

North American Tungsten Corporation Ltd.

MACTUNG PROJECT

2006 ENVIRONMENTAL BASELINE STUDIES

TERRAIN and SURFICIAL GEOLOGY

1200163.006

June 2007

EXECUTIVE SUMMARY

North American Tungsten Corporation Ltd. (NATCL) is considering the development of a world-class tungsten deposit located in the Yukon near Macmillan Pass, on the border between the Northwest Territories and the Yukon Territory. This terrain study was completed by EBA as part of environmental assessments required for project planning and regulatory submissions leading to MacTung Project approvals and implementation.

This terrain component of the biophysical assessment for the MacTung study area includes the results of a review of previous studies, air photo interpretation, field checking and terrain mapping revisions. Terrain mapping includes definition of polygons with similar terrain attributes such as surficial material type/genesis, surface expression, geomorphological processes (where applicable), drainage, and soil texture.

The MacTung terrain study area straddles the Yukon and NWT border within the Selwyn Mountain Ecoregion of the Taiga Cordillera Ecozone of Canada at an elevation of 1,725 m to 1,800 m a.s.l. The landscape of the study area varies from gentle to flat terrain on the valley floor to steep relief on glacially scoured, upper hillslope bedrock slopes. The terrain mapping study area (about 4,200 ha) for the MacTung project was defined to include the proposed mine production area footprint and options under consideration.

Till (moraine) is the most common surficial material mapped in the study area. Morainal deposit textures ranged from gravelly silty sand to silty sand and most commonly consists of a sand matrix with variable silt and gravel content. Colluvium on upper valley hillslopes is typically coarse, blocky material derived from ongoing erosion of upslope bedrock. Colluvium on lower valley hillslopes ranged from sandy gravel with some silt to silt with some sand.

Sites near the mine access road in the NWT are identified that may be suitable for good granular borrow. Further exploration and testing is required to identify potential granular sources on the Yukon side.

Active geomorphological processes in the study area include rockfall, debris slides, debris flows, avalanches, gully erosion and permafrost processes (e.g., rock glaciers).

Low soil temperatures, short growing season and slow rates of plant reproduction, organic accumulation and decomposition contribute to poorly developed soils. Most of the soils in the study area are Regosols or Brunisols. Some organosols have developed in flat, poorly-drained areas on the valley floor and crysols exist in some areas where organic layers provide sufficient insulation to allow frozen soil horizons to develop.

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1.0 INTRODUCTION

1.1 BACKGROUND

North American Tungsten Corporation Ltd. (NATCL) is considering the development of a world-class tungsten deposit located in the Yukon near Macmillan Pass, on the border between the Northwest Territories and Yukon (Figure 1). The mine site is located in the Selwyn Mountains at an elevation of 1,725 m to 1,800 m a.s.l. The mine site is located 650 km (400 air km) northeast of Whitehorse and is accessible by the Canol Road, a gravel surfaced road to the southern Yukon that is open only during summer months. The mine site is linked to the Canol Road east of Macmillan Pass by a 10 km access road.

NATCL retained EBA to conduct a terrain study in the MacTung Project area (study area). This information is required for project planning and regulatory submissions leading to MacTung project approvals and implementation. The terrain and soils mapping comprised part of the comprehensive environmental baseline study being conducted within the MacTung study area which includes components such as meteorology, hydrology, fisheries and aquatic studies, vegetation, archaeology, wildlife studies and water sampling.

2.0 SCOPE

The terrain component of the biophysical assessment for the MacTung study area included project initiation, review of previous studies, study area boundary definition, air photo interpretation, field checking, terrain mapping revisions and preparation of figures and this report.

To initiate the terrain mapping, the project objectives and the local study area boundaries were defined. The following documents were assembled and reviewed:

- Air photos
- Previous relevant reports
- Previous geology mapping and soil descriptions
- Previous geotechnical sub-surface reports

Terrain mapping for the local study area was based on the Guidelines and Standards for Terrain Mapping in B.C. and Terrain Classification System for British Columbia, Version 2 (RIC, 1996 and 1997 resp.)

Terrain Mapping was completed at Terrain Survey Intensity Level D (TSIL D). TSIL D includes field checking of 0 to 25% of polygons by vehicle and flying. The typical objectives of TSIL D are preliminary mapping to produce a terrain map at a scale between 1:20,000 and 1:250,000. Terrain mapping includes creating polygons with similar terrain attributes such as surficial material type/genesis, surface expression, geomorphological processes (where applicable), drainage, and soil texture (where known).

3.0 STUDY AREA

The MacTung study area occurs in both the Yukon and the NWT adjacent to where the North Canol Road crosses the border between the two Territories. The site lies within the Selwyn Mountain Ecoregion of the Taiga Cordillera Ecozone of Canada. The Selwyn Mountain Ecoregion is characterized by high elevation mountain ranges that contain alpine glaciers such as those located on nearby Keele Peak (2,970 m a.s.l.). Elevations range from 745 m a.s.l. to 2,970 m a.s.l.. The Selwyn Mountains give rise to the highest levels of annual precipitation (600-700 mm) in the Yukon outside the Coast Mountains (Yukon Ecoregions Working group 2004). Mean annual temperatures for the region are -5 °C to -8°C, ranging from an average of -20 °C in January to 8 °C in July. The region lies in the discontinuous permafrost zone, however, the study area is likely within the continuous permafrost zone due to its high elevation of between 1,300 m a.s.l. to 2,200 m a.s.l.. Approximate land cover in the Selwyn Mountain Ecoregion is 65% boreal/subalpine coniferous forest, 20% alpine tundra, and 15% rockland (Yukon Ecoregions Working Group 2004). The regional study area has been defined in previous reports and terrain definition for the region is outside the scope of this study.

The terrain mapping study area for the MacTung project was defined to include the probable footprint of the mine production area. This includes areas such as buildings, roads, mill site, tailings ponds and borrow areas. The study area also includes areas within the adjacent valleys and valley sideslopes that could potentially impact the mine footprint area. Initially, the focus was on the Yukon side of the Yukon-NWT border, but the study area was later expanded to include a potential mine production area on the NWT side. The NWT side was the focus of previous studies (AMAX 1981; EBA,1983).

3.1 SITE DESCRIPTION

The project area defined for terrain mapping is about 10 km by 4 km (40 km²), with the proposed mine site near the centre (Figure 2). Within the terrain study area, valley bottoms measure between 1,160 m a.s.l. and 1,400 m a.s.l. Alpine peaks range from 1,800 m a.s.l. to 2,200 m a.s.l. Terrain is highly variable in the study area due to depositional and erosional differences and variable permafrost conditions. Valley bottoms tend to be flat to gentle gradient and valley sideslopes are steep with much open bedrock.

The Yukon / NWT border is located on the continental divide. The Yukon side is within the Yukon River watershed which drains to the Pacific Ocean. The NWT side is within the Mackenzie River watershed which drains to the Arctic Ocean.

3.2 GEOMORPHOLOGY AND GEOLOGY

The landscape of the study area varies from gentle to flat terrain on the valley floor to steep relief on glacially scoured, upper hillslope bedrock slopes. The area landscape is the result of montaine glaciation that scoured valley hillslopes, creating steep rock headwalls with associated colluvial slopes below. On the lower valley hillslopes and floor, morainial deposits form lower gradient slopes and low relief irregular terrain.

The general site geology and topography have been extensively described and documented in previous reports. The site is located within the Selwyn Mountain Range, which is characterized by extreme relief with pointed summits, steep sideslopes and narrow valleys. Evidence of glaciation is widespread. The lower valley areas were affected by continental ice sheets which deposited varying thicknesses of till, while the upper elevations have been affected more recently by alpine glaciation. Lower valley slopes are typically covered in colluvium due to erosion processes, landslides and surface flowslides. In the immediate vicinity of the mine, bedrock geology consists of laminated shales and phyllites. These were intruded by granitic blocks which form the higher, more competent peaks.

The proposed mine site has elevations varying from 1,524 m (5,000 ft) at the bottom of Dale Creek valley to about 1,890 m (6,200 ft) near the proposed mill site. The Selwyn Mountains are very rugged, with sharp peaks and steep side slopes. The valleys tend to be narrow and slightly rounded. The higher areas of the mountains have little or no surficial soils while the lower slopes and valley bottoms are covered with thin deposits of residual soils and glacial tills. Kames and eskers deposits are visible in the Dale Creek valley and extend eastward into the TsiChu River valley.

Due to the generally weak and fissile nature of the parent rocks in the area, which are generally highly schistostic metamorphic rocks, most granular deposits are of poor quality. Granular material suitable for concrete aggregate has not been reported near the proposed plant area. However, at least one source of talus gravel that may be suitable for road surfacing was identified on the south side of Dale Creek near the existing bridge (Geocon1983 cited in Golder Associates 1981). Initial indications are that concrete aggregates may have to be obtained by crushing local competent bedrock.

4.0 METHODS

4.1 PREVIOUS REPORTS

According to AMAX (circa 1983), weather studies were first undertaken for the area in 1968 with environmental and socio-economic studies first conducted in 1973. Of the many studies completed since, four studies that provide a background of the terrain and geology of the area are:

- Golder Associates. 1981. Report to AMAX Northwest Mining Company Ltd. on Geotechnical Investigations for Tailing Disposal at MacTung
- Geocon Inc. 1983. Conceptual Geotechnical Evaluation. Proposed Mine. Report.
- EBA Engineering Consultants. 1983. Geotechnical Evaluation. Proposed MacTung Mine, MacMillan Pass, Yukon, Northwest Territories.
- AMAX Northwest Mining Company Limited. 1982. Initial Environmental Evaluation of the MacTung Project Yukon and Northwest Territories.

- Kershaw, G.P. and Kershaw, L.J. 1983. *Geomorphology and Vegetation of the MacTung Study Area, Yukon/N.W.T.* Prepared for AMAX Northwest Mining Co. Ltd., Vancouver. 85 p.

Kershaw (1983) provides a reconnaissance level interpretation of the terrain and surficial geology within the local study area, covering about 450 km².

4.2 TERRAIN CLASSIFICATION SYSTEM

The Terrain Classification System is designed for the classification of surficial materials, landforms and geomorphological processes. It has been specifically developed to provide an inventory of the terrain features in the landscape and to show their distribution, extent and location. The system is scale independent and provides base data applicable for a wide range of natural resource applications including planning, management, effects assessment and research. The data are conveyed in map form by the use of terrain symbols and is conducive to computer digital storage, management and processing.

The process results in the production of a terrain map that shows the distribution of surficial (Quaternary) deposits and related landforms. It also provides information about present day geomorphological processes such as debris slides, permafrost and erosion.

Terrain mapping consists of project planning, review of previous reports and geology, air photo interpretation and initial classification of terrain, field-checking, post-field terrain revisions and mapping. The methods and approaches for each phase are discussed below.

Project planning and initial review included defining the objectives and the purpose of the work, a detailed literature review of prior geology and terrain classification for the study area and defining the survey intensity. Level D survey intensity (RIC 1996) was determined to be adequate for the 22,500 hectare local study area. A Level D survey intensity protocol includes investigation of up to 25% of the terrain polygons.

Terrain mapping was completed by Jack Dennett, P.Geo. (BC). Field checking was conducted by Jack Dennett and Glenn Rudman, M.Sc. between July 4th and July 10th 2006. Representative terrain polygons were accessed mostly on foot or by road with some assistance by helicopter to access remote areas. Terrain descriptions and data from hand excavated soil pits were recorded on standardized field form. Mapping of terrain was based on the Terrain Classification System for British Columbia (RIC 1997). All plot positions were recorded using a Garmin 76 Global Positioning System with accuracy of between 6 to 20 m.

Terrain field checking included observations at 42 field stations with additional overview mapping from the air and strategic view sites. A total of 145 polygons were mapped in the terrain study area. Field checking intensity was 24%. This meets the requirements for Terrain Survey Intensity Level D terrain mapping.

Air photo interpretation of the terrain was completed on 1:30,000 scale, black and white air photographs flown in July 1996. Specifically, the air photographs used to cover the local study area were Flight Line A28283, photographs 49 to 53, and 24 to 28.

Terrain maps were completed using ArcGIS version 9.1. Reconciliation of all polygons was completed to ensure quality assurance and control.

5.0 RESULTS

5.1 TERRAIN CLASSIFICATION INVENTORY

Terrain mapping was completed within the terrain study area, which includes the main valley and hillslopes on each side of the NWT/Yukon border. The study area extends into the Yukon about 7 km west of the border and about 4.5 km east into the NWT. During the course of the study, 145 terrain polygons were delineated within a study area covering an area of about 4200 ha. A statistical summary of the four general terrain units classified in the area (colluvium, till, fluvial and bedrock) is presented on Table 5.1.

TABLE 5.1 TERRAIN CLASSIFICATION INVENTORY FOR THE MACTUNG AREA, YUKON/NWT

Surficial Material Type	Symbol	Number of Polygons	Percent of Total
Colluvium	C	44	30
Till (moraine)	M	59	41
Fluvial	A	1	1
Bedrock	R	41	28
	TOTAL	145	100

5.2 PERMAFROST

The area falls within the discontinuous permafrost zone. However, the study area is within a high elevation alpine zone with a low mean annual temperature (-7.7°C to -8.5°C) and the area climate is likely similar to conditions found in the continuous permafrost zone. Continuous permafrost terrain is generally expected wherever the mean annual air temperature is less than about -5°C. Permafrost was not intersected in any of the shallow hand excavated pits evaluated during the 2006 terrain field program. However, permafrost was intersected at some of the boreholes and testpits advanced on the NWT side in 1980 (Golder Associates 1981).

5.3 SURFICIAL MATERIALS

Colluvium on upper valley hillslopes is typically coarse, blocky material derived from ongoing erosion of upslope bedrock. Colluvium on lower valley hillslopes ranged from sandy gravel with some silt to silt with some sand. Colluvium in the valley bottom is generally similar to the till texture.

Morainal deposit texture ranged from gravelly silty sand to silty sand and most commonly consists of a sand matrix with variable silt and gravel content. Hand excavated testpits on the Yukon side of the study area indicated generally similar soil textures to those found in testpits and boreholes reported in previous reports from the NWT side.

Fluvial materials have accumulated in some low gradient stream channel areas on the valley floor. Soil textures of these fluvial materials are expected to have increased silt and sand content.

Previous reports identify sites on the NWT side that may be suitable for good granular borrow (Golder Associates 1981). Boreholes 80-17A and 80-18 report 6.0 m thick intersections of sand and gravel. Testpits 79-9 and 79-10 report intersections of up to 2.7 m sand and gravel, and boreholes 75-8 and 75-9 report 3.8 m to 5.6 m sand and gravel (Figure 3). Further exploration and testing is required to identify potential granular sources on the Yukon side.

5.4 TERRAIN DESCRIPTION

The bedrock slopes of the upper valley walls and cirques are typically steep (greater than 70%) and moderately steep (50 to 70%). They are rapidly drained. Snow accumulations in the area are heavy and the moderately steep to steep slopes are likely subject to avalanching. Rockfall is the primary erosional process on these slopes. A possible relic debris slide about 20 ha in area was mapped on a north valley hillslope about 6 km west of the Yukon / NWT border.

Colluvium most commonly occurs on moderately steep (50-70%) to moderate (27-49%) gradient, well drained blocky talus slopes below bedrock headwalls. Colluvium on lower gradient (moderate to gentle) lower valley slopes is more weathered and is typically covered by a thin organic horizon with ground vegetation. Lower valley slopes are typically moderately well to moderately drained. Colluvial fans are abundant on the lower reaches of tributary streams, where colluvium has been deposited from debris flows and alluvial processes. Fans are typically imperfectly drained near the toe.

Till deposits in the study area may be the result of basal deposits, lateral and terminal moraines and other intra-glacial deposits formed during periodic glacial advance and retreat throughout deglaciation. Very compact soils reported at test sites on the NWT side (Golder Associates 1981) may be basal tills. Loose material, forming ridges and hummocks on the valley floor, are probably from intra-glacial deposition. Recent fluvial deposits on the flat areas of the valley floor have formed silt rich plains

5.5 GEOMORPHOLOGICAL PROCESSES

Six geomorphological processes, rockfall (-Rb), debris slides (-Rs), debris flows (-Rd), avalanches (-A), gully erosion (-V) and rock glaciers (-Z), are active in the study area.

Rockfall involves the release of relatively small masses of rock (e.g., a single block or a few cubic metres) and movement downslope by freefall, rolling and bouncing. This is the most common process in the area and results in the formation of extensive talus slopes.

Debris slides occur when a mass of glacial drift or colluvium becomes detached from a hillside and moves rapidly downslope by sliding along a shear plane. Debris slides are initiated on steep hillsides by the sliding of weathered till and/or colluvium along a shear plane that coincides with the contact between weathered till and unweathered till, or between colluvium and till, or between any of these materials and bedrock. A possible relic debris slide about 10 ha in area was mapped on a north valley hillslope about 6 km west of the Yukon / NWT border.

A debris flow is the rapid flow of a mass of viscous material, consisting of mud, sand, stones and/or organic debris. A debris flow is often initiated when a debris slide enters a stream channel and may move downslope for several hundred metres or more. They are a significant source of stream sediment and deposition on colluvial fans in lower reach run-out zones. Small, periodic debris flows are probably an ongoing process within valley sideslope stream channels and contribute to the colluvial fan deposits mapped in the study area.

Avalanches are rapid slides or flows of snow. Rocky debris and vegetative material are commonly transported by the snow. Avalanches probably play a part in downslope transport of some colluvial material in the study area

Gullies are small ravines with v-shaped profiles that form in drift and bedrock. In the terrain study area gullies on the valley sideslopes are mostly active, with most erosion probably taking place during spring run-off. The presence of gullies indicates erodable material, such as till, colluvium and weathered bedrock.

Rock glaciers are typically thick talus deposits with an ice-rich core and have a lobate, tongue-shaped form. They can form where deep blocky colluvium over permafrost receives sub-surface flow from an upslope basin. Rock glaciers are usually active, moving downslope at a very slow rate, and have a moderately steep, active escarpment on the downslope face. Numerous rock glaciers are mapped in the study area.

5.6 SOILS

Terrain field checking indicated the lack of well developed soil profiles, which is typical of arctic alpine environments. Soils are absent on the upper, steep to moderately steep slopes where erosional processes are active. Low soil temperatures, short growing season and slow rates of plant reproduction, organic accumulation and decomposition contribute to poorly developed soils. Most of the soils in the study area are Regosols or Brunisols. Regosols

occur at high elevations in association with till deposits and Brunisols generally occur at lower elevations in well drained locations. Organisols have developed in flat, poorly drained areas on the valley floor. Cryosols exist in some areas where organic layers provide sufficient insulation to allow frozen soil horizons to develop. Palsas – hummocks of frozen peat with ice-rich cores – were mapped on the valley floor about 2.6 km east of the Yukon/NWT border.

6.0 DISCUSSION AND CONCLUSIONS

The results of the terrain mapping characterize a landscape typical of northern alpine mountainous terrain. Surficial material ranges from coarse textured colluvial talus on middle to upper slopes to sandy gravelly silt colluvium and till on lower slopes.

Much of the colluvium and till should be suitable as general fill. Previous reports identify sites on the NWT side that may be suitable for good granular borrow as sand and gravel intersections between 2.7 m and 6.0 m were located.

Hand excavated testpits on the Yukon side of the study area indicated generally similar soil textures to those found in testpits and boreholes reported in previous reports from the NWT side.

Geomorphological processes identified in the study area include rockfall, debris slides, debris flows, avalanches, gully erosion and permafrost processes (e.g., rock glaciers). Colluvium and bedrock dominate the upper valley hillslopes and moraine is the common soil cover on the lower valley hillslopes and main valley floor.

Although the area is within the zone of discontinuous permafrost, continuous permafrost is more likely to occur in the high elevation alpine climate. Permafrost features are mapped in the area.

