



Minto Mine
Water Licence QZ96-006

Dry Stack Tailings Storage Facility
Deformation Monitoring Plan and Report

Prepared by:
Minto Mine
November 2012

Contents

1 Introduction..... 1

2 Monitoring Update and Results..... 1

 2.1 Surface Monitoring Update 1

 2.2 Inclinator Data..... 2

3 Future Monitoring..... 3

 3.1 Downhole Instrumentation Plan 3

4 Conclusion 3

List of Figures:

Figure 2-1: Example of DSTSF survey hub data 1

Figure 2-2: Survey hub readings shown as scaled vectors, superimposed upon a survey surface 2

Figure 3-1: Movement rate of the primary shear plane (located at 7.0m depth) in DSI-12. 2

List of Appendices:

Appendix A – DSTSF Survey Hub Movement Rates

Appendix B - Plot of Currently-Active and Planned Instrumentation on the DSTSF

1 Introduction

This document has been prepared by Minto Explorations Ltd. (Minto), a subsidiary of Capstone Mining Corporation, with respect to the Minto Mine.

The following document is intended to fulfill the requirements of Clause 90 of Minto's water use license QZ96-006 (WUL) by providing an update on data collected since January 2011 and outlining future planned data collection on and around the Dry Stack Tailings Storage Facility (DSTS F).

2 Monitoring Update and Results

2.1 Surface Monitoring Update

The DSTS F is currently monitored by six survey hubs. These are steel posts cemented into the rockfill of the berm that forms the front face of the stack. Each post is equipped with a threaded base to which a high-precision (RTK-corrected) GPS instrument can be attached. Readings are generally taken every three days. This method of measurement is suitable for a slow creep movement such as that seen on the DSTS F. Figure 2-1 shows an example of survey hub data for DSSH12, a hub located near the centerline of the dry stack, with average rates over several intervals noted on the graph.

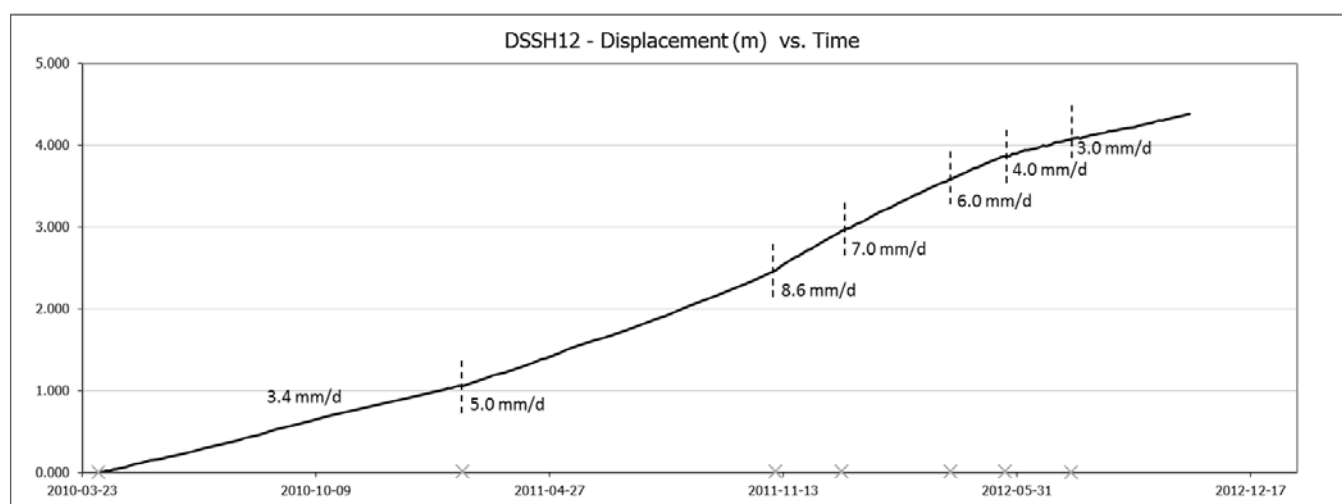


Figure 2-1: Example of DSTS F survey hub data

The movement rates of these survey hubs as of October 27, 2012 are shown in Figure 2-2, with detailed displacement vs. time data in Appendix A.

