Termination:
WINE STIE ALE ON WASHING SUB LEST AND ALLERARY TEMPLATE-TPS.GLB, TEST	- - - - - - - - - - - - - - - - - - -	- - - 81 - - - - - - -								Bedrock.	
COTECHNICAL SI PROGRAMIGI	3 - - - - - - - - - - - - - - - - - - -	- - - 80 - - - - -									
01100325/16/A/DATA/TASK 200 - 2013 GE	4 - - - - - - - - - - - - - - -	- - - 79 - - - - - - - - - -									
		]									
				ARKS:				Casino Mir			
S S S S S S S S S S S S S S S S S S S	-			-	old Soils La	aboratory		Casi TEST PIT L	no Proje OG FOR	ct TP13-56	
brary: //VA.	Denve	er, Co	lorado	).			Knigh	t Piéso		ROJECT/ASSIGNME VA101-32	5/16 1
	aina co	nducte	ed acco	ording to the	Canadian Fo	oundation Engineering Manual, 4th Edition, 200		UNSULTI	NG	IP	13-56 0

	F	Proje	ct:	Casino	Project		_Test Pit No.:	TP13-57	_	Page	1 of 1
		Contra	ctor:	Kluane	Drilling L	.td.	_Equipment Used:	CAT 322C	_ Date	e Started: _	17 Aug 13
		Loca	tion:	Low Gra	ade Supe	rgene Oxide Ore Stockpile	Total Depth:	1.7 m	_ Date Co	ompleted:	17 Aug 13
	(	Coordin	ates	6,956,16	68N, 6	11,805 E (UTM ZONE 7 NAD83)	Elevation:	1153.006 m		ogged by: _	
				1					Rev	iewed by: _	SB
r, 23 Dec 13	DEPTH - (m)	ELEVATION - (m)	SAMPLES	SAMPLE NO.	GRAPHIC LOG	MATERIA	AL DESCRIPTION	N		со	MMENTS
3.GDT	_				<u> </u>	VEGETATION					
IIE.WANTIPRJ. FLEDUDIO26DIGADA ANASK 200 - 2013 GEOTECHNICAL SI PROGRAMGINI MINE SI E REPORTICASINO 2013 LEST PIT LOGS GPJ JDray: \\VAN11/FR_FLEF1(0100325(16\IDATAITASK 200 - 2013 GEOTECHNICAL SI PROGRAMGINI/LIBRARY_TEMPLATE-TPS.GLB, TEST PIT LOG METRIC, TEST PIT DATA TEMPLATE MAY08.GDT,		- - - - - - - - - - - - - - - - - - -			$ \  = \  = \  = \  = \  = \  = \  = \  = \  = \  $	(0 to 0.1 m) Moss, roots, vegetation. <b>TOPSOIL</b> (0.1 to 0.2 m) Organic SILT, some sand, many ro (Topsoil). <b>WEATHERED WRGD</b> (0.2 to 1.7 m) Dawson Range Batholith - Granodi black specks, very weak, highly we with fine to coarse silty SAND, brow End of Test Pit: 1.7 m	orite, coarse grained, ar athered, close joint spac	igular, light grey w	ith		on surface.
THICAL SI PROGRAMIGINI WIINE ECHNICAL SI PROGRAMIGINTL	- - - - - - -	- - - - - - - - - - - - - - - - - - -									
1/00325/16/4/DATA/TASK 200 - 2013 GEOT	- - - - - - - - - - - - - - - - - - -	- - - - - - - - - - - - - - - - - - -									
	65	NERAL	DEM								
PRJ -				Knight Piés	sold Soile I	aboratory		Casino Mir Casi	ning Cor <sub>l</sub> no Proje		
AN11		enver, C		-	OVIIO L			TEST PIT L	OG FOR	TP13-57	
-lie://vAN	. 20	, 0					Knigh	t Piéso		ROJECT/ASSIGNME VA101-32 JRE	
ᆂᆜᇉ	oggin	a conduc	ted acc	ording to the	Canadian F	oundation Engineering Manual, 4th Edition, 200				IF	0

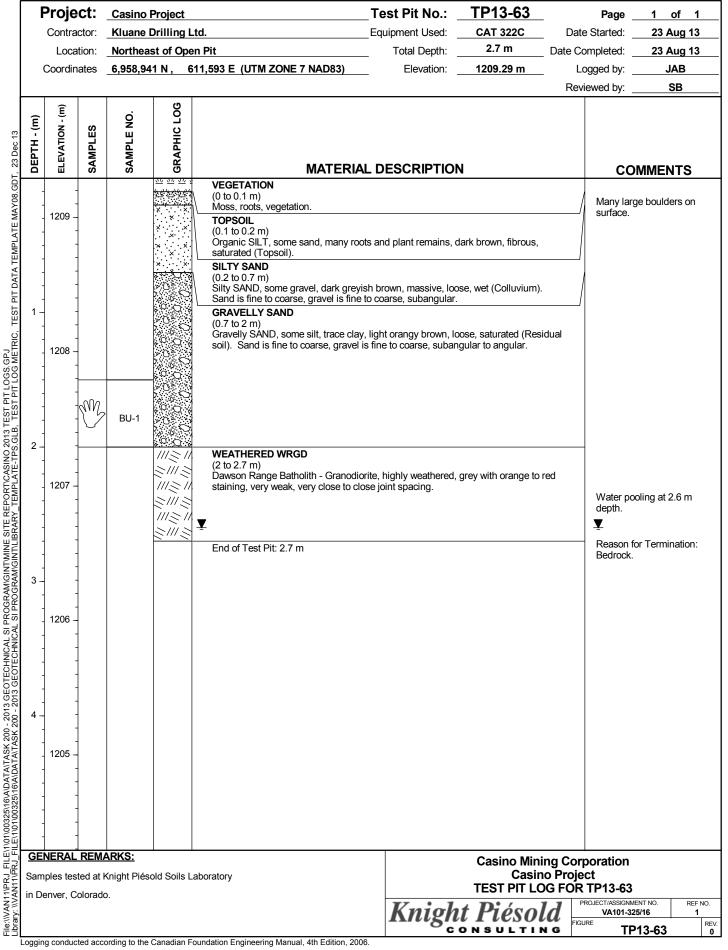
	Proje Contra	actor:		Drilling Lt		<b>Test Pit No.:</b> Equipment Used:	TP13-58 CAT 322C	_ Date Sta		1 of 1 18 Aug 13
(					gene Sulfide Ore Stockpile 1,396 E (UTM ZONE 7 NAD83)	Total Depth: _ Elevation:	1.2 m 1230.433 m	Date Compl		18 Aug 13 JAB
								Reviewe		SB
DEPTH - (m)	ELEVATION - (m)	SAMPLES	SAMPLE NO.	の GRAPHIC LOG		AL DESCRIPTION	1		СОМ	MENTS
- - - - - - - - - - - - - - - - - - -	1230 - - - - - - - - - - - - - - - - - - -				VEGETATION (0 to 0.1 m) Moss, roots, vegetation. TOPSOIL (0.1 to 0.2 m) Organic SILT, some sand, many ro (Topsoil). SILTY SAND (0.2 to 0.5 m) Silty SAND, some gravel, some cot orangy brown, loose to compact, m coarse, gravel is fine to coarse, sub SILTY SAND, FROZEN (NBN) (0.5 to 1.2 m) Silty SAND, some gravel, some cot orangy brown, massive, frozen, Nb fine to coarse, subangular, cobbless End of Test Pit: 1.2 m	obles and boulders, well assive, saturated (Collu- vangular, cobbles and boulders, well obles and boulders, well n (Colluvium). Sand is 1	graded, greyish to rium). Sand is fine pulders are subang graded, greyish to ine to coarse, grave	to ular.	eason for ermafrost.	Termination:
	- - - - - - - - - - - - - - - - - - -	-								
3 -	-	-								
	- 1227 - - - - - -	- - - -								
4	1226 -									
GE		REM	ARKS:				Occia III		<b>4 a a</b>	
				sold Soils La	aboratory		Casino Min Casir	no Project		
in De	enver, C	olorad	0.			Knigh	TEST PIT LO		13-58 T/ASSIGNMENT VA101-325/1 TP13	6 1

	F	Proje	ct:	Casino	Project		_Test Pit No.:	TP13-59	_	Page	1 of 1
		Contra	ctor:	Kluane	Drilling L	td.	_Equipment Used:	CAT 322C	_ Dat	e Started: _	18 Aug 13
		Loca				gene Sulfide Ore Stockpile	Total Depth:	0.5 m	_ Date C	ompleted: _	18 Aug 13
	(	Coordin	ates	6,957,60	01N, 6	11,378 E (UTM ZONE 7 NAD83)	_ Elevation:	1229.265 m	_	ogged by: _	
				1					Rev	iewed by: _	SB
T, 23 Dec 13	DEPTH - (m)	ELEVATION - (m)	SAMPLES	SAMPLE NO.	GRAPHIC LOG	MATERIA	L DESCRIPTION	N		со	MMENTS
.GD.	-	-			######################################	VEGETATION (0 to 0.1 m)					
NTA TEMPLATE MAYO	-	- 1229 - - - - -			× · · · · × ·	Moss, roots, vegetation. TOPSOIL (0.1 to 0.2 m) Organic SILT, some sand, many root saturated (Topsoil). SILTY SAND (0.2 to 0.3 m)	ots and plant remains, d	lark brown, fibrous,			Ilders on surface. or Termination: st.
IETRIC, TEST PIT DA	- - 1 - -	- - - 1228 -				<ul> <li>Silty SAND, some cobbles, trace gramassive, saturated (Colluvium). Sa subangular, gravel is fine to coarse,</li> <li>SILTY SAND, FROZEN (NBN) (0.3 to 0.5 m)</li> <li>As above but frozen, Nbn (Colluviur End of Test Pit: 0.5 m</li> </ul>	nd is fine to coarse, cob boulders are subangul	obles and boulders	are		
LIBERDARY INTERVENCES IN 1970 CONTRACTOR 2012 SECTEMENDER SI PROGRAMIGINTUBRARY TEMPLATE-TPS.GLB, TEST PIT LOG METRIC, TEST PIT DATA TEMPLATE MAY08.GDT, 23 Dec 13	- - - 2 - - - - - - - - - - - - - - -	- - - - - - - - - - - - - - - - - - -				End of restrict 0.5 m					
TECHNICAL SI PROGRAMGINT		- - - 1226 - - -									
SANDATANTASK 200 - 2013 GEO	- - 4 - - - -	- - - - - - 1225 - - -									
N11\PRJ_FILE\1\01\00325\16	Sam	-	ted at I	Knight Piés	old Soils Li	aboratory		Casino Min Casin TEST PIT L(	no Proje	ct	
		enver, C			0	oundation Engineering Manual, 4th Edition, 200		t Piéso		PROJECT/ASSIGNME VA101-32	

	F	Proje	ct:	Casino	Project		_Test Pit No.:	TP13-60		Page	1 of 1
		Contra	ctor:	Kluane	Drilling L	.td.	_Equipment Used:	CAT 322C	Date	e Started: _	18 Aug 13
		Loca	tion:	Margina	Grade	Ore Stockpile	_ Total Depth: _	0.7 m	Date Co	ompleted: _	18 Aug 13
	(	Coordin	ates	6,957,80	5N, 6	11,364 E (UTM ZONE 7 NAD83)	_ Elevation: _	1224.902 m		ogged by: _	
				1					Rev	iewed by: _	SB
T, 23 Dec 13	DEPTH - (m)	ELEVATION - (m)	SAMPLES	SAMPLE NO.	GRAPHIC LOG		L DESCRIPTION	N		со	MMENTS
FIIE://VAN11PRJ. FILE/1/01/0032516/ADATATASK 200 - 2013 GEOTECHNICAL SI PROGRAMGINTMINE STE REPORTICASINO 2013 TEST PIT LOGS GPJ Library: \\VAN11/PRJ_FILE/1/01/0032516/a/DATATASK 200 - 2013 GEOTECHNICAL SI PROGRAMGINTLIBRARY_TEMPLATE-TPS.GLB, TEST PIT LOG METRIC, TEST PIT DATA TEMPLATE MAY08.GDT, 23 Dec 13	- - - - - - - - - - - - - - - - - - -	- - - - - - - - - - - - - - - - - - -				VEGETATION (0 to 0.1 m) Moss, roots, vegetation. TOPSOIL ✓ (0.1 to 0.3 m) Organic SILT, some sand, many root saturated (Topsoil). SILTY SAND (0.3 to 0.5 m) Silty SAND, some cobbles, trace grating compact, saturated (Colluvium). Sa subangular, gravel is fine to coarse, SILTY SAND, FROZEN (NBN) (0.5 to 0.7 m) As above but frozen, Nbn (Colluvium) End of Test Pit: 0.7 m	avel, trace boulders, gre nd is fine to coarse, cot subangular to subroun	ey, massive, loose to	re	¥ Water see between 0 depth (top	eps from pit walls 0.4 and 0.6 m o of permafrost). or Termination:
IINE SITE KEPOKI (CASINO 2013 IESI ITLIBRARY_TEMPLATE-TPS.GLB, TES	2	1223									
TECHNICAL SI PROGRAMIGINTM SEOTECHNICAL SI PROGRAMIGI	3 - - - - - - -	1222 - - - - - - - - - - - - - - - - - -									
011003251161A1DA1A11A5K 200 - 2013 GEU E11011003251161A1DATA1TASK 200 - 2013 G	- 4 - - - - - - - - - - - - - - - - -	1221 - - - - - - - - - - - - - - - - - - -									
	GE	NERAL	REM	ARKS:	1			Casino Mini	na Cor	noration	
NJ H				Knight Piés	old Soils L	aboratory		Casin	o Proje	ct	
VAN1	in De	enver, C	olorado	<b>)</b> .				TEST PIT LO		TP13-60 PROJECT/ASSIGNME	
e://VAN vrary: ///							Knigh	t Piésol		VA101-32	5/16 1
	oggin	a conduc	ted acc	ording to the	Canadian F	oundation Engineering Manual, 4th Edition, 200	- C	ONSULTIN	G	TP	13-60

	F	Proje	ct:	Casino	Project		_Test Pit No.:	TP13-61	_	Page	1 of 1
		Contra	ctor:	Kluane	Drilling L	td.	_Equipment Used:	CAT 322C	_ Dat	e Started: _	18 Aug 13
		Loca	tion:	Low Gra	ade Supe	gene Sulfide Ore Stockpile	Total Depth:	0.7 m	_ Date C	ompleted:	18 Aug 13
	(	Coordin	ates	6,957,76	68N, 6	11,094 E (UTM ZONE 7 NAD83)	Elevation:	1275.242 m	-	ogged by: _	
				1					Rev	iewed by: _	SB
T, 23 Dec 13	DEPTH - (m)	ELEVATION - (m)	SAMPLES	SAMPLE NO.	GRAPHIC LOG	MATERIA		N		со	MMENTS
8.GD1	_	-			6 80 80 80 80 80 80 80 80 8	VEGETATION (0 to 0.2 m)					
EST PIT DATA TEMPLATE MAYO	- - - - - - - 1 -	1275				Moss, roots, vegetation. <b>TOPSOIL</b> (0.2 to 0.3 m) Organic SILT, some sand, many roo saturated (Topsoil). <b>SILTY SAND, FROZEN (NBN, VX)</b> (0.3 to 0.7 m) Silty SAND, trace gravel, well grade Vx, 2 to 3 mm, some chunks of opac gravel is fine to coarse, subangular.	d, grey to brown, massi que ice (Colluvium). Sa	ive, frozen, Nbn, so		Reason fr Permafro	or Termination: st.
EST PIT LOGS.GPJ TEST PIT LOG METRIC, T	- - - - - -					End of Test Pit: 0.7 m					
SITE REPORT/CASINO 2013 11 BRARY_TEMPLATE-TPS.GLB,	2	- - - - - - - - - - - -									
TECHNICAL SI PROGRAM/GINI/MINE		- - - - - - - - - - - - - - - - - - -									
FIIe://VAN11/PRJ. FILE/1/01/0032516/a/DATATASK 200 - 2013 GEOTECHNICAL SI PROGRAM/GINTMINE SITE REPORTICASINO 2013 TEST PIT LOGS GPJ LIbrary: //VAN11/PRJ_FILE/1/01/0032516/a/IDATATASK 200 - 2013 GEOTECHNICAL SI PROGRAM/GINTLIBRARY_TEMPLATE-TPS.GLB, TEST PIT LOGS GPJ	- - 4 - - - - - - - - - - - -	- - - - - - - - - - - - - - - - - - -									
PRJ_FILE/1/01/00325/ 11/PRJ_FILE/1/01/003		NERAL ples tes		<b>ARKS:</b> Knight Piés	old Soils L	aboratory		Casino Min Casir	no Proje	ct	
File:\\\VAN11\F Library: \\VAN	in De	enver, C	olorad	0.			Knigh	TEST PIT LO	ld F	PROJECT/ASSIGNME VA101-32	

F	Proje	ct:	Casino	Project		_Test Pit No.:	TP13-62	_	Page	1 of 1
	Contra	ctor:	Kluane	Drilling L	td.	_Equipment Used:	CAT 322C	_ Date	e Started: _	23 Aug 13
	Loca	tion:	Northea	st of Ope	n Pit	_ Total Depth: _	0.9 m	_ Date Co	ompleted: _	23 Aug 13
(	Coordin	ates	6,959,30	3N, 6	11,818 E (UTM ZONE 7 NAD83)	_ Elevation: _	1254.747 m			
			1					Rev	iewed by: _	SB
DEPTH - (m)	ELEVATION - (m)	SAMPLES	SAMPLE NO.	GRAPHIC LOG		L DESCRIPTION	N		со	MMENTS
- - - - 1 - - - - - -	- - - - - - - - - - - - - - - - - - -				saturated (Topsoil). SILTY SAND, FROZEN (NBN, VX) (0.5 to 0.9 m) Silty SAND, trace cobbles, poorly gr	aded, dark grevish brov	wn, massive, frozer	n, Nbn	Reason fo Permafros	or Termination: st.
- - - 2 - - - -	- 1253 - - - - - - - - - - - -									
- - - 3 - - - -	- 1252 - - - - - - - -									
- - - 4 - - - - -	- - - - - - - - - - - - - - - - - - -									
GEI Sam	ples tes	ted at I	Knight Piés	old Soils L	aboratory	Knigh	Casing TEST PIT Lo t Piéso	no Proje OG FOR	Ct TP13-62 ROJECT/ASSIGNME VA101-32	
	DEPTH - (m)	Contra Loca Coordin	Contractor: Location: Coordinates	Contractor: Kluane Location: Northea Coordinates 6,959,30	Location: Coordinates       Northeast of Ope       6,959,303 N,       6       () <td< th=""><th>Contractor:       Kluane Drilling Ltd.         Location:       Northeast of Open Pit         Coordinates       6,959,303 N,         611,818 E (UTM ZONE 7 NAD83)</th><th>Contractor:       Kluane Drilling Ltd.       Equipment Used:         Location:       Northeast of Open Pit       Total Depth:         Coordinates       6,959,303 N,       611,818 E (UTM ZONE 7 NAD83)       Elevation:         E       E       y       y       y         E       y       y       y       y</th><th>Contractor:       Kluane Drilling Ltd.       Equipment Used:       CAT 322C         Location:       Northeast of Open Pit       Total Depth:       0.9 m         Coordinates       6,959,303 N, 611,818 E (UTM ZONE 7 NAD83)       Elevation:       1254.747 m         E       2       0       0       0</th><th>Contractor:       Kluane Drilling Ltd.       Equipment Used:       CAT 322C       Date Contractor:         Location:       Northeast of Open Pit       Total Depth:       0.9 m       Date Contractor:         Coordinates       6,959,303 N,       611,818 E (UTM ZONE 7 NAD83)       Elevation:       1254.747 m       Location:         E       2       0       2       0       0       0       0       0</th><th>Contractor:       Kutheast of Open Pit.       Total Deptit:       OPEN Contraction:       Date Standed:         Coordinates       5.959.303 N.       611,818 E (UTM ZONE 7 NADS3)       Elevation:       1254.747 m.       Logael by:         Image: Second colspan="2"&gt;Reviewed by:         Image: Second colspan="2"&gt;Coordinates:       5.959.303 N.       611,818 E (UTM ZONE 7 NADS3)       Elevation:       1254.747 m.       Logael by:         Image: Second colspan="2"&gt;Reviewed colspan="2"&gt;Reviewed colspan="2"&gt;Reviewed colspan="2"&gt;Colspan="2"&gt;Colspan="2"&gt;Colspan="2"&gt;Colspan="2"&gt;Colspan="2"&gt;Colspan="2"&gt;Colspan="2"&gt;Colspan="2"&gt;Colspan="2"&gt;Colspan="2"&gt;Colspan="2"&gt;Colspan="2"&gt;Colspan="2"&gt;Colspan="2"&gt;Colspan="2"&gt;Colspan="2"&gt;Colspan= 2"Colspan="2"&gt;Colspan="2"Colspan="2"Colspan="2"Colspan="2"Colspan="2"Colspan="2"Colspan="2"Colspan="2"Colspan="2"Colspan=</th></td<>	Contractor:       Kluane Drilling Ltd.         Location:       Northeast of Open Pit         Coordinates       6,959,303 N,         611,818 E (UTM ZONE 7 NAD83)	Contractor:       Kluane Drilling Ltd.       Equipment Used:         Location:       Northeast of Open Pit       Total Depth:         Coordinates       6,959,303 N,       611,818 E (UTM ZONE 7 NAD83)       Elevation:         E       E       y       y       y         E       y       y       y       y	Contractor:       Kluane Drilling Ltd.       Equipment Used:       CAT 322C         Location:       Northeast of Open Pit       Total Depth:       0.9 m         Coordinates       6,959,303 N, 611,818 E (UTM ZONE 7 NAD83)       Elevation:       1254.747 m         E       2       0       0       0	Contractor:       Kluane Drilling Ltd.       Equipment Used:       CAT 322C       Date Contractor:         Location:       Northeast of Open Pit       Total Depth:       0.9 m       Date Contractor:         Coordinates       6,959,303 N,       611,818 E (UTM ZONE 7 NAD83)       Elevation:       1254.747 m       Location:         E       2       0       2       0       0       0       0       0	Contractor:       Kutheast of Open Pit.       Total Deptit:       OPEN Contraction:       Date Standed:         Coordinates       5.959.303 N.       611,818 E (UTM ZONE 7 NADS3)       Elevation:       1254.747 m.       Logael by:         Image: Second colspan="2">Reviewed by:         Image: Second colspan="2">Coordinates:       5.959.303 N.       611,818 E (UTM ZONE 7 NADS3)       Elevation:       1254.747 m.       Logael by:         Image: Second colspan="2">Reviewed colspan="2">Reviewed colspan="2">Reviewed colspan="2">Colspan="2">Colspan="2">Colspan="2">Colspan="2">Colspan="2">Colspan="2">Colspan="2">Colspan="2">Colspan="2">Colspan="2">Colspan="2">Colspan="2">Colspan="2">Colspan="2">Colspan="2">Colspan="2">Colspan= 2"Colspan="2">Colspan="2"Colspan="2"Colspan="2"Colspan="2"Colspan="2"Colspan="2"Colspan="2"Colspan="2"Colspan="2"Colspan=



	Ρ	roje	ct:	Casino	Project		_Test Pit No.:	TP13-64	_	Page	1 of 1
	(	Contrac	ctor:	Kluane	Drilling L	td.	_Equipment Used:	CAT 322C	_ Date	e Started: _	23 Aug 13
		Locat	tion:	Northea	st of Ope	n Pit	Total Depth:	1.2 m	_ Date Co	ompleted:	23 Aug 13
	C	Coordina	ates	6,959,16	62N, 6	11,447 E (UTM ZONE 7 NAD83)	_ Elevation:	1252.309 m		ogged by: _	
				1					Rev	iewed by:	SB
JT, 23 Dec 13	DEPTH - (m)	ELEVATION - (m)	SAMPLES	SAMPLE NO.	で の の の の の の の の の の の の の		L DESCRIPTION	1		со	MMENTS
PLATE MAY08.GI		- 1252 - -			× · · · × · · · · · · · · · · · · · · ·	VEGETATION (0 to 0.1 m) Moss, roots, vegetation. TOPSOIL (0.1 to 0.2 m) Organic SILT, some sand, many roo	ots and plant remains, d	ark brown, fibrous,	/	Boulders	on surface.
	- - - - - - - - - - - -	- - - - - - - - - - - - - - - - - - -				saturated (Topsoil). SILTY SAND (0.2 to 0.6 m) Silty SAND, some gravel, some bou loose to compact, wet (Colluvium). subangular to subrounded, boulders SAND (0.6 to 1.2 m) SAND, some silt, some gravel, well wet (Residual soil). Sand is fine to o End of Test Pit: 1.2 m	Sand is fine to coarse, g s are subrounded. graded. light orangy bro	gravel is fine to coa	rse,	Reason fo Permafros	or Termination: st.
LIBRARY_TEMPLATE-TPS.GLB, TE	2 -	- - - 1250 - - - -									
NICAL SI PROGRAM/GINT	3 -	- - - 1249 -									
A\DATA\TASK 200 - 2013 GEOTECH	4	- - - - - - - - - - - - - - - - - - -									
V11/PRJ_FILE/1/01/00325/16/		IERAL			old Soils La	aboratory		Casino Mir Casi TEST PIT L	no Proje	ct	
		nver, Co				oundation Engineering Manual, 4th Edition, 200		t Piéso		ROJECT/ASSIGNME VA101-32	

CEPTH - (m) SAMPLE NO. (m) S	
Coordinates 6,959,300 N, 611,591 E (UTM ZONE 7 NAD83) Elevation: 1269.28 m Logge Reviewe	ged by: JAB wed by: SB COMMENTS
23 Dec 13 Reviewse 38 A PHIC LOG (m) (m) 38 A PHIC LOG (m	COMMENTS
23 Dec 13 DEPTH - (m) SAMPLES SAMPLE NO. (m) SAMPLE NO. (m) SAMPLE NO.	COMMENTS
Image: Normal base in the second s	
Image: Section of the section of th	Many boulders on surface.
1269       Moss, roots, vegetation.         1269       TOPSOIL (0.1 to 0.3 m) Organic SILT, some sand, many roots and plant remains, many roots, dark brown, amorphous, wet (Topsoil).         SAND (0.3 to 1 m) SAND, some silt, some gravel, well graded, greyish brown, massive, loose, moist (Colluvium). Sand is fine to coarse, gravel is fine to coarse, subangular.	Many boulders on surface.
D         D         D         D         C to	
BU-1 0. 0. BU-1 0. 0. b. 0.	Reason for Termination: Bedrock.
GENERAL REMARKS: Casino Mining Corpor Samples tested at Knight Piésold Soils Laboratory Casino Project	
Z Samples tested at Knight Plesoid Solis Laboratory TEST PIT LOG FOR TP	P13-65
Knight Piésold	JECT/ASSIGNMENT NO. REF NO. VA101-325/16 1
Logging conducted according to the Canadian Foundation Engineering Manual, 4th Edition, 2006.	TP13-65

	F	Contracto Locatio		t: Casino Project or: Kluane Drilling Ltd.						Page	1 of 1
		Contra	ctor:	Kluane	Drilling L	td.	_Equipment Used:	CAT 322C	_ Date	e Started: _	23 Aug 13
		Loca	tion:	Northea	st of Ope	n Pit	_ Total Depth: _	0.9 m	_ Date Co	ompleted:	23 Aug 13
	(	Coordin	ates	6,959,22	0N, 6	11,204 E (UTM ZONE 7 NAD83)	_ Elevation: _	1265.369 m	_	ogged by: _	
				1					Rev	iewed by: _	SB
T, 23 Dec 13	DEPTH - (m)	ELEVATION - (m)	SAMPLES	SAMPLE NO.	GRAPHIC LOG		L DESCRIPTION	J		со	MMENTS
HIG:WANTIPEL FLENDT0022216AUDALANIASK 200 - 2013 GEOLECHNICAL SI PROGRAMIGINI WINE SI E KEPORTICASINO 2013 LEST PIT LOGS GPJ LIbray: IVAN111PRJ_FLEN1010032516/aIDATATASK 200 - 2013 GEOTECHNICAL SI PROGRAMIGINTLIBRARY_TEMPLATE-TPS.GLB, TEST PIT LOG METRIC, TEST PIT DATA TEMPLATE MAY08.GDT, 23 Dec 13	- - - - - - - - - - - - - - - - - - -	- - - - - - - - - - - - - - - - - - -				VEGETATION (0 to 0.1 m) Moss, roots, vegetation. TOPSOIL (0.1 to 0.3 m) Organic SILT, some sand, many roo (Topsoil). SAND (0.3 to 0.6 m) SAND, some silt, trace gravel, well o (Residual Soil). Sand is fine to coar SAND, FROZEN (VX) (0.6 to 0.9 m) As above, but frozen, Vx, opaque cry End of Test Pit: 0.9 m	graded, orangy brown, o se, gravel is fine to coa	compact, massive,	]	Reason fo Permafros	or Termination: st.
E SI IE KEPUKI (CASINU 2013 IESI MI I IBRARY_TEMPLATE-TPS.GLB, TEST PI	- - - - - - - - - - - - - - - - - - -	- - - - - - - - - - - - - - - - - - -									
AL SI PROGRAM/GIN I MIN	3	- - - - 1262									
ASK 200 - 2013 GEOTECHNIC AITASK 200 - 2013 GEOTECH	4										
E/1/01/00325/16/A/DALA/L/ FILE/1/01/00325/16/A/DAT,		1261 - - - - - - - - - - - - - - - - - - -	REM								
				ARKS: Knight Piés	old Soils L	aboratory		Casino Mir Casi	no Proje	ct	
ile:///AN11/PI ibrary: ///AN1		enver, C		-			Knigh	TEST PIT L		TP13-66 ROJECT/ASSIGNME VA101-32	
	oggin	a conduc	ted acc	ording to the	Canadian Fo	oundation Engineering Manual, 4th Edition, 200				16	

F	Proje	ct:	Casino F	Project		_Test Pit No.:	TP13-67	_	Page _	1 of 1
	Contrac	ctor:	Kluane D	Drilling L	td.	_Equipment Used:	CAT 322C	_ Date	e Started: _	23 Aug 13
	Locat		Northeas			_ Total Depth: _	0.8 m	_	ompleted:	
(	Coordina	ates	6,959,03	0N, 6	11,245 E (UTM ZONE 7 NAD83)	_ Elevation: _	1231.617 m		ogged by: _	
								Rev	iewed by: _	SB
DEPTH - (m)	ELEVATION - (m)	SAMPLES	SAMPLE NO.	GRAPHIC LOG	MATERIA	L DESCRIPTION	4		со	MMENTS
-	_			n O	VEGETATION AND BOULDERS					
- - - - - - - - - - - - - - - - - - -	- - - 1231 - - - - - - - - - - - - - - - - - - -				(0 to 0.2 m) Moss, roots, vegetation, large suban <b>TOPSOIL, MANY BOULDERS</b> (0.2 to 0.4 m) Organic SILT, some sand, many large brown, amorphous, wet (Topsoil). <b>SILTY SAND, FROZEN (NBN, VX)</b> (0.4 to 0.8 m) Silty SAND, some gravel, some coble to frozen, Nbn, VX, opaque crystals ( fine to coarse, angular, cobbles are a weathered, strong Granodiorite. End of Test Pit: 0.8 m	ge subangular boulders ples, well graded, orang Colluvium). Sand is fir	gy brown, massive	, wet l is	Reason fo Permafros	or Termination: st.
2 -	- 1230 - - - - - - -									
3 -	- - 1229 - - - - - -									
-	- - 1228 – -									
4										
-	- 1227 - - -									
GEI	NERAL	REM	ARKS:				Casino Mir	ning Cor	poration	
Sam	ples test	ed at l	Knight Piésc	old Soils La	aboratory		Casi TEST PIT L	no Proje	ct	
n De	enver, Co	olorado	<b>D</b> .			Knich			ROJECT/ASSIGNME VA101-32	
						nngn	t Piéso	IA FIG	IRE	13-67

F	Proje	ct:	Casino	Project		_Test Pit No.:	TP13-68	_	Page _	1 of 1
	Contra	ctor:	Kluane	Drilling L	td.	_Equipment Used:	CAT 322C	_ Date	e Started: _	
	Loca				North of HLF	_ Total Depth: _	1.6 m	_	ompleted:	
	Coordin	ates	6,957,53	39 N, 6	10,038 E (UTM ZONE 7 NAD83)	_ Elevation:	1410.883 m	_	bgged by: _	
								Rev	ewed by: _	SB
DT, 23 Dec 13 DEPTH - (m)	ELEVATION - (m)	SAMPLES	SAMPLE NO.	后 在 在 APHIC LOG		L DESCRIPTION	4		со	MMENTS
					VEGETATION (0 to 0.1 m) Moss, roots, vegetation. TOPSOIL (0.1 to 0.2 m) Organic SILT, some sand, many root wet (Topsoil). SILT AND SAND (0.2 to 0.6 m) SILT and SAND, trace boulders, sor compact, massive, wet (Colluvium). SAND (0.6 to 1.6 m) SAND, some silt, some gravel, some brown, compact, massive, wet to sat gravel is fine to coarse, angular, cob End of Test Pit: 1.6 m	ne root inclusions, low Sand is fine to coarse, e cobbles and boulders urated (Colluvium). Sa	plasticity, brown, boulders are angu , well graded, dark and is fine to coarse	ılar.	¥ Water se below 1.4	a boulderfield. eps from pit walls m depth. or Termination:
ZARY_TEMPLATE-TPS.GLB, TEST	. 1409 - -       								Bedrock.	
ECHNICAL SI PROGRAMGINTILIB	. 1408 - 									
325/16/ADATA/TASK 200 - 2013 GEOT										
GEI Sam in De	1406 <b>NERAL</b> pples test	ted at I	Knight Piés	old Soils L	aboratory		TEST PIT L	no Proje OG FOR	ct TP13-68	
					pundation Engineering Manual, 4th Edition, 200	- C	t Piéso	ld FIGL	ROJECT/ASSIGNM VA101-32	

	Proje		Casino		44			-	Page _	1 of 1
		ation:		Stockpile	e North of HLF	Total Depth:	CAT 322C 1.5 m	_ Date Con		26 Aug 13
(	Coordir	nates	6,957,50	6N, 6	09,754 E (UTM ZONE 7 NAD83)	Elevation: _	1400.57 m		iged by: _ wed by:	
DEPTH - (m)	ELEVATION - (m)	SAMPLES	SAMPLE NO.	GRAPHIC LOG	MATERIA	AL DESCRIPTION	4			MMENTS
	1400 -	STATISTICS IN THE INCLUSION OF INCLUS OF INCLUS OF INCLUSION OF INCLUSION OF INCLUS OF INCLUSION OF INCLUSION OF INCLUS OF INCL	BU-1		VEGETATION AND BOULDERS (0 to 0.05 m) Moss, roots, vegetation, boulders. TOPSOIL (0.05 to 0.1 m) Organic SILT, some sand, many ro saturated (Topsoil). SILT (0.1 to 0.6 m) SILT, some sand, some roots, high massive, saturated (Colluvium). Sa SILTY SAND (0.6 to 1.5 m) Silty SAND, some cobbles and bou loose to compact, massive, saturate cobbles and boulders are angular ( End of Test Pit: 1.5 m	ots and plant remains, d plasticity, brown to grey and is fine to coarse. Iders, some gravel, trace d. Sand is fine to coars	ark brown, fibrous, to orange, firm, e clay, brown to gre	y,	Close to a	boulderfield.
2 -									Bedrock.	
	-									
4	1397 -									
-	- 1396 - -	-								
GE	NERAL	REM	ARKS:				Casino Min	ing Corp	oration	
	-		Knight Piés	old Soils L	aboratory		Casir TEST PIT LO	no Projec	t	
in De	enver, C	olorad	Э.			Knigh	t Piéso		JECT/ASSIGNME VA101-325	

	F	Proje	ct:	Casino	Project					Page	1 of 1
		Contra	ctor:	Kluane	Drilling L	td.	_Equipment Used:	CAT 322C	_ Date	e Started:	26 Aug 13
		Loca	tion:	Topsoil	Stockpile	North of HLF	_ Total Depth: _	2.5 m	_ Date Co	ompleted:	26 Aug 13
	(	Coordin	ates	6,957,22	28 N, 6	09,793 E (UTM ZONE 7 NAD83)	_ Elevation:	1405.518 m	_ L	ogged by: _	JAB
			-						Rev	iewed by:	SB
T, 23 Dec 13	DEPTH - (m)	ELEVATION - (m)	SAMPLES	SAMPLE NO.	GRAPHIC LOG	MATERIA	L DESCRIPTION	١		со	MMENTS
		1405 - - - - - - - - - - - - - - - - - - -				VEGETATION (0 to 0.1 m) Moss, roots, vegetation. TOPSOIL (0.1 to 0.2 m) Organic SILT, some sand, many roo (Topsoil). SAND (0.2 to 1 m) SAND, trace silt, trace gravel, poorly massive, moist (Colluvium). Sand is WEATHERED WRGD / FAULT (1 to 2.5 m) Dawson Range Batholith - Granodio weathered, very close joint spacing. trace cobbles and boulders, trace cla fine to coarse, gravel is fine to coarse Possible fault in center of pit where r	graded, dark greyish b fine to coarse, gravel i rite, orange brown, ver Recovered as SAND, ay, well graded, orange e, angular, cobbles and	prown, loose to cor is fine to coarse, an y weak, highly some gravel, some brown, moist. Sa boulders are ang	npact, ngular. e silt, nd is		
OGRAM/GINT/LIBRARY_TEMPL/	- - - - - - - - - - - - - -	- 1403 - - - -	<u>m</u> y	BU-1		End of Test Pit: 2.5 m				Reason fr Permafro	or Termination: st.
013 GEOTECHNICAL SI PF		- - - - - - - - - - - - - - - - -									
11/00325/16/A/DATA/TASK 200 - 2	4	- - - - - - - - - - - - - - - - - - -									
E/1/C	-	.									
	GE	NERAL	REM	ARKS:	1			Casino Mir	nina Cor	poration	
1∖PR	Sam	ples tes	ted at I	Knight Piés	sold Soils L	aboratory		Casi	no Proje	ct	
VAN1	in De	enver, C	olorado	Э.				TEST PIT L			
ary: ///							Knigh	t Piéso		ROJECT/ASSIGNMI VA101-32	5/16 1
	occir	accoder	tod cor	ordina to the	Canadian	oundation Engineering Manual, 4th Edition, 200	C	ONSULTI	NG	TP	13-70 REV. 0

	F	Proje	ct:	Casino I	Project		Test Pit No.:TP13-71		_	Page <u>1 of 1</u>	
		Contra	ctor:	Kluane I	Drilling L	td.	_Equipment Used:	CAT 322C	_ Date	e Started: _	26 Aug 13
		Loca				e North of HLF	Total Depth:	1.4 m	_ Date Co	ompleted:	
	(	Coordin	ates	6,957,25	5N, 6	09,672 E (UTM ZONE 7 NAD83)	Elevation:	1415.758 m	_	ogged by: _	
					, ,				Rev	iewed by: _	SB
HIE/WANTIPRU, FILE/101/0032516/AUAIANTASK 200 - 2013 GEOTECHNICAL SI PROGRAMIGINTURINE SITE KEPORTICASINO 2013 LEST PIT LOGS GPJ LIbrary: \\VAN11/PRJ_FILE/101/0032516/ADATATASK 200 - 2013 GEOTECHNICAL SI PROGRAMIGINTULIBRARY_TEMPLATE-TPS GLB, TEST PIT LOG METRIC, TEST PIT DATA TEMPLATE MAY08.GDT, 23 Dec 13	DEPTH - (m)	ELEVATION - (m)	SAMPLES	SAMPLE NO.	GRAPHIC LOG	MATERIA		N		со	MMENTS
GDT	_	-			<u> </u>	VEGETATION (0 to 0.1 m)				Located a	t the base of a
IAY08	-				<u>4.34.37</u>	Moss, roots, vegetation.				large pile (felsenme	of boulders er).
PLATE M	-	-			8 <u>10 18 10</u> X X	▼ TOPSOIL (0.1 to 0.4 m) Organic SILT, some sand, many roo	ots and plant remains. d	lark brown. fibrous.		¥ Water see	eping from test pit
A TEMF	-	-			ו•••×	saturated (Topsoil).	·····, ·		]		ow 0.4 m depth.
T DAT/	-	1415 -			× × ×	(0.4 to 1.4 m) Silty SAND, some gravel, some bou	Ilders, roots to ~1 m dep	oth, well graded, da	ırk		
EST PI	- 1 -	-			× · · · · · · · · · · · · · · · · · · ·	greyish brown to orange, loose to co is fine to coarse, gravel is fine to coa			and		
RC, TI	-	-			× · · · × ·						
METF	-	-			× × ×						Touri C
LOGS	-	-				End of Test Pit: 1.4 m				Reason for Permafros	or Termination: st.
EST PIT	-	- 1414 -									
13 TE 3LB, T	-	-									
-TPS.G	2 -										
LATE-	-	-									
TEMF	-	-									
RARY	-	-									
	-	- 1413 –									
GINT/I AM/GII	3 -	-									
ROGR.	5-	-									
L SI PI	-	-									
CAL SI HNICA	-	-									
OTECH	-										
3EOTE 13 GE	-	1412 -									
2013 C )0 - 20	- 4	-									
4SK 20	-										
ATANT,	-										
NDATA 16/A/D	-	-									
5/16/A 0325/1	-										
1/0032	-	- 1411									
	<u>G</u> E	NERAL	<u>RE</u> M/	ARKS:							
RJ FII				Knight Piése	old Soils L	aboratory	Casino Mining Corporation Casino Project TEST PIT LOG FOR TP13-71				
N11/P	in De	enver, Co	olorado	D.							
brary: \							Knigh	<i>t Piéso</i>		VA101-32	5/16 1
	oqqin	a conduct	ted acc	ording to the	Canadian F	oundation Engineering Manual, 4th Edition, 200		UNBULTI	NU	19	13-71 0

	F	Proje	ct:								1 of 1
		Contra	ctor:	Kluane	Drilling L	td.	_Equipment Used:	CAT 322C	-	e Started: _	
		Loca	tion:	Heap Le	each Faci	lity	Total Depth:	2.5 m	_ Date Co	ompleted: _	26 Aug 13
	(	Coordin	ates	6,957,02	24 N, 6	09,737 E (UTM ZONE 7 NAD83)	Elevation:	1389.773 m	_ Lo	ogged by: _	JAB
									Rev	iewed by: _	SB
23 Dec 13	DEPTH - (m)	ELEVATION - (m)	SAMPLES	SAMPLE NO.	GRAPHIC LOG	MATERIA	L DESCRIPTION	N		co	MMENTS
GDT,	_		•••			VEGETATION AND BOULDERS		•			
13 TEST PIT LOGS GPJ 3LB, TEST PIT LOG METRIC, TEST PIT DATA TEMPLATE MAY08.GDT,		- - - - - - - - - - - - - - - - - - -				(0 to 0.1 m) Moss, roots, vegetation, many bould TOPSOIL AND BOULDERS (0.1 to 0.4 m) Organic SILT, some sand, many roo brown, fibrous, moist (Topsoil). SILTY SAND (0.4 to 1 m) Silty SAND, well graded, greyish ora (Colluvium). Sand is fine to coarse. SILTY SAND (1 to 1.5 m) Silty SAND, poorly graded, grey and Sand is fine to coarse. WEATHERED WRGD (1.5 to 2.5 m) Dawson Range Batholith - Granodid weathered, very close joint spacing. some cobbles, angular, well graded	ots and plant remains, r angy brown, compact, r d orange, stratified, con prite, orangy brown, ver Recovered as sand, s	nassive, moist npact, moist (Colluv y weak, highly ome silt, some grav	/		
RAMIGINITMINE SITE REPORTICASINO 2013 T COGRAMIGINITLIBRARY_TEMPLATE-TPS.GLB,	2					End of Test Pit: 2.5 m				Reason fo Permafros	or Termination: st.
NICAL SI PROGRAMIGINI W CHNICAL SI PROGRAMIGIN	- 3 - - - -										
13 GEO IECHI 2013 GEOTE	-	- - 1386 – -									
116:\/AN111/PKJ_FILEY1\01\00325\16A\DATA\1ASK_200 - 2013 GEOTECHNICAL SI PROG .bray: \\VAN11\PRJ_FILE\101\00325\16A\DATA\TASK 200 - 2013 GEOTECHNICAL SI PR	4										
			DEM								
PRJ_		NERAL			ald O-lini	abaratan.		Casino Min	ing Corj າo Proje	poration	
111K		iples tes enver, C		-	sold Soils L	aboratory		TEST PIT L	DG FOR	TP13-72	
IVAN1	in De	enver, O	oloraŭ	0.			Knigh	t Piéso	ld 上	ROJECT/ASSIGNME VA101-32	5/16 1
┶╶┙╘	oggir	a condu-	tod co-	ording to the	Capadian	oundation Engineering Manual, 4th Edition, 200	C	ONSULTI	N G	TP	13-72 REV. 0

F	Proje	ct:	Casino I	Project		_Test Pit No.:	TP13-73	_	Page	1 of 1
	Contra	ctor:	Kluane I	Drilling L	.td.	_Equipment Used:	CAT 322C	_ Date	Date Started: 26 Aug	
	Loca	tion:	Heap Le	ach Faci	lity	Total Depth:	1.8 m	_ Date Co	mpleted:	26 Aug 13
0	Coordin	ates	6,956,80	9N, 6	09,684 E (UTM ZONE 7 NAD83)	Elevation:	1368.927 m	_	ogged by: _	
			1					Rev	ewed by:	SB
DEPTH - (m)	ELEVATION - (m)	SAMPLES	SAMPLE NO.	CRAPHIC LOG			1		со	MMENTS
	- - - - - - - - - - - - - - - - - - -				VEGETATION AND BOULDERS (0 to 0.1 m) Moss, roots, vegetation, many bould TOPSOIL AND BOULDERS (0.1 to 0.4 m) Organic SILT, some sand, many roo brown, wet (Topsoil). SILTY SAND (0.4 to 1.8 m) Silty SAND, trace to some gravel, tr compact, massive, saturated. Sand ✓ angular, cobbles are angular (Collur	ots and plant remains, r ace cobbles, trace clay, is fine to coarse, grave	well graded, brown	]	depth, wa	
	- - - - - - - - - - - - - -	an s	BU-1	× × · · · · × · · · · · × · · · · · × · · · · · × · · · · · · × ·	End of Test Pit: 1.8 m				Reason fo Permafro	or Termination: st.
3 -	- - - 1366 - - - - - - -									
4	- - - 1365 - - - - - - - - - - - - - -									
Sam	- - - - - - - - - - - - - - - - - - -	ted at F	Knight Piéso	bld Soils L	aboratory	Knigh	Casino Mir Casi TEST PIT L <b>t Piéso</b>	no Proje OG FOR	Ct TP13-73 ROJECT/ASSIGNMI VA101-32	

P	Proje	ct:	Casino	Project		_Test Pit No.:	TP13-74	_	Page _	1 of 1
	Contrac	tor:	Kluane	Drilling Lt	d.	Equipment Used:	CAT 322C	_ Date	e Started: _	26 Aug 13
	Locat			each Facili	*	Total Depth:	4 m		mpleted: _	
C	Coordina	ates	6,957,03	32 N, 61	0,001 E (UTM ZONE 7 NAD83)	Elevation: _	1370.296 m		bgged by: _	
			1	· · ·				Rev	ewed by: _	SB
DEPTH - (m)	ELEVATION - (m)	SAMPLES	SAMPLE NO.	GRAPHIC LOG	MATERIA	AL DESCRIPTION	4		со	MMENTS
-	-			<u> </u>	VEGETATION (0 to 0.1 m)					
	- 1370 - - - - - - - - - - - - - - - - - - -				Moss, roots, vegetation. TOPSOIL (0.1 to 0.2 m) Organic SILT, some sand, many roo wet (Topsoil). SILTY SAND (0.2 to 1 m) Sitty SAND, some gravel, some cob massive, moist (Colluvium). Sand i SAND (1 to 2 m) SAND, trace gravel, poorly graded, Sand is fine to coarse, gravel is fine	bbles, well graded, dark s fine to coarse, gravel a light brown, loose, mass	brown, loose to co and cobbles are ar	mpact, igular.	Boulders	on surface.
2 -	- - - - - 1368 - - - -				<b>COMPLETELY WEATHERED WR</b> (2 to 4 m) Dawson Range Batholith - Granodic extremely weak, friable, original bec trace gravel, trace cobbles, poorly g	orite, brownish grey, cor Irock fabric clearly visibl	<ul> <li>Recovered as §</li> </ul>	i, SAND,		
3 -	- - - 1367 – -									
	- - - - 1366 -				End of Test Pit: 4 m				Reason fo Bedrock.	or Termination:
	- - - - - -			old Soils La	boratory		Casino Mir Casi	no Proje	ct	
-	nver, Co		-			Knigh	TEST PIT L <i>t Piéso</i>	OG FOR	TP13-74 ROJECT/ASSIGNMI VA101-32	5/16 1
						c	ONSULTI	N G	TP	13-74

	F	Proje	ct:	Casino	Project		_Test Pit No.:	TP13-75	_	Page	1 of 1
		Contra	ctor:	Kluane	Drilling L	.td.	_Equipment Used:	CAT 322C	_ Date	e Started: _	26 Aug 13
		Loca	tion:	Topsoil	Stockpil	e North of HLF	_ Total Depth: _	2 m	_ Date Co	ompleted:	26 Aug 13
	(	Coordin	ates	6,957,32	27N, 6	10,005 E (UTM ZONE 7 NAD83)	_ Elevation:	1410.069 m	_ Lo	ogged by: _	JAB
				_					Rev	iewed by: _	SB
T, 23 Dec 13	DEPTH - (m)	ELEVATION - (m)	SAMPLES	SAMPLE NO.	GRAPHIC LOG		L DESCRIPTION	J		со	MMENTS
8.GD	-	1410 -				VEGETATION (0 to 0.05 m)					
RAMIGINI UNITE STIE REPORTIZASINO 2013 TEST PIT LOGS GARICINTEST PIT DATA TEMPLATE MAY08.GDT, OGRAMICINTLIBRARY TEMPLATE-TPS.GLB, TEST PIT LOG METRIC, TEST PIT DATA TEMPLATE MAY08.GDT,		1409 -				Moss, roots, vegetation. TOPSOIL (0.05 to 0.1 m) Organic SILT, some sand, many roo moist (Topsoil). SAND (0.1 to 1.2 m) SAND, some gravel, trace silt, trace with black organic matter, loose to co Sand is fine to coarse, gravel is fine WEATHERED WRGD (1.2 to 2 m) Dawson Range Batholith - Granodio joint spacing. Recovered as SAND, graded, orange grey, massive, dry to	boulders, poorly grade ompact, massive, moist to coarse, angular, bou rite, very weak to weak some gravel, some boi	d, orange, some pa to wet (Colluvium Iders are angular. , highly weathered.	atches ).	Reason fr	or Termination:
GINT/LIBRARY_TEMPLATE-TP	- - - - - - - - -	1408 - - - - - - - - - - - - - - - - - - -				End of Test Pit: 2 m				Bedrock.	
GEOTECHNICAL SI PROGRAMIGIN	3	1407 - - - - -									
LIBE///WANTIT/PRJ_FILE/1/01/00326/16/A/DATATASK 200 - 2013 GEOTECHNICAL SI PROG	4	- 1406 - - - - - - - - - - - - - - - - - - -									
	GE	NERAL	REM	ARKS:				Casino Mir	ning Cor	poration	
	Sam	ples tes	ted at	Knight Piés	old Soils L	aboratory	Casino Mining Corporation Casino Project				
brary: \\VAN1	in De	enver, C	olorad	0.			Knigh	TEST PIT L		ROJECT/ASSIGNME VA101-32	5/16 1
	oggin	a conduc	ted acc	ording to the	Canadian F	oundation Engineering Manual, 4th Edition, 200		UNBULTI	NG	19	13-75

	Proje	ct:	Casino	Project		_Test Pit No.:	TP13-81		Page	1 of 1
	Contra	ctor:	Kluane	Drilling l	_td.	_Equipment Used:	CAT 322C	_ Date	e Started:	2 Sep 13
	Loca	ition:	ADR/SA	ART Facil	ity	Total Depth:	2.5 m	_ Date Co	mpleted:	2 Sep 13
	Coordin	ates	6,955,1	64 N, (	610,796 E (UTM ZONE 7 NAD83)	Elevation:	1032.372 m	_ Lo	ogged by: _	SB
			1					Revi	ewed by: _	JEH
, 23 Dec 13	ELEVATION - (m)	SAMPLES	SAMPLE NO.	GRAPHIC LOG	MATERIA	L DESCRIPTION	N		CO	MMENTS
GDT,	<u> </u>			1 40 40 40 20 40 40	VEGETATION		•			
TEST PIT LOG METRIC, TEST PIT DATA TEMPLATE MAY08.GDT,				2 50 50 50 W W W 15 50 50 50 + + + + + + + +	(0 to 0.2 m) Moss, roots, vegetation. <b>TOPSOIL</b> (0.2 to 0.25 m) SILT, trace fine sand, roots, grey, da <b>SILT</b> (0.25 to 0.55 m) SILT, some sand, trace gravel, trace plasticity, light greyish beige brown, subrounded to subangular, cobbles	e cobbles, some roots, g , firm, slightly moist (Co	gap-graded, low	c ash).		
BLB, TEST PIT LOG METRIC, TEST L		SWN.	BU-1		SAND (0.55 to 1.25 m) SAND, some silt, trace clay, trace g compact, slightly moist (Residual so to coarse, gravel is fine and consist WEATHERED WRGD (1.25 to 1.75 m) Dawson Range Batholith - Granodio weathered, extremely weak, consist silt, beige to orangy brown, locally p to coarse, gravel and cobbles consi Granodiorite.	bil). Some variation in fi s of highly weathered, a prite, medium grained, i s of SAND, many cobbl ink layers, sand is fine	ines content, sand angular Granodiorit nequigranular, hig es, some gravel, s to coarse, gravel is	is fine e/ hly ome s fine		
OGRAMIGINTILIBRARY_TEMPLATE-TPS.GLB, T	2				WEATHERED WRGD (1.75 to 2.5 m) Dawson Range Batholith - Granodic to pink with black specks, quartz ric weak, highly weathered, close joint End of Test Pit: 2.5 m	h, orange, pink and bla	ck (mangenese) st		Reason fo Bedrock.	or Termination:
EOTECHNICAL SI PROGRAMIGIN	1029 -									
VDATA/TASK 200 - 2013 G										
Ŕ	ENERAL amples tes			sold Soils I	Laboratory		Casino Min Casi	no Proje	ct	
ui UI	Denver, C	olorado	0.			Knigh	test pit l t <b>Piéso</b>		ROJECT/ASSIGNME VA101-325	5/16 1
- <b>- -</b>	ning conduc	ted acc	ordina to the	Canadian F	oundation Engineering Manual, 4th Edition, 200	° c	ONSULTI	NG	TP	13-81

	F	Proje	ct:	Casino	Project		_Test Pit No.:	TP13-82	_	Page	1 of 1
		Contra	ctor:	Kluane	Drilling L	td.	_Equipment Used:	CAT 322C	_ Date	e Started:	2 Sep 13
		Loca	tion:	ADR/SA	ART Facili	ty	_ Total Depth:	3.4 m	_ Date Co	mpleted:	2 Sep 13
	(	Coordin	ates	6,955,1	79N, 6	10,802 E (UTM ZONE 7 NAD83)	Elevation:	1042.566 m	_ Lo	ogged by:	SB
									Revi	ewed by: _	JEH
23 Dec 13	DEPTH - (m)	ELEVATION - (m)	SAMPLES	SAMPLE NO.	GRAPHIC LOG	MATERIA	L DESCRIPTION	N		CO	MMENTS
μΩ,	-	ш	0)	0,	<u> </u>	VEGETATION		•		CO	
	- - - - - - - - - - - - - -	- - - - 1042 - - - - - - - - - - - - - - - -			$\begin{array}{c} \begin{array}{c} \begin{array}{c} \begin{array}{c} \end{array} \\ \end{array} \\ \end{array} \\ \end{array} \\ \begin{array}{c} \end{array} \\ \end{array} \\ \end{array} \\ \begin{array}{c} \end{array} \\ \end{array} \\ \end{array} \\ \end{array} \\ \begin{array}{c} \end{array} \\ \end{array} \\ \end{array} \\ \begin{array}{c} \end{array} \\ \end{array} \\ \end{array} \\ \begin{array}{c} \end{array} \\ \end{array} \\ \end{array} \\ \end{array} \\ \begin{array}{c} \end{array} \\ \end{array} \\ \end{array} \\ \begin{array}{c} \end{array} \\ \end{array} \\ \end{array} \\ \begin{array}{c} \end{array} \\ \end{array} \\ \end{array} \\ \end{array} \\ \begin{array}{c} \end{array} \\ \end{array} \\ \end{array} \\ \end{array} \\ \begin{array}{c} \end{array} \\ \end{array} \\ \end{array} \\ \end{array} \\ \end{array} \\ \begin{array}{c} \end{array} \\ \end{array} \\ \end{array} \\ \end{array} \\ \begin{array}{c} \end{array} \\ \end{array} $	(0 to 0.1 m) Moss, roots, vegetation. <b>TOPSOIL</b> (0.1 to 0.15 m) Organic SILT, dark brown to black, I <b>SILT</b> (0.15 to 0.3 m) SILT, some sand, trace gravel, trace plasticity, light greyish beige brown, subrounded to subangular, cobbles <b>WEATHERED WRGD</b> (0.3 to 2.4 m) Dawson Range Batholith - Granodic weathered, extremely weak, consists	e cobbles, some roots, g firm, slightly moist (Co are angular. vrite, medium grained, i	Iluvium). Sand is nequigranular, higl	nly		
MPLATE-TPS.GLB, TEST PIT LOG METF	2 -	- - - - - - - - - - - - - - - - - - -				weathered, extremely weak, consists beige to orange brown with black sp coarse, gravel and cobbles are angu weathered Granodiorite.	ecks, sand is fine to co	arse, gravel is fine	siit, to		
GINT/LIBRARY_TEN	-	- - 1040 - -				WEATHERED WRGD (2.4 to 3.4 m) Dawson Range Batholith - Granodic with black specks, orange staining, moderately weathered, residual silt a	very weak (UCS 1 to 5		t grey		
ICAL SI PROGRAM	3 -	-								Reason fo	or Termination:
2013 GEOTECHN	-	- 1039 – - -				End of Test Pit: 3.4 m				Bedrock.	
16/A/DATA/TASK 200 -	4	- - - - 1038 –									
ILE\1\01\00325\1	-	-									
RJ F		NERAL						Casino Mir			
				-	sold Soils L	aboratory		Cası TEST PIT L	no Proje OG FOR	CT TP13-82	
Library: ////	in De	enver, C	olorad	0.			Knigh	t Piéso		ROJECT/ASSIGNME VA101-325	
	oggin	g conduc	ted acc	ording to the	e Canadian Fo	oundation Engineering Manual, 4th Edition, 200		•	I		

	Project: Contractor:			Casino Project			_Test Pit No.:	TP13-83	Page _	1 of 1
	Со	ntrac	tor:	Kluane I	Drilling L	td.	_Equipment Used: E	xisting blasting site	Date Started:	2 Sep 13
	L	ocati	ion:	Plant Sit	te - Blast	ed Rock	_ Total Depth:	1 m Date	Completed:	2 Sep 13
	Coo	ordina	ates	6,956,48	6N, 6	11,907 E (UTM ZONE 7 NAD83)	_ Elevation:	1187.789 m	Logged by:	SB
								F	Reviewed by:	JEH
л, 23 Dec 13		ELEVATION - (m)	SAMPLES	SAMPLE NO.	GRAPHIC LOG		L DESCRIPTIO	N	со	MMENTS
LINGY, WANTIPRI, FLETTOTO00325116AIDATATASK 200 - 2013 GEOTECHNICAL SI PROGRAMIGINTILIBRARY, TEMPLATE-IPS.GLB, TEST PIT LOG METRIC, TEST PIT DATA TEMPLATE MAYO8.GDT, 23 Dec 13 = 2, 10	- - - - - - - - - - - - - - - - - -	- - - - 87 - - - - - - - - - - -			=      =     =     =     =     =     =     =      =      =      =      =      =      =       =       =      =      =       =       =      =       =	WRGD (0 to 1 m) Dawson Range Batholith - Granodic light grey matrix with black specks (a fresh, some pink quartz veins.	rite, medium grained, amphibole), very stron	inequigranular, white and g (UCS ~200 MPa),		or Termination: lasting site.
EMPLATE-TPS.GLB, TEST PIT LOG M	2 - 1186									
CAL SI PROGRAMIGINTILIBRARY_T	- - - 11; - - - - - - -									
ATATASK 200 - 2013 GEOTECHNI	- - - 11/ - - - - -	- 84								
N11/PRJ_FILE/1/01/00325/16/A/E	Image: Second state     Image: Second state       GENERAL REMARKS:       Samples tested at Knight Piésold Soils Laboratory				DId Soils La	aboratory		Casino Mining C Casino Pro TEST PIT LOG FO	orporation oject DR TP13-83	
	in Denver, Colorado.							t Piésold	PROJECT/ASSIGNMI VA101-32	

	Project: <u>Casino Proj</u> Contractor: <u>Kluane Drill</u> Location: Barge Landi			Casino	Project		_Test Pit No.:	TP13-84	Page	1 of 1
		Contra	ctor:	Kluane	Drilling L	td.	_Equipment Used: E	xisting blasting site	Date Started:	2 Sep 13
		Loca	tion:	Barge L	anding A	ccess Road - Blasted Rock	Total Depth:	<b>1 m</b> Da	te Completed:	2 Sep 13
	(	Coordin	ates	6,961,40	DON, 6	12,888 E (UTM ZONE 7 NAD83)	Elevation:	1068.41 m	Logged by:	SB
									Reviewed by:	JEH
T, 23 Dec 13	DEPTH - (m)	ELEVATION - (m)	SAMPLES	SAMPLE NO.	GRAPHIC LOG	MATERIA	L DESCRIPTIO	N	cc	OMMENTS
EST PIT LOG METRIC, TEST PIT DATA TEMPLATE MAY08.GDT, 23 Dec 13		- - 1068 - -	Sur S	BU-1		WRGD (0 to 1 m) Dawson Range Batholith - Granodic light grey and pink matrix with black 200 MPa), fresh, quartz grains are s	specks (amphibole),	inequigranular, white, very strong (UCS 100 to		
OG METRIC, TEST PIT D	- 1 - - - -	1 End of Test Pit: 1 m							or Termination: blasting site.	
PROGRAM/GINT/LIBRARY_TI										
(200 - 2013 GEOTECHNICAL SI	- - - - - - - -	- 1065 - - - - - - -								
III: III: III: III: III: III: III: III		- - - - - - -								
PRJ_FII						abaratan (	Casino Mining Corporation Casino Project			
ary: \\VAN11\		ples tes enver, C		-	old Soils L	abor ator y	Knigh	TEST PIT LOGI It Piésold	FOR TP13-84	25/16 1
		a oonduo	tod ooo	ording to the	Canadian E	oundation Engineering Manual, 4th Edition, 200		ONSULTING	TF	<b>213-84</b>

	F	Proje	ct:	Casino I	Project		_Test Pit No.:	TP13-85		Page	1 of 1
		Contra	ctor:	Kluane I	Drilling L	.td.	_Equipment Used:	CAT 322C	Date	e Started:	3 Sep 13
		Loca		Crusher			_ Total Depth: _	3.5 m	Date Co	ompleted:	•
	(	Coordin	ates	6,958,35	7N, 6	12,082 E (UTM ZONE 7 NAD83)	_ Elevation:	1085.381 m		ogged by: _	
╞									Rev	iewed by: _	JEH
	(L	ELEVATION - (m)		ġ	GRAPHIC LOG						
c 13	DEPTH - (m)	NOIL	SAMPLES	SAMPLE NO.	HIC						
23 De	EPT	LEVA	AMP	AMP	RAP			.1			
DT,	D	Ξ	S	ري ا	<u> </u>		L DESCRIPTION	N		CO	MMENTS
Y08.G	-	-			<u>here</u>	(0 to 0.1 m) Moss, roots, vegetation.			/	1	
E MA	-	- 1085 -			609	TOPSOIL			/	▼ Water flow	vs in fast at 0.3 m
IPLAT	-	- 1005				(0.1 to 0.15 m) Organic SILT, dark brown to black, r	noist (Topsoil).			depth.	vs in last at 0.5 m
V TEM	-	-				COBBLES (0.15 to 0.6 m)					
DAT/	-					COBBLES, some silt, sand and grav angular, wet to saturated (Colluvium	vel, some roots, cobbles	s consist of Granodic	orite,		
T PIT	-				0.0	SILTY GRAVEL AND SAND	·/·		]	l ocalized	area where
TES	1 - -					(0.6 to 2 m) Silty GRAVEL and SAND, some cot	bles, angular, stratified	l, brown with some	<b>-</b>	permafros	at is absent due to of drainage. To
TRIC,	-				0.	orangy brown to grey layers, loose, s to coarse, cobbles consist of Granoo		to coarse, gravel is	ine	confirm th	is the excavator o the west, which
S.GP.	-	1084 -					·			revealed f	rozen soil at 0.3
LOG	-				à					m depth.	
ST PIT	-	-									
3 TES B, TE	-				م.ب.ب. م.روم						
0 201 2S.GL	2 -	-				COBBLES, BOULDERS AND GRA	VEI			-	
ASIN(	-				0. Ú	(2 to 3.5 m)		ilt aubongular ta			
UPLA.	-	-				COBBLES, BOULDERS and GRAV subrounded, brown, loose to compa	ct, saturated (Alluvium	- Channel Deposit).			
Y TEPC	-	1083 –			[0, 0]	Sand is fine to coarse, gravel is fine various intrusive rock types.	to coarse, cobbles and	boulders comprise	Ŋ		
SITE   3RAR	-	-									
MINE VT/LIE	-										
MGI	-	-			0.0.						
SAM/G	3 -										
ROGF 31 PRC	-	-									
CAL S	-	- 1082 –									
NICAL	-	-			<u>;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;</u>	End of Test Pit: 3.5 m					or Termination:
ECH	-	-								Instability.	
GEO1 13 GE	-	-									
2013 ( 0 - 20	4										
200 - SK 20	-	-									
TASK	-										
	-	1081 -									
6\A\D.	-										
325/1	-										
01/00 E/1/01	-	-									
File://VAN11/PRJ_FILE1/101/0032516/GADATATASK 200 - 2013 GEOTECHNICAL SI PROGRAMGINTMINE SITE REPORTICASINO 2013 TEST PIT LOGS GPJ Library: //VAN11/PRJ_FILE1/101/0032516/GADATATASK 200 - 2013 GEOTECHNICAL SI PROGRAMGINT/LIBRARY_TEMPLATE-TPS.GLB	GE	NERAL	REM	ARKS:				Casino Mini	na Cor	poration	
711/PR	Sam	ples test	ted at	Knight Piéso	old Soils L	aboratory		Casin TEST PIT LC	o Proje	ct	
N11/F	in De	enver, Co	olorad	D.			¥7 4 =			TP13-85	NT NO. REF NO.
e://VAI							Knigh	t Piésol	d FIGU	VA101-32	5/16 1
	oggin	a conduct	ted acc	ording to the	Canadian F	oundation Engineering Manual, 4th Edition, 200		ONSULTIN	G	TP	13-85

					Test Pit No.:	TP13-86	_	Page	1 of 1	
	Cont	ractor:	Kluane	Drilling L	.td.	Equipment Used: CAT 322C Date Started: 3 Sep 13				
	Location: Crusher Area					Total Depth:	2.8 m	_ Date Co	ompleted:	3 Sep 13
	Coord	inates	6,958,3	41N, 6	12,060 E (UTM ZONE 7 NAD83)	Elevation:	1092.646 m	_ Lo	ogged by:	SB
								Rev	iewed by:	JEH
1, 23 Dec 13 DFPTH - (m)	ELEVATION - (m)	SAMPLES	SAMPLE NO.	GRAPHIC LOG	MATERIA	L DESCRIPTION	٧		со	MMENTS
	_	-		6 80 80 80	VEGETATION					
1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Image: Second state state     Image: Second state     (0 to 0.3 m)       Image: Second state     Moss, roots, vegetation.       Image: Second state     Image: Second state       Image: Second state     Image: Second s							/		iext to geophysics ie G13-13.
LIRIC, IESI PILUA		- - - -			Silty SAND, some cobbles, trace gra brown patches, loose, very small hor (Colluvium). Sand is fine to coarse, SILTY SAND, FROZEN (VS) (1.1 to 1.5 m)	izontal open cracks (< gravel is fine to coarse	1 mm), moist	e		
OG ME	]		> BU-1		Às above, but frozen, Vs, with < 1 m	m ice layers, candled, ·	~15% excess ice.			
						, some silt, angular, or		ı, Nbn		
500	3 - 3 - 3 - 3 - 3 - 3 - 3 - 3 - 3 - 3 -					trace silt, trace clay, si	ubrounded, well gr eposit). Sand is fi	aded, ne to	Permafro ground o	or Termination: st. Thawed bserved 50 m to n-West and
	1089									
	1088 1088	-	IARKS:				Casino Mir	ning Corr	oration	
Sa	mples t	ested at	Knight Piés	sold Soils L	aboratory			no Proje	ct	
u in	Denver,	Colorad	JO.			Knigh	t Piéso		ROJECT/ASSIGNM VA101-32	25/16 1
	ing oon	ucted ac	cording to the	Canadian F	oundation Engineering Manual, 4th Edition, 200	- C	ONSULTI	NG	TP	v13-86

					td.	_Equipment Used:	CAT 322C	_	e Started: _	•
	Loca		Crushe			_ Total Depth: _	2 m		ompleted:	
	Coordin	ates	6,958,3	65 N, 6	12,154 E (UTM ZONE 7 NAD83)	_ Elevation:	1088.967 m		ogged by: _	
			1					Rev	iewed by: _	JEH
DEPTH - (m)	ELEVATION - (m)	SAMPLES	SAMPLE NO.	GRAPHIC LOG		L DESCRIPTION	١		со	MMENTS
	- - - - - - - - - - - - - - - - - - -				VEGETATION (0 to 0.2 m) Moss, roots, vegetation. TOPSOIL (0.2 to 0.3 m) Organic SILT, many roots and plant SAND AND GRAVEL (0.3 to 2 m) SAND and GRAVEL, many cobbles, graded, greyish to beige brown, loos coarse, gravel is fine to coarse, grav and some orange Quartzite.	remains, black, wet (To some silt, some roots, e, wet to saturated (Co	opsoil). trace boulders, we illuvium). Sand is t	fine to	⊻ Water se test pit wa	eping fast from alls below 1.2 m oling at base of
2 -	- 1087 - - - - - - - - - - - - -			0.0	End of Test Pit: 2 m				Reason fo	or Termination:
3	- 1086 - - - - - - - - - - -									
	- - - - - - - - - - - - - - - - - - -									
		DEM								
GEI	NERAL			old Coile L	abaratan (		Casino Mir	ning Cor no Proje		
	enver, Co		-	sold Soils L	audi al Ul y		TEST PIT L	OG FOR	TP13-87	
						Knigh	t Piéso	ld 上	ROJECT/ASSIGNM VA101-32	5/16 1
					pundation Engineering Manual, 4th Edition, 200	C	ONSULTI	N G	TP	13-87 <sup>REV</sup> 0

Contractor: Location:									Page <u>1 of 1</u>		
			Kluane	Drilling L	td.	_Equipment Used:	e Started: _				
			Crushe			_ Total Depth: _	3.5 m		ompleted:		
			6,958,3	50 N, 6	12,178 E (UTM ZONE 7 NAD83)	_ Elevation:	1088.866 m		ogged by: _		
			1					Rev	iewed by: _	JEH	
DEPTH - (m)	ELEVATION - (m)	SAMPLES	SAMPLE NO.	GRAPHIC LOG	MATERIA	L DESCRIPTION	J		со	MMENTS	
-	-			6 70 70 70 70 70 70 7	VEGETATION						
3     0 <td></td> <td>Directly n line.</td> <td>ext to geophysics</td>									Directly n line.	ext to geophysics	
1087     BU-1     Image: Solution of the second sec					<ul> <li>(1.5 to 1.7 m)</li> <li>SAND, some silt, trace gravel, trace</li> <li>(Residual Soil). Sand is fine to coar</li> <li>this material is a fault structure with</li> <li>pit with water flowing in at a rate of ~</li> </ul>	se, gravel is fine to coa thawed soil, it extends	rse. At south end beyond the depth of	of pit of the	fault at 1.8 rate of ~ 3	U-1 consists of	
3 -	- - - - 1086 - - - - - - - - - - - - - - - - - -			$\begin{array}{c} u = u \\ u = u \\$							
-	-				End of Test Pit: 3.5 m				Bedrock a pit, and in	or Termination: at North part of Istability of fault outh end of pit.	
4 -	1085 - - - -										
	- - - 1084 – - <b>- - - - - - - - - - - - - - - - - -</b>			sold Soils La	aboratory		Casino Mir Casi	no Proje	ct		
-	enver, Co		-		-	Knioh	test pit l t Piéso	OG FOR	TP13-88 ROJECT/ASSIGNME VA101-32		
							<i>i i ic</i> ou onsulti		IRE	13-88	



## **APPENDIX B2**

## PREVIOUS TEST PIT LOGS

(Pages B2-1 to B2-88)

