

<b>Site Number</b>	<b>Location</b>	<b>Name</b>	<b>Hwy</b>	<b>km</b>
SH004	HWY 49:12 C1 2.560	Little Smoky River (S of Bridge)	49:12	Km 2.6
<b>Legal Description:</b>		<b>UTM Co-ordinates</b>		
10-33-74-21 W5		11U E 489444	N	6145583

<b>Current Monitoring:</b>	17-May-2024	<b>Previous Monitoring</b>	8-Oct-2023
<b>Instruments Read By:</b>	Mr. Niraj Regmi, G.I.T., and Mr. Nixson Mationg, Thurber		

Instruments Read During This Site Visit			
<b>Slope Inclinerometers (SIs):</b> N/A	<b>Pneumatic Piezometers (PN):</b> N/A	<b>Vibration Wire Piezometers (VW):</b> VW07-2 VW07-2 VW07-3 VW07-3A	<b>Standpipe Piezometers (SP):</b> N/A
<b>Load Cell (LC):</b> N/A	<b>Strain Gauges:</b> N/A	<b>SAA's:</b> N/A	<b>Others:</b>

Readout Equipment Used			
<b>Slope Inclinerometers:</b>	<b>Pneumatic Piezometers:</b>	<b>Vibration Wire Piezometers:</b> GEOKON GK-404 vibrating wire data readout	<b>Standpipe Piezometers:</b>
<b>Load Cell:</b>	<b>Strain Gauges:</b>	<b>SAA's:</b>	<b>Others:</b>
<b>Note:</b>			

Discussion	
<b>Zones of New Movement:</b>	None
<b>Interpretation of Monitoring Results:</b>	Vibrating wire piezometers VW07-2 and VW07-2A both showed increases in groundwater level of 0.02 m since the spring of 2023 readings. There has been a generally lowering of the groundwater level in these two piezometers by about 0.05 m/yr since 2007. Vibrating wire piezometers VW07-3 and VW07-3A both showed decreases in groundwater level of 0.02 m since the spring of 2023 readings and following a similar trend since 2020.
<b>Future Work:</b>	The instruments should be read again in the fall of 2024.
<b>Instrumentation Repairs:</b>	No instrument repairs are required at this time.
<b>Additional Comments:</b>	

<b>Attachments:</b>	<ul style="list-style-type: none"><li>• Table SH004-1 Spring 2024 – HWY 49:12 Little Smoky River (South of Bridge) Vibrating Wire Piezometer Instrumentation Reading Summary</li><li>• Statement of Limitations and Conditions</li><li>• APPENDIX A – SH004 SPRING 2024<ul style="list-style-type: none"><li>○ Field Inspector’s report</li><li>○ Site Plan Showing Approximate Instrument Locations (Drawing No. 32121 SH004)</li><li>○ Figure SH004-1 (Vibrating Wire Piezometer Depths)</li></ul></li></ul>
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We trust this report meets your requirements at present. If you have any questions, please contact the undersigned at your convenience.

Yours very truly,  
Thurber Engineering Ltd.  
Don Proudfoot, M.Eng., P. Eng.  
Partner | Senior Geotechnical Engineer

Lucas Green, P.Eng.  
Geotechnical Engineer



**Table SH004-1 Spring 2024– Hwy 49:12 Little Smoky River (South Of Bridge) Vibrating Wire Piezometer Instrumentation Reading Summary**

Date Monitored: October 8, 2023

<b>INSTRUMENT</b>	<b>DATE INITIALIZED</b>	<b>TIP DEPTH (m)</b>	<b>CURRENT STATUS</b>	<b>MAXIMUM GROUNDWATER HEIGHT (mBGS)</b>	<b>CURRENT GROUNDWATER DEPTH (mBGS)</b>	<b>PREVIOUS GROUNDWATER DEPTH (mBGS)</b>	<b>CHANGE IN WATER LEVEL SINCE PREVIOUS READING (m)</b>
VW07-2	March 27, 2007	33.3	Operational	13.27 in May 2007	14.68	14.70	0.02
VW07-2A	March 27, 2007	20.2	Operational	12.88 in May 2007	13.64	13.66	0.02
VW07-2B	<i>March 27, 2007</i>	45.2	<i>Damaged</i>	<i>13.25 in May 2007</i>	<i>N/A</i>	<i>N/A</i>	<i>N/A</i>
VW07-3	March 27, 2007	35.7	Operational	20.14 in October 2021	20.32	20.30	-0.02
VW07-3A	March 27, 2007	20.5	Operational	18.00 in October 2021	18.27	18.25	-0.02
VW07-3B	<i>March 27, 2007</i>	44.6	<i>Damaged</i>	<i>17.86 in October 2015</i>	<i>N/A</i>	<i>N/A</i>	<i>N/A</i>

Drawing 32121-SH004 in Appendix A provides a sketch of the approximate locations of the monitoring instrumentation for this site.