In addition to the six on the front face of the DSTS F, two survey hubs measure the movement of the ground approximately 275m south of (upslope of) the DSTS F. These survey hubs have been monitored since March of 2011 and have shown no movement.

A summary of all currently active instrumentation is shown in Appendix B.

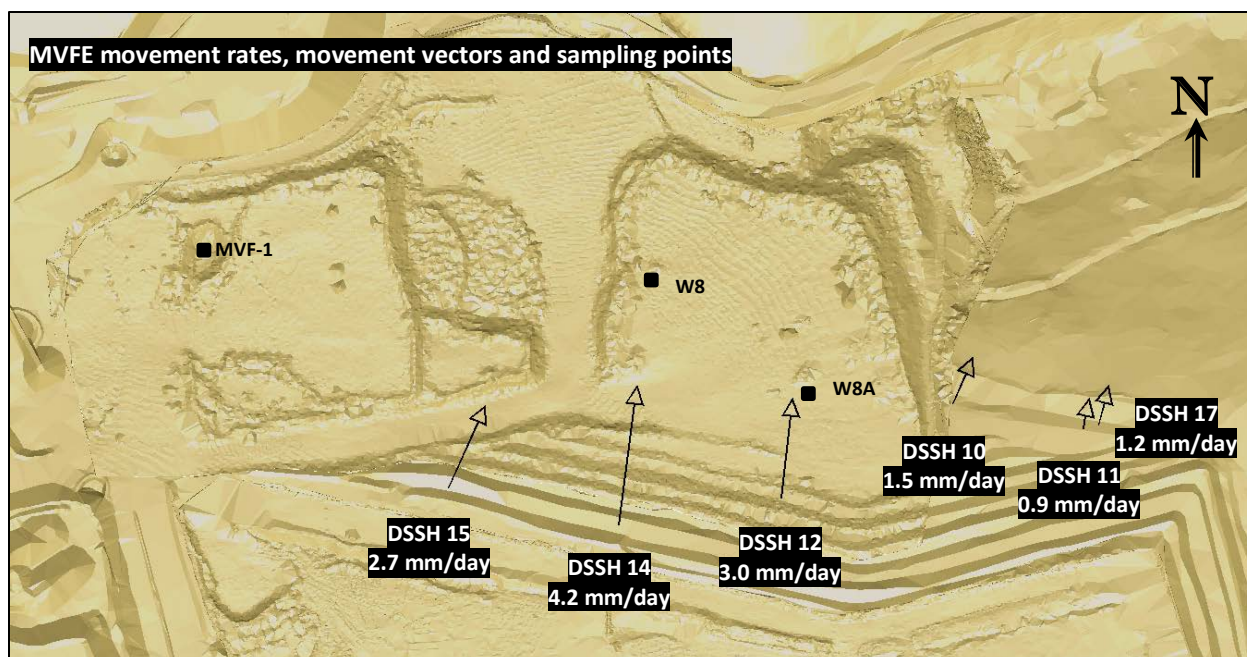


Figure 2-2: Survey hub readings shown as scaled vectors, superimposed upon a survey surface

2.2 Inclinator Data

Twelve inclinometers have been installed in and around the DSTSF since February of 2010. Due to the high rate of movement and the low tolerance of inclinometers for hole deviation, only two of these instruments are currently readable. While active, inclinometers provide information on both the rate of movement and the depth at which it is occurring, and the core samples retrieved in the process of installing them allow Minto's consultants to characterize the foundation conditions of the DSTSF.