KNIGHT AND			TEST PIT L	OG	TEST PIT NO. 9034-C
	ENGINEERS				SHEET / of 2
PROJECT	ASINO			PROJECT No.	1831
		S. OF CAN	HD ALUNG MELOY CK. RD.		
DATEAUG					
DATE AND	. 207 93	-		LOGGED BY	
NOTES Groundwater level, difficulty in digg- ing , equipment used , etc .	<b>ДЕРТН</b> (m)	GRAPHIC LOG		AND CLASSIFICAT MATERIAL	ION
Cat D7	0-	+ <u>k</u> +++ <u>k</u> +	vegetation :		
dozer.	-	*_+ + +++	Abundant, close	ly spaced tall s	pruce w/
	0.3 -	+++++++++++++++++++++++++++++++++++++++	Abundant, closed some willows and	grasses (sam	e as
Cut along		+0+0+0	9034-D).		
existing (old)	-			DICH TARCOLL	
trench	-	+-++++	0-0.3m ORGANIC-		
Trench is dry.	] ]	+0++	organic-rich topson		ujey silt
no groundwater		++++++	w/roots, sand and	gravel.	
a permontroit.	1-	D+ 0+ -10+ + -+ 0+ -+	0.3-1.2 m FINE GRA	MED COLLUVIUN	m (NET) w/
	-	0-0-+	U.S-T. C M THE ROCK FRAG	S. AND ORGAN,	· c s ·
I Easy excavation	1.2 -	****			
in colluvium		0 to 10	Dark brown, very n	VIDISI ; MACA . UCM	se (firm)
and residual	]	+0.0	clayey silt w/ some		
soils.		+ 0.0	(approx. 70%) suppo	, ting crs. grau	el to
Likely no		"+ 3+	small cubble class	ts of broken r	ock, koch
perma Frost	Re-worked 1.8	+ - 0. +	Frags. are mod. hard	to hard, comp	petent,
in subjective and	Res. Soil	+++++	sub-angular granodi	wite and com	prise approx.
(Resh) mat's.	9034-01 - 6-		30% of mat'l. Ma	i'l also contai	ns occasional
on slope.		+ + + +			
	$  \setminus ./ ]$	+	black organic-rich, s	100 CEC	cpca.
Fairly diffimit	$  \setminus /  $	1. 1. 1	Tayers Rock Frags. 2	-iv em dia.	1 FARL
excavation in	X		-> Fine grained c	olluvium w/ 100	n ing
broken bedrock		4 + +	Trace v. fine roots th	hroughout	
(easy ripping).	$ / \rangle $	++++	-gap graded (b	imodal) matil.	likely too
	29	+ . +	ult to utilize as	fill mat'l.	
Occasional	3-	YIIITEY			4 40
EW gongy		MW-HW	1.2-1.8m WELL GRAD	IED COLLUVIV	
granular gouge	-	Grano-	Light brown, moist,	dense siltu st	ND matrix
zone tranding	-	dion te Bedrock			
N-S, steeply	-	Badly	(approx. 60%) support		
dipping .		broken.	cobble size vocle fings		
(possible			w/ no organics. Ma	at l is Moist,	, non-plastic.
preferential			Rock Frags. are hard	granu dionte	from 2-10 cm.
alteration).			aia.		
	4		B2-1 of 88	(Con	t'd)

KNIGHT AND			TEST	PIT	LOG	TEST PIT No. 9034-C SHEET 2 of 2
PROJECT LOCATION OF DATEAug.	TEST PIT_				PROJECT No GROUND ELEVAT	
NOTES Groundwater level, difficulty in digg- ing, equipment used, etc.	DEPTH	GRAPHIC LOG	DESC		AND CLASSIFICAT	
			collusion fill Fines optimum nic anymber, ha <u>Note:</u> Total increas slope 1.8-2.9 m H Orange-tan silty fine trace fine g heavily wea by occasion stained reli broken, very - Mat's content Sh Entimete ( dense comp material Z.9 m BRO MW-HW, m Cgranodiovit	n is p only out only out only out only out only out only to the twick is to the twick to the twick to the the twick to the the the the the the the the the the	PADED COLLUVIL potential source slightly great content. Af modionite rock and the valle e west. DUAL SILTY 5. , uniform Mu / some med. s and clay. M jin-situ as e inonite / hema ints and Hu rock at ba htly mosit. M less Man optin / some grained fine grained MU-HW BEDRC d broken bedr MU-HW BEDRC	of random en than aprox 40%. frags. imm y (down- AND vesidual and and at'l is vident tite , badly se Moisture ility, I Gill sck och

PROJECT       CASINO       PROJECT No. [83]         LOCATION OF TEST PIT       GROUND ELEVATION         DATE       Aug. 20,1993       IDGE         MOTES       DEPTH       GRAPHIC         Groundwater level, difficulty in digo- ing , equipment       (m)       DESCRIPTION AND CLASSIFICATION         Ing , equipm	KNIGHT AND PI			TEST PI	Т	LOG	TEST PIT NO. 9034-D SHEET 1 of Z
DATE       AUG. 20,1993       LOGGED BY       MDG         Inorest Groundwater level, difficulty in dig.       DEFTH       GRAPHIC LOG       DESCRIPTION AND CLASSIFICATION OF MATERIAL         Cat D7       0       the rest in dig.       (m)       Description and classification:         Cat D7       0       the rest in dig.       Notes       Notes         Trench       0       the rest in dig.       Notes       Notes         Cat D7       0       the rest in dig.       Notes       Notes         Cat D7       0       the rest in dig.       Notes       Notes       Notes         Cat D7       0       the rest in dig.       Notes       Notes       Notes       Notes         Cat D7       0       the rest in dig.       Notes	PROJECTCA	SINO				PROJECT No/	831
NOTES Groundwater level, difficutif in dige ing, equipment used, stc.       DEFTH (m)       GRAPHIC LOG       DESCRIPTION AND CLASSIFICATION OF MATERIAL         Cat D7 dozer.       0       thereit thereit cat       0       thereit thereit cat       Ugetation: thereit comparent used, stc.         Trench eccabeted in existing (cld) trench cat.       0       thereit thereit cat       0       thereit thereit comparent used, stc.         Tunch eccabeted in existing (cld) trench cat.       0       thereit thereit cat       0       0         Tunch ecat       0       0       thereit thereit cat       0       0         Tunch edf, use       1       0       0       0       0       0         1       0       0       0       0       0       0       0         1       0       0       0       0       0       0       0       0         1       0 <td>LOCATION OF</td> <td>TEST PIT</td> <td></td> <td></td> <td></td> <td></td> <td>4 ( )</td>	LOCATION OF	TEST PIT					4 ( )
Groundwoter level, difficulty in digging (m) LOG DESCRIPTION AND CLASSIFICATION OF MATERIAL DESCRIPTION AND CLASSIFICATION OF MATERIAL DESCRIPTION AND CLASSIFICATION OF MATERIAL DESCRIPTION AND CLASSIFICATION OF MATERIAL Description and prastes (some as 9034-0). Description and prastes (some as 9034-0). Tinch dry, in groundwater of gravel and vita some gravel and prastes (some as 9034-0). Tinch dry, in groundwater of gravel and vita some gravel and protes (some as 9034-0). Description and prastes (some as 9034-0). Descr	DATE AUG.	20,1993	_			LOGGED BY	1DG
dozer: Trench escabated in existing (eld) trench escabated in existing (eld) trench escabated in existing (eld) trench escabated in existing (eld) trench escabated in existing (eld) trench escabated in eyoundwate or permatrost 1000	Groundwater level, difficulty in digg- ing , equipment			DESCRIF			ION
Top 0.3 m is thinly bedded (alluvially reworked residual soil) and has apparently been dragged downshipe - likely as a result of solifluction (creep of overlying colluvium).	dozer. Trench excalated in existing (old) trench cut. Trench diy, no groundwate, or permatrost inalls very oble. Moderately casy excavation u/ D7 in stoney collavium: Easy excavation in loose residual suils. Difficult excavation in broken bedrock. (easily	0.2 1 9034-01 2.3	HW Grano- diorite, Ruartz	Abundant, cla Some tall will (same tall will (same as 9 0-0.2m <u>ORGANIC</u> Organic-rich silty sand 0.2-1.1m <u>WELL GR</u> . Brown, moist gravel matrix coarse gravel to Material is n grading), poor angular, range oriented . Mat content . Mat inganics (room <u>Note:</u> Colluviu downst. 1.1-2.3m <u>RESIDU</u> Crange - It. brow soil (granadion loose silty sam med crs. groin (opprox. 0.3m) angular fine (rock frags.) heavily ovidize throughout of Top 0.3m is reworked resid been clragged result of s	-RIC topso topso with ADED silty from trix sol trix sol trix	c). <u>H SANDY TOPSO</u> iii comprising do some gravel an <u>COBBLY COLLUVI</u> fine sand with apprises approx. 60 Il cobble size re- supported, mass ted. Clasts an 3-15 cm dia., 1 is at ~ optimum dense. Trace ve hroughout. cr. in thickness to <u>SANDS, GRAVELS,</u> loose, dry, HW . Material gra top 0.3 m); down and with trace in to sandy 1 what residual gra sidual matil is ith linionite / h cal). Ly bedded (allu soil) and has pshape - likely	<u>DIL</u> ark brown and roots <u>UN1</u> * sume fine of!) and ock frags. rive (no e sub- andomly noisture iy fine 2.5 m <u>SILTS.</u> residual ander from to silt UW, weak, ravels (rumbly, ematite vially apparently as a

			and the state of t			
KNIGHT AND F			TEST	PIT	LOG	TEST PIT No. 9034-D SHEET 2 of 2
PROJECT	CASING	)			PROJECT No/	831
LOCATION OF					GROUND ELEVAT	
DATE _AUG					LOGGED BY	
DATE						
NOTES Groundwater level, difficulty in digg- ing , equipment used , etc .		GRAPHIC LOG	DES		AND CLASSIFICAT MATERIAL	ION
Cat D7 dozer.			Heavily W granodiorite (Dykes of possibly new Abundant dipping, tren clayey gran Likely fau small Lein along perm	eathered / quartz Q. Mon ar cont fault/ nding oular go lt activ ning cor cable b	ROKEN GRAND. 16 , badly broken : monzomite be zonite in grand act ). shear zones stee prox. NNW co inge-like materi ity followed by ad preferential vokan zone to material.	drock. diorite - eply niprising id possible weathering
	-		B2-4 of 8	8		

KNIGHT AND PIESOLD LTD. CONSULTING ENGINEERS

DATE JULY 16, 1993

difficulty in digg- (METERS)

## TEST PIT LOG

TEST PIT No. 9042-8 SHEET / of 3

ROJECT CASINO

NOTES

Groundwater level,

LOCATION OF TEST PIT WEST END OF TRENCH

DEPTH

GRAPHIC

LOG

GROUND ELEVATION \_\_\_\_\_

PROJECT No. 1831

## DESCRIPTION AND CLASSIFICATION OF MATERIAL

ing, equipment	(PETERS)		-	OF MATERIAL
used, etc.	0.0			
Excavation w/ DEC CAT	-	***	0.0-0.2m •	ORGANICS + MOSSES + TOPSOIL - with abord - ant root mass. TOPSOIL is sandy SILT
Materials are generally well drained	0.5		0.2 -0.7m •	SANDY GRAVEL COLLUVIUM: Brown, sandy GRAVEL with trace to some
No granchater table present, though mal'ls	9642-81	0		silt, medium dense, moist (slightly dry of optimum- <u>est</u> d) with cobble sized, angular, limonite stained, coarse grained GRANODIORITE
are moist. Relatively Pasy blading		C	0.7-2.0 •	RESIDUAL SAND AND GRAVEL: Tan, orange-brown sand and gravel
c approx 1.6m Suspect rippath to 40cm below		A-140		with some sill and clay. Moist (slightly dry of oplimum est.'d) and loose to med. dense. Material is residual soil
bottom of trench.	2.0-	0. 60 0.		derived from weathering of hornblende, biolite, course grained GRANDOIDRITE. Sandt and gravels are limonite
				preserved the jointing/fracture
	2.5			pattern of the weadhered rock. Generally sand and gravel grains are coarse and hard and very angular,
	3.0			and coarsen downwords. Pockets of tang beige moist clayey silt and gravel (Argillic Alteration?)
	35			are present in sequence.
е 		-		

4.0

KNIGHT AND P	NESOLD LTD.		TEC		1.06	TEST PIT No. 9042-B
CONSULTING E	ENGINEERS		IEJ		200	9042-8 SHEET 2 of 3
CROJECT LOCATION OF	TEST PIT	M100LE	12-15m0	F TRENCH	PROJECT No GROUND ELEV LOGGED BYZ	
NOTES Groundwater level, difficulty in digg- ing, equipment used, etc.	DEPTH	GRAPHIC LOG			N AND CLASSIFIC	ΔΤΙΟΝ
Excavated with DGC CAT: BLADE REFUSAL	0.0 9042-B2 1.0 1.0		0.10 - 1.10 * <u>Note</u> : 1 BR GI	Abunda brown RESIDO Orange Sandy SIH. (slightk pocket heavily friable stained Estima motrix BLADE REFU OKEN, ANSO	CS, MOSSES + TOPE Int root mass. T Sandy sitt. JAL SANDY GRAVE & brown (iron ox GRAVEL with the Medium dense of y dry of optimum s of angular, mail weathered, brown cogree graine f granodiarite to 80-85% sand SAL in SLIGHTLY EAR, BLOCKY, COO E. COULD PROPA FEET WITH CAT.	EL: ide stained) ace to some mod moist est.d). Some derately to oken, weak d, limonite (to Tum dia.). dy GRAVEL = erial. WENTHERED, se grained MBUY RIP
	-					

KNIGHT AND PIESOLD LTD. CONSULTING ENGINEERS	TEST PIT L	DG TEST PIT No. 9042-B SHEET 3 of 3
PROJECT <u>CASINO</u> LOCATION OF TEST PIT <u>B</u> DATE JULY 16TH 1993	EASTEEN 12M OF TRENCH	PROJECT NO. 1831 GROUND ELEVATION
NOTES Groundwater level, difficulty in digg- ing, equipment used, etc. DEPTH (METERS) 0.0	OF	AND CLASSIFICATION MATERIAL
	5/ightly mot 5/ightly mot 0.10-0.80m · <u>SAND</u> AND Orange br optimum) AND GIZAU matrix u quartz dia 0.80m + <u>BEDROCK</u> Fine grain broken, ha	silly sand/sandy sill, why in colour, loose and ist (dry of gotinium). <u>GRAVEL</u> : nown, moist (slighthy dry of , loose to med-dense SAND EL, with trace to some sitt with angular, fine grained orite (?) - 4" typ

KNIGHT AND PIESOLD LTD. CONSULTING ENGINEERS		TEST	PIT	LOG	TEST PIT No. 9043-G SHEET / of 2
PROJECT _CASINO				PROJECT No. 10	231
LOCATION OF TEST PIT _				GROUND ELEVAT	
DATE 22 1993				LOGGED BY TH	c
NOTES DEPTH Groundwater level, difficulty in digg- ing, equipment	GRAPHIC LOG	DE		AND CLASSIFICAT	ION
used, etc.			OF	MATERIAL	
Hota CHOOLE	1.0840			- veries between thield, 30-30% 10-20% sendys CRAVEL, TRACE	MOSS + ROUTMAS
0.5	A A A A A A A A A A A A A A A A A A A		SILT: Crey and a to dense SAND AND -8" angul GRANCERCO (S-7cm) banding: GRANEL by FLOVI Discontinue present ou	r tambrown med , well graded, po S GRAVEL. Conto lor, hard, Liven Prise clast Sor Srange and con of moist silks SA > RESIDUAL SO AL PROCESSES ?) S Lous dong herch 1 er 90% of its len 30 And 70 cm this	tim dense in dense in score ond te stored ne thin, discord ear herizerted ND AND ic (reworked ic corrowing. in th (structures)
2.0	गमानगंद (	0,4 - 0.8 m*	Tan crang sandy G sitt. Gra hard any grains sigUly ob,	AVEL, TRACE TO S a ( 15 porte to inte in A VEL with a to vel is residual G Unit is medium of optimum me weas material ex bottom ( - 2.0 m.	D) and brown ace to SERO RANCDICRUTE VELS SPORT dence and order content.
	3	8 - 2.0 m ∙	<u>Gennodic</u> <u>Argolar</u> slightly be weather Hornblen Weatherin as cuide. on smoc		) jointed notentely grained noticeite. je ciptons te Staining

KNIGHT AND CONSULTING			TEST F	PIT	LO	G	TEST PIT No. 9043-G SHEET 2 of 2
PROJECT	Pasinc					OJECT No. 1	
LOCATION OF					GR	OUND ELEVAT	ION
DATE	27 1793				LO	GGED BY Tu	<i>с</i>
NOTES Groundwater level, difficulty in digg- ing , equipment used , etc .	DEPTH	GRAPHIC LOG	DESCR			CLASSIFICAT TERIAL	ION
			Some or cas Arg. Ilisally of thench. In maintains	<u></u>	142 142 011 162	ONIENTA O 1/30 1/62° SOLTH 1/38° ENST 1/64° NE.	0.2-0.5m al m der 0.1-0.5m al m
	-		B2-9 of 88				

KNIGHT AND CONSULTING			TEST PIT I	_OG	TEST PIT No. 9058-B SHEET / of Z
OJECT	CASINO -	EAST S	ECTION OF TRENCH	PROJECT No	
LOCATION OF	TEST PIT	PREN PIT S	30uth	GROUND ELEVAT	ION
DATE JUNE	12,1993			LOGGED BYM	DG
NOTES	DEPTH	GRAPHIC			
Groundwater level, difficulty in digg- ing, equipment used, etc.		LOG		AND CLASSIFICAT MATERIAL	ION
	0		0.2		
lce at surface under organics (primatrost) Mod. d: fricult digging in	Permafrost table 0.3	+ + +	0-0.3 Dark brown to black, peat with some gr muskeg like regetati occasional large ( boulder (fresh, very h 0.3-0.9 FINE GRAINED COLLU	in on surface up to Im dia.) Gr ard).	c/ anodiorite
suificial ice and boney colluvium.	-	+++++++++++++++++++++++++++++++++++++++	Light brown and grey silt w/ thin clay p	lominal of v.f. partings up to 0.	. sandy 5 cm thick .
Easy digging residual sands (loose). Cat D7	9058-B1 (frozen) 0.9 Stratified SANDS {1	+ + + + + + + + + + + + + + + + + + +	Horizontal lamination Ice lenses. Soil full stratified in horizo 1.0 cm. Dark grey - c excess ice Mat'l c (limonite stained) c frags. up to 2 cm c 0.9-1.9m <u>RESIDUAL CRS. SA</u>	ly saturated w, ntal layers, sp clear ice. Estim ontains decompos is sand and tia	lexcess ice acing -0.5 - ate 20%.
in F.gr. colluvium causing french walls		Narware ana.diyee Nari	Orange-red, loose, residual SAND w/ mix w/ heavily wea weak Granodiorite	trace silt . App Hered , Friable bedrock . Rock	rox. 50%. , decomposed, frags. to
to cave in a	9058-B2	0 00	20 cm dia. Heavily Stained. No ice vis Moist - wet, well a crs. weathered Grand Friable and crumbly angular.	trained, fining diorite granul	is loose, up. Very ar texture,
	- - - - - - - - - - - - - - - - - - -		WEATHERED GRAN 1.9m Dark red (hema weathered, weak Rock is jointed o jts at (D) 055- (2) 165/ Minor (3) 074/	ntite), moderate Granodiorite b and blocky. 070/805-90° (s 190° (vertical)	ly redrock <sup>U</sup> ajor

KNIGHT AND CONSULTING			TEST PIT L	_0G	TEST PIT No. 9058-8 SHEET 2 of 2
DATE	TEST PIT_		SECTION OF TRENCH	PROJECT No GROUND ELEVAT LOGGED BY	1831
NOTES Groundwater level, difficulty in digg- ing , equipment used , etc .	DEPTH	GRAPHIC LOG		AND CLASSIFICAT	
			West end of trem decreasing thickne (weathered, decompo Here, blocky, mode competent, mod. ha some residual SAN blocky Crs. grained silt and Surficient * Fault gouge near comprises granule colour. Attitud 341/30°W. Approx	es of residua sed granodior rately weathered rd granodior iD is overlain d colluvium al organics west end of west end of the clay, white the measured	I sANDS ite rock). ite rock). ite w/ by some french (cream at approx.

.

KNIGHT AND PIESOLD LTD. CONSULTING ENGINEERS

## TEST PIT LOG

TEST PIT NO. 9060-A SHEET / of /

				SHEET / of /
PROJECT	CASINO			PROJECT No. 1831
LOCATION OF	TEST PIT_			GROUND ELEVATION
DATE JULY				LOGGED BY
	r		5	
NOTES	DEPTH	GRAPHIC LOG		
Groundwater level, difficulty in digg-		200	DESCRIPTION	AND CLASSIFICATION
ing, equipment	(m)		OF	MATERIAL
used,etc.	-		•	
		the state		2- 1-1 - 1 - 11
Hitachi	0_	14 <u>F</u>		Assorted scrub willows,
backhoe	Permafrost o.is	* * *	thick ruoss and	abundant stunted
UHO9LC	table	0th	black spruce (5-	10' tall) -> Permatrost!
Tours EDOTEN	LADIE	UD	Some large crs.	talus blocks of Fresh,
Trench FROZEN		C H		ned granodiorite from 0.2-
Stripped approx.	Ice * wedges	FTTL	1.2 m dia.	
1.5 weeks	Ice *	++++	0-0.15m Moss / PEA	T
prior to	lenses		Thick mass fresh	black, saturated, tibrous,
excavation.	0.5 -	+ - + +	loose peat. (Ins	ulating layer).
Very difficult	-			IS BLOCKS and FEDZEN
digging in	8	+.0.0.	DREANIC -	RICH TUPSOIL .
hard, fruzen			Despivic	comprising have cis
ground.		0	Coarse blocky talus	comprising v. hard crs. and clark grey - black
Trench walls	9060-AIA	+ - 0	grained granoalorite	tocal comprision frozen
thawing and	Tot.	· · · ·	organic -rich (peat)	topsoil comprising frozen
very slowly			pear (~ 50%) and	grey clayey SILT.
caving.	m/c.	1.0.1	* Material is very ic	e-nich with thin (~1-2mm)
Materials	(frozen) 1		ice lenses in P.gr	clayey silt & peat, and
fairly stable	±	. 0 .	thick clear hard	ice wedges between talus
during thaw .		0	blocks. Estimate	approx. 30% excess ice in
		+0.+	t.gr. matil - v. hard	d, well bunded ice; and
			up to 40% excess	
		· · + ·	0.5-1.3m HARD. FR	OZEN RESIDUAL FINE
Refusal w/	1,3	0.0	GRAVFILV SA	AND w/ SOME SILT &
toothed		Refusal	COBBLES.	
bucket at 1.3m. 3"	18	(bottom)	When hand (find	I grangish how residual
		1	fine annuelly SAND	) orangish brown residual w/ some silt and large
deep teeth bucket marks	s	1	Gravel - small Cohb.	le clasts. Rare small
left in		1	builder Claste com	prise competent, hard,
bottoms of		1	ars pronodiovite	prise competent, hard, Matrix & fn. gravelly
trench .		]		Nov 754 of material.
No sign of			SALV COMPLISES OF	prox. 75% of material.
bedrock at		1	Visible ice present	as clear, hard ice lenses
buttom of		-	up to Zmm thick	, randomly oriented
trench.		-	Throughout materi	al, Ice is v. well bonded.
		-	uccasional v large bou	ulder clast of SW, hard
	2	1	granodiorite at bot	rom of lience.
			B2-12 of 88	

2	PLACER TEST PIT DESCRIPTI CASINO PROPERTY	×	LEASE NO .: PL 906/ CREEK: CASWO TYPE: BENCH, 2ND TIER
PIT NUMBER: 9061- RTHING: 25440 EASTING: 111 663 STARTED: JUNE 4, 1 FINISHED: JUNE 5, 1 SON PROFILE SULTHEG IMPAU 19061-A LT SCURAL FUC PYRITE 14670 T4670 T4670 T4670 T4670 T4670 T4670 T4670 T4670	993 PLAN VIEW SCALE 1:500 0 0-3.9 BLOCKY GRANDDING		HITACHI HOE B Dil30/HR = \$ 1040 R @ \$17.50/HE = \$192.50
Road T4675	70 N D PAN SAMPLE Rock 31 M PLE Sol 34 MPLE		

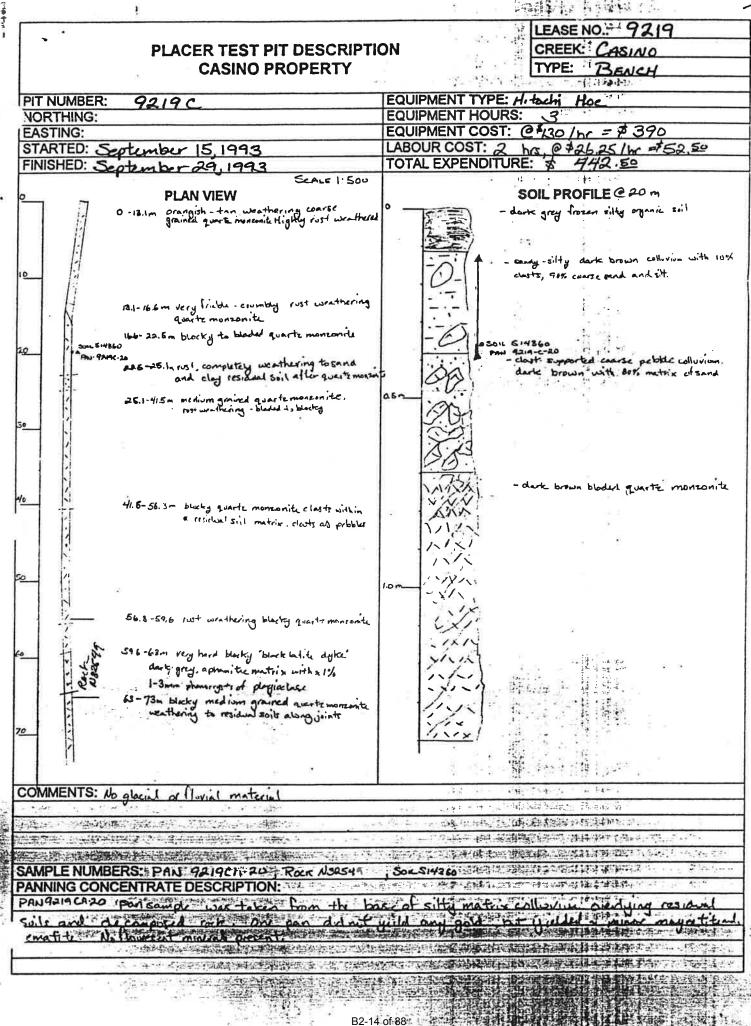
.

SAMPLE NUMBERS: Som SAMPLE: T4662 TAKEN FROM HEADOF TRANCH Rais SAMPLEN: T466970 T4675 PANNING CONCENTRATE DESCRIPTION: PAU 7061-0-0 COARSE FIRTURE (+ NO. 4 MISH) REPLICE OF DARK REST REDWIN MANGANESE

STAINED GERMO DOBITE, FINT FRACTION:

 $\mathbf{c}$ 

.



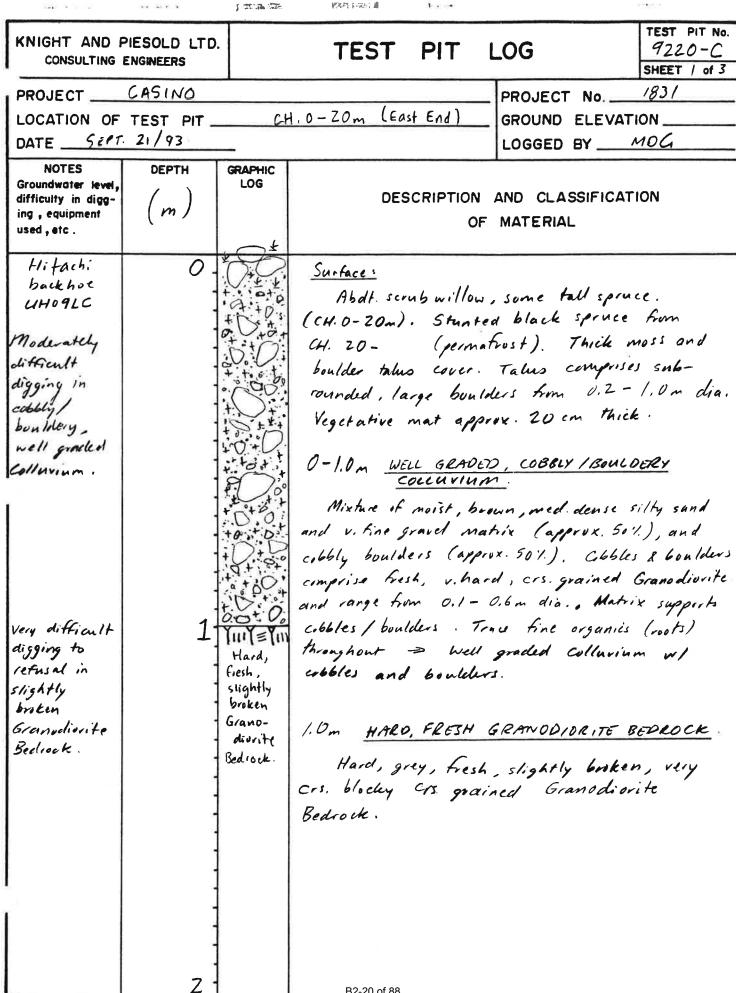
		. A	*		
KNIGHT AND A			TEST PIT I	_OG TEST 1 9220 SHEET	- A
PROJECT	CASINO			PROJECT No	
LOCATION OF	TEST PIT		CH. 0- 15m	GROUND ELEVATION	
	r. 20/93.			LOGGED BY MDG	
NOTES	DEPTH	GRAPHIC			
Groundwater level,		LOG		AND OF A COLERCATION	
difficulty in digg- ing , equipment	(m)			AND CLASSIFICATION	
used, etc.			OF	MATERIAL	
		000	a second s		
Hitachi	0	+2++	Surface:		
backhoe	-		Abdt. scrub willow 1	birch w/ some tall and	
(UHO9LC	-	+	Stunted black spruce	. This Moss cover and	
Fail and	1	o! () +	small bouldery talus	blocks from 0.2 - 0.4 m	dia.,
Failly easy disging in	]		anoular fresh hard.	vegetative mat compr	Ising
Collarinm	-	<b>T</b> . <b>D</b>	moss and roots app. 0)	. 0.2-0,3 m thick.	
(not Frezen)	-		<b>A</b> ( )		
	-	+ + 0	0 - 1.0 WELL GRADED	COLLUVIUM	
	-	Ori	Realize marith G		
		0,14	v for a l	SAND and SILT w/ som	e .,)
	1	+++++++++++++++++++++++++++++++++++++++		ay (matrix approx. 80	1.],
	6	5 * *	supporting small-larg	e dia cobbles of SW	
		+++	granodiorite rock frag		
			few cm to 0.2 m dia	, angular, hard.	
		- D-".	* all a communit		
	.		* CH. 0 - 5m; 10-15m.		
Refusal in -	- 11	Y	1.0 m BLOCKY, FRESH	GRANODIORITE BEPROC	CK
blocky, fresh,	-			-	
hard	]	23		Fresh , hard , crs. gr. Blocks are angular	· ,
Granodiurite Bedrock			range from 0.1-0.		-
		N. 10	( y differ 14 dispire	to refusal in broken.	block
					, and the second s
			Bedrock)		
	]		**		1
	- 15-	**	CH. 5- 10 m :		
		(m (= ( m		GRAVELLY MED CRS. S	AND
	1	Blocky		residual gravelly SAND	
1	1	sw-FR, hard		list susceptible in-sit	
		Grano -		•	
	-	diosite Bedsock	1.5 M FINE BLOCK	Y GRANODIORITE BED	ROCK
	2		B2-15 of 88		
			the second s		the second second second

R			ana e e		
KNIGHT AND A			TEST PIT	LOG	TEST PIT No. 9220-A SHEET 2 of 5
PROJECT	CASINO			_ PROJECT No	1831
LOCATION OF	TEST PIT_		CH. 14 - 17	GROUND ELEVAT	
DATE SEPT	20/93	_	(Frozen section)	LOGGED BY	MPG
NOTES Groundwater level, difficulty in digg- ing , equipment used , etc .	DEPTH ( m )	GRAPHIC LOG		AND CLASSIFICAT F MATERIAL	ION
Hitach; backhoe UH09LC	0		0-0.8 F.G.R. WELL Brown, Frozen (h		
Difficult digging in frown collunium but can excavate to bedrock.	4 - - - - - - - - - - - - - - - - - - -		troce clay & organic large gravel to la nek frags. Lock fra hard, range from - Matrix is f.gr Saturation, Trace to	s (approx 70%) arge cabble size as.are angular, so 2-15 cm dia. ained and frozen. some excess ice	), supporting granochorite W, mod. Est. med as v. tain
Fairly easy digging in blocky bedrock. (no excess ice - rock well drained).		D+ -+ + D+ + D+ + D+ + D+ + D+ + D+ + D+	(~1mm) ice lenses an well bonded to soit 0.8-1.3 FINE BLOG Fine blocky bed on rough, planar hard rock Frags, r	nd crs. crystals. v.hard. CKY <u>ERANODIORITO</u> rock. <u>comprising</u> Fracture surfaces anging from 5-	Ice is E BEDROCK SW (limonik ), mod. IS cm dia.
Refusal at 1.3m in blocky, Sw. mod hard Granodiorite Bedrock.	/.3		Rock is somewhat pe depth . Rock mat's ric. <u>CH. 17-28m</u> ; <u>D- 0.8m FROZO</u> <u>0.8m Refusal i. (CH. 17- 0.8-1.1m FROZER</u>	is well drained , w colluvium, frozen Colluv ZOm)	AS ABOVE
	2	ű.	B2-16 of 88	1 (CH. 20-28,	~)

KNIGHT AND A		40 - 38 )	TEST PIT	LOG	TEST PIT No. 9220-A SHEET 3 of 5
PROJECT	CASINO			PROJECT No.	/83/
LOCATION OF	And a second		CH. 28-40m; *CH.44-60m	GROUND ELEVAT	
DATE Ser	r. 20/93		CH. 44 - 60m	LOGGED BY	MDG
NOTES Groundwater level, difficulty in digg- ing, equipment used, etc.		GRAPHIC LOG		AND CLASSIFICAT MATERIAL	ION
Hitachi backhoe UHO9LC Fairly easy digging in cullarium	0	0+0+0+0+0+0+0+0+0 0+0+0+0+0+0+0+0+0+0+0	0-0.7m F.G.R., WELL G Brown, f.gr. well g comprising v.f. sand gravel and cubbles, (pear & roots). 0.7 - 1.1m <u>Residual</u> Drangish brown, H sand w/ some fine	raded Colluvium and silt w/ trace clay.an SAND.	sime d organics
Easy digging in residual sands from uit-lilm.	9220-A1 0.7 CH.35m 1 1.1 1.4	1200 + + + + + + + + + + + + + + + + + + +	1.1 m BLOCKY GRAND SW-FR, blocky, M Grained Granoolionit angular w/ limornite Fracture surfaces, 1.4 m Refressed in Blo * <u>CH.44 m</u> : <u>Apparent</u> down of residual sand a bedrock. (Collumin underlying resident <u>Note:</u> Occasional	DIORITE BEDRON and hard to v. have Bedrock, Block to rough, Sur range from S- acky Granodioni, slope drag (con- ver blocky (consume has apparently south down slope	ck rd, crs. cks are ch-planar 30 cm dia. fe. fe. ) grano. dragged ). und sand
	2		B2-17 of 88		

KNIGHT AND		• East 1	TEST PIT	LOG	TEST PIT No. 9220-A SHEET 4 of 5
PROJECT LOCATION OF DATE Science NOTES Groundwater level, difficulty in digg- ing , equipment used , etc .	TEST PIT _ 20/93 DEPTH			PROJECT No GROUND ELEVAT LOGGED BY AND CLASSIFICAT MATERIAL	1831 ION 10Gr
Hitachi barkhoe UHO9LC. Fairly casy digging in Collavium and residual silty Sand materials.	0 0.7 9220-AZ CH.42m 1 1.6 2	$\begin{array}{c} 0 \\ + \\ + \\ + \\ + \\ + \\ + \\ + \\ + \\ + \\$	0-0.7m <u>F.GR</u> , WEZ (As Above, 0.7-1.6m <u>RESIDUAR</u> Orange, sl.moist, Mat'l is uniform, heavily ron oxidize are weak -> Typical mat'l. - Potential good compacted Fill mat. B2-18 of 88	see p. 3) SILTY SAND HW residual med. dense, nor d throughout. A residual silty , dense, low pe	silty SAND. - Foren, article sand

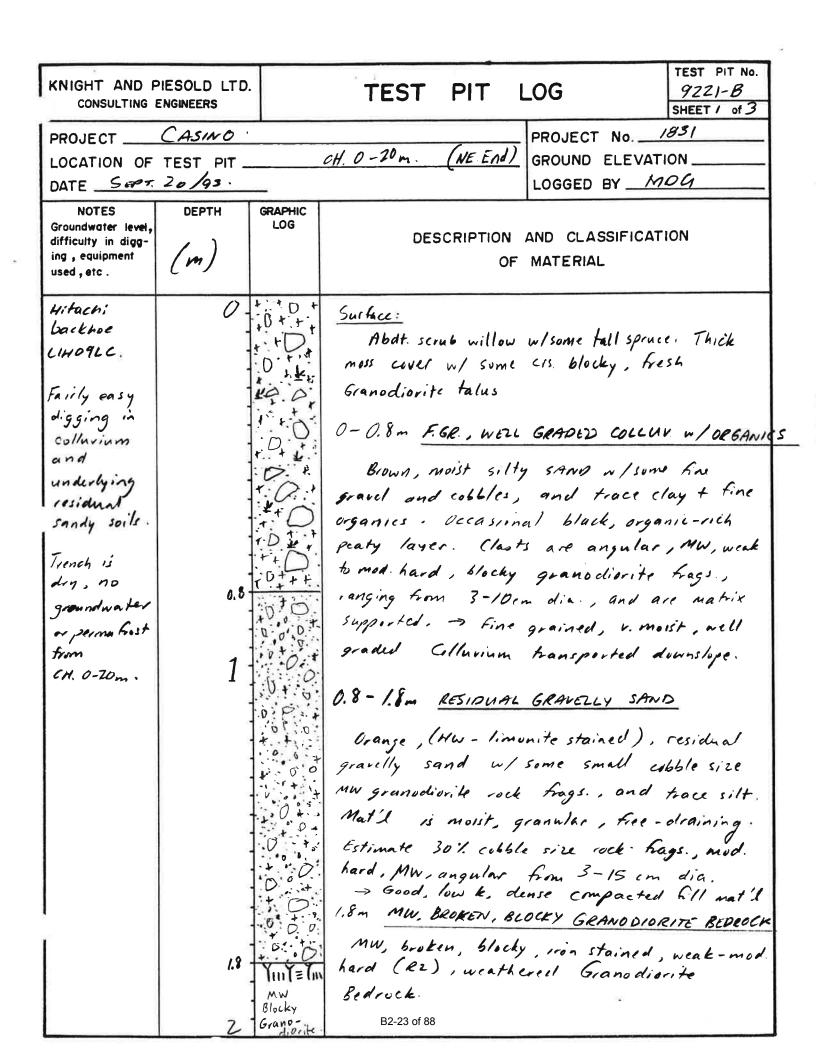
(						
KNIGHT AND F		10 <b>3</b> 4 a 4	TEST F			TEST PIT No. 9220-A SHEET 5 of 5
PROJECT	CASINO.				PROJECT No.	1831
LOCATION OF			CH. 60 - 65 m	n ;	GROUND ELEVAT	
DATESEP					LOGGED BY	
				- [		
NOTES Groundwater level, difficulty in digg- ing , equipment used , etc .		GRAPHIC LOG	DESCR		AND CLASSIFICAT MATERIAL	ION
Hitachi backhoe UHO9LC Fairly easy digging in	0	**************************************	Brown, loose, Gravel and can -> well gradea	moist s bbles 1, f.gr	SRADED COLLUI , the sand i , trace fine room . colluvium hible due to hig	n/some of frags.
Colluvinm (non-frozen).	* 0.4	Residual Sand 4 broken rock CH. 70-90m	(silf) content.			
Diffi ault . digging in boken, blocky bedrock.				d, crs	ocky GRANDDIOR(1 blocky Granodic	
	1	DYOU TINTE TIN SW-FR, hard, blocky Grano-	<u>CH. 65-70m</u>			
		dionik Bedrock	17.3 Ref	usal in	colluvium (A frozen colluvium teeth marks ,	-only
Fairly easy digging in			* <u>CH. 70 - 90 m</u>	63 (C)	And the Altano	
non-Rozen colluvium and residual	-		0.4-0.8	RESIDO	um, A: Above AAL SAND & . Cles of GRANOD	BLOKEN,
sond w/ nzk from CH. 70- 90 m.	2		1.0Am FRESH,	BROKE	Refusal)	
	6		B2-19 of 88			



B2-20 of 88

		CITE A	11. N. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1.	uth 2014		•
KNIGHT AND F			TEST	PIT I	_OG	TEST PIT NO. 9220-C SHEET Z of 3
PROJECT	ASINO			¥	PROJECT No.	1831
LOCATION OF	TEST PIT_		CH. 20-50 N	1 1 1	GROUND ELEVAT	
DATE SEPT.	21/93.				LOGGED BY	MOG
NOTES Groundwater level, difficulty in digg- ing, equipment used, etc.			DES		AND CLASSIFICAT	ΓΙΟΝ
Hitachí backhoe UH09LC ·	0 C <u>H.30 - 50 m</u> 3	+0,+1++0++0++	the west Surface:	-> Perma		
Rematrost table - varies from 0.3-0.5m.	CH-20-3U 0.5		Grano diorite	boulder	all, angular fre talus, Black of from CH. 30-50 n fOED COLLUVIN ove)	ganics (peat)
lery difficult digging - can only scrape - in frozen collarium. Estimate 30% excess. visible ice in figrained	1-	Broken, fresh, v.hard, crs. grained Grano- diorite Bedrock.	(see p.1). comprises b ut trace c supporting some small	Mat'l rown sar lay & org fresh, ha. boulde	Collavium, A is v. moist to w ndy silt and v. yanies Capprox of Grano diorite Capprox 40%	et and fine gravel . 60%), cobbles.w/
matrix of criling. Ice is present as thin lenses. up to Zem thich.			CH.20-30n 0.3n dept	n Form	atroit table si CH, 30 - 50 m à Collarium for a bottom of tr a 0.3 - 0.6 m	hallows to
Note: Note: Trench finzen inder moss from (H. 50- ~100m - did not attempt to excavate (v. difficult digging).			Briken, v. between CH. <u>CH. 30 - 50</u>	crs. blocky 20-30m <u>m</u> :	BLOCKY GRANODI granodiorite be n Colluvium - uspect at shak	drock

anat in	÷.,	157夜黄山表	6 Britin i			
KNIGHT AND A			TEST PIT	T L	OG	TEST PIT No. 9220-C SHEET 3 of 3
PROJECTC	ASINO				PROJECT No/	831
	TEST PIT_	25m se	ection upslope from roa	ad (	GROUND ELEVATI	ON
NOTES Groundwater level, difficulty in digg- ing , equipment used , etc .	<b>DEPTH</b> (m)	GRAPHIC LOG	DESCRIPT		ND CLASSIFICATI MATERIAL	ION
Hitachi backhoe LIND9LC	CH. 15- 25m.		<u>Vegetatin</u> : Scrub willows Thick moss and	w/ som	e shunted black sp ular large bould	oruce , Ider
Very easy digging in collurium			talus on surface CH. 0-15m:	ε,		
and residual soil.			Frozen Collu organics, as a page 2).	above	(see frizen	Colluvium,
Trench is Idry, walls		Did D	CH. 15-25m (-000			
Stable, well	0,7 -	+++++	0-0.7m FINE COLL	GRAIN	ED, WELL GRA	DED
drained.	1	+ + + + + + + + + + + + + + + + + + +	Brown, moist fine gravel and (approx. 80%), small boulder	fine organ suppor size	sandy silt w/ nics, trace clo hing crs graves granodiorite rock	some v. ny matrix I to k frags.
Failly casy digging in wenthcled, badly broken, beavily iron	<i> </i> ,   -	H: + + YIII = TIII MW-HW Badly broken, Oxid. Zed Granodionte	(approx. 20%). Fresh, v.hard & diorite. Organi U.7- 1.1 m <u>RESI</u>	Clast comp is Cr IDUAL	ise crs. grained outs) throng hom SILTY SAND	r, Бсоску) И дгано- t.
oxidized Granodiovik Bedrock		Bedrock.	Orange residu fine gravel. Ma dense, well drain 1.1- 1.6m <u>MW-HW</u> <u>BEDRE</u>	ned,	NOT TROLEM.	
		Botton	Mw-HW, broke Bedrock. Limonite pervasive throughou	ten, tr. /hem ht rock	atite on frac. k. Apparent	ste & shear
	2		fabric parallel 177/90: Rock 1 Spacing.	to (4	in galena vein	ar.



KNIGHT AND F			TEST	PIT I	LOG	TEST PIT No. 9221-B SHEET 2 of 3
PROJECT LOCATION OF DATE	TEST PIT_		CH. 20-45 m GROUND ELEVATION LOGGED BY MDC		10N	
NOTES Groundwater level, difficulty in digg- ing , equipment used , etc .	DEPTH	GRAPHIC LOG	DES		AND CLASSIFICAT	TION
Hitachi backbot LIHOGLC Trench fivzen fivzen firm CH. 20- m Moderatchy difficult digging in top 1.0 m of collowium of collowium of collowium of collowium of collowium of collowium at 1.0 m. Refusal in fivzen collowium at 1.0 m. Water flowing in bottom of trench water flowing in bottom of trench water flowing in bottom of continuates tobk = depth to forma frost in continue to forma frost	Reima frost	0 + + + + + + + + + + + + +	Brown, que silt and org granular, s moist. Froze	andy C	LUVIUM u/ de well graded alluvium . Ma opprox. Im .	/ colles,
	2		B2-24 of 88			

10.25	9.857.872	지아 한 산 수수를			
KNIGHT AND		TEST	PIT	LOG	TEST PIT No. 922/-B SHEET 3 of 3
PROJECT	CASINO			PROJECT No. 12	831
	TEST PIT	CH. 45 - 90	m	GROUND ELEVAT	
DATE		(W.End on R			
DATE	1. 20/12	( wiend on w	oud j	LOGGED BY	104
NOTES Groundwater level, difficulty in digg- ing , equipment used , etc .	DEPTH GRAPH LOG	5	DESCRIPTION AND CLASSIFICATION OF MATERIAL		
H: tach: backhoe UNO9LC.	0 + 0	0-0.9m	BROWN, U GRADED	NET, F. GRAINED, COLLUVIUM	WELL
Failly eary	- C			, fine sand w,	
	1.4.5	1. 2 fine gravel	and cob	bles, trace v	fine
digging in Colluvium	±	Arganics a	nd clau.	Mat'l is f.g.	., well
Trench walls		tio graded a			
10327 (595.363 A066-	12 1	- Too us	t for cont	truction matil .	
dry and stable. residual	<b>6 • • •</b>				la a sino
soils well		s .t st. L01.	angular,	mod hard, cobb	7 5100
drained.	0			s., ranging free	
		O. dia., Support	led in r m	wist time grained	matrix.
		·• +		GRAVELLY SAND	
Vory easy	0.9			it granular res	
digging in	1			Mat'l is u	
f.gravelly residual	9721-81			articles are we	
sands.	CH. 70m /			decomposed gr	anodier H
from 0.9-1.9m	Sand).	: (typical	residual n	not ).	
(non-frozen)		0 - Potentia	good s	ource of low per	meability,
		ou dense com	pacted h	Il matil.	
Frozen section		· - occasiona	l crs. gra	vel layer up t	6 20 cm
in residual		S Thick all	ng trench		7
Francelly sands	/ ∖ ]∴∷	<u> </u>			-
at ~ 1.3 m depth		1.9 MW.	BROKEN	GRANDDIORITE B	EDROCK
Fram CH.80-85m				hard Grandalio	1
14 14 11		Bedrock.			لم
Very difficult discise at		Nela D	ecidenal -	andly sAAA.	1
disging at 1.9 m.		IVORE &	road +	avelly SAND pin c Im colluvian	CATJ DUT
C ( M )	1.7 Yur	ET brok	in time b	locky, MW Gran	odiorite
	2 MV	✓ B2-25 of 88	some resi	ichai sand.	

KNIGHT AND PIESOLD LTD. CONSULTING ENGINEERS

PROJECT \_\_\_\_CASINO

DATE \_\_\_\_\_\_ SEPT. 28/93

DEPTH

(m)

0

1.2

17

YINYEY Blocky,

fresh

NOTES

Groundwater level.

difficulty in digging, equipment

used, etc.

Hitachi

backhoe

UH09LC

TEST PIT No.

TEST PIT LOG 9221-C SHEET / of 3 PROJECT No. \_\_\_\_\_\_/83/ CH. O- 30 m (East End) LOCATION OF TEST PIT \_\_ GROUND ELEVATION \_ LOGGED BY \_\_\_\_MDG GRAPHIC LOG DESCRIPTION AND CLASSIFICATION OF MATERIAL ct . W+-Surface : Abolt. thick tall spruce trees w/ occasional Small paper birch. Abdt. Labrador ten and moss cover. Vegetative mat comprises 0.3m thick moss, fresh root network. 0.4 0-0.4 ORGANIC-RICH COLLUVIUM. Dart brown, firm, moist clayey silt > D'O w/some sand and fine gravel matrix Diat. (approx 60%), supporting SW, hard, sub-100 rounded cobble size granodiorite rock frags. 5+ 0: (approx 40%). Also, trace fresh roots throughto D out Mat'l is sl. plastic, much greater OPO 000 than optimum moisture content. 04 ju :00: 0.4-1.2 m BROWN, WELL GRAPED COLLUVIUM +D, light brown, med. dense fine sandy silt w/ 0 trace fine gravel and clay matrix (approx. 50%), and SW, mod. hard angular 00 Granodiorite colobles. Mat'l is generally SOOD matrix supported, competent, slightly moist. ·D.C No organics.

> - Good source of random fill. Granodierite clasts range from 5-15 cm dia., blocky. 1.2 - 1.7 RESIDUAL BROKEN ROCK & SANDY GRAVEL

Orange, loose, crumbly, dry (well drained) residual sandy gravel and broken rock. Granodissie Mat'l comprises approx. 70%. MW, weak-Bedrock B2-26 of 88

KNIGHT AND PIESOLD LTD. CONSULTING ENGINEERS

ROJECT \_\_\_\_CASINO

NOTES

Groundwater level.

difficulty in digging, equipment

used, etc.

## TEST PIT LOG

(4 0-30m (cont'd) GROUND ELEVATION

LOCATIO	N OF	TEST	PIT	(
DATE	Sep	+. 28/	193.	

GRAPHIC LOG

DEPTH

11 47		CLEVAI	
	LOGGED	BY	MDG

PROJECT No. \_

TEST PIT No.

SHEET 2 of 3

1831

9221-C

## DESCRIPTION AND CLASSIFICATION OF MATERIAL ... (cont'd)

mod hard Grano diorite rock frags - angular ranging from 2-10 cm dia (fine blocky), and dry residual sandy fine gravel. 1.7 M BLOCKY, FRESH GRANDDIDRITE BEDROCK Broken, v. crs. blocky, crs. grained. fresh, v. hard Grano disrite Bedrock \* <u>Note</u>: Blocky granodiorite only outwop along 1/2 length of trench from

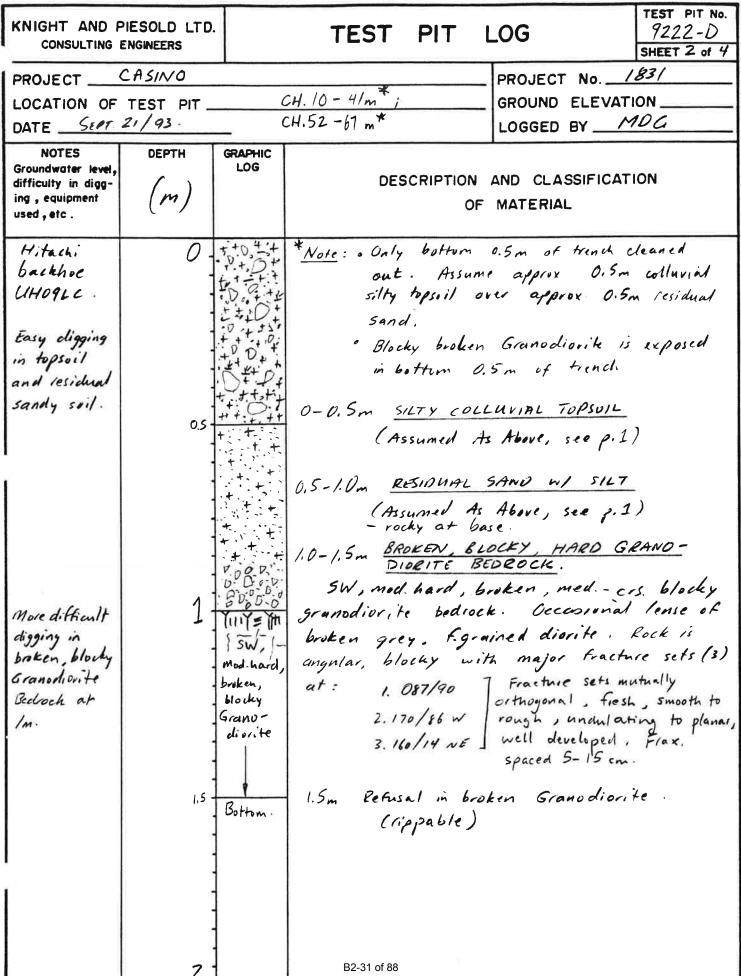
CH. 0-30m Remaining portion bottomed in residual broken rock & sandy gravel. Therefore suspect undulating contact of fresh, blocky Granodiorite Bedrock.

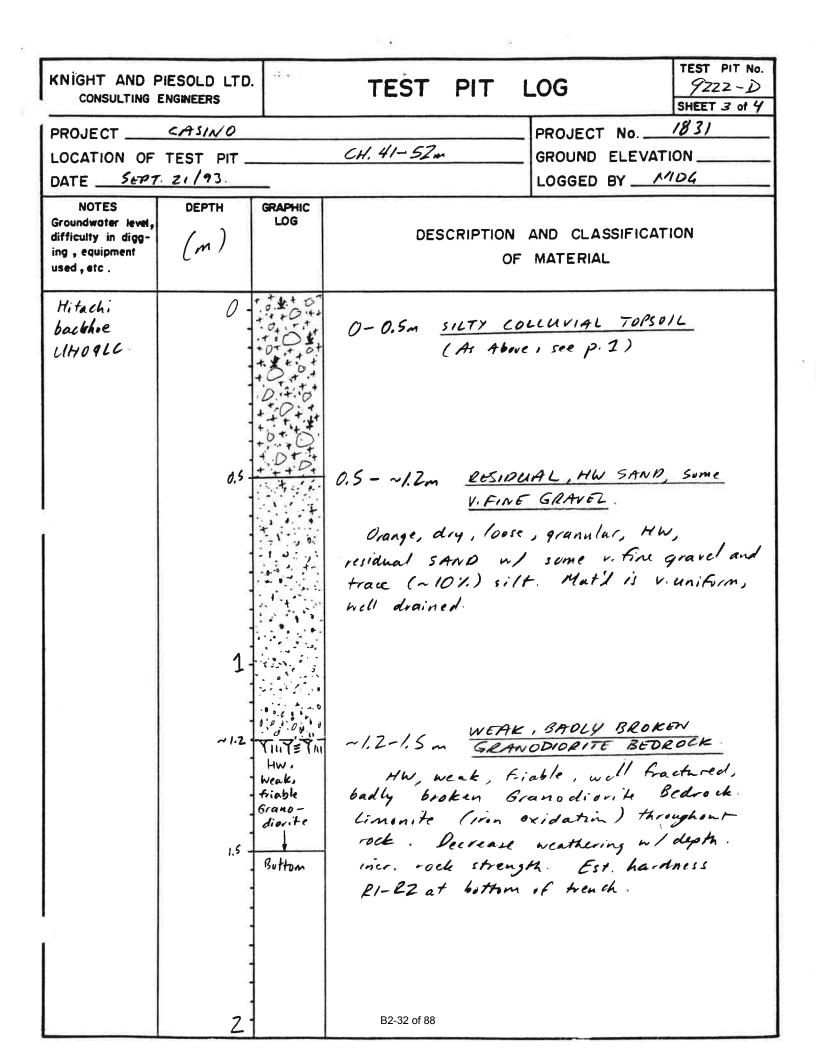
KNIGHT AND P			TEST PIT LOG				
ROJECT	CASINO			PROJECT No.	1831		
LOCATION OF	1		CH. 30 - 100 m	GROUND ELEVAT	10N		
DATESept.	28/93.		(West End)	LOGGED BY	MDG		
NOTES Groundwater level, difficulty in digg- ing, equipment used, etc.	DЕРТН ( м )	GRAPHIC LOG		AND CLASSIFICAT MATERIAL	ION		
Hitach; backhoe, UHO9LC	0 -	+0+0+0+++	0-0.3 DEGANIC-RU (Same as about	ie, see p.1)			
	0,3 - - -	+0,0+0+0,0,0,0 +0,0+0,0+0,0+0+0 +0,0+0,0	angular SW, Mod hard Granodiorite rock				
a	0,9 1 -		- Matil est mod. h. rundom fill (suil only sl. moist, v. w sorted, massive dep 0.9 - 1.6 m <u>RESIDUAL</u> HW, orange residua	+ rock fill) ell graded, osit SAND*8 ROC	since pourly K FRAGS		
Permafrost Table @ 1.5 approx. 1.5m along 50%. of trench "un CH. 30-	7		Fine gravel and silt supporting MW-SW blocky, broken Gra (approx. 50%). 5-30 cm dla. * <u>Note:</u> Occasional z	Capprox. 50 , hard angul anodiorik rock Rock frags.	ar Frags. ange from		
. 00 m .	Z		approx 1.5 m o of trench from in residual san 162-28 of 88 cess int	lepth along CH. 30-100m. dy math - v.	Approx 50%. PF table hard est.		

×

	ومروحيا برجو	<b>y</b> =			
KNIGHT AND PIESOLD LTD. CONSULTING ENGINEERS		TEST PI	Г	LOG	9222-C
CONSULTING ENGINEERS PROJECT <u>CASINO</u> LOCATION OF TEST PIT <u>DATE SEPT. 22/93</u> NOTES DEPTH Groundwater level, difficulty in digg- ing, equipment used, etc. Hitachi backhoze UHO9LC Very difficult digging in frozen (permafrost table near ground surface under thick insulating moss cover.		TEST PI Trench at .094° BR DESCRIP <u>Surface:</u> Scrub birch un moss/lichen w/ spruce trees up permativost vegete - Permativost vegete - Permativost vegete - Permativost table approx 0.3 m d O-O.9 <u>F202EN</u> (SILTY) Brown, fvozen, fine sandy silt un (matrix approx. E to small angular	TION OF Some to I Some to I Some ince ince ice-1 ice-1 So 1.) So 1.)	PROJECT No GROUND ELEVAT LOGGED BY AND CLASSIFICAT MATERIAL and thick soft, sparse, stunted 2ft. tall. (Typica of surrounding of nediately under mil- <u>-RICH, FINE GRA</u> <u>-RICH, FINE GRA</u>	SHEET / of / 1831 TION MDG TION hummocky black 1 area). oss at AINED JIC LAYEES mprising an ics ge graved prox. 20%).
Refusal in 0.9-	Battom (ReGusal)	(matrix approx. E to small angular Clasts are angui divrite & range Rare boulder up • Colluvium is 20% excess visi discritinuous, un throughout sitty • Occasional i also present • Fine grained thaws. Mat'l fine, sands w/ Mat'l thaws to moisture conte	30 %.) bloc lar, fron to ible ible ible ible in dular interb in colli fro some some	, supporting lar ky colobles (ap) blocky, Fresh, ha few cm up	ge gravel prox. 20%). ard grano- to 0.15 m. ). Estimate thin (1-3mm. enses ard, well bonded. ty organics Ocm thick. strength when rated silts, clay. high total wigh total wigh total after
2		30-40 % of mo B2-29 of 88	ut'1)		

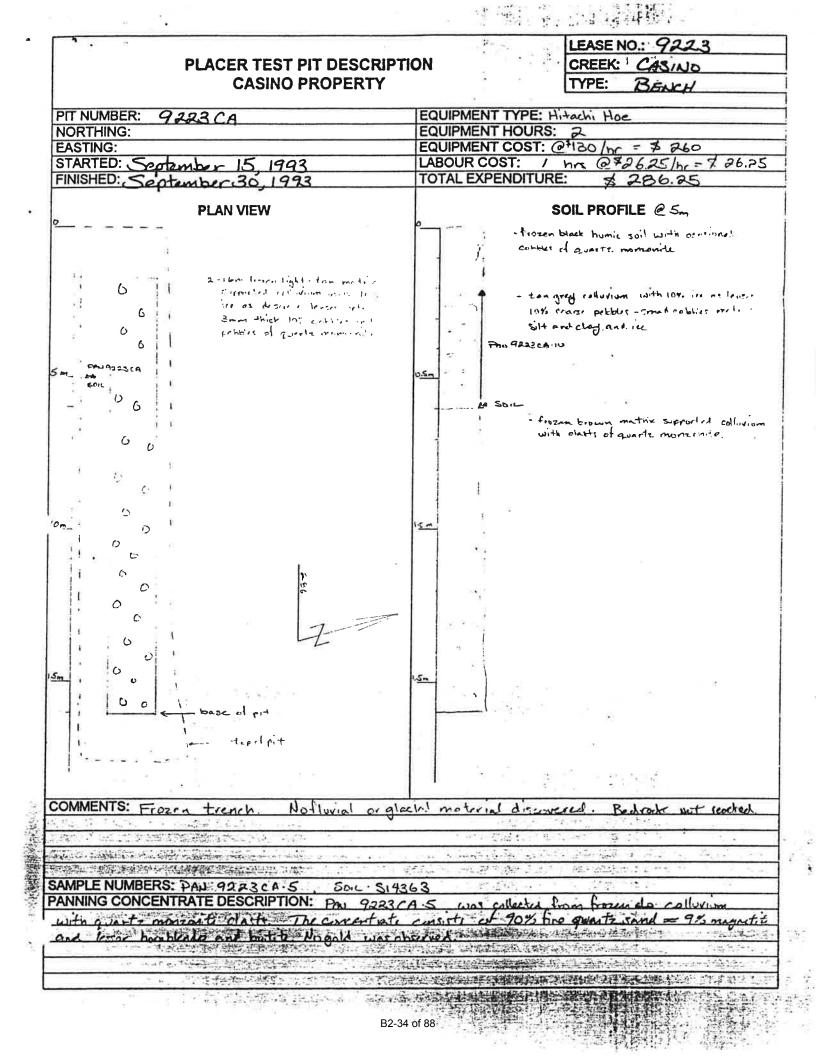
KNIGHT AND PIESOLD LTD. CONSULTING ENGINEERS			TEST PIT I	_OG	TEST PIT No. 9222-D SHEET/ of 4
PROJECT		a de <sup>o</sup> cratu	ON (OLD CUT)_E-W LEG .	PROJECT No.	
LOCATION OF			0-10m (West End)	GROUND ELEVAT	
			U TOM (WESTERNA)	LOGGED BY	
NOTES Groundwater level, difficulty in digg- ing, equipment used, etc.	DEPTH	GRAPHIC LOG		AND CLASSIFICAT MATERIAL	FION
H;tach: backhoe UH09LC	0 -		Vegetation: Tall willows and up to 40° tall. Occasion	al birch . Very	y Thin MOSS/
Very easy excavation in	-	++++	lichen cover and sm. 0-0.5m FINE GRAINE TOPSOIL W		
collurial topsuit and residual		+ + + + + +	TOPSOIL -W	ELL GRADED	welly eith
Sandy soil	9	I FOR O	Brown, slightly moist.	time vitine gra	small
from 0 - 1.5 m	9222-01 0.5-	1 t + +	w/ some sand, ers.	grave and -	n Aries
1	CH.5m. /		weathered angular, mu	a have granding	where a
All mat is	$  \rangle / \cdot$	· triage of	make-up approx , 20,	, of matil. To	are rout
failly dry and well drained.		the first states of the second	frags . throughout -		
Trench is dry-	I Å I	+ +	by organic dependant		
no groundwates	$ / \setminus$	r ; +	weathered granodisrik		12
or permentrost	$ / \rangle$	· · · · · · · · · · · ·	Mat I is fairly well		
or evidense	1.	1080	real s for y week	<b>,</b>	
thereof.		YmY⊊Ym	0.5-1.0 m RESIDUAL	SANDW/ SILT	
Tunch walls	-	HW, Badly			
are stuble and very dry.		broken,	Orange, dry. lous		
		fine blocky Granodiorit	grained sand w/ s		
	-	Bedrock	gravel. Main is we		-
	-		down to HW, badly	-	Gonte rock
			alsome residual so		
E. I. com	1,5 -	MW	-> Excellent potents		
Fairly easy		Button	perm. fill since	· · .	
digging in weathered,			moisture 2 partie	to break clow	n waen
Swken grano-			compacted	LEAK OAA	ITT RID
diorite bediock.	-		1.0-1.5m BROKEN,		
	-		HW, weak, badly diorite Bedrock	broken, weather	ed Grano-
	2 -		B2-30 of 88		

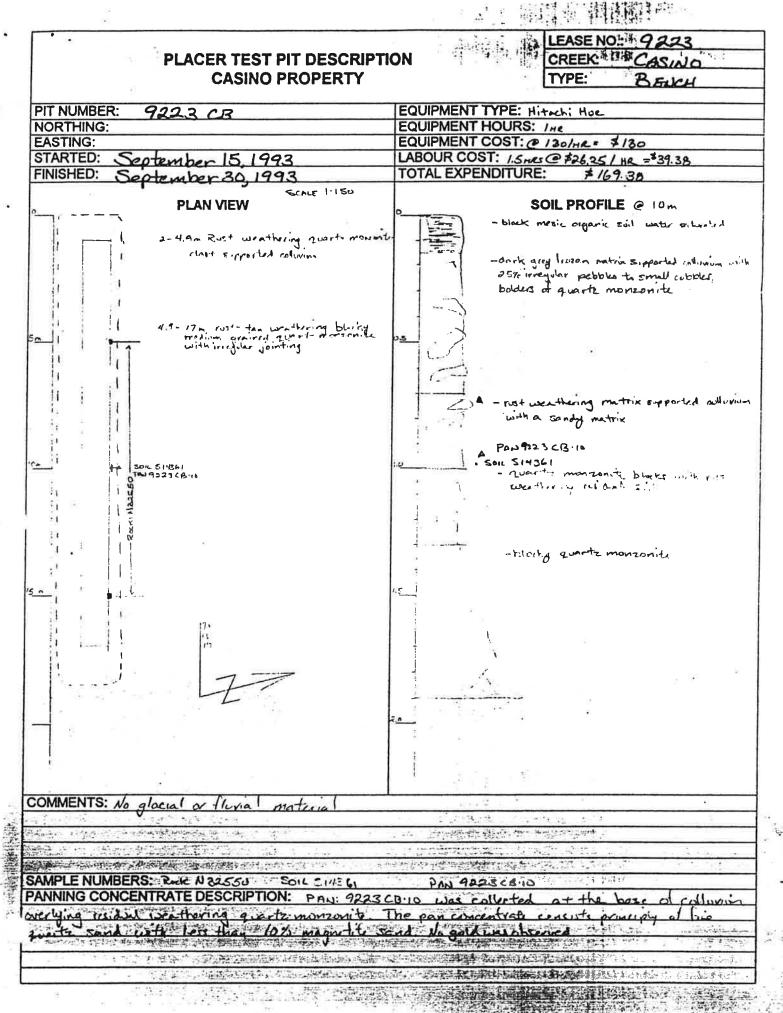


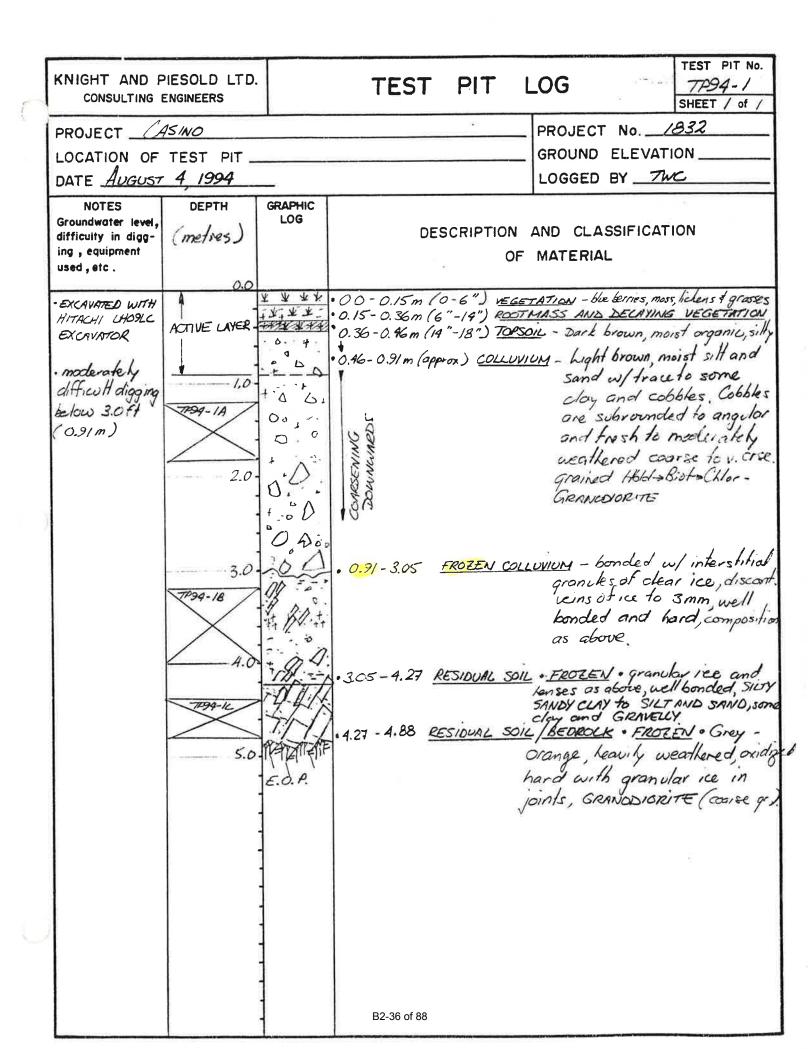


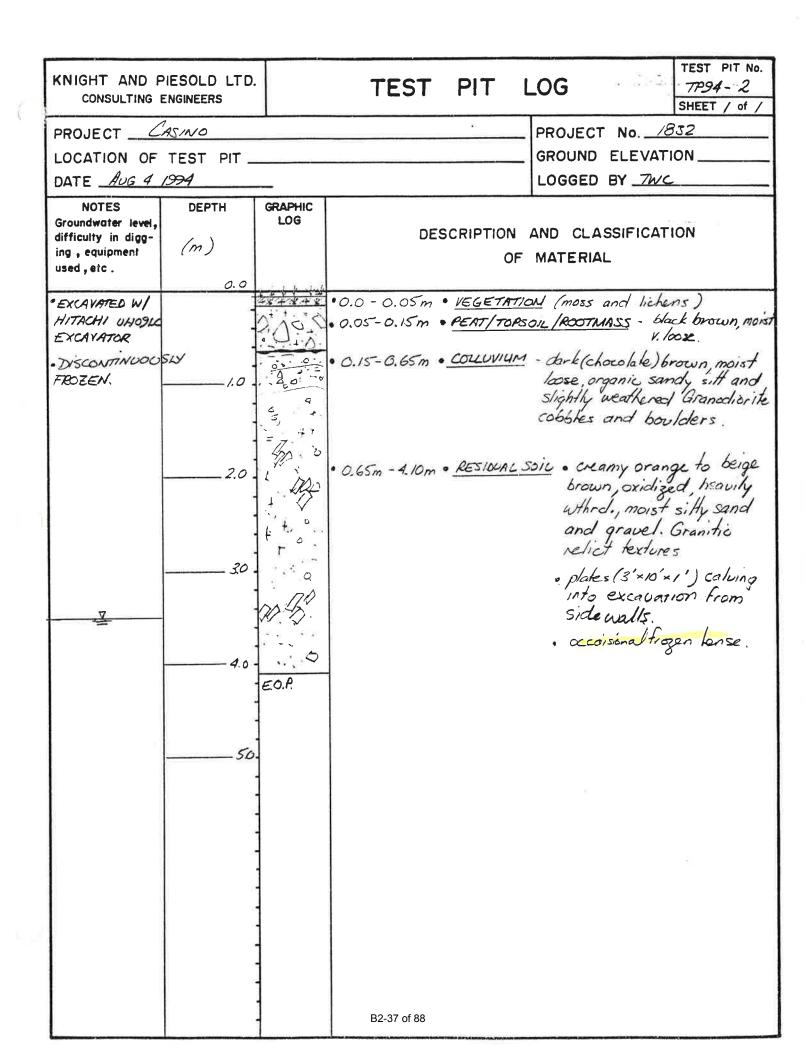
Description of the second s		5 <del>1</del>	17.2.77	· · · · · · · · · · · · · · · · · · ·	
KNIGHT AND F			TEST PIT L	LOG	TEST PIT No. 9222 - D SHEET 4 of 4
PROJECT				PROJECT No.	/ 83/
LOCATION OF	TEST PIT	V-S SECTI	ion at 150° BRG.*	GROUND ELEVAT	ION
DATE SEPT.			4.0-50m (North End to) South End	LOGGED BY	1DG
NOTES Groundwater level, difficulty in digg- ing , equipment used , etc .	DEPTH	GRAPHIC LOG	DESCRIPTION	AND CLASSIFICAT MATERIAL	ION
Hitochi backhoe UH09LC * N-S SECTION is <u>NEW</u> Trench cut.	9222-D2 (matrix only) (4.40m		0-0.6m SILTY COLLUM Brown, firm, slightly v.fine sand, gravel, (roots throughout). gravel and cubble c	y moist silt w cobbles and org Estimate 10- lasts comprisin	some ganiès 20%. 5 SW,
Very easy digging in withy collerial		) + + 0 + + + 0 + + + 0 + + + + 0 +	hard, sub- cinqular go 0.6 - 1.0 m <u>RESIDUAL</u> FINE GR Orangish brown resid	AVEL **	VERY
topsvil and resident	$\downarrow$	+ • • • •	fine gravel and too		
tandy soil.	Residual	· · · · · · · ·	ers granular, well	drained, dry	and loose.
	sand pinches ont to On at CH.25 m downslope	++++++++++++++++++++++++++++++++++++++	Contains some gran From 5-10 cm. di 10-304. dlong N-S	portion of the	Frays. ies from nch).
	-> Appiox Im silty collevial topsoil	FE Broken, Cis. blocky	1.0m - 1.6m BROKEN	DIORITE BEDR	OCE
	over broken -	Grano- diorite	Slightly broken, t	1. 1. 12-1	
	blocky Granodiorite Rock from CH. 25-50m.	Bed 10 C K	crs. grained Gran Some zones contait sand in fill along Fractures are well	n approx. 20 Fractures. I developed int	three (s)
Refucal at _			mutually perpendice	alar sers = 1	wo sers
approx. 1.6m	1.6 -		are steeply dipping	and trend p	malit a
along N-s			perpendiculas to the	e inthen aligh	ment, ine
portion of	-		third set is shallow	vy dipping	
trench in fresh, hard blacky			slupe to t	sand pinches of the south to a grades the re	only o.c.m
Granodiorite,	2		B2-33 of 88 gravelly s	and.	