Most of the soils in the study area are Regosols or Brunisols. Organisols have developed in flat, poorly drained areas on the valley floor. Cryosols have developed in some areas where organic layers provide sufficient insulation for frozen soil horizons to develop.

7.0 CLOSURE

The information and analyses contained in this report and maps are based on the results of previous reports, air photograph interpretation, current understanding of regional terrain and geology, and on limited observations of land-surface conditions. In most of the study area, subsurface conditions (e.g., characteristics of subsurface materials and subsurface hydrologic conditions) are interpreted from surface observations or air photo interpretation with only reconnaissance scale field checking.

EBA is pleased to present North American Tungsten Corporation Ltd. with this Terrain Study report for the MacTung project. The report has been produced to aid project planning and future regulatory submissions leading to MacTung project approvals and

implementation. We are confident that the data and associated information presented in the report will assist in supporting this objective.

Further information on the use of this report is presented in the attached General Conditions, which form a part of the report.

Respectfully submitted,
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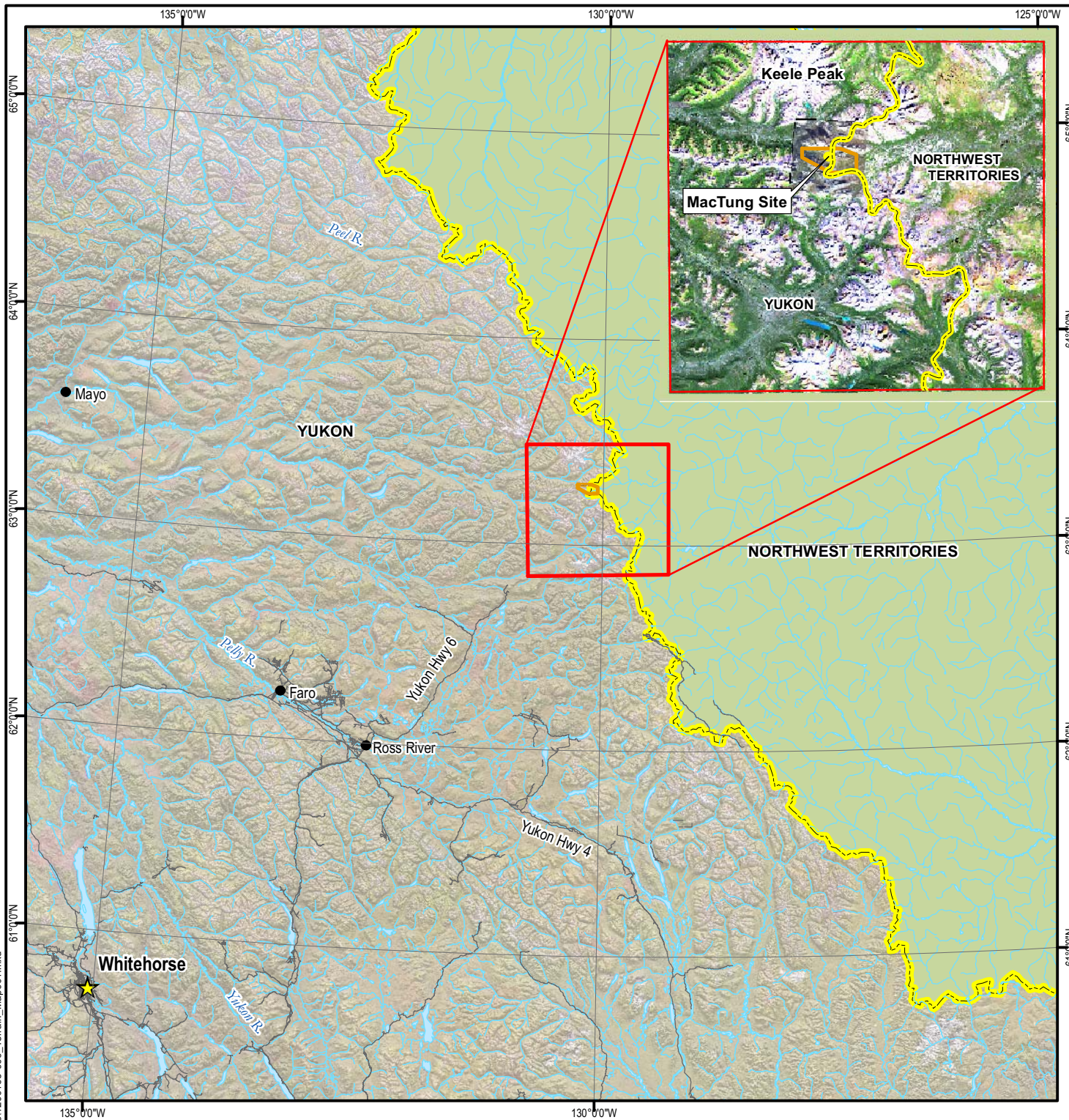
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






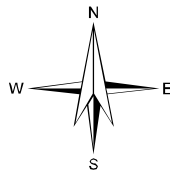
FIGURES





LEGEND

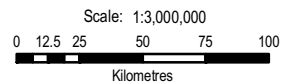
-  Provincial / Territorial Boundary
-  Terrain Study Area
-  Watercourse
-  Waterbody
-  Roads



**MACTUNG PROJECT
2006 ENVIRONMENTAL BASELINE STUDIES
TERRAIN STUDY**

Project Location

PROJECTION	DATUM
UTM Zone 9	NAD83



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1200163-006_Terrain_Map001.mxd

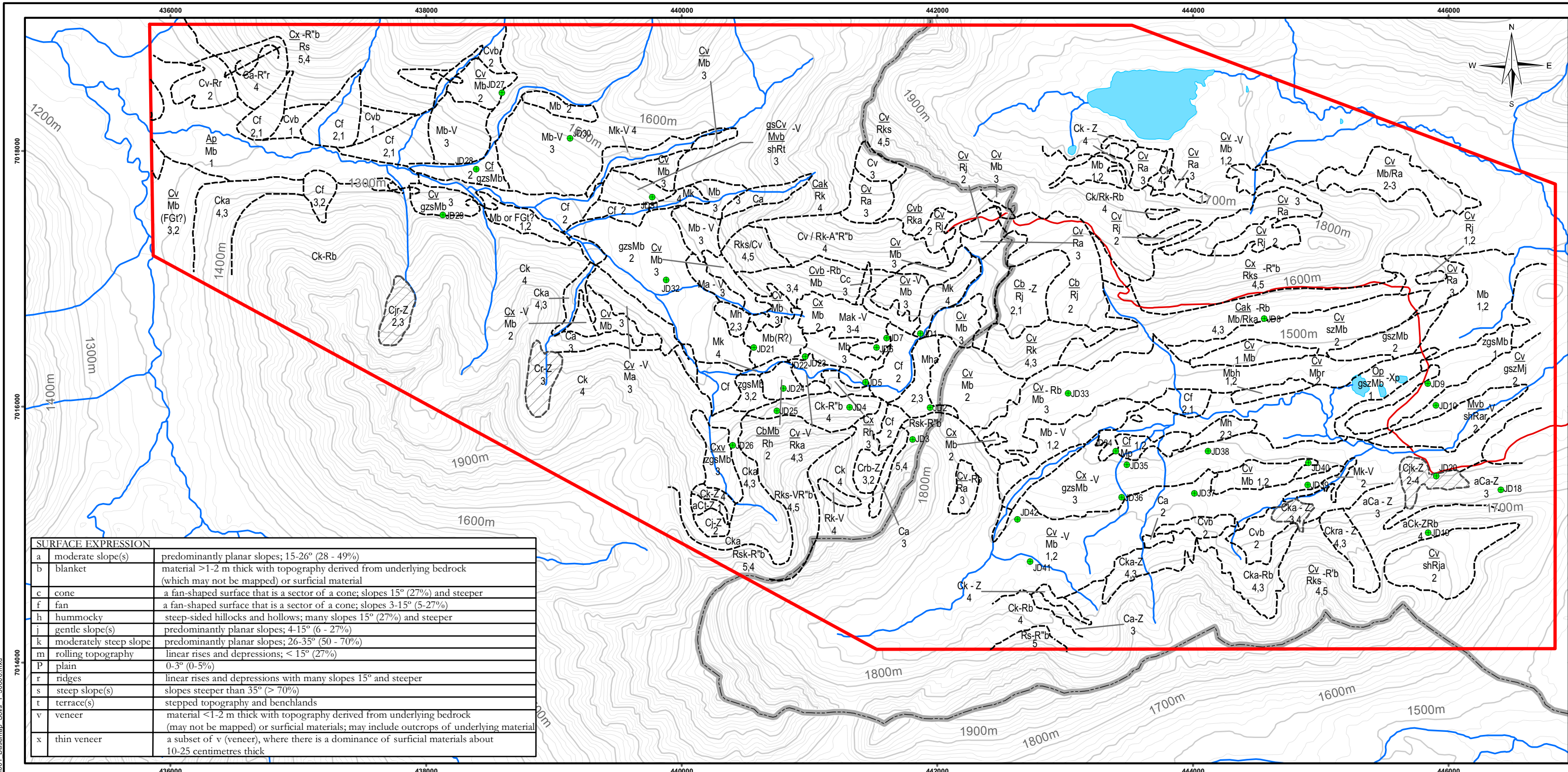
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1200163.006	MEZ	GR	0

OFFICE	DATE
EBA-VANC	May 11, 2007

EBA Engineering
Consultants Ltd. 

Figure 1

NOTES Landsat TM imagery Earthsat acquired Sept,17, 1995
Bands 432 enhanced



SURFACE EXPRESSION		
a	moderate slope(s)	predominantly planar slopes; 15-26° (28 - 49%)
b	blanket	material >1-2 m thick with topography derived from underlying bedrock (which may not be mapped) or surficial material
c	cone	a fan-shaped surface that is a sector of a cone; slopes 15° (27%) and steeper
f	fan	a fan-shaped surface that is a sector of a cone; slopes 3-15° (5-27%)
h	hummocky	steep-sided hillocks and hollows; many slopes 15° (27%) and steeper
j	gentle slope(s)	predominantly planar slopes; 4-15° (6 - 27%)
k	moderately steep slope	predominantly planar slopes; 26-35° (50 - 70%)
m	rolling topography	linear rises and depressions; < 15° (27%)
p	plain	0-3° (0-5%)
r	ridges	linear rises and depressions with many slopes 15° and steeper
s	steep slope(s)	slopes steeper than 35° (> 70%)
t	terrace(s)	stepped topography and benchlands
v	vener	material <1-2 m thick with topography derived from underlying bedrock (may not be mapped) or surficial materials; may include outcrops of underlying material
x	thin veneer	a subset of v (vener), where there is a dominance of surficial materials about 10-25 centimetres thick

- LEGEND**
- NWT - Yukon Border
 - Waterbody
 - Streams
 - Soils Study Area
 - Existing Road
 - 100m Contour
 - 20m Contour
 - Field Stations
 - Terrain Boundary
 - Rock glacier

Terrain Unit Symbols

Surficial material texture → aCk-Rb

surface expression → geomorphological process

TEXTURE	Specific Clastic Terms
c	clay < 2 µm
z	silt 2 - 62.5 µm
s	sand 62.5 µm - 2 mm
a	blocks > 256 mm; angular particles

Composite Units: Up to 3 letters may be used to describe any characteristic. Processes follow the dash "-" symbol.

Cb-Mb indicates "Cb" and "Mb" are roughly equal in extent

Mv/Rk indicates "Mv" is more extensive than "Rk" (about 2/1 or 3/2)

Stratigraphic Units: when one or more surficial materials overlie a different material or bedrock

e.g. Mw/Rr indicates that "Mw" overlies "Rr"

GEOMORPHOLOGICAL PROCESSES		
V	Gullying	Slope affected by gully erosion
W	Washing	Winnowing of fines by flowing water resulting in development of lag deposits.
Xp	Permafrost processes	Processes related to the presence of permafrost, permafrost aggradation and degradation. (p= palsa)
Z	Periglacial Processes	Solifluction, cryoturbation and nivation occurring within the same unit. Most Z processes noted in the terrain study area indicate rock glaciers.
Rb	Rapid Mass Movement	Slope or parts of slope affected by rockfall
Rr	Rapid Mass Movement	Slope or parts of slope affected by rockslide.

MATERIALS		
C	Colluvium	Products of gravitational slope movements; materials derived from local bedrock and major deposits derived from drift; includes talus and landslide deposits. Includes up to 20% bedrock.
FG	Glaciofluvial sediments	Sands and gravels transported and deposited by meltwater streams; includes kames, eskers and outwash plains.
M	Till	Material deposited by glaciers without modification by flowing water. Typically consists of a mixture of pebbles, cobbles and boulders in a matrix of sand, silt and clay; diamicton. Includes up to 20% bedrock and/or colluvium.
O	Organic materials	Material resulting from the accumulation of decaying vegetative matter; includes peat and organic soils.
R	Bedrock	Outcrops and bedrock within a few centimetres of the surface. Includes up to 20% colluvium.

MACTUNG PROJECT
2006 ENVIRONMENTAL BASELINE STUDIES
TERRAIN STUDY

Terrain Basemap

PROJECTION: UTM Zone 9 DATUM: NAD83

Scale: 1:30,000

0.5 0.25 0 0.5
Kilometres

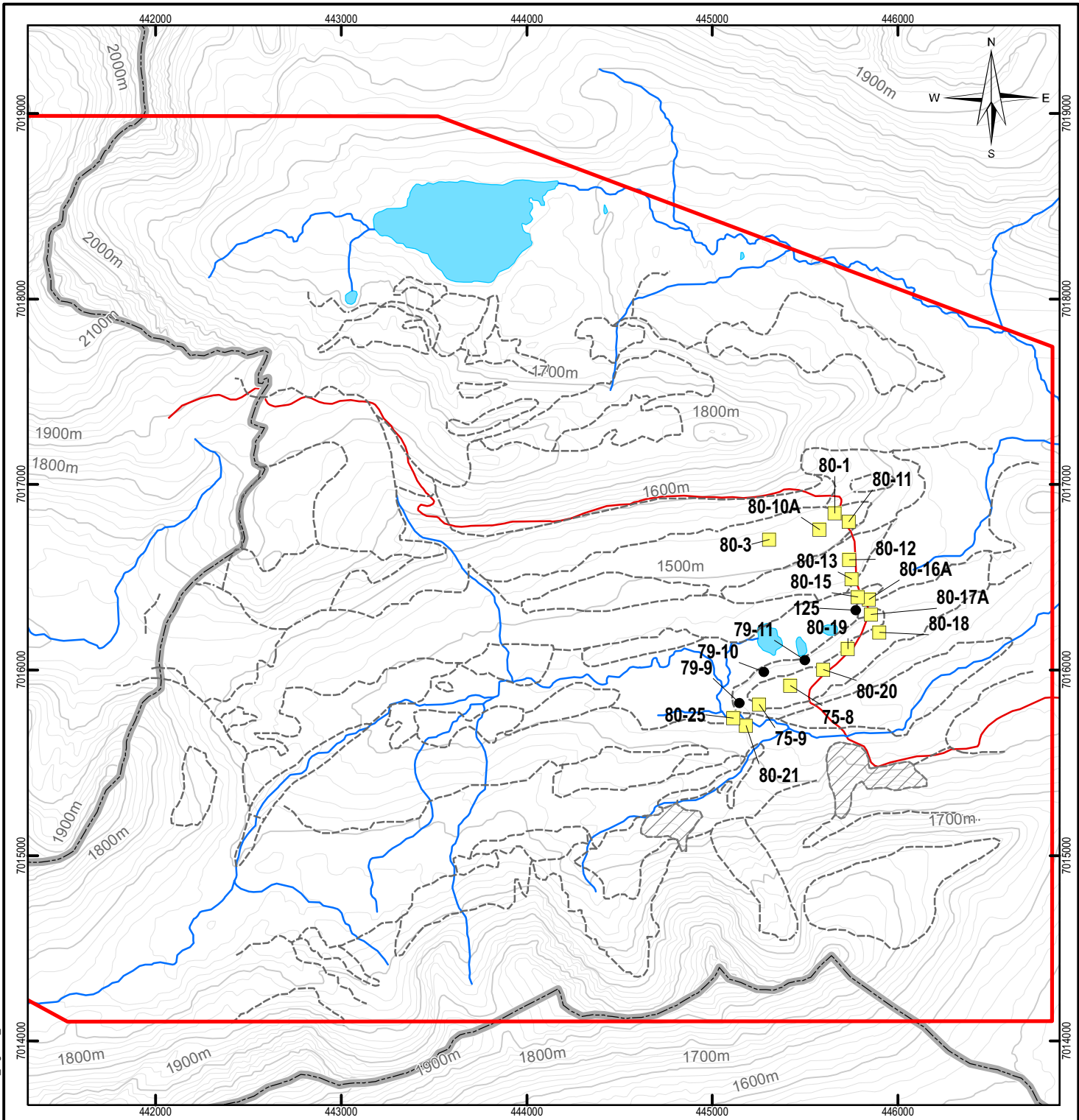
EBA Engineering Consultants Ltd.

FILE NO.: 001_Basemap_Soils.mxd

PROJECT NO. 1200163	DWN MEZ	CKD GR	REV 0
OFFICE: EBA-VANC	DATE: May 9, 2007		

Figure 2

G:\Vancouver\GIS\0201_YUKON\1200163_Mactung\Maps\06_Terrain\Soils\001_Basemap_Soils_1_30000.mxd



Q:\Vancouver\GIS\0201_YUKON\1200163_MacTung\Maps\006_Terrain-Sols\1200163_Figure3_Boreholes.mxd

LEGEND

- ▭ Terrain Study Area
- Borehole
- Test Pit
- Terrain Boundary
- Rock glacier

**MACTUNG PROJECT
2006 ENVIRONMENTAL BASELINE STUDIES
TERRAIN STUDY**

**Borehole and Testpit
Locations**

PROJECTION UTM Zone 9	DATUM NAD83
Scale: 1:30,000	
<div style="display: flex; justify-content: space-between; width: 100%;"> 0 0.25 0.5 1 </div> <div style="border-top: 1px solid black; width: 100%; margin-top: 2px;"></div> <p style="text-align: center; margin-top: 2px;">Kilometers</p>	

FILE NO. 1200163_Figure3_Boreholes.mxd			
PROJECT NO. 1200163	DWN MEZ	CKD JD	REV 0
OFFICE EBA-VANC	DATE May 10, 2007		

EBA Engineering Consultants Ltd.

Figure 3



APPENDIX

APPENDIX A: PHOTOS



Photo 1
MacTung July 2006. Soil pit on colluvial, mid-valley slope



Photo 2
MacTung July 2006. Excavation of soil testpit on lower valley hill slope



Photo 3

MacTung July 2006. Valley floor and steep sideslopes characteristic of the study area



Photo 4

MacTung July 2006. Moderately steep talus slopes with periglacial processes (CK-Z)



Photo 5

MacTung July 2006. Rock glacier (Cjk-Z) near mine access road on south valley hillslope, located about four kilometers east of the Yukon NWT border



Photo 6

MacTung July 2006. Common till (moraine) texture on valley floor



Photo 7

MacTung July 2006. View east of morainal terrain on valley floor at the eastern extent of the terrain study area



Photo 8

MacTung July 2006. Moderately steep to steep valley sideslopes in the NWT side of the terrain study area.



Photo 9

MacTung July 2006. Gulying (-V) through thick till deposits on south-facing valley



Photo 10

MacTung July 2006. Palsas (ice-core peat) in thick organic deposits on valley floor in NWT side of terrain study area.



APPENDIX

APPENDIX B: FIELD NOTES



PROJECT NO. (area) 1200163.006
 DATE 3 July 06
 AIR PHOTO NO.