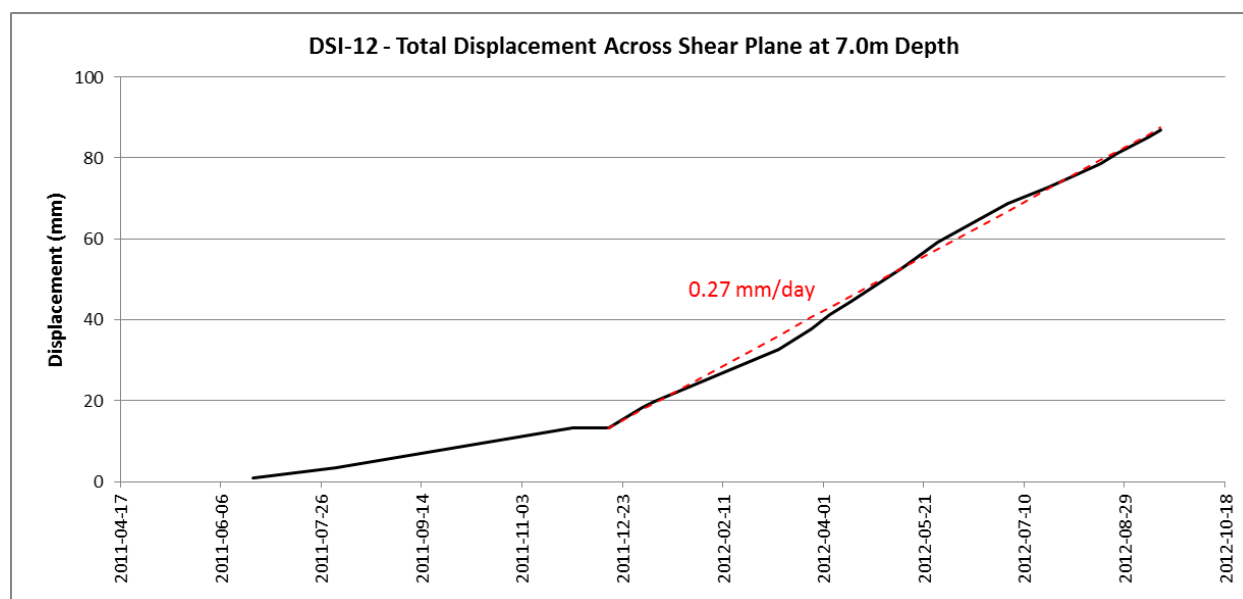


Figure 3-3: Movement rate of the primary shear plane (located at 7.0m depth) in DSI-12.

The two active inclinometers are DSI-10 and DSI-12. The former is located approximately 150m east of the DSTSF and does not appear to be showing reliable movements. The latter is located approximately 40m east of the toe of the DSTSF and shows movement at 0.27 mm/day, as shown in Figure 3-1.

3 Future Monitoring

Minto will continue monitoring the existing installations and, in addition, plans further monitoring as detailed in this section. With the installation and commissioning of a slurried tailings pipeline on November 1, 2012, Minto has ceased to place tailings material onto the DSTSF.

3.1 Downhole Instrumentation Plan

Before spring of 2013, Minto will undertake a sampling program which prescribes logging for the presence and quantity of frozen tailings and analysis of grain size distribution, density, and moisture content, as required by clause 89 of the WUL. Of the four holes required, two will be instrumented with ground temperature cables and one will be instrumented with an inclinometer.

Two additional holes will be drilled further east to provide data on the part of the DSTSF not currently buttressed by the Mill Valley Fill Extension. One will be instrumented with a ground temperature cable and the other with an inclinometer.

