Environment

Government of Yukon

Former Clinton Creek Asbestos Mine
Long Term Performance Monitoring - 2010

Prepared by:

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Project Number:

60160515 (402.2.5)

Date:

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March 31, 2011

Mr. Brett Hartshorne
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Department of Energy, Mines and Resources
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Dear Mr. Hartshorne:

Project No: **60160515 (402.2.5)**
Regarding: **Former Clinton Creek Asbestos Mine**
Long Term Performance Monitoring - 2010

AECOM Canada Ltd. (AECOM) is pleased to submit our report on the above referenced project. If we can be of further assistance, please contact the undersigned directly.

Sincerely,
AECOM Canada Ltd.

Tom Wingrove, P.Eng.
Executive Vice-President,
Deputy Operations Director,
North America, Environment

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cc: K. Thiessen

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1. Introduction

This report provides the results of the 2010 performance monitoring at the former Clinton Creek Asbestos Mine. The purpose of the monitoring program is to obtain information on the performance of physical mine site features including the Clinton Creek waste rock dump, the Clinton Creek channel (including the gabion drop structures), the Wolverine Creek channel and the tailings pile. The monitoring program provides data which is compared with trigger levels and an action plan for maintenance or remedial stabilization work developed to maintain the long term stability of these features. The terms of reference for this work are outlined in our letter proposal to Ms. Rachel Pugh of the Government of Yukon (GY), Energy, Mines and Resources dated February 18, 2008.

Two performance monitoring events were completed in 2010. The first monitoring event was the routine bi-annual event which was completed in July 2010. A significant precipitation event in the Clinton Creek watershed occurred sometime in the month of August 2010 which resulted in some landslides along the mine access road and high flows in the Clinton Creek channel. These high flows caused significant damage to Drop Structure #4 and erosion of the creek channel downstream of the drop structures. A second complete round of performance monitoring was conducted in September 2010 to capture the effects of this event.

1.1 Background

Hazards associated with continued degradation of the Clinton Creek channel through the waste rock dump and the Wolverine Creek channel through the tailings piles have been previously identified (UMA 2000). Of particular concern are potential risks to human life and property downstream of the mine associated with a sudden breach of the channel blockages. In areas with significant relief, such as the Clinton Creek valley, flooding from failures of channel blockages can be especially dangerous and may be unrelated to precipitation events that would normally be expected to produce flooding conditions.

With respect to the potential for a breach of channel blockages, the most immediate concern was considered to be at the outlet from Hudgeon Lake. Profiles of the creek channel through the waste rock from 1986, 1999 and 2001, showed that progressive channel degradation (i.e. erosion / down-cutting) was occurring along the first 500 m of channel downstream of the outlet. As degradation continued, the toe of the waste rock pile was being undercut and localized slope instabilities were developing. By 2001, conditions had developed to a point where it was feared that normal flow and/or an overtopping event could trigger a breach of the waste rock at the Hudgeon Lake outlet. The consequences of a breach and rapid draining of Hudgeon Lake are discussed in UMA's Risk Assessment Report (UMA 2000). To address this concern, channel stabilization works were constructed at the Hudgeon Lake outlet between 2001 and 2004.

Measures to stabilize the Wolverine Creek tailings pile have also been investigated (UMA 2003). The requirement for these remedial measures was based on the premise that the tailings were moving at rates comparable to those observed at mine closure. Recent surveys however, indicate that the movements are significantly less than previously assumed and some mounding of the tailings in the valley bottom is occurring. A better understanding of the overall behaviour of the tailings piles is necessary to determine the most appropriate strategy to deal with previously identified hazards. In this regard, the implementation of stabilization measures have been deferred until this information becomes available and the need for remedial work is confirmed. Of particular concern with respect to tailings pile stability is the potential for channel degradation where Wolverine Creek passes over the toe of the tailings. In this regard, maintaining the integrity of the rock-lined channel downstream of the tailings is considered essential to reduce the likelihood of mass tailings movements.

2. Performance Monitoring

The monitoring work consists of surveying the movement monitors on the Clinton Creek Waste Rock Dump, at the Drop Structures and on the Wolverine Creek Tailings Pile, surveying channel profiles of Clinton Creek and Wolverine Creek and surveying cross-sections at two locations on each drop structure. The location of these mine features are illustrated on Drawing 01, a plan view of the former mine site. Horizontal measurements across each drop structure were also collected. The first bi-annual long term performance monitoring event was completed in 2006 (UMA 2007) with some follow-up work in 2007, including a site inspection (UMA 2008). The second event was completed in 2008 (AECOM 2009).

The third bi-annual monitoring event was completed in July 2010 and another event was completed in September 2010 following a significant precipitation event(s) in the Clinton Creek watershed that occurred sometime in the months of July and August 2010. The results from the weather station located on the waste rock dump near Hudgeon Lake suggest that a total of 255 mm of rain fell from April 27 to September 13 of which 82 mm of rain fell over a 17 day period from July 11 to 27 and 70 mm of rain fell over a four day period beginning August 5 (Figure 2.1). Sixty millimetres (60 mm) fell on August 6 over a period of about 20 hours. The effects of the precipitation included some landslides along the mine access road and high flows in the Clinton Creek channel. These high flows caused significant damage to Drop Structure #4 and erosion of the creek channel downstream of the drop structures. The September 2010 monitoring was completed to capture the effects of this event to aid in understanding the extent of the damage to the creek and how a large event may impact the other features of the site such as movement of the waste rock dump.

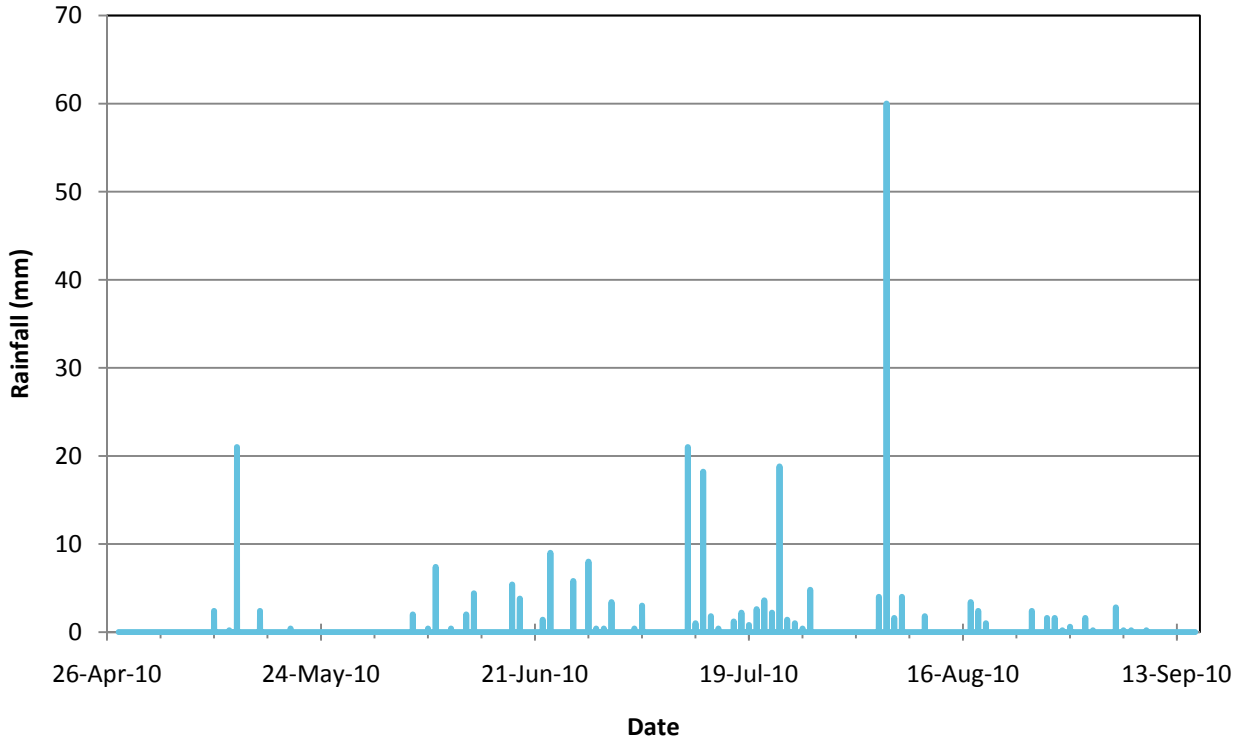

Figure 2.1. Clinton Creek - 2010 Weather Station Data Rainfall Daily Totals.

Underhill Geomatics Ltd. (UGL) from Whitehorse, YK completed the survey work for the performance monitoring program under Contract with the Government of Yukon. The first and second surveys were completed in July and September 2010, respectively by UGL using Global Positioning Survey (GPS) referenced to the UTM NAD 83 (Zone 7) co-ordinate system. The horizontal accuracy of the GPS survey is within 2 to 3 cm, which is acceptable given the magnitude of movements expected and given the potential error in positioning the survey rod at the exact same location for each monitoring event. The monitoring instructions and protocol provided to UGL by AECOM are provided in Appendix A along with the resulting survey information provided by UGL. The horizontal measurements of the drop structures were completed by AECOM in July 2010 during the site inspection.

2.1 Clinton Creek Waste Rock Dump

2.1.1 Movement Monitors

Monitoring of the waste rock dump was re-instated in 1999 with subsequent monitoring events in 2001, 2003 and 2004. In 2003, the monitoring network was expanded from seven to forty-two monitoring points (UMA 2004).

The locations of the waste rock movement monitors shown on Drawings 02 and 02A have been categorized according to location on the waste rock dump that is, the lower slope monitors are located below elevation 420 m, the mid-slope monitors are located between elevation 420 m and 450 m and the upper slope monitors are located above elevation 450 m. The Porcupine Pit slope monitor points are not included in these categories since they provide data on pit wall movements and not waste rock movements (with the exception of monitors #1493 and #1839).

A detailed summary of the waste rock movement monitoring for the upper, mid and lower slope areas and the open pit area are provided on Tables B-1 to B-4 in Appendix B. These tables include the total and incremental movements of each monitor along with annual rates of movement. The direction and magnitude of movement for each monitor since the baseline reading is graphically illustrated on Drawing 02 for the July 2010 survey and on Drawing 02A for the September 2010 survey. The annual horizontal rates of movement are summarized below in Table 2.1. The horizontal rates of movement from the 2008 to July 2010 period range from nil up to 0.08 m/yr, values which are similar or slightly higher than the rates calculated after from the 2008 survey. The Horizontal rates of movement from July to September 2010 range from 0.01 up to 0.35 m/yr, values which are significantly higher than the rates for the 2008 to July 2010 period. The average incremental movements measured between July 2010 and September 2010 in the three waste rock zones, are equal to or less than the displacements measured between July 2008 and July 2010.

Table 2.1: Summary of Annual Horizontal Movement Rates

	CLINTON CREEK WASTE ROCK DUMP						
Dump Area		Annual Horizontal Movement Rates (m/yr)				Rate Change (m/yr)	
		Monitoring Period					
		2004-2006	2006-2008	2008-July 2010	July to Sept 2010	2008-Jul 2010	Jul-Sept 2010
Upper	Avg.	0.02	0.02	0.02	0.20	0.00	0.18
(5 monitors)	Max.	0.03	0.03	0.04	0.35	0.01	0.31
	Min.	0.01	0.01	0.01	0.07	0.00	0.06
Mid	Avg.	0.03	0.03	0.02	0.10	-0.01	0.08
(13 monitors)	Max.	0.07	0.05	0.06	0.29	0.01	0.23
	Min.	0.01	0.01	0.01	0.01	0.00	0.00
Lower	Avg.	0.02	0.02	0.02	0.16	0.00	0.14
(18 monitors)	Max.	0.07	0.06	0.08	0.28	0.02	0.20
	Min.	0.01	0.00	0.00	0.03	0.00	0.03

Upper Slope Monitors

There are five monitors located in the upper slope area. The movement vectors and magnitudes shown on Drawings 02 and 02A suggest that this area of the waste rock dump is moving in a northerly direction (i.e. down the underlying valley slope). The rates of movement for the 2008 to July 2010 period range from 0.01 to 0.04 m/yr with an average of 0.02 m/yr. The rate change for this same period indicates that there was no significant change in the movement rates. The annual movement rates calculated based on the 2 month period from July to September 2010 are significantly higher since the incremental movements for this period are similar in magnitude to those from the 2 year period ending July 2010. The results are summarized in Table B-1 of Appendix B.

Mid Slope Monitors

There are 13 monitors located in the mid slope area of the waste rock pile, which covers the underlying south valley slope toe and the original valley bottom. The vectors suggest that the waste rock dump in this area is generally moving in a northerly direction across the former valley. However, the three monitors closest to Hudgeon Lake (#0229, #1831 and #22A) are moving in a north westerly direction towards the lake. This radial spreading has been previously reported and is not unexpected. However, there are three monitors in the center of the mid-slope area (Monitors #4, #68 and #0227) that do not follow this pattern. The direction of movement of these three monitors is thought to be influenced by local topography and not representative of the global movement of the mid slope area of the waste rock dump.

For the 2008 to July 2010 period, the rates of horizontal movement for these monitors range from 0.01 to 0.06 m/yr with an average of 0.02 m/yr. The rate change for this same period indicates that there was no significant change in the movement rates from the previous survey. The annual movement rates calculated based on the incremental movements for the 2 month period from July to September 2010 are significantly higher since the incremental movements for this period are 50 percent of those from the 2 year period ending July 2010. The monitoring results are summarized in Table B-2 of Appendix B.

Lower Slope Monitors

In July 2010 there were 19 active monitors located in the lower slope area of the waste rock pile, which is likely located along the toe and/or side slope of the original north valley slope. Monitor XS-G was destroyed during the creek stabilization work in 2003. Five monitors were lost after July 2010 due to the effects of the precipitation event that occurred in August (Monitors destroyed include: 84-1, 217, 220, XS-A, and XS-E).

The rates of movement for the 19 monitors active during the 2008 to July 2010 period range from nil up to 0.08 m/yr with an average of 0.02 m/yr. The rate change for this same period indicates that there was no significant change in the movement rates from the previous survey. The annual movement rates calculated based on the incremental movements for the 2 month period from July to September 2010 are significantly higher since the incremental movements for this period are typically at least 50 to 90 percent of those for the 2 year period ending July 2010. The results are summarized in Table B-3 of Appendix B.

Based on the monitoring results to the end of July 2010, it appears that waste rock in the area south of the stabilized creek channel (Monitors #1833 and P2) is moving in a northerly direction across the stabilized portion of the creek at rates of about 0.04 to 0.07 m/yr. The exceptions are Monitors #0228 and #0226 which are moving north westerly and north easterly, respectively. Monitor #0228 is moving towards the lake similar to Monitors #0229, 1831 and 22A. Monitor #0226 is located at the top of a slope on the waste rock pile and is generally moving in a direction perpendicular to the slope. The remaining monitors east of the stabilized channel section are moving in a variety of directions at rates of about 0.01 to 0.02 m/yr. The variety of movement directions is unexpected and may be a result of passive resistance developing at the leading edge of the waste rock. In any case, the magnitudes are small and not considered to be of any consequence to the stabilized section of the channel.

Open Pit Area Monitors

There are six monitors in the area of the Porcupine Pit. Four monitors (#'s 1830, 1832, 1837 and 1838) are located on the east wall of the open pit, one on the north side of the pit (#1839) and one near the former crusher building (#1493). The movement data for the four monitors on the east wall of the pit do not indicate any signs of significant horizontal movements. The south west and south east corners of the Porcupine Pit are relatively unstable based upon previous visual inspections.

The movement data for Monitor #1839 suggest that this monitor is not undergoing significant horizontal movements however, the survey shows that this monitor settled at a rate of 0.11 m/yr during the previous 2 year monitoring period but reduced to 0.03 m per year based on the July 2010 survey results. The movement data for Monitor #1493, located north of the open pit near the former crusher building, show that this monitor is moving in a northerly direction at a rate of about 0.06 m /yr. This area of the waste rock is not impacting Clinton Creek. The monitoring data for the open pit monitors is included in Table B-4, Appendix B.

2.1.2 Summary

The waste rock dump continues to undergo creep movements ranging from nil up to 0.08 m per year. In general, the movements measured for the 2 year period ending in July 2010 are the same or slightly higher than the previous monitoring period (2006 to 2008). The results from the 2 month monitoring period from July to September 2010 suggest that the precipitation event and associated erosion along the toe of the waste rock resulted in additional movements of the waste rock pile.

In general, the monitoring data suggest the western area of the waste rock dump nearest to Hudgeon Lake is moving in a westerly direction towards the lake and the main mass of the waste rock dump is moving in a northerly direction across Clinton Creek. East of the stabilized creek channel, the monitors at the top of the south bank of the creek channel are moving in a variety of directions.

With the exception of Monitor U1493, the monitors around the open pit do not appear to be developing any movement trends. Monitor U1493 is moving in a northerly direction however, this area of the waste rock pile is not impacting the creek channel at this time.

The waste rock continues to close in on the stabilized section of the creek channel at a rate of about 0.05 m/yr. While movement rates to the end of July 2010 are similar to those previously reported, it is expected that integrity of the gabion drop structures will eventually be compromised unless stabilization measures for the waste rock dump are implemented. Alternatively, the gabion structures can be replaced or repaired as required in the future to restore their functionality. While movements of the mid and lower slope downstream of the stabilized channel section are erratic, they are of no consequence to the stabilized section of the channel.

2.2 Gabion Drop Structures

Starting in 2004, the monitoring program for the drop structures was limited to taking horizontal measurements across each gabion drop structure at two locations (Drawing C-1, Appendix C) to determine if the gabions are deforming laterally. To provide a better understanding of the deformations of the gabion drop structures in relation to the waste rock movements, and the impact on functionality of the structures, additional survey requirements were recommended for long term performance monitoring (UMA 2006b). These include four movement monitors located near the four corners of each drop structure and surveying two cross sections of each drop structure between each pair of movement monitors.

During the 2009 spring freshet the drop structures sustained some damage due to concentrated flows which were repaired in the fall of 2009. The repair work is documented in a construction activity report (AECOM 2010). Drop Structure #4 had the worst damage which required the lower tier to be re-built. The drop structures were not damaged during the 2010 spring freshet. The precipitation event in August 2010, and the associated creek flows, resulted in the bottom end of Drop Structure 4 being undermined. The extent of the damage to the drop structures could not be fully determined in the fall of 2010 due to the flow level across the drop structures. Creek flows and weather conditions prevented any repairs from being made in 2010. A repair program will be implemented in 2011.

2.2.1 Horizontal Measurements

The horizontal measurements to date for Drop Structures 1, 2, 3 and 4 are summarized in Tables C-1 to C-5 (Appendix C). The measurement locations were tagged with permanent markers in September 2006 to improve the repeatability of the measurement locations. To July 2010, from 0.09 to 0.47 m of lateral movement has been measured with the largest movements measured at Drop Structure #3. The average annual rates of movement calculated from the September 2008 and July 2010 measurements range from 0.03 and 0.10 m/yr, respectively.

These rates are slightly higher than those reported in the 2008 Monitoring report which is a similar trend with the waste rock monitoring data to July 2010. These rates are also in the same order of magnitude as the waste rock monitors suggesting that the drop structures are being impacted by the on-going waste rock movement.

2.2.2 Movement Monitors

Sixteen movement monitors (#1450 to 1465) were installed near the corners of the four drop structures in July 2006 by Underhill Geomatics Ltd. (UGL) to provide additional data on horizontal deformations (closure). The locations of these monitors are illustrated on Drawings 03 to 07 and a summary of the distance between each pair of monitors is provided on Table C-6 (Appendix C).

Between July 2008 and July 2010, the horizontal distance between the pairs of movement monitors decreased from 0.02 m to 0.11 m with an average of 0.06 m. The change in horizontal movements is slightly greater than those reported in the 2008 report and correlate with the slightly higher rates of movement for the waste rock movement monitors to the end of July 2010. The results indicate that the total decrease in horizontal distance measured to date range from 0.06 to 0.25 m with the largest total movements measured at DS#3.

From July to September 2010 no change was noted for the movement monitors at Drop Structures 1 and 2 and at Drop Structures 3 and 4 the decrease in horizontal distance ranged from nil to 0.06 m.

2.2.3 Surveyed Cross-Sections

Two cross-sections were surveyed across each drop structure between each pair of movement monitors in July 2006 by UGL as part of the long term performance monitoring program (UMA 2006b). The locations of these sections are illustrated on Drawings 04 to 07. The plan view and end view sections provided on the left hand side of these Drawings represent the drop structure geometry based on the nominal dimensions of the baskets and 3H:1V side slopes. The sections on the right hand side of the drawings represent the surveyed geometry which differ slightly from the plan view and end view sections. The results of the baseline survey in June 2006 suggest that at that time (2006) some deformation had already occurred.

Drop Structure 1: The gabion baskets added to DS#1 in 2007 to address a deficiency in the amount of freeboard have been included on Drawing 04. Cross Sections 1 and 2 show that the design flow depth (2.01 m) at the top of the drop structure (Section 1) is contained within the upper level of the gabion drop structure now that the additional gabion baskets have been added. On Cross Section 2, the dip in the side slope on the right hand side occurred during the first spring freshet after the structure was completed. Based on the surveyed cross-sections, the drop structure does not appear to have undergone additional settlement since the baseline survey in 2006.

A top of bank survey was completed in 2007 to confirm that at least 0.2 m of freeboard is available above the maximum expected lake level of 411.21 m (UMA 2007). There is at least 0.2 m of freeboard along both sides of the channel with the exception of one location on the south side of the outlet channel where the top of bank elevation is 0.07 m below the minimum freeboard elevation of 411.41 m. It is expected that this is a localized area near the top of the channel which is surrounded by higher ground a short distance away.

Drop Structures 2, 3 and 4:

The differences between the 2008 and July 2010 cross-sections on Drawings 05, 06 and 07 may be related to the damage that was sustained during the 2009 freshet and the repairs completed in the fall of 2009. Drop Structure #2 does not show any significant changes for the period ending in July 2010. At DS #3, the left hand (south) side slope and bottom section of DS#3 appears to have undergone some settlement ranging from 50 to 200 mm. At DS #4, the

left hand (south) side slope and bottom section of DS#3 appears to have undergone some settlement ranging from 50 to 100 mm. The lower tier of DS#4 (Drawing 07) was rebuilt in the fall of 2009 by adding a new layer of baskets over the original layer resulting in the raised area visible in the July 2010 section.

The sections were re-surveyed in September 2010 to help determine what effects the August 2010 event had on the drop structures. Drop Structure #1 does not appear to have been significantly impacted by the August event. The sections at Drop Structure #2 suggest some minor damage or settlement occurred on the top tier and at the lower tier the bottom of the structure is about 100 to 200 mm lower than in July 2010. The sections for DS #3 suggest some changes to the left hand slope (south side) occurred at the top tier. The section at the bottom tier dropped in elevation from the July 2010 survey by 50 to 200 mm. At DS #4, the upper tier does not appear to have been impacted but the bottom tier is showing signs of settlement on the order of 500 mm. This is attributed to the significant erosion of the creek directly at the bottom end of DS #4.

The effects of the August 2010 event won't be fully understood until a thorough site inspection can be completed in 2011.

2.2.4 Summary

The changes in the horizontal measurements taken at the gabion drop structures are at least partially a result of continued waste rock movements. The damage that occurred during the spring 2009 freshet is most likely reflected in the July 2010 cross-sections and the damage that occurred during the August 2010 event is represented by the September 2010 sections. In general, the side slope angle has not been impacted by the settlements and is still well below the trigger level of 2H:1V sideslopes and the 2.01 m flow depth is still within the channel cross section. The 2011 work program for the site includes a thorough inspection of the drop structures as soon as the site can be accessed after which a repair program will be implemented.

2.3 Clinton Creek Channel

Since 1983, The Clinton Creek Channel profile has been surveyed on seven different occasions. For purposes of comparing conditions before and after channel stabilization works, the profile from 2001 is shown as a dashed line on Drawing 08 with the 2004, 2006, 2007, 2008 and 2010 surveys. The 2004 survey has been selected as the baseline to evaluate channel degradation (down-cutting) and determine when remedial measures are required. The creek profile shown on Drawing 08 has been sub-divided on to three larger scale drawings (Drawings 09, 10 and 11) to aid in evaluating changes in the channel profile. Offset lines are shown on these drawings to indicate the depth of channel degradation that would trigger the action items identified in the Long Term Performance Monitoring Report (UMA 2006b). That is, between the downstream end of Drop Structure #4 and Station 0+225 m a 0.5 m offset line is shown and downstream of Station 0+225 m a 1.5 m offset line is shown.

The July 2010 surveys shows that there are no significant changes in the creek profile from the 2008 survey and none of the trigger levels were reached. However, the August 2010 event resulted in significant channel erosion and re-alignment of the creek. At the downstream end of DS#4 (Station 0+175 m) the creek bed was eroded to a depth of 5 m reducing to 3.5 m at Station 0+200m and 2 m at Station 0+225 m. Between Stations 0+225 m and 0+320 m the creek profile is about 2 m lower and from Station 0+320 m to 0+390 m the creek profile is about 1 m lower. From Station 0+400 m to 0+600 m the creek profile did not change significantly. Downstream of Station 0+600 m deposition occurred resulting in creek profile that is 0.8 to 1.3 m higher than in July 2010. The re-alignment of the creek channel (Drawing 03) was significant between Stations 0+375 m and 0+450 m where is was shifted about 20 m south into the waste rock pile and also downstream of Station 0+675 m where the creek is now located up to 80 m south of the previous alignment.

The trigger levels for action were exceeded between Stations 0+175 m and 0+320 m and between Stations 0+320 m and 0+375m the trigger level was reached.

2.3.1 Summary

The July 2010 survey shows that no significant changes to the creek alignment and profile had occurred since the previous survey in 2008. The September 2010 survey results show that the creek alignment and profile were significantly altered during the August 2010 event and that trigger levels were exceeded or reached over a 200 m length of the channel starting at DS#4. Creek flows and weather conditions affected the ability of a local Contractor to perform repairs before freeze-up in October 2011. An assessment of the damage will be made as soon as possible in the spring of 2011 followed by a repair program.

2.4 Wolverine Creek Tailings Pile

Fifty-two movement monitors were surveyed in July 2010 and again in September 2010 by UGL. The second monitoring event was undertaken to evaluate if the precipitation event in August had an impact on the movement of the tailings pile. Monitor 2005-10 was noted as being buried and monitor 2005-09 was missed in the September survey. The previous monitoring event was in July 2008 (AECOM 2009). The monitoring results are provided in Appendix D. The locations of the movement monitors are shown on Drawings 12 and 12A. The monitors on the South and North lobes of the tailings pile have been grouped according to their location on the upper, mid and lower slope areas. The monitors on the upper slope are located above elevation 530 m, the mid slope monitors are located between elevation 425 and 530 m and the lower slope monitors are located below elevation 425 m. The vectors for each monitoring point on Drawings 12 and 12A indicate the total horizontal movement and direction since the baseline survey (typically 2003) to July 2010 and September 2010, respectively. The measured horizontal movement for the current monitoring period from July 2008 to July 2010 (Drawing 12) and from July 2010 to September 2010 is printed beside each monitor point label. The measured movements for each monitoring period have been converted to annual movement rates and are summarized in Tables 3-2 and 3-3 for the South and North lobes, respectively. A summary of the movements and movement rates for each monitor is provided in Appendix D (Tables D1 to D3).

2.4.1 South Lobe

<u>Monitoring Period: July 2008 to July 2010</u>

The average horizontal movement rates for the upper, mid and lower slope areas of the South Lobe for this monitoring period are 0.04, 0.36 and 0.23 m/yr, respectively, as shown in Table 2.2. The average annual movement rates for the last four monitoring periods show that the movement rates are decreasing with time and are less than those for the previous monitoring period (2006 to 2008) by 0.03, 0.09 and 0.05 m/yr, respectively. Drawing 13 illustrates the movement vectors and magnitudes on the South Lobe. The monitoring results for each monitor are presented in Appendix D on Tables D-1 to D-3. The upper slope is the least active area, consistent with previous monitoring data, with annual movement rates of 0.03 and 0.06 m/yr for the two monitors on the upper slope. The mid slope and lower slope areas are active and have similar annual movement rates ranging from 0.0 to 0.52 m/yr and an average of 0.36 and 0.23 m/yr, respectively.

<u>Monitoring Period: July 2010 to September 2010</u>

The average horizontal movement rates for the upper, mid and lower slope areas of the South Lobe for the second monitoring period are 0.11, 0.53 and 0.36 m/yr, respectively, as shown in Table 2.2. The average annual movement

rates for the previous monitoring periods showed that the movement rates were decreasing with time. However, the movement rates calculated for this period show that the average movement rates have increased by about 0.07, 0.17, 0.13 m / year for the upper, middle and lower slope areas respectively. Drawing 13A illustrates the movement vectors and magnitudes on the South Lobe. The monitoring results for each monitor are presented in Appendix D on Tables D-1 to D-3. The upper slope is the least active area, consistent with previous monitoring data, with annual movement rates of 0.10 and 0.12 m/yr for the two monitors on the upper slope. The mid slope and lower slope areas are active and have similar annual movement rates ranging from 0.05 to 0.71 m/yr and an average of 0.53 to 0.36 m/yr, respectively.

Table 2.2: Range of Annual Horizontal Movement Rates – South Lobe

WOLVERINE CREEK TAILINGS PILE – SOUTH LOBE									
Slope Area		Annual Horizontal Movement Rates (m/yr)						Rate Change (m/yr)	
		Monitoring Period							
		1984	2004 to 2005	2005 to 2006	2006 to 2008	2008 to Jul 2010	July to Sept 2010	2008 to Jul 2010	July to Sept 2010
Upper	Avg.	0.50	0.13	0.10	0.07	0.04	0.11	-0.03	0.07
(2 monitors)	Max.	-	0.18	0.18	0.09	0.06	0.12	-0.03	0.06
	Min.	-	0.09	0.02	0.05	0.03	0.10	-0.02	0.07
Mid	Avg.	7.00	0.76	0.59	0.45	0.36	0.53	-0.09	0.17
(12 monitors)	Max.	-	0.93	0.81	0.62	0.52	0.71	-0.11	0.19
	Min.	-	0.35	0.04	0.03	0.02	0.11	-0.01	0.09
Lower	Avg.	-	0.45	0.35	0.28	0.23	0.36	-0.05	0.13
(14 monitors)	Max.	2.80	0.66	0.57	0.44	0.36	0.52	-0.08	0.16
	Min.	0.50	0.05	0.03	0.02	0.00	0.05	-0.02	0.05

As shown by the direction of movement vectors on Drawings 13 and 13A, the upper and mid slope areas are generally moving down slope in an easterly direction and the lower slope area is undergoing some lateral spreading. The majority of monitors in the mid slope area near the boundary with the lower slope are moving in a north easterly direction towards the pond between the two lobes. On the lower slope area, the movement monitors on the north end are moving in a north easterly direction towards the pond and the monitors on the south end are generally moving east, perpendicular to the leading edge of the South lobe.

The movements of the mid and lower slope areas discussed above are a result of the mounding of the tailings in the middle portion of the lower slope area (i.e. Monitors 80-9, 25B, SL-1, Sl-2, Sl-3 and 1484) which is providing passive resistance to the movement of the tailings. As the passive resistance has increased over the years the movement of the tailings has been redirected towards areas of less resistance. The most pronounced movement is towards the pond between the two lobes. As the tailings move in this north easterly direction they impart some thrust on the tailings mounded up in the middle area of the lower slope, essentially pushing them aside as the tailings move towards the pond. The mounding in the middle area and the main direction of movement is illustrated on Figure 2-1.

The tailings on the south end of the lower slope area are generally moving in an easterly direction at lower rates than the north end of the tailings which are moving towards the pond. Some of the monitors (i.e. 2005-05, 2005-06 and 80-9) at the south limit of the lobe are most likely being influenced by local topography.

The small movement rates on the upper slope area are not unexpected because the original landslide did not encompass much of this area, which may be due to a decrease in the inclination of the underlying valley slope above elevation 530 m. The flatter valley slope feature is visible on aerial photographs taken before mine site development (UMA 2003). The mid and lower slopes are most active since these areas are coincident with the main area of the original landslide which occurred in 1974 (UMA 2003). As the tailings mound up in the valley bottom (i.e. lower slope area), the movement rates in the mid-slope area may continue to decrease as toe support due to mounding increases.

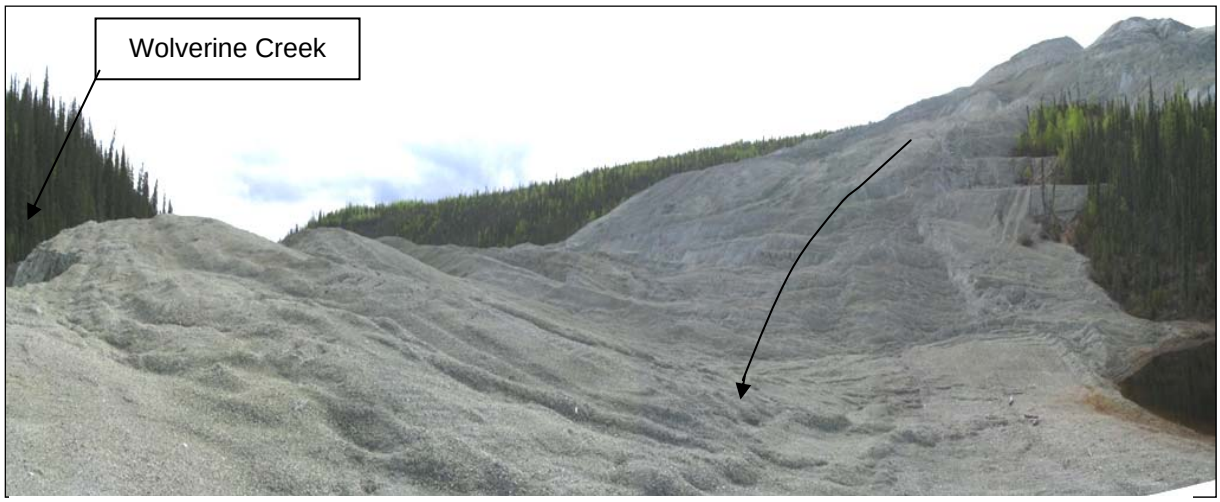

Figure 2-1) Mounding at Toe of South Lobe Near Monitor 2005-01 (view facing south)

2.4.2 North Lobe

Monitoring Period: July 2008 to July 2010

The movement rates for the North lobe summarized in Table 2.3 are less than those measured for the South lobe. The average horizontal movement rates for the upper, mid and lower slope areas of the North Lobe for this monitoring period are 0.03, 0.06 and 0.05 m/yr, respectively. The rates are the same or less than those for the previous monitoring period (2005 to 2006) by about 0.0, 0.04 and 0.02 m/yr, respectively. The monitoring results for each monitor are presented in Appendix D on Tables D-1 to D-3. Drawing 12 illustrates the movement vectors and magnitudes on the North Lobe.

The upper slope is the least active area, consistent with previous monitoring data, with movement rates ranging from 0.01 to 0.10 m/yr. Monitors 80-4 and 80-5 in the mid slope area are relatively active compared to all the other monitors on the North Lobe. Monitors 1086, 500-1 and 650-1 in the northwest area of the mid slope area have relatively small movement rates compared to the other movement monitors on both the mid and lower slope areas. The group of movement monitors on the east limit of the North lobe and on the lower slope area all have similar movement rates of about 0.07 m/year.

Monitoring Period: July 2010 to September 2010

The movement rates for the North lobe summarized in Table 2.3 are less than those measured for the South lobe. The average horizontal movement rates for the upper, mid and lower slope areas of the North Lobe for this monitoring period are 0.15, 0.33 and 0.22 m/yr, respectively. The average annual movement rates for the previous monitoring periods showed that the movement rates were decreasing with time. However, the movement rates calculated for this period show that the average movement rates have increased by about 0.12, 0.27, 0.17 m / year, respectively. Drawing 13A illustrates the movement vectors and magnitudes on the South Lobe. The monitoring results are presented in Appendix D on Tables D-1 to D-3. Drawing 12 illustrates the movement vectors and magnitudes on the North Lobe.

The upper slope is the least active area, consistent with previous monitoring data, with movement rates ranging from 0.08 to 0.19 m/yr. Monitors 80-4 and 80-5 in the mid slope area are relatively active compared to all the other monitors on the North Lobe. Monitors 1086, 500-1 and 650-1 in the northwest area of the mid slope area have relatively small movement rates compared to the other movement monitors on both the mid and lower slope areas. The group of movement monitors on the east limit of the North lobe and on the lower slope area all have similar movement rates of about 0.2 m/year.

