


ALPINE PIPELINE HYDROLOGY MONITORING 2017

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ACRONYMS & ABBREVIATIONS

BPMSL	British Petroleum Mean Sea Level
CPAI	ConocoPhillips Alaska, Inc.
E	East
ft	Feet
ft/ft	Feet per vertical foot
ft/yr	Feet per year
HDD	Horizontal directionally drilled
HSM	Horizontal support member
in	Inches
in/ft	Inches per vertical foot
Michael Baker	Michael Baker International
N	North
NPS	Nominal pipe size
S	South
STA	Station
UMIAQ	Umiaq, LLC (formerly known as LCMF)
VSM	Vertical support member
W	West

1. INTRODUCTION

Originally constructed during the winter of 1998/1999, the Alpine Pipeline System crosses three rivers between the Alpine Development CD1 facility and the tie-in to the Kuparuk Pipeline. The three pipeline crossings (four monitoring locations) are the horizontal directionally drilled (HDD) crossing of the Colville River East Channel (HDD West and HDD East), and the above ground crossings of the Kachemach River and the Miluveach River.

Monitoring of these pipeline crossings is required by the Right-of-Way Lease/Grant Stipulations and the ConocoPhillips Alaska, Inc. (CPAI) Alpine Pipelines Surveillance and Monitoring Program (CPAI 2008) which identifies parameters for collecting data and evaluating the physical condition of the pipelines. Pipeline hydrology monitoring is designed to comply with the Alpine Pipelines Surveillance and Monitoring Program criteria and is conducted to document the condition of the pipeline and the pipeline's effect on channel morphology at each monitoring location. The record of monitoring allows for annual comparisons between observed conditions and design criteria.

Michael Baker International (Michael Baker) conducted initial monitoring of the HDD West and HDD East monitoring locations in 2001 and has continued annually since 2003. Umiaq, LLC (UMIAQ) has conducted annual polygon trough subsidence surveys since 2001 at HDD East, bank erosion surveys since 2001 at HDD East and since 2002 at HDD West, and foundation settlement and jacking surveys since 2004 at HDD West (Michael Baker 2002, 2003a, 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015, and 2016).

Michael Baker conducted initial monitoring of the Kachemach River and Miluveach River monitoring locations in 2003 and continued annually through 2006. Monitoring resumed at these locations in 2008 and has continued annually (Michael Baker 2003a, 2004, 2005, 2006, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015, and 2016). UMIAQ conducted annual bank erosion surveys between 2002 and 2007 and annual scour and settlement and jacking surveys between 2004 and 2008. After 2007, the surveys were scheduled to be performed every five (5) years beginning in 2012 and again this year (Michael Baker 2004, 2005, 2006, 2008, and 2012). The next bank erosion, scour, and settlement and jacking surveys are planned for the 2022 monitoring program.

The Alpine Pipeline Hydrology Monitoring locations are included in Figure 1.1.



ConocoPhillips
Alaska



Date:	09/15/2017	Project:	161687
Drawn:	BTG	File:	Figure 1.1
Checked:	JMG	Scale:	1 in = 2 miles

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**2017 Alpine Pipeline
Hydrology Monitoring
Locations**

FIGURE: 1.1
(SHEET 1 of 1)

1.1 MONITORING CRITERIA

The following data were collected by Michael Baker:

- Ground and aerial photographs at all monitoring locations;
- Vertical support member (VSM) tilt survey – evaluation of VSM tilt at all monitoring locations;
- VSM scour survey – survey of main channel and floodplain VSMs at the Kachemach River and Miluveach River monitoring locations;
- Visual observations of the following physical conditions at all monitoring locations:
 - ✧ Obstructions, ice dams, new river channels, or changes in flow in the channels; and
 - ✧ Evidence of potential pipeline leaks; and
- Visual observations of the following physical conditions at the HDD West and HDD East monitoring locations:
 - ✧ Signs of flooding threatening a facility or pipeline, or where water could not be diverted and there was:
 - Evidence of water concentrated longitudinally on or along the pipeline centerline
 - Gullying threatening the buried pipeline;
 - ✧ Soil pressure ridges parallel to the pipe axis exceeding 1 foot in height and 60 feet in length;
 - ✧ Ponding extending over the pipe axis deeper than 1 foot and more than 100 feet in length;
 - ✧ Soil disturbances (cracks) located within 10 feet of the pipeline crossing centerlines having one of the following characteristics identified:
 - At least 10 feet in length with vertical displacement exceeding 6 inches,
 - Wider than 2 inches parallel to the pipe axis and longer than 60 feet;
 - ✧ Depressions occurring longitudinally over the pipe axis deeper than 1 foot and more than 100 feet in length; and
 - ✧ Presence or absence of gravel pad erosion.

The following data were collected by UMIAQ:

- Evaluation of bank erosion and identification of locations of bank caving at least 50 feet upstream and downstream from the nominal pipe size (NPS) 14 oil pipeline at the HDD West and HDD East monitoring locations;
- Evaluation of bank erosion and identification of locations of bank caving at least 50 feet upstream and downstream from the Alpine Pipeline at the Kachemach River and Miluveach River monitoring locations;
- VSM scour survey – topographic survey of main channel VSMs at the Kachemach River and Miluveach River;
- Foundation settlement and jacking survey – pile elevation survey (bottom of pile cap) at HDD West to document building foundation elevation change and at the Kachemach River and Miluveach River monitoring locations to document VSM and horizontal support member (HSM) elevation change; and
- Polygon trough subsidence survey – topographic survey from the east bank of the Colville River East Channel to the HDD East pad to document bank and ground stability

2. METHODS

Field investigations by Michael Baker were performed by a two-person team on August 22, 2017. Soloy Helicopters, LLC provided helicopter access to all monitoring locations. Safety precautions were followed, as outlined in the North Slope Water Resources 2017 Health, Safety, and Environmental Plan (Michael Baker 2017a) and the 2017 Summer Hydrology Monitoring – Job Safety Analysis (Michael Baker 2017b).

2.1 VISUAL OBSERVATIONS

Michael Baker collected visual observations at the HDD West and HDD East monitoring locations beginning from where the pipeline casings enter the ground and extending to the bank. Visual observations at the Kachemach River and Miluveach River monitoring locations were collected along the pipeline to 15 feet outside the banks of the active channel and extended upstream and downstream several hundred feet along both banks. Aerial photographs during the 2017 spring breakup field program and ground and aerial photographs during the August 2017 field program were also collected. Spring breakup aerial photographs and summer ground and aerial photographs at all monitoring locations are provided in Appendix A.

2.2 VSM TILT

Michael Baker measured VSM tilt using a Stabila Type 196-2 magnetic, electronic carpenter's level with a digital read-out. Prior to field measurements, the electronic level was calibrated to manufacturer specifications. The calibration was verified by taking a reading on a surface then rotating the level 180° in the same plane to confirm the measurement. The electronic level was carefully positioned on the VSM to avoid reflective tape, welds, and fasteners that would impact the tilt measurements. A plumb bob and pocket rod tape measure were used to measure the tilt of three VSMs at HDD West where there was interference on the VSM.

Tilt was measured perpendicular to the pipeline (generally north [N]/south [S]) and parallel to the pipeline (generally east [E]/west [W]). The tilt of each VSM was documented by recording the digital level read-out in inches per vertical foot (in/ft) and converting to feet per vertical foot (ft/ft) or measuring the horizontal distance from the plumb bob in ft/ft. The accuracy of the electronic level method is ± 0.0008 ft/ft and rounded to ± 0.001 ft/ft, the accuracy of the plumb bob method is ± 0.001 ft/ft. Approximate conversions between ft/ft and inches per vertical foot, rounded to the nearest thousandth, are provided in Table 2.1.

The 2010 CPAI North Slope Foundation Design Specification states that under sustained loads, "VSM pipe supports shall be limited to $\Delta v/l = 0.015$ and $\Delta v = 1$ -inch max", where Δv equals the horizontal deflection and l equals the vertical distance (CPAI 2010).

Taking into consideration the accuracy of the measurement method and the design specifications, the VSM axis was considered plumb and within tolerance if the tilt was measured to be less than or equal to 0.015 ± 0.001 ft/ft. Any calculations that were determined to be less than the survey accuracy are reported as such (<0.001 ft/ft).

Table 2.1: VSM Tilt Unit Conversion

Inches of Deflection per 10 feet	ft/ft	Slope
<i>1/8</i>	<i>0.001¹</i>	<i>1:1000</i>
1/4	0.002	1:500
1/2	0.004	1:250
3/4	0.006	1:160
1	0.008	1:125
1-1/4	0.010	1:100
1-1/2	0.013	1:77
<i>1-3/4</i>	<i>0.015²</i>	<i>1:66.6</i>
2	0.017	1:58
Notes:		
1. Survey Tolerance		
2. Project Tolerance		

2.3 BANK & PAD EROSION

UMIAQ surveyed bank erosion at the Kachemach River and Miluveach River monitoring locations in July 2017 and the HDD West and HDD East monitoring locations in August 2017, incorporated the data into figures, and provided tabulations of historical erosion. Bank erosion was surveyed relative to a permanent baseline that runs parallel to each bank. The distance from the top of the bank to the baseline was measured at regular intervals along the baseline and recorded (Michael Baker 2003b). The HDD West, HDD East, Kachemach River, and Miluveach River bank erosion surveys are provided in Appendix B.1, C.1, D.1, and E.1, respectively.

Michael Baker collected ground and aerial photographs and visual observations to document bank erosion at all monitoring locations and to document the presence or absence of gravel pad erosion at the HDD West and HDD East monitoring locations.

2.4 VSM SCOUR

UMIAQ conducted a topographic survey of streambed scour at VSMs in the main channel of the Kachemach River (VSMs 1715A and 1715B) and four VSMs in the main channel of the Miluveach River (2047N (A), 2047S (B), 2048N (A), 2048S (B)) in July 2017 and incorporated the data into figures. The Kachemach River and Miluveach River VSM surveys are provided in Appendix D.2 and Appendix E.2, respectively.

Michael Baker surveyed streambed scour at VSMs in the main channel and floodplain of the Kachemach River (VSMs 1714, 1714A, 1715A, 1715B, 1715C, and 1716) and main channel of the Miluveach River (2047N (A), 2047S (B), 2048N (A), 2048S (B)) in August 2017. Scour conditions were evaluated either at the VSM, or if a casing was present, inside and outside of the casing.

2.5 SETTLEMENT & JACKING

FOUNDATION SETTLEMENT & JACKING

UMIAQ surveyed the elevation of the HDD West building foundation piles (bottom of pile cap) in August 2017 and provided tabulations of historical elevations. The surveyed foundation piles (W-01 through W-20) are provided in Appendix B.2. Data presented in the 2008 Alpine Pipeline Hydrology Monitoring report reflected an adjustment to the vertical datum at HDD West of -0.35 feet, which was made to reflect actual elevations based on differential levels carried by UMIAQ from

CD1 facility in August 2007 (Michael Baker 2008). According to UMIAQ, this adjustment was eliminated to avoid confusion about elevation values. Therefore, the values for each pile cap as presented in Appendix B.2 reflect the original datum.

VSM & HSM SETTLEMENT & JACKING

UMIAQ surveyed the elevation of the Kachemach River and Miluveach River monitoring location pile caps (bottom of pile cap) in July 2017 and developed tabulations of historical elevations. The surveyed pile caps for the Kachemach River (VSMs 1713, 1714, 1714A, 1715A, 1715B, and 1715C) and Miluveach River (VSMs 2046, 2047N (A), 2047S (B), 2048N (A), 2048S (B), and 2049 and HSMs 2046N and S, 2047N (A), 2047S (B), 2048N (A), 2048S (B), and 2049N and S) are provided in Appendix D.3 and Appendix E.3, respectively.

2.6 POLYGON TROUGH SUBSIDENCE

UMIAQ surveyed polygon trough subsidence at cross sections of the polygon trough located between the east bank of the Colville River East Channel and west of the HDD East gravel pad in August 2017, incorporated the data into figures, and provided tabulations of elevations for each cross section (cross section A through H). The surveyed cross sections are provided in Appendix C.2.

3. RESULTS

Spring breakup observations suggest flow was confined to the active channels and did not reach the overbank regions of any of the monitoring locations. During the August field work conducted by Michael Baker, all channels were clear of ice and snow, allowing full access to the channels and pipeline. Based on visual observations at all monitoring locations, there were no obstructions, ice dams, new river channels, or changes in flow in the channels, and no evidence of potential pipeline leaks.

3.1 HDD WEST

VISUAL OBSERVATIONS

Based on visual observations of physical conditions, there were no signs of flooding threatening the facility or pipeline, no soil pressure ridges, no ponding, and no soil disturbances. Two small depressions, one measuring approximately four (4) feet in diameter and one (1) foot deep and the other measuring approximately two (2) feet in diameter and 0.5 feet deep, were observed on the gravel pad adjacent to the stairs of the southern HDD facility.

VSM TILT

A summary of VSM tilt survey results is presented in Table 3.1. A summary of the change in tilt measurements between 2016 and 2017 is presented in Table 3.2. A historical summary of the change in VSM tilt by orientation between 2006 and 2017 is presented in Graph 3.1 and Graph 3.2.

Table 3.1: HDD West VSM Tilt Measurement Results

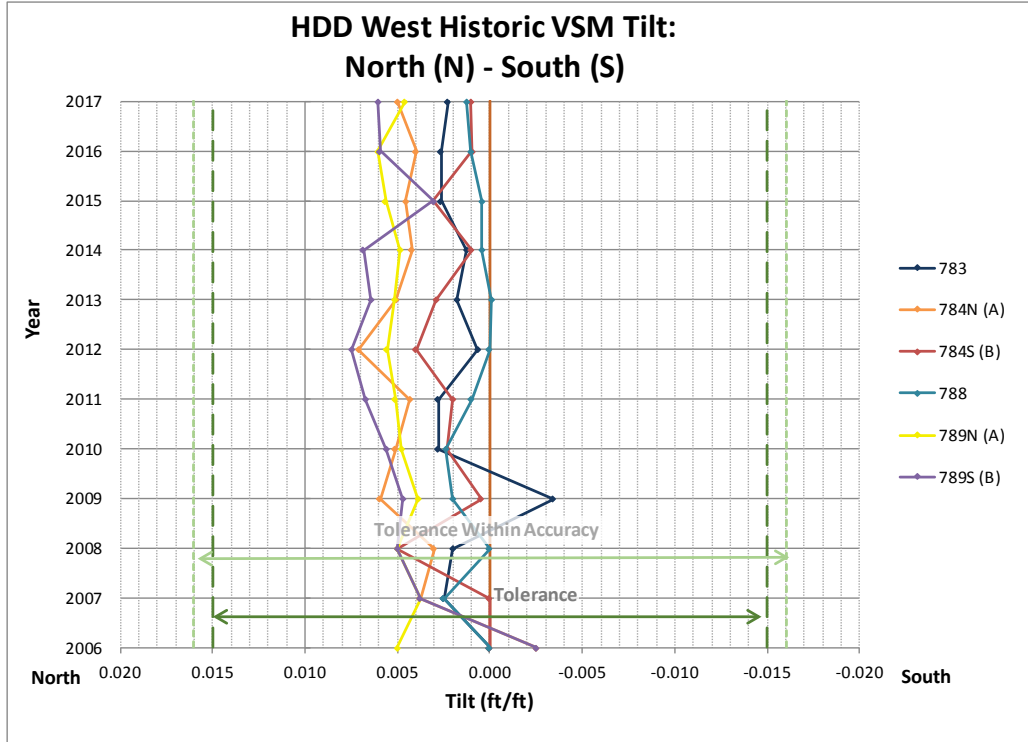
HDD West VSM Number	Tilt Measurement Orientation (ft/ft)		Comment
	North/South	East/West	
783*	0.0023 N	0.0022 W	Plumb
784A	0.005 N	<0.001	Plumb
784B*	0.001 N	0.0052 W	Plumb
788	0.0013 N	0.0021 E	Plumb
789A	0.0046 N	<0.001	Plumb
789B*	0.0061 N	0.0023 W	Plumb

*Measured with Plumb Bob

Table 3.2: HDD West VSM Change in Tilt, 2016-2017

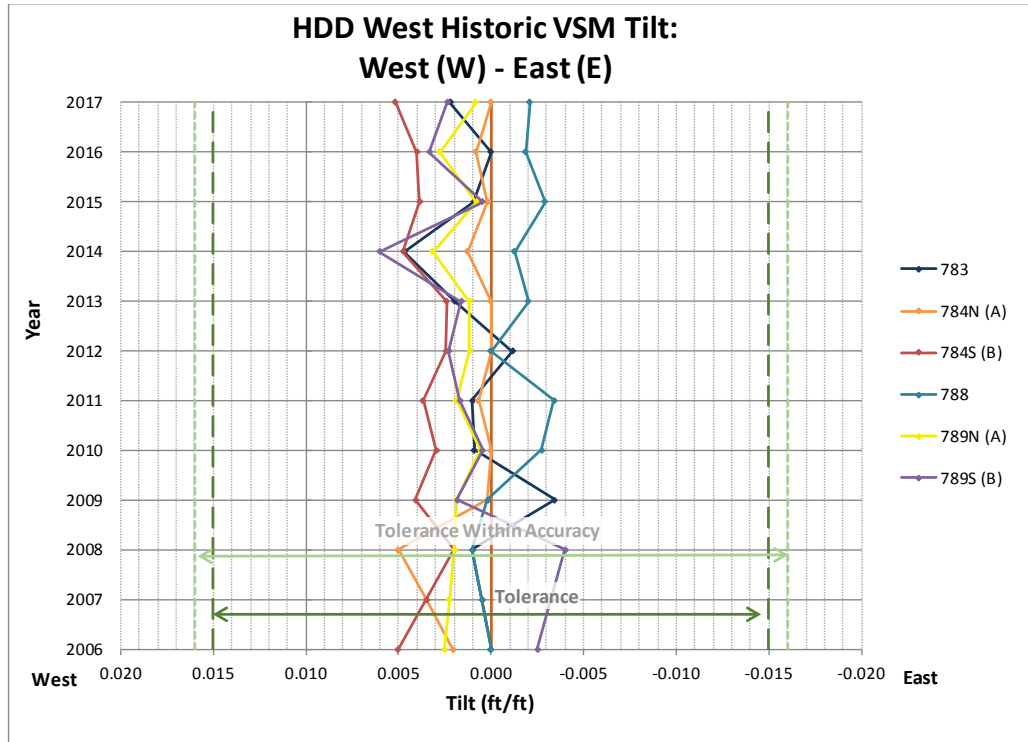
HDD West VSM Number	Change in Tilt Measurement Orientation (ft/ft)	
	North/South	East/West
783*	<0.001	0.0022 W
784A	0.001 N	<0.001
784B*	<0.001	0.0012 W
788	<0.001	<0.001
789A	0.0015 S	0.0019 E
789B*	<0.001	<0.001

*Measured with Plumb Bob



- Notes:**
1. Positive tilt indicates north (N), negative tilt indicates south (S).
 2. Project tilt tolerance for VSM is +/- 0.015 ft/ft.
 3. Survey accuracy of this project is +/-0.001 ft/ft.

Graph 3.1: HDD West VSM Historical Change in Tilt, North/South



- Notes:**
1. Positive tilt indicates west (W), negative tilt indicates east (E).
 2. Project tilt tolerance for VSM is +/- 0.015 ft/ft.
 3. Survey accuracy of this project is +/-0.001 ft/ft.

Graph 3.2: HDD West VSM Historical Change in Tilt, East/West



BANK & PAD EROSION

The average rate of incremental bank erosion between 2016 and 2017 and cumulative bank erosion between 2002 and 2017 along the entire 440-foot top of bank was 0.1 ft/yr and 0.5 ft/yr, respectively. These values average both erosion and deposition. The maximum incremental bank erosion between 2016 and 2017 was 1.6 feet observed at STA 1+25, 125 feet upstream (south) of the NPS 14 oil pipeline centerline (STA 2+50).

In 1997, Michael Baker established a survey control point on the top of bank at the centerline of the NPS 14 oil pipeline, as shown on the drawing in Appendix B.2. The location of the 1997 survey control point was compared with the 2017 UMIAQ surveyed top of bank at the pipeline centerline (STA 2+50), indicating approximately 12 feet of bank erosion has occurred over the 20-year period.

The maximum cumulative bank erosion overall was 18.7 feet observed at STA 3+70 over the 15-year period, 120 feet downstream (north) of the NPS 14 oil pipeline centerline. There have been no changes in maximum cumulative bank erosion at STA 3+70 since 2006. The design bank erosion rate compared to the 20-year bank erosion rate at the pipeline centerline and the 15-year maximum cumulative bank erosion rate at STA 3+70 is presented in Table 3.3.

Table 3.3: HDD West Design Bank Erosion Rate vs Surveyed Bank Erosion Rates

Station	Design Bank Erosion Rate ¹ (ft/yr)	Surveyed Bank Erosion Rate ² (ft/yr)
2+50 (Pipeline Centerline)	2.3	0.6
3+70 (Maximum Cumulative Erosion)	2.3	1.2
Notes:		
1. Design erosion rate from Michael Baker 2003b		
2. Surveyed bank erosion from UMIAQ 2002 and 2017 surveys		

Floodwater did not reach the gravel pad during 2017 spring breakup. Based on visual observations conducted by Michael Baker, there was no notable erosion of the gravel pad.

FOUNDATION SETTLEMENT & JACKING

The average rate of incremental change between 2016 and 2017 and cumulative change between 2004 and 2017 was 0.004 ft/yr and 0.003 ft/yr, respectively. These values average both settlement and jacking. The maximum incremental settlement between 2016 and 2017 was 0.033 feet at pile W-15. The maximum incremental jacking between 2016 and 2017 was 0.039 feet at pile W-13. The maximum cumulative jacking between 2004 and 2017 was 0.086 feet at pile W-13, yielding an average rate of cumulative jacking of 0.007 ft/yr. No cumulative settlement has occurred since 2004.

3.2 HDD EAST

VISUAL OBSERVATIONS

Based on visual observations of physical conditions, there were no signs of flooding threatening the facility or pipeline, no soil pressure ridges, no ponding, and no soil disturbances. A depression, identified in past years, was observed on the gravel pad near the centerline of the NPS 14 oil

pipeline. The depression measured approximately 10 feet in diameter and 1.5 feet in depth. The presence of gravel fill at the same position over the adjacent 18-inch seawater pipeline was observed.

VSM TILT

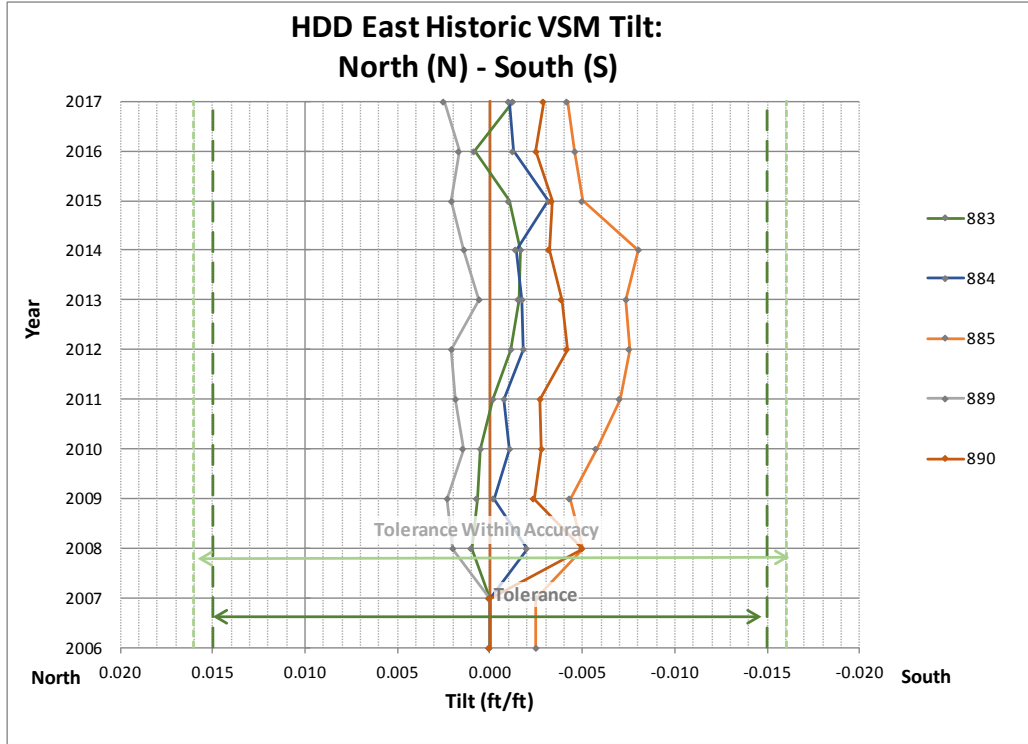
A summary of VSM tilt survey results is presented in Table 3.4. A summary of the change in tilt measurements between 2016 and 2017 is presented in Table 3.5. A historical summary of the change in VSM tilt by orientation between 2006 and 2017 is presented in Graph 3.3 and Graph 3.4.

Table 3.4: HDD East VSM Tilt Measurement Results

HDD East VSM Number	Tilt Measurement Orientation (ft/ft)		Comment
	North/South	East/West	
883	0.0013 S	<0.001	Plumb
884	0.001 S	0.001 W	Plumb
885	0.0042 S	0.0046 W	Plumb
889	0.0025 N	0.0023 E	Plumb
890	0.0029 S	<0.001	Plumb

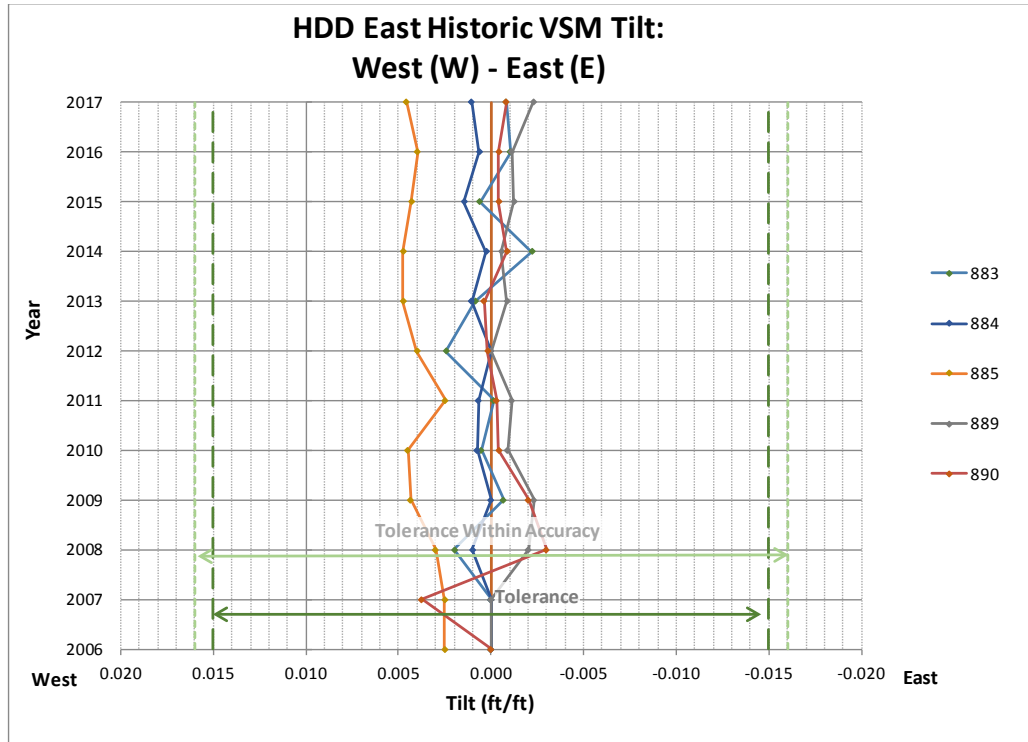
Table 3.5: HDD East VSM Change in Tilt, 2016-2017

HDD East VSM Number	Change in Tilt Measurement Orientation (ft/ft)	
	North/South	East/West
883	0.0021 S	<0.001
884	<0.001	<0.001
885	<0.001	<0.001
889	<0.001	0.0012 E
890	<0.001	<0.001



- Notes:**
1. Positive tilt indicates north (N), negative tilt indicates south (S).
 2. Project tilt tolerance for VSM is +/- 0.015 ft/ft.
 3. Survey accuracy of this project is +/-0.001 ft/ft.

Graph 3.3: HDD East VSM Historical Change in Tilt, North/South



- Notes:**
1. Positive tilt indicates west (W), negative tilt indicates east (E).
 2. Project tilt tolerance for VSM is +/- 0.015 ft/ft.
 3. Survey accuracy of this project is +/-0.001 ft/ft.

Graph 3.4: HDD East VSM Historical Change in Tilt, East/West

BANK & PAD EROSION

The average rate of incremental bank erosion between 2016 and 2017 and cumulative bank erosion between 2001 and 2017 along the entire 450-foot top of bank was 0.2 ft/yr and 1.0 ft/yr, respectively. These values average both erosion and deposition. The maximum incremental bank erosion between 2016 and 2017 was 4.3 feet observed at STA 1+30, 150 feet upstream (south) of the NPS 14 oil pipeline centerline (STA 2+80).

In 1997, Michael Baker established a survey control point on the top of bank at the centerline of the NPS 14 oil pipeline, as shown on the drawing in Appendix C.1. The location of the 1997 survey control point was compared with the 2017 UMIAQ surveyed top of bank at the pipeline centerline (STA 2+80), indicating approximately 18 feet of bank erosion has occurred over the 20-year period.

The maximum cumulative bank erosion overall was 39.3 feet observed at STA 2+90 over the 16-year period, 10 feet downstream (north) of the NPS 14 oil pipeline centerline. There have been no changes in maximum cumulative bank erosion at STA 2+90 since 2014. The design bank erosion rate compared to the 20-year bank erosion rate at the pipeline centerline and the 16-year maximum cumulative bank erosion rate at STA 2+90 is presented in Table 3.6.

Table 3.6: HDD East Design Bank Erosion Rate vs Surveyed Bank Erosion Rates

Station	Design Bank Erosion Rate ¹ (ft/yr)	Surveyed Bank Erosion Rate ² (ft/yr)
2+80 (Pipeline Centerline)	2.5	0.9
2+90 (Maximum Cumulative Erosion)	2.5	2.5
Notes:		
1. Design bank erosion rate from Michael Baker 2003b		
2. Surveyed bank erosion from UMIAQ 2001 and 2017 surveys		

Several thermosyphons sustained damage from ice impacts during spring breakup in 2015. The damaged thermosyphons are not impacting the integrity of the pipeline and are not contributing to further bank erosion.

Floodwater did not reach the gravel pad during 2017 spring breakup. Based on visual observations conducted by Michael Baker, there was no notable erosion of the gravel pad.

POLYGON TROUGH SUBSIDENCE

Maximum incremental subsidence between 2016 and 2017 was 1.5 feet observed at STA 0+21 at cross section A. Maximum cumulative subsidence between 2001 and 2017 was 4.2 feet observed at STA 0+21 and STA 0+25 at cross section A. Cross section B experienced a maximum cumulative subsidence between 2001 and 2017 of 3.9 feet at STA 0+35.

Active erosion and sloughing continue along the east bank north of the NPS 14 oil pipeline. In 2001, sandbags and Styrofoam were installed in the bank to reduce melting ice lenses and combat further erosion. Exposed sandbags and Styrofoam were evident at the toe of the polygon trough, similar to site conditions encountered during the 2016 field visit.

3.3 KACHEMACH RIVER

VISUAL OBSERVATIONS

At the time of the field visit, flow was observed across the entire gravel channel at the pipeline crossing. Wetted width was approximately 75 feet with a maximum depth of approximately 3 feet.

VSM TILT

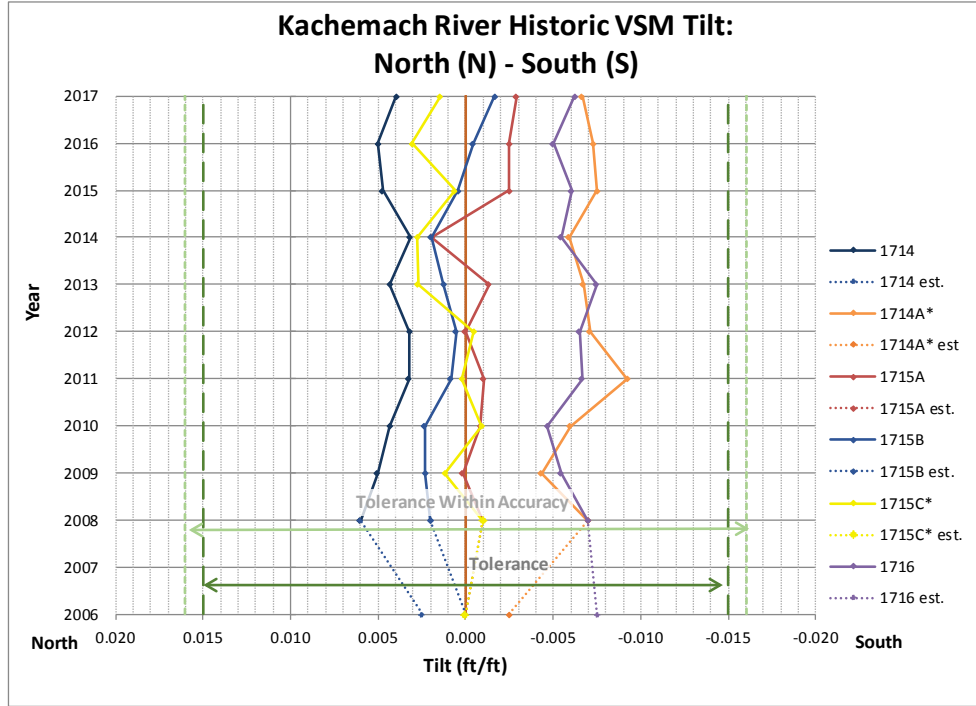
A summary of VSM tilt survey results is presented in Table 3.7. A summary of the change in tilt measurements between 2016 and 2017 is presented in Table 3.8. A historical summary of the change in VSM tilt by orientation between 2006 and 2017 is presented in Graph 3.5 and Graph 3.6.

Table 3.7: Kachemach River VSM Tilt Measurement Results

Kachemach River VSM Number	Tilt Measurement Orientation (ft/ft)		Comment
	North/South	East/West	
1714	0.004 N	0.0054 E	Plumb
1714A*	0.0067 S	0.0135 E	Plumb
1715A	0.0029 S	<0.001	Plumb
1715B	0.0017 S	0.0019 W	Plumb
1715C*	0.0015 N	0.0146 E	Plumb
1716	0.0063 S	0.0067 E	Plumb
*Abandoned VSM			

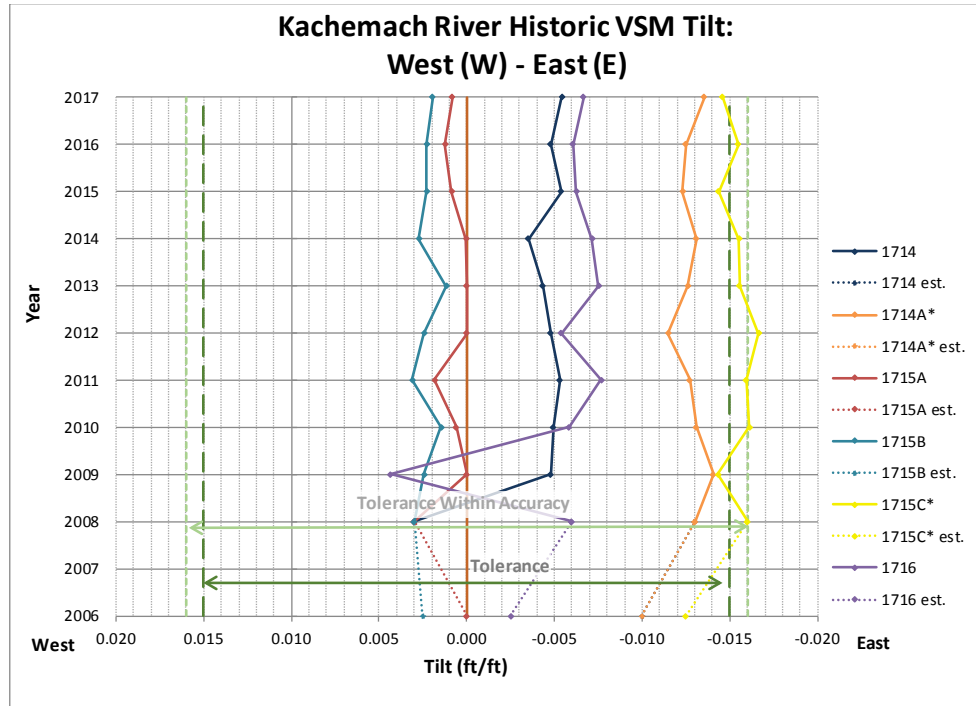
Table 3.8: Kachemach River VSM Change in Tilt, 2016-2017

Kachemach River VSM Number	Change in Tilt Measurement Orientation (ft/ft)	
	North/South	East/West
1714	0.001 S	<0.001
1714A*	<0.001	0.001 E
1715A	<0.001	<0.001
1715B	0.0013 S	<0.001
1715C*	0.0016 S	<0.001
1716	0.0013 S	<0.001
*Abandoned VSM		



- Notes:**
1. Positive tilt indicates north (N), negative tilt indicates south (S).
 2. Project tilt tolerance for VSM is +/- 0.015 ft/ft.
 3. Survey accuracy of this project is +/-0.001 ft/ft.
 4. Tilt measurements were not taken at this location in 2007; tilt is estimated between 2006 and 2008.
 5. VSMs 1714A and 171C are abandoned.

Graph 3.5: Kachemach River VSM Historical Change in Tilt, North/South



- Notes:**
1. Positive tilt indicates west (W), negative tilt indicates east (E).
 2. Project tilt tolerance for VSM is +/- 0.015 ft/ft.
 3. Survey accuracy of this project is +/-0.001 ft/ft.
 4. Tilt measurements were not taken at this location in 2007; tilt is estimated between 2006 and 2008.
 5. VSMs 1714A and 171C are abandoned.

Graph 3.6: Kachemach River VSM Historical Change in Tilt, East/West

BANK EROSION

A. EAST BANK

The average rate of incremental bank erosion between 2012 and 2017 and cumulative bank erosion between 2002 and 2017 along the entire 420-foot top of bank were both 0.3 ft/yr. This value averages both erosion and deposition. The maximum incremental bank erosion between 2012 and 2017 was 9.2 feet observed at STA 2+40, approximately 170 feet upstream (south) of the Alpine Pipeline centerline (STA 4+10).

The maximum cumulative bank erosion at the pipeline centerline was 0.0 feet. The maximum cumulative bank erosion overall was 22.2 feet observed at STA 2+10 over the 15-year period, approximately 200 feet upstream (south) of the pipeline centerline, yielding a yearly erosion rate of 1.5 ft/yr.

B. WEST BANK

The average rate of incremental bank erosion between 2012 and 2017 and cumulative bank erosion between 2002 and 2017 along the entire 440-foot top of bank were both 0.2 ft/yr. This value averages both erosion and deposition. The maximum incremental bank erosion between 2012 and 2017 was 0.1 feet observed at STA 2+20, approximately 51 feet upstream (south) of the Alpine Pipeline centerline (STA 2+71).

The maximum cumulative bank erosion at the pipeline centerline was 0.0 feet. The maximum cumulative bank erosion overall was 15.6 feet at STA 1+10 over the 15-year period, approximately 161 feet upstream (south) of the pipeline centerline, yielding a yearly erosion rate of 1.0 ft/yr.

VSM SCOUR

No excessive scour was observed at the base of any VSM located within the main channel or floodplain. Ground depressions observed at the base of VSM 1714, 1715C, and 1716 are likely the result of consolidated backfill material and are not attributed to hydraulic events. A summary of VSM scour results in the floodplain of the Kachemach River is presented in Table 3.9.

Table 3.9: Kachemach River Floodplain VSM Ground Depression Results

Kachemach River VSM Number	Location Description	Ground Depression ^{1,2} (ft)				Notes
		North	East	South	West	
1714	Grassy Floodplain	1.9	1.8	1.8	1.4	Ground depression is approximately 3.0 feet in diameter
1715C	Grassy Floodplain	-	-	0.8	1.0	Ground depression is approximately 1.5 feet in diameter
1716	Grassy Floodplain	0.8	-	-	1.0	Ground depression is approximately 1.5 feet in diameter
Notes:						
1. Measurement units are feet below adjacent ground						
2. A dash line “-” indicates no ground depression was observed						

The minimum bed elevation surveyed by UMIAQ was within the 21.75 ft BPMSL contour on the south side (upstream side) of both VSMs 1715A and 1715B on the outside of the casings. The

minimum bed elevation surveyed by Michael Baker was 21.8 ft BPMSL on the south side (upstream side) of VSM 1715B on the outside of the casing. VSM 1715A and 1715B have permanent steel casings installed as a countermeasure to control local scour. The minimum bed elevation prior to construction at VSM 1715B was 27.1 ft BPMSL based on design drawings (Michael Baker 1998). Therefore, the change in bed elevation since the pipeline was constructed at 1715B was 5.3 feet. A summary of VSM scour survey results by Michael Baker in the main channel is presented in Table 3.10.

Table 3.10: Kachemach River Main Channel VSM Scour Results

Kachemach River VSM Number	Location Description	Casing	Scour Hole Elevation ¹ (ft BPMSL)			
			North	East	South	West
1714A	Channel	-	24.0	23.7	23.7	24.0
1715A	Channel	Inside	24.0	23.4	23.8	24.0
		Outside	22.9	22.0	21.9	22.6
1715B	Channel	Inside	23.7	23.9	23.2	23.6
		Outside	22.9	22.1	21.8	22.6

Notes:

1. Scour hole elevations from Michael Baker 2017 survey
2. The water surface elevation at the time of the survey was 26.7 ft BPMSL

VSM SETTLEMENT & JACKING

The average rate of incremental vertical change between 2012 and 2017 and cumulative vertical change between 2004 and 2017 were 0.006 ft/yr and 0.002 ft/yr, respectively. These values average both settlement and jacking. The maximum incremental settlement between 2012 and 2017 was 0.001 feet at VSM 1713. The maximum incremental jacking between 2012 and 2017 was 0.143 feet at VSM 1714A. The maximum of cumulative settlement between 2004 and 2017 was 0.095 feet at VSM 1715C, yielding an average rate of cumulative settlement of 0.007 ft/yr. The maximum cumulative jacking between 2004 and 2017 was 0.108 feet at VSM 1715A, yielding an average rate of cumulative jacking of 0.008 ft/yr.

3.4 MILUVEACH RIVER

VISUAL OBSERVATIONS

At the time of the field visit, flow upstream of the pipeline crossing was observed across the entire gravel channel. Flow downstream of the pipeline crossing was split by a gravel bar, with the majority of flow being conveyed on the left (west) side of the channel, as seen in previous years. Wetted width was approximately 90 feet with a maximum depth of approximately 1 foot.

VSM TILT

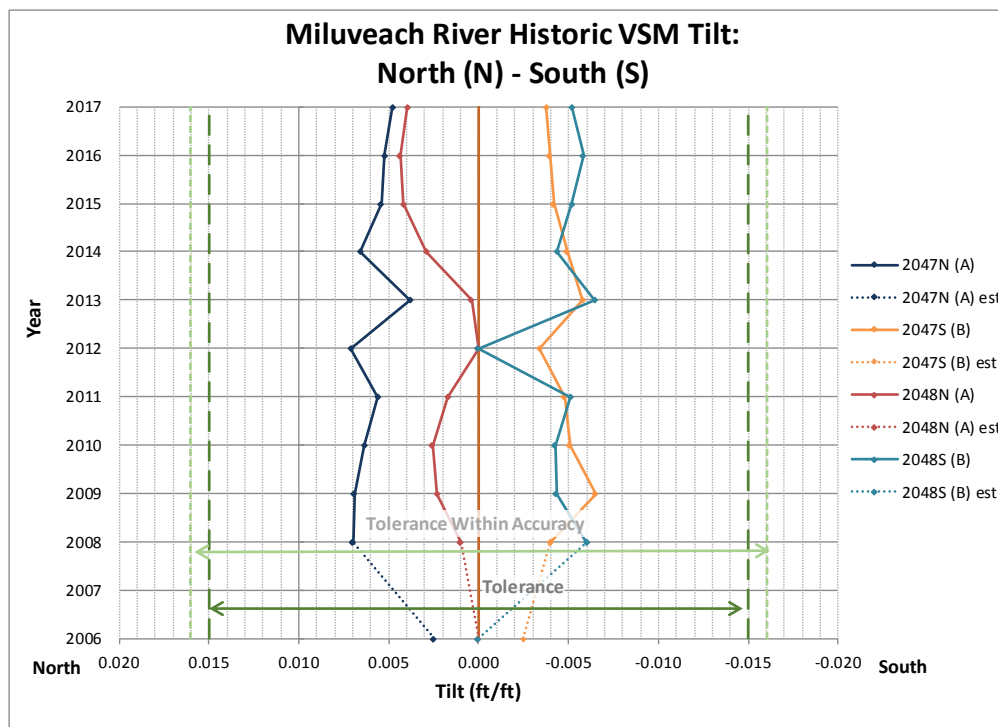
A summary of VSM tilt survey results is presented in Table 3.11. A summary of the change in tilt measurements between 2016 and 2017 is presented in Table 3.12. A historical summary of the change in VSM tilt by orientation between 2006 and 2017 is presented in Graph 3.7 and Graph 3.8.

Table 3.11: Miluveach River VSM Tilt Measurement Results

Miluveach River VSM Number	Tilt Measurement Orientation (ft/ft)		Comment
	North/South	East/West	
2047N (A)	0.0048 N	0.0029 E	Plumb
2047S (B)	0.0038 S	0.0027 E	Plumb
2048N (A)	0.004 N	0.005 W	Plumb
2048S (B)	0.0052 S	0.0092 E	Plumb

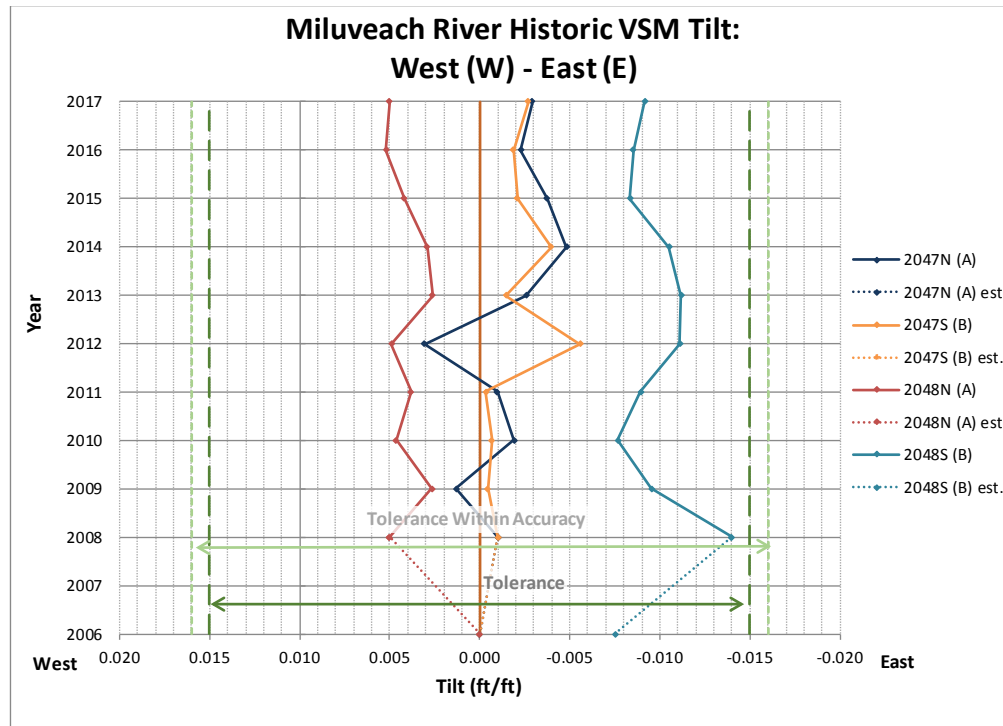
Table 3.12: Miluveach River VSM Change in Tilt, 2016-2017

Miluveach River VSM Number	Change in Tilt Measurement Orientation (ft/ft)	
	North/South	East/West
2047N (A)	<0.001	<0.001
2047S (B)	<0.001	<0.001
2048N (A)	<0.001	<0.001
2048S (B)	<0.001	<0.001



- Notes: 1. Positive tilt indicates north (N), negative tilt indicates south (S).
- 2. Project tilt tolerance for VSM is +/- 0.015 ft/ft.
- 3. Survey accuracy of this project is +/-0.001 ft/ft.
- 4. Tilt measurements were not taken at this location in 2007; tilt is estimated between 2006 and 2008.

Graph 3.7: Miluveach River VSM Historical Change in Tilt, North/South



- Notes: 1. Positive tilt indicates west (W), negative tilt indicates east (E).
- 2. Project tilt tolerance for VSM is +/- 0.015 ft/ft.
- 3. Survey accuracy of this project is +/- 0.001 ft/ft.
- 4. Tilt measurements were not taken at this location in 2007; tilt is estimated between 2006 and 2008.

Graph 3.8: Miluveach River VSM Historical Change in Tilt, East/West

BANK EROSION

C. EAST BANK

The average rate of incremental bank erosion between 2012 and 2017 and cumulative bank erosion between 2002 and 2017 along the entire 620-foot top of bank were 0.1 ft/yr and 0.0 ft/yr, respectively. These values average both erosion and deposition. The maximum incremental bank erosion between 2012 and 2017 was 4.6 feet observed at STA 14+80, approximately 325 feet downstream (north) of the Alpine Pipeline centerline (STA 11+55).

The maximum cumulative bank erosion at the pipeline centerline was 0.0 feet. The maximum cumulative bank erosion overall was 4.6 feet observed at STA 14+80 over the 15-year period, approximately 325 feet downstream (north) of the pipeline centerline, yielding a yearly erosion rate of 0.3 ft/yr.