SITE DESCRIPTION

SITE NO. JD-1
 ASPECT 140
 SLOPE ° 90
 Typical M/min 80
 ELEVATION (m) 1662
 SECTION HT/PIT DEPTH m 70
 E: 441867
 LOCATION: N: 7016572

SKETCH (X-SEC. TO SHOW SITE POSITION; INDICATE ORIENTATION AND SCALE)
 soil colour: medium brown
 erosion potential: high (steep, loose)
 unfrayed
 dry
 Regoso!

SLOPE CONFIG. (DOWN/SLOPE) concave convex straight
 SLOPE CONFIG. (ACROSS SLOPE) concave convex straight

HILLSLOPE CONFIG. uni irr hum ben ter rid gul sca
 DOM. VEG. & MOISTURE INDICATOR PLANTS

BOULDERS a c s o
 BLOCKS a c s o
 BEDROCK OUTCROP a c s o
 HYDRO. CHAR. dry slope

PHOTOS roll no. description 13:00

SAMPLES

MATERIAL DESCRIPTION

SOIL CHARACTERISTICS
 LFH HORIZON: thickness 3 cm absent
 B HORIZON: thickness cm
 absent Bc Bf Bh Bm Bg Bj Bm
 B and/or C horizons: below depth of cm
 absent some abundant
 B and/or C pedogenic concentration: none moderate high
 top at cm; base at cm
 SOIL DRAINAGE: r m i p v

SURFICIAL MATERIALS
 STRATIG. UNIT 1
 THICKNESS (m) bns
 OVERALL TEXTURE gravally silt
 ORIGIN C
 CONTACT: sharp or gradational; horizontal or wavy
 bns
 CONTACT: sharp or gradational; horizontal or wavy
 bns

Complete the following for unweathered surface material if possible, otherwise use B horizon (weathered)

BEDDING/STRATIFICATION well mod. well mod. weak massive
 MATRIX TEXTURE silt, some sand
 % CLASTS: 20
 CLAST ABUNDANCE BY SIZE a c s o
 PEBBLES a c s o
 COBBLES a c s o
 BOULDERS a c s o
 CLAST ROUNDNESS: SA SR R WR
 CONSOLIDATION high mod slight non
 COHESION high mod slight non
 INDURATION high mod slight non
 OXIDATION high mod slight non
 WEATHERING OF CLASTS/BEDROCK F 1 2 3 D

LITHOLOGY OF COARSE FRAGMENTS QZTT
 TERRAIN UNIT SYMBOL for vicinity of site sgZCs-V
 REPRESENTS POLYGON? YES NO
 ADD. NOTES IN FIELD BOOK? YES NO
 poly gm = gully
 vegetation: ep



PROJECT NO. (+area) 1200163.006
 DATE 3 July 06
 AIR PHOTO NO.

SITE DESCRIPTION
 SITE NO. JD-2
 ASPECT W to flat
 SLOPE 0-30%
 ELEVATION (m) ft. 1622
 SECTION HT./PIT DEPTH m (cm) 50
 E: 441942
 LOCATION N: 7015993

SKETCH (X-SEC. TO SHOW SITE POSITION; INDICATE ORIENTATION AND SCALE)
 unfrozen
 dry med/dark gray-brn.
 Regosol
 bottom of pit - 50cm
 -NB- one sub-rounded cobble noted (Mx)

SLOPE CONFIG. (DOWN SLOPE) concave convex straight
 SLOPE CONFIG. (ACROSS SLOPE) concave convex straight
 HILL SLOPE CONFIG. uni irr (hum) ben ter rid gul spa low relief
 DOM. VEG. & MOISTURE INDICATOR PLANTS
 Boulders a c s o
 Blocks a c s o
 Bedrock outcrop a c s o
 Hydro. char. moist today
 PHOTOS roll no. description ② 13155 in saddle
 SAMPLES

MATERIAL DESCRIPTION

SOIL CHARACTERISTICS
 LFH HORIZON: thickness 2 cm absent
 B HORIZON: thickness cm absent/Bc Bf Bh Bll Bg Bjl Bm
 B and/or C horizon nodules: below depth of cm absent/some abundant
 B and/or C pedogenic concentration: top at cm; base at cm none/moderate/high

SURFICIAL MATERIALS
 STRATIG. UNIT 1
 THICKNESS (m) bns
 CONTACT: sharp or gradational; horizontal or wavy
 OVERALL TEXTURE Zstg
 ORIGIN C

Complete the following for unweathered surface material if possible, otherwise use B horizon (weathered)
 BEDDING/STRATIFICATION well mod. well. mod. weak massive
 MATRIX TEXTURE S silt
 % CLASTS: 35
 CLAST ABUNDANCE BY SIZE
 PEBBLES a c s o
 COBBLERS a c s o
 BOULDERS a c s o
 CLAST ROUNDNESS: A SA SR R WR
 CONSOLIDATION high mod slight non
 COHESION high mod slight non
 INDURATION high mod slight non
 OXIDATION high mod slight non

LITHOLOGY OF COARSE FRAGMENTS blk. ls, fine pyrite
 WEATHERING OF CLASTS/BEDROCK F1 2 3 D
 TERRAIN UNIT SYMBOL for vicinity of site gsCb
 REPRESENTS POLYGON? YES NO
 ADD. NOTES IN FIELD BOOK? YES NO
 vegetation: GR



PROJECT NO. (+area) 1200167.006
 DATE 3 July 06
 AIR PHOTO NO.

SITE DESCRIPTION

SITE NO. JD-3
 ASPECT 350 N
 SLOPE ° %
 Typical Min/max
 ELEVATION (m) ft. 1649
 SECTION HT/PIT DEPTH m (cm) 58
 E: 0 44 1806
 LOCATION: N: 7015745

SKETCH (X-SEC. TO SHOW SITE POSITION; INDICATE ORIENTATION AND SCALE)

unfrozen
 soil colour: black
 dry
 Regosol
 -NB One 0.5m boulder of sub-round gneissic rock (M) noted on hill slope.

SLOPE CONFIG. (DOWN SLOPE)
 concave (convex) straight

SLOPE CONFIG. (ACROSS SLOPE)
 concave (convex) straight

HILLSLOPE CONFIG.
 unif (ir) hum ben ter rid gul sea

DOM. VEG. & MOISTURE INDICATOR PLANTS

BOULDERS a c s o

BLOCKS a c s o

BEDROCK/OUTCROP a c s o

HYDRO. CHAR. well dr.

PHOTOS roll no. description

③ 14:27 - slope with R well behind

SAMPLES

MATERIAL DESCRIPTION

SOIL CHARACTERISTICS

LFR HORIZON: thickness 5 cm absent
 B HORIZON: thickness cm absent Bc Bf Bh Bk Bg Bj Bm
 B and/or C horizon mottles: below depth of cm absent some abundant
 B and/or C pedogenic concentration: top at cm; base at cm none moderate high
 SOIL DRAINAGE: r w m i p v

SUPRACIAL MATERIALS

STRATIG. UNIT
 THICKNESS (m)
 OVERALL TEXTURE
 ORIGIN
 CONTACT: sharp or gradational, horizontal or wavy
 CONTACT: sharp or gradational, horizontal or wavy

Complete the following for unweathered surface material if possible, otherwise use B horizon (weathered)

BEDDING/STRATIFICATION: well, mod, well mod, weak (massive)
 MATRIX TEXTURE: SAND trace silt
 % CLASTS: 30
 CLAST ABUNDANCE BY SIZE: a c s o
 PEBBLES: a c s o
 COBBLES: a c s o
 BOULDERS: a c s o
 CLAST ROUNDNESS: A SA SR R WR
 CONSOLIDATION: high mod slight non
 COHESION: high mod slight non
 INDURATION: high mod slight non
 OXIDATION: high mod slight non

LITHOLOGY OF COARSE FRAGMENTS: graphic shale;
 WEATHERING OF CLASTS/BEDROCK: F 1 2 3 D

TERRAIN UNIT SYMBOL for vicinity of site: gsCb
 REPRESENTS POLYGON? YES NO
 ADD. NOTES IN FIELD BOOK? YES NO
 Vegetation: GR



PROJECT NO. (+area) 1200163.006	DATE 3 July 06	AIR PHOTO NO.
SITE DESCRIPTION		
SITE NO. JD-4	ASPECT flat / long	SLOPE ° % 5 / 100
SITE DESCRIPTION (soil pit, road cut, etc.) E: 44 / 1313		ELEVATION ft. 1610
SECTION HT./PIT DEPTH m, cm M: 70 / 15997		

SKETCH (X-SEC. TO SHOW SITE POSITION; INDICATE ORIENTATION AND SCALE)

black soil
nitrogen
0.8m wide track of fertilizer nearby
-regosol

SLOPE CONFIG. (DOWN SLOPE) concave convex straight reg	SLOPE CONFIG. (ACROSS SLOPE) concave convex straight
HILLSLOPE CONFIG. unit (tr) (km) ben ter rid gul sea low red soil in veg. / horizontally	DOM. VEG. & MOISTURE INDICATOR PLANTS grass, comb. (lila, moss)
BOULDERS a c s o	BEDROCK OUTCROP a c s o
PHOTOS roll no. description A pit + snow slope nearby - follows carbon pit line	HYDRO. CHAR. dry
SAMPLES	

MATERIAL DESCRIPTION			
SOIL CHARACTERISTICS			
LFH HORIZON: thickness 8 cm absent	B HORIZON: thickness _____ cm absent Bc Bf Bh Bih Bg Bjl Bm		
B and/or C horizon mottles; below depth of _____ cm absent some abundant	B and/or C pedogenic concentration: top at _____ cm; base at _____ cm none moderate high		
SOIL DRAINAGE: r m i p v			
SURFICIAL MATERIALS			
STRATIG. UNIT 1	THICKNESS (m) bns	OVERALL TEXTURE gravelly sand	ORIGIN C
CONTACT: sharp or gradational; horizontal or wavy			
CONTACT: sharp or gradational; horizontal or wavy			
CONTACT: sharp or gradational; horizontal or wavy			
Complete the following for unweathered surface material if possible, otherwise use B horizon (weathered)			
BEDDING/STRATIFICATION well mod. well mod. weak massive			
MATRIX TEXTURE sand			
% CLASTS: 30	CLAST ROUNDNESS: A SA SR R WR		
CLAST ABUNDANCE BY SIZE a c s o	PEBBLES a c s o	BOULDERS a c s o	
CONSOLIDATION high mod. slight non	COHESION high mod. slight non	INDURATION high mod. slight non	OXIDATION high mod. slight non
LITHOLOGY OF COARSE FRAGMENTS QZT, some b			
WEATHERING OF CLASTS/BEDROCK F 1 2 3 D			
TERRAIN UNIT SYMBOL for vicinity of site qs Cb - Z			
REPRESENTS POLYGON? YES NO ADD. NOTES IN FIELD BOOK? YES NO vegetation: GR			



PROJECT NO. (4-areas)
1200163, 006

AIR PHOTO NO.

DATE

3 July 86

SITE DESCRIPTION

SITE NO. JD-5
ASPECT ° SW steeply flat
SLOPE % 6
ELEVATION (m) ft. 1624
SECTION HT./PIT DEPTH m cm
E: 441436
LOCATION: N: 7016191

SKETCH (X-SEC. TO SHOW SITE POSITION; INDICATE ORIENTATION AND SCALE)

medium brown-grey colour
unfrozen
- pit at small stone boil (PF)
- montane till
- Regosol
- black shale (rusty W) o/c in main creek
down slope w/ hydrocarbon odour.

SLOPE CONFIG. (DOWN SLOPE) concave convex straight		SLOPE CONFIG. (ACROSS SLOPE) concave convex straight	
HILLSLOPE CONFIG. unit (by hum ben ter rid gul sea micro/ind relief) wavy		DOM. VEG. & MOISTURE INDICATOR PLANTS alpine ground cover	
BOULDERS a c s o rare	BLOCKS a c s o	BEDROCK OUTCROP a c s o	HYDRO. CHAR. dry
PHOTOS roll no. description			
SAMPLES			

MATERIAL DESCRIPTION

SOIL CHARACTERISTICS

LFA HORIZON: thickness 3 cm absent

B HORIZON: thickness _____ cm
absent Bc Bf Bh Bg Bj Bm

B and/or C horizon mottles: below depth of _____ cm
absent some abundant

B and/or C pedogenic concentration:
top at _____ cm; base at _____ cm
none moderate high

SOIL DRAINAGE: r w m i p v

SURFICIAL MATERIALS

STRATIG. UNIT	THICKNESS (m)	OVERALL TEXTURE	ORIGIN
1	(bns)	gravely sand some silt	M(C?)
CONTACT: sharp or gradational; horizontal or wavy			
CONTACT: sharp or gradational; horizontal or wavy			
CONTACT: sharp or gradational; horizontal or wavy			

Complete the following for unweathered surface material if possible, otherwise use B horizon (weathered)

BEDDINGS/STRATIFICATION well mod. well mod. weak massive	MATRIX TEXTURE sand, some (trace?) silt		
% CLASTS: 25	CLAST ROUNDNESS: A (SA) SR R WR		
CLAST ABUNDANCE BY SIZE a c s o	PEBBLES a c s o	BOULDERS a c s o	OXIDATION high mod slight non
CONSOLIDATION high mod slight non	COHESION high mod slight non	INDURATION high mod slight non	WEATHERING OF CLASTS/BEDROCK F 1 2 3 D
LITHOLOGY OF COARSE FRAGMENTS qzH, shale ft			

TERRAIN UNIT SYMBOL for vicinity of site
Eg5 Mb
REPRESENTS POLYGON? YES NO
ADD. NOTES IN FIELD BOOK? YES NO
vegetation: GR



PROJECT NO. (+area) 1200163.006	DATE 3 July 06	AIR PHOTO NO.
SITE DESCRIPTION		
SITE NO. UP-6	ASPECT SW	SLOPE ° (%) 15° Typical 2/23 M10max
SITE DESCRIPTION (soil pit, road out, etc.)		ELEVATION (m) ft. 1645
SECTION HT/PIT DEPTH (m) cm E: 44(524) N: 7016463		

SKETCH (X-SEC. TO SHOW SITE POSITION; INDICATE ORIENTATION AND SCALE)

dark brown soil
unfringed
Regosol

SLOPE CONFIG. (DOWN SLOPE) concave convex straight Veg.	SLOPE CONFIG. (ACROSS SLOPE) concave convex straight
HILLSLOPE CONFIG. unl (in) hum ben ter rid gul sca M-1020	DOM. VEG. & MOISTURE INDICATOR PLANTS
BOULDERS a c s o	BEDROCK OUTCROP a c s o
PHOTOS roll no. description /	HYDRO. CHAR. mudst
SAMPLES /	

MATERIAL DESCRIPTION	
SOIL CHARACTERISTICS	
LFA HORIZON: thickness <u>3</u> cm absent	B HORIZON: thickness _____ cm absent Bc Bt Bh Bq Bm
B and/or C horizon mottles: below depth of _____ cm absent some abundant	B and/or C pedogenic concentration: top at _____ cm; base at _____ cm <u>none</u> moderate high
SOIL DRAINAGE: r w (m) l p v	

SUBSIGNAL MATERIALS			
STRATIG. UNIT	THICKNESS (m)	OVERALL TEXTURE	ORIGIN
1	0.5	gravelly sand of siltstone	C
CONTACT: sharp or gradational; horizontal or wavy?			
2	0.5		M probable
CONTACT: sharp or gradational; horizontal or wavy			
Complete the following for unweathered surface material if possible, otherwise use B horizon (weathered)			
BEDDING/STRATIFICATION well mod. well mod. weak massive	MATRIX TEXTURE Sand, some silt		
% CLASTS: 25	CLAST ROUNDNESS: A SA SR R WR		
CLAST ABUNDANCE BY SIZE	PEBBLES	COBBLES	BOULDERS
a c s o	a c s o	a c s o	a c s o
CONSOLIDATION	COHESION	INDURATION	OXIDATION
high mod slight non	high mod slight non	high mod slight non	high mod slight non
LITHOLOGY OF COARSE FRAGMENTS black shale		WEATHERING OF CLASTS/BEDROCK F 1 2 3 D	
TERRAIN UNIT SYMBOL for vicinity of site g5 Cb / Mb(?)		REPRESENTS POLYGON? YES NO ADD. NOTES IN FIELD BOOK? YES NO Vegetation GP	



PROJECT NO. (+area)

12.00163.006

DATE

3 July 06

AIR PHOTO NO.

SITE DESCRIPTION

SITE NO.

JD-7

ASPECT

SLOPE °

43/30

ELEVATION (m) ft.

1676

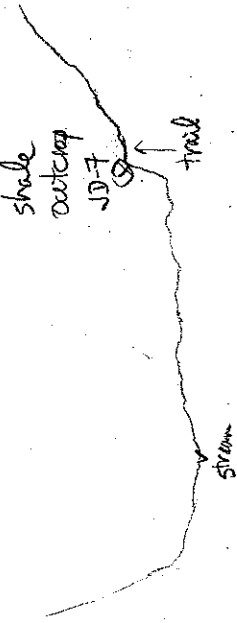
SITE DESCRIPTION (soil pit, road cut, etc.)

o/c

SECTION HT/PIT DEPTH m cm

E: 0441603
N: 7016538

SKETCH (X-SEC. TO SHOW SITE POSITION; INDICATE ORIENTATION AND SCALE)



-hillslope here may be some bedrock moraine overlain by C and shf overlain by CvB

SLOPE CONFIG. (DOWN SLOPE)

concave convex (straight)

SLOPE CONFIG. (ACROSS SLOPE)

concave convex straight

HILLSLOPE CONFIG.

unit hr hum/ben ter rid gul sca

DOM. VEG. & MOISTURE INDICATOR PLANTS

BOULDERS

a c s o

BLOCKS

a c s o

BEDROCK OUTCROP

a c s o

HYDRO. CHAR.

dry

PHOTOS roll no. description

16:50 - View across valley from here into creek

SAMPLES

Q5 C44 AR

MATERIAL DESCRIPTION

SOIL CHARACTERISTICS

LH HORIZON: thickness 3 cm absent

B HORIZON: thickness absent Bc Bf Blr Bfh Bg Bjl Bm cm

B and/or C horizon mottles: below depth of cm

B and/or C pedogenic concentration: top at cm; base at cm

absence some abundant

none moderate high

SOIL DRAINAGE: r w m i p v

SUBICIAL MATERIALS

STRATIG. UNIT

THICKNESS (m)

OVERALL TEXTURE

ORIGIN

bns

CONTACT: sharp or gradational; horizontal or wavy

bns

CONTACT: sharp or gradational; horizontal or wavy

Complete the following for unweathered surface material if possible, otherwise use B horizon (weathered)

BEDDING/STRATIFICATION

well mod. well mod. weak massive

MATRIX TEXTURE

% CLASTS:

CLAST ROUNDNESS: A SA SR R WR

CLAST ABUNDANCE BY SIZE

PEBBLES

a c s o

COBBLES

a c s o

BOULDERS

a c s o

CONSOLIDATION

high mod slight non

COHESION

high mod slight non

INDURATION

high mod slight non

OXIDATION

high mod slight non

LITHOLOGY OF COARSE FRAGMENTS

black shale (g.w.)

WEATHERING OF CLASTS/BEDROCK

F 1 2 3 D

TERRAIN UNIT SYMBOL for vicinity of site

REPRESENTS POLYGON? YES NO

ADD. NOTES IN FIELD BOOK? YES NO

Vegetation EPR



PROJECT NO. (+area)
1200/63.006

DATE
3 July 06

AIR PHOTO NO.

SITE DESCRIPTION

SITE NO. JD-8 ASPECT 60°/100° ELEVATION m. ft. Typical
 SECTION HT./PIT DEPTH m cm E: 449555
N: 7016680

SKETCH (X-SEC. TO SHOW SITE POSITION; INDICATE ORIENTATION AND SCALE)
probably not a slide here; down-slope deposition where are likely ice-rich talus

JD-8 boulder/cobble talus
R
Road

SLOPE CONFIG. (DOWN SLOPE) concave convex straight SLOPE CONFIG. (ACROSS SLOPE) concave convex straight

HILLSLOPE CONFIG. unit 1r hum ben ter rid gul sca DOM. VEG. & MOISTURE INDICATOR PLANTS brn, some willow, grasses, dwarf

BOULDERS a c s o BEDROCK OUTCROP a c s o HYDRO. CHAR. dry

PHOTOS roll no. description 17:55 - 2 photos - 1 down slope - 1 back to road.