Table 2.3: Range of Annual Movement Rates – North Lobe

WOLVERINE CREEK TAILINGS PILE – NORTH LOBE									
Slope Area		Annual Movement Rates (m/yr)						Rate Change (m/yr)	
		Monitoring Period							
		1984	2004 to 2005	2005 to 2006	2006 to 2008	2008 to Jul 2010	July to Sept 2010	2008 to Jul 2010	July to Sept 2010
Upper	Avg.	-	0.07	0.06	0.03	0.03	0.15	0.00	0.12
(7 monitors)	Max.	0.90	0.12	0.18	0.05	0.10	0.19	0.05	0.09
	Min.	0.40	0.03	0.03	0.02	0.01	0.08	-0.01	0.07
Mid	Avg.	-	0.18	0.13	0.10	0.06	0.33	-0.04	0.27
(10 monitors)	Max.	24.5	0.53	0.43	0.31	0.21	1.10	-0.10	0.89
	Min.	1.6	0.02	0.02	0.01	0.00	0.13	-0.01	0.13
Lower	Avg.	20.0	0.13	0.09	0.07	0.05	0.22	-0.02	0.17
(8 monitors)	Max.	-	0.18	0.13	0.10	0.07	0.27	-0.03	0.20
	Min.	-	0.08	0.05	0.04	0.03	0.14	-0.01	0.11

The largest movements on the North lobe were measured along the south and east edges of the mid slope area (i.e. all mid-slope monitors except 1085, 500-1 and 650-1) and the lower slope area. The direction of movement is eastward (downslope) and is consistent with the previous monitoring reports. The mid-slope monitors just upslope from the 425 m contour moved 0.06 to 0.12 m at the end of the July 2010 monitoring period (2 years) and 0.04 to 0.20 m at the end of the September 2010 monitoring period (2 months). On the south edge, Monitors 80-4 and 80-5 moved 0.43 and 0.31 m, respectively at the end of the July 2010 monitoring period and 0.09 to 0.06 m at the end of the September 2010 monitoring period. These two monitors moved the most, possibly due to the lack of toe support in the treed area between the two lobes just above the pond. The monitors clustered at the east limit of the mid slope area and the lower slope area are moving a similar rates in an easterly direction. Monitors NL-4, NL-5 and

1489 on the south side of the lower slope area are moving in a south easterly direction towards the pond where there is less resistance to movement.

2.4.3 Summary

The downslope movement rates of the tailings continued to slow down to the end of the July monitoring period. Based on the survey results, the measured movements (incremental) during the two month period between July and September 2010 were generally about 15 percent for the South lobe and 30 to 50 percent for the North Lobe for the of the movements from the previous two year monitoring period. When considering the movement rates (per year), these percentages suggest that the annual movement rates increased by about 0.1 and 0.2 m per year for the South and North Lobes, respectively. The increase in movement rates is assumed to be related to two factors:

- The precipitation event in August 2010. Future monitoring results will be required to help determine if these movement rates will continue over time or if the previous trend of decreasing rates will continue.
- The period between monitoring events was approximately two months during summer. It is quite possible that the movement rates fluctuate seasonally, and therefore the measurements between July and September 2010 are not representative of the rate of movement over an entire year.

Until additional monitoring data is obtained it is suggested that no action is required at this time since the movements appear to be partially related to the August 2010 weather event.

2.5 Wolverine Creek Channel

The creek profile was surveyed in July 2010 and again in September 2010 by UGL. The second monitoring event was undertaken to evaluate if the precipitation event in August had an impact on the creek alignment.

Previous Monitoring Events

The channel profile between Stations 0+700 m and 1+500 m (Drawing 14) was surveyed by UGL in 2006 with the intent to utilize the original survey from 2003 as the baseline to compare subsequent surveys and evaluate channel degradation. Once the two plan and profiles were created it was noted that there was a discrepancy between the two surveys, in plan and profile, mainly between Station 0+800 and 1+100 m. In discussion with Jean-Louis Salesse of UGL, these two surveys could not be reconciled without checking some of the control points used for the 2003 survey. No conclusions were made in the 2006 monitoring report except a recommendation that the survey be re-done in 2007. In 2007, the creek channel survey was only partially completed (i.e. Station 1+025 to 1+450 m) and no conclusions could be made. The 2008 and subsequent surveys were completed from Station 0+700 to 1+450 m.

The 2008 survey results compared well in plan view with the 2003 baseline survey and the profile compares well with the 2003 baseline survey from Station 0+700 to 0+950 and from Station 1+050 to 1+475m. Between Station 0+950 and 1+050 the 2008 survey suggest that the channel has filled in by about 0.5 to 1 m. The beaver dam at the upstream end of the south lobe (Station 1+300 m) was removed in 2007 which resulted in a local straightening of the channel in plan view. Where the surveyed channel is above the previous baselines, it is implied that depositional processes have raised the channel bottom. Conversely, erosional processes have lowered the channel bottom at other locations.

July 2010 Survey

The July 2010 survey results compare well in plan view with the 2003 baseline survey and the 2008 survey. The profile compares well with the 2003 baseline survey with some possible local infilling around Station 0+925 and from Station 1+000 to 1+040. The portion of the channel across the north lobe is about 0.75 m lower than the baseline.

The July 2010 survey results compare well with the baseline and 2008 surveys from 0+700 to 0+960 m. From this point to Station 1+050 m the channel profile is about 0.5 to 1.0 m lower than the 2008 survey but still above the 2003 baseline survey. From Station 1+050 to 1+300 m the July 2010 profile is slightly less than the 2008 profile but not below the baseline. Across the north lobe the profile is lower than the 2008 survey, both the 2008 and July 2010 surveys are below the baseline survey.

September 2010 Survey

The September 2010 survey compares well in plan view with the baseline, 2008 and July 2010 surveys. In profile the results generally compare well with the July 2010 survey. However, along the downstream half of the rock lined channel from Station 0+800 to 0+925 m the creek profile has a distinct ‘saw tooth’ pattern that was not observed in previous surveys. The valleys of the saw tooth pattern appear to be below the baseline survey and may be scour holes in the creek bed, but this has not been confirmed by a visual inspection. Upstream of Station 1+100 m the September survey is lower than the July survey by as much as 0.5 m in some locations and below the baseline for a 75 m stretch upstream of Station 1+175 m. Across the north lobe the profile is slightly lower than the July survey.

3. Bathymetry of Hudgeon Lake

As part of the 2010 performance monitoring, a bathymetric survey of Hudgeon Lake was completed. This also included a shoreline survey. Elevation contours along with several sections are shown on Drawings 16 and 17. The lake elevation was 411.16 m in July 2010. The lake surface area was 71.9 hectares, and the volume was calculated as 9.5 million cubic meters.

4. Recommendations

Based on previous recommendations, the results of the 2010 performance monitoring and the damage that occurred due to the August 2010 precipitation event the following work is recommended for 2011:

- Site inspection
  - Visually inspect the gabion drop structures, Clinton Creek channel and waste rock dump,
  - Develop a repair program for the Drop Structures and eroded portions of the Clinton Creek Channel
  - Measure the horizontal distances across the drop structures
  - Visually inspect the rock lined channel and weirs on Wolverine Creek
  - Visually inspect Wolverine Creek upstream of the rock lined channel
- Make repairs to the Drop Structures and Clinton Creek Channel to address the damage caused by the August 2010 precipitation events
- Assess the need for repairs to the Wolverine Creek Channel and weirs based on future visual inspections
- Complete a full round of performance monitoring to aid in understanding the influence that the precipitation event had on the mine site features.

If we can be of further assistance or should you wish to proceed with the recommended engineering work in 2011, please contact either Tom Wingrove or Kendall Thiessen.

5. References

UMA Engineering Ltd., 2000. Indian and Northern Affairs Canada, Abandoned Clinton Creek Asbestos Mine, Risk Assessment Report.

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AECOM, 2011. Government of Yukon, Former Clinton Creek Asbestos Mine – 2010 Site Inspection Report.

Drawings

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ISS/REV: 0A

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7,148,000
7,147,500
7,147,000

U1190
AIRSTRIP
WOLVERINE CREEK TAILINGS PILE
NORTH LOBE
FORMER MILL SITE
U2834 (RTK BASE)
SOUTH LOBE
U1561 (MINE)
U1086
WOLVERENE CREEK
HILL (MINE)
CREEK STABILIZATION AREA INCLUDING: HUDGEON LAKE OUTLET AND FOUR GABION DROP STRUCTURES
U5700
U1192
U5699
U5698
U1183
U1191
G-TRAV (MINE)
CLINTON CREEK
2835
HUDGEON LAKE
U1200
U1189
MINE ACCESS ROAD
CLINTON CREEK WASTE ROCK DUMP
U2836 (RTK BASE)
BEAR CREEK
U228 (MINE)
U1836
U1182
PORCUPINE PIT
U1193
SHACK (MINE)
U280 (MINE)
PORCUPINE CREEK
CLINTON CREEK

0 150 300 m

SCALE 1:1500(

UTM ZONE 7 NAD83
IMAGE DATE 1999

U5700 BENCHMARK

U228 (MINE) LOCAL MINE BENCHMARKS

AECOM

Government of Yukon
Former Clinton Creek Asbestos Mine
Long Term Performance Monitoring - 2010

Site Plan and Bench Mark Locations

Drawing - 01

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CREEK STABILIZATION AREA INCLUDING:
HUDGEON LAKE OUTLET AND
FOUR GABION DROP
STRUCTURES

HUDGEON LAKE

±420 CONTOUR

CLINTON CREEK WASTE ROCK DUMP

±450 CONTOUR

CLINTON CREEK

WOLVERINE CREEK

FORMER CRUSHER BUILDING (DEMOLISHED)

SNOWSHOE PIT

PORCUPINE PIT SLOPE MONITORS

PORCUPINE PIT

CREEK PIT

0228 11cm
P2 13cm
XS-G
1833 7cm
0226 6cm
69 3cm
0217 1cm
XS-A 1cm
XS-B 1cm
0219 2cm
P3 4cm
80-13 5cm
80-14 16cm
0222 2cm
0220 1cm
XS-E 2cm
68 5cm
4 6cm
P4 4cm
0218 0cm
84-1 3cm
P5 1cm
0224 2cm
1831 12cm
22A 9cm
21A 6cm
1cm 81-2
U1196 5cm
20A 3cm
0229 5cm
U1195 2cm
0227 2cm
19 4cm
81-1 2cm
1834 7cm
0223 3cm
0225 3cm
U1194 7cm
1839 7cm
U1493 13cm
1830 2cm
4cm 1837
1832 1cm
1838 1cm

7,147,500
7,147,000
7,146,500
513,000
513,500
514,000

SCALE 1:5000
0 50 100 m
UTM ZONE 7 NAD83
IMAGE DATE 1999

0226 MONITOR LOCATION (ACTIVE)
XS-G MONITOR LOCATION (DESTROYED)
P2 PIEZOMETER LOCATION
22cm INCREMENTAL MOVEMENT (JULY 2008 - JULY 2010)
10cm TOTAL MOVEMENT VECTOR (BASELINE TO JULY 2010)

UPPER SLOPE AREA
- ELEVATION >450±
MID SLOPE AREA
- ELEVATION >420± <450±
LOWER SLOPE AREA
- ELEVATION <420±

AECOM

Government of Yukon
Former Clinton Creek Asbestos Mine
Long Term Performance Monitoring - 2010

Clinton Creek Waste Rock Dump
July 2008 to July 2010 Movement Monitoring
Drawing - 02

B SIZE 11" x 17" (279.4mm x 431.8mm)

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CREEK STABILIZATION AREA INCLUDING: HUDGEON LAKE OUTLET AND FOUR GABION DROP STRUCTURES

HUDGEON LAKE

±420 CONTOUR

CLINTON CREEK

CREEK

WOLVERINE CREEK

CLINTON CREEK

CLINTON CREEK WASTE ROCK DUMP

±450 CONTOUR

±420 CONTOUR

0228 5cm
P2 5cm
XS-G
1824 21cm
69 2cm
0217
XS-A
XS-B 1cm
0219 3cm
0222 2cm
0220
XS-E
0218
84-1
1833 1cm
0226 3cm
P3 3cm
2835 0cm
80-13 4cm
80-14 3cm
68 2cm
4 2cm
P4 5cm
P5 3cm
0224 1cm
1831 5cm
22A 4cm
21A 2cm
0cm 81-2
U1196 1cm
20A 2cm
0229 1cm
U1195 1cm
19 3cm
0227 3cm
81-1 2cm
1834 6cm
0223 4cm
0225 5cm
U1194 2cm
1839 2cm
U1493 0cm
FORMER CRUSHER BUILDING (DEMOLISHED)
SNOWSHOE PIT
PORCUPINE PIT SLOPE MONITORS
PORCUPINE PIT
1830 1cm
1832 2cm
1cm 1837
1838 1cm
CREEK PIT

NOTE: MONITORS 69, 0219, 0220, 0222, 1824, XS-A WERE RELOCATED BACK FROM EDGE OF WASTE ROCK SLOPE AFTER JULY, 2010 SURVEY.

7,146,500 | 513,000 | 513,500 | 514,000

0 50 100 m

SCALE 1:5000

UTM ZONE 7 NAD83
IMAGE DATE 1999

MONITOR LOCATION (ACTIVE)

MONITOR LOCATION (LOST, DESTROYED OR DAMAGED)

P2 PIEZOMETER LOCATION

22cm INCREMENTAL MOVEMENT (JULY 2010 - SEPTEMBER 2010)

10cm TOTAL MOVEMENT VECTOR (BASELINE TO SEPTEMBER 2010)

UPPER SLOPE AREA
- ELEVATION >450±

MID SLOPE AREA
- ELEVATION >420± <450±

LOWER SLOPE AREA
- ELEVATION <420±

AECOM

Government of Yukon
Former Clinton Creek Asbestos Mine
Long Term Performance Monitoring - 2010

Clinton Creek Waste Rock Dump Movement Monitoring Drawing - 02A

7 147 500
7 147 250
7 147 000
513 000
513 250
513 500

SECTION 1
SECTION 2
SECTION 3
SECTION 4
SECTION 5
SECTION 6
SECTION 7
SECTION 8

1450 1451 1452 1453 1454 1455 1456 1457 1458 1459 1460 1461 1462 1463 1464 1465

DROP STRUCTURE #1
(SEE DRAWING 04)

DROP STRUCTURE #2
(SEE DRAWING 05)

DROP STRUCTURE #3
(SEE DRAWING 06)

DROP STRUCTURE #4
(SEE DRAWING 07)

ALIGNMENT OF CREEK
CHANNEL (TYP.)

1999
2001
JULY, 2006
JULY, 2004 (BASE LINE)
JULY, 2008
JULY, 2010
SEPTEMBR, 2010

20m
80m

0+000 0+050 0+100 0+150 0+200 0+250 0+300 0+350 0+400 0+450 0+500 0+550 0+600 0+650 0+700 0+750 0+800 0+850 0+900 0+950

CHANNEL STATION
(m) TYP.

N

PLAN

0 25 50 m
SCALE 1:2500

LEGEND

- 1450 — CHANNEL CLOSURE MOVEMENT MONITOR (TYP)
- CREEK CENTRELINE 1999
- CREEK CENTRELINE 2001
- CREEK CENTRELINE 2004 (BASELINE FOR LONG TERM MONITORING)
- CREEK CENTRELINE 2006
- CREEK CENTRELINE 2008
- CREEK CENTRELINE JULY 2010
- CREEK CENTRELINE SEPTEMBER 2010

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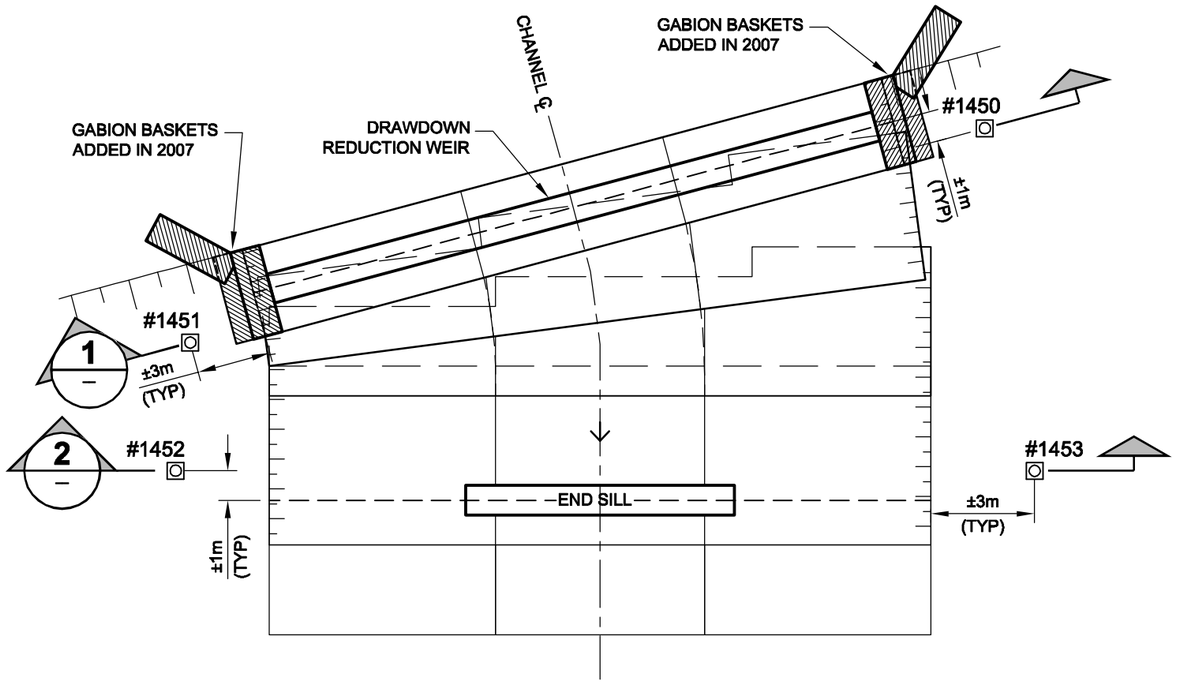
Government of Yukon
Former Clinton Creek Asbestos Mine
Long Term Performance Monitoring - 2010

Clinton Creek
Channel Plan
Drawing - 03



DROP STRUCTURE PLAN VIEW

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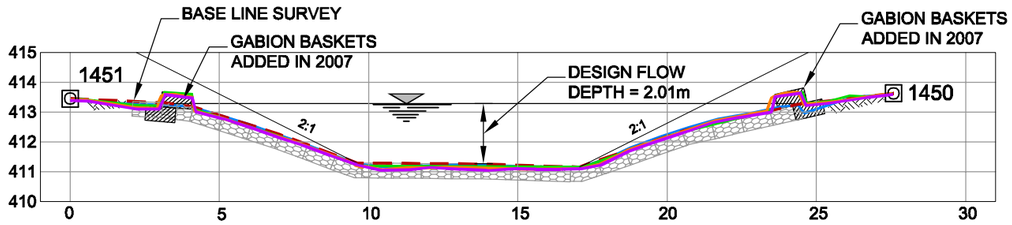

SECTION 1 —

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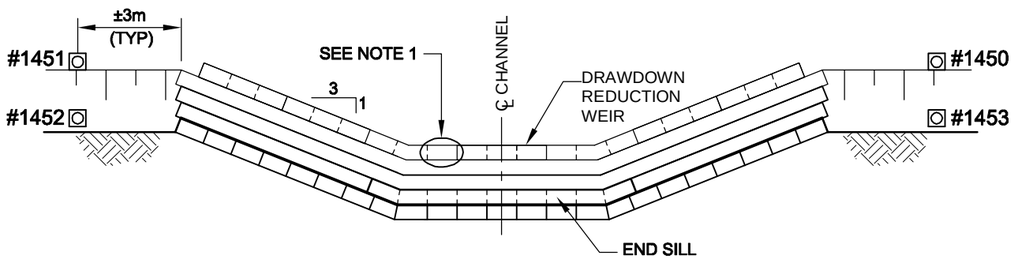
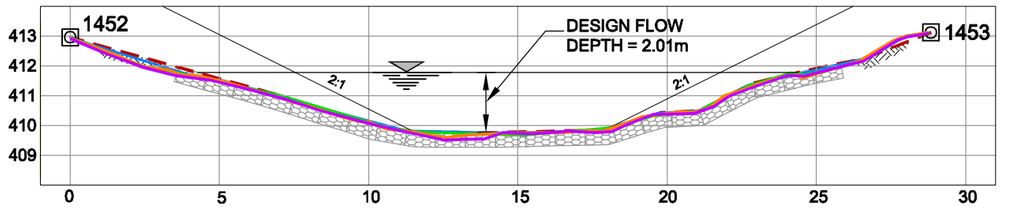


DROP STRUCTURE END VIEW

m SCALE 1:200
0 2 4



SECTION 2 —

m SCALE 1:200
0 2 4

▣ CHANNEL CLOSURE MOVEMENT MONITOR (19mm Ø STEEL PIN) INSTALLED DURING 2006 SURVEY.

NOTE 1: GABION FILL REMOVED FROM THIS CELL OF THE DRAWDOWN WEIR IN 2007 TO AID IN DRAWING DOWN THE LEVEL IN HUDGEON LAKE DURING LOW FLOW PERIODS.

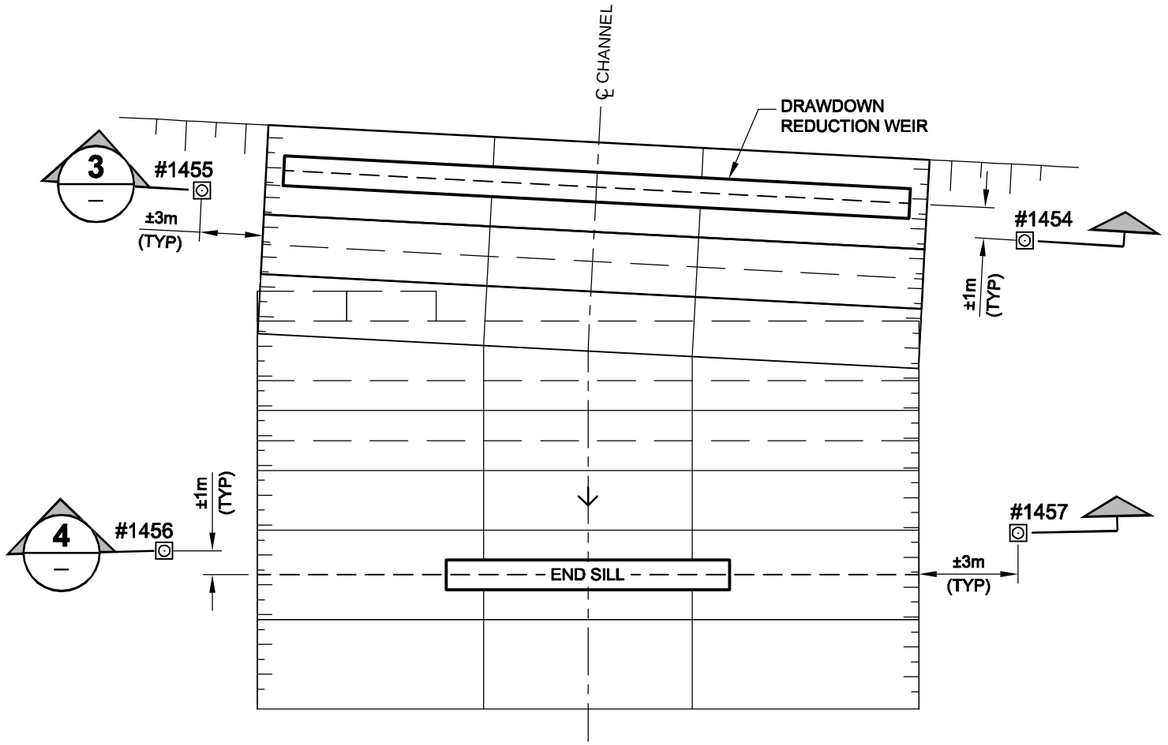
- - - BASE LINE SURVEY (2006)
SURVEY (2007)
SURVEY (2008)
SURVEY (JULY 2010)
SURVEY (SEPTEMBER 2010)

AECOM

Government of Yukon
Former Clinton Creek Asbestos Mine
Long Term Performance Monitoring - 2010

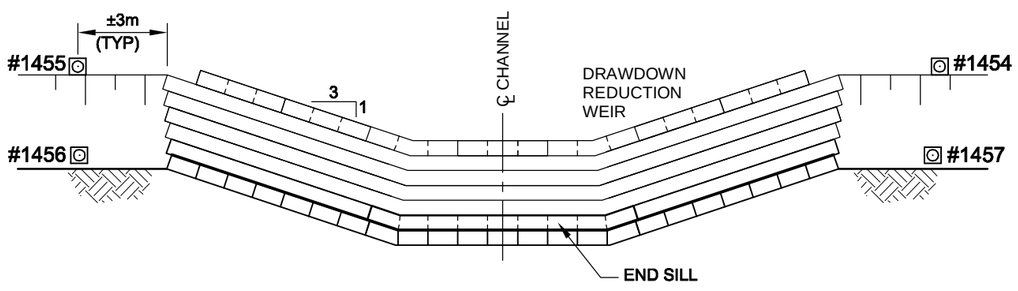
Drop Structure #1

Drawing - 04



DROP STRUCTURE PLAN VIEW

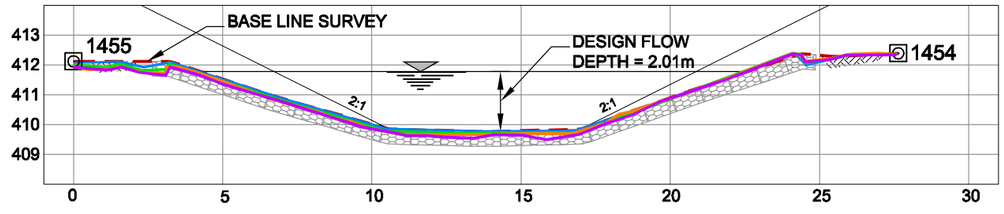
0 2 4 m SCALE 1:200



DROP STRUCTURE END VIEW

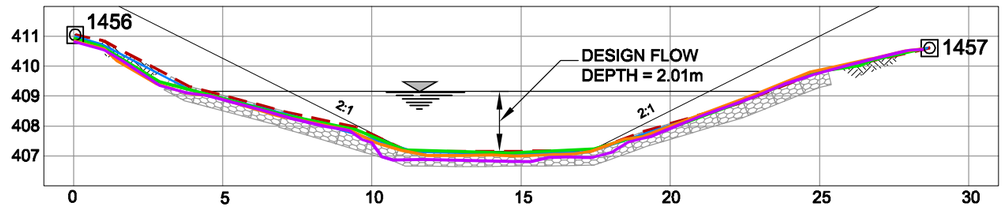
0 2 4 m SCALE 1:200

▣ CHANNEL CLOSURE MOVEMENT MONITOR (19mm Ø STEEL PIN) INSTALLED DURING 2006 SURVEY.



SECTION 3 —

0 2 4 m SCALE 1:200



SECTION 4 —

0 2 4 m SCALE 1:200

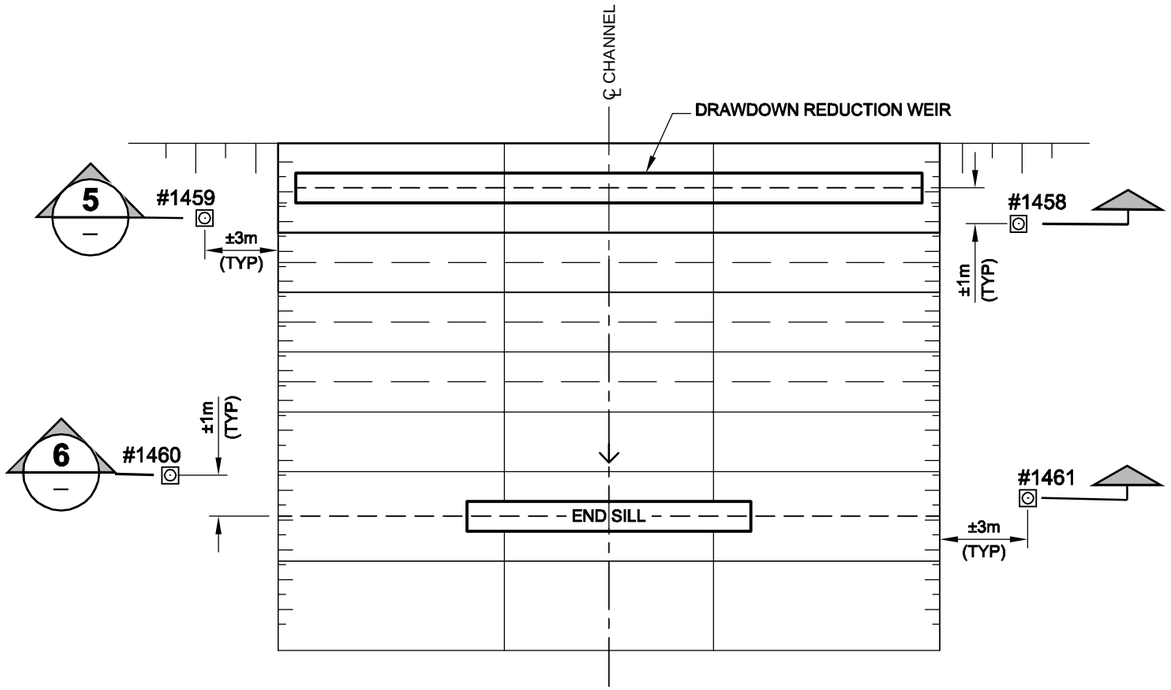
- BASE LINE SURVEY (2006)
- SURVEY (2007)
- SURVEY (2008)
- SURVEY (2010, JULY)
- SURVEY (2010, SEPTEMBER)

AECOM

Government of Yukon
Former Clinton Creek Asbestos Mine
Long Term Performance Monitoring 2010

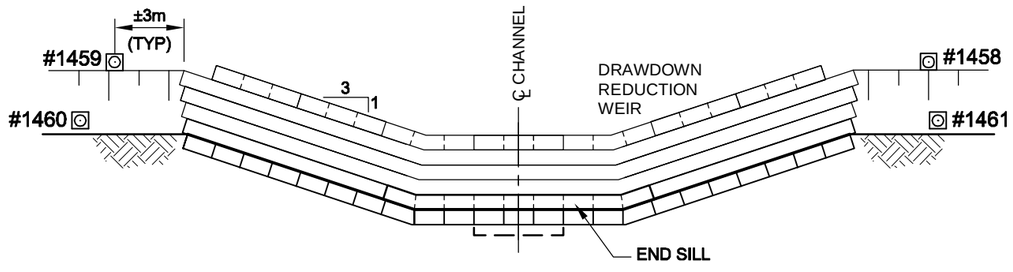
Drop Structure #2

Drawing - 05



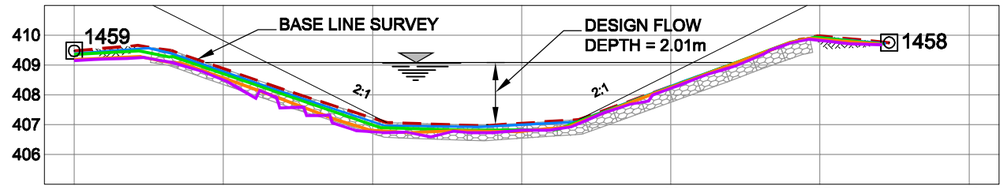
DROP STRUCTURE PLAN VIEW

0 2 4 m SCALE 1:200



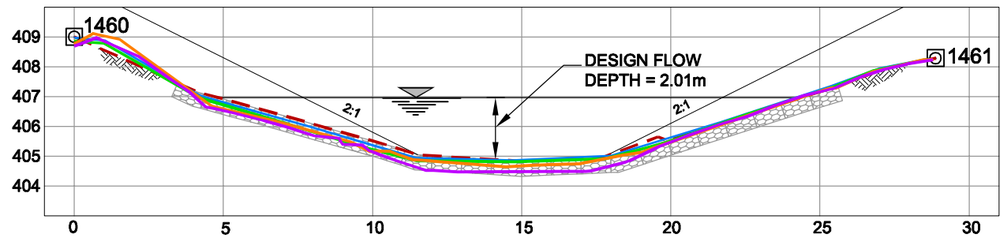
DROP STRUCTURE END VIEW

0 2 4 m SCALE 1:200



SECTION 5

0 2 4 m SCALE 1:200



SECTION 6

0 2 4 m SCALE 1:200

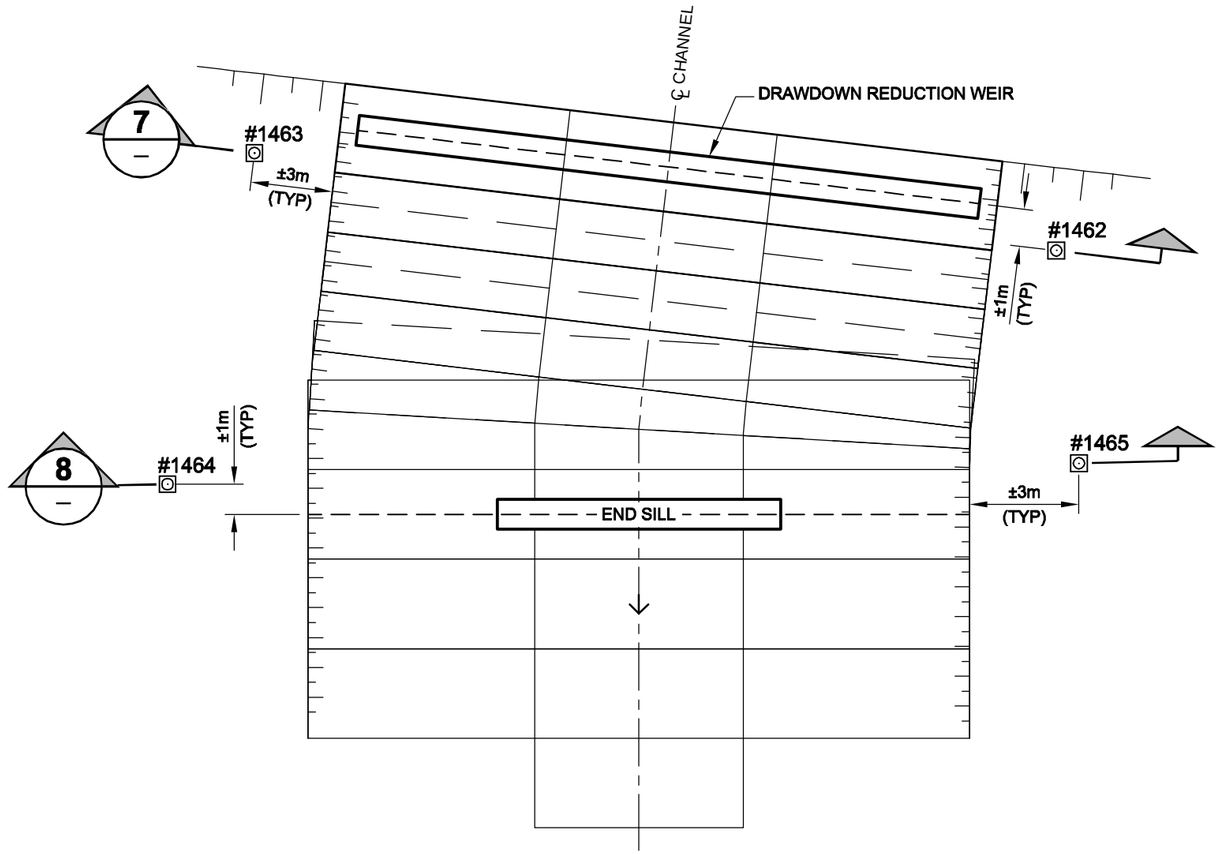
CHANNEL CLOSURE MOVEMENT MONITOR (19mm Ø STEEL PIN) INSTALLED DURING 2006 SURVEY.