D. WEST BANK

The average rate of incremental bank erosion between 2012 and 2017 and cumulative bank erosion between 2002 and 2017 along the entire 610-foot top of bank were 0.0 ft/yr and 0.1 ft/yr, respectively. These values average both erosion and deposition. The maximum incremental bank erosion between 2012 and 2017 was 0.3 feet observed at STA 3+80, approximately 20 feet downstream (north) of the Alpine Pipeline centerline (STA 3+60).

The maximum cumulative bank erosion at the centerline of the pipeline centerline was 1.2 feet, yielding a yearly erosion rate of 0.1 ft/yr. The maximum cumulative bank erosion overall was 5.1 feet observed at STA 1+80 over the 15-year period, yielding a yearly erosion rate of 0.3 ft/yr.

VSM SCOUR

No excessive scour was observed at the base of any VSM located within the channel. The minimum bed elevation surveyed by UMIAQ was within the 43.75 ft BPMSL contour on the southeast side (upstream side) of VSM 2048S (B). The minimum bed elevation surveyed by Michael Baker was 43.7 ft BPMSL on the south side (upstream side) of VSM 2048S (B). The minimum bed elevation prior to construction at VSM 2048S (B) was 47.3 ft BPMSL based on design drawings (Michael Baker 1998). Therefore, the change in bed elevation since the pipeline was constructed at VSM 2048S (B) is 3.6 feet. A summary of VSM scour survey results by Michael Baker is presented in Table 3.13.

Table 3.13: Miluveach River VSM Scour Results

Miluveach River VSM Number	Location Description	Scour Hole Elevation ^{1,2} (ft BPMSL)			
		North	East	South	West
2047N (A)	Grassy Mud – Bank/Channel Interface	-	-	-	45.5
2047S (B)	Grassy Mud – Bank/Channel Interface	-	-	-	-
2048N (A)	Channel	44.6	44.5	44.3	44.5
2048S (B)	Channel	44.3	43.9	43.7	44.0

Notes:

1. Scour hole elevations from Michael Baker 2017 survey
2. A dash line “-“ indicates no scour hole was observed
3. The water surface elevation at the time of the survey was 45.8 ft BPMSL

VSM & HSM SETTLEMENT & JACKING

The average rate of incremental vertical change between 2012 and 2017 and cumulative vertical change between 2004 and 2017 were 0.018 ft/yr and 0.027 ft/yr, respectively. These values average both settlement and jacking. The maximum incremental settlement between 2012 and 2017 was 0.027 feet at HSM 2049 S. The maximum incremental jacking between 2012 and 2017 was 0.228 feet at HSM 2047S (B). The maximum cumulative jacking between 2004 and 2017 was 0.629 feet at HSM 2047A (N), yielding an average rate of cumulative jacking of 0.048 ft/yr. No cumulative settlement has occurred since 2004.

4. CONCLUSION

Channel morphology and flow direction within the channels remain largely unchanged. The pipeline at each monitoring location appeared to be in stable condition with no visual indication of leaks. No ponding, cracks, or pressure ridges were evident over the buried pipe axis at HDD West and HDD East. The HDD West, HDD East, Kachemach River, and Miluveach River VSMs monitored were all plumb and within project tolerance based on tilt measurements and project method accuracy. The tilt of VSM 1715C (abandoned) at the Kachemach River crossing is within but near the project tolerance in the east/west orientation.

Gravel pad erosion was not observed at the HDD West and HDD East gravel pads. Bank erosion at all four monitoring locations was less than 50% of the respective design setback. If in the future, the banks “migrate 50% of the design setback, erosion rates or possible mitigation measures will be evaluated” (Michael Baker 2003c). The design setback, cumulative bank erosion at the pipeline centerline, and percent of design setback at each monitoring location is presented in Table 4.1.

Table 4.1: Bank Erosion Design Setback Survey Results

Monitoring Location	Design Setback ¹ (ft)	Cumulative Bank Erosion at Pipeline Centerline ² (ft)	Percent of Design Setback (%)
HDD West	105	12	11.4
HDD East	115	18	15.7
Kachemach River - East Bank	25	0.03	0.1
Kachemach River - West Bank	25	0.02	0.1
Miluveach River - East Bank	35	0.00	0.0
Miluveach River - West Bank	35	1.22	3.5

Notes:
 1. Design setbacks from Michael Baker 2003b and 2003c
 2. Surveyed bank erosion from UMIAQ 2017 survey

Observed scour of each measured VSM at the Kachemach River and Miluveach River were found to be within project design criteria. Scour at the VSMs in the main channel of the Kachemach River and Miluveach River monitoring locations was greater than the design minimum scour hole elevations, as presented in Table 4.2.

Table 4.2: VSM Design Scour Survey Results

Monitoring Location	Design Minimum Scour Hole Elevation ¹ (ft BPMSL)	Surveyed Minimum Scour Hole Elevation ² (ft BPMSL)
	Main Channel	Main Channel
Kachemach River	6.9	21.8
Miluveach River	35.1	43.7

Notes:
 1. Design scour hole elevations from Michael Baker 2003c
 2. Surveyed scour hole elevations from Michael Baker 2017 survey

Since 2004, the maximum vertical change of any one pile cap at HDD West, Kachemach River, and the Miluveach River was 0.09 feet, 0.11 feet, and 0.63 feet, respectively. Since 2001, the maximum cumulative polygon trough subsidence at HDD East was 4.2 feet.

5. REFERENCES

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- 2008. Alpine Pipelines Surveillance and Monitoring Program. Alpine Oil Pipeline ADL 415701, Alpine Utility Pipeline ADL415857, Alpine Diesel Pipeline ADL 415932. Edition 1, Revision 0. February 2008.
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- 2014. 2014 Alpine Pipeline River Crossing Monitoring Report. Prepared for ConocoPhillips Alaska. 141674-MBJ-RPT-001. September 2014.
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- 2003a. 2003 Alpine Pipeline River Crossing Monitoring. Prepared for ConocoPhillips Alaska. 101376-MBJ-001. July 2003.
- 2003b. Alpine Development. Colville River Crossing Design Report. Prepared for Arco Alaska Inc. 23100-MBJ-RP-003. June 1997. Rev 5. 2003.
- 2003c. Mechanical Analysis of Aboveground Pipeline & Aboveground River Crossings. Prepared for ARCO Alaska Inc. 23100-MBJ-RP-001. October 1997. Rev 7. 2003.
- 2002. HDD Transition Zones Civil Surveillance Trip Report – 2001. Prepared for Phillips Alaska Inc. 25114-217-MBJ-001. January 2002.
- 1998. Alpine Development Overland Pipeline PI-03 to PI-40 Plan and Profile Drawings. November 1998.

Appendix A MONITORING LOCATION PHOTOGRAPHS

A.1 HDD WEST



Photo A-1: HDD West during spring breakup, looking south (upstream); May 31, 2017



Photo A-2: HDD West after spring breakup, looking southeast (upstream); June 5, 2017



Photo A-3: HDD West after spring breakup, looking north (downstream); June 7, 2016



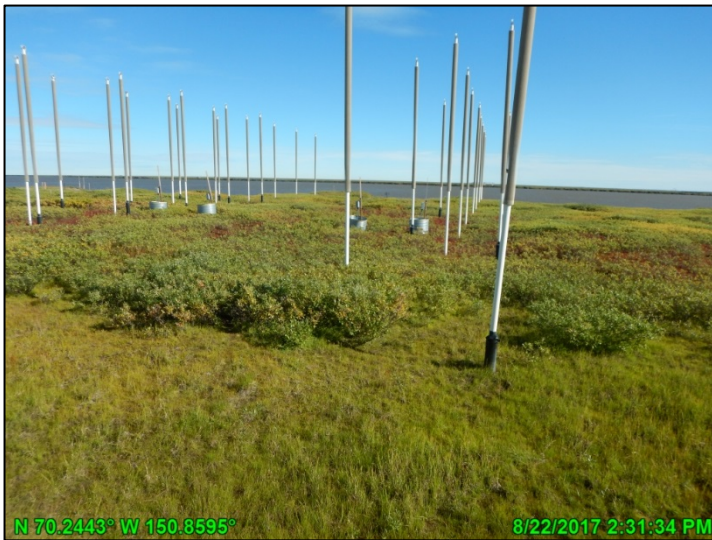
Photo A-4: HDD West after spring breakup, looking northwest (downstream); June 27, 2017



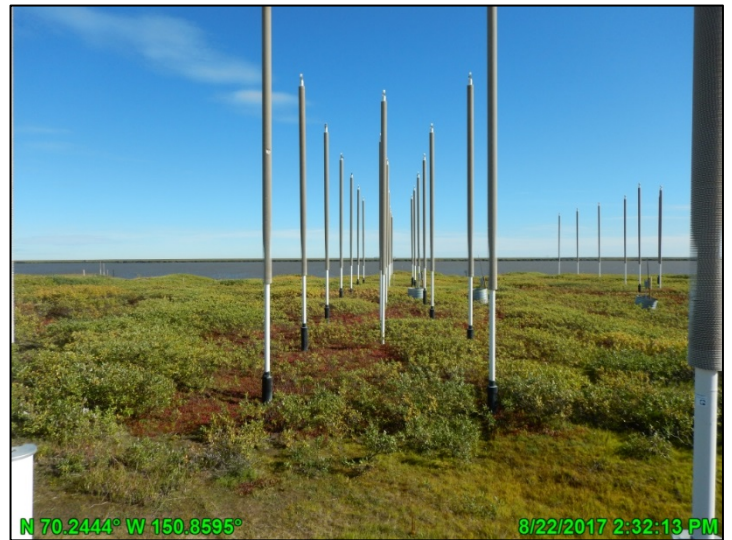
**Photo A-5: HDD West, looking northwest;
August 22, 2017**



**Photo A-6: HDD West, looking southeast; August
22, 2017**



**Photo A-7: HDD West gravel pad and south
side thermosyphons, looking east; August 22,
2017**



**Photo A-8: HDD West gravel pad and north
side thermosyphons, looking east; August 22,
2017**



Photo A-9: HDD West bank, looking south (downstream); August 22, 2017



Photo A-10: HDD West bank, looking north (downstream); August 22, 2017

A.2 HDD EAST



Photo A-11: HDD East during spring breakup, looking southwest; May 23, 2017

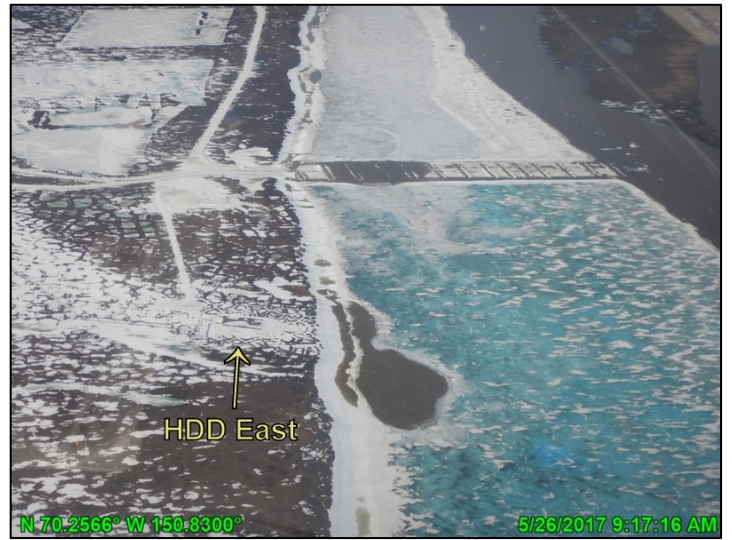


Photo A-12: HDD East during spring breakup, looking south (upstream); May 26, 2017

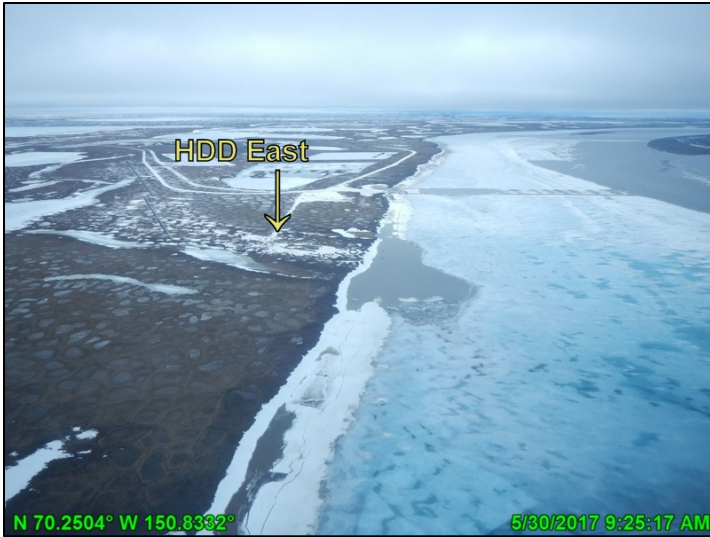


Photo A-13: HDD East during spring breakup, looking south (upstream); May 30, 2017



Photo A-14: HDD East during spring breakup, looking southeast; May 30, 2017



Photo A-15: HDD East, looking north (downstream); August 22, 2017



Photo A-16: HDD East, looking west; August 22, 2017



Photo A-17: HDD East gravel pad and north side thermosyphons, looking west; August 22, 2017

Photo A-18: HDD East gravel pad and south side thermosyphons, looking west; August 22, 2017



Photo A-19: HDD East bank, looking south (upstream); August 22, 2017

Photo A-20: HDD East bank, looking north (downstream); August 22, 2017

A.3 KACHEMACH RIVER



Photo A-21: Kachemach River prior to spring breakup, looking north (downstream); May 23, 2017



Photo A-22: Kachemach River during spring breakup, looking northwest (downstream); May 31, 2017



Photo A-23: Kachemach River, looking south (upstream); August 22, 2017



Photo A-24: Kachemach River, looking north (downstream); August 22, 2017



Photo A-25: Kachemach River, looking south (upstream); August 22, 2017



Photo A-26: Kachemach River VSM ground depression measurement; August 22, 2017



Photo A-27: Kachemach River east bank, looking north (downstream); August 22, 2017



Photo A-28: Kachemach River west bank, looking north (downstream); August 22, 2017

A.4 MILUVEACH RIVER



Photo A-29: Miluveach River, looking northwest (downstream); August 22, 2017



Photo A-30: Miluveach River, looking southeast (upstream); August 22, 2017



Photo A-31: Miluveach River VSM tilt measurement; August 22, 2017



Photo A-32: Miluveach River, looking east; August 22, 2017



Photo A-33: Miluveach River west bank, looking northwest (downstream); August 22, 2017



Photo A-34: Miluveach River east bank, looking northwest (downstream); August 22, 2017



Appendix B HDD WEST BANK EROSION AND FOUNDATION SETTLEMENT & JACKING SURVEY

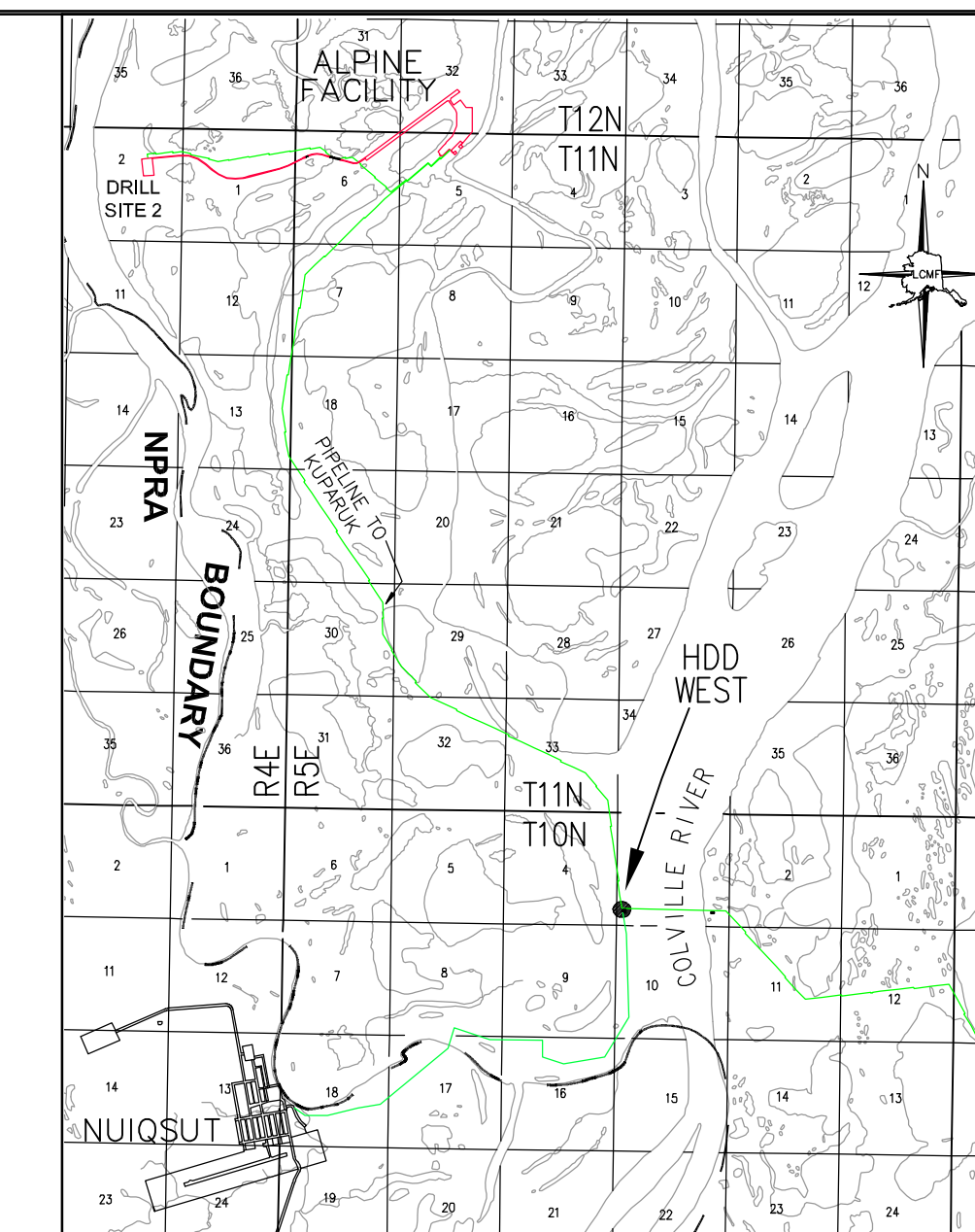


B.1 BANK EROSION

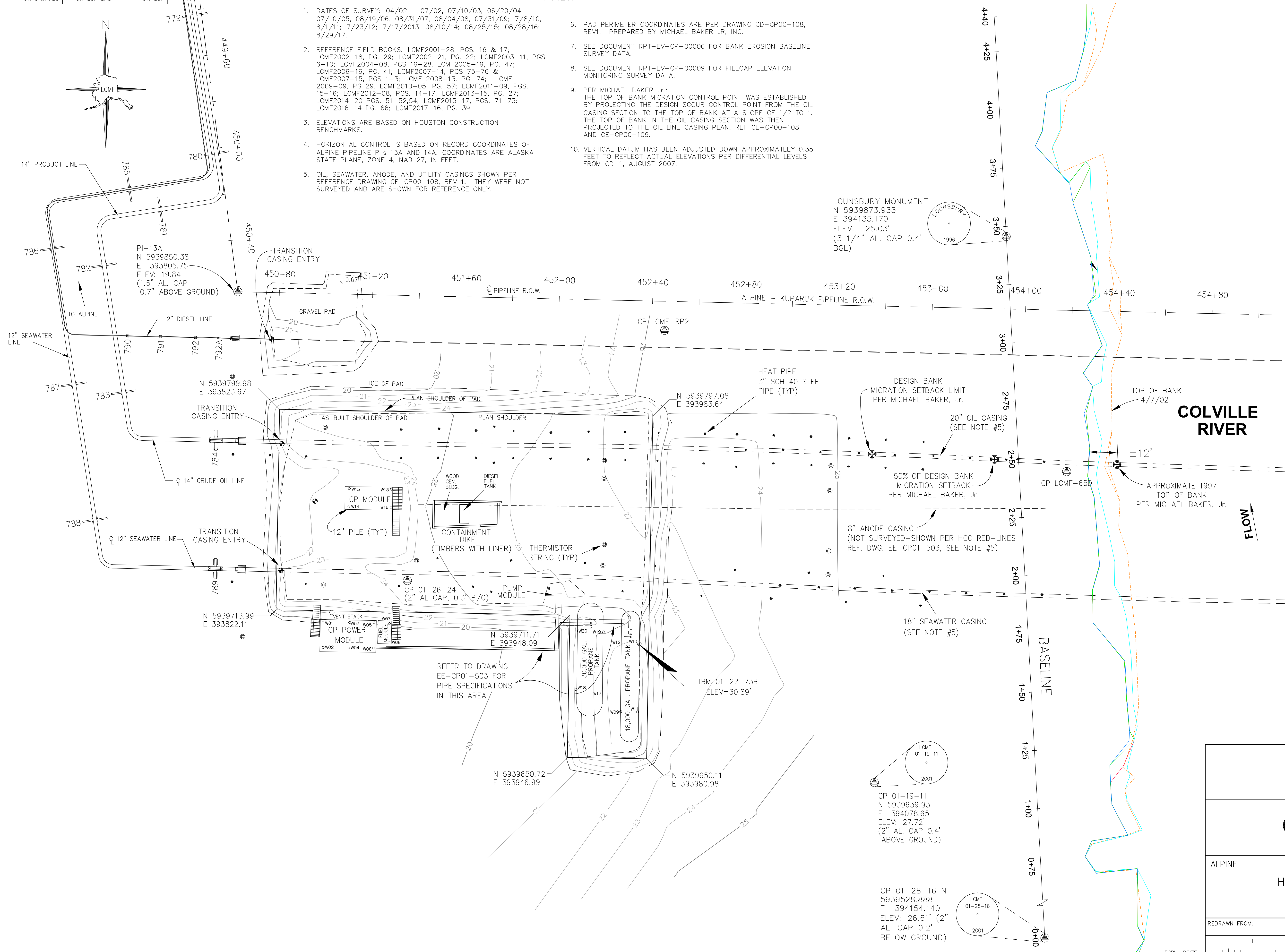
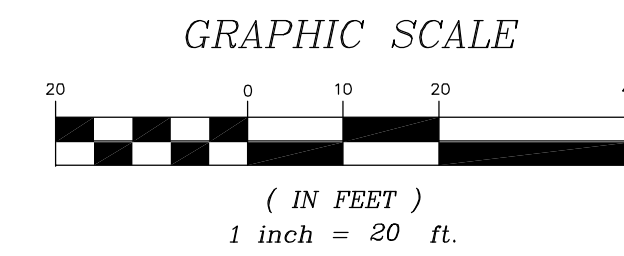
NOTES:

- DATES OF SURVEY: 04/02 - 07/02, 07/10/03, 06/20/04, 07/10/05, 08/19/06, 08/31/07, 08/04/08, 07/31/09, 7/8/10, 8/1/11, 7/23/12, 7/17/2013, 08/10/14, 08/25/15, 08/28/16, 8/29/17.
- REFERENCE FIELD BOOKS: LCMF2001-28, PGS. 16 & 17; LCMF2002-18, PG. 29; LCMF2002-21, PG. 22; LCMF2003-11, PGS 6-10; LCMF2004-08, PGS 19-28; LCMF2005-19, PG. 47; LCMF2006-16, PG. 41; LCMF2007-14, PGS 75-76 & LCMF2007-15, PGS 1-3; LCMF 2008-13, PG. 74; LCMF 2009-09, PG 29; LCMF2010-05, PG. 57; LCMF2011-09, PGS. 15-16; LCMF2012-08, PGS. 14-17; LCMF2013-15, PG. 27; LCMF2014-20 PGS. 51-52,54; LCMF2015-17, PGS. 71-73; LCMF2016-14 PG. 66; LCMF2017-16, PG. 39.
- ELEVATIONS ARE BASED ON HOUSTON CONSTRUCTION BENCHMARKS.
- HORIZONTAL CONTROL IS BASED ON RECORD COORDINATES OF ALPINE PIPELINE PI'S 13A AND 14A. COORDINATES ARE ALASKA STATE PLANE, ZONE 4, NAD 27, IN FEET.
- OIL, SEAWATER, ANODE, AND UTILITY CASINGS SHOWN PER REFERENCE DRAWING CE-CP00-108, REV 1. THEY WERE NOT SURVEYED AND ARE SHOWN FOR REFERENCE ONLY.
- PAD PERIMETER COORDINATES ARE PER DRAWING CD-CP00-108, REV1. PREPARED BY MICHAEL BAKER JR, INC.
- SEE DOCUMENT RPT-EV-CP-00006 FOR BANK EROSION BASELINE SURVEY DATA.
- SEE DOCUMENT RPT-EV-CP-00009 FOR PILECAP ELEVATION MONITORING SURVEY DATA.
- PER MICHAEL BAKER JR.: THE TOP OF BANK MIGRATION CONTROL POINT WAS ESTABLISHED BY PROJECTING THE DESIGN SCOUR CONTROL POINT FROM THE OIL CASING SECTION TO THE TOP OF BANK AT A SLOPE OF 1/2 TO 1. THE TOP OF BANK IN THE OIL CASING SECTION WAS THEN PROJECTED TO THE OIL LINE CASING PLAN. REF CE-CP00-108 AND CE-CP00-109.
- VERTICAL DATUM HAS BEEN ADJUSTED DOWN APPROXIMATELY 0.35 FEET TO REFLECT ACTUAL ELEVATIONS PER DIFFERENTIAL LEVELS FROM CD-1, AUGUST 2007.

LOUNSBURY MONUMENT
 N 5939873.933
 E 394135.170
 ELEV: 25.03'
 (3 1/4" AL. CAP 0.4' BGL)



- LEGEND
- HEAT PIPE
 - THERMISTOR STRING
 - TRANSITION CASING ENTRY POINT
 - 1' CONTOUR LINES
 - PILE
 - SURVEY CONTROL
 - MICHAEL BAKER JR. MIGRATION POINT
 - TOE OF PAD
 - SHOULDER OF PAD
 - TOP OF BANK 7/8/02
 - TOP OF BANK 8/10/14
 - TOP OF BANK 8/25/15
 - TOP OF BANK 8/28/16
 - TOP OF BANK 8/29/17



COLVILLE RIVER
 FLOW

BASELINE



ConocoPhillips
 Alaska, Inc.

ALPINE MODULE: CP00 UNIT: CP
 HDD BANK EROSION MONITORING
 HDD SITE - WEST
 ALPINE FACILITY

DATE: 11/5/02	DRAWN: CZ	DESIGN: JZ	ECM NO: 1870227ACS
SCALE: 1"=20'	CHECKED: JZ	APPROVAL: ML	CC NO:
JOB NO: 02-205	SUB JOB NO:	DRAWING NO: CE-CP00-143	CADD FILE NO: 01-12-05-1WEST
REV: 16	1 OF 1		

REV	DATE	REVISIONS	BY	CHK	JOB ENGR	PROJ ENGR	CUST APP	REV	DATE	REVISIONS	BY	CHK	JOB ENGR	PROJ ENGR	CUST APP
12	7/17/13	UPDATED PER 9670829ACS	CZ	DB				6	8/31/07	UPDATED PER 4810351ACS	CZ	DB			
11	7/23/12	UPDATED PER 9101901ACS	AG	DB				5	8/21/06	UPDATED PER 4116808ACS	AG	GD			
10	8/3/11	UPDATED PER 8292382ACS	AG	DB				16	8/31/17	UPDATED PER 22259977ACS	CZ	GD			
9	7/10/10	UPDATED PER 7224503ACS	CZ	GD				15	9/05/16	UPDATED PER 21654942ACS	CZ	DB			
8	7/31/09	UPDATED PER 6370813ACS	AG	DB				14	9/01/15	UPDATED PER 20967693ACS	CZ	DB			
7	8/7/08	UPDATED PER 5538034ACS	CZ	GD				13	08/11/14	ISSUED PER 20306694ACS	TB	DB			

**Alpine CP 00
 HDD West Site
 Streambank Monitor**

Baseline Station	Streambank Monitor - Top of Bank Locations																Description	
	See Drawing CE-CP00-143 Rev 16 for Survey Baseline Location																	
	4/7/2002	7/8/2002	7/10/2003	6/20/2004	7/10/2005	8/19/2006	8/31/2007	8/5/2008	7/31/2009	7/8/2010	8/1/2011	7/23/2012	7/17/2013	8/10/2014	8/26/2015	8/28/2016	8/29/2017	Date
0+00	39.5	39.5	39.5	39.5	39.3	39.3	39.3	39.3	39.4	39.3	39.4	39.6	39.6	39.6	39.6	39.6	39.6	Baseline Offset (In Feet)
		0.0	0.0	0.0	-0.2	0.0	0.0	0.0	0.1	-0.1	0.1	0.2	0.0	0.0	0.0	0.0	0.0	Incremental Change
		0.0	0.0	0.0	-0.3	-0.2	-0.2	-0.2	-0.1	-0.2	-0.1	0.1	0.1	0.1	0.1	0.1	0.1	Cumulative Change
0+05	39.3	39.3	39.3	39.3	37.6	37.6	37.6	37.6	37.7	37.6	37.7	37.8	37.8	37.8	37.8	37.8	37.8	Baseline Offset (In Feet)
		0.0	0.0	0.0	-1.7	0.0	0.0	0.0	0.1	-0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	Incremental Change
		0.0	0.0	0.0	-1.7	-1.7	-1.7	-1.7	-1.6	-1.7	-1.6	-1.5	-1.5	-1.5	-1.5	-1.5	-1.5	Cumulative Change
0+10	39.4	39.4	39.4	39.4	38.5	38.5	38.5	38.5	38.7	38.5	38.7	38.8	38.8	38.8	36.5	36.5	36.5	Baseline Offset (In Feet)
		0.0	0.0	0.0	-0.9	0.0	0.0	0.0	0.2	-0.2	0.2	0.1	0.0	0.0	-2.3	0.0	0.0	Incremental Change
		0.0	0.0	0.0	-0.9	-0.9	-0.9	-0.9	-0.7	-0.9	-0.6	-0.5	-0.5	-0.5	-2.9	-2.9	-2.9	Cumulative Change
0+20	45.8	45.8	45.8	45.8	41.9	41.9	41.9	41.9	39.9	39.9	39.8	40.1	40.1	40.1	34.9	34.9	34.9	Baseline Offset (In Feet)
		0.0	0.0	0.0	-3.8	0.0	0.0	0.0	-2.0	0.0	-0.1	0.4	0.0	0.0	-5.2	0.0	0.0	Incremental Change
		0.0	0.0	0.0	-3.8	-3.9	-3.9	-3.9	-5.9	-5.9	-6.0	-5.6	-5.6	-5.6	-10.9	-10.9	-10.9	Cumulative Change
0+25	41.5	41.5	41.5	41.5	39.1	39.1	39.1	39.1	37.6	37.6	37.6	37.9	37.9	37.9	33.8	33.8	33.8	Baseline Offset (In Feet)
		0.0	0.0	0.0	-2.4	0.0	0.0	0.0	-1.5	0.0	0.0	0.3	0.0	0.0	-4.1	0.0	0.0	Incremental Change
		0.0	0.0	0.0	-2.4	-2.4	-2.4	-2.4	-3.9	-3.9	-3.9	-3.7	-3.7	-3.7	-7.7	-7.7	-7.7	Cumulative Change
0+30	37.7	37.9	37.9	37.9	37.9	37.9	37.9	37.9	37.8	37.9	37.9	38.1	38.1	38.1	34.0	34.0	34.0	Baseline Offset (In Feet)
		0.1	0.0	0.0	0.0	0.0	0.0	0.0	-0.1	0.1	0.0	0.2	0.0	0.0	-4.1	0.0	0.0	Incremental Change
		0.1	0.1	0.1	0.2	0.1	0.2	0.2	0.1	0.2	0.2	0.4	0.4	0.4	-3.7	-3.7	-3.7	Cumulative Change
0+40	41.9	41.9	41.9	41.9	41.9	41.9	41.9	41.9	42.2	41.9	41.6	41.8	41.8	41.8	41.6	41.6	41.6	Baseline Offset (In Feet)
		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	-0.3	-0.3	0.2	0.0	0.0	-0.2	0.0	0.0	Incremental Change
		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	-0.3	-0.1	-0.1	-0.1	-0.3	-0.3	-0.3	Cumulative Change
0+50	42.0	42.0	42.0	42.0	42.0	42.0	44.5	44.5	44.5	44.0	44.0	44.3	44.3	44.3	40.2	40.2	40.2	Baseline Offset (In Feet)
		0.0	0.0	0.0	0.0	0.0	2.5	0.0	0.0	-0.5	0.0	0.3	0.0	0.0	-4.1	0.0	0.0	Incremental Change
		0.0	0.0	0.0	0.0	0.0	2.5	2.5	2.5	2.0	1.9	2.3	2.3	2.3	-1.8	-1.8	-1.8	Cumulative Change
0+60	41.4	41.4	41.4	41.4	41.4	41.4	46.4	46.4	46.3	46.4	46.3	46.3	46.3	46.3	40.8	40.8	40.8	Baseline Offset (In Feet)
		0.0	0.0	0.0	0.0	0.0	5.0	0.0	-0.1	0.1	-0.1	0.0	0.0	0.0	-5.5	0.0	0.0	Incremental Change
		0.0	0.0	0.0	0.0	0.0	5.0	5.0	4.9	5.0	4.9	4.9	4.9	4.9	-0.6	-0.6	-0.6	Cumulative Change
0+70	40.7	40.7	40.7	40.7	40.7	40.7	41.9	41.9	41.9	41.9	42.1	42.1	42.1	42.1	42.1	42.1	42.1	Baseline Offset (In Feet)
		0.0	0.0	0.0	0.0	0.0	1.2	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	Incremental Change
		0.0	0.0	0.0	0.0	0.0	1.2	1.2	1.2	1.2	1.4	1.4	1.4	1.4	1.4	1.4	1.4	Cumulative Change

Alpine CP 00
HDD West Site
Streambank Monitor

Baseline Station	Streambank Monitor - Top of Bank Locations																Description	
	See Drawing CE-CP00-143 Rev 16 for Survey Baseline Location																	
	4/7/2002	7/8/2002	7/10/2003	6/20/2004	7/10/2005	8/19/2006	8/31/2007	8/5/2008	7/31/2009	7/8/2010	8/1/2011	7/23/2012	7/17/2013	8/10/2014	8/26/2015	8/28/2016	8/29/2017	Date
0+75	21.4	21.4	21.4	21.4	21.4	21.4	21.4	21.4	21.3	21.4	21.3	21.4	21.4	21.4	21.4	21.4	21.4	Baseline Offset (In Feet)
		0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.1	0.1	-0.1	0.0	0.0	0.0	0.0	0.0	0.0	Incremental Change
		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.1	0.0	-0.1	0.0	0.0	0.0	0.0	0.0	0.0
0+80	20.1	20.1	20.1	20.1	20.1	20.1	20.1	20.1	20.1	20.1	20.2	20.3	20.3	20.3	20.3	20.3	20.3	Baseline Offset (In Feet)
		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0	Incremental Change
		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.2	0.2	0.2	0.2	0.2
0+85	29.0	29.0	29.0	29.0	29.0	29.0	29.7	29.7	30.3	29.7	30.3	30.7	30.7	30.1	30.1	30.1	30.1	Baseline Offset (In Feet)
		0.0	0.0	0.0	0.0	0.0	0.7	0.0	0.6	-0.6	0.6	0.4	0.0	-0.6	0.0	0.0	0.0	Incremental Change
		0.0	0.0	0.0	0.0	0.0	0.7	0.7	1.3	0.7	1.3	1.7	1.7	1.1	1.1	1.1	1.1	1.1
0+90	42.8	42.8	42.8	42.8	42.8	42.8	42.8	42.8	43.3	42.8	43.4	43.6	43.6	43.6	36.4	36.4	36.4	Baseline Offset (In Feet)
		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	-0.5	0.6	0.2	0.0	0.0	-7.2	0.0	0.0	Incremental Change
		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.0	0.5	0.8	0.8	0.8	-6.4	-6.4	-6.4
1+00	38.7	38.7	38.7	38.7	38.7	38.7	38.7	38.7	38.9	38.7	39.0	39.1	39.1	39.1	31.9	31.9	31.9	Baseline Offset (In Feet)
		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	-0.2	0.3	0.1	0.0	0.0	-7.2	0.0	0.0	Incremental Change
		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.2	0.4	0.4	0.4	-6.8	-6.8	-6.8
1+05	37.9	37.9	37.9	37.9	37.9	37.9	37.9	37.9	37.8	37.9	38.0	38.2	38.2	38.2	31.8	31.8	31.8	Baseline Offset (In Feet)
		0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.1	0.1	0.1	0.2	0.0	0.0	-6.4	0.0	0.0	Incremental Change
		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.1	0.0	0.1	0.3	0.3	0.3	-6.1	-6.1	-6.1
1+10	41.4	41.4	41.4	41.4	39.2	39.2	39.2	39.2	39.2	39.2	39.2	39.4	39.4	39.4	32.2	31.8	31.8	Baseline Offset (In Feet)
		0.0	0.0	0.0	-2.2	0.1	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	-7.2	-0.4	0.0	Incremental Change
		0.0	0.0	0.0	-2.2	-2.2	-2.2	-2.2	-2.2	-2.2	-2.2	-2.2	-2.0	-2.0	-2.0	-9.2	-9.6	-9.6
1+15	38.2	38.2	38.2	38.2	38.2	38.2	39.9	39.9	39.9	39.1	39.3	39.5	39.5	39.5	36.6	31.9	31.9	Baseline Offset (In Feet)
		0.0	0.0	0.0	0.0	0.0	1.7	0.0	0.0	-0.8	0.1	0.2	0.0	0.0	-2.9	-4.7	0.0	Incremental Change
		0.0	0.0	0.0	0.0	0.0	1.7	1.7	1.7	0.9	1.0	1.3	1.3	1.3	-1.6	-6.3	-6.3	Cumulative Change
1+20	39.4	39.4	39.4	39.4	39.4	39.4	40.4	40.4	40.4	40.4	40.5	40.7	40.7	40.7	40.7	35.2	34.5	Baseline Offset (In Feet)
		0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.1	0.2	0.0	0.0	0.0	-5.5	-0.7	Incremental Change
		0.0	0.0	0.0	0.0	0.0	1.0	1.0	1.0	1.0	1.1	1.3	1.3	1.3	1.3	-4.2	-4.9	Cumulative Change
1+25	41.4	41.4	41.4	41.4	41.4	41.4	41.4	41.4	42.1	41.4	42.1	42.3	42.3	42.3	42.3	40.6	39.0	Baseline Offset (In Feet)
		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.7	-0.7	0.7	0.2	0.0	0.0	0.0	-1.7	-1.6	Incremental Change
		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.7	0.0	0.7	0.9	0.9	0.9	0.9	-0.8	-2.4

Alpine CP 00
HDD West Site
Streambank Monitor

Baseline Station	Streambank Monitor - Top of Bank Locations																Description	
	See Drawing CE-CP00-143 Rev 16 for Survey Baseline Location																	
	4/7/2002	7/8/2002	7/10/2003	6/20/2004	7/10/2005	8/19/2006	8/31/2007	8/5/2008	7/31/2009	7/8/2010	8/1/2011	7/23/2012	7/17/2013	8/10/2014	8/26/2015	8/28/2016	8/29/2017	Date
1+30	43.0	43.0	43.0	43.0	43.0	43.0	43.0	43.0	43.5	43.0	43.6	43.8	43.8	43.8	41.7	41.7	41.0	Baseline Offset (In Feet)
		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	-0.5	0.6	0.2	0.0	0.0	-2.1	0.0	-0.7	Incremental Change
		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.0	0.5	0.8	0.8	0.8	-1.3	-1.3	-2.0	Cumulative Change
1+35	44.2	44.2	44.2	44.2	43.8	43.8	43.8	43.8	44.1	43.8	44.1	44.3	44.3	44.3	40.7	40.7	41.1	Baseline Offset (In Feet)
		0.0	0.0	0.0	-0.4	0.0	0.0	0.0	0.3	-0.3	0.3	0.2	0.0	0.0	-3.6	0.0	0.4	Incremental Change
		0.0	0.0	0.0	-0.4	-0.4	-0.4	-0.4	-0.1	-0.4	-0.1	0.1	0.1	0.1	-3.5	-3.5	-3.1	Cumulative Change
1+40	45.3	45.3	45.3	45.3	43.4	43.4	43.4	43.4	43.4	43.4	43.5	43.7	43.7	43.7	40.7	40.7	41.0	Baseline Offset (In Feet)
		0.0	0.0	0.0	-1.9	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.0	0.0	-3.0	0.0	0.3	Incremental Change
		0.0	0.0	0.0	-1.9	-1.9	-1.9	-1.9	-1.9	-1.9	-1.8	-1.6	-1.6	-1.6	-4.6	-4.6	-4.3	Cumulative Change
1+45	45.7	45.7	45.7	45.7	43.4	43.4	43.4	43.4	43.4	43.4	43.3	43.4	43.4	43.4	40.7	40.7	40.8	Baseline Offset (In Feet)
		0.0	0.0	0.0	-2.3	0.0	0.0	0.0	0.0	0.0	-0.1	0.1	0.0	0.0	-2.7	0.0	0.1	Incremental Change
		0.0	0.0	0.0	-2.3	-2.3	-2.3	-2.3	-2.3	-2.3	-2.4	-2.3	-2.3	-2.3	-5.0	-5.0	-4.9	Cumulative Change
1+50	45.7	45.7	45.7	45.7	43.9	43.9	43.9	43.9	44.1	43.9	43.4	43.5	43.5	43.5	40.7	40.7	40.7	Baseline Offset (In Feet)
		0.0	0.0	0.0	-1.8	0.0	0.0	0.0	0.2	-0.2	-0.5	0.1	0.0	0.0	-2.8	0.0	0.0	Incremental Change
		0.0	0.0	0.0	-1.8	-1.8	-1.8	-1.8	-1.6	-1.8	-2.3	-2.2	-2.2	-2.2	-5.0	-5.0	-5.0	Cumulative Change
1+60	45.8	45.8	45.8	44.9	44.2	44.3	44.3	44.3	44.2	43.7	43.8	43.6	43.6	43.6	40.6	40.6	40.6	Baseline Offset (In Feet)
		0.0	0.0	-1.0	-0.6	0.0	0.0	0.0	-0.1	-0.5	0.0	-0.1	0.0	0.0	-3.0	0.0	0.0	Incremental Change
		0.0	0.0	-1.0	-1.6	-1.6	-1.5	-1.5	-1.6	-2.1	-2.1	-2.2	-2.2	-2.2	-5.2	-5.2	-5.2	Cumulative Change
1+65	45.9	45.9	45.9	45.0	44.3	44.4	44.4	44.4	44.2	43.8	43.6	43.5	43.5	43.5	37.8	37.8	37.8	Baseline Offset (In Feet)
		0.0	0.0	-0.9	-0.7	0.1	0.0	0.0	-0.2	-0.4	-0.2	-0.1	0.0	0.0	-5.7	0.0	0.0	Incremental Change
		0.0	0.0	-0.9	-1.6	-1.5	-1.5	-1.5	-1.7	-2.1	-2.3	-2.4	-2.4	-2.4	-8.1	-8.1	-8.1	Cumulative Change
1+75	45.9	45.9	45.9	45.9	44.4	44.4	44.4	44.4	44.4	44.3	42.7	42.8	42.8	42.8	30.5	30.5	30.5	Baseline Offset (In Feet)
		0.0	0.0	0.0	-1.5	0.0	0.0	0.0	0.0	-0.1	-1.6	0.1	0.0	0.0	-12.3	0.0	0.0	Incremental Change
		0.0	0.0	0.0	-1.5	-1.5	-1.5	-1.5	-1.5	-1.6	-3.2	-3.1	-3.1	-3.1	-15.4	-15.4	-15.4	Cumulative Change
1+90	45.0	45.0	44.1	44.1	44.1	44.1	44.1	44.1	44.2	40.9	40.1	40.0	40.0	40.0	28.5	28.5	28.5	Baseline Offset (In Feet)
		0.0	-0.9	0.0	0.0	0.0	0.0	0.0	0.1	-3.3	-0.8	-0.1	0.0	0.0	-11.5	0.0	0.0	Incremental Change
		0.0	-0.9	-0.9	-0.9	-0.9	-0.9	-0.9	-0.8	-4.1	-4.9	-5.1	-5.1	-5.1	-16.5	-16.5	-16.5	Cumulative Change
1+95	44.9	44.9	42.8	42.8	42.8	42.8	42.8	42.8	42.8	37.8	38.0	38.2	38.2	38.2	29.5	29.5	29.5	Baseline Offset (In Feet)
		0.0	-2.1	0.0	0.0	0.0	0.0	0.0	0.0	-5.0	0.2	0.3	0.0	0.0	-8.7	0.0	0.0	Incremental Change
		0.0	-2.1	-2.1	-2.1	-2.1	-2.1	-2.1	-2.1	-7.1	-6.9	-6.7	-6.7	-6.7	-15.4	-15.4	-15.4	Cumulative Change

Alpine CP 00
HDD West Site
Streambank Monitor

Baseline Station	Streambank Monitor - Top of Bank Locations																Description	
	See Drawing CE-CP00-143 Rev 16 for Survey Baseline Location																	
	4/7/2002	7/8/2002	7/10/2003	6/20/2004	7/10/2005	8/19/2006	8/31/2007	8/5/2008	7/31/2009	7/8/2010	8/1/2011	7/23/2012	7/17/2013	8/10/2014	8/26/2015	8/28/2016	8/29/2017	Date
2+00	44.7	44.7	41.8	41.8	41.1	40.4	40.4	40.4	40.6	38.1	38.3	38.6	38.6	38.6	31.2	31.2	31.2	Baseline Offset (In Feet)
		0.0	-2.9	0.0	-0.8	-0.6	0.0	0.0	0.2	-2.5	0.2	0.3	0.0	0.0	-7.4	0.0	0.0	Incremental Change
		0.0	-2.9	-2.9	-3.6	-4.3	-4.3	-4.3	-4.1	-6.6	-6.5	-6.1	-6.1	-6.1	-13.5	-13.5	-13.5	Cumulative Change
2+05	44.6	44.6	40.4	40.4	39.7	38.4	38.4	38.4	38.3	38.4	38.3	38.6	38.6	38.6	32.1	32.1	32.1	Baseline Offset (In Feet)
		0.0	-4.2	0.0	-0.7	-1.4	0.0	0.0	-0.1	0.1	-0.1	0.3	0.0	0.0	-6.5	0.0	0.0	Incremental Change
		0.0	-4.2	-4.2	-4.8	-6.2	-6.2	-6.2	-6.3	-6.2	-6.2	-5.9	-5.9	-5.9	-12.5	-12.5	-12.5	Cumulative Change
2+10	43.7	43.7	40.4	40.2	40.2	38.3	38.3	38.3	38.1	38.3	37.6	37.9	37.9	37.9	32.0	32.0	32.0	Baseline Offset (In Feet)
		0.0	-3.2	-0.3	0.0	-1.9	0.0	0.0	-0.2	0.2	-0.7	0.3	0.0	0.0	-5.9	0.0	0.0	Incremental Change
		0.0	-3.2	-3.5	-3.5	-5.4	-5.4	-5.4	-5.6	-5.4	-6.0	-5.8	-5.8	-5.8	-11.7	-11.7	-11.7	Cumulative Change
2+20	41.5	41.5	41.5	40.6	40.6	37.5	37.5	37.5	37.2	37.5	36.1	36.3	36.3	36.3	31.8	31.8	31.8	Baseline Offset (In Feet)
		0.0	0.0	-0.9	0.0	-3.1	0.0	0.0	-0.3	0.3	-1.4	0.2	0.0	0.0	-4.5	0.0	0.0	Incremental Change
		0.0	0.0	-0.9	-0.9	-3.9	-4.0	-4.0	-4.3	-4.0	-5.4	-5.2	-5.2	-5.2	-9.7	-9.7	-9.7	Cumulative Change
2+25	42.0	42.0	42.0	40.7	40.7	35.9	35.9	35.9	35.7	35.9	35.1	35.2	35.2	35.2	31.6	31.6	31.6	Baseline Offset (In Feet)
		0.0	0.0	-1.3	0.0	-4.8	0.0	0.0	-0.2	0.2	-0.8	0.1	0.0	0.0	-3.6	0.0	0.0	Incremental Change
		0.0	0.0	-1.3	-1.3	-6.1	-6.1	-6.1	-6.3	-6.1	-6.9	-6.8	-6.8	-6.8	-10.4	-10.4	-10.4	Cumulative Change
2+30	42.4	42.3	42.2	40.9	40.9	34.2	34.2	34.2	34.2	34.2	34.1	34.2	34.2	34.2	31.5	31.5	31.5	Baseline Offset (In Feet)
		0.0	-0.1	-1.4	0.0	-6.6	0.0	0.0	0.0	0.0	-0.1	0.0	0.0	0.0	-2.7	0.0	0.0	Incremental Change
		0.0	-0.1	-1.5	-1.5	-8.1	-8.2	-8.2	-8.2	-8.2	-8.2	-8.2	-8.2	-8.2	-10.9	-10.9	-10.9	Cumulative Change
2+35	41.0	40.4	40.4	40.4	40.4	33.1	33.1	33.1	33.1	33.1	33.1	33.3	33.3	33.3	30.7	30.7	30.7	Baseline Offset (In Feet)
		-0.6	0.0	0.0	0.0	-7.3	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	-2.6	0.0	0.0	Incremental Change
		-0.6	-0.6	-0.6	-0.6	-7.9	-7.9	-7.9	-7.9	-7.9	-7.9	-7.7	-7.7	-7.7	-10.3	-10.3	-10.3	Cumulative Change
2+45	38.3	36.8	36.8	36.8	36.8	32.7	32.7	32.7	32.7	32.7	33.3	33.5	33.5	33.5	29.7	29.7	29.7	Baseline Offset (In Feet)
		-1.5	0.0	0.0	0.0	-4.1	0.0	0.0	0.0	0.0	0.6	0.2	0.0	0.0	-3.8	0.0	0.0	Incremental Change
		-1.5	-1.5	-1.5	-1.5	-5.6	-5.6	-5.6	-5.6	-5.6	-5.0	-4.8	-4.8	-4.8	-8.6	-8.6	-8.6	Cumulative Change
2+50	39.0	38.1	37.8	37.5	37.1	34.3	34.3	34.3	34.3	34.3	34.7	34.8	34.8	34.8	30.3	30.3	30.3	Baseline Offset (In Feet)
		-1.0	-0.3	-0.3	-0.4	-2.8	0.0	0.0	0.0	0.0	0.4	0.1	0.0	0.0	-4.5	0.0	0.0	Incremental Change
		-1.0	-1.2	-1.5	-1.9	-4.7	-4.7	-4.7	-4.7	-4.7	-4.4	-4.2	-4.2	-4.2	-8.7	-8.7	-8.7	Cumulative Change
2+55	39.9	39.3	38.2	38.2	37.4	35.9	35.9	35.9	35.9	35.9	36.0	36.0	36.0	36.0	30.7	30.7	30.6	Baseline Offset (In Feet)
		-0.5	-1.1	0.0	-0.8	-1.5	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	-5.3	0.0	-0.1	Incremental Change
		-0.5	-1.6	-1.6	-2.4	-4.0	-4.0	-4.0	-4.0	-4.0	-3.8	-3.9	-3.9	-3.9	-9.2	-9.2	-9.3	Cumulative Change