## STATEMENT OF LIMITATIONS AND CONDITIONS

### 1. STANDARD OF CARE

This Report has been prepared in accordance with generally accepted engineering or environmental consulting practices in the applicable jurisdiction. No other warranty, expressed or implied, is intended or made.

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- b) Reliance on Provided Information: The evaluation and conclusions contained in the Report have been prepared on the basis of conditions in evidence at the time of site inspections and on the basis of information provided to Thurber. Thurber has relied in good faith upon representations, information and instructions provided by the Client and others concerning the site. Accordingly, Thurber does not accept responsibility for any deficiency, misstatement or inaccuracy contained in the Report as a result of misstatements, omissions, misrepresentations, or fraudulent acts of the Client or other persons providing information relied on by Thurber. Thurber is entitled to rely on such representations, information and instructions and is not required to carry out investigations to determine the truth or accuracy of such representations, information and instructions.
- c) Design Services: The Report may form part of design and construction documents for information purposes even though it may have been issued prior to final design being completed. Thurber should be retained to review final design, project plans and related documents prior to construction to confirm that they are consistent with the intent of the Report. Any differences that may exist between the Report's recommendations and the final design detailed in the contract documents should be reported to Thurber immediately so that Thurber can address potential conflicts.
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**THURBER** ENGINEERING LTD.

**ALBERTA TRANSPORTATION AND ECONOMIC CORRIDORS GRMP (CON0022164)  
PEACE REGION (PEACE RIVER DISTRICT)  
INSTRUMENTATION MONITORING RESULTS**

**SPRING 2024**

**APPENDIX A  
DATA PRESENTATION**

**SITE SH004: HWY 49:12, LITTLE SMOKY RIVER (SOUTH OF BRIDGE)**

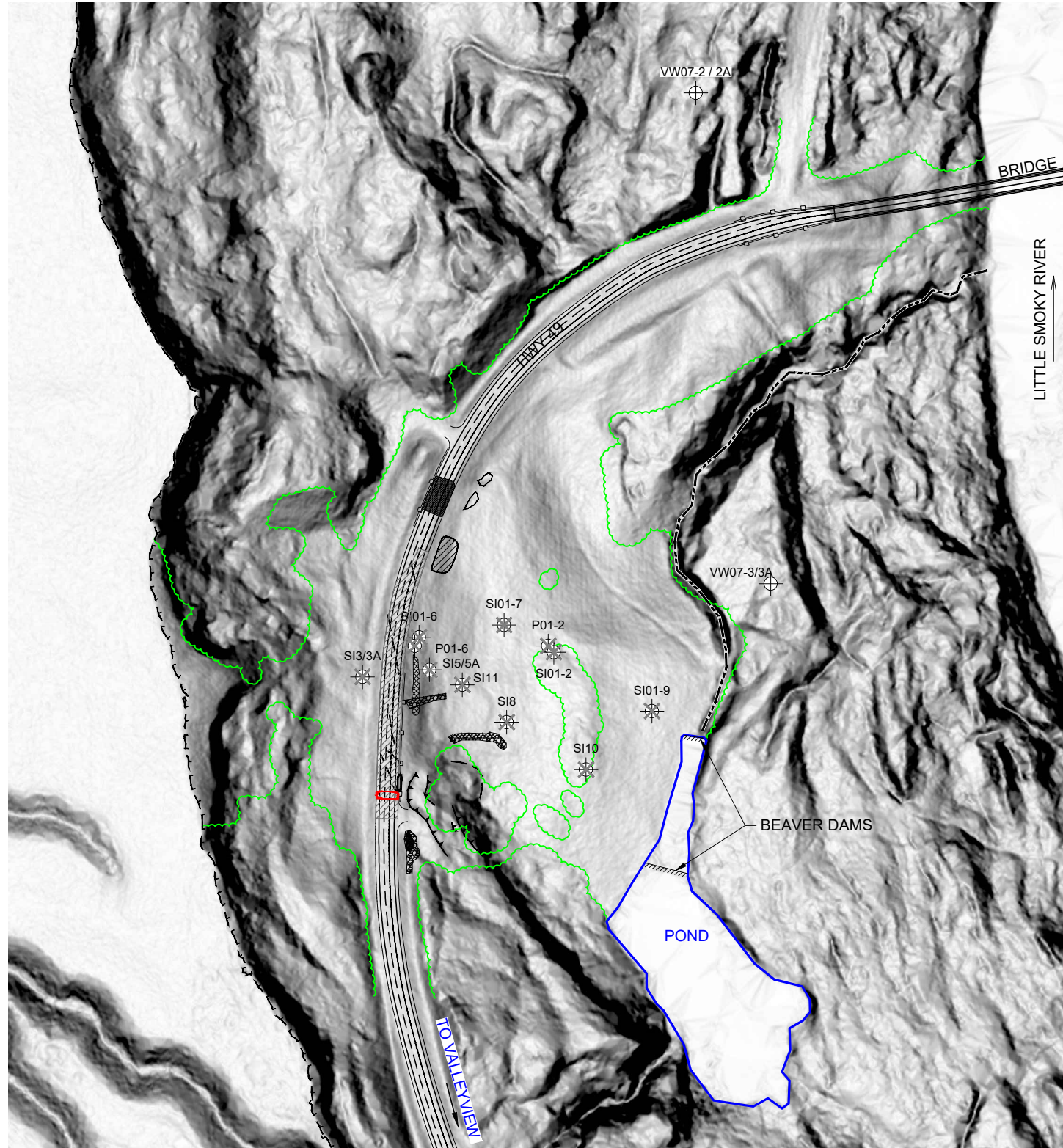
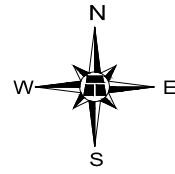
**ALBERTA TRANSPORTATION AND ECONOMIC CORRIDORS  
PEACE REGION (PEACE RIVER DISTRICT)  
INSTRUMENTATION MONITORING FIELD SUMMARY (SH004)  
SPRING 2024**