SAMPLES R

MATERIAL DESCRIPTION

SOIL CHARACTERISTICS

LPH HORIZON: thickness: absent cm B HORIZON: thickness: absent cm
 B and/or C horizon mottles: below depth of absent cm top at none cm; base at none cm
 B and/or C pedogenic concentration: absent some abundant moderate high

SUBSTRATA MATERIALS

STRATIG. UNIT 1 THICKNESS (m) bns OVERALL TEXTURE g ORIGIN R
 CONTACT: sharp or gradational; horizontal or wavy
 CONTACT: sharp or gradational; horizontal or wavy
 CONTACT: sharp or gradational; horizontal or wavy

Complete the following for unweathered surface material if possible, otherwise use B horizon (weathered)

BEDDING/STRATIFICATION well mod. well mod. weak massive MATRIX TEXTURE g
 % CLASTS: 100 CLAST ROUNDNESS: A SA SR R WR
 CLAST ABUNDANCE BY SIZE a c s o PEBBLES a c s o BOULDERS a c s o
 CONSOLIDATION high mod slight COHESION high mod slight INDURATION high mod slight OXIDATION high mod slight

LITHOLOGY OF COARSE FRAGMENTS dk gy, rusty w shale WEATHERING OF CLASTS/BEDROCK F 2 3 D
 TERRAIN UNIT SYMBOL for vicinity of site R5 up slope; C1k down slope REPRESENTS POLY/GON? YES NO
 ADD. NOTES IN FIELD BOOK? Vegetation: Cal YES NO



PROJECT NO. (+area) 1200163.006
 DATE 3 July 06
 AIR PHOTO NO.

SITE DESCRIPTION

SITE NO. JD-9
 ASPECT FLAT
 SLOPE ° %
 Typical Mix/max
 ELEVATION (m) ft. 1483
 SECTION HT/PIT DEPTH m (cm) 180
 E: 44.5837
 N: 70.16181

SKETCH (X-SEC. TO SHOW SITE POSITION; INDICATE ORIENTATION AND SCALE)

- intersected mineral soil at full
 auger stem length
 - medium blue-grey soil
 - un-frozen
 - narrow polygon in
 valley lowland
 - 2.5m SE is mineral soil (gravelly shale) at a
 depth of ~40cm.
 end of hole → @ 1.82 m
 peat
 1.8m

SLOPE CONFIG. (DOWN-SLOPE) concave convex straight		SLOPE CONFIG. (ACROSS-SLOPE) concave convex straight	
HILLSLOPE CONFIG. unit hum ben ter rid gul sea		DOM. VEG. & MOISTURE INDICATOR PLANTS wellwood grasses	
BOULDERS a c s o	BLOCKS a c s o	BEDROCK OUTCROP a c s o	HYDRO. CHAR. water extended
PHOTOS roll no. description			
SAMPLES			

MATERIAL DESCRIPTION			
SOIL CHARACTERISTICS			
LPH HORIZON: thickness 180 cm absent	B HORIZON: thickness cm absent B ₁ B ₂ B ₃ B ₄ B ₅ B ₆ B ₇ B ₈ B ₉ B ₁₀		
B and/or C horizon mottles: below depth of cm absent some abundant	B and/or C pedogenic concentration: top at cm; base at cm none moderate high		
SOIL DRAINAGE: r w m l-p v			
SURFICIAL MATERIALS			
STRATIG. UNIT	THICKNESS (m)	OVERALL TEXTURE	ORIGIN
1	1.80 bns	peat	O
CONTACT: sharp or gradational; horizontal or wavy			
2	bns	silty sand trace gravel	M
CONTACT: sharp or gradational; horizontal or wavy			
Complete the following for unweathered surface material if possible, otherwise use B horizon (weathered)			
BEDDING/STRATIFICATION: well mod. well mod. weak massive	MATRIX TEXTURE silty sand		
% CLASTS: ?	CLAST ROUNDNESS: A SA SR R WR		
CLAST ABUNDANCE BY SIZE ?	PEBBLES a c s o	BOULDERS a c s o	
CONSOLIDATION high mod slight non	COHESION high mod slight non	INDURATION high mod slight non	OXIDATION high mod slight non
LITHOLOGY OF COARSE FRAGMENTS shale		WEATHERING OF CLASTS/BEDROCK ? F 1 2 3 D	
TERRAIN UNIT SYMBOL for vicinity of site POB / 25 MP		REPRESENTS POLYGON? YES NO ADD. NOTES IN FIELD BOOK? YES NO vegetation GR	



PROJECT NO. (+area) 120063.006
 DATE 3 July 06
 AIR PHOTO NO.

SITE DESCRIPTION
 SITE NO. JD-10
 ASPECT ~ Flat
 SLOPE 10%
 Typical Min/max
 ELEVATION (m) 1492
 ft.
 SECTION HT/PIT DEPTH (m) 2.60
 cm
 E: 445901
 LOCATION N: 7D16011

SKETCH (X-SEC. TO SHOW SITE POSITION; INDICATE ORIENTATION AND SCALE)

SLOPE CONFIG. (DOWN SLOPE) concave convex straight
 SLOPE CONFIG. (ACROSS SLOPE) concave convex straight
 HILLSLOPE CONFIG. uni lr hum ben ter rid gul sea
 BOULDERS a c s o
 BLOCKS a c s o
 BEDROCK/OUTCROP
 DOM. VEG. & MOISTURE INDICATOR PLANTS
 HYDRO. CHAR. dry

PHOTOS roll no. description
 18:36 - road cut w/ GR filling p. 7

SAMPLES

SOIL CHARACTERISTICS			
LFH HORIZON: thickness 5 cm absent	B HORIZON: thickness absent Bc Bf Bh Bth Bg Bj Bm cm		
B and/or C horizon molles: below depth of absent some abundant cm	B and/or C pedogenic concentration: top at none moderate high cm		
SOIL DRAINAGE: r w m i p v			
SURFICIAL MATERIALS			
STRATIG. UNIT	THICKNESS (m)	OVERALL TEXTURE	ORIGIN
1	bn	gravelly sand trace silt	M
CONTACT: sharp or gradational; horizontal or wavy			
CONTACT: sharp or gradational; horizontal or wavy			
CONTACT: sharp or gradational; horizontal or wavy			
Complete the following for unweathered surface material if possible, otherwise use B horizon (weathered)			
BEDDING/STRATIFICATION: well mod. well mod. weak massive	MATRIX TEXTURE sand, trace silt		
% CLASTS: 50	CLAST ROUNDNESS: A (S) SR R WR		
CLAST ABUNDANCE BY SIZE	PEBBLES	COBBLES	BOULDERS
a c s o	a c s o	a c s o	a c s o
CONSOLIDATION	COHESION	INDURATION	OXIDATION
high mod slight non	high mod slight non	high mod slight non	high mod slight non
LITHOLOGY OF COARSE FRAGMENTS black shale matrix + granitic meta sediments boulders			
WEATHERING OF CLASTS/BEDROCK F 1 2 3 D			
TERRAIN UNIT SYMBOL for vicinity of site			
95 Mr			
REPRESENTS POLYGON? YES NO			
ADD. NOTES IN FIELD BOOK? YES NO			
Vegetation: GR			



PROJECT NO. (+area) 12001472.006	DATE 4 July 06	AIR PHOTO NO.
SITE DESCRIPTION		
SITE NO. JD-11	ASPECT ° N 360	SLOPE ° 15/18/1
SITE DESCRIPTION (soil pit, road cut, etc.) LOCATION: <u> </u>		ELEVATION (m) ft. 1364
SECTION HT/PIT DEPTH m cm E: 449165		
LOCATION: N: 7014783		

SKETCH (X-SEC. TO SHOW SITE POSITION; INDICATE ORIENTATION AND SCALE)

medium brown soil
Brunosoil
unfrozen

SLOPE CONFIG. (DOWN SLOPE) concave convex (straight)	SLOPE CONFIG. (ACROSS SLOPE) concave convex (straight)
HILLSLOPE CONFIG. (un) r hum ben ter rd gul sea	DOM. VEG. & MOISTURE INDICATOR PLANTS willow, moss, grasses
BOULDERS a c s o	BEDROCK OUTCROP a c s o
PHOTOS roll no. description 1119 soil pit, bed; background terrain	HYDRO CHAR. W DIST
SAMPLES J	

MATERIAL DESCRIPTION

SOIL CHARACTERISTICS	
LFA HORIZON: thickness: 10 cm absent	B HORIZON: thickness: >10 cm absent Bc Bf Bh Bg Bq Bm
B and/or C horizon mollic: below depth of _____ cm (absent) some abundant	B and/or C pedogenic concentration: top at _____ cm; base at _____ cm (none) moderate high
SOIL DRAINAGE: r/w m i p v	

SURFICIAL MATERIALS

STRATIG. UNIT	THICKNESS (m)	OVERALL TEXTURE	ORIGIN
1	bns	gsz	M
CONTACT: sharp or gradational, horizontal or wavy			
CONTACT: sharp or gradational, horizontal or wavy			

Complete the following for unweathered surface material if possible, otherwise use B horizon (weathered)

BEDDING/STRATIFICATIONS well mod. well mod. weak massive	MATRIX TEXTURE sandy silt
% CLASTS:	CLAST ROUNDNESS: A (S) SR R WR
CLAST ABUNDANCE BY SIZE a c s o	BOULDERS a c s o
CONSOLIDATION high mod slight non	INDURATION high mod slight non
LITHOLOGY OF COARSE FRAGMENTS WEATHERING OF CLASTS/BEDROCK F 1 2 3 D	

TERRAIN UNIT SYMBOL for vicinity of site gsz Mx	REPRESENTS POLYGON? YES NO
	ADD. NOTES IN FIELD BOOK? YES NO vegetation GR



PROJECT NO. (area) 1200163.006
 AIR PHOTO NO. 4 July 06

SITE DESCRIPTION

SITE NO. JD-12
 ASPECT FLAT
 SLOPE ° %
 Typical Min/max
 ELEVATION (m) ft. 1364
 SECTION HT/PIT DEPTH (m) cm 3.0
 SITE DESCRIPTION (soil pit, road cut, etc.) eroded stream bank
 LOCATION: E: 449150 N: 7014992

SKETCH (X-SEC. TO SHOW SITE POSITION; INDICATE ORIENTATION AND SCALE)

medium brown soil
 unfrozen
 Brunisol

SLOPE CONFIG. (DOWN SLOPE) concave convex straight
 SLOPE CONFIG. (ACROSS SLOPE) concave convex straight
 HILLSLOPE CONFIG. (up) Ir hum ben ter rid gul sea
 DOM. VEG. & MOISTURE INDICATOR PLANTS
 Boulders a c s o
 BLOCKS a s o
 BEDROCK OUTCROP a s o
 HYDRO CHAR. dry upland wet stream slope
 PHOTOS roll no. description
 11:40 stream bank cut slope
 SAMPLES

MATERIAL DESCRIPTION

SOIL CHARACTERISTICS

LFH HORIZON: thickness 10 cm absent
 B HORIZON: thickness > 10 cm absent Bc Bf Bh Bg Bjl (Bm)
 B and/or C pedogenic concentration: top al. cm; base al. cm
 B and/or C horizon mottles: below depth of cm
 absent some abundant none moderate high
 SOIL DRAINAGE: r w m i p v

SURFICIAL MATERIALS

STRATIG. UNIT THICKNESS (m) OVERALL TEXTURE ORIGIN
 1 bns gravel and sand M
 CONTACT: sharp or gradational; horizontal or wavy
 CONTACT: sharp or gradational; horizontal or wavy

Complete the following for unweathered surface material if possible, otherwise use B horizon (weathered)

BEDDING/STRATIFICATION: well mod. well mod. weak massive
 MATRIX TEXTURE: sand, trace silt
 CLAST ROUNDNESS: A (S) (SR) R WR
 % CLASTS: 60
 CLAST ABUNDANCE BY SIZE: PEBBLES a c s o BOULDERS a c s o
 CONSOLIDATION: high mod slight non COHESION: high mod slight non
 INDURATION: high mod slight non OXIDATION: high mod slight non
 WEATHERING OF CLASTS/BEDROCK: F 1 2 3 D

LITHOLOGY OF COARSE FRAGMENTS: shale matrix w/ cobbles + blades of quartzite + sandstone
 WEATHERING OF CLASTS/BEDROCK: F 1 2 3 D
 REPRESENTS POLYGON? YES NO
 ADD. NOTES IN FIELD BOOK? YES NO
 195 MP
 vegetation: ER



PROJECT NO. (+area) **1200163.006** DATE **4 July 06** AIR PHOTO NO.

SITE DESCRIPTION
 SITE NO. **JD-13** SLOPE ° **18/12** ELEVATION (m) ft. **1402**
 Typical Min/Max
 SECTION HT (RT, DEPTH) m cm **30**
 E: **448834**
 N: **7014619**
 ROAD CUT = 2.0 m LOCATION: **LOCATIONS**

SKETCH (X-SEC. TO SHOW SITE POSITION; INDICATE ORIENTATION AND SCALE)

- medium brown soil
- unfrozen
- dense angular C @ 30cm depth
- small window of shale R exposed within fill in borrow pit by road 1/2 km N.
- cut slope is mainly block shale with M borders & cobbles
- Regosol

SLOPE CONFIG. (DOWN SLOPE) concave convex **straight** SLOPE CONFIG. (ACROSS SLOPE) concave convex **straight**

HILLSLOPE CONFIG. **(un)** hum ben ter rid gut sca DOM. VEG. & MOISTURE INDICATOR PLANTS **dwarf willow, cotton-willow, willow**

BOULDERS **a o s o** BEDROCK OUTCROP **a s o** HYDRO. CHAR. **dry**

PHOTOS roll no. description **12:23: View back of ridge in JD-13 is probably same road in background disappeared off to right**

SAMPLES

MATERIAL DESCRIPTION	
SOIL CHARACTERISTICS	
LFH HORIZON: thickness 7 cm absent	B HORIZON: thickness cm absent Bc Bf Bh Bth Bg Bj Br
7cm thick ash layer below LFH	
B and/or C horizon mottles; below depth of cm	B and/or C pedogenic concentration: top at cm ; base at cm
(absent) some abundant	(none) moderate high
SOIL DRAINAGE: (r) w m i p v	
SURFICIAL MATERIALS	
STRATIG. UNIT	THICKNESS (m)
1	Var.
bns	gravel & sand
CONTACT: sharp or gradational; horizontal or wavy	
2	Shale gravel & sand
bns	C
CONTACT: sharp or gradational; horizontal or wavy	
1	bns
Complete the following for unweathered surface material if possible, otherwise use B horizon (weathered)	
BEDDING/STRATIFICATION: well mod. well mod. weak massive	MATRIX TEXTURE sand
% CLASTS: 50	CLAST ROUNDNESS: (A) SA SR R WR
CLAST ABUNDANCE BY SIZE	COBBLES (a) c s o BOULDERS (a) c s o
CONSOLIDATION: high mod slight (non)	INDURATION: high mod slight (non) high mod slight (non)
LITHOLOGY OF COARSE FRAGMENTS shale	WEATHERING OF CLASTS/BEDROCK (F) 2 3 D
TERRAIN UNIT SYMBOL for vicinity of site gs mbv / shrv	REPRESENTS POLYGON? (YES) NO
	ADD NOTES IN FIELD BOOK? (YES) NO



PROJECT NO. (+area) 1200163.006	DATE 4 July 06	AIR PHOTO NO.
SITE DESCRIPTION		
SITE NO. JD-14	ASPECT FLAT	SLOPE (%) 0.3
SITE DESCRIPTION (soil pit, road cut, etc.) Road cut = 1.2m		ELEVATION (m) ft. 1388
LOCATION N 70 15091		SECTION HEIGHT DEPTH m cm E: 448596 33

SKETCH (X-SEC. TO SHOW SITE POSITION; INDICATE ORIENTATION AND SCALE)

Orange-brown to medium brown soil colour
- unfrozen
- Regosol

SLOPE CONFIG. (DOWN SLOPE) concave convex straight	SLOPE CONFIG. (ACROSS SLOPE) concave convex straight
HILLSLOPE CONFIG. Unit r hum ben ter rld (gull) sea	DOM. VEG. & MOISTURE INDICATOR PLANTS divers herb, cereals, Lithum
Boulders a c s o	BEDROCK OUTCROP a s o
PHOTOS roll no. description P	HYDRO. CHAR. dry
SAMPLES P	

MATERIAL DESCRIPTION	
SOIL CHARACTERISTICS	
LFH HORIZON: thickness 2 cm absent	B HORIZON: thickness _____ cm absent Bc Bf Bh Bt Bg Bjl Bm
B and/or C horizon mottles: below depth of _____ cm absent some abundant	B and/or C pedogenic concentration: top at _____ cm; base at _____ cm none moderate high
SOIL DRAINAGE: r w m i p v	
SURFICIAL MATERIALS	
STRATIG. UNIT 1	THICKNESS (m) bns
OVERALL TEXTURE gravel & sand	ORIGIN M
CONTACT: sharp or gradational; horizontal or wavy	
CONTACT: sharp or gradational; horizontal or wavy	
CONTACT: sharp or gradational; horizontal or wavy	
Complete the following for unweathered surface material if possible, otherwise use B horizon (weathered)	
BEDDING/STRATIFICATION well mod. well mod. weak massive	MATRIX TEXTURE sand
% CLASTS: 45	CLAST ROUNDNESS: A SR R WR
CLAST ABUNDANCE BY SIZE a c s o	COBBLES a c s o
PEBBLES a c s o	BOULDERS a c s o
CONSOLIDATION high mod slight non	INDURATION high mod slight non
COHESION high mod slight non	OXIDATION high mod slight non
LITHOLOGY OF COARSE FRAGMENTS blk shale toward quartzite/purple shale	WEATHERING OF CLASTS/BEDROCK F 1 2 3 D
TERRAIN UNIT SYMBOL for vicinity of site gs Mp-V	REPRESENTS POLYGON? YES NO ADD NOTES IN FIELD BOOK? YES NO ✓ vegetation gap



PROJECT NO. (+area)
1200163.006

DATE
4 July 2006

AIR PHOTO NO.