Alpine CP 00
HDD West Site
Streambank Monitor

Baseline Station	Streambank Monitor - Top of Bank Locations																Description	
	See Drawing CE-CP00-143 Rev 16 for Survey Baseline Location																	
	4/7/2002	7/8/2002	7/10/2003	6/20/2004	7/10/2005	8/19/2006	8/31/2007	8/5/2008	7/31/2009	7/8/2010	8/1/2011	7/23/2012	7/17/2013	8/10/2014	8/26/2015	8/28/2016	8/29/2017	Date
2+60	40.7	40.7	40.7	40.7	38.3	35.1	35.1	35.1	35.2	35.1	35.2	35.3	35.3	35.3	30.4	30.4	30.1	Baseline Offset (In Feet)
		0.0	0.0	0.0	-2.4	-3.1	0.0	0.0	0.1	-0.1	0.1	0.1	0.0	0.0	-4.9	0.0	-0.3	Incremental Change
		0.0	0.0	0.0	-2.4	-5.5	-5.6	-5.6	-5.5	-5.6	-5.5	-5.4	-5.4	-5.4	-10.3	-10.3	-10.6	Cumulative Change
2+65	40.9	40.9	40.9	40.6	39.2	34.1	34.1	34.1	34.2	34.1	34.2	34.2	34.2	34.2	30.2	30.2	29.5	Baseline Offset (In Feet)
		0.0	0.0	-0.4	-1.3	-5.1	0.0	0.0	0.1	-0.1	0.1	0.1	0.0	0.0	-4.0	0.0	-0.7	Incremental Change
		0.0	0.0	-0.4	-1.7	-6.8	-6.8	-6.8	-6.7	-6.8	-6.8	-6.7	-6.7	-6.7	-10.7	-10.7	-11.4	Cumulative Change
2+70	41.1	41.1	41.1	40.3	40.3	33.3	33.3	33.3	33.4	33.3	33.3	33.4	33.4	33.4	30.6	30.6	29.9	Baseline Offset (In Feet)
		0.0	0.0	-0.8	0.0	-7.0	0.0	0.0	0.1	-0.1	0.0	0.1	0.0	0.0	-2.8	0.0	-0.7	Incremental Change
		0.0	0.0	-0.8	-0.8	-7.8	-7.8	-7.8	-7.7	-7.8	-7.8	-7.7	-7.7	-7.7	-10.5	-10.5	-11.2	Cumulative Change
2+75	41.3	41.3	41.3	39.9	39.9	33.3	33.3	33.3	33.3	33.3	33.3	33.3	33.3	33.3	32.1	32.1	31.9	Baseline Offset (In Feet)
		0.0	0.0	-1.4	0.0	-6.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-1.2	0.0	-0.2	Incremental Change
		0.0	0.0	-1.4	-1.4	-8.0	-8.0	-8.0	-8.0	-8.0	-8.0	-8.0	-8.0	-8.0	-9.2	-9.2	-9.4	Cumulative Change
2+80	41.5	41.5	41.5	39.4	39.4	34.6	34.6	34.6	34.2	34.6	33.5	34.5	34.5	34.5	33.1	33.1	33.1	Baseline Offset (In Feet)
		0.0	0.0	-2.2	0.0	-4.8	0.0	0.0	-0.4	0.4	-1.1	0.9	0.0	0.0	-1.4	0.0	0.0	Incremental Change
		0.0	0.0	-2.2	-2.2	-6.9	-6.9	-6.9	-7.3	-6.9	-8.0	-7.1	-7.1	-7.1	-8.4	-8.4	-8.4	Cumulative Change
2+85	41.7	41.7	41.7	39.6	39.6	37.8	37.8	37.8	37.6	37.8	36.1	37.7	37.7	37.7	30.0	30.0	30.0	Baseline Offset (In Feet)
		0.0	0.0	-2.1	0.0	-1.8	0.0	0.0	-0.2	0.2	-1.7	1.6	0.0	0.0	-7.7	0.0	0.0	Incremental Change
		0.0	0.0	-2.1	-2.1	-3.9	-3.9	-3.9	-4.1	-3.9	-5.6	-4.0	-4.0	-4.0	-11.7	-11.7	-11.7	Cumulative Change
2+90	43.5	43.5	41.5	40.8	40.8	38.5	38.5	38.5	38.5	38.5	38.6	38.5	38.5	38.5	33.3	33.3	33.3	Baseline Offset (In Feet)
		0.0	-1.9	-0.7	0.0	-2.3	0.0	0.0	0.0	0.0	0.1	-0.1	0.0	0.0	-5.2	0.0	0.0	Incremental Change
		0.0	-1.9	-2.6	-2.6	-5.0	-5.0	-5.0	-5.0	-5.0	-4.9	-5.0	-5.0	-5.0	-10.2	-10.2	-10.2	Cumulative Change
3+00	47.0	47.0	46.1	46.1	44.8	41.6	41.6	41.6	41.6	40.5	40.3	39.3	39.3	39.3	37.5	37.5	37.5	Baseline Offset (In Feet)
		0.0	-0.9	0.0	-1.3	-3.2	0.0	0.0	0.0	-1.1	-0.3	-1.0	0.0	0.0	-1.8	0.0	0.0	Incremental Change
		0.0	-0.9	-0.9	-2.2	-5.4	-5.4	-5.4	-5.4	-6.5	-6.7	-7.7	-7.7	-7.7	-9.5	-9.5	-9.5	Cumulative Change
3+10	47.1	43.6	43.6	43.6	43.6	43.2	43.2	43.2	43.2	39.8	39.2	35.0	35.0	35.0	34.5	34.5	34.5	Baseline Offset (In Feet)
		-3.5	0.0	0.0	0.0	-0.4	0.0	0.0	0.0	-3.4	-0.6	-4.2	0.0	0.0	-0.5	0.0	0.0	Incremental Change
		-3.5	-3.5	-3.5	-3.5	-3.8	-3.8	-3.8	-3.8	-7.3	-7.9	-12.1	-12.1	-12.1	-12.6	-12.6	-12.6	Cumulative Change
3+15	47.4	42.9	42.9	42.9	42.3	42.9	42.9	42.0	42.0	39.4	38.9	33.5	33.5	33.5	33.5	33.5	33.7	Baseline Offset (In Feet)
		-4.5	0.0	0.0	-0.6	0.6	0.0	-0.9	0.0	-2.6	-0.5	-5.4	0.0	0.0	0.0	0.0	0.2	Incremental Change
		-4.5	-4.5	-4.5	-5.2	-4.6	-4.5	-5.4	-5.4	-8.0	-8.5	-13.9	-13.9	-13.9	-13.9	-13.9	-13.7	Cumulative Change

Alpine CP 00
HDD West Site
Streambank Monitor

Baseline Station	Streambank Monitor - Top of Bank Locations																Description	
	See Drawing CE-CP00-143 Rev 16 for Survey Baseline Location																	
	4/7/2002	7/8/2002	7/10/2003	6/20/2004	7/10/2005	8/19/2006	8/31/2007	8/5/2008	7/31/2009	7/8/2010	8/1/2011	7/23/2012	7/17/2013	8/10/2014	8/26/2015	8/28/2016	8/29/2017	Date
3+25	47.3	44.6	44.6	44.4	42.3	38.9	38.9	37.4	37.4	36.9	36.7	38.3	38.3	38.3	36.5	36.5	36.0	Baseline Offset (In Feet)
		-2.7	0.0	-0.2	-2.1	-3.4	0.0	-1.5	0.0	-0.5	-0.2	1.6	0.0	0.0	-1.8	0.0	-0.5	Incremental Change
		-2.7	-2.7	-2.9	-5.0	-8.4	-8.4	-9.9	-9.9	-10.4	-10.6	-9.0	-9.0	-9.0	-10.8	-10.8	-11.3	Cumulative Change
3+30	45.4	44.0	44.0	43.2	42.7	36.2	36.2	35.4	35.4	35.2	35.1	38.2	38.2	38.2	36.1	36.1	35.9	Baseline Offset (In Feet)
		-1.4	0.0	-0.9	-0.5	-6.5	0.0	-0.8	0.0	-0.2	-0.1	3.1	0.0	0.0	-2.1	0.0	-0.2	Incremental Change
		-1.4	-1.4	-2.3	-2.7	-9.2	-9.2	-10.0	-10.0	-10.2	-10.3	-7.2	-7.2	-7.2	-9.3	-9.3	-9.5	Cumulative Change
3+35	43.4	43.4	43.4	43.4	42.0	36.4	36.4	35.8	35.8	35.8	35.5	38.2	38.2	38.2	35.7	35.7	35.7	Baseline Offset (In Feet)
		0.0	0.0	0.0	-1.4	-5.6	0.0	-0.6	0.0	0.0	-0.3	2.6	0.0	0.0	-2.5	0.0	0.0	Incremental Change
		0.0	0.0	0.0	-1.4	-7.0	-7.0	-7.6	-7.6	-7.6	-7.9	-5.3	-5.3	-5.3	-7.7	-7.7	-7.7	Cumulative Change
3+40	44.8	44.8	44.0	44.0	41.3	41.1	41.1	40.1	40.1	40.1	38.7	38.9	38.9	38.9	34.3	34.3	34.3	Baseline Offset (In Feet)
		0.0	-0.8	0.0	-2.6	-0.3	0.0	-1.0	0.0	0.0	-1.4	0.1	0.0	0.0	-4.6	0.0	0.0	Incremental Change
		0.0	-0.8	-0.8	-3.5	-3.7	-3.7	-4.7	-4.7	-4.7	-6.1	-6.0	-6.0	-6.0	-10.5	-10.5	-10.5	Cumulative Change
3+45	45.2	45.2	44.2	44.2	42.8	41.5	41.5	40.7	40.7	40.7	38.8	38.8	38.7	38.7	33.0	33.0	33.0	Baseline Offset (In Feet)
		0.0	-1.0	0.0	-1.5	-1.3	0.0	-0.8	0.0	0.0	-1.9	0.0	-0.1	0.0	-5.7	0.0	0.0	Incremental Change
		0.0	-1.0	-1.0	-2.5	-3.7	-3.7	-4.5	-4.5	-4.5	-6.4	-6.4	-6.5	-6.5	-12.2	-12.2	-12.2	Cumulative Change
3+50	44.9	44.9	44.2	44.2	42.3	41.4	41.4	40.8	40.8	40.8	38.7	38.7	38.2	38.2	31.7	31.7	31.7	Baseline Offset (In Feet)
		0.0	-0.6	0.0	-1.9	-0.9	0.0	-0.6	0.0	0.0	-2.1	0.0	-0.5	0.0	-6.5	0.0	0.0	Incremental Change
		0.0	-0.7	-0.7	-2.6	-3.5	-3.5	-4.1	-4.1	-4.1	-6.2	-6.2	-6.7	-6.7	-13.2	-13.2	-13.2	Cumulative Change
3+60	44.1	44.1	44.1	44.1	43.4	41.4	41.4	41.4	41.0	41.4	38.4	38.4	37.3	37.3	30.2	30.2	30.2	Baseline Offset (In Feet)
		0.0	0.0	0.0	-0.7	-2.0	0.0	0.0	-0.4	0.4	-3.0	0.0	-1.1	0.0	-7.1	0.0	0.0	Incremental Change
		0.0	0.0	0.0	-0.7	-2.7	-2.7	-2.7	-3.1	-2.7	-5.7	-5.7	-6.8	-6.8	-13.9	-13.9	-13.9	Cumulative Change
3+70	44.7	44.7	42.8	41.8	41.0	26.0	26.0	26.0	26.0	26.0	26.2	26.0	26.0	26.0	26.0	26.0	26.0	Baseline Offset (In Feet)
		0.0	-1.9	-1.1	-0.8	-15.0	0.0	0.0	0.0	0.0	0.1	-0.2	0.0	0.0	0.0	0.0	0.0	Incremental Change
		0.0	-1.9	-2.9	-3.7	-18.7	-18.7	-18.7	-18.7	-18.7	-18.6	-18.7	-18.7	-18.7	-18.7	-18.7	-18.7	Cumulative Change
3+75	23.6	23.6	23.6	23.6	23.6	23.6	23.6	23.6	23.6	23.6	23.8	23.6	23.6	23.6	21.7	21.7	21.7	Baseline Offset (In Feet)
		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	-0.2	0.0	0.0	-1.9	0.0	0.0	Incremental Change
		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	-1.9	-1.9	-1.9	Cumulative Change
3+85	23.1	23.1	23.1	23.1	23.1	23.0	23.0	23.0	23.1	23.0	23.0	23.0	23.0	23.0	15.2	15.2	15.2	Baseline Offset (In Feet)
		0.0	0.0	0.0	0.0	-0.1	0.0	0.0	0.1	-0.1	0.0	0.0	0.0	0.0	-7.8	0.0	0.0	Incremental Change
		0.0	0.0	0.0	0.0	-0.1	-0.1	-0.1	0.0	-0.1	-0.1	-0.1	-0.1	-0.1	-7.9	-7.9	-7.9	Cumulative Change

**Alpine CP 00
 HDD West Site
 Streambank Monitor**

Baseline Station	Streambank Monitor - Top of Bank Locations																Description	
	See Drawing CE-CP00-143 Rev 16 for Survey Baseline Location																	
	4/7/2002	7/8/2002	7/10/2003	6/20/2004	7/10/2005	8/19/2006	8/31/2007	8/5/2008	7/31/2009	7/8/2010	8/1/2011	7/23/2012	7/17/2013	8/10/2014	8/26/2015	8/28/2016	8/29/2017	Date
4+00	28.4	28.4	28.4	28.4	26.5	26.5	26.5	26.5	26.4	26.5	26.3	26.4	26.4	26.4	19.7	19.7	19.7	Baseline Offset (In Feet)
		0.0	0.0	0.0	-1.8	0.0	0.0	0.0	-0.1	0.1	-0.2	0.1	0.0	0.0	-6.7	0.0	0.0	Incremental Change
		0.0	0.0	0.0	-1.9	-1.9	-1.9	-1.9	-2.0	-1.9	-2.1	-2.0	-2.0	-2.0	-8.7	-8.7	-8.7	Cumulative Change
4+10	37.4	37.1	37.1	37.1	33.0	33.0	33.0	33.0	34.0	34.0	32.2	32.1	32.1	32.1	30.8	30.8	30.8	Baseline Offset (In Feet)
		-0.3	0.0	0.0	-4.1	0.0	0.0	0.0	1.0	0.0	-1.8	-0.1	0.0	0.0	-1.3	0.0	0.0	Incremental Change
		-0.3	-0.3	-0.3	-4.4	-4.4	-4.4	-4.4	-3.4	-3.4	-5.2	-5.3	-5.3	-5.3	-6.6	-6.6	-6.6	Cumulative Change
4+25	45.9	42.2	42.2	42.2	40.4	40.3	40.2	40.0	40.0	40.0	38.1	38.0	38.0	38.0	37.8	37.8	37.6	Baseline Offset (In Feet)
		-3.7	0.0	0.0	-1.9	0.0	-0.1	-0.2	0.0	0.0	-1.9	-0.1	0.0	0.0	-0.2	0.0	-0.2	Incremental Change
		-3.7	-3.7	-3.7	-5.6	-5.6	-5.7	-5.9	-5.9	-5.9	-7.8	-8.0	-8.0	-8.0	-8.1	-8.1	-8.3	Cumulative Change
4+30	47.3	43.2	43.2	42.1	41.2	41.1	41.1	40.5	40.5	40.5	39.7	39.5	39.5	39.5	38.7	38.7	38.7	Baseline Offset (In Feet)
		-4.1	0.0	-1.1	-0.9	-0.1	0.0	-0.6	0.0	0.0	-0.8	-0.1	0.0	0.0	-0.8	0.0	0.0	Incremental Change
		-4.1	-4.1	-5.2	-6.1	-6.2	-6.2	-6.8	-6.8	-6.8	-7.6	-7.8	-7.8	-7.8	-8.6	-8.6	-8.6	Cumulative Change
4+35	48.8	43.1	43.1	41.9	41.9	41.8	41.8	41.1	41.1	41.1	41.0	40.9	40.9	40.9	39.4	39.4	39.4	Baseline Offset (In Feet)
		-5.7	0.0	-1.3	0.0	-0.1	0.0	-0.7	0.0	0.0	-0.1	-0.1	0.0	0.0	-1.5	0.0	0.0	Incremental Change
		-5.7	-5.7	-6.9	-6.9	-7.1	-7.0	-7.7	-7.7	-7.7	-7.8	-7.9	-7.9	-7.9	-9.4	-9.4	-9.4	Cumulative Change
4+40	50.9	42.5	42.5	42.1	42.1	42.1	42.1	41.9	41.9	41.9	41.7	41.6	41.6	41.6	39.7	39.7	39.7	Baseline Offset (In Feet)
		-8.4	0.0	-0.4	0.0	0.0	0.1	-0.2	0.0	0.0	-0.2	0.0	0.0	0.0	-1.9	0.0	0.0	Incremental Change
		-8.4	-8.4	-8.8	-8.8	-8.9	-8.8	-9.0	-9.0	-9.0	-9.2	-9.3	-9.3	-9.3	-11.2	-11.2	-11.2	Cumulative Change

***Note: Survey completed on 4/7/02 was used for baseline data to compute Incremental/Cumulative Change. Negative numbers indicate erosion.



B.2 FOUNDATION SETTLEMENT & JACKING

**Alpine CP 00
 HDD West Site
 Pilecap Monitor**

Pile Cap Designation	Pile Cap Monitor - Bottom of Pile Cap Locations														Description
	6/20/2004	8/4/2005	8/19/2006	8/31/2007	8/7/2008	8/3/2009	7/8/2010	8/3/2011	7/23/2012	7/17/2013	8/9/2014	8/25/2015	8/28/2016	8/29/2017	
W-01 NE Cor	26.389	26.389	26.391	26.398	26.397	26.401	26.401	26.413	26.420	26.420	26.427	26.431	26.437	26.440	Bottom of Pile Cap (In Feet)
		0.000	0.002	0.007	-0.001	0.004	0.000	0.012	0.007	0.000	0.007	0.004	0.006	0.003	Incremental Change
		0.000	0.002	0.009	0.008	0.012	0.012	0.024	0.031	0.031	0.038	0.042	0.048	0.051	Cumulative Change
W-02 NE Cor	26.391	26.390	26.390	26.400	26.397	26.403	26.401	26.416	26.420	26.422	26.427	26.436	26.440	26.445	Bottom of Pile Cap (In Feet)
		-0.001	0.000	0.010	-0.003	0.006	-0.002	0.015	0.004	0.002	0.005	0.009	0.004	0.005	Incremental Change
		-0.001	-0.001	0.009	0.006	0.012	0.010	0.025	0.029	0.031	0.036	0.045	0.049	0.054	Cumulative Change
W-03 NE Cor	26.391	26.391	26.394	26.400	26.398	26.403	26.401	26.414	26.420	26.422	26.428	26.435	26.438	26.443	Bottom of Pile Cap (In Feet)
		0.000	0.003	0.006	-0.002	0.005	-0.002	0.013	0.006	0.002	0.006	0.007	0.003	0.005	Incremental Change
		0.000	0.003	0.009	0.007	0.012	0.010	0.023	0.029	0.031	0.037	0.044	0.047	0.052	Cumulative Change
W-04 NE Cor	26.389	26.388	26.390	26.394	26.394	26.396	26.397	26.407	26.415	26.419	26.424	26.429	26.432	26.436	Bottom of Pile Cap (In Feet)
		-0.001	0.002	0.004	0.000	0.002	0.001	0.010	0.008	0.004	0.005	0.005	0.003	0.004	Incremental Change
		-0.001	0.001	0.005	0.005	0.007	0.008	0.018	0.026	0.030	0.035	0.040	0.043	0.047	Cumulative Change
W-05 NE Cor	26.383	26.378	26.386	26.390	26.389	26.393	26.393	26.404	26.410	26.413	26.418	26.426	26.428	26.432	Bottom of Pile Cap (In Feet)
		-0.005	0.008	0.004	-0.001	0.004	0.000	0.011	0.006	0.003	0.005	0.008	0.002	0.004	Incremental Change
		-0.005	0.003	0.007	0.006	0.010	0.010	0.021	0.027	0.030	0.035	0.043	0.045	0.049	Cumulative Change
W-06 NE Cor	26.395	26.391	26.394	26.400	26.397	26.401	26.401	26.412	26.416	26.422	26.425	26.432	26.438	26.440	Bottom of Pile Cap (In Feet)
		-0.004	0.003	0.006	-0.003	0.004	0.000	0.011	0.004	0.006	0.003	0.007	0.006	0.002	Incremental Change
		-0.004	-0.001	0.005	0.002	0.006	0.006	0.017	0.021	0.027	0.030	0.037	0.043	0.045	Cumulative Change
W-07 NE Cor	26.397	26.393	26.402	26.406	26.404	26.408	26.405	26.419	26.423	26.426	26.432	26.439	26.442	26.446	Bottom of Pile Cap (In Feet)
		-0.004	0.009	0.004	-0.002	0.004	-0.003	0.014	0.004	0.003	0.006	0.007	0.003	0.004	Incremental Change
		-0.004	0.005	0.009	0.007	0.011	0.008	0.022	0.026	0.029	0.035	0.042	0.045	0.049	Cumulative Change
W-08 NE Cor	26.403	26.401	26.404	26.408	26.406	26.412	26.410	26.423	26.422	26.430	26.435	26.443	26.441	26.451	Bottom of Pile Cap (In Feet)
		-0.002	0.003	0.004	-0.002	0.006	-0.002	0.013	-0.001	0.008	0.005	0.008	-0.002	0.010	Incremental Change
		-0.002	0.001	0.005	0.003	0.009	0.007	0.020	0.019	0.027	0.032	0.040	0.038	0.048	Cumulative Change
W-09 NE Cor	31.291	31.294	31.292	31.290	31.292	31.294	31.296	31.301	31.297	31.303	31.305	31.307	31.307	31.309	Bottom of Pile Cap (In Feet)
		0.003	-0.002	-0.002	0.002	0.002	0.002	0.005	-0.004	0.006	0.002	0.002	0.000	0.002	Incremental Change
		0.003	0.001	-0.001	0.001	0.003	0.005	0.010	0.006	0.012	0.014	0.016	0.016	0.018	Cumulative Change
W-10 NE Cor	31.266	31.261	31.261	31.264	31.263	31.263	31.262	31.264	31.263	31.266	31.266	31.265	31.263	31.267	Bottom of Pile Cap (In Feet)

**Alpine CP 00
 HDD West Site
 Pilecap Monitor**

Pile Cap Designation	Pile Cap Monitor - Bottom of Pile Cap Locations														Description
	6/20/2004	8/4/2005	8/19/2006	8/31/2007	8/7/2008	8/3/2009	7/8/2010	8/3/2011	7/23/2012	7/17/2013	8/9/2014	8/25/2015	8/28/2016	8/29/2017	
		-0.005	0.000	0.003	-0.001	0.000	-0.001	0.002	-0.001	0.003	0.000	-0.001	-0.002	0.004	Incremental Change
		-0.005	-0.005	-0.002	-0.003	-0.003	-0.004	-0.002	-0.003	0.000	0.000	-0.001	-0.003	0.001	Cumulative Change
W-11 NE Cor	31.299	31.300	31.288	31.294	31.299	31.304	31.299	31.304	31.302	31.310	31.310	31.309	31.313	31.316	Bottom of Pile Cap (In Feet)
		0.001	-0.012	0.006	0.005	0.005	-0.005	0.005	-0.002	0.008	0.000	-0.001	0.004	0.003	Incremental Change
		0.001	-0.011	-0.005	0.000	0.005	0.000	0.005	0.003	0.011	0.011	0.010	0.014	0.017	Cumulative Change
W-12 NE Cor	31.301	31.301	31.298	31.294	31.297	31.298	31.296	31.301	31.298	31.302	31.303	31.302	31.301	31.303	Bottom of Pile Cap (In Feet)
		0.000	-0.003	-0.004	0.003	0.001	-0.002	0.005	-0.003	0.004	0.001	-0.001	-0.001	0.002	Incremental Change
		0.000	-0.003	-0.007	-0.004	-0.003	-0.005	0.000	-0.003	0.001	0.002	0.001	0.000	0.002	Cumulative Change
W-13 NE Cor	27.377	27.373	27.383	27.393	27.389	27.391	27.394	27.401	27.408	27.409	27.413	27.420	27.424	27.463	Bottom of Pile Cap (In Feet)
		-0.004	0.010	0.010	-0.004	0.002	0.003	0.007	0.007	0.001	0.004	0.007	0.004	0.039	Incremental Change
		-0.004	0.006	0.016	0.012	0.014	0.017	0.024	0.031	0.032	0.036	0.043	0.047	0.086	Cumulative Change
W-14 NE Cor	27.428	27.423	27.433	27.439	27.442	27.442	27.454	27.455	27.462	27.463	27.468	27.474	27.478	27.481	Bottom of Pile Cap (In Feet)
		-0.005	0.010	0.006	0.003	0.000	0.012	0.001	0.007	0.001	0.005	0.006	0.004	0.003	Incremental Change
		-0.005	0.005	0.011	0.014	0.014	0.026	0.027	0.034	0.035	0.040	0.046	0.050	0.053	Cumulative Change
W-15 NE Cor	27.413	27.407	27.407	27.425	27.428	27.425	27.434	27.436	27.442	27.448	27.451	27.458	27.460	27.427	Bottom of Pile Cap (In Feet)
		-0.006	0.000	0.018	0.003	-0.003	0.009	0.002	0.006	0.006	0.003	0.007	0.002	-0.033	Incremental Change
		-0.006	-0.006	0.012	0.015	0.012	0.021	0.023	0.029	0.035	0.038	0.045	0.047	0.014	Cumulative Change
W-16 NE Cor	27.389	27.385	27.392	27.416	27.400	27.404	27.410	27.414	27.421	27.421	27.428	27.432	27.437	27.439	Bottom of Pile Cap (In Feet)
		-0.004	0.007	0.024	-0.016	0.004	0.006	0.004	0.007	0.000	0.007	0.004	0.005	0.002	Incremental Change
		-0.004	0.003	0.027	0.011	0.015	0.021	0.025	0.032	0.032	0.039	0.043	0.048	0.050	Cumulative Change
W-17 NE Cor	28.940	28.947	28.944	28.940	28.945	28.946	28.942	28.948	28.943	28.957	28.952	28.953	28.954	28.961	Bottom of Pile Cap (In Feet)
		0.007	-0.003	-0.004	0.005	0.001	-0.004	0.006	-0.005	0.014	-0.005	0.001	0.001	0.007	Incremental Change
		0.007	0.004	0.000	0.005	0.006	0.002	0.008	0.003	0.017	0.012	0.013	0.014	0.021	Cumulative Change
W-18 NE Cor	28.965	28.972	28.968	28.965	28.970	28.969	28.968	28.968	28.972	28.982	28.982	28.984	28.984	28.988	Bottom of Pile Cap (In Feet)
		0.007	-0.004	-0.003	0.005	-0.001	-0.001	0.000	0.004	0.010	0.000	0.002	0.000	0.004	Incremental Change
		0.007	0.003	0.000	0.005	0.004	0.003	0.003	0.007	0.017	0.017	0.019	0.019	0.023	Cumulative Change
W-19 NE Cor	28.959	28.962	28.960	28.956	28.958	28.958	28.955	28.955	28.952	28.970	28.963	28.963	28.963	28.966	Bottom of Pile Cap (In Feet)
		0.003	-0.002	-0.004	0.002	0.000	-0.003	0.000	-0.003	0.018	-0.007	0.000	0.000	0.003	Incremental Change
		0.003	0.001	-0.003	-0.001	-0.001	-0.004	-0.004	-0.007	0.011	0.004	0.004	0.004	0.007	Cumulative Change

**Alpine CP 00
 HDD West Site
 Pilecap Monitor**

Pile Cap Designation	Pile Cap Monitor - Bottom of Pile Cap Locations														Description
	6/20/2004	8/4/2005	8/19/2006	8/31/2007	8/7/2008	8/3/2009	7/8/2010	8/3/2011	7/23/2012	7/17/2013	8/9/2014	8/25/2015	8/28/2016	8/29/2017	
W-20 NE Cor	28.964	28.965	28.965	28.965	28.966	28.964	28.964	28.963	28.964	28.973	28.973	28.973	28.974	28.977	Bottom of Pile Cap (In Feet)
		0.001	0.000	0.000	0.001	-0.002	0.000	-0.001	0.001	0.009	0.000	0.000	0.001	0.003	Incremental Change
		0.001	0.001	0.001	0.002	0.000	0.000	-0.001	0.000	0.009	0.009	0.009	0.010	0.013	Cumulative Change
Note: Survey completed on 6/20/2004 was used to compute Incremental/Cumulative Change. Positive numbers indicate subsidence.															
All Pile Caps are 0.083' Thick. Add Cap thickness to shown elevations for Top of Pile Cap Elevations															



Appendix C HDD EAST BANK EROSION AND POLYGON TROUGH SUBSIDENCE SURVEY



C.1 BANK EROSION

**Alpine CP 00
 HDD East Site
 Streambank Monitor**

Baseline Station	Streambank Monitor - Top of Bank Locations																							Description	
	See Drawing CE-CP00-134 Rev 16 for Survey Baseline Stations																								
	7/29/01	8/7/01	8/15/01	8/23/01	9/8/01	7/8/02	9/12/02	7/9/03	9/8/03	6/19/04	7/10/05	8/21/06	8/30/07	8/6/08	8/3/09	7/20/10	8/4/11	7/14/12	7/21/13	8/12/14	8/23/15	9/6/16	8/31/17	Date	
0+10	N/A	N/A	N/A	N/A	N/A	N/A	-25.3	-25.3	-25.3	-25.3	-25.3	-25.3	-25.3	-25.3	-25.6	-25.6	-23.9	-24.0	-24.0	-24.0	-24.0	-24.0	-24.0	Baseline Offset (In Feet)	
								0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	-1.7	0.1	0.0	0.0	0.0	0.0	0.0	Incremental Change	
									0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.3	-1.4	-1.4	-1.4	-1.3	-1.3	-1.3	-1.3	Cumulative Change
0+20	N/A	N/A	N/A	N/A	N/A	N/A	-32.1	-30.9	-30.9	-30.9	-30.9	-30.9	-30.9	-30.9	-31.0	-29.1	-29.2	-29.2	-29.2	-29.2	-29.2	-28.7	-28.7	-28.7	Baseline Offset (In Feet)
								-1.2	0.0	0.0	0.0	0.0	0.0	0.0	0.1	-1.9	0.1	0.0	0.0	0.0	0.0	-0.5	0.0	0.0	Incremental Change
									-1.2	-1.2	-1.2	-1.2	-1.2	-1.2	-1.2	-1.1	-3.0	-2.9	-2.9	-2.9	-2.9	-3.4	-3.4	-3.4	Cumulative Change
0+25	N/A	N/A	N/A	N/A	N/A	N/A	-38.2	-38.2	-38.2	-38.2	-37.0	-37.0	-37.0	-37.0	-34.1	-29.9	-29.2	-29.2	-29.2	-29.2	-29.2	-29.2	-29.2	-29.2	Baseline Offset (In Feet)
								0.0	0.0	0.0	-1.2	0.0	0.0	0.0	-2.9	-4.2	-0.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	Incremental Change
									0.0	0.0	0.0	-1.2	-1.2	-1.2	-1.2	-4.1	-8.3	-9.0	-9.1	-9.1	-9.1	-9.1	-9.1	-9.1	Cumulative Change
0+30	N/A	N/A	N/A	N/A	N/A	N/A	-41.1	-41.1	-41.1	-41.1	-36.9	-36.9	-36.9	-36.9	-34.3	-31.4	-29.3	-29.3	-29.3	-29.3	-29.3	-29.3	-29.3	-29.3	Baseline Offset (In Feet)
								0.0	0.0	0.0	-4.2	0.0	0.0	0.0	-2.6	-2.9	-2.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	Incremental Change
									0.0	0.0	0.0	-4.2	-4.2	-4.2	-4.2	-6.8	-9.7	-11.8	-11.8	-11.8	-11.8	-11.8	-11.8	-11.8	Cumulative Change
0+40	N/A	N/A	N/A	N/A	N/A	N/A	-37.7	-37.7	-37.7	-37.7	-36.5	-35.1	-35.1	-35.1	-34.8	-34.3	-29.4	-29.4	-29.4	-29.4	-29.4	-29.4	-29.4	-29.4	Baseline Offset (In Feet)
								0.0	0.0	0.0	-1.2	-1.4	0.0	0.0	-0.3	-0.5	-4.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	Incremental Change
									0.0	0.0	0.0	-1.2	-2.6	-2.6	-2.6	-2.9	-3.4	-8.3	-8.2	-8.2	-8.3	-8.3	-8.3	-8.3	Cumulative Change
0+50	N/A	N/A	N/A	N/A	N/A	N/A	-30.3	-30.3	-30.3	-30.3	-30.3	-30.3	-30.3	-30.3	-30.3	-30.3	-30.1	-30.1	-30.1	-30.1	-30.1	-30.1	-30.1	-30.1	Baseline Offset (In Feet)
								0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	Incremental Change
									0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.2	-0.2	-0.2	-0.2	-0.2	-0.2	-0.2	-0.2	Cumulative Change
0+60	N/A	N/A	N/A	N/A	N/A	N/A	-28.0	-27.9	-27.5	-27.5	-27.5	-27.5	-27.5	-27.5	-27.5	-27.5	-25.3	-25.4	-25.4	-25.4	-25.4	-25.4	-25.4	-25.4	Baseline Offset (In Feet)
								-0.1	-0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-2.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	Incremental Change
									-0.1	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.4	-0.5	-2.7	-2.6	-2.6	-2.6	-2.6	-2.6	-2.6	Cumulative Change
0+65	N/A	N/A	N/A	N/A	N/A	N/A	-39.8	-39.8	-23.9	-23.9	-23.4	-23.4	-23.4	-23.4	-23.4	-23.4	-19.9	-19.9	-19.9	-19.9	-19.9	-19.9	-19.9	-19.9	Baseline Offset (In Feet)
								0.0	-16.0	0.0	-0.5	0.0	0.0	0.0	0.0	0.0	-3.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	Incremental Change
									0.0	-16.0	-16.0	-16.4	-16.4	-16.4	-16.4	-16.4	-16.4	-19.9	-19.9	-19.9	-19.9	-19.9	-19.9	-19.9	Cumulative Change
0+70	N/A	-32.4	N/A	-31.2	-31.2	-31.5	-27.7	-27.7	-20.0	-20.0	-16.2	-16.2	-16.2	-16.2	-16.2	-16.2	-16.2	-16.2	-16.2	-16.2	-16.2	-16.2	-16.2	-16.2	Baseline Offset (In Feet)
				-1.2	0.0	0.3	-3.8	0.0	-7.7	0.0	-3.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	Incremental Change
				-1.2	-1.2	-0.9	-4.7	-4.7	-12.4	-12.4	-16.2	-16.2	-16.2	-16.2	-16.2	-16.2	-16.2	-16.2	-16.2	-16.2	-16.2	-16.2	-16.2	-16.2	Cumulative Change
0+75	N/A	-27.1	-27.0	-27.0	-27.1	-27.0	-27.2	-27.6	-21.1	-21.0	-18.0	-18.0	-18.0	-18.0	-18.0	-18.0	-17.8	-17.8	-17.8	-17.8	-17.8	-17.8	-17.0	-17.0	Baseline Offset (In Feet)
			-0.1	0.0	0.1	-0.1	0.2	0.4	-6.5	-0.1	-3.0	0.1	0.0	0.0	0.0	0.0	-0.2	0.0	0.0	0.0	0.0	0.0	-0.8	0.0	Incremental Change
			-0.1	-0.1	0.0	-0.1	0.1	0.5	-6.0	-6.1	-9.1	-9.1	-9.1	-9.1	-9.1	-9.1	-9.1	-9.3	-9.3	-9.3	-9.3	-9.3	-10.0	-10.0	Cumulative Change

**Alpine CP 00
 HDD East Site
 Streambank Monitor**

Baseline Station	Streambank Monitor - Top of Bank Locations																							Description	
	See Drawing CE-CP00-134 Rev 16 for Survey Baseline Stations																								
	7/29/01	8/7/01	8/15/01	8/23/01	9/8/01	7/8/02	9/12/02	7/9/03	9/8/03	6/19/04	7/10/05	8/21/06	8/30/07	8/6/08	8/3/09	7/20/10	8/4/11	7/14/12	7/21/13	8/12/14	8/23/15	9/6/16	8/31/17	Date	
0+80	N/A	-26.4	N/A	-26.6	-26.5	-26.5	-27.5	-27.5	-22.4	-22.4	-22.4	-22.4	-22.4	-22.4	-22.4	-22.1	-21.7	-21.6	-21.6	-21.6	-20.6	-18.0	-18.0	Baseline Offset (In Feet)	
				0.2	-0.1	0.0	1.0	0.0	-5.1	0.0	0.0	0.0	0.0	0.0	0.0	-0.3	-0.4	-0.1	0.0	0.0	-1.0	-2.6	0.0	Incremental Change	
				0.2	0.1	0.0	1.1	1.1	-4.0	-4.0	-4.0	-4.0	-4.0	-4.0	-4.0	-4.3	-4.8	-4.8	-4.8	-4.8	-5.8	-8.4	-8.4	Cumulative Change	
0+90	N/A	-29.2	N/A	-28.9	-29.2	-29.2	-29.2	-29.2	-29.2	-27.8	-27.8	-27.2	-27.2	-27.2	-27.2	-26.5	-23.1	-23.1	-23.1	-23.1	-22.3	-22.3	-20.2	Baseline Offset (In Feet)	
				-0.3	0.3	0.0	0.0	0.0	0.0	-1.5	0.0	-0.6	0.0	0.0	0.0	-0.7	-3.4	0.0	0.0	0.0	-0.8	0.0	-2.1	Incremental Change	
				-0.3	0.0	0.0	0.0	0.0	0.0	-1.5	-1.5	-2.0	-2.0	-2.0	-2.0	-2.7	-6.1	-6.1	-6.1	-6.1	-6.9	-6.9	-9.0	Cumulative Change	
1+00	N/A	-26.7	-26.9	-26.3	-26.8	-26.7	-26.7	-26.7	-26.7	-26.7	-26.7	-26.7	-26.7	-26.7	-26.7	-25.5	-20.0	-20.0	-20.0	-20.0	-20.0	-20.0	-19.5	Baseline Offset (In Feet)	
			0.2	-0.6	0.5	-0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-1.2	-5.5	0.0	0.0	0.0	0.0	0.0	-0.5	Incremental Change	
			0.2	-0.4	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-1.2	-6.7	-6.7	-6.7	-6.7	-6.7	-6.7	-7.2	Cumulative Change	
1+10	N/A	-25.6	N/A	-25.3	-25.4	-25.6	-25.6	-25.6	-23.9	-23.9	-23.9	-23.9	-23.9	-23.9	-23.9	-23.7	-23.0	-23.0	-23.0	-23.0	-23.0	-20.3	-20.3	Baseline Offset (In Feet)	
				-0.3	0.1	0.2	0.0	0.0	-1.7	0.0	0.0	0.0	0.0	0.0	0.0	-0.2	-0.7	0.0	0.0	0.0	0.0	-2.7	0.0	Incremental Change	
				-0.3	-0.2	0.0	0.0	0.0	-1.7	-1.7	-1.7	-1.7	-1.7	-1.7	-1.7	-1.9	-2.6	-2.6	-2.6	-2.6	-2.6	-5.3	-5.3	Cumulative Change	
1+15	N/A	-27.6	N/A	-27.5	-27.6	-27.6	-24.5	-24.5	-20.8	-20.8	-20.2	-20.2	-20.2	-20.2	-20.2	-20.2	-20.3	-20.3	-20.3	-20.3	-20.3	-20.3	-20.3	-20.3	Baseline Offset (In Feet)
				-0.1	0.1	0.0	-3.1	0.0	-3.7	0.0	-0.7	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	Incremental Change
				-0.1	0.0	0.0	-3.1	-3.1	-6.8	-6.8	-7.4	-7.4	-7.4	-7.4	-7.4	-7.4	-7.3	-7.3	-7.3	-7.3	-7.3	-7.3	-7.3	-7.3	Cumulative Change
1+20	N/A	-35.5	N/A	-30.5	-30.5	-22.1	-22.6	-22.6	-21.4	-21.4	-18.2	-18.2	-18.2	-18.2	-18.8	-18.5	-18.6	-18.6	-18.6	-18.6	-16.1	-16.1	-13.8	Baseline Offset (In Feet)	
				-5.0	0.0	-8.4	0.4	0.0	-1.2	0.0	-3.2	0.0	0.0	0.0	0.6	-0.3	0.1	0.0	0.0	0.0	-2.5	0.0	-2.3	Incremental Change	
				-5.0	-5.0	-13.4	-12.9	-12.9	-14.0	-14.1	-17.3	-17.3	-17.3	-17.3	-16.7	-17.0	-16.9	-16.9	-16.9	-16.9	-16.9	-19.4	-19.4	-21.7	Cumulative Change
1+25	-38.4	-38.7	-39.1	-33.0	-32.8	-22.5	-23.0	-22.9	-18.1	-18.1	-16.4	-16.4	-16.4	-16.4	-16.4	-16.4	-16.1	-16.2	-16.2	-16.2	-13.8	-13.8	-10.9	Baseline Offset (In Feet)	
			0.4	-6.1	-0.2	-10.3	0.5	-0.1	-4.8	0.0	-1.7	0.0	0.0	0.0	0.0	0.0	-0.3	0.0	0.0	0.0	-2.4	0.0	-2.9	Incremental Change	
			0.4	-5.7	-5.9	-16.2	-15.7	-15.8	-20.6	-20.6	-22.3	-22.3	-22.3	-22.3	-22.3	-22.3	-22.6	-22.6	-22.6	-22.6	-22.6	-24.9	-24.9	-27.8	Cumulative Change
1+30	N/A	-37.8	N/A	-36.2	-36.1	-27.7	-28.0	-27.9	-17.3	-17.3	-17.0	-17.0	-17.0	-17.0	-17.0	-17.0	-16.3	-16.3	-16.3	-16.3	-15.3	-15.3	-11.0	Baseline Offset (In Feet)	
				-1.6	-0.1	-8.4	0.2	-0.1	-10.6	0.0	-0.3	0.0	0.0	0.0	0.0	0.0	-0.7	0.0	0.0	0.0	-1.0	0.0	-4.3	Incremental Change	
				-1.6	-1.7	-10.1	-9.9	-9.9	-20.5	-20.5	-20.8	-20.8	-20.8	-20.8	-20.8	-20.8	-21.5	-21.5	-21.5	-21.5	-22.5	-22.5	-26.8	Cumulative Change	
1+40	N/A	-33.8	N/A	-35.0	-34.9	-21.3	-20.6	-20.6	-17.1	-17.1	-15.8	-15.8	-15.8	-15.8	-16.0	-16.0	-15.4	-15.4	-15.4	-15.4	-15.4	-15.4	-13.6	Baseline Offset (In Feet)	
				1.2	-0.1	-13.6	-0.8	0.0	-3.5	0.0	-1.3	0.0	0.0	0.0	0.2	0.0	-0.6	0.0	0.0	0.0	0.0	0.0	-1.8	Incremental Change	
				1.2	1.1	-12.5	-13.3	-13.2	-16.7	-16.7	-18.1	-18.0	-18.0	-18.0	-17.8	-17.8	-18.5	-18.5	-18.5	-18.5	-18.5	-18.5	-20.2	Cumulative Change	
1+45	N/A	-28.2	N/A	-29.5	-28.8	18.6	-16.5	-16.5	-16.1	-16.1	-14.3	-14.3	-14.3	-14.3	-14.3	-14.3	-14.1	-14.1	-14.1	-14.1	-14.1	-14.1	-14.1	Baseline Offset (In Feet)	
				1.3	-0.7	-47.4	35.0	0.0	-0.4	0.0	-1.8	0.0	0.0	0.0	0.0	0.0	-0.3	0.0	0.0	0.0	0.0	0.0	0.0	Incremental Change	
				1.3	0.6	-46.8	-11.7	-11.7	-12.1	-12.1	-13.9	-13.9	-13.9	-13.9	-13.9	-13.9	-14.1	-14.1	-14.1	-14.1	-14.1	-14.1	-14.1	Cumulative Change	

**Alpine CP 00
 HDD East Site
 Streambank Monitor**

Baseline Station	Streambank Monitor - Top of Bank Locations																							Description	
	See Drawing CE-CP00-134 Rev 16 for Survey Baseline Stations																								
	7/29/01	8/7/01	8/15/01	8/23/01	9/8/01	7/8/02	9/12/02	7/9/03	9/8/03	6/19/04	7/10/05	8/21/06	8/30/07	8/6/08	8/3/09	7/20/10	8/4/11	7/14/12	7/21/13	8/12/14	8/23/15	9/6/16	8/31/17	Date	
1+50	-18.4	-23.7	-23.8	-23.9	-23.8	-20.7	-15.6	-15.6	-13.8	-13.8	-13.4	-13.4	-13.4	-13.4	-13.4	-13.4	-11.7	-11.7	-11.7	-11.7	-11.7	-11.7	-11.7	-11.7	Baseline Offset (In Feet)
			0.1	0.1	-0.1	-3.1	-5.1	0.0	-1.8	0.0	-0.4	0.0	0.0	0.0	0.0	0.0	-1.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	Incremental Change
			0.1	0.2	0.1	-3.0	-8.1	-8.1	-9.9	-9.9	-10.3	-10.3	-10.3	-10.3	-10.3	-10.3	-12.0	-12.0	-12.0	-12.0	-12.0	-12.0	-12.0	-12.0	Cumulative Change
1+55	N/A	-22.2	N/A	-21.9	-22.2	-21.8	-14.5	-14.5	-11.5	-11.5	-7.1	-7.1	-7.1	-7.1	-7.5	-7.5	-7.0	-7.0	-7.0	-7.0	-7.0	-7.0	-7.0	-7.0	Baseline Offset (In Feet)
				-0.2	0.3	-0.4	-7.3	0.0	-3.0	0.0	-4.4	0.0	0.0	0.0	0.4	0.0	-0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	Incremental Change
				-0.2	0.1	-0.4	-7.7	-7.7	-10.7	-10.7	-15.1	-15.1	-15.1	-15.1	-14.7	-14.7	-15.2	-15.2	-15.2	-15.2	-15.2	-15.2	-15.2	-15.2	Cumulative Change
1+60	-17.1	-21.6	-21.8	-21.7	-21.6	-21.4	-15.1	-14.9	-9.0	-9.0	-4.2	-4.2	-4.2	-4.2	-4.2	-4.2	-4.4	-4.5	-4.5	-4.5	-4.5	-4.5	-4.5	-4.5	Baseline Offset (In Feet)
			0.2	-0.1	-0.1	-0.2	-6.3	-0.2	-5.9	0.0	-4.8	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	Incremental Change
			0.2	0.1	0.0	-0.2	-6.5	-6.7	-12.6	-12.6	-17.4	-17.4	-17.4	-17.4	-17.4	-17.4	-17.2	-17.2	-17.2	-17.2	-17.1	-17.1	-17.1	-17.1	Cumulative Change
1+65	N/A	-26.2	N/A	-26.3	-26.5	-25.8	-24.9	-24.6	-11.4	-9.7	-6.9	-6.9	-6.9	-6.9	-6.9	-6.9	-7.0	-7.0	-7.0	-7.0	-7.0	-7.0	-7.0	-7.0	Baseline Offset (In Feet)
				0.0	0.2	-0.6	-1.0	-0.2	-13.3	-1.7	-2.8	0.1	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	Incremental Change
				0.0	0.2	-0.4	-1.4	-1.6	-14.9	-16.6	-19.4	-19.3	-19.3	-19.3	-19.3	-19.3	-19.2	-19.3	-19.3	-19.3	-19.3	-19.3	-19.3	-19.3	Cumulative Change
1+70	N/A	-30.1	N/A	-30.1	-30.1	-29.6	-29.7	-29.7	-15.7	-13.0	-10.8	-10.8	-10.8	-10.8	-10.8	-10.8	-10.0	-10.0	-10.0	-10.0	-10.0	-10.0	-10.0	-10.0	Baseline Offset (In Feet)
				0.1	0.0	-0.5	0.2	0.0	-14.1	-2.7	-2.2	0.0	0.0	0.0	0.0	0.0	-0.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	Incremental Change
				0.1	0.0	-0.5	-0.3	-0.3	-14.4	-17.1	-19.3	-19.3	-19.3	-19.3	-19.3	-19.3	-20.0	-20.0	-20.0	-20.0	-20.1	-20.1	-20.1	-20.1	Cumulative Change
1+75	-30.4	-30.7	-31.1	-30.7	-30.5	-30.0	-29.6	-29.6	-16.1	-14.4	-12.0	-12.0	-12.0	-12.0	-12.0	-12.0	-10.2	-10.2	-10.2	-10.2	-10.2	-10.2	-10.2	-10.2	Baseline Offset (In Feet)
			0.4	-0.4	-0.2	-0.5	-0.4	0.0	-13.5	-1.7	-2.5	0.0	0.0	0.0	0.0	0.0	-1.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	Incremental Change
			0.4	0.0	-0.2	-0.7	-1.1	-1.1	-14.6	-16.3	-18.7	-18.7	-18.7	-18.7	-18.7	-18.7	-20.5	-20.5	-20.5	-20.5	-20.5	-20.5	-20.5	-20.5	Cumulative Change
1+80	N/A	-30.2	N/A	-30.7	-29.4	-30.2	-24.6	-22.1	-13.9	-13.9	-12.8	-12.8	-12.8	-12.8	-12.8	-12.8	-10.5	-10.5	-10.5	-10.5	-10.5	-10.5	-10.5	-10.5	Baseline Offset (In Feet)
				0.5	-1.3	0.8	-5.7	-2.4	-8.3	0.0	-1.1	0.0	0.0	0.0	0.0	0.0	-2.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	Incremental Change
				0.5	-0.8	0.0	-5.7	-8.1	-16.4	-16.4	-17.4	-17.4	-17.4	-17.4	-17.4	-17.4	-19.7	-19.8	-19.8	-19.8	-19.8	-19.8	-19.8	-19.8	Cumulative Change
1+85	-27.1	-24.5	-24.4	-24.2	-24.5	-24.5	-20.5	-17.0	-12.7	-12.7	-12.3	-12.3	-12.3	-12.3	-12.3	-12.3	-11.4	-11.4	-11.4	-11.4	-11.4	-11.4	-11.4	-11.4	Baseline Offset (In Feet)
			-0.1	-0.2	0.3	0.0	-4.0	-3.5	-4.3	0.0	-0.4	0.0	0.0	0.0	0.0	0.0	-0.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	Incremental Change
			-0.1	-0.3	0.0	0.0	-4.0	-7.5	-11.8	-11.8	-12.2	-12.2	-12.2	-12.2	-12.2	-12.2	-13.1	-13.1	-13.1	-13.1	-13.1	-13.1	-13.1	-13.1	Cumulative Change
1+90	N/A	-12.8	N/A	-21.4	-21.5	-21.6	-21.9	-19.5	-16.9	-16.9	-16.9	-16.9	-16.9	-16.9	-16.9	-16.9	-16.6	-16.7	-16.8	-16.8	-17.4	-17.4	-13.9	-13.9	Baseline Offset (In Feet)
				8.6	0.0	0.1	0.3	-2.4	-2.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.3	0.1	0.1	0.0	0.6	0.0	-3.5	0.0	Incremental Change
				8.6	8.7	8.8	9.1	6.7	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	3.8	3.9	4.0	4.0	4.6	4.6	1.1	1.1	Cumulative Change
1+95	N/A	-27.6	N/A	-27.8	-28.5	-27.7	-27.7	-27.7	-27.7	-27.7	-27.7	-26.3	-26.3	-26.3	-26.3	-18.7	-18.7	-18.7	-18.7	-18.7	-18.7	-18.3	-18.3	-18.3	Baseline Offset (In Feet)
				0.2	0.7	-0.9	0.0	0.0	0.0	0.0	0.0	-1.4	0.0	0.0	0.0	-7.6	0.0	0.0	0.0	0.0	0.0	-0.4	0.0	0.0	Incremental Change
				0.2	0.9	0.1	0.1	0.1	0.1	0.1	0.1	-1.3	-1.3	-1.3	-1.3	-8.9	-9.0	-9.0	-9.0	-9.0	-8.9	-9.3	-9.3	-9.3	Cumulative Change