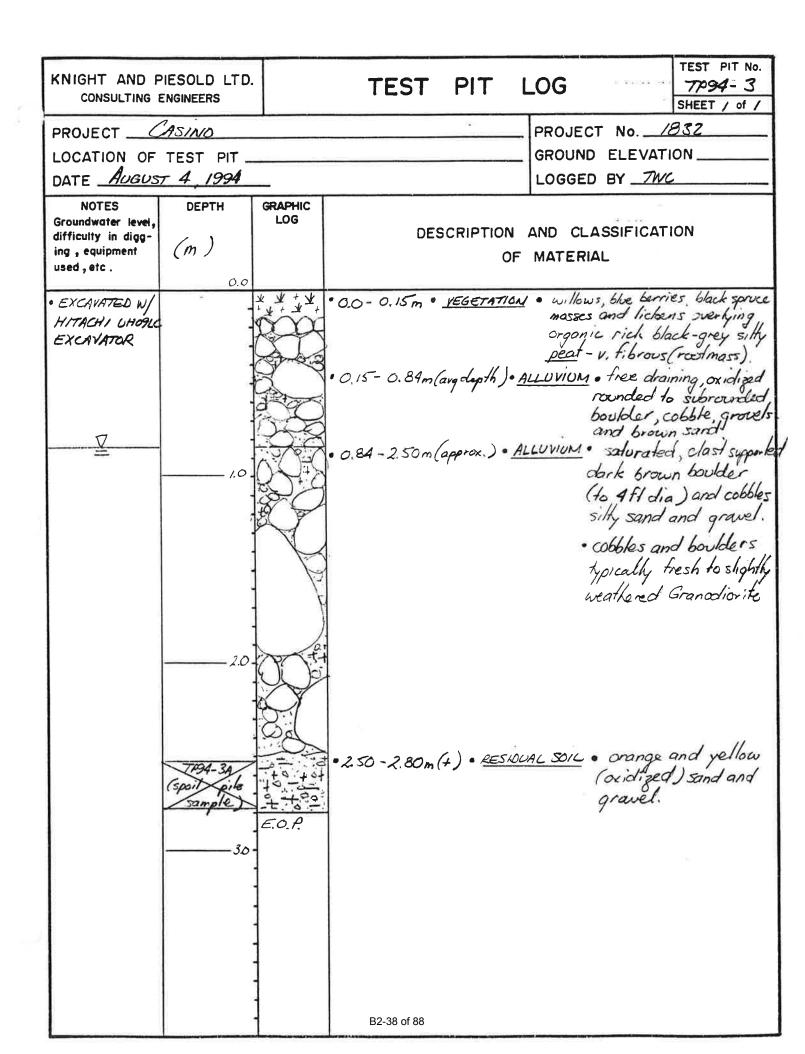
<u>}</u> {





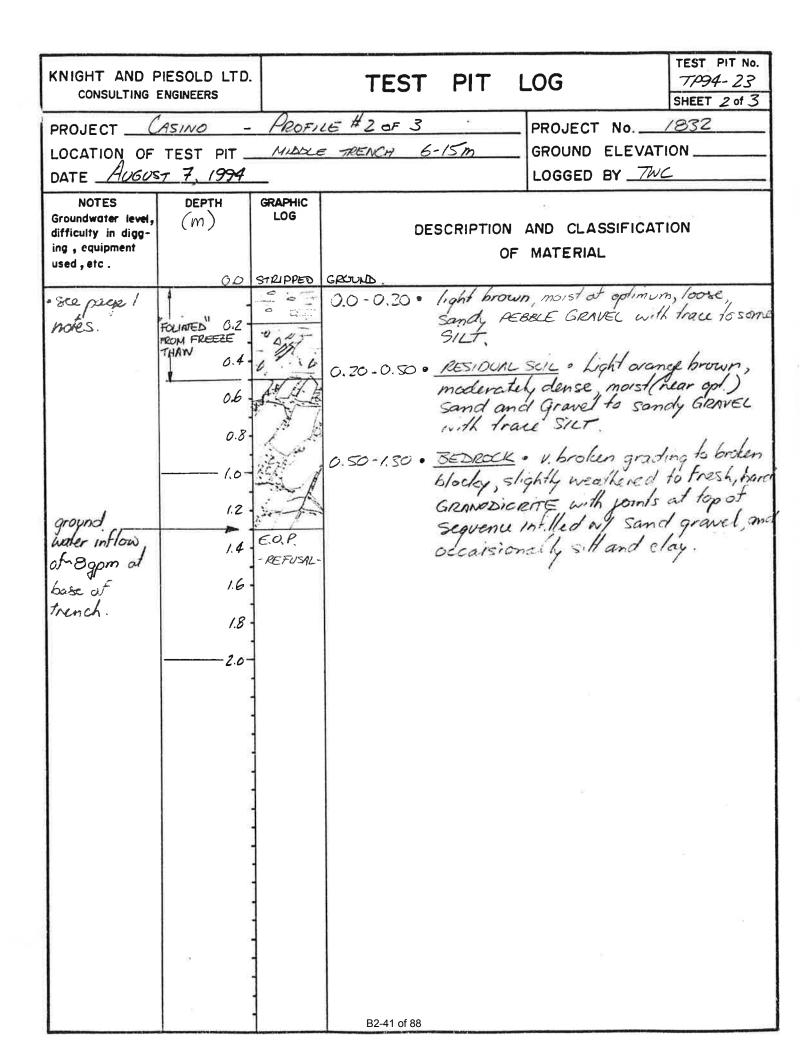


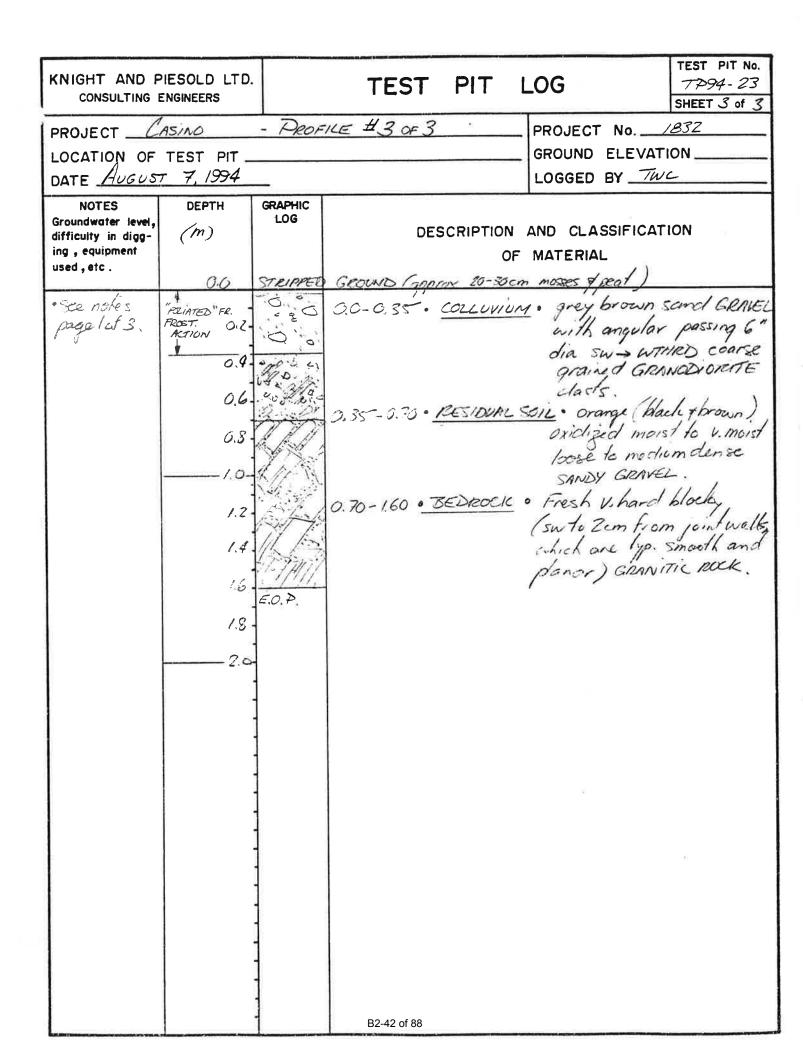


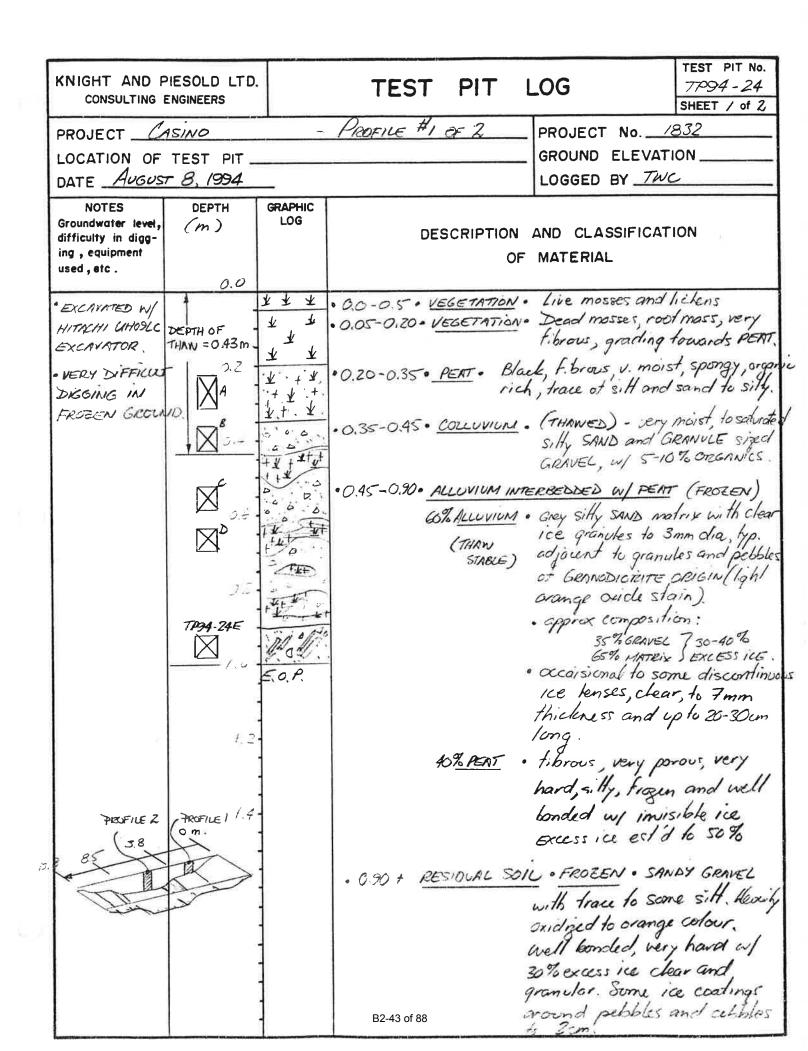


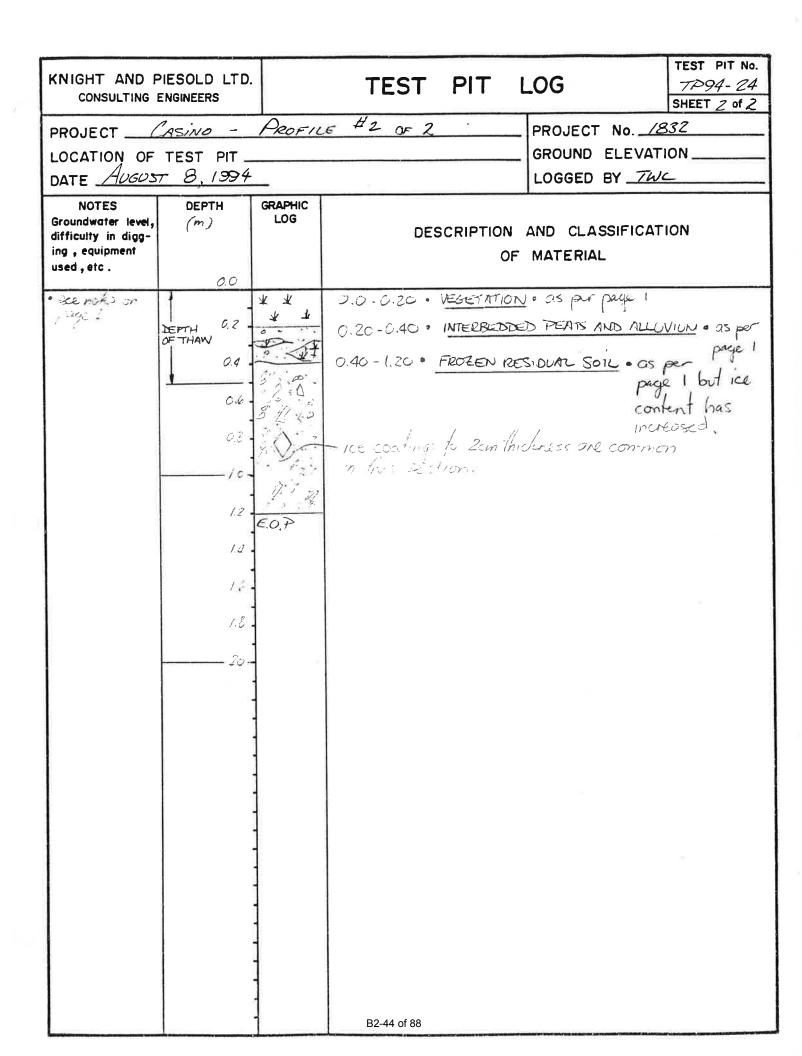
KNIGHT AND F			TEST PIT LOG TEST PIT No. 7794-70 SHEET / of /
PROJECT	ASINO		PROJECT No/832
LOCATION OF	TEST PIT		GROUND ELEVATION
DATE AUGUS	T 5. 1994		LOGGED BY _7WC
NOTES	DEPTH	GRAPHIC	
Groundwater level, difficulty in digg- ing , equipment used , etc .	(m) 0.0	LOG	DESCRIPTION AND CLASSIFICATION OF MATERIAL
USED, erc. • EXCAVATED W HITTACHI CHO9LL • V. DIFFICULT DIGGING IN FROZEN GROUND.	0.0 0.20 0.40 0.40 0.60 0	* *	•0.0-0.20 • VEGETATION • MOSSES and lickuns •0.20-0.35 • PEAT • brown, f.brows, spongy, v. moist. •0.35-0.85 • COLLUVIUM • Beige - brown silly sand and GRAVEL with 20-308 64 volume angular to sub angular clast of oxidized (slightly withed.) to fresh GRANDDIDENTE (to cobble size) •0.85-1.00 • RESIDUAL SOIL • orange -tan - yollow Silly samd and gravel w/ plot-blocky pieces of Slightly withed. Cannedwarte to coarse gravel size.
			B2-39 of 88

KNIGHT AND PIESOLD LTD. CONSULTING ENGINEERS			TEST PIT I	_OG	TEST PIT No. 77994-23 SHEET / of 3
PROJECT	AsiNO	- Pk	POFILE # 1 OF 3	PROJECT No/	332
LOCATION OF	TEST PIT_	HEAD OF	TRENCH TO 6.0 m.	GROUND ELEVAT	ION
DATE AUGUST				LOGGED BY TH	د
NOTES	DEPTH	GRAPHIC		A set of the set of th	
Groundwater level, difficulty in digg-	(m)	LOG	DESCRIPTION	AND CLASSIFICAT	ION
ing , equipment				MATERIAL	
used, etc.	60	STRIPPED C			
· EXCAVATED W	0.0	. OP	0.0-0.30m · COLLUVIUM	· loose grey bro	wn sand and
HITTACHI UHO9LC	0.2	· P		GRAVEL, trace	s,H.
EXCAVATOR	7794-23A	-	0.30-2.56m . RESIDUALS		
· STRIPPED IN	0.4 -	+ maint +	0.30-2.36m • <u>REPIDUNED</u>	<u> </u>	1 hand of
SUMMER 1993. BUT HAS NOW	0.6	- loose	0.30-0.50	- Orange exidized Residence Soil -	attanto
THAWED TO		t c t		Some SILT, SAN	sand some
BEDROCK	0.8 -	i D + i		gravel to grave	U. Foliated
		AS TO		from Frost act	on
	1.0-	0. 4 0.5 1	05.20		
	1.2	4 9.0	0.50-2.56	- Orange and dri oridized v. wea	k hearih
	/	DP 9		wthrd/complet	they wthred
	1.4 -	12:00		fride bedroel	Elswoy 1
	1.6	0° 27 2 0		fridde bedroel GRAVEL W/ trace	to some sitt
		A D		and day depen	ding on
	1.8-	1		alteration Sel	RI strength
	2.0			ofter Hoelet Bro	wn table.
	2.0	· Ash		Francis brain	then No"
	2.2 -	A.D	-	Fragments larger dia crumble in t. blow of harmer	inders of 1
		Vimoist		the of he	1 settle
	2.4 -	dense.		arw of nammer	to facen
	_6	2.56 M	-	gravel.	
	16	E.O.P.			
	2.5.			$\langle \rangle$	
			TRENCH DIMENSION	/S (NTS).	FILE
			BRG 247°		ж.
	-			PROFILE	
			PROFILE 3		
					$\searrow$
				5	6m
			FREEZING	9m	
		1	and a start	17m GROUNIE	WATER 1.1
			B2-40 of 88	INFLOW	- Bapmedd.









KNIGHT AND P			TEST	PIT	L	_OG	TEST PIT No. 7794-25 SHEET / of /
PROJECT	CASINO			-5		PROJECT No.	832
LOCATION OF	TEST PIT _	-				GROUND ELEVAT	LION
DATE AUGUST	8,1994					LOGGED BY Th	ис
NOTES Groundwater level, difficulty in digg- ing, equipment used, etc.	<b>DEPTH</b> ( <i>m</i> ) 0.0	GRAPHIC LOG	DES			AND CLASSIFICA MATERIAL	ΓΙΟΝ
•EXCAVATED W/ HITACHI UHO9LC EXCAVATOR	0.2 0.4			THIN D SURFAC	xes 1200		IN BOUDER
	0.6 TH94-25A <sup>6.3</sup> 1.2 1.2 TH94-258 1.4 joint int: 1.6 1.8 2.0	EQ.P. (REPUSAL)	0.90-1.10 °	RESIDURS	FR 5777 (	ARGE ANGULAR TO ESH, LIGHT YELLO RINING, BOULDER P. PRESING EST D HARD, SUPPORT D HARD, SUPPORT D AND CRAVEL -10% ORGANICS. AND AND CRAVEL -10% ORGANICS. AND CRAVEL OXIDATION, WED. AT CONTACT BETO OXIDATION, CON AT CONTACT BETO AT CONTACT BETO A	W SURFACE S AND COBBUC TSIA) V. STREENG PRED IN A HOIST SILTY ,2003E WITH WIN, heavily Fe Shering bands ween talus Dry of se, silty sendy blocky, slightly grading to DioPitE at ats infilled inge sandy silty sondy weathered to from wall
		•	B2-45 of 88				

TEST PIT No. KNIGHT AND PIESOLD LTD. TEST PIT LOG TP94-31 CONSULTING ENGINEERS SHEET / of Z PROJECT No. \_/832 PROJECT \_\_\_\_ASINO GROUND ELEVATION LOCATION OF TEST PIT LOGGED BY \_TWC DATE AUGUST 10, 1994 NOTES DEPTH GRAPHIC LOG Groundwater level, (m)DESCRIPTION AND CLASSIFICATION difficulty in digging, equipment OF MATERIAL used, etc. 0.0 . 0.0-0.04 . MOSS CARPET EXCAVATED W/ ¥ VEGETATION . dead and decaying moss, ¥ · 0.04 - 0.29 · HITACHI UHO94 TP94-31 0.2. pine needles, leaves, branches EXCAVATOR trees (ele.) fibrous and 0.4 V. spongy, dry to slightly 0.6 moist. • 0.29-0.90 · COLLUVIUM · Hard, angular, slightly OB TP94-31 weathered to Fresh clasts of coarse grained equigranular FROZEN GROUND GRANODIORITE colbles and 1.2 boulders (+3" to -3' dia typ) supported in maline of bean 1.4 sandy grovels of trace to 1.6 some all and lease clay. 71994-31E Poorly sorted and well 1.8 graded. Discontinuously 20 FROBEN - typically invisible acarsional clear proinctice to Imm), poorly bonded TP94-31A-top portion granular collevium 318-top portion fires 5-10% excessive 31c-resid soil from crack. · 0.90 - 1.30 · HEAVILY WEATHERED V. BROKEN, BEXROCK top 20 to 30 cm . lose gronular (sandy 310-05 31C. pebble size granules of qts. and feldspar) 315 - trench bottom pecket of in pochets between larger blocks to Fine sand-pea gravel matrix. (12" dia typ) sub angulas slightly weathered to Zam from joint walls GRANDDIDRITE. FROZEN below 1.0 m in fine grained sund and gravel joint infillings - typical weakly bonded upinvisible ice, occ. B2-46 of 88

KNIGHT AND PIESOLD LTD. CONSULTING ENGINEERS       TEST PIT LOG       ITEST PIT LOG         PROJECT       ASMO         LOCATION OF TEST PIT       GROUND ELEVATION         DATE       MOTEST PIT         DATE       MOTEST         Groundwater test, digg       BEPTH         Groundwater test, digg       DESCRIPTION AND CLASSIFICATION         OF MATERIAL       DESCRIPTION AND CLASSIFICATION         OF MATERIAL       130-1.75' BEDADCK - Fresh, blacky, (joint ypacin         Thy 8-34") U.hard care       grained equipranular, Heavil, Chlorilized to lean on point         UMARY       MOTEST PIT         DATERIAL       130-1.75' BEDADCK - Fresh, blacky, (joint ypacin         MOTEST PIT       Cocaisional joint         MOTEST PIT       MOTEST PIT         MOTEST PIT       MOTEST PIT         MOTEST PIT       Cocaisional joint         MOTEST PIT       MOTEST PIT         MOTEST PIT       MOTEST PIT         MOTEST PIT       MOTEST PIT         MOTEST PIT					
LOCATION OF TEST PIT GROUND ELEVATION DATE <u>AUGUST 10,1994</u> GROUND ELEVATION GROUND ELEVATION LOGGED BY <u>Twc</u> DEPTH GRAPHIC LOG DESCRIPTION AND CLASSIFICATION OF MATERIAL 1.30-1.75 <u>BEDROCK</u> Fresh, blocky, (joint spacin typ 8-24") V. hard, carse grained equigranular, Holde = Biotile; gtz. Jeldypar GRAWITIC Rock. Heavily chlorilized to lom on joint unalls. Occaisional joint Infilling of 3-4 cm moist lightly frozen, weakly burdled brown silt and fine sand.			TEST PIT	LOG	11 21
LOCATION OF TEST PIT GROUND ELEVATION DATE <u>AUGUST 10,1994</u> GROUND ELEVATION GROUND ELEVATION LOGGED BY <u>Twc</u> DEPTH GRAPHIC LOG DESCRIPTION AND CLASSIFICATION OF MATERIAL 1.30-1.75 <u>BEDROCK</u> Fresh, blocky, (joint spacin typ 8-24") V. hard, carse grained equigranular, Holde = Biotile; gtz. Jeldypar GRAWITIC Rock. Heavily chlorilized to lom on joint unalls. Occaisional joint Infilling of 3-4 cm moist lightly frozen, weakly burdled brown silt and fine sand.	PROJECT	ASINO	G.	_ PROJECT No	1832
DATE <u>AUGUST 10,1994</u> NOTES <u>DEPTH</u> <u>GRAPHIC</u> Groundwater level, difficulty in digg- ing, equipment used, etc.					
NOTES Groundwater level, difficulty in digg- ing, equipment used, etc.	DATE AUGU	ST 10, 1999		LOGGED BY	we
typ 8-24") v.hard, coarse grained equigranular, Holde = Biotile; gtz. feldspor GRAWITIC ROCK. Heavily chlorilized to lom on joint walls. Occaisional joint Infilling of 3-4 cm moist lightly frozen, weakly borded brown sitt and fine sand.	Groundwater level, difficulty in digg- ing , equipment	DEPTH	1		TION
B2-47 of 88				typ 8-24") V. grained equique Holde = Biotike GRANITIC ROCK. Chloritized to 1 walls. Occaisi Infilling of 3- lightly frozen, w brown sitt and t	hard, coarse anular, sqtz. feldspor seauily am on point onal joint 4 cm moist/ eakly bunded inc sand.

	-				Gold Project					of 1
(	Contra		Kluane				CAT 322C	_ Date Start		
	Loca				ment Facility		2.7 m	_Date Complete		
С	oordin	ates	6,952,06	1N, 6	13,073 E (UTM NAD83)	Elevation:	1003 m		by:	
	-			(7)				Reviewed	by:	SR
Ē	ELEVATION - (m)	S	ÖN	C LOG						
DEPTH - (m)	EVATIO	SAMPLES	SAMPLE NO.	GRAPHIC						
ä	E	SA S	SA	<u></u> Б	TOPSOIL	RIAL DESCRIPTIO	N		COMN	IENTS
-		-		<u>6 84 87 84</u> 86 86 86 9 6 84 86 86 9 84 84 86 84	(0 to 0.4 m) organic SILT, some roots, me	dium to dark brown, soft, c	lry moist			
-				+ + +	RESIDUAL SOIL					
-		-		+ + +	(0.4 to 2.7 m) sandy SILT, some angular gra firm to stiff, dry to moist	avel and cobbles, well grac	led, non plastic, b	rown,		
1-	1002 -			+ + +						
		₩3	- <u>TP10-05-1</u>							
-		-		+ + +						
-				+ + +						
-				+ + +						
2 -	1001 -			+ + +						
				+ + +						
		-		+ + +						
]				+ + +						
-	•			╡ ╺┵╾╍╼╍	End of Test Pit: 2.7 m				t pit concl se materia	uded due al.
3 -	1000 -	-								
-		-								
-		-								
-		-								
-		-								
4 -	999 -	-								
-		-								
-		-								
-		-								
-		-								
GEI	NERAI	 <u>_ re</u> n	IARKS:				Wastern Co	pper Corpor	ation	
Sam	ples tes	ted at	Knight Piéso	old Soils La	boratory		Casino Cop	oper-Gold Pr OG FOR TP1	oject	
n De	enver, C	oiorad	υ.			Knigh	t Piéso		SSIGNMENT NO 101-325/3	D. REF 4
					Indation Engineering Manual, 4th Edition	C	DNSULTI	FIGURE NG	TP10-	05

ſ	F	Proje	ct:	Casino	Copper	Gold Project	Test F	Pit No.:	TP10-06	_	Page _	1 of 1
	(	Contra	ctor:	Kluane	Drilling	Ltd.	Equipme	ent Used:	CAT 322C	_ Date	Started:	Aug 11, 10
9		Loca	tion:	Tailings	s Manage	ement Facility	Tota	al Depth:	4.8 m	_Date Co	mpleted:	Aug 11, 10
Oct 15, 10	С	oordin	ates	6,951,9	56N,	613,061 E (UTM NAD83)	E	levation:	1017 m	_ Lo	gged by: _	AG
										Revi	ewed by: _	SR
G METRIC, TEST PIT DATA TEMPLATE MAY08.GDT,	-	<u>(</u>		ö	00							
ΔAYO	DEPTH - (m)	ELEVATION - (m)	Ë	SAMPLE NO.	GRAPHIC LOG							
ATE N	E	<b>VAT</b>	SAMPLES	MPL	APF							
MPL	B	ELE	SA	SA	GR	MATE		CRIPTIO	N		со	MMENTS
TA TE	-	-			<u>14 14 14 14</u>	TOPSOIL (0 to 0.2 m)						
T DA	-	-			<u>463696</u>	<u>organic SILT, some roots, mea</u>	dium brown, s	oft, dry		/		
ST PI	]	-			000	RESIDUAL SOIL (0.2 to 2 m)						
Ĕ	-	-			° 0 °	silty SAND and gravel, some a compact, dry	angular cobble	es, non plasti	c, brown, loose to	)		
TRIC		-			0,00	compact, dry						
G ME	-	-			° ° ° °							
0		-										
LEST PIT L	1-	- 1016			[0,0,0]							
۲ ا	-	-			° 0 °							
GLB	-	-			$\circ \circ \circ \circ$							
ATE	]	-	สท									
MPL	-	-	<i>₩</i> }	TP10-06-1								
	1	-										
RAF	-	-			000							
	2 -	1015 -			<u>。○</u>	WEATHERED GRANODIORI	TE				-	
GEOTECHNICAL SI PROGRAMGINTICIBRARY_TEMPLATE.GLB	]	-				(2 to 4.8 m) Weak, fractured, highly weath	ered dry					
GRA	-	-			111211	weak, nactured, nighty weath	ereu, ury					
PROS	-	-										
NL SI	]	-										
NIC/	-	-										
	]	-			21112							
E E E E E E E	3 -	1014 -			111211							
19	-	-										
/SNC	1	-										
ATIC	-	-										
100 - GEOTECHNICAL SITE INVESTIGATIONS/20	-	-										
2 Z	]	-			11121							
SITE	-	-										
CAL	4 -	- - 1013										
SHO SHO												
L L L	-	-										
50	]	-			111211							
2	-	-										
TASK	-	-										
ATA/	]	-				End of Toot Dit: 4.0 m						oncluded due to
MAD.	-	-				End of Test Pit: 4.8 m					Impenetr	able rock.
125/00	GE	NERAL	REN	IARKS:					Western Co	pper Co	poratio	n
brary: M:\1\01\00325\03\A\DATA\TASK	Sam	ples tes	ted at	Knight Piés	sold Soils L	aboratory			Casino Cop TEST PIT L	per-Go		t
11/0	in De	enver, C	olorad	0.				r 4 4			CIP10-00	
ary: N							K	night	t Piéso	ld 🗖	VA101-3	25/3 4
Libr								Co	NSULTI	NG	TP	10-06 REV. 0

	-		Casino Copper-		Test Pit No.:			1 of	
(	Contra		Kluane Drilling L			CAT 322C	_ Date Started: _		
	Loca			ment Facility		3.6 m	_Date Completed: _		
С	oordin	ates	<u>6,951,883 N,</u>	13,005 E (UTM NAD83)	Elevation:	1002 m	_ Logged by: _		
			<u> </u>				Reviewed by:	SR	
DEPTH - (m)	ELEVATION - (m)	SAMPLES	SAMPLE NO. GRAPHIC LOG		FERIAL DESCRIPTIO	N	со	MMENT	S
-			5 - 270 - 270 - 270 - 270 - 270 - 270 - 270 - 270 - 270 - 270 - 270 - 270	TOPSOIL (0 to 0.3 m) organic SILT, some roots,	dark brown, soft, moist				
	- - - - - - - - - - - - - - - - - - -			RESIDUAL SOIL (0.3 to 3.5 m) silty SAND and gravel, son moist to wet	ne cobbles, trace boulders, br	own, loose to con			
2	- - 1000 - - - - - - - - - - - - - - - - - -								
3 -	- - - - - - - - - - - - - - - - - - -	· · · ·		▼ GRANODIORITE (3.5 to 3.6 m) Weak, fractured, moderate	ly weathered, grey		Test pit o	12:45PM oncluded d able rock.	uet
4	998 - - - - - - -			End of Test Pit: 3.6 m					
Sam	ples tes	ted at	IARKS: Knight Piésold Soils L	aboratory		Casino Cop	pper Corporatio pper-Gold Projec OG FOR TP10-03	t	
in De	enver, C	olorad	0.		Knigh	t Piéso	Id PROJECT/ASSIGNM VA101-3	ENT NO.	REF I

ſ	F	Proje	ct:	Casino	Copper	-Gold Project	Test Pit No.:	TP10-35	_	Page	1 of 1
		Contra	ctor:	Kluane	Drilling	Ltd.		CAT 322C	_ Date	Started:	Aug 13, 10
5		Loca		Plant Si			Total Depth: _	2.5 m			Aug 13, 10
Oct 15, 10	С	coordin	ates	6,956,71	I1N,	612,203 E (UTM NAD83)	Elevation:	1173 m		gged by: _	
				1					Revie	ewed by: _	SR
EMPLATE MAY08.GD	DEPTH - (m)	ELEVATION - (m)	SAMPLES	SAMPLE NO.	GRAPHIC LOG		RIAL DESCRIPTIO	N		со	MMENTS
0 GEOTECHNICAL SI PROGRAM/GINTULIBRARY_TEMPLATE.GLB, TEST PIT LOG METRIC, TEST PIT DATA TEMPLATE MAY08.GDT		-				organic SILT, some roots, dark <b>RESIDUAL SOIL</b> (0.2 to 2.4 m) sandy SILT, fine to medium sa and boulders, brown, soft, moi	nd, some subrounded to s		/ es	<b>⊻</b> 3/08/10	
	- - - - - - - - - - - - - - - - - - -	- - - - - - - - - - - - - - - - - - -				(2.4 to 2.5 m) sandy SILT, fine to medium sa and boulders, brown, hard, fro End of Test Pit: 2.5 m		subangular cobble — — — — — — –	es   		concluded due to se frozen
IB: MATION 100022500340DATA/TASK 1100 - GEOTECHNICAL SITE INVESTIGATIONS/2010 G	4	- - - - - - - - - - - - - - - - - - -									
22/03/	GE	NERAL	REN	ARKS:	1			Western Co	nner Co	rnoratio	
1/0032				Knight Piés	old Soils	Laboratory		Casino Cop	per-Go	d Projec	t
1:/1/0	in De	enver, C	olorad	0.			<b>W7</b> A <b>-</b>			R TP10-3	
Library: N							Knigh	t Piéso	ld FIGL	VA101-3	25/3 4
: : : L	oggin	a conduc	ted acc	ording to the	Canadian F	oundation Engineering Manual, 4th Edition,		ONSULTI	NG	TP	10-35

	Proje	ct:	Casino	Copper-C	Gold Project	_ Test Pit No.:	TP11-01	_	Page	1 of 1
	Contra	ctor:	Kluane [	Drilling L	td.	_Equipment Used:	CAT 322C	_ Date	Started:	26 Jul 11
	Loca	tion:	Plant Sit	e		Total Depth:	1 m	_Date Co	mpleted:	26 Jul 11
(	Coordin	ates	6,957,89	1N, 6	11,694 E (UTM ZONE 7 NAD83)	Elevation:	1169 m	Lo	gged by: _	ML
								Revi	ewed by: _	SB
T, 18 Feb 12 DEPTH - (m)	ELEVATION - (m)	SAMPLES	SAMPLE NO.	GRAPHIC LOG		AL DESCRIPTION	I		CO	MMENTS
- L					TOPSOIL (0 to 0.45 m) Plant remains, moss, roots and or SANDY SILT (0.45 to 1 m)	-			-	
PIT DATA		SW2	TP11-01	)+ + + + + +	Sandy SILT, some cobbles, trace well graded, dark brown. SILT is g granodiorite, subangular.	rey, firm, moist. Cobble	rained, sub-angui es consist of	lar,	Desser	
ST PIT LOG METRIC,	1168 -		1111-01	0.20	End of Test Pit: 1 m				Reason fo Permafro	or Termination: st
PIT PROGRAMULIBRARY_TEMPLATE/GLB, TE: 6 C - C - C - C - C - C - C - C - C - C	- 1167 - - 1167 - 									
L SI PROGRAMIGINTYTEST PIT PRC 5	- 1166 - 									
SK 200 - 2011 GEOTECHNICA - 5	- 1165 - - 1165 -    									
032				d Soile Let	poraton.		Casino Mir Casino Cop			
	enver, C		night Piésol	u oons Ldi	on alon y		TEST PIT L	OG FOR	TP11-01	
Library: M:	, -					Knigh	t Piéso		ROJECT/ASSIGNME VA101-32 JRE TP	

	Proje	ect:	Casino (	Copper-C	Gold Project	Test Pit No.:	TP11-14	_	Page	1 of 1
	Contra	ctor:	Kluane I	Drilling L	td.	_Equipment Used:	CAT 322C	_ Date	Started:	26 Jul 11
	Loca		Plant Sit			Total Depth:	1.18 m		mpleted:	
	Coordir	ates	6,957,11	0N, 6	12,000 E (UTM ZONE 7 NAD83)	Elevation: _	1144 m		gged by: _	
			1	1 1				Revi	ewed by: _	SB
DEPTH - (m)	ELEVATION - (m)	SAMPLES	SAMPLE NO.	GRAPHIC LOG		AL DESCRIPTION	4		со	MMENTS
	- - - - - - - - - - - - - - - - - - -			$\begin{array}{c} \begin{array}{c} \begin{array}{c} \begin{array}{c} \begin{array}{c} \begin{array}{c} \begin{array}{c} \begin{array}{c} $	TOPSOIL (0 to 0.62 m) Plant remains, moss, roots and on bottom of the layer SILT (0.62 to 1.18 m) SILT, trace gravel, trace sand, trace			the		
EST PILLOG METRIC, TE			TP11-14	++++	End of Test Pit: 1.18 m				. Reason fo Permafro	or Termination: st
jkamulikkaky_iemplate.glb, ie 7	- 1142 - - 1142 -     									
N N	- 1141 - - 1141 - 	-								
	- 1140 - - 1140 - 									
	ENERAL	REM	ARKS:				Casino Mi	ning Cor	noration	
Sar			night Piésol	d Soils Lat	poratory		Casino Miı Casino Cop	pper-Gol	d Project	
in C	Denver, C	olorado				¥7 4 T			<b>TP11-14</b> ROJECT/ASSIGNMI	ENT NO. REF NO.
orary: N						Knigh	t Piéso		VA101-32	25/8 4
	ina conduc	ted acco	rding to the C	anadian For	ndation Engineering Manual, 4th Edition, 2006.	C	ONSULTI	NG	TP	11-14

F	Proje	ct:	Casino	Copper-	Gold Project	Test Pit No.:	TP11-NAG02		Page _	1 of 1
	Contra	ctor:	Kluane	Drilling L	td.	_Equipment Used:	CAT 322C	Date S	Started: _	4 Oct 11
	Loca	tion:	Ore Sto	ckpile A	rea	Total Depth:	1.8 m[	Date Com	. –	
	Coordin	ates	6,957,14	2N, 6	11,262 E (UTM ZONE 7 NAD83)	_ Elevation:	1253 m		ged by: _	
			1	,				Review	ved by: _	GRG
DEPTH - (m)	ELEVATION - (m)	SAMPLES	SAMPLE NO.	GRAPHIC LOG		AL DESCRIPTIC	DN		со	MMENTS
6 METRIC, IESI PII DAIA IEMPLAIE MAT08.60	1252 -				<ul> <li>TOPSOIL AND COBBLES AND B (0 to 0.5 m) Moss, roots and COBBLES and B weathered granodiorite, up to 2 m slightly moist</li> <li>✓ SILTY SAND (0.5 to 1.8 m) Silty SAND, some gravel, some bo angular, gap graded, brown, loose granodiorite, subangular.</li> </ul>	OULDERS, subangu diameter, some orga pulders. Sand is medi	inic sandy silt, brown, s			ws in from 0.6 m vards at a high nstable
		. M	TP11- NAG02						Boulders sample.	left out of
	1251 -				End of Test Pit: 1.8 m					or termination: le to boulders
	1250 -									
	1249 -									
GE Sam	NERAL ples test enver, C	ed at K	ínight Piéso	ld Soils La	boratory	77. • 1	Casino Minir Casino Copp TEST PIT LOG	er-Gold FOR TP1	Project 11-NAG	ENT NO. REF NO.
						Knig	ht Piésol		VA101-32	
	a conduc	ed acco	rding to the C	anadian Fo	undation Engineering Manual, 4th Edition, 2006.	11118	ONSULTIN	FIGURE	TP11	-NAG02

Proje	ct:	Casino (	Copper-	Gold Project	_ Test Pit No.:	TP11-NAG03		Page	1 of 1
Contra	ctor:	Kluane E	Drilling L	td.	Equipment Used:	CAT 322C	Date	Started:	4 Oct 11
Loca		Ore Sto			_ Total Depth:	1.5 m[	Date Co	mpleted:	4 Oct 11
Coordin	ates	6,956,96	8N, 6	11,184 E (UTM ZONE 7 NAD83)	_ Elevation:	1257 m		gged by: _	
m) 4 - (m)		O	DOG				Revi	ewed by: _	GRG
DEPTH - (m) ELEVATION - (m)	SAMPLES	SAMPLE NO.	GRAPHIC LOG						
	S	S		TOPSOIL AND COBBLES AND BO		<b>N</b>		CO	MMENTS
	m	TP11- NAG03		<ul> <li>(0 to 0.3 m)</li> <li>Moss, roots and COBBLES and BQ weathered granodiorite, up to 2 m islightly moist</li> <li>SILTY SAND (0.3 to 0.8 m)</li> <li>Silty SAND, some gravel, some bo graded, brown, loose, saturated. G subangular.</li> <li>SILT AND SAND (0.8 to 1.2 m)</li> <li>SILT and SAND, some gravel, tract soft, moist. Gravel and cobbles cordinates of granodiorite, subangular. Silt and SAND, some gravel, tract of granodiorite, subangular. Silt and SAND, some gravel, tract of granodiorite, subangular. Silt and SAND, some gravel, tract of granodiorite, subangular. Silt is I loe is in mostly horizontal 1-2 mm tice estimated.</li> <li>End of Test Pit: 1.5 m</li> </ul>	DULDERS, subangu diameter, some orga ulders. Sand is coar ravel and boulders c e cobbles. Silt is low nsist of granodiorite, e cobbles, frozen. C ow plasticity, greyish	nic sandy silt, brown, s se grained, angular, ga onsist of granodiorite, plasticity, greyish bro subangular. Gravel and cobbles cor b brown, soft, frozen, V	ap wn, sist s.	0.3-0.8 m unstable Reason fo	ws in between depth, pit or termination: le to permafrost.
2 - 1255	· · ·								
3 - 1254 -									
4 - 1253 -									
GENERAL Samples test	ed at K	night Piésol	d Soils La	boratory		Casino Minir Casino Copp TEST PIT LOG I	er-Gol	d Project	)3
in Denver, Co	olorado				Knig	ht Piésol	d FIGI	ROJECT/ASSIGNME VA101-32	ENT NO. REF NO.

ſ	F	Proje	ct:	Casino	Copper-	Gold Project	Test Pit No.:	TP11-NAG07		Page _	1 of 1
		Contra	ctor:	Kluane I	Drilling L	.td.	Equipment Used:	CAT 322C	Date	Started: _	4 Oct 11
		Loca	tion:	Ore Sto	ckpile A	rea	Total Depth:	C	ate Co	mpleted: _	4 Oct 11
	С	Coordin	ates	6,956,93	7N, 6	510,824 E (UTM ZONE 7 NAD83)	Elevation:	1312 m		gged by: _	
Ļ				1	1	Γ			Revi	ewed by: _	GRG
T, 16 Apr 12	DEPTH - (m)	ELEVATION - (m)	SAMPLES	SAMPLE NO.	GRAPHIC LOG		L DESCRIPTIO	N		со	MMENTS
TEST PIT LOG METRIC, TEST PIT DATA TEMPLATE MAY08.GDT,		- - - - - - - - - - - - - - - - - - -	an s	TP11- NAG07		<ul> <li>TOPSOIL AND COBBLES AND B(0 to 0.3 m)</li> <li>Moss, roots and COBBLES and B(0 to 0.3 m)</li> <li>Moss, roots and COBBLES and B(0 to 0.5 m)</li> <li>SANDY SILT</li> <li>(0.3 to 0.5 m)</li> <li>Sandy SILT, some cobbles and b(0 to 0.5 m)</li> <li>SAND SILT, some cobbles and b(0 to 0.5 m)</li> <li>SAND AND SILT, some cobbles and b(0 to 0.5 to 1 m)</li> <li>SAND and SILT, some gravel, som plasticity, brownish grey, massive, &lt;5mm, &lt;5mm spacing, clear, hard of slightly weathered granodiorite, particles have ice coating and clear larger for finer soils.</li> <li>End of Test Pit: 1 m</li> </ul>	DULDERS, subangul diameter, some orga ulders, trace organic: t. Cobbles and bould ir to angular. ne cobbles and bould frozen, Vs. Ice in silt , no inclusions. Cobb subangular to angula	nic sandy silt, dark bro s. SILT is low plasticity ers consist of slightly lers, frozen. SILT is lov is present in layers les and boulders consi r, frozen, Vc. Large	,/ ,/ v	Next to la Very harc	arge boulderfield. I permafrost. or termination: ue to permafrost.
PROGRAM/LIBRARY_TEMPLATE.GLB, TES	2 -	- 1310 - - - - - - - - - - - - - - - - - - -									
EST PIT	3 -	1309 - - - - - - - - - -									
art in 100022000 MDATAITASK 200 - 2011 GEOTECHNICAL SI PROGRAMIGINTI ES	- 4	- - - - - - - - - - - - - - - - - - -									
25/08	GE	NERAL	REM	ARKS:	1	1		Casino Minin	g Cor	poration	
01/003	Sam	ples test	ed at K	inight Piésol	d Soils La	boratory		Casino Coppe TEST PIT LOG F	er-Gol	d Project	07
Library: M:\1\	in De	enver, Co	olorado				Knig	<i>t Piésol</i>		ROJECT/ASSIGNM VA101-32	ENT NO. REF NO.

n, 2006. nual, 4th E Logg

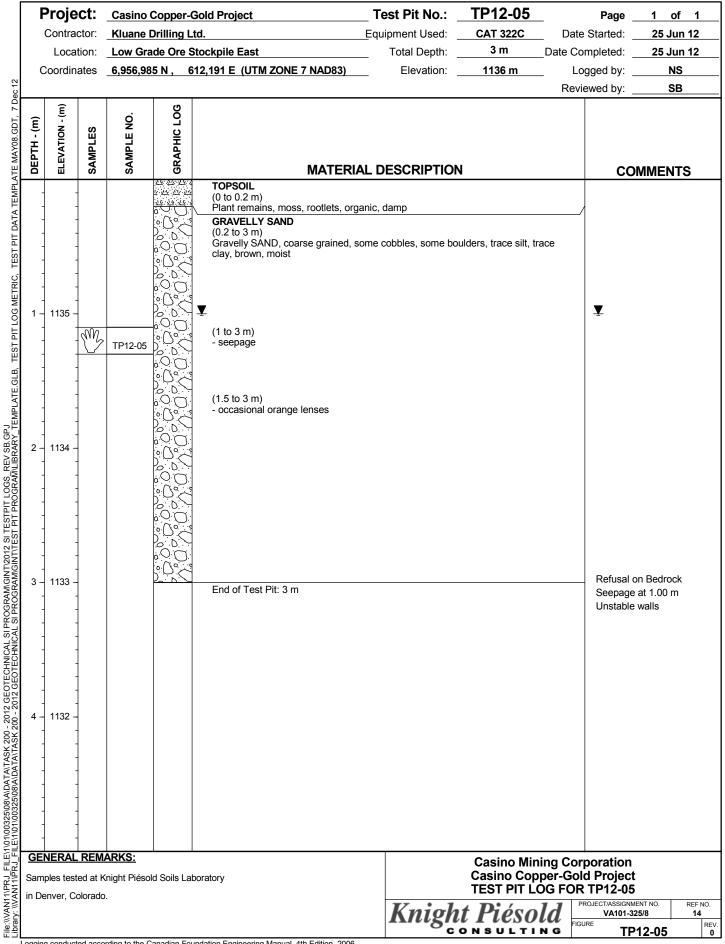
Ρ	Proje	ct:	Casino C	Copper-	Gold Project	Test Pit No.:	TP11-NAG08		Page _	1 of 1
(	Contra	ctor:	Kluane E	Drilling L	.td.	Equipment Used:	CAT 322C	Date	Started:	4 Oct 11
	Loca	tion:	Ore Stor	ckpile A	rea	Total Depth:	1.4 m[	Date Co	mpleted: _	4 Oct 11
С	oordin	ates	6,957,06	7N, (	611,072 E (UTM ZONE 7 NAD83)	Elevation:	1282 m	Lo	gged by: _	SB
								Revi	ewed by: _	GRG
DEPTH - (m)	ELEVATION - (m)	SAMPLES	SAMPLE NO.	GRAPHIC LOG	MATERI	AL DESCRIPTIC	DN		со	MMENTS
_	-			<u> 24. 24. 34.</u> 4. 24. 37. 34		BOULDERS				
	-	S. S	TP11- NAG08	<u>NG NG NG NG</u> <u>NG NG NG NG</u> <u>NG NG NG NG</u> X X X X X X X X X X X X X	(0 to 0.4 m) Moss, roots and COBBLES and I weathered granodiorite, up to 1 n to black, soft, moist <b>SILTY SAND</b> (0.4 to 1.05 m) Silty SAND, some gravel, some o plasticity, light greyish brown, loo consist of slightly weathered gran	n diameter, some orga cobbles and boulders. se, massive, moist. C	anic sandy silt, dark bro Silty SAND is low obbles and boulders	wn		
-	-	-		. ×					Novt to b	ouldor field
1	1281 - - - - - - - - - - - - - -			× · · · × · · · · × · · · · · · · · · ·	SILTY SAND, FROZEN (1.05 to 1.3 m) Silty SAND, some gravel, some of plasticity, light greyish brown, ma thin layers <2mm, clear, hard, no slightly weathered granodiorite, s have hard, clear ice coating, up to GRANODIORITE (1.3 to 1.4 m)	ssive, frozen, Vs. Ice inclusions. Cobbles a ubangular to angular, o 1 cm thickness.	in silty SAŃD is preser and boulders consist of frozen, Vc. Large parti	it in cles	Reason f	oulder field or termination: Je to bedrock.
2	- 1280 - - - - - - - - - -				GRANODIORITE, slightly to mod End of Test Pit: 1.4 m	lerately weathered, lig	ht grey with black spot	5		
3	- - - - - - - - - - - - - - - - - - -									
4	- - - - - - - - - - - - - - - - - - -	· · · ·								
Samp		ed at K	<b>ARKS:</b> (night Piésol	d Soils La	boratory	Vain	Casino Minir Casino Copp TEST PIT LOG	er-Gol FOR T	d Project P11-NAG	08 ENT NO. REF N
					undation Engineering Manual, 4th Edition, 2006		ht Piésol	G FIGL	VA101-32	-NAG08

	F	Proje	ct:	Casino	Copper-0	Gold Project	Test Pit No.:	TP11-NAG09	)	Page	1 of 1
		Contra	ctor:	Kluane	Drilling L	td.	Equipment Used:	CAT 322C	Date	Started:	4 Oct 11
		Loca	tion:	Ore Sto	ockpile A	rea	Total Depth:	<u>2 m</u>		mpleted:	
	С	Coordin	ates	<u>6,957,4</u> ′	12 N, 6	10,994 E (UTM ZONE 7 NAD83)	_ Elevation:	1309 m		gged by:	
Ļ				1					Revi	ewed by:	GRG
0T, 16 Apr 12	DEPTH - (m)	ELEVATION - (m)	SAMPLES	SAMPLE NO.	GRAPHIC LOG		AL DESCRIPTIC	DN		со	MMENTS
bray: M:/10/00325/08/AIDATATASK 200 - 2011 GEOTECHNICAL SI PROGRAMGINTTEST PIT PROGRAMUIBRARY TEMPLATE GLB, TEST PIT LOG METRIC, TEST PIT DATA TEMPLATE MAY08.GDT,		1308 - - - - - - - - - - - - - - - - - - -				TOPSOIL (0 to 0.4 m) Moss, roots, some organic sandy s COBBLES and BOULDERS, suba granodiorite, up to 1 m diameter SILTY SAND (0.4 to 1.7 m) Silty SAND, some cobbles and boo light greyish brown, loose, moist. C weathered granodiorite, subangula Silty SAND, some cobbles and boo light greyish brown, loose, frozen, thick, 2 cm spacing, clear, hard, m slightly weathered granodiorite, su individual ice crystals present, clear End of Test Pit: 2 m	silt, dark brown to bla ngular, consist of slig ulders. SAND is suba Cobbles and boulders ar to angular. Ulders. SAND is suba Vs. Ice in silt is presa b inclusions. Cobbles bangular to angular,	angular, poorly gradec ent in thin layers <2mr angular, Source Strategies angular, poorly gradec ent in thin layers <2mr frozen, Vx. Some	l, n	Next to ruculvert. V pit betwe	oad with ice in Vater flows into en 0.40-1.70m for termination: ue to permafrost
8/A/DATA/TASK 200 - 2011	GENERAL REMARKS:										
0325/0					old Soile Lat		Casino Mining Corporation Casino Copper-Gold Project				
1.1/01/0		ples test enver, Co		-	old Soils Lat	σοταιοιγ		TEST PIT LOG	FOR T	P11-NAG	09
brary: M							Knigl	ht Piésol		VA101-3	25/8 5
	aaina	g conduct	ed acco	1P11	-NAG09 0						

	Proje	ect:	Casino	Copper-	Gold Project	_ Test Pit No.:	<u>TP11-NAG10</u>	Page	1 of 1	
	Contra	ctor:	Kluane I	Drilling L	td.	_Equipment Used:	CAT 322C Dat	e Started:	4 Oct 11	
	Loca		Ore Sto			Total Depth:	0.8 m Date C	ompleted:	4 Oct 11	
	Coordir	ates	6,957,27	2N, 6	11,144 E (UTM ZONE 7 NAD83)	Elevation:		ogged by:		
		1	1	1			Rev	viewed by:	GRG	
, 16 Apr 12 DEPTH - (m)	ELEVATION - (m)	SAMPLES	SAMPLE NO.	GRAPHIC LOG	MATERI	AL DESCRIPTIC	N	со	MMENTS	
GDT.	-	-		<u>848</u> <u>846</u> <u>846</u> 8 1 <u>7</u> - <u>846</u> <u>846</u> - <u>846</u>	TOPSOIL AND COBBLES AND E (0 to 0.3 m)	OULDERS				
.GLB, TEST PIT LOG METRIC, TEST PIT DATA TEMPLATE MAY08.GDT,	- 1276 -	m	TP11- NAG10		<ul> <li>Moss, roots and COBBLES and E</li> <li>Weathered granodiorite, up to 2 m to black, soft, moist</li> <li>SANDY SILT (0.3 to 0.4 m)</li> <li>Sandy SILT, some cobbles and be brownish grey, soft, massive, moi of slightly weathered granodiorite,</li> <li>SANDY SILT, FROZEN (0.4 to 0.8 m)</li> <li>Sandy SILT, some cobbles and be grey, massive, frozen, Vs. Gravel weathered granodiorite, subangul cm thick, similar spacing, clear, he End of Test Pit: 0.8 m</li> </ul>	diameter, some orga bulders, trace gravel, st to wet. Gravel, cobl subangular. bulders, trace gravel, cobbles and boulder ar. Ice is present in la	nic sandy silt, dark brown SILT is low plasticity, ples and boulders consist frozen. SILT is brownish s consist of slightly yers from several mm to 2	very slow 0.30-0.40 Reason f	omes out of wall /ly between ) m for termination: ue to permafrost.	
: PROGRAMILIBRARY_TEMPLATE.GLB, TES	- - - - - - - - - - - - - - - - - - -									
- SI PROGRAMIGINT/TEST PIT PR	- 1274 - - 1274 - 	-								
200 - 2011 GEOTECHNICAL	- 1273 - - 1273 - 									
032	ENERAL mples tes		ARKS: ínight Piésol	 d Soils La	boratory	Casino Mining Corporation Casino Copper-Gold Project TEST PIT LOG FOR TP11-NAG10				
orary: M:/1/(	Denver, C	olorado				Knigl	ht Piésold	PROJECT/ASSIGNM VA101-3	ENT NO. REF NO. 25/8 5	
	ing conduc	ted acco	rding to the C	anadian Fo	undation Engineering Manual, 4th Edition, 2006.	6	UNSULTING	1211	-NAG10	

	F	Proje	ct:	Casino	Copper-C	Gold Project	Test Pit No.:	TP12-01	_	Page	1 of 1
	(	Contra	ctor:	Kluane I	Drilling L	d.	_Equipment Used:	CAT 322C		Started:	
		Locat				tockpile East	Total Depth: _	2.2 m		mpleted:	
2	С	Coordin	ates	6,957,80	1N, 6	11,630 E (UTM ZONE 7 NAD83)	Elevation:	1183 m		gged by:	
7 Dec 12									Revi	ewed by: _	SB
	DEPTH - (m)	ELEVATION - (m)	SAMPLES	SAMPLE NO.	GRAPHIC LOG		AL DESCRIPTION	4		со	MMENTS
TUD10032908AIDATATASK 200 - 2012 GEDTECHNICAL SI PROGRAMIGIN 12012 SI LEDI PIT LUGS REV SB.GPJ - ILE110110032508IAIDATATASK 200 - 2012 GEOTECHNICAL SI PROGRAMIGINTITEST PIT PROGRAMILIBRARY TEMPLATE.GLB, TEST PIT LOG METRIC, TEST PIT DATA TEMPLATE MAY08.GDT,				TP12-01	· · · · · · · · · · · · · · · · · · ·	<b>TOPSOIL</b> (0 to 0.2 m) Plant remains, moss, rootlets, org <b>SILTY SAND</b> (0.2 to 2.2 m) Silty SAND, some cobbles, some graded, brown, damp-moist <b>▼</b> (1.45 to 2.2 m) - trace seepage, wet, coarse grain (1.5 to 2.2 m) - oxidation stains, seepage End of Test Pit: 2.2 m	gravel, trace cobbles, n	nedium grained, v	vell		
	GE	NERAL	REM/	ARKS:	, I		Casino Mining Corporation				
11/24	Sam	ples test	ed at K	night Piésol	d Soils Lab	oratory	Casino Copper-Gold Project TEST PIT LOG FOR TP12-01				
NAN.	in De	enver, Co	olorado				<b>T</b> 7 • <b>T</b>			TP12-01	IENT NO. REF NO.
Library: \\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\							Knigh	t Piéso		VA101-3	25/8 14
	Onging	1 conduct	ed accor	rding to the C	anadian Ecu	ndation Engineering Manual, 4th Edition, 2006.	° c	ONSULTI	NG	TP	12-01

	Ρ	roje	ct:	Casino	Copper-	Gold Project	_ Test Pit No.:	TP12-03	_	Page	1 of 1
	C	Contra	ctor:	Kluane [	Drilling L	.td.	Equipment Used:	CAT 322C	_ Date	e Started:	
		Locat	tion:	Low Gra	de Ore S	Stockpile East	_ Total Depth: _	2 m	_Date Co	mpleted:	25 Jun 12
	С	oordin	ates	6,957,47	4N, 6	611,784 E (UTM ZONE 7 NAD83)	Elevation:	1156 m	_ Lo	ogged by: _	NS
7 Dec 12									Revi	iewed by: _	SB
ATE MAY08.GDT, 7 D	DEPTH - (m)	ELEVATION - (m)	SAMPLES	SAMPLE NO.	GRAPHIC LOG		L DESCRIPTION	l		CO	MMENTS
PIT PROGRAMULIBRARY_TEMPLATE.GLB, TEST PIT LOG METRIC, TEST PIT DATA TEMPLATE MAY08.GDT,		- - - - 1155 –	<u> (M)</u>			GRAVELLY SAND AND COBBLES (0 to 2 m) Gravelly SAND, some cobbles, trac damp, brown		ained sand, trace	silt,	¥	
XY_TEMPLATE.GLB, TEST PIT L				TP12-03		(1 to 2 m) - trace seepage, some oxidation, n (1.5 to 2 m) - trace boulders	o boulders				n Bedrock
NT/TEST PIT PROGRAM/LIBRA	2	1154 - - - - - - - - - - -				End of Test Pit: 2 m					at 1.00 m
L SI PROGR	3	- 1153 – - - - - - - - - - -									
	4	- - - - - - - - - - - - - - - - - - -									
	GEN	IERAL	REM	ARKS:				Casino Mir	ning Cor	noration	
1\PRJ	Samples tested at Knight Piésold Soils Laboratory						Casino Mining Corporation Casino Copper-Gold Project				
in Navi	-	nver, Co		-				TEST PIT L	OG FOR TP12-03		
rary: ///							Knigh	t Piéso		ROJECT/ASSIGNME VA101-32	25/8 14
			1			undation Engineering Manual, 4th Edition, 2006.	C	ONSULTI	NG	TP	12-03 REV



	F	Proje	ct:	Casino (	Copper-C	Gold Project	Test Pit No.:	TP12-06	_	Page	1 of 1	
		Contra	ctor:	Kluane E	Drilling L	td.	Equipment Used:	CAT 322C	_ Date	Started: _	25 Jun 12	
		Loca	tion:	Low Gra	de Ore S	tockpile East	Total Depth:	2.4 m	_Date Co	mpleted: _	25 Jun 12	
	С	Coordin	ates	6,956,72	2N, 6	12,183 E (UTM ZONE 7 NAD83)	Elevation:	1165 m	_ Lo	gged by: _	NS	
7 Dec 12									Revie	ewed by: _	SB	
	DEPTH - (m)	ELEVATION - (m)	SAMPLES	SAMPLE NO.	GRAPHIC LOG		AL DESCRIPTION	l		со	MMENTS	
MPL	-	-			$\int O$	BOULDERS AND COBBLES (0 to 0.2 m)						
TEST PIT LOG METRIC, TEST PIT DATA TEMPLATE MAY08.GDT,	- - - - - - - - - - - - - - - - - - -	- - - - - - - - - - - - - - - - - - -	any	TP12-06		BOULDERS AND COBBLES, sul SILTY SAND (0.2 to 2.4 m) Silty SAND with some cobbles, tra graded, coarse grained, brown, da (1 to 2.4 m) - some boulders, trace seepage	ace boulders, subrounde		/	¥		
PROGRAMILIBRARY_TEMPLATE.GLB, TE	2	- - - - - - - - - - - - - - - - - - -				(1.8 to 2.4 m) - seepage End of Test Pit: 2.4 m					n Permafrost	
HNICAL SI PROGRAMIGIN I 2012 SI 1ESTI ECHNICAL SI PROGRAMIGINT/TEST PIT	- - - - - - - - - - - - - - - - - - -	- - - - - - - - - - - - - - - - - - -								Unstable	at 1.80 m walls	
FIIE:WANTITIKJ, FILENUTU0325/08/AIDATATASK 200 - 2012 GEOTECHNICAL SI PROGRAMIGIN 12012 SI LEST PLI LUGS KEV SB GPJ LIbrary: WANTIFRJ, FILENU0100325/08/AIDATATASK 200 - 2012 GEOTECHNICAL SI PROGRAMGINTITEST PIT PROGRAMILIBRARY TEMPLATE.GLB,	4	- - - - - - - - - - - - - - - - - - -										
	GEI	NERAL	RFM	ARKS				<u> </u>				
				inight Piésol	d Soils I al	poratory		Casino Mining Corporation Casino Copper-Gold Project				
AN11		enver, Co		-	3.13 Edi	· · · · · · · · · · · · · · · · · · ·		TEST PIT L	OG FOR	er-Gold Project G FOR TP12-06		
Tary: ///		, 0					Knight Piésold consulting					
	ogging	a conduct	ed acco	rding to the C	anadian For	Indation Engineering Manual, 4th Edition, 2006.	ONSULTI	NG	TP	12-06		

	F	Proje	ct:	Casino C	Copper-C	Gold Project	_ Test Pit No.:	TP12-08		Page _	1 of 1
		Contra	ctor:	Kluane D	Drilling L	td.	_Equipment Used:	CAT 322C	_ Date	Started:	25 Jun 12
		Loca	tion:	Low Gra	de Ore S	tockpile East	Total Depth:	1 m	_Date Co	mpleted:	25 Jun 12
	С	Coordin	ates	6,956,512	2N, 6	12,564 E (UTM ZONE 7 NAD83)	Elevation:	1107 m	_ Lo	gged by: _	NS
7 Dec 12									Revi	ewed by: _	SB
	DEPTH - (m)	ELEVATION - (m)	SAMPLES	SAMPLE NO.	GRAPHIC LOG		AL DESCRIPTION	l		со	MMENTS
3 METRIC, TEST PIT DATA TEMPL	-	1106	m	TP12-08		SILTY SAND (0 to 1 m) Silty SAND, fine grained, trace col	obles, trace boulders, b	rown, damp		Refusal o	on Bedrock
B.GPJ .RY_TEMPLATE.GLB, TEST PIT LOC	1	1106 -			<u>, , , , , , , , , , , , , , , , , , , </u>	End of Test Pit: 1 m				No seepa Unstable	age
I I ZUTZ SI TESTPIT LOGS REV S GINT\TEST PIT PROGRAM\LIBRA	-	1105 -									
2 GEOTECHNICAL SI PROGRAMULIN 2 GEOTECHNICAL SI PROGRAM	3	1104 -									
FIR://MANTITERJ. FILE/10/10032508/AUDATA/TASK 200 - 2012 GEOTECHNICAL SI PROGRAMIGIN 12012 SI LESI PIT LOGS, REV SB.GPJ LIBRAY, 1/VANTITERJ. FILE/10/10032508/AUDATA/TASK 200 - 2012 GEOTECHNICAL SI PROGRAMIGINT/TEST PIT PROGRAM/LIBRARY_TEMPLATE.GLB, TEST PIT LOG METRIC, TEST PIT DATA TEMPLATE MAY08.GDT,	- 4	1103 -									
	GEI	NERAL	REM	ARKS:			Casino Mining Corporation				
111/PF	Sam	ples test	ed at K	night Piésol	d Soils Lat	poratory	Casino Copper-Gold Project TEST PIT LOG FOR TP12-08				
brary: ///AN	in De	enver, C	olorado				Knigh	t Piéso		ROJECT/ASSIGNM VA101-32	
	ogging	a oondud	od oooo	rding to the C	anadian For	ndation Engineering Manual, 4th Edition, 2006.					12-00

	F	Proje	ct:	Casino (	Copper-C	Gold Project	Test Pit No.:	TP12-09		Page	1 of 1
		Contra	ctor:	Kluane [	Drilling L	td.	_Equipment Used:	CAT 322C	_ Date	Started: _	26 Jun 12
		Loca	tion:	Low Gra	de Ore S	tockpile East	Total Depth:	1 m	_Date Co	mpleted: _	26 Jun 12
~	С	Coordin	ates	6,956,50	1N, 6	12,175 E (UTM ZONE 7 NAD83)	Elevation:	1275 m		gged by: _	
7 Dec 12									Revi	ewed by: _	SB
	DEPTH - (m)	ELEVATION - (m)	SAMPLES	SAMPLE NO.	GRAPHIC LOG		AL DESCRIPTION	1		со	MMENTS
ST PIT LOG METRIC, TEST PIT DATA TEMPL	- - - - - - - - - - - - - - - - - - -	- - - - - - - - - - - - - - - - - - -	m	TP12-09		SAND (0 to 1 m) SAND, many cobbles, some to ma moist End of Test Pit: 1 m	any boulders, some silt,	coarse grained, t	orown,	No seepa	walls, boulders
AMGIN 12012 SI TESTRIT LOGS KEV SB.GPJ JGRAMGINTITEST PIT PROGRAMLIBRARY_TEMPLATE.GLB, TEST PIT LOG METRIC, TEST PIT DATA TEMPLATE MAY08.GDT,	2 -	- - - - - - - - - - - - - - - - - - -									
INICAL SI PROGRAMIGIN I 2012 SI 1E ECHNICAL SI PROGRAMGINT/TEST F		- - - - - - - - - - - - - - - - - - -									
FIIE://WAN11/FKJ_FILE/1/01/00325008/AUA1A1/ASK 200 - 2012 GEOTECHNICAL SI FROGR Library: ///AN111/FRJ_FILE/1/01/00325008/ADATA/TASK 200 - 2012 GEOTECHNICAL SI PRO	4	- - - - - - - - - - - - - - - - - - -									
	65	NERAL	REM								
PRJ					d Soile Lat	oratory	Casino Mining Corporation Casino Copper-Gold Project				
AN11/	Samples tested at Knight Piésold Soils Laboratory in Denver, Colorado.						TEST PIT LOG FOR TP12-09				
ary: ////							Knight Piésold         PROJECT/ASSIGNMENT NO.         REF NO.           CONSULTING         FIGURE         TP12-09         REV.				
	000	a ocardo d	od or -	rding to the O	anadian Tr	ndation Engineering Manual, 4th Edition, 2006.	c	ONSULTI	N G	TP	12-09 0

	F	Proje	ct:	Casino	Copper-C	Gold Project	Test Pit No.:	TP12-10	_	Page _	1 of 1
	(	Contra	ctor:	Kluane I	Drilling L	td.	Equipment Used:	CAT 322C	_ Date	Started: _	26 Jun 12
		Loca				tockpile East	Total Depth:	2 m	_Date Co	mpleted: _	
~	С	Coordin	ates	6,956,67	1N, 6	12,660 E (UTM ZONE 7 NAD83)	Elevation:	1109 m		gged by: _	
7 Dec 12				1	1				Revie	ewed by: _	SB
	DEPTH - (m)	ELEVATION - (m)	SAMPLES	SAMPLE NO.	GRAPHIC LOG		AL DESCRIPTION	N		со	MMENTS
MPL	-	-			17. 3.11. 311. 314.	TOPSOIL (0 to 0.2 m)					
MPLATE.GLB, TEST PIT LOG METRIC, TEST PIT DATA TEMPLATE MAY08.GDT, I	- - - - - - - - - - - - - - - - - - -	- - - - - - - - - - - - - - - - - - -	S. S	TP12-10		Moss, some silt, rootlets, organic SILTY SAND (0.2 to 2 m) Silty SAND, medium grained, , so ▼ rounded sand, brown, moist (0.6 to 2 m) - orange, trace seepage on sidew	ome cobbles, trace bould	ders, rounded to s	Jb	Ţ	
EST PIT PROGRAMILIBRARY	2 -	- 1107 - - - - - -			x	End of Test Pit: 2 m					on Permafrost epage at 0.6 m alls
ECHNICAL SI PROGRAMGINTIT	3 -	- - - - - - - -									
	4	- - - - - - - - - - - - - - - - - - -									
LEVIN	-	-									
AN11/PRJ_FI	Samp	NERAL ples test enver, Co	ed at K	knight Piéso	ld Soils Lat	poratory	Casino Mining Corporation Casino Copper-Gold Project TEST PIT LOG FOR TP12-10				
}							Knigh	t Piéso	ld 🖻	ROJECT/ASSIGNM VA101-32	25/8 14
						ndation Engineering Manual, 4th Edition, 2006		ONSULTI	N G	RE TP	12-10 REV 0

	F	Proje	ct:	Casino C	Copper-C	Gold Project	Test Pit No.:	TP12-11		Page _	1 of 1
		Contra	ctor:	Kluane E	Drilling L	td.	_Equipment Used:	CAT 322C	_ Date	Started:	26 Jun 12
		Loca	tion:	Low Gra	de Ore S	tockpile East	Total Depth:	0.2 m	_Date Co	mpleted:	26 Jun 12
	C	Coordin	ates	6,956,83	6N, 6	12,701 E (UTM ZONE 7 NAD83)	Elevation:	1084 m	_ Lo	gged by: _	NS
7 Dec 12									Revi	ewed by: _	SB
FIR://WANTITRA, FILE/I/01/0032508/A/DATATASK 200 - 2012 GEOTECHNICAL SI PROGRAM/GINTITEST PIT PROGRAM/LIBRARY_TEMPLATE.GLB, TEST PIT LOG METRIC, TEST PIT DATA TEMPLATE MAY08.GDT, 7 DI	DEPTH - (m)	ELEVATION - (m)	SAMPLES	SAMPLE NO.	GRAPHIC LOG		AL DESCRIPTION	1		со	MMENTS
EMPL	-	-			<u>16.76.76</u> <u>1.5.76</u> <u>16.76</u>	TOPSOIL, FROZEN (0 to 0.2 m)				Defusel	on Permafrost
TΑT		-			<u> 44.78.44</u> .7	Moss, visible ice, rootlets, organic	s, black, frozen sand be	eneath the topsoil	/	No seepa	
T DA	-	-				End of Test Pit: 0.2 m				Stable wa	-
ST PI	-	-									
TES		-									
L RIC	-	-									
, ME		-									
LOC	1-	1083 -									
JT PI	-	-									
Ë	]	-									
GLB,	-	-									
-ATE	-	-									
EMPI	1	-									
Z Z I I I I I I I I I I I I I I I I I I	-	-									
BRAF	2 -	1082 -									
	]	-									
OGR/	-	-									
T PR		-									
	-	-									
ITE0	-	-									
	]	-									
RAM	3 –	1081 -									
ROG		-									
N N N N N N N	]	-									
	-	-									
		-									
E U U U U	-	-									
012 G	-	-									
2012	4 -	- 1080 –									
SK 20	-	-									
ANTA	1	-									
DAT,	-	-									
A/D8	-	-									
0325	]	-									
101/0	-	-									
		-									
NJ-F		NERAL					Casino Mining Corporation				
				ínight Piésol	d Soils Lal	poratory		Casino Cop TEST PIT L	oper-Gol OG FOR	u Project	
NAI /	in De	enver, Co	olorado				Valat			ROJECT/ASSIGNM	
e:///							Knigh	t Piéso		VA101-3	BEV
	ogging	a conduct	ed acco	rding to the C	anadian Fou	ndation Engineering Manual, 4th Edition, 2006.	- C	ONSULTI	NG	TP	12-11

	F	Proje	ect:	Casino	Copper-0	Gold Project	Test Pit No.:	TP12-12		Page _	1 of 1	
		Contra	ctor:	Kluane	Drilling L	td.	Equipment Used:	CAT 322C	_ Date	Started:	26 Jun 12	
		Loca	tion:	Low Gra	ade Ore S	tockpile East	Total Depth:	0.2 m	_Date Co	mpleted:	26 Jun 12	
	C	Coordin	ates	6,956,99	5N, 6	12,638 E (UTM ZONE 7 NAD83)	Elevation:	1077 m	_ Lo	gged by: _	NS	
7 Dec 12									Revi	ewed by: _	SB	
	DEPTH - (m)	ELEVATION - (m)	SAMPLES	SAMPLE NO.	GRAPHIC LOG		AL DESCRIPTION	4		со	MMENTS	
MPLA	-				14 - 24 - 14 - 14 14 - 24 - 14 - 14 14 - 14 - 14 - 14	TOPSOIL, FROZEN						
A TE	-		-		<u>46.46.46.4</u> 2.412.412.412	(0 to 0.3 m) Moss, visible ice, rootlets, organic	s, black, frozen sand b	eneath the topsoil		Defueel e	n Dormofroot	
DAT	-				<u></u>	End of Test Pit: 0.2 m						
T PIT	-		-								-	
TES	-		1									
RIC,	-		1									
MET	-		-									
DOG	1-	1076 -	1									
T PI	-		-									
TES	-											
GLB.	-		-									
LATE	-											
EMP	-		]									
Z Z Z T Z Z T	-		-									
IBRA	2 -	1075 -	1									
AMIL	-		-									
OGR	-		1									
TPR	_		]									
STP	-		-									
TTTE	-		1									
	-		-									
GRANG	3 –	1074 -	1									
PROAP	-		]									
L SI L	-		-									
NICA	-		1									
	-		-									
	-		1									
2012	-		]									
200	4 -	1073 -	-									
ASK:	-		1									
TAIT	-		-									
A/DA	-		1									
25/08	-		-									
10032	-											
11/01	-											
	GE	GENERAL REMARKS:						Casino Mir	ning Cor	noration		
1/PRJ				Knight Piéso	ld Soils Lat	poratory		Casino Cop	pper-Gol	d Project	Pleted:       26 Jun 12         ed by:       NS         ed by:       SB         COMMENTS         Refusal on Permafrost         No seepage       Stable walls         Stable walls       REFUSAL         Cottom       REFUSAL         Refusal on Permafrost       REFUSAL         No seepage       Stable walls         Stable walls       REFUSAL         Cottom       REFUSAL         REV       REFUSAL         REV       REFUSAL         REV       REV	
AN1	in Denver, Colorado.							TEST PIT L	OG FOR	TP12-12		
		, -					Knioh	t Piéso		VA101-32		
Librai				<u> </u>	<u> </u>			ONSULTI	N G	JRE TP	12-12 REV 0	
	oaain	a conduc	ted acco	ording to the C	anadian Fou	ndation Engineering Manual, 4th Edition, 2006.	- C	ONSULTI	NG	TP	12-12	

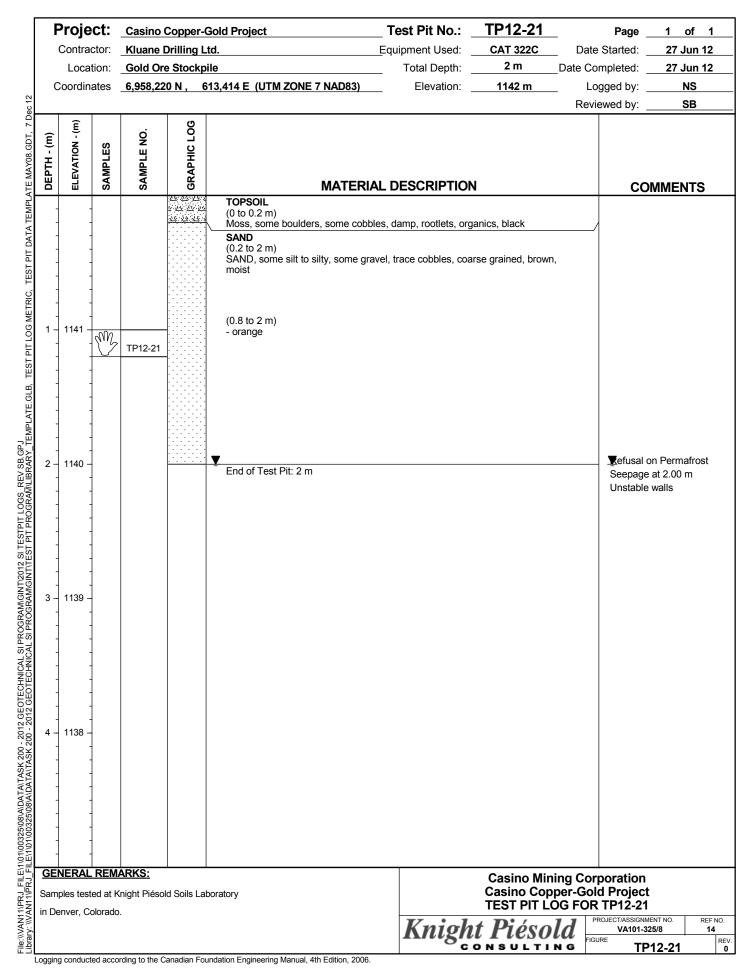
	Project: Contractor:			Casino	Copper-(	Gold Project	Test Pit No.:	TP12-13		Page	1 of 1
		Contra	ctor:	Kluane	Drilling L	td.	Equipment Used:	CAT 322C	Date	Started: _	26 Jun 12
		Loca	tion:	Low Gra	de Ore S	tockpile East	Total Depth:	2.75 m _	Date Co	mpleted: _	26 Jun 12
01	C	Coordin	ates	6,957,14	5N, 6	12,353 E (UTM ZONE 7 NAD83)	Elevation:	1090 m	Lo	gged by: _	NS
Dec 12				1					Revie	ewed by: _	SB
TE MAY08.GDT, 7 D	DEPTH - (m)	ELEVATION - (m)	SAMPLES	SAMPLE NO.	GRAPHIC LOG	MATERI	AL DESCRIPTION	ı		CO	MMENTS
MPLA	_					GRAVELLY SAND					
FIE://VAN11/PRJ. FILE/1/01/0032508/AIDATATASK 200 - 2012 GEOTECHNICAL SI PROGRAMGINT/2012 SI TESTPIT LOGS REV SB GPJ LIDBAY: //VAN11/PRJ. FILE/1/01/0032508/AIDATATASK 200 - 2012 GEOTECHNICAL SI PROGRAMGINT/TEST PIT PROGRAM/LIBRARY_TEMPLATE.GLB, TEST PIT LOG METRIC, TEST PIT DATA TEMPLATE MAY08.GDT, 7 Dec 12		1089	S. S	TP12-13		(0 to 2.75 m) Gravelly SAND, some cobbles, tra sub rounded to rounded sand (0.2 to 2.75 m) - brown, some oxidation stains	ace silt, trace boulders,	coarse grained, blac	k,	Refusal o No seepa	n Bedrock ige
1/101/00325/08/AIDATATASK 200 - 2012 GEOTECHNICAL SI PROGRAMGN I FILE/1101/00325/08/AIDATATASK 200 - 2012 GEOTECHNICAL SI PROGRAMG	4	1087								Stable wa	alls
Ш Ч Ц Ц Ц Ц Ц Ц Ц Ц Ц Ц	GE	NERAL	REM	ARKS:				Casino Minin	g Cor	poration	
N11/PRJ				knight Piéso	ld Soils Lal	poratory		Casino Coppe TEST PIT LOC	er-Gol G FOR	d Project TP12-13	
/AN11	in De	enver, Co	olorado	).			Knich			ROJECT/ASSIGNME VA101-32	
File:/// Library							inigh	t Piésol	G FIGL	IRF	12-13 REV.