<p><b>Location:</b> Little Smoky River (S of Bridge) (HWY 49:12 C1 2.560) <b>File Number:</b> 32121</p>	<p><b>Readout:</b> GK 404, SN 364 <b>Temp:</b> 5/ Rain <b>Read by:</b> NKR/NRM</p>
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**VIBRATING WIRE PIEZOMETER (PN) READINGS**

VW#	GPS Location (UTM 11)		Date	Reading	Temp (°C)	Identification Number
	Easting	Northing				
VW07-2	489444	6145583	17-May-24	6865.1	6.9	88274
VW07-2A	489444	6145583	17-May-24	7654.3	4.8	88266
VW07-3	489498	6145229	17-May-24	7634	4.9	88269
VW07-3A	489498	6145229	17-May-24	7946.4	4.7	88267

**INSPECTOR REPORT**

**LEGEND**

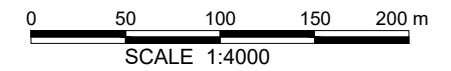
- APPROXIMATE INSTRUMENT LOCATION
- DISCONTINUED INSTRUMENT
- SI SLOPE INCLINOMETER
- P PNEUMATIC PIEZOMETER
- VW VIBRATING WIRE PIEZOMETER
- MAJOR SCARP
- VALLEY CREST
- TREE LINE
- GUARDRAIL
- LANDSLIDE SCARP CRACKS

**NOTES**

FEATURE LOCATIONS ARE APPROXIMATE.

**REFERENCE**

1. 2008 LIDAR PROVIDED BY ALBERTA TRANSPORTATION. SHADED BY SLOPE ANGLE FROM WHITE AT 0° TO BLACK AT ≥30°.



**PEACE REGION (PEACE RIVER DISTRICT)**

**SH004: HWY 49:12 LITTLE SMOKY RIVER  
BRIDGE - SOUTH OF BRIDGE  
SITE PLAN SHOWING APPROXIMATE  
INSTRUMENT LOCATIONS**

**DWG No. 32123-SH004**

DRAWN BY	ML
DESIGNED BY	NFR
APPROVED BY	DWP
SCALE	1:4000
LAST UPDATED	SEPTEMBER 2021
FILE No.	32121



FIGURE SH004-1  
VIBRATING WIRE PIEZOMETER READINGS FOR  
HWY 49:12 LITTLE SMOKY RIVER