**Alpine CP 00
 HDD East Site
 Streambank Monitor**

Baseline Station	Streambank Monitor - Top of Bank Locations																							Description
	See Drawing CE-CP00-134 Rev 16 for Survey Baseline Stations																							
	7/29/01	8/7/01	8/15/01	8/23/01	9/8/01	7/8/02	9/12/02	7/9/03	9/8/03	6/19/04	7/10/05	8/21/06	8/30/07	8/6/08	8/3/09	7/20/10	8/4/11	7/14/12	7/21/13	8/12/14	8/23/15	9/6/16	8/31/17	Date
2+00	-32.6	-33.7	-33.8	-33.7	-33.4	-33.7	-27.8	-27.8	-27.8	-27.8	-27.8	-26.4	-26.4	-26.4	-26.4	-20.4	-20.4	-20.4	-20.4	-20.4	-18.7	-18.7	-18.7	Baseline Offset (In Feet)
			0.1	-0.1	-0.3	0.3	-5.9	0.0	0.0	0.0	0.0	-1.4	0.0	0.0	0.0	-6.0	0.0	0.0	0.0	0.0	-1.7	0.0	0.0	Incremental Change
			0.1	0.0	-0.3	0.0	-5.9	-5.9	-5.9	-5.9	-5.9	-7.3	-7.3	-7.3	-7.3	-13.3	-13.3	-13.3	-13.3	-13.3	-15.0	-15.0	-15.0	Cumulative Change
2+05	N/A	-32.9	N/A	-32.7	-32.6	-32.5	-27.3	-27.3	-27.3	-27.3	-27.3	-26.8	-26.8	-26.8	-26.8	-23.1	-22.5	-22.4	-22.4	-22.6	-18.5	-18.5	-18.5	Baseline Offset (In Feet)
				-0.3	-0.1	-0.1	-5.2	0.0	0.0	0.0	0.0	-0.5	0.0	0.0	0.0	-3.7	-0.6	0.0	0.0	0.2	-4.1	0.0	0.0	Incremental Change
				-0.3	-0.4	-0.4	-5.6	-5.6	-5.6	-5.6	-5.6	-6.1	-6.1	-6.1	-6.1	-9.8	-10.5	-10.5	-10.5	-10.3	-14.4	-14.4	-14.4	Cumulative Change
2+10	N/A	-33.7	N/A	-33.5	-33.5	-29.1	-26.0	-26.0	-26.0	-26.0	-26.0	-26.0	-26.0	-26.0	-26.5	-26.0	-24.6	-24.6	-24.6	-24.8	-18.0	-18.0	-18.0	Baseline Offset (In Feet)
				-0.2	0.0	-4.4	-3.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	-0.5	-1.4	0.0	0.0	0.2	-6.8	0.0	0.0	Incremental Change
				-0.2	-0.2	-4.6	-7.8	-7.8	-7.8	-7.7	-7.7	-7.7	-7.7	-7.7	-7.2	-7.7	-9.2	-9.2	-9.2	-9.0	-15.7	-15.7	-15.7	Cumulative Change
2+15	-32.9	-34.9	-35.4	-34.5	-34.5	-28.8	-23.2	-23.2	-23.2	-23.2	-23.2	-23.2	-23.2	-23.7	-23.7	-23.7	-23.8	-23.8	-23.8	-24.2	-24.2	-24.2	-24.2	Baseline Offset (In Feet)
			0.5	-0.9	0.0	-5.7	-5.6	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.0	0.0	0.1	0.0	0.0	0.4	0.0	0.0	0.0	Incremental Change
			0.5	-0.4	-0.4	-6.1	-11.7	-11.7	-11.7	-11.7	-11.7	-11.7	-11.7	-11.2	-11.2	-11.2	-11.1	-11.1	-11.1	-10.7	-10.7	-10.7	-10.7	Cumulative Change
2+20	N/A	-34.4	N/A	-34.4	-34.9	-32.0	-21.0	-21.0	-21.0	-20.4	-17.4	-17.3	-17.3	-17.3	-18.2	-18.2	-17.5	-17.4	-17.4	-16.7	-16.7	-16.7	-16.7	Baseline Offset (In Feet)
				0.0	0.5	-2.9	-11.0	0.0	0.0	-0.6	-3.0	0.0	0.0	0.0	0.9	0.0	-0.7	0.0	0.0	-0.7	0.0	0.0	0.0	Incremental Change
				0.0	0.5	-2.4	-13.4	-13.4	-13.4	-14.0	-17.0	-17.1	-17.1	-17.1	-16.2	-16.2	-16.9	-17.0	-17.0	-17.7	-17.7	-17.7	-17.7	Cumulative Change
2+25	-30.0	-32.0	-31.5	-31.5	-31.2	-31.1	-18.4	-18.4	-8.0	-5.2	-5.2	-5.2	-1.0	-1.0	-1.0	-1.0	-1.1	-1.1	-1.1	-1.1	-1.1	-1.1	-1.1	Baseline Offset (In Feet)
			-0.5	0.0	-0.3	-0.1	-12.7	0.0	-10.4	-2.9	0.0	0.0	-4.2	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	Incremental Change
			-0.5	-0.5	-0.8	-0.9	-13.6	-13.6	-24.0	-26.8	-26.8	-26.8	-31.0	-31.0	-31.0	-31.0	-31.0	-30.9	-30.9	-30.9	-30.9	-30.9	-30.9	Cumulative Change
2+30	-22.0	-23.4	-22.6	-23.5	-23.2	-19.7	-13.7	-13.7	-2.4	-2.4	-2.4	-2.4	-2.4	-2.4	-2.8	-2.8	-3.0	-3.0	-2.6	-2.6	-2.6	-2.6	-2.6	Baseline Offset (In Feet)
			-0.8	0.9	-0.3	-3.5	-6.0	0.0	-11.3	0.0	0.0	0.0	0.0	0.0	0.4	0.0	0.2	0.0	-0.4	0.0	0.0	0.0	0.0	Incremental Change
			-0.8	0.1	-0.2	-3.7	-9.7	-9.7	-21.0	-21.0	-21.0	-21.0	-21.0	-21.0	-20.6	-20.6	-20.5	-20.4	-20.8	-20.8	-20.8	-20.8	-20.8	Cumulative Change
2+35	-21.7	-20.6	-20.1	-20.6	-18.8	-11.7	-8.9	-7.0	-7.0	-7.1	-7.1	-7.1	-7.1	-7.1	-7.9	-7.9	-8.1	-8.1	-4.0	-3.9	-3.9	-3.9	-3.9	Baseline Offset (In Feet)
			-0.5	0.5	-1.8	-7.1	-2.8	-1.9	0.0	0.1	0.0	0.0	0.0	0.0	0.8	0.0	0.2	0.0	-4.2	0.0	0.0	0.0	0.0	Incremental Change
			-0.5	0.0	-1.8	-8.9	-11.7	-13.6	-13.6	-13.5	-13.5	-13.5	-13.5	-13.5	-12.7	-12.7	-12.5	-12.5	-16.7	-16.7	-16.7	-16.7	-16.7	Cumulative Change
2+40	N/A	-19.2	N/A	-20.1	-15.9	-12.0	-8.3	-8.3	-8.3	-8.3	-8.3	-8.3	-8.3	-8.2	-8.2	-8.2	-8.5	-8.5	-5.3	-5.3	-5.3	-5.3	-5.3	Baseline Offset (In Feet)
				0.9	-4.2	-3.9	-3.6	0.0	0.0	0.0	0.0	0.0	0.0	-0.1	0.0	0.0	0.3	0.0	-3.3	0.0	0.0	0.0	0.0	Incremental Change
				0.9	-3.3	-7.2	-10.8	-10.8	-10.8	-10.8	-10.8	-10.9	-10.9	-11.0	-11.0	-11.0	-10.6	-10.6	-13.9	-13.9	-13.9	-13.9	-13.9	Cumulative Change
2+50	-21.0	-21.8	-21.3	-21.0	-21.0	-20.7	-14.7	-14.6	-14.6	-14.6	-14.6	-13.6	-13.3	-13.3	-13.3	-13.3	-10.6	-10.6	-9.0	-9.0	-9.0	-9.0	-8.1	Baseline Offset (In Feet)
			-0.5	-0.3	0.0	-0.3	-6.0	-0.1	0.0	0.0	0.0	-1.0	-0.3	0.0	0.0	0.0	-2.7	0.0	-1.6	0.0	0.0	0.0	-0.9	Incremental Change
			-0.5	-0.8	-0.8	-1.1	-7.1	-7.2	-7.2	-7.2	-7.2	-8.2	-8.5	-8.5	-8.5	-8.5	-11.2	-11.2	-12.8	-12.8	-12.8	-12.8	-13.7	Cumulative Change

**Alpine CP 00
 HDD East Site
 Streambank Monitor**

Baseline Station	Streambank Monitor - Top of Bank Locations																							Description
	See Drawing CE-CP00-134 Rev 16 for Survey Baseline Stations																							
	7/29/01	8/7/01	8/15/01	8/23/01	9/8/01	7/8/02	9/12/02	7/9/03	9/8/03	6/19/04	7/10/05	8/21/06	8/30/07	8/6/08	8/3/09	7/20/10	8/4/11	7/14/12	7/21/13	8/12/14	8/23/15	9/6/16	8/31/17	Date
2+60	-26.1	-26.5	-26.7	-26.1	-26.0	-25.9	-20.5	-20.6	-20.6	-20.5	-19.8	-17.7	-17.7	-17.7	-17.4	-16.3	-14.2	-14.2	-14.2	-12.6	-11.8	-11.8	-10.2	Baseline Offset (In Feet)
			0.2	-0.6	-0.1	-0.1	-5.4	0.1	0.0	-0.1	-0.7	-2.1	0.0	0.0	-0.3	-1.1	-2.1	0.0	0.0	-1.6	-0.8	0.0	-1.6	Incremental Change
			0.2	-0.4	-0.5	-0.6	-6.0	-5.9	-5.9	-6.0	-6.7	-8.8	-8.8	-8.8	-9.1	-10.2	-12.3	-12.3	-12.3	-13.9	-14.7	-14.7	-16.3	Cumulative Change
2+70	-28.9	-30.4	-30.9	-30.4	-30.0	-30.6	-25.5	-25.4	-20.8	-20.8	-20.8	-20.6	-20.0	-20.0	-20.0	-17.4	-17.7	-17.6	-17.6	-14.3	-11.7	-11.7	-11.7	Baseline Offset (In Feet)
			0.5	-0.5	-0.4	0.6	-5.1	-0.1	-4.6	0.0	0.0	-0.2	-0.6	0.0	0.0	-2.6	0.3	0.0	0.0	-3.3	-2.6	0.0	0.0	Incremental Change
			0.5	0.0	-0.4	0.2	-4.9	-5.0	-9.6	-9.6	-9.6	-9.8	-10.4	-10.4	-10.4	-13.0	-12.8	-12.8	-12.8	-16.1	-18.7	-18.7	-18.7	Cumulative Change
2+75	-28.4	-31.4	-31.4	-31.3	-30.7	-31.2	-26.1	-26.0	-20.9	-20.9	-20.8	-19.7	-19.7	-19.7	-19.4	-17.6	-17.5	-17.5	-17.5	-15.3	-10.4	-10.4	-10.4	Baseline Offset (In Feet)
			0.0	-0.1	-0.6	0.5	-5.1	-0.1	-5.1	0.0	-0.1	-1.1	0.0	0.0	-0.3	-1.8	-0.1	0.0	0.0	-2.2	-4.9	0.0	0.0	Incremental Change
			0.0	-0.1	-0.7	-0.2	-5.3	-5.4	-10.5	-10.5	-10.6	-11.7	-11.7	-11.7	-12.0	-13.8	-13.9	-13.9	-13.9	-16.1	-21.0	-21.0	-21.0	Cumulative Change
2+85	-27.5	-26.9	-27.1	-26.9	-26.8	-26.8	-22.8	-22.8	-22.8	-22.8	-20.4	-17.9	-17.9	-17.9	-17.9	-17.9	-17.2	-17.2	-17.2	-16.5	-8.0	-8.0	-8.0	Baseline Offset (In Feet)
			0.2	-0.2	-0.1	0.0	-4.0	0.0	0.0	0.0	-2.4	-2.5	0.0	0.0	0.0	0.0	-0.7	0.0	0.0	-0.7	-8.5	0.0	0.0	Incremental Change
			0.2	0.0	-0.1	-0.1	-4.1	-4.1	-4.1	-4.1	-6.5	-9.1	-9.0	-9.0	-9.0	-9.0	-9.7	-9.7	-9.7	-10.4	-18.9	-18.9	-18.9	Cumulative Change
2+90	-24.5	-24.5	-24.8	-24.2	-24.5	-24.5	-21.4	-21.4	-21.4	-21.3	-21.3	-17.3	-16.5	-15.1	-15.1	-12.0	-8.7	-8.8	-0.6	14.8	14.8	14.8	14.8	Baseline Offset (In Feet)
			0.3	-0.6	0.3	0.0	-3.1	0.0	0.0	-0.1	0.0	-4.1	-0.8	-1.4	0.0	-3.1	-3.3	0.0	-8.2	-15.4	0.0	0.0	0.0	Incremental Change
			0.3	-0.3	0.0	0.0	-3.1	-3.1	-3.1	-3.2	-3.2	-7.2	-8.0	-9.4	-9.4	-12.5	-15.8	-15.7	-23.9	-39.3	-39.3	-39.3	-39.3	Cumulative Change
3+00	-5.5	-9.1	-9.2	-8.9	-8.7	-9.0	-9.0	-8.9	-6.0	-6.0	0.3	0.3	0.3	0.3	0.3	0.3	0.1	0.1	2.1	17.4	17.4	17.4	17.4	Baseline Offset (In Feet)
			0.1	-0.3	-0.2	0.3	0.0	-0.1	-2.9	0.0	-6.3	0.0	0.0	0.0	0.0	0.0	0.2	0.0	-2.0	-15.3	0.0	0.0	0.0	Incremental Change
			0.1	-0.2	-0.4	-0.1	-0.1	-0.2	-3.1	-3.1	-9.4	-9.4	-9.4	-9.4	-9.4	-9.4	-9.2	-9.2	-11.2	-26.5	-26.5	-26.5	-26.5	Cumulative Change
3+10	N/A	-11.4	N/A	-11.3	-11.0	-11.4	-11.4	-11.4	-11.4	-11.4	-6.9	-5.2	-5.2	-5.2	-5.0	-5.0	-5.3	-5.2	-3.2	3.8	9.9	9.9	9.9	Baseline Offset (In Feet)
				-0.1	-0.3	0.4	0.0	0.0	0.0	0.0	-4.4	-1.7	0.0	0.0	-0.2	0.0	0.3	-0.1	-2.0	-7.0	-6.1	0.0	0.0	Incremental Change
				-0.1	-0.4	-0.1	-0.1	-0.1	-0.1	-0.1	-4.5	-6.2	-6.2	-6.2	-6.4	-6.4	-6.2	-6.2	-8.3	-15.2	-21.3	-21.3	-21.3	Cumulative Change
3+15	N/A	-16.2	N/A	-16.2	-16.2	-16.1	-16.0	-15.9	-15.9	-15.9	-10.5	-9.6	-9.6	-9.6	-9.6	-9.6	-9.5	-9.6	-4.2	-1.8	-1.3	-1.3	-1.3	Baseline Offset (In Feet)
				0.1	-0.1	0.0	-0.2	-0.1	0.0	0.0	-5.4	-0.9	0.0	0.0	0.0	0.0	-0.1	0.0	-5.3	-2.4	-0.5	0.0	0.0	Incremental Change
				0.1	0.0	0.0	-0.2	-0.3	-0.3	-0.3	-5.7	-6.6	-6.6	-6.6	-6.6	-6.6	-6.7	-6.6	-11.9	-14.3	-14.9	-14.9	-14.9	Cumulative Change
3+20	N/A	-15.9	N/A	-15.6	-15.8	-15.9	-11.9	-11.9	-11.9	-11.8	-11.8	-8.9	-8.9	-8.9	-8.9	-8.9	-8.9	-8.9	-4.0	-3.0	-3.0	-3.0	-3.0	Baseline Offset (In Feet)
				-0.4	0.2	0.1	-4.1	0.0	0.0	0.0	0.0	-2.9	0.0	0.0	0.0	0.0	0.0	0.0	-4.9	-1.0	0.0	0.0	0.0	Incremental Change
				-0.4	-0.1	0.0	-4.1	-4.1	-4.1	-4.1	-4.1	-7.0	-7.0	-7.0	-7.0	-7.0	-7.1	-7.1	-12.0	-13.0	-13.0	-13.0	-13.0	Cumulative Change
3+25	-18.5	-17.1	-17.7	-17.3	-17.3	-16.6	-11.4	-11.1	-11.1	-11.1	-10.3	-9.5	-9.5	-9.5	-9.5	-9.5	-9.6	-9.6	-4.0	-4.0	-4.0	-4.0	-4.0	Baseline Offset (In Feet)
			0.6	-0.4	0.0	-0.7	-5.2	-0.3	0.0	0.0	-0.8	-0.8	0.0	0.0	0.0	0.0	0.1	0.0	-5.6	0.0	0.0	0.0	0.0	Incremental Change
			0.6	0.2	0.2	-0.5	-5.7	-6.0	-6.0	-6.0	-6.8	-7.6	-7.6	-7.6	-7.6	-7.6	-7.5	-7.5	-13.2	-13.1	-13.1	-13.1	-13.1	Cumulative Change

**Alpine CP 00
 HDD East Site
 Streambank Monitor**

Baseline Station	Streambank Monitor - Top of Bank Locations																							Description
	See Drawing CE-CP00-134 Rev 16 for Survey Baseline Stations																							
	7/29/01	8/7/01	8/15/01	8/23/01	9/8/01	7/8/02	9/12/02	7/9/03	9/8/03	6/19/04	7/10/05	8/21/06	8/30/07	8/6/08	8/3/09	7/20/10	8/4/11	7/14/12	7/21/13	8/12/14	8/23/15	9/6/16	8/31/17	Date
3+30	-34.3	-35.4	-35.7	-35.3	-35.0	-35.4	-23.4	-13.9	-11.5	-11.5	-11.2	-11.2	-11.2	-11.2	-11.2	-11.0	-11.0	-11.0	-5.9	-5.9	-5.3	-5.3	-5.3	Baseline Offset (In Feet)
			0.3	-0.4	-0.3	0.4	-12.0	-9.5	-2.4	0.0	-0.3	0.0	0.0	0.0	0.0	-0.2	0.0	0.0	-5.1	0.0	-0.6	0.0	0.0	Incremental Change
			0.3	-0.1	-0.4	0.0	-12.0	-21.5	-23.9	-23.9	-24.2	-24.2	-24.2	-24.2	-24.2	-24.4	-24.4	-24.4	-29.5	-29.5	-30.1	-30.1	-30.1	Cumulative Change
3+35	-35.4	-35.7	-35.7	-35.3	-35.0	-35.0	-23.8	-23.5	-23.5	-23.5	-23.5	-23.5	-23.5	-23.5	-24.6	-24.6	-12.7	-12.7	-12.7	-13.3	-6.6	-6.6	-6.6	Baseline Offset (In Feet)
			0.0	-0.4	-0.3	0.0	-11.2	-0.3	0.0	0.0	0.0	0.0	0.0	0.0	1.1	0.0	-11.9	0.0	0.0	0.6	-6.7	0.0	0.0	Incremental Change
			0.0	-0.4	-0.7	-0.7	-11.9	-12.2	-12.2	-12.2	-12.2	-12.2	-12.2	-12.2	-11.1	-11.1	-23.0	-23.0	-23.0	-22.4	-29.1	-29.1	-29.1	Cumulative Change
3+40	-33.8	-34.2	-34.1	-34.0	-33.9	-33.9	-25.4	-25.4	-25.4	-25.4	-25.4	-25.4	-25.4	-25.4	-25.4	-25.4	-18.9	-18.9	-18.9	-19.4	-4.0	-4.0	-4.0	Baseline Offset (In Feet)
			-0.1	-0.1	-0.1	0.0	-8.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-6.5	0.0	0.0	0.5	-15.4	0.0	0.0	Incremental Change
			-0.1	-0.2	-0.3	-0.3	-8.8	-8.8	-8.8	-8.8	-8.8	-8.8	-8.8	-8.8	-8.8	-8.8	-15.3	-15.3	-15.3	-14.9	-30.2	-30.2	-30.2	Cumulative Change
3+45	-32.0	-32.4	-32.5	-32.6	-32.4	-32.5	-27.3	-27.4	-27.4	-26.4	-24.1	-24.1	-24.1	-24.1	-24.6	-24.6	-17.0	-17.0	-17.0	-17.7	-0.3	-0.3	-0.3	Baseline Offset (In Feet)
			0.1	0.1	-0.2	0.1	-5.2	0.1	0.0	-1.0	-2.3	0.0	0.0	0.0	0.5	0.0	-7.6	0.0	0.0	0.7	-17.4	0.0	0.0	Incremental Change
			0.1	0.2	0.0	0.1	-5.1	-5.0	-5.0	-6.0	-8.3	-8.3	-8.3	-8.3	-7.8	-7.8	-15.4	-15.4	-15.4	-14.7	-32.1	-32.1	-32.1	Cumulative Change
3+52	-9.7	-10.1	-10.2	-10.4	-10.4	-10.1	-9.9	-8.4	-8.4	-8.4	-8.4	2.4	2.4	2.4	3.1	3.1	3.1	3.1	3.1	3.7	4.5	4.5	4.5	Baseline Offset (In Feet)
			0.1	0.2	0.0	-0.3	-0.2	-1.5	0.0	0.0	0.0	-10.8	0.0	0.0	-0.7	0.0	0.0	0.0	0.0	-0.6	-0.8	0.0	0.0	Incremental Change
			0.1	0.3	0.3	0.0	-0.2	-1.7	-1.7	-1.7	-1.7	-12.5	-12.5	-12.5	-13.2	-13.2	-13.2	-13.2	-13.2	-13.8	-14.6	-14.6	-14.6	Cumulative Change
3+60	N/A	-11.9	N/A	-10.8	-12.4	-11.5	-11.3	-11.2	-11.2	-10.8	-10.8	3.0	3.0	3.0	3.0	3.0	3.1	3.1	3.1	3.1	3.1	3.1	3.1	Baseline Offset (In Feet)
				-1.1	1.7	-0.9	-0.2	-0.1	0.0	-0.4	0.0	-13.8	0.0	0.0	0.0	0.0	-0.1	0.0	0.0	0.0	0.0	0.0	0.0	Incremental Change
				-1.1	0.5	-0.4	-0.6	-0.7	-0.7	-1.1	-1.1	-14.9	-14.9	-14.9	-14.9	-14.9	-15.0	-15.0	-15.0	-15.0	-15.0	-15.0	-15.0	Cumulative Change
3+65	N/A	-18.8	N/A	-18.5	-18.9	-18.7	-18.7	-18.7	-18.7	-18.4	-18.4	-3.3	-13.8	-13.8	-13.8	-13.8	-13.9	-13.9	-13.9	-13.9	-9.4	-9.4	-9.4	Baseline Offset (In Feet)
				-0.3	0.4	-0.2	0.0	0.0	0.0	-0.3	0.0	-15.1	10.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-4.5	0.0	0.0	Incremental Change
				-0.3	0.1	-0.1	-0.1	-0.1	-0.1	-0.4	-0.4	-15.5	-5.0	-5.0	-5.0	-5.0	-5.0	-5.0	-5.0	-5.0	-9.4	-9.4	-9.4	Cumulative Change
3+70	N/A	-23.9	N/A	-24.1	-23.8	-24.2	-24.0	-24.0	-24.0	-24.1	-21.2	-9.6	-11.9	-11.9	-11.9	-11.9	-12.0	-12.0	-12.0	-12.0	-7.4	-7.4	-7.4	Baseline Offset (In Feet)
				0.2	-0.3	0.4	-0.1	0.0	0.0	0.1	-2.9	-11.6	2.3	0.0	0.0	0.0	0.1	0.0	0.0	0.0	-4.6	0.0	0.0	Incremental Change
				0.2	-0.2	0.2	0.1	0.0	0.0	0.2	-2.8	-14.3	-12.0	-12.0	-12.0	-12.0	-12.0	-12.0	-12.0	-11.9	-16.5	-16.5	-16.5	Cumulative Change
3+75	N/A	-23.2	-23.3	-23.4	-23.3	-23.3	-20.2	-20.2	-20.2	-20.2	-19.3	-11.3	-10.1	-10.1	-10.1	-10.1	-10.1	-10.1	-10.1	-10.1	-5.4	-5.4	-5.4	Baseline Offset (In Feet)
			0.1	0.1	-0.1	0.0	-3.1	0.0	0.0	0.0	-0.9	-8.0	-1.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-4.7	0.0	0.0	Incremental Change
			0.1	0.2	0.1	0.1	-3.0	-3.0	-3.0	-3.0	-3.9	-11.9	-13.1	-13.1	-13.1	-13.1	-13.1	-13.1	-13.1	-13.1	-17.8	-17.8	-17.8	Cumulative Change
3+80	N/A	-19.6	N/A	-19.0	-19.3	-19.7	-12.9	-12.9	-12.9	-11.6	-11.6	-9.0	-9.0	-9.0	-9.0	-9.0	-8.9	-8.9	-8.9	-8.9	-6.6	-6.6	-6.6	Baseline Offset (In Feet)
				-0.6	0.3	0.4	-6.8	0.0	0.0	-1.3	0.0	-2.6	0.0	0.0	0.0	0.0	-0.1	0.0	0.0	0.0	-2.3	0.0	0.0	Incremental Change
				-0.6	-0.4	0.1	-6.7	-6.7	-6.7	-8.0	-8.0	-10.6	-10.6	-10.6	-10.6	-10.6	-10.7	-10.7	-10.7	-10.7	-13.0	-13.0	-13.0	Cumulative Change

**Alpine CP 00
 HDD East Site
 Streambank Monitor**

Baseline Station	Streambank Monitor - Top of Bank Locations																							Description	
	See Drawing CE-CP00-134 Rev 16 for Survey Baseline Stations																								
	7/29/01	8/7/01	8/15/01	8/23/01	9/8/01	7/8/02	9/12/02	7/9/03	9/8/03	6/19/04	7/10/05	8/21/06	8/30/07	8/6/08	8/3/09	7/20/10	8/4/11	7/14/12	7/21/13	8/12/14	8/23/15	9/6/16	8/31/17	Date	
3+85	N/A	-19.9	N/A	-19.9	-19.5	-19.3	-13.2	-12.3	-12.3	-12.0	-12.0	-11.1	-11.1	-11.1	-11.1	-11.1	-10.6	-10.6	-10.6	-10.6	-8.8	-8.8	-8.8	Baseline Offset (In Feet)	
				0.0	-0.5	-0.1	-6.1	-1.0	0.0	-0.3	0.0	-0.9	0.0	0.0	0.0	0.0	-0.5	0.0	0.0	0.0	-1.8	0.0	0.0	Incremental Change	
				0.0	-0.4	-0.6	-6.7	-7.7	-7.7	-7.9	-7.9	-8.9	-8.8	-8.8	-8.8	-8.8	-9.4	-9.3	-9.3	-9.3	-11.1	-11.1	-11.1	Cumulative Change	
3+95	N/A	-26.1	N/A	-25.7	-25.9	-26.3	-22.4	-22.4	-22.4	-21.9	-21.9	-16.1	-16.1	-16.1	-16.1	-16.1	-14.1	-14.1	-14.1	-14.1	-13.5	-13.5	-13.5	Baseline Offset (In Feet)	
				-0.4	0.2	0.4	-3.9	0.0	0.0	-0.5	0.0	-5.8	0.0	0.0	0.0	0.0	-2.0	0.0	0.0	0.0	-0.6	0.0	0.0	Incremental Change	
				-0.4	-0.2	0.2	-3.7	-3.8	-3.8	-4.2	-4.2	-10.1	-10.0	-10.0	-10.0	-10.0	-12.0	-12.0	-12.0	-12.0	-12.6	-12.6	-12.6	Cumulative Change	
4+00	N/A	-29.9	-30.0	-29.5	-29.7	-30.2	-21.2	-21.2	-21.2	-21.9	-21.9	-18.6	-18.6	-18.6	-18.6	-18.6	-15.9	-15.9	-15.9	-15.9	-15.9	-15.9	-15.9	Baseline Offset (In Feet)	
			0.1	-0.5	0.2	0.5	-9.0	0.0	0.0	0.7	0.0	-3.3	0.0	0.0	0.0	0.0	-2.7	0.0	0.0	0.0	0.0	0.0	0.0	Incremental Change	
			0.1	-0.4	-0.2	0.3	-8.7	-8.7	-8.7	-8.0	-8.0	-11.3	-11.3	-11.3	-11.3	-11.3	-14.0	-14.0	-14.0	-14.0	-14.0	-14.0	-14.0	Cumulative Change	
4+05	N/A	-29.8	N/A	-29.4	-29.4	-29.9	-19.5	-19.5	-19.5	-19.5	-19.5	-21.7	-21.7	-21.7	-21.3	-21.3	-20.4	-20.5	-20.5	-20.5	-15.7	-15.7	-15.7	Baseline Offset (In Feet)	
				-0.4	0.0	0.4	-10.4	0.0	0.0	0.0	0.0	2.2	0.0	0.0	-0.4	0.0	-0.9	0.0	0.0	0.0	-4.8	0.0	0.0	Incremental Change	
				-0.4	-0.4	0.1	-10.3	-10.3	-10.3	-10.3	-10.3	-8.1	-8.1	-8.1	-8.5	-8.5	-9.4	-9.4	-9.4	-9.4	-14.1	-14.1	-14.1	Cumulative Change	
4+15	N/A	N/A	N/A	-30.7	-30.6	-27.3	2.7	2.6	2.6	2.6	2.6	2.7	2.7	2.5	2.5	2.5	2.5	2.5	2.5	2.4	3.7	3.7	3.7	Baseline Offset (In Feet)	
				-0.1	-3.4	-29.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	-1.3	0.0	0.0	Incremental Change	
				-0.1	-3.4	-33.4	-33.3	-33.3	-33.3	-33.3	-33.3	-33.4	-33.4	-33.2	-33.2	-33.2	-33.2	-33.2	-33.2	-33.2	-33.1	-34.4	-34.4	-34.4	Cumulative Change
4+25	N/A	N/A	N/A	-8.6	-5.4	-1.0	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1	4.7	4.7	4.7	4.6	4.6	5.4	5.4	5.4	5.4	Baseline Offset (In Feet)	
				-3.2	-4.4	-6.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.0	0.0	0.0	0.0	-0.7	0.0	0.0	0.0	Incremental Change	
				-3.2	-7.6	-13.7	-13.7	-13.7	-13.7	-13.7	-13.7	-13.7	-13.7	-13.7	-13.3	-13.3	-13.3	-13.2	-13.2	-14.0	-14.0	-14.0	-14.0	Cumulative Change	
4+35	N/A	N/A	N/A	-5.6	-5.4	-0.7	4.4	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.9	4.9	5.0	4.9	4.9	4.9	4.9	4.9	4.9	4.9	Baseline Offset (In Feet)
				-0.2	-4.6	-5.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.4	0.0	-0.1	0.0	0.0	0.0	0.0	0.0	0.0	Incremental Change	
				-0.2	-4.8	-10.0	-10.0	-10.0	-10.0	-10.0	-10.0	-10.1	-10.1	-10.1	-10.5	-10.5	-10.5	-10.5	-10.5	-10.5	-10.5	-10.5	-10.5	-10.5	Cumulative Change
4+45	N/A	N/A	N/A	N/A	N/A	-5.1	1.3	1.2	1.2	1.9	1.9	1.9	1.9	1.9	1.6	1.6	1.6	1.6	1.6	1.6	7.8	7.8	7.8	Baseline Offset (In Feet)	
						-6.4	0.1	0.0	0.0	-0.7	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	-6.2	0.0	0.0	Incremental Change	
						-6.4	-6.3	-6.3	-7.0	-7.0	-7.0	-7.0	-7.0	-7.0	-6.7	-6.7	-6.7	-6.7	-6.7	-6.7	-12.9	-12.9	-12.9	Cumulative Change	
4+50	N/A	N/A	N/A	N/A	N/A	-6.3	1.9	1.8	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	5.0	5.0	5.0	5.0	8.4	8.4	8.4	Baseline Offset (In Feet)	
						-8.2	0.1	-2.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.9	-0.1	0.0	0.0	-3.4	0.0	0.0	Incremental Change	
						-8.1	-10.4	-10.4	-10.4	-10.4	-10.4	-10.4	-10.4	-10.4	-10.4	-10.4	-11.3	-11.3	-11.3	-11.3	-14.7	-14.7	-14.7	Cumulative Change	

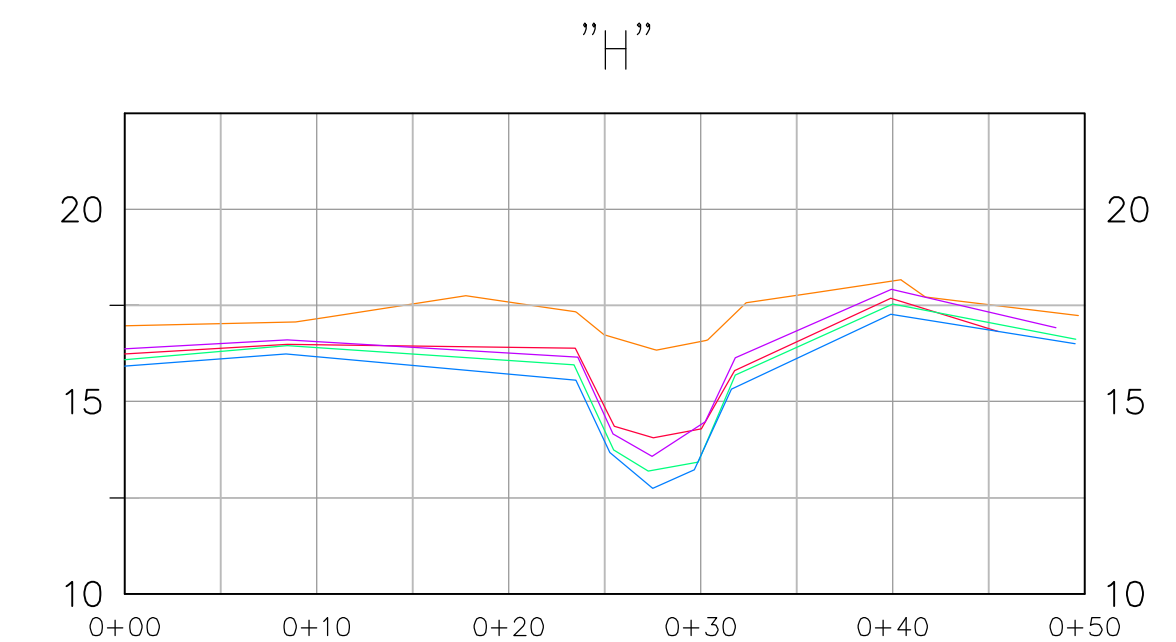
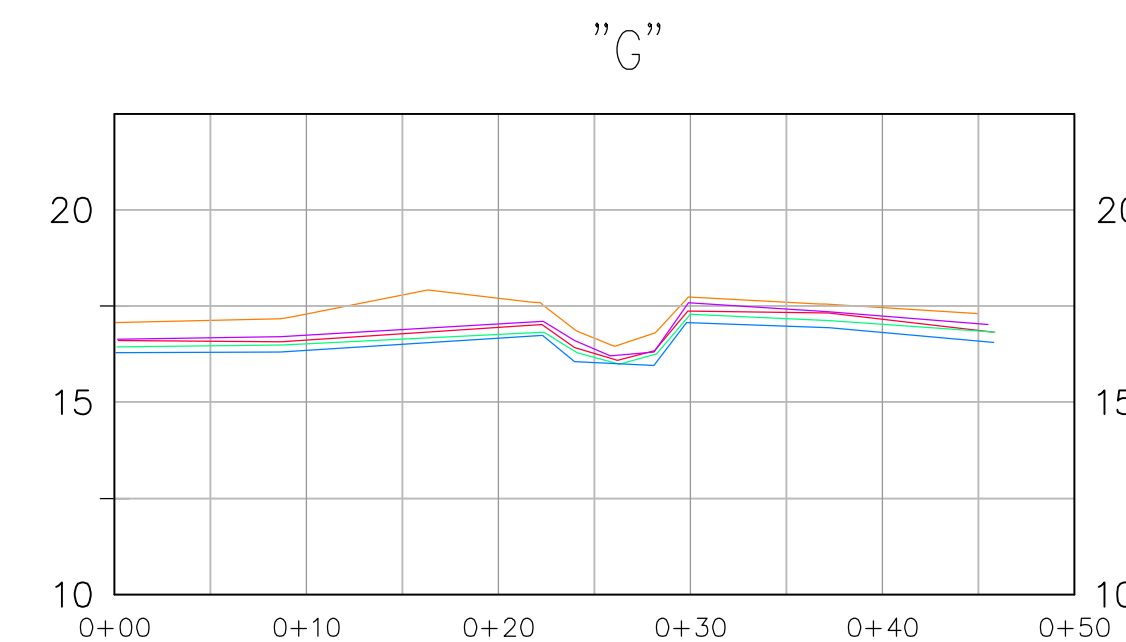
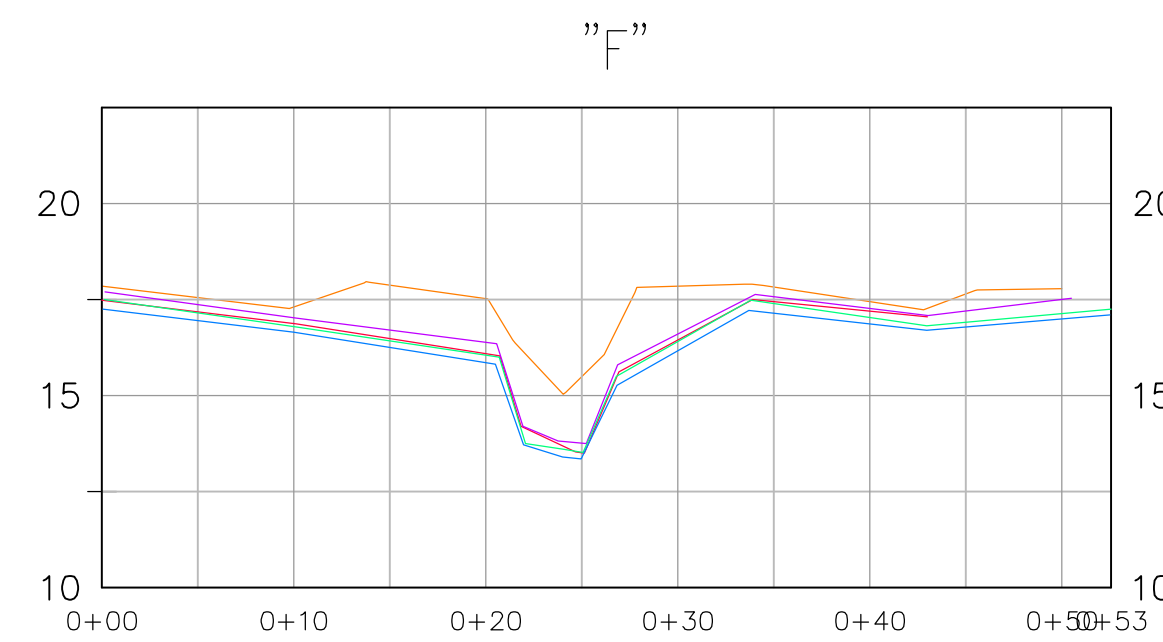
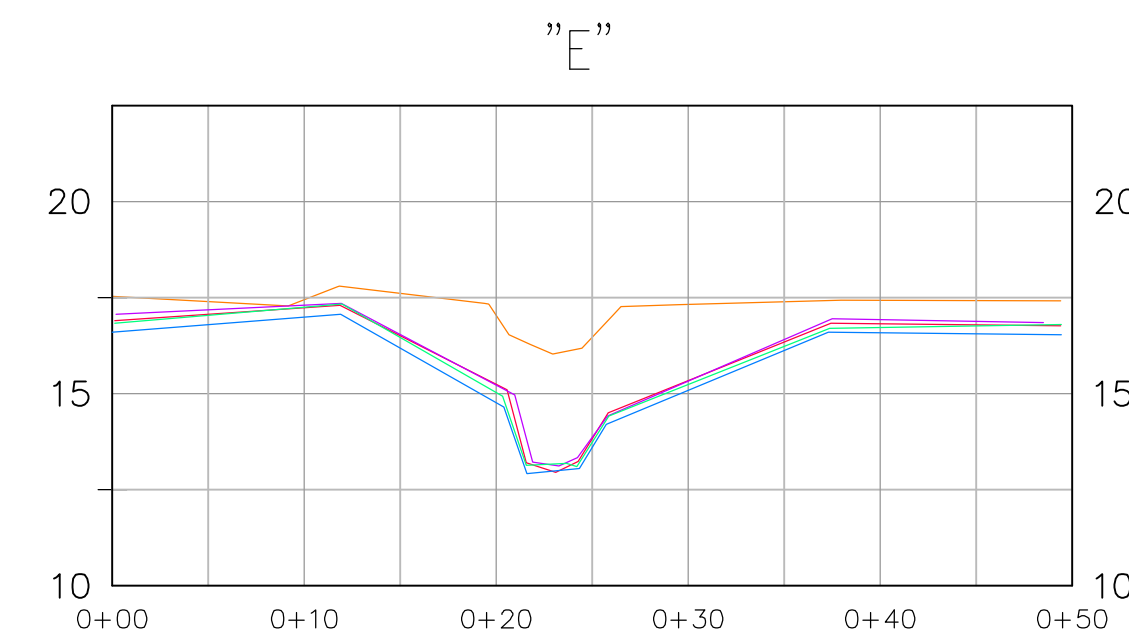
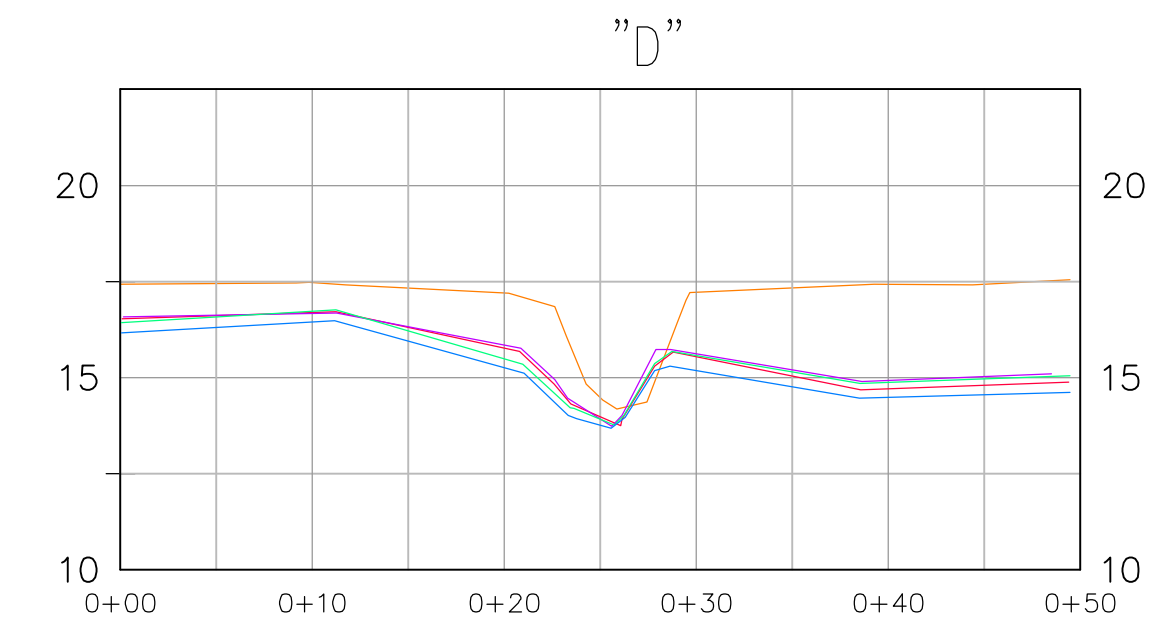
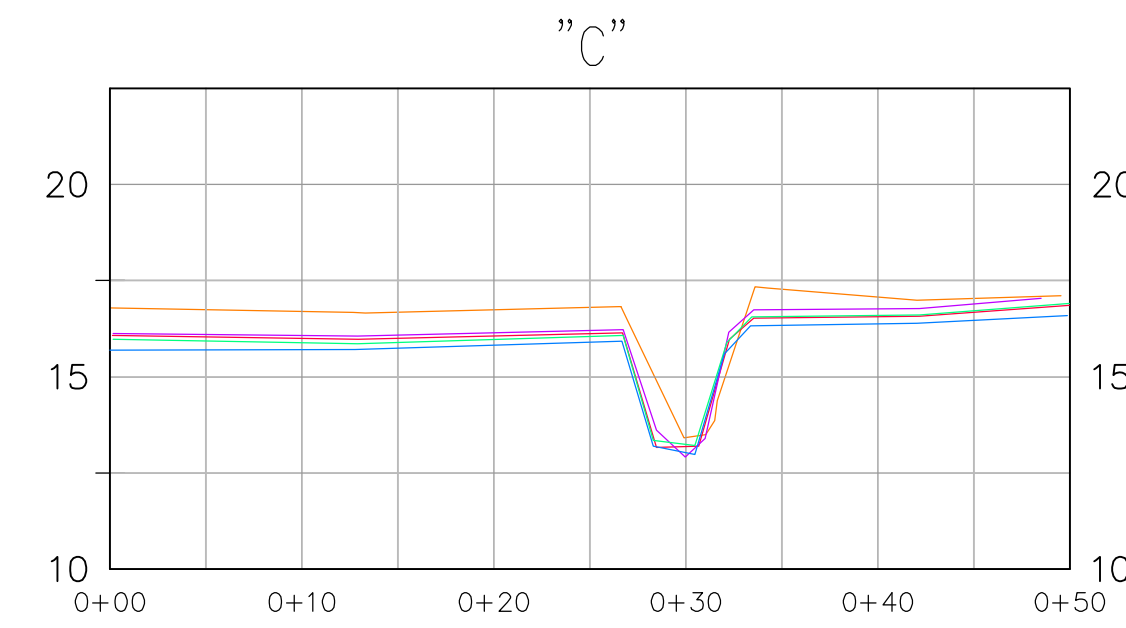
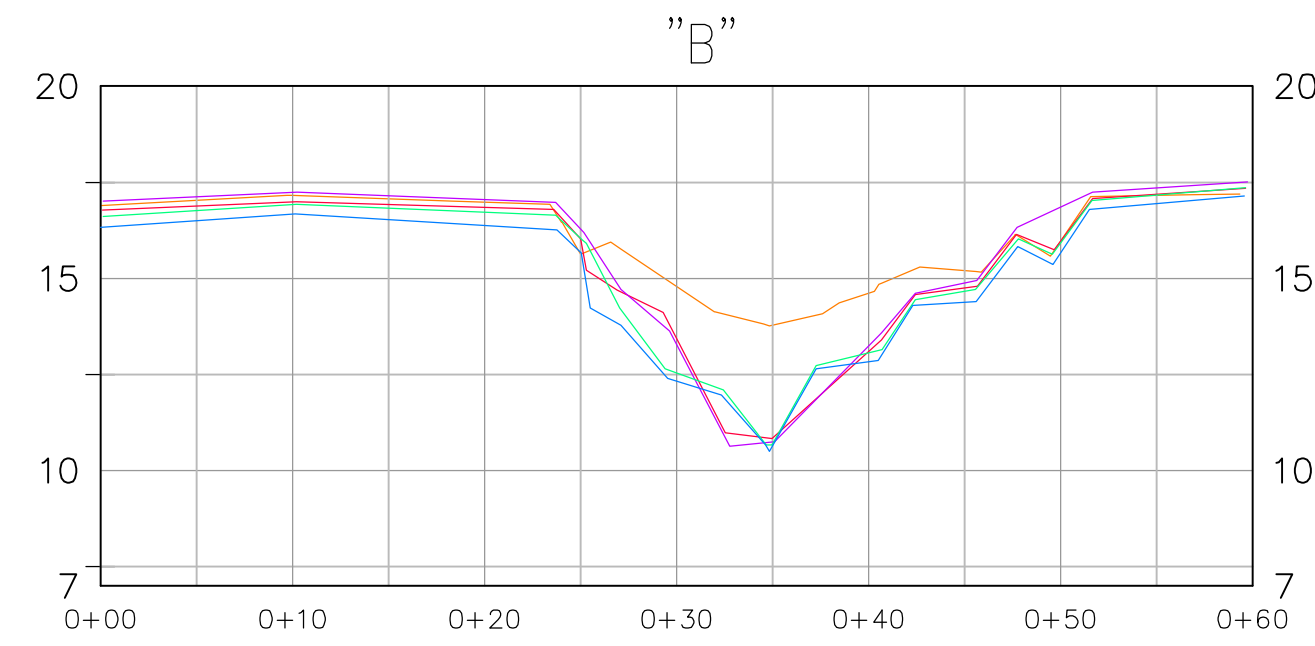
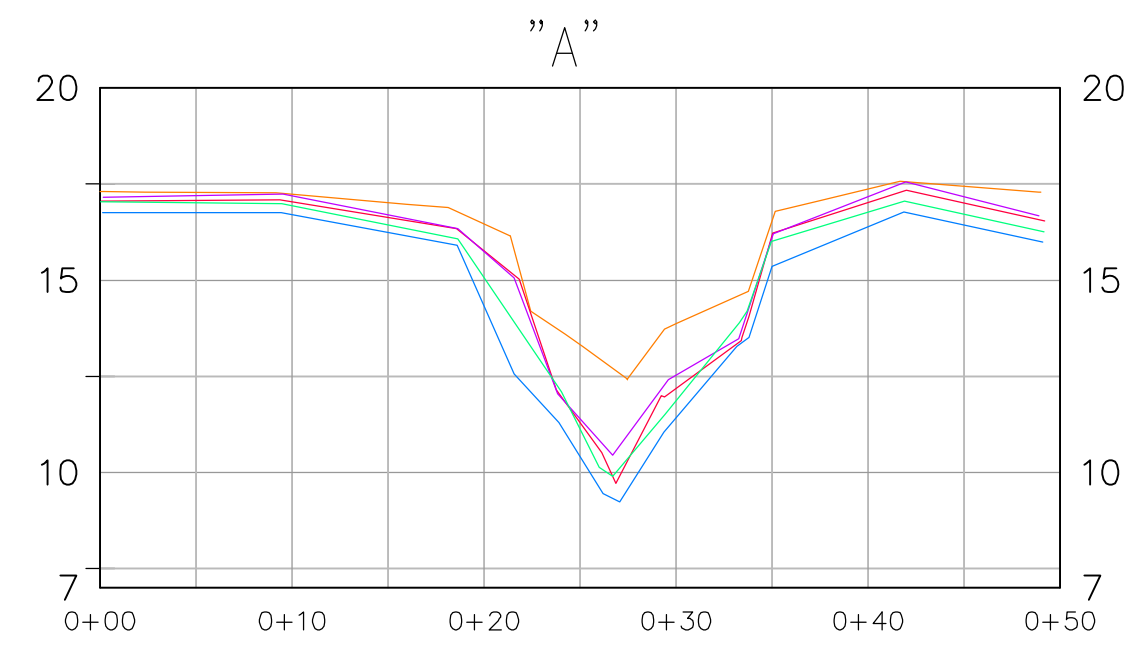
***Note: Field Survey dated 8/7/01 was used for baseline data to compute Incremental/Cumulative Change. Negative numbers indicate erosion.