	F	Proje	ct:	Casino (	Copper-C	Gold Project	Test Pit No.:	TP12-14	_	Page	1 of 1
		Contra	ctor:	Kluane E	Drilling L	td.	_Equipment Used:	CAT 322C	_ Date	Started:	26 Jun 12
		Loca	tion:	Low Gra	de Ore S	tockpile East	Total Depth:	0.4 m	_Date Co	mpleted:	26 Jun 12
~	C	Coordin	ates	6,957,14	1N, 6	12,011 E (UTM ZONE 7 NAD83)	Elevation:	1137 m		gged by: _	
7 Dec 12				1					Revi	ewed by: _	SB
FIR:WANTIFEST FILE TO TO US 20 WANDATA TASK 200 - 2012 GEOTECHNICAL SI PROGRAMIGIN TZUS ALEV 35.0FJ	DEPTH - (m)	ELEVATION - (m)	SAMPLES	SAMPLE NO.	GRAPHIC LOG	TOPSOIL, FROZEN	AL DESCRIPTION	1		CO	MMENTS
TEM	1	-			4.54.94.94.94 96.96.96.9	(0 to 0.4 m) Moss, visible ice, rootlets, organic	s, black, frozen sand be	eneath the topsoil			
TEST PIT DATA	-	-			6 20 20 30 24 24 24 3 	End of Test Pit: 0.4 m				Refusal o No seepa Stable wa	-
G METRIC,	- - 1 -	- - - 1136 –									
EST PIT LO	-	-									
ATE.GLB, T	-	-									
S.GPJ 3Y_TEMPL/	-	-									
SAM/LIBRA	2 -	- 1135 - -									
	-	-									
	-	-									
PROGRAM	3 -	- 1134 - -									
HNICAL SI TR	-	-									
12 GEOTEC	-	-									
SK 200 - 20	4 -	- 1133 – -									
A\DATA\TA	-	-									
1/00325/08/	-	-									
E/1/0	-	-									
	GE	NERAL	REM	ARKS:			Casino Mining Corporation				
				ínight Piésol	d Soils Lat	poratory	Casino Copper-Gold Project TEST PIT LOG FOR TP12-14				
ry: WAN	in De	enver, Co	olorado				Knigh	t Piéso		ROJECT/ASSIGNME VA101-32	5/8 14
	occir	a 0000	od oco -	rding to the O	anadian Fri	Indation Engineering Manual, 4th Edition, 2006.	- Scool	ONSULTI	N G	JRE TP	12-14 REV. 0

	Project:		ct:	Casino C	Copper-C	Gold Project	Test Pit No.: <u>TP12-18</u>			Page _	1 of 1
		Contra	ctor:	Kluane E	Drilling L	td.	Equipment Used:	CAT 322C Date Started: 27 Jun			
		Loca	tion:	Gold Ore	Stockp	ile	Total Depth:				27 Jun 12
~	C	Coordin	ates	6,958,38	3N, 6	12,970 E (UTM ZONE 7 NAD83)	Elevation:	1177 m		gged by: _	
7 Dec 12									Revi	ewed by: _	SB
	DEPTH - (m)	ELEVATION - (m)	SAMPLES	SAMPLE NO.	GRAPHIC LOG		AL DESCRIPTION	4		со	MMENTS
EMPI	-	-			1. <del>2.1</del> . 2.1. 2.1. 2.2. 2.1. 2.1. 2.1.	TOPSOIL, FROZEN (0 to 0.15 m)			,		on Permafrost
TA T		-				Moss, visible ice, rootlets, organic End of Test Pit: 0.15 m	s, black, frozen silty sa	nd beneath the to	psoil /	No seepa	
IT DA	-	-				End of Test Fit. 0.15 III				Stable wa	alis
STP	-	-									
Щ Ц	]	-									
TRIC	-	-									
G ME	1 -	- 1176 –									
JT LC	-	-									
ESTF		-									
E	-	-									
TE.GL		-									
IPLA <sup>-</sup>	-	-									
		-									
RARY	2 -	1175 –									
		-									
GRAN	-	-									
PRO	-	-									
	-	-									
	-	-									
	-	-									
BRAM	3 -	1174 -									
PROA		-									
I ISI I	-	-									
HIC/		-									
	-	-									
		-									
2012	-	-									
200-20	4 -	- 1173									
TASK	-	-									
ATA		-									
1941	1	-									
325/0	]	-									
01/00		-									
	-	-									
L L L L L L	GE	NERAL	REM	ARKS:				Casino Mir	ning Cor	poration	
	Sam	ples test	ed at K	ínight Piésol	d Soils Lal	poratory		Casino Cop TEST PIT L	oper-Gol	d Project	
	in De	enver, Co	olorado				Valat			ROJECT/ASSIGNM	
brary:							Knigh	t Piéso		VA101-32	PEV
	ogging	a conduct	ed acco	rding to the C:	anadian Foi	ndation Engineering Manual, 4th Edition, 2006.	C	UNSULTI	NG	TP	12-18

	Project:		ct:	Casino	Copper-C	Gold Project	Test Pit No.:	TP12-19	Page	1 of 1		
		Contra	ctor:	Kluane I	Drilling L	td.	Equipment Used:					
		Loca	tion:	Gold Ore	e Stockp	ile	Total Depth:	1.2 m				
~	C	Coordin	ates	6,958,39	5N, 6	13,336 E (UTM ZONE 7 NAD83)	Elevation:	1177 m		gged by: _		
7 Dec 12				1					Revi	ewed by: _	SB	
	DEPTH - (m)	ELEVATION - (m)	SAMPLES	SAMPLE NO.	GRAPHIC LOG		AL DESCRIPTION	4		CO	MMENTS	
IEMPI	-	-			4.24. 34.34	<b>TOPSOIL</b> (0 to 0.3 m)						
ATA 1	-	-			o ∪ o v vu vu vu	Moss, some boulders, some cobb	oles, wet, rootlets, organ	lics, black				
LOG METRIC, TEST PIT D	- - - - - 1 -	- - - - - 1176 -	an .			GRAVELLY SAND, FROZEN (0.3 to 1.2 m) Gravelly SAND, some silt, some of sand, frozen, no excess ice, well I	cobbles, sub-rounded co bonded, Nbn	obbles, coarse gra	iined			
T PIT	-	-	$\vee$	TP12-19	ہ گ	End of Test Pit: 1.2 m					n Permafrost	
AMGIN 12012 SI LESTRI LUGS KEV SB.GPJ JGRAMGINTITEST PIT PROGRAMLIBRARY_TEMPLATE.GLB, TEST PIT LOG METRIC, TEST PIT DATA TEMPLATE MAY08.GDT,	2	- - - - - - - - - - - - - - - - - - -								No seepa Stable wa	-	
FIIE://VAN111/FKJ_FILE/1/01/00325/08/AIDATA/TASK 200 - 2012 GEOLECHNICAL SI PROGRA Library: //VAN111/FRJ_FILE/1/01/00325/08/AIDATA/TASK 200 - 2012 GEOTECHNICAL SI PROG	4	- - - - - - - - - - - - - - - - - - -										
	GE	NERAL	REM	ARKS:				Cacino Mi	ning Cor	noration		
				inight Piésol	d Soils Lat	poratory		Casino Mir Casino Cop	per-Gol	d Project		
VIAN1	in De	enver, C	olorado				77 . 7			TP12-19	ENT NO. REF NO.	
e:///AI							Knigh	t Piéso		VA101-32	25/8 14	
	oaain	a conduct	ed acco	rding to the C	anadian Fou	ndation Engineering Manual, 4th Edition, 2006.	C	UNSULTI	NG	<u> </u>	12-19	

ſ	Project:		ct:	Casino	Copper-C	Gold Project	Test Pit No.:	TP12-20		Page	1 of 1
		Contractor: Kluane Drilling Lt			Drilling L	td.	Equipment Used:				27 Jun 12
		Loca	tion:	Gold Or	e Stockpi	ile	Total Depth:	Total Depth: <u>1 m</u> Date C			27 Jun 12
	C	Coordin	ates	6,958,21	3N, 6	13,493 E (UTM ZONE 7 NAD83)	Elevation:	1138 m	Log	iged by: _	NS
7 Dec 12									Review	wed by: _	SB
	DEPTH - (m)	ELEVATION - (m)	SAMPLES	SAMPLE NO.	GRAPHIC LOG		AL DESCRIPTION	J		CO	MMENTS
MPL	-				V - 24 - 24 - 24	TOPSOIL (0 to 0.2 m)					
TAT	-					Moss, some boulders, some cobl SAND, FROZEN	oles, damp, rootlets, org	anics, black			
RIC, TEST PIT DA						(0.2 to 1 m) SAND, some silt, some cobbles, excess ice, Nbn	coarse grained, brown, t	frozen, well bonded, r	10		
METI	-		Sun	TP12-20							_
TE.GLB, TEST PIT LOG	1 - - - -	1137 -		11 12-20		End of Test Pit: 1 m				Refusal o No seepa Stable wa	-
I LUGS KEV SB.GFJ ROGRAMILIBRARY_TEMPLA	- - 2 - - - -	1136 -									
CAL SI FROGRAMIGIN I ZUIZ SI LEST PHICAL SI PROGRAMIGINT/TEST PIT P	- - - 3 - - - - - -	1135 -									
	- - - - - - - - - - - - - - - - - - -	1134 -									
ILEY!	-										
NPRJ_F		NERAL		ARKS: night Piéso	ld Soils Lat	poratory		Casino Minin Casino Coppe	r-Gold	Project	
/AN1		enver, C		-				TEST PIT LOG	FOR	TP12-20	
ibrary: ///							Knigh	<i>t Piésole</i>		VA101-32	
- "I L						indetion Engineering Manual 4th Edition 2006	Ű		-	<u> </u>	14-40



F	Proje	ect:	Casino	Copper-G	old Project	_ Test Pit No.:	TP12-22	Page	1 of 1
Location:			Drilling Lto		_Equipment Used: _	CAT 322C	Date Started:	27 Jun 12	
					Total Depth: _	5.2 m	_Date Completed:		
С	Coordin	ates	6,958,12	23 N, 61	3,198 E (UTM ZONE 7 NAD83)	Elevation:	1127 m	Logged by:	
								Reviewed by:	SB
DEPTH - (m)	ELEVATION - (m)	SAMPLES	SAMPLE NO.	GRAPHIC LOG		AL DESCRIPTION	I	c	OMMENTS
-				1. 24, 34, 34, 34, 36. 36. 36. 3	TOPSOIL (0 to 0.25 m) Moss, some boulders, some cobb	les. damp. rootlets. org	anics. black		
-				× × ×	SILTY SAND (0.25 to 5.2 m)	, uamp, rocaeto, erg			
-				× × ×	Silty SAND, medium grained, som	e gravel, some cobbles	s, brown, dry to da	Imp	
				× × × ×					
1-	1126 -			× × ×					
-		-		× × × ×					
		SWN	TD40.00	×××					
			TP12-22	× ×					
2 -	1125 -			× × × × ×					
-		-		× × × ×					
-				× × × ×					
-				×××					
3 -	1124 -	-		× × ×					
-				× × ×					
-				× × ×					
-									
4 -	1123 -			× × × ×					
-				×. ×. ×					
-				× × × ×					
-				× × × ×					
5 -	1122 -			× ×					
	1122 -			× × × ×					um boom extensi
-					End of Test Pit: 5.2 m			No see Stable	
			ARKS:	1 1			Casino Mir	ning Corporatio	n
	ples tes enver, C		-	ld Soils Labo	pratory		Casino Cop TEST PIT L	oper-Gold Proje OG FOR TP12-2	ct 2
		5.5.000				Knigh	t Piéso	PROJECT/ASSIG	NMENT NO. REF -325/8 14
						c	ONSULTI		P12-22

F	-		Casino Copper-Gold Project			_ Test Pit No.:	TP12-23	Page		
Contractor: Location: Coordinates			Drilling Lto		Equipment Used:	CAT 322C	Date Started:			
					Total Depth:	5.1 m	_Date Completed:			
		ates	6,957,97	1N, 61	3,080 E (UTM ZONE 7 NAD83)	Elevation:	1103 m	Logged by:		
			1	1				Reviewed by:	SB	
DEPTH - (m)	ELEVATION - (m)	SAMPLES	SAMPLE NO.	GRAPHIC LOG		AL DESCRIPTION	I	cc	OMMENTS	
1	-			¢ŽΩ/	TOPSOIL (0 to 0.1 m)					
-	-			0.00	Moss, some cobbles, damp, rootle SAND AND GRAVEL	ets, organics, black		/		
- - - - 1 - -	- - - - - 1102 -				(0.1 to 5.1 m) SAND and GRAVEL, some cobbl coarser with depth, some oxidatio	es, trace silt, trace clay, n, orange, damp	medium grained,			
-	-	- M	TP12-23							
2 -	- - - 1101 -									
3 -	- - - - - - - - - - - - - - - - - - -									
4	- - - - - - - - - - - - - - - - - - -									
	- - - 1098 - - - -				End of Test Pit: 5.1 m			Maximu No seep Stable w	-	
GE	NERAL	REM	ARKS:				Casino Mir	ning Corporation		
				ld Soils Labo	pratory	Casino Mining Corporation Casino Copper-Gold Project				
in De	enver, Co	olorado				Knich		OG FOR TP12-23	MENT NO. REF	
						nnign	t Piéso	FIGURE	<sup>325/8</sup> 14 212-23	

	-				Gold Project	_ Test Pit No.: _	TP12-24	Page			
			Kluane	-		_Equipment Used: _	CAT 322C	_ Date Started:		27 Jun 12	
			Gold Or			Total Depth:	5.1 m	_Date Completed:			
С	oordin	ates	6,958,07	′1N, 6′	12,907 E (UTM ZONE 7 NAD83)	Elevation:	1123 m	_ Logged by:			
								Reviewed by:	SI	В	
DEPTH - (m)	ELEVATION - (m)	SAMPLES	SAMPLE NO.	GRAPHIC LOG		AL DESCRIPTION	I	с	OMMEN	TS	
-				<u>24</u> , <u>24</u> , <u>24</u> , <u>2</u> 4, <u>24</u> , <u>24</u> , <u>24</u> , <u>26, 26, 26</u> , <u>2</u>	(0 to 0.3 m) ■ Moss, some cobbles, damp, rootle	ate organice black					
-		-		n <u>in vin in</u> 0	GRAVELLY, SANDY CLAY	ets, organics, black		<b>¥</b>			
-		1			(0.3 to 5.1 m) Gravelly, sandy CLAY, some silt,	fine arained, rounded ar	avel orange dar	no			
-	-			<u> </u>	Staveny, Sandy OLAT, SUME SIL,	and granica, rounded gr	arei, oranye, uar	<b>.</b>			
]				· 0							
1	1122 -										
•		-									
		1									
-		-		· · · ·							
1		1									
-		-									
2 -	1121 -	m									
]		V	TP12-24-1								
]		1									
]	-	-									
		1		· <u>·</u> ·							
-		-									
3 -	1120 -	1		-0° -							
-		-									
	•			· 0. ·							
-		1									
-				-0							
]		1									
-		-		6.00-							
4 -	- 1119	SW									
-			TP12-24-2	<sup>+0°</sup> ਰ	(4 to 5.1 m) - light grey/silver						
		1									
-		-									
1	•	1									
-		1		-0.4							
5 -	1118 -	]									
-		1			End of Test Pit: 5.1 m				um boom ex seepage at (		
-		-							le walls		
GEN		REM	ARKS:				<b>A</b> • • • • • •				
				ld Soila Lab	oraton			ning Corporatio oper-Gold Proje			
	ples test enver, C		inight Piéso	iu Joiis Lab	ioratory		TEST PIT L	OG FOR TP12-2	24		
De		5101 200				Knich	t Piósn	PROJECT/ASSIG	-325/8	REF N 14	
						migh	t Piéso		P12-24		

	-				old Project	Test Pit No.:	TP12-31	_ Page		: 4 Jul 12
				d. : East	_ · · _	CAT 322C 2.16 m		Started: _		
				3,190 E (UTM ZONE 7 NAD83)	Elevation:	995 m		ged by: _		
C	,001011	lales	0,952,17	<u>2 N, 81</u>	3,190 E (UTWIZONE / NADOS)		990 III		wed by: _	
( <b>m</b> )	(m) - NC	S	N	C LOG						
DEPTH - (m)	ELEVATION - (m)	SAMPLES	SAMPLE NO.	GRAPHIC		AL DESCRIPTION	I		COI	MMENTS
-		-		24 <u>24</u> 22 26 <u>26 26</u> 2 26 26 26 2	TOPSOIL (0 to 0.3 m) Moss, moist, rootlets, organics, bl	ack				
-		-			SAND (0.3 to 2.16 m) SAND, some silt, some gravel, so angular cobbles, brown, moist to v	ome cobbles, coarse gra wet, well graded	ined, sub rounder	d to		
1-	994 -	m	TP12-31	- · · · · · · · · · · · · · · · · · · ·						
-		-								
2 -	993 -	-			(1.9 to 2.16 m) - light brown, 0.1 m sand and grav	vel seam			Refusal o	n Bedrock
-		-			End of Test Pit: 2.16 m				No seepa Stable wa	-
3 -	992 -	-								
4 -	991 -									
			ARKS:	ld Soils Labo	oratory		Casino Mir Casino Cop TEST PIT L	per-Gold	Project	
in De	enver, C	olorado	).			Knigh	t Piéso		DJECT/ASSIGNME VA101-32	

	Project:		ct:	Casino (	Copper-C	Gold Project	Test Pit No.:	TP12-32	Р	age <u>1 of 1</u>	
		Contra	ctor:	Kluane [	Drilling L	td.	_Equipment Used:	nt Used: CAT 322C Date Started:			
		Loca	tion:	TMF Em	bankmer	nt East	Total Depth:	<b>1.4 m</b> Da	1.4 m Date Completed: 4 Ju		
	C	Coordin	ates	6,952,21	5N, 6	13,338 E (UTM ZONE 7 NAD83)	Elevation:	1013 m	Logged	by:NS	
7 Dec 12									Reviewed	by: <b>SB</b>	
	DEPTH - (m)	ELEVATION - (m)	SAMPLES	SAMPLE NO.	GRAPHIC LOG		AL DESCRIPTION	I		COMMENTS	
MPL	-	-			<u>14</u> <u>14</u> <u>14</u> <u>14</u> <u>14</u>	TOPSOIL (0 to 0.15 m)					
TA TE	-	-				Moss, some cobbles, some bould	lers, moist, rootlets, orga	anics, black			
EST PIT LOG METRIC, TEST PIT DAI	- - - - - 1 - - - - -	- - - - - - - - - - - - - - - - - - -	em?	TP12-32		SAND (0.15 to 1.4 m) SAND, some boulders, trace to so well graded, sub angular cobbles	ome silt, some to many	cobbles, brown, moist,			
B,	-	-			• • • • • • • • • •	End of Test Pit: 1.4 m				efusal on Bedrock	
FIIE/WANTIFRJ. FILETI010032508AIDATATASK 200 - 2012 GEOTECHNICAL SI PROGRAMIGINT2012 SI TESTPIT LOGS. REV SB.GPJ LIbrary. WANTIFRJ. FILETI010032508AIDATATASK 200 - 2012 GEOTECHNICAL SI PROGRAMIGINTTEST PIT PROGRAMILIBRARY_TEMPLATE.GLB, TEST PIT LOG METRIC, TEST PIT DATA TEMPLATE MAY08.GDT,		- - - - - - - - - - - - - - - - - - -								o seepage Istable walls	
	-	-									
CHNICAL SI PROGRAMIGIN I DTECHNICAL SI PROGRAMIG	3	1010 - - - - - - -									
2 GEC	-										
J325/08/AILATATASK 200 - 2012 G	4	- 1009 - - - - - - - - - - - - - - - - - - -									
E/1/0	-	-									
KJ FILEVI 1\PRJ_FIL		NERAL		ARKS: (night Piésol	d Soils Lat	poratory	Casino Mining Corporation Casino Copper-Gold Project				
VANT	in De	enver, Co	olorado				<b>T</b> T A <b>T</b>	TEST PIT LÖG		I2-32 ASSIGNMENT NO. REF NC	
Library: //							Knigh	t Piésold	FIGURE	TP12-32	

	Ρ	roje	ct:	Casino (	Copper-C	Gold Project	_ Test Pit No.:	TP12-33	_	Page _	1 of 1
	C	Contra	ctor:	Kluane I	Drilling Lt	d.	_Equipment Used:	CAT 322C		Started:	
		Loca	tion:	TMF Em	bankmer	t East	Total Depth:	1 m	_Date Co	mpleted: _	4 Jul 12
~	С	oordin	ates	6,952,23	4N, 6	13,516 E (UTM ZONE 7 NAD83)	Elevation:	1037 m		gged by: _	
Jec 1									Revi	ewed by: _	SB
LATE MAY08.GDT, 71	DEPTH - (m)	ELEVATION - (m)	SAMPLES	SAMPLE NO.	GRAPHIC LOG		AL DESCRIPTION	I		со	MMENTS
₹¥_TEMPLATE.GLB, TEST PIT LO	-	- - - - - - - - - - - - - - - - - - -	E.	TP12-33		TOPSOIL (0 to 0.2 m) Moss, moist, rootlets, organics, bla SILTY SAND (0.2 to 1 m) Silty SAND, coarse grained, some (0.9 to 1 m) - damp to dry End of Test Pit: 1 m		wet, brown	/	Refusal c No seepa Stable wa	-
DTECHNICAL SI PROGRAMGINT/TEST PIT PROGRAM	3 -	- - - - - - - - - - - - - - - - - - -									
E\1\01\00325\08\A\DATA\TASK 200 - 2012 GEOT	4	- - - - - - - - - - - - - - - - - - -									
	<u>JE</u> N	<u>IER</u> AL	<u>REM</u>	ARKS:				Caeino Mir		noration	
S 1/PRJ				night Piésol	d Soils Lat	oratory		Casino Mir Casino Cop	per-Gol	d Project	
in NAN	-	nver, Co		-				TEST PIT L	OG FOR	TP12-33	
rary: //							Knigh	t Piéso		VA101-32	25/8 14
						ndation Engineering Manual, 4th Edition, 2006.	Čc	ONSULTI	NG	TP	12-33 REV

F	Proje	ct:	Casino (	Copper-(	Gold Project	_ Test Pit No.:	TP12-44	_	Page	1 of 1
	Contra	ctor:	Kluane E	Drilling L	td.	Equipment Used:	CAT 322C	_ Date	Started:	5 Jul 12
	Loca	tion:	TMF Em	bankmei	nt East	Total Depth:	0.9 m	_Date Co	mpleted:	5 Jul 12
С	coordin	ates	6,952,36	7N, 6	13,499 E (UTM ZONE 7 NAD83)	_ Elevation:	1038 m			
								Revi	ewed by: _	SB
DEPTH - (m)	ELEVATION - (m)	SAMPLES	SAMPLE NO.	GRAPHIC LOG		L DESCRIPTION	I		v CO	MMENTS
- - - - - - - - - - - - - - - - - - -	- - - - - - - - - - - - - - - - - - -	em j	TP12-44		(0 to 0.3 m) Moss, wet, rootlets, organics, black SILTY SAND, FROZEN (0.3 to 0.9 m) Silty SAND, some gravel, trace col	bbles, rounded to sub r	ounded cobbles, l	brown,	1	
2 -	- - - - - - - - - - - - - - - - - - -									
3 -	- - - - - - - - - - - - - - - - - - -									
- 4	- - - - - - - - - - - - - - - - - - -									
-	-									
GEI	NERAL	REM	ARKS:				Casino Mir	ning Cor	poration	
Sam	ples test	ed at K	night Piésol	d Soils Lal	boratory		Casino Cop	per-Gol	d Project	
in De	enver, Co	olorado				Knigh			ROJECT/ASSIGNME VA101-32	
	(m) - HLd - O 	Image: Contract Local Coordin         Image: Coordin	Contractor: Location: Coordinates	Contractor: Kluane I Location: TMF Emil Coordinates 6,952,36 (u) L N Hag U Hag U Hag	Kluane Drilling L         Location:       TMF Embankmen         Coordinates       O       O       O         (ii)       (iii)       S       O       O       O         (iii)       N       S       O       O       O       O         (iii)       N       S       O       O       O       O       O         (iii)       N       S       O       I       O       O       O       O         (iii)       N       S       I       I       O       O       O       O       O         (iii)       N       S       I <thi< th=""> <thi< th="">       I       I</thi<></thi<>	Contractor: Kluane Drilling Ltd. Location: TMF Embankment East Coordinates 6,952,367 N, 613,499 E (UTM ZONE 7 NAD83)	Contractor: Kluane Drilling Ltd Total Depth: Total	Contractor:       Kluene Drilling Ltd.       Equipment Used:       CAT 322C         Location:       IMF Embankment East       Total Depth:       0.9 m         Coordinates       6.952,367 N.       613.499 E (UTM ZONE 7 NAD83)       Elevation:       1038 m         Image: Second and the se	Contractor:       Kluene Drilling Ltd.       Equipment Used:       0.9 m       Date Co.         Coordinates       5,952,367 N.       613,499 E (UTM ZONE 7 NADB3)       Elevation:       1038 m       Location:         Image: System of the system	Contractor:       Kluene Drilling Ltd.       Equipment Used:       0.3 m       Date Completed:         Coordinates       6.952,967 N.       613.499 E (UTM ZONE 7 NADB3)       Elevation:       1038 m       Logged by:         Eigen State       0.9 m       0.9 m       Date Completed:       1038 m       Logged by:         Eigen State       0.9 m       0.9 m       0.9 m       Reviewed by:       Reviewed by:         Eigen State       0.9 m       0.9 m       0.9 m       Reviewed by:       Reviewed by:         Eigen State       0.9 m       0.9 m       0.9 m       Reviewed by:       Reviewed by:         Eigen State       0.9 m       0.9 m       Reviewed by:       Reviewed by:       Reviewed by:         Eigen State       0.9 m       Reviewed by:       Reviewed by:       Reviewed by:       Reviewed by:         Image: State       State       State       Reviewed by:       Reviewed by:       Reviewed by:       Reviewed by:       Reviewed by:         Image: State       State       State       Reviewed by:       Reviewed by:       Reviewed by:       Reviewed by:       Reviewed by:         Image: State       Image: State       State       Reviewed by:       Reviewed by:       Reviewed by:       Reviewed by: <t< td=""></t<>

ſ	F	Proje	ct:	Casino C	Copper-(	Gold Project	Test Pit No.:	TP12-47	Page _	1 of 1
		Contra	ctor:	Kluane D	Drilling L	td.	_Equipment Used:	CAT 322C D	ate Started: _	5 Jul 12
		Loca	tion:	TMF Emb	bankmei	nt East	Total Depth:	2.1 m Date	Completed: _	5 Jul 12
~	C	Coordin	ates	6,952,147	7N, 6	13,517 E (UTM ZONE 7 NAD83)	Elevation:		Logged by: _	
Dec 1;								R	eviewed by: _	SB
ATE MAY08.GDT, 71	DEPTH - (m)	ELEVATION - (m)	SAMPLES	SAMPLE NO.	GRAPHIC LOG		AL DESCRIPTION	1	CO	MMENTS
EMPL	-	-			1. 44. 94. 94. 84. 84. 84. 94. 9	TOPSOIL (0 to 0.1 m)				
TATE	-	-				Moss, some boulders, some cobb	oles, damp, rootlets, org	anics, black		
ETRIC, TEST PIT D/			m	TP12-47		(0.1 to 2.1 m) SAND, many cobbles, some silt, angular cobbles, moist, brown	some boulders, coarse g	grained, sub angular to		
LB, TEST PIT LOG MI	- 1 - - -	1028 - - - -								
.V SB.GPJ BRARY_TEMPLATE.G		- - - - 1027 -							Refusal c	n Bedrock
I V2012 SI TESTPIT LOGS RE SINT/TEST PIT PROGRAMUL	-					End of Test Pit: 2.1 m			No seepa Unstable cobbles	age walls, sloughing
O I ECHNICAL SI PROGRAMIGIN GEOTECHNICAL SI PROGRAMIC	3	1026 - - - - - - - - -								
FIE://VANT1/PRJ.FILE1101100325084AIDATATASK 200 - 2012 GEOTECHNICAL SI PROGRAMGINT2012 SI TESTPIT LOGS REV SB.GPJ LIbrary: //VANT1/PRJ.FILE1101100325084/DATATASK 200 - 2012 GEOTECHNICAL SI PROGRAMGINTTEST PIT PROGRAM/LIBRARY_TEMPLATE.GLB, TEST PIT LOG METRIC, TEST PIT DATA TEMPLATE MAY08.GDT, 7 Dec 12	- 4 - - - - - - - - - - - -	- 1025 - - - - - - - - - - - - - - - - - - -								
	GF	NERAL	RFM	ARKS				<u> </u>		
				night Piésolo	d Soils Lal	poratory		Casino Mining C Casino Copper-G	old Project	
		enver, Co		-				TEST PIT LOG FO	DR TP12-47 PROJECT/ASSIGNME	
e: WAN Srary: W							Knigh	t Piésold	VA101-32	25/8 14
						indetion Engineering Manual 4th Edition, 2006	C	ONSULTING	<u> </u>	12-47

	F	Proje	ct:	Casino (	Copper-C	Gold Project	Test Pit No.:	TP12-48	Page	1 of 1
		Contra	ctor:	Kluane E	Drilling L	td.	_Equipment Used:		Date Started:	5 Jul 12
		Loca		TMF Em			Total Depth:	1.7 m Date	Completed:	
2	C	Coordin	ates	6,952,03	4N, 6	13,376 E (UTM ZONE 7 NAD83)	Elevation:	1007 m	Logged by:	
7 Dec 12				1				F	Reviewed by:	SB
FIREWARTITIES THE TOTO 2005 SOUND AT A SUCCEDENTION OF A PROGRAMMONTANT SUCCES REVASSION OF THE TOTAL THE TOTAL	DEPTH - (m)	ELEVATION - (m)	SAMPLES	SAMPLE NO.	GRAPHIC LOG		AL DESCRIPTION	I	c	OMMENTS
MPL	-	-			<u>14</u> . <u>14</u> . <u>14</u> . <u>14</u>	TOPSOIL (0 to 0.2 m)				
TA TE		-			<u> </u>	Moss, damp, rootlets, organics, bl	ack			
TEST PIT DA	-	-	m	TP12-48		SAND (0.2 to 1.7 m) SAND, some cobbles, some bould damp to moist	ders, some gravel, coar	se grained, brown,		
ETRIC,	-	-			· · · · · · · · · ·					
OG ME	1 -	- 1006 -			· · · · · · · · · · · · ·					
L PIT L	-	-			· · · · · · · · · · ·					
, TESI	-	-			· · · · · · · · · · · · · · · · · · ·					
E.GLB.	-	-			· · · · · · · · · · · · · · · · · · ·					
<b>APLAT</b>	-	-			· · · · · · · · · · · · · · · · · · ·	End of Test Pit: 1.7 m				on Bedrock
TEN	-	-							No seep Stable w	-
EV SB.	2 -	1005 -								
RAML	-									
PROG	-	-								
T PIT	-	-								
UTZ SI	-	-								
GIN 1/2 AM/GIN	3 -	- 1004 -								
ROGR	-									
LSIP	-	-								
HNICA	-	-								
OTECHN		-								
012 GE	-	-								
2012	4 -	1003 -								
LASK 2	-	-								
DATAN	-	-								
A/DA	-	-								
100325	-									
E/1/01	-	-								
-ILEVIN	GE	NERAL	REM	ARKS:				Casino Mining (		
11/21		-		night Piésol	d Soils Lat	poratory		Casino Copper- TEST PIT LOG F	Gold Projec	t
/ANT	in De	enver, Co	olorado				Knich		PROJECT/ASSIGN	MENT NO. REF NO.
						indetion Engineering Manual 4th Edition, 2006	migil	t Piésold	FIGURE	P12-48 0

	F	Proje	ect:	Casino	Copper-C	Gold Project	Test Pit No.:	TP12-49	_	Page _	1 of 1
		Contra	ctor:	Kluane [	Drilling L	td.	Equipment Used:	CAT 322C	_ Date	Started:	5 Jul 12
		Loca	tion:	TMF Em	bankmer	nt East	Total Depth:	1.1 m	_Date Co	mpleted:	5 Jul 12
	С	Coordin	ates	6,951,91	5N, 6	13,237 E (UTM ZONE 7 NAD83)	Elevation:	999 m	_ Lo	gged by:	NS
sc 12									Revi	ewed by:	SB
ATE MAY08.GDT, 7 De	DEPTH - (m)	ELEVATION - (m)	SAMPLES	SAMPLE NO.	GRAPHIC LOG		AL DESCRIPTION	J		со	MMENTS
		998 - 998 - 997 - 996 - 996 -		TP12-49		TOPSOIL (0 to 0.2 m) Moss, damp, rootlets, organics, b SAND, FROZEN (0.2 to 1.1 m) SAND, some silt to silty, some co frozen, well bonded, no excess ic End of Test Pit: 1.1 m	lack bbles, some gravel, me		/		on Bedrock age
"WANT1/PKJ_FILE/1/01/00325/08/4/DATA/TASK 2: ary: "WAN11/PRJ_FILE/1/01/00325/08/A/DATA/TASK 2:	Sam	NERAL ples test enver, C	ed at K	night Piésol	d Soils Lal	poratory	Knigh	Casino Min Casino Cop TEST PIT LO t Piéso	per-Gol OG FOR	d Project TP12-49 ROJECT/ASSIGNM VA101-32	ENT NO. REF NO.
18						indetion Engineering Manual 4th Edition 2006	- C	ONSULTI	NG	TP	12-49

	F	Proje	ct:	Casino (	Copper-(	Gold Project	Test Pit No.:	TP12-50	_	Page _	1 of 1
		Contra	ctor:	Kluane E	Drilling L	td.	Equipment Used:	CAT 322C	Date	Started:	5 Jul 12
		Loca	tion:	TMF Em	bankmei	nt East	Total Depth:	1.2 m	-	mpleted: _	
	C	Coordin	ates	6,952,00	1N, 6	13,104 E (UTM ZONE 7 NAD83)	Elevation:	1006 m	_	gged by: _	
ec 12									Revie	ewed by: _	SB
ATE MAY08.GDT, 7 D	DEPTH - (m)	ELEVATION - (m)	SAMPLES	SAMPLE NO.	GRAPHIC LOG		AL DESCRIPTION	l		со	MMENTS
MPL	-				11. 34. 31. 34.	TOPSOIL (0 to 0.15 m)					
I LOG METRIC, TEST PIT DATA TE	- - - - - 1 -	1005 -	any.	TP12-50		Moss, damp, rootlets, organics, b SAND, FROZEN (0.15 to 1.2 m) SAND, some silt to silty, some co well bonded, no excess ice, Nbn		dium grained, froze	/		
PJ TEMPLATE.GLB, TEST PIT	- - - - - - -					End of Test Pit: 1.2 m				Refusal o No seepa Stable wa	-
112 SI IESIPII LUGS REV 38.6 TITEST PIT PROGRAMILIBRARY	2	1004 -									
ECHNICAL SI PROGRAMIGIN I /2( EOTECHNICAL SI PROGRAMIGIN	3	1003 -									
FIIE://VAN11/PRL FILE/1010032508/AIDATATASK 200 - 2012 GEOTECHNICAL SI PROGRAMIGINT2012 SI TESTPIT LOGS REV SB GPJ LIDRAY. //VAN11/PRL FILE/101/0032508/AIDATATASK 200 - 2012 GEOTECHNICAL SI PROGRAMGINTTEST PIT PROGRAM/LIBRARY_TEMPLATE.GLB, TEST PIT LOG METRIC, TEST PIT DATA TEMPLATE MAY08.GDT, 7 Dec 12	4	1002 -									
	GE	NERAL	REM	ARKS:				Casino Min		noration	
111/PR.				night Piésol	d Soils Lal	poratory		Casino Cop TEST PIT LC	per-Gol	d Project	
NAN/	in De	enver, C	olorado				17			ROJECT/ASSIGNM	
Library:							Knigh	t Piéso	IA NG	VA101-33	25/8 14 12-50 REV. 0

ſ	F	Proje	ct:	Casino	Copper-0	Gold Project	Test Pit No.:	TP12-60	_	Page	1 of 1
		Contra	ctor:	Kluane	Drilling L	td.	_Equipment Used:	CAT 322C	_ Date	Started: _	6 Jul 12
						tockpile South	Total Depth:	2.3 m		mpleted: _	
2	C	Coordin	ates	6,955,57	78N, 6	11,938 E (UTM ZONE 7 NAD83)	Elevation:	1090 m		gged by: _	
7 Dec 12				1					Revi	ewed by: _	SB
	DEPTH - (m)	ELEVATION - (m)	SAMPLES	SAMPLE NO.	GRAPHIC LOG		AL DESCRIPTION	I		CO	MMENTS
EMPL	-				<u>14</u> . <u>14</u> . <u>14</u> . <u>14</u>	TOPSOIL (0 to 0.3 m)					
TTA TI					10 <u>11</u> 1 <u>1</u> 1 <u>1</u>	Moss, some boulders, some cobb	bles, moist, rootlets, orga	anics, black			
TEST PIT LOG METRIC, TEST PIT DATA TEMPLATE MAY08.GDT,	- - - - 1 - - - - - -	1089 -	m	TP12-60		GRAVELLY SAND (0.3 to 2.3 m) Gravelly SAND, some cobbles, tra grained, brown, moist to wet (1 to 2.3 m) - orange, some silt	ace boulders, some silt,	sand is medium			
PII LOGS REV SB.GPJ PROGRAMILIBRARY_TEMPLATE.GLB,	- - - - 2 - - - -	1088 -				End of Test Pit: 2.3 m				Refusal o	n Bedrock
AM/GIN1/2012 SI 1ESI OGRAM/GINT/TEST PIT	- - - - - - - - - - - - -	1087 -								Stable wa	alis
1/10/100325/08/A/DATA/TASK 200 - 2012 GEOTECHNICAL SI PROG 11///100325/08/A/DATA/TASK 200 - 2012 GEOTECHNICAL SI PR	- - - 4 - - - - - - - - - - - - - - -	1086 -									
PRJ_		NERAL			ld Saile La			Casino Mir Casino Cor	ning Cor	poration	
AN11		enver, C		ínight Piéso	na Juis Läi	or all y		Casino Cop TEST PIT L			
ibrary: \\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\				-			Knigh	t Piéso		ROJECT/ASSIGNMI VA101-32	25/8 14
┶╶┙╘	oggin	aconduct	od ooco	rding to the C	Canadian Es:	ndation Engineering Manual, 4th Edition, 2006.	c	ONSULTI	N G	TP	12-60 REV. 0

	F	Proje	ct:	Casino (	Copper-C	Gold Project	Test Pit No.:	TP12-61	Page	1 of 1
		Contra	ctor:	Kluane [	Drilling L	td.	_Equipment Used:	CAT 322C	ate Started: _	6 Jul 12
		Loca	tion:	Low Gra	de Ore S	tockpile South	Total Depth:	2.3 m Date	Completed: _	6 Jul 12
N	C	Coordin	ates	6,955,81	5N, 6	11,757 E (UTM ZONE 7 NAD83)	_ Elevation: _	1101 m	Logged by: _	
7 Dec 12				1				R	eviewed by: _	SB
	DEPTH - (m)	ELEVATION - (m)	SAMPLES	SAMPLE NO.	GRAPHIC LOG		AL DESCRIPTION	I	со	MMENTS
MPLA	-	-			$\frac{1}{2}, \frac{1}{2}, \frac$	TOPSOIL (0 to 0.3 m)				
TA TE	-	-			<u>46.46.46.4</u> 12.49.492.49	Moss, some cobbles, moist, rootle	ts, organics, black			
IT LOG METRIC, TEST PIT DA	- - - - - 1 -	- - - - - - - - - - - - - - - - - - -				SAND (0.3 to 2.3 m) SAND, some cobbles, trace bould wet, brown (1 to 2.3 m)	ers, some silt to silty, m	nedium grained, moist to		
STP		-	m		• • • • • • • • • •	- orange, many cobbles, some silt				
AMIGIN 1201 ST LEST PIT LOGS REV 26.04 JGRAMGINTITEST PIT PROGRAMLIBRARY_TEMPLATE.GLB, TEST PIT LOG METRIC, TEST PIT DATA TEMPLATE MAY08.GDT,		- - - - - - - - - - - - - - - - - - -		TP12-61					Refusal c	on Bedrock
PII L	-	-				End of Test Pit: 2.3 m			No seepa	-
CAL SI PROGRAMIGIN LIZUTZ SI LESTE HNICAL SI PROGRAMIGINTITEST PITE	- - - 3 - - - - - -	- - - - - - - - - - - - - - - - - - -							Stable wa	2015
FIIE://VAN11/PKJ_FILE/1/01/00325/08/A/DATA/TASK 200 - 2012 GEOTECHNICAL SI PROGR Library: //VAN11/PRJ_FILE/1/01/00325/08/A/DATA/TASK 200 - 2012 GEOTECHNICAL SI PRO	4	- - - - - - - - - - - - - - - - - - -								
E/1/0	]									
11/PRJ_FILE		NERAL		ARKS: (night Piésol	d Soils Lat	poratory		Casino Mining C Casino Copper-G TEST PIT LOG FO	<b>Sold Project</b>	
NAN	in De	enver, C	olorado	).			77 • 7		JR IP12-61 PROJECT/ASSIGNMI	ENT NO. REF NO.
						undation Engineering Manual 4th Edition 2006	Knigh	t Piésold	VA101-32	

ſ	F	Proje	ct:	Casino	Copper-C	Gold Project	Test Pit No.:	TP12-62	Page	1 of 1
		Contra	ctor:	Kluane I	Drilling Lt	d.	Equipment Used:	CAT 322C	Date Started:	6 Jul 12
		Loca	tion:	Low Gra	de Ore S	tockpile South	Total Depth:	1.82 m Dat	e Completed:	6 Jul 12
	C	Coordin	ates	6,956,02	2N, 6	11,629 E (UTM ZONE 7 NAD83)	Elevation:	1107 m	Logged by:	NS
7 Dec 12									Reviewed by:	SB
	DEPTH - (m)	ELEVATION - (m)	SAMPLES	SAMPLE NO.	GRAPHIC LOG		AL DESCRIPTION	l	cc	MMENTS
MPL	-	-			17. 2. 16. 19. 11. 19. 19. 19. 19. 19. 19. 19. 19	TOPSOIL (0 to 0.25 m)				
TEST PIT LOG METRIC, TEST PIT DATA TEMPLATE MAY08.GDT,	- - - - - - 1 - - - -	- - - - - - - - - - - - - - - - - - -	E.	TP12-62		Moss, damp, rootlets, organics, b SAND (0.25 to 0.9 m) SAND, some cobbles, trace bould brown SAND, FROZEN (0.9 to 1.82 m) SAND, some cobbles, some boul some excess ice, Nbe	ders, some silt to silty, rr			
PIT LOGS REV SB.GPJ PROGRAMULIBRARY_TEMPLATE.GLB, TES	- - - - 2 - - - - - -	- - - - - - - - - - - - - - - - - - -				End of Test Pit: 1.82 m			Refusal o No seepa Stable w	-
SI PROGRAM/GIN 1/2012 SI 1ESI AL SI PROGRAM/GINT/TEST PIT	- - - 3 - - - - -	- - - - - - - - - - - - - - - - - - -								
IIE:WANTTIPKJ FILENI/01/00325/08/AIDATALTASK 200 - 2012 GEOTECHNICAL : brary: \\VAN11/PRJ_FILEN1/01/00325/08/A\DATA\TASK 200 - 2012 GEOTECHNIC	- - - - - - - - - - - - - - -	- - - - - - - - - - - - - - - - - - -								
11/013	-	-								
	GE	NERAL	REM	ARKS:				Cooling Ministra		
U FIL				inight Piéso	ld Soils Lab	oratory		Casino Mining Casino Copper-	Sorporation Gold Project	t
AN11		enver, Co		-		,		Casino Copper- TEST PIT LOG F		
ILVAN	- •	., 2					Knigh	t Piésold	PROJECT/ASSIGNM VA101-3	25/8 14
						ndation Engineering Manual 4th Edition 2006	c	ONSULTING		P12-62 0



### APPENDIX C

#### **GEOTECHNICAL DRILLHOLE DATA**

Appendix C1	Geotechnical Drillhole Logs
Appendix C2	Geotechnical Drillhole Logging Data Sheets
Appendix C3	Previous Geotechnical Drillhole Logs



# **APPENDIX C1**

### **GEOTECHNICAL DRILLHOLE LOGS**

(Pages C1-1 to C1-23)

	Pr	oje	ct:	CASINO PROJECT			Drill	Hole N	No	DH	113-	05	PAGE	1 of	1
	С	ontra	ctor:	Kryotek				itu Samp	oler: _		N/A	Date	e Started:	25 Aug	13
		Loca	ation:	Proposed Crusher Area				Total De					mpleted:	25 Aug	13
	Co	ordin	ates:	6,958,360 N, 612,088 E, UTM NAD8					ion: _						
	D	rilling	Rig:	SDC150			'	Inclinati	on":		-90°		ogged by:		
	Drillin	g Met	thod:	Sonic. No flush.				Hole s	size: _		HQ	Rev	ewed by:	SB	
DT, 24 Dec 13	ELEVATION (m)	DEPTH (m)	GRAPHIC LOG	MATERIAL DESCRIPTION	TOTAL CORE RECOVERY (%)	SAMPLE TYPE	SAMPLE NO.	SAMPLE RECOVERY (%)	SPT BLOW COUNTS	Kelusal Felleuauoli	SPT 'N' VALUE / RQD (%)	RQD (%) ● 20 40 60 80 SPT TEST DATA 'I VALUES * 20 40 60 80	r	DRILLHOLE NOTES	WELL DETAILS
RJ FILEVI01/00325/16/AIDATATTASK 200 - 2013 GEOTECHNICAL SI PROGRAMGINTULIBRARY_TEMPLATE-DHS.GLB, DRILLHOLE LOG, DATA TEMPLATE_DEC18,2009.GDT,	- - 1075 - - -			VEGETATION (0 to 0.1) Moss, roots, vegetation TOPSOIL (0.1 to 0.2) Organic SILT, some roots, dark brown, wet (Topsoil). SAND AND GRAVEL (0.2 to 3) SAND and GRAVEL, some silt, some cobbles, poorly graded, reddish brown, loose, saturated. Sand is fine to coarse, gravel is coarse, subangular to angular (Colluvium). SANDY GRAVEL (3 to 4.1) Sandy GRAVEL, some cobbles, trace silt, orangy brown, locally red to black, massive, saturated to wet. Sand is fine to coarse, gravel is fine to coarse, gravel and cobbles are subangular to subrounded (Alluvium - Channel Deposit). End of Drillhole: 4.1 m	13		: BU-01	100					ground. frozen d of draina starts 10 West. Logging using in TP13-85 due to p to 3.00 r HQ size from 0.0 depth.	on original Soil is not ue to influence age, permafrost 0 m to the supplemented formation from 5 and TP13-86 oor recovery up n depth. sonic drilling to 4.1 m on a cobble at and of hole.	
	VATE	R LEV	EL IS ST IS /	ARKS: 0.2 M BGS BASED ON CORE. LOCALIZED . ABSENT DUE TO PROXIMITY OF DRAINAG	E. DF						С	MINING COR ASINO PROJ OLE LOG FO	ЕСТ		
				H LOCAL MATERIALS AFTER COMPLETION				TZ.	• 1				PROJECT/AS	SIGNMENT NO.	REF. NO
orary:				or Papart				K)	ııgl	nt	M	ésold	VA10	1-325/16	1 REV.
				for Report cording to the Canadian Foundation Engineering Ma	nual, 4t	th Edition	2006.		- (	C O I	N S I	ULTING		DH13-05	0

	-		CASINO PROJECT				ill Hole No					PAGE		
						In	Situ Sample					Started:	26 Aug	
	Loca		Proposed Crusher Area				Total Dept	h:	39.62			npleted:		
			6,958,360 N, 612,088 E, UTM NAD8	3			Elevatio		1080		te Well In		28 Aug	
	illing	Ũ	KD1000				"Inclination		-90°		-	ged by:	JAB	
Drilling	g Me	hod:	Diamond Coring. Water flush.	1 1	1	_	Hole siz	e:	HTW	· <u> </u>	Revie	wed by:	SB	1
ELEVATION (m)	DEPTH (m)	<b>GRAPHIC LOG</b>	MATERIAL DESCRIPTION	TOTAL CORE RECOVERY (%)	SAMPLE TYPE	SAMPLE NO.	SAMPLE RECOVERY (%)	SPT BLOW COUNTS Refusal Penetration	SPT 'N' VALUE / RQD (%)	20 40 SPT TES	60 80 <b>T DATA 'N'</b> JES≭ 60 80		DATES	
	- - 5		VEGETATION (0 to 0.1) Moss, roots, vegetation TOPSOIL (0.1 to 0.15) Organic SILT, some roots, dark brown, wet (Topsoil). COBBLES (0.15 to 0.6) COBBLES, some silt, sand and gravel, some roots, wet to saturated (Colluvium). Cobbles are angular and consist of Granodiorite. SILTY GRAVEL AND SAND (0.6 to 2) Silty GRAVEL and SAND, some cobbles, angular, orangy brown to grey, saturated, some layering visible (Colluvium). Sand is fine to coarse, gravel is fine to coarse. COBBLES, BOULDERS AND GRAVEL (2 to 4.3) COOBBLES, BOULDERS and GRAVEL, some silty sand, orangy brown, locally brownish red, subangular to subrounded, comprised of various rock types (Alluvium - Channel Deposit). Sand is fine to coarse, gravel is fine to coarse. WEATHERED WRGD (4.3 to 12.5) Dawson Range Batholith - Granodiorite, highly weathered, possibly fault between 9.40 and 10.00 m depth where rock is broken down to orange stained sand, fine to coarse, and gravel, fine to coarse. Medium grained, inequigranular, pink with very dark green to black specks (amphibole) and white to light grey specks (quartz), orange to dark red staining, very weak, very close joint spacing.	0 100 70 70 70 70 70 70 70 70 70 70 70 70 7								Drillpad o ground. S frozen due of drainag starts 10 r West. From 0.00 logged ba DH13-05, TP13-86 c recovery. HWT casi from 0.0 t depth.	n original soil is not e to influence e, permafrost n to the 0 to 4.30 m sed on TP13.85 and fue to poor ng installed o 4.6 m	
GENEF	201	₽.╱.\ RFM^	RKS <sup>.</sup>	65					0	• <u> </u>				
WATER DATA S	R LEV	EL IS ( TS AR		VC WI	TH HEAT	Г			C	CASINO	PROJE	ORATIOI CT DH13-05I		
			) FOR DOWNHOLE GEOPHYSICS. LOCAL ABSENT DUE TO PROXIMITY OF DRAINAG		AREA WI	HERE	TZ.					PROJECT/ASS		R
			-				-Kn	ıgh	it P	leso		VA101-		

	-		CASINO PROJECT				Hole N					GE <u>2</u>	
С	ontra		Kluane								Date Star		ug 13
0.			Proposed Crusher Area				Total Dep	om:			e Comple		ug 13
			6,958,360 N, 612,088 E, UTM NAD8	3			Elevatio		<u>1080 r</u> -90°-		Vell Instal		<u>ug 13</u> AB
	rilling	-	KD1000						-90° HTW				
Drillin	g Me I	inod:	Diamond Coring. Water flush.			-	Hole siz	∠e:			Reviewed	by:	SB
ELEVATION (m)	DEPTH (m)	<b>GRAPHIC LOG</b>	MATERIAL DESCRIPTION	TOTAL CORE RECOVERY (%)	SAMPLE TYPE	SAMPLE NO.	SAMPLE RECOVERY (%)	SPT BLOW COUNTS Refusal Penetration	SPT 'N' VALUE / RQD (%)	RQD (%) 20 40 60 SPT TEST DA VALUES 20 40 60	80 • 80 • • • • • • • • • • • • • • • • • • •	DRILLHOLE NOTES	
		0. 0. 0. 1. 1. 0. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1.	WEATHERED WRGD (4.3 to 12.5)										
-			Dawson Range Batholith - Granodiorite, highly weathered, possibly fault between 9.40 and 10.00 m depth where rock is broken down to orange stained sand, fine to coarse, and gravel, fine to coarse. Medium grained, inequigranular, pink with very dark green to black specks (amphibole) and white to light grey specks (quartz), orange to dark red staining, very weak, very close joint spacing. <b>WEATHERED WRGD</b> (12.5 to 13.72) Dawson Range Batholith - Granodiorite, medium grained, inequigranular, light gray with black specks, medium strong,	82					0 •				
- 1065 —	- 15	+++++++++++++++++++++++++++++++++++++++	moderately weathered. Joints are closely spaced, slightly rough, partially open, no infill, rust staining on surfaces. <b>WRGD</b> (13.72 to 21.33) Dawson Range Batholith - Granodiorite, medium grained, inequigranular, light grey with black specks, strong, slightly weathered. Joints are closely spacing, slightly rough, some yellow orange to green hard infill.	100					84				
-				99		UCS-1	100		86				
-	-			100					89				
_				95					55				
DATA S	R LEV SHEE	'EL IS ( TS AR	0.2 M BGS BASED ON DH13-05. DETAILED E PROVIDED IN APPENDIX B2. 2" SOLID P	VC WI	TH HEAT	-			С	MINING C ASINO PR DLE LOG F	OJECT		
			D FOR DOWNHOLE GEOPHYSICS. LOCAL ABSENT DUE TO PROXIMITY OF DRAINAG		AREA WH	1ERE	TZ.					CT/ASSIGNMENT NO	. RE
			or Report				- KN	lgh	II M	ésol		VA101-325/16	

	-		CASINO PROJECT				ill Hole No				PAGE	<u>3 of</u>	
С							Situ Sampler				Started:	26 Aug	
~			Proposed Crusher Area				Total Depth				mpleted:		
			6,958,360 N, 612,088 E, UTM NAD8				Elevation "Inclination"		<u>1080 m</u> -90°		nstalled: gged by:		
	rilling	-	KD1000 Diamond Coring. Water flush.				Hole size				ewed by:		
Drillin	iy ivie		Staniona oornig. Water nush.					·	(%)			3D	
ELEVATION (m)	DEPTH (m)	GRAPHIC LOG	MATERIAL DESCRIPTION	TOTAL CORE RECOVERY (%)	SAMPLE TYPE	SAMPLE NO.	SAMPLE RECOVERY (%)	SPT BLOW COUNTS Refusal Penetration	r value / RQD	RQD (%) ● 20 40 60 80 SPT TEST DATA 'N VALUES # 20 40 60 80		DRILLHOLE NOTES	
-			WRGD (13.72 to 21.33) Dawson Range Batholith - Granodiorite, medium grained, inequigranular, light grey with black specks, strong, slightly weathered. Joints are closely spacing, slightly rough, some yellow orange to green hard infill. WEATHERED WRGD	100					55				
-			(21.33 to 25.34) Dawson Range Batholith - Granodiorite, broken zone, very weak, moderately weathered rock mass. Rock fragments are medium grained, inequigranular, light grey with black specks, medium strong, moderately weathered. Joints are very closely spaced, slightly rough, yellow to green chalky and dark grey waxy infill; white veinlets throughout, up to ~1 cm thick.	100					0 •				
-				100					0 •				
1055 —	- 25-		WRGD (25.34 to 28.95) Dawson Range Batholith - Granodiorite, medium grained, inequigranular, light grey	100					22	↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓			
_			with black specks, strong, slightly weathered. Joints are moderately closely spaced, slightly rough, thin white to green soft infill.	100					32				
-				100					100		•		
0			DK0	89					60				
DATA S TRACE	r le\ Shee E ins <sup>-</sup>	/EL IS TS AR FALLEI		VC WI IZED /	TH HEAT	-		D	C/ RILLHO	MINING CORF ASINO PROJE LE LOG FOR	CT DH13-0	5B	
PERMA	AFRO	ST IS	ABSENT DUE TO PROXIMITY OF DRAINAG	E.			Kni	oh	t Pi	ésold		SIGNMENT NO. 1-325/16	RE
REV. (	0 - Is:	sued f	or Report					0			EIGURE	DH13-05B	

	•		CASINO PROJECT					lo. <u>D</u>			PAGE	4 of	
U	Contra					In Si 			N/A		e Started:	26 Au	
~			Proposed Crusher Area					oth:	<u>39.62 n</u>		mpleted:		-
			6,958,360 N, 612,088 E, UTM NAD8	5				on:					-
	rilling		KD1000				Inclinatio		-90°		ogged by:	JA	
Drillin	g Me	thod:	Diamond Coring. Water flush.				Hole s	ze:	HTW	Rev	ewed by:	SE	s 
ELEVATION (m)	DEPTH (m)	GRAPHIC LOG	MATERIAL DESCRIPTION	TOTAL CORE RECOVERY (%)	SAMPLE TYPE	SAMPLE NO.	SAMPLE RECOVERY (%)	SPT BLOW COUNTS Refusal Penetration	SPT 'N' VALUE / RQD (%)	RQD (%) ● 20 40 60 80 SPT TEST DATA 'N VALUES * 20 40 60 80	r	DRILLHOLE NOTES	
		$[+++]{+++++++++++++++++++++++++++++++++$	WEATHERED WRGD (28.95 to 33.52)										
-			Dawson Range Batholith - Granodiorite, medium grained, inequigranular, light grey with black specks, strong, moderately weathered. Joints are closely spaced, slightly rough, thin white to green soft infill.	100					83				
-				100					69				
- 1045 —			WRGD (33.52 to 39.11) Dawson Range Batholith - Granodiorite, medium grained, inequigranular, dark grey with black specks, medium strong, slightly weathered. Joints are slightly rough, thin white soft chalky infill, green veinlets along core length.	100		UCS-2	100		91		•		
-				100					67				
-				100					53				
-			WEATHERED WRGD (39.11 to 39.62)	100					39		Target de	pth reached,	NOW NOW
		++++ +-++	Leached, medium strong, moderately to highly weathered, close joint spacing.	┢──┤			+						- Po
			End of Drillhole: 39.62 m										
VATEI DATA S	R LEV SHEE	/EL IS TS AR	A <b>RKS:</b> 0.2 M BGS BASED ON DH13-05. DETAILED IE PROVIDED IN APPENDIX B2. 2" SOLID P D FOR DOWNHOLE GEOPHYSICS. LOCAL	VC WI	TH HEA	AT .			C	MINING COR ASINO PROJI DLE LOG FOR	ЕСТ		
			ABSENT DUE TO PROXIMITY OF DRAINAG				K <sub>V</sub>	inh	t Pi	ésold	PROJECT/ASS	GNMENT NO. -325/16	F
	) _ ler		for Report					ugn		JLTING	FICUPE	-325/16 H13-05B	

	-		CASINO PROJECT			_	II Hole No					<u>1 of</u>	
С	ontra					_	Situ Sampler				Started:	28 Aug	
~			Proposed Crusher Area			_	Total Depth				mpleted:		
			6,958,351 N, 612,168 E, UTM NAD8	3		-	Elevation					30 Aug	
	rilling	-	KD1000			_	"Inclination"		-90°		gged by:	SB	
Drillin	g Me	thod:	Diamond Coring. Water flush.				Hole size	e:	HTW	Revi	ewed by:	JEH	<u>الــــــــــــــــــــــــــــــــــــ</u>
ELEVATION (m)	DEPTH (m)	<b>GRAPHIC LOG</b>	MATERIAL DESCRIPTION	TOTAL CORE RECOVERY (%)	SAMPLE TYPE	SAMPLE NO.	SAMPLE RECOVERY (%)	SPT BLOW COUNTS Refusal Penetration	SPT 'N' VALUE / RQD (%)	RQD (%) ● 20 40 60 80 SPT TEST DATA 'N VALUES ¥ 20 40 60 80		DRILLHOLE NOTES	
-			SAND AND GRAVEL, FROZEN (NBN) (0 to 0.1) SAND and GRAVEL, some angular cobbles, trace silt, brownish grey, frozen, Nbn (Colluvium). Sand is fine to coarse, gravel is fine to coarse. SAND, FROZEN (NBN) (0.1 to 4.2) SAND, some silt, trace gravel, non plastic, orange beige, frozen, Nbn (Residual Soil). Sand is fine to coarse, gravel is fine to coarse.	0							of moss, topsoil a brownish angular of silt (Collu removed drilling. From 0.0 logged b TP13-87 due to po HWT cas from 0.00 depth.	by CAT before 0 to 4.20 m ased on and TP13-88 boor recovery. sing installed 0 to 4.57 m e diamond om 0.00 to	
1074 —	5-		WEATHERED WRGD (4.2 to 6.1) Dawson Range Batholith - Granodiorite, medium grained, equigranular, light grey with black spots, locally pink bands, weak, moderately weathered. Joints are very closely spaced, slightly rough with up to 2 mm of orange brown sandy silt infill, some healed joints with light green hard infill. Small shear zone between 5.67 and 5.77 m depth with subangular SAND and GRAVEL, some silt and clay.	99					0	• • • • • • • • • • • • • • • • • • •			
_			FAULT (6.1 to 6.7) FAULT From 6.30 to 6.50 m Recovered as clayey SAND and GRAVEL, moist, clay is grey, medium plasticity. From 6.10 to 6.30 and from 6.50 to 6.70 m Recovered as GRAVEL sized rock fragments, some silty sand in joints. Rock is pink with black and light grey specks.	98					22				
_	-	++++++++++++++++++++++++++++++++++++++	WEATHERED WRGD (6.7 to 8.07) Dawson Range Batholith - Granodiorite, medium grained, equigranular, pink to light grey matrix with dark green to black specks, strong, moderately to slightly weathered. Joints are closely spaced, slightly rough, some have orange slity sand infill, some dark red to orange staining, some healed joints with green infil.	100					40				
			SHEAR ZONE (8.07 to 8.27) SHEAR ZONE	99					0				
GENE								C		MINING COR		N	
SEPTE	MBEF	R 2013	OF LESS THAN 1 L/MIN FROM PIEZOMETE . DETAILED ROCK LOGGING DATA SHEET			D IN				ASINO PROJE		6	
APPEN	DIX E	32.					TZ					BIGNMENT NO.	R
							-Kni	gh	t Pi	iésold		-325/16	

Co Co Dr	ontra Loca ordin rilling	ctor: ation: ates: Rig:	CASINO PROJECT Kluane Proposed Crusher Area 6,958,351 N, 612,168 E, UTM NAD8 KD1000	3		In Si 	tu Samp Fotal Dep Elevati Inclinatic		N/A 41.15 r 1079 r -90°	Date n Date Co n Date Well I Lo	gged by:	<u>30 Auç</u> SB	y 13 y 13 y 13
ELEVATION (m)	DEPTH (m)	GRAPHIC LOG	Diamond Coring. Water flush.	TOTAL CORE RECOVERY (%)	SAMPLE TYPE	SAMPLE NO.	SAMPLE RECOVERY (%)	3ZI SPT BLOW COUNTS Refusal Penetration	SPT 'N' VALUE / RQD (%)	RQD (%) ● 20 40 60 80 SPT TEST DATA 'N VALUES # 20 40 60 80	ewed by:		WELL DETAILS
	- - - - - - - - -		Recovered as clayey SAND and GRAVEL, moist. Clay is greenish beige, orange and minor blue, medium plasticity. Gravel is angular, reddish pink hematite altered Granodiorite with black and light grey specks. <b>WEATHERED WRGD</b> (8.27 to 9.34) Dawson Range Batholith - Granodiorite, medium grained, equigranular, pink to light grey matrix with dark green to black and light grey specks, strong, moderately to slightly weathered. Joints are closely spaced, slightly rough, some have orange silty sand infill, some dark red to orange silty sand infill, some dark red to orange silty sand infill. Some dark red to orange silty sand infill. <b>FAULT</b> From 9.75 to 9.85 m Recovered as gravelly CLAY and SILT, moist, beige to pink, medium plasticity. From 9.34 to 9.75 m and from 9.85 to 10.67 m Recovered as a rubble zone of GRAVEL sized rock fragments with sandy silt and clay in joints. Gravel is fine to coarse, angular to subangular, silt and clay are orange to bright pinkish red (hematite). Gravel consists of slightly altered Granodiorite, pink matrix with light grey and black specks, medium grained, inequigranular, weak, moderately to highly weathered, dark green surface staining. <b>WEATHERED WRGD</b> (10.67 to 12.39) Dawson Range Batholith - Granodiorite, medium grained, light grey to pink matrix with dark grey specks, moderately weathered, weak. Joints are closely spaced, dominated by one discontinuity, smooth with soft white, dark red and green sandy clay infill. <b>WRGD</b> (12.39 to 20.05) Dawson Range Batholith - Granodiorite, medium grained, inequigranular, light grey with dark grey specks, strong, slightly weathered, some green sericit evinlets (1 mm thick). Joints are closely spaced, planar, smooth to slightly rough, some have dark red staining and trace calcite infill.	100 100 94 95 97 100		UCS-1	100		34 62 70 82 90 94				
	ian f Mbef	LOW ( 2013)	<b>RKS:</b> OF LESS THAN 1 L/MIN FROM PIEZOMETE . DETAILED ROCK LOGGING DATA SHEET						C DRILLH	MINING CORF ASINO PROJE OLE LOG FOR	CT DH13-0	6	
REV. 0	- Ise	ued f	or Report				Kn	igh c	t Pi	ésold	VA10	signment no. 1 <b>-325/16</b> DH13-06	REF

	Contra	ictor:	CASINO PROJECT Kluane Proposed Crusher Area			In	II Hole N Situ Sample Total Dep	er:	N/A	Date	PAGE Started:		g 13	
Со			6,958,351 N, 612,168 E, UTM NAD8					on:					-	
	rilling		KD1000				"Inclination				ged by:		-	
Drillin	ig Me	thod:	Diamond Coring. Water flush.			-	Hole siz	ze:	HTW	Revie	wed by:	JE	н	_
ELEVATION (m)	DEPTH (m)	GRAPHIC LOG	MATERIAL DESCRIPTION	TOTAL CORE RECOVERY (%)	SAMPLE TYPE	SAMPLE NO.	SAMPLE RECOVERY (%)	SPT BLOW COUNTS Refusal Penetration	SPT 'N' VALUE / RQD (%)	RQD (%) ● 20 40 60 80 SPT TEST DATA 'N' VALUES # 20 40 60 80		DRILLHOLE NOTES		
-			MAFIC DYKE (20.05 to 20.2) Mafic dyke, fine grained, inquigranular, dark grey with white specks, very strong, fresh, no discontinuities. WEATHERED WRGD (20.2 to 23.11) Dawson Range Batholith - Granodiorite, altered or leached, argillaceous weathering at some intervals, other intervals grey to	88					27					
-			locally pink matrix with green tone and grey specks, medium grained, inequigranular, weak, highly to moderately weathered. Joints are closely spaced, planar, slightly rough, soft white to green clay and calcite infill (1 to 5 mm thick), some dark red surface staining.	100					47					
-			(23.11 to 30.18) Dawson Range Batholith - Granodiorite, medium grained, inequigranular, light grey to locally pink matrix with green tone and dark green to black specks, strong, slightly weathered. Joints are closely spaced, planar, slightly rough, trace soft white calcite and light green sericite infill, some red staining.	97					74					
1054 —	25	+ + + + + + + + + + + + + + + + + + +		97					96					
-				99					53					
-		+++++		97					88					-
		+ + +     + + +     + , +		100					89					-
	SIAN F MBEF	LOW 0	NRKS: OF LESS THAN 1 L/MIN FROM PIEZOMETE . DETAILED ROCK LOGGING DATA SHEET	R, ME				D	ASINO I CA DRILLHO	MINING CORP ASINO PROJEC DLE LOG FOR	CT DH13-06	6		
							-Kn	ighi	t Pi	esola –	VA101	IGNMENT NO. -325/16	RE	
REV. (			or Report cording to the Canadian Foundation Engineering Mar					Co	) N S U	LTING		DH13-06		

	Contra	actor:	CASINO PROJECT Kluane			In Sit	Hole N tu Samp		DH13-0		PAGE _ Started: _	4 of <b>28 Auç</b>	
			Proposed Crusher Area						41.15 m			29 Aug	
			6,958,351 N, 612,168 E, UTM NAD8						<u>1079 m</u>	Date Well Ir	_		
	rilling		KD1000 Diamond Coring. Water flush.				Inclinatio		-90° HTW		iged by: _	SB JEF	
Drillin	ig Me	thod:	Diamond Coring. Water hush.				Hole si	ze:		Revie	wed by: _	JEF	1
ELEVATION (m)	DEPTH (m)	GRAPHIC LOG	MATERIAL DESCRIPTION	TOTAL CORE RECOVERY (%)	SAMPLE TYPE	SAMPLE NO.	SAMPLE RECOVERY (%)	SPT BLOW COUNTS Refusal Penetration	SPT 'N' VALUE / RQD (%)	RQD (%) ● 20 40 60 80 PT TEST DATA 'N' VALUES ¥ 20 40 60 80		NOTES	WELL DETAILS
-		++++++++++++++++++++++++++++++++++++++	WEATHERED WRGD (30.18 to 33.53) Dawson Range Batholith - Granodiorite, medium grained, inequigranular, light grey to locally pink matrix with dark grey specks, weak, moderately weathered. Joints are closely spaced, planar, slightly rough, some joints have 10 mm of soft white calcite and light green sericite infill, some red and dark green staining.	100					51				
-			WRGD	100					86	· · · · · · · · · · · · · · · · · · ·			
- 1044 —			(33.53 to 41.15) Dawson Range Batholith - Granodiorite, medium grained, inequigranular, light grey matrix and dark green to black specks, some pink bands, strong, slightly weathered. Joints are moderately closely spaced, planar, slightly rough, soft yellowish beige to white calcite and green sericite infill (2 to 6 mm), some dark red	94					94	                                   			
-			staining. Some healed joints filled with white calcite.	100					96				
-				98		UCS-2	100		98		•		
-				100					95				
ARTES	SIAN F Ember	R 2013	NRKS: OF LESS THAN 1 L/MIN FROM PIEZOMETE . DETAILED ROCK LOGGING DATA SHEE						CAS DRILLHOI	INING CORP SINO PROJEC LE LOG FOR	CT DH13-06		
							Kn	igh	ıt Pie	esold 🗄	PROJECT/ASSIC VA101-3		REF
REV (	) - Iss	sued f	or Report					~~~~	ONSU	LTING	FIGURE.	H13-06	

ſ	Pi	roje	ct:	CASINO PROJECT			Dri	II Hole	No	DH13	-06		PAGE	5 of	5
	С	contra	ctor:	Kluane			In	Situ Sam	pler:	N/A		Date	Started:	28 Aug	13
		Loca	tion:	Proposed Crusher Area				Total De	epth:	41.15	<u>m</u>	Date Con	npleted:	29 Aug	13
	Co	ordin	ates:	6,958,351 N, 612,168 E, UTM NAD	83			Eleva	tion:	1079 ו	<u>m D</u> a	ate Well Ir	stalled:	30 Aug	13
	D	rilling	Rig:	KD1000				"Inclinat	ion":	<b>-90</b> °		Log	ged by:	SB	
	Drillin	g Met	hod:	Diamond Coring. Water flush.				Hole	size:	HTW		Revie	wed by:	JEH	
0T, 24 Dec 13	ELEVATION (m)	DEPTH (m)	GRAPHIC LOG	MATERIAL DESCRIPTION	TOTAL CORE RECOVERY (%)	SAMPLE TYPE	SAMPLE NO.	SAMPLE RECOVERY (%)	SPT BLOW COUNTS Refusal Penetration	SPT 'N' VALUE / RQD (%)	20 40 SPT TES	D (%) ● 0 60 80 ST DATA 'N' UES ₩ 0 60 80	-	DRILLHOLE NOTES	WELL DETAILS
LEN10010032516MIDATATASK 200 - 2013 GEOTECHNICAL SI PROGRAMIGINTILIBRARY TEMPLATE-DHS.GLB, DRILLHOLE LOG, DATA TEMPLATE_DEC18,2009.GDT,		   		End of Drillhole: 41.15 m									Target d end of h	epth reached, ole.	
ary: \\\VAN11\PRJ_F	SEPTE APPEN	Bian F Imbef Idix B	LOW 2013 2.	ARKS: OF LESS THAN 1 L/MIN FROM PIEZOMETI DETAILED ROCK LOGGING DATA SHEE	ER, ME TS AR	ASUREI E PROV	D 1 /IDED IN	Kı		C DRILLH	ASINO	G CORP PROJEC OG FOR	CT DH13-0 PROJECT/AS VA10		REF, NO. 1 REV.
				cording to the Canadian Foundation Engineering Ma	anual 4t	h Edition	2006.								0

	Pr	oje	ct:	CASINO PROJECT			Dri	I Hole I	No. <b>_</b>	DH13	-07	PAGE	1 of	1
	C	ontra	ctor:	Kryotek			In	Situ Samp	oler:	N/A	Date	Started:	25 Aug	13
		Loca	tion:	Proposed ADR/SART Facility				Total De	pth:	1.2 n	n Date Co	mpleted:	25 Aug	13
	Co	ordina	ates:	6,955,169 N, 610,805 E, UTM NAD8	3			Elevat	ion:	1031	m Date Well	nstalled:		
	Dr	illing	Rig:	SDC150				"Inclinati	on":	-90°	Lo	gged by:	SB	
	Drilling	g Met	hod:	Sonic. No flush.			_	Hole s	size:	HQ	Revi	ewed by:	JEH	
0T, 24 Dec 13	ELEVATION (m)	DEPTH (m)	GRAPHIC LOG	MATERIAL DESCRIPTION	TOTAL CORE RECOVERY (%)	SAMPLE TYPE	SAMPLE NO.	SAMPLE RECOVERY (%)	SPT BLOW COUNTS Refusal Penetration	SPT 'N' VALUE / RQD (%)	RQD (%) ● 20 40 60 80 SPT TEST DATA 'N VALUES * 20 40 60 80		DRILLHOLE NOTES	WELL DETAILS
EN101100325116AIDATATTASK 200 - 2013 GEOTECHNICAL SI PROGRAMIGINTILIBRARY TEMPLATE-DHS.GLB, DRILLHOLE LOG, DATA TEMPLATE_DEC18,2009.GDT,				SILTY SAND (0 to 1.1) Silty SAND, some gravel, some roots, angular to subangular, well graded, beige orangy brown, slightly moist (Residual Soil). Sand is fine to coarse, gravel is fine to coarse. Gravel consists of highly to moderately weathered Granodiorite, orange brown with black specks, and moderately weathered beige brown quartz. COBBLE (1.1 to 1.2) COBBLE, beige brown quartz, subangular, moderately weathered, reworked by drill. End of Drillhole: 1.2 m	100							moss, 0 and 0.50 brown sl silty SAI angular gravel (0 drilling. HQ size from 0.0 depth.	nately 0.1 m of .05 m of topsoil 0 m greyish ND with many cobbles and Colluvium) 1 by CAT before sonic drilling 1 to 1.2 m on cobble, end	
;E	GENER	RAL	REMA	NRKS:							MINING CORF			1
n l				FILLED WITH LOCAL MATERIALS AFTER C	OMPL	ETION.				C	ASINO PROJE	СТ		
y: ∭								K1	nioh	t P	iésold		SIGNMENT NO. 1-325/16	REF. NO. 1
Librar	REV. 0	- Iss	ued f	or Report						ONS	ULTING	FICURE	DH13-07	REV.