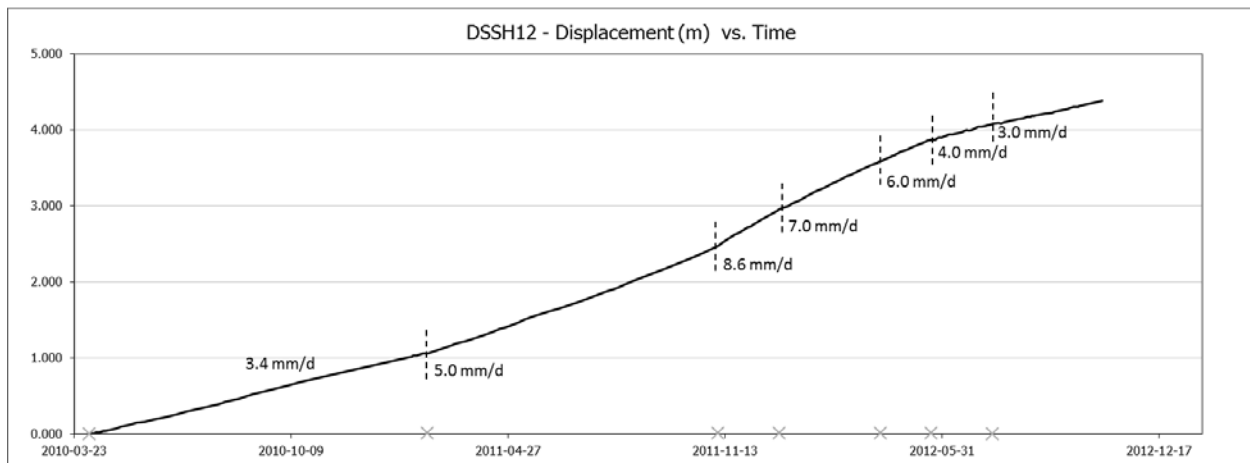
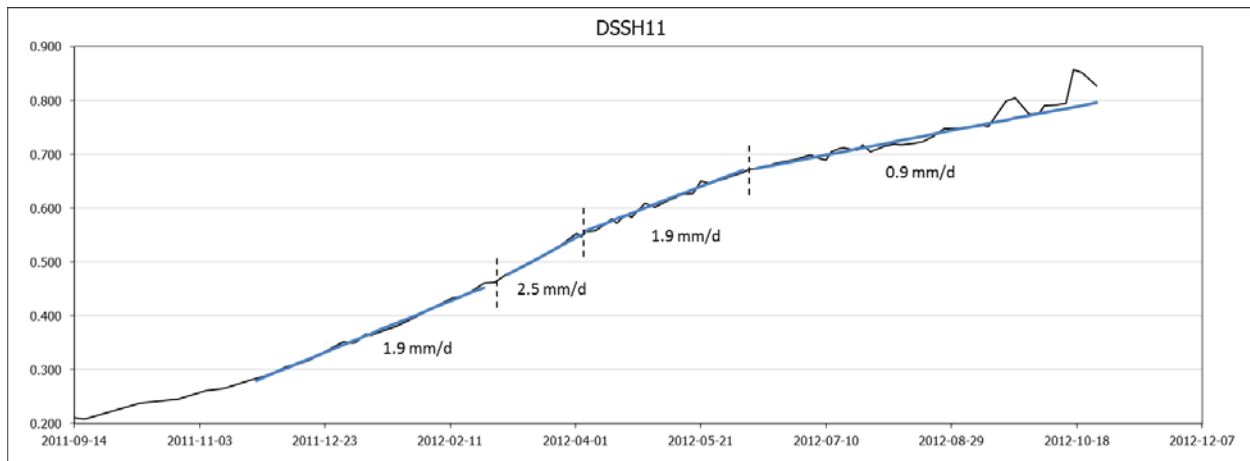
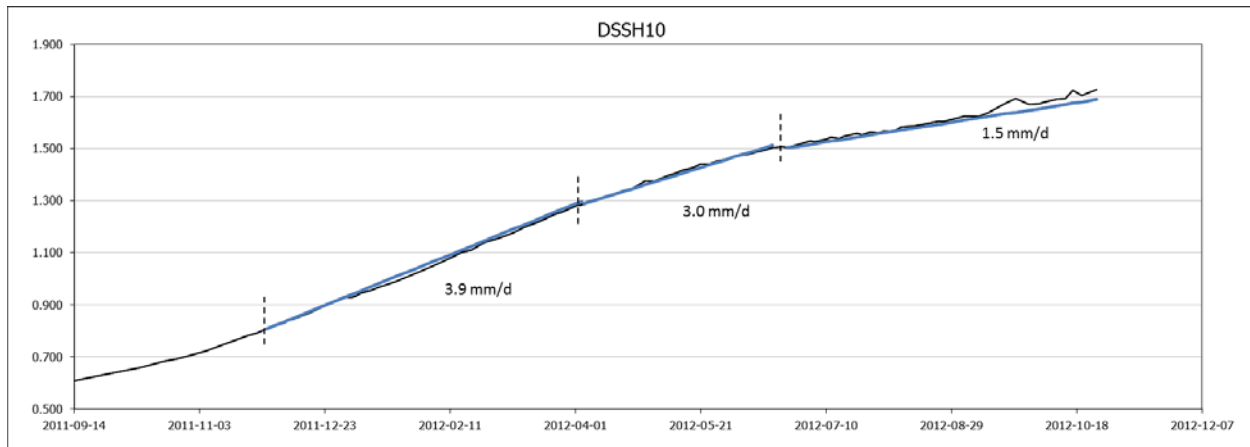
The inclinometers will provide full-depth readings on the rate of creep movement. The ground temperature cables, each reading down to bedrock, will provide important supplemental temperature profile data. This data, in addition to core logs from the six holes, will be used to update temperature and stability models for use in assessing the long-term stability of the DSTSF and whether further measures are necessary to reduce movements to acceptable rates.