SITE DESCRIPTION

SITE NO. JD-15
ASPECT 130 SE
SLOPE ° 120/200
Typical Min/Max
ELEVATION (m) ft. 1452
SECTION HT./PT. DEPTH m (cm) 35
E 448444
N 7015516
VOCATION:

SKETCH X-SEC. TO SHOW SITE POSITION; INDICATE ORIENTATION AND SCALE)

orange-brown soil
-rusty w/ calcium & bedrock
unfrozen
Regosol
-some M boulders (Mx)

SLOPE CONFIG. (DOWN SLOPE) concave convex straight		SLOPE CONFIG. (ACROSS SLOPE) concave convex straight	
HILLSLOPE CONFIG. unfir hum ben ter rd gul sca		DOM. VEG. & MOISTURE INDICATOR PLANTS dwarf birch conifer birch	
BOULDERS a c s o	BLOCKS a s o	BEDROCK OUTCROP a s o	HYDRO. CHAR. dry
PHOTOS roll no. description 13:04			
SAMPLES			

MATERIAL DESCRIPTION

SOIL CHARACTERISTICS
LFH HORIZON: thickness 6 cm absent
B HORIZON: thickness cm
absent Bc Bf Bh Bt Bg Bj Bm
B and/or C pedogenic concentration:
top at cm; base at cm
none moderate high


SOIL DRAINAGE: r w m i p v

SURFICIAL MATERIALS

STRATIG. UNIT	THICKNESS (m)	OVERALL TEXTURE	ORIGIN
1	brs	granulby sand trace silt	C
2	brs observed on road cut	R	R
CONTACT: sharp or gradational; horizontal or wavy			
CONTACT: sharp or gradational; horizontal or wavy			

Complete the following for unweathered surface material if possible, otherwise use B horizon (weathered)

BEDDING/STRATIFICATION well mod. well mod. weak massive	MATRIX TEXTURE sandy to silt
% CLASTS: 50	CLAST ROUNDNESS: A SA SR R WR
CLAST ABUNDANCE BY SIZE a c s o	BOULDERS a o s o
PEBBLES a c s o	INDURATION high mod slight non
COHESION high mod slight non	OXIDATION high mod slight non
LITHOLOGY OF COARSE FRAGMENTS W siltstone?	WEATHERING OF CLASTS/BEDROCK F 1 2 3 D
TERRAIN UNIT SYMBOL for vicinity of site gs Cu/Rr	REPRESENTS POLYGON? YES NO ADD. NOTES IN FIELD BOOK? YES NO Neglect: GR

PROJECT NO. (+area) 1200163.006	DATE 4 July 2006	AIR PHOTO NO.		
SITE DESCRIPTION				
SITE NO. JD-16	ASPECT ° 354 N	SLOPE ° (%) 10 Typical Min/Max	ELEVATION (m) ft. 1471	
SITE DESCRIPTION (soil pit/road cut, etc.) LOCATION: N: 701595B		SECTION HT/PIT DEPTH m (cm) 45 E: 448127		
SKETCH (X-SEC. TO SHOW SITE POSITION; INDICATE ORIENTATION AND SCALE)				
<p> - medium gray soil unfrozen but below 45m may be a approaching P/F - compact/well-indurated, but no visible ice. bottom of pit → -45cm Regosol 1.5m road cut: fill bouldery and sloughing, shale-rich soil. <i>transferred to previous plot?</i> </p>				
SLOPE CONFIG. (DOWN SLOPE) concave convex (straight)		SLOPE CONFIG. (ACROSS SLOPE) concave convex (straight)		
HILLSLOPE CONFIG. uni hum ben ter rid gul sea		DOM. VEG. & MOISTURE INDICATOR PLANTS willow dwarf birch		
BOULDERS a c s o	BLOCKS a c s o	BEDROCK OUTCROP a c s o	HYDRO. CHAR.	
PHOTOS roll no. description				
SAMPLES				

MATERIAL DESCRIPTION				
SOIL CHARACTERISTICS				
LPH HORIZON: thickness, 5 cm absent.	B HORIZON: thickness, _____ cm absent Bc Bf Bh Bg Bj Bm			
B and/or C horizon mottles: below depth of _____ cm absent some abundant	B and/or C pedogenic concentration: top at _____ cm; base at _____ cm none moderate high			
SOIL DRAINAGE: r w m i p v				
SURFICIAL MATERIALS				
STRATIG. UNIT	THICKNESS (m)	OVERALL TEXTURE	ORIGIN	
1	0.15	gravely sandy silt	M	
CONTACT: sharp or gradational; horizontal or wavy				
CONTACT: sharp or gradational; horizontal or wavy				
CONTACT: sharp or gradational; horizontal or wavy				
Complete the following for unweathered surface material if possible, otherwise use B horizon (weathered)				
BEDDING/STRATIFICATION well mod. well mod. weak massive		MATRIX TEXTURE sandy silt		
% CLASTS: 35	CLAST ROUNDNESS: A SA SR R WR			
CLAST ABUNDANCE BY SIZE	PEBBLES a c s o	COBBLES a c s o	BOULDERS a c s o	
CONSOLIDATION high mod slight non	COHESION high mod slight non	INDURATION high mod slight non	OXIDATION high mod slight non	
LITHOLOGY OF COARSE FRAGMENTS shale + granitic sandstone		WEATHERING OF CLASTS/BEDROCK F 1 2 3 D		
TERRAIN UNIT: SYMBOL for vicinity of site gse Mb - P/F		REPRESENTS POLYGON? YES NO		ADD. NOTES IN FIELD BOOK? YES NO vegetation of



PROJECT NO. (+area)
1700163.006

DATE
4 July 2006

AIR PHOTO NO.

SITE DESCRIPTION

SITE NO. **VD-17** ASPECT **360 N** SLOPE **15%** ELEVATION (m.) ft. **1451**
 Typical Min/max
 SECTION HT./PIT DEPTH (m) cm **2.0**
 E: **44745.2**
 LOCATION: **N: 7016105**

SKETCH (X-SEC. TO SHOW SITE POSITION; INDICATE ORIENTATION AND SCALE)

med. gray soil
 Regosol
 - thick till here, 5 m deep in gully (see photos).

SLOPE CONFIG. (DOWN SLOPE)
concave convex **straight**

SLOPE CONFIG. (ACROSS SLOPE)
concave convex **straightly**

HILLSLOPE CONFIG.
unl irr hum ben ter rid (gul) sca

DOM. VEG. & MOISTURE INDICATOR PLANTS
diversif. shrub, willow

BOULDERS
a c s o

BLOCKS
a c s o

BEDROCK OUTCROP
a c s o

HYDRO. CHAR.
dry

PHOTOS roll no. description
 ① 14:45 - slope at site, road cut, CR.
 ② 14:54 - gully 5 m deep

SAMPLES
 ①
 ②

MATERIAL DESCRIPTION

SOIL CHARACTERISTICS

LFH HORIZON: thickness _____ cm absent
Some as 1/16
 B and/or C horizon molles: below depth of _____ cm absent some abundant
 B HORIZON: thickness _____ cm absent Bc Bf Bh Bih Bg Bj Bm
 B and/or C pedogenic concentration: top at _____ cm; base at _____ cm none moderate high
 SOIL DRAINAGE: **r w m i p v**

SURFICIAL MATERIALS

STRATIG. UNIT
 THICKNESS (m)
 OVERALL TEXTURE
 ORIGIN
 CONTACT: sharp or gradational; horizontal or wavy
 CONTACT: sharp or gradational; horizontal or wavy

Complete the following for unweathered surface material if possible, otherwise use B horizon (weathered)

BEDDING/STRATIFICATION
 well mod. well mod. weak massive
 MATRIX TEXTURE
Sandy silt
 CLAST. ROUNDNESS: **A SA SR R WR**
 COBBLES
 BOULDERS
 a c s o
 a s o
 INDURATION
 OXIDATION
 high mod slight non high mod slight non
 WEATHERING OF CLASTS/BEDROCK
F 1 2 3 D

LITHOLOGY OF COARSE FRAGMENTS
shale conglomerate, mica-silt, "matrix" of shale
 REPRESENTS POLYGON? **YES NO**
 ADD. NOTES IN FIELD BOOK? **YES NO**
g5EMB
Yogurt station, 5/16



PROJECT NO. (+area) 1200/63,006
 DATE 4 July 2006
 AIR PHOTO NO.

SITE DESCRIPTION

SITE NO. JD-13
 ASPECT N
 SLOPE 30%
 Typical Min/Max
 ELEVATION (m) 1476
 SECTION HT./PIT DEPTH m cm
 E: 446/408
 N: 7015352
 LOCATION

SKETCH (X-SEC. TO SHOW SITE POSITION; INDICATE ORIENTATION AND SCALE)

SLOPE CONFIG. (DOWN SLOPE) concave convex straight
 SLOPE CONFIG. (ACROSS SLOPE) concave convex straight
 HILLSLOPE CONFIG. (unit) (r) hum ben ter rid gul sca
 DOM. VEG. & MOISTURE INDICATOR PLANTS
 Boulders a c s o
 BEDROCK OUTCROP a s o
 HYDRO. CHAR. dry
 PHOTOS roll no. description
 SAMPLES

SOIL CHARACTERISTICS		MATERIAL DESCRIPTION	
LFI HORIZON: thickness / cm absent	N/A	B HORIZON: thickness / cm absent	Bg Bm
B and/or C horizon molles: below depth of / cm absent / some abundant		B and/or C pedogenic concentration: top at / cm; base at / cm	moderate high
SOIL DRAINAGE: m i p v			
SURFICIAL MATERIALS			
STRATIG. UNIT	THICKNESS (m)	OVERALL TEXTURE	ORIGIN
	bns	gravel	C
CONTACT: sharp or gradational; horizontal or wavy			
CONTACT: sharp or gradational; horizontal or wavy			
CONTACT: sharp or gradational; horizontal or wavy			
Complete the following for unweathered surface material if possible, otherwise use B horizon (weathered)			
BEDDING/STRATIFICATION	well mod. well mod. weak	MATRIX TEXTURE	shale cobbly/boulders to sh
% CLASTS: 100		CLAST ROUNDNESS: A SA SR R WR	
CLAST ABUNDANCE BY SIZE	PEBBLES a c s o	BOULDERS	a c s o
CONSOLIDATION	COHESION	INDURATION	OXIDATION
high mod slight (non)	high mod slight (non)	high mod slight (non)	high mod slight (non)
LITHOLOGY OF COARSE FRAGMENTS		WEATHERING OF CLASTS/BEDROCK	
black shale		F 2 3 D	
TERRAIN UNIT SYMBOL for vicinity of site		REPRESENTS POLYGON? YES NO	
shCa		YES NO	
		ADD. NOTES IN FIELD BOOK? YES NO	
		YES NO	



PROJECT NO. (+area)
1200163.006

AIR PHOTO NO.

DATE
4 July 2006

SITE DESCRIPTION

SITE NO. JD-19 ASPECT 350N SLOPE 70/15N ELEVATION 1601 ft.

SITE DESCRIPTION (e.g. pit, road cut, etc.) SECTION HT./PIT DEPTH m cm
E: 445340 N: 7015015

SKETCH (X-SEC. TO SHOW SITE POSITION; INDICATE ORIENTATION AND SCALE)
- AT CREST OF FACE OF "ROCK SLACER"
- HUMMOCKY RUBBLE BEYOND TOE OF FACE INDICATES
SUBSIDENCE, POSSIBLE MULTIPLE OF ICE LENSES.

SLOPE CONFIG. (DOWN-SLOPE) concave convex straight
SLOPE CONFIG. (ACROSS SLOPE) concave convex straight

HILLSLOPE CONFIG. unt fir hum ben (er) rd gul sea
DOM. VEG. & MOISTURE INDICATOR PLANTS

BOULDERS a 300 BLOCKS a c s o BEDROCK OUTCROP dry HYDRO. CHAR. dry

PHOTOS roll no. description
16:30 4 photos - pan of valley E to W from JD-19

SAMPLES

SOIL CHARACTERISTICS		MATERIAL DESCRIPTION	
LFIH HORIZON: thickness _____ cm; absent	B HORIZON: thickness _____ cm; absent Bc Bf Bh Bth Bg Bq Bm		
B and/or C horizon moities: below depth of _____ cm; absent some abundant	B and/or C pedogenic concentration: top at _____ cm; base at _____ cm; none moderate high		
SOIL DRAINAGE: r w m i p v			
SURFICIAL MATERIALS			
STRATIG. UNIT	THICKNESS (m)	OVERALL TEXTURE	ORIGIN
1	bns	rubble	C
CONTACT: sharp or gradational; horizontal or wavy			
CONTACT: sharp or gradational; horizontal or wavy			
CONTACT: sharp or gradational; horizontal or wavy			
CONTACT: sharp or gradational; horizontal or wavy			
Complete the following for unweathered surface material if possible, otherwise use B horizon (weathered)			
BEDDING/STRATIFICATION well mod. well mod. weak massive		MATRIX TEXTURE	
% CLASTS: 100	CLAST ABUNDANCE BY SIZE	CLAST ROUNDNESS: A SA SR R WR	
PEBBLES a c s o	COBBLES a c s o	BOULDERS a c s o	
COHESION high mod slight non	INDURATION high mod slight non	OXIDATION high mod slight non	
LITHOLOGY OF COARSE FRAGMENTS black shale		WEATHERING OF CLASTS/BEDROCK F 1 2 3 D	
TERRAIN UNIT SYMBOL for vicinity of site acks-Z		REPRESENTS POLYGON? YES NO	
		ADD. NOTES IN FIELD BOOK? YES NO	



PROJECT NO. (+area)
1200163.006

DATE
4 July 2006

AIR PHOTO NO.

SITE DESCRIPTION

SITE NO.
JD-20

ASPECT
@ stream channel

SLOPE ° %
Typical Min/max

ELEVATION (m) ft.
1501

SECTION HT./PIT DEPTH (m) cm
2.0

SITE DESCRIPTION (soil pit, road cut, etc.)
cut slope on stream bank

E: 445902
LOCATION N: 7015458

SKETCH (X-SEC. TO SHOW SITE POSITION; INDICATE ORIENTATION AND SCALE)

- stream flows down fault: shale on North side, steeper dipping Namb; more massive (quartzite?) [bedding not clear] on South side.

SLOPE CONFIG. (DOWN SLOPE)
concave convex straight

SLOPE CONFIG. (ACROSS SLOPE)
concave convex straight

HILLSLOPE CONFIG.
uni) irr hum ben ter rid gul sea

DOM. VEG. & MOISTURE INDICATOR PLANTS

BOULDERS
a c s o

BLOCKS
a c s o

BEDROCK OUTCROP
a c s o

HYDRO. CHAR.
wet

PHOTOS roll no. description
17:24 ② PAN OF THIS SITE FROM ACROSS VALLEY

SAMPLES
~17:00 ④ PAN OF VALLEY FROM JD-20

MATERIAL DESCRIPTION

SOIL CHARACTERISTICS

LFH HORIZON: thickness ~ 6 cm absent

B HORIZON: thickness _____ cm
(absent) Bc Bf Bh Bt Bg Bj Bm

B and/or C horizon motiles: below depth of _____ cm
(absent) some abundant

B and/or C pedogenic concentration:
top at _____ cm; base at _____ cm
none moderate high

SOIL DRAINAGE: r i p v

SURFICIAL MATERIALS

STRATIG. UNIT	THICKNESS (m)	OVERALL TEXTURE	ORIGIN
1	~1.0 bns	?	M

CONTACT: sharp or gradational; horizontal or wavy

2

bns

R

CONTACT: sharp or gradational; horizontal or wavy

Complete the following for unweathered surface material if possible, otherwise use B horizon (weathered)

BEDDING/STRATIFICATION
well/mod. well mod. weak massive

MATRIX TEXTURE

% CLASTS:

CLAST ROUNDNESS: A SA SR R WR

CLAST ABUNDANCE BY SIZE	PEBBLES a c s o	COBBLES a c s o	BOULDERS a c s o
high mod slight non	high/mod slight non	high mod slight non	high mod slight non

INDURATION
high mod slight non

OXIDATION

LITHOLOGY OF COARSE FRAGMENTS
shale & gneiss

WEATHERING OF CLASTS/BEDROCK
F 1 2 3 D

TERRAIN UNIT SYMBOL for vicinity of site
Nvb/snr

REPRESENTS POLYGON? YES NO

ADD. NOTES IN FIELD BOOK? YES NO



PROJECT NO. (+area) 1200163.006	DATE 5 July 2006	AIR PHOTO NO.
SITE DESCRIPTION		
SITE NO. VD-21	ASPECT 110 E	SLOPE ° 8-10 % Typical Min/Max
ELEVATION (m) ft. 1522		SECTION HT./PIT DEPTH m cm E: 440564 N: 7016463
SITE DESCRIPTION (soil pit/road cut, etc.)		

SKETCH (X-SEC. TO SHOW SITE POSITION; INDICATE ORIENTATION AND SCALE)

- LOCATION ON HUMmock, ROUNDED TOP

- FROST BOILS & BOULDERS IN 1m dia. Soils noted = permafrost

- Regosol

- permafrost not intersected

SLOPE CONFIG. (DOWN SLOPE) concave (convex) straight	SLOPE CONFIG. (ACROSS SLOPE) concave (convex) straight
HILL SLOPE CONFIG. uni irr (hum) ben ter rd gul sea	DOM. VEG. & MOISTURE INDICATOR PLANTS grass, for, Carex, sedge, willow
BOULDERS a c s o	BEDROCK OUTCROP a c s o
PHOTOS roll no. description 0 10:53 - shows edge of hummock, pit, shore, back, pit, bldg	HYDRO. CHAR. dry
SAMPLES	

MATERIAL DESCRIPTION	
SOIL CHARACTERISTICS	
LFB HORIZON: thickness 11 cm absent	B HORIZON: thickness _____ cm (absent) Bc Bf Bh Bln Bg Bj Bm
B and/or C horizon: boulders below depth of _____ cm absent some abundant	B and/or C pedogenic concentration: top at _____ cm; base at _____ cm (none) moderate high
SOIL DRAINAGE: (w) m i p v	

SURFICIAL MATERIALS		
STRATIG. UNIT	THICKNESS (m)	OVERALL TEXTURE
1	(bns)	gravel & sand trace silt
CONTACT: sharp or gradational; horizontal or wavy		
—	bns	
CONTACT: sharp or gradational; horizontal or wavy		
—	bns	
CONTACT: sharp or gradational; horizontal or wavy		
—	bns	

Complete the following for unweathered surface material if possible, otherwise use B horizon (weathered)

BEDDING/STRATIFICATION: well mod. well mod. weak massive	MATRIX TEXTURE sandy, tr. silt
% CLASTS: 60	CLAST ROUNDNESS: (A) SA SR R WR
CLAST ABUNDANCE BY SIZE a c s o	BOULDERS a (c) s o
PEBBLES a c s o	COBBLES a c s o
CONSOLIDATION high mod slight non	INDURATION high mod slight non
COHESION high mod slight non	OXIDATION high mod slight non
LITHOLOGY OF COARSE FRAGMENTS sandy argillite	WEATHERING OF CLASTS/BEDROCK F 1 2 3 D

TERRAIN UNIT SYMBOL for vicinity of site sh R h	REPRESENTS POLYGON? (YES) NO
	ADD. NOTES IN FIELD BOOK? (YES) NO segment type: GR



PROJECT NO. (+area) 1200 62 056	DATE 5 July	AIR PHOTO NO.
SITE DESCRIPTION		
SITE NO. JD-22	ASPECT 290 W	SLOPE ° 35.62W Typical Microflax
SLOPE °		ELEVATION (m) 1593
SECTION HT./PIT DEPTH E: 44096.4 N: 7016393		m (cm) 47

SKETCH (X-SEC. TO SHOW SITE POSITION; INDICATE ORIENTATION AND SCALE)

Regolith
Boulder Cracks common

SLOPE CONFIG. (DOWN SLOPE) concave convex straight		SLOPE CONFIG. (ACROSS SLOPE) concave convex straight	
HILLSLOPE CONFIG. unl (100) ben ter rid gul sea		DOM. VEG. & MOISTURE INDICATOR PLANTS Carrizo bushes, Mesquite, grasses	
BOULDERS s c s o	BLOCKS s c s o	BEDROCK OUTCROP s c s o	HYDRO. CHAR. dry
PHOTOS roll no. description			
SAMPLES			

MATERIAL DESCRIPTION			
SOIL CHARACTERISTICS			
LPH HORIZON: thickness 7 cm absent	B HORIZON: thickness cm absent Ac Bf Bh Bih Bg Bj Bm		
B and/or C horizons: below depth of cm absent some abundant	B and/or C pedogenic concentration: top at cm; base at cm none moderate high		
SOIL DRAINAGE: r w m i p v			
SURFICIAL MATERIALS			
STRATIG. UNIT	THICKNESS (m)	OVERALL TEXTURE	ORIGIN
1	2 bns	gravelly sand some silt	C
CONTACT: sharp or gradational; horizontal or wavy			
2	?		R
CONTACT: sharp or gradational; horizontal or wavy			
CONTACT: sharp or gradational; horizontal or wavy			
Complete the following for unweathered surface material if possible, otherwise use B horizon (weathered)			
BEDDING/STRATIFICATION: well mod. well mod. weak massive			
MATRIX TEXTURE Sand, some silt			
% CLASTS: 50-60	CLAST ROUNDNESS: A SA SR R WR		
CLAST ABUNDANCE BY SIZE	PEBBLES s c s o	COBBLES s c s o	BOULDERS s c s o
CONSOLIDATION high mod slight non	COHESION high mod slight non	INDURATION high mod slight non	OXIDATION high mod slight non
LITHOLOGY OF COARSE FRAGMENTS shaly argillite			
WEATHERING OF CLASTS/BEDROCK F 1 2 3 D			
TERRAIN UNIT SYMBOL for vicinity of site ZgS C/R/hr		REPRESENTS POLYGON? YES NO	
		ADD. NOTES IN FIELD BOOK? YES NO	



PROJECT NO. (4-area)
1200/63.006

DATE
5 July 2006

AIR PHOTO NO.