- BASE LINE SURVEY (2006)
- SURVEY (2007)
- SURVEY (2008)
- SURVEY (2010, JULY)
- SURVEY (2010, SEPTEMBER)

Government of Yukon
Former Clinton Creek Asbestos Mine
Long Term Performance Monitoring - 2010

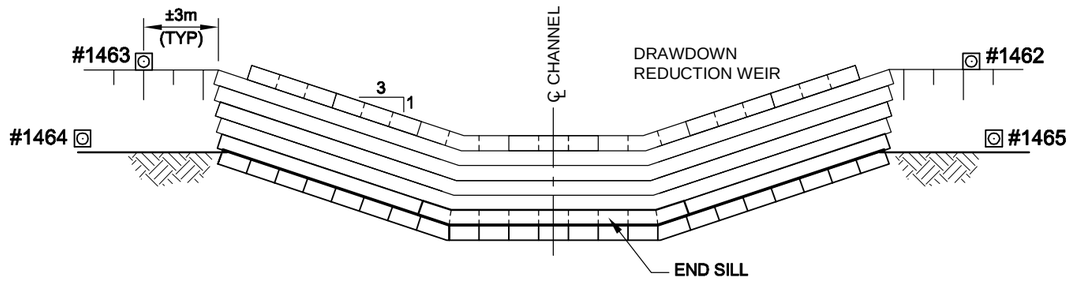
Drop Structure #3

Drawing - 06



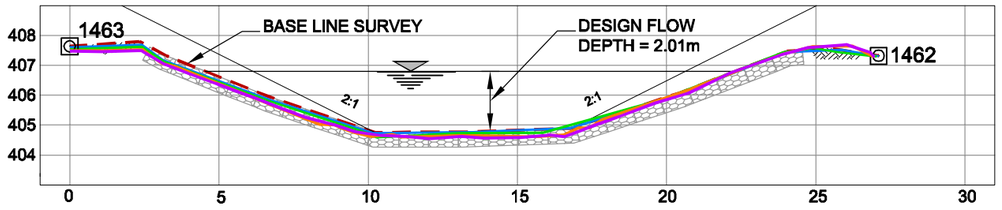
DROP STRUCTURE PLAN VIEW

0 2 4 m SCALE 1:200



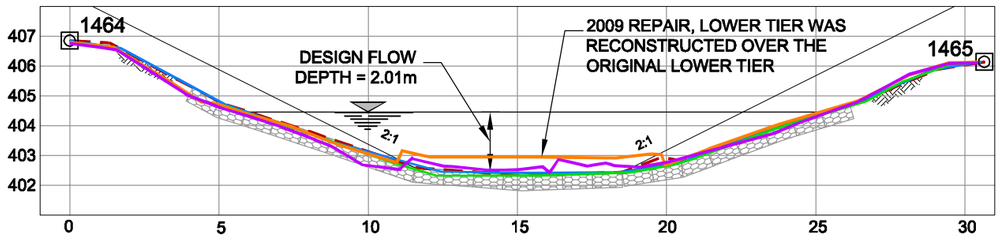
DROP STRUCTURE END VIEW

0 2 4 m SCALE 1:200



SECTION 7

0 2 4 m SCALE 1:200



SECTION 8

0 2 4 m SCALE 1:200

⊙ CHANNEL CLOSURE MOVEMENT MONITOR (19mm Ø STEEL PIN) INSTALLED DURING 2006 SURVEY.

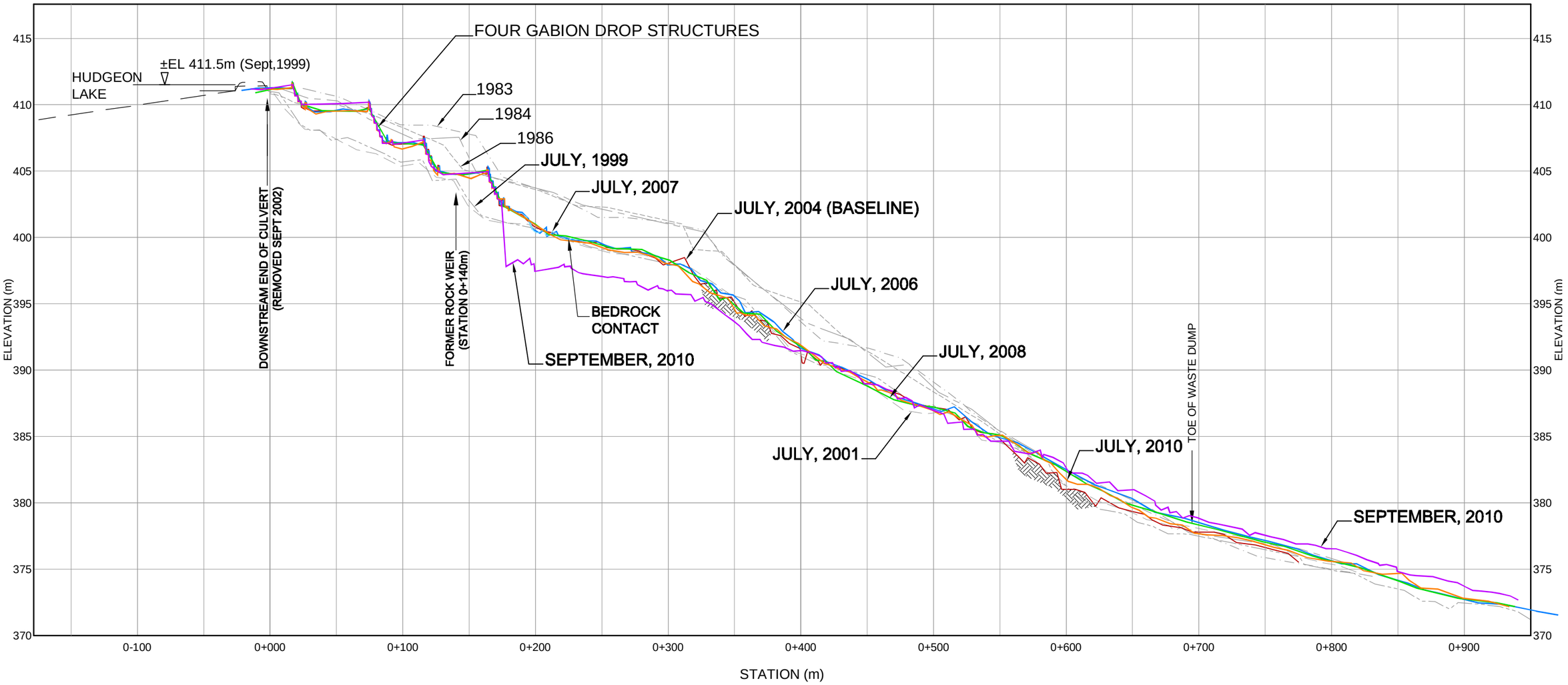
- BASE LINE SURVEY (2006)
- SURVEY (2007)
- SURVEY (2008)
- SURVEY (JULY 2010)
- SURVEY (SEPTEMBER 2010)

AECOM

Government of Yukon
Former Clinton Creek Asbestos Mine
Long Term Performance Monitoring - 2010

Drop Structure #4

Drawing - 07



PROFILE

0 30 60 H=1:3000
m
0 3 6 V=1:300

STATION	NORTHING	EASTING
0+000	7,147,427	512,863
0+250	7,147,366	513,113
0+500	7,147,272	513,363
0+750	7,147,204	513,613

COORD: UTM ZONE 7W NAD83

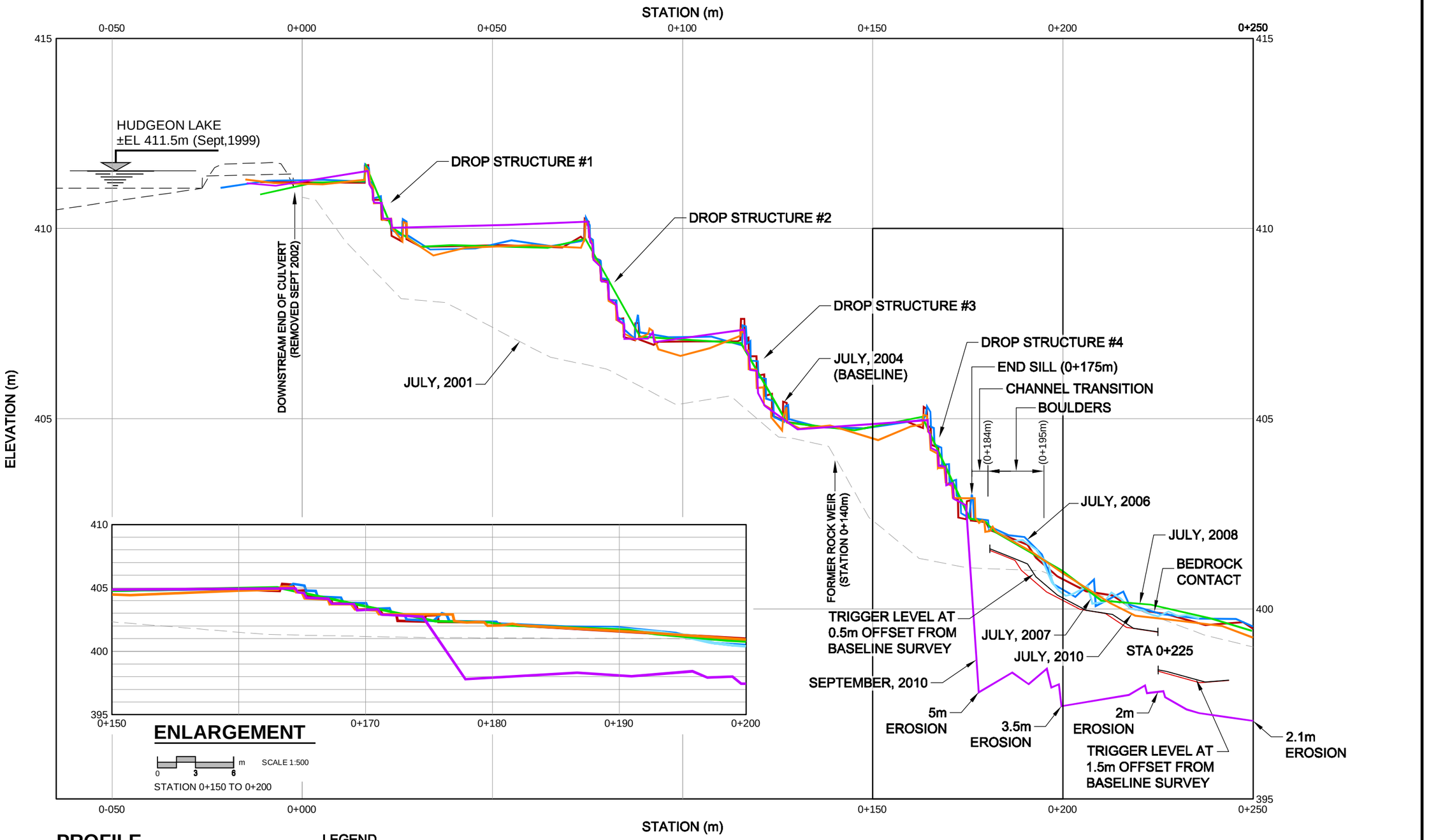
LEGEND

- PROFILE 1983
- PROFILE 1984
- PROFILE 1986
- PROFILE 1999
- PROFILE 2001
- PROFILE 2004 (BASELINE FOR LONG TERM MONITORING)
- PROFILE 2006
- PROFILE 2007
- PROFILE 2008
- PROFILE JULY 2010
- PROFILE SEPTEMBER 2010

AECOM

Government of Yukon
Former Clinton Creek Asbestos Mine
Long Term Performance Monitoring - 2010

Clinton Creek
Channel Profile
Drawing - 08



PROFILE

0 10 20 m
H=1:1000
0 1 2
V=1:100

0-50 to 0+250

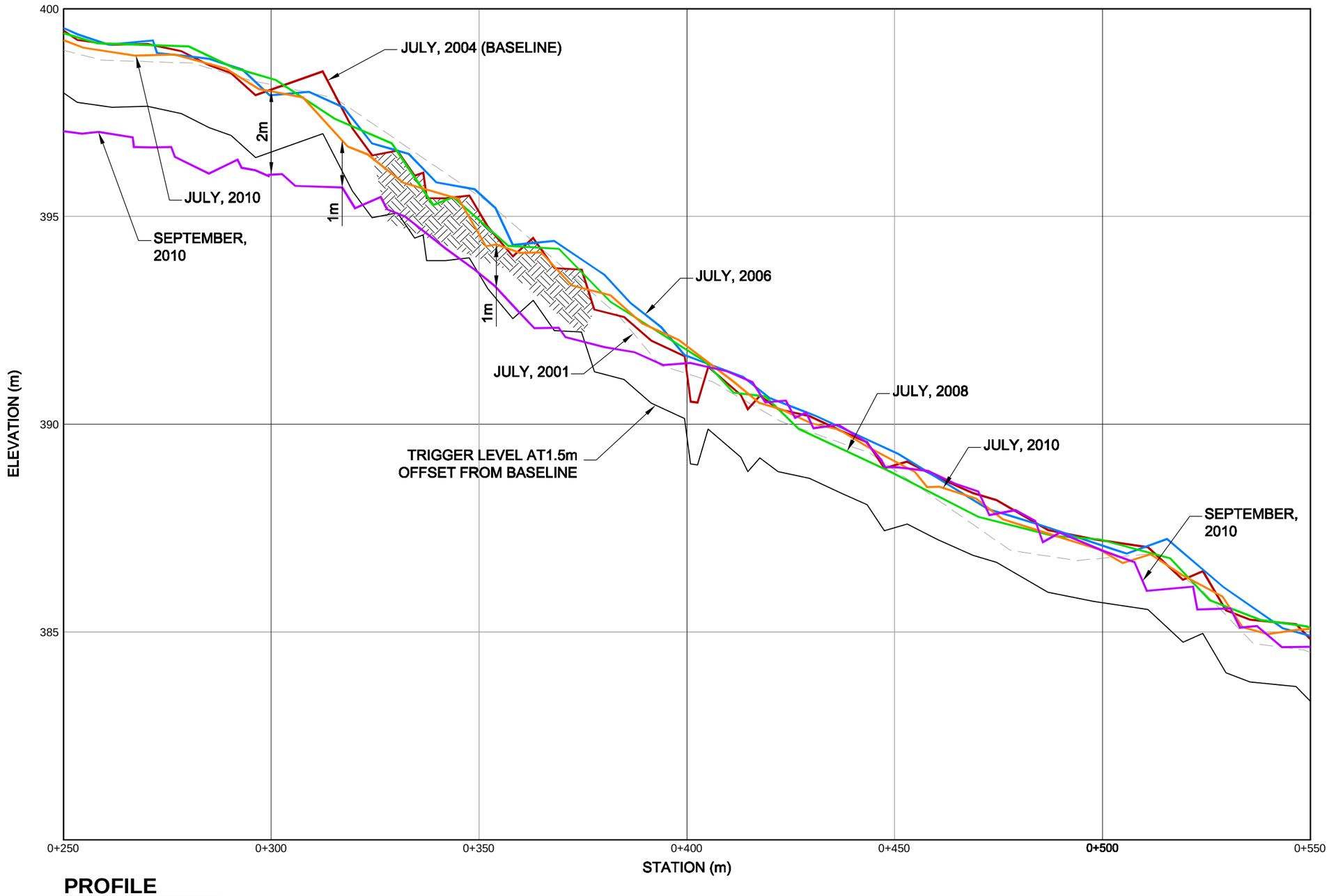
LEGEND

- PROFILE 2001
- PROFILE 2004 (BASELINE FOR LONG TERM MONITORING)
- PROFILE 2006
- PROFILE 2007
- PROFILE 2008
- PROFILE JULY 2010
- PROFILE SEPTEMBER 2010

AECOM

Government of Yukon
Former Clinton Creek Asbestos Mine
Long Term Performance Monitoring - 2010

Clinton Creek Channel Profile
Station 0-050 to 0+250
Drawing - 09



PROFILE

0 10 20 m H=1:1000
0 1 2 V=1:100

0+250 to 0+550

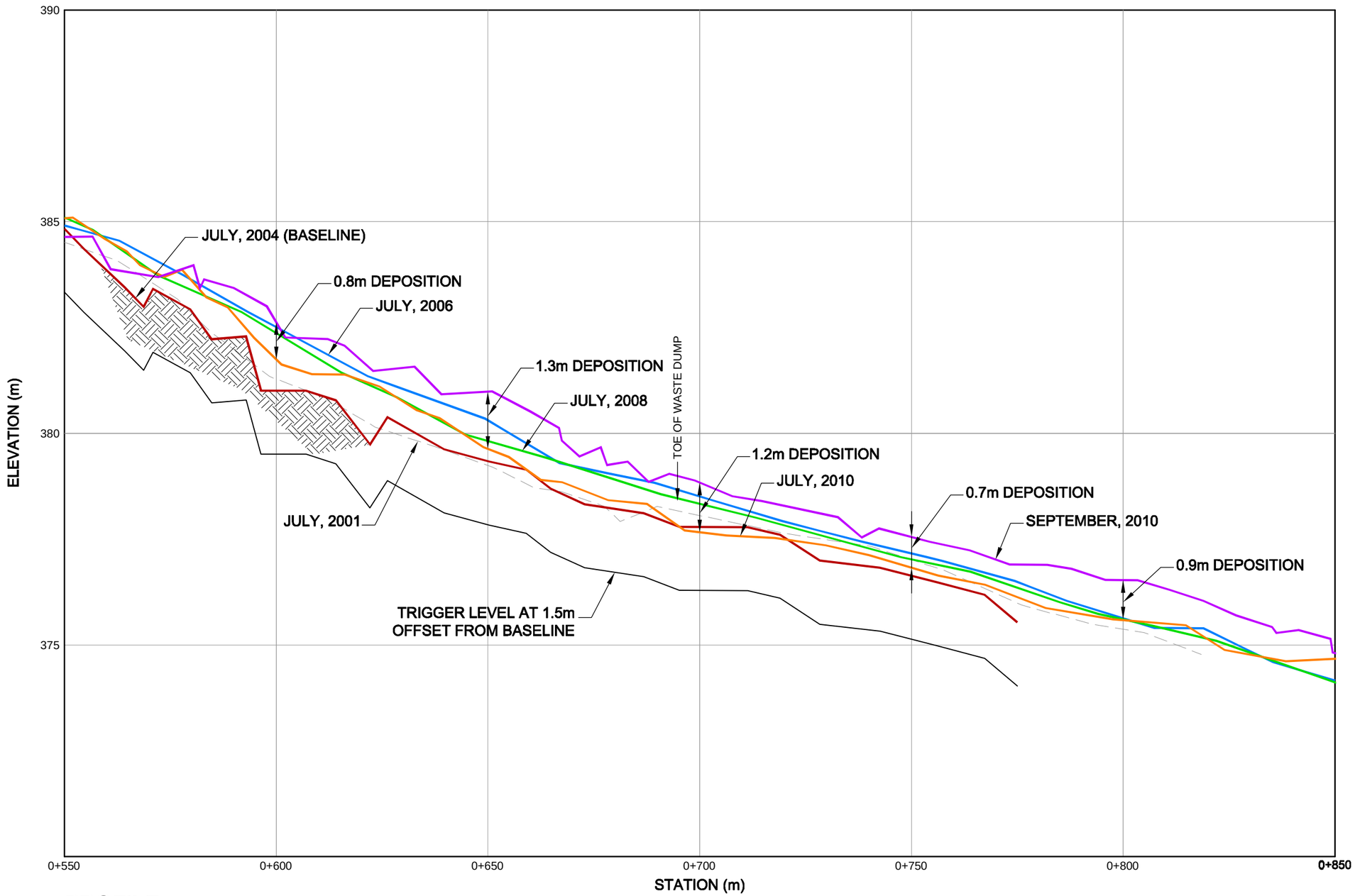
LEGEND

- PROFILE 2001
- PROFILE 2004 (BASELINE FOR LONG TERM MONITORING)
- PROFILE 2006
- PROFILE 2008
- PROFILE JULY 2010
- PROFILE SEPTEMBER 2010

AECOM

Government of Yukon
Former Clinton Creek Asbestos Mine
Long Term Performance Monitoring - 2010

Clinton Creek Channel Profile
Station 0+250 to 0+550
Drawing - 10



PROFILE

0 10 20 m H=1:1000
0 1 2 V=1:100

0+550 to 0+850

LEGEND

- PROFILE 2001
- PROFILE 2004 (BASELINE FOR LONG TERM MONITORING)
- PROFILE 2006
- PROFILE 2008
- PROFILE JULY 2010
- PROFILE SEPTEMBER 2010

AECOM

Government of Yukon
Former Clinton Creek Asbestos Mine
Long Term Performance Monitoring - 2010

Clinton Creek Channel Profile
Station 0+550 to 0+850
Drawing - 11

513,000 513,500 514,000

7,148,500 7,148,000

530 425

WOLVERINE CREEK

1495 3cm
BH-14(T7) 21cm
80-1 3cm
26 2cm
24A 3cm
80-2 6cm
1483 3cm
2834 (RTK BASE)
1492 7cm
24 11cm
1084 18cm
U1086

650-1 2cm
650-2 6cm
1491 12cm
80-7 12cm
NORTH LOBE
1085 1cm
500-1 2cm
500-2 12cm
NL-1 12cm
1083 (NL-2) 11cm
NL-3 9cm
350-3A 14cm
1489 6cm
NL-4 14cm
NL-5 10cm
350-1A 11cm
350-2A 12cm
80-5 31cm
80-4 43cm

FORMER MILL SITE

WOLVERINE CREEK TAILINGS PILES

SOUTH LOBE

NL-BASE 4cm
2005-11 55cm
SL-4 67cm
1484 72cm
2005-09 52cm
SL-3 70cm
SL-2 56cm
SL-1 42cm
2005-08 12cm
2005-10
SL-5 73cm
2005-02 70cm
2005-01 78cm
2005-03 77cm
BH-16(T8) 92cm
24B 93cm
24A 97cm
25B 27cm
24D 70cm
2005-04 89cm
1485 95cm
2005-05 105cm
2005-06 66cm
2005-07 0cm
80-9 1cm

UPPER SLOPE AREA
MID SLOPE AREA
LOWER SLOPE AREA

530m ELEVATION CONTOUR
425m ELEVATION CONTOUR
ROCK LINED CHANNEL AND ROCK WEIRS

0 40 80 120 m
SCALE 1:4000
UTM ZONE 7 NAD83
IMAGE DATE 1999

24 MONITOR LOCATION (ACTIVE)
MONITOR LOCATION (DESTROYED)
SL/NL-01 VISUAL ALIGNMENT PIN
BH-14 (T7) 1978 TEST HOLE LOCATION

17cm INCREMENTAL MOVEMENT (JULY 2008 - JULY 2010)
100cm TOTAL MOVEMENT VECTOR (BASELINE TO JULY 2010)

COMPASS BEARING FROM NL-BASE ALONG PINS NL-1 TO NL-5
DECLINATION: 30°
BEARING: 208°

COMPASS BEARING FROM NL-BASE ALONG PINS SL-1 TO SL-5
DECLINATION: 30°
BEARING: 121°

AECOM

Government of Yukon
Former Clinton Creek Asbestos Mine
Long Term Performance Monitoring - 2010

Wolverine Creek Tailings Pile

July 2008 to July 2010 Movement Monitoring

Drawing - 12

B SIZE 11" x 17" (279.4mm x 431.8mm)

PLOT: 11/01/21 11:06:39 AM

Saved By: vibergj

ISS/REV: 0A
AECOM FILE NAME: 60160515-01-B-F32-R0X.dwg

513,000 513,500 514,000

7,148,500

7,148,000

530 425

WOLVERINE CREEK

FORMER MILL SITE

NORTH LOBE

SOUTH LOBE

WOLVERINE CREEK TAILINGS PILES

1495 1cm
BH-14(T7) 3cm
80-1 3cm
650-1 4cm
650-2 4cm
1491 20cm
80-7 4cm
NL-1 5cm
1083 (NL-2) 3cm
NL-3 5cm
350-3A 4cm
1489 3cm
NL-4 4cm
NL-5 5cm
1085 3cm
500-1 3cm
500-2 4cm
26 4cm
26A 4cm
80-2 3cm
350-1A 5cm
350-2A 4cm
80-5 6cm
80-4 9cm
1483 2cm
2834 (RTK BASE)
NL-BASE 2cm
2005-01 7cm
SL-4 9cm
2005-02
1484 9cm
2005-03 --cm
SL-3 10cm
SL-2 9cm
SL-1 9cm
2005-04 3cm
SL-5 8cm
2005-10 10cm
2005-11 11cm
2005-09 11cm
BH-16(T8) 12cm
24A 12cm
24B 12cm
25B 3cm
24D 10cm
1492 2cm
24 2cm
1084 3cm
1485 12cm
2005-07 13cm
2005-06 10cm
2005-05 2cm
2005-08 12cm
80-9 1cm
U1086

UPPER SLOPE AREA | MID SLOPE AREA | LOWER SLOPE AREA

530m ELEVATION CONTOUR

425m ELEVATION CONTOUR

ROCK LINED CHANNEL AND ROCK WEIRS

0 40 80 120 m

SCALE 1:4000

UTM ZONE 7 NAD83
IMAGE DATE 1999

24 MONITOR LOCATION (ACTIVE)

MONITOR LOCATION (DESTROYED)

SL/NL-01 VISUAL ALIGNMENT PIN

BH-14 (T7) 1978 TEST HOLE LOCATION

17cm / 100cm INCREMENTAL MOVEMENT (JULY 2010 - SEPTEMBER 2010) / TOTAL MOVEMENT VECTOR (BASELINE TO SEPTEMBER 2010)

COMPASS BEARING FROM NL-BASE ALONG PINS NL-1 TO NL-5
DECLINATION: 30°
BEARING: 208°

COMPASS BEARING FROM NL-BASE ALONG PINS SL-1 TO SL-5
DECLINATION: 30°
BEARING: 121°

AECOM

Government of Yukon
Former Clinton Creek Asbestos Mine
Long Term Performance Monitoring - 2010

Wolverine Creek Tailings Pile Movement Monitoring Drawing - 12A

513,500

514,000

7,148,000

530

425

80-2 6cm

80-5 31cm

80-4 43cm

1483 3cm

2834 (RTK BASE)

1492 7cm

24 11cm

1084 18cm

1485 95cm

350-1A 11cm

350-2A 12cm

NL-5 11cm

1489 6cm

NL-4 14cm

NL-BASE 4cm

2005-10

2005-11 55cm

1484 72cm

SL-5 73cm

2005-02 70cm

2005-01 78cm

2005-03 77cm

SL-4 67cm

SL-3 70cm

2005-09 52cm

SL-2 56cm

SL-1 42cm

24D 70cm

25B 27cm

2005-08 12cm

BH-16(T8) 92cm

24A 97cm

24B 94cm

2005-04 89cm

2005-05 105cm

2005-06 66cm

2005-07 0cm

80-9 1cm

WOLVERINE CREEK TAILINGS PILES

SOUTH LOBE

APPARENT DIRECTION OF MOVEMENT (TYPICAL)

530m ELEVATION CONTOUR

425m ELEVATION CONTOUR

UPPER SLOPE AREA

MID SLOPE AREA

LOWER SLOPE AREA

ROCK LINED CHANNEL AND ROCK WEIRS

N

0 20 40 m

SCALE 1:2000

UTM ZONE 7 NAD83
IMAGE DATE 1999

24 MONITOR LOCATION (ACTIVE)

MONITOR LOCATION (DESTROYED)

SL/NL-01 VISUAL ALIGNMENT PIN

BH-14 (T7) 1978 TEST HOLE LOCATION

18cm INCREMENTAL MOVEMENT (JULY 2008 - JULY 2010)

100cm TOTAL MOVEMENT VECTOR (BASELINE TO JULY 2010)

APPARENT DIRECTION OF MOVEMENT

COMPASS BEARING FROM NL-BASE ALONG PINS NL-1 TO NL-5
DECLINATION: 30°
BEARING: 208°

COMPASS BEARING FROM NL-BASE ALONG PINS SL-1 TO SL-5
DECLINATION: 30°
BEARING: 121°

AECOM

Government of Yukon
Former Clinton Creek Asbestos Mine
Long Term Performance Monitoring - 2010

Wolverine Creek Tailings Pile

July 2008 to July 2010 South Lobe Movement

Drawing - 13

B SIZE 11" x 17" (279.4mm x 431.8mm)

PLOT: 11/01/24 10:19:02 AM

Saved By: vibergj

ISS/REV: 0A
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513,500

514,000

7,148,000

530

425

80-2 3cm

80-5 6cm

80-4 9cm

1483 2cm

2834 (RTK BASE)

1492 2cm

24 2cm

350-1A 5cm

350-2A 4cm

1489 3cm

NL-4 4cm

NL-5 5cm

NL-BASE 2cm

WOLVERINE CREEK TAILINGS PILES

2005-01 7cm

2005-02

1484 9cm

2005-03

2005-10 10cm

SL-5 8cm

2005-11 11cm

2005-09 11cm

SL-4 9cm

SL-3 10cm

SL-2 9cm

SL-1 9cm

SOUTH LOBE

24D 10cm

25B 3cm

2005-04 3cm

APPARENT DIRECTION OF MOVEMENT (TYPICAL)

BH-16(T8) 12cm

24A 12cm

24B 12cm

2005-08 12cm

1084 3cm

1485 12cm

2005-07 13cm

2005-06 10cm

2005-05 2cm

80-9 1cm

530m ELEVATION CONTOUR

425m ELEVATION CONTOUR

UPPER SLOPE AREA

MID SLOPE AREA

LOWER SLOPE AREA

ROCK LINED CHANNEL AND ROCK WEIRS

N

0 20 40 m

SCALE 1:2000

UTM ZONE 7 NAD83
IMAGE DATE 1999

24 MONITOR LOCATION (ACTIVE)

MONITOR LOCATION (DESTROYED)

SL/NL-01 VISUAL ALIGNMENT PIN

BH-14 (T7) 1978 TEST HOLE LOCATION

18cm INCREMENTAL MOVEMENT (JULY 2010 - SEPTEMBER 2010)

100cm TOTAL MOVEMENT VECTOR (BASELINE TO SEPTEMBER 2010)

APPARENT DIRECTION OF MOVEMENT

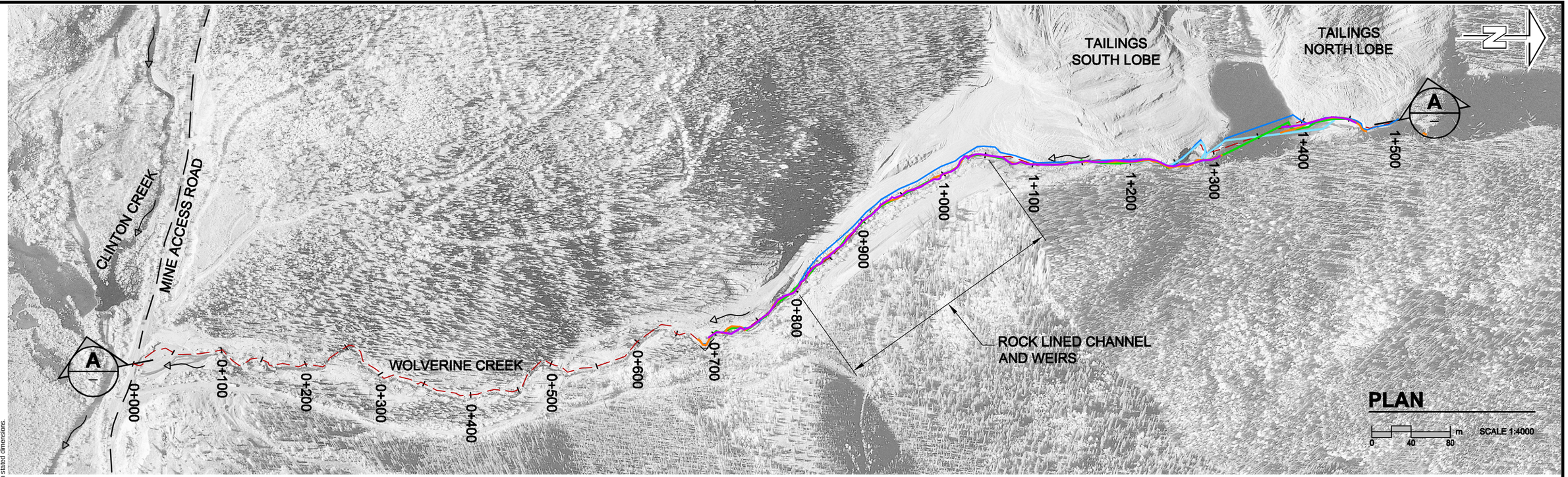
COMPASS BEARING FROM NL-BASE ALONG PINS NL-1 TO NL-5
DECLINATION: 30°
BEARING: 208°

COMPASS BEARING FROM NL-BASE ALONG PINS SL-1 TO SL-5
DECLINATION: 30°
BEARING: 121°

AECOM

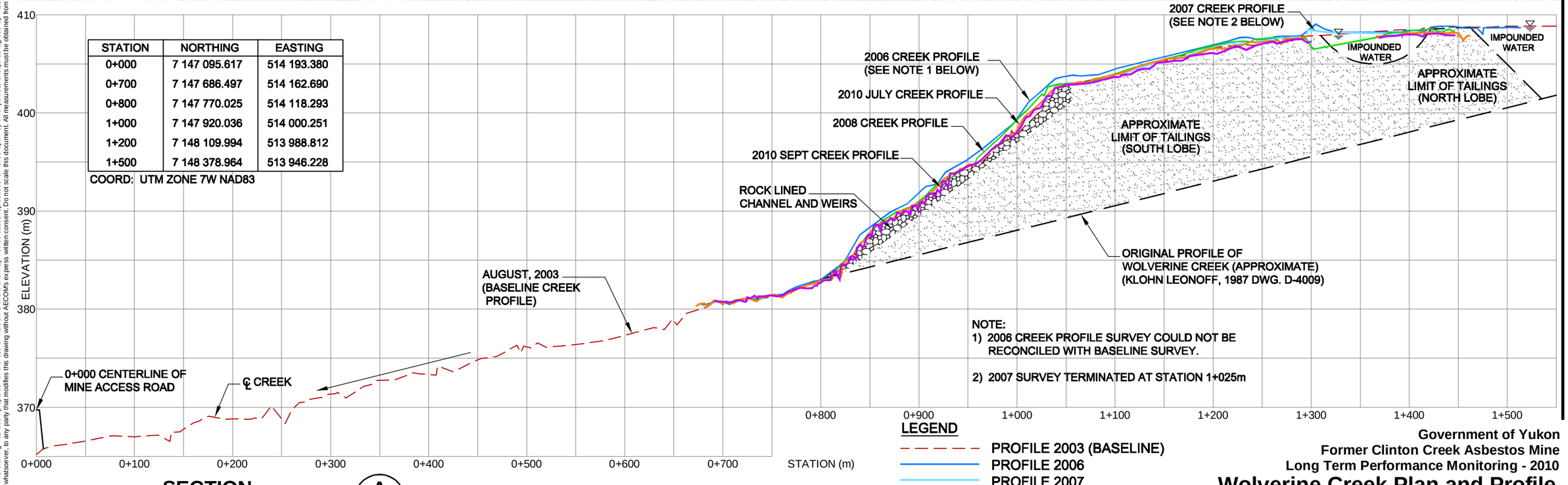
Government of Yukon
Former Clinton Creek Asbestos Mine
Long Term Performance Monitoring - 2010

Wolverine Creek Tailings Pile
South Lobe Movement
Drawing - 13A



STATION	NORTHING	EASTING
0+000	7 147 095.617	514 193.380
0+700	7 147 686.497	514 162.690
0+800	7 147 770.025	514 118.293
1+000	7 147 920.036	514 000.251
1+200	7 148 109.994	513 988.812
1+500	7 148 378.964	513 946.228

COORD: UTM ZONE 7W NAD83



NOTE:
1) 2006 CREEK PROFILE SURVEY COULD NOT BE RECONCILED WITH BASELINE SURVEY.
2) 2007 SURVEY TERMINATED AT STATION 1+025m

LEGEND
- PROFILE 2003 (BASELINE)
- PROFILE 2006
- PROFILE 2007
- PROFILE 2008
- PROFILE JULY 2010
- PROFILE SEPTEMBER 2010

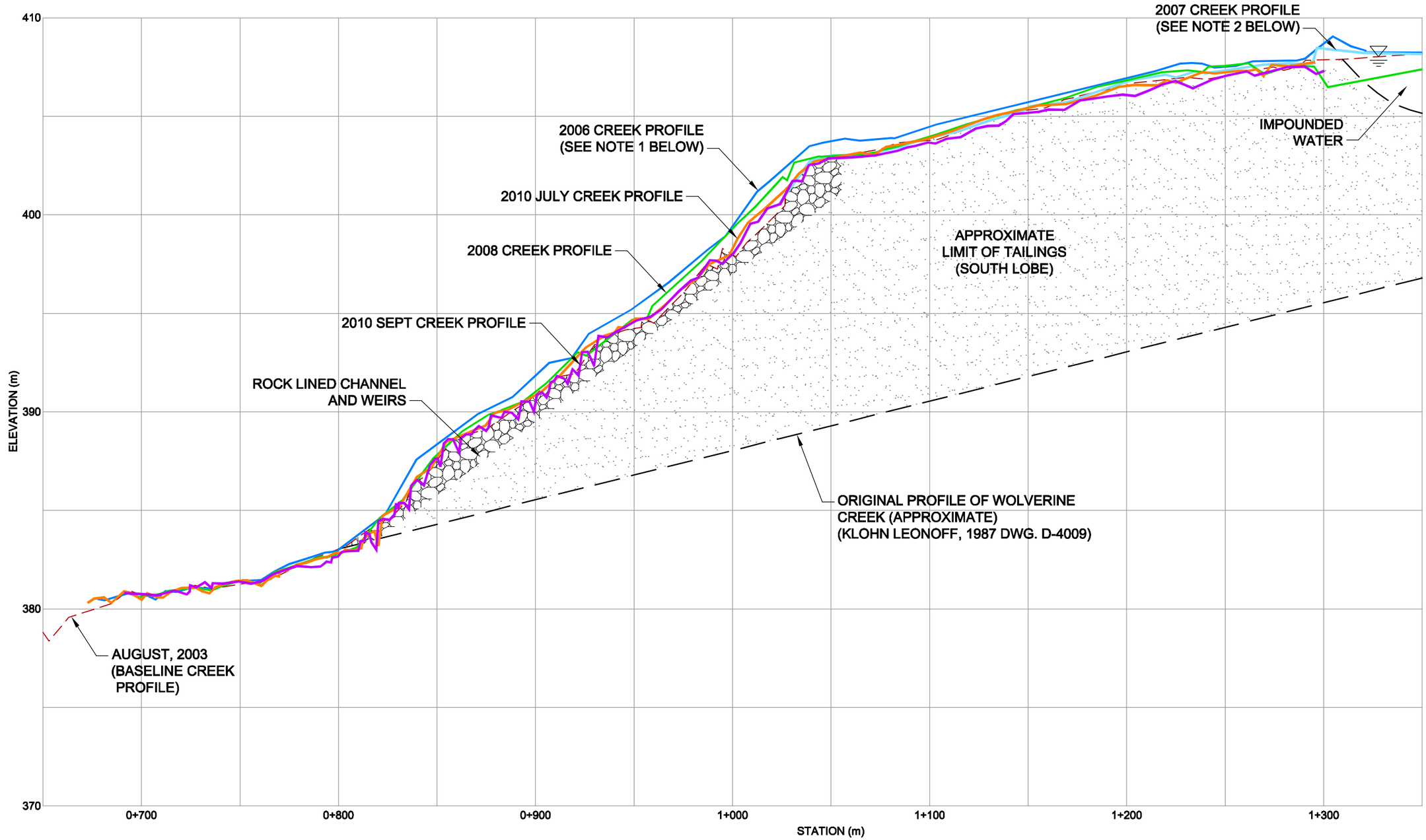
SECTION A
0 40 80 m H=1:4000
0 4 8 V=1:400

AECOM

Government of Yukon
Former Clinton Creek Asbestos Mine
Long Term Performance Monitoring - 2010

Wolverine Creek Plan and Profile

Drawing - 14



PROFILE

0 25 50 H=1:2500 m
0 2.5 5 V=1:250

STATION 0+700 TO 1+350

LEGEND

- PROFILE 2003 (BASELINE)
- PROFILE 2006
- PROFILE 2007
- PROFILE 2008
- PROFILE JULY 2010
- PROFILE SEPTEMBER 2010

NOTE:

1) 2006 CREEK PROFILE SURVEY COULD NOT BE RECONCILED WITH BASELINE SURVEY.