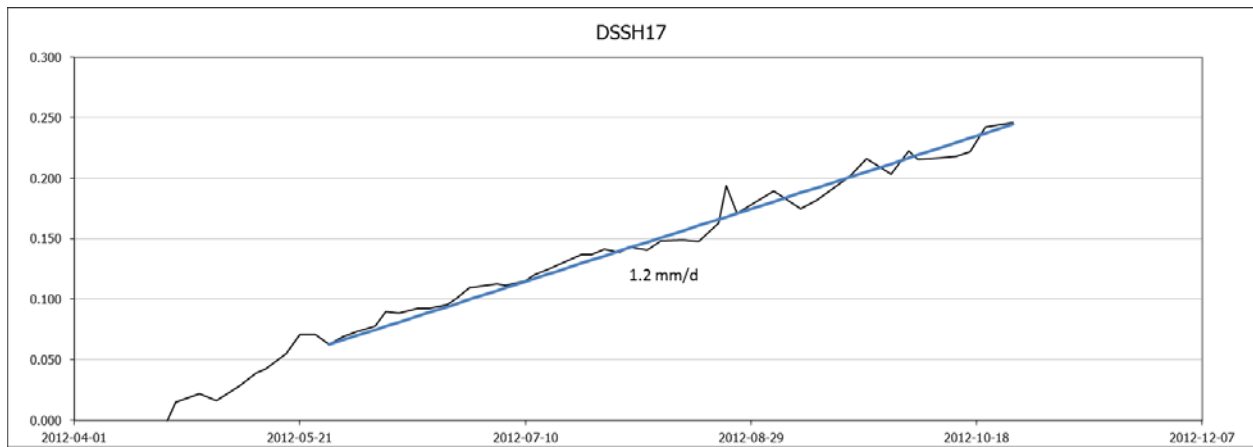
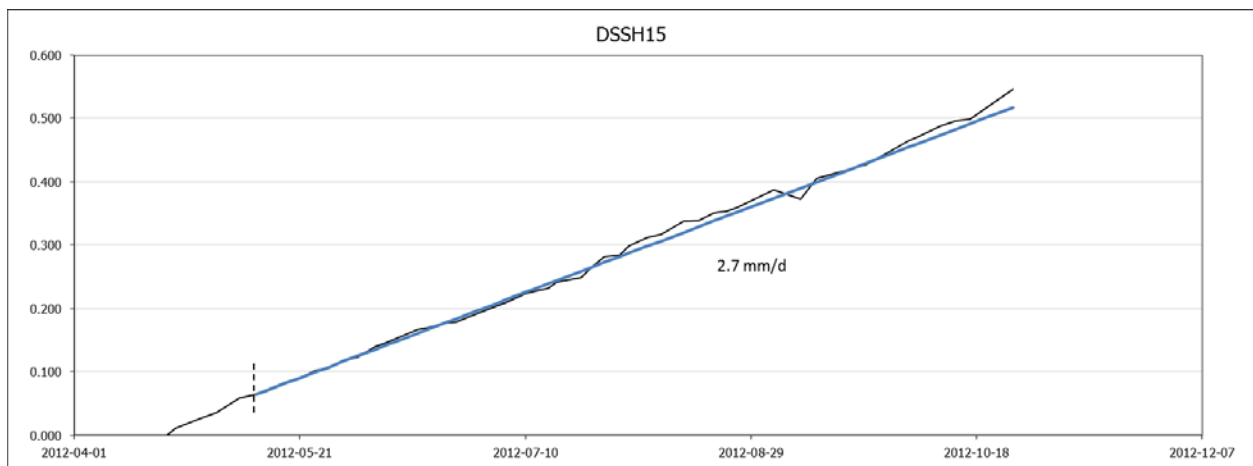
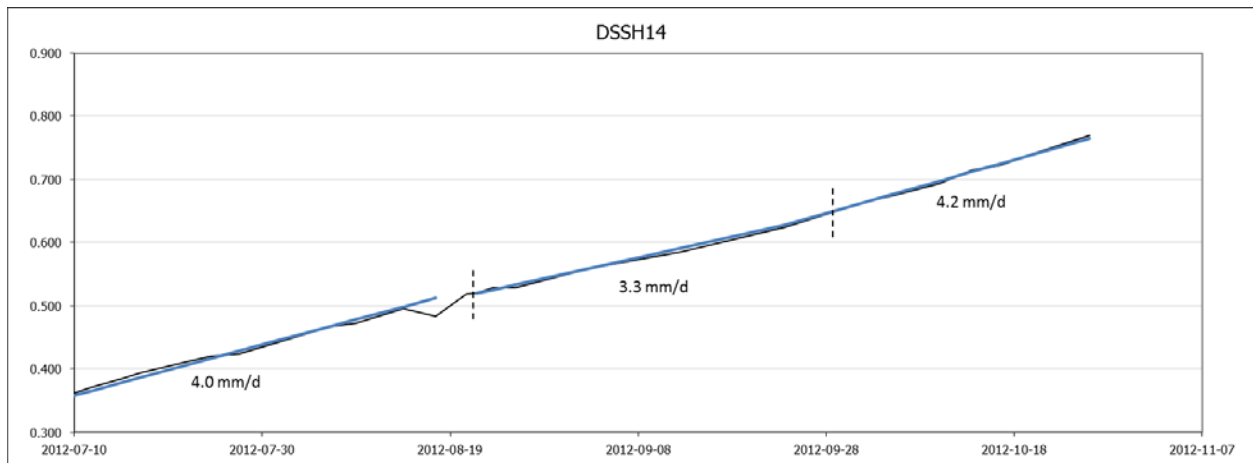
The planned hole locations are shown in Appendix B. The collar coordinates have been selected to line up with other instrumentation or geotechnical holes along section lines approximately parallel to the movement vectors shown by existing survey hubs.