C.2 POLYGON TROUGH SUBSIDENCE

CROSS SECTIONS, POLYGON TROUGH

HORIZONTAL SCALE = 1"=10' VERTICAL SCALE = 1"=5'

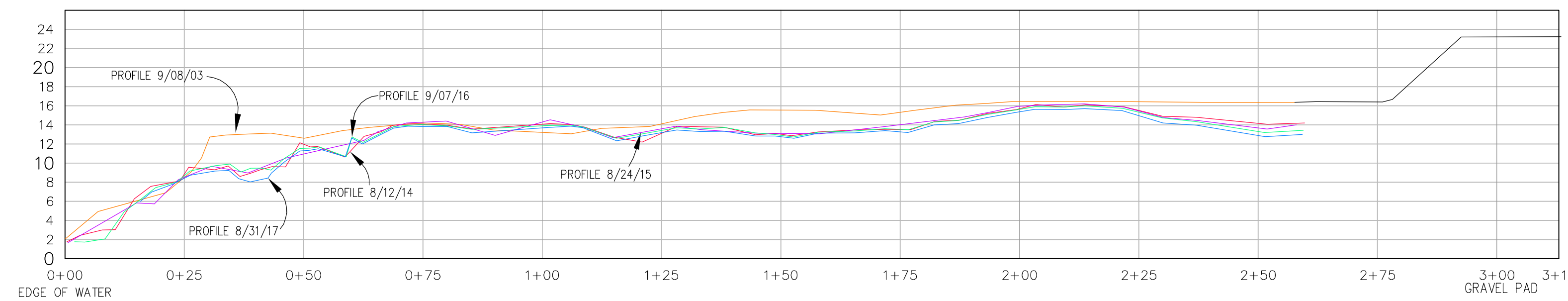


LEGEND

- CROSS SECTION 9/8/03
- CROSS SECTION 8/12/14
- CROSS SECTION 8/24/15
- CROSS SECTION 9/07/16
- CROSS SECTION 8/31/17

CENTERLINE PROFILE, POLYGON TROUGH

HORIZONTAL SCALE = 1"=20' VERTICAL SCALE = 1"=10'



ConocoPhillips
Alaska, Inc.

ALPINE MODULE: CP00 UNIT: CP
HDD BANK EROSION TOPO/MONITORING
HDD SITE - EAST
ALPINE FACILITY

REDRAWN FROM: CONSTRUCTION SHEET OF 6
DO NOT SCALE ABOVE SCALE FOR REFERENCE ONLY

DATE: 12/31/03
SCALE: 1"=20'
JOB NO: 02-205
SUB JOB NO:
DRAWN: GD/CZ
CHECKED: JZ
DESIGN:
APPROVAL: COLEGROVE/KANADY
ECM NO: 2094387ACS
CC NO:
CADD FILE NO: 01-12-05-1EAST
PART: 2 OF 2
REV: 15

REV	DATE	REVISIONS	BY	CHK	JOB ENGR	PROJ ENGR	CUST APP	REV	DATE	REVISIONS	BY	CHK	JOB ENGR	PROJ ENGR	CUST APP
12	8/14/14	UPDATED PER 20306694ACS	TB	GD				6	8/6/08	UPDATED PER 5538034ACS	CZ	GD			
11	7/21/13	UPDATED PER 9670829ACS	CZ	DB				5	8/30/07	UPDATED PER 4810351ACS	CZ	DB			
10	7/16/12	UPDATED PER 9101901ACS	AG	GD				4	8/25/06	UPDATED PER 4116808ACS	AG	DB			
9	8/5/11	UPDATED PER 8292382ACS	AG	DB				15	9/02/17	UPDATED PER 222259977ACS	CZ	GD			
8	7/21/10	ISSUED PER 7224503ACS	AG	DB				14	9/08/16	UPDATED PER 21654942ACS	CZ	GD			
7	8/6/09	UPDATED PER 6370813ACS	AG	GD				13	9/01/15	UPDATED PER 20967693ACS	CZ	DB			

**Alpine CP 00
 HDD East Site
 Subsidence Monitor - Seawater Line**

Baseline Station	Point Description	Subsidence Monitor - Cross-Section A																				Description		
		See Drawing CE-CP00-134 for Survey Cross-Section Locations																						
		8/15/01	8/23/01	9/8/01	7/9/02	9/14/02	7/9/03	9/8/03	7/9/04	7/28/05	8/21/06	8/30/07	8/7/08	8/3/09	7/19/10	8/4/11	7/14/12	7/20/13	8/12/14	8/24/15	9/9/16	8/31/17	Date	
0+00	Tundra	17.9	18.0	18.0	17.8	17.8	17.8	17.8	17.7	17.9	18.0	17.3	17.3	17.2	17.1	17.1	17.0	16.9	17.1	17.1	17.0	16.8	Elevation (In Feet)	
			0.1	0.0	-0.2	0.0	0.0	0.0	0.0	-0.1	0.2	0.1	-0.7	0.0	-0.1	-0.1	0.0	-0.1	0.0	0.1	0.0	0.0	-0.2	Incremental Change
			0.1	0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.2	0.0	0.1	-0.6	-0.6	-0.7	-0.8	-0.8	-0.9	-1.0	-0.8	-0.8	-0.9	-1.1	Cumulative Change
0+09	Tundra		17.9	18.0	17.8	17.8	17.8	17.8	17.7	17.8	17.9	17.2	17.3	17.2	17.0	17.0	17.1	17.1	17.1	17.2	17.0	16.8	Elevation (In Feet)	
				0.1	-0.2	0.0	0.0	0.0	0.0	-0.1	0.1	0.1	-0.7	0.1	-0.1	-0.1	0.0	0.1	0.0	0.0	0.1	-0.2	-0.2	Incremental Change
				0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.2	-0.1	0.0	-0.7	-0.6	-0.8	-0.9	-0.9	-0.8	-0.8	-0.8	-0.7	-0.9	-1.1	Cumulative Change
0+18	Tundra	17.6	17.6	17.5	17.3	17.5	17.4	17.4	17.2	17.4	17.4	16.7	16.7	16.7	16.4	16.5	16.5	16.3	16.4	16.3	16.1	15.9	Elevation (In Feet)	
			0.0	-0.1	-0.2	0.2	-0.1	0.0	-0.2	0.2	0.0	-0.7	0.0	0.0	-0.3	0.1	-0.1	-0.1	0.0	-0.1	-0.2	-0.2	Incremental Change	
			0.0	-0.1	-0.3	-0.1	-0.2	-0.2	-0.2	-0.4	-0.2	-0.2	-0.9	-0.9	-0.9	-1.2	-1.1	-1.2	-1.3	-1.2	-1.3	-1.5	-1.7	Cumulative Change
0+21	Top Bank	16.8	16.7	16.7	16.6	16.5	16.8	16.8	16.4	16.6	16.6	15.8	15.9	15.8	15.3	15.4	15.3	15.0	15.3	15.0	14.1	12.6	Elevation (In Feet)	
			-0.1	0.0	-0.1	-0.1	0.3	0.0	-0.4	0.2	0.0	-0.8	0.1	-0.1	-0.5	0.1	-0.1	-0.3	0.3	-0.3	-0.9	-1.5	Incremental Change	
			-0.1	-0.1	-0.2	-0.3	0.0	0.0	-0.4	-0.2	-0.2	-1.0	-0.9	-1.0	-1.5	-1.4	-1.5	-1.8	-1.5	-1.8	-2.7	-4.2	Cumulative Change	
0+22.5	Gradebreak		15.4	15.4	14.9	14.8	14.8	14.8	14.8	14.6	14.4	13.5	13.6	13.7	13.4	13.1	13.0	12.5	14.3	13.2	12.1	11.3	Elevation (In Feet)	
				0.0	-0.5	-0.1	0.0	0.0	0.0	-0.2	-0.2	-0.9	0.1	0.2	-0.3	-0.3	-0.1	-0.5	1.8	-1.1	-1.1	-0.8	Incremental Change	
				0.0	-0.5	-0.6	-0.6	-0.6	-0.6	-0.8	-1.0	-1.9	-1.9	-1.7	-2.0	-2.3	-2.4	-2.9	-1.1	-2.2	-3.3	-4.1	Cumulative Change	
0+25	Toe Bank	13.6	14.1	13.9	13.6	13.6	13.7	13.7	13.0	13.3	13.0	12.3	12.3	12.3	12.0	11.6	11.5	10.4	11.7	11.3	10.1	9.4	Elevation (In Feet)	
			0.5	-0.2	-0.3	0.0	0.1	0.0	-0.7	0.3	-0.3	-0.7	0.0	0.0	-0.3	-0.4	-0.1	-1.1	1.3	-0.4	-1.2	-0.7	Incremental Change	
			0.5	0.3	0.0	0.0	0.1	0.1	-0.6	-0.3	-0.6	-1.3	-1.3	-1.3	-1.6	-2.1	-2.1	-3.2	-1.9	-2.3	-3.5	-4.2	Cumulative Change	
0+27	CL Swale		13.3	13.5	13.3	12.5	13.1	13.1	11.7	12.2	12.8	12.3	12.0	12.1	11.9	11.3	11.1	9.8	10.9	10.4	9.9	9.2	Elevation (In Feet)	
				0.2	-0.2	-0.8	0.6	0.0	-1.4	0.5	0.6	-0.5	-0.3	0.1	-0.2	-0.6	-0.1	-1.4	1.2	-0.5	-0.6	-0.7	Incremental Change	
				0.2	0.0	-0.8	-0.2	-0.2	-1.6	-1.1	-0.5	-1.0	-1.3	-1.2	-1.4	-2.0	-2.2	-3.5	-2.4	-2.9	-3.4	-4.1	Cumulative Change	
0+29	Toe Bank	13.3	13.6	13.5	13.5	14.2	14.5	14.5	13.9	14.1	14.0	13.4	13.5	13.3	13.3	13.1	13.1	12.1	11.9	12.0	11.5	11.0	Elevation (In Feet)	
			0.3	-0.1	0.0	0.7	0.3	0.0	-0.6	0.2	-0.1	-0.6	0.1	-0.2	0.0	-0.2	0.1	-1.0	-0.3	0.1	-0.5	-0.5	Incremental Change	
			0.3	0.2	0.2	0.9	1.2	1.2	0.6	0.8	0.7	0.1	0.2	0.0	0.0	-0.2	-0.2	-1.2	-1.4	-1.3	-1.8	-2.3	Cumulative Change	
0+34	Gradebreak		15.6	15.6	15.2	15.2	15.5	15.5	14.8	15.3	15.3	14.6	14.6	14.4	14.3	14.1	14.0	12.8	14.4	13.4	14.2	13.5	Elevation (In Feet)	
				0.0	-0.4	0.0	0.3	0.0	-0.7	0.5	0.0	-0.7	0.0	-0.2	-0.1	-0.2	-0.2	-1.1	1.6	-1.0	0.8	-0.7	Incremental Change	
				0.0	-0.4	-0.4	-0.1	-0.1	-0.8	-0.3	-0.3	-1.0	-1.0	-1.2	-1.3	-1.5	-1.6	-2.8	-1.2	-2.2	-1.4	-2.1	Cumulative Change	
0+35	Top Bank	17.6	17.6	17.6	17.4	17.4	17.4	17.4	17.6	17.2	17.2	16.5	16.5	16.3	16.3	16.3	16.5	16.2	16.2	16.2	16.0	15.4	Elevation (In Feet)	
			0.0	0.0	-0.2	0.0	0.0	0.0	0.0	0.2	-0.4	0.0	-0.7	0.0	-0.2	0.0	0.0	0.2	-0.3	0.1	0.0	-0.2	-0.6	Incremental Change
			0.0	0.0	-0.2	-0.2	-0.2	-0.2	-0.2	0.0	-0.4	-0.4	-1.1	-1.1	-1.3	-1.3	-1.3	-1.2	-1.4	-1.4	-1.4	-1.6	-2.2	Cumulative Change
0+42	Tundra		18.3	18.4	18.1	18.1	18.1	18.1	18.0	18.1	18.1	17.5	17.5	17.4	17.3	17.4	17.3	17.2	17.3	17.5	17.1	16.8	Elevation (In Feet)	
				0.1	-0.3	0.0	0.0	0.0	-0.1	0.1	0.0	-0.6	0.0	-0.1	-0.1	0.1	0.0	-0.1	0.1	0.2	-0.4	-0.3	Incremental Change	
				0.1	-0.2	-0.2	-0.2	-0.2	-0.2	-0.3	-0.2	-0.2	-0.8	-0.8	-0.9	-1.0	-0.9	-1.0	-1.1	-1.0	-0.8	-1.3	-1.5	Cumulative Change
0+50	Tundra	18.0	18.0	18.1	17.9	17.8	17.8	17.8	17.7	17.8	17.8	17.1	17.1	16.9	16.6	16.7	16.6	16.5	16.5	16.6	16.3	16.0	Elevation (In Feet)	
			0.0	0.1	-0.2	-0.1	0.0	0.0	-0.1	0.1	0.0	-0.7	-0.1	-0.2	-0.3	0.1	-0.1	-0.2	0.1	0.1	-0.3	-0.3	Incremental Change	
			0.0	0.1	-0.1	-0.2	-0.2	-0.2	-0.2	-0.3	-0.2	-0.2	-0.9	-0.9	-1.1	-1.4	-1.3	-1.4	-1.6	-1.5	-1.4	-1.7	-2.0	Cumulative Change

***Note: Baseline Stationing Runs from North to South along Cross-Sections.

***Note: Vertical Datum Adjusted Down Approximately 0.5 feet to reflect Actual Elevation per Differential Levels from CD-1, ran August 2007.

**Alpine CP 00
 HDD East Site
 Subsidence Monitor - Seawater Line**

Baseline Station	Point Description	Subsidence Monitor - Cross-Section B																				Description		
		See Drawing CE-CP00-134 for Survey Cross-Section Locations																						
		8/15/01	8/23/01	9/8/01	7/9/02	9/14/02	7/9/03	9/8/03	7/9/04	7/28/05	8/21/06	8/30/07	8/7/08	8/3/09	7/19/10	8/4/11	7/14/12	7/20/13	8/12/14	8/24/15	9/9/16	8/31/17	Date	
0+00	Tundra	17.5	17.6	17.6	17.2	17.2	17.4	17.4	17.5	17.4	17.5	16.8	16.9	16.8	16.7	16.8	16.7	16.6	16.8	17.0	16.6	16.3	Elevation (In Feet)	
			0.1	0.0	-0.4	0.0	0.2	0.0	0.1	-0.1	0.1	-0.7	0.1	-0.1	-0.1	0.1	-0.1	-0.1	0.1	0.2	-0.4	-0.3	Incremental Change	
			0.1	0.1	-0.3	-0.3	-0.1	-0.1	0.0	-0.1	0.0	-0.7	-0.6	-0.7	-0.8	-0.7	-0.8	-0.9	-0.7	-0.5	-0.9	-1.2	Cumulative Change	
0+10	Tundra		17.9	18.0	17.9	17.7	17.7	17.7	17.7	17.7	17.8	17.1	17.1	16.9	16.9	17.0	17.0	16.8	17.0	17.2	16.9	16.7	Elevation (In Feet)	
				0.1	-0.1	-0.2	0.0	0.0	0.0	0.0	0.0	0.1	-0.6	0.0	-0.1	0.0	0.1	0.0	-0.2	0.2	0.2	-0.3	-0.2	Incremental Change
				0.1	0.0	-0.2	-0.2	-0.2	-0.2	-0.2	-0.2	-0.1	-0.8	-0.8	-1.0	-1.0	-0.9	-0.9	-1.1	-0.9	-0.7	-1.0	-1.2	Cumulative Change
0+23	Tundra	17.5	17.6	17.6	17.3	17.3	17.4	17.4	17.3	17.4	17.5	16.8	16.8	16.8	16.6	16.7	16.7	16.6	16.8	17.0	16.6	16.3	Elevation (In Feet)	
			0.1	0.0	-0.3	0.0	0.1	0.0	-0.1	0.1	0.1	-0.7	0.0	0.0	-0.1	0.1	0.1	-0.2	0.2	0.2	-0.3	-0.3	Incremental Change	
			0.1	0.1	-0.2	-0.2	-0.1	-0.1	-0.2	-0.1	0.0	-0.7	-0.7	-0.8	-0.9	-0.8	-0.8	-0.9	-0.7	-0.5	-0.9	-1.2	Cumulative Change	
0+25	Top of Bank	17.2	17.0	17.2	17.0	16.0	16.0	16.0	15.9	16.0	16.1	15.4	15.4	15.3	15.0	15.1	15.1	15.0	16.0	16.2	16.0	15.7	Elevation (In Feet)	
			-0.2	0.2	-0.2	-1.0	0.0	0.0	-0.1	0.1	0.1	-0.7	0.0	-0.1	-0.3	0.1	0.0	-0.1	1.0	0.2	-0.2	-0.3	Incremental Change	
			-0.2	0.0	-0.2	-1.2	-1.2	-1.2	-1.3	-1.2	-1.1	-1.8	-1.8	-1.9	-2.2	-2.1	-2.1	-2.2	-1.2	-1.0	-1.2	-1.5	Cumulative Change	
0+27	Gradebreak		16.7	16.6	16.5	16.5	16.5	16.5	16.4	16.4	16.5	15.8	15.7	15.6	14.9	14.8	14.5	14.5	14.7	14.7	14.2	13.8	Elevation (In Feet)	
				-0.1	-0.1	0.0	0.0	0.0	-0.1	0.0	0.1	-0.7	-0.1	-0.2	-0.7	-0.1	-0.3	0.1	0.2	0.0	-0.5	-0.4	Incremental Change	
				-0.1	-0.2	-0.2	-0.2	-0.2	-0.3	-0.3	-0.2	-0.9	-1.0	-1.2	-1.8	-1.9	-2.2	-2.2	-2.0	-2.0	-2.5	-2.9	Cumulative Change	
0+32	Toe Bank	14.2	14.5	14.4	14.6	14.1	14.5	14.5	14.5	14.7	14.6	13.9	13.9	13.8	13.6	12.8	12.2	12.5	11.5	10.6	12.1	12.0	Elevation (In Feet)	
			0.3	-0.1	0.2	-0.5	0.4	0.0	0.0	0.2	-0.1	-0.7	0.0	-0.1	-0.2	-0.8	-0.6	0.3	-1.0	-0.9	1.5	-0.1	Incremental Change	
			0.3	0.2	0.4	-0.1	0.3	0.3	0.3	0.5	0.4	-0.3	-0.3	-0.4	-0.6	-1.4	-2.0	-1.7	-2.7	-3.6	-2.1	-2.2	Cumulative Change	
0+35	CL Swale		14.4	14.3	14.2	13.7	14.2	14.2	14.2	14.6	14.6	13.9	13.9	13.7	13.4	13.8	12.6	12.3	10.8	10.7	10.7	10.5	Elevation (In Feet)	
				-0.1	-0.1	-0.5	0.5	0.0	0.0	0.4	0.0	-0.7	0.0	-0.2	-0.3	0.4	-1.2	-0.3	-1.5	-0.1	0.0	-0.2	Incremental Change	
				-0.1	-0.2	-0.7	-0.2	-0.2	-0.2	0.2	0.2	-0.5	-0.5	-0.7	-1.0	-0.6	-1.8	-2.1	-3.6	-3.7	-3.7	-3.9	Cumulative Change	
0+37	Toe Bank	13.9	13.8	14.2	13.7	13.5	14.4	14.4	13.7	14.4	14.5	13.5	13.8	13.4	13.3	13.1	N/A	13.5	11.8	11.7	12.7	12.6	Elevation (In Feet)	
			-0.1	0.4	-0.5	-0.2	0.9	0.0	-0.7	0.7	0.0	-0.9	0.3	-0.4	-0.1	-0.2		0.3	-1.7	-0.1	1.0	-0.1	Incremental Change	
			-0.1	0.3	-0.2	-0.4	0.5	0.5	-0.2	0.5	0.5	-0.4	-0.1	-0.5	-0.6	-0.8		-0.4	-2.2	-2.2	-1.2	-1.3	Cumulative Change	
0+38	Gradebreak		15.2		15.0	14.9	14.9	14.9	14.9	15.0	15.1	14.4	14.5	14.4	14.2	14.2	13.9	13.5	12.2	12.2	12.8	12.7	Elevation (In Feet)	
					-0.2	-0.1	0.0	0.0	0.0	0.1	0.1	-0.7	0.1	-0.1	-0.2	0.0	-0.3	-0.3	-1.3	0.0	0.6	-0.1	Incremental Change	
					-0.2	-0.3	-0.3	-0.3	-0.3	-0.2	-0.1	-0.8	-0.7	-0.8	-1.0	-1.0	-1.3	-1.7	-3.0	-3.0	-2.4	-2.5	Cumulative Change	
0+40	Gradebreak		14.5		14.2	14.0	15.4	15.4	15.4	15.5	15.5	14.9	14.9	13.8	13.6	13.7	13.4	13.4	13.1	13.2	13.2	12.9	Elevation (In Feet)	
					-0.3	-0.2	1.4	0.0	0.0	0.1	0.0	-0.6	0.0	-1.0	-0.2	0.1	-0.3	0.0	-0.3	0.1	-0.1	-0.3	Incremental Change	
					-0.3	-0.5	0.9	0.9	0.9	1.0	1.0	0.4	0.4	-0.7	-0.9	-0.8	-1.1	-1.1	-1.4	-1.3	-1.4	-1.6	Cumulative Change	
0+42	Gradebreak		15.8	16.1	15.6	15.6	15.8	15.8	15.8	15.9	15.9	15.3	15.2	15.0	14.7	14.6	14.6	14.4	14.3	14.6	14.5	14.3	Elevation (In Feet)	
				0.3	-0.5	0.0	0.2	0.0	0.0	0.1	0.0	-0.6	-0.1	-0.3	-0.3	-0.1	0.0	-0.2	-0.1	0.3	-0.2	-0.1	Incremental Change	
				0.3	-0.2	-0.2	0.0	0.0	0.0	0.1	0.1	-0.5	-0.6	-0.9	-1.1	-1.3	-1.3	-1.4	-1.5	-1.2	-1.4	-1.5	Cumulative Change	
0+49	Gradebreak	16.2	16.2	16.2	16.2	16.0	16.0	16.0	16.0	16.2	16.2	15.6	15.6	15.6	15.4	15.5	15.7	15.5	15.9	16.5	15.6	15.4	Elevation (In Feet)	
			0.0	0.0	0.0	-0.2	0.0	0.0	0.0	0.2	0.0	-0.6	0.0	-0.1	-0.2	0.0	0.2	-0.2	0.4	0.6	-0.9	-0.2	Incremental Change	
			0.0	0.0	0.0	-0.2	-0.2	-0.2	-0.2	-0.2	0.0	0.0	-0.6	-0.6	-0.6	-0.8	-0.8	-0.5	-0.7	-0.3	0.3	-0.6	-0.8	Cumulative Change
0+52	Top Bank	17.3	17.7	17.6	17.8	17.6	17.7	17.7	17.6	17.7	17.8	17.2	17.2	17.1	16.9	16.9	17.0	16.9	17.1	17.2	17.0	16.8	Elevation (In Feet)	
			0.4	-0.1	0.2	-0.2	0.1	0.0	-0.1	0.1	0.1	-0.6	0.0	-0.1	-0.2	0.0	0.1	-0.1	0.2	0.1	-0.2	-0.2	Incremental Change	

Alpine CP 00
HDD East Site
Subsidence Monitor - Seawater Line

Baseline Station	Point Description	Subsidence Monitor - Cross-Section B																				Description	
		See Drawing CE-CP00-134 for Survey Cross-Section Locations																					
		8/15/01	8/23/01	9/8/01	7/9/02	9/14/02	7/9/03	9/8/03	7/9/04	7/28/05	8/21/06	8/30/07	8/7/08	8/3/09	7/19/10	8/4/11	7/14/12	7/20/13	8/12/14	8/24/15	9/9/16	8/31/17	Date
			0.4	0.3	0.5	0.3	0.4	0.4	0.3	0.4	0.5	-0.1	-0.1	-0.2	-0.4	-0.4	-0.3	-0.4	-0.2	-0.1	-0.3	-0.5	Cumulative Change
0+60	Tundra	17.8	17.8	17.8	17.6	17.7	17.7	17.7	17.6	17.8	17.9	17.2	16.9	17.2	17.1	17.2	17.2	17.2	17.3	17.5	17.4	17.1	Elevation (In Feet)
			0.0	0.0	-0.2	0.1	0.0	0.0	-0.1	0.2	0.1	-0.7	-0.3	0.3	-0.1	0.0	0.1	0.0	0.1	0.2	-0.1	-0.3	Incremental Change
			0.0	0.0	-0.2	-0.1	-0.1	-0.1	-0.2	0.0	0.1	-0.6	-0.9	-0.6	-0.7	-0.7	-0.6	-0.6	-0.5	-0.3	-0.4	-0.7	Cumulative Change
***Note: Baseline Stationing Runs from North to South along Cross-Sections.																							
***Note: Vertical Datum Adjusted Down Approximately 0.5 feet to reflect Actual Elevation per Differential Levels from CD-1, ran August 2007.																							

**Alpine CP 00
 HDD East Site
 Subsidence Monitor - Seawater Line**

Baseline Station	Point Description	Subsidence Monitor - Cross-Section C																				Description		
		See Drawing CE-CP00-134 for Survey Cross-Section Locations																						
		8/15/01	8/23/01	9/8/01	7/9/02	9/14/02	7/9/03	9/8/03	7/9/04	7/28/05	8/21/06	8/30/07	8/7/08	8/3/09	7/19/10	8/4/11	7/14/12	7/20/13	8/12/14	8/24/15	9/9/16	8/31/17	Date	
0+00	Tundra	16.9	16.9	16.9	16.9	16.8	16.8	16.8	16.7	16.7	16.8	16.1	16.1	16.0	15.8	16.1	16.0	15.9	16.1	16.1	16.0	15.7	Elevation (In Feet)	
			0.0	0.0	0.0	-0.1	0.0	0.0	-0.1	0.0	0.1	-0.7	0.0	-0.1	-0.2	0.3	0.0	-0.2	0.2	0.0	-0.1	-0.3	Incremental Change	
			0.0	0.0	0.0	-0.1	-0.1	-0.1	-0.2	-0.2	-0.1	-0.8	-0.8	-0.9	-1.1	-0.8	-0.9	-1.1	-0.8	-0.8	-0.9	-1.2	Cumulative Change	
0+13	Tundra		16.8	16.7	16.7	16.6	16.7	16.7	16.6	16.7	16.8	16.1	16.2	16.0	15.9	16.0	15.9	15.8	16.0	16.1	15.9	15.7	Elevation (In Feet)	
				-0.1	0.0	-0.1	0.1	0.0	-0.1	0.1	0.1	-0.7	0.0	-0.2	-0.1	0.1	-0.1	-0.1	0.2	0.1	-0.2	-0.2	Incremental Change	
				-0.1	-0.1	-0.2	-0.1	-0.1	-0.2	-0.1	0.0	-0.7	-0.7	-0.8	-0.9	-0.8	-0.9	-1.0	-0.8	-0.7	-1.0	-1.1	Cumulative Change	
0+27	Top Bank	17.0	17.0	16.8	16.8	16.8	16.8	16.8	16.8	16.8	16.9	16.2	16.2	16.2	16.0	16.2	16.1	16.0	15.7	16.2	16.1	15.9	Elevation (In Feet)	
			0.0	-0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	-0.7	0.0	0.0	-0.2	0.2	-0.1	-0.2	-0.3	0.5	-0.1	-0.2	Incremental Change
			0.0	-0.2	-0.2	-0.2	-0.2	-0.2	-0.2	-0.2	-0.2	-0.1	-0.8	-0.8	-0.8	-1.0	-0.8	-0.9	-1.1	-1.3	-0.8	-0.9	-1.1	Cumulative Change
0+29	Toe Bank	12.8	12.8	12.9	12.5	12.4	13.2	13.2	13.5	13.7	13.8	13.2	13.5	13.4	13.1	13.3	13.3	13.2	13.2	13.6	13.4	13.2	Elevation (In Feet)	
			0.0	0.1	-0.4	-0.1	0.8	0.0	0.3	0.2	0.1	-0.6	0.3	-0.1	-0.3	0.2	0.0	-0.1	0.0	0.4	-0.2	-0.2	Incremental Change	
			0.0	0.1	-0.3	-0.4	0.4	0.4	0.7	0.9	1.0	0.4	0.7	0.6	0.3	0.5	0.5	0.4	0.4	0.8	0.6	0.4	Cumulative Change	
0+31	Toe Bank	13.9	13.6	13.9	13.6	13.4	13.6	13.6	13.5	13.6	13.9	13.2	13.3	13.2	13.0	12.8	13.0	13.0	13.8	13.4	13.2	13.0	Elevation (In Feet)	
			-0.3	0.3	-0.3	-0.2	0.2	0.0	-0.1	0.1	0.3	-0.7	0.1	-0.1	-0.2	-0.2	0.3	0.0	0.8	-0.4	-0.2	-0.2	Incremental Change	
			-0.3	0.0	-0.3	-0.5	-0.3	-0.3	-0.4	-0.3	0.0	-0.7	-0.6	-0.7	-0.9	-1.1	-0.9	-0.9	-0.1	-0.5	-0.7	-0.9	Cumulative Change	
0+32	Gradebreak	16.7	N/A	16.7	16.6	N/A	16.7	16.7	16.6	16.7	16.7	16.0	16.0	15.8	15.9	15.9	15.9	15.7	15.5	16.2	15.9	15.6	Elevation (In Feet)	
				0.0	-0.1		0.1	0.0	-0.1	0.1	0.0	-0.7	0.0	-0.2	0.1	-0.1	0.1	-0.2	-0.2	0.6	-0.3	-0.3	Incremental Change	
				0.0	-0.1		0.0	0.0	-0.1	0.0	0.0	-0.7	-0.7	-0.9	-0.8	-0.9	-0.8	-1.0	-1.2	-0.6	-0.8	-1.1	Cumulative Change	
0+33	Top Bank	17.3	17.5	17.5	17.1	17.2	17.2	17.2	17.1	17.1	17.5	16.7	16.7	16.5	16.5	16.5	16.6	16.4	16.3	16.7	16.6	16.3	Elevation (In Feet)	
			0.2	0.0	-0.4	0.1	0.0	0.0	-0.1	0.0	0.4	-0.8	0.0	-0.1	0.0	0.0	0.0	-0.2	-0.1	0.4	-0.2	-0.3	Incremental Change	
			0.2	0.2	-0.2	-0.1	-0.1	-0.1	-0.2	-0.2	0.2	-0.6	-0.6	-0.8	-0.8	-0.8	-0.7	-0.9	-1.0	-0.6	-0.7	-1.0	Cumulative Change	
0+42	Tundra		17.0	17.1	17.0	16.9	16.9	16.9	17.0	17.0	17.1	16.5	16.7	16.5	16.3	16.5	16.5	16.5	16.6	16.8	16.6	16.4	Elevation (In Feet)	
				0.1	-0.1	-0.1	0.0	0.0	0.1	0.0	0.1	-0.6	0.2	-0.2	-0.1	0.2	0.0	0.0	0.1	0.2	-0.2	-0.2	Incremental Change	
				0.1	0.0	-0.1	-0.1	-0.1	0.0	0.0	0.1	-0.5	-0.3	-0.6	-0.7	-0.5	-0.5	-0.5	-0.4	-0.2	-0.4	-0.6	Cumulative Change	
0+50	Tundra	17.2	17.1	17.2	17.1	17.0	17.2	17.2	17.1	17.2	17.3	16.7	16.8	16.6	16.5	16.7	16.8	16.7	16.9	17.0	16.9	16.6	Elevation (In Feet)	
			-0.1	0.1	-0.1	-0.1	0.2	0.0	-0.1	0.1	0.1	-0.6	0.1	-0.1	-0.1	0.2	0.0	0.0	0.1	0.2	-0.1	-0.3	Incremental Change	
			-0.1	0.0	-0.1	-0.2	0.0	0.0	-0.1	0.0	0.1	-0.5	-0.4	-0.6	-0.7	-0.5	-0.4	-0.5	-0.3	-0.2	-0.3	-0.6	Cumulative Change	
0+60	Tundra	N/A	N/A	N/A	17.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Elevation (In Feet)	
																							Incremental Change	
																								Cumulative Change

***Note: Baseline Stationing Runs from North to South along Cross-Sections.

***Note: Vertical Datum Adjusted Down Approximately 0.5 feet to reflect Actual Elevation per Differential Levels from CD-1, ran August 2007.

**Alpine CP 00
 HDD East Site
 Subsidence Monitor - Seawater Line**

Baseline Station	Point Description	Subsidence Monitor - Cross-Section D																				Description	
		See Drawing CE-CP00-134 for Survey Cross-Section Locations																					
		8/15/01	8/23/01	9/8/01	7/9/02	9/14/02	7/9/03	9/8/03	7/9/04	7/28/05	8/21/06	8/30/07	8/7/08	8/3/09	7/19/10	8/4/11	7/15/12	7/20/13	8/12/14	8/24/15	9/9/16	8/31/17	Date
0+00	Tundra	17.6	17.6	17.6	17.6	17.3	17.5	17.5	17.5	17.4	17.5	16.8	16.9	16.6	16.5	16.6	16.5	16.4	16.5	16.5	16.4	16.2	Elevation (In Feet)
			0.0	0.0	0.0	-0.3	0.2	0.0	0.0	-0.1	0.1	-0.7	0.1	-0.4	-0.1	0.1	-0.1	-0.1	0.1	0.0	-0.1	-0.2	Incremental Change
			0.0	0.0	0.0	-0.3	-0.1	-0.1	-0.1	-0.2	-0.1	-0.8	-0.7	-1.0	-1.1	-1.0	-1.1	-1.2	-1.1	-1.1	-1.2	-1.4	Cumulative Change
0+10	Tundra		17.7	17.9	17.9	17.6	17.6	17.6	17.6	17.6	17.6	16.9	16.9	16.9	16.7	16.9	16.7	16.6	16.7	16.7	16.8	16.5	Elevation (In Feet)
				0.2	0.0	-0.3	0.0	0.0	0.0	0.0	0.0	-0.7	0.0	0.0	-0.2	0.2	-0.1	-0.2	0.1	0.0	0.1	-0.3	Incremental Change
				0.2	0.2	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.8	-0.8	-0.8	-1.0	-0.8	-1.0	-1.1	-1.0	-1.0	-0.9	-1.2	Cumulative Change
0+20	Gradebreak		17.4	17.6	17.5	16.6	NA	NA	NA	17.2	17.2	16.4	16.5	16.0	15.9	15.8	15.8	15.6	15.8	15.8	15.3	15.1	Elevation (In Feet)
				0.2	-0.1	-0.9				0.6	-0.1	-0.8	0.1	-0.5	-0.1	-0.1	0.1	-0.2	0.2	0.0	-0.4	-0.2	Incremental Change
				0.2	0.1	-0.8				-0.2	-0.3	-1.0	-0.9	-1.4	-1.5	-1.6	-1.6	-1.8	-1.6	-1.6	-2.1	-2.3	Cumulative Change
0+22	Top Bank		16.8	16.7	16.8	16.6	16.8	16.8	16.8	16.5	16.5	15.7	15.7	14.9	14.9	14.8	14.8	14.7	15.1	15.0	14.9	14.6	Elevation (In Feet)
				-0.1	0.1	-0.2	0.2	0.0	0.0	-0.3	-0.1	-0.8	0.0	-0.8	0.0	-0.1	0.0	-0.2	0.4	-0.2	-0.1	-0.3	Incremental Change
				-0.1	0.0	-0.2	0.0	0.0	0.0	-0.3	-0.4	-1.1	-1.1	-1.9	-1.9	-2.0	-2.0	-2.1	-1.7	-1.9	-1.9	-2.2	Cumulative Change
0+24	Toe Bank	14.7	14.6	14.7	14.8	14.3	14.8	14.8	14.8	13.9	14.9	14.2	14.5	14.2	13.9	14.3	14.3	14.1	14.2	14.5	14.2	14.0	Elevation (In Feet)
			-0.1	0.1	0.1	-0.5	0.5	0.0	0.0	-0.9	1.0	-0.7	0.3	-0.3	-0.3	0.4	0.0	-0.2	0.2	0.2	-0.3	-0.2	Incremental Change
			-0.1	0.0	0.1	-0.4	0.1	0.1	0.1	-0.8	0.2	-0.5	-0.2	-0.5	-0.8	-0.4	-0.4	-0.6	-0.5	-0.2	-0.5	-0.7	Cumulative Change
0+25	CL Swale		14.1	14.2	14.1	13.7	14.1	14.1	14.1	13.7	14.0	13.4	13.9	13.6	13.9	13.4	13.5	13.6	14.1	13.7	13.8	13.7	Elevation (In Feet)
				0.1	-0.1	-0.4	0.4	0.0	0.0	-0.4	0.3	-0.6	0.4	-0.3	0.3	-0.5	0.1	0.2	0.5	-0.4	0.0	-0.1	Incremental Change
				0.1	0.0	-0.4	0.0	0.0	0.0	-0.4	-0.1	-0.7	-0.3	-0.5	-0.2	-0.7	-0.6	-0.5	0.0	-0.4	-0.3	-0.4	Cumulative Change
0+27	Toe Bank	14.4	14.6	14.6	14.3	14.0	14.2	14.2	14.2	16.2	16.5	15.8	15.8	15.6	15.5	15.3	15.4	15.1	14.7	14.9	15.4	15.2	Elevation (In Feet)
			0.2	0.0	-0.3	-0.3	0.2	0.0	0.0	2.0	0.3	-0.7	0.0	-0.1	-0.1	-0.2	0.0	-0.3	-0.4	0.2	0.5	-0.2	Incremental Change
			0.2	0.2	-0.1	-0.4	-0.2	-0.2	-0.2	1.8	2.1	1.4	1.4	1.2	1.1	0.9	1.0	0.7	0.3	0.5	1.0	0.8	Cumulative Change
0+29	Top Bank	17.3	17.3	17.4	17.1	16.9	17.1	17.1	17.0	17.0	17.0	16.4	16.5	15.9	15.8	15.8	15.7	15.6	15.6	15.7	15.7	15.3	Elevation (In Feet)
				0.1	-0.3	-0.2	0.2	0.0	-0.1	0.0	0.0	-0.6	0.1	-0.5	-0.1	0.0	-0.1	-0.1	0.1	0.1	0.0	-0.4	Incremental Change
				0.1	-0.2	-0.4	-0.2	-0.2	-0.3	-0.3	-0.3	-0.9	-0.9	-1.4	-1.5	-1.5	-1.6	-1.8	-1.7	-1.6	-1.6	-2.0	Cumulative Change
0+38	Tundra		17.6	17.7	17.5	17.3	17.3	17.3	17.2	17.2	17.1	16.4	16.4	14.8	14.7	14.8	14.6	14.7	14.7	14.9	14.8	14.5	Elevation (In Feet)
				0.1	-0.2	-0.2	0.0	0.0	-0.1	0.0	-0.1	-0.7	0.0	-1.6	-0.1	0.1	-0.3	0.1	0.1	0.2	-0.1	-0.3	Incremental Change
				0.1	-0.1	-0.3	-0.3	-0.3	-0.4	-0.4	-0.5	-1.2	-1.2	-2.8	-2.9	-2.8	-3.0	-2.9	-2.9	-2.9	-2.7	-2.8	-3.1
0+50	Tundra	17.7	17.6	17.6	17.5	17.3	16.8	16.8	17.4	17.4	17.4	16.7	16.8	14.9	14.7	14.7	15.0	15.3	14.9	15.1	15.0	14.6	Elevation (In Feet)
			-0.1	0.0	-0.1	-0.2	-0.5	0.0	0.6	0.0	0.0	-0.7	0.1	-1.9	-0.2	0.0	0.3	0.3	-0.4	0.2	-0.1	-0.4	Incremental Change
			-0.1	-0.1	-0.2	-0.4	-0.9	-0.9	-0.3	-0.3	-0.3	-1.0	-0.9	-2.8	-3.0	-3.0	-2.8	-2.4	-2.8	-2.6	-2.7	-3.1	Cumulative Change
***Note: Baseline Stationing Runs from North to South along Cross-Sections. ***Note: Vertical Datum Adjusted Down Approximately 0.5 feet to reflect Actual Elevation per Differential Levels from CD-1, ran August 2007.																							

**Alpine CP 00
 HDD East Site
 Subsidence Monitor - Seawater Line**

Baseline Station	Point Description	Subsidence Monitor - Cross-Section E															Description
		See Drawing CE-CP00-134 for Survey Cross-Section Locations															
		9/8/03	7/9/04	7/28/05	8/21/06	8/30/07	8/7/08	8/3/09	7/19/10	8/4/11	7/15/12	7/20/13	8/12/14	8/24/15	9/9/16	8/31/17	Date
0+00	Tundra	17.5	17.5	17.4	17.5	16.8	16.8	16.8	16.6	16.6	16.7	16.7	16.9	17.1	16.8	16.6	Elevation (In Feet)
			0.0	-0.1	0.1	-0.7	0.0	-0.1	-0.2	0.0	0.1	0.0	0.2	0.2	-0.2	-0.2	Incremental Change
			0.0	-0.1	0.0	-0.7	-0.7	-0.7	-0.9	-0.9	-0.8	-0.8	-0.6	-0.4	-0.7	-0.9	Cumulative Change
0+9	Tundra	17.3	17.3	17.3	17.8	17.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Elevation (In Feet)
			0.0	0.0	0.5	-0.7											Incremental Change
			0.0	0.0	0.5	-0.2											Cumulative Change
0+12	Gradebreak	17.8	17.8	17.4	17.9	17.2	17.3	17.1	17.1	17.2	17.2	17.2	17.2	17.3	17.3	17.1	Elevation (In Feet)
			0.0	-0.4	0.5	-0.7	0.1	-0.1	0.0	0.1	-0.1	0.0	0.0	0.1	0.0	-0.2	Incremental Change
			0.0	-0.4	0.1	-0.6	-0.6	-0.7	-0.7	-0.6	-0.6	-0.6	-0.6	-0.6	-0.5	-0.5	-0.7
0+20	Top Bank	17.3	17.3	17.3	17.3	16.2	15.8	15.8	15.5	15.2	15.1	15.0	15.2	15.0	14.9	14.6	Elevation (In Feet)
			0.0	0.0	0.0	-1.1	-0.4	0.0	-0.3	-0.3	-0.1	-0.1	0.2	-0.3	0.0	-0.3	Incremental Change
			0.0	0.0	0.0	-1.1	-1.5	-1.5	-1.8	-2.1	-2.2	-2.3	-2.3	-2.1	-2.3	-2.4	-2.7
0+21	Toe Bank	16.5	16.5	16.5	16.2	14.8	14.3	13.4	15.0	13.1	13.4	13.1	14.2	13.2	13.6	12.9	Elevation (In Feet)
			0.0	0.0	-0.3	-1.4	-0.5	-0.9	1.6	-1.9	0.2	-0.3	1.1	-1.0	0.4	-0.7	Incremental Change
			0.0	0.0	-0.3	-1.7	-2.2	-3.1	-1.5	-3.4	-3.1	-3.4	-2.3	-3.3	-2.9	-3.6	Cumulative Change
0+23	CL Swale	16.0	16.0	16.0	14.7	13.8	13.2	13.0	12.7	12.8	12.9	13.1	13.2	13.1	13.2	12.8	Elevation (In Feet)
			0.0	0.0	-1.3	-0.9	-0.6	-0.2	-0.3	0.1	0.2	0.2	0.1	-0.1	0.1	-0.4	Incremental Change
			0.0	0.0	-1.3	-2.2	-2.8	-3.0	-3.3	-3.3	-3.1	-2.9	-2.8	-2.9	-2.8	-3.2	Cumulative Change
0+24	Toe Bank	16.2	16.4	16.3	14.8	13.1	13.8	13.1	13.1	13.1	13.0	13.2	13.2	13.3	13.1	13.0	Elevation (In Feet)
			0.2	-0.1	-1.5	-1.7	0.7	-0.7	0.0	0.0	-0.1	0.2	0.1	0.1	-0.2	-0.1	Incremental Change
			0.2	0.1	-1.4	-3.1	-2.4	-3.1	-3.1	-3.1	-3.1	-3.2	-3.0	-3.0	-2.9	-3.1	-3.2
0+27	Top Bank	17.3	17.4	17.4	16.3	14.5	14.5	14.3	14.2	14.4	14.4	14.7	14.8	14.4	14.6	14.2	Elevation (In Feet)
			0.1	0.0	-1.2	-1.8	0.0	-0.2	-0.1	0.2	0.0	0.3	0.1	-0.3	0.2	-0.4	Incremental Change
			0.1	0.1	-1.1	-2.8	-2.8	-3.0	-3.1	-2.9	-2.9	-2.6	-2.6	-2.9	-2.7	-3.1	Cumulative Change
0+38	Tundra	17.4	17.4	17.5	17.5	16.8	16.8	16.7	16.7	16.8	16.8	16.7	16.8	17.0	16.7	16.6	Elevation (In Feet)
			0.0	0.1	0.0	-0.7	0.0	-0.1	0.0	0.1	-0.1	-0.1	0.1	0.2	-0.2	-0.1	Incremental Change
			0.0	0.1	0.1	-0.6	-0.6	-0.7	-0.7	-0.6	-0.6	-0.7	-0.6	-0.6	-0.4	-0.7	-0.8
0+49	Tundra	17.4	17.4	17.4	17.4	16.7	16.8	16.7	16.6	16.9	16.7	16.5	16.7	16.8	16.8	16.5	Elevation (In Feet)
			0.0	0.0	0.0	-0.7	0.1	-0.1	0.0	0.3	-0.2	-0.2	0.2	0.1	0.0	-0.3	Incremental Change
			0.0	0.0	0.0	-0.7	-0.6	-0.8	-0.8	-0.5	-0.7	-0.9	-0.7	-0.6	-0.6	-0.9	Cumulative Change

***Note: Baseline Stationing Runs from North to South along Cross-Sections.

***Note: Vertical Datum Adjusted Down Approximately 0.5 feet to reflect Actual Elevation per Differential Levels from CD-1, ran August 2007.