2) 2007 SURVEY TERMINATED AT STATION 1+025m

Government of Yukon
Former Clinton Creek Asbestos Mine
Long Term Performance Monitoring - 2010

Wolverine Creek Profile

AECOM

Drawing - 15

B SIZE 11" x 17" (279.4mm x 431.8mm)

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Saved By: vibergj

ISS/REV: 0A
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7,148,000
7,147,500
7,147,000

511,000
511,500
512,000
512,500

N

0+000
0+500
0+500
1+000
1+500
2+000
2+000

F 17
E 17
A1 17
A2 17

HUDGEON LAKE
AREA:719,000 m²
VOLUME: 9,525,600 m³
LAKE EL JULY 2010 (411.16 m)

390
400
410

CLINTON CREEK WASTE ROCK DUMP

BEAR CREEK

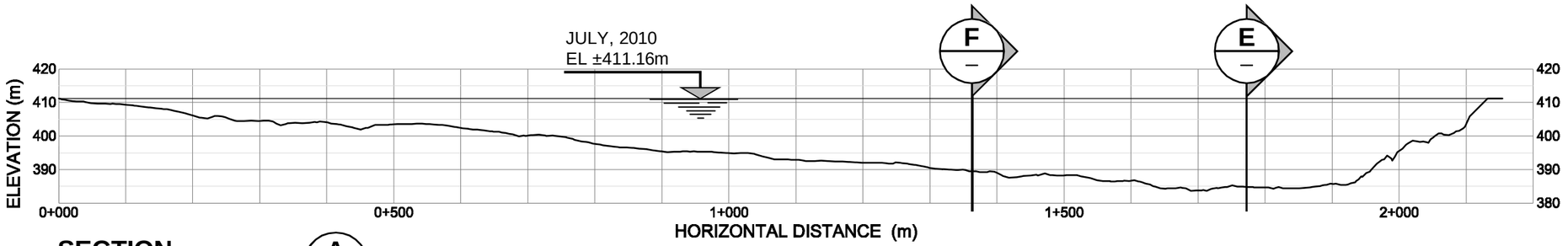
0 60 120 m
SCALE 1:6000

UTM ZONE 7 NAD83
IMAGE DATE 1999

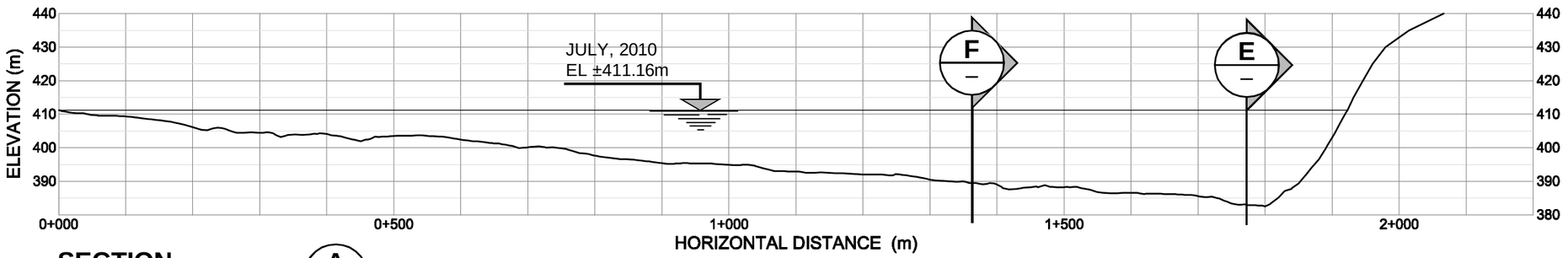
AECOM

Government of Yukon
Former Clinton Creek Asbestos Mine
Long Term Performance Monitoring - 2010

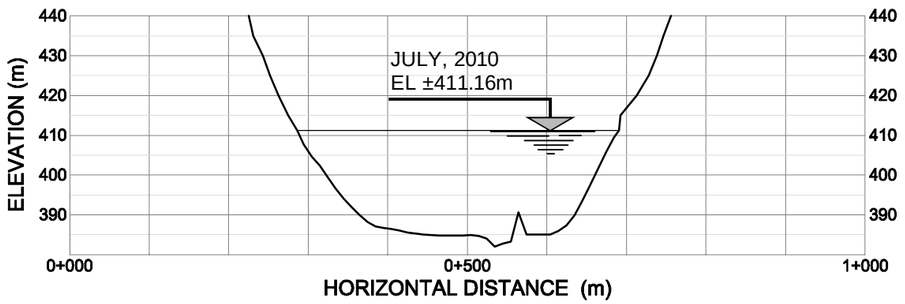
Hudgeon Lake
Plan
Drawing - 16



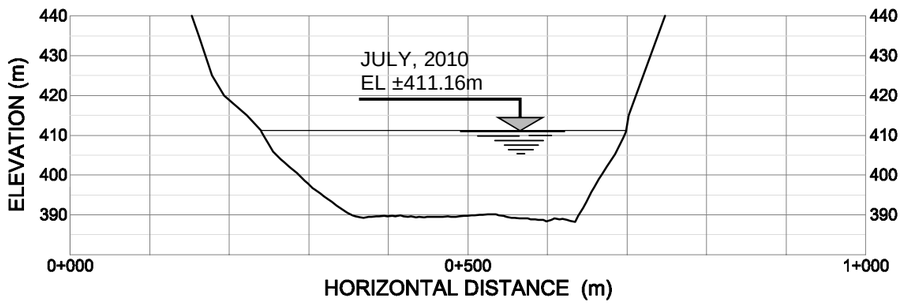
SECTION A1 16
0 75 150 m H=1:7500
0 15 30 V=1:1500



SECTION A2 16
0 75 150 m H=1:7500
0 15 30 V=1:1500



SECTION E 16
0 75 150 m H=1:7500
0 15 30 V=1:1500



SECTION F 16
0 75 150 m H=1:7500
0 15 30 V=1:1500

Government of Yukon
Former Clinton Creek Asbestos Mine
Long Term Performance Monitoring - 2010

Hudgeon Lake
Sections
Drawing - 17

AECOM

Appendix A

Monitoring Instructions and Protocol and Survey Results from Underhill Geomatics

Government of Yukon
Former Clinton Creek Asbestos Mine
2010 Performance Monitoring and Survey Program

1. Set-up GPS base station near Mill Site at BM-U1086.
   (Ref. Drawing 1, Table 1)

2. Check control points to confirm BM-U1086 is stable
   (Ref. Drawing 1, Table 1).

3. Once control has been verified start survey of movement monitoring points.

4. Waste Rock Pile Movement Monitors (ref: Drawing 2, Table 2):
   - Setup RTK base station on Waste Rock pile at U2836,
   - Face Clinton Creek (CC) when surveying points,
   - **Survey ground level at the base of the pin on the side of the pin furthest from the creek.**
   - Deliverable: spreadsheet with monitor point name, UTM Coords and Elev

5. Porcupine Pit Slope Monitors (ref: Drawing 2, Table 2):
   - Face the open pit when surveying,
   - **Survey ground level at the base of the pin on the side of the pin furthest from the pit.**
   - Deliverable: spreadsheet with monitor point name, UTM Coords and Elev

6. Clinton Creek Channel Stabilization – Drop Structure Monitoring (ref: Drawings 3 and 4, Table 2):
   - **Movement Monitor Pins** # 1450 to 1465 located at the four corners of each drop structure
   - Face creek when surveying,
   - **survey ground level at the base of the pin on the side of the pin furthest from the creek.**
     - **i.** Deliverable: spreadsheet with monitor point name, UTM Coords and Elev

   - **Survey cross-sections** #1 to #8 of drop structures along the line between the two sets of movement monitoring pins at each structure. As a minimum, take survey shots on top of the gabions every other basket (1m interval) including top of slope, mid-slope, toe of slope and centerline.
     i. Deliverable: drawing file with plan and sections

7. Clinton Creek Centreline Profile Survey (ref. Drawing 4 and 5):
    - Establish TBM's (check 2004/2006/2008 survey files for locations),
    - Start at Station 0+00m (see Table below for co-ordinates),
    - Survey from Station 0+000 to 0+800 m
    - Deliverable: drawing file with plan and profile

Clinton Creek Profile Survey: Station Co-ordinates

STATION (m)	NORTHING	EASTING
0+000	7,147,427	512,863
0+250	7,147,366	513,113
0+500	7,147,272	513,363
0+750	7,147,204	513,613
	UTM NAD 83 Zone 7W	

8. Tailings Movement Monitors(ref: Drawing 6, Table 3):
    - Setup RTK base station near crest of tailings pile (U 2834),
    - Face Wolverine Creek when surveying,
    - **Survey ground level at the base of the pin on the side furthest from the creek.**
    - Deliverable: spreadsheet with monitor point name, UTM Coords and Elev

9. Wolverine Creek Centreline Profile Survey (ref: Drawing 7):
    - Establish TBM's if required (check 2003 / 2008 survey for locations),
    - Start at Station 0+700 m (see Table below for co-ordinates),
    - Survey from Station 0+700 to 1+500 m ***(PLEASE NOTE THAT THE STATION NUMBERS INCREASE IN THE UPSTREAM DIRECTION AS SHOWN ON THE ATTACHED DRAWING)***
    - Deliverable: drawing file with plan and profile

Wolverine Creek Profile Survey: Station Co-ordinates

STATION (m)	NORTHING	EASTING
0+000	7,147,095.6	514,193.4
0+700	7,147,686.5	514,162.7
0+800	7,147,770.0	514,118.3
1+000	7,147,920.0	514,000.3
1+200	7,148,110.0	513,988.8
1+500	7,148,379.0	513,946.2
	UTM NAD 83 Zone 7W	

10. Hudgeon Lake Bathymetry

- Establish bathymetry (elevation contours, not depths) for Hudgeon lake. As illustrated by the grid lines on Drawing 01, the lake is about 2 km long and 400m wide at the widest point. The near shore bathymetry is very important for the work we will be doing.
- Deliverable: drawing showing the elevation contours of the valley slopes, waste rock slopes and lake bottom. We will tie the lake bathymetry into the existing DTM established from the 1999 aerial photographs for the site. UGL located at air photo targets for the airphotos back in 1999.

11. Miscellaneous Surveys:

- Please allow for up to 2 extra days of time on-site to perform local topo and cross-section surveys to supplement existing info. We will have someone on-site to provide direction on where/what to survey.
- Deliverable: drawing file that can be used by CADD operators to prepare site plans, cross-sections etc.

B SIZE 11" x 17" (279.4mm x 431.8mm)

PLOT: 11/03/29 1:30:15 PM

Saved By: vibergj

ISS/REV: 0A

AECOM FILE NAME: 60160515-03-B-F01-R0X.dwg

510,500 511,000 511,500 512,000 513,000 513,500 514,000 514,500 515,000 515,500 516,000

7,149,500 7,149,000 7,148,500 7,148,000 7,147,500 7,147,000

U1190

AIRSTRIP

WOLVERINE CREEK TAILINGS PILE

NORTH LOBE

FORMER MILL SITE

U2834 (RTK BASE)

SOUTH LOBE

U1561 (MINE)

U1086

WOLVERENE CREEK

HILL (MINE)

U5700

U1183

U1191

G-TRAV (MINE)

U1192

U5699

U5698

HUDGEON LAKE

U1200

U1189

CLINTON CREEK WASTE ROCK DUMP

U2836 (RTK BASE)

BEAR CREEK

CLINTON CREEK

U228 (MINE)

U1836

U1182

PORCUPINE PIT

U1193

SHACK (MINE)

U280 (MINE)

PORCUPINE CREEK

0 150 300 m

SCALE 1:15000

UTM ZONE 7 NAD83
IMAGE DATE 1999

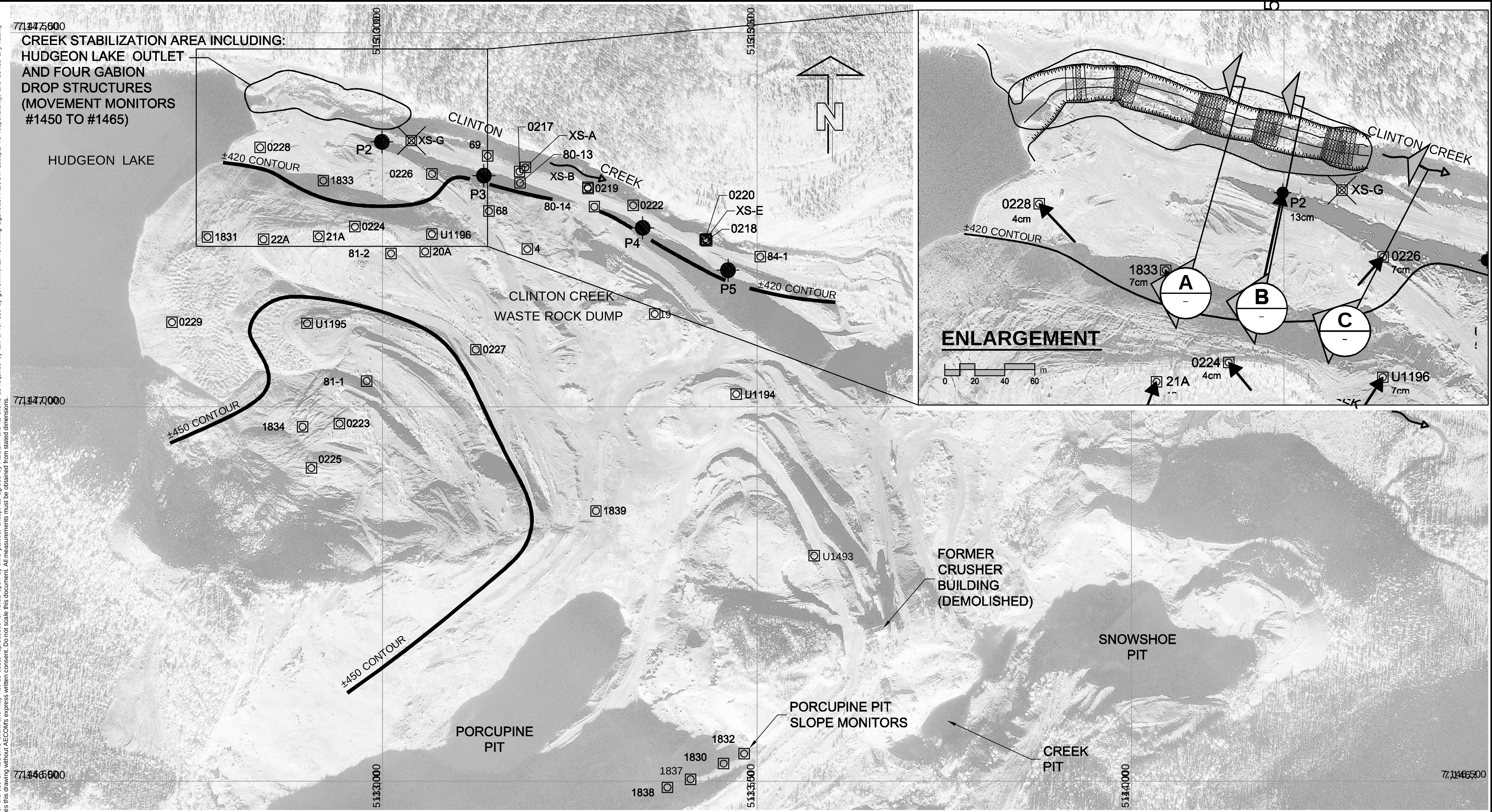
U5700 BENCHMARK

U228 (MINE) LOCAL MINE BENCHMARKS

AECOM

Government of Yukon
Former Clinton Creek Asbestos Mine
Long Term Performance Monitoring

Site Plan
Bench Mark Locations
Drawing - 01


CREEK STABILIZATION AREA INCLUDING:
HUDGEON LAKE OUTLET
AND FOUR GABION
DROP STRUCTURES
(MOVEMENT MONITORS
#1450 TO #1465)
HUDGEON LAKE
CLINTON
CREEK
±420 CONTOUR
±450 CONTOUR
CLINTON CREEK
WASTE ROCK DUMP
P2
P3
P4
P5
XS-G
XS-A
XS-B
XS-E
0217
80-13
80-14
69
68
0219
0220
0222
0218
0228
1833
0226
0224
1831
22A
21A
U1196
81-2
20A
4
84-1
19
0229
U1195
0227
81-1
U1194
1834
0223
0225
1839
U1493
FORMER
CRUSHER
BUILDING
(DEMOLISHED)
SNOWSHOE
PIT
PORCUPINE PIT
SLOPE MONITORS
PORCUPINE
PIT
1832
1830
1837
1838
CREEK
PIT
N
ENLARGEMENT
0228 4cm
P2 13cm
1833 7cm
0226 7cm
0224 4cm
U1196 7cm
21A
A
B
C
CLINTON CREEK
0 20 40 60 m

0 50 100 m SCALE 1:5000

UTM ZONE 7 NAD83
IMAGE DATE 1999

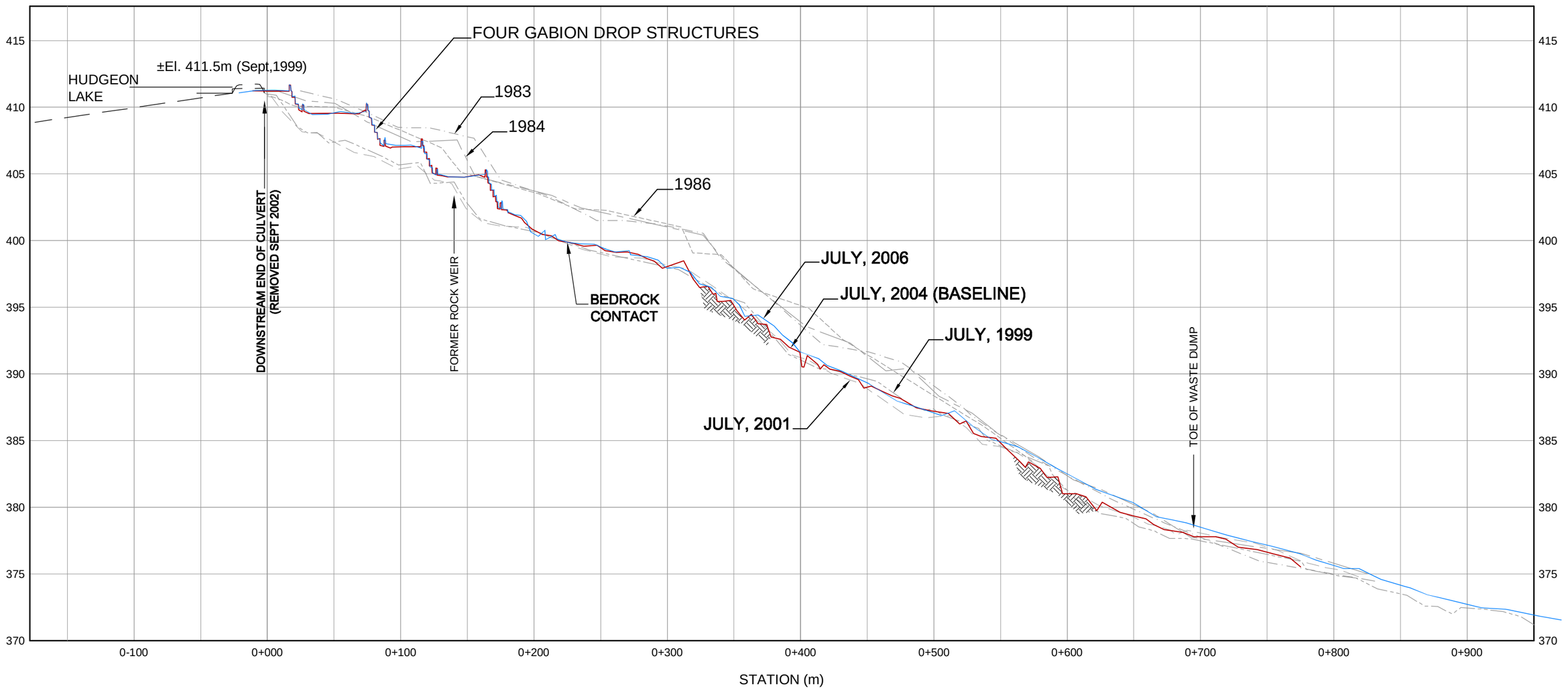
0226	MONITOR LOCATION (ACTIVE)	ELEVATION >450± - UPPER SLOPE
XS-G	MONITOR LOCATION (DESTROYED)	ELEVATION >420± <450± - MID SLOPE
P2	PIEZOMETER LOCATION	ELEVATION <420± LOWER SLOPE

AECOM

Government of Yukon
Former Clinton Creek Asbestos Mine
Long Term Performance Monitoring

Clinton Creek Waste Rock Dump Movement Monitors

Drawing - 02



PROFILE

0 30 60 m H=1:3000
0 3 6 V=1:300

STATION	NORTHING	EASTING
0+000	7,147,427	512,863
0+250	7,147,366	513,113
0+500	7,147,272	513,363
0+750	7,147,204	513,613

COORD: UTM ZONE 7W NAD83

LEGEND

- PROFILE 1983
- PROFILE 1984
- PROFILE 1986
- PROFILE 1999
- PROFILE 2001
- PROFILE 2004 (BASELINE FOR LONG TERM MONITORING)
- PROFILE 2006

Government of Yukon
Former Clinton Creek Asbestos Mine
Long Term Performance Monitoring

Clinton Creek
Channel Profile
Drawing - 03

AECOM

B SIZE 11" x 17" (279.4mm x 431.8mm)

PLOT: 11/03/29 11:29:34 AM

Saved By: vibergj

ISS/REV: 0A
AECOM FILE NAME: 60160515-03-B-F04-R0X.dwg

513,000 513,500 514,000

7,148,500 7,148,000

530 425

1495 BH-14(T7)

80-1 650-1 650-2 1491

NORTH LOBE

NL-1 13cm
1083 (NL-2) 13cm
NL-3 10cm
350-3A 12cm
1489 9cm
NL-4 11cm
NL-5 6cm

SURVEY WATER EDGE

WOLVERINE CREEK

1085 500-1 500-2 80-7

26 26A 80-2 350-1A 350-2A

80-5 80-4

1483

FORMER MILL SITE

2834 (RTK BASE)

NL-BASE

WOLVERINE CREEK TAILINGS PILES

2005-11 2005-10 1484 2005-09 2005-02 SL-5 SL-4 2005-01 2005-03 SL-3 58cm SL-2 35cm SL-1 20cm

SOUTH LOBE

24D 25B BH-16(T8) 24B 24A 2005-04 2005-08 24 1084 1485 2005-05 2005-06 2005-07 80-9

1492

U1086

UPPER SLOPE AREA MID SLOPE AREA LOWER SLOPE AREA

ROCK LINED CHANNEL AND ROCK WEIRS

530m ELEVATION CONTOUR

425m ELEVATION CONTOUR

0 40 80 120 m

SCALE 1:4000

UTM ZONE 7 NAD83
IMAGE DATE 1999

24 MONITOR LOCATION (ACTIVE)

2005-01 MONITOR LOCATION (ADDDED IN 2005)

SL/NL-01 VISUAL ALIGNMENT PIN

BH-14 (T7) 1978 TEST HOLE LOCATION

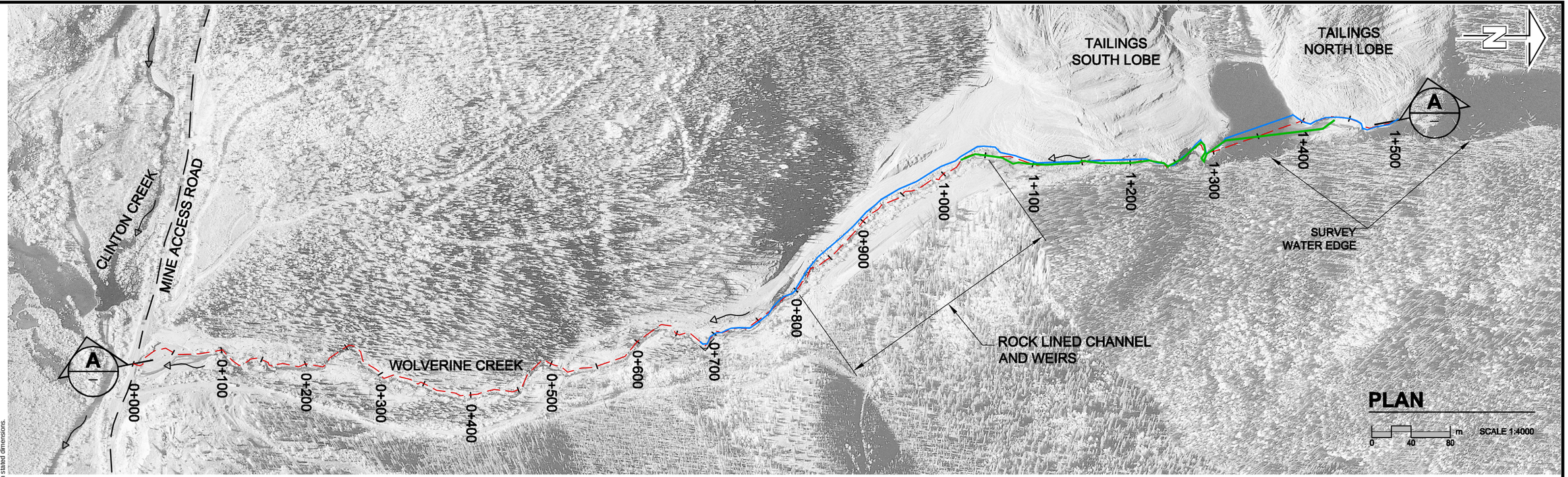
COMPASS BEARING FROM NL-BASE ALONG PINS NL-1 TO NL-5
DECLINATION: 30°
BEARING: 208°

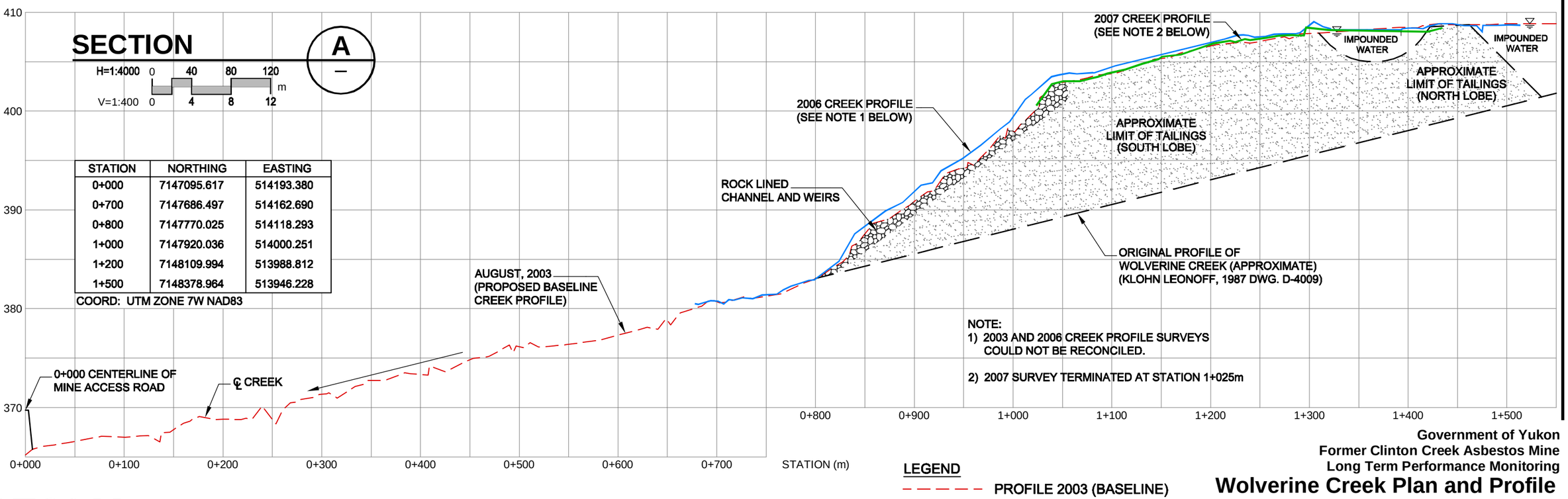
COMPASS BEARING FROM NL-BASE ALONG PINS SL-1 TO SL-5
DECLINATION: 30°
BEARING: 121°

AECOM

Government of Yukon
Former Clinton Creek Asbestos Mine
Long Term Performance Monitoring

Wolverine Creek Tailings Pile Movement Monitors Drawing - 04





STATION	NORTHING	EASTING
0+000	7147095.617	514193.380
0+700	7147686.497	514162.690
0+800	7147770.025	514118.293
1+000	7147920.036	514000.251
1+200	7148109.994	513988.812
1+500	7148378.964	513946.228

COORD: UTM ZONE 7W NAD83

NOTE:
1) 2003 AND 2006 CREEK PROFILE SURVEYS COULD NOT BE RECONCILED.
2) 2007 SURVEY TERMINATED AT STATION 1+025m

LEGEND
- PROFILE 2003 (BASELINE)
- PROFILE 2006
- PROFILE 2007

Government of Yukon
Former Clinton Creek Asbestos Mine
Long Term Performance Monitoring

Wolverine Creek Plan and Profile

AECOM

Drawing - 05

Client: Government of Yukon
Project: Former Clinton Creek Asbestos Mine
UMA Job No.: 60160515 **Date:** March 2011

Table 1) Benchmarks at Former Clinton Creek Mine

UTM NAD83 ZONE 7N

Based on 1999 Air Photo Control (U1189 Destroyed)
Set new Control Points U1086 and U1836. Tied 2001 Control Points in stable areas

	Northing (m)	Easting (m)	Elevation (m)	ID
1086	7,147,972.205	513,176.707	590.950	U1086
1182	7,146,634.155	513,637.686	465.460	U1182
1190	7,149,824.696	512,500.926	609.520	U1190
1191	7,147,605.454	513,589.857	528.930	U1191
1192	7,147,564.047	512,278.761	441.290	U1192
1193	7,146,545.113	513,572.457	456.430	U1193
1200	7,147,166.861	513,662.996	375.480	U1200
1836	7,146,656.183	513,597.724	476.540	U1836
2834	7,148,172.722	513,447.467	607.224	U2834
2836	7,146,814.577	513,092.158	478.422	U2836
5698	7,147,458.764	512,825.164	415.050	U5698
5699	7,147,485.368	512,618.332	425.550	U5699
5700	7,147,657.353	512,155.907	481.380	U5700

Local Mine Ground Control Transformed to UTM by Underhill Geomatics

Transformation based on U5698,U5699,U5700,U1182 common 2001 and 2003 ties.(U1184 not found)
Used U5698 as base. LDD handles scale to ground and rotation -0°17'15" to grid. Manually scale to metric.
Elevation differences based on U1561 (UTM = 423.803m., LOCAL = 1389.87ft.)