SITE DESCRIPTION

SITE NO. JD-23 ASPECT 2005 SLOPE 0% ELEVATION m. ft.

SITE DESCRIPTION (soil pit, road cut, etc.)
View from JD-22

Typical Min/Max
N/A

SECTION HT./PIT DEPTH m cm

SKETCH (X-SEC. TO SHOW SITE POSITION; INDICATE ORIENTATION AND SCALE)

*remnants of what had the C one
R-controlled. This site, bedrock of
exposed on side-slope*

SLOPE CONFIG. (DOWN SLOPE)
concave convex / straight

SLOPE CONFIG. (ACROSS SLOPE)
concave convex / straight

HILLSLOPE CONFIG.
unl irr (hum) ben ter rid gul sca

DOM. VEG. & MOISTURE INDICATOR PLANTS

BOULDERS
8 c s o

BLOCKS
8 c s o

HYDRO. CHAR.
dry

PHOTOS roll no. description
11:34 - view across road to JD23 from JD22

SAMPLES
CV/Rh

MATERIAL DESCRIPTION

SOIL CHARACTERISTICS

LFH HORIZON: thickness _____ cm absent

B HORIZON: thickness _____ cm absent Bc Bf Bh Bk Bg Bj Bm

B and/or C horizon mottles: below depth of _____ cm absent some abundant

B and/or C pedogenic concentration: top at _____ cm; base at _____ cm none moderate high

SOIL DRAINAGE: D w m i p v

SURFICIAL MATERIALS

STRATIG. UNIT

THICKNESS (m)

OVERALL TEXTURE

ORIGIN

1 < 1m brs C

CONTACT: sharp or gradational; horizontal or wavy

2 brs R

CONTACT: sharp or gradational; horizontal or wavy

3 brs

Complete the following for unweathered surface material if possible, otherwise use B horizon (weathered)

BEDDING/STRATIFICATION
(well mod. well. mod. weak massive)

MATRIX TEXTURE
R

% CLASTS:

CLAST ROUNDNESS: A SA SR R WR

CLAST ABUNDANCE BY SIZE

PEBBLES
a c s o

BOULDERS
a c s o

CONSOLIDATION

high .mod slight non

INDURATION

OXIDATION

high .mod slight non

high mod slight non

LITHOLOGY OF COARSE FRAGMENTS

WEATHERING OF CLASTS/BEDROCK

shale / arg?

F 1 2 3 D

TERRAIN UNIT SYMBOL for vicinity of site

REPRESENTS POLYGON? (YES/NO)

CV/Rh

ADD. NOTES IN FIELD BOOK? (YES/NO)



PROJECT NO. (4-area) 1200163, 006	DATE 5 July 2006	AIR PHOTO NO.
SITE DESCRIPTION		
TE NO. JD-24	ASPECT FLAT	ELEVATION ft. 1590
SLOPE % 6-13% on top		Typical
SECTION HT./PIT DEPTH m cm E1 440 795 N: 7016144		

SKETCH (X-SEC. TO SHOW SITE POSITION; INDICATE ORIENTATION AND SCALE)
 - AT EDGES OF ROCK CANYON
 - RECESSED
 - canyon depth ~ 40m

SLOPE CONFIG. (DOWN SLOPE) concave convex straight		SLOPE CONFIG. (ACROSS SLOPE) concave convex straight	
HILLSLOPE CONFIG. unl irr (hum) ben ter rid gul sca			
BOULDERS & 0°	BLOCKS & 0° s o	BEDROCK OUTCROP & 0° s o	HYDRO. CHAR. dry site
PHOTOS roll no. description ② 12:00 ② h w GR @ site			
SAMPLES			

MATERIAL DESCRIPTION	
SOIL CHARACTERISTICS	
LFI HORIZON: thickness 8 cm absent	B HORIZON: thickness _____ cm (absent B ₁ B ₂ B ₃ B ₄ B ₅ B ₆)
B and/or C horizon profiles: below depth of _____ cm (absent) some abundant	B and/or C pedogenic concentration: top at _____ cm; base at _____ cm (none) moderate high
SOIL DRAINAGE: (W) m i p v	

SURFICIAL MATERIALS			
STRATIG. UNIT	THICKNESS (m)	OVERALL TEXTURE	ORIGIN
1	(> 1m) bns	gravelly sandy trace silt	C
CONTACT: sharp or gradational, horizontal or wavy			
CONTACT: sharp or gradational, horizontal or wavy			
CONTACT: sharp or gradational, horizontal or wavy			
Complete the following for unweathered surface material if possible, otherwise use B horizon (weathered)			

BEDDING/STRATIFICATION well mod. well mod. weak massive		MATRIX TEXTURE sandy trace silt	
% CLASTS:	CLAST ROUNDNESS: (A) SA SR R WR		
CLAST ABUNDANCE BY SIZE	PEBBLES (A) o s o	COBBLES (A) c s o	BOULDERS (A) b s o
CONSOLIDATION high mod slight (on)	COHESION high mod slight (on)	INDURATION high mod slight (on)	OXIDATION high mod slight (on)
LITHOLOGY OF COARSE FRAGMENTS		WEATHERING OF CLASTS/BEDROCK (F) 1 2 3 D	
TERRAIN UNIT SYMBOL for vicinity of site Cb/Rh		REPRESENTS POLYGON? YES NO ADD. NOTES IN FIELD BOOK? YES NO V. pedation: CR	



PROJECT NO. (+area)
1200163.016

DATE
5 July 2006

AIR PHOTO NO.

SITE DESCRIPTION

SITE NO. JD-25
ASPECT SLOPE ° %
Typical Mtr/max
SECTION HT./PIT DEPTH m
E: 440743
LOCATION N: 7015967

ELEVATION (m) ft.
1574
SKETCH (X-SEC. TO SHOW SITE POSITION; INDICATE ORIENTATION AND SCALE)
Regosol

SLOPE CONFIG. (DOWN SLOPE)
concave convex straight

SLOPE CONFIG. (ACROSS SLOPE)
concave convex straight

HILLSLOPE CONFIG.
unit hum ben ter rd gul sca

DOM. VEG. & MOISTURE INDICATOR PLANTS

BOULDERS a c s o

BLOCKS a c s o

BEDROCK OUTCROP a c s o

HYDRO. CHAR.

PHOTOS roll no. description

SAMPLES

MATERIAL DESCRIPTION

SOIL CHARACTERISTICS
LFH HORIZON: thickness 6 cm absent
B HORIZON: thickness cm absent Bc Bf Bh Bfn Bg Bm
B and/or C horizons: below depth of cm absent some abundant
B and/or C pedogenic concentration: top at cm; base at cm
none moderate high

SURFICIAL MATERIALS

STRATIG. UNIT THICKNESS (m) OVERALL TEXTURE ORIGIN
1 bns gravelly SAND, some silt M (Co?)
CONTACT: sharp or gradational; horizontal or wavy
CONTACT: sharp or gradational; horizontal or wavy
CONTACT: sharp or gradational; horizontal or wavy

Complete the following for unweathered surface material if possible, otherwise use B horizon (weathered)

BEDDING/STRATIFICATION well mod. well mod. weak massive
MATRIX TEXTURE sandy bone silt
% CLASTS: CLAST ROUNDNESS: (A) SA SR R WR
CLAST ABUNDANCE BY SIZE PEBBLES BOULDERS
a c s o a c s o
CONSOLIDATION COHESION INDURATION OXIDATION
high mod slight non high mod slight non high mod slight non
LITHOLOGY OF COARSE FRAGMENTS WEATHERING OF CLASTS/BEDROCK
oxy illuvial sediments F 1 2 3 D
TERRAIN UNIT SYMBOL for vicinity of site REPRESENTS POLYGON? YES NO
Zg s Mb ADD. NOTES IN FIELD BOOK? YES NO



PROJECT NO. (+area)
200163.006

DATE
5 July 2006

AIR PHOTO NO.

SITE DESCRIPTION

SITE NO. JD-26

ASPECT 340 N

SLOPE ° % 35/306

ELEVATION (m) ft. 1569

SITE DESCRIPTION (soil pit/road cut, etc.)
E: 440 398

SECTION HT./PIT DEPTH m (cm) 66

LOCATION: N: 315678

SKETCH (X-SEC. TO SHOW SITE POSITION; INDICATE ORIENTATION AND SCALE)

- Regosol
shallow R exposed in canyon draining
cynque creek 70m to west.

SLOPE CONFIG. (DOWN SLOPE) concave convex straight		SLOPE CONFIG. (ACROSS SLOPE) concave convex (straight) irreg.	
HILLSLOPE CONFIG. unit (hr) hum ben ter rid gul sea		DOM. VEG. & MOISTURE INDICATOR PLANTS	
BOULDERS a (s) o	BLOCKS a (s) o	BEDROCK OUTCROP s (s) o	HYDRO. CHAR. dry site
PHOTOS roll no. description (7) 12: 12 (2) PPT GATS etc			
SAMPLES Ø			

MATERIAL DESCRIPTION

SOIL CHARACTERISTICS

LFH HORIZON: thickness 9 cm. absent

B HORIZON: thickness _____ cm
absent Bc Bt Bh Bk Bg Bq Bm

B and/or C horizon mottles: below depth of _____ cm
absent some abundant
B and/or C pedogenic concentration:
top at _____ cm; base at _____ cm
none moderate high

SOIL DRAINAGE: (w) m i p v

SURFICIAL MATERIALS

STRATIG. UNIT

THICKNESS (m)

OVERALL TEXTURE

ORIGIN

1

discontinuous
(bns)

coarse
(granul. sand?)

Cx

CONTACT: sharp or gradational; horizontal or wavy?

2

(bns)

gravely silty
SAND

M

CONTACT: sharp or gradational; horizontal or wavy

—

(bns)

Complete the following for unweathered surface material if possible, otherwise use B horizon (weathered)

BEDDING/STRATIFICATION:
well mod. well mod. weak massive

MATRIX TEXTURE
silty sand

% CLASTS: ~40 (?)

CLAST ROUNDNESS: A (SA) SR R WR

CLAST ABUNDANCE BY SIZE

PEBBLES
(a) s o

BOULDERS
a c (s) o

CONSOLIDATION
high mod slight (no)

COHESION
high mod slight (no)

INDURATION
high mod slight (no)

OXIDATION
high mod slight (no)

LITHOLOGY OF COARSE FRAGMENTS

weathered; some sub-angular
granitic

WEATHERING OF CLASTS/BEDROCK
P 1 2 3 D

TERRAIN UNIT SYMBOL for vicinity of site

Cx / Zg5 Mb

REPRESENTS POLYGON? YES NO

ADD. NOTES IN FIELD BOOK? YES NO

vegetation: GR



PROJECT NO. (+area)

1200163.006

DATE

5 July 2006

AIR PHOTO NO.

SITE DESCRIPTION

TE NO. AD-27

ASPECT

240 W

SLOPE ° %

191/296

ELEVATION (m) ft.

1538

SITE DESCRIPTION (soil pit, road cut, etc.)

SECTION HI/PT DEPTH m cm

E: 438593

N: 7018456

SKETCH (X-SEC. TO SHOW SITE POSITION; INDICATE ORIENTATION AND SCALE)

- Regosed
- dark gray soil

SLOPE CONFIG. (DOWN SLOPE)

concave convex straight

SLOPE CONFIG. (ACROSS SLOPE)

concave convex straight

HILLSLOPE CONFIG.

uni) hr hum ben ter rid gul sca

DOM. VEG. & MOISTURE INDICATOR PLANTS

BOULDERS

a c s o

BEDROCK OUTCROP

a s o

PHOTOS roll no. description

2-14:09

HYDRO. CHAR.

dry site

SAMPLES

MATERIAL DESCRIPTION

SOIL CHARACTERISTICS

LFH HORIZON: thickness 6 cm absent

B HORIZON: thickness _____ cm

absent) Bc Bf Bh Bih Bg Bj Bm

B and/or C horizon mottles: below depth of _____ cm

B and/or C pedogenic concentration: top at _____ cm; base at _____ cm

absent) some abundant

none) moderate high

SOIL DRAINAGE: (w) m i p v

SURFICIAL MATERIALS

STRATIG. UNIT

THICKNESS (m)

OVERALL TEXTURE

ORIGIN

|

bns

gravelly

silty SAND

M (C?)

CONTACT: sharp or gradational; horizontal or wavy

CONTACT: sharp or gradational; horizontal or wavy

CONTACT: sharp or gradational; horizontal or wavy

CONTACT: sharp or gradational; horizontal or wavy

CONTACT: sharp or gradational; horizontal or wavy

CONTACT: sharp or gradational; horizontal or wavy

CONTACT: sharp or gradational; horizontal or wavy

CONTACT: sharp or gradational; horizontal or wavy

CONTACT: sharp or gradational; horizontal or wavy

CONTACT: sharp or gradational; horizontal or wavy

CONTACT: sharp or gradational; horizontal or wavy

CONTACT: sharp or gradational; horizontal or wavy

CONTACT: sharp or gradational; horizontal or wavy

CONTACT: sharp or gradational; horizontal or wavy

CONTACT: sharp or gradational; horizontal or wavy

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CONTACT: sharp or gradational; horizontal or wavy

CONTACT: sharp or gradational; horizontal or wavy

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CONTACT: sharp or gradational; horizontal or wavy

CONTACT: sharp or gradational; horizontal or wavy

CONTACT: sharp or gradational; horizontal or wavy

CONTACT: sharp or gradational; horizontal or wavy

CONTACT: sharp or gradational; horizontal or wavy

CONTACT: sharp or gradational; horizontal or wavy

CONTACT: sharp or gradational; horizontal or wavy

CONTACT: sharp or gradational; horizontal or wavy

CONTACT: sharp or gradational; horizontal or wavy

Complete the following for unweathered surface material if possible, otherwise use B horizon (weathered)

BEDDING/STRATIFICATION

well mod. well mod. weak massive

MATRIX TEXTURE

% CLASTS:

CLAST ROUNDNESS: A SA SR R WR

CLAST ABUNDANCE BY SIZE

PEBBLES

a c s o

COBBLES

a c s o

BOULDERS

a c s o

CONSOLIDATION

high mod slight/non

COHESION

high mod slight/non

INDURATION

high mod slight/non

OXIDATION

high mod slight/non

LITHOLOGY OF COARSE FRAGMENTS

(quartzite) shale

WEATHERING OF CLASTS/BEDROCK

F 1 2 3 D

TERRAIN UNIT SYMBOL for vicinity of site

g25Mba (C?)

REPRESENTS POLYGON? YES NO

YES NO

ADD. NOTES IN FIELD BOOK? YES NO

UNgraded GR



PROJECT NO. (+area) 17-00163.006
 DATE 5 July 2006
 AIR PHOTO NO.

SITE DESCRIPTION

SITE NO. JD-28
 ASPECT 220° SW
 ELEVATION (m) 1354
 SLOPE ° %
 Typical Min/max
 SECTION HT./PIT. DEPTH m cm
 438 392
 LOCATION: N: 7017858

SKETCH (X-SEC. TO SHOW SITE POSITION; INDICATE ORIENTATION AND SCALE)
 - Brunised
 LFH 19cm
 Bm 35cm
 C
 bottom of pit 62cm

SLOPE CONFIG. (DOWN SLOPE) concave convex straight
 SLOPE CONFIG. (ACROSS SLOPE) concave convex straight
 HILLSLOPE CONFIG. (unit) irr hum ben ter rid gul sca
 DOM. VEG. & MOISTURE INDICATOR PLANTS tall willow; spruce up to 20m
 BEDROCK OUTCROP wet lower valley slopes
 Boulders a o s o
 HYDRO. CHAR. wet lower valley slopes
 PHOTOS roll no. description
 SAMPLES

MATERIAL DESCRIPTION	
SOIL CHARACTERISTICS	
LFH HORIZON: thickness 19 cm absent	B HORIZON: thickness 6 cm absent Bc Bf Bh Bg Bj Bl
B and/or C horizon mottles: below depth of 1 cm absent; some abundant	B and/or C pedogenic concentration: top at 1 cm; base at 1 cm; none moderate high
SOIL DRAINAGE: r w 0 i p v	
SURFICIAL MATERIALS	
STRATIG. UNIT 1	THICKNESS (m) bns
OVERALL TEXTURE silty sand some gravel	ORIGIN M
CONTACT: sharp or gradational; horizontal or wavy	
CONTACT: sharp or gradational; horizontal or wavy	
Complete the following for unweathered surface material if possible, otherwise use B horizon (weathered)	
BEDDING/STRATIFICATION well mod. well mod. weak massive	MATRIX TEXTURE silty sand
% CLASTS:	CLAST ROUNDNESS: (A) SA SR R WR
CLAST ABUNDANCE BY SIZE	PEBBLES a o s o BOULDERS a o s o
CONSOLIDATION high mod slight non	COHESION high mod slight non INDURATION high mod slight non
LITHOLOGY OF COARSE FRAGMENTS shaly black (sympatric?) argillite?	WEATHERING OF CLASTS/BEDROCK F 1 2 3 D
TERRAIN UNIT SYMBOL for vicinity of site g25 Mj	REPRESENTS POLY/GONT? YES NO ADD. NOTES IN FIELD BOOK? YES NO vegetation: GR



PROJECT NO. (4-area) 1200/63.006
 DATE 5 July 2006
 AIR PHOTO NO.

SITE DESCRIPTION
 SITE NO. JD-29
 ASPECT 360° N
 SLOPE ° % 54/254
 Typical MIN/MAX
 ELEVATION (m) ft. 1317
 SECTION HT./PIT DEPTH m cm
 E: 438/2.9
 LOCATION: N: 7017499

SKETCH (X-SEC. TO SHOW SITE POSITION; INDICATE ORIENTATION AND SCALE)
 - gently sloped "bench"
 - black soil
 - Regosol

SLOPE CONFIG. (DOWN SLOPE) concave convex straight
 SLOPE CONFIG. (ACROSS SLOPE) concave convex straight

HILLSLOPE CONFIG. uni fir hum ben ter rd gul sca
 Boulders a c s o
 BLOCKS a c s o
 BEDROCK OUTCROP a c s o
 HYDRO. CHAR. wet tower slopes

PHOTOS roll no. description
 1556 - view across valley to site JD-27
 SAMPLES

MATERIAL DESCRIPTION

SOIL CHARACTERISTICS
 LFH HORIZON: thickness 12 cm absent
 B HORIZON: thickness cm absent Bc Bf Bh Bth Bg Bj Bm
 B and/or C horizon mottles: below depth of cm absent some abundant
 B and/or C pedogenic concentration: top at cm; base at cm none/moderate high

SURFICIAL MATERIALS
 STRATIG. UNIT THICKNESS (m) OVERALL TEXTURE ORIGIN
 bns silty sand
 some gravel
 CONTACT: sharp or gradational; horizontal or wavy

CONTACT: sharp or gradational; horizontal or wavy
 bns
 CONTACT: sharp or gradational; horizontal or wavy
 bns

Complete the following for unweathered surface material if possible, otherwise use B horizon (weathered)
 BEDDING/STRATIFICATION well mod. well mod. weak massive
 MATRIX TEXTURE
 % CLASTS: CLAST ROUNDNESS: A SA SR R WR
 CLAST ABUNDANCE BY SIZE BOULDERS a c s o
 COBBLES a c s o
 CONSOLIDATION COHESION high mod slight non high mod slight non
 INDURATION high mod slight non high mod slight non
 OXIDATION high mod slight non
 LITHOLOGY OF COARSE FRAGMENTS WEATHERING OF CLASTS/BEDROCK
 study of silty, granitic (SA) block (granitic?) bldr.
 TERRAIN UNIT SYMBOL for vicinity of site F 2 3 D
 REPRESENTS POLYGON? YES NO
 ADD. NOTES IN FIELD BOOK? YES NO
 gzs Mb or Cv/Mb? Cx/Mb?