			CASINO PROJECT				ill Hole N					PAGE	<u>1 of</u>	
С							Situ Samp					Started:	30 Aug	
_			Proposed ADR/SART Facility				Total Dep				Date Con	•		
			6,955,169 N, 610,805 E, UTM NAD8	3				on:			ate Well Ir			13
	rilling	-	KD1000				"Inclinatio		-90			ged by:	SB	
Drillin	g Me	thod:	Diamond Coring. Water flush.	, , ,	1	-		ze:		·	Revie	wed by:	JEH	
ELEVATION (m)	DEPTH (m)	GRAPHIC LOG	MATERIAL DESCRIPTION	TOTAL CORE RECOVERY (%)	SAMPLE TYPE	SAMPLE NO.	SAMPLE RECOVERY (%)	SPT BLOW COUNTS Refusal Penetration	SPT 'N' VALUE / RQD (%)	20 4	D (%) ● 0 60 80 ST DATA 'N' LUES ₩ 0 60 80	-	DRILLHOLE NOTES	
- - - 1026 - - - - -	5		SILTY SAND (0 to 1.1) Silty SAND, some gravel, some roots, angular to subangular, well graded, non plastic to low plasticity, beige orangy brown, slightly moist (Residual Soil). Sand is fine to coarse, gravel is fine to coarse. Gravel consists of highly to moderately weathered Granodiorite, orange brown with black specks, and moderately weathered beige brown quartz. WEATHERED WRGD (1.1 to 3.31) Dawson Range Batholith - Granodiorite, highly weathered, coarse grained, extremely weak, friable. Recovered as gravelly SAND, many cobbles, some silt and clay, beige to orangy brown, locally pink layers, slightly moist. Sand is fine to coarse, gravel is fine to coarse. Cobbles are angular, highly weathered Granodiorite. Material becomes less weathered and coarser with depth. WEATHERED WRGD (3.31 to 4.3) Dawson Range Batholith - Granodiorite, medium grained, inequigranular, light pinkish grey with black spots, pervasive orange weathering, weak, moderately weathered. Joints are closely spaced, slightly rough, planar, orange surface staining, some joints have 1 to 2 mm of sand infill. WRGD (4.3 to 5.61) Dawson Range Batholith - Granodiorite, quartz altered, medium grained to aphanitic, orange brown, orginal fabrice of granodiorite (light grey specks) is still recognizable at most locations, other locations almost pure quartz, very strong, slightly weathered. Joints are closely spaced, planar, smooth, orange staining, no infill except for one joint with 2 mm of brown silty sand infill. WEATHERED WRGD (5.61 to 14.24) Dawson Range Batholith - Granodiorite, medium grained, inequigranular, light pinkish grey with black spots, some pink bands, pervasive orange weathering, medium strong, moderately weathered. Between 13.80 and 14.24 m depth highly weathered and very weak. Joints are closely spaced, planar, smooth to slightly rough, orange brown surface staining, some have trace white calcite or trace orange silty sand infill (up to ~1 mm thick).	12 50 100 95 100 98 100					36 11 62 54 27 0			Approxim moss, 0.0 brown sli silty SAN angular c gravel (Cr removed drilling. From 0.0 logged b DH13-07 TP13-82 recovery. HWT cas from 0.00 depth.	ately 0.1 m of 55 m of topsoil m greyish ghtly moist D with many obbles and olluvium) by CAT before 0 to 3.31 m ased on TP13-81 and due to poor ing installed to 3.05 m e diamond pm 0.00 to	
		[+++ +++ ++++ +++++												ļ.
GENE	RAL		ARKS:	1					CASING		G CORP	ORATIO	N	1.
			B.2 M BGS, MEASURED 3 SEPTEMBER 201	3. DE	TAILED F	ROCK					PROJE			
JUGGI	NG D	AIAS	HEETS ARE PROVIDED IN APPENDIX B2.						DRILLH	OLE LO	DG FOR I	DH13-07	В	
							K <sub>1</sub>	ial	nt P	ióg	1d		GIGNMENT NO. -325/16	F
			or Report				_1\/l	ugi	II I	LES (	<i>)11</i> –	FIGURE	-325/16 H13-07B	-

	-		CASINO PROJECT				ill Hole No			<u>78</u>		PAGE		of 4
С	Contra						Situ Sample		N/A			Started:		Aug 13
~		ation:	Proposed ADR/SART Facility			_	Total Dept					pleted:		Aug 13
			<u>6,955,169 N, 610,805 E, UTM NAD8</u>	5			Elevatio		<u>1031 n</u> -90°	<u>n D</u> ate		stalled:		Aug 13
	rilling	-	KD1000				"Inclination		-90 HTW			ged by:		SB
Drillin	ig Me	thod:	Diamond Coring. Water flush.				Hole siz	e:	1 1		Review	ved by:		JEH
ELEVATION (m)	DEPTH (m)	GRAPHIC LOG	MATERIAL DESCRIPTION	TOTAL CORE RECOVERY (%)	SAMPLE TYPE	SAMPLE NO.	SAMPLE RECOVERY (%)	SPT BLOW COUNTS Refusal Penetration	SPT 'N' VALUE / RQD (%)	RQD (%) 20 40 60 SPT TEST D VALUES 20 40 60	0 80 ATA 'N'		DRILLHOLE NOTES	
-		+ + + + + + + + + + + + + + + + + + +	WEATHERED WRGD (5.61 to 14.24) Dawson Range Batholith - Granodiorite, medium grained, inequigranular, light pinkish grey with black spots, some pink bands, pervasive orange weathering, medium strong, moderately weathered. Between 13.80 and 14.24 m depth highly weathered and very weak. Joints are closely spaced, planar, smooth to slightly rough, orange brown surface staining, some have trace white calcite or trace orange silty sand infill (up to ~1 mm thick).	94 100 100					32					
- 1016	- 15	++++++++++++++++++++++++++++++++++++	COMPLETELY WEATHERED WRGD (14.24 to 14.94) Dawson Range Batholith - Granodiorite, extremely weak, friable, completely weathered. Recovered as orange to white silty SAND and GRAVEL. WEATHERED WRGD (14.94 to 25.81) Dawson Range Batholith - Granodiorite, medium grained, inequigranular, light pink and grey matrix with black specks, some black specks weathered to orange greenish	81 100 100					9 0 • 67	•	•			
-			grey, pervasive orange weathering, medium strong, moderately weathered. Joints are closely spaced, planar, smooth to slightly rough, orange surface staining, trace orange sand infill, some healed joints with orange and white calcite infill.	100					33					
-				100					57					
<b>GENE</b> WATE LOGGI	R LEV	EL IS	NRKS: 8.2 M BGS, MEASURED 3 SEPTEMBER 201 HEETS ARE PROVIDED IN APPENDIX B2.	3. DE		ЭСК			C	MINING C ASINO PF DLE LOG	ROJEC	т		
							Kn					ROJECT/ASS	SIGNMENT NO	). RE
			or Report				- <b>N</b> ()	ıgri	i Tl	ésol	u		<u>-325/16</u> )H13-07E	

	contra	actor:	CASINO PROJECT Kluane			In Si	tu Sampl	er:	H13-0	Date	PAGE Started:	<u>3 of</u> <u>30 Aug</u>	g 13
•		ation:		•			Fotal Dep				•		-
			<u>6,955,169 N, 610,805 E, UTM NAD8</u>	3			Elevatio Inclinatio		<u>1031 m</u> -90°		nstalled: gged by:	<u>31 Aug</u> SB	-
Drillin		g Rig:	KD1000 Diamond Coring. Water flush.				Hole si		HTW		wed by:	JEH	
DIIIIII						_	1						Ť
ELEVATION (m)	DEPTH (m)	GRAPHIC LOG	MATERIAL DESCRIPTION	TOTAL CORE RECOVERY (%)	SAMPLE TYPE	SAMPLE NO.	SAMPLE RECOVERY (%)	SPT BLOW COUNTS Refusal Penetration	SPT 'N' VALUE / RQD (%) 1	RQD (%) ● 20 40 60 80 SPT TEST DATA 'N' VALUES # 20 40 60 80	-	DRILLHOLE NOTES	
		+ + + + + + + + +	WEATHERED WRGD (14.94 to 25.81)	100					60				$\left\  \right\ $
-			Dawson Range Batholith - Granodiorite, medium grained, inequigranular, light pink and grey matrix with black specks, some black specks weathered to orange greenish grey, pervasive orange weathering, medium strong, moderately weathered. Joints are closely spaced, planar, smooth to slightly rough, orange surface staining, trace orange sand infill, some healed joints with orange and white calcite infill.	100					58				
-		$\begin{array}{c} + + + + + + + + + + + + + + + + + + +$		95					60				
- 1006 —	- 25-	++++++++++++++++++++++++++++++++++++++		100					75				
-		+ + + + + + + + + + + + + + + + + + +	WRGD (25.81 to 26.14) Dawson Range Batholith - Granodiorite, quartz altered, medium grained to	100		UCS-1	100		80				
-		, , , , , , , , , , , , , , , , , , ,	aphanitic, pink brown, orginal fabrice of granodiorite (light grey specks) is still recognizable at most locations, other locations almost pure quartz, very strong, slightly weathered. <b>WEATHERED WRGD</b> (26.14 to 32.2) Dawson Range Batholith - Granodiorite, medium grained, inequigranular, light pink	98					84				
-		++++++++++++++++++++++++++++++++++++	and grey matrix with black specks, some black specks weathered to orange greenish grey, pervasive orange weathering, medium strong, moderately weathered. Joints are closely to moderately closely spaced, planar, slightly rough, orange to dark brown surface staining, some have	88					81				$\langle \rangle$
		- + + + + + + + + + + + + + + + + + + +	orange brown clayey sand and calcite infill (~1 mm thick), some healed joints with orange to white calcite infill (veinlets).	99					85				
NATE	R LE\	/EL IS	ARKS: 8.2 M BGS, MEASURED 3 SEPTEMBER 201: HEETS ARE PROVIDED IN APPENDIX B2.	3. DE	TAILED	ROCK		D	C/ RILLHC	MINING CORP ASINO PROJE LE LOG FOR	CT DH13-07		F
			for Report				Kn	igh	t Pi	ésold		1-325/16	

	r <b>oje</b> Contra		CASINO PROJECT Kluane				ill Hole N		<u>)H13-(</u> N/A	<u> </u>	Data	PAGE Started:	4 ( 30 A	
C			Proposed ADR/SART Facility				Situ Sample Total Dep			m D		npleted:		_
<u> </u>			6,955,169 N, 610,805 E, UTM NAD8				Elevatio					npieted: nstalled:		-
				5			"Inclinatio		<u>-90°</u>					-
	rilling	-	KD1000						-90° HTW		-	ged by:		В
Drillin	g Me	tnod:	Diamond Coring. Water flush.		1		Hole siz	<u></u>			Kevie	wed by:	JI	EH
ELEVATION (m)	DEPTH (m)	GRAPHIC LOG	MATERIAL DESCRIPTION	TOTAL CORE RECOVERY (%)	SAMPLE TYPE	SAMPLE NO.	SAMPLE RECOVERY (%)	SPT BLOW COUNTS Refusal Penetration	SPT 'N' VALUE / RQD (%)	RQD ( 20 40 0 SPT TEST I VALUE 20 40 0	60 80 DATA 'N'	-	DRILLHOLE NOTES	
996		++++++++++++++++++++++++++++++++++++	WEATHERED WRGD (32.2 to 37) Dawson Range Batholith - Granodiorite, leached, medium grained, inequigranular, light grey matrix with orange specks, quartz rich, pervasive weathering, medium strong, moderately weathered. Joints are moderately closely spaced, planar, slightly rough, orange surface staining, trace orange silty sand infill, some quartz veinlets.	100 99 100 100					96 79 100		$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	•		
-			WEATHERED WRGD (37 to 38.1) Dawson Range Batholith - Granodiorite, leached, medium grained, inequigranular, light grey matrix with light green specks, pervasive argillaceous weathering, medium strong, moderately weathered, no joints. WEATHERED WRGD	98					94					
-			(38.1 to 39.62) Dawson Range Batholith - Granodiorite, slightly leached, medium grained, inequigranular, light grey matrix with orange and black specks, medium strong, moderately weathered. Joints are moderately closely spaced, rough, orange surface staining, trace orange silty sand	100					100			<ul> <li>Target d end of h</li> </ul>	lepth reached ole.	,
			infill, one 1 cm thick quartz vein.											
VATE	R LEV	EL IS	INTERPORT OF DIMINUE, 39.62 m RKS: 8.2 M BGS, MEASURED 3 SEPTEMBER 201: HEETS ARE PROVIDED IN APPENDIX B2.	3. DE	TAILED R	OCK			С	MINING ASINO P DLE LOG	ROJE	СТ		1
							V					PROJECT/AS	SIGNMENT NO.	F
			or Report				— KN	ign	II PI	éso	ıa -	VA10 FIGURE.	1-325/16	

			CASINO PROJECT Kryotek				II Hole N Situ Sample			<b>-08</b> Date	PAGE		
			Potential Borrow Area at Mine Site				Total Dep				npleted:		
			6,957,812 N, 613,239 E, UTM NAD8							<u>m D</u> ate Well Ir	•	-	
	rilling		SDC150				"Inclinatio				ged by:		
Drilling	Ũ	Ũ	Sonic. No flush.			_	Hole siz	ze:	HQ		wed by:		
ELEVATION (m)	DEPTH (m)	GRAPHIC LOG	MATERIAL DESCRIPTION	TOTAL CORE RECOVERY (%)	SAMPLE TYPE	SAMPLE NO.	SAMPLE RECOVERY (%)	SPT BLOW COUNTS Refusal Penetration	SPT 'N' VALUE / RQD (%)	RQD (%) ● 20 40 60 80 SPT TEST DATA 'N'	DRILLHOLE	DTES	
Ц	B			Ю.Щ	AS SA	SA	SAI	SP. Rei	SP.	<b>VALUES</b> ₩ 20 40 60 80	Ľ	ž	
-			SILTY SAND (0 to 0.2) Silty SAND, some gravel, some cobbles and boulders, subangular, greyish orangy brown, moist (Colluvium). Cobbles and boulders are slightly to moderately weathered Granodiorite, sand is fine to coarse, gravel is fine to coarse. <b>GRAVELLY SAND</b> (0.2 to 1.5) Gravelly SAND, some silt, subangular, well graded, orange brown, moist (Residual Soil). Sand is fine to coarse, gravel is fine. Some of the gravelly sand is recovered as weakly bonded friable chunks. <b>COMPLETELY WEATHERED WRGD</b> (1.5 to 3) Dawson Range Batholith - Granodiorite, completely weathered, extremely weak, friable. Recovered as gravelly SAND, trace to some silt, subangular, orange, massive, slightly moist. Sand is fine to coarse, gravel is fine.	100	The second secon	BU-1	100				Approximate of moss, 0.1 topsoil and t and 0.30 m orangy brow silty SAND w gravel and s cobbles and (Colluvium) ( CAT before of HQ size son from 0.0 to 4 depth.	0 m of ooulders of greyish n moist vith some ome boulders termoved by drilling. ic drilling	
-	-		<b>COMPLETELY WEATHERED WRGD</b> (3 to 4.3) Dawson Range Batholith - Granodiorite, completely weathered, extremely weak, friable. Recovered as SAND and GRAVEL, trace silt, orange, slightly moist to dry. Sand is fine to coarse, gravel is fine to coarse.	100	Sur Sur	BU-2	100						
		<u>0:&gt;:\</u> + + - +	WEATHERED WRGD (4.3 to 4.5) Dawson Range Batholith - Granodiorite, coarse grained, light grey to orange brown, highly weathered, very weak. End of Drillhole: 4.5 m	-							Bedrock rea of hole.	ched, end	
IOLE.	S DR` DRIL	r, mea Lhole	N <mark>RKS:</mark> ASURED IN OPEN HOLE, 30 MINUTES AFTE E BACKFILLED WITH LOCAL MATERIALS A MPLETION.	ER DR	RILLING T ARKED V	THE VITH A			C	MINING CORP CASINO PROJE	СТ		
							K	iah	t D	iésold	PROJECT/ASSIGN		1
		uod f	or Report				-111	ign	11	ULTING	EIGURE	13-08	

	-		CASINO PROJECT Kryotek				II Hole Ne Situ Sample			-09	Date	PAGE Started:	<u>1 of</u>	
U			Potential Borrow Area at Mine Site				Total Dept			n			<u>4 Aug ′</u> 4 Aug ′	
Co			6,958,040 N, 612,942 E, UTM NAD8				•					•	4 Aug *	13
	rilling						"Inclination		-90°			iged by:		
Drillin	-	-	SDC150 Sonic / Downhole Hammer. No flush			_	Hole siz		HQ		-	wed by:		
							(%)		(%)					
ELEVATION (m)	DEPTH (m)	<b>GRAPHIC LOG</b>	MATERIAL DESCRIPTION	TOTAL CORE RECOVERY (%)	SAMPLE TYPE	SAMPLE NO.	SAMPLE RECOVERY (%)	SPT BLOW COUNTS Refusal Penetration	SPT 'N' VALUE / RQD (%)	20 40 SPT TES	60 80 <b>T DATA 'N'</b> UES ₩ 60 80	-	DRILLHOLE NOTES	
-			TOPSOIL (0 to 0.3) Gravelly organic SILT, some roots, medium plasticity, dark brown, moist (Topsoil). SAND AND GRAVEL (0.3 to 0.8) SAND and GRAVEL, some silt, some cobbles, subangular, orangy grey brown, wet (Colluvium). Sand is fine to coarse, gravel is fine to coarse. Cobbles consist of slightly to moderately weathered Granodiorite. (0.75) From 0.75 to 0.80 m Sandy, gravelly SILT, moist. COMPLETELY WEATHERED WRGD (0.8 to 1.5) Dawson Range Batholith - Granodiorite, completely weathered, coarse grained, extremely weak. Recovered as SAND and GRAVEL, trace silt, orangy red to brown, subangular to subrounded, moist. Sand is fine to coarse, gravel is fine. Some of the sand and gravel is recovered as weakly bonded friable chunks. WEATHERED WRGD (1.5 to 3) Dawson Range Batholith - Granodiorite, highly weathered, coarse grained, extremely weak. Recovered as SAND and GRAVEL, trace to some silt, some cobbles, orangy red to brown, dry. Sand is fine to coarse, gravel is fine to coarse. Cobbles and some gravel are strong, some of the sand and gravel is recovered as weakly bonded friable chunks. WEATHERED WRGD (3 to 4.2) Dawson Range Batholith - Granodiorite. Cuttings transition from orange brown to light orangy grey with depth, indicating less weathering with depth, highly to moderately weathered.	100		BU-1	100					Approxim moss and topsoil re CAT befo HQ size s from 0.00 depth.	ately 0.1 m of d 0.15 m of moved by re drilling. sonic drilling to 2.30 m 30 m Difficult merates heat, the soil and s rock 3.	
VATER	R LEV NG TH	el IS Ie Ho	Recovered light grey, dry cuttings, interpreted as Granodiorite, slightly to moderately weathered, coarse grained. End of Drillhole: 4.4 m ARKS: 3.8 M BGS, MEASURED IN OPEN HOLE, 15 DRILLHOLE BACKFILLED WITH LOCAL						c	ASINO	PROJE	ORATIO CT DH13-09		
MARKE	D WI	I'H A S	STAKE AFTER COMPLETION.				Ku	ial				PROJECT/ASS	IGNMENT NO.	R
		ued f	or Report				- <b>//</b>	ıgn	t Pi	es0	nu -	EIGURE	-325/16 DH13-09	L

			CASINO PROJECT				II Hole N			-09B	PAGE	1 of	1
			Kryotek								Started:		
			Potential Borrow Area at Mine Site				Total Dept				mpleted:		
			6,958,073 N, 612,915 E, UTM NAD8	3					1122		nstalled:		
	illing	-	SDC150				"Inclination				gged by:		
Drilling	g Met	nod:	Sonic / Downhole Hammer. No flush			_	Hole siz	ze:		Kevie	ewed by:	JEH	1
ELEVATION (m)	DEPTH (m)	<b>GRAPHIC LOG</b>	MATERIAL DESCRIPTION	TOTAL CORE RECOVERY (%)	SAMPLE TYPE	SAMPLE NO.	SAMPLE RECOVERY (%)	SPT BLOW COUNTS Refusal Penetration	SPT 'N' VALUE / RQD (%)	RQD (%) ● 20 40 60 80 SPT TEST DATA 'N VALUES * 20 40 60 80	DRILLHOLE	NOTES	
			TOPSOIL (0 to 0.3) Organic sandy SILT, some gravel, trace clay, some roots, low plasticity, dark greyish brown, wet, soft (Topsoil). SILTY SAND (0.3 to 0.5) Silty SAND, fine to coarse, trace clay, some organic content, dark brown, moist (Colluvium). SAND AND GRAVEL (0.5 to 4.2)	100							Approximate moss remov before drillin HQ size son from 0.00 to depth.	éd by CAT g. ic drilling	
-	_		Recovered as gravelly SAND, some silt, trace clay, well graded, orange brown, dry due to drilling (Residual soil). Sand is fine to coarse, gravel is fine. Fines display plastic behaviour with low to medium plasticity. Some of the gravelly sand is recovered as weakly bonded friable chunks. Host rock is Granodiorite, coarse grained.	100	E.	BU-1	100				0.50 to 3.80 drilling gene dries out the pulverizes ro fragments, a compresses very dense s	rates heat, soil, ock ind it into a	
_	_		(2.4) From 2.4 to 4.2 m Saturated due to water flowing into hole from surface.	100									
-				0							Downhole hadrilling from 4.20 m deptices of the due to water end of hole.	3.80 to h, cuttings recovered	
			End of Drillhole: 4.2 m										
DRILLIN	R LEV NG TH	el IS / Ie ho	AT SURFACE, MEASURED IN OPEN HOLE, DLE. DRILLHOLE BACKFILLED WITH LOCAL	_ MAT	ERIALS /	AND				D MINING CORF CASINO PROJE	СТ		
ROM			STAKE AFTER COMPLETION. LOCATED AF	PPRO	XIMATEI	LY 10 M	V				PROJECT/ASSIGN		F
	le i		or Report				- <b>K</b> N	ıgł	II P	iésold	VA101-32	:5/16  3-09B	

			CASINO PROJECT				II Hole N					<u>    1   of</u>	
			Kryotek									2 Aug	
			Potential Borrow Area at Mine Site				Total Dep					2 Aug	
Co	ordin	ates:	<u>6,958,715 N, 611,615 E, UTM NAD8</u>	3						m Date Well			
Dr	rilling	Rig:	SDC150				"Inclinatio	on":			ogged by:		
Drilling	g Me	hod:	Sonic. No flush.			_	Hole si	ize:	-	Rev	iewed by:	JEH	<u> </u>
ELEVATION (m)	DEPTH (m)	GRAPHIC LOG	MATERIAL DESCRIPTION	TOTAL CORE RECOVERY (%)	SAMPLE TYPE	SAMPLE NO.	SAMPLE RECOVERY (%)	SPT BLOW COUNTS Refusal Penetration	SPT 'N' VALUE / RQD (%)	RQD (%) ● 20 40 60 80 SPT TEST DATA 'I VALUES# 20 40 60 80	N.	DRILLHOLE NOTES	
			MOSS AND COBBLES	r							HQ size	sonic drilling	
		[•Og	Moss, one cobble								from 0.0 depth.		
		0.0	COMPLETELY WEATHERED WRGD (0.1 to 2.5)										
-	-		(0.102.3) Dawson Range Batholith - Granodiorite, completely weathered, coarse grained, extremely weak, friable. Recovered as silty, gravelly SAND, subangular, well graded, yellowish light brown, massive, friable, saturated to moist (drier with depth). Gravel is fine, sand is fine to coarse. Some of the silty, gravelly sand is recovered as weakly bonded friable chunks.	100									
_	-		<ul> <li>(1.5)</li> <li>Coarser interval from 1.5 to 2.0 m depth: Recovered as SAND and GRAVEL, some silt. Gravel is fine, sand is fine to coarse.</li> <li>(2)</li> <li>Finer interval from 2.0 to 2.4 m depth:</li> </ul>	100									
			Recovered as SAND and SILT, some gravel, moist. Gravel is fine, sand is fine to coarse. SILT AND SAND		E Constantino de la constant	BU-1	100						
			(2.5 to 2.7) SILT and SAND, some gravel, trace clay, subangular, yellowish grey brown, moist (Residual Soil). Gravel is fine, sand is fine to coarse.	100									
-			COMPLETELY WEATHERED WRGD (2.7 to 3) Dawson Range Batholith - Granodiorite, completely weathered, coarse grained, extremely weak, friable. Recovered as friable chunks of silty SAND, trace clay, dry to slightly moist, grey white to orange.	ſ									
_	-		COMPLETELY WEATHERED WRGD (3 to 3.4) Dawson Range Batholith - Granodiorite, highly to completely weathered, increasing weathering with depth, coarse grained, orange and light grey, slightly moist, very weak to extremely weak, friable. Recovered as friable chunks of silty SAND, trace clay.	100	SUN S	BU-2	100						
			SILTY SAND (3.4 to 4.3) Silty SAND, trace gravel, trace clay, yellowish brown, moist (Residual Soil). Sand is fine to coarse, gravel is fine, some of the silty sand is recovered as weakly bonded friable chunks. Host rock is										
RILLIN	R LEV NG TH	EL IS 4 IE HO	<b>\<u>RKS:</u></b> 4.8 M BGS, MEASURED IN OPEN HOLE, 30 LE. DRILLHOLE BACKFILLED WITH LOCAL STAKE AFTER COMPLETION.						C	MINING COR ASINO PROJ IOLE LOG FO	ECT		
							K	ial	t D	iésold		SIGNMENT NO.	R
			or Report				- 11/1	ugn	U I ONS	iesoia	FIGURE.	-020/10	-

	-		CASINO PROJECT			_Dr	ill Hole No	)	DH13	-10	PAGE	2 of	2
							Situ Sampler	r:	N/A		ate Started		
			Potential Borrow Area at Mine Site				Total Depth				•	2 Aug	13
			<u>6,958,715 N, 611,615 E, UTM NAD8</u>	3			Elevation						
	rilling	-	SDC150				"Inclination"		-90°		Logged by:		
Drilling	g Me	hod:	Sonic. No flush.				Hole size	e:		Ri	eviewed by:	JEH	1
ELEVATION (m)	DEPTH (m)	<b>GRAPHIC LOG</b>	MATERIAL DESCRIPTION	TOTAL CORE RECOVERY (%)	SAMPLE TYPE	SAMPLE NO.	SAMPLE RECOVERY (%)	SPT BLOW COUNTS Refusal Penetration	SPT 'N' VALUE / RQD (%)	RQD (%) ● 20 40 60 5 SPT TEST DAT VALUES # 20 40 60 5	A 'N'	DRILLHOLE NOTES	
-	-		Granodiorite. SILT AND SAND, FROZEN (VS) (4.3 to 6) SILT and SAND, some gravel, trace clay, yellowish brown, frozen, Vs (Residual soil). Sand is coarse grained, gravel is fine grained, some excess ice in 0.3 cm clear ice layers, partially melted by drilling. Host rock is Granodiorite. SILTY SAND AND GRAVEL, FROZEN (6 to 7.2) Silty SAND and GRAVEL, trace clay, subangular, yellowish grey brown (Residual soil). Sand is fine to coarse, gravel is fine. Recovered moist to wet, but expected to be frozen with estimated ~10 to 20% excess ice content. Host rock is salt and pepper Granodiorite. SAND (7.2 to 7.25)	100							Difficul	7.5 m depth: t drilling zes rock nts.	
-			SAND, some silt, sand is coarse grained, white and black with orange staining (Residual soil). Host rock is Granodiorite. <b>WEATHERED WRGD</b> (7.25 to 7.4) Dawson Range Batholith - Granodiorite, highly weathered, coarse grained, orange, very weak. Recovered as SAND and GRAVEL, some silt. Sand is fine to coarse, gravel is fine to coarse. <b>WEATHERED WRGD</b> (7.4 to 7.5) Dawson Range Batholith - Granodiorite, highly to moderately weathered, coarse grained, grey with orange staining. Pulverized by drilling, recovered as SAND and GRAVEL, some silt. Sand is fine to coarse, gravel is fine to coarse. End of Drillhole: 7.5 m	100							Bedroc   Bedroc   of hole                                     	k reached, end	
DRILLIN	R LEV NG TH	EL IS 4 IE HO	4.8 M BGS, MEASURED IN OPEN HOLE, 30 LE. DRILLHOLE BACKFILLED WITH LOCAL		TES AFTE ERIALS AN	R ND			C	MINING CO ASINO PRO	JECT		1
			STAKE AFTER COMPLETION.				TZ					SSIGNMENT NO.	RE
							-Kni	igh	t Pi	iésold	FIGURE.	01-325/16	

	-		CASINO PROJECT				II Hole N					<u>1 of</u>	
							Situ Sample				Started:	<u>3 Aug</u>	
			Potential Borrow Area at Mine Site				Total Dep				•	3 Aug	
			6,958,163 N, 611,423 E, UTM NAD8							<u>m D</u> ate Well			
	illing	-	SDC150				"Inclination		-90		ogged by:		
Drillin	g Met	hod:	Sonic. No flush.			_	Hole siz	ze:	HQ	Revi	ewed by:	JEH	<u>i</u>
ELEVATION (m)	DEPTH (m)	<b>GRAPHIC LOG</b>	MATERIAL DESCRIPTION	TOTAL CORE RECOVERY (%)	SAMPLE TYPE	SAMPLE NO.	SAMPLE RECOVERY (%)	SPT BLOW COUNTS Refusal Penetration	SPT 'N' VALUE / RQD (%)	RQD (%) ● 20 40 60 80 SPT TEST DATA 'N VALUES * 20 40 60 80		DRILLHOLE NOTES	
			FROZEN TOPSOIL (VS) (0 to 0.35) Gravelly organic SILT, some sand, some subangular gravel, gap graded, dark brown with light brownish yellow to orange gravel, massive, frozen, Vs (Topsoil). Gravel consists of highly weathered bedrock, weak. Ice in 0.5 cm thick layers, spaced every 5 cm, horizontal, clear, hard, ~20% excess ice. ICE + SANDY SILT (0.35 to 1.55) ICE + sandy SILT, some gravel, trace clay, low plasticity, yellowish brown (Colluvium). Sand is fine to coarse, gravel is fine. Clear hard ice, colorless, horizontal ice lenzes comprised of 0.3 cm diameter ice granules, the lenzes are mostly connected, some are separated by thin silt layers, ~40% excess lice.	100							of vegeta by CAT b	nately 0.10 m tion removed before drilling. sonic drilling to 9.0 m	
-	-		ICE + ORGANIC SANDY SILT (1.55 to 1.65) ICE + organic sandy SILT, fine grained, organics odour, ice in ~1 cm horizontal layers comprised of 0.3 cm diameter ice granules (Colluvium). ICE + SILT (1.65 to 2.3) ICE + SILT, some fine to coarse sand, trace clay, low plasticity, yellow, result of chemical weathering of material that moved downslope (Colluvium). 1 cm thick organic layer at 2.20 m depth. Hard, randomly oriented ice layers ~2.5 cm thick. Ice is clear, 15% excess ice content. ICE + SILT AND SAND (2.3 to 3.2)	100		FC-1	100						
-	-		ICE + SILT and fine to coarse SAND, trace fine gravel, trace clay, yellow (Colluvium). Same as above but more coarse material. <b>SANDY SILT, FROZEN (VS)</b> (3.2 to 3.75) Sandy SILT, fine to coarse, trace clay, trace fine gravel, subangular, low plasticity, dark grey, frozen, Vs. 1 to 5 mm clear ice layers, mostly horizontal, ~10% excess ice (Colluvium). <b>SILTY SAND, FROZEN (VX)</b> (3.75 to 4) Silty SAND, some gravel, yellow to orange, frozen, Vx, small ice inclusions between soil particles (<1 mm), clear hard ice, ~10% excess ice (Colluvium). <b>SILT, FROZEN (VR)</b> (4 to 4.5) SILT, some sand, trace gravel, trace clay,	r 100	M.	BU-1	100						
DRILLIN	R LEV NG TH	el IS 8 Ie ho	locally black organics with odour (no roots or fibres), dark greyish brown, frozen, Vr (Colluvium). Randomly oriented 0.3 cm hard clear ice layers. Partially thawed RKS: 8 M BGS, MEASURED IN OPEN HOLE, 60 M LE. DIFFICULT TO MEASURE WATER LEV	/EL DL	JE TO CI				(	MINING CORI	СТ		
			ILLHOLE WALL. DRILLHOLE BACKFILLED MARKED WITH A STAKE AFTER COMPLET		LUCAL		V	ial	_		PROJECT/AS	SIGNMENT NO.	R
			or Report				- <b>N</b>	ıgn	ll P	iésold	FIGURE.	-325/16	1

Ρι	roje	ct:	CASINO PROJECT				I Hole No			-11	PAGE	<u>2</u> of	2
С	Contra		Kryotek								te Started:		
			Potential Borrow Area at Mine Site				Total Dept				•	3 Aug	13
			6,958,163 N, 611,423 E, UTM NAD8	33						<u>m D</u> ate Wel			
	rilling	-	SDC150				"Inclinatior		-90°		ogged by:		
Drillin	g Met	hod:	Sonic. No flush.			-	Hole siz	:e:	1	Re	viewed by:	JEł	1
ELEVATION (m)	DEPTH (m)	<b>GRAPHIC LOG</b>	MATERIAL DESCRIPTION	TOTAL CORE RECOVERY (%)	SAMPLE TYPE	SAMPLE NO.	SAMPLE RECOVERY (%)	SPT BLOW COUNTS Refusal Penetration	SPT 'N' VALUE / RQD (%)	RQD (%) ● 20 40 60 8 SPT TEST DATA VALUES # 20 40 60 8	'N'	DRILLHOLE NOTES	
		+ +	core, center still frozen. SANDY SILT, FROZEN (VR)										
		+. +. +. +. +. +. 4	(4.5 to 5.5) Sandy SILT, trace clay, trace gravel, low plasticity, bright orangy yellow, frozen, Vr, top 0.5 m thawed by drill (Colluvium). Randomly oriented ice layers, up to 1 cm thick (average 0.5 cm), typical spacing 3 cm, ~20% excess ice. <b>ORGANIC SILT, FROZEN (NBN)</b> (5.5 to 6) SILT, some sand, trace clay, low plasticity,	100									
-			dark greyish brown with some silty black organic inclusions (Colluvium). Previously frozen but thawed by drilling, no excess ice visible, likely Nbn. <b>SILTY, SANDY GRAVEL TO GRAVELLY, SANDY SILT</b> (6 to 7.5) Silty, sandy GRAVEL, becoming finer with depth to gravelly, sandy SILT, trace clay (Residual Soil). Light yellowish beige, saturated, no evidence of being previously frozen.	100									
-			SANDY SILT (7.5 to 7.8) Sandy SILT, trace gravel, low plasticity, light greenish to orangy beige, firm, moist (Residual Soil). Sand is fine to coarse, gravel is fine. SILTY GRAVEL AND SAND (7.8 to 8.4) Silty GRAVEL and SAND, trace clay, subangular, light orangy beige, wet (Residual Soil). SANDY SILT (8.4 to 8.5) Sandy SILT, trace gravel, low plasticity,	100	Sun	BU-2	100						
			light greenish to orangy beige, firm, moist (Residual Soil). Sand is fine to coarse, gravel is fine. SILTY GRAVEL AND SAND	ſ							Bedroc of hole.	k reached, end	
			(8.5 to 8.9) Silty GRAVEL and SAND, trace clay, subangular, light orangy beige, wet (Residual Soil).										
			WEATHERED METAMORPHIC ROCK (8.9 to 9) Metamorphic bedrock, moderately weathered and leached, orange stained, very weak.										
			End of Drillhole: 9 m										
DRILLI	R LEV NG TH	el IS ( Ie ho	8 M BGS, MEASURED IN OPEN HOLE, 60 M LE. DIFFICULT TO MEASURE WATER LEV	/EL DL	JE TO CL				C	MINING COF CASINO PROJ IOLE LOG FO	IECT		
			ILLHOLE WALL. DRILLHOLE BACKFILLED ' MARKED WITH A STAKE AFTER COMPLET		LUCAL		Vac				PROJECT/A	SSIGNMENT NO.	RE
	) Ic		or Report				- <b>N</b>	ıgn		iésold	FIGURE.	)1-325/16	

			CASINO PROJECT				II Hole N				PAGE _		
С							Situ Sampl				Started:	5 Aug '	
0-			Potential Borrow Area at Mine Site				Total Dep	oth: on:			npleted:	-	<u>13</u>
	orain: rilling		<u>6,957,954 N, 613,449 E, UTM NAD8</u> SDC150				Elevation "Inclination		<u>1072 1</u> -90°		istalled: ged by:		
	-	-	SDC150 Sonic. No flush.				Hole si		HQ		wed by:		
Drillin			<u></u>			_		<u> </u>				JEN	_
ELEVATION (m)	DEPTH (m)	GRAPHIC LOG	MATERIAL DESCRIPTION	TOTAL CORE RECOVERY (%)	SAMPLE TYPE	SAMPLE NO.	SAMPLE RECOVERY (%)	SPT BLOW COUNTS Refusal Penetration	SPT 'N' VALUE / RQD (%)	RQD (%) ● 20 40 60 80 SPT TEST DATA 'N' VALUES * 20 40 60 80	DRILLHOLE	NOTES	
-			COMPLETELY WEATHERED WRGD (0 to 1.5) Dawson Range Batholith - Granodiorite, completely weathered, recovered as rock core, friable, breaks into SAND and GRAVEL, trace to some silt, trace clay, orange, slightly moist. WEATHERED WRGD (1.5 to 3.8) Dawson Range Batholith - Granodiorite, pulverized by drilling to gravelly SAND, some silt to silty. Alternating intervals (0.1 to 0.6 m) of moderately weathered (grey) to highly and completely weathered (orange) bedrock.	0	S. S	BU-1	100		0		Approximate of moss and organic blac and 0.40 m moist SANL gravel and s cobbles and (Colluvium) CAT before HQ size son from 0.0 to 3 depth.	silty, k topsoil of brown with some ome boulders removed by drilling. ic drilling 8.8 m	
		+'+ +++ ++	End of Drillhole: 3.8 m	100					0 •		Bedrock rea of hole.	ched, end	
HOLE I	S DR	Y, MEA	NRKS: ASURED IN OPEN HOLE, 15 MINUTES AFTI	ER DR	ILLING T	ΉE				MINING CORP			
IOLE.	DRIL	LHOLE	E BACKFILLED WITH LOCAL MATERIALS A MPLETION.	ND M/	ARKED V	VITH A				OLE LOG FOR			
							K <sub>1</sub>	ink	t D	iésold	PROJECT/ASSIGN		F
		und f	or Report				17/1	ugn		ULTING	EIGURE	13-12	<u> </u>



# **APPENDIX C2**

#### **GEOTECHNICAL DRILLHOLE LOGGING DATA SHEETS**

(Pages C2-1 to C2-8)

# Knight Piésold

# **GEOTECHNICAL DRILLHOLE LOGGING DATA SHEET ROCK MASS CLASSIFICATION - RMR 1989**

PROJECT:	CASINO PROJECT
Client:	CASINO MINING CORPORATION
Drilling Company:	KLUANE
Location:	CRUSHER AREA
Coordinates :	N 6,958,360 E 612,088 (UTM NAD 83 ZONE 7)

Surface Elevation:	1,080.39	m	Drill Typ	e: Kl
	3,545	ft	Core Diamete	er: Fro
Total Depth:	39.62	m		Fro
	130	ft		Fro
Azimuth:	0	deg		Fro
Inclination:	90	deg	(down is positive)	Fro

NOTE: THE FOLLOWING DESCRIPTIONS WERE BASED ON FIELD OBSERVATIONS AND DRILLING CHARACTERISTICS

JAB
SB
26-Aug-13
27-Aug-13

\\VAN11\Prj_file\1\01\00325\16\A\Data\Task 200 - 2013 Geotechnical SI Program\Drillholes\DH13-05B\[DH13-05B Data Logging Sheet Rev 0.xls]Data - Calc Sheet									Drill Hole Number: DH13-05B																				
DRILL RUN DATA												GEOLOGY - COMMENTS				RMR - DATA (BY RUN)						RMR CALCULATIONS (BY RUN)							
Depth	Elev.	Depth	Elev.	Depth	Depth	Run	Recov.	Reco	ov. R	QD	RQD	Rock		UCS	#	Joint		J	loint Cor	ndition			Water	RMR-89	RMR-89	RMR-89	RMR-89	RMR-89	RMR-89
From	From	From	From	То	То	Length	Length		Ler	ngth		Туре	Description of Rock Mass and Discontinuities		of	Set	Persis-	Apert-	Rough	Infill	Weath	TOTAL	Rating	UCS	RQD	Joint	Joint	Water	Total
(ft)	(ft)	(m)	(m)	(ft)	(m)	(m)	(m)	(%)	6) (r	m)	(%)	(see Log)			Joints	Spac. (mm)	Р	A	R	I	W			Rating	Rating	Spac. Rating	Condition Rating	Rating	
0.0	3544.5	0.00	1080.4	14.1	4.30	4.30						OVB	See Soils Log																,
14.1	3530.4	4.30	1076.1	41.0	12.50	8.20	6.75	82	2 0.	.18	2	WRGD	Granodiorite, highly weathered, possibly fault between 9.40 and 10.00 m depth where rock is broken down to orange stained sand and gravel. Medium grained, inequigranular, pink with very dark green to black specks (amphibole) and white to light grey specks (quartz), orange to dark red staining, very weak, very close joint spacing.	3	Max	50	0	0	0	0	0	0	15	1.3	3.2	5.7	0.0	15	25.2
41.0	3503.5	12.50	1067.9	45.0	13.72	1.22	1.22	100	00 0.	.70	57	WRGD	Granodiorite, medium grained, inequigranular, light gray with black specks, medium strong, moderately weathered. Joints are slightly rough, partially open, no infill, rust staining on surfaces.	50	10	122	0	4	3	6	3	16	15	5.7	11.3	6.6	16.0	15	54.6
45.0	3499.5	13.72	1066.7	50.0	15.24	1.52	1.52	100	00 1.	.27	84	WRGD	Granodiorite, medium grained, inequigranular, light grey with black specks (last ~0.1m dark grey with white specks), strong, slightly weathered. Joints are slightly rough, thin white to yellow hard infill (calcite).	100	10	152	0	4	3	4	5	16	15	9.4	16.5	7.0	16.0	15	63.9
50.0	3494.5	15.24	1065.2	55.0	16.76	1.52	1.50	99	9 1.	.30	86	WRGD	Granodiorite, medium grained, inequigranular, light grey with black specks, strong, fresh. Joints are smooth, no infill.	75	9	167	0	4	1	6	6	17	15	7.7	16.9	7.2	17.0	15	63.8
55.0	3489.6	16.76	1063.6	60.0	18.29	1.53	1.52	99	9 1.	.36	89	WRGD	Granodiorite, medium grained, inequigranular, light grey with black specks, strong, slightly weathered. Joints are slightly rough, thin yellow orange to green hard infill.	75	8	190	0	4	3	4	5	16	15	7.7	17.7	7.5	16.0	15	63.8
60.0	3484.5	18.29	1062.1	65.0	19.81	1.52	1.45	95	5 0.	.84	55	WRGD	Granodiorite, medium grained, inequigranular, light grey with black specks (pinkish band at ~19.6 m depth), strong, slightly weathered. Joints are slightly rough, thin yellow green to red hard infill.	100	14	104	0	4	3	4	5	16	15	9.4	10.9	6.4	16.0	15	57.7
65.0	3479.6	19.81	1060.6	70.0	21.33	1.53	1.52	99	9 0.	.84	55	WRGD	Granodiorite, medium grained, inequigranular, light grey with black specks, very strong, slightly weathered. Joints are slightly rough, thin yellow to orange to green hard infill.	125	17	89	0	4	3	4	5	16	15	10.9	10.9	6.2	16.0	15	59.0
70.0	3474.5	21.33	1059.1	75.0	22.85	1.52	1.52	100	00 0.	.00	0	WRGD	Broken zone of Granodiorite, medium grained, inequigranular, light grey with black specks, medium to strong, moderately weathered. Joints are slightly rough, yellow to green chalky soft infill; white veinlets throughout, up to ~1 cm thick.	50	Max	50	0	1	1	0	3	5	15	5.7	3.0	5.7	5.0	15	34.4
75.0	3469.6	22.85	1057.5	80.0	24.37	1.52	1.52	100	00 0.	.00	0	WRGD	Broken zone, same as previous run, moderately weathered. Joints are slightly rough, dark grey waxy infill, white veinlets throughout.	50	Мах	50	0	1	1	0	3	5	15	5.7	3.0	5.7	5.0	15	34.4
80.0	3464.6	24.37	1056.0	85.0	25.90	1.53	1.53	100	00 0.	.34	22	WRGD	Heavily fractured section from 24.37 to 25.34 m depth. Granodiorite, medium grained, inequigranular, light grey with black specks, strong, slightly weathered. Joints are slightly rough, thin yellow to white soft chalky infill.	50	Max	50	0	4	3	2	5	14	15	5.7	5.7	5.7	14.0	15	46.1

# Drill Hole Number:

DH13-05B

luane KD1000													
rom	0	to	39.62	m	HTW	70.9	mm						
rom		to		m			mm						
rom		to		m			mm						
rom		to		m			mm						
rom		to		m			mm						

\\VAN11\Prj\_file\1\01\00325\16\A\Data\Task 200 - 2013 Geotechnical SI Program\Drillholes\DH13-05B\[DH13-05B Data Logging Sheet Rev 0.xls]Data - Calc Sheet

DRILL RUN DATA											GEOLOGY - COMMENTS				RM	R - DA	TA (B)	( RUN)					RM	R CALCU	JLATIONS	CULATIONS (BY RUN)			
Depth	Elev.	Depth	Elev.	Depth	Depth	Run	Recov.	Recov.	RQD	RQD	Rock		UCS	#	Joint			Joint Cor	ndition		1	Water	RMR-89	RMR-89	RMR-89	RMR-89	RMR-89	RMR-89	
From	From	From	From	То	То	Length	Length		Length		Туре	Description of Rock Mass and Discontinuities	(Est.)	of	Set	Persis-	Apert-	Rough	Infill	Weath	TOTAL	Rating	UCS	RQD	Joint	Joint	Water	Total	
(ft)	(ft)	(m)	(m)	(ft)	(m)	(m)	(m)	(%)	(m)	(%)	(see Log)		(MPa)	Joints	Spac. (mm)	Ρ	A	R	I	W			Rating	Rating	Spac. Rating	Condition Rating	Rating		
85.0	3459.5	25.90	1054.5	90.0	27.42	1.52	1.52	100	0.49	32	WRGD	Granodiorite, medium grained, inequigranular, light grey with black specks, strong, slightly weathered, 5 cm thick pink quartz vein at 27.10 m depth. Joints are slightly rough, thin white soft chalky infill.	75	19	80	0	4	3	2	5	14	15	7.7	7.2	6.1	14.0	15	49.9	
90.0	3454.6	27.42	1053.0	95.0	28.95	1.53	1.53	100	1.53	100	WRGD	Granodiorite, medium grained, inequigranular, light grey with black specks, strong, slightly weathered. Joints are slightly rough, thin white to green soft infill.	75	6	255	0	4	3	2	5	14	15	7.7	20.2	8.2	14.0	15	65.1	
95.0	3449.5	28.95	1051.4	100.0	30.47	1.52	1.35	89	0.91	60	WRGD	Granodiorite, medium grained, inequigranular, light grey with black specks, strong, moderately weathered. Joints are slightly rough, thin white to green soft infill.	75	10	135	0	4	3	2	3	12	15	7.7	11.8	6.8	12.0	15	53.2	
100.0	3444.6	30.47	1049.9	105.0	31.99	1.52	1.52	100	1.26	83	WRGD	Same as previous run. Joints are slightly rough, thin green soft chalky infill.	50	9	169	0	4	3	2	5	14	15	5.7	16.4	7.2	14.0	15	58.2	
105.0	3439.6	31.99	1048.4	110.0	33.52	1.53	1.53	100	1.06	69	WRGD	Same as previous run. Joints are slightly rough, thin green soft chalky infill.	75	11	139	0	4	3	2	5	14	15	7.7	13.6	6.8	14.0	15	57.1	
110.0	3434.6	33.52	1046.9	115.0	35.04	1.52	1.52	100	1.39	91	WRGD	Granodiorite, medium grained, inequigranular, dark grey with black specks, medium strong, slightly weathered. Pink quartz vein from 34.00 to 34.50 m depth, very strong. Joints are smooth, thin soft chalky infill.	50	6	253	0	4	1	2	5	12	15	5.7	18.2	8.2	12.0	15	59.1	
115.0	3429.6	35.04	1045.3	120.0	36.57	1.53	1.53	100	1.03	67	WRGD	Granodiorite, medium grained, inequigranular, dark grey with black specks, medium strong, slightly weathered. Joints are slightly rough, thin white soft chalky infill, green veinlets along core length.	50	8	191	0	4	3	2	5	14	15	5.7	13.2	7.5	14.0	15	55.3	
120.0	3424.6	36.57	1043.8	125.0	38.09	1.52	1.52	100	0.80	53	WRGD	Granodiorite, medium grained, inequigranular, dark grey with black specks, very strong, slightly weathered. Joints are slightly rough, thin white to yellow soft chalky infill.	125	18	84	0	4	3	2	5	14	15	10.9	10.5	6.1	14.0	15	56.5	
125.0	3419.6	38.09	1042.3	130.0	39.61	1.52	1.52	100	0.60	39	WRGD	From 38.09 to 39.11 m Granodiorite, medium grained, inequigranular, dark grey with black specks, medium strong, slightly weathered. Joints are slightly rough, thin white to orange soft chalky infill. From 39.11 to 39.61 m leached appearance, medium strong, moderately to highly weathered, close joint spacing, decreasing with depth.	30	15	101	0	4	3	2	5	14	15	3.9	8.3	6.4	14.0	15	47.5	

DH13-05B

# Knight Piésold

### **GEOTECHNICAL DRILLHOLE LOGGING DATA SHEET ROCK MASS CLASSIFICATION - RMR 1989**

PROJECT:	CASINO PROJECT
Client:	CASINO MINING CORPORATION
Drilling Company:	KLUANE
Location:	CRUSHER AREA
Coordinates :	N 6,958,351 E 612,168 (UTM NAD 83 ZONE 7)

Surface Elevation:	1,078.89	m	Drill Typ	e: Kl
	3,540	ft	Core Diamete	er: Fro
Total Depth:	41.15	m		Fro
	135	ft		Fro
Azimuth:	0	deg		Fro
Inclination:	90	deg	(down is positive)	Fro

NOTE: THE FOLLOWING DESCRIPTIONS WERE BASED ON FIELD OBSERVATIONS AND DRILLING CHARACTERISTICS

Logged By:	SB
Reviewed By:	LM
Date Started:	28-Aug-13
Date Completed:	29-Aug-13

\\VAN11\F	11\Prj_file\1\01\00325\16\A\Data\Task 200 - 2013 Geotechnical SI Program\Drillholes\DH13-06\[DH13-06 Data Logging Sheet Rev 0.xls]Data - Calc Sheet											Γ	Drill H	ole Ni	umber:		DH	13-06										
			-	DR	ILL RUN	DATA	-					GEOLOGY - COMMENTS				RM	IR - DA	TA (B)	Y RUN)			-		RN	R CALCU	JLATIONS	(BY RUN	l)
Depth	Elev.	Depth	Elev.	Depth	Depth	Run	Recov.	Recov.	RQD	RQD	Rock		UCS	#	Joint		J	loint Cor	ndition			Water	RMR-89	RMR-89	RMR-89	RMR-89	RMR-89	RMR-89
From	From	From	From	То	То	Length	Length		Length		Туре	Description of Rock Mass and Discontinuities	(Est.)	of	Set	Persis	Apert-	Rough	Infill	Weath	TOTAL	Rating	UCS	RQD	Joint	Joint	Water	Total
(ft)	(ft)	(m)	(m)	(ft)	(m)	(m)	(m)	(%)	(m)	(%)	(see Log)		(MPa)	Joints	Spac.	Р	А	R	I	W			Rating	Rating	Spac. Rating	Condition Rating	Rating	
0.0	3539.6	()	1078.9	13.8	4.20	4.20	()	(70)	()	(70)	OVB	See Soils Log	( u)		()										rtating	rtating		
13.8	3525.9	4.20	1074.7	15.0	4.57	0.37	0.37	99	0.00	0	WRGD	Granodiorite, medium grained, equigranular, light grey with dark grey spots, locally light orangy pink, weak, moderately weathered. Some joints visible with orange to brown surface staining, no infill, sand and fines likely washed out. Reworked and broken up by drill.	20	Max	50	0	1	1	0	3	5	15	3.0	3.0	5.7	5.0	15	31.7
15.0	3524.6	4.57	1074.3	20.0	6.10	1.52	1.55	100	0.22	14	WRGD	Granodiorite, medium grained, equigranular, light grey with black spots, locally pink bands, weak, moderately weathered. Joints at 20 and 65° from core axis, with up to 2 mm of orange brown sandy silt infill. Healed and partially healed joints at 60° with light green infill. Small shear zone between 5.67 and 5.77 m depth with subangular SAND and GRAVEL, some silt and clay.	5	Max	50	0	0	0	0	0	0	15	1.5	4.7	5.7	0.0	15	26.9
20.0	3519.6	6.10	1072.8	20.7	6.30	0.20	0.20	99	0.00	0	WRGD	Broken zone with gravel sized rock fragments, some silty sand in joints. Rock is pink with black and light grey specks. Joints are planar with dark red surface staining (hematite).	20	Max	50	0	1	1	0	3	5	15	3.0	3.0	5.7	5.0	15	31.7
20.7	3519.0	6.30	1072.6	21.3	6.50	0.20	0.20	100	0.00	0	WRGD	Fault, gouge-like clayey SAND and angular GRAVEL, clay is grey, medium plasticity. Rock is pink with black and light grey specks.	1	Max	50	0	0	0	0	0	0	15	1.1	3.0	5.7	0.0	15	24.8
21.3	3518.3	6.50	1072.4	22.0	6.70	0.20	0.20	100	0.00	0	WRGD	Broken zone with gravel sized rock fragments, some silty sand in joints. Rock is pink with black and light grey specks, moderately weathered. Joints are planar with dark red surface staining (hematite).	20	Max	50	0	1	1	0	3	5	15	3.0	3.0	5.7	5.0	15	31.7
22.0	3517.7	6.70	1072.2	25.0	7.62	0.92	0.90	98	0.34	37	WRGD	Granodiorite, medium grained, equigranular, pink with very dark green to black specks (amphibole) and white to light grey specks (quartz), locally light grey bands, strong, moderately to slightly weathered. Joints at 20 and 60° from core axis, some orange brown stained, some purple stained, some partially and fully healed joints with green infill (<1 mm, sericite?). One joint has 2 mm of purple sand infill.	50	14	64	0	1	3	2	3	9	15	5.7	7.9	5.9	9.0	15	43.4
25.0	3514.6	7.62	1071.3	26.5	8.07	0.45	0.45	100	0.22	49	WRGD	Granodiorite, medium grained, equigranular, pink to light grey matrix with dark green to black and light grey specks, strong, moderately to slightly weathered. Joints at 20 and 60° from core axis, slightly rough, some have orange silty sand infill, some dark red to orange staining. Healed joints at 40° with green infill.	50	7	64	0	4	3	1	3	11	15	5.7	9.8	5.9	11.0	15	47.4
26.5	3513.2	8.07	1070.8	27.1	8.27	0.20	0.20	100	0.00	0	WRGD	Shear zone, clayey SAND and GRAVEL, clay is greenish beige, orange and minor blue, gravel is angular, purplish pink Granodiorite with very dark green and light grey specks, slightly to moderately weathered.	1	Max	50	0	0	0	0	0	0	15	1.1	3.0	5.7	0.0	15	24.8
27.1	3512.5	8.27	1070.6	30.6	9.34	1.07	1.07	100	0.49	46	WRGD	Granodiorite, medium grained, equigranular, pink to light grey matrix with dark green to black and light grey specks, strong, moderately to slightly weathered. Joints at 20 and 60° from core axis, slightly rough, some have orange silty sand infill, some dark red to orange staining. Healed joints at 40° with green infill. Last 10 cm of run broken up by drill.	50	8	134	0	4	3	1	3	11	15	5.7	9.3	6.8	11.0	15	47.7

## Drill Hole Number:

DH13-06

luar	e KD1	000					
om	0	to	41.15	m	HTW	70.9	mm
om		to		m			mm
om		to		m			mm
om		to		m			mm
om		to		m			mm

#### \\VAN11\Prj\_file\1\01\00325\16\A\Data\Task 200 - 2013 Geotechnical SI Program\Drillholes\DH13-06\[DH13-06 Data Logging Sheet Rev 0.xls]Data - Calc Sheet

	,				ILL RUI								ev 0.xlsjData - Calc Sheet GEOLOGY - COMMENTS				RM	R - DA	TA (B	Y RUN)					RM	R CALCI	N)		
Depth	Elev.	Depth	Elev.	Depth	Depth	Run	Recov	. Reco	v. R	RQD	RQD	Rock		UCS	#	Joint			Joint Co	ndition			Water	RMR-89	RMR-89	RMR-89	RMR-89	RMR-89	RMR-89
From	From	From	From	То	То	Length	Lengt	h	Le	ength		Туре	Description of Rock Mass and Discontinuities (F			Set	Persis-	Apert-	Rough	Infill	Weath	TOTAL	Rating	UCS	RQD	Joint	Joint	Water	Total
(ft)	(ft)	(m)	(m)	(ft)	(m)	(m)	(m)	(%)		(m)	(%)	(see Log)		(MPa)	Joints	Spac. (mm)	Ρ	A	R	L	W			Rating	Rating	Spac. Rating	Condition Rating	Rating	
30.6	3509.0	9.34	1069.6	35.0	10.67	1.33	1.33	100	0	0.00	0	WRGD	Fault zone. From 9.75 to 9.85 m depth gouge-like gravelly CLAY and SILT, beige to pink. Remainder of run is a rubble zone of angular GRAVEL with sandy silt and clay in joints, with some intact rock pieces. Gravel is angular to subangular, silt and clay are orange to bright pinkish red (hematite). Rock is slightly altered Granodiorite, pink matrix with light grey and black specks, medium grained, inequigranular, weak, moderately to highly weathered. Most joints at 20° from core axis with sandy CLAY and SILT infill and dark green surface staining.	5	Max	50	0	0	0	0	0	0	15	1.5	3.0	5.7	0.0	15	25.2
35.0	3504.6	10.67	1068.2	36.5	11.13	0.46	0.46	100	0	).35	76	WRGD	Salt and pepper Granodiorite, medium grained, light grey with dark green to black specks, strong, moderately weathered. Joints at 40 and 60° from core axis, slight green and red surface staining, rough undulating.	50	3	153	0	4	5	6	3	18	15	5.7	14.9	7.0	18.0	15	60.6
36.5	3503.1	11.13	1067.8	40.6	12.39	1.26	1.26	100	0	).16	13	WRGD	Granodiorite, medium grained, pink with black to dark grey specks, moderately to highly weathered, weak. Joints at 10, 40 and 60° from core axis, dominated by one discontinuity at 10° with soft white, dark red and green sandy clay infill. Some faint striation visible that may be slickensides. Last 20 cm of run broken zone, aggravated by drill.	20	Max	50	0	1	1	2	1	5	15	3.0	4.5	5.7	5.0	15	33.1
40.6	3499.0	12.39	1066.5	45.0	13.72	1.33	1.42	100	) 0	).95	71	WRGD	Salt and pepper Granodiorite, medium grained, equigranular, light grey with dark green to black specks, some pink bands, and light green (sericite?) veinlets, strong, slightly weathered. Joints at 20, 50 and 70° from core axis, slight red surface staining, slightly rough undulating.	75	15	95	0	4	3	6	5	18	15	7.7	14.0	6.3	18.0	15	60.9
45.0	3494.6	13.72	1065.2	50.0	15.24	1.52	1.43	94	1	.07	70	WRGD	Salt and pepper Granodiorite, medium grained, light grey with dark green to black specks, strong, slightly weathered, some green veinlets and pink (quartz) veins at 20°. Joints at 20 and 40° from core axis, some green and dark red surface staining, trace soft white calcite infill, slightly rough undulating.	50	16	89	0	5	3	6	5	19	15	5.7	13.7	6.2	19.0	15	59.6
50.0	3489.6	15.24	1063.7	55.0	16.76	1.52	1.44	94	1	.25	82	WRGD	Salt and pepper Granodiorite, medium grained, inequigranular, light grey with dark greenish grey to black specks, locally pink with dark grey specks, strong, slightly weathered, some light green veinlets (1 mm thick, sericite?). Joints at 70 to 80° from core axis, planar, slightly rough, trace soft white calcite infill.	75	10	144	0	4	3	6	5	18	15	7.7	16.2	6.9	18.0	15	63.7
55.0	3484.6	16.76	1062.1	60.0	18.29	1.52	1.48	97	1	.38	91	WRGD	Granodiorite, medium grained, light grey with dark grey specks, few pink bands with dark grey specks, strong to very strong, slightly weathered to fresh, light green and dark bluish green veinlets (1 mm thick, sericite?), locally pervasive to make up 30% of rock. One 1.5 cm thick aplite vein (quartz, feldspar) at 10°. Joints at 60 to 70° from core axis, planar, smooth to slightly rough, some have dark red staining and trace calcite infill.	100	10	148	0	4	3	6	5	18	15	9.4	18.0	7.0	18.0	15	67.4
60.0	3479.6	18.29	1060.6	65.8	20.05	1.76	1.79	100	) 1	.43	81	WRGD	Salt and pepper Granodiorite, medium grained, inequigranular, light grey with dark grey specks, few pink bands with dark grey specks, strong, slightly weathered, green veinlets at 50°. One 2 cm thick aplite vein (quartz, feldspar) at 10°. Joints at 10, 30 and 50° from core axis. 50° joint is planar, smooth, with 2 mm soft calcite and green sericite with red staining, other joints are slightly rough to rough with no infill.	75	12	149	0	4	3	6	5	18	15	7.7	16.0	7.0	18.0	15	63.7
65.8	3473.9	20.05	1058.8	70.0	21.34	1.29	1.10	85	0	).42	33	WRGD	20.05 to 20.20 m depth: Mafic dyke, fine grained, inquigranular, dark grey with white specks, very strong, fresh, no discontinuities. 20.20 to 21.34 m depth: Altered or leached Granodiorite, argillaceous weathering, medium grained, inequigranular, white with grey specks, very weak, highly weathered, includes three 5 to 10 cm long rubble zones, likely aggravated by drill.	5	17	65	0	1	3	2	1	7	15	1.5	7.2	5.9	7.0	15	36.6
70.0	3469.6	21.34	1057.6	75.0	22.86	1.52	1.54	100	0	).72	47	WRGD	Altered or leached Granodiorite, argillaceous weathering at some intervals, other intervals grey to locally pink matrix with green tone and grey specks, medium grained, inequigranular, very weak to weak, highly to moderately weathered. Joints at 10, 50 and 70° from core axis, planar, slightly rough, soft white to green clay and calcite infill, typically 1 to 5 mm, some dark red surface staining.	5	14	110	0	1	3	2	1	7	15	1.5	9.5	6.5	7.0	15	39.5
75.0	3464.6	22.86	1056.0	80.0	24.38	1.52	1.48	97	1	1.12	73	WRGD	Slightly altered or leached Granodiorite, slight argillaceous weathering, grey to locally pink matrix with green tone and dark greenish grey specks, medium grained, inequigranular, medium strong, moderately weathered. Joints at 20, 50 and 70° from core axis, planar, slightly rough, soft white calcite and light green clayey sericite infill, 1 to 3 mm, some dark green and purplish red surface staining. Unaltered and slightly weathered below 23.11 m depth.	50	13	114	0	1	3	2	3	9	15	5.7	14.4	6.5	9.0	15	50.6

### Drill Hole Number:

DH13-06

#### \\VAN11\Prj\_file\1\01\00325\16\A\Data\Task 200 - 2013 Geotechnical SI Program\Drillholes\DH13-06\[DH13-06 Data Logging Sheet Rev 0.xls]Data - Calc Sheet