	Northing (m)	Easting (m)	Elevation (m)	ID
228	7,146,650.833	513,454.406	500.740	U228
280	7,146,404.795	513,292.824	501.030	U280
300	7,147,747.252	512,674.428	509.290	HILL
400	7,146,435.213	513,325.619	495.390	SHACK
900	7,147,649.576	513,899.213	489.860	GTRAV
1561	7,148,082.327	514,012.370	423.800	U1561

LOCAL MINE GROUND SYSTEM (feet)

2003 GPS Control transformed to ground

	Northing (ft)	Easting (ft)	Elevation (ft)	ID
1086	113,283.833	107,216.924	1,938.260	U1086
1182	108,884.267	108,707.955	1,526.550	U1182
1190	119,375.619	105,029.244	1,999.190	U1190
1191	112,073.197	108,566.986	1,734.780	U1191
1192	111,958.873	104,262.818	1,447.250	U1192
1193	108,593.080	108,492.379	1,496.920	U1193
1200	110,632.388	108,799.766	1,231.340	U1200
1836	108,957.224	108,577.153	1,562.900	U1836
5698	111,604.300	106,054.560	1,361.160	U5698
5699	111,695.030	105,376.109	1,395.610	U5699
5700	112,267.162	103,861.093	1,578.780	U5700

Local Mine Control From Historical Files

	Northing (ft)	Easting (ft)	Elevation (ft)	ID
228	108,941.540	108,107.020	1,642.290	U228
280	108,136.470	107,572.500	1,643.240	U280
300	112,553.880	105,564.450	1,670.330	HILL
400	108,235.800	107,680.660	1,624.750	SHACK
900	112,213.030	109,583.730	1,606.590	GTRAV
1561	113,631.480	109,961.620	1,389.870	U1561

Client: Government of Yukon
Project: Former Clinton Creek Asbestos Mine
UMA Job No.: 60160515
Date: March 2011

Upper Slope) Elevation > 450m
Mid-Slope) Elevation 420 to 450m
Lower Slope) Elevation < 420m

Table 2) Clinton Creek Waste Rock Dump Instrumentation

Description	ID	Location	Type	Marker Cone	Monitor Tag	Underhill Geomatics Tag	Underhill Survey (Aug 21/03) UTM NAD 83			Comments
							Northing	Easting	Elevation	
Movement Monitor	0225	Upper Slope			0225	0225	7,146,918.716	512,905.221	475.17	
Movement Monitor	0223	Upper Slope			0223	0223	7,146,978.053	512,942.739	467.22	
Movement Monitor	1834	Upper Slope			1834	1834	7,146,973.618	512,893.433	461.12	
Movement Monitor	UU1195	Upper Slope	Bench Mark		UU1195		7,147,111.936	512,899.532	456.59	
Movement Monitor	81-1	Upper Slope			81-1		7,147,034.819	512,978.933	455.27	Old Pin
Movement Monitor	21-A	Mid-Slope	Prism		21-A		7,147,228.197	512,915.152	446.54	Old Pin with prism
Movement Monitor	20-A	Mid-Slope	Prism		20-A		7,147,207.859	513,057.137	445.83	Old Pin with prism
Movement Monitor	22-A	Mid-Slope		YES	22-A		7,147,224.290	512,841.309	444.99	
Movement Monitor	0224	Mid-Slope			0224	0224	7,147,241.091	512,963.327	444.85	Old pin found
Movement Monitor	UU1196	Mid-Slope	Bench Mark		UU1196		7,147,231.232	513,066.175	444.08	
Movement Monitor	81-2	Mid-Slope		YES	81-2		7,147,205.285	513,011.562	443.75	Old Pin
Movement Monitor	0227	Mid-Slope			0227	0227	7,147,076.844	513,124.776	439.48	
Movement Monitor	0229	Mid-Slope			0229	0229	7,147,113.528	512,719.142	437.43	Old Pin found
Movement Monitor	4	Mid-Slope			4		7,147,211.284	513,193.636	435.18	Old Pin
Movement Monitor	68	Mid-Slope		YES	68		7,147,262.029	513,142.415	434.42	
Movement Monitor	UU1194	Mid-Slope	Bench Mark		UU1194		7,147,017.321	513,472.438	433.19	
Local Mine Ground Co	1831	Mid-Slope			1831	1831	7,147,227.179	512,766.646	432.85	
Movement Monitor	19	Mid-Slope	3/4" diam. Bar	YES	19		7,147,124.347	513,365.638	429.24	located 3m east of #19-B
Movement Monitor	19-B	Mid-Slope	1/2" diam. Bar		19-B		7,147,126.637	513,363.485	429.13	was 19. Should be 19-B
Movement Monitor	1839	Mid-Slope	Marker		1839	1839	7,146,861.354	513,285.180	428.66	Marker Pin for T2
Movement Monitor	0226	Lower Slope			0226	0226	7,147,311.525	513,066.355	426.46	Was Underhill tag CP1635-1.
Movement Monitor	1833	Lower Slope	3/8" Steel Pin		1833	1833	7,147,302.699	512,921.250	418.34	
~~Movement Monitor~~	XS-G	Lower Slope	3/4" Steel Pin		n/a		7,147,356.110	513,038.841	416.54	**Destroyed**
Piezometer	P2	Lower Slope	1" white pipe		P2		7,147,354.357	512,999.352	416.10	P1 destroyed
Piezometer	P3	Lower Slope	1" white pipe		P3		7,147,309.317	513,135.578	415.35	
Movement Monitor	69	Lower Slope	Marker?		69		7,147,335.532	513,140.577	414.90	Mon 69 in previous UMA survey
~~Movement Monitor~~	0217	Lower Slope	Marker		0217	0217	7,147,314.731	513,183.178	414.87	**Destroyed**
Movement Monitor	0228	Lower Slope			0228	0228	7,147,346.995	512,836.840	413.95	
Movement Monitor	80-13	Lower Slope	3/8" Steel Pin		80-13		7,147,299.401	513,183.839	413.08	Found on South Side of Road
~~Movement Monitor~~	XS-A	Lower Slope	3/4" Steel Pin		XS-A		7,147,320.214	513,190.989	411.33	**Destroyed**
Movement Monitor	0219	Lower Slope	Marker		0219	0219	7,147,292.121	513,274.646	404.60	Relocated - July 2010
Movement Monitor	XS-B	Lower Slope	3/4" Steel Pin		XS-B		7,147,293.649	513,274.196	404.28	Nearly in Creek
Movement Monitor	80-14	Lower Slope	3/4" Steel Pin		80-14	No	7,147,267.767	513,283.109	403.77	Found on South Side of Road
Movement Monitor	0222	Lower Slope	Marker		0222	0222	7,147,269.485	513,334.964	398.01	Relocated - July 2010
Piezometer	P4	Lower Slope	1" white pipe		P4		7,147,239.500	513,347.557	397.28	
~~Movement Monitor~~	0220	Lower Slope	Marker		0220	0220	7,147,223.417	513,430.902	388.65	**Destroyed**
~~Movement Monitor~~	0218	Lower Slope	Marker		0218	0218	7,147,222.214	513,433.185	388.04	**Destroyed**
~~Movement Monitor~~	XS-E	Lower Slope	3/4" Steel Pin		XS-E	No	7,147,224.703	513,432.222	387.53	
Piezometer	P5	Lower Slope	1" white pipe		P5		7,147,182.931	513,461.461	387.21	
~~Movement Monitor~~	84-1	Lower Slope	Marker		84-1		7,147,201.069	513,504.647	381.77	**Destroyed**
PORCUPINE PIT AREA										
Movement Monitor	1839	north of pit	Marker		1839	1839	7,146,861.354	513,285.180	428.66	located at entrance to open pit
Movement Monitor	U1493	NE of pit	Marker		U1493	U1493	7,146,801.561	513,576.663	453.00	Located NW od former crusher building
Movement Monitor	1832	West pit slope	Marker		1832	1832	7,146,537.063	513,483.131	473.62	Pit Slope Monitor
Movement Monitor	1830	West pit slope	Marker		1830	1830	7,146,523.769	513,455.681	471.67	Pit Slope Monitor
Movement Monitor	1837	West pit slope	Marker		1837	1837	7,146,502.874	513,411.468	470.22	Pit Slope Monitor
Movement Monitor	1838	West pit slope	Marker		1838	1838	7,146,491.909	513,380.524	468.34	Pit Slope Monitor, original markings show '320'
1978 TEST HOLE LOCATIONS (WITH THERMISTORS)										
BH - 1 (T1)	T1	Mid-Slope	cable		BH - 1 (T1)		7,146,863.402	513,381.017	422.96	Borehole / Thermistor
BH - 2 (T2)	T2	Mid-Slope	cable		BH - 2 (T2)		7,146,882.784	513,274.725	424.28	Borehole / Thermistor
~~BH-4 (T3)~~	T3	Upper Slope	cable							Borehole / Thermistor - cable cut
~~BH-6 (T4)~~	T4	Lower Slope								**Destroyed**
GABION DROP STRUCTURE MOVEMENT MONITORS							**UGL Survey July 2007**			
Movement Monitor	1450	DS#1	steel pin		1450	1450	7,147,441.29	512,890.12	413.61	
Movement Monitor	1451	DS#1	steel pin		1451	1451	7,147,413.80	512,888.17	413.42	
Movement Monitor	1452	DS#1	steel pin		1452	1452	7,147,411.91	512,892.02	412.99	
Movement Monitor	1453	DS#1	steel pin		1453	1453	7,147,439.06	512,901.52	413.10	
Movement Monitor	1454	DS#2	steel pin		1454	1454	7,147,423.23	512,948.58	412.35	
Movement Monitor	1455	DS#2	steel pin		1455	1455	7,147,397.03	512,939.88	412.06	
Movement Monitor	1456	DS#2	steel pin		1456	1456	7,147,392.75	512,951.22	410.99	
Movement Monitor	1457	DS#2	steel pin		1457	1457	7,147,420.52	512,958.00	410.60	
Movement Monitor	1458	DS#3	steel pin		1458	1458	7,147,412.17	512,986.90	409.72	
Movement Monitor	1459	DS#3	steel pin		1459	1459	7,147,385.84	512,980.01	409.38	
~~Movement Monitor~~	1460	DS#3	steel pin		1460	1460	7,147,382.58	512,988.07	408.97	**Destroyed or lost**
Movement Monitor	1461	DS#3	steel pin		1461	1461	7,147,410.18	512,995.89	408.28	
Movement Monitor	1462	DS#4	steel pin		1462	1462	7,147,399.84	513,033.18	407.31	
Movement Monitor	1463	DS#4	steel pin		1463	1463	7,147,373.73	513,025.89	407.60	
Movement Monitor	1464	DS#4	steel pin		1464	1464	7,147,369.18	513,036.45	406.83	
Movement Monitor	1465	DS#4	steel pin		1465	1465	7,147,399.46	513,040.34	406.12	

Client: Government of Yukon
Project: Former Clinton Creek Asbestos Mine
UMA Job No.: 60160515 **Date:** March 2011

Table 3) Wolverine Creek Tailings Pile - Movement Monitor Summary
Datum: NAD83, UTM Zone 7 Coordinates

Station	Northing	Easting	Elevation	Comment
24	7,148,033.895	513,525.561	549.553	
26	7,148,341.494	513,483.546	575.081	
1083 / NL-2	7,148,354.012	513,936.519	414.078	
1084	7,148,017.993	513,618.378	516.095	
1085	7,148,346.060	513,666.411	488.824	
1484	7,148,149.184	513,961.975	417.949	
1485	7,148,018.022	513,703.459	480.101	
1489	7,148,305.198	513,928.504	413.635	
1491	7,148,376.821	513,868.989	432.316	
1492	7,148,053.727	513,409.949	609.982	
1495	7,148,526.645	513,528.950	529.066	
2834	7,148,172.721	513,447.481	607.227	RTK base for tailings survey
1483	7,148,233.020	513,412.679	608.997	
24-A	7,148,035.439	513,775.702	464.888	
24-B	7,148,045.334	513,833.263	445.888	
24-D	7,148,071.928	513,920.650	422.279	
25-B	7,148,065.753	513,948.634	422.031	
26-A	7,148,339.318	513,540.493	557.740	
350-1A	7,148,298.609	513,822.642	448.002	
350-2A	7,148,300.538	513,873.845	428.576	
350-3A	7,148,312.197	513,899.138	417.275	
500-1	7,148,343.237	513,725.526	474.010	
500-2	7,148,344.367	513,842.258	438.050	
650-1	7,148,408.753	513,701.306	483.907	
650-2	7,148,400.253	513,816.079	439.717	
80-1	7,148,408.034	513,543.064	555.613	
80-2	7,148,290.083	513,549.484	552.632	
80-4	7,148,201.727	513,689.474	501.415	
80-5	7,148,249.423	513,718.768	481.074	
80-7	7,148,344.005	513,890.893	422.399	
80-9	7,147,996.383	513,970.725	411.035	
BH-14 T7	7,148,488.334	513,562.988	530.299	
BH-16 T8 CORD	7,148,048.627	513,761.307	464.593	
BH-16 T8 POST	7,148,048.841	513,761.873	464.910	
NL-1	7,148,365.727	513,942.447	413.164	
NL-2	see 1083			NL-2 and 1083 are the same point
NL-3	7,148,334.731	513,926.880	417.046	
NL-4	7,148,307.194	513,912.986	416.159	
NL-5	7,148,275.174	513,896.964	415.416	
SL-1	7,148,079.086	513,970.461	419.764	
SL-2	7,148,087.009	513,956.878	422.458	
SL-3	7,148,100.541	513,933.163	420.779	
New Monitors Points Established in 2005				
NL-Base	7,148,154.79	513,836.26	431.47	
SL-4	7,148,115.67	513,907.57	416.88	
SL-5	7,148,133.63	513,876.08	422.91	
2005-01	7,148,100.15	513,757.89	463.73	
2005-02	7,148,118.21	513,816.95	447.89	
2005-03	7,148,108.16	513,870.12	428.18	
2005-04	7,148,047.07	513,876.04	428.36	
2005-05	7,148,000.57	513,781.55	464.67	
2005-06	7,147,999.72	513,865.78	433.29	
2005-07	7,148,000.11	513,945.37	416.35	
2005-08	7,148,038.85	513,970.98	415.77	
2005-09	7,148,124.38	513,969.23	420.18	
2005-10	7,148,146.69	513,925.39	411.78	
2005-11	7,148,176.10	513,942.17	411.91	

Appendix B

Waste Rock Dump Movement Monitoring Results

Client: Government of Yukon
Project: Former Clinton Creek Asbestos Mine

Job No.:	6029-005-00	6029-006-00	6029-008-00	6029-009-00	2940-044-00	60160515
Date:	31-Aug-03	31-Jul-04	Nov-06	Jul-07	9-Jul-08	25-Sep-10

Table B-1) Waste Rock Dump Stability - Upper Slope Summary

Monitor	Date	UTM Coordinates			Horizontal Movement			Vertical Movement		
		Northing (metres)	**Easting** (metres)	**Elevation** (metres)	total (metres)	increment (metres)	rate (metres/year)	total (metres)	incremental (metres)	rate (metres/year)
81-1	19-Jun-01	7,147,034.71	512,978.88	455.25	0.00	0.12	0.06	-2.02	0.14	0.07
	20-Aug-03	7,147,034.82	512,978.93	455.27	0.12	0.12	0.06	-2.01	0.02	0.01
	28-Jul-04	7,147,034.76	512,978.92	455.23	0.06	0.06	0.07	-2.05	-0.04	-0.05
	28-Jul-06	7,147,034.80	512,978.92	455.18	0.10	0.05	0.02	-2.09	-0.04	-0.02
	9-Jul-08	7,147,034.83	512,978.93	455.22	0.13	0.03	0.01	-2.06	0.04	0.02
	20-Jul-10	7,147,034.84	512,978.93	455.17	3.40	0.02	0.01	-2.10	-0.04	-0.02
	25-Sep-10	7,147,034.83	512,978.94	455.17	3.40	0.02	0.08	-2.10	0.00	0.00
223	19-Jun-01	n/a								
	20-Aug-03	7,146,978.05	512,942.74	467.22	0.00			0.00		
	28-Jul-04	7,146,978.08	512,942.73	467.20	0.03	0.03	0.03	-0.02	-0.02	-0.02
	28-Jul-06	7,146,978.12	512,942.73	467.21	0.07	0.04	0.02	-0.01	0.00	0.00
	9-Jul-08	7,146,978.16	512,942.75	467.15	0.11	0.05	0.02	-0.07	-0.05	-0.03
	20-Jul-10	7,146,978.19	512,942.75	467.13	0.14	0.03	0.02	-0.09	-0.02	-0.01
	25-Sep-10	7,146,978.17	512,942.78	467.10	0.12	0.04	0.21	-0.12	-0.03	-0.15
225	19-Jun-01	n/a								
	20-Aug-03	7,146,918.72	512,905.22	475.17	0.00			0.00		
	28-Jul-04	7,146,918.73	512,905.18	475.14	0.04	0.04	0.04	-0.03	-0.03	-0.03
	28-Jul-06	7,146,918.77	512,905.18	475.15	0.07	0.04	0.02	-0.03	0.00	0.00
	9-Jul-08	7,146,918.81	512,905.20	475.10	0.09	0.04	0.02	-0.07	-0.05	-0.03
	20-Jul-10	7,146,918.83	512,905.19	475.07	0.12	0.03	0.02	-0.11	-0.03	-0.01
	25-Sep-10	7,146,918.84	512,905.24	475.06	0.13	0.05	0.27	-0.11	-0.01	-0.04
1195	19-Jun-01	7,147,111.83	512,899.53	456.62	0.00	0.10	0.05	0.16	0.16	0.08
	20-Aug-03	7,147,111.94	512,899.53	456.59	0.10	0.11	0.05	0.13	-0.03	-0.01
	28-Jul-04	7,147,111.95	512,899.52	456.60	0.12	0.02	0.02	0.14	0.01	0.01
	28-Jul-06	7,147,111.95	512,899.50	456.56	0.12	0.03	0.01	0.10	-0.04	-0.02
	4-Jul-07	7,147,112.01	512,899.50	456.54	0.17	0.06	0.06	0.08	-0.02	-0.03
	9-Jul-08	7,147,112.03	512,899.52	456.51	0.19	0.03	0.03	0.05	-0.03	-0.03
	20-Jul-10	7,147,112.05	512,899.52	456.48	0.21	0.02	0.01	0.02	-0.03	-0.02
	25-Sep-10	7,147,112.03	512,899.52	456.43	0.20	0.01	0.07	-0.02	-0.04	-0.23
1834	19-Jun-01	n/a								
	20-Aug-03	7,146,973.62	512,893.43	461.12	0.00			0.00		
	28-Jul-04	7,146,973.64	512,893.38	461.09	0.06	0.06	0.06	-0.03	-0.03	-0.03
	28-Jul-06	7,146,973.69	512,893.36	461.09	0.11	0.06	0.03	-0.03	0.00	0.00
	4-Jul-07	7,146,973.72	512,893.36	461.08	0.13	0.03	0.03	-0.04	-0.01	-0.01
	9-Jul-08	7,146,973.74	512,893.38	461.06	0.13	0.03	0.03	-0.06	-0.01	-0.01
	20-Jul-10	7,146,973.79	512,893.34	461.04	0.20	0.07	0.04	-0.08	-0.02	-0.01
	25-Sep-10	7,146,973.78	512,893.40	461.03	0.16	0.06	0.35	-0.09	-0.01	-0.07

Average	1999 to 2001	0.11	0.06		0.15	0.08
	2001 to 2003	0.12	0.05		0.00	0.00
	2003 to 2004	0.04	0.04		-0.02	-0.02
	2004 to 2006	0.04	0.02		-0.02	-0.01
	2006 to 2008	0.03	0.02		-0.02	-0.02
	2008 to 2010	**0.04**	**0.02**		**-0.03**	**-0.01**
	Jul 2010 to Sep 2010	**0.04**	**0.20**		**-0.02**	**-0.10**
Maximum	1999 to 2001	0.12	0.06		0.16	0.08
	2001 to 2003	0.12	0.06		0.02	0.01
	2003 to 2004	0.06	0.07		0.01	0.01
	2004 to 2006	0.06	0.03		0.00	0.00
	2006 to 2008	0.05	0.03		0.04	0.02
	2008 to 2010	**0.07**	**0.04**		**-0.02**	**-0.01**
	Jul 2010 to Sep 2010	**0.06**	**0.35**		**0.00**	**0.00**
Minimum	1999 to 2001	0.10	0.05		0.14	0.07
	2001 to 2003	0.11	0.05		-0.03	-0.01
	2003 to 2004	0.02	0.02		-0.04	-0.05
	2004 to 2006	0.03	0.01		-0.04	-0.02
	2006 to 2008	0.03	0.01		-0.05	-0.03
	2008 to 2010	**0.02**	**0.01**		**-0.04**	**-0.02**
	Jul 2010 to Sep 2010	**0.01**	**0.07**		**-0.04**	**-0.23**

Client: Government of Yukon
Project: Former Clinton Creek Asbestos Mine
Job No.: 6029-005-00 6029-006-00 6029-008-00 6029-009-00 2940-044-00 60160515
Date: 31-Aug-03 31-Jul-04 Nov-06 Jul-07 9-Jul-08 25-Sep-10

Table B-2) Waste Rock Dump Stability - Mid Slope Summary

Monitor	Date	UTM Coordinates			Horizontal Movement			Vertical Movement		
		Northing (metres)	**Easting** (metres)	**Elevation** (metres)	total (metres)	increment (metres)	rate (metres/year)	total (metres)	incremental (metres)	rate (metres/year)
4	19-Jun-01	7,147,211.31	513,193.67	435.30	0.00	0.06	0.03	0.00	-0.17	-0.09
	20-Aug-03	7,147,211.28	513,193.64	435.18	0.04	0.05	0.02	-0.12	-0.12	-0.06
	28-Jul-04	7,147,211.22	513,193.64	435.08	0.08	0.06	0.07	-0.22	-0.10	-0.11
	28-Jul-06	7,147,211.16	513,193.61	435.06	0.15	0.07	0.03	-0.24	-0.02	-0.01
	9-Jul-08	7,147,211.10	513,193.62	434.97	0.20	0.06	0.03	-0.33	-0.09	-0.05
	20-Jul-10	7,147,211.05	513,193.59	434.91	0.32	0.06	0.03	-0.56	-0.06	-0.03
	25-Sep-10	7,147,211.04	513,193.60	434.90	0.32	0.02	0.10	-0.57	-0.01	-0.06
19	19-Jun-01	7,147,124.18	513,365.54	430.10	0.00	0.22	0.11	0.00	-0.32	-0.16
	20-Aug-03	7,147,124.35	513,365.64	429.24	0.19	0.19	0.09	-0.87	-0.86	-0.40
	28-Jul-04	7,147,124.36	513,365.70	429.13	0.24	0.06	0.06	-0.98	-0.11	-0.11
	28-Jul-06	not surveyed in 2006								
	9-Jul-08	7,147,124.48	513,365.75	428.78	0.36	0.13	0.03	-1.33	-0.35	-0.09
	20-Jul-10	7,147,124.46	513,365.72	428.66	8.07	0.04	0.02	-3.57	-0.12	-0.06
	25-Sep-10	7,147,124.43	513,365.74	428.64	8.06	0.03	0.18	-3.59	-0.03	-0.14
20A	19-Jun-01	7,147,207.71	513,057.05	445.86	0.00	0.22	0.11	0.00	0.05	0.03
	20-Aug-03	7,147,207.86	513,057.14	445.83	0.17	0.17	0.08	-0.03	-0.03	-0.01
	28-Jul-04	7,147,207.85	513,057.12	445.74	0.15	0.02	0.03	-0.12	-0.09	-0.09
	28-Jul-06	7,147,207.88	513,057.14	445.69	0.19	0.05	0.02	-0.17	-0.05	-0.03
	4-Jul-07	7,147,207.91	513,057.16	445.66	0.22	0.03	0.03	-0.20	-0.03	-0.03
	9-Jul-08	7,147,207.92	513,057.18	445.63	0.25	0.03	0.03	-0.23	-0.03	-0.03
	20-Jul-10	7,147,207.95	513,057.18	445.57	0.27	0.03	0.01	-0.29	-0.06	-0.03
	25-Sep-10	7,147,207.93	513,057.18	445.55	0.25	0.02	0.11	-0.31	-0.02	-0.12
21A	19-Jun-01	7,147,228.14	512,915.05	446.57	0.00	0.20	0.10	0.00	0.05	0.02
	20-Aug-03	7,147,228.20	512,915.15	446.54	0.05	0.11	0.05	-0.03	-0.03	-0.02
	28-Jul-04	7,147,228.18	512,915.11	446.43	0.03	0.04	0.05	-0.14	-0.11	-0.11
	28-Jul-06	7,147,228.26	512,915.11	446.38	0.11	0.08	0.04	-0.19	-0.05	-0.02
	4-Jul-07	7,147,228.30	512,915.11	446.37	0.15	0.12	0.13	-0.21	-0.06	-0.02
	9-Jul-08	7,147,228.31	512,915.12	446.32	0.17	0.05	0.05	-0.25	-0.06	-0.06
	20-Jul-10	7,147,228.36	512,915.09	446.26	0.21	0.06	0.03	-3.43	-0.06	-0.03
	25-Sep-10	7,147,228.34	512,915.10	446.23	0.20	0.02	0.09	-3.47	-0.03	-0.19
22A	19-Jun-01	7,147,224.10	512,841.41	445.02	0.00	0.19	0.10	0.00	-0.03	-0.02
	20-Aug-03	7,147,224.29	512,841.31	444.99	0.21	0.22	0.10	-0.03	-0.03	-0.01
	28-Jul-04	7,147,224.27	512,841.30	444.88	0.20	0.02	0.02	-0.14	-0.11	-0.12
	28-Jul-06	7,147,224.40	512,841.26	444.81	0.33	0.13	0.07	-0.21	-0.07	-0.03
	4-Jul-07	7,147,224.45	512,841.23	444.77	0.38	0.05	0.06	-0.25	-0.04	-0.05
	9-Jul-08	7,147,224.48	512,841.23	444.72	0.42	0.04	0.04	-0.30	-0.05	-0.05
	20-Jul-10	7,147,224.57	512,841.21	444.62	0.51	0.09	0.04	-0.40	-0.09	-0.05
	25-Sep-10	7,147,224.59	512,841.24	444.59	0.52	0.04	0.23	-0.44	-0.04	-0.21
68	19-Jun-01	7,147,261.98	513,142.46	434.49	0.00	0.02	0.01	0.00	-0.15	-0.08
	20-Aug-03	7,147,262.03	513,142.42	434.42	0.00	0.07	0.03	-0.07	-0.07	-0.03
	28-Jul-04	7,147,262.00	513,142.42	434.33	-0.02	0.03	0.04	-0.16	-0.09	-0.09
	28-Jul-06	7,147,262.02	513,142.36	434.31	-0.05	0.06	0.03	-0.18	-0.02	-0.01
	4-Jul-07	7,147,262.06	513,142.33	434.27	-0.04	0.10	0.04	-0.22	-0.06	-0.02
	9-Jul-08	7,147,262.05	513,142.32	434.22	-0.06	0.02	0.01	-0.27	-0.05	-0.03
	20-Jul-10	7,147,262.07	513,142.27	434.16	-0.08	0.05	0.02	-0.33	-0.06	-0.02
	25-Sep-10	7,147,262.07	513,142.29	434.13	-0.06	0.02	0.01	-0.36	-0.03	-0.01
81-2	19-Jun-01	7,147,205.22	513,011.60	443.70	0.00	0.15	0.08	0.00	0.04	0.02
	20-Aug-03	7,147,205.29	513,011.56	443.75	0.03	0.07	0.03	0.05	0.05	0.02
	28-Jul-04	7,147,205.26	513,011.60	443.71	0.03	0.05	0.05	0.01	-0.04	-0.05
	28-Jul-06	7,147,205.28	513,011.59	443.71	0.04	0.02	0.01	0.01	0.00	0.00
	4-Jul-07	7,147,205.31	513,011.58	443.69	0.06	0.03	0.04	-0.01	-0.02	-0.02
	9-Jul-08	7,147,205.32	513,011.59	443.68	0.08	0.02	0.02	-0.02	-0.01	-0.01
	20-Jul-10	7,147,205.32	513,011.61	443.64	0.09	0.01	0.01	-0.06	-0.04	-0.02
	25-Sep-10	7,147,205.33	513,011.60	443.61	0.09	0.00	0.02	-0.09	-0.03	-0.16
224	19-Jun-01	n/a								
	20-Aug-03	7,147,241.09	512,963.33	444.85	0.00			0.00		
	28-Jul-04	7,147,241.12	512,963.29	444.82	0.04	0.04	0.05	-0.03	-0.03	-0.03
	28-Jul-06	7,147,241.17	512,963.29	444.79	0.09	0.05	0.03	-0.06	-0.03	-0.02
	4-Jul-07	7,147,241.19	512,963.25	444.74	0.12	0.04	0.04	-0.11	-0.05	-0.05
	9-Jul-08	7,147,241.21	512,963.27	444.72	0.13	0.03	0.03	-0.13	-0.02	-0.02
	20-Jul-10	7,147,241.22	512,963.26	444.67	0.15	0.02	0.01	-0.18	-0.05	-0.02
	25-Sep-10	7,147,241.23	512,963.26	444.64	0.15	0.01	0.03	-0.21	-0.04	-0.20
227	19-Jun-01	n/a								
	20-Aug-03	7,147,076.84	513,124.78	439.48	0.00			0.00		
	28-Jul-04	7,147,076.78	513,124.77	439.44	0.07	0.07	0.07	-0.04	-0.04	-0.04
	28-Jul-06	7,147,076.82	513,124.77	439.45	0.03	0.04	0.02	-0.03	0.01	0.01
	9-Jul-08	7,147,076.83	513,124.80	439.42	0.02	0.03	0.01	-0.06	-0.03	-0.02
	20-Jul-10	7,147,076.85	513,124.79	439.40	0.02	0.02	0.01	-0.08	-0.02	-0.01
	25-Sep-10	7,147,076.87	513,124.80	439.35	0.04	0.02	0.13	-0.13	-0.06	-0.30

Client: Government of Yukon
Project: Former Clinton Creek Asbestos Mine

Job No.:	6029-005-00	6029-006-00	6029-008-00	6029-009-00	2940-044-00	60160515
Date:	31-Aug-03	31-Jul-04	Nov-06	Jul-07	9-Jul-08	25-Sep-10

Table B-2) Waste Rock Dump Stability - Mid Slope Summary

Monitor	Date	UTM Coordinates			Horizontal Movement			Vertical Movement		
		Northing (metres)	**Easting** (metres)	**Elevation** (metres)	total (metres)	increment (metres)	rate (metres/year)	total (metres)	incremental (metres)	rate (metres/year)
229	19-Jun-01	n/a								
	20-Aug-03	7,147,113.53	512,719.14	437.43	0.00			0.00		
	28-Jul-04	7,147,113.49	512,719.14	437.37	0.04	0.04	0.05	-0.06	-0.06	-0.06
	28-Jul-06	7,147,113.55	512,719.11	437.39	0.04	0.07	0.04	-0.05	0.02	0.01
	4-Jul-07	7,147,113.52	512,719.04	437.37	0.11	0.08	0.08	-0.06	-0.02	-0.02
	9-Jul-08	7,147,113.56	512,719.06	437.33	0.09	0.04	0.04	-0.10	-0.04	-0.04
	20-Jul-10	7,147,113.60	512,719.03	437.30	0.14	0.05	0.03	-0.13	-0.03	-0.02
	25-Sep-10	7,147,113.60	512,719.02	437.27	0.14	0.01	0.04	-0.16	-0.03	-0.15
1194	19-Jun-01	7,147,017.22	513,472.45	433.19	0.00	0.09	0.05	0.00	-0.18	-0.09
	20-Aug-03	7,147,017.32	513,472.44	433.19	0.09	0.10	0.05	0.00	0.00	0.00
	28-Jul-04	7,147,017.35	513,472.44	433.12	0.12	0.03	0.03	-0.07	-0.07	-0.07
	28-Jul-06	7,147,017.43	513,472.44	433.08	0.19	0.08	0.04	-0.10	-0.04	-0.02
	9-Jul-08	7,147,017.49	513,472.46	433.04	0.26	0.07	0.03	-0.14	-0.04	-0.02
	20-Jul-10	7,147,017.56	513,472.46	433.07	0.33	0.07	0.03	-0.28	0.02	0.01
	25-Sep-10	7,147,017.54	513,472.46	432.96	0.31	0.02	0.10	-0.38	-0.10	-0.56
1196	19-Jun-01	7,147,231.16	513,066.14	444.13	0.00	0.17	0.09	0.00	0.03	0.01
	20-Aug-03	7,147,231.23	513,066.18	444.08	0.08	0.08	0.04	-0.05	-0.05	-0.02
	28-Jul-04	7,147,231.26	513,066.20	444.05	0.12	0.04	0.04	-0.09	-0.03	-0.03
	28-Jul-06	7,147,231.28	513,066.23	443.97	0.15	0.04	0.02	-0.17	-0.08	-0.04
	4-Jul-07	7,147,231.35	513,066.26	443.93	0.22	0.07	0.08	-0.21	-0.04	-0.04
	9-Jul-08	7,147,231.36	513,066.28	443.87	0.24	0.02	0.02	-0.27	-0.06	-0.06
	20-Jul-10	7,147,231.40	513,066.31	443.80	0.29	0.05	0.03	-0.33	-0.07	-0.03
	25-Sep-10	7,147,231.39	513,066.32	443.77	0.29	0.01	0.03	-0.37	-0.03	-0.17
1831	19-Jun-01	n/a								
	20-Aug-03	7,147,227.18	512,766.65	432.85	0.00			0.00		
	28-Jul-04	7,147,227.23	512,766.60	432.79	0.07	0.07	0.08	-0.06	-0.06	-0.07
	28-Jul-06	7,147,227.36	512,766.55	432.71	0.20	0.13	0.07	-0.14	-0.07	-0.04
	4-Jul-07	7,147,227.41	512,766.51	432.67	0.27	0.06	0.07	-0.18	-0.04	-0.04
	9-Jul-08	7,147,227.44	512,766.52	432.61	0.29	0.03	0.03	-0.24	-0.06	-0.06
	20-Jul-10	7,147,227.55	512,766.46	432.76	0.41	0.12	0.06	-0.09	0.15	0.07
	25-Sep-10	7,147,227.54	512,766.51	432.50	0.39	0.05	0.29	-0.35	-0.26	-1.41

Average	1999 to 2001	0.15	0.08		-0.08	-0.04
	2001 to 2003	0.12	0.05		-0.13	-0.06
	2003 to 2004	0.04	0.05		-0.07	-0.08
	2004 to 2006	0.07	0.03		-0.03	-0.02
	2006 to 2008	0.04	0.03		-0.07	-0.04
	2008 to 2010	**0.05**	**0.02**		**-0.04**	**-0.02**
	Jul 2010 to Sep 2010	**0.02**	**0.10**		**-0.05**	**-0.28**
Maximum	1999 to 2001	0.22	0.11		0.05	0.03
	2001 to 2003	0.22	0.10		0.05	0.02
	2003 to 2004	0.07	0.08		-0.03	-0.03
	2004 to 2006	0.13	0.07		0.02	0.01
	2006 to 2008	0.13	0.05		-0.01	-0.01
	2008 to 2010	**0.12**	**0.06**		**0.15**	**0.07**
	Jul 2010 to Sep 2010	**0.05**	**0.29**		**-0.01**	**-0.01**
Minimum	1999 to 2001	0.02	0.01		-0.32	-0.16
	2001 to 2003	0.05	0.02		-0.86	-0.40
	2003 to 2004	0.02	0.02		-0.11	-0.12
	2004 to 2006	0.02	0.01		-0.08	-0.04
	2006 to 2008	0.02	0.01		-0.35	-0.09
	2008 to 2010	**0.01**	**0.01**		**-0.12**	**-0.06**
	Jul 2010 to Sep 2010	**0.00**	**0.01**		**-0.26**	**-1.41**

Client: Government of Yukon
Project: Former Clinton Creek Asbestos Mine

Job No.:	6029-005-00	6029-006-00	6029-008-00	6029-009-00	2940-044-00	60160515
Date:	31-Aug-03	31-Jul-04	Nov-06	Jul-07	9-Jul-08	25-Sep-10

Table B-3) Waste Rock Dump Stability - Lower Slope Summary

Monitor	Date	UTM Coordinates			Horizontal Movement			Vertical Movement		
		Northing (metres)	**Easting** (metres)	**Elevation** (metres)	total (metres)	increment (metres)	rate (metres/year)	total (metres)	incremental (metres)	rate (metres/year)
69	19-Jun-01	7,147,335.52	513,140.55	414.88	0.00	0.19	0.10	0.00	-0.05	-0.03
	20-Aug-03	7,147,335.53	513,140.58	414.90	0.03	0.03	0.01	0.02	0.02	0.01
	28-Jul-04	7,147,335.53	513,140.56	414.87	0.01	0.02	0.02	-0.01	-0.03	-0.04
	28-Jul-06	7,147,335.49	513,140.52	414.91	-0.04	0.05	0.03	0.03	0.05	0.02
	9-Jul-08	7,147,335.48	513,140.50	414.89	-0.06	0.02	0.01	0.01	-0.02	-0.01
	20-Jul-10	7,147,329.16	513,138.51	416.48	0.12	0.03	0.01	-0.05	0.00	0.00
	25-Sep-10	7,147,329.17	513,138.53	416.43	0.14	0.02	0.12	-0.09	-0.05	-0.27
80-13	19-Jun-01	n/a								
	20-Aug-03	7,147,299.40	513,183.84	413.08	0.00			0.00		
	28-Jul-04	7,147,299.39	513,183.83	413.06	0.02	0.02	0.02	-0.02	-0.02	-0.03
	28-Jul-06	7,147,299.35	513,183.82	413.10	0.06	0.04	0.02	0.02	0.05	0.02
	9-Jul-08	7,147,299.35	513,183.81	413.07	0.06	0.01	0.01	-0.01	-0.03	-0.02
	20-Jul-10	7,147,299.32	513,183.77	413.21	0.10	0.05	0.03	0.13	0.13	0.07
	25-Sep-10	7,147,299.32	513,183.81	413.18	0.09	0.04	0.21	0.10	-0.03	-0.14
80-14	19-Jun-01	n/a								
	20-Aug-03	7,147,267.77	513,283.11	403.77	0.00			0.00		
	28-Jul-04	7,147,267.79	513,283.08	403.74	0.03	0.03	0.03	-0.03	-0.03	-0.03
	28-Jul-06	7,147,267.65	513,283.10	403.80	0.12	0.14	0.07	0.03	0.05	0.03
	9-Jul-08	7,147,267.63	513,283.14	403.83	0.14	0.04	0.02	0.06	0.04	0.02
	20-Jul-10	7,147,267.74	513,283.03	403.82	0.09	0.16	0.08	0.05	-0.01	0.00
	25-Sep-10	7,147,267.75	513,283.05	403.83	0.06	0.03	0.15	0.06	0.01	0.06
84-1	19-Jun-01	7,147,201.04	513,504.62	381.71	0.00	0.13	0.07	0.00	-0.01	-0.01
	20-Aug-03	7,147,201.07	513,504.65	381.77	-0.03	0.04	0.02	0.06	0.06	0.03
	28-Jul-04	7,147,201.08	513,504.64	381.72	-0.04	0.01	0.02	0.00	-0.06	-0.06
	28-Jul-06	7,147,201.09	513,504.63	381.83	-0.05	0.01	0.01	0.11	0.11	0.06
	9-Jul-08	7,147,201.07	513,504.62	381.78	-0.03	0.02	0.01	0.07	-0.04	-0.02
	20-Jul-10	7,147,201.10	513,504.61	381.79	-0.06	0.03	0.01	0.05	0.00	0.00
	25-Sep-10	destroyed								
217	19-Jun-01	7,147,314.81	513,183.13	414.83	0.00	0.05	0.02	0.00	-0.05	-0.03
	20-Aug-03	7,147,314.73	513,183.18	414.87	0.03	0.09	0.04	0.04	0.04	0.02
	28-Jul-04	7,147,314.77	513,183.18	414.84	0.02	0.03	0.04	0.01	-0.03	-0.03
	28-Jul-06	7,147,314.72	513,183.16	414.86	0.02	0.05	0.03	0.03	0.02	0.01
	9-Jul-08	7,147,314.72	513,183.17	414.86	0.02	0.01	0.01	0.03	0.01	0.00
	20-Jul-10	7,147,314.72	513,183.15	414.86		0.01	0.01	0.03	0.00	0.00
	25-Sep-10	destroyed								
218	19-Jun-01	7,147,222.17	513,433.25	387.99	0.00	0.07	0.04	0.00	0.05	0.02
	20-Aug-03	7,147,222.21	513,433.19	388.04	0.08	0.07	0.03	0.04	0.05	0.02
	28-Jul-04	7,147,222.22	513,433.18	388.03	0.08	0.00	0.00	0.03	-0.01	-0.01
	28-Jul-06	7,147,222.20	513,433.18	388.09	0.08	0.02	0.01	0.09	0.06	0.03
	9-Jul-08	7,147,222.21	513,433.18	388.09	0.08	0.01	0.01	0.09	0.00	0.00
	20-Jul-10	7,147,222.20	513,433.18	388.10	0.08	0.00	0.00	0.10	0.01	0.00
	25-Sep-10	destroyed or lost								
219	19-Jun-01	7,147,292.13	513,274.61	404.48	0.00	0.17	0.09	0.00	-0.05	-0.03
	20-Aug-03	7,147,292.12	513,274.65	404.60	-0.02	0.03	0.02	0.17	0.12	0.06
	28-Jul-04	7,147,292.13	513,274.65	404.55	-0.03	0.01	0.01	0.00	-0.05	-0.05
	28-Jul-06	7,147,292.12	513,274.62	404.62	0.00	0.03	0.02	0.12	0.07	0.04
	9-Jul-08	7,147,292.14	513,274.63	404.62	-0.02	0.02	0.01	0.05	0.00	0.00
	20-Jul-10	7,147,292.15	513,274.65	404.60	-0.04	0.02	0.01	0.02	-0.01	-0.01
	25-Sep-10	7,147,292.14	513,274.64	404.57	-0.03	0.01	0.07	-0.01	-0.03	-0.17
RELOCATED	25-Sep-10	7147288.583	513273.599	405.593						
220	19-Jun-01	7,147,223.43	513,431.01	388.55	0.00	0.25	0.13	0.00	0.06	0.03
	20-Aug-03	7,147,223.42	513,430.90	388.65	0.09	0.11	0.05	0.11	0.10	0.05
	28-Jul-04	7,147,223.43	513,430.90	388.60	0.08	0.01	0.01	0.06	-0.05	-0.05
	28-Jul-06	7,147,223.42	513,430.88	388.68	0.10	0.02	0.01	0.14	0.08	0.04
	9-Jul-08	7,147,223.43	513,430.88	388.67	0.10	0.01	0.01	0.12	-0.01	-0.01
	20-Jul-10	7,147,223.43	513,430.88	388.68	0.09	0.01	0.00	0.14	0.02	0.01
	25-Sep-10	destroyed								
222	19-Jun-01	7,147,269.46	513,334.94	397.91	0.00	0.06	0.03	0.00	-0.05	-0.02
	20-Aug-03	7,147,269.49	513,334.96	398.01	0.00	0.04	0.02	0.10	0.10	0.04
	28-Jul-04	7,147,269.52	513,334.97	397.96	-0.01	0.03	0.03	0.05	-0.05	-0.05
	28-Jul-06	7,147,269.51	513,334.93	397.99	-0.04	0.03	0.02	0.08	0.03	0.02
	9-Jul-08	7,147,269.53	513,334.95	397.99	-0.03	0.02	0.01	0.08	0.00	0.00
	20-Jul-10	7,147,269.54	513,334.95	397.98	-0.02	0.02	0.01	0.07	-0.01	0.00
RELOCATED	20-Jul-10	7,147,265.33	513,333.03	399.65						
226	19-Jun-01	n/a								
	20-Aug-03	7,147,311.53	513,066.36	426.46	0.00			0.00		
	28-Jul-04	7,147,311.54	513,066.40	426.43	0.04	0.04	0.05	-0.03	-0.03	-0.03
	28-Jul-06	7,147,311.56	513,066.42	426.36	0.07	0.03	0.01	-0.10	-0.07	-0.04