4 Conclusion

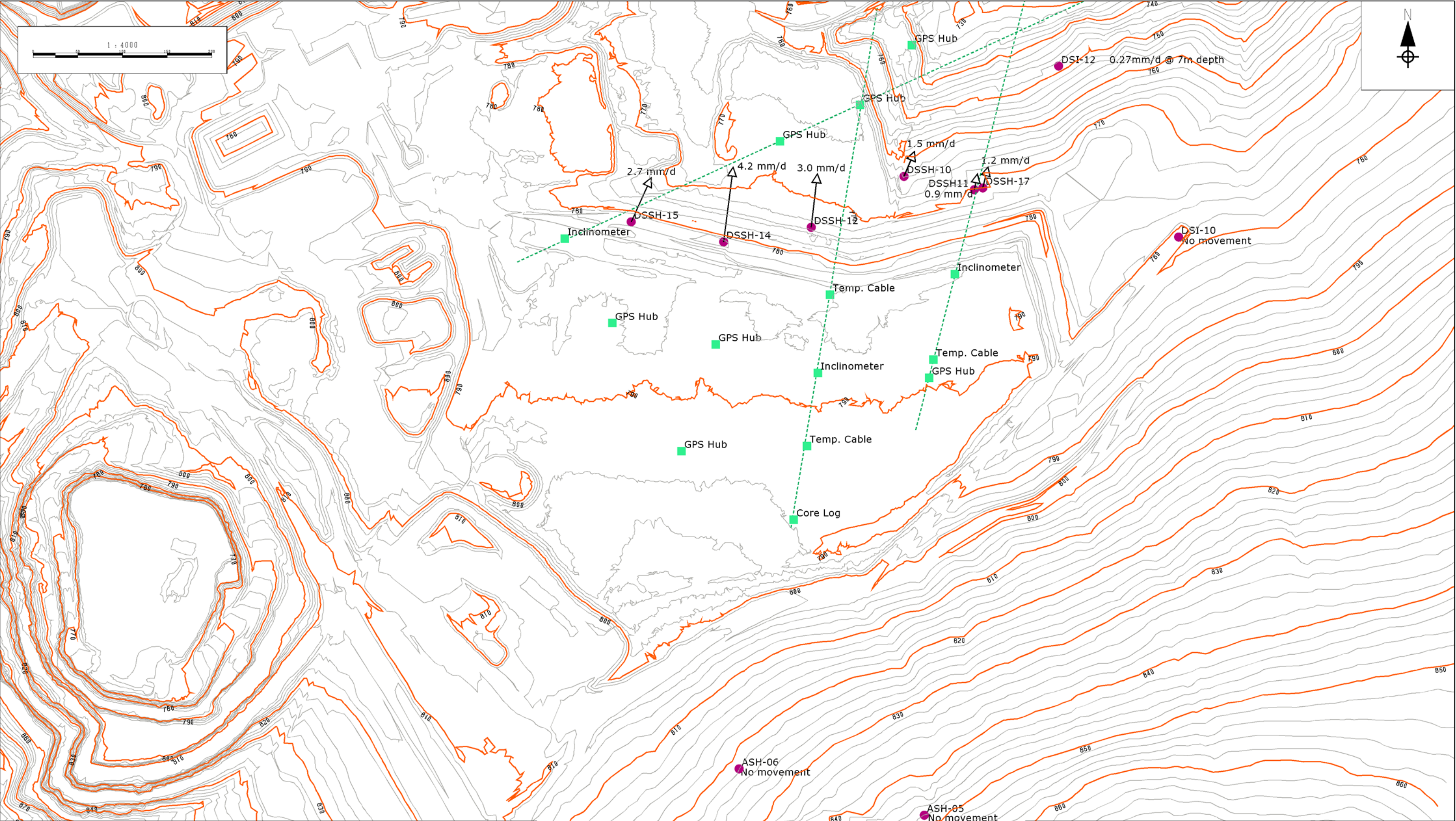
Minto hopes that this document fulfills the requirements of clause 80 of the WUL. Monitoring movement of the DSTSF will continue as outlined in this plan, and details of the monitoring may be amended from time to time should conditions warrant.

Appendix A – DSTSF Survey Hub Movement Rates





Appendix B - Plot of Currently-Active and Planned Instrumentation on the DSTSF



NOTES:	
Green denotes planned instrumentation.	
Purple denotes instrumentation that is active (readable) as of plot date.	

PROJECT:	Minto Mine
	DSTSF Instrumentation Overview
DATE PLOTTED:	2012-11-02
SCALE:	X = 1mm : 4000mm