				DR	ILL RUN	I DATA						GEOLOGY - COMMENTS	RMR - DATA (BY RUN)					RN	R CALCI	JLATIONS	6 (BY RUI	N)						
Depth	Elev.	Depth	Elev.	Depth	Depth	Run	Recov.	Recov.	RQD	RQD	Rock	U			Joint			Joint Co	ndition			Water	RMR-89	RMR-89	RMR-89	RMR-89	RMR-89	RMR-89
From	From	From	From	То	То	Length	Length		Length		Туре	Description of Rock Mass and Discontinuities	(Est.)	of	Set	Persis-	Apert	- Rough	Infill	Weath	TOTAL	Rating	UCS	RQD	Joint	Joint	Water	Total
(ft)	(ft)	(m)	(m)	(ft)	(m)	(m)	(m)	(%)	(m)	(%)	(see Log)			Joints	Spac. (mm)	Ρ	A	R	T	W			Rating	Rating	Spac. Rating	Condition Rating	Rating	
80.0	3459.6	24.38	1054.5	85.0	25.91	1.52	1.48	97	1.46	96	WRGD	Granodiorite, medium grained, inequigranular, light grey to locally pink matrix with green tone and dark greenish grey to black specks, strong, slightly weathered. Joints at 10 and 50° from core axis, planar, slightly rough, soft white calcite and light green sericite infill, <5 mm infill.	75	5	296	0	1	3	2	5	11	15	7.7	19.2	8.7	11.0	15	61.6
85.0	3454.6	25.91	1053.0	90.0	27.43	1.52	1.50	98	0.80	52	WRGD	Same as above, one 3 cm thick aplite vein (quartz, feldspar) at 10°. Joints at 20, 50 and 70° from core axis, planar, slightly rough, some have 1 to 2 mm soft white to green calcite and sericite infill, trace dark red surface staining, some dark green veinlets.	75	12	125	0	1	3	2	5	11	15	7.7	10.4	6.7	11.0	15	50.8
90.0	3449.6	27.43	1051.5	95.0	28.96	1.52	1.48	97	1.35	89	WRGD	Granodiorite, medium grained, inequigranular, light grey to locally pink matrix with green tone and dark green to black specks, strong, slightly weathered. Joints at 50° from core axis, planar, slightly rough, trace soft white calcite and light green sericite infill, some healed joints at 45° with light green (sericite) infill.	100	8	185	0	4	3	6	5	18	15	9.4	17.6	7.4	18.0	15	67.4
95.0	3444.6	28.96	1049.9	100.0	30.48	1.52	1.54	100	1.36	89	WRGD	Granodiorite, medium grained, inequigranular, light grey to locally pink matrix with green tone and dark green to black specks, strong, slightly weathered. Joints at 10, 50 and 70° from core axis, planar, slightly rough, trace soft white calcite and light green sericite infill, some red staining. Rock becomes softer and has thicker infill around discontinuity at 30.18 m.	100	9	171	0	4	3	6	5	18	15	9.4	17.7	7.2	18.0	15	67.4
100.0	3439.6	30.48	1048.4	105.0	32.00	1.52	1.52	100	0.77	51	WRGD	Granodiorite, medium grained, inequigranular, light grey to locally pink matrix and dark grey specks, weak, moderately weathered. Joints at 10, 30 and 60° from core axis, planar, slightly rough, 10° joints have 10 mm of soft white calcite and light green sericite infill, some red and dark green staining. Some healed joints at 30° filled with white calcite. Below 31.26 m depth rock becomes stronger and less weathered.	25	13	117	0	1	3	0	1	5	15	3.4	10.1	6.6	5.0	15	40.1
105.0	3434.6	32.00	1046.9	110.0	33.53	1.52	1.52	100	1.31	86	WRGD	Same as previous run, rock mass dominated by a 10° joint with 10 mm of soft white calcite and sericite in moderately weathered rock and light green sericite infill, some dark red staining. Other joints are at 10 and 60°, planar, slightly rough, trace calcite and sericite infill.	25	9	169	0	1	3	0	1	5	15	3.4	17.0	7.2	5.0	15	47.7
110.0	3429.6	33.53	1045.4	115.0	35.05	1.52	1.43	94	1.43	94	WRGD	Granodiorite, medium grained, inequigranular, light grey matrix and dark green to black specks, few pink bands, strong, slightly weathered. Joints at 10, 50 and 70° from core axis, planar, slightly rough, soft yellowish beige to white calcite and green sericite infill (< 5 mm), some dark red staining. Most infill at 10° joints. Some healed joints filled with white calcite.	100	3	477	0	1	3	2	5	11	15	9.4	18.8	10.5	11.0	15	64.7
115.0	3424.6	35.05	1043.8	120.0	36.58	1.52	1.52	100	1.47	96	WRGD	Same as previous run, but trace to no infill.	100	7	217	0	4	3	6	5	18	15	9.4	19.4	7.8	18.0	15	69.6
120.0	3419.6	36.58	1042.3	125.0	38.10	1.52	1.50	98	1.50	98	WRGD	Same as previous run, trace light beige to green (calcite and sericite) infill. Joints at 80° from core axis.	100	2	750	0	6	3	6	5	20	15	9.4	19.8	12.9	20.0	15	77.1
125.0	3414.6	38.10	1040.8	130.0	39.62	1.52	1.52	100	1.44	94	WRGD	Granodiorite, medium grained, inequigranular, light grey with dark green to black specks, pink bands along open and healed 20° discontinuities, strong, slightly weathered. Joints at 20° from core axis, planar, slightly rough, soft light beige to white calcite and dark green (sericite) infill (2 to 6 mm), dark red staining.		4	380	0	0	3	0	5	8	15	7.7	18.9	9.6	8.0	15	59.2
130.0	3409.6	39.62	1039.3	135.0	41.15	1.52	1.52	100	1.52	100	WRGD	As above, but no infill in joints. Joints at 60° from core axis, planar, slightly rough, trace light beige calcite infill, some red staining.		3	507	0	4	3	6	5	18	15	7.7	20.1	10.8	18.0	15	71.6

DH13-06

# Knight Piésold

### **GEOTECHNICAL DRILLHOLE LOGGING DATA SHEET ROCK MASS CLASSIFICATION - RMR 1989**

PROJECT:	CASINO PROJECT
Client:	CASINO MINING CORPORATION
Drilling Company:	KLUANE
Location:	ADR/SART FACILITY
Coordinates :	N 6,955,169 E 610,805 (UTM NAD 83 ZONE 7)

Surface Elevation:	1,031.11	m	Drill Typ	e: Klu
	3,383	ft	Core Diamete	er: Fro
Total Depth:	39.62	m		Fro
	130	ft		Fro
Azimuth:	0	deg		Fro
Inclination:	90	deg	(down is positive)	Fro

NOTE: THE FOLLOWING DESCRIPTIONS WERE BASED ON FIELD OBSERVATIONS AND DRILLING CHARACTERISTICS

Logged By:	SB
Reviewed By:	LM
Date Started:	30-Aug-13
Date Completed:	31-Aug-13

IVVAN11\Prj_file\1\01\00325\16\A\Data\Task 200 - 2013 Geotechnical SI Program\Drillholes\DH13-07B \Data Logging Sheet Rev 0.xls]Data - Calc Sheet       DH13-         DRILL RUN DATA       GEOLOGY - COMMENTS       RMR - DATA (BY RUN)       RMR CALCULATIONS (B																													
		1	1	DR		IDATA							GEOLOGY - COMMENTS		-	_	RM	R - DA	TA (B	Y RUN)	)				RN	R CALCU	JLATIONS	(BY RUN	1)
Depth	Elev.	Depth	Elev.	Depth	Depth	Run	Recov	. Reco	ov. R	QD	RQD	Rock	Description of Rock Mass and Discontinuities	UCS	#	Joint		<u> </u>	Joint Co			1	Water	RMR-89	RMR-89	RMR-89	RMR-89	RMR-89	RMR-89
From	From	From	From	То	То	Length	Lengt	ו	Le	ength		Туре		(Est.)	of	Set	Persis	Apert-	Rough	Infill	Weath	TOTAL	Rating	UCS	RQD	Joint	Joint	Water	Total
(ft)	(ft)	(m)	(m)	(ft)	(m)	(m)	(m)	(%)	o) (	(m)	(%)	(see Log)		(MPa)	Joints	Spac. (mm)	Р	A	R		W			Rating	Rating	Spac. Rating	Condition Rating	Rating	
0.0	3382.9	0.00	1031.1	3.6	1.10	1.10						OVB	See Soils Log																
3.6	3379.3	1.10	1030.0	10.9	3.31	2.21	0.51	23	3 0	.15	7	WRGD	Dawson Range Batholith - Granodiorite, highly weathered, coarse grained, extremely weak, friable. Recovered as gravelly SAND, many cobbles, some silt and clay, beige to orangy brown, locally pink layers, slightly moist. Sand is fine to coarse, gravel is fine to coarse. Cobbles are angular, highly weathered Granodiorite. Material becomes less weathered and coarser with depth.	0.5	Max	50	0	0	0	0	0	0	15	1.1	3.8	5.7	0.0	15	25.5
10.9	3372.0	3.31	1027.8	14.1	4.30	0.99	0.99	100	0 0	.30	30	WRGD	Granodiorite, medium grained, inequigranular, light pinkish grey with black spots, pervasive orange weathering, weak, moderately weathered. Joints at 45 and 65° from core axis, slightly rough, planar, orange surface staining, some joints have 1 to 2 mm of sand infill.	20	8	124	0	1	3	2	3	9	15	3.0	6.9	6.6	9.0	15	40.5
14.1	3368.7	4.30	1026.8	18.4	5.61	1.31	1.31	100	0 0	.35	27	WRGD	Granodiorite, quartz altered, medium grained to aphanitic, orange brown, orginal fabric of granodiorite (light grey specks) is still recognizable at most locations, other locations almost pure quartz, very strong, slightly weathered. Joints mostly at 60° from core axis, some at 20 and 45°, planar, smooth, orange staining, no infill except for one 45° joints with 2 mm of brown silty sand infill.	125	21	62	0	4	1	6	5	16	15	10.9	6.3	5.8	16.0	15	54.1
18.4	3364.5	5.61	1025.5	22.0	6.71	1.10	1.10	100	0 0	.66	60	WRGD	Granodiorite, medium grained, inequigranular, light pinkish grey with black spots, some pink bands, pervasive orange weathering, medium strong, moderately weathered. Joints at 10, 60 and 70° from core axis, planar, smooth to slightly rough, orange brown surface staining, some have trace silty sand infill (<1 mm).	50	10	110	0	4	1	6	3	14	15	5.7	11.8	6.5	14.0	15	53.0
22.0	3360.9	6.71	1024.4	25.0	7.62	0.91	1.02	100	0 0	.49	54	WRGD	Same as previous run. Joints at 10, 50 and 75° from core axis, planar, smooth to slightly rough, orange brown surface staining, some have trace white calcite or trace orange silty sand infill (<1 mm).	50	11	93	0	4	1	6	3	14	15	5.7	10.6	6.2	14.0	15	51.5
25.0	3357.9	7.62	1023.5	29.0	8.84	1.22	1.20	98	3 0	.33	27	WRGD	Granodiorite, medium grained, inequigranular, light pinkish grey with black spots, pervasive orange weathering, medium strong, moderately weathered. Joints at 10 and 50 to 70° from core axis, planar, slightly rough, orange brown surface staining, some have trace silty sand infill (~1 mm), some have soft calcite infill. Two pink Aplite veins (quartz, feldspar) at 65°, 2 cm thick.	50	18	67	0	1	3	2	3	9	15	5.7	6.4	5.9	9.0	15	42.0
29.0	3353.9	8.84	1022.3	31.0	9.45	0.61	0.64	100	0 0	.00	0	WRGD	Same as previous run, but more fractured. Joints at 10 and 50 to 70° from core axis, planar, slightly rough, orange brown surface staining, some have trace silty sand infill (~1 mm), some have soft calcite infill. One pink Aplite veins (quartz, feldspar), 2 cm thick.	50	15	50	0	1	3	2	3	9	15	5.7	3.0	5.7	9.0	15	38.4
31.0	3351.9	9.45	1021.7	35.0	10.67	1.22	1.15	94	4 0	.30	25	WRGD	Granodiorite, medium grained, inequigranular, light pinkish grey with black spots, orange weathering (~1 cm halo around joints), medium strong, moderately weathered. Joints at 10 and 50 to 70° from core axis, planar, slightly rough, orange surface staining, some have beige orange silt and sand infill (1 to 2 mm), some have soft calcite infill. Some healed joints at 60° with soft white calcite infill.	50	17	68	0	1	3	2	3	9	15	5.7	6.0	5.9	9.0	15	41.6
35.0	3347.9	10.67	1020.4	40.0	12.19	1.52	1.52	100	0 0	.49	32	WRGD	Same as previous run. Joints at 10 and 50 to 70° from core axis, planar, slightly rough, orange surface staining, some have beige orange silt and sand infill, some have soft calcite infill.	50	20	76	0	1	3	2	3	9	15	5.7	7.1	6.0	9.0	15	42.8

### Drill Hole Number:

DH13-07B

Kluan	e KD1	000					
rom	0	to	39.62	m	HTW	70.9	mm
rom		to		m			mm
rom		to		m			mm
rom		to		m			mm
rom		to		m			mm

#### \\VAN11\Prj\_file\1\01\00325\16\A\Data\Task 200 - 2013 Geotechnical SI Program\Drillholes\DH13-07B\[DH13-07B Data Logging Sheet Rev 0.xls]Data - Calc Sheet

	-				ILL RUN		rograma					7B Data Logging Sheet Rev 0.xls]Data - Calc Sheet									CALCULATIONS (BY RUN)							
Depth	Elev.	Depth	Elev.	Depth	Depth	Run	Reco		Recov.	RQD	RQD	Rock		UCS	#	Joint			Joint Condition	<u>,</u>		Water	RMR-89	RMR-89	RMR-89	RMR-89	RMR-89	RMR-89
From	From	From	From	То	То	Length				Length	ngb	Туре	Description of Rock Mass and Discontinuities	(Est.)	of	Set	Persis		Rough Infill	Weath	TOTAL	Rating	UCS	RQD	Joint	Joint	Water	Total
						_				-		(see Log)		. ,	Joints	Spac.	P	A	R I	W	TOTAL	rituting	Rating	Rating	Spac.	Condition	Rating	Total
(ft) 40.0	(ft) 3342.9	(m) 12.19	(m) 1018.9	(ft) 45.3	(m) 13.80	(m) 1.61	(m) 1.61		(%)	(m) 0.52	(%)	WRGD	Same as previous run, but heavily fractured from 12.95 to 13.41 m depth, likely aggrevated by drill due to vertical joints. Joints at 10 and 50 to 70° from core	(MPa) 50	27	(mm) 60	0	1	3 2	3	9	15	5.7	7.2	Rating 5.8	Rating 9.0	15	42.6
													axis, planar, slightly rough, orange surface staining, beige orange silt and sand infill, some have soft calcite infill. Granodiorite, medium grained, inequigranular, light grey with black spots, orange															
45.3	3337.6	13.80	1017.3	46.7	14.24	0.44	0.44	4	100	0.00	0	WRGD	weathering throughout, some black spots weathered down to white clay, very weak, can be broken by hand, highly weathered. Joints at 10 and 50 to 70° from core axis, planar, slightly rough, orange surface staining, beige orange silt and sand infill.	4	11	50	0	1	1 2	1	5	15	1.4	3.0	5.7	5.0	15	30.1
46.7	3336.1	14.24	1016.9	49.0	14.94	0.70	0.40	D	57	0.00	0	WRGD	Granodiorite, completely weathered, friable to orange to white clayey SAND and GRAVEL.	0.5	Max	50	0	0	0 0	0	0	15	1.1	3.0	5.7	0.0	15	24.7
49.0	3333.9	14.94	1016.2	51.0	15.54	0.61	0.63	3	100	0.00	0	WRGD	Granodiorite, medium grained, inequigranular, light pink and grey matrix with black specks, orange weathering (~1 cm halo around joints), medium strong, moderately weathered. Joints at 40 and 70° from core axis, planar, slightly rough, orange surface staining, beige orange silt and sand infill.	50	12	53	0	1	3 2	3	9	15	5.7	3.0	5.7	9.0	15	38.4
51.0	3331.9	15.54	1015.6	53.0	16.15	0.61	0.62	2	100	0.41	67	WRGD	Slough at start of run (cuttings) - disregarded. Granodiorite, medium grained, inequigranular, grey and orange matrix with black specks, strong, moderately weathered. Joints at 50 to 70° from core axis, planar, slightly rough, ~1 mm aperture, orange surface staining, most have orange silty sand infill, some healed joints with orange veinlets.	70	10	62	0	4	3 2	3	12	15	7.3	13.2	5.8	12.0	15	53.3
53.0	3329.9	16.15	1015.0	58.0	17.68	1.52	1.52	2	100	0.51	33	WRGD	Granodiorite, medium grained, inequigranular, light pink and grey matrix with black specks, pervasive orange weathering, medium strong, moderately weathered. Joints at 10 and 50 to 70° from core axis, planar, smooth to slightly rough, orange surface staining, some orange sand, trace silt infill, some healed joints with orange and white calcite infill.	40	19	80	0	4	3 2	1	10	15	4.8	7.3	6.1	10.0	15	43.2
58.0	3324.9	17.68	1013.4	63.0	19.20	1.52	1.54	4	100	0.87	57	WRGD	Same as previous run, moderately weathered Granodiorite. Joints at 20, 60 and 80° from core axis, planar, smooth to slightly rough, orange brown surface staining, some with orange sand, trace silt infill. Rock is highly to completely weathered around 2 joints, from 18.53 to 18.56 and 19.05 to 19.10 m.	40	17	91	0	0	1 0	0	1	15	4.8	11.3	6.2	1.0	15	38.3
63.0	3319.9	19.20	1011.9	68.0	20.73	1.52	1.52	2	100	0.91	60	WRGD	Granodiorite, medium grained, inequigranular, light pink and grey matrix with black specks, some black specks weathered to orange greenish grey, pervasive orange weathering, medium strong, moderately weathered. Joints at 20 and 50 to 70° from core axis, planar, smooth to slightly rough, orange surface staining, trace orange sand infill, some healed joints with orange and white calcite infill.	50	12	127	0	4	36	1	14	15	5.7	11.7	6.7	14.0	15	53.1
68.0	3314.9	20.73	1010.4	73.0	22.25	1.52	1.58	8	100	0.89	58	WRGD	Same as previous run, moderately weathered Granodiorite, but from 21.70 to 22.25 m detph slightly weathered, light grey and pink matrix with black specks. Joints at 50 to 80° from core axis, planar, slightly rough, orange red surface staining, most have orange silty sand infill.	50	15	105	0	4	3 2	3	12	15	5.7	11.5	6.4	12.0	15	50.6
73.0	3309.9	22.25	1008.9	77.0	23.47	1.22	1.16	6	95	0.73	60	WRGD	Granodiorite, medium grained, inequigranular, light pink and grey matrix with black specks, some black specks weathered to orange greenish grey, pervasive orange weathering, medium strong, moderately weathered. Joints at 20 and 50 to 70° from core axis, planar, slightly rough, orange surface staining, trace orange silty sand infill, some healed joints with orange (calcite) infill.	50	12	97	0	4	3 2	3	12	15	5.7	11.8	6.3	12.0	15	50.7
77.0	3305.9	23.47	1007.6	82.0	24.99	1.52	1.53	3	100	1.15	75	WRGD	Same as previous run. Joints at 20, 40 and 60 to 70° from core axis, planar, slightly rough, orange surface staining, trace orange silty sand infill.	50	13	118	0	4	3 6	3	16	15	5.7	14.8	6.6	16.0	15	58.0
82.0	3300.9	24.99	1006.1	87.0	26.52	1.52	1.56	6	100	1.22	80	WRGD	Granodiorite, medium grained, inequigranular, light pink and grey matrix with black specks, some black specks weathered to orange greenish grey, pervasive orange weathering, medium strong, moderately weathered. Some healed joints at 20° with orange infill. From 25.81 to 26.14 m depth: Quartz altered granodiorite, medium grained to aphanitic, pink brown, orginal fabrice of granodiorite (light grey specks) is still recognizable at most locations, other locations almost pure quartz, very strong, slightly weathered. Contact at 20° from core axis. Joints at 20, 50 and 80° from core axis, planar, slightly rough, orange staining, 1 to 2 mm of orange brown silty sand infill.	50	11	142	0	1	3 2	3	9	15	5.7	15.8	6.9	9.0	15	52.3

### **Drill Hole Number:**

DH13-07B

#### \\VAN11\Prj\_file\1\01\00325\16\A\Data\Task 200 - 2013 Geotechnical SI Program\Drillholes\DH13-07B\[DH13-07B Data Logging Sheet Rev 0.xls]Data - Calc Sheet

				DR	ILL RUN	DATA					GEOLOGY - COMMENTS RMR - DATA (BY RUN)								RM	IR CALCU	JLATIONS	6 (BY RUI	N)					
Depth	Elev.	Depth	Elev.	Depth	Depth	Run	Recov.	Recov.	RQD	RQD	Rock		UCS	#	Joint		r	Joint Co	ndition			Water	RMR-89	RMR-89	RMR-89	RMR-89	RMR-89	RMR-89
From	From	From	From	То	То	Length	Length		Length		Туре	Description of Rock Mass and Discontinuities	(Est.)	of	Set	Persis-	Apert	Rough	Infill	Weath	TOTAL	Rating	UCS	RQD	Joint	Joint	Water	Total
(ft)	(ft)	(m)	(m)	(ft)	(m)	(m)	(m)	(%)	(m)	(%)	(see Log)		(MPa)	Joints	Spac. (mm)	Ρ	A	R	I	w			Rating	Rating	Spac. Rating	Condition Rating	Rating	
87.0	3295.9	26.52	1004.6	92.0	28.04	1.52	1.50	98	1.28	84	WRGD	Granodiorite, medium grained, equigranular, light pink and grey matrix with black specks, some black specks weathered to orange greenish grey, pervasive orange weathering, medium strong, moderately weathered. Joints at 10 to 20 and 50 to 70° from core axis, planar, slightly rough, orange to dark brown surface staining, some have orange brown clayey sand and calcite infill, some healed joints with orange to white calcite infill (veinlets).	50	11	136	0	4	3	2	3	12	15	5.7	16.6	6.8	12.0	15	56.1
92.0	3290.9	28.04	1003.1	97.4	29.68	1.63	1.53	94	1.32	81	WRGD	Same as previous run. Joints at 10, 30 and 60° from core axis, planar, slightly rough, orange to dark brown surface staining, trace soft orange clayey sand infill (I<1/3A).	50	3	510	0	4	3	6	3	16	15	5.7	15.9	10.8	16.0	15	63.4
97.4	3285.5	29.68	1001.4	100.8	30.74	1.06	1.06	100	0.87	82	WRGD	Granodiorite, medium grained, inequigranular, light grey and pink matrix with black specks, medium strong, slightly weathered. Joints at 50° from core axis, planar, slightly rough, orange staining, trace orange sand infill.	70	4	265	0	4	3	6	5	18	15	7.3	16.2	8.3	18.0	15	64.8
100.8	3282.0	30.74	1000.4	105.6	32.20	1.46	1.47	100	1.20	82	WRGD	Granodiorite, medium grained, inequigranular, light pink and grey matrix with black specks, many black specks weathered to grey, pervasive orange weathering, medium strong, moderately weathered. Joints at 10 and 60° from core axis, planar, slightly rough, orange brown surface staining, ~1 mm orange brown sand infill, some healed joints with orange to white infill (quartz) at 10 and 60°. At 32.20 m depth one joint with 1 cm of subrounded sand fill.	40	8	184	0	0	3	0	3	6	15	4.8	16.2	7.4	6.0	15	49.4
105.6	3277.2	32.20	998.9	110.0	33.53	1.33	1.32	99	1.23	92	WRGD	Granodiorite, leached, medium grained, inequigranular, light grey matrix with beige orange specks, some orangy red specks, quartz rich, medium strong, moderately weathered. Joints at 30, 60 and 80° from core axis, planar, slightly rough, orange surface staining, trace orange fine sand infill, few quartz veinlets.	50	5	264	0	4	3	6	3	16	15	5.7	18.4	8.3	16.0	15	63.4
110.0	3272.9	33.53	997.6	115.0	35.05	1.52	1.53	100	1.53	100	WRGD	Same as previous run, but with more quartz veining. Joints at 20 and 70° from core axis, planar, rough, orange to black surface staining.	50	4	383	0	5	5	6	3	19	15	5.7	20.2	9.6	19.0	15	69.5
115.0	3267.9	35.05	996.1	120.0	36.58	1.52	1.52	100	1.52	100	WRGD	Same as previous run, near vertical joint causes drilling induces fractures. Joints at 10 to 30° from core axis, undulating, rough, trace orange silty sand infill.	50	5	304	0	4	5	6	3	18	15	5.7	20.1	8.8	18.0	15	67.6
120.0	3262.9	36.58	994.5	125.0	38.10	1.52	1.50	98	1.43	94	WRGD	From 36.58 to 37.00 m and 37.54 to 37.84 m Leached Granodiorite, medium grained, inequigranular, light grey matrix with orange specks, pervasive weathering, medium strong, moderately weathered, few healed joints with dark orange to white infill. Joints at 20 and 45° from core axis, planar, rough, orange surface staining, trace orange silty sand infill. From 37.00 to 37.54 m and 37.84 to 38.10 m Leached Granodiorite, medium grained, inequigranular, light grey matrix with light pastel green specks, pervasive argillaceous weathering, medium strong, moderately weathered, no joints.	50	3	500	0	4	3	6	3	16	15	5.7	18.8	10.8	16.0	15	66.2
125.0	3257.9	38.10	993.0	130.0	39.62	1.52	1.60	100	1.60	100	WRGD	Granodiorite, less leached than previous run, medium grained, inequigranular, light grey matrix with orange and black specks, medium strong, moderately weathered. Joints at 20, 60 and 70° from core axis, discontinuous, rough, orange surface staining, trace orange silty sand infill, one 1 cm thick quartz vein at 70°.	50	3	533	0	4	5	6	3	18	15	5.7	20.2	11.1	18.0	15	69.9

## Drill Hole Number:

DH13-07B



#### **APPENDIX C3**

#### PREVIOUS GEOTECHNICAL DRILLHOLE LOGS

(Pages C3-1 to C3-2)

1	ESOLD LTD.	TEST	HOLE L	.0G	TEST HOLE No. 94-356 SHEET 1 of 1
PROJECT LOCATION O DATE BEGUN	F TEST HOLE_ N_July26,1994_C	<i>CASINO</i> Plant Site DATE FINISHED	uly 26, 1994	PROJECT NO GROUND EL LOGGED BY	1130.88m
NOTES Water loss, type and size of hole, drilling method, groundwater level, etc.	cm/s	DEPTH 00 01 01 01 01 01 01 01 01 01 01 01 01	DESCRIF	PTION AND CLASSIF OF MATERIAL	ICATION
		$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	BEDROCK (Get - Quartz Mor - Dawson	Range Granco	

	ESOLD LTD. ENGINEERS	TEST H	HOLE L	.0G	TEST HOLE No. 94-357 SHEET <b>1</b> of <b>1</b>
	F TEST HOLE_ N_July26,1994D	<u>CASINO</u> Plant Sitc. ATE FINISHED July	127,1994	PROJECT NO GROUND EL LOGGED BY	. 1143.13m
NOTES Water loss, type and size of hole, drilling method, groundwater level, etc.		DEPTH DEPTH DHAVE		PTION AND CLASSIF OF MATERIAL	FICATION
			Dawson Range	ological description Caranodior itc Range Aplitc Ronge Granodia E 17.37m	

-----

CAD FILE: VPROUKEN '35/14 Phot scole 1-1 Feb. 2, 1995



#### APPENDIX D

#### HYDROGEOLOGICAL DRILLHOLE DATA

Appendix D1	Installation Completion Details
Appendix D2	Rising Head Hydraulic Conductivity Test Sheet



#### APPENDIX D1

#### INSTALLATION COMPLETION DETAILS

(Pages D1-1 to D1-3)

Location:       Proposed Crusher Area       Total Depth:       39.62 m       Date Completed:       27 Aug 13	Ρ	roje	ect:	CASINO PROJECT		Drill Hole No.	DH13-05B	PAGE	1 of 1
Cordinates:     598,360 N. 612,088 E. UTM NAD83     Elevator:     1980 m. Date Well Installact:     22 Aug 13       Drilling Reim:     KO1000     "Inclination":		-							26 Aug 13
Drilling Rig:     K01000     Tindination*:     90°     Logged by:     JAB       Drilling Method:     Diamond Coring, Water flush.     Hole size:     HTW     Reviewed by:     SB       Image: State Prescher Cap:     Deale of Measurement     Deale of Measurement     Deale of Measurement       Image: State Prescher Cap:     Prescher Cap:     Prescher Cap:     NOTES       Image: State Prescher Cap:     Prescher Cap:     Prescher Cap:       Image: State Prescher Cap:     Prescher Cap:     Presche		Loc	ation:	Proposed Crusher Area		Total Depth:	39.62 m	_ Date Completed:	27 Aug 13
Drilling Method     Diamond Coring, Water flush.     Hole size:     HTW     Reversed by:     SB       Image: State Protector Cape     Weather flush.     Hole size:     Image: State Protector Cape     Diamond Coring: Diamond Coring	Co	oordir	ates:	6,958,360 N, 612,088 E, UTM NAD	083	Elevation:	1080 m	Date Well Installed:	28 Aug 13
Open of another     Open of SWL m       1     0	C	Drilling	g Rig:	KD1000		"Inclination":	-90°	Logged by:	JAB
B     B <th>Drillir</th> <th>ng Me</th> <th>thod:</th> <th>Diamond Coring. Water flush.</th> <th></th> <th>Hole size:</th> <th>HTW</th> <th>_ Reviewed by:</th> <th>SB</th>	Drillir	ng Me	thod:	Diamond Coring. Water flush.		Hole size:	HTW	_ Reviewed by:	SB
Solid PVC Pipe B 075 - 15 - WRGD B 075 - 15 - WRGD B 075 - 25 - WRG	/ATION - (m)	PTH - (m)	APHIC LOG					Depth of SWL m Date of Measuremer	-
1065     15     +++     Forteen 10-foot solid PVC pipes, 2" diameter, SCH 80       1060     20     +++     WEATHERED WRGD       1065     25     +++       1065     25     +++       1060     30     +++       1065     25     +++       1065     25     +++       1060     30     +++       1060     30     +++       1060     30     +++       1060     30     +++       1060     30     +++       1060     30     +++       1060     30     +++       1060     30     -+++       1060     30     -+++       1060     30     -+++       1060     30     -+++       1060     30     -+++       1060     30     -+++       1060     30     -+++       1060     30     -+++       1060     -+++     WRGD       1045     -++++       1046     -++++       1047     -++++       1048     -++++       1049     -+++++       1040     -+++++       1040     -+++++       1040     -++++++	ELV	DE	GR					NO	TES
1005       15       +++         1000       20       +++         1000       20       +++         1000       20       +++         1000       20       +++         1000       20       +++         1000       20       +++         1000       20       +++         1000       20       +++         1000       25       +++         1000       30       +++         1000       30       +++         1000       30       +++         1000       30       +++         1000       30       +++         1000       30       +++         1000       30       +++         1000       30       +++         1000       30       +++         1000       30       +++         1000       30       -+++         1000       30       -+++         1000       -+++       WEATHERED WRGD         1000       -+++       WEATHERED WRGD         1000       -++++       -++++         1000       -++++       -+++++	- - - 1075 — - - - 1070 —	5-		TOPSOIL COBBLES SILTY GRAVEL AND SAND COBBLES, BOULDERS AND GRAVEL	f 				
1     -     + <th>- - - 1065</th> <td>15-</td> <td></td> <td></td> <td>-</td> <td></td> <td></td> <td></td> <td></td>	- - - 1065	15-			-				
050       30       -++++       WEATHERED WRGD         045       35       -++++         045       35       -++++         045       35       -++++         045       35       -++++         045       35       -++++         045       35       -++++         045       35       -++++         045       35       -++++         045       35       -++++         046       -+++++       -+++++         040       -+++++       -+++++         040       -+++++      +++++         040       -+++++      +++++         040       -+++++      +++++         040       -+++++      +++++         040       -+++++      +++++         040       -+++++      +++++         040       -+++++      +++++         040       -+++++      +++++         040      +++++      +++++         040      +++++      +++++         040      ++++++      +++++         040      ++++++      ++++++         040      +++++++      ++	- - 1060 - -	20-		WEATHERED WRGD			/C Pipe	diameter, SCH 80 Grout: two 50 lbs ba bentonite mix, four 4	gs of Grout-Well
1050 - 30 - + + + + + + + + + + + + + + + + + +	- 1055 — - -	25-		WRGD					
	- 1050 — - -	30-	+	WEATHERED WRGD					
	- 1045 - -	35-		WRGD					
	- 1040 — - - -	40-		VEATHERED WRGD		Slough		Slough	
					PVC WITH HEAT				ION
TRACE INSTALLED FOR DOWNHOLE GEOPHYSICS. LOCALIZED AREA WHERE PERMAFROST IS ABSENT DUE TO PROXIMITY OF DRAINAGE.	TRAC	E INS	TALLED	FOR DOWNHOLE GEOPHYSICS. LOCA	ALIZED AREA WHE		ONITORING WE	LL DETAILS FOR	SIGNMENT NO. REF. NO
REV. 0 - Issued for Report PROJECT ASSIGNMENT NO. F REV. 0 - Issued for Report FIGURE. DH13-05B	REV.	0 - Is:	sued fo	r Report		<b>n</b> ng	CONSULT		020/10
Logging conducted according to the Canadian Foundation Engineering Manual, 4th Edition, 2006.				•	lanual, 4th Edition, 20	D6.			

Ρ	roje	ct:	CASINO PROJECT	Drill F	lole No.	DH13-06	PAGE _	1 of 1
C	Contra	ctor:	Kluane	In Situ	u Sampler:	N/A	Date Started:	28 Aug 13
	Loca	ation:	Proposed Crusher Area	To	otal Depth:	41.15 m	_ Date Completed: _	29 Aug 13
С	oordina	ates:	6,958,351 N, 612,168 E, UTM NAD83		Elevation:		Date Well Installed:	30 Aug 13
D	Drilling	Rig:	KD1000	"Ir	nclination":	-90°	Logged by:	SB
Drillir	ng Met	hod:	Diamond Coring. Water flush.		Hole size:	HTW	_ Reviewed by:	JEH
ELVATION - (m)	DEPTH - (m)	GRAPHIC LOG			Steel Prot Piezomete	tector Cap er DH13-06, Stick-up =	Water Level Reading Depth of SWL Artesia Date of Measurement = 0.05 m	n m 1 Sep 13
ш			SAND AND GRAVEL, FROZEN					20
- - - 074 —	- - - 5—	· · · · · · · · · · · · · · · · · · ·	(NBN) SAND, FROZEN (NBN) WEATHERED WRGD	П				
			← FAULT WEATHERED WRGD \SHEAR ZONE / WEATHERED WRGD /					
)69 — - - -	10— - -		FAULT WEATHERED WRGD WRGD		- Grout		Grout: one and a half Grout-Well bentonite bags of cement, 60 ga	mix, three 40 kg allons of water
064	15— - -	+ $+$ $+$ $+$ $+$ $+$ $+$ $+$ $+$ $+$			← Solid PV	/C Pipe	Eleven 10-foot solid P diameter, SCH 80	VC pipes, 1"
- 			MAFIC DYKE					
- )54 -	- 25— -		WRGD 24.7 m - 26.6 m -		- Bentonit	e Top Seal	Bentonite Pellets 3/8"	(2/3 bucket)
- - - - - - - - - - - - - - - - - - -	- 30 —	++++ +++++ ++++++++++++++++++++++++++	29.12 m - WEATHERED WRGD		Filter Sa Slotted F	ind PVC Screen	10/20 Sand (3 bags). One 10-foot PVC slott diameter, SCH 80	ed screen, 1"
- - - )44	- - 35—	++++ ++++ +++++ +++++ +++++++++++++++	32.03 m - 33 m - WRGD 35 m -		◀— Bentonit	e Bottom Seal	Bentonite Pellets 3/8"	(2/3 bucket)
-	-	+++++  ++++++++++++++++++++++++++++++			, <b>⊲</b> — Solid PV	/C Pipe	Three 10-foot solid P	/C pipes, 1"
-	-	++++ ++++ ++++ ++++ +++++			Filter Sa		diameter, SCH 80 10/20 Sand (3 bags)	
)39 — - -	40		40.8 m - 41.15 m <sup>7</sup>		⊈ <del>-</del> —Slough		Slough	
_ )34 —	- 45—							
		REMA	RKS: DF LESS THAN 1 L/MIN FROM PIEZOMETER.		M	CAS	NING CORPORATION INO PROJECT ELL DETAILS FOR I	
				ŀ	Knio	ht Piés	VA101-3	
		und fe	or Report		mug		FIGURE.	H13-06

Dr		dina	tion:	Kluane Proposed ADR/SART Facility			Sampler:	N/A	Date Started:	30 Aug 13						
Dr	Coor Dril	dina		Location:         Proposed ADR/SART Facility         Total Depth:         39.62 m         Date Completed:         31 Aug 13												
Dr	Dril		ites:			Тс	otal Depth:	39.62 m	Date Completed:	31 Aug 13						
Dr		:		6,955,169 N, 610,805 E, UTM NAD	83		Elevation:	1031 m	Date Well Installed:	31 Aug 13						
Dr	illing	ing i	Rig:	KD1000		"In	clination":	-90°	Logged by:	SB						
		Meth	hod:	Diamond Coring. Water flush.		_	Hole size:	HTW	Reviewed by:	JEH						
2009.GDT, 24 Dec 13 ELVATION - (m)		UEF 111 - (III)	<ul> <li>GRAPHIC LOG</li> </ul>	SILTY SAND				tector Cap er DH13-07B, Stick-		n						
COMPLETION, DATA TEMPLATE_DEC18,2009.GDT,		5 5	( ) ( ) ( ) ( ) ( ) ( ) ( ) ( ) ( ) ( )	WEATHERED WRGD WEATHERED WRGD WRGD WEATHERED WRGD	- - - 7.45 m -	Ţ	◄— Solid P\	te backfill /C Pipe te Top Seal	Enviroplug Bentonite Four 10-foot solid P\ SCH 80	′C pipe, 1" diameter,						
WELL	- 1' - 1'  - 1		+ + + + + + + + + + + + + + + + + + +		· · · ·		<ul> <li>Filter Sa</li> <li>Slotted</li> </ul>	and PVC Screen	Bentonite Pellets 3/8 10/20 Sand (2.5 bag) One 10-foot PVC slo diameter, SCH 80	tted screen, 1"						
TEMPLATE-DHS.G	- - - - 2		++++ ++++ +++++ +++++ +++++ +++++ ++++++	WEATHERED WRGD	15.8 m -		·▪── Filter Sa ▪── Bentoni ▪── Van Ru	te Bottom Seal	10/20 Sand (1/2 bag) Bentonite Pellets 3/8 HTW size Van Ruth	" (1 bucket)						
I PROGRAMIGINTILIBRARY	- - - - 2	5 		\_WRGD	Ē	,	> >									
GEOTECHNICAL S 00	- 3 - -			WEATHERED WRGD	-		Cavity		Cavity below Van Ru	th plug						
TA\TASK 200 - 2013 66 99	996 - 35 - + + + + + + + + + + + + + + + + + +															
WANTINERJ         FILENTI0100325166AIDATAITASK 200 - 2013 GEOTECHNICAL SI PR           TAR A         0         0         0           TAR A         0         0         0         0	-  - - - -	F	++++	WEATHERED WRGD	- 39.6 m -	/	>									
	EW B RE R	ENT EMO	VED B	RKS: PELLETS FELL INTO PIEZOMETER DUR YREPEATEDLY LOWERING WATER LEV INTIL IT SHOWED NO SIGNS OF BENTO	VEL METER TO	D THE		CA ONITORING W	IINING CORPORATI SINO PROJECT ELL DETAILS FOR I	DH13-07B						
		lee:	und fo	r Panort			Knig	ht Pié	Sold VA101	325/16 1 REV.						
				r Report rding to the Canadian Foundation Engineering Ma	anual, 4th Edition		0	CONSUL	TING D	H13-07B						

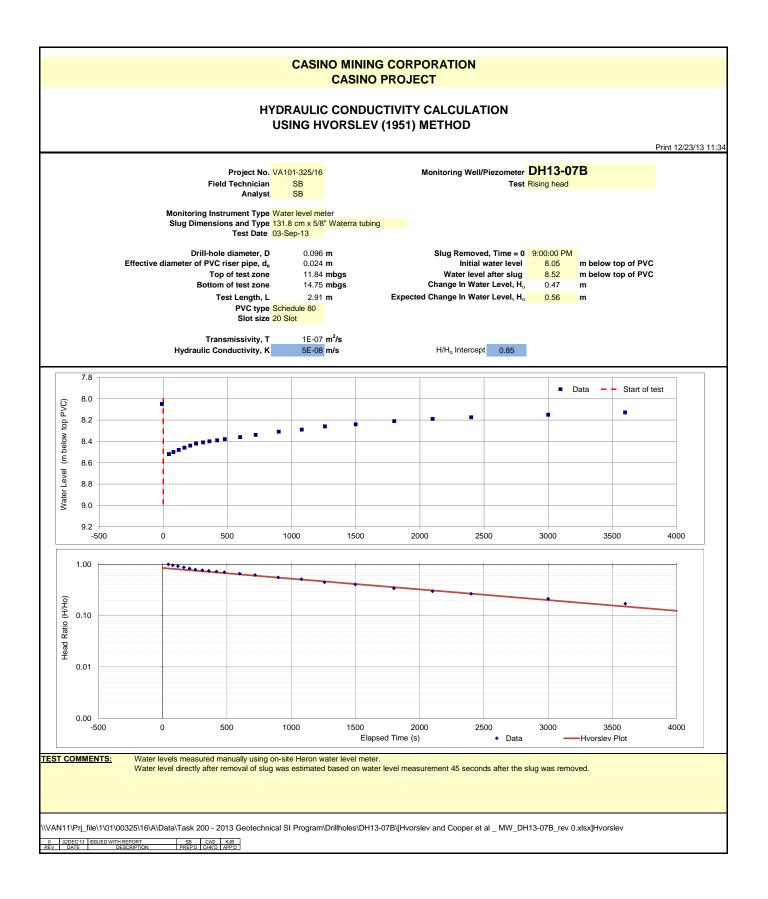


#### APPENDIX D2

#### **RISING HEAD HYDRAULIC CONDUCTIVITY TEST SHEET**

(Page D2-1)







#### APPENDIX E

#### **GEOPHYSICAL INVESTIGATIONS**

(Pages E-1 to E-13)



### **Geophysical Survey of Subsurface Conditions**

Casino Project Yukon

Submitted to:

Sanne Brinkman Knight Piésold Ltd.

Submitted by:

James Coates Kryotek Arctic Innovation Inc #173-108 Elliott Street Whitehorse, Yukon Y1A 6C4

Date:

#### November 27, 2013



#### **Table of Contents**

1.0 GENERAL	3
1.1 INTRODUCTION 1.2 SETTING	3 3
2.0 METHODOLOGY	4
2.1 OVERVIEW 2.2 GEOPHYSICAL DISCLAIMER 2.3 LINE LOCATIONS	4 6 7
3.0 INTERPRETED RESISTIVITY TOMOGRAMS	8
LINE 1 LINE 2 LINE 3 LINE 4 LINE 5 LINE 13 LINE 14 LINE 15 LINE 16 LINE 22 LINE 23	8 8 9 10 10 11 11 12 12 12



# 1.0 General

## 1.1 Introduction

The following report has been prepared by Kryotek Arctic Innovation Inc. (Kryotek Inc.) for Sanne Brinkman of Knight Piésold Consulting Ltd. The objective of the surveys was to use resistivity geophysics to determine the likely depths to bedrock, location of permafrost and thicknesses of overburden.

Fieldwork took place from August 2 to 12, 2013. Personnel on site included James Coates and Astrid Grawehr of Kryotek Inc.

A total of eleven (11) survey lines were completed in the Mine Site area.

# 1.2 Setting

The local geography consists of rolling hills extending to alpine ridges, cut by vshaped, erosion-formed valleys. The area is un-glaciated except for isolated local valley glaciers and is underlain by extensive discontinuous permafrost. Hill slopes are covered in one to two meters of colluvium over degraded schist and granite bedrock. Valley bottoms are infilled with fluvial gravels and windblown loess deposits. Often there is a significant organic percentage to the loess, and valley deposits may be covered with a colluvial apron at the base of steeper slopes.



# 2.0 Methodology

# 2.1 Overview

Resistivity was selected for this area as the electrical properties of silt, gravel and schist/granite bedrock are distinct and easily definable.

A Lippmann 4-point Resistivity System was used. This system allowed up to 40 m of depth penetration. Data was collected and inverted using AGI Earth Imager 2D software. Noisy data points and electrodes with poor contact resistance were removed and data was filtered for spikes or depressions in resistivity. The software produced two-dimensional tomograms using a smoothed, least squares damped and robust inversion parameters. Preliminary interpretations were conducted on the processed data.

#### DC Electrical Resistivity Tomography

This technique injects a direct electrical current into the ground surface, and then measures the voltage that remains at a number of distances from the injection point. As different soils have different resistances to electrical current, a tomogram (subsurface diagram) of resistivities can be produced. This technique is useful for displaying the high-resistance regions of bedrock and ground-ice.

#### Induced Polarization Tomography

This technique is conducted simultaneously with the dc electrical resistivity. As the electrical current is injected into the ground, a charge is retained in soil and rock materials and then decays as a function of time. This differs according to the electrical properties of the ground materials and can be useful in differentiating subsurface material types and boundaries.

#### Earth Imager 2D Software

Earth Imager 2D software by Advanced Geosciences Inc. was used to invert and process the geophysics data. This software produced two-dimensional tomograms of resistivity data. The images were processed using both smoothed and robust inversion parameters in order to clarify transitions between material types as well as resistivity properties of those materials.

#### Interpretation

The images were interpreted by James Coates and features such as thawed regions, ice-rich permafrost, competent bedrock, degraded bedrock and top of bedrock contours were identified. James Coates has ten years of experience



performing geophysics surveys in permafrost areas commercially and academically at the doctoral level.

These are preliminary interpretations. The Casino area is a unique landscape with complex and poorly understood surficial and bedrock geology. Best efforts were made to identify ground material types based on surface exposure, borehole and test pit data as well as experience in the area. Geophysical readings and interpretations are complicated by the presence of permafrost, which greatly alters geophysical properties of soil.

Interpretations are subjective and highly dependent on the experience of the interpreter. General principles and assumptions followed in the interpretation are as follows:

- 1. Fine-grained materials over 600 Ohm/m are generally frozen.
- 2. Frozen gravels and ice-rich materials have much higher resistivity (up to 100,000 Ohm/m).
- 3. Frozen granite bedrock (as well as granite boulders) has a relatively low resistivity, similar to the thawed overburden in the area. There is little difference between frozen and thawed granite.
- 4. Frozen schist can have a very high resistivity due to the presence of interstitial water.
- 5. High induced polarization chargeability in bedrock can indicate mineralization and faulting.
- 6. Low induced polarization chargeability in bedrock appears to indicate massive buried ice.
- 7. Low resistivity can indicate thawed and saturated areas.
- 8. Contrasts between resistivity readings indicate transitions between materials and are more important than absolute values.
- Resistivity is the primary tool. IP sections are only provided when it provides insights in addition to the findings from resistivity data. As a result only resistivity images will be labeled, with supplementary information on the IP sections where relevant.

The images are included in this report (refer to section 3.0). Rough text interpretation is also included. This is not an exhaustive geophysical report, and is intended only as a guide to understand subsurface conditions in the immediate vicinity of boreholes and test pits.

#### Limitations

The electrical resistivity and induced polarizations method provide an estimate of subsurface conditions only at the specific locations where lines were conducted and only to the depths penetrated, and within the accuracy of the method. Data gathered represents a hemispherical cross-section extending downwards from the surface. Results are more accurate closer to the surface and become more



general with increasing depths. The presence of permafrost is a major complicating factor and can cause changes in resistivity of up to several orders of magnitude.

These data are indirect and the interpreted features subjective in nature, with identified anomalies based on a visual assessment of the characteristic signatures in the data coupled with information from nearby boreholes and test pits.

Interpretation is largely based on the experience of the operator with the specific equipment and terrain types. Certain material types can be very similar in resistivity, resulting in ambiguous results.

# 2.2 Geophysical Disclaimer

Subsurface information shown on these drawings was obtained solely for use in establishing design controls for the project. The accuracy of this information is not guaranteed and it is not to be construed as part of the plans governing construction of the project. It is the bidder's responsibility to inquire of the owner if additional information is available, to make arrangements to review the same prior to bidding, to conduct whatever site investigation or testing may be required, and to make their own determinations as to all subsurface conditions. James Coates and Kryotek Arctic Innovation Inc. accept no liability whatsoever for any use or application of this information by any and all authorized or unauthorized parties.

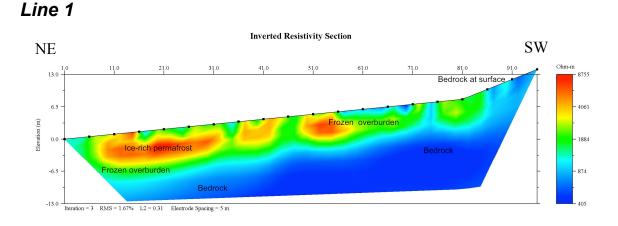
This is a preliminary report with limited analysis. Complete analysis and detailed interpretation of each geophysics image has not been conducted. This report should serve only as a guide to understanding ground conditions surrounding boreholes and testpits, and is not to be used for planning or construction purposes.



		Coor	dinates	
Line	St	tart	I	End
	Easting (m)	Northing (m)	Easting (m)	Northing (m)
G13-01	611420	6958186	611343	6958142
G13-02	611420	6958186	611441	6958097
G13-03	611615	6958699	611580	6958784
G13-04	613307	6958212	613392	6958224
G13-05	613058	6958154	613013	6958183
G13-13	612053	6958339	612136	6958360
G13-14	612136	6958360	612231	6958343
G13-15	612197	6958317	612150	6958395
G13-16	612150	6958395	612089	6958463
G13-22	610812	6955106	610797	6955223
G13-23	610703	6955152	610933	6955153

# 2.3 Line Locations



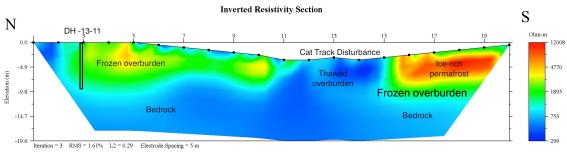


# 3.0 Interpreted Resistivity Tomograms

This geophysics line was conducted in search of potential borrow material.

This image shows granite bedrock at approximately 10 m depth, rising to the surface exposure uphill. Permafrost with ice-rich regions is present in the surficial material.



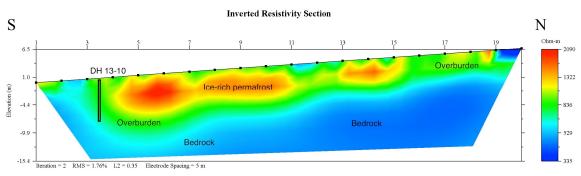


This geophysics line was conducted in search for potential borrow material.

This image shows granite bedrock at approximately 10 m depth. Frozen overburden with local ice-rich regions is present across the transect with the exception of the centre region, where permafrost has thawed to bedrock due to surface disturbance.



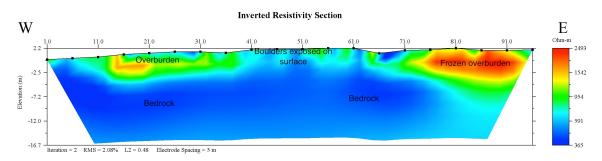
# Line 3



This geophysics line was conducted in search of potential borrow material.

This image shows granite bedrock varying between 4 and 10 m depth, overlain by frozen overburden with local ice-rich areas.

# Line 4

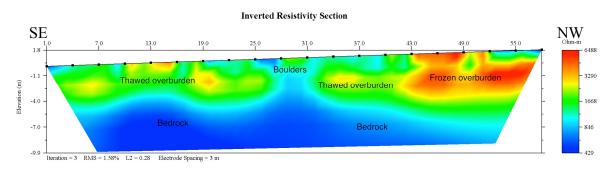


This geophysics line was conducted in search of potential borrow material.

This image shows granite bedrock at 4-5 m depths, with boulders exposed at the surface near the centre of the image. Overburden is mostly thawed, with potential ice-rich permafrost near the east end of the image. Bedrock becomes deeper near the east end of the image.

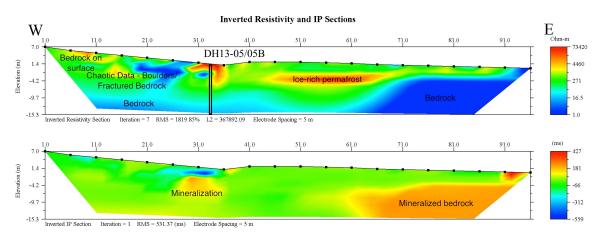


# Line 5



This geophysics line was conducted in search of potential borrow material.

This image shows 4-7 m of thawed and frozen overburden with local areas of icerich permafrost overlying granite bedrock. Boulders were visible at the surface near the centre of the image.



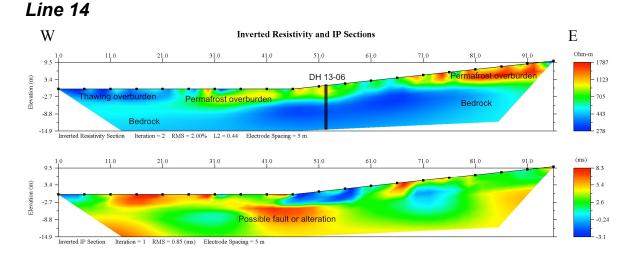
# Line 13

This line runs west to east near the proposed crusher site and across DH 13-05 and 13-05B.

The image has an extremely high RMS error centered in the area of the borehole near the west (left) end of the image. Chaotic readings (sharp-edged, abruptly changing color blocks) may indicate a mix of boulders, mineralized material and fractured bedrock or poor electrode surface contact near the west end of the image. Bedrock outcroppings were observed near 11 m on the horizontal scale. Permafrost is present in surficial materials across the image, with a possible region of ice-rich material near the centre of the image. Very strong IP highs are



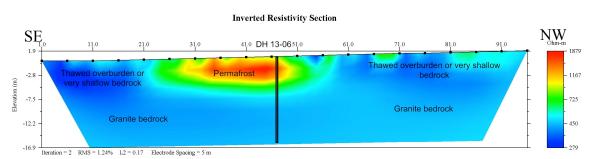
present near the east end of the line as well as near the borehole and likely represent faulting or regions of strong mineralization, however high RMS error means these results should be interpreted with caution.



This line runs west to east across the proposed crusher site.

The image shows granite bedrock at 2-8 m depth across the image. Surficial materials are generally frozen with the exception of the area at the west end of the image where surface disturbance by a bulldozer led to rapid thawing of the permafrost. Several areas of high IP chargeability may indicate faulting and mineralization.

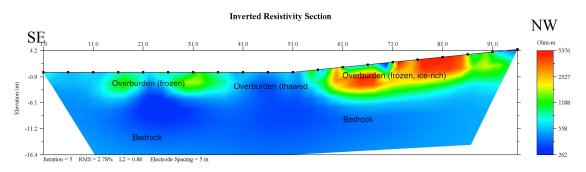
# Line 15



This image shows granite bedrock at 6-7.5 m depth in the centre of the image, and possibly higher near the edges. Overburden is generally thawed with frozen sections. An area of possible ice-rich permafrost is located between 30 and 50 m on the horizontal scale. This image runs southeast to northwest near the proposed crusher site.

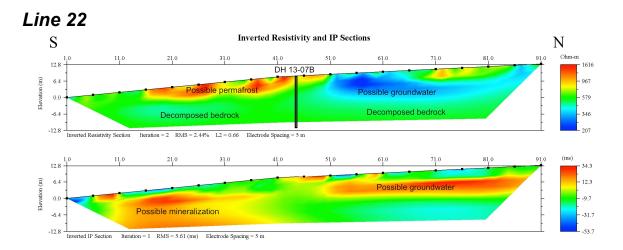


# Line 16



This line runs southeast to northwest near the crusher site.

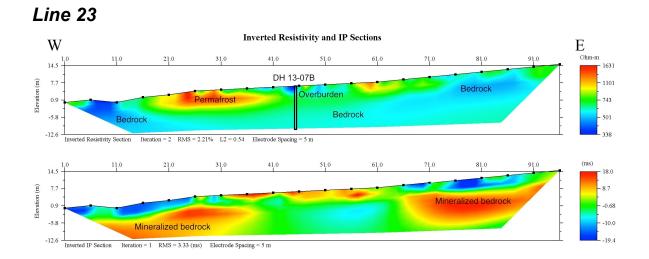
The image shows granite bedrock at approximately 4.7 m depth, overlain by predominantly frozen ground with some thawed areas. Ice-rich permafrost is likely found between 60 and 90 m on the horizontal scale.



This image runs south to north at the proposed ADR/SART site.

This image shows overburden to 1-4 m depths, poorly contrasting with highly weathered or decomposed bedrock. High IP/low resistivity horizontal features are likely mineralized groundwater. High resistivity regions near the surface are likely permafrost but may also be very dry coarse-grained material. An area of possible mineralization is indicated by high chargeability in the IP image.





This image runs west to east through DH 13-07B at the proposed ADR/SART site, perpendicular to Line 22.

This image shows a bedrock contrast in both the resistivity and IP images at 1-5 m depths. This is likely due to highly weathered bedrock. Overburden may be frozen or thawed, except for one area between 20 and 30 m horizontally, which is almost certainly permafrost. High IP regions are likely mineralized or faulted bedrock, although there is the possibility that the region from 70 to 90 m on the horizontal scale is a continuation of the mineralized groundwater seen at Line 22.



#### APPENDIX F

#### LABORATORY TEST RESULTS

Appendix F1	Laboratory Soil Test Results
Appendix F2	Laboratory Rock Test Results



#### **APPENDIX F1**

#### LABORATORY SOIL TEST RESULTS

(Pages F1-1 to F1-64)

PROJECT:       Casino 2013 Geotechnical Site Investigation         SITE:       DH 13-05, BU-01         Casino Project Site       PROJECT NO:         VA101-325/16       CLIENT:         CLIENT:       Western Copper         SAMPLE NO:       BU-01         DATE TESTED:       Sep 23/13         DATE TESTED:       Sep 23/13         Subscription       G (Inferred)         NATURAL MOISTURE CONTENT:       14.3%         REMARKS:       Grab Core Sample         1       7cVV'g1 3%							PÆ	AR'	TIC	LE	S	IZE	E AI	IAI	YS	SIS	REF	POP	रा						
Casino Project Site           PROJECT NO:         VA101-325/16           CLIENT:         Western Copper           SAMPLE NO:         BU-01           DATE TESTED:         Sep 23/13         BY:         AG           USC CLASSIFICATION:         G (Inferred)         NATURAL MOISTURE CONTENT:         14.3%           REMARKS:         Grab Core Sample         TotWY 19' 8%         Grab Core Sample           1 7cW/Yg1'8%         "%; ràVel "#")(""%Sand = 24"""%Silt/Clay = 1	PRO	JECT	:		Ca	asin	o 2	013	Geo	otec	hnie	cal	Site	Inve	stiga	ation	l				-				
PROJECT NO:       VA101-325/16         CLIENT:       Western Copper         SAMPLE NO:       BU-01         DATE TESTED:       Sep 23/13       BY:       AG         USC CLASSIFICATION:       G (Inferred)         NATURAL MOISTURE CONTENT:       14.3%         REMARKS:       Grab Core Sample	SITE	:			D	H 13	-05	, BL	J-01												-				
CLIENT:         Western Copper           SAMPLE NO:         BU-01           DATE TESTED:         Sep 23/13           USC CLASSIFICATION:         G (Inferred)           NATURAL MOISTURE CONTENT:         14.3%           REMARKS:         Grab Core Sample           1         7cVVYg118%           ************************************					Ca	asin	o P	roje	ect S	Site											-				
SAMPLE NO:       BU-01         DATE TESTED:       Sep 23/13         USC CLASSIFICATION:       G (Inferred)         NATURAL MOISTURE CONTENT:       14.3%         REMARKS:       Grab Core Sample         1 7 CVV'Yg'1 28%       ''''''''''''''''''''''''''''''''''''			NO:		VA	101	-32	25/10	6												-				
DATE TESTED:         Sep 23/13         BY:G           USC CLASSIFICATION:         G (Inferred)           NATURAL MOISTURE CONTENT:         14.3%           REMARKS:         Grab Core Sample           1 7cVV'Yg'1 8%         ''''''''''''''''''''''''''''''''''''	CLIE	NT:			W	este	ern	Сор	per												-				
USC CLASSIFICATION: <u>G (Inferred)</u> NATURAL MOISTURE CONTENT: <u>14.3%</u> REMARKS: <u>Grab Core Sample</u> <u>1 7 cVV Yg1 8%</u> %; rävel = )(%Sand = 24%Silt/Clay = 1 	SAM	PLE I	NO:		Bl	J-01															-				
NATURAL MOISTURE CONTENT:       14.3%         REMARKS:       Grab Core Sample         1.7cVVYg18%       ''''''''''''''''''''''''''''''''''''	DATI	E TES	TED	:	Se	ep 2	3/13	3										BY:	A	G	-				
REMARKS:       Grab Core Sample         1       7c-VVYg'1'8%         %; råvël'=`)(       %Sand = 24         %Silt/Clay = 1										_	G (	Infe	rred	)							-				
<u>1 7 cVVYg'1'&amp;%</u> <u>1 7 cVVYg'1'&amp;% <u>1 7 cVVYg'1'&amp;%</u> <u>1 7 cVVYg'1'&amp;% <u>1 7 cVVYg'1</u></u></u></u></u></u></u></u></u></u></u></u></u></u></u></u></u></u></u></u></u></u></u></u></u></u></u></u></u></u></u></u></u></u></u></u></u></u></u></u></u></u></u></u></u></u></u></u></u></u></u></u></u></u></u></u></u></u></u></u></u></u></u></u></u></u>										-	14.3	3%									-				
CLAY SILT SAND GRAVEL FINE COARSE FINE COARSE FINE COARSE 000000000000000000000000000000000000											8	- h	· • • · ·		/ 6:1						-				
CLAY         SILT         FINE         MEDIUM         COARSE         FINE         COARSE           100         0 <td< th=""><th><u>1 / C</u></th><th>VV YO</th><th>jî ŏ</th><th>/o</th><th>%;</th><th>ra\</th><th>/el :</th><th>= ) (</th><th></th><th>%</th><th>Sar</th><th>10 =</th><th>24</th><th></th><th>/05II</th><th></th><th>y = 1</th><th></th><th></th><th></th><th>-</th><th></th><th></th><th></th><th></th></td<>	<u>1 / C</u>	VV YO	jî ŏ	/o	%;	ra\	/el :	= ) (		%	Sar	10 =	24		/05II		y = 1				-				
CLAY         SILT         FINE         MEDIUM         COARSE         FINE         COARSE           100         0 <td< th=""><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th>-</th><th></th><th></th><th></th><th></th></td<>																					-				
CLAY         SILT         FINE         MEDIUM         COARSE         FINE         COARSE           100         0 <td< th=""><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th>•</th><th></th><th></th><th></th><th></th></td<>																					•				
CLAY         SILT         FINE         MEDIUM         COARSE         FINE         COARSE           100         0 <td< th=""><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th>-</th><th></th><th></th><th></th><th></th></td<>																					-				
CLAY         SILT         FINE         MEDIUM         COARSE         FINE         COARSE           100         0 <td< th=""><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th></td<>																									
PRCENT PASSING 0000 0000 000 000 000 0000 0000 0000 0000 0000 0000 0000 0				CLAY				S	ILT							SAN						GRAV			
PERCENT PASSING 0000 0000 0000 000 000 000 000														FINE			MEDIUN	vi	CUARSI	E	FINE		CO	ARSE	
PERCENT PASSING 0000 0000 0000 000 000 000 000		100																							
PERCENT PASSING 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000		100																							ן ך
PERCENT PASSING 0.001 0.002 0.001 0.001 0.002 0.002 0.001 0.001 0.001 0.001 0.001 0.001 0.001 0.001 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.00		90									++										++				-
PERCENT PASSING 0.001 0.002 0.001 0.001 0.001 0.002 0.002 0.002 0.002 0.002 0.001 0.001 0.001 0.001 0.001 0.001 0.001 0.001 0.001 0.00 0.000 0.0000 0.0000 0.0000 0.0000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.000000		80																							
PERCENT PASSING 0.000 0.001 0.002 0.005 0.001 0.001 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000		00																							7
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$		70																						$\wedge$	-
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	ŊG	60																					$\square$	, 	
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	ASSI	00																							
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	NT P	50																							-
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	RCE	40																							
0.005 0.005 0.005 0.005 0.005 0.005 0.005 0.005 0.005 0.005 0.005 0.005 0.005 0.005 0.005 0.005 0.000 0.00 0.00 0.00 0 0 0	ЪЕ																				4				
0.001 0.001 0.001 0.002 0.005 0.005 0.005 0.005 0.005 0.005 0.005 0.005 0.005 0.005 0.005 0.005 0.001 0.002 0.250 0.002 0.2500 0.2500 0.2500 0.2500 0.2500 0.2500 0.2500 0.2500 0.25000 0.25000 0.25000 0.250000000000		30																							-
0.0005 0.0001 0.001 0.005 0.005 0.005 0.005 0.005 0.005 0.005 0.005 0.005 0.005 0.005 0.005 0.005 0.005 0.005 0.001 0.002 0.001 0.002 0.002 0.002 0.002 0.002 0.002 0.002 0.002 0.002 0.005 0.002 0.005 0.002 0.005 00000000		20																	$\square$						_
0.0005 0.0001 0.001 0.005 0.005 0.005 0.005 0.005 0.005 0.005 0.005 0.005 0.005 0.005 0.005 0.005 0.005 0.005 0.005 0.005 0.000 0.005 0.0001 0.0005 0.0001 0.0001 0.0001 0.0005 0.0005 0.0005 0.0001 0.0001 0.0005 0005 0005 00005 00005 00005 0000000																		$\neg$							
2.0005 0.001 0.002 0.005 0.075 0.075 0.075 0.075 0.075 0.075 0.075 0.250 0.425 0.425 0.425 0.850 0.425 0.850 0.850 0.850 0.2500 0.2500 0.2500 0.2500 0.2500 0.2500 0.2500 0.2500 0.250000000000		10																							-
2.0005 0.001 0.002 0.005 0.075 0.075 0.075 0.075 0.075 0.075 0.075 0.250 0.425 0.425 0.425 0.850 0.425 0.850 0.850 0.850 0.2500 0.2500 0.2500 0.2500 0.2500 0.2500 0.2500 0.2500 0.250000000000		0										F													┛╿
PARTICLE SIZE (mm)		002	2	001	700	005		0.01	.02		).05	075	C L	120		4 7 2	850	2.0	ļ	4.75	9.5 12.5	19	25 17 5	50	75
				0 0	5	0		U	0		0						Ö			•	,		Ċ.	,	
												P.		, LE 3	12 C (I	)									
	L																								

						F	PAI	RT	ICI	LE	S	IZE	ΞA	NA	٩L	ſS	IS I	REI	<b>2</b> 0	RT							
PRO	JECT	•			Cas	ino	201	13 0	Geot	tech	nni	cal	Site	Inv	/est	iaa	tion										
SITE		-			DH1											<u>. g</u> .						_					
					Cas					te																	
PRO	JECT	NC	):		VA1	01-	325	/16																			
CLIE	INT:				Wes	ster	n C	opp	ber																		
SAM	IPLE	NO:			BU-	1																					
DAT	E TES	STE	D:	-	Sep	ot 25	5/20	13									_		ΒY		AG						
usc	CLA	SSII	FICA	TION	:						S (	Infe	rrec	d)													
NAT	URAL	. MC	DIST	URE	CON	ITE	NT:			_	10.	0%															
REM	IARK	S:		Grab	o Co	re S	am	ple																			
%Gr	avel =	= 25		%Sa	nd =	: 71		%	Silt	= 4			%	Cla	ay =	0						_					
								<u>он т</u>								S	AND						GRA	WEL			7
			CLAY					SILT						FINE	E		М	EDIUM		COARS	E	FINE		0	COARS	8E	
	100										ТТ																ו ר
	90																										
	80															_					+/			++			
	70																				$\bigwedge$						
с																				/	/						
SIN	60															_				+				++			
PERCENT PASSING	50																										
ENT																											
ERC	40																										
	30																										
	20														-		/										
	10														4	$\square$											
													/	1													
	0 y	∟⊥ ?	5	]2		)5	<u></u> Z		)2		15	ັບ 		00	20	.5 		00	0 0	2	75 -	ا	ب	19 25	ب	50	75 -
	0000	0.00	0.001	0.002		0.005	0.01	5	0.02		0.05	0.075		0.150	0.250	0.425		0.850	~	I	4.75	9.5	12		37.5	4)	·~
		-										P	ARTI	CLE	SIZ	E (m	ım)										

					P	AR'	τιςι	_E :	SIZ	EAN		/SIS	S REF	POR	Г						
PRO	JECT	:		Casi	ino 2	2013	Geot	ech	nical	Site I	nvest	igatio	on								
SITE	:			DH1	3-08	8, BU	-2														
				Casi	Casino Project Site																
PRO	JECT	NO:		VA10	01-3	25/1	6														
CLIENT: SAMPLE NO:				Western Copper																	
				<u>BU-2</u>																	
DAT	E TES	TED:		Sep	25/1	3								BY:	AG						
USC	CLA	SSIFIC	ATION	1:				S	(Inf	erred)											
		MOIS						<u>7</u> .	.4%												
	IARKS			b Cor		-				0/ 6		•									
%Gr	avel =	: 45	%Sa	and =	52	0,	%Silt	= 3		%0	lay =	U									
		CLA	Y			SIL	.т					SAN	D		RSE		GRA				]
										F	INE		MEDIUM	FINE	FINE COARSE						
	100																				]
	90				+++																-
																		F			
	80																17				1
	70				+++	+		+									+	++			-
Ű	60																-				
PERCENT PASSING	60																				1
ΤP¢	50				+++			+	_						-		_	++			-
CEN	40																				
PER	40																				1
	30				+++	$\left  \right  $		+	+								_	+	_	-	-
	20												$\bigwedge$								
	20																				
	10				+++	$\left  \right  \right $		+	+			+					-	++	-+		-
	0																				
		0.001	0.002		0.005	0.01	0.02		0.05 0.075	PARTIC		<b>mm)</b> 0.425	0.850	2.0	4.75	9.5	12.5	19 25	37.5	50 7F	15
		0.00	0.00		0.00	0.01	0.0		<u> </u>					2.0	4.75	9.5	12.5	25	37.5		5

						D		דור		: 9	176			vs	IS R	FDC	PT						
						P	AK		, L C	. 3		AIN	AL	13	IJ R		/N I						
PROJE	CT:			Ca	asir	10	2013	B Ge	otec	hni	cal S	Site Ir	ives	tiga	tion								
SITE:				D	H13	8-09	), Bl	J-1															
				Ca	asir	10	Proj	ect S	Site														
PROJE		10:		V	<b>A10</b>	1-3	25/1	6															
CLIENT:	:			W	est	ern	Co	pper	r														
SAMPLI	E N	0:		B	U-1																		
DATE TI	EST	ED:		Se	ep 2	25/1	3								_	B	Y: <u>A</u>	G					
ISC CL	AS:	SIFIC	CATIO	ON:						G (	Infe	rred)											
ATUR		NOIS	STUR	E CC	ONT	EN	IT:			27.0	0%												
REMAR				ab C																			
%Grave	el = 4	45	%	Sand	= {	52		%Sil	lt = :	3		%C	lay =	= 0									
		С	LAY				S	ILT						S	AND		004505			RAVE			
	L											FI	NE		MED	IUM	COARSE	FINE	-		COAF	RSE	
100	0																						
100	Γ																				$\checkmark$		
90	0	++++																	_	$\mathbb{A}$			-
80																				/			
00																			Τ				
70	0 -	++++			+	+				++									-	_			-
<b>5</b> NI 00																							
DERCENT PASSING																							
а <sub>50</sub>	0 -	++++																					_
Ш Ц	Ŭ																						
30	0															-			_				-
20																							
20	Ŭ																						
10	0  -	++++			+	++	$\left  \right  \right $			+			+	-					+	+			+
ſ	٥L		_							+	-												
, c	, 105	0.001		200	0.005	)	0.01	0.02		0.05	0.075	0.150	0.250	0.425	0.850	0	2.U 4.75	0.0	12.5	19	25 7 F	50 50	75
	0.0005	0			0.0		0	Ö	•	0	0						4	t s	4		'n	כ	
											PA	RTICL	E SIZ	Έ(m	m)								

						PA	R1	ΓICI	LE	SI	ZE	AN	IAL	YS.	SIS	RE	PO	RT	-						
PRO.	JECT:	:		Ca	sinc	o 20	)13	Geot	tech	nic	al Si	ite l	nves	stig	atior	ı									
SITE	:				113-(																				
				Ca	sind	o Pi	roje	ct Si	te																
PRO	JECT	NO:		VA	101	-32	5/16	6																	
CLIE	NT:			We	este	rn (	Сор	per																	
SAM	PLE N	10:		BU	J-1																				
DATE	E TES	TED:		Se	p 25	5/13	•										B	<b>/</b> :	AG	)					
JSC	CLAS	SSIFI	CATIC	N:					5	6 (lı	nferi	red)													
			STUR						2	2.1%	<b>b</b>														
				ab Co							-														
<u>%Gra</u>	avei =	41	%\$	sand	= 52	2	~	Silt/	Cla	<u>y =</u>	/														
	[	CL	AY				SIL	г						;	SAND							AVEL			
												F	INE		N	MEDIU	м	COAF	RSE	FIN	IE		COAR	SE	
	100 -																								
	90							_			_											-			-
	80																								
	70								_		_										$\parallel$	-			
DNG	60 -										_										1				
ASS																			Λ						
ЧТР	50 -																					-			
PERCENT PASSING	40																	1							
В																$\backslash$									
	30 -															, 									
	20																					_			
	10 -										7														
	<sub>0</sub> [																								
	0.0005	100 0		200.0	0.005		0.01	0.02		0.05	0.075	0.150	0 250	L C	0.425	0.850	0	2.0	4.75	L C	9.5 12.5	19	25 37 F	50	75
	0.0			ر	0								LE SI			0									
														,	,										

					F	PAR	TICL	E S	SIZE	AN	AĽ	YSI	S R	EPC	RT						
PRO. SITE	-	:		DH	13-1	0, BU	Geot I-1 ect Sil		ical S	Site Ir	ivest	tigati	on								
PRO	JECT	NO:				325/1											_				
CLIE						n Cop	oper														
SAM		-		<u>BU</u>		40										• •					
		STED:			o 25/	13		6	(Infe	(rod)				D	<b>/</b> :	AG					
			TURE		VTE	١Т·			.3%	ieu)											
			Gra				е		.0 /0												
%Gra	avel =	= 38	%Sa	and =	= 50	0	%Silt :	= 12		%C	lay =	• 0					_				
		CLA	AY			SIL	.T			FII		SAN	ID MEDI	15.4	COARS	-	( FINE	GRAVE	EL COA	DOF	
										FII	NC		WEDI	UIVI	COARS		FINE		COA	ROE	
	100														1						_
	90																		$\square$		_
	80															_		$\square$			-
	70																				
9																					
PERCENT PASSING	60															$\wedge$					
NT PA	50																				-
RCE	40																				
PEI													$\wedge$								
	30																				
	20									$ \rightarrow $	$\triangleleft$										-
	10																				
														_							
	بر 0 ا	3 5			05	<u>-</u>	32	<u></u>		20	20	25	20	(	0.7	4.75	9.5	ດ ເຼີຍ	25	u. 0. ⊔	75 L
	0 0005	0000	0.002		0.005	0.01	0.02	Ċ	0.075 0.075	0.150	0.250	0.425	0.850	0	N	4	0,0	<u> </u>		37.5 50	
1									PA	RTICL	E SIZ	E (mm	1)								