Client: Government of Yukon
Project: Former Clinton Creek Asbestos Mine
Job No.: 6029-005-00 6029-006-00 6029-008-00 6029-009-00 2940-044-00 60160515
Date: 31-Aug-03 31-Jul-04 Nov-06 Jul-07 9-Jul-08 25-Sep-10

Table B-3) Waste Rock Dump Stability - Lower Slope Summary

Monitor	Date	UTM Coordinates			Horizontal Movement			Vertical Movement		
		Northing (metres)	**Easting** (metres)	**Elevation** (metres)	total (metres)	increment (metres)	rate (metres/year)	total (metres)	incremental (metres)	rate (metres/year)
	4-Jul-07	7,147,311.62	513,066.44	426.32	0.13	0.07	0.07	-0.14	-0.04	-0.04
	9-Jul-08	7,147,311.61	513,066.47	426.27	0.15	0.03	0.03	-0.19	-0.05	-0.05
	20-Jul-10	7,147,311.67	513,066.49	426.18	0.20	0.06	0.03	-0.28	-0.09	-0.04
	25-Sep-10	7,147,311.68	513,066.53	426.14	0.23	0.03	0.18	-0.32	-0.05	-0.26
228	19-Jun-01	n/a								
	20-Aug-03	7,147,347.00	512,836.84	413.95	0			0		
	28-Jul-04	7,147,347.03	512,836.79	413.88	0.06	0.06	0.07	-0.07	-0.07	-0.08
	28-Jul-06	7,147,347.13	512,836.73	413.92	0.18	0.12	0.06	-0.03	0.04	0.02
	4-Jul-07	7,147,347.15	512,836.70	413.86	0.21	0.04	0.04	-0.09	-0.06	-0.07
	9-Jul-08	7,147,347.20	512,836.68	413.83	0.26	0.04	0.04	-0.12	-0.02	-0.02
	20-Jul-10	7,147,347.29	512,836.62	413.78	0.37	0.11	0.05	-0.17	-0.05	-0.02
	25-Sep-10	7,147,347.31	512,836.66	413.76	0.36	0.05	0.25	-0.19	-0.02	-0.10
1833	19-Jun-01	n/a								
	20-Aug-03	7,147,302.70	512,921.25	418.34	0			0		
	28-Jul-04	7,147,302.69	512,921.27	418.30	0.02	0.02	0.02	-0.04	-0.04	-0.04
	28-Jul-06	7,147,302.78	512,921.24	418.35	0.08	0.10	0.05	0.01	0.04	0.02
	4-Jul-07	7,147,302.84	512,921.20	418.34	0.15	0.07	0.07	0.00	-0.01	-0.01
	9-Jul-08	7,147,302.86	512,921.23	418.44	0.16	0.03	0.03	0.10	0.10	0.10
	20-Jul-10	7,147,302.92	512,921.21	418.39	0.23	0.07	0.04	0.05	-0.05	-0.02
	25-Sep-10	7,147,302.93	512,921.21	418.37	0.23	0.01	0.05	0.03	-0.01	-0.08
P2	19-Jun-01	7,147,354.12	512,999.27	416.14	0.00	0.17	0.09	0.00	-0.09	-0.05
	20-Aug-03	7,147,354.36	512,999.35	416.10	0.25	0.25	0.11	-0.04	-0.04	-0.02
	28-Jul-04	7,147,354.41	512,999.36	415.98	0.30	0.05	0.05	-0.16	-0.12	-0.13
	28-Jul-06	7,147,354.50	512,999.34	415.99	0.39	0.10	0.05	-0.16	0.00	0.00
	4-Jul-07	7,147,354.63	512,999.38	416.05	0.52	0.13	0.14	-0.09	0.06	0.07
	9-Jul-08	7,147,354.57	512,999.39	415.98	0.47	0.06	0.06	-0.16	-0.07	-0.07
	20-Jul-10	7,147,354.70	512,999.38	415.90	0.59	0.13	0.07	-0.24	-0.08	-0.04
	25-Sep-10	7,147,354.71	512,999.43	415.93	0.61	0.05	0.28	-0.21	0.03	0.16
P3	19-Jun-01	7,147,309.29	513,135.55	415.34	0.00	0.11	0.06	0.00	-0.11	-0.06
	20-Aug-03	7,147,309.32	513,135.58	415.35	0.00	0.04	0.02	0.01	0.01	0.00
	28-Jul-04	7,147,309.30	513,135.56	415.24	0.00	0.03	0.03	-0.10	-0.11	-0.11
	28-Jul-06	7,147,309.30	513,135.53	415.19	0.02	0.02	0.01	-0.15	-0.05	-0.03
	9-Jul-08	7,147,309.31	513,135.55	415.17	0.01	0.02	0.01	-0.18	-0.02	-0.01
	20-Jul-10	7,147,309.32	513,135.51	415.06	0.05	0.04	0.02	-0.28	-0.11	-0.05
	25-Sep-10	7,147,309.33	513,135.54	415.03	0.03	0.03	0.15	-0.31	-0.03	-0.15
P4	19-Jun-01	7,147,239.53	513,347.49	397.05	0			0		
	20-Aug-03	7,147,239.50	513,347.56	397.28	0.07	0.07	0.02	0.23	0.23	0.06
	28-Jul-04	7,147,239.49	513,347.51	397.31	0.05	0.05	0.05	0.26	0.03	0.03
	28-Jul-06	7,147,239.44	513,347.50	397.34	0.09	0.05	0.02	0.29	0.03	0.01
	9-Jul-08	7,147,239.44	513,347.49	397.31	0.09	0.01	0.00	0.26	-0.03	-0.01
	20-Jul-10	7,147,239.44	513,347.46	397.30	0.09	0.04	0.02	0.25	-0.01	-0.01
	25-Sep-10	7,147,239.41	513,347.49	397.32	0.12	0.05	0.25	0.27	0.02	0.10
P5	19-Jun-01	7,147,182.91	513,461.26	386.86	0			0		
	20-Aug-03	7,147,182.93	513,461.46	387.21	0.20	0.20	0.05	0.35	0.35	0.09
	28-Jul-04	7,147,182.95	513,461.42	387.20	0.17	0.04	0.05	0.34	-0.01	-0.01
	28-Jul-06	7,147,182.92	513,461.40	387.24	0.14	0.04	0.02	0.38	0.04	0.02
	9-Jul-08	7,147,182.92	513,461.40	387.23	0.14	0.01	0.00	0.37	-0.01	0.00
	20-Jul-10	7,147,182.92	513,461.38	387.24	0.12	0.01	0.01	0.38	0.01	0.00
	25-Sep-10	7,147,182.91	513,461.41	387.19	0.15	0.03	0.15	0.33	-0.05	-0.27
XS-A	19-Jun-01	n/a								
	20-Aug-03	7,147,320.21	513,190.99	411.33	0			0		
	28-Jul-04	7,147,320.32	513,191.01	411.24	0.10	0.10	0.11	-0.09	-0.09	-0.09
	28-Jul-06	7,147,315.67	513,189.82	413.35						
	9-Jul-08	7,147,315.71	513,189.83	413.35		0.04	0.02		0.01	0.00
	20-Jul-10	7,147,315.72	513,189.82	413.36		0.01	0.01		0.01	0.00
	25-Sep-10	destroyed								
XS-B	19-Jun-01	n/a								
	20-Aug-03	7,147,293.65	513,274.20	404.28	0.00			0.00		
	28-Jul-04	7,147,293.70	513,274.20	404.29	0.06	0.06	0.06	0.01	0.01	0.01
	28-Jul-06	7,147,293.67	513,274.18	404.31	0.03	0.04	0.02	0.03	0.02	0.01
	9-Jul-08	7,147,293.68	513,274.18	404.31	0.04	0.01	0.01	0.03	0.00	0.00
	20-Jul-10	7,147,293.69	513,274.18	404.33	0.04	0.01	0.00	0.05	0.02	0.01
	25-Sep-10	7,147,293.69	513,274.18	404.30	0.04	0.01	0.03	0.02	-0.02	-0.13

Client: Government of Yukon
Project: Former Clinton Creek Asbestos Mine

Job No.:	6029-005-00	6029-006-00	6029-008-00	6029-009-00	2940-044-00	60160515
Date:	31-Aug-03	31-Jul-04	Nov-06	Jul-07	9-Jul-08	25-Sep-10

Table B-3) Waste Rock Dump Stability - Lower Slope Summary

Monitor	Date	UTM Coordinates			Horizontal Movement			Vertical Movement		
		Northing (metres)	**Easting** (metres)	**Elevation** (metres)	total (metres)	increment (metres)	rate (metres/year)	total (metres)	incremental (metres)	rate (metres/year)
XS-E	19-Jun-01	n/a								
	20-Aug-03	7,147,224.70	513,432.22	387.53	0.00			0.00		
	28-Jul-04	7,147,224.67	513,432.18	387.52	0.06	0.06	0.06	-0.01	-0.01	-0.01
	28-Jul-06	7,147,224.66	513,432.16	387.59	0.07	0.01	0.01	0.06	0.07	0.04
	9-Jul-08	7,147,224.67	513,432.16	387.53	0.07	0.01	0.00	0.00	-0.06	-0.03
	20-Jul-10	7,147,224.68	513,432.16	387.54	0.06	0.02	0.01	0.01	0.01	0.01
	25-Sep-10	destroyed								
XS-G	19-Jun-01	7,147,355.94	513,038.74	416.55	0.00	0.19	0.10	0.00	-0.12	-0.06
	20-Aug-03	7,147,356.11	513,038.84	416.54	0.20	0.20	0.09	-0.01	-0.01	0.00
	28-Jul-06	destroyed								

Average	1999 to 2001	0.14	0.07		-0.04	-0.02
	2001 to 2003	0.10	0.04		0.09	0.03
	2003 to 2004	0.04	0.04		-0.04	-0.04
	2004 to 2006	0.05	0.02		0.04	0.02
	2006 to 2008	0.02	0.02		-0.01	-0.01
	2008 to 2010	**0.04**	**0.02**		**-0.01**	**-0.01**
	Jul 2010 to Sep 2010	**0.03**	**0.16**		**-0.02**	**-0.10**
Maximum	1999 to 2001	0.25	0.13		0.06	0.03
	2001 to 2003	0.25	0.11		0.35	0.09
	2003 to 2004	0.10	0.11		0.03	0.03
	2004 to 2006	0.14	0.07		0.11	0.06
	2006 to 2008	0.06	0.06		0.10	0.10
	2008 to 2010	**0.16**	**0.08**		**0.13**	**0.07**
	Jul 2010 to Sep 2010	**0.05**	**0.28**		**0.03**	**0.16**
Minimum	1999 to 2001	0.05	0.02		-0.12	-0.06
	2001 to 2003	0.03	0.01		-0.04	-0.02
	2003 to 2004	0.00	0.00		-0.12	-0.13
	2004 to 2006	0.01	0.01		-0.07	-0.04
	2006 to 2008	0.01	0.00		-0.07	-0.07
	2008 to 2010	**0.00**	**0.00**		**-0.11**	**-0.05**
	Jul 2010 to Sep 2010	**0.01**	**0.03**		**-0.05**	**-0.27**

Client: Government of Yukon
Project: Former Clinton Creek Asbestos Mine

Job No.:	6029-005-00	6029-006-00	6029-008-00	6029-009-00	2940-044-00	60160515
Date:	31-Aug-03	31-Jul-04	Nov-06	Jul-07	9-Jul-08	25-Sep-10

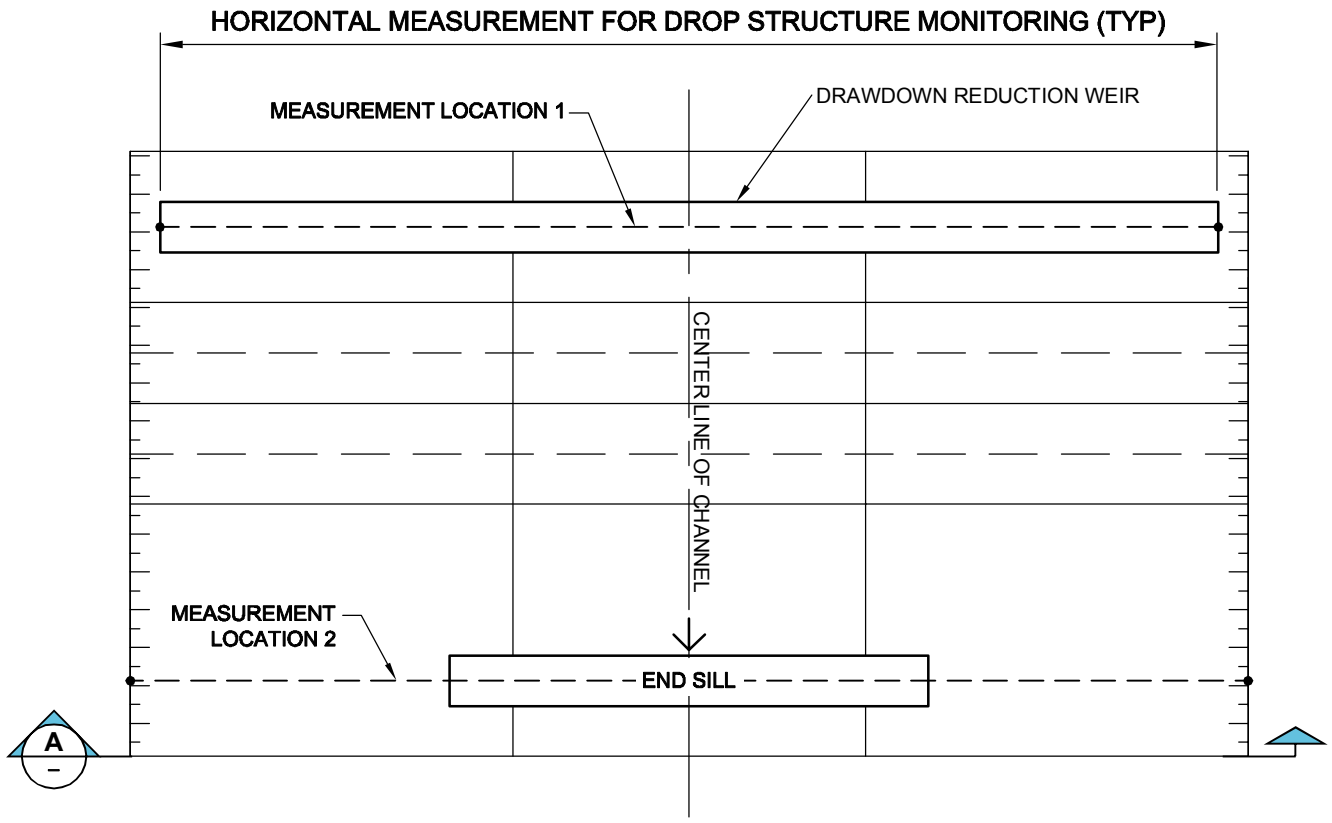
Table B-4) Open Pit Area - Summary

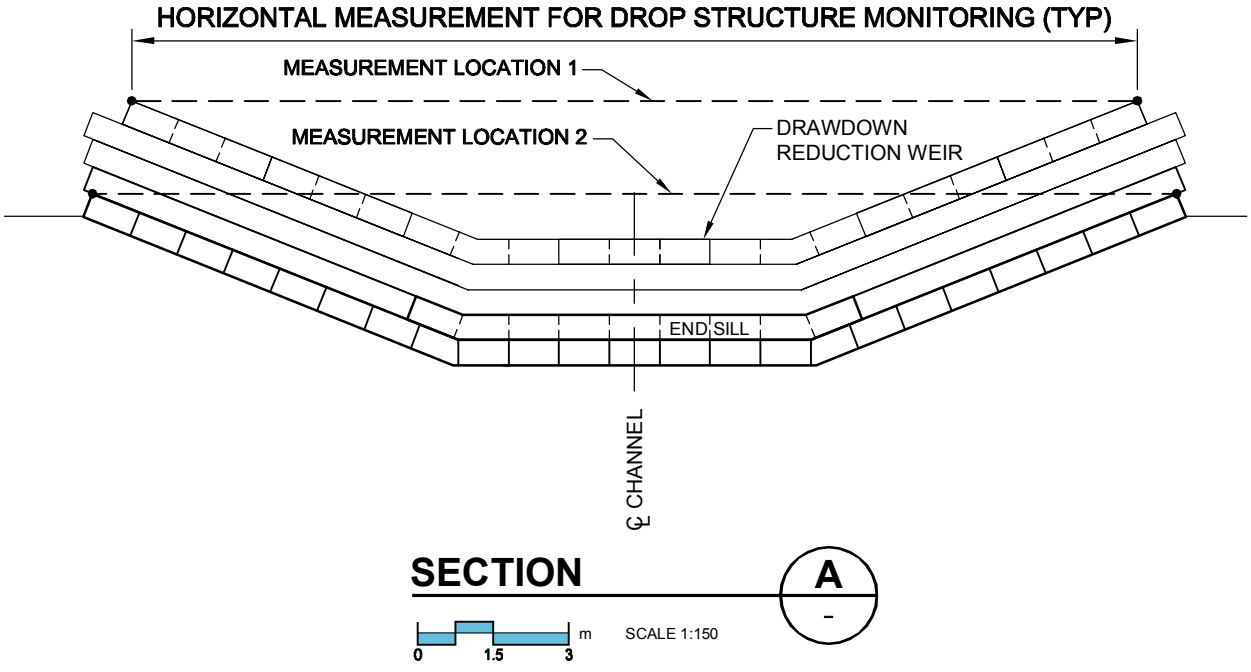
Monitor	Date	UTM Coordinates			Horizontal Movement			Vertical Movement		
		Northing (metres)	**Easting** (metres)	**Elevation** (metres)	total (metres)	increment (metres)	rate (metres/year)	total (metres)	incremental (metres)	rate (metres/year)
1493	19-Jun-01	n/a								
	20-Aug-03	7,146,801.56	513,576.66	453.00	0.00			0.00		
	28-Jul-04	7,146,801.65	513,576.65	452.96	0.08	0.08	0.09	-0.04	-0.04	-0.04
	28-Jul-06	7,146,801.85	513,576.60	452.89	0.29	0.21	0.10	-0.11	-0.07	-0.03
	9-Jul-08	7,146,802.00	513,576.60	452.79	0.44	0.15	0.08	-0.21	-0.10	-0.05
	20-Jul-10	7,146,802.12	513,576.56	452.72	0.57	0.13	0.06	-0.28	-0.07	-0.03
	25-Sep-10	7,146,802.12	513,576.55	452.67	0.57	0.00	0.01	-0.33	-0.05	-0.28
1830	19-Jun-01	n/a								
	20-Aug-03	7,146,523.77	513,455.68	471.67	0.00			0.00		
	28-Jul-04	7,146,523.79	513,455.68	471.68	0.02	0.02	0.02	0.01	0.01	0.01
	28-Jul-06	7,146,523.79	513,455.68	471.73	0.02	0.01	0.00	0.06	0.05	0.03
	9-Jul-08	7,146,523.78	513,455.68	471.70	0.02	0.01	0.00	0.03	-0.03	-0.02
	20-Jul-10	7,146,523.80	513,455.68	471.71	0.03	0.02	0.01	0.04	0.01	0.01
	25-Sep-10	7,146,523.81	513,455.69	471.69	0.04	0.01	0.06	0.02	-0.02	-0.12
1832	19-Jun-01	n/a								
	20-Aug-03	7,146,537.06	513,483.13	473.62	0.00			0.00		
	28-Jul-04	7,146,537.06	513,483.16	473.58	0.03	0.03	0.03	-0.04	-0.04	-0.05
	28-Jul-06	7,146,537.04	513,483.16	473.68	0.04	0.02	0.01	0.06	0.10	0.05
	9-Jul-08	7,146,537.07	513,483.17	473.65	0.03	0.03	0.02	0.02	-0.04	-0.02
	20-Jul-10	7,146,537.08	513,483.16	473.65	0.03	0.01	0.01	0.03	0.00	0.00
	25-Sep-10	7,146,537.09	513,483.17	473.65	0.05	0.02	0.12	0.03	0.00	0.01
1837	19-Jun-01	n/a								
	20-Aug-03	7,146,502.87	513,411.47	470.22	0.00			0.00		
	28-Jul-04	7,146,502.89	513,411.46	470.20	0.02	0.02	0.02	-0.02	-0.02	-0.02
	28-Jul-06	7,146,502.88	513,411.44	470.24	0.02	0.02	0.01	0.02	0.03	0.02
	9-Jul-08	7,146,502.89	513,411.44	470.25	0.03	0.01	0.01	0.03	0.01	0.01
	20-Jul-10	7,146,502.91	513,411.47	470.3	0.04	0.04	0.02	0.04	0.01	0.01
	25-Sep-10	7,146,502.90	513,411.47	470.2	0.03	0.01	0.04	0.00	-0.05	-0.25
1838	19-Jun-01	n/a								
	20-Aug-03	7,146,491.91	513,380.52	468.34	0.00			0.00		
	28-Jul-04	7,146,491.89	513,380.52	468.33	0.02	0.02	0.02	-0.01	-0.01	-0.01
	28-Jul-06	7,146,491.87	513,380.53	468.38	0.04	0.02	0.01	0.04	0.05	0.03
	9-Jul-08	7,146,491.89	513,380.52	468.38	0.02	0.01	0.01	0.04	0.00	0.00
	20-Jul-10	7,146,491.89	513,380.53	468.39	0.02	0.01	0.00	0.05	0.00	0.00
	25-Sep-10	7,146,491.88	513,380.53	468.36	0.03	0.01	0.04	0.02	-0.02	-0.13
1839	19-Jun-01	n/a								
	20-Aug-03	7,146,861.35	513,285.18	428.66	0.00			0.00		
	28-Jul-04	7,146,861.34	513,285.17	428.61	0.02	0.02	0.02	-0.05	-0.05	-0.05
	28-Jul-06	7,146,861.40	513,285.20	428.60	0.05	0.07	0.03	-0.06	-0.01	-0.01
	9-Jul-08	7,146,861.36	513,285.15	428.39	0.03	0.06	0.03	-0.28	-0.21	-0.11
	20-Jul-10	7,146,861.43	513,285.17	428.32	0.08	0.07	0.04	-0.34	-0.06	-0.03
	25-Sep-10	7,146,861.41	513,285.16	428.29	0.06	0.02	0.11	-0.37	-0.04	-0.20

Average	1999 to 2001	n/a	n/a		n/a	n/a
	2001 to 2003	n/a	n/a		n/a	n/a
	2003 to 2004	0.03	0.03		-0.03	-0.03
	2004 to 2006	0.06	0.03		0.03	0.01
	2006 to 2008	0.05	0.02		-0.06	-0.03
	2008 to 2010	**0.05**	**0.02**		**-0.02**	**-0.01**
	Jul 2010 to Sep 2010	**0.01**	**0.06**		**-0.03**	**-0.16**
Maximum	1999 to 2001	n/a	n/a		n/a	n/a
	2001 to 2003	n/a	n/a		n/a	n/a
	2003 to 2004	0.08	0.09		0.01	0.01
	2004 to 2006	0.21	0.10		0.10	0.05
	2006 to 2008	0.15	0.08		0.01	0.01
	2008 to 2010	**0.13**	**0.06**		**0.01**	**0.01**
	Jul 2010 to Sep 2010	**0.02**	**0.12**		**0.00**	**0.01**
Minimum	1999 to 2001	n/a	n/a		n/a	n/a
	2001 to 2003	n/a	n/a		n/a	n/a
	2003 to 2004	0.02	0.02		-0.05	-0.05
	2004 to 2006	0.01	0.00		-0.07	-0.03
	2006 to 2008	0.01	0.00		-0.21	-0.11
	2008 to 2010	**0.01**	**0.00**		**-0.07**	**-0.03**
	Jul 2010 to Sep 2010	**0.00**	**0.01**		**-0.05**	**-0.28**

Appendix C

Gabion Drop Structure Movements





SECTION A – A

0 1.5 3 m SCALE 1:150

Yukon Government
Clinton Creek
2010 Site Inspection and Long Term Performance Monitoring

Drop Structure Measurements

AECOM

Drawing - C-1

Client: Government of Yukon
Project: Former Clinton Creek Asbestos Mine - Channel Stabilization
Job No.: 60160515
Date: 20-Jul-10

Table C-1) Former Clinton Creek Asbestos Mine - Clinton Creek Drop Structure Monitoring
Horizontal Measurements - Summary

Measurement Location #1 - Across Drawdown Weir

Drop Structure	Horizontal Distance Across Drop Structure (metres)									Incremental Change (m)	Incremental Change (m)	Average Annual Rate Of Movement (m/yr)	Total Change (m)	Comment
	Date 29-Jul-04	Date 22-May-05	Date 21-Jun-06	Date 3-Oct-06	Date 4-Jul-07	Date 21-Sep-07	Date 8-Sep-08	Date 16-Jul-09	Date 20-Jul-10	Sept 2008 to Jul 2009	Jul 2009 to Jul 2010	Sept 2008 to July 2010		
1	19.62	19.57	19.57	19.58	19.51	19.55	19.48	19.40	19.35	-0.08	-0.05	-0.07	-0.27	survey tags 1 & 2
2	19.49	19.48	19.48	19.48	19.43	19.48	19.46	19.41	19.40	-0.05	-0.01	-0.03	-0.09	survey tags 5 & 6
3	19.44	19.32	19.25	19.21	19.14	19.17	19.08	19.00	18.99	-0.08	-0.01	-0.05	-0.45	survey tags 9 & 10
4	n/a	19.61	19.55	19.51	19.43	19.46	19.40	19.35	19.29	-0.05	-0.06	-0.06	-0.32	survey tags 13 & 14

Measurement Location #2 - Across Lower Tier In-Line With End Sill

Drop Structure	Horizontal Distance Across Drop Structure (metres)									Incremental Change (m)	Incremental Change (m)	Average Annual Rate Of Movement (m/yr)	Total Change (m)	Comment
	Date 29-Jul-04	Date 22-May-05	Date 21-Jun-06	Date 3-Oct-06	Date 4-Jul-07	Date 21-Sep-07	Date 8-Sep-08	Date 16-Jul-09	Date 20-Jul-10	Sept 2008 to Jul 2009	Jul 2009 to Jul 2010	Sept 2008 to July 2010		
1	n/a	21.00	20.99	20.90	20.83	20.85	20.77	20.66	20.58	-0.11	-0.08	-0.10	-0.42	survey tags 3 & 4
2	n/a	21.15	21.06	21.05	21.01	21.01	20.95	20.90	20.83	-0.05	-0.07	-0.06	-0.32	survey tags 7 & 8
3	n/a	21.50	21.31	21.31	21.25	21.24	21.17	21.09	21.03	-0.08	-0.06	-0.08	-0.47	survey tags 11 & 12
4	n/a	21.48	21.46	21.36	21.34	21.35	21.30	21.27	21.20	-0.03	-0.07	-0.05	-0.28	survey tags 15 & 16

Average	**-0.07**	**-0.05**	**-0.06**	**-0.33**
Minimum	**-0.03**	**-0.01**	**-0.03**	**-0.09**
Maximum	**-0.11**	**-0.08**	**-0.10**	**-0.47**

Year	Monitored By	
2004	UMA	
2005	UMA	
2006	Gov of Yukon	Survey tags installed in September 2006
2007	UMA (July) / GY (Sept)	
2008	Gov of Yukon	
2009	AECOM	
2010	AECOM	

Client: Government of Yukon
Project: Former Clinton Creek Asbestos Mine
Job No.: 60160515
Date: 20-Jul-10

Table C-2) Clinton Creek Drop Structure #1 Monitoring Results

Monitoring Date	Time		Horizontal Movement - Location 1 (Weir)				Horizontal Movement - Location 2 (End Sill)				Comments
	total (days)	incremental (days)	measurement (metres)	total (metres)	incremental (metres)	rate (metres/year)	measurement (metres)	total (metres)	incremental (metres)	rate (metres/year)	
29-Jul-04	0	0	19.62								
22-May-05	297	297	19.57	-0.05	-0.05	**-0.06**	21.00				
21-Jun-06	692	395	19.57	-0.05	0.00	**0.00**	20.99	-0.01	-0.01	**-0.01**	
3-Oct-06	796	104	19.58	-0.04	0.01	**0.04**	20.90	-0.10	-0.09	**-0.32**	
4-Jul-07	1,070	274	19.51	-0.11	-0.07	**-0.09**	20.83	-0.17	-0.07	**-0.09**	
21-Sep-07	1,149	79	19.55	-0.07	0.04	**0.18**	20.85	-0.15	0.02	**0.09**	
8-Sep-08	1,502	353	19.48	-0.14	-0.07	**-0.07**	20.77	-0.23	-0.08	**-0.08**	
16-Jul-09	1,813	311	19.40	-0.22	-0.08	**-0.09**	20.66	-0.34	-0.11	**-0.13**	
20-Jul-10	2,182	369	19.35	-0.27	-0.05	**-0.05**	20.58	-0.42	-0.08	**-0.08**	

Client: Government of Yukon
Project: Former Clinton Creek Asbestos Mine
Job No.: 60160515
Date: 20-Jul-10

Table C-3) Clinton Creek Drop Structure #2 Monitoring Results

Monitoring Date	Time		Horizontal Movement - Location 1 (Weir)				Horizontal Movement - Location 2 (End Sill)				Comments
	total (days)	incremental (days)	measurement (metres)	total (metres)	incremental (metres)	rate (metres/year)	measurement (metres)	total (metres)	incremental (metres)	rate (metres/year)	
29-Jul-04	0	0	19.49								
22-May-05	297	297	19.48	-0.01	-0.01	**-0.01**	21.15				
21-Jun-06	692	395	19.48	-0.01	0.00	**0.00**	21.06	-0.09	-0.09	**-0.08**	
3-Oct-06	796	104	19.48	-0.01	0.00	**0.00**	21.05	-0.10	-0.01	**-0.04**	
4-Jul-07	1,070	274	19.43	-0.06	-0.05	**-0.07**	21.01	-0.14	-0.04	**-0.05**	
21-Sep-07	1,149	79	19.48	-0.01	0.05	**0.23**	21.01	-0.14	0.00	**0.00**	
8-Sep-08	1,502	353	19.46	-0.03	-0.02	**-0.02**	20.95	-0.20	-0.06	**-0.06**	
16-Jul-09	1,813	311	19.41	-0.08	-0.05	**-0.06**	20.90	-0.25	-0.05	**-0.06**	
20-Jul-10	2,182	369	19.40	-0.09	-0.01	**-0.01**	20.83	-0.32	-0.07	**-0.07**	

Client: Government of Yukon
Project: Former Clinton Creek Asbestos Mine
Job No.: 60160515
Date: 20-Jul-10

Table C-4) Clinton Creek Drop Structure #3 Monitoring Results

Monitoring Date	Time		Horizontal Movement - Location 1 (Weir)				Horizontal Movement - Location 2 (End Sill)				Comments
	total (days)	incremental (days)	measurement (metres)	total (metres)	incremental (metres)	rate (metres/year)	measurement (metres)	total (metres)	incremental (metres)	rate (metres/year)	
29-Jul-04	0	0	19.44								
22-May-05	297	297	19.32	-0.12	-0.12	**-0.15**	21.50				
21-Jun-06	692	395	19.25	-0.19	-0.07	**-0.06**	21.31	-0.19	-0.19	**-0.18**	
3-Oct-06	796	104	19.21	-0.23	-0.04	**-0.14**	21.31	-0.19	0.00	**0.00**	
4-Jul-07	1,070	274	19.14	-0.30	-0.07	**-0.09**	21.25	-0.25	-0.06	**-0.08**	
21-Sep-07	1,149	79	19.17	-0.27	0.03	**0.14**	21.24	-0.26	-0.01	**-0.05**	
8-Sep-08	1,502	353	19.08	-0.36	-0.09	**-0.09**	21.17	-0.33	-0.07	**-0.07**	
16-Jul-09	1,813	311	19.00	-0.44	-0.08	**-0.09**	21.09	-0.41	-0.08	**-0.09**	
20-Jul-10	2,182	369	18.99	-0.45	-0.01	**-0.01**	21.03	-0.47	-0.06	**-0.06**	

Client: Government of Yukon
Project: Former Clinton Creek Asbestos Mine
Job No.: 60160515
Date: 20-Jul-10

Table C-5) Clinton Creek Drop Structure #4 Monitoring Results

Monitoring Date	Time		Horizontal Movement - Location 1 (Weir)				Horizontal Movement - Location 2 (End Sill)				Comments
	total (days)	incremental (days)	measurement (metres)	total (metres)	incremental (metres)	rate (metres/year)	measurement (metres)	total (metres)	incremental (metres)	rate (metres/year)	
29-Jul-04	n/a										
22-May-05	0	0	19.61				21.48				
21-Jun-06	395	395	19.55	-0.06	-0.06	**-0.06**	21.46	-0.02	-0.02	**-0.02**	
3-Oct-06	499	104	19.51	-0.10	-0.04	**-0.14**	21.36	-0.12	-0.10	**-0.35**	
4-Jul-07	773	274	19.43	-0.18	-0.08	**-0.11**	21.34	-0.14	-0.02	**-0.03**	
21-Sep-07	852	79	19.46	-0.15	0.03	**0.14**	21.35	-0.13	0.01	**0.05**	
8-Sep-08	1205	353	19.40	-0.21	-0.06	**-0.06**	21.30	-0.18	-0.05	**-0.05**	
16-Jul-09	1516	311	19.35	-0.26	-0.05	**-0.06**	21.27	-0.21	-0.03	**-0.04**	
20-Jul-10	1885	369	19.29	-0.32	-0.06	**-0.06**	21.20	-0.28	-0.07	**-0.07**	