PROJECT NO. (+area)
120063,006

DATE
5 July 2006

AIR PHOTO NO.

SITE DESCRIPTION

SITE NO. JD-30

ASPECT

SLOPE ° % 30/30
Typical Min/Max

ELEVATION (m) ft. 1562

SECTION HT./PIT. DEPTH (m) cm 0.40

E: 439125

LOCATION: N: 7018100

SKETCH (X-SEC. TO SHOW SITE POSITION; INDICATE ORIENTATION AND SCALE)

- LOCATED JUST DOWNSLOPE OF FLAT-TOPPED MUDYGE

SLOPE CONFIG. (DOWN SLOPE)
concave convex straight

SLOPE CONFIG. (ACROSS SLOPE)
concave convex straight

HILLSLOPE CONFIG.
un) r hum ben ter rid gut sca

DOM. VEG. & MOISTURE INDICATOR PLANTS

BOULDERS a c s o

BLOCKS a c s o

BEDROCK OUTCROP a c s o

HYDRO. CHAR.

PHOTOS roll no. description
② 16:19 ① 811

② SLOPE = GR

SAMPLES

SOIL CHARACTERISTICS		MATERIAL DESCRIPTION	
LFH HORIZON: thickness <u>6</u> cm absent	B HORIZON: thickness <u>7.5</u> cm absent Bc Bf Bh Blh Bg Bgi <u>6m</u>		
B and/or C horizon mottles: below depth of <u> </u> cm absent some abundant	B and/or C pedogenic concentration: top at <u> </u> cm; base at <u> </u> cm none moderate high		
SOIL DRAINAGE: <u>r w / m i p v</u>			
SURFICIAL MATERIALS			
STRATIG. UNIT	THICKNESS (m)	OVERALL TEXTURE	ORIGIN
	bns		
CONTACT: sharp or gradational; horizontal or wavy			
	bns		
CONTACT: sharp or gradational; horizontal or wavy			
	bns		
Complete the following for unweathered surface material; if possible, otherwise use B horizon (weathered)			
BEDDING/STRATIFICATION well mod. well mod. weak <u>massive</u>		MATRIX TEXTURE	
% CLASTS:			
CLAST ABUNDANCE BY SIZE	PEBBLES <u>a c s o</u>	COBBLES <u>a c s o</u>	BOULDERS <u>a c s o</u>
CONSOLIDATION high mod slight non	COHESION high mod slight non	INDURATION high mod slight non	OXIDATION high mod slight non
LITHOLOGY OF COARSE FRAGMENTS <u>blks are typically platy, hard sediments</u>		WEATHERING OF CLASTS/BEDROCK F 1 2 3 D	
TERRAIN UNIT SYMBOL for vicinity of site <u>MND</u>	REPRESENTS POLYGON? YES / NO	ADD. NOTES IN FIELD BOOK? YES / NO <u>Vegetation: GR</u>	



PROJECT NO. (+area) 120063.006
 DATE 5 July 2006
 AIR PHOTO NO.

SITE DESCRIPTION

SITE NO. JD-31
 ASPECT ° FLAT
 SLOPE ° (%) 0.5
 ELEVATION (m) ft. 1529
 SECTION HT./PIT DEPTH m (cm) 51
 E: 439767
 N: 7017645

SKETCH (X-SEC. TO SHOW SITE POSITION; INDICATE ORIENTATION AND SCALE)

- ON SURFACE ≡ ANULAR STALS (Cx)
- block / v. dark gray soil
- Regosol
- a 10m x 10m slump block at edge of ridge above stream - at end of swale that collects run-off from up-ridge bowl (photo D)

SLOPE CONFIG. (DOWN SLOPE) concave convex straight		SLOPE CONFIG. (ACROSS SLOPE) concave convex straight	
HILLSLOPE CONFIG. unl'ir hum ben ter rid gul sea slightly irreg.		DOM. VEG. & MOISTURE INDICATOR PLANTS Caribou lichen, moss, heather	
BOULDERS a o s o	BLOCKS a o s o	BEDROCK OUTCROP a o s o	HYDRO. CHAR. dry site
PHOTOS roll no. description D see above; Mb/R exposed in deep stream canyon			
SAMPLES			

MATERIAL DESCRIPTION			
SOIL CHARACTERISTICS			
LFH HORIZON: thickness 7 cm absent	B HORIZON: thickness _____ cm absent Bc Bf Bh Bk Bg Bj Bm		
B and/or C horizon mottles: below depth of _____ cm absent some abundant	B and/or C pedogenic concentration: top at _____ cm; base at _____ cm none moderate high		
SOIL DRAINAGE: r w m i p v			
SURFICIAL MATERIALS			
STRATIG. UNIT	THICKNESS (m)	OVERALL TEXTURE	ORIGIN
1	bns	gravelly sand trace silt	M
CONTACT: sharp or gradational; horizontal or wavy			
CONTACT: sharp or gradational; horizontal or wavy			
CONTACT: sharp or gradational; horizontal or wavy			
CONTACT: sharp or gradational; horizontal or wavy			
Complete the following for unweathered surface material if possible, otherwise use B horizon (weathered)			
BEDDING/STRATIFICATION well mod. well mod. weak massive		MATRIX TEXTURE sand, trace silt	
% CLASTS: 30	CLAST ROUNDNESS: a s o	SR	R WR
CLAST ABUNDANCE BY SIZE	PEBBLES a o s o	BOULDERS	a o s o
CONSOLIDATION	COHESION	INDURATION	OXIDATION
high mod slight non	high mod slight non	high mod slight non	high mod slight non
LITHOLOGY OF COARSE FRAGMENTS mostly shaly argillite; some gneissitic		WEATHERING OF CLASTS/BEDROCK F 1 2 3 D	
TERRAIN UNIT SYMBOL for vicinity of site Cx / g5 Mb		REPRESENTS POLY/GON? YES NO ADD. NOTES IN FIELD BOOK? YES NO Vegetation: GR	



PROJECT NO. (4-AREA)
120063,006

DATE
5 July 2006

AIR PHOTO NO.

SITE DESCRIPTION

SITE NO.
JD-32

ASPECT °
310° SW

SLOPE ° (%)
24/74
Typical Min/Max

ELEVATION (m) ft.
1465

SITE DESCRIPTION (soil pit, road cut, etc.)
SECTION HT./PIT DEPTH m cm
E: 439878

LOCATION
N: 7016991

SKETCH (X-SEC. TO SHOW SIZE POSITION; INDICATE ORIENTATION AND SCALE)

- Regosol
- medium gray soil column
- water pooling in soil pit
- this site at meadow in valley bottom where vegetation is thinned across slope (feature noted on air photo). Ice-retreat line?
- LARGE BOULDERS DEPOSED ON SURFACE (BEULLETT TO SURFACE BY CRYOTERRAZIONS).

SLOPE CONFIG. (DOWN SLOPE) concave convex straight		SLOPE CONFIG. (ACROSS SLOPE) concave convex straight	
HILLSLOPE CONFIG. unit fir hum ben ter rd gul sca		DOM. VEG. & MOISTURE INDICATOR PLANTS	
BOULDERS a c s o	BLOCKS s p o	BEDROCK OUTCROP s p o	HYDRO. CHAR. wet site
PHOTOS roll no. description ① 18:02 - pit, GA, meadow			
SAMPLES			

MATERIAL DESCRIPTION

SOIL CHARACTERISTICS

L/H HORIZON: thickness 15 cm absent
HORIZON: thickness cm
absent bc Bf Bh Bth Bg Bjl Bm

4cm H. orange Ae (Be?)
B and/or C horizon mottles: below depth of cm
absent some abundant
B and/or C pedogenic concentration:
top at cm; base at cm
non moderate high

SOIL DRAINAGE: r w m D p v

SURFICIAL MATERIALS

STRATIG. UNIT	THICKNESS (m)	OVERALL TEXTURE	ORIGIN
bn	bn	silty sand some gravel	
CONTACT: sharp or gradational; horizontal or wavy			
CONTACT: sharp or gradational; horizontal or wavy			

Complete the following for unweathered surface material if possible, otherwise use B horizon (weathered)

BEDDING/STRATIFICATION
well mod. well mod. weak massive

MATRIX TEXTURE

% CLASTS:

CLAST ABUNDANCE BY SIZE	PEBBLES	COBBLES	BOULDERS
a c s o	a c s o	a c s o	a c s o

CLAST ROUNDNESS: A SA SR R WR

INDURATION
high mod slight non

OXIDATION
high mod slight non

WEATHERING OF CLASTS/BEDROCK
F 1 2 3 D

LITHOLOGY OF COARSE FRAGMENTS
various

TERRAIN UNIT SYMBOL for vicinity of site
gzs mb

REPRESENTS POLYGON? YES NO
ADD NOTES IN FIELD BOOK? YES NO
Vegetation: GR



PROJECT NO. (+area) 1200163.006
 DATE 6 July 2006
 AIR PHOTO NO.

SITE DESCRIPTION	
SITE NO. JD-33	ASPECT 160° S
SLOPE ° 30	ELEVATION (m) ft. 1624
SECTION HT./PIT DEPTH m cm	44/144
LOCATION: N: 7016 105	E: 443022

SKETCH (X-SEC. TO SHOW SITE POSITION; INDICATE ORIENTATION AND SCALE)

- regosol
 - medium brown soil colour
 - bldgs/cobbles/pebbles are subangular to fl
 clasts; surface blocks are angular
 = Cxv/Mb

SLOPE CONFIG. (DOWN-SLOPE) concave convex (straight) bumpy	SLOPE CONFIG. (ACROSS SLOPE) concave convex (straight)
HILLSLOPE CONFIG. unit (ir) num (pen) ter rd (gul) sca	DOM. VEG. & MOISTURE INDICATOR PLANTS blueberry, willow, grasses, ferns, lichen
BOULDERS a c s o	BEDROCK OUTCROP a c s o
PHOTOS roll no. description 2 0:58 4 PT = 20m from break in slope	HYDRO. CHAR. wet soil
SAMPLES	

MATERIAL DESCRIPTION	
SOIL CHARACTERISTICS	
LFH HORIZON: thickness 4 cm absent	B HORIZON: thickness cm
absent	absent/Bc Bf Bh Bih Bg Bjl Bm
B and/or C horizon mollic: below depth of cm	B and/or C pedogenic concentration: top at cm; base at cm
absent	none moderate high
SOIL DRAINAGE: r w (M) p v	

SURFICIAL MATERIALS			
STRATIG. UNIT	THICKNESS (m)	OVERALL TEXTURE	ORIGIN
1	disc thin bns	blocky	C
2	(bns)	gravely silty sand	M
CONTACT: sharp or gradational; horizontal or wavy			
CONTACT: sharp or gradational; horizontal or wavy			
Complete the following for unweathered surface material if possible, otherwise use B horizon (weathered)			

BEDDING/STRATIFICATION: well mod. well mod. weak/massive	MATRIX TEXTURE silty sand
% CLASTS: 40	CLAST ROUNDNESS: A SA SR R WR
CLAST ABUNDANCE BY SIZE a c s o	BOULDERS a c s o
PEBBLES a c s o	COBBLES a c s o
CONSOLIDATION high mod slight non	INDURATION high mod slight non
COHESION high mod slight non	OXIDATION high mod slight non
LITHOLOGY OF COARSE FRAGMENTS variable (M)	
WEATHERING OF CLASTS/BEDROCK F 1 2 3 D	
TERRAIN UNIT SYMBOL for vicinity of site alt/gas Mb	
REPRESENTS POLYGON? (YES) NO	
ADD. NOTES IN FIELD BOOK? (YES) NO vegetation: GR	



PROJECT NO. (+area) 120063.006
 DATE 6 July 2006
 AIR PHOTO NO.

SITE DESCRIPTION	
SITE NO. JD-34	ASPECT ° FLAT
ELEVATION (m) ft. 1505	
SLOPE ° % Typical Min/max	
SECTION HT/PIT DEPTH (m) cm E: 44 3395 12	
N: 7015654	
SCARPE	

SKETCH (X-SEC. TO SHOW SITE POSITION; INDICATE ORIENTATION AND SCALE)

- FLAT (MICRO-IRREGULAR) PSEUDO-ALLUVIAL/FI TERRACE WITH ~12m HIGH ESCARPMENT ~20m N. OF STREAM

- SOME LG BLOCKS OF SHALY ARL. ON SCARP.

- URBAN R UNDER SURFACE

- SOIL HAS AN ANOMALOUS CLAY - NOT WATERSO SS NOT ALLUVIAL

- STREAM BED HAS TILL BOULDERS

SLOPE CONFIG. (DOWN SLOPE) concave convex straight		SLOPE CONFIG. (ACROSS SLOPE) concave convex straight	
HILLSLOPE CONFIG. uni lr hum ben for rid gul sea		DOM. VEG. & MOISTURE INDICATOR PLANTS milser, dwarf birch, blinding feather	
BOULDERS a c s o	BLOCKS a s o	BEDROCK OUTCROP a s o	HYDRO. CHAR. dry
PHOTOS roll no. description ③ 9:30 ② ESCARPMENT ③ VIEW UP VALLEY ④ FLAT-TOPPED (TRAIL) W/ HILL			
SAMPLES			

MATERIAL DESCRIPTION

SOIL CHARACTERISTICS	
LFH HORIZON: thickness ~ 5 cm absent	B HORIZON: thickness cm absent Bc Bf Bh Bg Bj Bm
B and/or C horizon mollic: below depth of cm absent some abundant	B and/or C pedogenic concentration: top at cm; base at cm none moderate high
SOIL DRAINAGE: r w m i p v	

SURFICIAL MATERIALS	
STRATIG. UNIT	THICKNESS (m)
1	bins
OVERALL TEXTURE gravel sand C	
CONTACT: sharp or gradational; horizontal or wavy	

CONTACT: sharp or gradational; horizontal or wavy	
Complete the following for unweathered surface material if possible, otherwise use B horizon (weathered)	
BEDDING/STRATIFICATION well mod. well mod. weak massive	MATRIX TEXTURE sand

% CLASTS: 40	CLAST ROUNDNESS: A SA SR R WR
CLAST ABUNDANCE BY SIZE a c s o	BOULDERS a c s o
COHESION high mod slight non	INDURATION high mod slight non
LITHOLOGY OF COARSE FRAGMENTS WEATHERING OF CLASTS/BEDROCK shaly, waxy w, argillaceous rock F 1 2 3 D	
TERRAIN UNIT SYMBOL for vicinity of site 95 CV / shrt	REPRESENTS POLYGON? YES NO
ADD. NOTES IN FIELD BOOK? YES NO vegetation: CR	



PROJECT NO. (+area)
1200163.006

DATE
July 6 '06

AIR PHOTO NO.

SITE DESCRIPTION	
SITE NO. JD35	ASPECT FLAT 3%
SLOPE ° (%) 0-3 Typical Min/max	ELEVATION m. ft. 1497m
SECTION HT./PIT DEPTH m cm E - 0443483 N - 7015547	

SKETCH (X-SEC. TO SHOW SITE POSITION; INDICATE ORIENTATION AND SCALE)

Grassy meadow - valley bottom

LFIH _____ 0cm

Ae _____ 10cm

B _____ 17cm

SAND/GRAVEL _____ 26cm

ASTERN. B & ALLUMINE _____ 32cm

80cm

SLOPE CONFIG. (DOWN SLOPE) concave convex straight	SLOPE CONFIG. (ACROSS SLOPE) concave convex straight
HILLSLOPE CONFIG. unk. fr hum ben ter rid gut sca	DOM. VEG. & MOISTURE INDICATOR PLANTS
BOULDERS a c s o ϕ	BEDROCK OUTCROP a c s o ϕ
BLOCKS a c s o ϕ	HYDRO. CHAR. MIST
PHOTOS roll no. description	
SAMPLES	

MATERIAL DESCRIPTION

SOIL CHARACTERISTICS

LPH HORIZON: thickness 10 cm absent
AE HORIZON: thickness 7 cm absent B: Bk Bh Bq Bm

B and/or C horizon mottles: below depth of _____ cm
absent some abundant

B and/or C pedogenic concentration:
top at _____ cm; base at _____ cm
none moderate high

SOIL DRAINAGE: r w U p v

SURFICIAL MATERIALS			
STRATIG. UNIT	THICKNESS (m)	OVERALL TEXTURE	ORIGIN
#1	.73 bns	Sandy silt Some gravel	O + Alluvium
CONTACT: sharp or gradational; horizontal or wavy			
2	bns	Sandy gravel Some silt(?)	M
CONTACT: sharp or gradational; horizontal or wavy			

Complete the following for unweathered surface material if possible, otherwise use B horizon (weathered)

BEDDING/STRATIFICATION well mod. well mod. weak massive STAI.	MATRIX TEXTURE Sandy silt
% CLASTS: 15	CLAST ROUNDNESS: A SA SR R WR
CLAST ABUNDANCE BY SIZE	BOULDERS a c s o ϕ
PEBBLES a c s o	COBBLES a c s o
CONSOLIDATION high mod slight non	INDURATION high mod slight non
COHESION high mod slight non	OXIDATION high mod slight non
LITHOLOGY OF COARSE FRAGMENTS SANDY ARGILLACEOUS UNIT	WEATHERING OF CLASTS/BEDROCK F 1 2 3 D
TERRAIN UNIT SYMBOL for vicinity of site Qu. Av / sg MP	REPRESENTS POLYGON? (YES) NO
	ADD. NOTES IN FIELD BOOK? (YES) NO Vegetation See GR



PROJECT NO. (4-area) DATE AIR PHOTO NO.
 1200163, 006 6 July 2006

SITE DESCRIPTION

SITE NO. JD-36 ASPECT 330° NW ELEVATION (m) 1518
 SLOPE ° % 30/26/6 Typical M/m/Max
 SECTION HT./PIT DEPTH m cm
 E: 44 34 42
 W: 70 52 92
 LOCATION: LOCATIONS

SKETCH (X-SEC. TO SHOW SITE POSITION; INDICATE ORIENTATION AND SCALE)

— probably Cx/Mb
 — appears to possibly be surface movement (solifluction?) because of gravely sand, some silt buried Ae. C saturated
 Bottom of PIT — 50cm

Bedrock exposed in upslope gully at crest of flatter terrain ups; are blocks below, so Cx/Ov/mb.