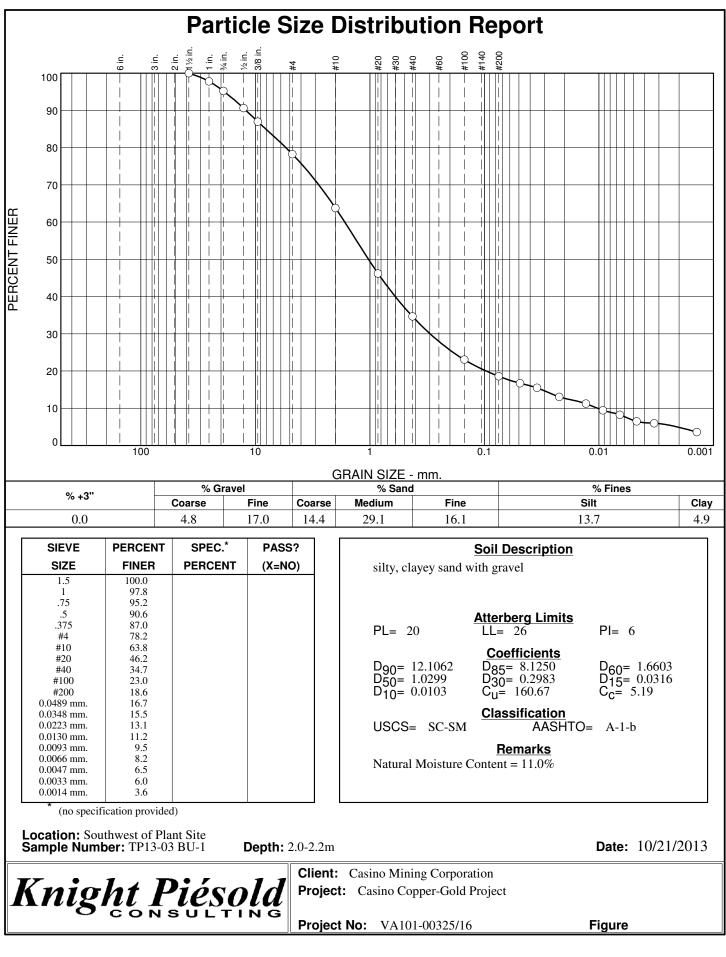
	PARTICLE	SIZE ANALYSIS REPO	DRT
PROJECT:		nnical Site Investigation	
SITE:	DH13-10, BU-2 Casino Project Site		
PROJECT NO:	VA101-325/16		
CLIENT:	Western Copper		
SAMPLE NO:	BU-2		
DATE TESTED:		В	Y: AG
USC CLASSIFICATI	-	G (Inferred)	
NATURAL MOISTUR	-	13.0%	
	rab Core Sample Sand = 40      %Silt = 5	%Clay = 0	
CLAY	SILT	SAND	GRAVEL
		FINE MEDIUM	COARSE FINE COARSE
100			
90			
80			
70			
00 00 00 00 00 00 00 00 00 00 00 00 00			
20 20 20 40			
30			
30 20			
30 20 10			
30 20 10 0	02 05 05 02 03 03 03 03 03 03 03 03 03 03 03 03 03	05 50 50 50 50 50 50 50	25 50 19 25 50 75
30 20 10 0	0.005 0.005 0.005 0.01 0.01 0.02 0.02	0.05 0.075 0.075 0.150 0.150 0.250 0.425 0.425 0.425	2.0 4.75 9.5 12.5 12.5 37.5 50 75
30 20 10 0	0.002	50.0 50.0 52.0 52.0 52.0 52.0 52.0 52.0	2.0 4.75 9.5 12.5 12.5 12.5 37.5 50 75

					I	PA		ГІС	E	ES	SIZ	E	٩N	AL	YS.	SIS	R	EP	OR	т							
PRO	JECI	:		Cas	sino	o 20	013	Geo	otec	:hn	ical	Sit	e Ir	ives	stig	atio	n					_					
SITE	:			DH1	13-1	11,	FC-	1														_					
				Cas	sino	) Pi	roje	ct S	Site													_					
PRO	JECI	NO:		VA1	01-	-32	5/16	6														_					
CLIE	NT:			Wes	ster	rn (	Сор	per														_					
SAM	IPLE	NO:		FC-																		_					
		STED:		Sep	25	/13	8											E	8Y: _	Α	G	_					
USC	CLA	SSIFIC		N:						S	(Inf	erre	ed)									_					
										30	.7%	)										_					
		-		b Co					<u> </u>	7				1	_ 0							_					
%Gr	avei	= 25	%58	and =	- 68	•	%	Sil	τ = .	(			%U	lay	= 0							_					
Volu	metri	c Ice C	onten	t: 15	%																	-					
																						_					
		CLA	AY				SIL	Г					-			SANE							GRA	_		05	
													FI	INE			MED	IUM		DARSE		FINE			COAR	SE	
	100																										
	100																							$\vdash$	$\neg$		
	90							_					_				_		-					$\left  \right $		_	
	80																										
	70																			-							
<b>DN</b>	60																			$\square$							
ASS																				/							
NTP	50																										
PERCENT PASSING	40																	_/									
РЕ																											
	30				+	+		+	+				+				$\wedge$		+						+	+	
	20					$\parallel$		_	_				-			$\square$	_		_						_	_	
	10							$\neg \uparrow$																			
	0										1																
		0.001	0.002		0.005		0.01	0.02					0.150	<b>.E SI</b>		<b>um)</b> 0.425	0.850		2.0		4.75	9.5	G.21	19	37.5	50	75
L																											

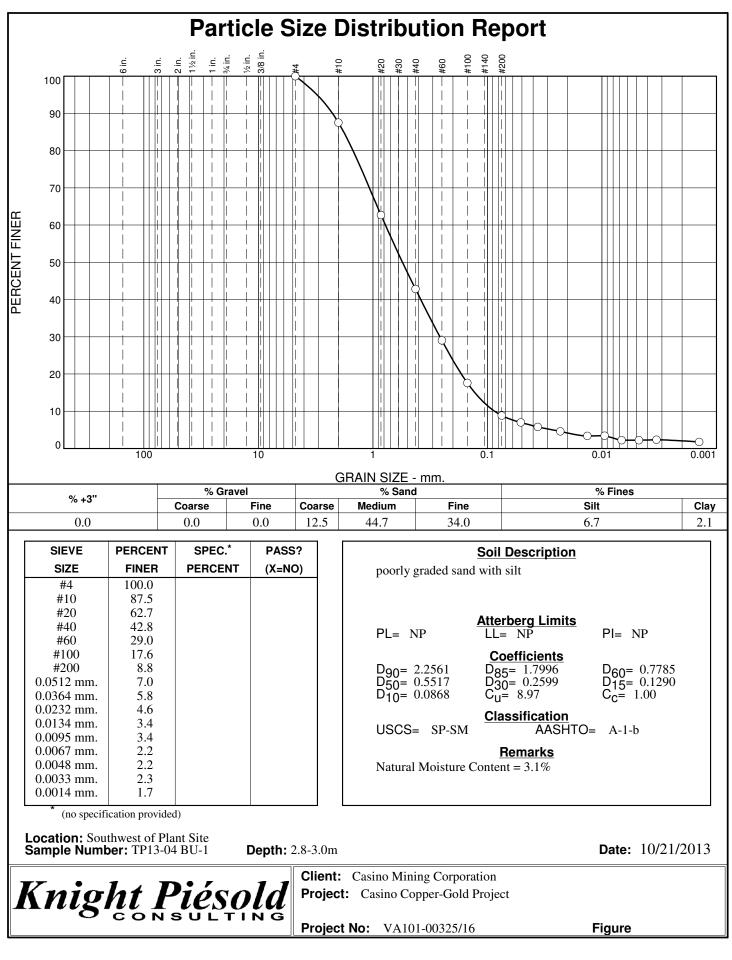
					I	PΑ	RT	ICL	.E	S	IZE	Α	NA	LY	'SI	s f	REP	OR	Т		_					
PRO	JECT:	1		Cas	sino	o 20	013 0	Geot	ec	hni	cal S	Site	Inv	esti	gat	ion					_					
SITE	:			DH1	13-1	11,	BU-1	1													_					
				Cas	sino	) Pi	rojec	t Sit	te												_					
PRO	JECT	NO:		VA1	101-	-32	5/16														-					
CLIE	NT:			Wes	ster	rn (	Copp	ber													_					
SAM	PLE N	10:		BU-	-1																_					
DATE	E TES	TED:																BY:	Α	G	_					
JSC	CLAS	SIFICA	TION	:					_	G	(Infe	rrec	d)								_					
		MOIST								28.	3%										_					
	ARKS		Grat									- 0/	01-		•						-					
<u>//Gra</u>	avel =	37	%Sa	nd =	= 33	5	%	Silt :	= 3	50		%	Cla	y =	0						-					
																					-					
		CLAY	,				SILT						FINE		SAI		DIUM		ARSE	FI	G	GRAV		OARS		
	Ĺ																	00						UAINO		
	100 r																									
	90 -																							/		
	80							_						_	_							$\geq$	1			_
	70																									
<b>(</b> D	/0																									
SINC	60 -					++			-									_	-	-	+					_
PERCENT PASSING	50 -													-												_
RCE	40							_						_	_			_								
Б														+	1											
	30 -								+						+									$\uparrow$		1
	20				++	++		_	+		/+			_	_						+			-	_	_
	10 -														$\top$											1
	0 L								4																	
	0.0005	0.001	0.002		0.005		0.01	0.02		0.05	0.075		0c1.0	0.250	0.425	0 850		2.0	1	4.70	9.5 7.7	1 1	19 25	37.5	50	75
	o.	0	0		0							ARTI					-									
i .															-	-										

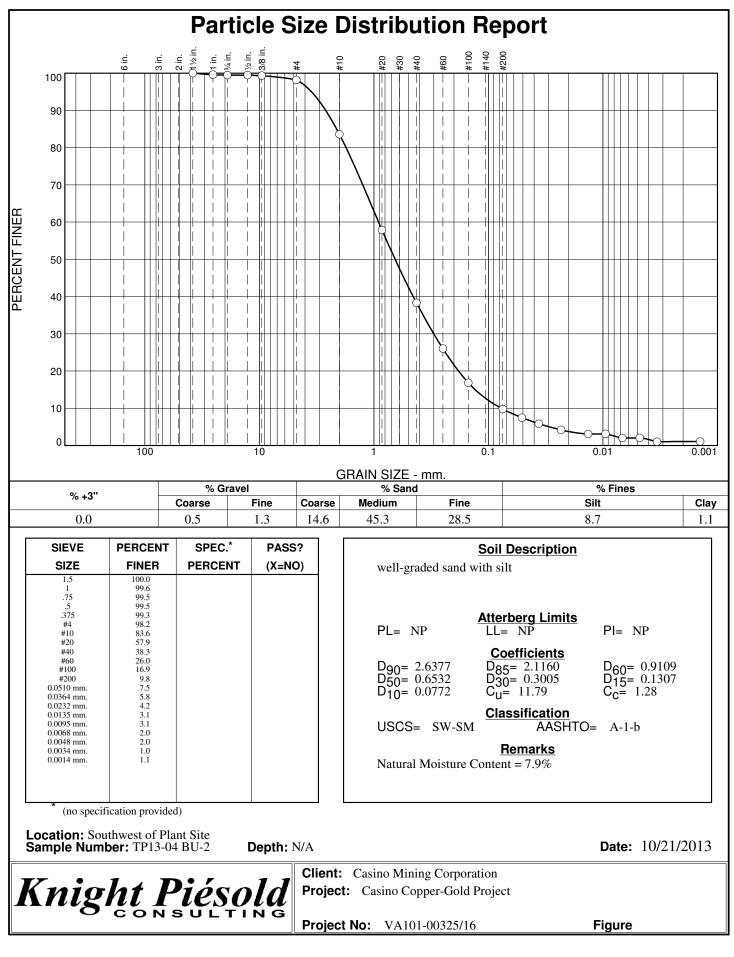
						Ρ	AR	RLI	CL	E	SI	ZE	A	A	LYS	SIS I	REP	OR	т							
	JECT	:							ote	ch	nic	al S	ite I	nve	stiga	ation					_					
SITE	:						, BL														-					
								ect	Site	)											-					
-	JECT	NO:					25/1														-					
						ern	Co	рре	r												-					
	PLE N E TES			<u>BL</u>		E/4	2											BY:	•	G	-					
			CATIO		р 2	5/1	<u> </u>			6	/1	nfer	rad)					DT:_	A	G	-					
			STURE		NT	FN	T.				() 6.4		ieu)								-					
	ARKS		Gra					le			0.4	70									-					
%Gr	avel =		%S					%Si	lt =	۰ <b>4</b>											-					
																					-					
																					-					
																					-					
	Г															SAND						RAVE	-,			
		CL	AY				SI	LT						FINE			EDIUM	CO	ARSE	FI	G NE	RAVE		ARSE	_	
	<sup>100</sup> г								1												<b>—</b> — —					1
																				/	Ι					
	90																									
	80					+					_	_							-					_		
	70																									
(7)	70																									
SING	60					+												$\square$								
- PAS	50																									
CENT																/	1									
PERCENT PASSING	40			+		$\parallel$						+												+		
	30					$\parallel$						_				/							_			
	20																									
	20													/												
	10			_	+	+				$\left  \right $	-							_					_	+		
	0																									
	0.0005	100 0	0.002		0.005		0.01	ç	0.02		0.05	0.075	0 150	0		0.440	0.850	2.0	4 75		9.5 7.5	6	25	37.5 50	22	2
	ŏ	Ċ		i	0.(		0	c	ر		0				Size (i		0		V	F	~	-		(7)		
	0											- 13 A	UTIC	IES	17E (1	mmì										

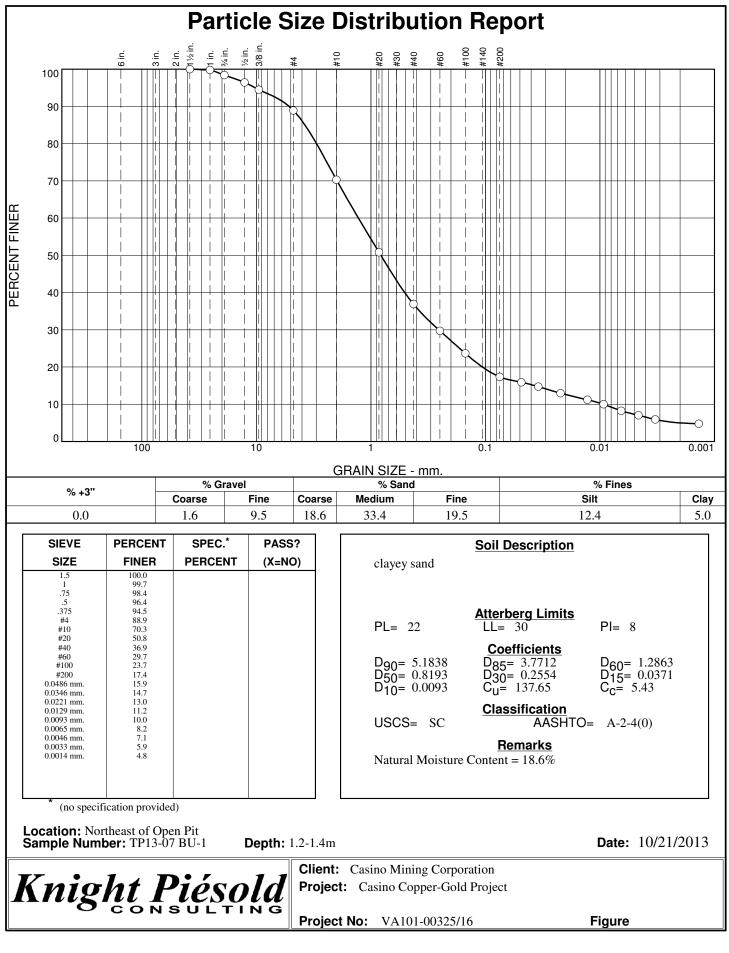
PRO. SITE:					•	<b>-</b> A	RI		-E	SI	ZE	AN	IAI	_YS	SIS	R	EPC	DR	Т							
SITE:	JECT	:		Cas	sino	20 <sup>-</sup>	13 G	Geot	ech	nic	al S	ite l	nve	stiga	atior	<u>1</u>					_					
				DH	13-1	2, E	<b>3U-</b> 1	1													_					
				Cas	sino	Pre	ojec	t Sit	e												_					
PRO	JECT	NO:		VA1	101-	325	5/16														_					
CLIEI	NT:			We	ster	n C	орр	er													_					
SAM		NO:		BU	-1																_					
DATE	TES	TED:															B	Y:_	Α	G	_					
JSC	CLAS	SSIFIC		1:					S	(Ir	nfer	red)									_					
		MOIST							7	.7%	)										_					
		S:					•														_					
%Gra	vel =	: 44	%Sa	and =	= 53		%	Silt =	= (3												-					
																					_					
																					-					
																					-					
		CLA	Y				SILT								SAND	)					C	GRAV	/EL			]
							0121						FINE			MEDI	JM	СО	ARSE	F	INE		C	DARSE	Ξ	
	<sup>100</sup>																									]
	90			_							_					_		_				$\left  \right $			_	_
	80 -																					/				1
	70										_					_		_			$\parallel$			_	-	_
5																										
PERCENT PASSING	60																				1					
ΤPA	50										_					_			-							-
CEN	40																									
PER	40																/						$ \uparrow $			1
	30				++						_					$\mathbf{k}$							$\parallel$	_		-
															/											
	20														/											1
	10				++				-		_					_		-			_		$\left  \right $		-	-
											F															
	0.0005 7	0.00	0.002		0.005	2	- 0.0	0.02	I	0.05	0.075	0 150	0.250		0.425	0.850		2.0	1	4./5	9.5	- C.7.	- 18 25	37.5	50	75 -
	0	, -	-		-								LES			-										



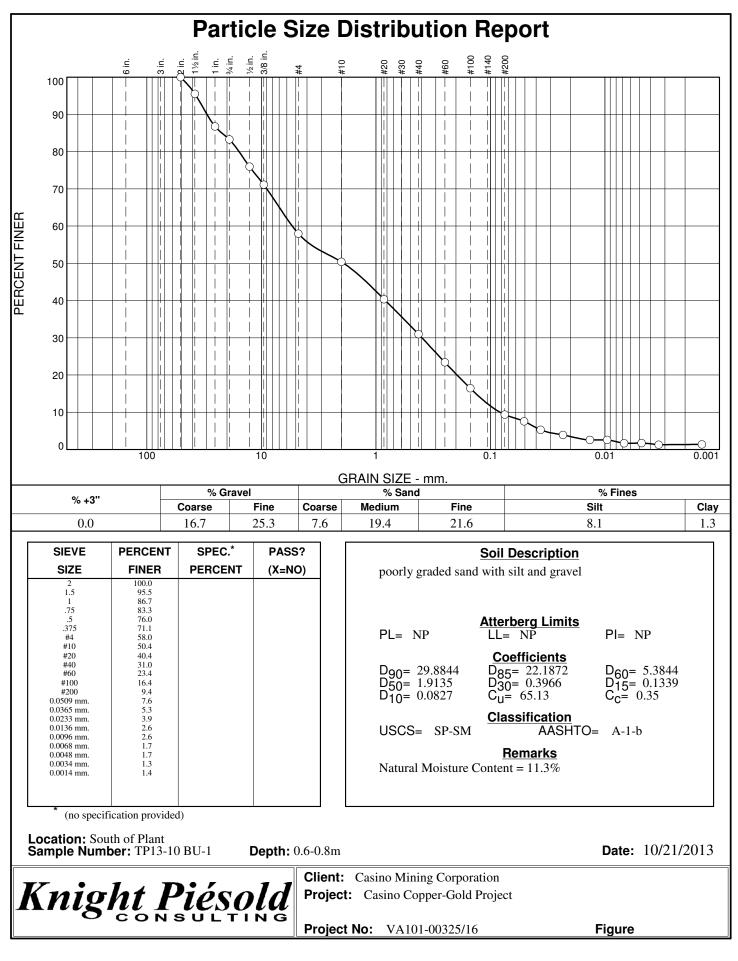
Checked By: DAB F1-12 of 64

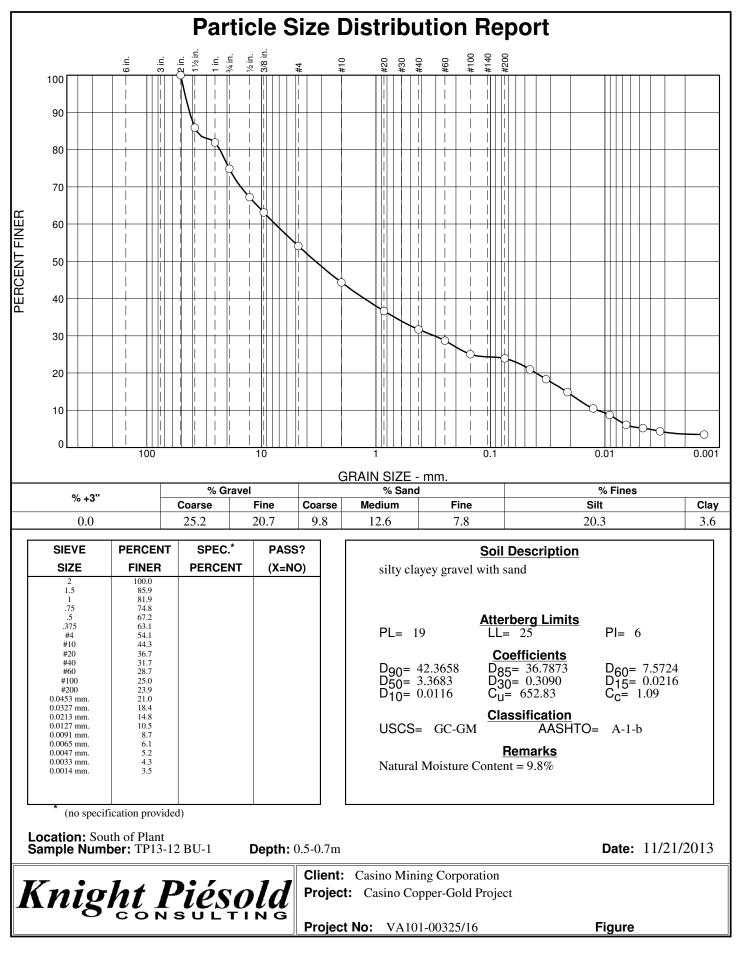


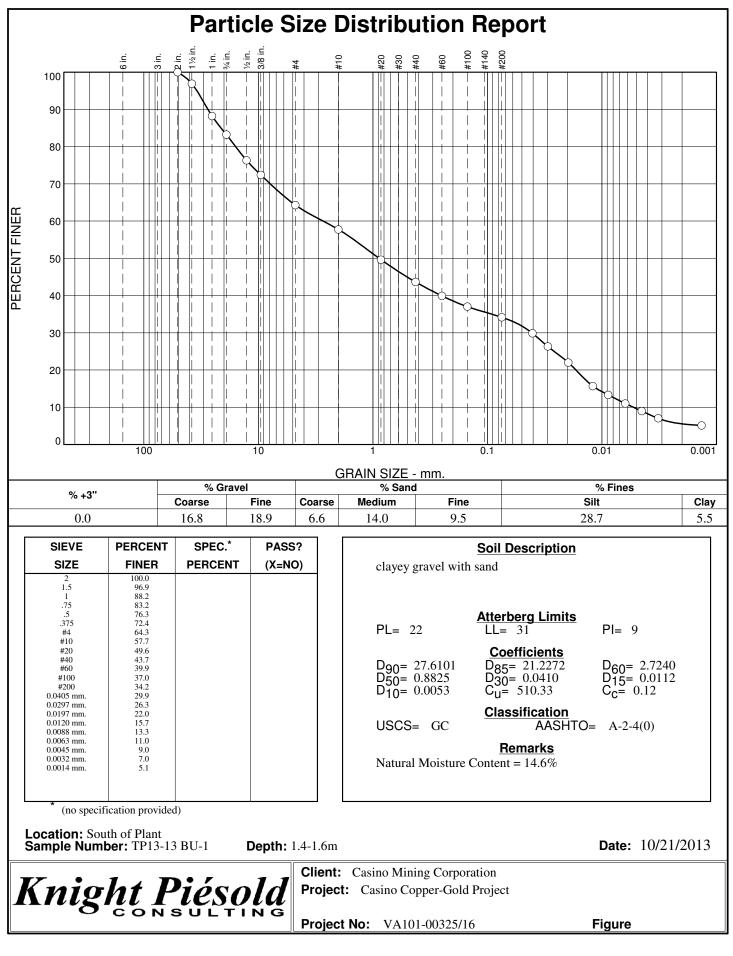


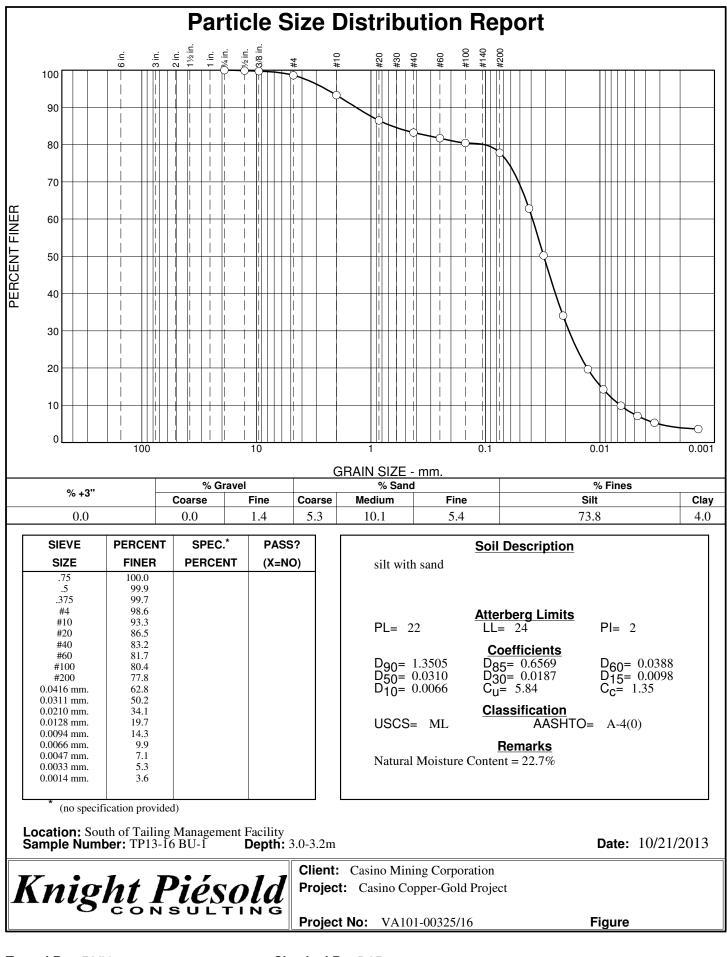


Checked By: DAB F1-15 of 64

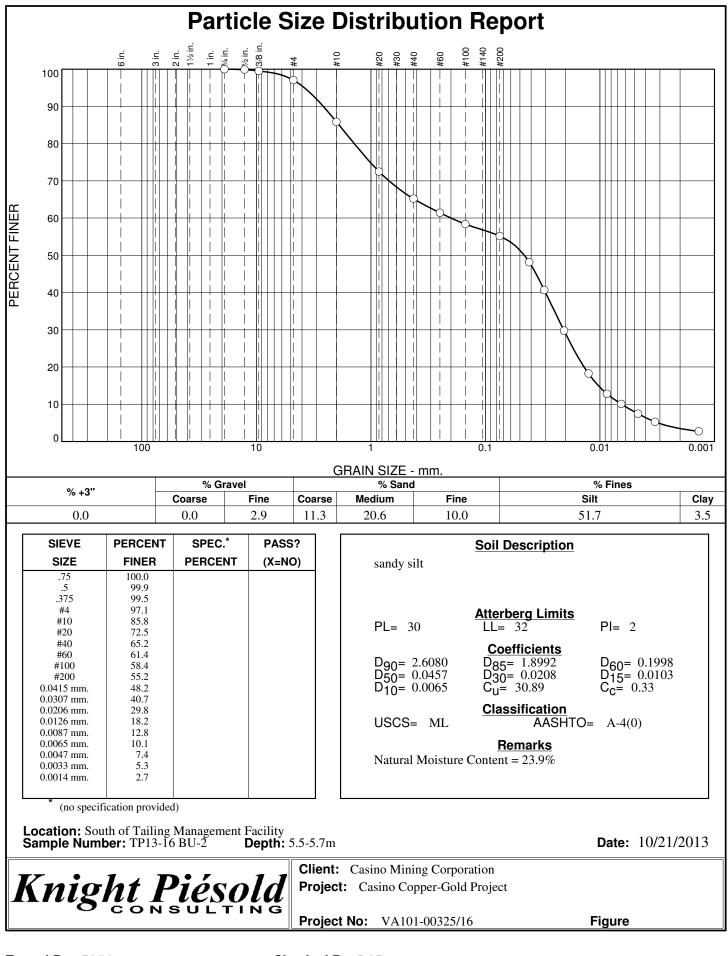




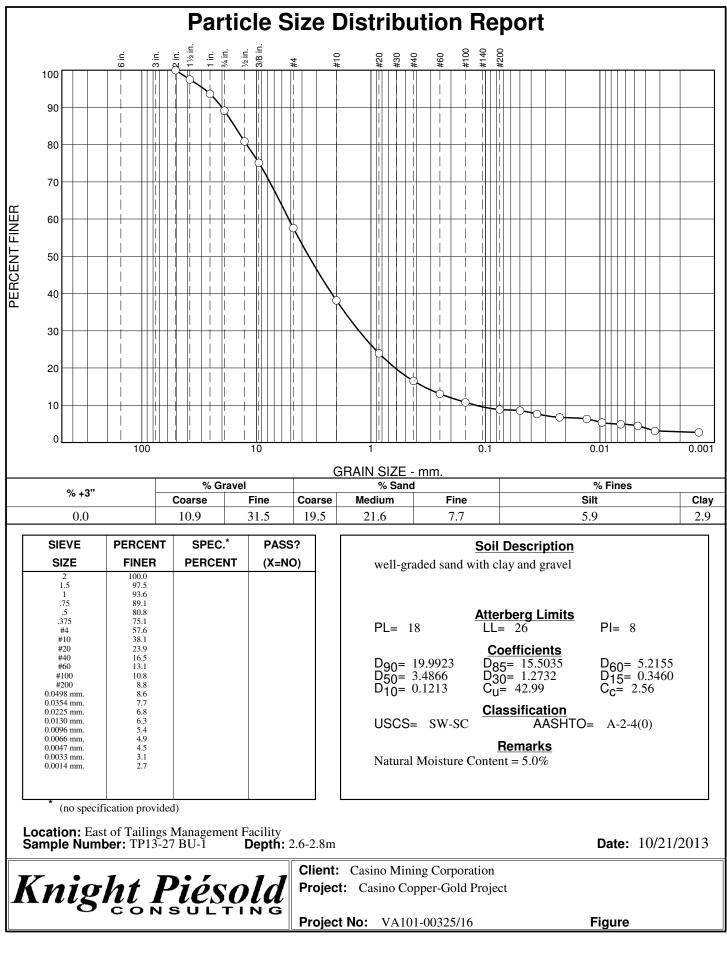




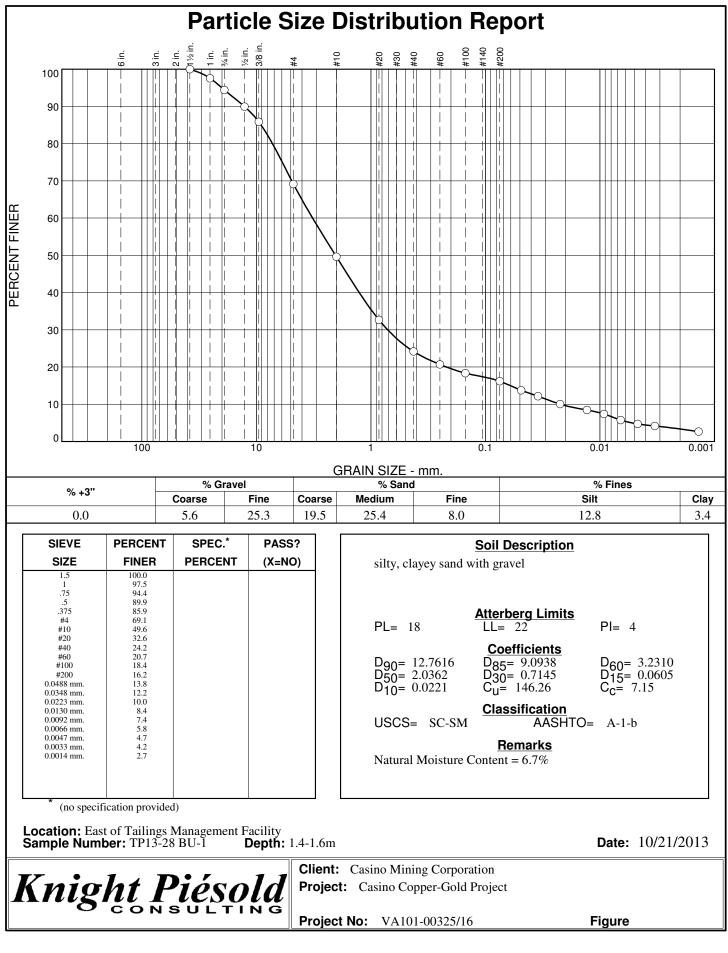
Checked By: DAB F1-19 of 64



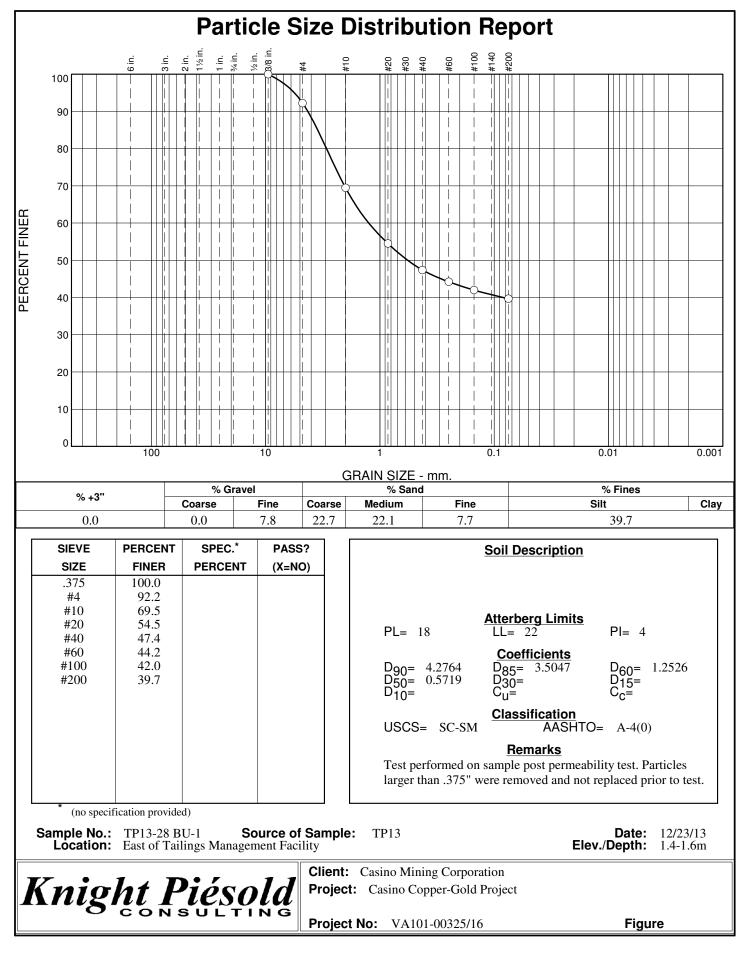
Checked By: DAB F1-20 of 64

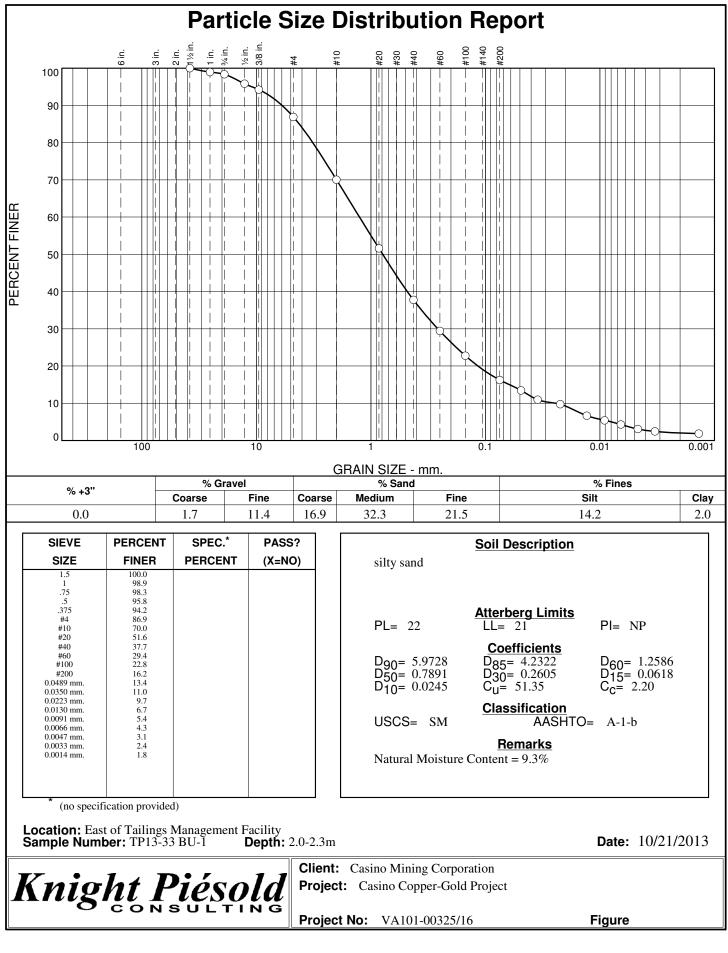


Checked By: DAB F1-21 of 64

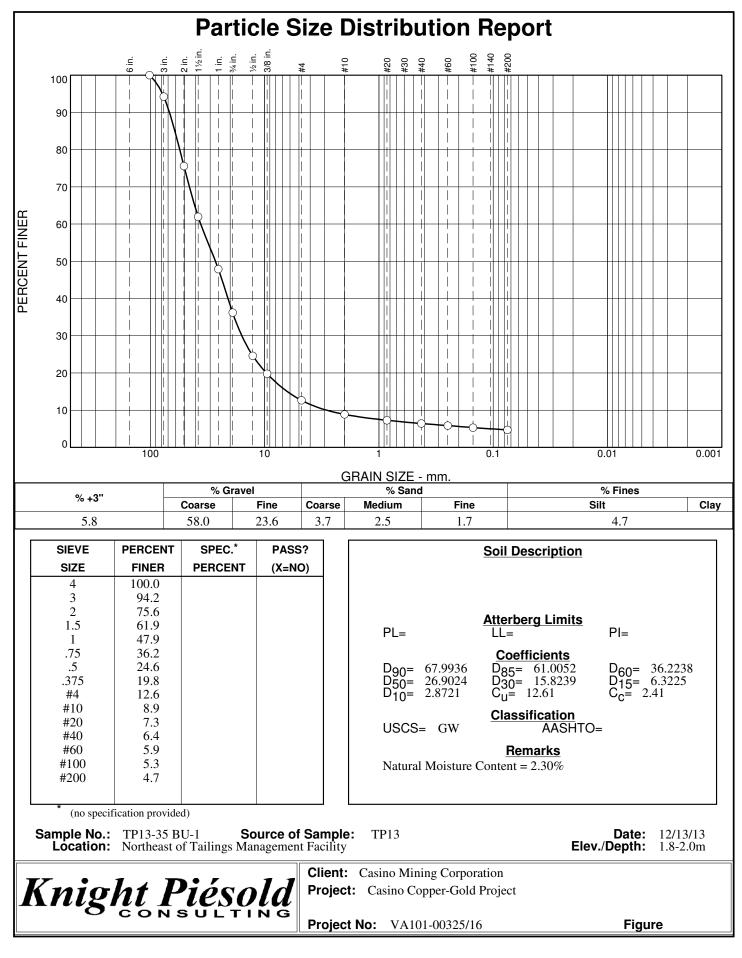


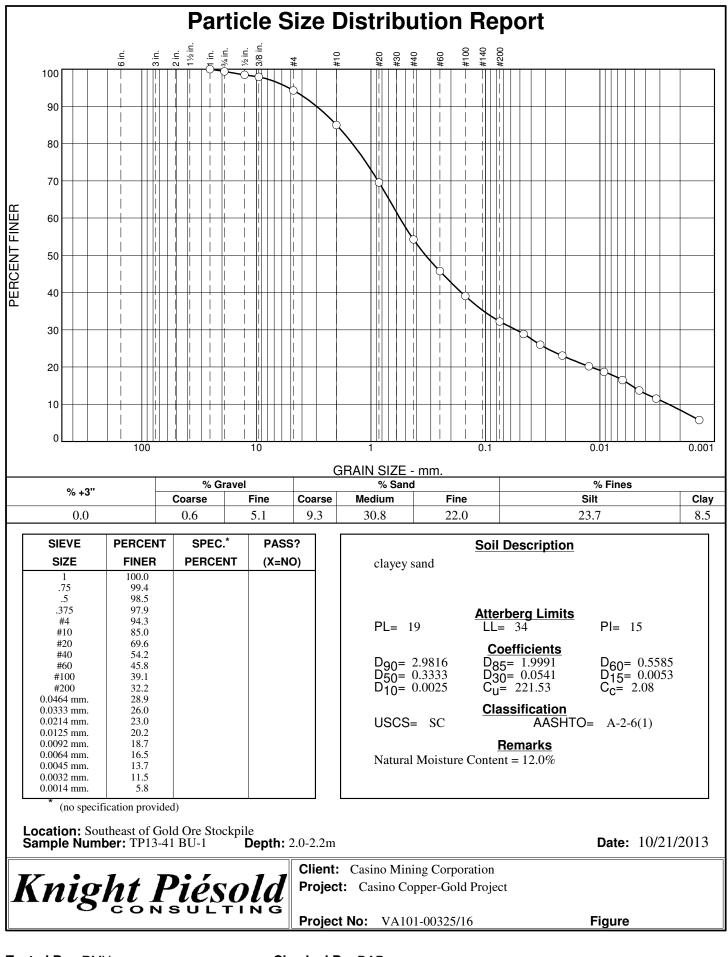
Checked By: DAB F1-22 of 64



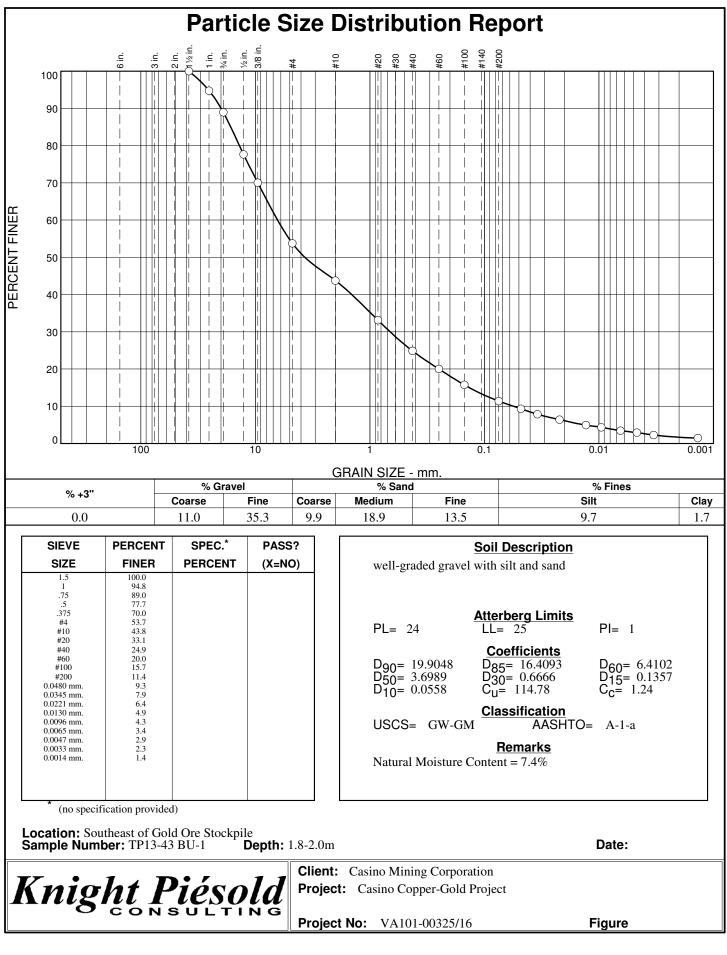


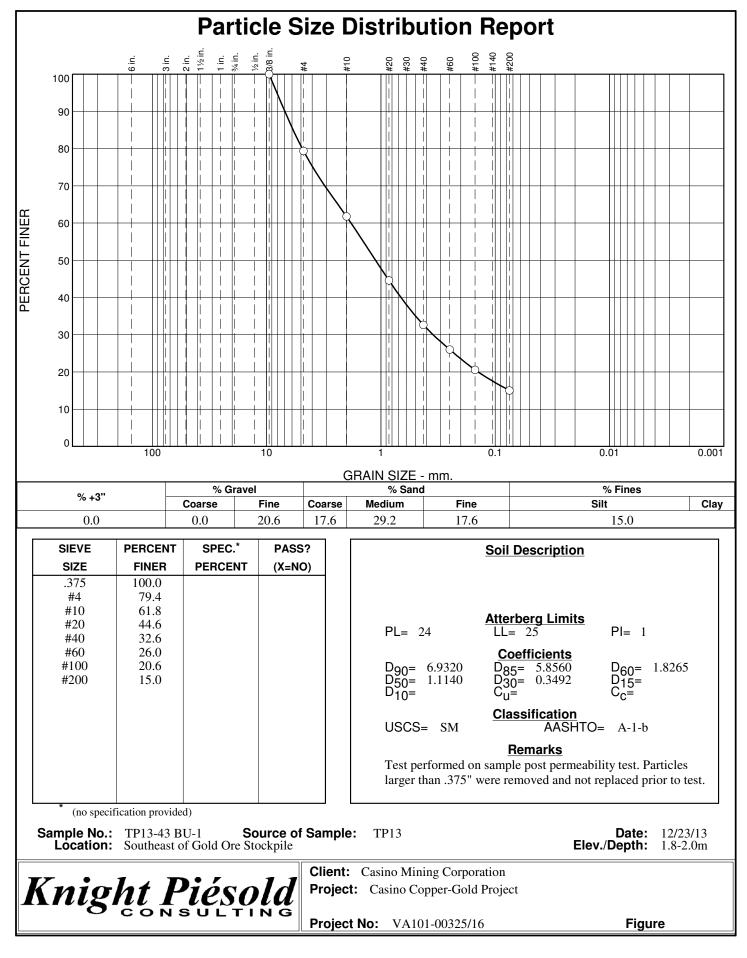
Checked By: DAB F1-24 of 64

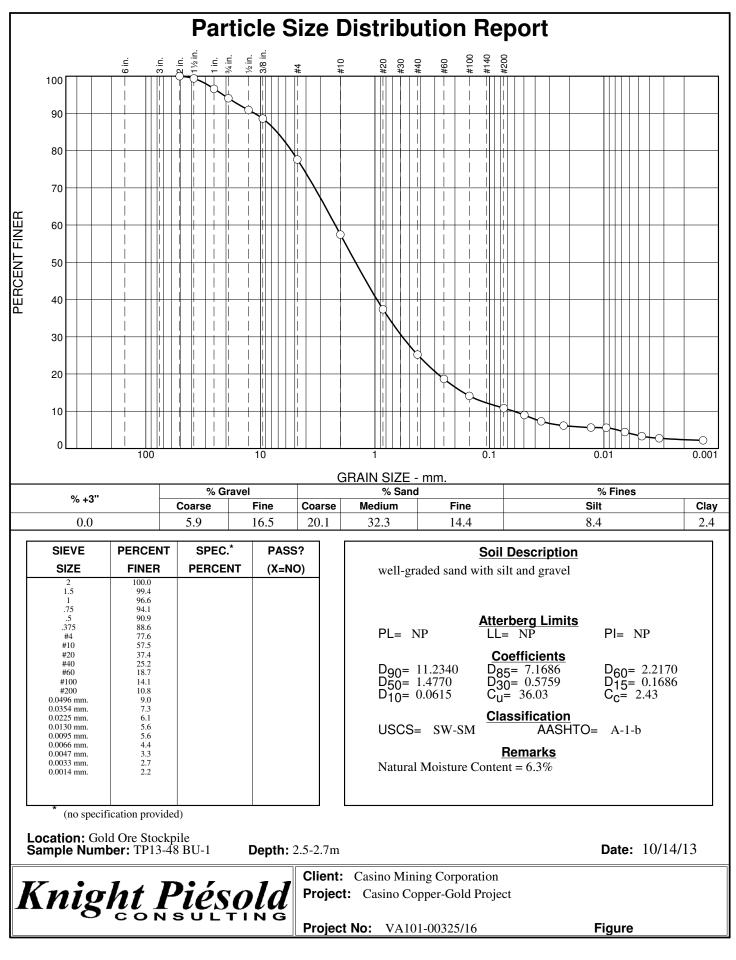


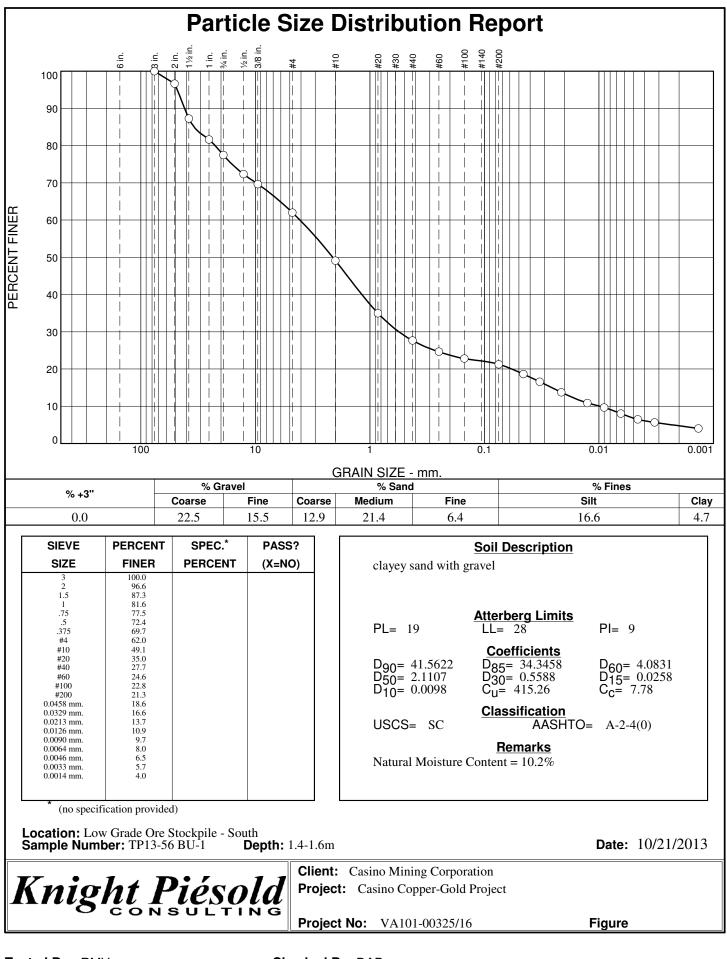


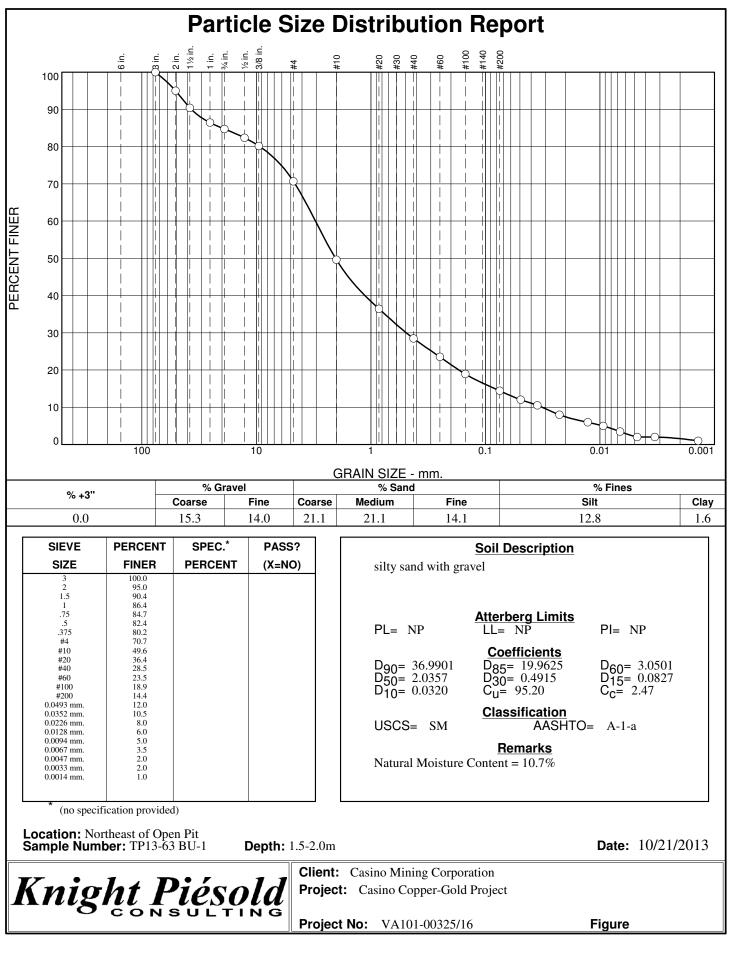
Checked By: DAB F1-26 of 64



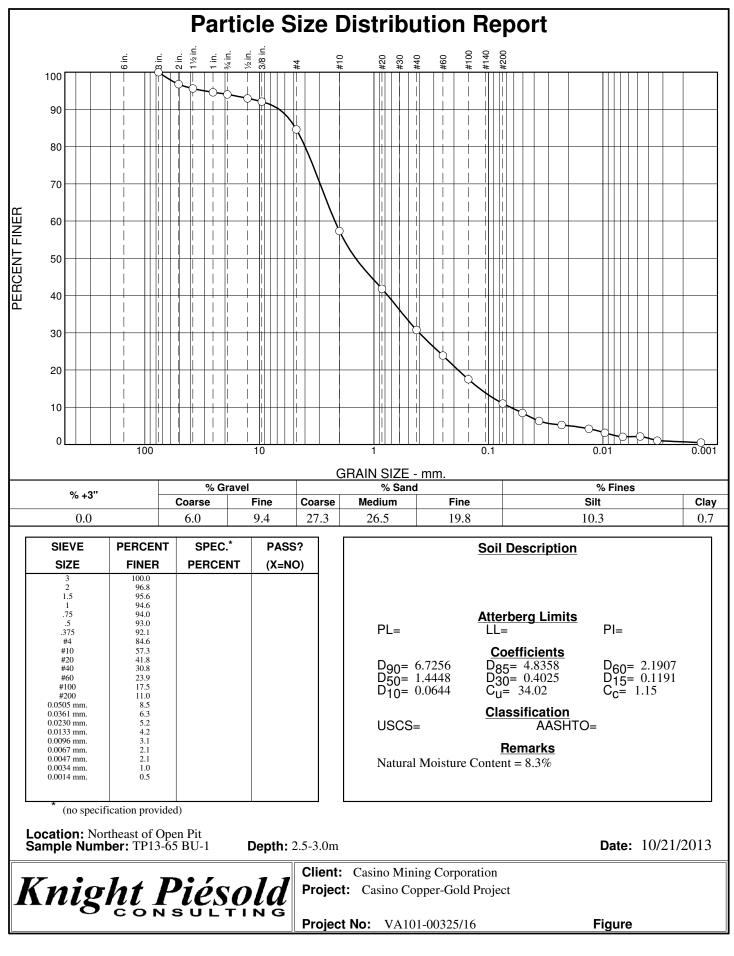


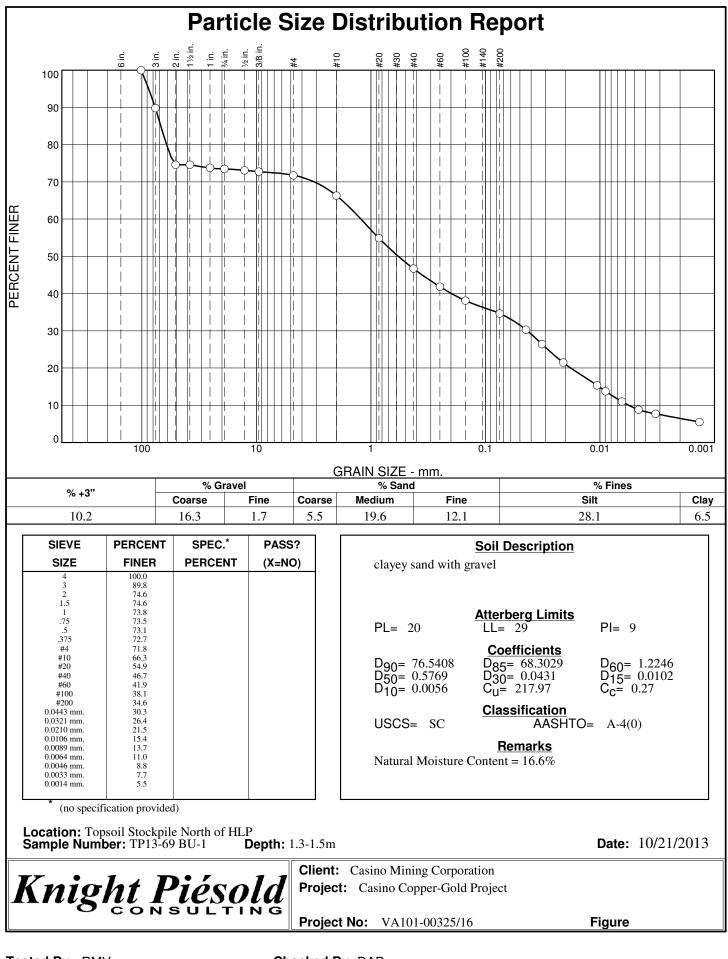




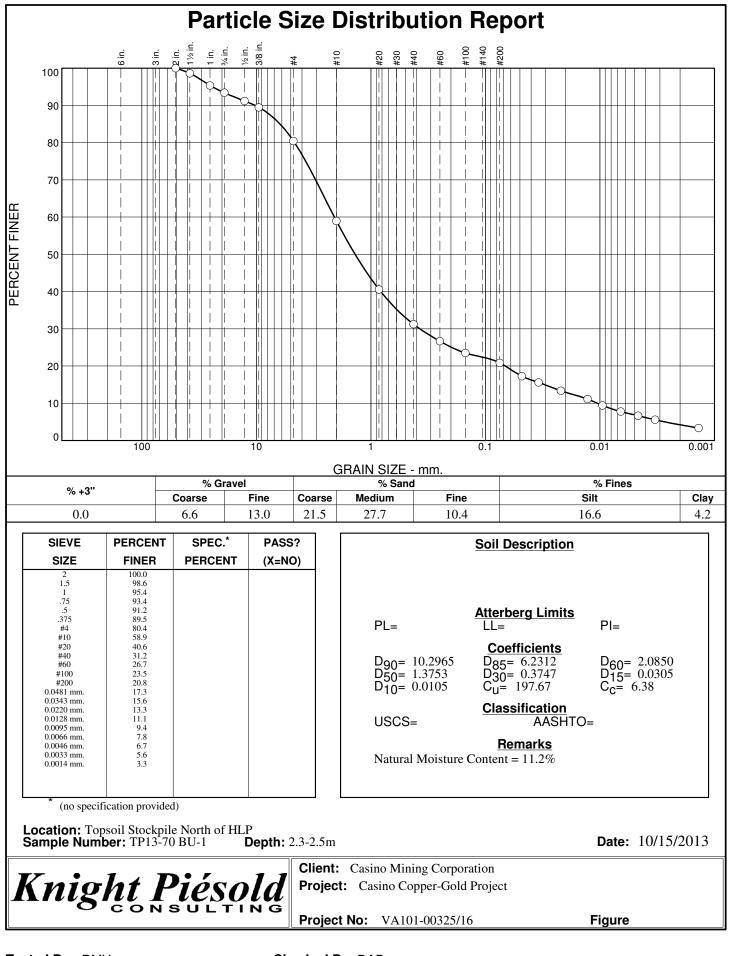


Checked By: DAB F1-31 of 64

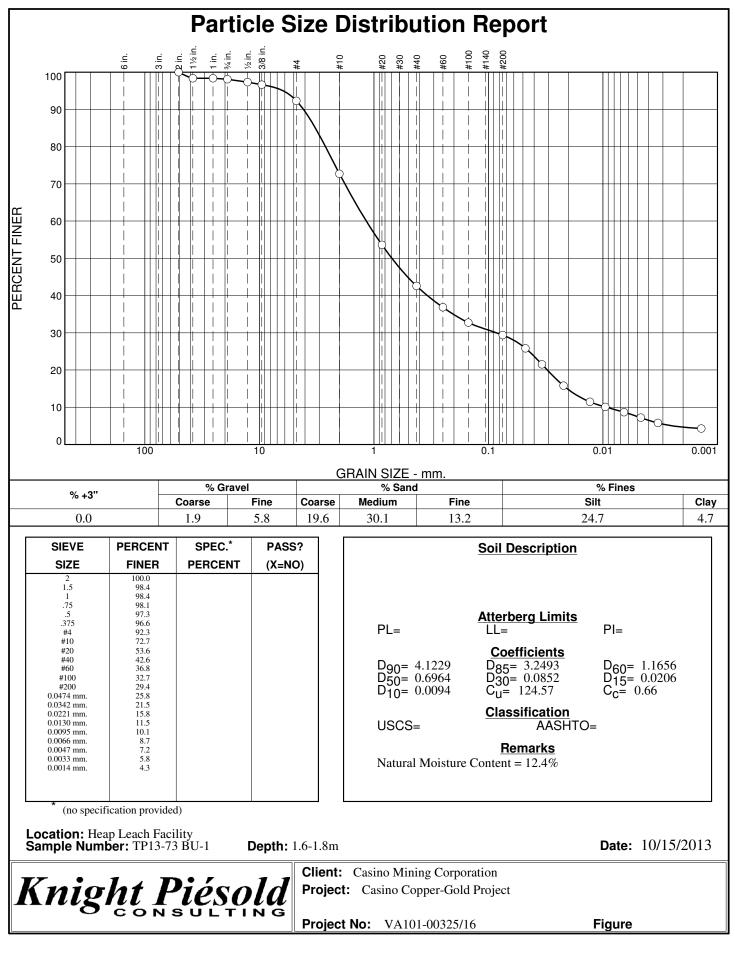


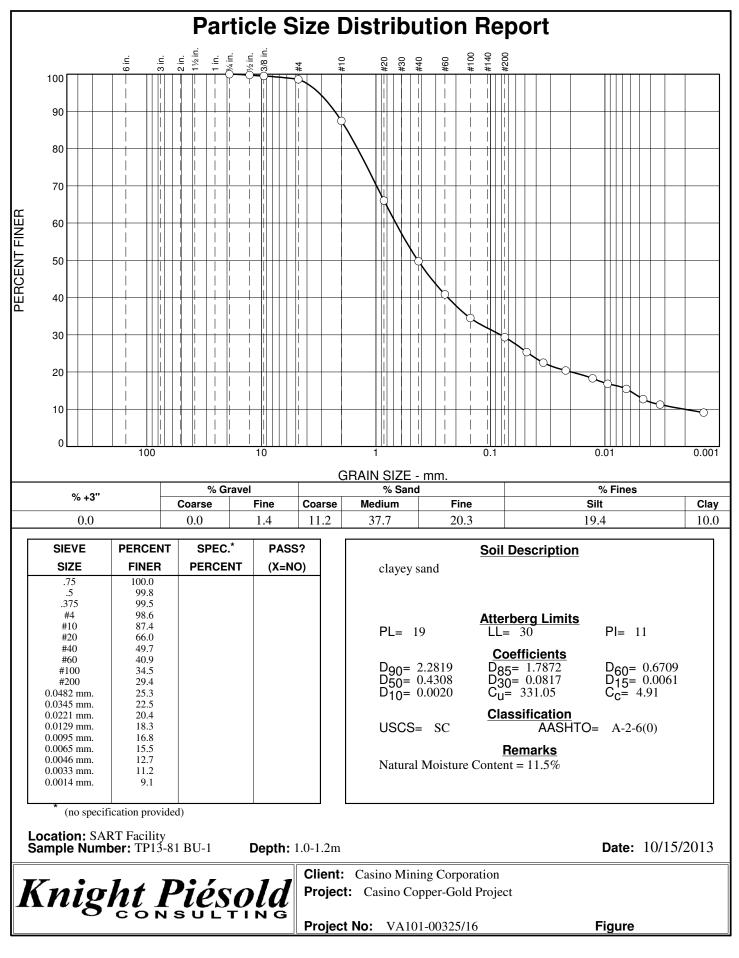


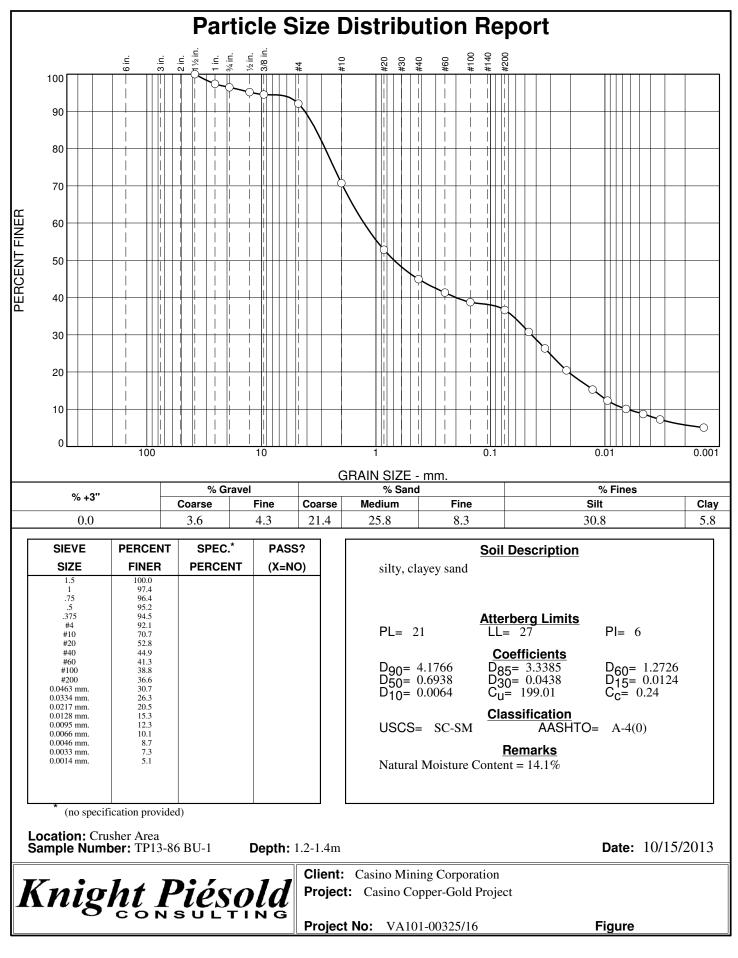
Checked By: DAB F1-33 of 64

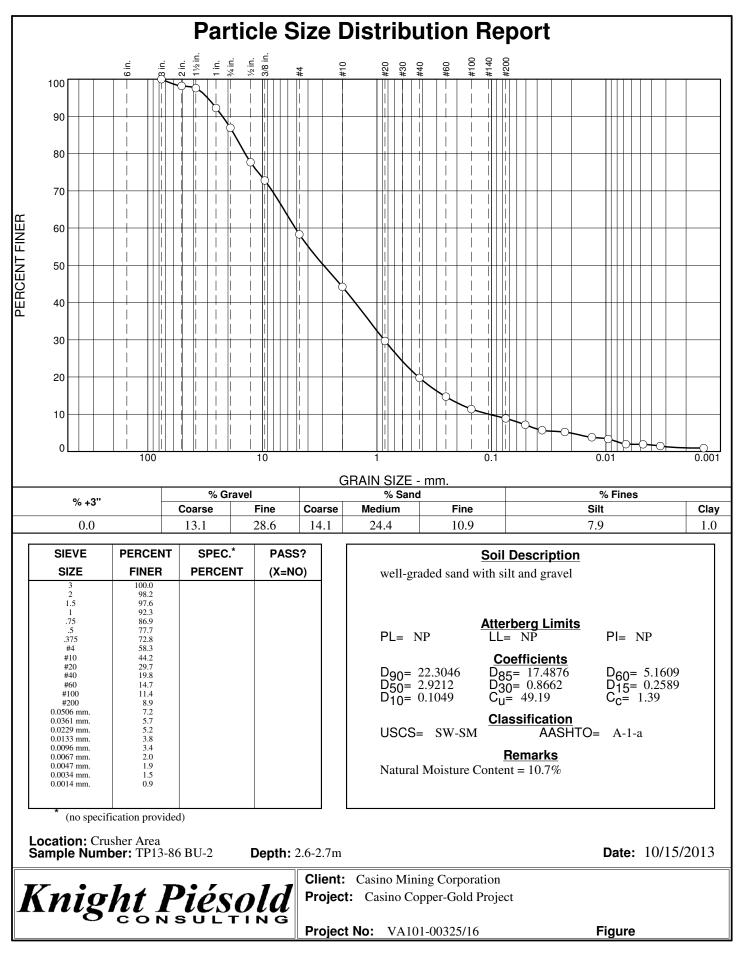


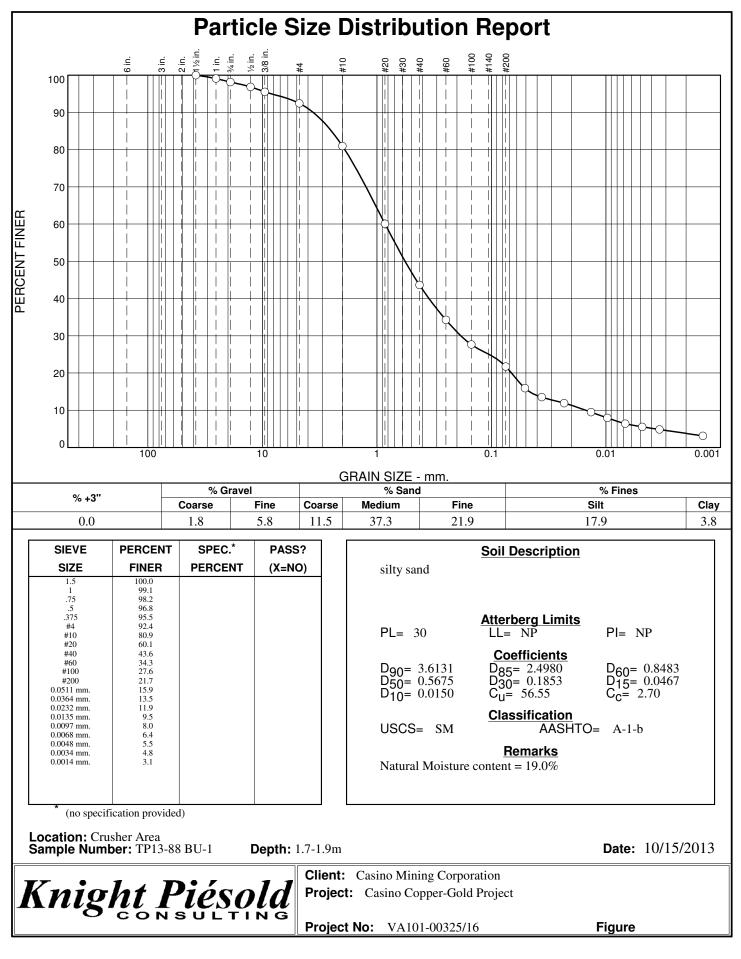
Checked By: DAB F1-34 of 64











CONSULTING

Project	Casino Geotech
Date Staged	10/17/2013
Date Completed	12/18/2013
Tested By	RMV

#### Specific Gravity - Soil ASTM D 854

Project No.	VA101-325/16
Act. Code	
Lab No.	L2013-118PPQ
Checked By	DAB

Sample No.	TP13-04 BU-	1 @ 2 8-3 0m	TP13-33 RII-	1 @ 2.0-2.2m	TP13-35 BU-	1 @ 1 8-2 0m	TP13-48 BU-	1@25-27m	TP13-76 BU	2 @ 1.7-2.0m
Sample Prep. (Wet or Dry)		et		et		et		et		et
Flask No.										
1) Wt. of Flask + Soil										
2) Wt. of Flask										
3) Wt. of Soil (1-2)	39.97	39.99	39.22	39.84	38.58	38.80	39.81	40.00	34.63	34.64
4) Calibrated Wt. of Flask + Water	342.47	342.13	351.47	342.07	341.94	349.13	352.70	343.85	342.34	352.52
5) #3 + #4	382.44	382.12	390.69	381.91	380.52	387.93	392.51	383.85	376.97	387.16
6) Wt. of Flask + Water + Soil	367.80	367.46	376.45	367.33	366.50	373.79	378.02	369.08	364.53	374.62
7) Volume of Soil (5 - 6)	14.64	14.66	14.24	14.58	14.02	14.14	14.49	14.77	12.44	12.54
8) Test Temperature, deg. C	19.2	19.2	20.4	20.5	23.1	22.3	19.2	19.3	21.7	22.6
9) Temperature Correction, k	1.000160	1.000160	0.999912	0.999890	0.999315	0.999497	1.000160	1.000140	0.999635	0.999427
10) Specific Gravity (( 3 / 7 ) * k )	2.731	2.728	2.754	2.732	2.750	2.743	2.748	2.709	2.783	2.761
Reported Average, G $_{\rm s}~$ @ 20 deg.C	2.7	729	2.7	743	2.7	746	2.7	28	2.7	772
Tare										
Dry Soil + tare, g	185.66	183.6	200.61	185.59	441.5	434.28	186.1	186.48	429.03	428.04
Tare, g	145.69	143.61	161.39	145.75	402.92	395.48	146.29	146.48	394.4	393.4

CONSULTING

# ProjectCasino GeotechDate Staged10/17/2013Date Completed12/18/2013Tested ByRMV

#### Specific Gravity - Soil ASTM D 854

Project No.	VA101-325/16
Act. Code	
Lab No.	L2013-118PPQ
Checked By	DAB

Sample No.	TP13-78 BU-	1 @ 1.0-1.2m	TP13-81 BU-	1 @ 1.0-1.2m	TP13-88 BU-	1 @ 1.7-1.9m			
Sample Prep. (Wet or Dry)		et		et		et	wet		
Flask No.									
1) Wt. of Flask + Soil									
2) Wt. of Flask									
3) Wt. of Soil (1-2)	39.08	39.20	38.90	38.64	37.97	37.98			
4) Calibrated Wt. of Flask + Water	365.70	343.77	349.19	352.61	364.64	342.36			
5) #3 + #4	404.78	382.97	388.09	391.25	402.61	380.34			
6) Wt. of Flask + Water + Soil	390.31	368.46	373.43	376.76	388.23	365.99			
7) Volume of Soil (5 - 6)	14.47	14.51	14.66	14.49	14.38	14.35			
3) Test Temperature, deg. C	20.9	20.9	21.2	21.1	21.6	21.2			
9) Temperature Correction, k	0.999810	0.999810	0.999746	0.999768	0.999657	0.999746			
10) Specific Gravity	2.700	2.701	2.653	2.666	2.640	2.646			
Reported Average, G $_{s}$ @ 20 deg.C	2.7	01	2.6	59	2.6	643			
Tare									
Dry Soil + tare, g	183.45	184.61	182.51	186.93	184.7	184.28			
Tare, g	144.37	145.41	143.61	148.29	146.73	146.3			

Specific Gravity - Coarse Aggregate

ASTM C 127

Project	Casino Geotech		Project No.	VA101-325/16		
Lab No.	L2013-118		Date of Test	12/17/2013		
Tested By	RMV		Checked By	JDB		
Run by / Date		TP13-35 BU-1 @	TP13-35 BU-1 @		 	
Sample No./ Dept	th	1.8-2.0m	1.8-2.0m			
Sample Descriptic	n	Plus 3/4"	Minus 3/4" to No. 4	Weighted average		
No. of +3 in. pcs.		1 103 3/4		Weighted average		
Tare No.						
Saturated Surface	e Dry Aggregate + Tare	6630	2812.5			
Dry Aggregate + T	Tare	6459.5	2719			
Tare		348.5	242.7			
Saturated Surface	e Dry Aggregate (B)	6281.5	2569.8	0	0	0
Dry Aggregate	(A)	6111	2476.3	0	0	0
Basket Submerge	ed					
Saturated Aggreg	ate Submerged (C)	3795.9	1545.5			
Temperature of W	/ater	22.7	22.7			
Correction Factor		1	1			
Apparent Specific	Gravity (A / (A-C))	2.64	2.66	2.65		
Bulk Specific Grav	vity , SSD (B / (B-C))	2.53	2.51	2.52		
Bulk Specific Grav	vity (A / (B-C))	2.46	2.42	2.45		
Absorption (%)		2.79	3.78	3.06		
Percent Retained	#4			63.8		
Percent Passing #	#4			36.2		
Gs of Aggregate F	Passing #4			2.746		
Weighted Average	e Specific Gravity			2.682		
Remarks:						
nomarko.						