Client: Government of Yukon
Project: Former Clinton Creek Asbestos Mine

Job No.:	6029-009-00	2940-044-00	60160515
Date:	4-Jul-07	9-Jul-08	20-Jul-10

Table C-6) Former Clinton Creek Asbestos Mine - Clinton Creek Drop Structure Monitoring
Channel Closure Monitor Pins #1450 to #1465 - SUMMARY

Location #1 - Across The Drawdown Weir

Drop Structure	Horizontal Distance Across Drop Structure (metres)					Incremental Change (m) Jul 08 to Jul 10	Incremental Change (m) Jul 10 to Sep 10	Average Annual Rate Of Movement (m/yr) Jul 08 to Jul 10	Average Annual Rate Of Movement (m/yr) Jul 08 to Sept 10	Total Change (m) Jul 10	Total Change (m) Sept 10	Comment
	Date	Date	Date	Date	Date							
	28-Jul-06	4-Jul-07	9-Jul-08	20-Jul-10	25-Sep-10							
1	27.59	27.56	27.55	27.52	27.52	-0.03	0.00	-0.01	-0.02	-0.07	-0.07	survey tags 1450 & 1451
2	27.62	27.60	27.58	27.55	27.56	-0.03	0.01	-0.01	0.03	-0.07	-0.06	survey tags 1454 & 1455
3	27.28	27.21	27.16	27.05	27.03	-0.11	-0.02	-0.06	-0.11	-0.23	-0.25	survey tags 1458 & 1459
4	27.09	27.11	27.05	26.97	26.96	-0.08	-0.01	-0.04	-0.07	-0.12	-0.13	survey tags 1462 & 1463

Location #2 - Across Lower Tier

Drop Structure	Horizontal Distance Across Drop Structure (metres)					Incremental Change (m) Jul 08 to Jul 10	Incremental Change (m) Jul 10 to Sep 10	Average Annual Rate Of Movement (m/yr) Jul 08 to Jul 10	Average Annual Rate Of Movement (m/yr) Jul 08 to Sept 10	Total Change (m) Jul 10	Total Change (m) Sept 10	Comment
	Date	Date	Date	Date	Date							
	28-Jul-06	4-Jul-07	9-Jul-08	20-Jul-10	25-Sep-10							
1	28.83	28.76	28.79	28.77	28.77	-0.02	0.00	-0.01	-0.02	-0.06	-0.06	survey tags 1452 & 1453
2	28.62	28.58	28.54	28.44	28.44	-0.10	0.00	-0.05	0.01	-0.18	-0.18	survey tags 1456 & 1457
3	28.82	28.69	28.64	Not Surveyed	Not Surveyed							survey tags 1460 & 1461
4	30.57	30.53	30.51	30.43	30.38	-0.08	-0.06	-0.04	-0.30	-0.14	-0.19	survey tags 1464 & 1465

Year	Monitored By
2006	Installed by Underhill Geomatics Limited
2007	Underhill Geomatics Limited
2008	Underhill Geomatics Limited
2010	Underhill Geomatics Limited

Average (m)	**-0.06**	**-0.01**	**-0.03**	**-0.07**	**-0.12**	**-0.14**
Maximum (m)	**-0.02**	**0.01**	**-0.01**	**0.03**	**-0.06**	**-0.06**
Minimum (m)	**-0.11**	**-0.06**	**-0.06**	**-0.30**	**-0.23**	**-0.25**

Channel Closure Monitor Pins #1450 to #1465

Location #1 - Across The Drawdown Weir

Drop Structure	Incremental Change Summary					
	Jul 06 to Jul 07	Jul 07 to Jul 08	Jul 08 to Jul10	Jul 10 to Sep 10		
1	-0.03	-0.01	-0.03	0.00		
2	-0.02	-0.02	-0.03	0.01		
3	-0.07	-0.05	-0.11	-0.02		
4	0.02	-0.06	-0.08	-0.01		

Location #2 - Across Lower Tier

Drop Structure	Incremental Change Summary					
	Jul 06 to Jul 07	Jul 07 to Jul 08	Jul 08 to Jul10	Jul 10 to Sep 10		
1	-0.07	0.03	-0.02	0.00		
2	-0.04	-0.04	-0.10	0.00		
3	-0.13	-0.05	Not Surveyed	Not Surveyed		
4	-0.04	-0.02	-0.08	-0.06		

Appendix D

Tailings Pile Movement Monitoring Results

Client: Government of Yukon
Project: Former Clinton Creek Asbestos Mine - Tailings Movement Monitoring
UMA Job No.: 6029-005-00 6029-006-00 6029-008-00 6029-009-00 2940-044-0(60160515
Date: 31-Aug-03 31-Jul-04 Nov-06 Jul-07 9-Jul-08 25-Sep-10

Table D1) Tailings Stability - Upper Slopes (Elevation > 530 m)

North Lobe

Monitor	Date	UTM Coordinates			Time		Horizontal Movement			Vertical Movement		
		Northing (metres)	Easting (metres)	Elevation (metres)	total (days)	incremental (days)	total (metres)	increment (metres)	rate (metres/year)	total (metres)	incremental (metres)	rate (metres/year)
1483	21-Aug-03	7,148,233.01	513,412.67	609.08	0	0	0.00			0.00		
	28-Jul-04	7,148,233.01	513,412.69	609.02	342	342	0.03	0.03	0.03	-0.06	-0.06	-0.06
	23-Sep-04	7,148,233.02	513,412.68	609.00	399	57	0.02	0.02	0.10	-0.08	-0.03	-0.16
	17-Sep-05	7,148,233.03	513,412.71	608.96	758	359	0.05	0.03	0.03	-0.12	-0.04	-0.04
	28-Jul-06	7,148,233.06	513,412.70	609.00	1,072	314	0.06	0.03	0.04	-0.08	0.04	0.05
	9-Jul-08	7,148,233.04	513,412.75	608.94	1,784	712	0.08	0.05	0.02	-0.14	-0.06	-0.03
	20-Jul-10	7,148,233.04	513,412.71	608.90	2,525	741	0.06	0.03	0.02	-0.18	-0.04	-0.02
	25-Sep-10	7,148,233.05	513,412.74	608.87	2,592	67	0.08	0.02	0.12	-0.21	-0.02	-0.12
26	21-Aug-03	7,148,341.45	513,483.53	575.11	9,275	7,007	0.00	0.77	0.04	-0.95	-0.43	-0.02
	28-Jul-04	7,148,341.48	513,483.55	575.10	9,617	342	0.03	0.04	0.04	-0.96	-0.01	-0.01
	23-Sep-04	7,148,341.49	513,483.55	575.08	9,674	57	0.03	0.02	0.10	-0.97	-0.01	-0.10
	17-Sep-05	7,148,341.47	513,483.57	575.01	10,033	359	0.04	0.04	0.04	-1.05	-0.07	-0.07
	28-Jul-06	7,148,341.50	513,483.58	575.07	10,347	314	0.06	0.04	0.04	-0.99	0.06	0.07
	9-Jul-08	7,148,341.50	513,483.61	575.02	11,059	712	0.09	0.04	0.02	-1.04	-0.05	-0.03
	20-Jul-10	7,148,341.49	513,483.62	575.01	11800.0	741	0.10	0.02	0.01	-1.05	-0.01	-0.01
	25-Sep-10	7,148,341.49	513,483.66	574.97	11867.0	67	0.13	0.04	0.19	-1.09	-0.04	-0.20
80-2	21-Aug-03	7,148,290.05	513,549.41	552.78	7,294	7,007	0.00	0.86	0.05	-0.57	-0.57	-0.03
	28-Jul-04	7,148,290.09	513,549.50	552.65	7,636	342	0.09	0.09	0.10	-0.70	-0.13	-0.14
	23-Sep-04	7,148,290.08	513,549.48	552.63	7,693	57	0.08	0.01	0.09	-0.72	-0.02	-0.12
	17-Sep-05	7,148,290.08	513,549.57	552.50	8,052	359	0.16	0.09	0.09	-0.86	-0.14	-0.14
	28-Jul-06	7,148,290.09	513,549.60	552.54	8,366	314	0.19	0.03	0.04	-0.81	0.05	0.05
	9-Jul-08	7,148,290.08	513,549.69	552.45	9,078	712	0.28	0.09	0.05	-0.91	-0.10	-0.05
	20-Jul-10	7,148,290.09	513,549.75	552.37	9,819	741	0.34	0.06	0.03	-0.99	-0.08	-0.04
	25-Sep-10	7,148,290.08	513,549.78	552.33	9,886	67	0.36	0.03	0.16	-1.02	-0.03	-0.19
26-A	21-Aug-03	7,148,339.30	513,540.50	557.82	9,275	7,007	0.00	0.74	0.04	-0.83	-0.83	-0.04
	28-Jul-04	7,148,339.32	513,540.52	557.75	9,617	342	0.01	0.03	0.03	-0.90	-0.07	-0.08
	23-Sep-04	7,148,339.32	513,540.49	557.74	9,674	57	-0.01	0.02	0.15	-0.91	-0.01	-0.06
	17-Sep-05	7,148,339.34	513,540.56	557.65	10,033	359	0.05	0.07	0.07	-1.01	-0.10	-0.10
	28-Jul-06	7,148,339.33	513,540.54	557.71	10,347	314	0.04	0.02	0.03	-0.94	0.06	0.07
	9-Jul-08	7,148,339.35	513,540.59	557.67	11,059	712	0.09	0.05	0.03	-0.98	-0.04	-0.02
	20-Jul-10	7,148,339.36	513,540.57	557.61	11,800	741	0.06	0.03	0.02	-1.04	-0.06	-0.03
	25-Sep-10	7,148,339.35	513,540.60	557.60	11,867	67	0.09	0.04	0.19	-1.05	-0.01	-0.04
80-1	21-Aug-03	7,148,407.98	513,543.04	555.71	7,294	7,007	0.00	1.79	0.09	-1.97	-1.97	-0.10
	28-Jul-04	7,148,408.01	513,543.07	555.61	7,636	342	0.02	0.04	0.05	-2.06	-0.10	-0.10
	23-Sep-04	7,148,408.03	513,543.06	555.61	7,693	57	0.01	0.03	0.16	-2.06	0.00	0.00
	17-Sep-05	7,148,408.01	513,543.12	555.49	8,052	359	0.07	0.06	0.06	-2.19	-0.12	-0.13
	28-Jul-06	7,148,408.02	513,543.14	555.55	8,366	314	0.09	0.03	0.03	-2.12	0.06	0.07
	9-Jul-08	7,148,408.04	513,543.21	555.48	9,078	712	0.15	0.07	0.04	-2.20	-0.08	-0.04
	20-Jul-10	7,148,408.03	513,543.24	555.43	9,819	741	0.18	0.03	0.01	-2.25	-0.05	-0.03
	25-Sep-10	7,148,408.04	513,543.27	555.40	9,886	67	0.21	0.03	0.17	-2.28	-0.03	-0.15
BH-14 (T7)	21-Aug-03	7,148,488.36	513,563.01	530.33	0	0	0.00			0.00		
	28-Jul-04	7,148,488.36	513,563.01	530.29	342	342	0.01	0.01	0.01	-0.04	-0.04	-0.05
	23-Sep-04	7,148,488.33	513,562.99	530.30	399	57	0.03	0.03	0.22	-0.03	0.01	0.08
	17-Sep-05	7,148,488.34	513,562.87	530.24	758	359	0.14	0.12	0.12	-0.09	-0.06	-0.06
	28-Jul-06	7,148,488.37	513,563.02	530.34	1,072	314	0.02	0.16	0.18	0.01	0.10	0.11
	9-Jul-08	7,148,488.43	513,563.07	530.36	1,784	712	0.10	0.07	0.04	0.03	0.02	0.01
	20-Jul-10	7,148,488.36	513,562.88	530.38	2,525	741	0.14	0.21	0.10	0.05	0.02	0.01
	25-Sep-10	7,148,488.36	513,562.91	530.35	2,592	67	0.11	0.03	0.16	0.02	-0.03	-0.17
1495	21-Aug-03	7,148,526.59	513,528.92	529.06	0	0	0.00			0.00		
	28-Jul-04	7,148,526.62	513,528.97	529.05	342	342	0.06	0.06	0.06	-0.01	-0.01	-0.01
	23-Sep-04	7,148,526.65	513,528.95	529.07	399	57	0.06	0.03	0.20	0.01	0.01	0.08
	17-Sep-05	7,148,526.65	513,529.00	528.97	758	359	0.10	0.05	0.05	-0.09	-0.10	-0.10
	28-Jul-06	7,148,526.67	513,529.02	529.06	1,072	314	0.13	0.03	0.03	0.00	0.09	0.11
	9-Jul-08	7,148,526.69	513,529.07	529.04	1,784	712	0.18	0.06	0.03	-0.02	-0.01	-0.01
	20-Jul-10	7,148,526.71	513,529.10	529.06	2,525	741	0.22	0.03	0.02	0.00	0.01	0.01
	25-Sep-10	7,148,526.72	513,529.11	529.03	2,592	67	0.23	0.01	0.08	-0.03	-0.02	-0.14

Client: Government of Yukon
Project: Former Clinton Creek Asbestos Mine - Tailings Movement Monitoring

UMA Job No.:	6029-005-00	6029-006-00	6029-008-00	6029-009-00	2940-044-0(	60160515
Date:	31-Aug-03	31-Jul-04	Nov-06	Jul-07	9-Jul-08	25-Sep-10

Table D1) Tailings Stability - Upper Slopes (Elevation > 530 m)

Average	Aug 03 to Jul 04	0.04	0.04		-0.06	-0.06
	Jul 04 to Sep 04	0.02	0.15		-0.01	-0.04
	Sep 04 to Sep 05	0.06	0.07		-0.09	-0.09
	Sep 05 to Jul 06	0.05	0.06		0.07	0.08
	Jul 06 to Jul 08	0.06	0.03		-0.04	-0.02
	Jul 08 to Jul 10	**0.06**	**0.03**		**-0.03**	**-0.01**
	Jul 10 to Sept 10	**0.03**	**0.15**		**-0.03**	**-0.14**
Maximum	Aug 03 to Jul 04	0.09	0.10		-0.01	-0.01
	Jul 04 to Sep 04	0.03	0.22		0.01	0.08
	Sep 04 to Sep 05	0.12	0.12		-0.04	-0.04
	Sep 05 to Jul 06	0.16	0.18		0.10	0.11
	Jul 06 to Jul 08	0.09	0.05		0.02	0.01
	Jul 08 to Jul 10	**0.21**	**0.10**		**0.02**	**0.01**
	Jul 10 to Sept 10	**0.04**	**0.19**		**-0.01**	**-0.04**
Minimum	Aug 03 to Jul 04	0.01	0.01		-0.13	-0.14
	Jul 04 to Sep 04	0.01	0.09		-0.03	-0.16
	Sep 04 to Sep 05	0.03	0.03		-0.14	-0.14
	Sep 05 to Jul 06	0.02	0.03		0.04	0.05
	Jul 06 to Jul 08	0.04	0.02		-0.10	-0.05
	Jul 08 to Jul 10	**0.02**	**0.01**		**-0.08**	**-0.04**
	Jul 10 to Sept 10	**0.01**	**0.08**		**-0.04**	**-0.20**

Client: Government of Yukon
Project: Former Clinton Creek Asbestos Mine - Tailings Movement Monitoring
UMA Job No.: 6029-005-00 6029-006-00 6029-008-00 6029-009-00 2940-044-0(60160515
Date: 31-Aug-03 31-Jul-04 Nov-06 Jul-07 9-Jul-08 25-Sep-10

Table D1) Tailings Stability - Upper Slopes (Elevation > 530 m)

South Lobe

Monitor	Date	UTM Coordinates			Time		Horizontal Movement			Vertical Movement		
		Northing (metres)	**Easting** (metres)	**Elevation** (metres)	total (days)	incremental (days)	total (metres)	increment (metres)	rate (metres/year)	total (metres)	incremental (metres)	rate (metres/year)
1492	21-Aug-03	7,148,053.74	513,409.91	610.07	1,496	1,496	0.00	0.30	0.07	-0.42	-0.42	-0.10
	28-Jul-04	7,148,053.72	513,409.97	609.98	1,838	342	0.06	0.06	0.07	-0.50	-0.09	-0.09
	23-Sep-04	7,148,053.73	513,409.95	609.98	1,895	57	0.04	0.02	0.14	-0.50	0.00	-0.01
	17-Sep-05	7,148,053.69	513,410.03	609.80	2,254	359	0.12	0.08	0.09	-0.69	-0.18	-0.19
	28-Jul-06	7,148,053.68	513,410.04	609.79	2,568	314	0.14	0.02	0.02	-0.70	-0.01	-0.01
	9-Jul-08	7,148,053.66	513,410.14	609.70	3,280	712	0.24	0.10	0.05	-0.79	-0.09	-0.05
	20-Jul-10	7,148,053.64	513,410.20	609.61	4,021	741	0.31	0.07	0.03	-0.87	-0.08	-0.04
	25-Sep-10	7,148,053.62	513,410.21	609.59	4,088	67	0.32	0.02	0.10	-0.90	-0.02	-0.14
24	21-Aug-03	7,148,033.83	513,525.34	549.69	9,275	7,007	0.00	9.06	0.47	-5.54	-5.54	-0.29
	28-Jul-04	7,148,033.87	513,525.57	549.55	9,617	342	0.22	0.23	0.24	-5.68	-0.14	-0.15
	23-Sep-04	7,148,033.90	513,525.56	549.55	9,674	57	0.21	0.03	0.19	-5.67	0.01	0.04
	17-Sep-05	7,148,033.91	513,525.74	549.37	10,033	359	0.39	0.18	0.18	-5.86	-0.19	-0.19
	28-Jul-06	7,148,033.92	513,525.89	549.37	10,347	313	0.54	0.15	0.18	-5.86	0.00	0.00
	9-Jul-08	7,148,033.94	513,526.07	549.28	11,059	712	0.71	0.17	0.09	-5.95	-0.09	-0.05
	20-Jul-10	7,148,033.97	513,526.17	549.24	11,800	741	0.82	0.11	0.06	-5.99	-0.04	-0.02
	25-Sep-10	7,148,033.95	513,526.17	549.22	11,867	67	0.82	0.02	0.12	-6.01	-0.02	-0.10

Average	Aug 03 to Jul 04	0.14	0.15		-0.11	-0.12
	Jul 04 to Sep 04	0.03	0.17		0.00	0.01
	Sep 04 to Sep 05	0.13	0.13		-0.19	-0.19
	Sep 05 to Jul 06	0.09	0.10		0.00	0.00
	Jul 06 to Jul 08	0.14	0.07		-0.09	-0.05
	Jul 08 to Jul 10	**0.09**	**0.04**		**-0.06**	**-0.03**
	Jul 10 to Sept 10	**0.02**	**0.11**		**-0.02**	**-0.12**
Maximum	Aug 03 to Jul 04	0.23	0.24		-0.09	-0.09
	Jul 04 to Sep 04	0.03	0.19		0.01	0.04
	Sep 04 to Sep 05	0.18	0.18		-0.18	-0.19
	Sep 05 to Jul 06	0.15	0.18		0.00	0.00
	Jul 06 to Jul 08	0.17	0.09		-0.09	-0.05
	Jul 08 to Jul 10	**0.11**	**0.06**		**-0.04**	**-0.02**
	Jul 10 to Sept 10	**0.02**	**0.12**		**-0.02**	**-0.10**
Minimum	Aug 03 to Jul 04	0.06	0.07		-0.14	-0.15
	Jul 04 to Sep 04	0.02	0.14		0.00	-0.01
	Sep 04 to Sep 05	0.08	0.09		-0.19	-0.19
	Sep 05 to Jul 06	0.02	0.02		-0.01	-0.01
	Jul 06 to Jul 08	0.10	0.05		-0.09	-0.05
	Jul 08 to Jul 10	**0.07**	**0.03**		**-0.08**	**-0.04**
	Jul 10 to Sept 10	**0.02**	**0.10**		**-0.02**	**-0.14**

Client: Government of Yukon
Project: Former Clinton Creek Asbestos Mine - Tailings Movement Monitoring

UMA Job No.:	6029-005-00	6029-006-00	6029-008-00	6029-009-00	2940-044-0(60160515
Date:	31-Aug-03	31-Jul-04	Nov-06	Jul-07	9-Jul-08 25-Sep-10

Table D2) Tailings Stability - Mid Slopes (Elevation 425 to 530 m)

North Lobe

Monitor	Date	UTM Coordinates			Time		Horizontal Movement			Vertical Movement		
		Northing (metres)	Easting (metres)	Elevation (metres)	total (days)	incremental (days)	total (metres)	increment (metres)	rate (metres/year)	total (metres)	incremental (metres)	rate (metres/year)
80-4	21-Aug-03	7,148,201.56	513,688.82	501.73	7,294	7,007	0.00	14.32	0.75	-5.41	-5.41	-0.28
	28-Jul-04	7,148,201.69	513,689.40	501.49	7,636	342	0.59	0.59	0.63	-5.65	-0.24	-0.26
	23-Sep-04	7,148,201.73	513,689.47	501.42	7,693	57	0.67	0.09	0.56	-5.73	-0.07	-0.47
	17-Sep-05	7,148,201.81	513,689.99	501.18	8,052	359	1.19	0.52	0.53	-5.96	-0.24	-0.24
	28-Jul-06	7,148,201.90	513,690.35	501.14	8,366	314	1.56	0.37	0.43	-6.00	-0.04	-0.05
	9-Jul-08	7,148,202.02	513,690.93	500.95	9,078	712	2.16	0.60	0.31	-6.19	-0.19	-0.10
	20-Jul-10	7,148,202.11	513,691.36	500.78	9,819	741	2.59	0.43	0.21	-6.36	-0.17	-0.08
	25-Sep-10	7,148,202.14	513,691.44	500.75	9,886	67	2.68	0.09	0.48	-6.40	-0.04	-0.21
80-5	21-Aug-03	7,148,249.32	513,718.34	481.19	7,294	7,007	0.00	17.49	0.91	-8.31	-8.31	-0.43
	28-Jul-04	7,148,249.41	513,718.73	481.10	7,636	342	0.40	0.40	0.43	-8.40	-0.09	-0.10
	23-Sep-04	7,148,249.42	513,718.77	481.07	7,693	57	0.44	0.04	0.28	-8.43	-0.02	-0.16
	17-Sep-05	7,148,249.49	513,719.16	480.92	8,052	359	0.83	0.39	0.40	-8.59	-0.16	-0.16
	28-Jul-06	7,148,249.55	513,719.41	480.96	8,366	314	1.09	0.26	0.30	-8.54	0.04	0.05
	9-Jul-08	7,148,249.63	513,719.85	480.86	9,078	712	1.54	0.45	0.23	-8.64	-0.10	-0.05
	20-Jul-10	7,148,249.68	513,720.15	480.77	9,819	741	1.84	0.31	0.15	-8.73	-0.08	-0.04
	25-Sep-10	7,148,249.67	513,720.21	480.72	9,886	67	1.90	0.06	0.33	-8.78	-0.05	-0.29
1085	21-Aug-03	7,148,346.05	513,666.41	488.88	0	0	0			0		
	28-Jul-04	7,148,346.06	513,666.43	488.84	342	342	0.02	0.02	0.02	-0.04	-0.04	-0.04
	23-Sep-04	7,148,346.06	513,666.41	488.82	399	57	0.01	0.02	0.14	-0.06	-0.01	-0.09
	17-Sep-05	7,148,346.06	513,666.46	488.72	758	359	0.05	0.05	0.05	-0.16	-0.10	-0.10
	28-Jul-06	7,148,346.08	513,666.47	488.82	1,072	314	0.06	0.02	0.02	-0.06	0.09	0.11
	9-Jul-08	7,148,346.05	513,666.51	488.82	1,784	712	0.10	0.05	0.03	-0.06	0.00	0.00
	20-Jul-10	7,148,346.05	513,666.52	488.78	2,525	741	0.10	0.01	0.00	-0.10	-0.04	-0.02
	25-Sep-10	7,148,346.05	513,666.54	488.75	2,592	67	0.13	0.02	0.13	-0.13	-0.03	-0.15
500-1	21-Aug-03	7,148,343.22	513,725.53	474.09	9,088	7,007	0.00	44.05	2.29	-46.56	-15.13	-0.79
	28-Jul-04	7,148,343.24	513,725.54	474.02	9,430	342	0.01	0.02	0.02	-46.63	-0.07	-0.07
	23-Sep-04	7,148,343.24	513,725.53	474.01	9,487	57	0.00	0.01	0.09	-46.64	-0.01	-0.06
	17-Sep-05	7,148,343.24	513,725.55	473.95	9,846	359	0.02	0.02	0.02	-46.70	-0.06	-0.06
	28-Jul-06	7,148,343.24	513,725.56	474.10	10,160	314	0.03	0.02	0.02	-46.56	0.14	0.16
	9-Jul-08	7,148,343.25	513,725.57	474.08	10,872	712	0.04	0.01	0.01	-46.57	-0.01	-0.01
	20-Jul-10	7,148,343.23	513,725.56	474.10	11613.0	741	0.04	0.02	0.01	-46.56	0.01	0.01
	25-Sep-10	7,148,343.22	513,725.59	474.05	11680.0	67	0.06	0.03	0.14	-46.60	-0.04	-0.23
650-1	21-Aug-03	7,148,408.73	513,701.26	483.95	9,088	7,007	0.00	25.21	1.31	-31.32	-11.57	-0.60
	28-Jul-04	7,148,408.75	513,701.33	483.92	9,430	342	0.07	0.06	0.07	-31.35	-0.03	-0.03
	23-Sep-04	7,148,408.75	513,701.31	483.91	9,487	57	0.05	0.02	0.13	-31.36	-0.01	-0.07
	17-Sep-05	7,148,408.75	513,701.34	483.87	9,846	359	0.09	0.04	0.04	-31.39	-0.03	-0.03
	28-Jul-06	7,148,408.77	513,701.35	483.89	10,160	314	0.09	0.02	0.03	-31.37	0.02	0.02
	9-Jul-08	7,148,408.75	513,701.39	483.87	10,872	712	0.13	0.05	0.02	-31.63	-0.02	-0.01
	20-Jul-10	7,148,408.75	513,701.40	483.84	11613.0	741	83.47	0.02	0.01	-31.66	-0.04	-0.02
	25-Sep-10	7,148,408.75	513,701.44	483.80	11680.0	67	83.51	0.04	0.21	-31.70	-0.03	-0.19
350-1A	21-Aug-03	7,148,298.59	513,822.46	448.09	9,078	7,007	0.00	72.05	3.75	-52.52	-25.55	-1.33
	28-Jul-04	7,148,298.61	513,822.64	448.01	9,420	342	0.19	0.19	0.20	-52.61	-0.08	-0.09
	23-Sep-04	7,148,298.61	513,822.64	448.00	9,477	57	0.19	0.00	0.03	-52.61	0.00	-0.03
	17-Sep-05	7,148,298.64	513,822.81	447.93	9,836	359	0.35	0.17	0.17	-52.69	-0.07	-0.08
	28-Jul-06	7,148,298.65	513,822.90	447.93	10,150	314	0.44	0.10	0.11	-52.68	0.00	0.00
	9-Jul-08	7,148,298.68	513,823.08	447.87	10,862	712	0.62	0.17	0.09	-52.74	-0.06	-0.03
	20-Jul-10	7,148,298.70	513,823.18	447.83	11,603	741	0.72	0.11	0.05	-52.79	-0.05	-0.02
	25-Sep-10	7,148,298.69	513,823.22	447.79	11,670	67	0.76	0.05	0.26	-52.82	-0.03	-0.19
500-2	21-Aug-03	7,148,344.36	513,842.07	438.14	9,078	7,007	0.00	66.97	3.49	-61.43	-26.78	-1.40
	28-Jul-04	7,148,344.36	513,842.27	438.06	9,420	342	0.20	0.20	0.21	-61.51	-0.08	-0.08
	23-Sep-04	7,148,344.37	513,842.26	438.05	9,477	57	0.19	0.02	0.10	-61.52	-0.01	-0.08
	17-Sep-05	7,148,344.37	513,842.43	438.00	9,836	359	0.37	0.17	0.18	-61.57	-0.05	-0.05
	28-Jul-06	7,148,344.39	513,842.53	438.02	10,150	314	0.46	0.10	0.11	-61.55	0.03	0.03
	9-Jul-08	7,148,344.41	513,842.70	437.96	10,862	712	0.64	0.18	0.09	-61.61	-0.07	-0.03
	20-Jul-10	7,148,344.40	513,842.82	437.91	11603.0	741	0.75	0.12	0.06	-61.66	-0.05	-0.02
	25-Sep-10	7,148,344.40	513,842.86	437.87	11670.0	67	0.79	0.04	0.22	-61.70	-0.04	-0.21
650-2	21-Aug-03	7,148,400.26	513,815.95	439.87	9,078	7,007	0.00	38.47	2.00	-44.69	-11.93	-0.62
	28-Jul-04	7,148,400.25	513,816.10	439.75	9,420	342	0.14	0.15	0.16	-44.81	-0.12	-0.12
	23-Sep-04	7,148,400.25	513,816.08	439.72	9,477	57	0.12	0.02	0.12	-44.84	-0.04	-0.24
	17-Sep-05	7,148,400.24	513,816.21	439.67	9,836	359	0.25	0.13	0.13	-44.89	-0.04	-0.05
	28-Jul-06	7,148,400.25	513,816.27	439.70	10,150	314	0.31	0.06	0.07	-44.86	0.02	0.03
	9-Jul-08	7,148,400.20	513,816.38	439.64	10,862	712	0.42	0.12	0.06	-46.07	-0.06	-0.03
	20-Jul-10	7,148,400.19	513,816.43	439.58	11603.0	741	0.47	0.06	0.03	-46.14	-0.07	-0.03
	25-Sep-10	7,148,400.17	513,816.46	439.53	11670.0	67	0.50	0.04	0.20	-46.18	-0.04	-0.23
350-2A	21-Aug-03	7,148,300.52	513,873.67	428.71	9,070	7,007	0.00	73.00	3.80	-61.41	-29.09	-1.52
	28-Jul-04	7,148,300.53	513,873.83	428.58	9,412	342	0.16	0.16	0.17	-61.54	-0.13	-0.14
	23-Sep-04	7,148,300.54	513,873.85	428.58	9,469	57	0.18	0.01	0.09	-61.55	-0.01	-0.04
	17-Sep-05	7,148,300.52	513,873.98	428.51	9,828	359	0.31	0.14	0.14	-61.61	-0.06	-0.07
	28-Jul-06	7,148,300.52	513,874.08	428.52	10,142	314	0.41	0.10	0.12	-61.60	0.01	0.01
	9-Jul-08	7,148,300.50	513,874.23	428.47	10,854	712	0.56	0.15	0.08	-61.66	-0.06	-0.03
	20-Jul-10	7,148,300.49	513,874.35	428.42	11,595	741	0.68	0.12	0.06	-61.70	-0.04	-0.02
	25-Sep-10	7,148,300.48	513,874.39	428.38	11,662	67	0.72	0.04	0.23	-61.74	-0.04	-0.23
1491	21-Aug-03	7,148,376.83	513,868.79	432.49	0	0	0			0		
	28-Jul-04	7,148,376.82	513,869.00	432.34	342	342	0.21	0.21	0.22	-0.15	-0.15	-0.16
	23-Sep-04	7,148,376.82	513,868.99	432.32	399	57	0.20	0.01	0.05	-0.17	-0.02	-0.13
	17-Sep-05	7,148,376.85	513,869.15	432.27	758	359	0.36	0.17	0.17	-0.22	-0.05	-0.05
	28-Jul-06	7,148,376.90	513,869.24	432.34	1,072	314	0.45	0.09	0.11	-0.15	0.07	0.08
	9-Jul-08	7,148,376.96	513,869.39	432.28	1,784	712	0.62	0.17	0.09	-0.21	-0.06	-0.03
	20-Jul-10	7,148,376.92	513,869.51	432.21	2,525	741	0.72	0.12	0.06	-0.29	-0.07	-0.04
	25-Sep-10	7,148,376.94	513,869.71	432.10	2,592	67	0.92	0.20	1.10	-0.39	-0.10	-0.57

Client: Government of Yukon
Project: Former Clinton Creek Asbestos Mine - Tailings Movement Monitoring

UMA Job No.:	6029-005-00	6029-006-00	6029-008-00	6029-009-00	2940-044-0(	60160515
Date:	31-Aug-03	31-Jul-04	Nov-06	Jul-07	9-Jul-08	25-Sep-10

Table D2) Tailings Stability - Mid Slopes (Elevation 425 to 530 m)

Average	Aug 03 to Jul 04	0.20	0.21		-0.10	-0.11
	Jul 04 to Sep 04	0.02	0.16		-0.02	-0.14
	Sep 04 to Sep 05	0.18	0.18		-0.09	-0.09
	Sep 05 to Jul 06	0.11	0.13		0.04	0.04
	Jul 06 to Jul 08	0.19	0.10		-0.06	-0.03
	Jul 08 to Jul 10	**0.13**	**0.06**		**-0.06**	**-0.03**
	Jul 10 to Sept 10	**0.06**	**0.33**		**-0.05**	**-0.25**
Maximum	Aug 03 to Jul 04	0.59	0.63		-0.03	-0.03
	Jul 04 to Sep 04	0.09	0.56		0.00	-0.03
	Sep 04 to Sep 05	0.52	0.53		-0.03	-0.03
	Sep 05 to Jul 06	0.37	0.43		0.14	0.16
	Jul 06 to Jul 08	0.60	0.31		0.00	0.00
	Jul 08 to Jul 10	**0.43**	**0.21**		**0.01**	**0.01**
	Jul 10 to Sept 10	**0.20**	**1.10**		**-0.03**	**-0.15**
Minimum	Aug 03 to Jul 04	0.02	0.02		-0.24	-0.26
	Jul 04 to Sep 04	0.00	0.03		-0.07	-0.47
	Sep 04 to Sep 05	0.02	0.02		-0.24	-0.24
	Sep 05 to Jul 06	0.02	0.02		-0.04	-0.05
	Jul 06 to Jul 08	0.01	0.01		-0.19	-0.10
	Jul 08 to Jul 10	**0.01**	**0.00**		**-0.17**	**-0.08**
	Jul 10 to Sept 10	**0.02**	**0.13**		**-0.10**	**-0.57**

Client: Government of Yukon
Project: Former Clinton Creek Asbestos Mine - Tailings Movement Monitoring
UMA Job No.: 6029-005-00 6029-006-00 6029-008-00 6029-009-00 2940-044-0(60160515
Date: 31-Aug-03 31-Jul-04 Nov-06 Jul-07 9-Jul-08 25-Sep-10

Table D2) Tailings Stability - Mid Slopes (Elevation 425 to 530 m)