**Alpine CP 00
 HDD East Site
 Subsidence Monitor - Seawater Line**

Baseline Station	Point Description	Subsidence Monitor - Cross-Section F															Description
		See Drawing CE-CP00-134 for Survey Cross-Section Locations															
		9/8/03	7/9/04	7/28/05	8/21/06	8/30/07	8/7/08	8/3/09	7/19/10	8/4/11	7/15/12	9/20/13	8/12/14	8/24/15	9/9/16	8/31/17	Date
0+00	Tundra	17.9	17.9	18.2	18.3	17.7	17.7	17.3	17.3	17.3	17.3	17.3	17.5	17.7	17.5	17.2	Elevation (In Feet)
			0.0	0.3	0.1	-0.6	0.0	-0.4	0.0	0.0	0.0	0.0	0.2	0.2	-0.2	-0.3	Incremental Change
			0.0	0.3	0.4	-0.2	-0.2	-0.6	-0.6	-0.6	-0.6	-0.6	-0.4	-0.2	-0.4	-0.7	Cumulative Change
0+10	Tundra	17.3	17.2	17.2	17.3	16.6	16.6	16.6	16.6	16.6	16.7	16.6	16.9	17.0	16.8	16.7	Elevation (In Feet)
			-0.1	0.0	0.1	-0.7	0.0	0.0	0.0	0.0	0.1	-0.1	0.2	0.1	-0.2	-0.1	Incremental Change
			-0.1	-0.1	0.0	-0.7	-0.7	-0.7	-0.7	-0.7	-0.6	-0.7	-0.4	-0.3	-0.5	-0.6	Cumulative Change
0+14	Gradebreak	18.0	18.0	18.0	18.0	16.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Elevation (In Feet)
			0.0	0.0	0.0	-1.4											Incremental Change
			0.0	0.0	0.0	-1.4											Cumulative Change
0+20	Top Bank	17.5	17.5	17.6	17.6	16.6	16.6	16.4	16.3	16.1	16.1	15.8	16.1	16.3	16.0	15.8	Elevation (In Feet)
			0.0	0.1	0.0	-1.0	0.0	-0.2	-0.1	-0.2	0.0	-0.3	0.3	0.2	-0.3	-0.2	Incremental Change
			0.0	0.1	0.1	-0.9	-0.9	-1.1	-1.2	-1.4	-1.4	-1.7	-1.4	-1.2	-1.5	-1.7	Cumulative Change
0+21	Toe Bank	16.5	16.3	16.3	16.0	15.1	15.0	14.7	14.4	14.3	14.2	13.9	15.5	14.2	13.7	13.7	Elevation (In Feet)
			-0.2	0.0	-0.3	-0.9	-0.1	-0.3	-0.3	-0.2	-0.1	-0.3	1.7	-1.3	-0.5	0.0	Incremental Change
			-0.2	-0.2	-0.5	-1.4	-1.5	-1.8	-2.1	-2.3	-2.4	-2.6	-1.0	-2.3	-2.8	-2.8	Cumulative Change
0+24	CL Swale	15.0	12.5	15.0	13.8	13.4	13.7	13.7	13.4	13.4	13.7	13.6	13.7	13.8	13.6	13.3	Elevation (In Feet)
			-2.5	2.5	-1.2	-0.4	0.3	0.0	-0.3	0.0	0.3	-0.1	0.2	0.1	-0.2	-0.3	Incremental Change
			-2.5	0.0	-1.2	-1.6	-1.4	-1.4	-1.6	-1.6	-1.3	-1.4	-1.3	-1.2	-1.4	-1.7	Cumulative Change
0+26	Toe Bank	16.1	12.5	13.1	13.6	15.2	13.6	15.8	13.5	13.3	13.4	14.4	14.6	14.7	14.6	14.2	Elevation (In Feet)
			-3.6	0.6	0.5	1.6	-1.6	2.2	-2.3	-0.2	0.2	1.0	0.2	0.1	-0.1	-0.4	Incremental Change
			-3.6	-3.0	-2.5	-0.9	-2.5	-0.3	-2.6	-2.8	-2.7	-1.7	-1.5	-1.4	-1.5	-1.9	Cumulative Change
0+28	Top Bank	17.8	17.9	17.9	17.3	16.4	16.1	16.2	15.6	15.6	15.6	15.7	15.9	15.8	15.8	15.8	Elevation (In Feet)
			0.1	0.0	-0.6	-0.9	-0.3	0.1	-0.6	0.0	0.0	0.1	0.2	-0.1	0.1	0.0	Incremental Change
			0.1	0.1	-0.5	-1.4	-1.7	-1.6	-2.2	-2.2	-2.3	-2.1	-1.9	-2.0	-2.0	-2.0	Cumulative Change
0+34	Gradebreak	17.9	17.9	18.0	18.0	17.4	17.5	17.4	17.3	17.4	17.4	17.4	17.5	17.6	17.5	17.2	Elevation (In Feet)
			0.0	0.1	0.0	-0.6	0.1	-0.1	-0.1	0.1	-0.1	0.0	0.1	0.1	-0.1	-0.3	Incremental Change
			0.0	0.1	0.1	-0.5	-0.4	-0.5	-0.6	-0.5	-0.5	-0.5	-0.4	-0.3	-0.4	-0.7	Cumulative Change
0+43	Gradebreak	17.2	17.3	17.2	17.4	16.8	16.8	16.7	16.7	16.8	16.9	16.7	17.1	17.1	16.8	16.7	Elevation (In Feet)
			0.1	-0.1	0.2	-0.6	0.0	-0.1	0.0	0.1	0.1	-0.2	0.3	0.0	-0.3	-0.1	Incremental Change
			0.1	0.0	0.2	-0.4	-0.4	-0.5	-0.5	-0.4	-0.3	-0.5	-0.1	-0.1	-0.4	-0.5	Cumulative Change
0+46	Gradebreak	17.8	17.8	17.8	17.6	17.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Elevation (In Feet)
			0.0	0.0	-0.2	-0.6											Incremental Change
			0.0	0.0	-0.2	-0.8											Cumulative Change
0+52	Tundra	17.8	17.9	17.9	18.0	17.3	17.4	17.3	17.1	17.1	17.3	17.2	17.4	17.5	17.3	17.1	Elevation (In Feet)
			0.1	0.0	0.1	-0.7	0.1	-0.1	-0.2	0.0	0.2	0.0	0.1	0.1	-0.2	-0.2	Incremental Change
			0.1	0.1	0.2	-0.5	-0.4	-0.5	-0.7	-0.7	-0.6	-0.6	-0.4	-0.3	-0.5	-0.7	Cumulative Change

***Note: Baseline Stationing Runs from North to South along Cross-Sections.

***Note: Vertical Datum Adjusted Down Approximately 0.5 feet to reflect Actual Elevation per Differential Levels from CD-1, ran August 2007.

**Alpine CP 00
 HDD East Site
 Subsidence Monitor - Seawater Line**

Baseline Station	Point Description	Subsidence Monitor - Cross-Section G															Description
		See Drawing CE-CP00-134 for Survey Cross-Section Locations															
		9/8/03	7/9/04	7/28/05	8/21/06	8/30/07	8/7/08	8/3/09	7/19/10	8/4/11	7/15/12	9/20/13	8/12/14	8/24/15	9/9/16	8/31/17	Date
0+00	Tundra	17.1	17.3	17.4	17.5	16.8	16.9	16.4	16.3	16.5	16.5	16.4	16.6	16.6	16.4	16.3	Elevation (In Feet)
			0.2	0.1	0.1	-0.7	0.1	-0.5	-0.1	0.2	0.1	-0.1	0.2	0.0	-0.2	-0.1	Incremental Change
			0.2	0.3	0.4	-0.3	-0.2	-0.7	-0.8	-0.6	-0.6	-0.7	-0.5	-0.5	-0.7	-0.8	Cumulative Change
0+09	Tundra	17.2	17.1	17.2	17.3	16.6	16.9	16.5	16.4	16.4	16.5	16.5	16.6	16.7	16.5	16.3	Elevation (In Feet)
			-0.1	0.1	0.1	-0.7	0.3	-0.4	-0.1	0.0	0.1	0.0	0.1	0.1	-0.2	-0.2	Incremental Change
			-0.1	0.0	0.1	-0.6	-0.3	-0.7	-0.8	-0.8	-0.7	-0.7	-0.6	-0.5	-0.7	-0.9	Cumulative Change
0+16	Gradebreak	17.9	17.9	17.9	17.5	16.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Elevation (In Feet)
			0.0	0.0	-0.4	-0.7											Incremental Change
			0.0	0.0	-0.4	-1.1											
0+22	Top Bank	17.6	17.7	17.7	17.8	17.0	17.1	16.9	16.9	16.9	16.9	16.8	17.0	17.1	16.8	16.7	Elevation (In Feet)
			0.1	0.0	0.1	-0.8	0.1	-0.1	0.0	0.0	0.0	-0.2	0.3	0.1	-0.3	-0.1	Incremental Change
			0.1	0.1	0.1	-0.6	-0.5	-0.7	-0.7	-0.7	-0.7	-0.8	-0.6	-0.5	-0.8	-0.9	Cumulative Change
0+24	Toe Bank	16.9	17.0	17.0	17.0	16.2	16.3	16.2	16.3	16.4	16.4	16.3	16.4	16.6	16.3	16.1	Elevation (In Feet)
			0.1	0.0	0.0	-0.8	0.1	0.0	0.1	0.1	0.0	-0.1	0.1	0.2	-0.3	-0.2	Incremental Change
			0.1	0.1	0.1	-0.7	-0.6	-0.7	-0.6	-0.5	-0.5	-0.6	-0.5	-0.3	-0.6	-0.8	Cumulative Change
0+26	CL Swale	16.5	16.5	16.5	16.5	16.3	16.1	16.0	16.0	15.9	16.0	16.4	16.4	16.2	16.0	15.7	Elevation (In Feet)
			0.0	0.0	0.0	-0.2	-0.2	-0.1	0.0	-0.1	0.1	0.4	0.0	-0.2	-0.2	-0.3	Incremental Change
			0.0	0.0	0.0	-0.2	-0.4	-0.5	-0.5	-0.6	-0.5	-0.1	-0.1	-0.3	-0.5	-0.8	Cumulative Change
0+28	Toe Bank	16.8	16.7	16.9	16.9	16.3	16.3	16.3	16.1	16.3	16.3	16.4	16.3	16.3	16.3	16.0	Elevation (In Feet)
			-0.1	0.2	0.0	-0.6	-0.1	0.0	-0.2	0.2	0.0	0.1	0.0	0.0	-0.1	-0.3	Incremental Change
			-0.1	0.1	0.1	-0.5	-0.6	-0.5	-0.7	-0.5	-0.5	-0.4	-0.5	-0.5	-0.5	-0.8	Cumulative Change
0+30	Top Bank	17.7	17.8	17.8	17.9	17.3	17.3	17.2	17.1	17.3	17.3	17.2	17.4	17.6	17.3	17.1	Elevation (In Feet)
			0.1	0.0	0.1	-0.6	0.0	-0.1	-0.1	0.2	0.0	0.0	0.1	0.2	-0.3	-0.2	Incremental Change
			0.1	0.1	0.2	-0.4	-0.4	-0.5	-0.6	-0.4	-0.4	-0.5	-0.3	-0.1	-0.4	-0.6	Cumulative Change
0+37	Tundra	17.6	17.6	17.6	17.7	17.0	17.3	17.1	16.9	17.1	17.2	17.0	17.3	17.3	17.1	16.9	Elevation (In Feet)
			0.0	0.0	0.1	-0.7	0.3	-0.2	-0.2	0.2	0.0	-0.1	0.3	0.0	-0.2	-0.2	Incremental Change
			0.0	0.0	0.1	-0.6	-0.3	-0.6	-0.7	-0.5	-0.5	-0.6	-0.3	-0.3	-0.5	-0.7	Cumulative Change
0+46	Tundra	17.3	17.3	17.3	17.4	16.8	16.8	16.7	16.6	16.7	16.7	16.7	16.8	17.0	16.8	16.6	Elevation (In Feet)
			0.0	0.0	0.1	-0.6	0.0	-0.1	-0.1	0.1	0.0	0.0	0.1	0.2	-0.2	-0.2	Incremental Change
			0.0	0.0	0.1	-0.5	-0.5	-0.6	-0.7	-0.6	-0.6	-0.6	-0.5	-0.3	-0.5	-0.7	Cumulative Change

***Note: Baseline Stationing Runs from North to South along Cross-Sections.

***Note: Vertical Datum Adjusted Down Approximately 0.5 feet to reflect Actual Elevation per Differential Levels from CD-1, ran August 2007.

**Alpine CP 00
 HDD East Site
 Subsidence Monitor - Seawater Line**

Baseline Station	Point Description	Subsidence Monitor - Cross-Section H															Description
		See Drawing CE-CP00-134 for Survey Cross-Section Locations															
		9/8/03	7/9/04	7/28/05	8/21/06	8/30/07	8/7/08	8/3/09	7/19/10	8/4/11	7/15/12	9/20/13	8/12/14	8/24/15	9/9/16	8/31/17	Date
0+00	Tundra	17.0	16.8	16.6	16.7	16.0	16.0	16.1	15.9	16.1	16.1	16.0	16.2	16.4	16.1	15.9	Elevation (In Feet)
			-0.2	-0.2	0.1	-0.7	0.0	0.1	-0.2	0.2	0.0	-0.1	0.2	0.1	-0.3	-0.2	Incremental Change
			-0.2	-0.4	-0.3	-1.0	-1.0	-0.9	-1.1	-0.9	-0.9	-1.0	-0.8	-0.6	-0.9	-1.1	Cumulative Change
0+09	Tundra	17.1	16.9	16.9	17.0	16.4	16.5	16.3	16.2	16.3	16.5	16.3	16.5	16.6	16.5	16.2	Elevation (In Feet)
			-0.2	0.0	0.1	-0.6	0.1	-0.1	-0.1	0.1	0.1	-0.1	0.1	0.1	-0.2	-0.3	Incremental Change
			-0.2	-0.2	-0.1	-0.7	-0.7	-0.8	-0.9	-0.8	-0.6	-0.8	-0.6	-0.5	-0.7	-0.9	Cumulative Change
0+18	Gradebreak	17.8	17.8	17.8	17.3	16.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Elevation (In Feet)
			0.0	0.0	-0.5	-0.7											Incremental Change
			0.0	0.0	-0.5	-1.2											Cumulative Change
0+24	Top Bank	17.3	17.4	17.4	17.5	16.8	16.8	16.7	16.6	16.4	16.4	16.4	15.9	16.2	16.0	15.6	Elevation (In Feet)
			0.1	0.0	0.1	-0.6	0.0	-0.1	-0.1	-0.2	0.0	-0.1	-0.5	0.3	-0.2	-0.4	Incremental Change
			0.1	0.1	0.1	-0.5	-0.5	-0.6	-0.7	-0.9	-0.9	-0.9	-1.5	-1.1	-1.4	-1.7	Cumulative Change
0+25	Toe Bank	16.8	16.4	16.6	16.6	15.9	15.9	15.7	15.3	15.1	14.9	14.3	14.9	14.2	13.7	13.7	Elevation (In Feet)
			-0.4	0.2	0.0	-0.7	0.0	-0.3	-0.4	-0.2	-0.2	-0.5	0.5	-0.7	-0.4	0.0	Incremental Change
			-0.4	-0.2	-0.2	-0.9	-0.9	-1.1	-1.5	-1.7	-1.9	-2.5	-2.0	-2.6	-3.1	-3.1	Cumulative Change
0+28	CL Swale	16.3	16.3	16.3	16.3	15.8	15.6	15.5	15.0	14.8	14.7	14.1	14.3	13.5	13.2	12.7	Elevation (In Feet)
			0.0	0.0	0.0	-0.5	-0.3	-0.1	-0.5	-0.2	-0.1	-0.6	0.2	-0.8	-0.3	-0.5	Incremental Change
			0.0	0.0	0.0	-0.5	-0.8	-0.8	-1.3	-1.5	-1.6	-2.2	-2.0	-2.8	-3.1	-3.6	Cumulative Change
0+30	Toe Bank	16.6	16.6	16.4	16.5	15.8	15.9	15.9	15.5	15.2	14.9	14.0	14.3	14.5	13.4	13.2	Elevation (In Feet)
			0.0	-0.2	0.1	-0.7	0.1	0.0	-0.4	-0.3	-0.3	-0.9	0.3	0.2	-1.0	-0.2	Incremental Change
			0.0	-0.2	-0.1	-0.8	-0.7	-0.7	-1.1	-1.4	-1.7	-2.7	-2.3	-2.1	-3.2	-3.4	Cumulative Change
0+32	Top Bank	17.6	17.7	17.6	17.6	16.9	17.0	16.8	16.8	16.5	16.3	15.8	15.8	16.1	15.7	15.3	Elevation (In Feet)
			0.1	-0.1	0.0	-0.7	0.1	-0.2	0.0	-0.4	-0.2	-0.4	0.0	0.3	-0.4	-0.4	Incremental Change
			0.1	0.0	0.0	-0.7	-0.6	-0.8	-0.8	-1.2	-1.3	-1.8	-1.8	-1.5	-1.9	-2.3	Cumulative Change
0+40	Gradebreak	18.2	18.2	18.2	18.3	17.6	17.7	17.6	17.5	17.6	17.6	17.5	17.7	17.9	17.6	17.3	Elevation (In Feet)
			0.0	0.0	0.1	-0.7	0.1	-0.1	-0.1	0.1	0.0	-0.1	0.1	0.3	-0.4	-0.3	Incremental Change
			0.0	0.0	0.1	-0.6	-0.5	-0.6	-0.7	-0.6	-0.6	-0.7	-0.5	-0.3	-0.6	-0.9	Cumulative Change
0+42	Gradebreak	17.7	17.7	17.8	17.9	17.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Elevation (In Feet)
			0.0	0.1	0.1	-0.7											Incremental Change
			0.0	0.1	0.2	-0.5											Cumulative Change
0+50	Tundra	17.2	17.2	17.3	17.4	16.7	16.7	16.7	16.7	16.7	16.7	16.6	16.8	16.9	16.6	16.5	Elevation (In Feet)
			0.0	0.1	0.1	-0.7	0.0	0.0	0.0	0.0	0.0	-0.1	0.2	0.1	-0.3	-0.1	Incremental Change
			0.0	0.1	0.2	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.6	-0.4	-0.3	-0.6	-0.7

***Note: Baseline Stationing Runs from North to South along Cross-Sections.

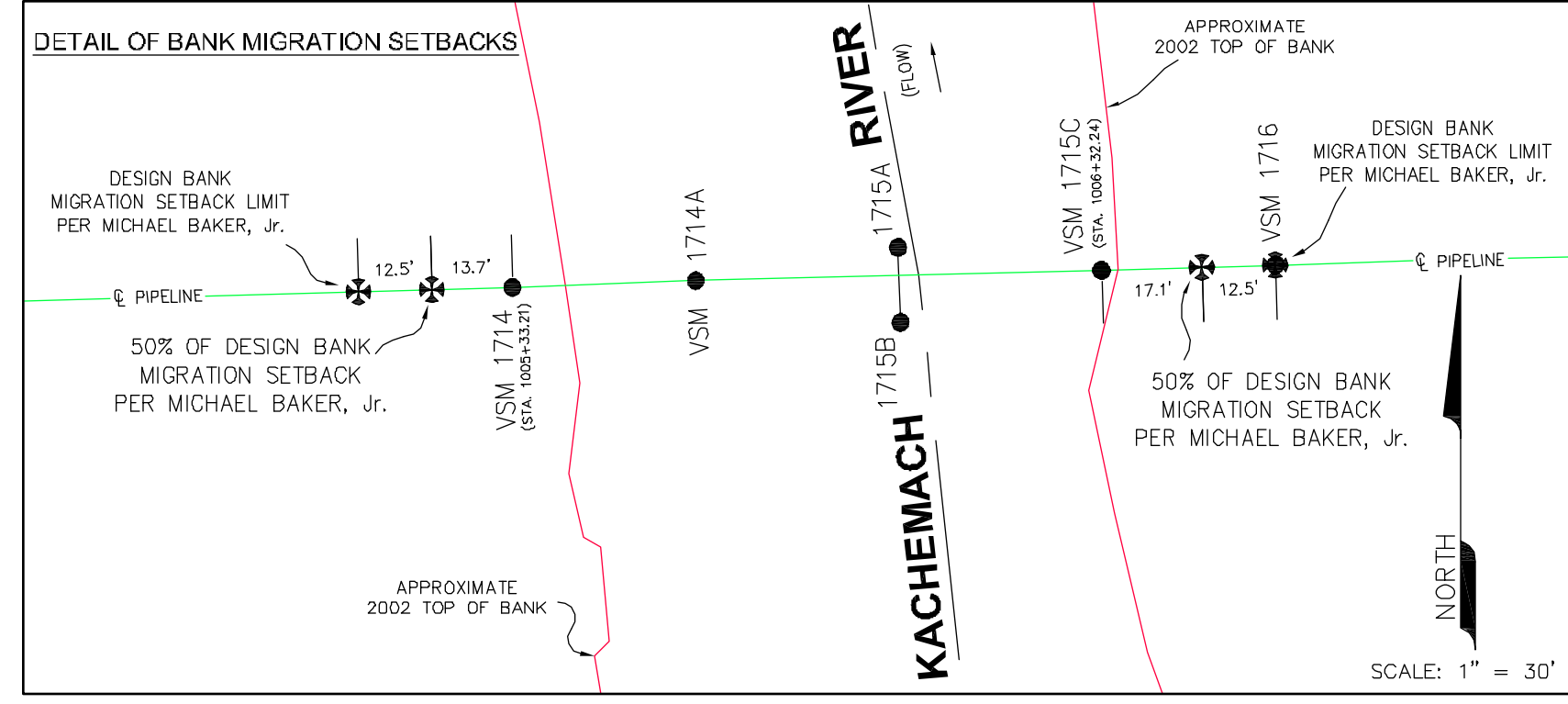
***Note: Vertical Datum Adjusted Down Approximately 0.5 feet to reflect Actual Elevation per Differential Levels from CD-1, ran August 2007.



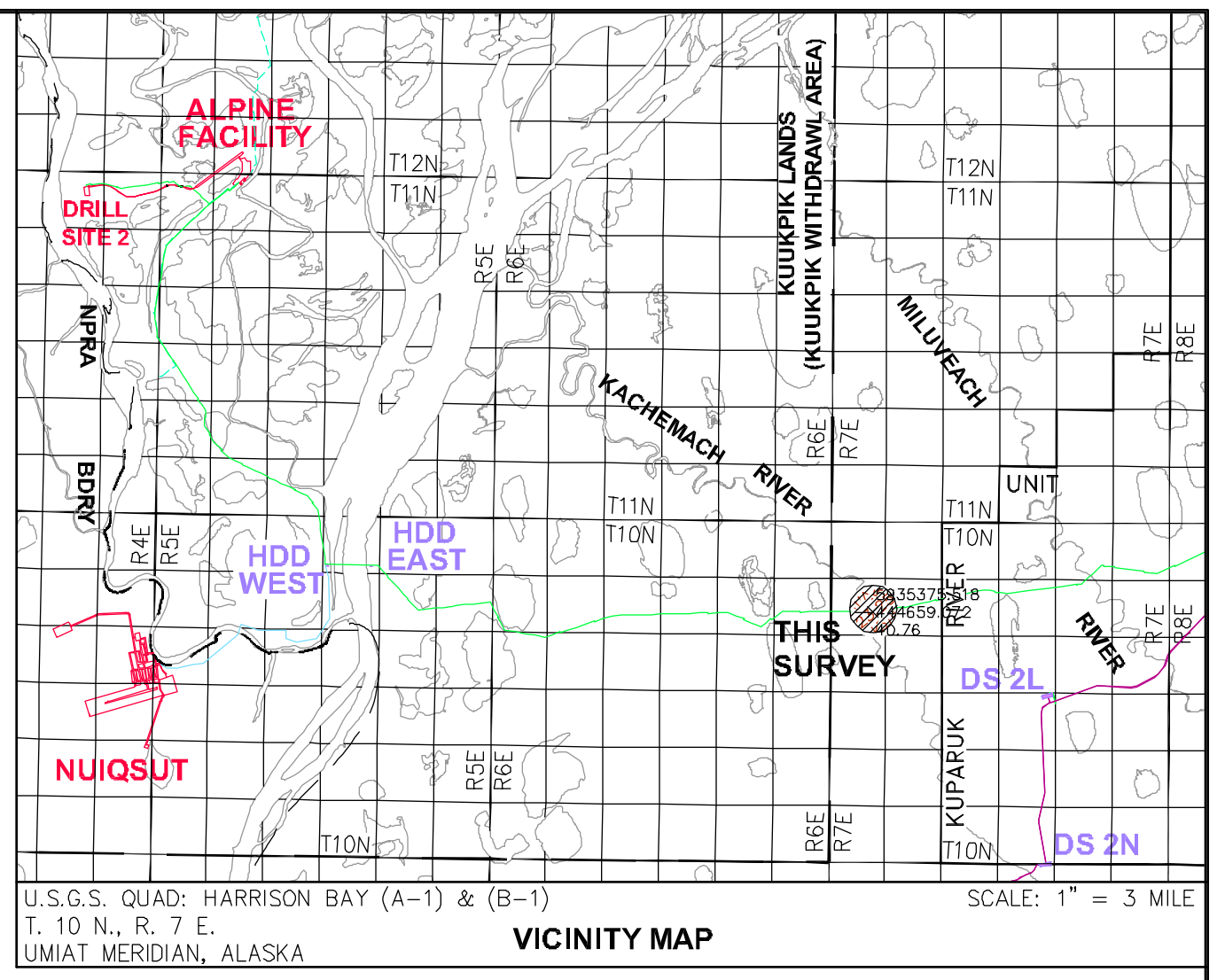
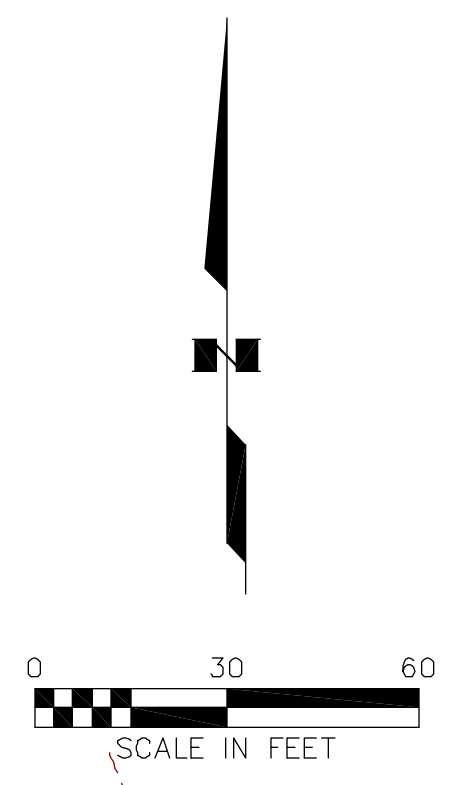
Appendix D KACHEMACH RIVER BANK EROSION AND VSM SCOUR SURVEY



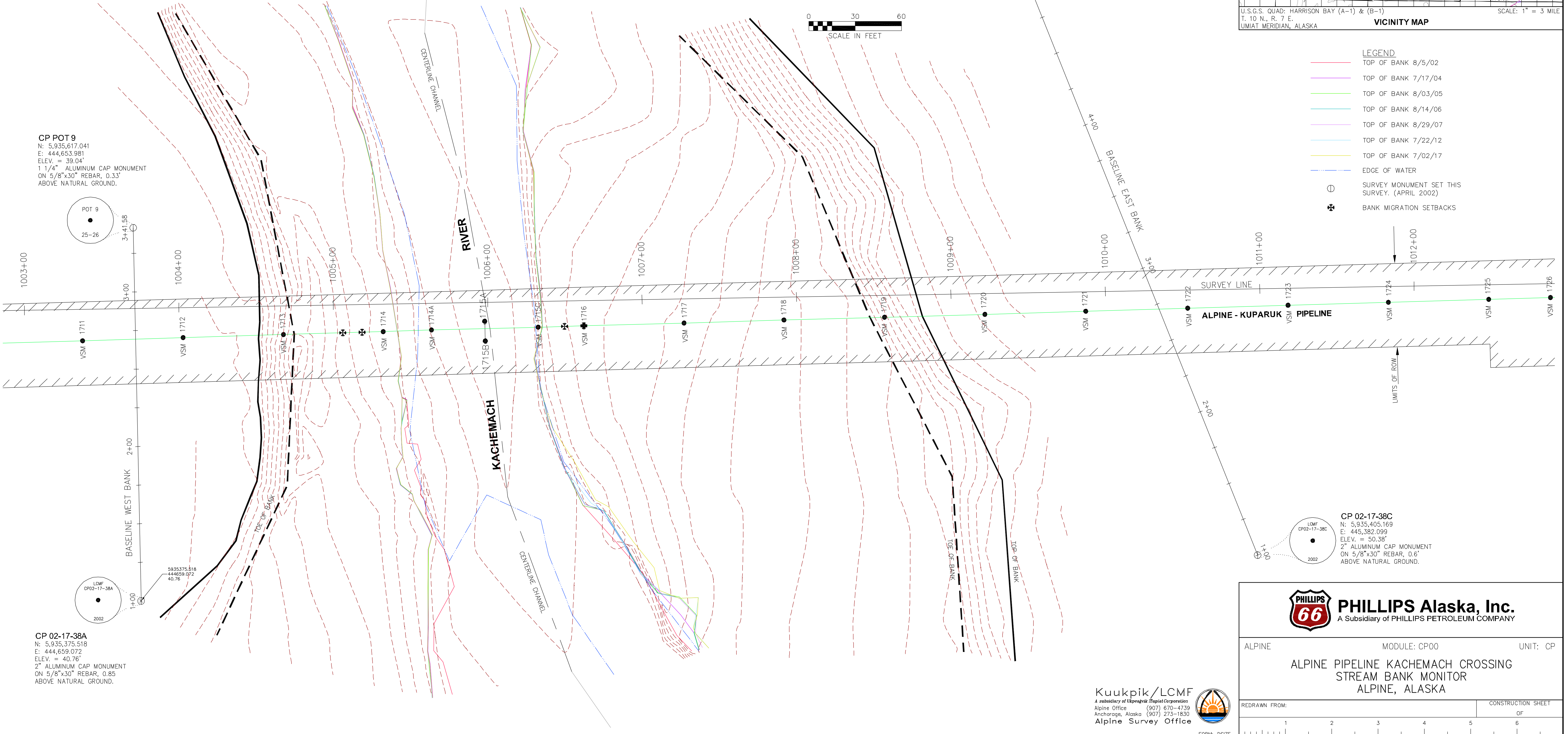
D.1 BANK EROSION



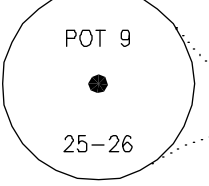
- NOTES:**
- DATES OF SURVEY: APRIL 2002 - AUGUST 2002, JULY 11, 2003, JULY 17, 2004; AUGUST 3 & 4, 2005, AUGUST 14, 2006; AUGUST 29, 2007; JULY 22, 2012; JULY 2, 2017.
 - REFERENCE FIELD BOOKS: LCMF2002-17, PGS. 37-39, & 44; LCMF2002-23, PG. 22; LCMF2003-11, PGS. 15-17; LCMF2004-08, PGS. 56-60; LCMF2005-21, PGS. 13 & 22; LCMF2006-12, PG. 58; LCMF2007-14, PG. 67; LCMF2012-08, PGS. 11-13; 2017-13, PGS. 43-45.
 - VERTICAL CONTROL IS BASED ON AS-BUILT TOP OF STEEL ELEVATIONS AT VSM 1712, 1713 AND 1724 PER DRAWING PD-CP00-109, SHEETS 31 AND 32.
 - HORIZONTAL CONTROL IS BASED ON RECORD COORDINATES OF ALPINE PIPELINE PI 13A AND ALPINE MONUMENT No. 19. COORDINATES ARE ALASKA STATE PLANE, ZONE 4, NAD 27, IN FEET.
 - SEE DOCUMENT RPT-EV-CP-00007 FOR STREAM BANK EROSION BASELINE SURVEY DATA.
 - VSM 1714A AND 1715C (identified as 1715A and 1715B during construction) DO NOT HAVE SUFFICIENT DEPTH TO MEET SCOUR DESIGN. THE PIPELINE SADDLES ARE UNBOLTED TO ENSURE NO PIPELINE DAMAGE SHOULD THE VSM FAIL DURING A SCOUR EVENT.



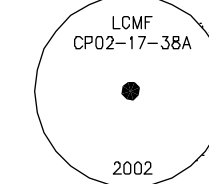
- LEGEND**
- TOP OF BANK 8/5/02
 - TOP OF BANK 7/17/04
 - TOP OF BANK 8/03/05
 - TOP OF BANK 8/14/06
 - TOP OF BANK 8/29/07
 - TOP OF BANK 7/22/12
 - TOP OF BANK 7/02/17
 - EDGE OF WATER
 - SURVEY MONUMENT SET THIS SURVEY (APRIL 2002)
 - BANK MIGRATION SETBACKS



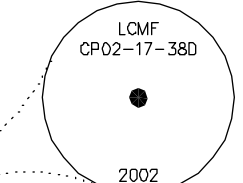
CP POT 9
N: 5,935,617.041
E: 444,653.981
ELEV. = 39.04'
1 1/4" ALUMINUM CAP MONUMENT
ON 5/8"x30" REBAR, 0.33'
ABOVE NATURAL GROUND.



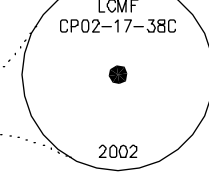
CP 02-17-38A
N: 5,935,375.518
E: 444,659.072
ELEV. = 40.76'
2" ALUMINUM CAP MONUMENT
ON 5/8"x30" REBAR, 0.85'
ABOVE NATURAL GROUND.



CP 02-17-38D
N: 5,935,771.077
E: 445,235.464
ELEV. = 51.78'
2" ALUMINUM CAP MONUMENT
ON 5/8"x30" REBAR, 0.5'
ABOVE NATURAL GROUND.



CP 02-17-38C
N: 5,935,405.169
E: 445,382.099
ELEV. = 50.38'
2" ALUMINUM CAP MONUMENT
ON 5/8"x30" REBAR, 0.6'
ABOVE NATURAL GROUND.



ALPINE MODULE: CP00 UNIT: CP
ALPINE PIPELINE KACHEMACH CROSSING
STREAM BANK MONITOR
ALPINE, ALASKA

REDRAWN FROM:	CONSTRUCTION SHEET
1 2 3 4 5 6	OF
DO NOT SCALE	ABOVE SCALE FOR REFERENCE ONLY
DATE: 12/16/02	DRAWN: CZ DESIGN: JZ FOR NO: 1870229ACS
SCALE: 1" = 30'	CHECKED: JZ AFC/CC NO: 1870229
JOB NO: 02-205	APPROVAL:
SUB JOB NO:	CADD FILE NO. 02-04-06-2
DRAWING NO: CE-CP00-145	SHEET: 1 of 2
	REV: 10

Kuukpiq/LCMF
A subsidiary of Ekpavik Regional Corporation
Alpine Office (907) 670-4739
Anchorage, Alaska (907) 273-1830
Alpine Survey Office



REV	DATE	REVISIONS	BY	CHK	JOB ENGR	PROJ ENGR	CUST APP	REV	DATE	REVISIONS	BY	CHK	JOB ENGR	PROJ ENGR	CUST APP
6	8/14/2006	UPDATED PER 4083251						6	8/14/2006	UPDATED PER 4083251	CZ	GD			
5	10/23/05	UPDATED PER 3423995ACS - ADD VSM LABELS 1714A&1715C						5	10/23/05	UPDATED PER 3423995ACS - ADD VSM LABELS 1714A&1715C	CZ	GD			
4	8/4/05	UPDATED PER 3423995ACS						4	8/4/05	UPDATED PER 3423995ACS	CZ	DB			
3	7/17/04	ISSUED PER 2390461ACS						3	7/17/04	ISSUED PER 2390461ACS	AG	GD			
2	7/11/03	ISSUED PER 2094388ACS TOP OF BANK 2003 - RECONTOURED						2	7/11/03	ISSUED PER 2094388ACS TOP OF BANK 2003 - RECONTOURED	GD	JZ			
1	12/16/02	ISSUED PER 1870229ACS						1	12/16/02	ISSUED PER 1870229ACS	CZ	JZ			



D.1.1 EAST BANK

Alpine CP00
Alpine Pipeline Kachemach Crossing
East Streambank Erosion Monitor

Baseline Station	Streambank Monitor - Top of East Bank Locations								Description
	See Drawing CE-CP00-145 Rev 7 for Survey Baseline Location								
	8/5/2002	7/11/2003	7/17/2004	8/3/2005	8/14/2006	8/29/2007	7/22/2012	7/2/2017	Date
1+80	363.8	363.8	358.2	358.2	358.2	356.1	353.7	353.7	Baseline Offset (In Feet)
		0.0	-5.6	0.0	0.0	-2.1	-2.4	0.0	Incremental Change
		0.0	-5.6	-5.6	-5.6	-7.7	-10.1	-10.1	Cumulative Change
1+90	367.8	367.8	357.7	356.8	356.8	356.0	356.8	356.8	Baseline Offset (In Feet)
		0.0	-10.1	-0.9	0.0	-0.8	0.8	0.0	Incremental Change
		0.0	-10.1	-10.9	-10.9	-11.8	-11.0	-11.0	Cumulative Change
2+00	369.4	369.4	360.4	351.9	351.9	351.9	351.6	350.6	Baseline Offset (In Feet)
		0.0	-9.0	-8.5	0.0	0.0	-0.3	-1.1	Incremental Change
		0.0	-9.0	-17.5	-17.5	-17.5	-17.8	-18.9	Cumulative Change
2+10	370.7	370.7	363.9	356.0	356.0	356.0	348.5	348.5	Baseline Offset (In Feet)
		0.0	-6.8	-7.9	0.0	0.0	-7.5	0.0	Incremental Change
		0.0	-6.8	-14.7	-14.7	-14.7	-22.2	-22.2	Cumulative Change
2+20	371.9	371.9	367.7	366.7	366.7	366.7	365.1	365.1	Baseline Offset (In Feet)
		0.0	-4.2	-1.0	0.0	0.0	-1.6	0.0	Incremental Change
		0.0	-4.2	-5.2	-5.2	-5.2	-6.8	-6.8	Cumulative Change
2+30	373.0	373.0	371.6	372.1	372.1	371.9	371.9	366.9	Baseline Offset (In Feet)
		0.0	-1.4	0.5	0.0	-0.3	0.0	-5.0	Incremental Change
		0.0	-1.4	-0.9	-0.9	-1.2	-1.1	-6.1	Cumulative Change
2+40	374.8	374.8	374.8	374.8	374.8	374.8	375.6	366.4	Baseline Offset (In Feet)
		0.0	0.0	0.0	0.0	0.0	0.8	-9.2	Incremental Change
		0.0	0.0	0.0	0.0	0.0	0.8	-8.4	Cumulative Change

Alpine CP00
Alpine Pipeline Kachemach Crossing
East Streambank Erosion Monitor

Baseline Station	Streambank Monitor - Top of East Bank Locations								Description
	See Drawing CE-CP00-145 Rev 7 for Survey Baseline Location								
	8/5/2002	7/11/2003	7/17/2004	8/3/2005	8/14/2006	8/29/2007	7/22/2012	7/2/2017	Date
2+50	378.3	378.3	376.3	376.3	376.3	376.3	377.0	369.5	Baseline Offset (In Feet)
		0.0	-2.0	0.0	0.0	0.0	0.7	-7.5	Incremental Change
		0.0	-2.0	-2.0	-2.0	-2.0	-1.3	-8.8	Cumulative Change
2+60	381.8	381.8	377.9	377.9	377.9	377.9	378.4	372.5	Baseline Offset (In Feet)
		0.0	-3.9	0.0	0.0	0.0	0.5	-5.9	Incremental Change
		0.0	-3.9	-3.9	-3.9	-3.9	-3.3	-9.2	Cumulative Change
2+70	385.3	385.3	379.7	379.7	379.7	379.7	380.2	374.9	Baseline Offset (In Feet)
		0.0	-5.6	0.0	0.0	0.0	0.5	-5.3	Incremental Change
		0.0	-5.6	-5.6	-5.6	-5.6	-5.1	-10.4	Cumulative Change
2+80	388.9	388.9	381.4	381.4	381.4	381.4	381.9	377.2	Baseline Offset (In Feet)
		0.0	-7.5	0.0	0.0	0.0	0.5	-4.7	Incremental Change
		0.0	-7.5	-7.5	-7.5	-7.5	-7.0	-11.7	Cumulative Change
2+90	392.6	392.6	390.4	390.4	389.0	389.0	386.7	382.4	Baseline Offset (In Feet)
		0.0	-2.2	0.0	-1.4	0.0	-2.3	-4.4	Incremental Change
		0.0	-2.2	-2.2	-3.5	-3.5	-5.8	-10.2	Cumulative Change
3+00	394.0	394.0	394.0	394.0	393.1	393.1	390.4	385.6	Baseline Offset (In Feet)
		0.0	0.0	0.0	-0.9	0.0	-2.7	-4.8	Incremental Change
		0.0	0.0	0.0	-0.9	-0.9	-3.6	-8.5	Cumulative Change
3+10	394.8	394.8	394.8	394.8	394.4	394.4	393.3	386.8	Baseline Offset (In Feet)
		0.0	0.0	0.0	-0.4	0.0	-1.2	-6.4	Incremental Change
		0.0	0.0	0.0	-0.4	-0.4	-1.5	-8.0	Cumulative Change

Alpine CP00
Alpine Pipeline Kachemach Crossing
East Streambank Erosion Monitor

Baseline Station	Streambank Monitor - Top of East Bank Locations								Description
	See Drawing CE-CP00-145 Rev 7 for Survey Baseline Location								
	8/5/2002	7/11/2003	7/17/2004	8/3/2005	8/14/2006	8/29/2007	7/22/2012	7/2/2017	Date
3+20	395.5	395.5	395.5	395.5	395.5	395.5	396.0	388.1	Baseline Offset (In Feet)
		0.0	0.0	0.0	0.0	0.0	0.5	-7.9	Incremental Change
		0.0	0.0	0.0	0.0	0.0	0.5	-7.4	Cumulative Change
3+30	395.1	395.1	395.1	395.1	395.1	395.1	395.1	390.0	Baseline Offset (In Feet)
		0.0	0.0	0.0	0.0	0.0	0.0	-5.1	Incremental Change
		0.0	0.0	0.0	0.0	0.0	0.0	-5.2	Cumulative Change
3+40	394.8	394.8	394.8	394.8	394.8	394.8	394.8	391.9	Baseline Offset (In Feet)
		0.0	0.0	0.0	0.0	0.0	0.0	-2.9	Incremental Change
		0.0	0.0	0.0	0.0	0.0	0.0	-2.9	Cumulative Change
3+50	394.0	394.0	394.0	394.0	394.0	394.0	394.0	392.9	Baseline Offset (In Feet)
		0.0	0.0	0.0	0.0	0.0	0.0	-1.1	Incremental Change
		0.0	0.0	0.0	0.0	0.0	0.0	-1.1	Cumulative Change
3+60	392.6	392.6	392.6	392.6	392.6	392.6	392.6	392.1	Baseline Offset (In Feet)
		0.0	0.0	0.0	0.0	0.0	0.0	-0.5	Incremental Change
		0.0	0.0	0.0	0.0	0.0	0.0	-0.5	Cumulative Change
3+70	391.1	391.1	391.1	391.1	391.1	391.1	391.1	391.3	Baseline Offset (In Feet)
		0.0	0.0	0.0	0.0	0.0	0.0	0.2	Incremental Change
		0.0	0.0	0.0	0.0	0.0	0.0	0.2	Cumulative Change
3+80	389.4	389.4	389.4	389.4	389.4	389.4	389.4	389.4	Baseline Offset (In Feet)
		0.0	0.0	0.0	0.0	0.0	0.0	0.0	Incremental Change
		0.0	0.0	0.0	0.0	0.0	0.0	0.0	Cumulative Change

Alpine CP00
Alpine Pipeline Kachemach Crossing
East Streambank Erosion Monitor

Baseline Station	Streambank Monitor - Top of East Bank Locations								Description
	See Drawing CE-CP00-145 Rev 7 for Survey Baseline Location								
	8/5/2002	7/11/2003	7/17/2004	8/3/2005	8/14/2006	8/29/2007	7/22/2012	7/2/2017	Date
3+90	387.6	387.6	387.6	387.6	387.6	387.6	387.6	387.6	Baseline Offset (In Feet)
		0.0	0.0	0.0	0.0	0.0	0.0	0.0	Incremental Change
		0.0	0.0	0.0	0.0	0.0	0.0	0.0	Cumulative Change
4+00	381.6	381.6	381.6	381.6	381.6	381.6	381.6	381.6	Baseline Offset (In Feet)
		0.0	0.0	0.0	0.0	0.0	0.0	0.0	Incremental Change
		0.0	0.0	0.0	0.0	0.0	0.0	0.0	Cumulative Change
4+10	375.0	375.0	375.0	375.0	375.0	375.0	375.0	375.0	Baseline Offset (In Feet)
{Pipeline		0.0	0.0	0.0	0.0	0.0	0.0	0.0	Incremental Change
Crossing}		0.0	0.0	0.0	0.0	0.0	0.0	0.0	Cumulative Change
4+20	371.3	371.3	371.3	371.3	371.3	371.3	371.3	371.3	Baseline Offset (In Feet)
		0.0	0.0	0.0	0.0	0.0	0.0	0.0	Incremental Change
		0.0	0.0	0.0	0.0	0.0	0.0	0.0	Cumulative Change
4+30	368.0	368.0	368.0	368.0	368.0	368.0	368.0	368.0	Baseline Offset (In Feet)
		0.0	0.0	0.0	0.0	0.0	0.0	0.0	Incremental Change
		0.0	0.0	0.0	0.0	0.0	0.0	0.0	Cumulative Change
4+40	365.4	365.4	365.4	365.4	365.4	365.4	365.4	365.4	Baseline Offset (In Feet)
		0.0	0.0	0.0	0.0	0.0	0.0	0.0	Incremental Change
		0.0	0.0	0.0	0.0	0.0	0.0	0.0	Cumulative Change
4+50	362.7	362.7	362.7	362.7	362.7	362.7	362.7	362.7	Baseline Offset (In Feet)
		0.0	0.0	0.0	0.0	0.0	0.0	0.0	Incremental Change
		0.0	0.0	0.0	0.0	0.0	0.0	0.0	Cumulative Change

Alpine CP00
Alpine Pipeline Kachemach Crossing
East Streambank Erosion Monitor

Baseline Station	Streambank Monitor - Top of East Bank Locations								Description
	See Drawing CE-CP00-145 Rev 7 for Survey Baseline Location								
	8/5/2002	7/11/2003	7/17/2004	8/3/2005	8/14/2006	8/29/2007	7/22/2012	7/2/2017	Date
4+60	358.5	358.5	358.5	358.5	359.5	359.5	359.5	359.5	Baseline Offset (In Feet)
		0.0	0.0	0.0	1.0	0.0	0.0	0.0	Incremental Change
		0.0	0.0	0.0	1.0	1.0	1.0	1.0	Cumulative Change
4+70	356.0	356.0	356.0	356.0	356.0	356.0	356.0	356.0	Baseline Offset (In Feet)
		0.0	0.0	0.0	0.0	0.0	0.0	0.0	Incremental Change
		0.0	0.0	0.0	0.0	0.0	0.0	0.0	Cumulative Change
4+80	352.4	352.4	352.4	352.4	352.4	352.4	352.4	352.4	Baseline Offset (In Feet)
		0.0	0.0	0.0	0.0	0.0	0.0	0.0	Incremental Change
		0.0	0.0	0.0	0.0	0.0	0.0	0.0	Cumulative Change
4+90	348.6	348.6	348.6	348.6	348.6	348.6	348.6	348.6	Baseline Offset (In Feet)
		0.0	0.0	0.0	0.0	0.0	0.0	0.0	Incremental Change
		0.0	0.0	0.0	0.0	0.0	0.0	0.0	Cumulative Change
5+00	344.8	344.8	344.8	344.8	344.8	344.8	344.8	344.8	Baseline Offset (In Feet)
		0.0	0.0	0.0	0.0	0.0	0.0	0.0	Incremental Change
		0.0	0.0	0.0	0.0	0.0	0.0	0.0	Cumulative Change
5+10	342.3	342.3	342.3	342.3	342.3	342.3	342.3	342.3	Baseline Offset (In Feet)
		0.0	0.0	0.0	0.0	0.0	0.0	0.0	Incremental Change
		0.0	0.0	0.0	0.0	0.0	0.0	0.0	Cumulative Change
5+20	341.0	341.0	341.0	341.0	341.0	341.0	341.0	341.0	Baseline Offset (In Feet)
		0.0	0.0	0.0	0.0	0.0	0.0	0.0	Incremental Change
		0.0	0.0	0.0	0.0	0.0	0.0	0.0	Cumulative Change

Alpine CP00
Alpine Pipeline Kachemach Crossing
East Streambank Erosion Monitor

Baseline Station	Streambank Monitor - Top of East Bank Locations								Description
	See Drawing CE-CP00-145 Rev 7 for Survey Baseline Location								
	8/5/2002	7/11/2003	7/17/2004	8/3/2005	8/14/2006	8/29/2007	7/22/2012	7/2/2017	Date
5+30	339.8	339.8	339.8	339.8	339.8	339.8	339.8	339.8	Baseline Offset (In Feet)
		0.0	0.0	0.0	0.0	0.0	0.0	0.0	Incremental Change
		0.0	0.0	0.0	0.0	0.0	0.0	0.0	Cumulative Change
5+40	335.5	335.5	335.5	335.5	335.5	335.5	335.5	335.5	Baseline Offset (In Feet)
		0.0	0.0	0.0	0.0	0.0	0.0	0.0	Incremental Change
		0.0	0.0	0.0	0.0	0.0	0.0	0.0	Cumulative Change
5+50	330.7	330.7	330.7	330.7	330.7	330.7	330.7	330.7	Baseline Offset (In Feet)
		0.0	0.0	0.0	0.0	0.0	0.0	0.0	Incremental Change
		0.0	0.0	0.0	0.0	0.0	0.0	0.0	Cumulative Change
5+60	325.6	325.6	325.6	325.6	324.3	324.3	324.3	324.3	Baseline Offset (In Feet)
		0.0	0.0	0.0	-1.3	0.0	0.0	0.0	Incremental Change
		0.0	0.0	0.0	-1.3	-1.3	-1.3	-1.3	Cumulative Change
5+70	320.1	320.1	320.1	320.1	315.7	315.7	315.7	315.7	Baseline Offset (In Feet)
		0.0	0.0	0.0	-4.4	0.0	0.0	0.0	Incremental Change
		0.0	0.0	0.0	-4.4	-4.4	-4.4	-4.4	Cumulative Change
5+80	314.6	314.6	314.6	314.6	309.1	309.1	309.1	309.1	Baseline Offset (In Feet)
		0.0	0.0	0.0	-5.5	0.0	0.0	0.0	Incremental Change
		0.0	0.0	0.0	-5.5	-5.5	-5.5	-5.5	Cumulative Change
5+90	313.0	313.0	313.0	313.0	310.0	310.0	310.0	310.0	Baseline Offset (In Feet)
		0.0	0.0	0.0	-3.0	0.0	0.0	0.0	Incremental Change
		0.0	0.0	0.0	-3.0	-3.0	-3.0	-3.0	Cumulative Change

Alpine CP00
Alpine Pipeline Kachemach Crossing
East Streambank Erosion Monitor

Baseline Station	Streambank Monitor - Top of East Bank Locations								Description
	See Drawing CE-CP00-145 Rev 7 for Survey Baseline Location								
	8/5/2002	7/11/2003	7/17/2004	8/3/2005	8/14/2006	8/29/2007	7/22/2012	7/2/2017	Date
6+00	312.1	312.1	312.1	312.1	310.9	310.9	310.9	310.9	Baseline Offset (In Feet)
		0.0	0.0	0.0	-1.2	0.0	0.0	0.0	Incremental Change
		0.0	0.0	0.0	-1.2	-1.2	-1.2	-1.2	Cumulative Change
VSM 1716	349.7	349.7	349.7	349.7	349.7	349.7	349.7	349.7	Baseline Offset (In Feet)
		0.0	0.0	0.0	0.0	0.0	0.0	0.0	Incremental Change
		0.0	0.0	0.0	0.0	0.0	0.0	0.0	Cumulative Change
***Note: Survey completed on 8/5/02 was used for baseline data to compute Incremental/Cumulative Change. Negative numbers indicate erosion.									