SLOPE CONFIG. (DOWN SLOPE) concave convex (straight)
 SLOPE CONFIG. (ACROSS SLOPE) concave convex (straight)

HILLSLOPE CONFIG. (un) irr hum ben ter rid (gul) sca
 DOM. VEG. & MOISTURE INDICATOR PLANTS

BOULDERS a c s o BLOCKS a c s o BEDROCK OUTCROP a c s o HYDRO. CHAR. moist slope

PHOTOS roll no. description
 10142 - all digging pit

SAMPLES

MATERIAL DESCRIPTION

SOIL CHARACTERISTICS
 LFH HORIZON: thickness 9 cm absent
 B HORIZON: thickness cm
 absent Bc Bf Bh Bk Bg Bj Bm
 B and/or C horizon mollic; below depth of cm
 some abundant
 B and/or C pedogenic concentration:
 low at cm; base at cm
 none moderate high

SOIL DRAINAGE: r w m p v

SURFICIAL MATERIALS

STRATIG. UNIT	THICKNESS (m)	OVERALL TEXTURE	ORIGIN
1	0.30 bns	silty silt	O
2	bns	gravely sand some silt	M

CONTACT: sharp or gradational; horizontal or wavy
 CONTACT: sharp or gradational; horizontal or wavy
 CONTACT: sharp or gradational; horizontal or wavy

Complete the following for unweathered surface material if possible, otherwise use B horizon (weathered)

BEDDING/STRATIFICATION: well mod. well mod. weak massive
 MATRIX TEXTURE: sand, some silt

% CLASTS: 40
 CLAST ROUNDNESS: A SA SR R WR
 BOULDERS a c s o
 COBBLES a c s o
 INDURATION high mod slight non high mod slight non
 COHESION high mod slight non high mod slight non
 OXIDATION high mod slight non

LITHOLOGY OF COARSE FRAGMENTS: study org. ill. coarse unit
 WEATHERING OF CLASTS/BEDROCK: F 1 2 3 D

TERRAIN UNIT SYMBOL for vicinity of site: Ov 295 Mb
 REPRESENTS POLYGON? YES NO
 ADD. NOTES IN FIELD BOOK? YES NO
 vegetation: Cx



PROJECT NO. (4-AREA) 1200163.006	DATE 6 July 2006	AIR PHOTO NO.
SITE DESCRIPTION		
SITE NO. JD-37	ASPECT 335° N	SLOPE ° % 30°/18%
SLOPE ° % Typical Min/Max		ELEVATION (m) ft. 1559
SECTION HT/PIT DEPTH m (ft) E: 44009		SECTION HT/PIT DEPTH m (ft) 50
LOCATION: N: 7015374		

SKETCH (X-SEC. TO SHOW SITE POSITION; INDICATE ORIENTATION AND SCALE)

- Bedrock of 50m +/-
 - Leached horizon (light grey silt) within dk grey soil @ 22cm = Be?
 - possible other thin layers @ 35cm - cryo-turbation?
 - some blocks from R above (Cx) - disc out masses
 - small (0.8m dia) stone bits nearby

SLOPE CONFIG. (DOWN SLOPE) concave convex (straight)	SLOPE CONFIG. (ACROSS SLOPE) concave convex (straight)
HILLSLOPE CONFIG. uni irr hum (be) ter rid (gul) sca	DOM. VEG. & MOISTURE INDICATOR PLANTS grasses, few willow
BOULDERS a s c o	BEDROCK OUTCROP a s c o
PHOTOS roll no. description 2 similar taken to left side	HYDRO. CHAR. moist slope
SAMPLES	

MATERIAL DESCRIPTION	
SOIL CHARACTERISTICS	
LPH HORIZON: thickness 7 cm absent	B HORIZON: thickness cm absent Be Br Bh Blh Bg Bj Bm
B and/or C horizon met: below depth of cm absent some abundant	B and/or C pedogenic concentration: top at cm; base at cm none moderate high
SOIL DRAINAGE: r w (u) I P V	

SURFICIAL MATERIALS			
STRATIG. UNIT	THICKNESS (m)	OVERALL TEXTURE	ORIGIN
1	bns	ges	M
CONTACT: sharp or gradational; horizontal or wavy			
CONTACT: sharp or gradational; horizontal or wavy			
Complete the following for unweathered surface material if possible, otherwise use B horizon (weathered)			
BEDDING/STRATIFICATION well mod. well mod. weak massive	MATRIX TEXTURE silty sand		
% CLASTS: 15	CLAST ROUNDNESS: A SA SR R WR	BOULDERS	
CLAST ABUNDANCE BY SIZE	PEBBLES a c o	COBBLES a s o	a c s o
CONSOLIDATION high mod slight non	COHESION high mod slight non	INDURATION high mod slight non	OXIDATION high mod slight non
LITHOLOGY OF COARSE FRAGMENTS shaly argillite		WEATHERING OF CLASTS/BEDROCK F 1 2 3 D	
TERRAIN UNIT SYMBOL for vicinity of site Cx / ges Mb		REPRESENTS POLYGON? YES NO ADD. NOTES IN FIELD BOOK? YES NO vegetation: ER	



PROJECT NO. (4-area) 1200163.006
 DATE 6 July 2006
 AIR PHOTO NO.

SITE DESCRIPTION

SITE NO. JD-38
 ASPECT 340° N
 SLOPE ° (%) 12.7/5.1
 ELEVATION (m) ft. 1488
 SECTION HT./PT DEPTH m cm 55
 E: 444118
 N: 7015652

SKETCH (X-SEC. TO SHOW SITE POSITION; INDICATE ORIENTATION AND SCALE)

Regosol
 medium brown soil

SLOPE CONFIG. (DOWN SLOPE) concave convex straight

SLOPE CONFIG. (ACROSS SLOPE) concave convex straight

HILLSLOPE CONFIG. und irr hum ben ter rid gul sca

DOM. VEG. & MOISTURE INDICATOR PLANTS moss, grass tussocks

BOULDERS a c s o

BLOCKS a c s o

BEDROCK OUTCROP a c s o

HYDRO. CHAR. moist sites

PHOTOS roll no. description

SAMPLES

MATERIAL DESCRIPTION

SOIL CHARACTERISTICS

LFH HORIZON: thickness 5 cm absent
 B HORIZON: thickness cm absent B₁ B₂ B₃ B₄ B₅ B₆ B₇ B₈ B₉ B₁₀ B₁₁ B₁₂ B₁₃ B₁₄ B₁₅ B₁₆ B₁₇ B₁₈ B₁₉ B₂₀ B₂₁ B₂₂ B₂₃ B₂₄ B₂₅ B₂₆ B₂₇ B₂₈ B₂₉ B₃₀ B₃₁ B₃₂ B₃₃ B₃₄ B₃₅ B₃₆ B₃₇ B₃₈ B₃₉ B₄₀ B₄₁ B₄₂ B₄₃ B₄₄ B₄₅ B₄₆ B₄₇ B₄₈ B₄₉ B₅₀ B₅₁ B₅₂ B₅₃ B₅₄ B₅₅ B₅₆ B₅₇ B₅₈ B₅₉ B₆₀ B₆₁ B₆₂ B₆₃ B₆₄ B₆₅ B₆₆ B₆₇ B₆₈ B₆₉ B₇₀ B₇₁ B₇₂ B₇₃ B₇₄ B₇₅ B₇₆ B₇₇ B₇₈ B₇₉ B₈₀ B₈₁ B₈₂ B₈₃ B₈₄ B₈₅ B₈₆ B₈₇ B₈₈ B₈₉ B₉₀ B₉₁ B₉₂ B₉₃ B₉₄ B₉₅ B₉₆ B₉₇ B₉₈ B₉₉ B₁₀₀

B and/or C horizon mottles: below depth of cm absent some abundant

B and/or C pedogenic concentration: top at cm; base at cm none moderate high

SOIL DRAINAGE: r w m i p v

SURFICIAL MATERIALS

STRATIG. UNIT THICKNESS (m) OVERALL TEXTURE ORIGIN

1 bns silty sand M
 silt-regard

CONTACT: sharp or gradational; horizontal or wavy

bns

CONTACT: sharp or gradational; horizontal or wavy

bns

Complete the following for unweathered surface material if possible, otherwise use B horizon (weathered)

BEDDING/STRATIFICATION well mod. well mod. weak massive

MATRIX TEXTURE silty sand

% CLASTS: 15

CLAST ABUNDANCE BY SIZE

PEBBLES a c s o

BOULDERS a c s o

CLAST ROUNDNESS: A B A SR R WR

INDURATION high mod slight (non)

OXIDATION high mod slight (non)

WEATHERING OF CLASTS/BEDROCK F 1 2 3 D

LITHOLOGY OF COARSE FRAGMENTS

Wetland, mostly silt clay

TERRAIN UNIT SYMBOL for vicinity of site

g25 Mb (some dwt on C?)

REPRESENTS POLYGON? (YES) NO

ADD. NOTES IN FIELD BOOK? (YES) NO

Signature: [Handwritten]



PROJECT NO. (+area) 1200/63, 056	DATE 6 July 2006	AIR PHOTO NO.
SITE DESCRIPTION		
SITE NO. ND-39	ASPECT 350°N	ELEVATION (m) ft. 1573
SLOPE ° % Typical Min/Max 37/33%		SECTION HT./PIT DEPTH m cm E: 04448% N: 7015387

SKETCH (X-SEC. TO SHOW SITE POSITION; INDICATE ORIENTATION AND SCALE)

- Regosol
- black soil

SLOPE CONFIG. (DOWN SLOPE) concave convex straight	SLOPE CONFIG. (ACROSS SLOPE) concave convex straight
HILLSLOPE CONFIG. un) irr hum ben ter rid gul sea zone 1W1g 1S2g (M110)	DOM. VEG. & MOISTURE INDICATOR PLANTS
BOULDERS a c s o	BEDROCK OUTCROP a c s o
BLOCKS a c s o	HYDRO. CHAR. dry slope
PHOTOS roll no. description D 1304 - GR digging pit	
SAMPLES	

MATERIAL DESCRIPTION	
SOIL CHARACTERISTICS	
LFH HORIZON: thickness 3 cm absent	B HORIZON: thickness ___ cm absent Bc Bf Bh Bk Bq Bjl Bm
B and/or C horizon nodules: below depth of ___ cm absent some abundant	B and/or C pedogenic concentration: top at ___ cm; base at ___ cm none moderate high
SOIL DRAINAGE: r w (m) i p v	

SURFICIAL MATERIALS			
STRATIG. UNIT	THICKNESS (m)	OVERALL TEXTURE	ORIGIN
1	(bns)	gravelly sand - trace silt	M(C?)
CONTACT: sharp or gradational; horizontal or wavy			
CONTACT: sharp or gradational; horizontal or wavy			
CONTACT: sharp or gradational; horizontal or wavy			

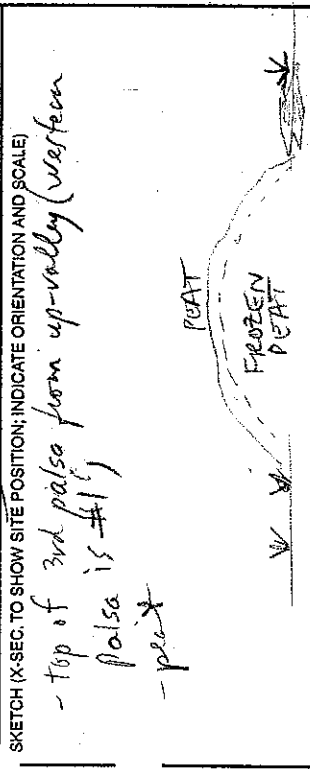
Complete the following for unweathered surface material if possible, otherwise use B horizon (weathered)

BEDDING/STRATIFICATION: well mod. well mod. weak massive	MATRIX TEXTURE sand, trace silt
% CLASTS:	CLAST ROUNDNESS: (A) SA SR R WR
CLAST ABUNDANCE BY SIZE	COBBLES a c s o
PEBBLES a c s o	BOULDERS a c s o
CONSOLIDATION high mod slight non	INDURATION high mod slight non
COHESION high mod slight non	OXIDATION high mod slight non
LITHOLOGY OF COARSE FRAGMENTS Block (gypsiferous) shale	
WEATHERING OF CLASTS/BEDROCK (F) 2 3 D	

TERRAIN UNIT SYMBOL for vicinity of site g s Mb (C?)	REPRESENTS POLYGON? YES NO
	ADD. NOTES IN FIELD BOOK? YES NO
	Vegetation: CR



PROJECT NO. (+area) 1200163006	DATE 6 July 2006	AIR PHOTO NO.
SITE DESCRIPTION		
SITE NO. JD-40	ASPECT FLAT	SLOPE ° % Typical Min/max
SITE DESCRIPTION (soil pit, road cut, etc.) hand auger		ELEVATION (m) ft. 1483
LOCATION: - top of 3rd palisa from up-valley (western palisa is #1) - peat		SECTION HT./PIT DEPTH m cm E: 444 902 N: 7015562



SLOPE CONFIG. (DOWN SLOPE) concave convex straight	SLOPE CONFIG. (ACROSS SLOPE) concave convex straight
HILLSLOPE CONFIG. unt lir hum ben ter rd gul sca	DOM VEG. & MOISTURE INDICATOR PLANTS Sphagnum moss, carbon ticks
BOULDERS & BLOCKS a b c d	BEDROCK OUTCROP HYDRO. CHAR. wetland
PHOTOS roll no. description 12-54 - pits w/ GR. 13:03 - palisa from D39 13:15 - hole on pin goz	SAMPLES

MATERIAL DESCRIPTION			
SOIL CHARACTERISTICS			
LPH HORIZON: thickness _____ cm absent	B HORIZON: thickness _____ cm absent Bc Bf Bh Bfn Bg Bj Bm		
> 42 cm			
B and/or C horizon mottles: below depth of _____ cm absent some abundant	B and/or C pedogenic concentration: top at _____ cm; base at _____ cm none moderate high		
SOIL DRAINAGE: r w m i p D			
SUFFICIAL MATERIALS			
STRATIG. UNIT	THICKNESS (m)	OVERALL TEXTURE	ORIGIN
	bs	peat	O
CONTACT: sharp or gradational; horizontal or wavy			
CONTACT: sharp or gradational; horizontal or wavy			
CONTACT: sharp or gradational; horizontal or wavy			
Complete the following for unweathered surface material if possible, otherwise use B horizon (weathered)			
BEDDING/STRATIFICATION well mod. well mod. weak/massive		MATRIX TEXTURE peat	
% CLASTS:			
CLAST ABUNDANCE BY SIZE	PEBBLES a c s o	CLAST ROUNDNESS: A SA SR R WR	BOULDERS a c s o
CONSOLIDATION high mod. slight non	COHESION high mod. slight non	INDURATION high mod. slight non	OXIDATION high mod. slight non
LITHOLOGY OF COARSE FRAGMENTS		WEATHERING OF CLASTS/BEDROCK F 2 3 D	
TERRAIN UNIT SYMBOL for vicinity of site pdk-zp		REPRESENTS POLYGON? YES NO ADD. NOTES IN FIELD BOOK? YES NO vs - GR.	



PROJECT NO. (4-area) 120013.006	DATE 6 July 2006	AIR PHOTO NO.
SITE DESCRIPTION		
SITE NO. VD-41	ASPECT 330 NW	ELEVATION (m) ft. 1623
SLOPE Typical Min/Max 13/101		
SECTION HT./PIT DEPTH E: 442 725		
LOCATION: W: 7014790		

SKETCH (X-SEC. TO SHOW SITE POSITION; INDICATE ORIENTATION AND SCALE)

- Rogosel
- med. gray clay

MATERIAL DESCRIPTION	
SOIL CHARACTERISTICS	
LFH HORIZON: thickness 6.5 cm absent	B HORIZON: thickness _____ cm absent Bc Bf Bg Bih Bjm Bm
B and/or C horizon mottles: below depth of _____ cm absent some abundant	B and/or C pedogenic concentration: top at _____ cm; base at _____ cm none moderate high
SOIL DRAINAGE: r w m i p v	
SURFICIAL MATERIALS	
STRATIG. UNIT	THICKNESS (m)
1	6ms
OVERALL TEXTURE	
gravelly sand of trace silt M	
CONTACT: sharp or gradational; horizontal or wavy	
CONTACT: sharp or gradational; horizontal or wavy	
CONTACT: sharp or gradational; horizontal or wavy	
CONTACT: sharp or gradational; horizontal or wavy	
Complete the following for unweathered surface material if possible, otherwise use B horizon (weathered)	
BEDDING/STRATIFICATION well mod. well mod. weak massive	
MATRIX TEXTURE sandy to v. silt	
% CLASTS: 15	CLAST ROUNDNESS: A (SA) SR R WR
CLAST ABUNDANCE BY SIZE	COBBLES
a b s o	a c s o
PEBBLES	BOULDERS
a b s o	a c s o
CONSOLIDATION	INDURATION
high mod slight non	high mod slight non
COHESION	OXIDATION
high mod slight non	high mod slight non
LITHOLOGY OF COARSE FRAGMENTS	
Weathering; typically argillaceous with F 1 2 3 D	
WEATHERING OF CLASTS/BEDROCK	
TERRAIN UNIT SYMBOL for vicinity of site	
gs Mb/R	
REPRESENTS POLYGON? YES NO	
ADD NOTES IN FIELD BOOK? YES NO	
Notes: veg: CR	

SLOPE CONFIG. (DOWN SLOPE) concave convex straight	SLOPE CONFIG. (ACROSS SLOPE) concave convex straight
HILLSLOPE CONFIG. uni/ir hum ben ter rid gul sea	DOM. VEG. & MOISTURE INDICATOR PLANTS grass, brush
BOULDERS a c s o	BEDROCK OUTCROP s p s o
BLOCKS a c s o	HYDRO. CHAR. dry slope
PHOTOS roll no. description D 14:36 - Looking back at site 41 from across cirque crest - look R - scarps	
SAMPLES	



PROJECT NO. (+area) 1208163.006	DATE 6 July 2006	AIR PHOTO NO.
SITE DESCRIPTION		
SITE NO. JD-42	ASPECT 075° E	SLOPE ° % Typical Min/Max
SITE DESCRIPTION (soil pit, road cut, etc.) deep stream cut scarp		ELEVATION (m) ft. 1614
LOCATION: E1 442625 N: 7015721		

SKETCH (X-SEC. TO SHOW SITE POSITION; INDICATE ORIENTATION AND SCALE)

- or lobe above canyon
- scarp = Cx/Mb/R
- regosol
- numerous outcrops in this area & upslope
- transition upslope from discont. M to C/R

SLOPE CONFIG. (DOWN SLOPE) concave convex straight	SLOPE CONFIG. (ACROSS SLOPE) concave convex straight
HILLSLOPE CONFIG. unif. fir hum ben ter rid gull sca	DOM. VEG. & MOISTURE INDICATOR PLANTS stunted willow
BOULDERS a c s o	BEDROCK OUTCROP a c s o
BLOCKS a c s o	HYDRO. CHAR. dry site
PHOTOS roll no. description ① 14189 - view up corque canyon from JD42	
SAMPLES	

MATERIAL DESCRIPTION

SOIL CHARACTERISTICS

LFH HORIZON: thickness _____ cm absent	B HORIZON: thickness _____ cm absent Bc Bf Bh Bm
B and/or C horizon mottles: below depth of _____ cm absent some abundant	B and/or C pedogenic concentration: top at _____ cm; base at _____ cm none moderate high
SOIL DRAINAGE: r w m i p v	

SURFICIAL MATERIALS

STRATIG. UNIT	THICKNESS (m)	OVERALL TEXTURE	ORIGIN
1	discont.	blocky	C
2	+5.0 bns	granuloly sand tr. silt	M
3	bns		R

CONTACT: sharp or gradational; horizontal or wavy

CONTACT: sharp or gradational; horizontal or wavy

Complete the following for unweathered surface material if possible, otherwise use B horizon (weathered)

BEDDING/STRATIFICATION M well mod. well mod. weak massive	MATRIX TEXTURE sand, tr. silt
% CLASTS: 15	CLAST ROUNDNESS: (A) SA SR R WR
CLAST ABUNDANCE BY SIZE	COBBLES a c s o
PEBBLES a c s o	BOULDERS a c s o
CONSOLIDATION high mod slight (not)	INDURATION high mod slight (not)
COHESION high mod slight (not)	OXIDATION high mod slight (not)
LITHOLOGY OF COARSE FRAGMENTS a s s o - 41	WEATHERING OF CLASTS/BEDROCK F 1 2 3 D
TERRAIN UNIT SYMBOL for vicinity of site [Cx] / g s Mb / R	REPRESENTS POLYGON? YES NO
	ADD. NOTES IN FIELD BOOK? YES NO vegetation: GR