South Lobe

Monitor	Date	UTM Coordinates			Time		Horizontal Movement			Vertical Movement		
		Northing (metres)	Easting (metres)	Elevation (metres)	total (days)	incremental (days)	total (metres)	increment (metres)	rate (metres/year)	total (metres)	incremental (metres)	rate (metres/year)
1084	21-Aug-03	7,148,017.97	513,617.95	516.26	0	0	0			0		
	28-Jul-04	7,148,017.98	513,618.35	516.10	342	342	0.40	0.40	0.43	-0.16	-0.16	-0.17
	23-Sep-04	7,148,017.99	513,618.38	516.10	399	57	0.43	0.03	0.18	-0.16	-0.01	-0.06
	17-Sep-05	7,148,018.02	513,618.72	516.02	758	359	0.77	0.34	0.35	-0.24	-0.08	-0.08
	28-Jul-06	7,148,018.00	513,618.94	515.98	1,072	314	0.99	0.22	0.26	-0.28	-0.04	-0.04
	9-Jul-08	7,148,018.01	513,619.24	515.89	1,784	712	1.29	0.30	0.15	-0.37	-0.10	-0.05
	20-Jul-10	7,148,018.02	513,619.42	515.83	2,525	741	1.47	0.18	0.09	-0.43	-0.05	-0.03
	25-Sep-10	7,148,018.01	513,619.44	515.80	2,592	67	1.49	0.03	0.14	-0.46	-0.03	-0.17
1485	21-Aug-03	7,148,017.91	513,702.37	480.46	0	0	0.00			0.00		
	28-Jul-04	7,148,018.00	513,703.32	480.19	342	342	0.95	0.95	1.02	-0.27	-0.27	-0.29
	23-Sep-04	7,148,018.02	513,703.46	480.10	399	57	1.09	0.14	0.89	-0.36	-0.09	-0.56
	17-Sep-05	7,148,018.12	513,704.37	479.82	758	359	2.00	0.91	0.93	-0.64	-0.29	-0.29
	28-Jul-06	7,148,018.16	513,705.01	479.62	1,072	314	2.65	0.65	0.75	-0.84	-0.19	-0.22
	9-Jul-08	7,148,018.25	513,706.15	479.22	1,784	712	3.79	1.14	0.58	-1.24	-0.40	-0.20
	20-Jul-10	7,148,018.30	513,707.09	478.84	2,525	741	4.74	0.95	0.47	-1.62	-0.39	-0.19
	25-Sep-10	7,148,018.30	513,707.21	478.78	2,592	67	4.85	0.12	0.63	-1.68	-0.06	-0.33
BH-16 (T8)	21-Aug-03	7,148,048.49	513,760.30	464.94	0	0	0			0		
	28-Jul-04	7,148,048.61	513,761.19	464.65	342	342	0.90	0.90	0.96	-0.29	-0.29	-0.31
	23-Sep-04	7,148,048.63	513,761.31	464.59	399	57	1.02	0.12	0.77	-0.35	-0.05	-0.35
	17-Sep-05	7,148,048.72	513,762.13	464.34	758	359	1.84	0.82	0.84	-0.60	-0.25	-0.26
	28-Jul-06	7,148,048.79	513,762.77	464.20	1,072	314	2.49	0.64	0.75	-0.75	-0.14	-0.17
	9-Jul-08	7,148,048.93	513,763.85	463.84	1,784	712	3.58	1.10	0.56	-1.10	-0.36	-0.18
	20-Jul-10	7,148,049.03	513,764.78	463.53	2,525	741	4.52	0.94	0.46	-1.41	-0.31	-0.15
	25-Sep-10	7,148,049.03	513,764.89	463.49	2,592	67	4.63	0.11	0.58	-1.45	-0.04	-0.25
24A	21-Aug-03	7,148,035.28	513,774.68	465.27	9,275	7,007	0.00	61.43	3.20	-21.10	-21.10	-1.10
	28-Jul-04	7,148,035.42	513,775.58	464.94	9,617	342	0.91	0.91	0.97	-21.43	-0.33	-0.35
	23-Sep-04	7,148,035.44	513,775.70	464.89	9,674	57	1.04	0.13	0.82	-21.49	-0.05	-0.34
	17-Sep-05	7,148,035.58	513,776.55	464.66	10,033	359	1.90	0.86	0.87	-21.71	-0.23	-0.23
	28-Jul-06	7,148,035.66	513,777.19	464.47	10,347	673	2.54	0.64	0.75	-21.90	-0.42	-0.23
	9-Jul-08	7,148,035.85	513,778.31	464.12	11,059	712	3.68	1.13	0.58	-22.25	-0.54	-0.28
	20-Jul-10	7,148,035.99	513,779.27	463.82	11,800	741	4.65	0.97	0.48	-22.55	-0.65	-0.32
	25-Sep-10	7,148,035.99	513,779.39	463.76	11,867	67	4.77	0.12	0.66	-22.61	-0.36	-1.96
24B	21-Aug-03	7,148,045.09	513,832.26	446.30	9,275	7,007	0.00	61.12	3.18	-20.06	-20.06	-1.04
	28-Jul-04	7,148,045.31	513,833.13	446.00	9,617	342	0.90	0.90	0.96	-20.36	-0.30	-0.32
	23-Sep-04	7,148,045.33	513,833.26	445.89	9,674	57	1.03	0.13	0.85	-20.47	-0.11	-0.69
	17-Sep-05	7,148,045.55	513,834.05	445.62	10,033	359	1.84	0.82	0.83	-20.74	-0.27	-0.27
	28-Jul-06	7,148,045.69	513,834.66	445.46	10,347	314	2.47	0.62	0.73	-20.90	-0.16	-0.19
	9-Jul-08	7,148,045.97	513,835.72	445.06	11,059	712	3.56	1.09	0.56	-21.30	-0.39	-0.20
	20-Jul-10	7,148,046.19	513,836.62	444.73	11,800	741	4.49	0.93	0.46	-21.63	-0.33	-0.16
	25-Sep-10	7,148,046.23	513,836.74	444.67	11,867	67	4.61	0.12	0.65	-21.69	-0.06	-0.35
NL-Base	17-Sep-05	7,148,154.79	513,836.26	431.47	0	0	0.00			0.00		
	28-Jul-06	7,148,154.78	513,836.23	431.38	314	314	0.03	0.03	0.04	-0.09	-0.09	-0.10
	9-Jul-08	7,148,154.80	513,836.28	431.40	1,026	712	0.02	0.05	0.03	-0.07	0.02	0.01
	20-Jul-10	7,148,154.82	513,836.31	431.41	1,767	741	0.06	0.04	0.02	-0.06	0.01	0.00
	25-Sep-10	7,148,154.81	513,836.32	431.38	1,834	67	0.07	0.02	0.11	-0.09	-0.03	-0.16
2005-06	17-Sep-05	7,147,999.72	513,865.78	433.29	0	0	0.00			0.00		
	28-Jul-06	7,147,999.74	513,866.22	433.22	314	314	0.44	0.44	0.51	-0.07	-0.07	-0.08
	9-Jul-08	7,147,999.88	513,867.02	432.94	1,026	712	1.25	0.81	0.41	-0.35	-0.28	-0.14
	20-Jul-10	7,147,999.95	513,867.68	432.73	1,767	741	1.91	0.66	0.33	-0.56	-0.21	-0.10
	25-Sep-10	7,147,999.94	513,867.77	432.66	1,834	67	2.00	0.10	0.54	-0.63	-0.07	-0.38
2005-01	17-Sep-05	7,148,100.15	513,757.89	463.73	0	0	0.00			0.00		
	28-Jul-06	7,148,100.13	513,758.45	463.64	314	314	0.56	0.56	0.65	-0.09	-0.09	-0.10
	9-Jul-08	7,148,100.09	513,759.38	463.46	1,026	712	1.49	0.93	0.48	-0.27	-0.18	-0.09
	20-Jul-10	7148100.073	513760.156	463.304	1,767	741	2.26	0.78	0.38	-0.42	-0.15	-0.07
	25-Sep-10	7148100.044	513760.26	463.283	1,834	67	2.37	0.11	0.59	-0.44	-0.02	-0.11
2005-02	17-Sep-05	7,148,118.21	513,816.95	447.89	0	0	0.00			0.00		
	28-Jul-06	7,148,118.32	513,817.41	447.77	314	314	0.48	0.48	0.56	-0.12	-0.12	-0.14
	9-Jul-08	7,148,118.56	513,818.22	447.45	1,026	712	1.31	0.84	0.43	-0.44	-0.32	-0.17
	20-Jul-10	7,148,118.75	513,818.89	447.17	1,767	741	2.01	0.70	0.35	-0.72	-0.28	-0.14
	25-Sep-10	7,148,118.77	513,818.98	447.11	1,834	67	2.11	0.10	0.52	-0.78	-0.05	-0.29
2005-03	17-Sep-05	7,148,108.16	513,870.12	428.18	0	0	0.00			0.00		
	28-Jul-06	7,148,108.35	513,870.58	428.04	314	314	0.50	0.50	0.58	-0.14	-0.14	-0.16
	9-Jul-08	7,148,108.74	513,871.41	427.72	1,026	712	1.41	0.91	0.47	-0.46	-0.32	-0.16
	20-Jul-10	7,148,109.06	513,872.11	427.45	1,767	741	2.18	0.77	0.38	-0.73	-0.27	-0.13
	25-Sep-10	7,148,109.08	513,872.21	427.40	1,834	67	2.29	0.11	0.58	-0.78	-0.05	-0.27
2005-04	17-Sep-05	7,148,047.07	513,876.04	428.36	0	0	0.00			0.00		
	28-Jul-06	7,148,047.27	513,876.56	428.26	314	314	0.55	0.55	0.64	-0.10	-0.10	-0.12
	9-Jul-08	7,148,047.65	513,877.50	428.02	1,026	712	1.57	1.02	0.52	-0.34	-0.24	-0.13
	20-Jul-10	7,148,047.97	513,878.33	427.81	1,767	741	2.46	0.89	0.44	-0.55	-0.21	-0.10
	25-Sep-10	7,148,048.02	513,878.45	427.73	1,834	67	2.59	0.12	0.68	-0.63	-0.08	-0.45
2005-05	17-Sep-05	7,148,000.57	513,781.55	464.67	0	0	0.00			0.00		
	28-Jul-06	7,148,000.65	513,782.24	464.51	314	314	0.70	0.70	0.81	-0.16	-0.16	-0.19
	9-Jul-08	7,148,000.83	513,783.44	464.19	1,026	712	1.91	1.22	0.62	-0.48	-0.32	-0.16
	20-Jul-10	7,148,000.98	513,784.48	463.91	1,767	741	2.96	1.05	0.52	-0.76	-0.29	-0.14
	25-Sep-10	7,148,000.97	513,784.61	463.86	1,834	67	3.09	0.13	0.71	-0.81	-0.05	-0.28

Client: Government of Yukon
Project: Former Clinton Creek Asbestos Mine - Tailings Movement Monitoring

UMA Job No.:	6029-005-00	6029-006-00	6029-008-00	6029-009-00	2940-044-0(	60160515
Date:	31-Aug-03	31-Jul-04	Nov-06	Jul-07	9-Jul-08	25-Sep-10

Table D2) Tailings Stability - Mid Slopes (Elevation 425 to 530 m)

Average	Aug 03 to Jul 04	0.81	0.87		-0.27	-0.29
	Jul 04 to Sep 04	0.11	0.70		-0.06	-0.40
	Sep 04 to Sep 05	0.75	0.76		-0.22	-0.23
	Sep 05 to Jul 06	0.50	0.59		-0.14	-0.14
	Jul 06 to Jul 08	0.88	0.45		-0.29	-0.15
	Jul 08 to Jul 10	**0.74**	**0.36**		**-0.26**	**-0.13**
	Jul 10 to Sept 10	**0.10**	**0.53**		**-0.08**	**-0.42**
Maximum	Aug 03 to Jul 04	0.95	1.02		-0.16	-0.17
	Jul 04 to Sep 04	0.14	0.89		-0.01	-0.06
	Sep 04 to Sep 05	0.91	0.93		-0.08	-0.08
	Sep 05 to Jul 06	0.70	0.81		-0.04	-0.04
	Jul 06 to Jul 08	1.22	0.62		0.02	0.01
	Jul 08 to Jul 10	**1.05**	**0.52**		**0.01**	**0.00**
	Jul 10 to Sept 10	**0.13**	**0.71**		**-0.02**	**-0.11**
Minimum	Aug 03 to Jul 04	0.40	0.43		-0.33	-0.35
	Jul 04 to Sep 04	0.03	0.18		-0.11	-0.69
	Sep 04 to Sep 05	0.34	0.35		-0.29	-0.29
	Sep 05 to Jul 06	0.03	0.04		-0.42	-0.23
	Jul 06 to Jul 08	0.05	0.03		-0.54	-0.28
	Jul 08 to Jul 10	**0.04**	**0.02**		**-0.65**	**-0.32**
	Jul 10 to Sept 10	**0.02**	**0.11**		**-0.36**	**-1.96**

Client: Government of Yukon
Project: Former Clinton Creek Asbestos Mine - Tailings Movement Monitoring

UMA Job No.:	6029-005-00	6029-006-00	6029-008-00	6029-009-00	2940-044-00	60160515
Date:	31-Aug-03	31-Jul-04	Nov-06	Jul-07	9-Jul-08	25-Sep-10

Table D3) Tailings Stability - Lower Slopes (Elevation <425 m)

North Lobe

Monitor	Date	UTM Coordinates			Time		Horizontal Movement			Vertical Movement		
		Northing (metres)	Easting (metres)	Elevation (metres)	total (days)	incremental (days)	total (metres)	increment (metres)	rate (metres/year)	total (metres)	incremental (metres)	rate (metres/year)
80-7	21-Aug-03	7,148,344.01	513,890.73	422.54	7,294	7,007	0.00	64.92	3.38	-23.45	-23.45	-1.22
	28-Jul-04	7,148,344.00	513,890.89	422.43	7,636	342	0.16	0.16	0.17	-23.56	-0.11	-0.12
	23-Sep-04	7,148,344.01	513,890.89	422.40	7,693	57	0.16	0.01	0.04	-23.59	-0.03	-0.21
	17-Sep-05	7,148,344.00	513,891.07	422.38	8,052	359	0.34	0.17	0.18	-23.61	-0.02	-0.02
	28-Jul-06	7,148,343.99	513,891.16	422.37	8,366	314	0.43	0.09	0.11	-23.62	-0.01	-0.01
	9-Jul-08	7,148,344.00	513,891.36	422.35	9,078	712	0.63	0.20	0.10	-23.65	-0.03	-0.01
	20-Jul-10	7,148,343.96	513,891.47	422.29	9,819	741	0.74	0.12	0.06	-23.70	-0.06	-0.03
	25-Sep-10	7,148,343.95	513,891.51	422.25	9,886	67	0.78	0.04	0.21	-23.74	-0.03	-0.19
350-3A	21-Aug-03	7,148,312.23	513,899.00	417.39	9,064	7,007	0.00	67.44	3.51	-67.47	-27.66	-1.44
	28-Jul-04	7,148,312.20	513,899.14	417.31	9,406	342	0.14	0.14	0.15	-67.55	-0.08	-0.08
	23-Sep-04	7,148,312.20	513,899.14	417.28	9,463	57	0.13	0.01	0.03	-67.59	-0.04	-0.25
	17-Sep-05	7,148,312.19	513,899.26	417.28	9,822	359	0.26	0.12	0.12	-67.58	0.00	0.00
	28-Jul-06	7,148,312.16	513,899.34	417.29	10,136	314	0.34	0.09	0.10	-67.57	0.01	0.01
	9-Jul-08	7,148,312.15	513,899.49	417.25	10,848	712	0.49	0.15	0.08	-67.61	-0.04	-0.02
	20-Jul-10	7,148,312.07	513,899.60	417.19	11589.0	741	0.60	0.14	0.07	-67.67	-0.06	-0.03
	25-Sep-10	7,148,312.07	513,899.64	417.16	11656.0	67	0.64	0.04	0.23	-67.70	-0.04	-0.20
1489	21-Aug-03	7,148,305.23	513,928.45	413.70	0	0	0			0		
	28-Jul-04	7,148,305.19	513,928.51	413.66	342	342	0.08	0.08	0.08	-0.04	-0.04	-0.04
	23-Sep-04	7,148,305.20	513,928.50	413.64	399	57	0.06	0.01	0.09	-0.06	-0.03	-0.16
	17-Sep-05	7,148,305.15	513,928.58	413.62	758	359	0.15	0.09	0.09	-0.08	-0.02	-0.02
	28-Jul-06	7,148,305.12	513,928.62	413.62	1,072	314	0.20	0.04	0.05	-0.08	0.00	0.00
	9-Jul-08	7,148,305.09	513,928.68	413.60	1,784	712	0.27	0.07	0.04	-0.10	-0.02	-0.01
	20-Jul-10	7,148,305.03	513,928.67	413.55	2,525	741	0.30	0.06	0.03	-0.15	-0.05	-0.02
	25-Sep-10	7,148,305.03	513,928.69	413.52	2,592	67	0.32	0.03	0.14	-0.18	-0.03	-0.19
NL-1	28-Jul-04	7,148,365.73	513,942.45	413.19	0	0	0.00			0.00		
	23-Sep-04	7,148,365.73	513,942.45	413.16	57	57	0.01	0.01	0.03	-0.02	-0.02	-0.15
	17-Sep-05	7,148,365.72	513,942.59	413.16	416	359	0.14	0.14	0.14	-0.03	0.00	-0.01
	28-Jul-06	7,148,365.70	513,942.70	413.15	730	314	0.24	0.11	0.13	-0.03	-0.01	-0.01
	9-Jul-08	7,148,365.72	513,942.85	413.10	1,442	712	0.40	0.16	0.08	-0.09	-0.05	-0.03
	20-Jul-10	7,148,365.71	513,942.97	413.05	2,183	741	0.52	0.12	0.06	-0.14	-0.05	-0.03
	25-Sep-10	7,148,365.69	513,943.01	413.00	2,250	67	0.56	0.05	0.27	-0.19	-0.05	-0.29
1083	21-Aug-03	7,148,354.01	513,936.37	414.10	0	0	0			0		
(NL-2)	28-Jul-04	7,148,354.00	513,936.52	414.10	342	342	0.15	0.15	0.16	0.00	0.00	-0.01
	23-Sep-04	7,148,354.01	513,936.52	414.08	33	-309	0.15	0.01	0.09	-0.02	-0.02	0.02
	17-Sep-05	7,148,354.02	513,936.65	414.05	758	359	0.28	0.13	0.14	-0.05	-0.03	-0.03
	28-Jul-06	7,148,354.03	513,936.74	414.06	1,072	314	0.37	0.09	0.11	-0.04	0.01	0.02
	9-Jul-08	7,148,354.05	513,936.89	414.04	1,784	712	0.52	0.15	0.07	-0.06	-0.02	-0.01
	20-Jul-10	7,148,354.05	513,937.00	414.00	2,525	741	0.63	0.11	0.05	-0.10	-0.04	-0.02
	25-Sep-10	7,148,354.04	513,937.03	413.97	2,592	67	0.66	0.03	0.19	-0.13	-0.03	-0.17
NL-3	28-Jul-04	7,148,334.73	513,926.88	417.07	0	0	0.00			0.00		
	23-Sep-04	7,148,334.73	513,926.88	417.05	57	57	0.00	0.00	0.03	-0.02	-0.02	-0.13
	17-Sep-05	7,148,334.75	513,926.99	417.08	416	359	0.10	0.11	0.11	0.01	0.03	0.03
	28-Jul-06	7,148,334.75	513,927.08	417.08	730	314	0.20	0.09	0.11	0.02	0.01	0.01
	9-Jul-08	7,148,334.74	513,927.20	417.08	1,442	712	0.32	0.12	0.06	0.01	0.00	0.00
	20-Jul-10	7,148,334.71	513,927.28	417.04	2,183	741	0.40	0.09	0.04	-0.03	-0.04	-0.02
	25-Sep-10	7,148,334.71	513,927.33	417.00	2,250	67	0.44	0.05	0.25	-0.07	-0.04	-0.23
NL-4	28-Jul-04	7,148,307.20	513,913.00	416.19	0	0	0.00			0.00		
	23-Sep-04	7,148,307.19	513,912.99	416.16	57	57	0.02	0.02	0.13	-0.03	-0.03	-0.20
	17-Sep-05	7,148,307.14	513,913.12	416.11	416	359	0.13	0.14	0.14	-0.08	-0.05	-0.05
	28-Jul-06	7,148,307.12	513,913.19	416.11	730	314	0.21	0.08	0.09	-0.08	0.01	0.01
	9-Jul-08	7,148,307.10	513,913.33	416.07	1,442	712	0.34	0.13	0.07	-0.13	-0.05	-0.02
	20-Jul-10	7,148,307.00	513,913.43	415.98	2,183	741	0.47	0.14	0.07	-0.21	-0.08	-0.04
	25-Sep-10	7,148,307.01	513,913.47	415.94	2,250	67	0.50	0.04	0.21	-0.25	-0.05	-0.25
NL-5	28-Jul-04	7,148,275.21	513,896.96	415.46	0	0	0.00			0.00		
	23-Sep-04	7,148,275.17	513,896.96	415.42	57	57	0.04	0.04	0.26	-0.04	-0.04	-0.26
	17-Sep-05	7,148,275.16	513,897.05	415.39	416	359	0.10	0.08	0.08	-0.07	-0.03	-0.03
	28-Jul-06	7,148,275.14	513,897.10	415.41	730	314	0.16	0.06	0.07	-0.04	0.03	0.03
	9-Jul-08	7,148,275.11	513,897.19	415.40	1,442	712	0.26	0.09	0.05	-0.06	-0.02	-0.01
	20-Jul-10	7,148,275.05	513,897.28	415.33	2,183	741	0.36	0.10	0.05	-0.12	-0.06	-0.03
	25-Sep-10	7,148,275.03	513,897.32	415.27	2,250	67	0.41	0.05	0.25	-0.19	-0.06	-0.34

Client: Government of Yukon
Project: Former Clinton Creek Asbestos Mine - Tailings Movement Monitoring

UMA Job No.:	6029-005-00	6029-006-00	6029-008-00	6029-009-00	2940-044-00	60160515
Date:	31-Aug-03	31-Jul-04	Nov-06	Jul-07	9-Jul-08	25-Sep-10

Table D3) Tailings Stability - Lower Slopes (Elevation <425 m)

Average	Aug 03 to Jul 04	0.11	0.11		-0.05	-0.05
	Jul 04 to Sep 04	0.01	0.09		-0.03	-0.17
	Sep 04 to Sep 05	0.12	0.13		-0.02	-0.02
	Sep 05 to Jul 06	0.08	0.09		0.01	0.01
	Jul 06 to Jul 08	0.14	0.07		-0.03	-0.01
	Jul 08 to Jul 10	**0.11**	**0.05**		**-0.05**	**-0.03**
	Jul 10 to Sept 10	**0.04**	**0.22**		**-0.04**	**-0.23**
Maximum	Aug 03 to Jul 04	0.16	0.17		0.00	-0.01
	Jul 04 to Sep 04	0.04	0.26		-0.02	0.02
	Sep 04 to Sep 05	0.17	0.18		0.03	0.03
	Sep 05 to Jul 06	0.11	0.13		0.03	0.03
	Jul 06 to Jul 08	0.20	0.10		0.00	0.00
	Jul 08 to Jul 10	**0.14**	**0.07**		**-0.04**	**-0.02**
	Jul 10 to Sept 10	**0.05**	**0.27**		**-0.03**	**-0.17**
Minimum	Aug 03 to Jul 04	0.08	0.08		-0.11	-0.12
	Jul 04 to Sep 04	0.00	0.03		-0.04	-0.26
	Sep 04 to Sep 05	0.08	0.08		-0.05	-0.05
	Sep 05 to Jul 06	0.04	0.05		-0.01	-0.01
	Jul 06 to Jul 08	0.07	0.04		-0.05	-0.03
	Jul 08 to Jul 10	**0.06**	**0.03**		**-0.08**	**-0.04**
	Jul 10 to Sept 10	**0.03**	**0.14**		**-0.06**	**-0.34**

Client: Government of Yukon
Project: Former Clinton Creek Asbestos Mine - Tailings Movement Monitoring
UMA Job No.: 6029-005-00 6029-006-00 6029-008-00 6029-009-00 2940-044-00 60160515
Date: 31-Aug-03 31-Jul-04 Nov-06 Jul-07 9-Jul-08 25-Sep-10

Table D3) Tailings Stability - Lower Slopes (Elevation <425 m)

South Lobe

Monitor	Date	UTM Coordinates			Time		Horizontal Movement			Vertical Movement		
		Northing (metres)	Easting (metres)	Elevation (metres)	total (days)	incremental (days)	total (metres)	increment (metres)	rate (metres/year)	total (metres)	incremental (metres)	rate (metres/year)
24D	21-Aug-03	7,148,071.59	513,920.05	422.39	9,103	7,007	0.00	50.43	2.63			
	28-Jul-04	7,148,071.88	513,920.59	422.29	9,445	342	0.61	0.61	0.65	-0.10	-0.10	-0.11
	23-Sep-04	7,148,071.93	513,920.65	422.28	9,502	57	0.68	0.08	0.51	-0.11	-0.01	-0.06
	17-Sep-05	7,148,072.22	513,921.17	422.27	9,861	359	1.26	0.59	0.60	-0.12	-0.01	-0.01
	28-Jul-06	7,148,072.45	513,921.53	422.29	10,175	314	1.68	0.43	0.50	-0.10	0.03	0.03
	9-Jul-08	7,148,072.86	513,922.19	422.25	10,887	712	2.42	0.77	0.40	-0.14	-0.04	-0.02
	20-Jul-10	7,148,073.24	513,922.78	422.22	11,628	741	3.10	0.70	0.34	-0.18	-0.04	-0.02
	25-Sep-10	7,148,073.27	513,922.87	422.18	11,695	67	3.19	0.10	0.52	-0.21	-0.04	-0.21
25B	21-Aug-03	7,148,065.68	513,948.29	422.02	9,096	7,007	0.00	35.04	1.83	1.18	1.18	0.06
	28-Jul-04	7,148,065.72	513,948.61	422.03	9,438	342	0.32	0.32	0.34	1.19	0.01	0.01
	23-Sep-04	7,148,065.75	513,948.63	422.03	9,495	57	0.35	0.04	0.26	1.19	0.00	-0.01
	17-Sep-05	7,148,065.78	513,948.89	422.10	9,854	359	0.60	0.25	0.26	1.26	0.07	0.07
	28-Jul-06	7,148,065.81	513,949.05	422.15	10,168	314	0.77	0.16	0.19	1.31	0.05	0.06
	9-Jul-08	7,148,065.90	513,949.39	422.20	10,880	712	1.12	0.35	0.18	1.36	0.05	0.02
	20-Jul-10	7,148,065.96	513,949.65	422.22	11,621	741	1.39	0.27	0.13	1.38	0.03	0.01
	25-Sep-10	7,148,065.96	513,949.68	422.20	11,688	67	1.42	0.03	0.19	1.36	-0.02	-0.13
80-9	21-Aug-03	7,147,996.44	513,970.69	411.11	7,294	7,007	0.00	12.02	0.63	3.07	3.07	0.16
	28-Jul-04	7,147,996.41	513,970.75	411.09	7,636	342	0.06	0.06	0.07	3.05	-0.02	-0.03
	23-Sep-04	7,147,996.38	513,970.73	411.04	7,693	57	0.05	0.03	0.20	2.99	-0.05	-0.33
	17-Sep-05	7,147,996.37	513,970.77	411.06	8,052	359	0.10	0.05	0.05	3.02	0.03	0.03
	28-Jul-06	7,147,996.36	513,970.80	411.12	8,366	314	0.13	0.03	0.03	3.08	0.06	0.07
	9-Jul-08	7,147,996.33	513,970.82	411.14	9,078	712	0.16	0.03	0.02	3.10	0.02	0.01
	20-Jul-10	7,147,996.32	513,970.82	411.14	9,819	741	0.16	0.01	0.01	3.10	0.00	0.00
	25-Sep-10	7,147,996.31	513,970.82	411.11	9,886	67	0.17	0.01	0.05	3.07	-0.03	-0.16
1484	21-Aug-03	7,148,148.49	513,961.52	417.94	0	0	0			0		
	28-Jul-04	7,148,149.07	513,961.93	417.98	342	342	0.71	0.71	0.76	0.04	0.04	0.04
	23-Sep-04	7,148,149.18	513,961.98	417.95	399	57	0.83	0.12	0.78	0.01	-0.03	-0.19
	17-Sep-05	7,148,149.71	513,962.36	417.93	758	359	1.49	0.65	0.66	-0.01	-0.01	-0.02
	28-Jul-06	7,148,150.10	513,962.63	417.98	1,072	314	1.96	0.47	0.55	0.04	0.05	0.05
	9-Jul-08	7,148,150.81	513,963.12	417.96	1,784	712	2.82	0.86	0.44	0.02	-0.02	-0.01
	20-Jul-10	7,148,151.41	513,963.53	417.88	2,525	741	3.54	0.72	0.36	-0.06	-0.08	-0.04
	25-Sep-10	7,148,151.47	513,963.59	417.85	2,592	67	3.63	0.09	0.49	-0.09	-0.03	-0.15
SL-1	28-Jul-04	7,148,078.88	513,970.45	419.86	0	0	0.00			0.00		
	23-Sep-04	7,148,079.09	513,970.46	419.76	57	57	0.20	0.20	1.30	-0.09	-0.09	-0.60
	17-Sep-05	7,148,078.87	513,970.86	419.83	416	359	0.40	0.45	0.46	-0.03	0.06	0.06
	28-Jul-06	7,148,078.84	513,971.10	419.84	730	314	0.64	0.24	0.28	-0.02	0.01	0.01
	9-Jul-08	7,148,078.82	513,971.55	419.81	1,442	712	1.10	0.46	0.23	-0.04	-0.02	-0.01
	20-Jul-10	7,148,078.78	513,971.97	419.78	2,183	741	1.52	0.42	0.21	-0.08	-0.03	-0.02
	25-Sep-10	7,148,078.74	513,972.05	419.71	2,250	67	1.61	0.09	0.46	-0.15	-0.07	-0.37
SL-2	28-Jul-04	7,148,086.80	513,956.84	422.53	0	0	0.00			0.00		
	23-Sep-04	7,148,087.01	513,956.88	422.46	57	57	0.21	0.21	1.38	-0.07	-0.07	-0.45
	17-Sep-05	7,148,086.98	513,957.37	422.60	416	359	0.56	0.49	0.50	0.08	0.15	0.15
	28-Jul-06	7,148,087.08	513,957.68	422.65	730	314	0.89	0.33	0.38	0.13	0.05	0.06
	9-Jul-08	7,148,087.23	513,958.26	422.76	1,442	712	1.49	0.60	0.31	0.23	0.10	0.05
	20-Jul-10	7,148,087.39	513,958.80	422.85	2,183	741	2.05	0.56	0.28	0.33	0.10	0.05
	25-Sep-10	7,148,087.37	513,958.88	422.75	2,250	67	2.12	0.09	0.49	0.22	-0.10	-0.57
SL-3	28-Jul-04	7,148,100.47	513,933.11	420.80	0	0	0.00			0.00		
	23-Sep-04	7,148,100.54	513,933.16	420.78	57	57	0.09	0.09	0.59	-0.02	-0.02	-0.13
	17-Sep-05	7,148,100.89	513,933.63	420.83	416	359	0.67	0.58	0.59	0.03	0.05	0.05
	28-Jul-06	7,148,101.13	513,933.98	420.86	730	314	1.10	0.43	0.49	0.06	0.03	0.04
	9-Jul-08	7,148,101.63	513,934.59	420.87	1,442	712	1.88	0.79	0.40	0.07	0.01	0.00
	20-Jul-10	7,148,102.06	513,935.14	420.87	2,183	741	2.58	0.70	0.35	0.07	0.00	0.00
	25-Sep-10	7,148,102.11	513,935.22	420.84	2,250	67	2.68	0.09	0.52	0.04	-0.03	-0.15
SL-4	17-Sep-05	7,148,115.67	513,907.57	416.88	0	0	0.00			0.00		
	28-Jul-06	7,148,115.91	513,907.91	416.82	314	314	0.42	0.42	0.49	-0.06	-0.06	-0.07
	9-Jul-08	7,148,116.34	513,908.56	416.70	1,026	712	1.19	0.77	0.40	-0.18	-0.12	-0.06
	20-Jul-10	7,148,116.72	513,909.11	416.58	1,767	741	1.86	0.67	0.33	-0.30	-0.12	-0.06
	25-Sep-10	7,148,116.76	513,909.19	416.54	1,834	67	1.95	0.09	0.47	-0.34	-0.04	-0.20
SL-5	17-Sep-05	7,148,133.63	513,876.08	422.91	0	0	0.00			0.00		
	28-Jul-06	7,148,133.86	513,876.52	422.79	314	314	0.49	0.49	0.57	-0.12	-0.12	-0.14
	9-Jul-08	7,148,134.25	513,877.26	422.53	1,026	712	1.34	0.85	0.43	-0.38	-0.26	-0.13
	20-Jul-10	7,148,134.60	513,877.91	422.30	1,767	741	2.07	0.73	0.36	-0.61	-0.24	-0.12
	25-Sep-10	7,148,134.62	513,877.99	422.24	1,834	67	2.15	0.08	0.45	-0.67	-0.06	-0.31
2005-07	17-Sep-05	7,148,000.11	513,945.37	416.35	0	0	0.00			0.00		
	28-Jul-06	7,148,000.07	513,945.39	416.36	314	314	0.04	0.04	0.05	0.01	0.01	0.01
	9-Jul-08	7,147,999.99	513,945.41	416.36	1,026	712	0.12	0.08	0.04	0.01	0.00	0.00
	20-Jul-10	7,147,999.99	513,945.41	416.37	1,767	741	0.12	0.00	0.00	0.02	0.00	0.00
	25-Sep-10	7,147,999.97	513,945.41	416.33	1,834	67	0.14	0.02	0.11	-0.02	-0.03	-0.19
2005-08	17-Sep-05	7,148,038.85	513,970.98	415.77	0	0	0.00			0.00		
	28-Jul-06	7,148,038.81	513,971.06	415.79	314	314	0.09	0.09	0.10	0.02	0.02	0.02
	9-Jul-08	7,148,038.79	513,971.22	415.84	1,026	712	0.25	0.16	0.08	0.07	0.05	0.03
	20-Jul-10	7,148,038.76	513,971.34	415.89	1,767	741	0.37	0.12	0.06	0.12	0.05	0.02
	25-Sep-10	7,148,038.75	513,971.36	415.83	1,834	67	0.39	0.03	0.15	0.06	-0.07	-0.36
2005-09	17-Sep-05	7,148,124.38	513,969.23	420.18	0	0	0.00			0.00		
	28-Jul-06	7,148,124.55	513,969.46	420.28	314	314	0.29	0.29	0.34	0.10	0.10	0.12
	9-Jul-08	7,148,124.87	513,969.90	420.40	1,026	712	0.83	0.54	0.28	0.22	0.12	0.06
	20-Jul-10	7,148,125.15	513,970.34	420.45	1,767	741	1.35	0.52	0.26	0.26	0.05	0.02
	25-Sep-10	NOT FOUND										

Client: Government of Yukon
Project: Former Clinton Creek Asbestos Mine - Tailings Movement Monitoring

UMA Job No.:	6029-005-00	6029-006-00	6029-008-00	6029-009-00	2940-044-00	60160515
Date:	31-Aug-03	31-Jul-04	Nov-06	Jul-07	9-Jul-08	25-Sep-10

Table D3) Tailings Stability - Lower Slopes (Elevation <425 m)

South Lobe

Monitor	Date	UTM Coordinates			Time		Horizontal Movement			Vertical Movement		
		Northing (metres)	Easting (metres)	Elevation (metres)	total (days)	incremental (days)	total (metres)	increment (metres)	rate (metres/year)	total (metres)	incremental (metres)	rate (metres/year)
2005-10	17-Sep-05	7,148,146.69	513,925.39	411.78	0	0	0.00			0.00		
	28-Jul-06	7,148,146.97	513,925.66	411.80	314	314	0.39	0.39	0.45	0.02	0.02	0.02
	9-Jul-08	7,148,147.50	513,926.16	411.83	1,026	712	1.12	0.73	0.37	0.05	0.03	0.02
	20-Jul-10	BURRIED										
2005-11	17-Sep-05	7,148,176.10	513,942.17	411.91	0	0	0.00			0.00		
	28-Jul-06	7,148,176.45	513,942.33	411.80	314	314	0.39	0.39	0.45	-0.11	-0.11	-0.13
	9-Jul-08	7,148,177.04	513,942.67	411.99	1,026	712	1.07	0.68	0.35	0.08	0.19	0.10
	20-Jul-10	7148177.528	513942.940	411.999	1,767	741	1.62	0.55	0.27	0.09	0.01	0.01
	25-Sep-10	7148177.576	513942.987	411.974	1,834	67	1.69	0.07	0.37	0.06	-0.03	-0.14

Average	Aug 03 to Jul 04	0.43	0.46		-0.02	-0.02
	Jul 04 to Sep 04	0.11	0.72		-0.04	-0.25
	Sep 04 to Sep 05	0.44	0.45		0.05	0.05
	Sep 05 to Jul 06	0.30	0.35		0.01	0.01
	Jul 06 to Jul 08	0.55	0.28		0.01	0.00
	Jul 08 to Jul 10	**0.46**	**0.23**		**-0.02**	**-0.01**
	Jul 10 to Sept 10	**0.07**	**0.36**		**-0.04**	**-0.25**
Maximum	Aug 03 to Jul 04	0.71	0.76		0.04	0.04
	Jul 04 to Sep 04	0.21	1.38		0.00	-0.01
	Sep 04 to Sep 05	0.65	0.66		0.15	0.15
	Sep 05 to Jul 06	0.49	0.57		0.10	0.12
	Jul 06 to Jul 08	0.86	0.44		0.19	0.10
	Jul 08 to Jul 10	**0.73**	**0.36**		**0.10**	**0.05**
	Jul 10 to Sept 10	**0.10**	**0.52**		**-0.02**	**-0.13**
Minimum	Aug 03 to Jul 04	0.06	0.07		-0.10	-0.11
	Jul 04 to Sep 04	0.03	0.20		-0.09	-0.60
	Sep 04 to Sep 05	0.05	0.05		-0.01	-0.02
	Sep 05 to Jul 06	0.03	0.03		-0.12	-0.14
	Jul 06 to Jul 08	0.03	0.02		-0.26	-0.13
	Jul 08 to Jul 10	**0.00**	**0.00**		**-0.24**	**-0.12**
	Jul 10 to Sept 10	**0.01**	**0.05**		**-0.10**	**-0.57**