D.1.2 WEST BANK

Alpine CP00
Alpine Pipeline Kachemach Crossing
West Streambank Erosion Monitor

Baseline Station	Streambank Monitor - Top of West Bank Locations								Description
	See Drawing CE-CP00-145 Rev 7 for Survey Baseline Location								
	8/5/2002	7/11/2003	7/17/2004	8/3/2005	8/14/2006	8/29/2007	7/22/2012	7/2/2017	Date
0+40	199.0	199.0	187.1	187.1	187.1	187.1	187.1	187.1	Baseline Offset (In Feet)
		0.0	-11.9	0.0	0.0	0.0	0.0	0.0	Incremental Change
		0.0	-11.9	-11.9	-11.9	-11.9	-11.9	-11.9	Cumulative Change
0+50	196.3	196.3	186.5	186.5	186.5	186.5	186.5	186.5	Baseline Offset (In Feet)
		0.0	-9.8	0.0	0.0	0.0	0.0	0.0	Incremental Change
		0.0	-9.8	-9.8	-9.8	-9.8	-9.8	-9.8	Cumulative Change
0+60	191.8	191.8	185.5	185.5	185.5	185.5	185.5	185.5	Baseline Offset (In Feet)
		0.0	-6.3	0.0	0.0	0.0	0.0	0.0	Incremental Change
		0.0	-6.3	-6.3	-6.3	-6.3	-6.3	-6.3	Cumulative Change
0+70	189.0	189.0	185.3	185.3	185.3	185.3	185.3	185.3	Baseline Offset (In Feet)
		0.0	-3.7	0.0	0.0	0.0	0.0	0.0	Incremental Change
		0.0	-3.7	-3.7	-3.7	-3.7	-3.7	-3.7	Cumulative Change
0+80	189.4	189.4	185.7	185.7	185.7	185.7	185.7	185.7	Baseline Offset (In Feet)
		0.0	-3.7	0.0	0.0	0.0	0.0	0.0	Incremental Change
		0.0	-3.7	-3.7	-3.7	-3.7	-3.7	-3.7	Cumulative Change
0+90	194.4	194.4	185.8	185.8	185.8	185.8	185.8	185.8	Baseline Offset (In Feet)
		0.0	-8.6	0.0	0.0	0.0	0.0	0.0	Incremental Change
		0.0	-8.6	-8.6	-8.6	-8.6	-8.6	-8.6	Cumulative Change
1+00	200.1	200.1	185.9	185.9	185.9	185.9	185.9	185.9	Baseline Offset (In Feet)
		0.0	-14.2	0.0	0.0	0.0	0.0	0.0	Incremental Change
		0.0	-14.2	-14.2	-14.2	-14.2	-14.2	-14.2	Cumulative Change

Alpine CP00
Alpine Pipeline Kachemach Crossing
West Streambank Erosion Monitor

Baseline Station	Streambank Monitor - Top of West Bank Locations								Description
	See Drawing CE-CP00-145 Rev 7 for Survey Baseline Location								
	8/5/2002	7/11/2003	7/17/2004	8/3/2005	8/14/2006	8/29/2007	7/22/2012	7/2/2017	Date
1+10	201.7	201.7	186.1	186.1	186.1	186.1	186.1	186.1	Baseline Offset (In Feet)
		0.0	-15.6	0.0	0.0	0.0	0.0	0.0	Incremental Change
		0.0	-15.6	-15.6	-15.6	-15.6	-15.6	-15.6	Cumulative Change
1+20	199.2	199.2	186.4	186.4	186.4	186.4	186.4	186.4	Baseline Offset (In Feet)
		0.0	-12.8	0.0	0.0	0.0	0.0	0.0	Incremental Change
		0.0	-12.8	-12.8	-12.8	-12.8	-12.8	-12.8	Cumulative Change
1+30	196.4	196.4	186.7	186.7	186.7	186.7	186.7	186.7	Baseline Offset (In Feet)
		0.0	-9.7	0.0	0.0	0.0	0.0	0.0	Incremental Change
		0.0	-9.7	-9.7	-9.7	-9.7	-9.7	-9.7	Cumulative Change
1+40	190.4	190.4	188.6	188.6	188.6	188.6	188.6	188.6	Baseline Offset (In Feet)
		0.0	-1.8	0.0	0.0	0.0	0.0	0.0	Incremental Change
		0.0	-1.8	-1.8	-1.8	-1.8	-1.8	-1.8	Cumulative Change
1+50	186.8	186.8	183.7	183.7	183.7	183.7	183.7	183.7	Baseline Offset (In Feet)
		0.0	-3.1	0.0	0.0	0.0	0.0	0.0	Incremental Change
		0.0	-3.1	-3.1	-3.1	-3.1	-3.1	-3.1	Cumulative Change
1+60	185.1	185.1	178.6	178.6	178.6	178.6	178.6	178.6	Baseline Offset (In Feet)
		0.0	-6.5	0.0	0.0	0.0	0.0	0.0	Incremental Change
		0.0	-6.5	-6.5	-6.5	-6.5	-6.5	-6.5	Cumulative Change
1+70	182.4	182.4	171.7	171.7	171.7	171.7	171.7	171.7	Baseline Offset (In Feet)
		0.0	-10.7	0.0	0.0	0.0	0.0	0.0	Incremental Change
		0.0	-10.7	-10.7	-10.7	-10.7	-10.7	-10.7	Cumulative Change

Alpine CP00
Alpine Pipeline Kachemach Crossing
West Streambank Erosion Monitor

Baseline Station	Streambank Monitor - Top of West Bank Locations								Description
	See Drawing CE-CP00-145 Rev 7 for Survey Baseline Location								
	8/5/2002	7/11/2003	7/17/2004	8/3/2005	8/14/2006	8/29/2007	7/22/2012	7/2/2017	Date
1+80	179.1	179.1	167.7	167.7	167.7	167.7	167.7	167.7	Baseline Offset (In Feet)
		0.0	-11.4	0.0	0.0	0.0	0.0	0.0	Incremental Change
		0.0	-11.4	-11.4	-11.4	-11.4	-11.4	-11.4	Cumulative Change
1+90	182.8	182.8	171.2	171.2	171.2	171.2	171.2	171.2	Baseline Offset (In Feet)
		0.0	-11.6	0.0	0.0	0.0	0.0	0.0	Incremental Change
		0.0	-11.6	-11.6	-11.6	-11.6	-11.6	-11.6	Cumulative Change
2+00	174.2	174.2	170.8	170.8	170.8	170.8	170.8	170.8	Baseline Offset (In Feet)
		0.0	-3.3	0.0	0.0	0.0	0.0	0.0	Incremental Change
		0.0	-3.3	-3.3	-3.3	-3.3	-3.3	-3.3	Cumulative Change
2+10	175.3	175.3	170.9	170.9	170.9	170.9	170.9	170.9	Baseline Offset (In Feet)
		0.0	-4.4	0.0	0.0	0.0	0.0	0.0	Incremental Change
		0.0	-4.4	-4.4	-4.4	-4.4	-4.4	-4.4	Cumulative Change
2+20	175.1	175.1	173.1	173.1	171.5	171.5	171.5	171.4	Baseline Offset (In Feet)
		0.0	-2.0	0.0	-1.6	0.0	0.0	-0.1	Incremental Change
		0.0	-2.0	-2.0	-3.5	-3.5	-3.5	-3.6	Cumulative Change
2+30	171.2	171.2	171.2	171.2	171.2	171.2	171.2	171.2	Baseline Offset (In Feet)
		0.0	0.0	0.0	0.0	0.0	0.0	0.0	Incremental Change
		0.0	0.0	0.0	0.0	0.0	0.0	0.0	Cumulative Change
2+40	169.5	169.5	169.5	169.5	169.5	169.5	169.5	169.5	Baseline Offset (In Feet)
		0.0	0.0	0.0	0.0	0.0	0.0	0.0	Incremental Change
		0.0	0.0	0.0	0.0	0.0	0.0	0.0	Cumulative Change

Alpine CP00
Alpine Pipeline Kachemach Crossing
West Streambank Erosion Monitor

Baseline Station	Streambank Monitor - Top of West Bank Locations								Description
	See Drawing CE-CP00-145 Rev 7 for Survey Baseline Location								
	8/5/2002	7/11/2003	7/17/2004	8/3/2005	8/14/2006	8/29/2007	7/22/2012	7/2/2017	Date
2+50	171.0	171.0	171.0	171.0	171.0	171.0	171.0	171.0	Baseline Offset (In Feet)
		0.0	0.0	0.0	0.0	0.0	0.0	0.0	Incremental Change
		0.0	0.0	0.0	0.0	0.0	0.0	0.0	Cumulative Change
2+60	170.9	170.9	170.9	170.9	170.9	170.9	170.9	170.9	Baseline Offset (In Feet)
		0.0	0.0	0.0	0.0	0.0	0.0	0.0	Incremental Change
		0.0	0.0	0.0	0.0	0.0	0.0	0.0	Cumulative Change
2+71	169.4	169.4	169.4	169.4	169.4	169.4	169.4	169.4	Baseline Offset (In Feet)
{Pipeline		0.0	0.0	0.0	0.0	0.0	0.0	0.0	Incremental Change
Crossing}		0.0	0.0	0.0	0.0	0.0	0.0	0.0	Cumulative Change
2+80	168.2	168.2	168.2	168.2	168.2	168.2	168.2	168.2	Baseline Offset (In Feet)
		0.0	0.0	0.0	0.0	0.0	0.0	0.0	Incremental Change
		0.0	0.0	0.0	0.0	0.0	0.0	0.0	Cumulative Change
2+90	166.8	166.8	166.8	166.8	166.8	166.8	166.8	166.8	Baseline Offset (In Feet)
		0.0	0.0	0.0	0.0	0.0	0.0	0.0	Incremental Change
		0.0	0.0	0.0	0.0	0.0	0.0	0.0	Cumulative Change
3+00	165.4	165.4	165.4	165.4	165.4	165.4	165.4	165.4	Baseline Offset (In Feet)
		0.0	0.0	0.0	0.0	0.0	0.0	0.0	Incremental Change
		0.0	0.0	0.0	0.0	0.0	0.0	0.0	Cumulative Change
3+10	163.7	163.7	163.7	163.7	163.7	163.7	163.7	163.7	Baseline Offset (In Feet)
		0.0	0.0	0.0	0.0	0.0	0.0	0.0	Incremental Change
		0.0	0.0	0.0	0.0	0.0	0.0	0.0	Cumulative Change

Alpine CP00
Alpine Pipeline Kachemach Crossing
West Streambank Erosion Monitor

Baseline Station	Streambank Monitor - Top of West Bank Locations								Description
	See Drawing CE-CP00-145 Rev 7 for Survey Baseline Location								
	8/5/2002	7/11/2003	7/17/2004	8/3/2005	8/14/2006	8/29/2007	7/22/2012	7/2/2017	Date
3+20	161.9	161.9	161.9	161.9	161.9	161.9	161.9	161.9	Baseline Offset (In Feet)
		0.0	0.0	0.0	0.0	0.0	0.0	0.0	Incremental Change
		0.0	0.0	0.0	0.0	0.0	0.0	0.0	Cumulative Change
3+30	160.9	160.9	160.9	160.9	160.9	160.9	160.9	160.9	Baseline Offset (In Feet)
		0.0	0.0	0.0	0.0	0.0	0.0	0.0	Incremental Change
		0.0	0.0	0.0	0.0	0.0	0.0	0.0	Cumulative Change
3+40	160.3	160.3	160.3	160.3	160.3	160.3	160.3	160.3	Baseline Offset (In Feet)
		0.0	0.0	0.0	0.0	0.0	0.0	0.0	Incremental Change
		0.0	0.0	0.0	0.0	0.0	0.0	0.0	Cumulative Change
3+50	159.4	159.4	159.4	159.4	159.4	159.4	159.4	159.4	Baseline Offset (In Feet)
		0.0	0.0	0.0	0.0	0.0	0.0	0.0	Incremental Change
		0.0	0.0	0.0	0.0	0.0	0.0	0.0	Cumulative Change
3+60	158.1	158.1	158.1	158.1	158.1	158.1	158.1	158.1	Baseline Offset (In Feet)
		0.0	0.0	0.0	0.0	0.0	0.0	0.0	Incremental Change
		0.0	0.0	0.0	0.0	0.0	0.0	0.0	Cumulative Change
3+70	156.8	156.8	156.8	156.8	156.8	156.8	156.8	156.8	Baseline Offset (In Feet)
		0.0	0.0	0.0	0.0	0.0	0.0	0.0	Incremental Change
		0.0	0.0	0.0	0.0	0.0	0.0	0.0	Cumulative Change
3+80	154.8	154.8	154.8	154.8	154.8	154.8	154.8	154.8	Baseline Offset (In Feet)
		0.0	0.1	0.0	0.0	0.0	0.0	0.0	Incremental Change
		0.0	0.1	0.1	0.1	0.1	0.1	0.1	Cumulative Change

Alpine CP00
Alpine Pipeline Kachemach Crossing
West Streambank Erosion Monitor

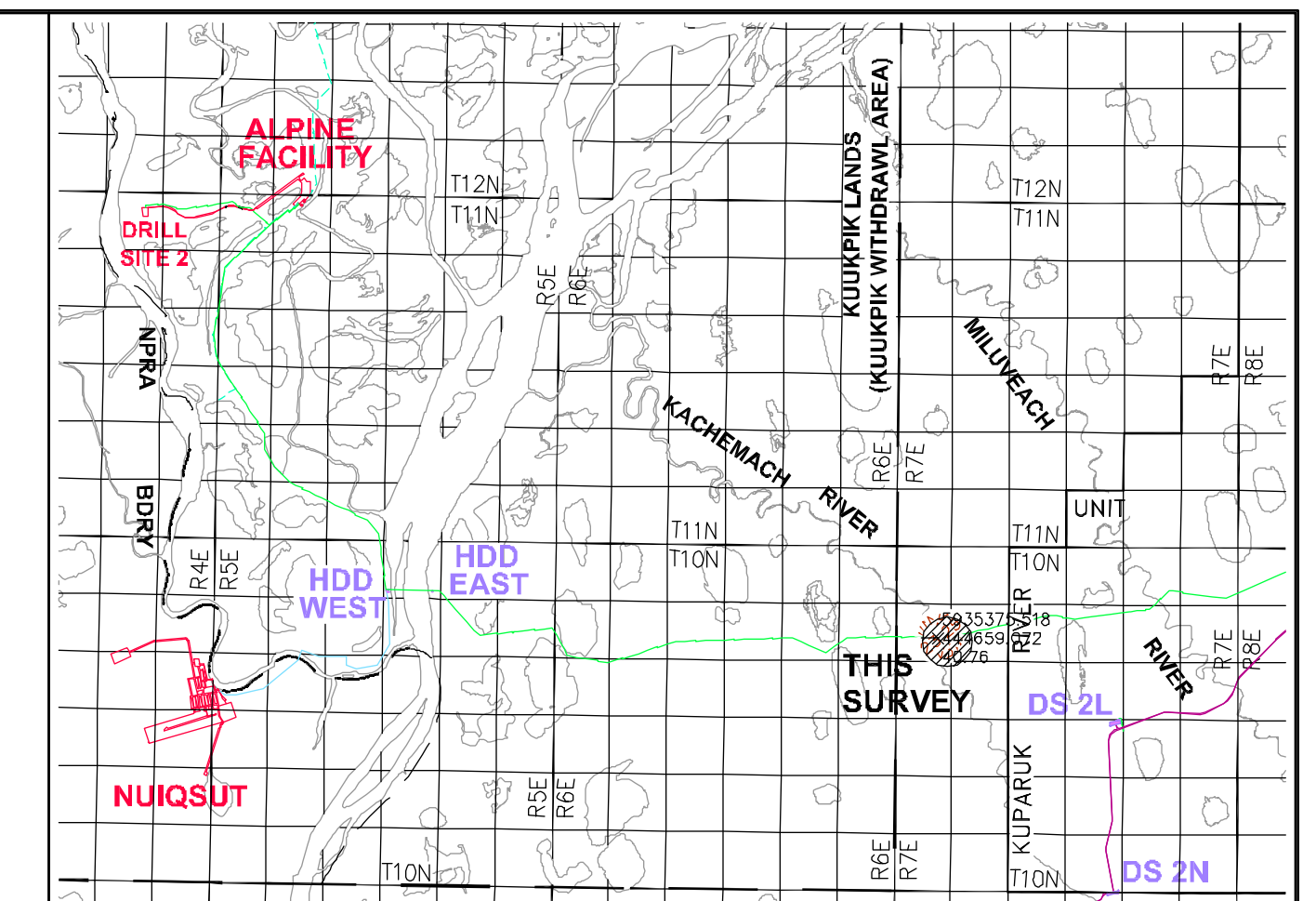
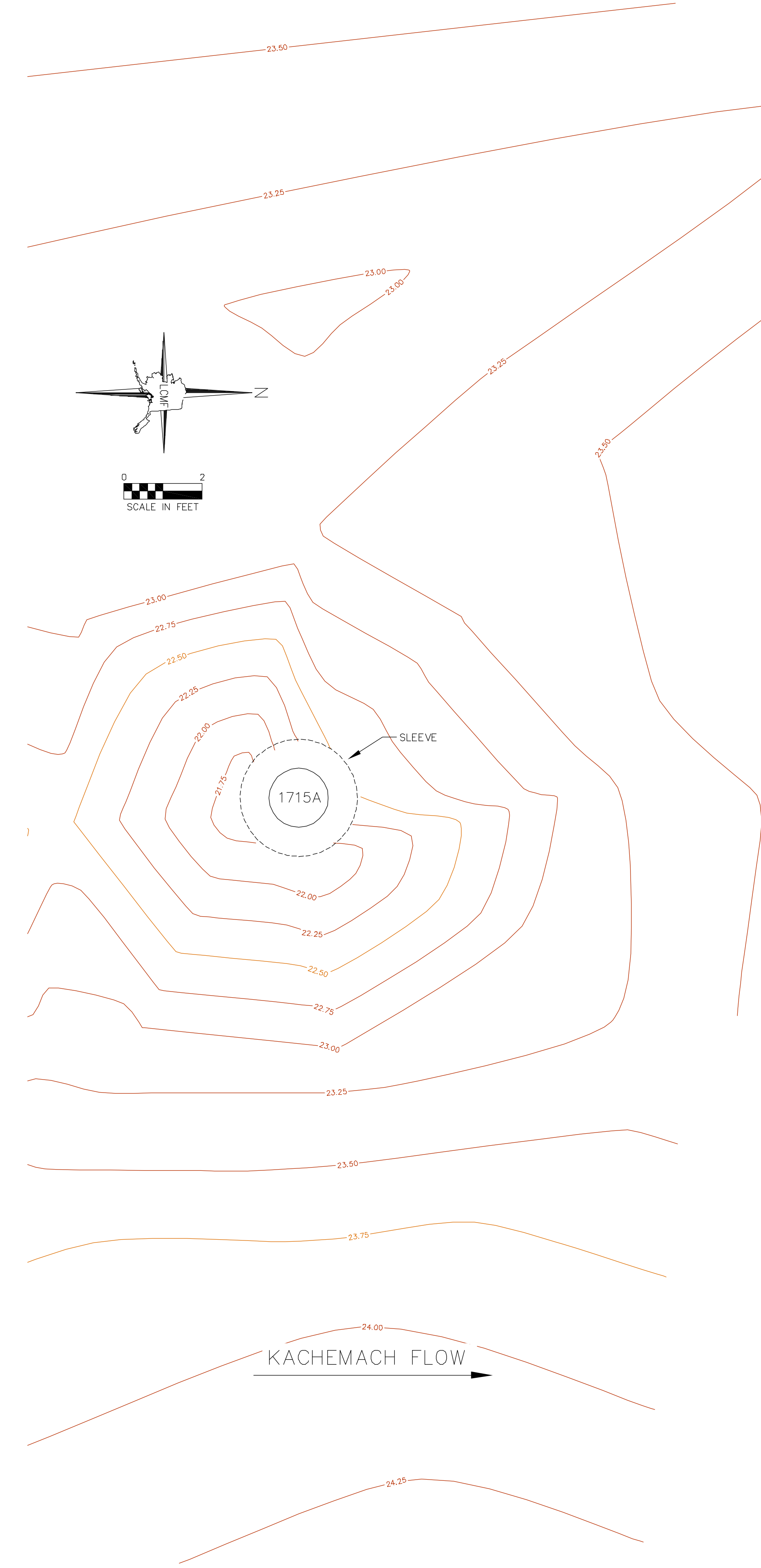
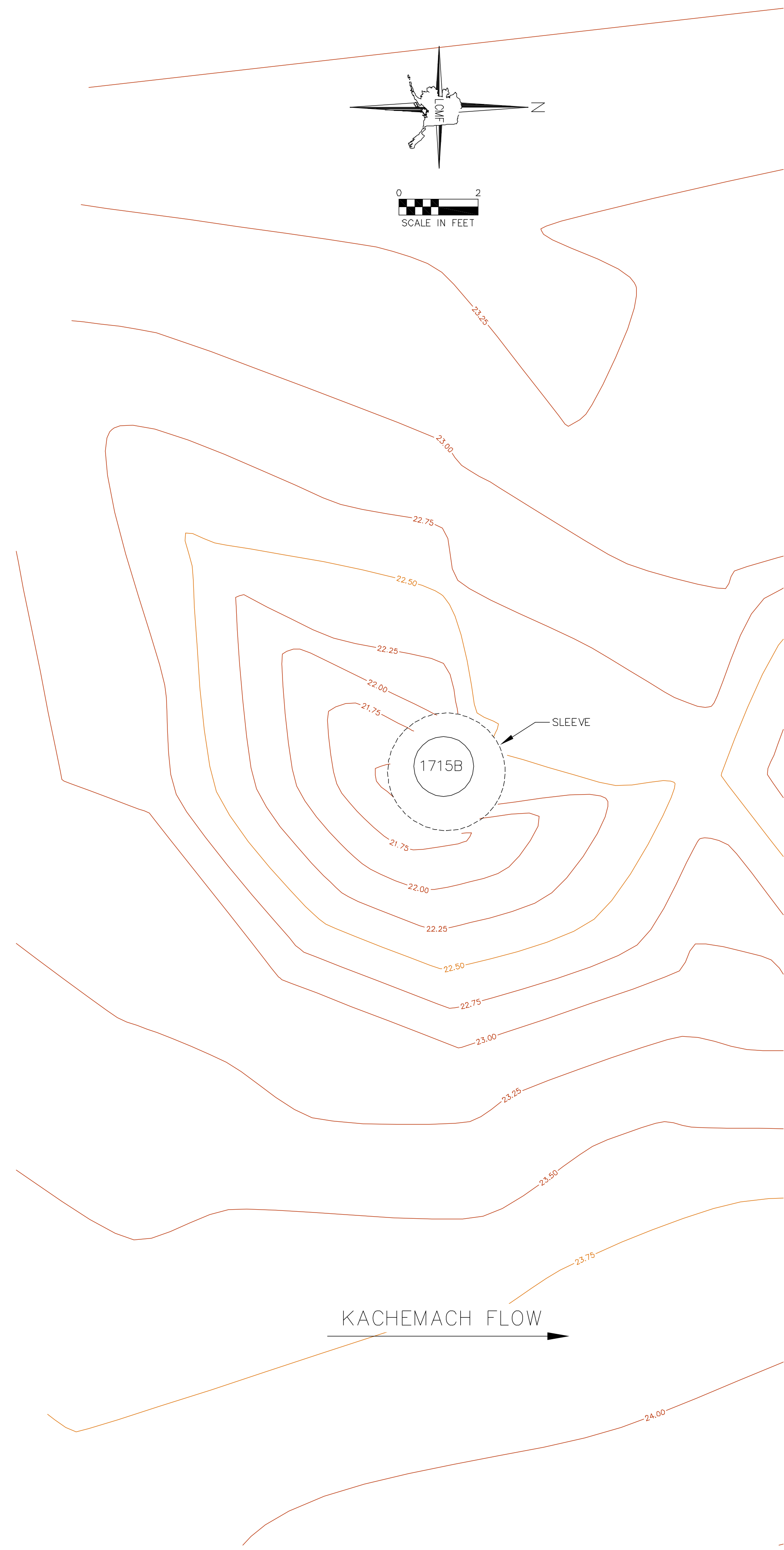
Baseline Station	Streambank Monitor - Top of West Bank Locations								Description
	See Drawing CE-CP00-145 Rev 7 for Survey Baseline Location								
	8/5/2002	7/11/2003	7/17/2004	8/3/2005	8/14/2006	8/29/2007	7/22/2012	7/2/2017	Date
3+90	152.5	152.5	152.5	152.5	152.5	152.5	152.5	152.5	Baseline Offset (In Feet)
		0.0	0.0	0.0	0.0	0.0	0.0	0.0	Incremental Change
		0.0	0.0	0.0	0.0	0.0	0.0	0.0	Cumulative Change
4+00	150.1	150.1	150.1	150.1	150.1	150.1	150.1	150.1	Baseline Offset (In Feet)
		0.0	0.0	0.0	0.0	0.0	0.0	0.0	Incremental Change
		0.0	0.0	0.0	0.0	0.0	0.0	0.0	Cumulative Change
4+10	146.5	146.5	146.5	146.5	146.5	146.5	146.5	146.5	Baseline Offset (In Feet)
		0.0	0.0	0.0	0.0	0.0	0.0	0.0	Incremental Change
		0.0	0.0	0.0	0.0	0.0	0.0	0.0	Cumulative Change
4+20	143.8	143.8	143.8	143.8	143.8	143.8	143.8	143.8	Baseline Offset (In Feet)
		0.0	0.0	0.0	0.0	0.0	0.0	0.0	Incremental Change
		0.0	0.0	0.0	0.0	0.0	0.0	0.0	Cumulative Change
4+30	144.0	144.0	144.0	144.0	144.0	144.0	144.0	144.0	Baseline Offset (In Feet)
		0.0	0.0	0.0	0.0	0.0	0.0	0.0	Incremental Change
		0.0	0.0	0.0	0.0	0.0	0.0	0.0	Cumulative Change
4+40	141.8	141.8	141.8	141.8	141.8	141.8	141.8	141.8	Baseline Offset (In Feet)
		0.0	0.0	0.0	0.0	0.0	0.0	0.0	Incremental Change
		0.0	0.0	0.0	0.0	0.0	0.0	0.0	Cumulative Change
4+50	138.7	138.7	138.7	138.7	138.7	138.7	138.7	138.7	Baseline Offset (In Feet)
		0.0	0.0	0.0	0.0	0.0	0.0	0.0	Incremental Change
		0.0	0.0	0.0	0.0	0.0	0.0	0.0	Cumulative Change

Alpine CP00
Alpine Pipeline Kachemach Crossing
West Streambank Erosion Monitor

Baseline Station	Streambank Monitor - Top of West Bank Locations								Description
	See Drawing CE-CP00-145 Rev 7 for Survey Baseline Location								
	8/5/2002	7/11/2003	7/17/2004	8/3/2005	8/14/2006	8/29/2007	7/22/2012	7/2/2017	Date
LU									
4+60	135.5	135.5	135.5	135.5	135.5	135.5	135.5	135.5	Baseline Offset (In Feet)
		0.0	0.0	0.0	0.0	0.0	0.0	0.0	Incremental Change
		0.0	0.0	0.0	0.0	0.0	0.0	0.0	Cumulative Change
4+70	131.8	131.8	131.8	131.8	131.8	131.8	131.8	131.8	Baseline Offset (In Feet)
		0.0	0.0	0.0	0.0	0.0	0.0	0.0	Incremental Change
		0.0	0.0	0.0	0.0	0.0	0.0	0.0	Cumulative Change
4+80	128.1	128.1	128.1	128.1	128.1	128.1	128.1	128.1	Baseline Offset (In Feet)
		0.0	0.0	0.0	0.0	0.0	0.0	0.0	Incremental Change
		0.0	0.0	0.0	0.0	0.0	0.0	0.0	Cumulative Change
VSM 1714	160.5	160.5	160.5	160.5	160.5	160.5	160.5	160.5	Baseline Offset (In Feet)
		0.0	0.0	0.0	0.0	0.0	0.0	0.0	Incremental Change
		0.0	0.0	0.0	0.0	0.0	0.0	0.0	Cumulative Change
***Note: Survey completed on 8/5/02 was used for baseline data to compute Incremental/Cumulative Change. Negative numbers indicate erosion.									



D.2 VSM SCOUR



U.S.G.S. QUAD: HARRISON BAY (A-1) & (B-1)
T. 10 N., R. 7 E.
UMIAT MERIDIAN, ALASKA
SCALE: 1" = 3 MILE

- NOTES:
- DATES OF SURVEY: JULY 17, & AUGUST 30, 2004, AUGUST 4, 2005, AUGUST 14, 2006; AUGUST 29 & 31, 2007, SEPTEMBER 2, 2007; AUGUST 26, 2008; JULY 22, 2012; JULY 2, 2017.
 - REFERENCE FIELD BOOKS: LCMF 2004-08, PGS 56-60, LCMF 2004-11 PGS 20,21; LCMF2005-21, PGS 13 & 22; LCMF2006-12, PG. 58; LCMF2007-14, PG. 67 & LCMF2007-15, PG. 4 & 12; LCMF2008-15, PGS. 32-35; LCMF2012-08, PGS. 11-13; 2017-13, PGS 43-45.
 - VERTICAL CONTROL IS BASED ON AS-BUILT TOP OF STEEL ELEVATIONS AT VM 1712, 1713 AND 1724 PER DRAWING PD-CP00-109, SHEETS 31 AND 32.
 - HORIZONTAL CONTROL IS BASED ON RECORD COORDINATES OF ALPINE PIPELINE PI 13A AND ALPINE MONUMENT No. 19. COORDINATES ARE ALASKA STATE PLANE, ZONE 4, NAD 27, IN FEET.

Kuukpiik/LCMF
A subsidiary of Ulupegnvik Upiut Corporation
Alpine Office (907) 670-4739
Anchorage, Alaska (907) 273-1830
Alpine Survey Office



ALPINE MODULE: CP00 UNIT: CP
ALPINE PIPELINE KACHEMACH CROSSING
PILE SCOURING MONITOR
ALPINE, ALASKA

REDRAWN FROM:	CONSTRUCTION SHEET
1 2 3 4 5 6	OF
DO NOT SCALE	ABOVE SCALE FOR REFERENCE ONLY

REV	DATE	REVISIONS	BY	CHK	JOB ENGR	PROJ ENGR	CUST APP	REV	DATE	REVISIONS	BY	CHK	JOB ENGR	PROJ ENGR	CUST APP
7	7/05/17	UPDATED PER 22161343ACS													
6	7/22/12	UPDATED PER 9068830ACS													
5	8/26/08	UPDATED PER 5351457ACS													
4	8/31/07	UPDATED PER 4810412ACS													
3	8/14/06	UPDATED PER 4083251ACS													
2	8/4/05	UPDATED PER 3423995ACS													
1	8/17/04	ISSUED PER 2390461ACS													

DATE:	8/17/04	DRAWN:	AG	DESIGN:	GD	FCR NO.:	2390461ACS
SCALE:	1" = 2'	CHECKED:	GD	AFC/CC NO.:	2390461	CADD FILE NO.:	04-06-14-3
JOB NO.:	02-205	SUB JOB NO.:		DRAWING NO.:	CE-CP00-145	SHEET:	2 OF 2
REV:	7						



D.3 VSM SETTLEMENT & JACKING

Alpine CP00
Alpine Pipeline Kachemach Crossing
Pilecap Monitor

Location	7/16/2004	8/3/2005	8/3/2006	8/29/2007	8/26/2008	7/22/2012	7/2/2017	Description
VSM 1713	N/A	43.812	43.840	43.830	43.835	43.840	43.839	Monitor Point Elev. at Bottom NE Cor Pile Cap
			0.028	-0.010	0.005	0.005	-0.001	Incremental Change
			0.028	0.018	0.023	0.028	0.027	Cumulative Change
VSM 1714	N/A	42.812	42.815	42.810	42.808	42.810	42.825	Monitor Point Elev. at Bottom NE Cor Pile Cap
			0.003	-0.005	-0.002	0.002	0.015	Incremental Change
			0.003	-0.002	-0.004	-0.002	0.013	Cumulative Change
VSM 1714A	N/A	N/A	42.720	42.790	42.768	42.610	42.753	Monitor Point Elev. at Bottom NE Cor Pile Cap
				0.070	-0.022	-0.158	0.143	Incremental Change
				0.070	0.048	-0.110	0.033	Cumulative Change
VSM 1715A	42.272	42.268	42.285	42.320	42.323	42.370	42.380	Monitor Point Elev. at Bottom NE Cor Pile Cap
		-0.004	0.017	0.035	0.003	0.047	0.010	Incremental Change
		-0.004	0.013	0.048	0.051	0.098	0.108	Cumulative Change
VSM 1715B	42.263	42.272	42.285	42.300	42.294	42.300	42.305	Monitor Point Elev. at Bottom NE Cor Pile Cap
		0.009	0.013	0.015	-0.006	0.006	0.005	Incremental Change
		0.009	0.022	0.037	0.031	0.037	0.042	Cumulative Change
VSM 1715C	N/A	42.612	42.520	42.520	42.516	42.510	42.517	Monitor Point Elev. at Bottom NE Cor Pile Cap
			-0.092	0.000	-0.004	-0.006	0.007	Incremental Change
			-0.092	-0.092	-0.096	-0.102	-0.095	Cumulative Change



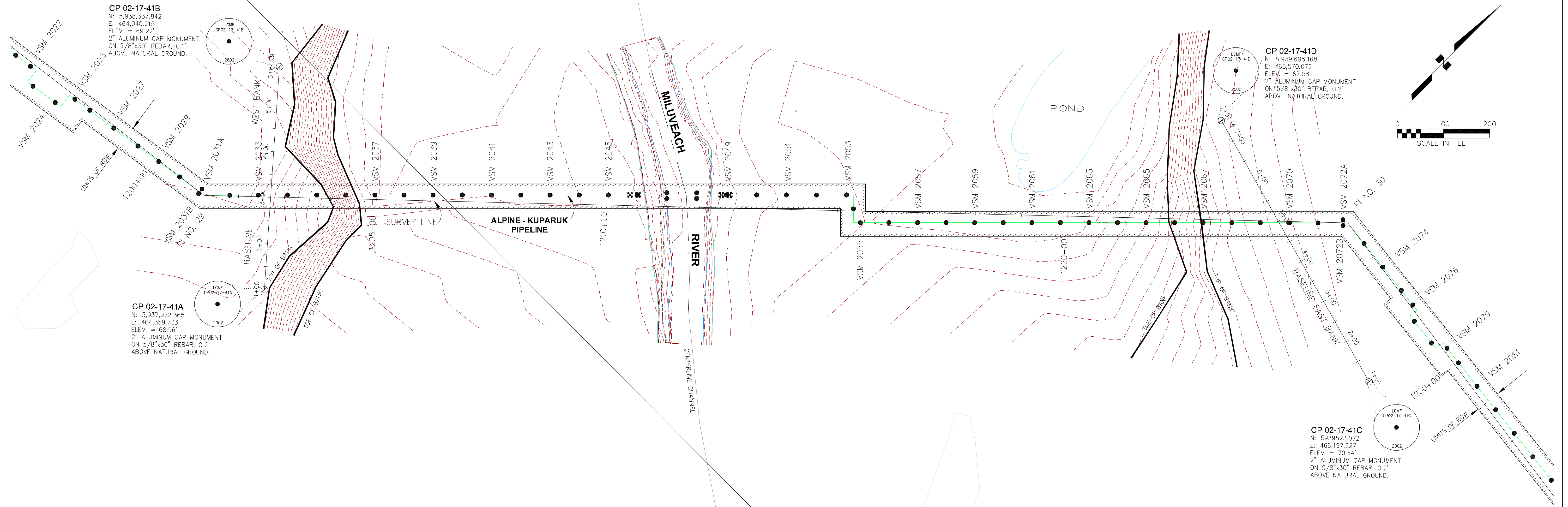
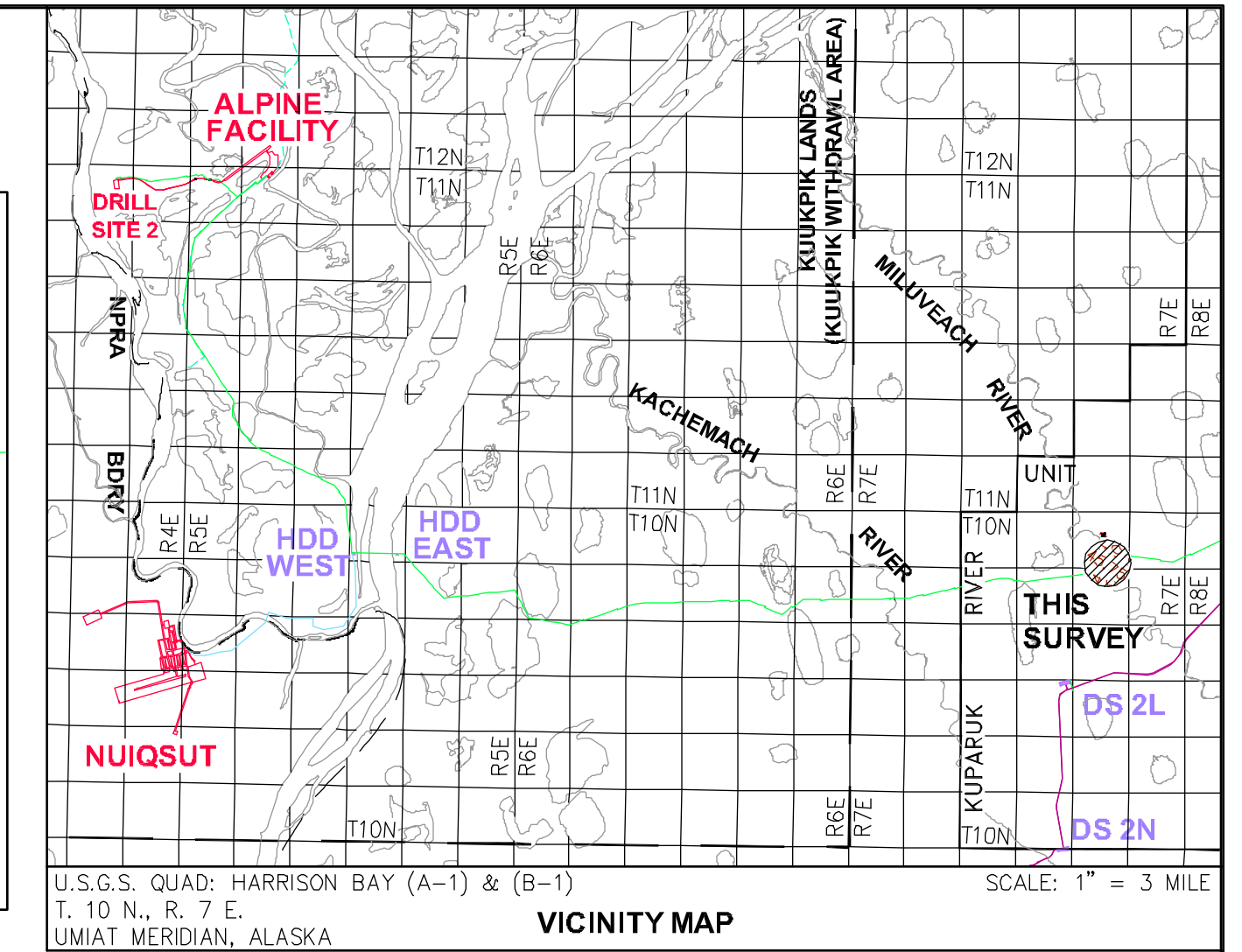
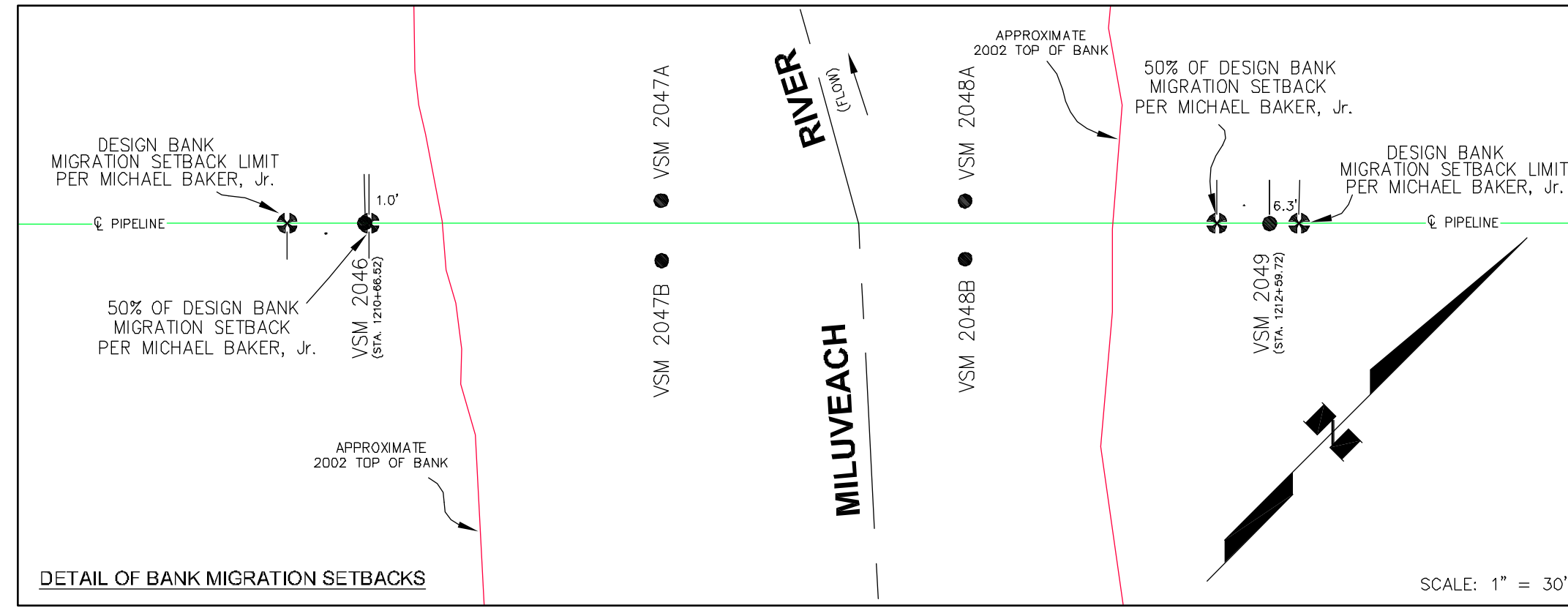
Appendix E MILUVEACH RIVER BANK EROSION AND VSM SCOUR SURVEY



E.1 BANK EROSION

LEGEND:

- TOP OF BANK 8/4/02 & 7/12/03
- TOP OF BANK 6/18/04
- TOP OF BANK 8/04/05
- TOP OF BANK 8/17/06
- TOP OF BANK 8/28/07
- TOP OF BANK 7/21/12
- TOP OF BANK 7/05/17
- EDGE OF WATER 6/18/04
- GRADE BREAK 6/18/04
- TOE OF SLOPE 6/18/04
- ⊙ SURVEY MONUMENT SET THIS SURVEY. (APRIL 2002)
- ✱ BANK MIGRATION SETBACKS



NOTES:

1. DATES OF SURVEY: MAY 2002 – AUGUST 2002. JULY 12, 2003; JUNE 18, 2004; AUGUST 4, 2005, AUGUST 17, 2006; AUGUST 28, 2007; JULY 21, 2012; JULY 5, 2017.
2. REFERENCE FIELD BOOKS: LCMF2002-17, PGS. 41, 66-46; LCMF2002-18, PGS. 2 & 3; LCMF2002-23, PG. 18-20 & 25; LCMF2003-11, PGS. 18-21; LCMF2004-8, PGS. 1-11; LCMF2005-21, PGS. 17-21; LCMF 2006-12 PG. 72; LCMF 2007-14 PGS.61-64; LCMF 2012-08, PGS 8-10; 2017-13, PGS. 46-47.
3. VERTICAL CONTROL BASED ON AS-BUILT TOP OF STEEL ELEVATIONS AT VSM 2049 AND 2059 PER DRAWING PD-CP00-109, SHEETS 38 AND 39.
4. HORIZONTAL CONTROL IS BASED ON RECORD COORDINATES OF ALPINE PIPELINE PI 13A AND ALPINE MONUMENT No. 19. COORDINATES ARE ALASKA STATE PLANE, ZONE 4, NAD 27, IN FEET.
5. SEE DOCUMENT RPT-EV-CP-00008 FOR STREAM BANK EROSION BASELINE SURVEY DATA.

Kuukpik/LCMF
 A subsidiary of Uluksagak Pipeline Corporation
 Alpine Office (907) 670-4739
 Anchorage, Alaska (907) 273-1830
 Alpine Survey Office



FORM: DSIZ

ConocoPhillips
 Alaska, Inc.