November 06, 2013

Knight Piesold and Company 5030 Nome St. Suite A Denver, CO 80239 USA

Client Sample ID: Date Received: Matrix: Net Sample Weight: TP13-03 BUI @ 2.0 - 2.2M 10/24/2013 Unknown 495.20 Kind of Sample : P. O. # : Project Name/# :

Solid 10823 DV101-77/14

#### SGS Minerals Sample ID: 072-71470-001

		<u>As Received</u>	Dry
% Moisture, Total	[ASTM D 3302]	10.32	
% Ash	[ASTM D 7582]	86.45	96.40

<u>Tests</u> Organic Matter, Total

Result Unit 3.60 %

Method ASTM D 7582

SGS North America Inc.

Minerals Services Division / 4665 Paris St Suite B-200 Denver CO 80239

Byun C. Catin Byron Caton, Denver Laboratory

t (303) 373-4772 f (303) 373-4791 www.sgs.com/minerals

This document is issued by the Company under its General Conditions of Service accessible at http://www.sgs.com/terms\_and\_conditions.htm Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein.

Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.



November 06, 2013

**Knight Piesold and Company** 5030 Nome St. Suite A Denver, CO 80239 USA

**Client Sample ID: Date Received:** Matrix: **Net Sample Weight:** 

TP13-16 BU2 @ 5.5 - 5.7M 10/24/2013 Unknown 523.30

Kind of Sample : P. O. # : Project Name/# :

#### Solid 10823 DV101-77/14

#### SGS Minerals Sample ID: 072-71470-002

		As Received	Dry
% Moisture, Total	[ASTM D 3302]	19.01	_
% Ash	[ASTM D 7582]	76.85	94.90

**Tests** Organic Matter, Total Result Unit 5.10 %

**Method ASTM D 7582** 

SGS North America Inc.

Burn C. Cata Byron Caton, Denver Laboratory Minerals Services Division 4665 Paris St Suite B-200 Denver CO 80239

t (303) 373-4772 f (303) 373-4791 www.sgs.com/minerals

Member of SGS Group This document is issued by the Company under its General Conditions of Service accessible at http://www.sgs.com/terms\_and\_conditions.htm Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein.

Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.



#### **Analysis Report**

November 06, 2013

Knight Piesold and Company 5030 Nome St. Suite A Denver, CO 80239 USA

 Client Sample ID:
 TP13-28 BU1 @ 1.4 - 1.6M
 Kind of Sample :
 Solid

 Date Received:
 10/24/2013
 P. O. # :
 10823

 Matrix:
 Unknown
 Project Name/# :
 DV101-77/14

 Net Sample Weight:
 717.70
 Project Name/# :
 DV101-77/14

#### SGS Minerals Sample ID: 072-71470-003

		As Received	Dry
% Moisture, Total	[ASTM D 3302]	6.10	
% Ash	[ASTM D 7582]	91.82	97.7 <del>9</del>

Tests Organic Matter, Total Result Unit 2.21 % Method ASTM D 7582

SGS North America Inc.

Minerals Services Division / 4665 Paris St Suite B-200 Denver CO 80239

Byron C. Cata Byron Caton, Denver Laboratory

t (303) 373-4772 f (303) 373-4791 www.sgs.com/minerals

This document is issued by the Company under its General Conditions of Service accessible at http://www.sgs.com/terms\_and\_conditions.htm Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein.

Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.



#### **Analysis Report**

November 06, 2013

**Knight Piesold and Company** 5030 Nome St. Suite A Denver, CO 80239 USA

**Client Sample ID: Date Received:** Matrix: **Net Sample Weight:**  TP13-43 BU1 @ 1.8 - 2.0M 10/24/2013 Unknown 750.70

Kind of Sample : P. O. # : Project Name/# :

Solid 10823 DV101-77/14

#### SGS Minerals Sample ID: 072-71470-004

		As Received	Dry
% Moisture, Total	[ASTM D 3302]	6.44	
% Ash	[ASTM D 7582]	92.26	98.61

**Tests** Organic Matter, Total Result Unit 1.39 %

Method **ASTM D 7582** 

SGS North America Inc.

**Minerals Services Division** 4665 Paris St Suite B-200 Denver CO 80239

Byron C. Cating Byron Caton, Denver Laboratory

t (303) 373-4772 f (303) 373-4791 www.sgs.com/minerals

Member of SGS Group This document is issued by the Company under its General Conditions of Service accessible at http://www.sgs.com/terms\_and\_conditions.htm Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein.

Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. Any unauthorized alteration, forgery or falsification of the content or appearance of this document their rights and obligations under the transaction socurity with the law. is unlawful and offenders may be prosecuted to the fullest extent of the law. F1-46 of 64



November 06, 2013

**Knight Piesold and Company** 5030 Nome St. Suite A Denver, CO 80239 USA

**Client Sample ID: Date Received:** Matrix: **Net Sample Weight:**  TP13-70 BU1 @ 2.3 - 2.5M 10/24/2013 Unknown 655.90

Kind of Sample : P.O.#: Project Name/# :

Solid 10823 DV101-77/14

#### SGS Minerals Sample ID: 072-71470-005

		As Received	Dry
% Moisture, Total	[ASTM D 3302]	10.42	
% Ash	[ASTM D 7582]	85.94	95.94

Tests Organic Matter, Total

Result Unit 4.06 %

Method **ASTM D 7582** 

SGS North America Inc.

Minerals Services Division 4665 Paris St Suite 8-200 Denver CO 80239

Byron C. Cating Byron Caton, Denver Laboratory

t (303) 373-4772 f (303) 373-4791 www.sgs.com/minerals

Member of SGS Group This document is issued by the Company under its General Conditions of Service accessible at http://www.sgs.com/terms\_and\_conditions.htm Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein.

Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. Any unauthorized alteration, forgery or falsification of the content or appearance of this document their rights and obligations under the transaction social strength of the law. is unlawful and offenders may be prosecuted to the fullest extent of the law. F1-47 of 64



November 06, 2013

**Knight Piesold and Company** 5030 Nome St. Suite A Denver, CO 80239 USA

**Client Sample ID: Date Received:** Matrix: **Net Sample Weight:** 

TP13-86 BU1 @ 1.2 - 1.4M 10/24/2013 Unknown 689.60

Kind of Sample : P. O. #: Project Name/# :

Solid 10823 DV101-77/14

#### SGS Minerals Sample ID: 072-71470-007

		As Received	Dry
% Moisture, Total	[ASTM D 3302]	11.95	
% Ash	[ASTM D 7582]	85.34	96.92

Tests Organic Matter, Total

Result Unit 3.08 %

Method **ASTM D 7582** 

SGS North America Inc.

**Minerals Services Division** 4665 Parls St Suite B-200 Denver CO 80239

Byron C. Cating Byron Caton, Denver Laboratory

t (303) 373-4772 f (303) 373-4791 www.sgs.com/minerals

Member of SGS Group

This document is issued by the Company under its General Conditions of Service accessible at http://www.sgs.com/terms\_and\_conditions.htm Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein.

Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. Any unauthorized alteration, forgery or falsification of the content or appearance of this document 



#### **Analysis Report**

November 06, 2013

Knight Piesold and Company 5030 Nome St. Suite A Denver, CO 80239 USA

Client Sample ID: Date Received: Matrlx: Net Sample Weight: TP13-86 BU2 @ 2.6 - 2.7M 10/24/2013 Unknown 902.70 Kind of Sample : P. O. # : Project Name/# :

#### Solid 10823 DV101-77/14

#### SGS Minerals Sample ID: 072-71470-008

		As Received	Dry
% Moisture, Total	[ASTM D 3302]	9.85	
% Ash	[ASTM D 7582]	85.86	95.24

Tests Organic Matter, Total

Result Unit 4.76 % Method ASTM D 7582

SGS North America Inc.

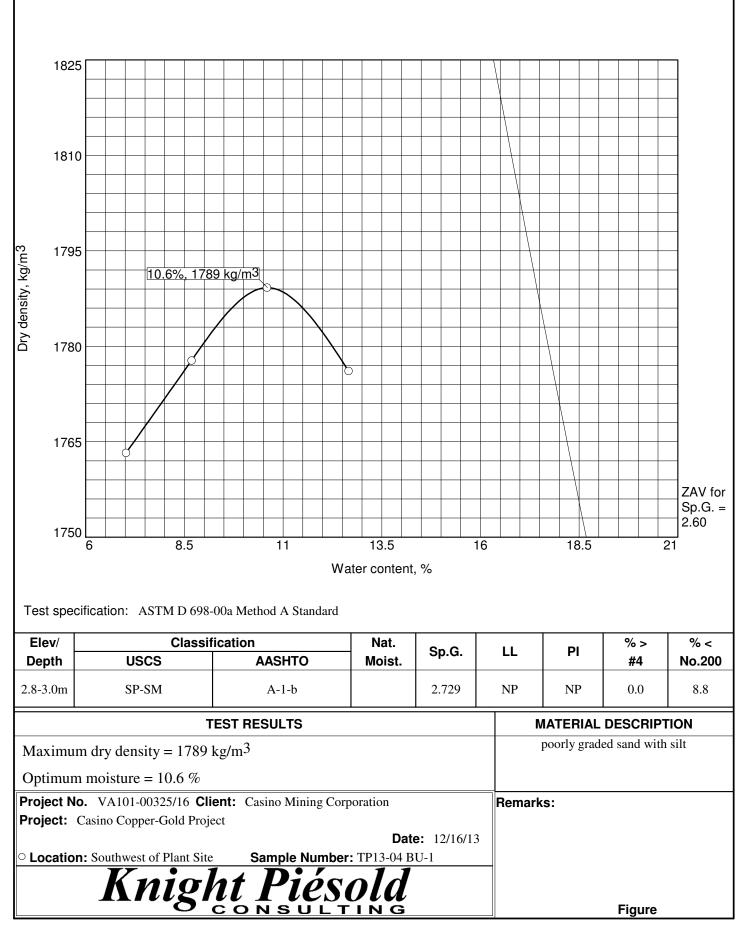
Minerals Services Division / 4665 Parls St Suite B-200 Denver CO 80239

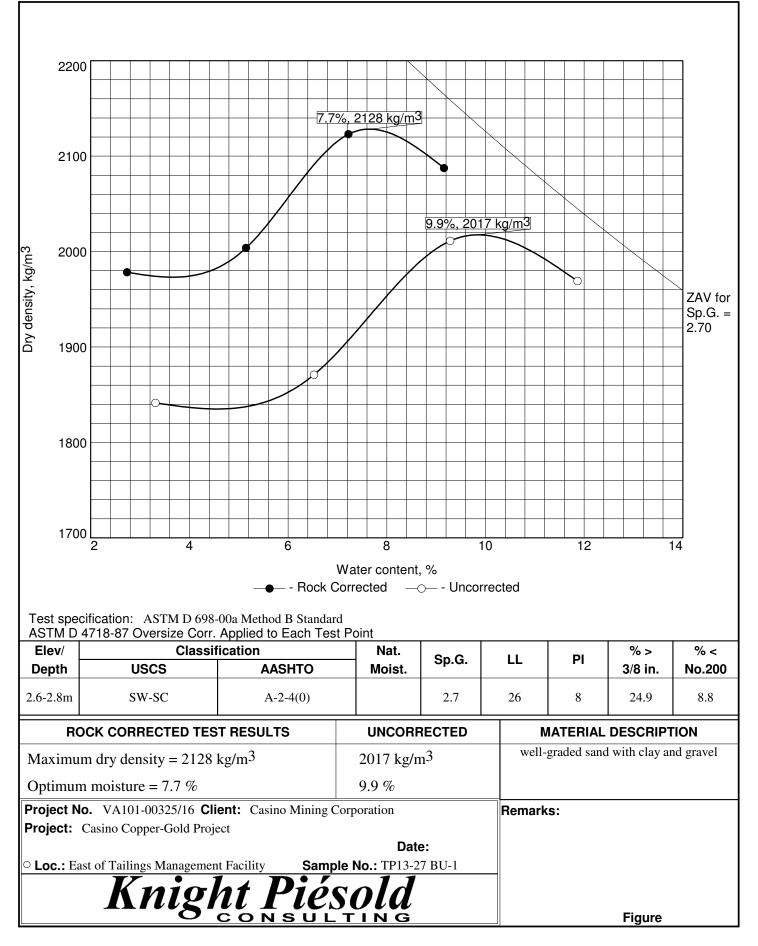
Byron C. Cata Byron Caton, Denver Laboratory

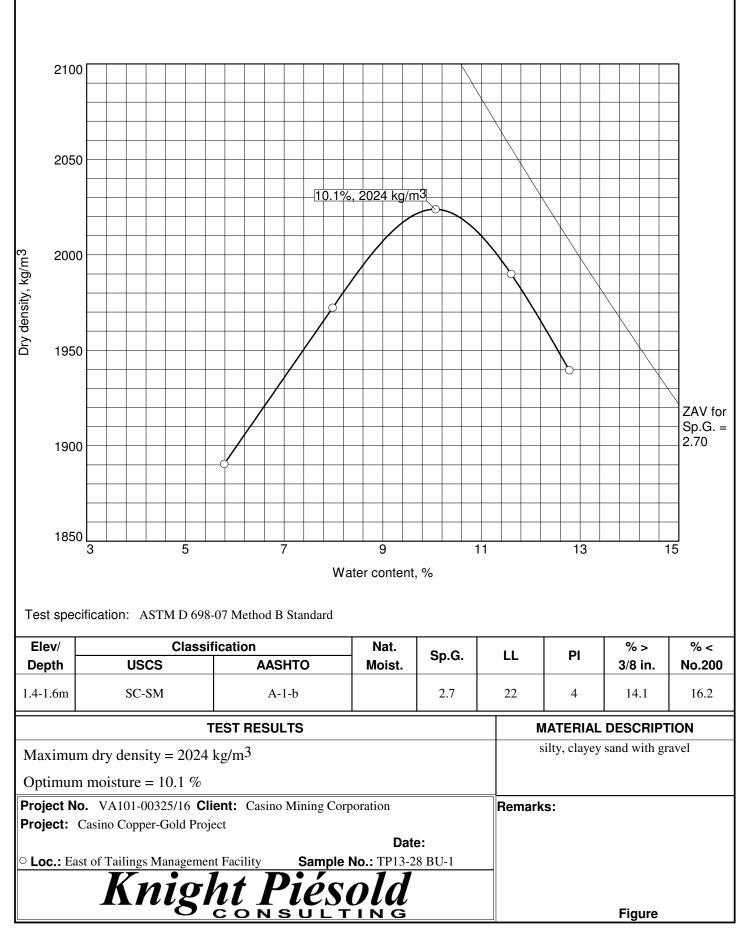
t (303) 373-4772 f (303) 373-4791 www.sgs.com/minerals

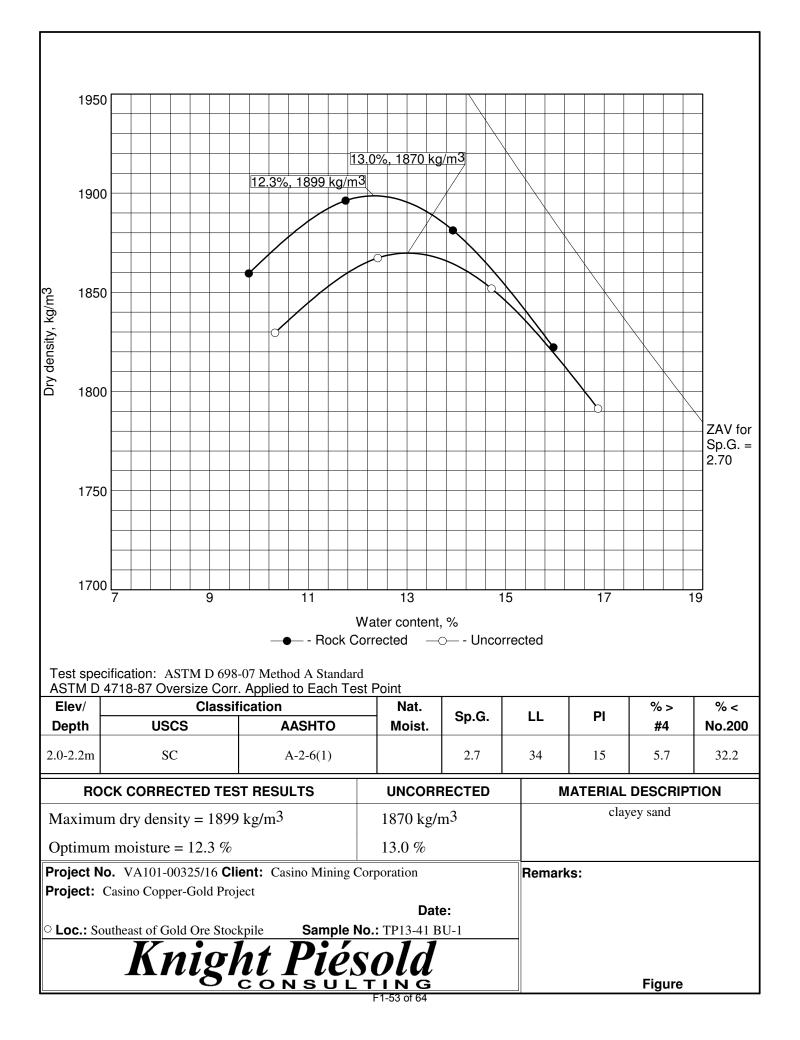
This document is issued by the Company under its General Conditions of Service accessible at http://www.sgs.com/terms\_and\_conditions.htm Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein.

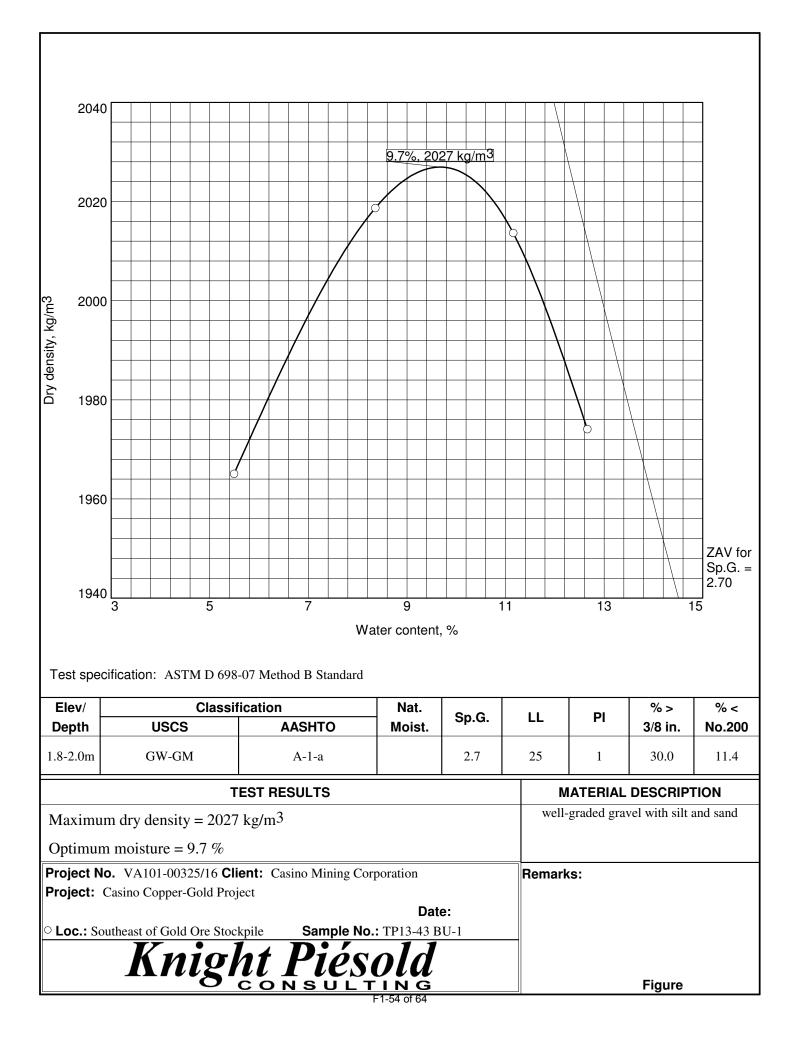
Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.

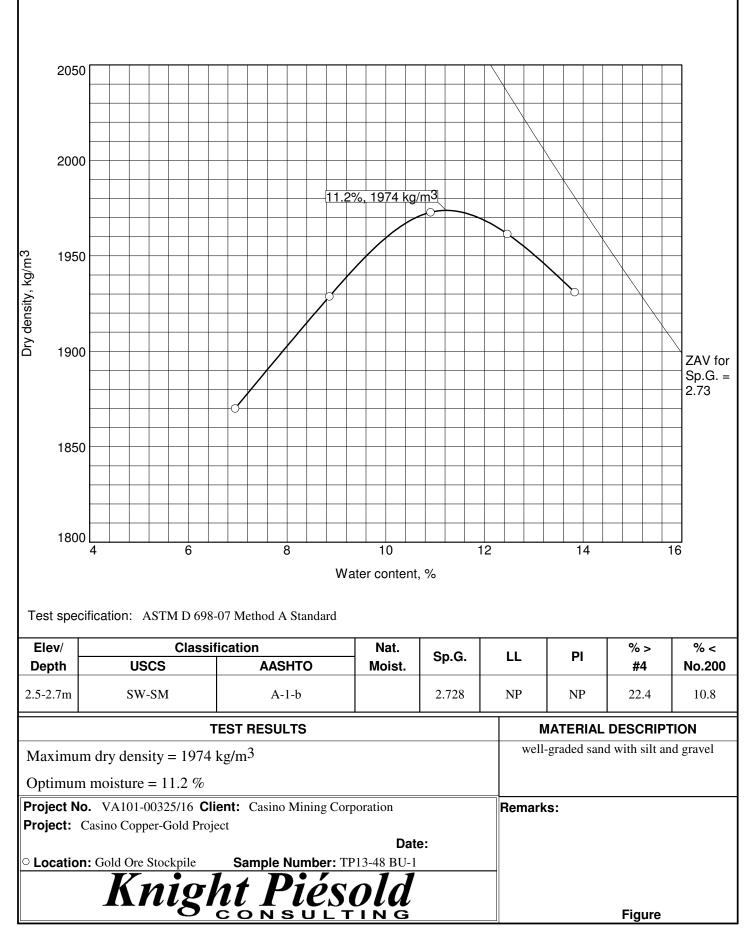












CLIENT: PROJECT: BORING NO. DEPTH SAMPLE NO. SAMPLE TYPE CONF. PRESSURE. (kPa)	Casino Mining Casino Copper TP13-28 1.4-1.6m BU-1 Remolded to 99 400	-Gold 5% MDD at OMC	2	PROJECT NO. : LAB NO. : SAMPLE ID: TEST STARTED : TEST FINISHED : SATURATED TEST:	VA101-325/16 L2013-118 2013-118-17 12/11/13 12/20/13 YES
MOISTURE/DENSITY DATA			BEFORE TEST	AFTER TEST	
Wt. Soil + Moisture (g) Wt. Wet Soil & Pan (g) Wt. Dry Soil & Pan (g) Wt. Moisture Lost (g) Wt. of Pan Only (g) Wt. of Dry Soil (g) Moisture Content % Wet Density (pcf) Dry Density (pcf)			677.20 2400.50 2202.70 197.80 185.13 2017.57 9.8 131.6 119.8	701.12 819.10 732.90 86.20 117.98 614.92 14.0 145.3 127.4	
Init. Diameter (in) Init. Area (sq in) Init. Height (in) Height Change (in) Consol. Height (in) Area After Consol. (sq in)			2.880 6.514 3.010 0.020 2.990 6.147	(cm) (sq cm) (cm) (cm) (sq cm)	42.028 7.645 0.051 7.595
Vol. Before Consol. (cu ft) Vol. Before Consol. (cc) Change in Vol. (cc)			0.01135 321.3 20.1	Specific Gravity Assumed?	
Cell Exp. (cc) Vol. After Consol. (cc) Vol. After Consol. (cu ft) Effective Porosity % Pressure Difference (psi):			0.0 301.2 0.01064 28.91 1.78	Init. Saturation Init. Void Ratio Final Saturation Final Void Ratio	0.407 100.0
C = k, cm/s = C/t*log(h1/h2)			0.20276	Buret Constant, a	0.920
		Dormoohility	r Toat Triola		
Time	Cap Elevation	<b>Permeability</b> Pedestal Elevation	Elevation Head	Total Head	Coefficient of Permeability, k
min. 0.0 37.0	cc 1.5 2.4	cc 48.1 47.2	cm 46.6 44.8	cm 175.7 173.8	cm/sec 4.4E-07
30.0 37.0 21.0	3.1 4.1 4.6	46.5 45.6 45.1	43.4 41.5 40.5	172.3 170.2 169.1	4.3E-07 4.8E-07 4.5E-07
	4.0	А	40.3 wg.of Last 4 Rdgs. Max.Hyd.Gradient:	23.0	4.5E-07

General Test Notes:

1) Tap water was used as the permeant.

2) Back pressure saturation continued until 'B' parameter a minimum of 0.95.

3) Target remolding parameters = 120.0pcf @ 10.1% moisture content.

4) Particles larger than 3/8" were removed and not included in test.

CLIENT: PROJECT: BORING NO. DEPTH SAMPLE NO. SAMPLE TYPE CONF. PRESSURE. (kPa)	Casino Mining Casino Copper TP13-28 1.4-1.6m BU-1 Remolded to 9: 800	-Gold 5% MDD at OM	С	PROJECT NO. : LAB NO. : SAMPLE ID: TEST STARTED : TEST FINISHED : SATURATED TEST:	VA101-325/16 L2013-118 2013-118-17 12/11/13 12/20/13 YES
MOISTURE/DENSITY DATA			BEFORE TEST	AFTER TEST	
Wt. Soil + Moisture (g) Wt. Wet Soil & Pan (g) Wt. Dry Soil & Pan (g) Wt. Moisture Lost (g) Wt. of Pan Only (g) Wt. of Dry Soil (g) Moisture Content % Wet Density (pcf) Dry Density (pcf)			677.20 2400.50 2202.70 197.80 185.13 2017.57 9.8 131.6 119.8	681.62 799.60 732.90 66.70 117.98 614.92 10.8 142.8 128.9	
Init. Diameter (in) Init. Area (sq in) Init. Height (in) Height Change (in) Consol. Height (in) Area After Consol. (sq in)			2.880 6.514 3.010 0.032 2.978 6.105	(cm) (sq cm) (cm) (cm) (sq cm)	42.028 7.645 0.081 7.564
Vol. Before Consol. (cu ft) Vol. Before Consol. (cc) Change in Vol. (cc)			0.01135 321.3 23.4	Specific Gravity Assumed?	
Cell Exp. (cc)			0.0 297.9	Init. Saturation Init. Void Ratio	
Vol. After Consol. (cc) Vol. After Consol. (cu ft)			0.01052	Final Saturation	
Effective Porosity %			28.91	Final Void Ratio	
Pressure Difference (psi):			1.78		
C =			0.20336	Buret Constant, a	0.920
k, cm/s = C/t*log(h1/h2)					
		Permeshili	ty Test Trials		
Time	Cap	Pedestal	Elevation	Total	Coefficient of
1 mile	Elevation	Elevation	Head	Head	Permeability, k
min.	сс	сс	cm	cm	cm/sec
0.0	1.1	48.6	47.5	176.7	
34.0	2.3	47.4	45.1	174.1	6.4E-07
37.0	3.6	46.2	42.6	171.4	6.2E-07
26.0	4.4	45.3	40.9	169.5	6.1E-07
34.0	5.5	44.2	38.7	167.2	6.1E-07
			Avg.of Last 4 Rdgs. Max.Hyd.Gradient:	23.2	6.2E-07

General Test Notes:

1) Tap water was used as the permeant.

2) Back pressure saturation continued until 'B' parameter a minimum of 0.95.

3) Target remolding parameters = 120.0pcf @ 10.1% moisture content.

4) Particles larger than 3/8" were removed and not included in test.

CLIENT: PROJECT: BORING NO. DEPTH SAMPLE NO. SAMPLE TYPE CONF. PRESSURE. (kPa)	Casino Mining Casino Copper TP13-41 2.0-2.2m BU-1 Remolded to 9. 400		С	PROJECT NO. : LAB NO. : SAMPLE ID: TEST STARTED : TEST FINISHED : SATURATED TEST:	VA101-325/16 L2013-118 2013-118-20 11/22/13 12/05/13 YES
MOISTURE/DENSITY DATA			BEFORE TEST	AFTER TEST	
Wt. Soil + Moisture (g) Wt. Wet Soil & Pan (g) Wt. Dry Soil & Pan (g) Wt. Moisture Lost (g) Wt. of Pan Only (g) Wt. of Dry Soil (g) Moisture Content % Wet Density (pcf) Dry Density (pcf)			643.20 643.20 568.20 75.00 0.00 568.20 13.2 125.0 110.5	682.80 800.80 686.20 114.60 118.00 568.20 20.2 145.9 121.4	
Init. Diameter (in) Init. Area (sq in) Init. Height (in) Height Change (in) Consol. Height (in) Area After Consol. (sq in)			2.880 6.514 3.008 0.126 2.882 6.185	(cm) (sq cm) (cm) (cm) (sq cm)	42.028 7.640 0.320 7.320
Vol. Before Consol. (cu ft) Vol. Before Consol. (cc) Change in Vol. (cc)			0.01134 321.1 29.0	Specific Gravity Assumed?	
Cell Exp. (cc) Vol. After Consol. (cc) Vol. After Consol. (cu ft) Effective Porosity % Pressure Difference (psi):			0.0 292.1 0.01032 34.46 0.00	Init. Saturation Init. Void Ratio Final Saturation Final Void Ratio	0.526 100.0
C = k, cm/s = C/t*log(h1/h2)			0.19426	Buret Constant, a	0.920
		Dormonhili	ty Test Trials		
Time	Cap Elevation	Pedestal Elevation	Elevation Head	Total Head	Coefficient of Permeability, k
min. 0.0 132.0	cc 0.6 1.3	cc 48.9 48.3	cm 48.3 47.0	cm 52.4 51.0	cm/sec 2.9E-07
177.0 1059.0 197.0	2.2 6.6 7.3	47.5 43.4 42.7	45.3 36.8 35.4	49.2 39.9 38.4	2.9E-07 2.9E-07 2.8E-07 2.8E-07
2729.0	15.1	35.8	20.7	22.5	2.8E-07 2.8E-07
			Avg.of Last 4 Rdgs.	7 1	2.8E-07

Max.Hyd.Gradient:

7.1

General Test Notes:

1) Tap water was used as the permeant.

2) Back pressure saturation continued until 'B' parameter a minimum of 0.95.

3) Target remolding parameters = 110.9 pcf @ 13.0% moisture content.

4) Particles larger than 3/8" were removed and not included in test.

F1-58 of 64

CLIENT: PROJECT: BORING NO. DEPTH SAMPLE NO. SAMPLE TYPE CONF. PRESSURE. (kPa)	Casino Mining Casino Copper TP13-41 2.0-2.2m BU-1 Remolded to 9: 800	-Gold 5% MDD at OMC		PROJECT NO. : LAB NO. : SAMPLE ID: TEST STARTED : TEST FINISHED : SATURATED TEST:	VA101-325/16 L2013-118 2013-118-20 11/22/13 12/05/13 YES
MOISTURE/DENSITY DATA			BEFORE TEST	AFTER TEST	
Wt. Soil + Moisture (g) Wt. Wet Soil & Pan (g) Wt. Dry Soil & Pan (g) Wt. Moisture Lost (g) Wt. of Pan Only (g) Wt. of Dry Soil (g) Moisture Content % Wet Density (pcf) Dry Density (pcf)			643.20 643.20 568.20 75.00 0.00 568.20 13.2 125.0 110.5	653.80 771.80 686.20 85.60 118.00 568.20 15.1 139.7 121.4	
Init. Diameter (in) Init. Area (sq in) Init. Height (in) Height Change (in) Consol. Height (in) Area After Consol. (sq in)			2.880 6.514 3.008 0.130 2.878 6.193	(cm) (sq cm) (cm) (cm) (sq cm)	42.028 7.640 0.330 7.310
Vol. Before Consol. (cu ft) Vol. Before Consol. (cc) Change in Vol. (cc)			0.01134 321.1 29.0	Specific Gravity Assumed?	
Cell Exp. (cc) Vol. After Consol. (cc) Vol. After Consol. (cu ft) Effective Porosity % Pressure Difference (psi):			0.0 292.1 0.01032 34.46 3.85	Init. Saturation Init. Void Ratio Final Saturation Final Void Ratio	0.526 100.0
C = k, cm/s = C/t*log(h1/h2)			0.19372	Buret Constant, a	0.920
		Dormoobilit	y Test Trials		
Time	Cap Elevation	Pedestal Elevation	Elevation Head	Total Head	Coefficient of Permeability, k
min. 0.0 121.0 148.0 111.0	cc 0.5 1.5 2.7 3.5	cc 49.7 48.9 47.9 47.1	cm 49.2 47.4 45.2 43.6	cm 324.1 322.2 319.8 318.0	cm/sec 7.0E-08 7.0E-08 6.9E-08
218.0	5.1	45.6	40.5	314.7	6.8E-08
			wg.of Last 4 Rdgs. Max.Hyd.Gradient:	44.2	6.9E-08

General Test Notes:

1) Tap water was used as the permeant.

2) Back pressure saturation continued until 'B' parameter a minimum of 0.95.

3) Target remolding parameters = 110.9 pcf @ 13.0% moisture content.

4) Particles larger than 3/8" were removed and not included in test.

CLIENT: PROJECT: BORING NO. DEPTH SAMPLE NO. SAMPLE TYPE CONF. PRESSURE. (kPa) MOISTURE/DENSITY DATA	Casino Mining Casino Copper TP13-43 1.8-2.0m BU-1 Remolded to 9: 400		BEFORE TEST	PROJECT NO. : LAB NO. : SAMPLE ID: TEST STARTED : TEST FINISHED : SATURATED TEST: AFTER TEST	VA101-325/16 L2013-118 2013-118-21 11/25/13 12/13/13 YES
Wt. Soil + Moisture (g) Wt. Wet Soil & Pan (g) Wt. Dry Soil & Pan (g) Wt. Moisture Lost (g) Wt. of Pan Only (g) Wt. of Dry Soil (g) Moisture Content % Wet Density (pcf) Dry Density (pcf)			1ES1 675.70 2218.70 2037.90 180.80 145.75 1892.15 9.6 131.1 119.7	713.11 831.00 733.70 97.30 117.89 615.81 15.8 148.0 127.8	
Init. Diameter (in) Init. Area (sq in) Init. Height (in) Height Change (in) Consol. Height (in) Area After Consol. (sq in)			2.880 6.514 3.014 0.054 2.960 6.200	(cm) (sq cm) (cm) (cm) (sq cm)	42.028 7.656 0.137 7.518
Vol. Before Consol. (cu ft) Vol. Before Consol. (cc) Change in Vol. (cc) Cell Exp. (cc)			0.01136 321.8 21.0 0.0	Specific Gravity Assumed? Init. Saturation	Yes 62.9
Vol. After Consol. (cc) Vol. After Consol. (cu ft) Effective Porosity % Pressure Difference (psi): C = k, cm/s = C/t*log(h1/h2)			300.8 0.01062 29.00 0.07 0.19903	Init. Void Ratio Final Saturation Final Void Ratio Buret Constant, a	100.0 0.317
$\mathbf{k}, 0115 = 011105(1111212)$					
Time	Cap	<b>Permeability</b> Pedestal	Test Trials Elevation	Total	Coefficient of
TIME	Elevation	Elevation	Head	Head	Permeability, k
min.	сс	сс	cm	cm	cm/sec
0.0	0.7	49.1	48.4	57.4	
1.0	2.2	47.5	45.3	54.1	8.7E-05
1.0	3.7	46.1	42.4	50.9	8.6E-05
1.0	5.0	44.8	39.8	48.1	8.2E-05
2.0	7.3	42.4	35.1	43.0	8.1E-05
1.0	8.4	41.4	33.0	40.7	7.8E-05

General Test Notes:

1) Tap water was used as the permeant.

2) Back pressure saturation continued until 'B' parameter a minimum of 0.95.

3) Target remolding parameters = 120.2 pcf @ 9.7% moisture content.

4) Particles larger than 3/8" were removed and not included in test.

F1-60 of 64

Avg.of Last 4 Rdgs. Max.Hyd.Gradient: 8.2E-05

7.4

CLIENT: PROJECT: BORING NO. DEPTH SAMPLE NO. SAMPLE TYPE CONF. PRESSURE. (kPa)	Casino Mining Casino Copper TP13-43 1.8-2.0m BU-1 Remolded to 9 800		ſС	PROJECT NO. : LAB NO. : SAMPLE ID: TEST STARTED : TEST FINISHED : SATURATED TEST:	VA101-325/16 L2013-118 2013-118-21 11/25/13 12/13/13 YES
MOISTURE/DENSITY DATA			BEFORE TEST	AFTER TEST	
Wt. Soil + Moisture (g) Wt. Wet Soil & Pan (g) Wt. Dry Soil & Pan (g) Wt. Moisture Lost (g) Wt. of Pan Only (g) Wt. of Dry Soil (g) Moisture Content % Wet Density (pcf) Dry Density (pcf)			675.70 2218.70 2037.90 180.80 145.75 1892.15 9.6 131.1 119.7	705.71 823.60 733.70 89.90 117.89 615.81 14.6 140.1 122.3	
Init. Diameter (in) Init. Area (sq in) Init. Height (in) Height Change (in) Consol. Height (in) Area After Consol. (sq in)			2.880 6.514 3.014 0.065 2.949 6.504	(cm) (sq cm) (cm) (cm) (sq cm)	42.028 7.656 0.165 7.490
Vol. Before Consol. (cu ft) Vol. Before Consol. (cc) Change in Vol. (cc)			0.01136 321.8 7.4	Specific Gravity Assumed?	
Cell Exp. (cc) Vol. After Consol. (cc) Vol. After Consol. (cu ft) Effective Porosity % Pressure Difference (psi): C =			$\begin{array}{c} 0.0 \\ 314.4 \\ 0.01110 \\ 29.00 \\ 0.06 \\ 0.18900 \end{array}$	Init. Saturation Init. Void Ratio Final Saturation Final Void Ratio Buret Constant, a	0.409 100.0 0.376
k, cm/s = C/t*log(h1/h2)					
		Permeabil	lity Test Trials		
Time	Cap Elevation	Pedestal Elevation	Elevation Head	Total Head	Coefficient of Permeability, k
min. 0.0 5.0	сс 11.7 12.7	cc 48.5 47.4	cm 36.8 34.8	cm 44.1 41.9	cm/sec 1.4E-05
3.0 4.0 5.0	13.2 14.0 15.0	46.9 46.2 45.2	33.7 32.2 30.2	40.8 39.2 37.0	1.3E-05 1.4E-05 1.6E-05
11.0	17.1	43.1	26.0	32.4	1.6E-05
			Avg.of Last 4 Rdgs.		1.5E-05

Avg.of Last 4 Rdgs. Max.Hyd.Gradient:

5.7

General Test Notes:

1) Tap water was used as the permeant.

2) Back pressure saturation continued until 'B' parameter a minimum of 0.95.

3) Target remolding parameters = 120.2 pcf @ 9.7% moisture content.

4) Particles larger than 3/8" were removed and not included in test.

F1-61 of 64

CLIENT: PROJECT: BORING NO. DEPTH SAMPLE NO. SAMPLE TYPE CONF. PRESSURE. (kPa)	Casino Mining Casino Copper TP13-43 1.8-2.0m BU-1 Remolded to 99 1600		ЛС	PROJECT NO. : LAB NO. : SAMPLE ID: TEST STARTED : TEST FINISHED : SATURATED TEST:	VA101-325/16 L2013-118 2013-118-21 11/25/13 12/13/13 YES
MOISTURE/DENSITY DATA			BEFORE TEST	AFTER TEST	
Wt. Soil + Moisture (g) Wt. Wet Soil & Pan (g) Wt. Dry Soil & Pan (g) Wt. Moisture Lost (g) Wt. of Pan Only (g) Wt. of Dry Soil (g) Moisture Content % Wet Density (pcf) Dry Density (pcf)			675.70 2218.70 2037.90 180.80 145.75 1892.15 9.6 131.1 119.7	690.71 808.60 733.70 74.90 117.89 615.81 12.2 140.6 125.3	
Init. Diameter (in) Init. Area (sq in) Init. Height (in) Height Change (in) Consol. Height (in) Area After Consol. (sq in)			2.880 6.514 3.014 0.088 2.926 6.397	(cm) (sq cm) (cm) (cm) (sq cm)	42.028 7.656 0.224 7.432
Vol. Before Consol. (cu ft) Vol. Before Consol. (cc) Change in Vol. (cc)			0.01136 321.8 15.0	Specific Gravity Assumed?	
Cell Exp.(cc)Vol. After Consol.(cc)Vol. After Consol.(cu ft)Effective Porosity %Pressure Difference (psi):			0.0 306.8 0.01083 29.00 0.00	Init. Saturation Init. Void Ratio Final Saturation Final Void Ratio	0.409 95.6 0.343
C = k, cm/s = C/t*log(h1/h2)			0.19068	Buret Constant, a	0.920
		Permeahi	lity Test Trials		
Time	Cap Elevation	Pedestal Elevation	Elevation Head	Total Head	Coefficient of Permeability, k
min. 0.0 60.0 123.0 41.0 60.0	cc 0.7 1.4 2.9 3.4 4.1	cc 47.7 47.0 45.5 45.1 44.5	cm 47.0 45.6 42.6 41.7 40.4	cm 51.0 49.5 46.2 45.2 43.8	cm/sec 7.0E-07 7.6E-07 7.2E-07 7.3E-07
			Avg.of Last 4 Rdgs. Max.Hyd.Gradient:	6.8	7.3E-07

General Test Notes:

1) Tap water was used as the permeant.

2) Back pressure saturation continued until 'B' parameter a minimum of 0.95.

3) Target remolding parameters = 120.2 pcf @ 9.7% moisture content.

4) Particles larger than 3/8" were removed and not included in test.

CLIENT: PROJECT: BORING NO. DEPTH SAMPLE NO. SAMPLE TYPE CONF. PRESSURE. (kPa)	Casino Mining Casino Copper TP13-48 2.5-2.7m BU-1 Remolded to 9 400		ЛС	PROJECT NO. : LAB NO. : SAMPLE ID: TEST STARTED : TEST FINISHED : SATURATED TEST:	VA101-325/16 L2013-118 2013-118-22 11/29/13 12/10/13 YES
MOISTURE/DENSITY DATA			BEFORE TEST	AFTER TEST	
Wt. Soil + Moisture (g) Wt. Wet Soil & Pan (g) Wt. Dry Soil & Pan (g) Wt. Moisture Lost (g) Wt. of Pan Only (g) Wt. of Dry Soil (g) Moisture Content % Wet Density (pcf) Dry Density (pcf)			666.80 1695.10 1549.80 145.30 117.95 1431.85 10.1 129.7 117.8	701.33 819.30 721.40 97.90 117.97 603.43 16.2 143.7 123.6	
Init. Diameter (in) Init. Area (sq in) Init. Height (in) Height Change (in) Consol. Height (in) Area After Consol. (sq in)			2.880 6.514 3.006 0.045 2.961 6.279	(cm) (sq cm) (cm) (cm) (sq cm)	42.028 7.635 0.114 7.521
Vol. Before Consol. (cu ft) Vol. Before Consol. (cc) Change in Vol. (cc)			0.01133 320.9 16.2	Specific Gravity Assumed?	
Cell Exp. (cc) Vol. After Consol. (cc) Vol. After Consol. (cu ft) Effective Porosity % Pressure Difference (psi): C =			$\begin{array}{c} 0.0\\ 304.7\\ 0.01076\\ 30.13\\ 0.09\\ 0.19658\end{array}$	Init. Saturation Init. Void Ratio Final Saturation Final Void Ratio Buret Constant, a	0.431 100.0 0.359
k, cm/s = C/t*log(h1/h2)					
<b></b> .	C		lity Test Trials		
Time	Cap Elevation	Pedestal Elevation	Elevation Head	Total Head	Coefficient of Permeability, k
min.	cc	cc	cm	cm	cm/sec
0.0	3.7	46.3	42.6	52.5	
0.3	6.4	43.6	37.2	46.7	6.7E-04
0.3	8.7	41.4	32.7	41.8	6.3E-04
0.3	10.7	39.2	28.5	37.3	6.6E-04
0.3	12.5	37.5	25.0	33.5	6.1E-04
0.3	14.0	36.0	22.0	30.2	5.8E-04
			Avg.of Last 4 Rdgs.		6.2E-04

Avg.of Last 4 Rdgs. Max.Hyd.Gradient:

6.6

General Test Notes:

1) Tap water was used as the permeant.

2) Back pressure saturation continued until 'B' parameter a minimum of 0.95.

3) Target remolding parameters = 117.04pcf @ 11.2% moisture content.

4) Particles larger than 3/8" were removed and not included in test.

F1-63 of 64

CLIENT: PROJECT: BORING NO. DEPTH SAMPLE NO. SAMPLE TYPE CONF. PRESSURE. (kPa)	Casino Mining Casino Copper TP13-48 2.5-2.7m BU-1 Remolded to 9 800		IC	PROJECT NO. : LAB NO. : SAMPLE ID: TEST STARTED : TEST FINISHED : SATURATED TEST:	VA101-325/16 L2013-118 2013-118-22 11/29/13 12/10/13 YES
MOISTURE/DENSITY DATA			BEFORE TEST	AFTER TEST	
Wt. Soil + Moisture (g) Wt. Wet Soil & Pan (g) Wt. Dry Soil & Pan (g) Wt. Moisture Lost (g) Wt. of Pan Only (g) Wt. of Dry Soil (g) Moisture Content % Wet Density (pcf) Dry Density (pcf)			666.80 1695.10 1549.80 145.30 117.95 1431.85 10.1 129.7 117.8	685.13 803.10 721.40 81.70 117.97 603.43 13.5 142.1 125.2	
Init. Diameter (in) Init. Area (sq in) Init. Height (in) Height Change (in) Consol. Height (in) Area After Consol. (sq in)			2.880 6.514 3.006 0.045 2.961 6.201	(cm) (sq cm) (cm) (cm) (sq cm)	42.028 7.635 0.114 7.521
Vol. Before Consol. (cu ft) Vol. Before Consol. (cc) Change in Vol. (cc)			0.01133 320.9 20.0	Specific Gravity Assumed?	
Cell Exp.(cc)Vol. After Consol.(cc)Vol. After Consol.(cu ft)Effective Porosity %Pressure Difference (psi):			0.0 300.9 0.01063 30.13 0.36	Init. Saturation Init. Void Ratio Final Saturation Final Void Ratio	0.431 100.0 0.342
C = k, cm/s = C/t*log(h1/h2)			0.19906	Buret Constant, a	0.920
		Permeabil	ity Test Trials		
Time	Cap Elevation	Pedestal Elevation	Elevation Head	Total Head	Coefficient of Permeability, k
min. 0.0 0.3	cc 1.0 2.9	cc 47.3 45.4	cm 46.3 42.5	cm 75.6 71.4	cm/sec 3.2E-04
0.3 0.3 0.3	4.6 6.1 7.5	43.8 42.2 40.9	39.2 36.1 33.4	67.8 64.5 61.6	3.0E-04 2.9E-04 2.7E-04
0.3	8.9	39.6	30.7 Avg.of Last 4 Rdgs.	58.6	2.8E-04 <b>2.8E-04</b>

Avg.of Last 4 Rdgs. Max.Hyd.Gradient:

9.8

General Test Notes:

1) Tap water was used as the permeant.

2) Back pressure saturation continued until 'B' parameter a minimum of 0.95.

3) Target remolding parameters = 117.04pcf @ 11.2% moisture content.

4) Particles larger than 3/8" were removed and not included in test.

F1-64 of 64



#### **APPENDIX F2**

#### LABORATORY ROCK TEST RESULTS

(Pages F2-1 to F2-3)

Sample/Hole (depth)	Density (g/cm <sup>3</sup> )	UCS (MPa)	Young's Modulus (GPa)	Poisson's ratio
UCS-1/DH13-05B (15.84-16.09)	2.75	123.5	22.086	0.10
UCS-2/DH13-05B (34.79-35.03)	2.73	83.3	18.336	0.12
UCS-1/DH13-06 (15.50-15.79)	2.73	88.5	28.638	0.13
UCS-2/DH13-06 (37.59-37.87)	2.73	91.8	22.905	0.12
UCS-1/DH13-07B (26.32-26.52)	2.66	55.0	13.382	0.24

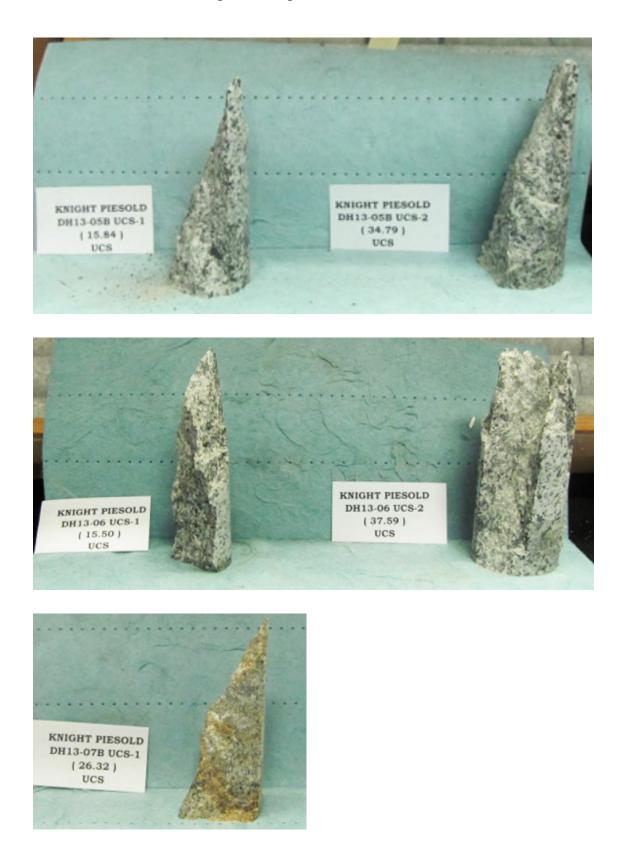
<b>Results of Core Sample UCS Failure Tests</b>	(Casino Project VA101-32	5/16) – PO #VA-1523

### **Pre-Test Unconfined Compression Specimens**





#### **Post-Test Unconfined Compression Specimens**





#### APPENDIX G

#### PHOTOGRAPHS

Appendix G1	Test Pit Photographs
Appendix G2	Drill Site Photographs
Appendix G3	Drill Core Photographs
Appendix G4	Drill Soil Sample Photographs



#### **APPENDIX G1**

#### **TEST PIT PHOTOGRAPHS**

(Pages G1-1 to G1-44)



PHOTO 1 TP13-01 Pit - Facing West



PHOTO 3 TP13-01 Detail



PHOTO 2 TP13-01 Detail - Laminations



PHOTO 4 TP13-02 Facing North

CASINO MINING CORPORATION CASINO PROJECT





**PHOTO 5** TP13-02 Facing South



PHOTO 7 TP13-03 Facing West



PHOTO 6 TP13-02 Facing West



PHOTO 8 TP13-03 Detail

CASINO MINING CORPORATION CASINO PROJECT



**PHOTO 9** TP13-04 Completely Weathered Granodiorite (1)



PHOTO 11 TP13-05 Pit - Facing North



PHOTO 10 TP13-04 Completely Weathered Granodiorite (2)



PHOTO 12 TP13-05 Pit - Facing South

CASINO MINING CORPORATION CASINO PROJECT



PHOTO 13 TP13-06 Pit - Facing North



PHOTO 15 TP13-07 Facing East



PHOTO 14 TP13-06 After Excavation



PHOTO 16 TP13-07 After Excavation

CASINO MINING CORPORATION CASINO PROJECT

> VA101-325/16-1 Rev 0 January 24, 2014





PHOTO 17 TP13-08 Pit - Facing South



PHOTO 19 TP13-09 Pit - Facing South



PHOTO 18 TP13-08 After Excavation



PHOTO 20 TP13-09 After Excavation

CASINO MINING CORPORATION CASINO PROJECT

> VA101-325/16-1 Rev 0 January 24, 2014



PHOTO 21 TP13-10 Facing East



PHOTO 23 TP13-11 Pit - Facing East



PHOTO 22 TP13-10 Pit - Facing East



PHOTO 24 TP13-11 After Excavation



PHOTO 25 TP13-12 Facing East



PHOTO 27 TP13-13 Pit - Facing North



PHOTO 26 TP13-12 Pit - Facing South



PHOTO 28 TP13-13 After Excavation

CASINO MINING CORPORATION CASINO PROJECT



PHOTO 29 TP13-14 Facing East



PHOTO 31 TP13-15 Pit - Facing South



PHOTO 30 TP13-14 Pit - Facing North



PHOTO 32 TP13-15 After Excavation



PHOTO 33 TP13-16 Pit - Facing West



PHOTO 35 TP13-16 After Excavation



PHOTO 34 TP13-16 Detail



PHOTO 36 TP13-17 Facing North

CASINO MINING CORPORATION CASINO PROJECT



PHOTO 37 TP13-17 Pit - Facing West



PHOTO 39 TP13-18 Pit - Facing South



PHOTO 38 TP13-17 After Excavation



PHOTO 40 TP13-18 After Excavation





PHOTO 41 TP13-19 Confluence



PHOTO 43 TP13-20 Pit - Facing South



PHOTO 42 TP13-19 Pit - Facing West



PHOTO 44 TP13-20 After Excavation



PHOTO 45 TP13-21 Facing East



PHOTO 47 TP13-22 Facing West



PHOTO 46 TP13-21 Pit - Facing South



PHOTO 48 TP13-22 Pit - Facing East

CASINO MINING CORPORATION CASINO PROJECT



PHOTO 49 TP13-23 Pit - Facing West



PHOTO 51 TP13-24 Facing North



PHOTO 50 TP13-23 After Excavation



PHOTO 52 TP13-24 After Excavation

CASINO MINING CORPORATION CASINO PROJECT



PHOTO 53 TP13-25 Pit - Facing North



PHOTO 55 TP13-26 Facing South



PHOTO 54 TP13-25 After Excavation



PHOTO 56 TP13-26 After Excavation



PHOTO 57 TP13-27 Pit - Facing South



PHOTO 59 TP13-28 Pit - Facing North



PHOTO 58 TP13-27 Detail Residual Soil



PHOTO 60 TP13-28 After Excavation



PHOTO 61 TP13-29 Pit - Facing East



PHOTO 63 TP13-30 Facing South



PHOTO 62 TP13-29 After Excavation



PHOTO 64 TP13-30 Pit - Facing South

CASINO MINING CORPORATION CASINO PROJECT

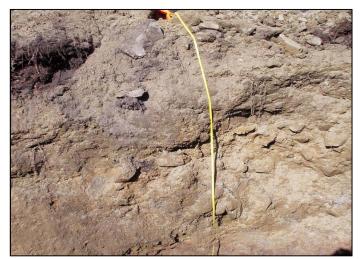


PHOTO 65 TP13-31 Pit - Facing West



PHOTO 67 TP13-32 Pit - Facing West



PHOTO 66 TP13-31 After Excavation



PHOTO 68 TP13-32 After Excavation



PHOTO 69 TP13-33 Pit - Facing East



PHOTO 71 TP13-34 Pit - Facing South



PHOTO 70 TP13-33 Detail Frozen Soil



PHOTO 72 TP13-34 After Excavation





PHOTO 73 TP13-35 Pit - Facing North



PHOTO 75 TP13-36 Pit - Facing East



PHOTO 74 TP13-35 Detail Rock



PHOTO 76 TP13-36 After Excavation





PHOTO 77 TP13-37 Pit - Facing East



PHOTO 79 TP13-38 Facing South



PHOTO 78 TP13-37 Detail



PHOTO 80 TP13-38 After Excavation





PHOTO 81 TP13-39 Pit - Facing North



PHOTO 83 TP13-40 Pit - Facing North



PHOTO 82 TP13-39 Detail Residual Soil



PHOTO 84 TP13-40 After Excavation



PHOTO 85 TP13-41 Pit - Facing West



PHOTO 87 TP13-42 Pit - Facing South



PHOTO 86 TP13-41 Detail Residual Soil



PHOTO 88 TP13-42 After Excavation



PHOTO 89 TP13-43 Pit - Facing North



PHOTO 91 TP13-44 Facing South



PHOTO 90 TP13-43 Detail



PHOTO 92 TP13-44 Pit - Facing East

CASINO MINING CORPORATION CASINO PROJECT



PHOTO 93 TP13-45 Pit - Facing North



PHOTO 95 TP13-46 Pit - Facing North



PHOTO 94 TP13-45 After Excavation



PHOTO 96 TP13-46 After Excavation



PHOTO 97 TP13-47 Pit - Facing North



PHOTO 99 TP13-48 Pit - Facing East



PHOTO 98 TP13-47 After Excavation



PHOTO 100 TP13-48 Detail Rock



PHOTO 101 TP13-49 Pit - Facing East



PHOTO 103 TP13-50 Pit - Facing West



PHOTO 102 TP13-49 Detail



PHOTO 104 TP13-50 After Excavation

CASINO MINING CORPORATION CASINO PROJECT



PHOTO 105 TP13-51 Facing South



PHOTO 107 TP13-52 Facing North



PHOTO 106 TP13-51 Pit - Facing South



PHOTO 108 TP13-52 Pit - Facing North



PHOTO 109 TP13-53 Facing North



PHOTO 111 TP13-54 Facing West



PHOTO 110 TP13-53 After Excavation



PHOTO 112 TP13-54 Pit - Facing West





PHOTO 113 TP13-55 Facing East



PHOTO 115 TP13-56 Pit - Facing North



PHOTO 114 TP13-55 Pit - Facing West



PHOTO 116 TP13-56 After Excavation

CASINO MINING CORPORATION CASINO PROJECT





PHOTO 117 TP13-57 Facing South



PHOTO 119 TP13-58 Pit - Facing South



PHOTO 118 TP13-57 Pit - Facing East



PHOTO 120 TP13-58 After Excavation



PHOTO 121 TP13-59 Facing North



PHOTO 123 TP13-60 Pit - Facing North



PHOTO 122 TP13-59 Pit - Facing North



PHOTO 124 TP13-60 Pit - Facing West

CASINO MINING CORPORATION CASINO PROJECT





PHOTO 125 TP13-61 Facing West



PHOTO 127 TP13-62 Facing North



PHOTO 126 TP13-61 After Excavation



PHOTO 128 TP13-62 Pit - Facing North



PHOTO 129 TP13-63 Pit - Facing North



PHOTO 131 TP13-64 Pit - Facing West



PHOTO 130 TP13-63 Pit - Facing West



PHOTO 132 TP13-64 After Excavation

CASINO MINING CORPORATION CASINO PROJECT





PHOTO 133 TP13-65 Pit - Facing South



PHOTO 135 TP13-66 Facing South



PHOTO 134 TP13-65 After Excavation



PHOTO 136 TP13-66 Pit - Facing South





No Photos Available

PHOTO 137 TP13-67 Pit - Facing East

PHOTO 139 TP13-68 No Photos Available



PHOTO 138 TP13-67 After Excavation



PHOTO 140 TP13-69 Facing East

CASINO MINING CORPORATION CASINO PROJECT





PHOTO 141 TP13-69 Pit - Facing East



PHOTO 143 TP13-70 Pit - Facing North



PHOTO 142 TP13-69 Pit - Facing West



PHOTO 144 TP13-70 Pit - Facing East





PHOTO 145 TP13-71 Facing West



PHOTO 147 TP13-72 Facing West



PHOTO 146 TP13-71 Pit - Facing South



PHOTO 148 TP13-72 Pit - Facing North





PHOTO 149 TP13-73 Pit - Facing North



PHOTO 151 TP13-74 Facing South



PHOTO 150 TP13-73 Pit - Facing East



PHOTO 152 TP13-74 Pit - Facing North



PHOTO 153 TP13-75 Pit - Facing East



PHOTO 155 TP13-75 After Excavation



PHOTO 154 TP13-75 Pit - Facing South



PHOTO 156 TP13-81 Facing East



PHOTO 157 TP13-81 Pit - Facing East



PHOTO 159 TP13-82 Facing South



PHOTO 158 TP13-81 Pit - Facing East Detail



PHOTO 160 TP13-82 Pit - Facing East

CASINO MINING CORPORATION CASINO PROJECT





PHOTO 161 TP13-82 Pit - Facing South



PHOTO 163 TP13-84 Facing North



PHOTO 162 TP13-83 No Photos Available



PHOTO 164 TP13-84 Detail - Rock





PHOTO 165 TP13-85 Pit - Facing East



PHOTO 167 TP13-85 Frozen 5 m to the West



PHOTO 166 TP13-85 Detail - Cobble



PHOTO 168 TP13-86 Pit - Facing North

CASINO MINING CORPORATION CASINO PROJECT





PHOTO 169 TP13-86 Pit - Facing West



PHOTO 171 TP13-87 Pit - Facing East



PHOTO 170 TP13-86 Detail - Alluvium



PHOTO 172 TP13-87 After Excavation

CASINO MINING CORPORATION CASINO PROJECT



PHOTO 173 TP13-88 Pit - Facing East



PHOTO 175 TP13-88 Detail



PHOTO 174 TP13-88 Pit - Facing South



PHOTO 176 TP13-88 After Excavation

CASINO MINING CORPORATION CASINO PROJECT



### **APPENDIX G2**

#### DRILL SITE PHOTOGRAPHS

(Pages G2-1 to G2-9)



PHOTO 1 DH13-05 and DH13-05B Facing North



PHOTO 3 DH13-05 and DH13-05B Facing South



PHOTO 2 DH13-05 and DH13-05B Facing East



PHOTO 4 DH13-05 and DH13-05B Facing West

CASINO MINING CORPORATION CASINO PROJECT



PHOTO 5 DH13-06 Facing North



PHOTO 7 DH13-06 Facing South



PHOTO 6 DH13-06 Facing East



PHOTO 8 DH13-06 Facing West



PHOTO 9 DH13-07 and DH13-07B Facing North



PHOTO 11 DH13-07 and DH13-07B Facing South



PHOTO 10 DH13-07 and DH13-07B Facing East



PHOTO 12 DH13-07 and DH13-07B Facing West

CASINO MINING CORPORATION CASINO PROJECT



PHOTO 13 DH13-08 Facing North



PHOTO 15 DH13-08 Facing South



PHOTO 14 DH13-08 Facing East



PHOTO 16 DH13-08 Facing West





PHOTO 17 DH13-09 Facing North



PHOTO 19 DH13-09 Facing South



PHOTO 18 DH13-09 Facing East



PHOTO 20 DH13-09 Facing West

CASINO MINING CORPORATION CASINO PROJECT



PHOTO 21 DH13-09B Facing North



PHOTO 23 DH13-09B Facing South



PHOTO 22 DH13-09B Facing East



PHOTO 24 DH13-09B Facing West

CASINO MINING CORPORATION CASINO PROJECT





PHOTO 25 DH13-10 Facing North



PHOTO 27 DH13-10 Facing South



PHOTO 26 DH13-10 Facing East



PHOTO 28 DH13-10 Facing West



PHOTO 29 DH13-11 Facing North



PHOTO 31 DH13-11 Facing South



PHOTO 30 DH13-11 Facing East



PHOTO 32 DH13-11 Facing West

CASINO MINING CORPORATION CASINO PROJECT



PHOTO 33 DH13-12 Facing North



PHOTO 35 DH13-12 Facing South



PHOTO 34 DH13-12 Facing East



PHOTO 36 DH13-12 Facing West

CASINO MINING CORPORATION CASINO PROJECT



### **APPENDIX G3**

#### DRILL CORE PHOTOGRAPHS

(Pages G3-1 to G3-18)



PHOTO 1 - DH13-05 Box 1-2, 0.00 to 4.10 m EOH



PHOTO 2 - DH13-05B Box 1-2, 2.50 to 10.54 m

#### CASINO MINING CORPORATION CASINO PROJECT



PHOTO 3 - DH13-05B Box 3-4, 10.54 to 16.48 m



**PHOTO 4** - DH13-05B Box 5-6, 16.48 to 22.54 m

#### CASINO MINING CORPORATION CASINO PROJECT



PHOTO 5 - DH13-05B Box 7-8, 22.54 to 28.10 m



PHOTO 6 - DH13-05B Box 9-10, 28.10 to 34.70 m

#### CASINO MINING CORPORATION CASINO PROJECT



PHOTO 7 - DH13-05B Box 11-12, 34.70 to 39.62 m EOH



**PHOTO 8** - DH13-06 Box 1-2, 4.10 to 9.80 m

#### CASINO MINING CORPORATION CASINO PROJECT



PHOTO 9 - DH13-06 Box 3-4, 9.80 to 15.50 m



PHOTO 10 - DH13-06 Box 5-6, 15.50 to 22.93 m

#### CASINO MINING CORPORATION CASINO PROJECT



PHOTO 11 - DH13-06 Box 7-8, 22.93 to 27.96 m



**PHOTO 12** - DH13-06 Box 9-10, 27.96 to 33.76 m

#### CASINO MINING CORPORATION CASINO PROJECT



PHOTO 13 - DH13-06 Box 11-12, 33.76 to 40.16 m



PHOTO 14 - DH13-06 Box 13, 40.16 to 41.15 m EOH

#### CASINO MINING CORPORATION CASINO PROJECT



PHOTO 15 - DH13-07 Box 1, 0.00 to 1.20 m EOH



PHOTO 16 - DH13-07B Box 1-2, 2.80 to 8.14 m

#### CASINO MINING CORPORATION CASINO PROJECT



PHOTO 17 - DH13-07B Box 3-4, 8.14 to 13.62 m



PHOTO 18 - DH13-07B Box 5-6, 13.62 to 19.75 m

#### CASINO MINING CORPORATION CASINO PROJECT



PHOTO 19 - DH13-07B Box 7-8, 19.75 to 25.80 m



PHOTO 20 - DH13-07B Box 9-10, 25.80 to 32.00 m

#### CASINO MINING CORPORATION CASINO PROJECT



PHOTO 21 - DH13-07B Box 11-12, 32.00 to 37.96 m



PHOTO 22 - DH13-07B Box 13, 37.96 to 39.62 m EOH

#### CASINO MINING CORPORATION CASINO PROJECT



PHOTO 23 - DH13-08 Topsoil and colluvium



PHOTO 24 - DH13-08 Box 1-2, 0.00 to 4.50 m (EOH)

#### CASINO MINING CORPORATION CASINO PROJECT



PHOTO 25 - DH13-09 Box 1-2, 0.00 to 4.40 m (EOH)



PHOTO 26 - DH13-09B Box 1-2, 0.00 to 4.20 m (EOH)

#### CASINO MINING CORPORATION CASINO PROJECT





PHOTO 27 - DH13-10 Box 1-2, 0.00 to 2.50 m



PHOTO 28 - DH13-10 Box 3-4, 2.50 to 4.50 m

#### CASINO MINING CORPORATION CASINO PROJECT



PHOTO 29 - DH13-10 Box 5-6, 4.50 to 7.40 m



**PHOTO 30** - DH13-10 Box 7, 7.40 to 7.50 m (EOH)

#### CASINO MINING CORPORATION CASINO PROJECT



PHOTO 31 - DH13-11 Box 1-2, 0.00 to 4.30 m



PHOTO 32 - DH13-11 Detail at 1.5m

#### CASINO MINING CORPORATION CASINO PROJECT



PHOTO 33 - DH13-11 Box 3-4, 4.30 to 8.10 m

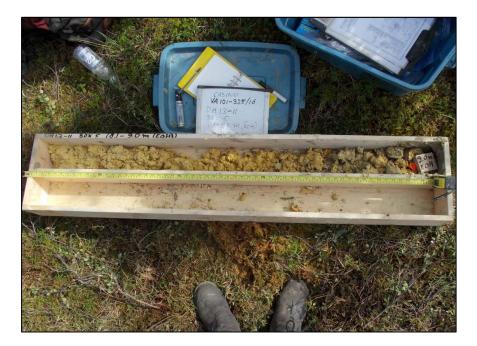


PHOTO 34 - DH13-11 Box 5, 8.10 to 9.00 m (EOH)

#### CASINO MINING CORPORATION CASINO PROJECT



PHOTO 35 - DH13-12 Topsoil and Colluvium

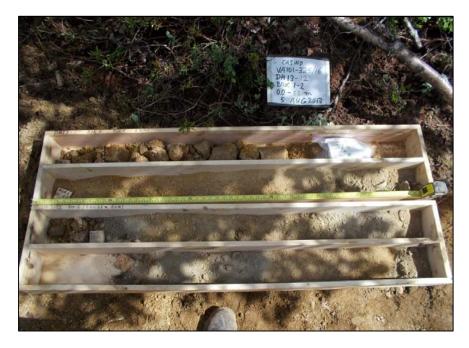


PHOTO 36 - DH13-12 Box 1-2, 0.00 to 3.80 m (EOH)

#### CASINO MINING CORPORATION CASINO PROJECT



### **APPENDIX G4**

#### DRILL SOIL SAMPLE PHOTOGRAPHS

(Pages G4-1 to G4-6)



PHOTO 2 - DH13-08 BU-01



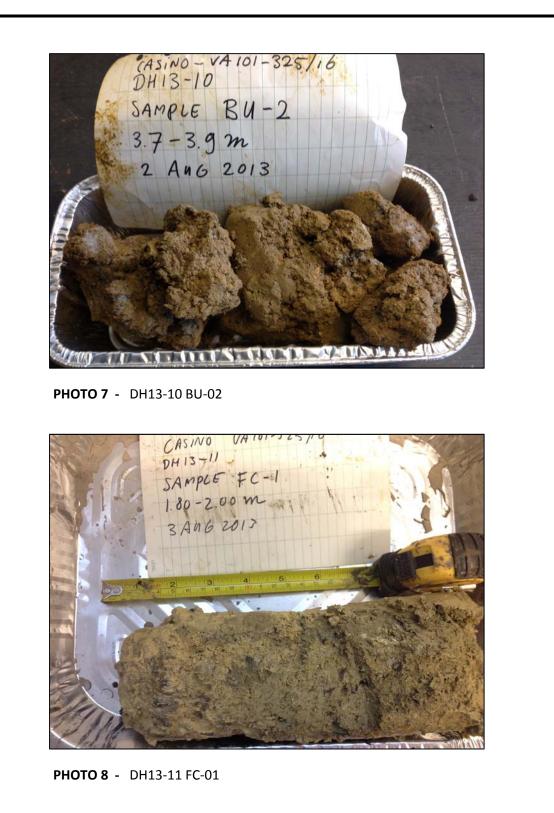
**PHOTO 4** - DH13-09 BU-01



PHOTO 5 - DH13-09B BU-01



PHOTO 6 - DH13-10 BU-01



VA101-325/16 (AsiNO UH13-11 SAMPLE BU-1. 3.50-3.70 m 3 ANG 2013 DH13-11 CONTRACTOR OF MILLAND PHOTO 9 - DH13-11 BU-01 CASINO VAIOI-325/16 DH13-11 SAMPLE BU-2 7.6-7.8 m 3 AUG 2013

PHOTO 10 - DH13-11 BU-02

. CASINO VA101-325/10 DH13-12 SAMPLE BU-1 1.2 - 1.5 m 5 A46 2013 

PHOTO 11 - DH13-12 BU-01