ALPINE		MODULE: CP00		UNIT: CP	
ALPINE PIPELINE MILUVEACH CROSSING STREAM BANK MONITOR ALPINE, ALASKA					
REDRAWN FROM:		CONSTRUCTION SHEET			
1 2 3 4 5 6		OF			
DO NOT SCALE		ABOVE SCALE FOR REFERENCE ONLY			
DATE:	12/19/02	DRAWN:	CZ	DESIGN:	ECM NO: 1870228ACS
SCALE:	1" = 100'	CHECKED:	JZ	CC NO:	1870228
JOB NO: 02-205		DRAWING NO: CE-CP00-144		CADD FILE NO:	02-04-06-1
SUB JOB NO:		PART:		1 of 2	REV: 9

REV	DATE	REVISIONS	BY	CHK	JOB ENGR	PROJ ENGR	CUST APP	REV	DATE	REVISIONS	BY	CHK	JOB ENGR	PROJ ENGR	CUST APP
								6	8/28/07	UPDATED PER 4810413ACS					
								5	8/19/06	UPDATED PER 4083252ACS					
								4	8/5/05	UPDATED PER 3423996ACS					
								3	6/??/04	REVISED PER 2390462ACS					
								2	7/11/03	ISSUED PER 2094389ACS CHECKED SUBSIDIENCE-RECONTOURED					
								1	12/19/02	ISSUED PER 1870228ACS					
								9	7/06/17	UPDATED PER 22161344ACS					
								8	11/12/12	UPDATED PER K120003ACS					
								7	7/21/12	UPDATED PER 9068831ACS					



E.1.1 EAST BANK

Alpine CP 00
Alpine Pipeline Miluveach Crossing
East Streambank Erosion Monitor

Baseline Station	Streambank Monitor - Top of East Bank Locations									Description
	See Drawing CE-CP00-144 Rev 6 for Survey Baseline Location									
	8/4/2002	7/12/2003	6/18/2004	8/4/2005	8/17/2006	8/28/2007	7/21/2012	7/5/2017	Future	Date
8+80	1196.2	1196.2	1196.2	1196.2	1196.2	1196.2	1196.2	1196.2		Baseline Offset (In Feet)
		0.0	0.0	0.0	0.0	0.0	0.0	0.0		Incremental Change
		0.0	0.0	0.0	0.0	0.0	0.0	0.0		Cumulative Change
8+90	1190.3	1190.3	1190.3	1190.3	1190.3	1190.3	1190.3	1190.3		Baseline Offset (In Feet)
		0.0	0.0	0.0	0.0	0.0	0.0	0.0		Incremental Change
		0.0	0.0	0.0	0.0	0.0	0.0	0.0		Cumulative Change
9+00	1184.3	1184.3	1184.3	1184.3	1184.3	1184.3	1184.3	1184.3		Baseline Offset (In Feet)
		0.0	0.0	0.0	0.0	0.0	0.0	0.0		Incremental Change
		0.0	0.0	0.0	0.0	0.0	0.0	0.0		Cumulative Change
9+10	1178.3	1178.3	1178.3	1178.3	1178.3	1178.3	1178.3	1178.3		Baseline Offset (In Feet)
		0.0	0.0	0.0	0.0	0.0	0.0	0.0		Incremental Change
		0.0	0.0	0.0	0.0	0.0	0.0	0.0		Cumulative Change
9+20	1172.4	1172.4	1172.4	1172.4	1172.4	1172.4	1172.4	1172.4		Baseline Offset (In Feet)
		0.0	0.0	0.0	0.0	0.0	0.0	0.0		Incremental Change
		0.0	0.0	0.0	0.0	0.0	0.0	0.0		Cumulative Change
9+30	1166.4	1166.4	1166.4	1166.4	1166.4	1166.4	1166.4	1166.4		Baseline Offset (In Feet)
		0.0	0.0	0.0	0.0	0.0	0.0	0.0		Incremental Change
		0.0	0.0	0.0	0.0	0.0	0.0	0.0		Cumulative Change
9+40	1160.3	1160.3	1160.3	1160.3	1160.3	1160.3	1160.3	1160.3		Baseline Offset (In Feet)
		0.0	0.0	0.0	0.0	0.0	0.0	0.0		Incremental Change
		0.0	0.0	0.0	0.0	0.0	0.0	0.0		Cumulative Change

Alpine CP 00
Alpine Pipeline Miluveach Crossing
East Streambank Erosion Monitor

Baseline Station	Streambank Monitor - Top of East Bank Locations									Description
	See Drawing CE-CP00-144 Rev 6 for Survey Baseline Location									
	8/4/2002	7/12/2003	6/18/2004	8/4/2005	8/17/2006	8/28/2007	7/21/2012	7/5/2017	Future	Date
9+50	1154.3	1154.3	1154.3	1154.3	1154.3	1154.3	1154.3	1154.3		Baseline Offset (In Feet)
		0.0	0.0	0.0	0.0	0.0	0.0	0.0		Incremental Change
		0.0	0.0	0.0	0.0	0.0	0.0	0.0		Cumulative Change
9+60	1148.2	1148.2	1148.2	1148.2	1148.2	1148.2	1148.2	1148.2		Baseline Offset (In Feet)
		0.0	0.0	0.0	0.0	0.0	0.0	0.0		Incremental Change
		0.0	0.0	0.0	0.0	0.0	0.0	0.0		Cumulative Change
9+70	1142.0	1142.0	1142.0	1142.0	1142.0	1142.0	1142.0	1142.0		Baseline Offset (In Feet)
		0.0	0.0	0.0	0.0	0.0	0.0	0.0		Incremental Change
		0.0	0.0	0.0	0.0	0.0	0.0	0.0		Cumulative Change
9+80	1135.5	1135.5	1135.5	1135.5	1135.5	1135.5	1135.5	1135.5		Baseline Offset (In Feet)
		0.0	0.0	0.0	0.0	0.0	0.0	0.0		Incremental Change
		0.0	0.0	0.0	0.0	0.0	0.0	0.0		Cumulative Change
9+90	1129.0	1129.0	1129.0	1129.0	1129.0	1129.0	1129.0	1129.0		Baseline Offset (In Feet)
		0.0	0.0	0.0	0.0	0.0	0.0	0.0		Incremental Change
		0.0	0.0	0.0	0.0	0.0	0.0	0.0		Cumulative Change
10+00	1122.5	1122.5	1122.5	1122.5	1122.5	1122.5	1122.5	1122.5		Baseline Offset (In Feet)
		0.0	0.0	0.0	0.0	0.0	0.0	0.0		Incremental Change
		0.0	0.0	0.0	0.0	0.0	0.0	0.0		Cumulative Change
10+10	1116.0	1116.0	1116.0	1116.0	1116.0	1116.0	1116.0	1116.0		Baseline Offset (In Feet)
		0.0	0.0	0.0	0.0	0.0	0.0	0.0		Incremental Change
		0.0	0.0	0.0	0.0	0.0	0.0	0.0		Cumulative Change

Alpine CP 00
Alpine Pipeline Miluveach Crossing
East Streambank Erosion Monitor

Baseline Station	Streambank Monitor - Top of East Bank Locations									Description
	See Drawing CE-CP00-144 Rev 6 for Survey Baseline Location									
	8/4/2002	7/12/2003	6/18/2004	8/4/2005	8/17/2006	8/28/2007	7/21/2012	7/5/2017	Future	Date
10+20	1110.7	1110.7	1110.7	1110.7	1110.7	1110.7	1110.7	1110.7		Baseline Offset (In Feet)
		0.0	0.0	0.0	0.0	0.0	0.0	0.0		Incremental Change
		0.0	0.0	0.0	0.0	0.0	0.0	0.0		Cumulative Change
10+30	1105.7	1105.7	1105.7	1105.7	1105.7	1105.7	1105.7	1105.7		Baseline Offset (In Feet)
		0.0	0.0	0.0	0.0	0.0	0.0	0.0		Incremental Change
		0.0	0.0	0.0	0.0	0.0	0.0	0.0		Cumulative Change
10+40	1100.6	1100.6	1100.6	1100.6	1100.6	1100.6	1100.6	1100.6		Baseline Offset (In Feet)
		0.0	0.0	0.0	0.0	0.0	0.0	0.0		Incremental Change
		0.0	0.0	0.0	0.0	0.0	0.0	0.0		Cumulative Change
10+50	1095.5	1095.5	1095.5	1095.5	1095.5	1095.5	1095.5	1095.5		Baseline Offset (In Feet)
		0.0	0.0	0.0	0.0	0.0	0.0	0.0		Incremental Change
		0.0	0.0	0.0	0.0	0.0	0.0	0.0		Cumulative Change
10+60	1090.5	1090.5	1090.5	1090.5	1090.5	1090.5	1090.5	1090.5		Baseline Offset (In Feet)
		0.0	0.0	0.0	0.0	0.0	0.0	0.0		Incremental Change
		0.0	0.0	0.0	0.0	0.0	0.0	0.0		Cumulative Change
10+70	1086.2	1086.2	1086.2	1086.2	1086.2	1086.2	1086.2	1086.2		Baseline Offset (In Feet)
		0.0	0.0	0.0	0.0	0.0	0.0	0.0		Incremental Change
		0.0	0.0	0.0	0.0	0.0	0.0	0.0		Cumulative Change
10+80	1082.3	1082.3	1082.3	1082.3	1082.3	1082.3	1082.3	1082.3		Baseline Offset (In Feet)
		0.0	0.0	0.0	0.0	0.0	0.0	0.0		Incremental Change
		0.0	0.0	0.0	0.0	0.0	0.0	0.0		Cumulative Change

Alpine CP 00
Alpine Pipeline Miluveach Crossing
East Streambank Erosion Monitor

Baseline Station	Streambank Monitor - Top of East Bank Locations									Description
	See Drawing CE-CP00-144 Rev 6 for Survey Baseline Location									
	8/4/2002	7/12/2003	6/18/2004	8/4/2005	8/17/2006	8/28/2007	7/21/2012	7/5/2017	Future	Date
10+90	1078.4	1078.4	1078.4	1078.4	1078.4	1078.4	1078.4	1078.4		Baseline Offset (In Feet)
		0.0	0.0	0.0	0.0	0.0	0.0	0.0		Incremental Change
		0.0	0.0	0.0	0.0	0.0	0.0	0.0		Cumulative Change
11+00	1074.4	1074.4	1074.4	1074.4	1074.4	1074.4	1074.4	1074.4		Baseline Offset (In Feet)
		0.0	0.0	0.0	0.0	0.0	0.0	0.0		Incremental Change
		0.0	0.0	0.0	0.0	0.0	0.0	0.0		Cumulative Change
11+10	1070.5	1070.5	1070.5	1070.5	1070.5	1070.5	1070.5	1070.5		Baseline Offset (In Feet)
		0.0	0.0	0.0	0.0	0.0	0.0	0.0		Incremental Change
		0.0	0.0	0.0	0.0	0.0	0.0	0.0		Cumulative Change
11+20	1065.1	1065.1	1065.1	1065.1	1065.1	1065.1	1065.1	1065.1		Baseline Offset (In Feet)
		0.0	0.0	0.0	0.0	0.0	0.0	0.0		Incremental Change
		0.0	0.0	0.0	0.0	0.0	0.0	0.0		Cumulative Change
11+30	1058.3	1058.3	1058.3	1058.3	1058.3	1058.3	1058.3	1058.3		Baseline Offset (In Feet)
		0.0	0.0	0.0	0.0	0.0	0.0	0.0		Incremental Change
		0.0	0.0	0.0	0.0	0.0	0.0	0.0		Cumulative Change
VSM 2049	1013.8	1013.8	1013.8	1013.8	1013.8	1013.8	1013.8	1013.8		Baseline Offset (In Feet)
{11+38.57}		0.0	0.0	0.0	0.0	0.0	0.0	0.0		Incremental Change
		0.0	0.0	0.0	0.0	0.0	0.0	0.0		Cumulative Change
11+40	1051.6	1051.6	1051.6	1051.6	1051.6	1051.6	1051.6	1051.6		Baseline Offset (In Feet)
		0.0	0.0	0.0	0.0	0.0	0.0	0.0		Incremental Change
		0.0	0.0	0.0	0.0	0.0	0.0	0.0		Cumulative Change

Alpine CP 00
Alpine Pipeline Miluveach Crossing
East Streambank Erosion Monitor

Baseline Station	Streambank Monitor - Top of East Bank Locations									Description
	See Drawing CE-CP00-144 Rev 6 for Survey Baseline Location									
	8/4/2002	7/12/2003	6/18/2004	8/4/2005	8/17/2006	8/28/2007	7/21/2012	7/5/2017	Future	Date
11+55	1042.9	1042.9	1042.9	1042.9	1042.9	1042.9	1042.9	1042.9		Baseline Offset (In Feet)
{Pipeline		0.0	0.0	0.0	0.0	0.0	0.0	0.0		Incremental Change
Crossing}		0.0	0.0	0.0	0.0	0.0	0.0	0.0		Cumulative Change
11+70	1033.0	1033.0	1033.0	1033.0	1033.0	1033.0	1033.0	1031.6		Baseline Offset (In Feet)
		0.0	0.0	0.0	0.0	0.0	0.0	-1.4		Incremental Change
		0.0	0.0	0.0	0.0	0.0	0.0	-1.4		Cumulative Change
11+80	1027.5	1027.5	1027.5	1027.5	1027.5	1027.5	1027.5	1026.0		Baseline Offset (In Feet)
		0.0	0.0	0.0	0.0	0.0	0.0	-1.5		Incremental Change
		0.0	0.0	0.0	0.0	0.0	0.0	-1.5		Cumulative Change
11+90	1024.0	1024.0	1024.0	1024.0	1024.0	1024.0	1024.0	1022.6		Baseline Offset (In Feet)
		0.0	0.0	0.0	0.0	0.0	0.0	-1.4		Incremental Change
		0.0	0.0	0.0	0.0	0.0	0.0	-1.4		Cumulative Change
12+00	1017.6	1017.6	1017.6	1017.6	1017.6	1017.6	1017.6	1016.7		Baseline Offset (In Feet)
		0.0	0.0	0.0	0.0	0.0	0.0	-0.9		Incremental Change
		0.0	0.0	0.0	0.0	0.0	0.0	-0.9		Cumulative Change
12+10	1012.1	1012.1	1010.9	1010.9	1010.9	1010.9	1010.9	1010.7		Baseline Offset (In Feet)
		0.0	-1.1	0.0	0.0	0.0	0.0	-0.2		Incremental Change
		0.0	-1.1	-1.1	-1.1	-1.1	-1.1	-1.4		Cumulative Change
12+20	1007.1	1007.1	1004.8	1007.1	1007.1	1007.1	1007.1	1007.1		Baseline Offset (In Feet)
		0.0	-2.3	2.2	0.0	0.0	0.0	0.0		Incremental Change
		0.0	-2.3	0.0	0.0	0.0	0.0	0.0		Cumulative Change

Alpine CP 00
Alpine Pipeline Miluveach Crossing
East Streambank Erosion Monitor

Baseline Station	Streambank Monitor - Top of East Bank Locations									Description
	See Drawing CE-CP00-144 Rev 6 for Survey Baseline Location									
	8/4/2002	7/12/2003	6/18/2004	8/4/2005	8/17/2006	8/28/2007	7/21/2012	7/5/2017	Future	Date
12+30	1001.8	1001.8	999.4	1001.8	1001.8	1001.8	1001.8	1001.8		Baseline Offset (In Feet)
		0.0	-2.4	2.3	0.0	0.0	0.0	0.0		Incremental Change
		0.0	-2.4	0.0	0.0	0.0	0.0	0.0		Cumulative Change
12+40	994.5	994.5	994.5	994.5	994.5	994.5	994.5	994.5		Baseline Offset (In Feet)
		0.0	0.0	0.0	0.0	0.0	0.0	0.0		Incremental Change
		0.0	0.0	0.0	0.0	0.0	0.0	0.0		Cumulative Change
12+50	993.8	993.8	993.8	993.8	993.8	993.8	993.8	993.8		Baseline Offset (In Feet)
		0.0	0.0	0.0	0.0	0.0	0.0	0.0		Incremental Change
		0.0	0.0	0.0	0.0	0.0	0.0	0.0		Cumulative Change
12+60	993.2	993.2	993.2	993.2	993.2	993.2	993.2	993.2		Baseline Offset (In Feet)
		0.0	0.0	0.0	0.0	0.0	0.0	0.0		Incremental Change
		0.0	0.0	0.0	0.0	0.0	0.0	0.0		Cumulative Change
12+70	998.0	998.0	998.0	998.0	998.0	998.0	998.0	998.0		Baseline Offset (In Feet)
		0.0	0.0	0.0	0.0	0.0	0.0	0.0		Incremental Change
		0.0	0.0	0.0	0.0	0.0	0.0	0.0		Cumulative Change
12+80	1001.9	1001.9	1001.9	1001.9	1001.9	1001.9	1001.9	1001.9		Baseline Offset (In Feet)
		0.0	0.0	0.0	0.0	0.0	0.0	0.0		Incremental Change
		0.0	0.0	0.0	0.0	0.0	0.0	0.0		Cumulative Change
12+90	1001.1	1001.1	1001.1	1001.1	1001.1	1001.1	1001.1	1001.1		Baseline Offset (In Feet)
		0.0	0.0	0.0	0.0	0.0	0.0	0.0		Incremental Change
		0.0	0.0	0.0	0.0	0.0	0.0	0.0		Cumulative Change

Alpine CP 00
Alpine Pipeline Miluveach Crossing
East Streambank Erosion Monitor

Baseline Station	Streambank Monitor - Top of East Bank Locations									Description
	See Drawing CE-CP00-144 Rev 6 for Survey Baseline Location									
	8/4/2002	7/12/2003	6/18/2004	8/4/2005	8/17/2006	8/28/2007	7/21/2012	7/5/2017	Future	Date
13+00	1000.3	1000.3	1000.3	1000.3	1000.3	1000.3	1000.3	1000.3		Baseline Offset (In Feet)
		0.0	0.0	0.0	0.0	0.0	0.0	0.0		Incremental Change
		0.0	0.0	0.0	0.0	0.0	0.0	0.0		Cumulative Change
13+10	999.4	999.4	999.4	999.4	999.4	999.4	999.4	999.4		Baseline Offset (In Feet)
		0.0	0.0	0.0	0.0	0.0	0.0	0.0		Incremental Change
		0.0	0.0	0.0	0.0	0.0	0.0	0.0		Cumulative Change
13+20	998.8	998.8	998.8	998.8	998.8	998.8	998.8	998.8		Baseline Offset (In Feet)
		0.0	0.0	0.0	0.0	0.0	0.0	0.0		Incremental Change
		0.0	0.0	0.0	0.0	0.0	0.0	0.0		Cumulative Change
13+30	997.8	997.8	997.8	997.8	997.8	997.8	997.8	997.8		Baseline Offset (In Feet)
		0.0	0.0	0.0	0.0	0.0	0.0	0.0		Incremental Change
		0.0	0.0	0.0	0.0	0.0	0.0	0.0		Cumulative Change
13+40	996.8	996.8	996.8	996.8	996.8	996.8	996.8	996.8		Baseline Offset (In Feet)
		0.0	0.0	0.0	0.0	0.0	0.0	0.0		Incremental Change
		0.0	0.0	0.0	0.0	0.0	0.0	0.0		Cumulative Change
13+50	995.8	995.8	995.8	995.8	995.8	995.8	995.8	995.8		Baseline Offset (In Feet)
		0.0	0.0	0.0	0.0	0.0	0.0	0.0		Incremental Change
		0.0	0.0	0.0	0.0	0.0	0.0	0.0		Cumulative Change
13+60	994.7	994.7	994.7	994.7	994.7	994.7	994.7	994.7		Baseline Offset (In Feet)
		0.0	0.0	0.0	0.0	0.0	0.0	0.0		Incremental Change
		0.0	0.0	0.0	0.0	0.0	0.0	0.0		Cumulative Change

Alpine CP 00
Alpine Pipeline Miluveach Crossing
East Streambank Erosion Monitor

Baseline Station	Streambank Monitor - Top of East Bank Locations									Description
	See Drawing CE-CP00-144 Rev 6 for Survey Baseline Location									
	8/4/2002	7/12/2003	6/18/2004	8/4/2005	8/17/2006	8/28/2007	7/21/2012	7/5/2017	Future	Date
13+70	993.7	993.7	993.7	993.7	993.7	993.7	993.7	993.7		Baseline Offset (In Feet)
		0.0	0.0	0.0	0.0	0.0	0.0	0.0		Incremental Change
		0.0	0.0	0.0	0.0	0.0	0.0	0.0		Cumulative Change
13+80	992.6	992.6	992.6	992.6	992.6	992.6	992.6	992.6		Baseline Offset (In Feet)
		0.0	0.0	0.0	0.0	0.0	0.0	0.0		Incremental Change
		0.0	0.0	0.0	0.0	0.0	0.0	0.0		Cumulative Change
13+90	991.4	991.4	991.4	991.4	991.4	991.4	991.4	991.4		Baseline Offset (In Feet)
		0.0	0.0	0.0	0.0	0.0	0.0	0.0		Incremental Change
		0.0	0.0	0.0	0.0	0.0	0.0	0.0		Cumulative Change
14+00	988.1	988.1	988.1	988.1	988.1	988.1	988.1	988.1		Baseline Offset (In Feet)
		0.0	0.0	0.0	0.0	0.0	0.0	0.0		Incremental Change
		0.0	0.0	0.0	0.0	0.0	0.0	0.0		Cumulative Change
14+10	984.8	984.8	984.8	984.8	984.8	984.8	984.8	984.8		Baseline Offset (In Feet)
		0.0	0.0	0.0	0.0	0.0	0.0	0.0		Incremental Change
		0.0	0.0	0.0	0.0	0.0	0.0	0.0		Cumulative Change
14+20	981.5	981.5	981.5	981.5	981.5	981.5	981.5	981.5		Baseline Offset (In Feet)
		0.0	0.0	0.0	0.0	0.0	0.0	0.0		Incremental Change
		0.0	0.0	0.0	0.0	0.0	0.0	0.0		Cumulative Change
14+30	978.2	978.2	978.2	978.2	978.2	978.2	978.2	978.2		Baseline Offset (In Feet)
		0.0	0.0	0.0	0.0	0.0	0.0	0.0		Incremental Change
		0.0	0.0	0.0	0.0	0.0	0.0	0.0		Cumulative Change

Alpine CP 00
Alpine Pipeline Miluveach Crossing
East Streambank Erosion Monitor

Baseline Station	Streambank Monitor - Top of East Bank Locations									Description
	See Drawing CE-CP00-144 Rev 6 for Survey Baseline Location									
	8/4/2002	7/12/2003	6/18/2004	8/4/2005	8/17/2006	8/28/2007	7/21/2012	7/5/2017	Future	Date
14+40	976.2	976.2	976.2	976.2	976.2	976.2	976.2	975.8		Baseline Offset (In Feet)
		0.0	0.0	0.0	0.0	0.0	0.0	-0.3		Incremental Change
		0.0	0.0	0.0	0.0	0.0	0.0	-0.3		Cumulative Change
14+50	975.6	975.6	975.6	975.6	975.6	975.6	975.6	974.2		Baseline Offset (In Feet)
		0.0	0.0	0.0	0.0	0.0	0.0	-1.4		Incremental Change
		0.0	0.0	0.0	0.0	0.0	0.0	-1.4		Cumulative Change
14+60	975.0	975.0	975.0	975.0	975.0	975.0	975.0	972.5		Baseline Offset (In Feet)
		0.0	0.0	0.0	0.0	0.0	0.0	-2.5		Incremental Change
		0.0	0.0	0.0	0.0	0.0	0.0	-2.5		Cumulative Change
14+70	974.4	974.4	974.4	974.4	974.4	974.4	974.4	970.8		Baseline Offset (In Feet)
		0.0	0.0	0.0	0.0	0.0	0.0	-3.5		Incremental Change
		0.0	0.0	0.0	0.0	0.0	0.0	-3.5		Cumulative Change
14+80	973.8	973.8	973.8	973.8	973.8	973.8	973.8	969.2		Baseline Offset (In Feet)
		0.0	0.0	0.0	0.0	0.0	0.0	-4.6		Incremental Change
		0.0	0.0	0.0	0.0	0.0	0.0	-4.6		Cumulative Change
14+90	973.0	973.0	973.0	973.0	973.0	973.0	973.0	968.7		Baseline Offset (In Feet)
		0.0	0.0	0.0	0.0	0.0	0.0	-4.4		Incremental Change
		0.0	0.0	0.0	0.0	0.0	0.0	-4.4		Cumulative Change
15+00	972.1	972.1	972.1	972.1	972.1	972.1	972.1	969.1		Baseline Offset (In Feet)
		0.0	0.0	0.0	0.0	0.0	0.0	-3.0		Incremental Change
		0.0	0.0	0.0	0.0	0.0	0.0	-3.0		Cumulative Change

***Note: Survey completed on 8/5/02 was used for baseline data to compute Incremental/Cumulative Change. Negative numbers indicate erosion.



E.1.2 WEST BANK

Alpine CP 00
Alpine Pipeline Miluveach Crossing
West Streambank Erosion Monitor

Baseline Station	Streambank Monitor - Top of West Bank Locations									Description
	See Drawing CE-CP00-144 Rev 6 for Survey Baseline Location									
	8/4/2002	7/12/2003	6/18/2004	8/4/2005	8/17/2006	8/28/2007	7/21/2012	7/5/2017	Future	Date
0+50	859.5	859.5	858.0	858.0	858.0	858.0	858.0	858.0		Baseline Offset (In Feet)
		0.0	-1.5	0.0	0.0	0.0	0.0	0.0		Incremental Change
		0.0	-1.5	-1.5	-1.5	-1.5	-1.5	-1.5	-1.5	
0+60	859.7	859.7	856.9	856.9	856.9	856.9	856.9	856.9		Baseline Offset (In Feet)
		0.0	-2.8	0.0	0.0	0.0	0.0	0.0		Incremental Change
		0.0	-2.8	-2.8	-2.8	-2.8	-2.8	-2.8	-2.8	
0+70	859.0	859.0	856.2	856.2	856.2	856.2	856.2	856.2		Baseline Offset (In Feet)
		0.0	-2.7	0.0	0.0	0.0	0.0	0.0		Incremental Change
		0.0	-2.7	-2.7	-2.7	-2.7	-2.7	-2.7	-2.7	
0+80	859.2	859.2	855.6	855.6	855.6	855.6	855.6	855.6		Baseline Offset (In Feet)
		0.0	-3.7	0.0	0.0	0.0	0.0	0.0		Incremental Change
		0.0	-3.7	-3.7	-3.7	-3.7	-3.7	-3.7	-3.7	
0+90	858.7	858.7	855.9	855.9	855.9	855.9	855.9	855.9		Baseline Offset (In Feet)
		0.0	-2.9	0.0	0.0	0.0	0.0	0.0		Incremental Change
		0.0	-2.9	-2.9	-2.9	-2.9	-2.9	-2.9	-2.9	
1+00	858.1	858.1	856.1	856.1	856.1	856.1	856.1	856.1		Baseline Offset (In Feet)
		0.0	-2.0	0.0	0.0	0.0	0.0	0.0		Incremental Change
		0.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	
1+10	857.4	857.4	855.8	855.8	855.8	855.8	855.8	855.8		Baseline Offset (In Feet)
		0.0	-1.6	0.0	0.0	0.0	0.0	0.0		Incremental Change
		0.0	-1.6	-1.6	-1.6	-1.6	-1.6	-1.6	-1.6	

Alpine CP 00
Alpine Pipeline Miluveach Crossing
West Streambank Erosion Monitor

Baseline Station	Streambank Monitor - Top of West Bank Locations									Description
	See Drawing CE-CP00-144 Rev 6 for Survey Baseline Location									
	8/4/2002	7/12/2003	6/18/2004	8/4/2005	8/17/2006	8/28/2007	7/21/2012	7/5/2017	Future	Date
1+20	856.5	856.5	854.8	854.8	854.8	854.8	854.8	854.8		Baseline Offset (In Feet)
		0.0	-1.7	0.0	0.0	0.0	0.0	0.0		Incremental Change
		0.0	-1.7	-1.7	-1.7	-1.7	-1.7	-1.7		Cumulative Change
1+30	854.6	854.6	852.5	852.5	852.5	852.5	852.5	852.5		Baseline Offset (In Feet)
		0.0	-2.2	0.0	0.0	0.0	0.0	0.0		Incremental Change
		0.0	-2.2	-2.1	-2.1	-2.1	-2.1	-2.1		Cumulative Change
1+40	854.4	854.4	851.1	851.1	851.1	851.1	851.1	851.0		Baseline Offset (In Feet)
		0.0	-3.3	0.0	0.0	0.0	0.0	-0.1		Incremental Change
		0.0	-3.3	-3.3	-3.3	-3.3	-3.3	-3.4		Cumulative Change
1+50	854.0	854.0	849.7	849.7	849.7	849.7	849.7	849.7		Baseline Offset (In Feet)
		0.0	-4.3	0.0	0.0	0.0	0.0	0.0		Incremental Change
		0.0	-4.3	-4.3	-4.3	-4.3	-4.3	-4.3		Cumulative Change
1+60	851.8	851.8	847.9	847.9	847.9	847.9	847.9	847.9		Baseline Offset (In Feet)
		0.0	-3.9	0.0	0.0	0.0	0.0	0.0		Incremental Change
		0.0	-3.9	-3.9	-3.9	-3.9	-3.9	-3.9		Cumulative Change
1+70	850.3	850.3	845.9	845.9	845.9	845.9	845.9	845.9		Baseline Offset (In Feet)
		0.0	-4.4	0.0	0.0	0.0	0.0	0.0		Incremental Change
		0.0	-4.4	-4.4	-4.4	-4.4	-4.4	-4.4		Cumulative Change
1+80	848.8	848.8	843.8	843.8	843.8	843.8	843.8	843.8		Baseline Offset (In Feet)
		0.0	-5.1	0.0	0.0	0.0	0.0	0.0		Incremental Change
		0.0	-5.1	-5.1	-5.1	-5.1	-5.1	-5.1		Cumulative Change

Alpine CP 00
Alpine Pipeline Miluveach Crossing
West Streambank Erosion Monitor

Baseline Station	Streambank Monitor - Top of West Bank Locations									Description
	See Drawing CE-CP00-144 Rev 6 for Survey Baseline Location									
	8/4/2002	7/12/2003	6/18/2004	8/4/2005	8/17/2006	8/28/2007	7/21/2012	7/5/2017	Future	Date
1+90	846.4	846.4	841.7	841.7	841.7	841.7	841.7	841.7		Baseline Offset (In Feet)
		0.0	-4.7	0.0	0.0	0.0	0.0	0.0		Incremental Change
		0.0	-4.7	-4.7	-4.7	-4.7	-4.7	-4.7		Cumulative Change
2+00	842.2	842.2	839.4	839.4	839.4	839.4	839.4	839.4		Baseline Offset (In Feet)
		0.0	-2.7	0.0	0.0	0.0	0.0	0.0		Incremental Change
		0.0	-2.7	-2.7	-2.7	-2.7	-2.7	-2.7		Cumulative Change
2+10	838.1	838.1	837.2	837.2	837.2	837.2	837.2	837.2		Baseline Offset (In Feet)
		0.0	-0.9	0.0	0.0	0.0	0.0	0.0		Incremental Change
		0.0	-0.9	-0.9	-0.9	-0.9	-0.9	-0.9		Cumulative Change
2+20	837.1	837.1	835.7	835.7	835.7	835.7	835.7	835.7		Baseline Offset (In Feet)
		0.0	-1.4	0.0	0.0	0.0	0.0	0.0		Incremental Change
		0.0	-1.4	-1.4	-1.4	-1.4	-1.4	-1.4		Cumulative Change
2+30	836.1	836.1	834.1	834.1	834.1	834.1	834.1	834.1		Baseline Offset (In Feet)
		0.0	-2.0	0.0	0.0	0.0	0.0	0.0		Incremental Change
		0.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0		Cumulative Change
2+40	834.7	834.7	832.4	832.4	832.4	832.4	832.4	832.4		Baseline Offset (In Feet)
		0.0	-2.3	0.0	0.0	0.0	0.0	0.0		Incremental Change
		0.0	-2.3	-2.3	-2.3	-2.3	-2.3	-2.3		Cumulative Change
2+50	830.5	830.5	829.3	829.3	829.3	829.3	829.3	829.3		Baseline Offset (In Feet)
		0.0	-1.1	0.0	0.0	0.0	0.0	0.0		Incremental Change
		0.0	-1.1	-1.1	-1.1	-1.1	-1.1	-1.1		Cumulative Change

Alpine CP 00
Alpine Pipeline Miluveach Crossing
West Streambank Erosion Monitor

Baseline Station	Streambank Monitor - Top of West Bank Locations									Description
	See Drawing CE-CP00-144 Rev 6 for Survey Baseline Location									
	8/4/2002	7/12/2003	6/18/2004	8/4/2005	8/17/2006	8/28/2007	7/21/2012	7/5/2017	Future	Date
2+60	827.7	827.7	827.1	827.1	827.1	827.1	827.1	827.1		Baseline Offset (In Feet)
		0.0	-0.6	0.0	0.0	0.0	0.0	0.0		Incremental Change
		0.0	-0.6	-0.6	-0.6	-0.6	-0.6	-0.6	-0.6	
2+70	826.0	826.0	825.5	825.5	825.5	825.5	825.5	825.5		Baseline Offset (In Feet)
		0.0	-0.6	0.0	0.0	0.0	0.0	0.0		Incremental Change
		0.0	-0.6	-0.6	-0.6	-0.6	-0.6	-0.6	-0.6	
2+80	824.6	824.6	823.8	823.8	823.8	823.8	823.8	823.8		Baseline Offset (In Feet)
		0.0	-0.8	0.0	0.0	0.0	0.0	0.0		Incremental Change
		0.0	-0.8	-0.8	-0.8	-0.8	-0.8	-0.8	-0.8	
2+90	823.5	823.5	822.1	822.1	822.1	822.1	822.1	822.1		Baseline Offset (In Feet)
		0.0	-1.4	0.0	0.0	0.0	0.0	0.0		Incremental Change
		0.0	-1.4	-1.4	-1.4	-1.4	-1.4	-1.4	-1.4	
3+00	822.3	822.3	820.4	820.4	820.4	820.4	820.4	820.4		Baseline Offset (In Feet)
		0.0	-1.9	0.0	0.0	0.0	0.0	0.0		Incremental Change
		0.0	-1.9	-1.9	-1.9	-1.9	-1.9	-1.9	-1.9	
3+10	821.1	821.1	818.8	818.8	818.8	818.8	818.8	818.8		Baseline Offset (In Feet)
		0.0	-2.3	0.0	0.0	0.0	0.0	0.0		Incremental Change
		0.0	-2.3	-2.3	-2.3	-2.3	-2.3	-2.3	-2.3	
3+20	818.9	818.9	816.8	816.8	816.8	816.8	816.8	816.8		Baseline Offset (In Feet)
		0.0	-2.2	0.0	0.0	0.0	0.0	0.0		Incremental Change
		0.0	-2.2	-2.2	-2.2	-2.2	-2.2	-2.2	-2.2	

Alpine CP 00
Alpine Pipeline Miluveach Crossing
West Streambank Erosion Monitor

Baseline Station	Streambank Monitor - Top of West Bank Locations									Description
	See Drawing CE-CP00-144 Rev 6 for Survey Baseline Location									
	8/4/2002	7/12/2003	6/18/2004	8/4/2005	8/17/2006	8/28/2007	7/21/2012	7/5/2017	Future	Date
3+30	816.4	816.4	814.8	814.8	814.8	814.8	814.8	814.8		Baseline Offset (In Feet)
		0.0	-1.6	0.0	0.0	0.0	0.0	0.0		Incremental Change
		0.0	-1.6	-1.6	-1.6	-1.6	-1.6	-1.6	-1.6	
3+40	814.9	814.9	812.7	812.7	812.7	812.7	812.7	812.7		Baseline Offset (In Feet)
		0.0	-2.3	0.0	0.0	0.0	0.0	0.0		Incremental Change
		0.0	-2.3	-2.3	-2.3	-2.3	-2.3	-2.3	-2.3	
3+50	812.0	812.0	810.7	810.7	810.7	810.7	810.7	810.7		Baseline Offset (In Feet)
		0.0	-1.3	0.0	0.0	0.0	0.0	0.0		Incremental Change
		0.0	-1.3	-1.3	-1.3	-1.3	-1.3	-1.3	-1.3	
VSM 2046 {3+59.23}	793.8	793.8	793.8	793.8	793.8	793.8	793.8	793.8		Baseline Offset (In Feet)
		0.0	0.0	0.0	0.0	0.0	0.0	0.0		Incremental Change
		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
3+60 {Pipeline Crossing}	810.3	810.3	809.1	809.1	809.1	809.1	809.1	809.1		Baseline Offset (In Feet)
		0.0	-1.2	0.0	0.0	0.0	0.0	0.0		Incremental Change
		0.0	-1.2	-1.2	-1.2	-1.2	-1.2	-1.2	-1.2	
3+70	807.8	807.8	805.9	805.9	805.9	805.9	805.9	805.9		Baseline Offset (In Feet)
		0.0	-1.9	0.0	0.0	0.0	0.0	0.0		Incremental Change
		0.0	-1.9	-1.9	-1.9	-1.9	-1.9	-1.9	-1.9	
3+80	805.2	805.2	804.3	804.3	804.3	804.3	804.3	804.0		Baseline Offset (In Feet)
		0.0	-0.9	0.0	0.0	0.0	0.0	-0.3		Incremental Change
		0.0	-0.9	-0.9	-0.9	-0.9	-0.9	-1.1		Cumulative Change

Alpine CP 00
Alpine Pipeline Miluveach Crossing
West Streambank Erosion Monitor

Baseline Station	Streambank Monitor - Top of West Bank Locations									Description
	See Drawing CE-CP00-144 Rev 6 for Survey Baseline Location									
	8/4/2002	7/12/2003	6/18/2004	8/4/2005	8/17/2006	8/28/2007	7/21/2012	7/5/2017	Future	Date
3+90	802.7	802.7	801.4	801.4	801.4	801.4	801.4	801.4		Baseline Offset (In Feet)
		0.0	-1.3	0.0	0.0	0.0	0.0	0.0		Incremental Change
		0.0	-1.3	-1.3	-1.3	-1.3	-1.3	-1.3	-1.3	
4+00	801.7	801.7	800.4	800.4	800.4	800.4	800.4	800.4		Baseline Offset (In Feet)
		0.0	-1.2	0.0	0.0	0.0	0.0	0.0		Incremental Change
		0.0	-1.2	-1.2	-1.2	-1.2	-1.2	-1.2	-1.2	
4+10	799.2	799.2	798.4	798.4	798.4	798.4	798.4	798.4		Baseline Offset (In Feet)
		0.0	-0.8	0.0	0.0	0.0	0.0	0.0		Incremental Change
		0.0	-0.8	-0.8	-0.8	-0.8	-0.8	-0.8	-0.8	
4+20	797.0	797.0	796.3	796.3	796.3	796.3	796.3	796.3		Baseline Offset (In Feet)
		0.0	-0.7	0.0	0.0	0.0	0.0	0.0		Incremental Change
		0.0	-0.7	-0.7	-0.7	-0.7	-0.7	-0.7	-0.7	
4+30	794.9	794.9	793.8	793.8	793.8	793.8	793.8	793.8		Baseline Offset (In Feet)
		0.0	-1.1	0.0	0.0	0.0	0.0	0.0		Incremental Change
		0.0	-1.1	-1.1	-1.1	-1.1	-1.1	-1.1	-1.1	
4+40	792.2	792.2	791.3	791.3	791.3	791.3	791.3	791.3		Baseline Offset (In Feet)
		0.0	-0.9	0.0	0.0	0.0	0.0	0.0		Incremental Change
		0.0	-0.9	-0.9	-0.9	-0.9	-0.9	-0.9	-0.9	
4+50	789.9	789.9	789.1	789.1	789.1	789.1	789.1	789.1		Baseline Offset (In Feet)
		0.0	-0.8	0.0	0.0	0.0	0.0	0.0		Incremental Change
		0.0	-0.8	-0.8	-0.8	-0.8	-0.8	-0.8	-0.8	

Alpine CP 00
Alpine Pipeline Miluveach Crossing
West Streambank Erosion Monitor

Baseline Station	Streambank Monitor - Top of West Bank Locations									Description
	See Drawing CE-CP00-144 Rev 6 for Survey Baseline Location									
	8/4/2002	7/12/2003	6/18/2004	8/4/2005	8/17/2006	8/28/2007	7/21/2012	7/5/2017	Future	Date
4+60	788.7	788.7	787.3	787.3	787.3	787.3	787.3	787.3		Baseline Offset (In Feet)
		0.0	-1.4	0.0	0.0	0.0	0.0	0.0		Incremental Change
		0.0	-1.4	-1.4	-1.4	-1.4	-1.4	-1.4	-1.4	
4+70	786.3	786.3	784.8	784.8	784.8	784.8	784.8	784.8		Baseline Offset (In Feet)
		0.0	-1.5	0.0	0.0	0.0	0.0	0.0		Incremental Change
		0.0	-1.5	-1.5	-1.5	-1.5	-1.5	-1.5	-1.5	
4+80	783.1	783.1	781.7	781.7	781.7	781.7	781.7	781.7		Baseline Offset (In Feet)
		0.0	-1.4	0.0	0.0	0.0	0.0	0.0		Incremental Change
		0.0	-1.4	-1.4	-1.4	-1.4	-1.4	-1.4	-1.4	
4+90	780.0	780.0	778.6	778.6	778.6	778.6	778.6	778.6		Baseline Offset (In Feet)
		0.0	-1.3	0.0	0.0	0.0	0.0	0.0		Incremental Change
		0.0	-1.3	-1.3	-1.3	-1.3	-1.3	-1.3	-1.3	
5+00	776.3	776.3	775.1	775.1	775.1	775.1	775.1	775.1		Baseline Offset (In Feet)
		0.0	-1.2	0.0	0.0	0.0	0.0	0.0		Incremental Change
		0.0	-1.2	-1.2	-1.2	-1.2	-1.2	-1.2	-1.2	
5+10	772.4	772.4	771.3	771.3	771.3	771.3	771.3	771.3		Baseline Offset (In Feet)
		0.0	-1.1	0.0	0.0	0.0	0.0	0.0		Incremental Change
		0.0	-1.1	-1.1	-1.1	-1.1	-1.1	-1.1	-1.1	
5+20	768.7	768.7	767.5	767.5	767.5	767.5	767.5	767.5		Baseline Offset (In Feet)
		0.0	-1.2	0.0	0.0	0.0	0.0	0.0		Incremental Change
		0.0	-1.2	-1.2	-1.2	-1.2	-1.2	-1.2	-1.2	

Alpine CP 00
Alpine Pipeline Miluveach Crossing
West Streambank Erosion Monitor

Baseline Station	Streambank Monitor - Top of West Bank Locations									Description
	See Drawing CE-CP00-144 Rev 6 for Survey Baseline Location									
	8/4/2002	7/12/2003	6/18/2004	8/4/2005	8/17/2006	8/28/2007	7/21/2012	7/5/2017	Future	Date
5+30	765.1	765.1	763.7	763.7	763.7	763.7	763.7	763.7		Baseline Offset (In Feet)
		0.0	-1.4	0.0	0.0	0.0	0.0	0.0		Incremental Change
		0.0	-1.4	-1.4	-1.4	-1.4	-1.4	-1.4	-1.4	
5+40	761.4	761.4	759.8	759.8	759.8	759.8	759.8	759.8		Baseline Offset (In Feet)
		0.0	-1.6	0.0	0.0	0.0	0.0	0.0		Incremental Change
		0.0	-1.6	-1.6	-1.6	-1.6	-1.6	-1.6	-1.6	
5+50	757.0	757.0	755.8	755.8	755.8	755.8	755.8	755.8		Baseline Offset (In Feet)
		0.0	-1.2	0.0	0.0	0.0	0.0	0.0		Incremental Change
		0.0	-1.2	-1.2	-1.2	-1.2	-1.2	-1.2	-1.2	
5+60	752.6	752.6	751.6	751.6	751.6	751.6	751.6	751.6		Baseline Offset (In Feet)
		0.0	-0.9	0.0	0.0	0.0	0.0	0.0		Incremental Change
		0.0	-0.9	-0.9	-0.9	-0.9	-0.9	-0.9	-0.9	
5+70	748.0	748.0	747.0	747.0	747.0	747.0	747.0	747.0		Baseline Offset (In Feet)
		0.0	-1.0	0.0	0.0	0.0	0.0	0.0		Incremental Change
		0.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	
5+80	743.5	743.5	742.4	742.4	742.4	742.4	742.4	742.4		Baseline Offset (In Feet)
		0.0	-1.1	0.0	0.0	0.0	0.0	0.0		Incremental Change
		0.0	-1.1	-1.1	-1.1	-1.1	-1.1	-1.1	-1.1	
5+90	739.4	739.4	738.4	738.4	738.4	738.4	738.4	738.4		Baseline Offset (In Feet)
		0.0	-1.1	0.0	0.0	0.0	0.0	0.0		Incremental Change
		0.0	-1.1	-1.1	-1.1	-1.1	-1.1	-1.1	-1.1	

Alpine CP 00
Alpine Pipeline Miluveach Crossing
West Streambank Erosion Monitor

Baseline Station	Streambank Monitor - Top of West Bank Locations									Description
	See Drawing CE-CP00-144 Rev 6 for Survey Baseline Location									
	8/4/2002	7/12/2003	6/18/2004	8/4/2005	8/17/2006	8/28/2007	7/21/2012	7/5/2017	Future	Date
6+00	735.5	735.5	734.2	734.2	734.2	734.2	734.2	734.2		Baseline Offset (In Feet)
		0.0	-1.3	0.0	0.0	0.0	0.0	0.0		Incremental Change
		0.0	-1.3	-1.3	-1.3	-1.3	-1.3	-1.3	-1.3	
6+10	731.5	731.5	730.0	730.0	730.0	730.0	730.0	730.0		Baseline Offset (In Feet)
		0.0	-1.5	0.0	0.0	0.0	0.0	0.0		Incremental Change
		0.0	-1.5	-1.5	-1.5	-1.5	-1.5	-1.5	-1.5	
6+20	726.6	726.6	725.3	725.3	725.3	725.3	725.3	725.3		Baseline Offset (In Feet)
		0.0	-1.3	0.0	0.0	0.0	0.0	0.0		Incremental Change
		0.0	-1.3	-1.3	-1.3	-1.3	-1.3	-1.3	-1.3	
6+30	721.7	721.7	720.5	720.5	720.5	720.5	720.5	720.5		Baseline Offset (In Feet)
		0.0	-1.3	0.0	0.0	0.0	0.0	0.0		Incremental Change
		0.0	-1.3	-1.3	-1.3	-1.3	-1.3	-1.3	-1.3	
6+40	716.9	716.9	715.6	715.6	715.6	715.6	715.6	715.6		Baseline Offset (In Feet)
		0.0	-1.2	0.0	0.0	0.0	0.0	0.0		Incremental Change
		0.0	-1.2	-1.2	-1.2	-1.2	-1.2	-1.2	-1.2	
6+50	712.0	712.0	710.8	710.8	710.8	710.8	710.8	710.8		Baseline Offset (In Feet)
		0.0	-1.2	0.0	0.0	0.0	0.0	0.0		Incremental Change
		0.0	-1.2	-1.2	-1.2	-1.2	-1.2	-1.2	-1.2	
6+60	707.1	707.1	705.9	705.9	705.9	705.9	705.9	705.9		Baseline Offset (In Feet)
		0.0	-1.2	0.0	0.0	0.0	0.0	0.0		Incremental Change
		0.0	-1.2	-1.2	-1.2	-1.2	-1.2	-1.2	-1.2	

***Note: Survey completed on 8/4/02 was used for baseline data to compute Incremental/Cumulative Change. Negative numbers indicate erosion.



E.2 VSM SCOUR



E.3 VSM & HSM SETTLEMENT & JACKING

Alpine CP 00
Alpine Pipeline Miluveach Crossing
Pile Monitor

Location	6/18/2004	8/3/2005	8/17/2006	8/28/2007	8/25/2008	7/21/2012	7/6/2017	Description
VSM 2046	57.611	57.595	57.590	57.510	57.527	57.675	57.653	Monitor Point Elev. at Bottom SE Cor Pile Cap
		-0.016	-0.005	-0.080	0.017	0.148	-0.022	Incremental Change
		-0.016	-0.021	-0.101	-0.084	0.064	0.042	Cumulative Change
HSM 2046 (North)	57.791	57.785	57.780	57.700	57.686	57.860	57.844	Monitor Point Elev. at North End, Bottom NE Cor.
		-0.006	-0.005	-0.080	-0.014	0.174	-0.016	Incremental Change
		-0.006	-0.011	-0.091	-0.105	0.069	0.053	Cumulative Change
HSM 2046 (South)	57.631	57.620	57.610	57.530	57.521	57.695	57.670	Monitor Point Elev. at South End, Bottom SE Cor.
		-0.011	-0.010	-0.080	-0.009	0.174	-0.025	Incremental Change
		-0.011	-0.021	-0.101	-0.110	0.064	0.039	Cumulative Change
VSM 2047A	57.528	57.465	57.480	57.430	57.464	57.790	58.004	Monitor Point Elev. at Bottom SE Cor Pile Cap
		-0.063	0.015	-0.050	0.034	0.326	0.214	Incremental Change
		-0.063	-0.048	-0.098	-0.064	0.262	0.476	Cumulative Change
HSM 2047A (North)	57.449	57.540	57.560	57.520	57.556	57.870	58.078	Monitor Point Elev. at North End, Bottom NE Cor.
		0.091	0.020	-0.040	0.036	0.314	0.208	Incremental Change
		0.091	0.111	0.071	0.107	0.421	0.629	Cumulative Change
VSM 2047B	57.433	57.450	57.460	57.420	57.459	57.780	57.970	Monitor Point Elev. at Bottom SE Cor Pile Cap
		0.018	0.010	-0.040	0.039	0.321	0.190	Incremental Change
		0.018	0.028	-0.012	0.027	0.348	0.538	Cumulative Change
HSM 2047B (South)	57.527	57.540	57.560	57.520	57.556	57.860	58.088	Monitor Point Elev. at South End, Bottom SE Cor.
		0.013	0.020	-0.040	0.036	0.304	0.228	Incremental Change
		0.013	0.033	-0.007	0.029	0.333	0.561	Cumulative Change

Alpine CP 00
Alpine Pipeline Miluveach Crossing
Pile Monitor

Location	6/18/2004	8/3/2005	8/17/2006	8/28/2007	8/25/2008	7/21/2012	7/6/2017	Description
VSM 2048A	57.635	57.665	57.740	57.740	57.776	58.120	58.251	Monitor Point Elev. at Bottom SE Cor Pile Cap
		0.030	0.075	0.000	0.036	0.344	0.131	Incremental Change
		0.030	0.105	0.105	0.142	0.485	0.616	Cumulative Change
HSM 2048A (North)	57.725	57.760	57.830	57.830	57.885	58.220	58.346	Monitor Point Elev. at North End, Bottom NE Cor.
		0.035	0.070	0.000	0.055	0.335	0.126	Incremental Change
		0.035	0.105	0.105	0.160	0.495	0.621	Cumulative Change
VSM 2048B	57.591	57.615	57.680	57.680	57.727	58.060	58.208	Monitor Point Elev. at Bottom SE Cor Pile Cap
		0.024	0.065	0.000	0.047	0.333	0.148	Incremental Change
		0.024	0.089	0.089	0.136	0.469	0.617	Cumulative Change
HSM 2048B (South)	57.691	57.710	57.770	57.770	57.824	58.150	58.302	Monitor Point Elev. at South End, Bottom SE Cor.
		0.019	0.060	0.000	0.054	0.326	0.152	Incremental Change
		0.019	0.079	0.079	0.133	0.459	0.611	Cumulative Change
VSM 2049	57.494	57.475	57.470	57.400	57.398	57.570	57.545	Monitor Point Elev. at Bottom SE Cor Pile Cap
		-0.019	-0.005	-0.070	-0.002	0.172	-0.025	Incremental Change
		-0.019	-0.024	-0.094	-0.096	0.076	0.051	Cumulative Change
HSM 2049 (North)	57.564	57.550	57.540	57.470	57.465	57.640	57.613	Monitor Point Elev. at North End, Bottom NE Cor.
		-0.014	-0.010	-0.070	-0.005	0.175	-0.027	Incremental Change
		-0.014	-0.024	-0.094	-0.099	0.076	0.049	Cumulative Change
HSM 2049 (South)	57.587	57.565	57.560	57.490	57.487	57.665	57.640	Monitor Point Elev. at South End, Bottom SE Cor.
		-0.022	-0.005	-0.070	-0.003	0.178	-0.025	Incremental Change
		-0.022	-0.027	-0.097	-0.100	0.078	0.053	Cumulative Change