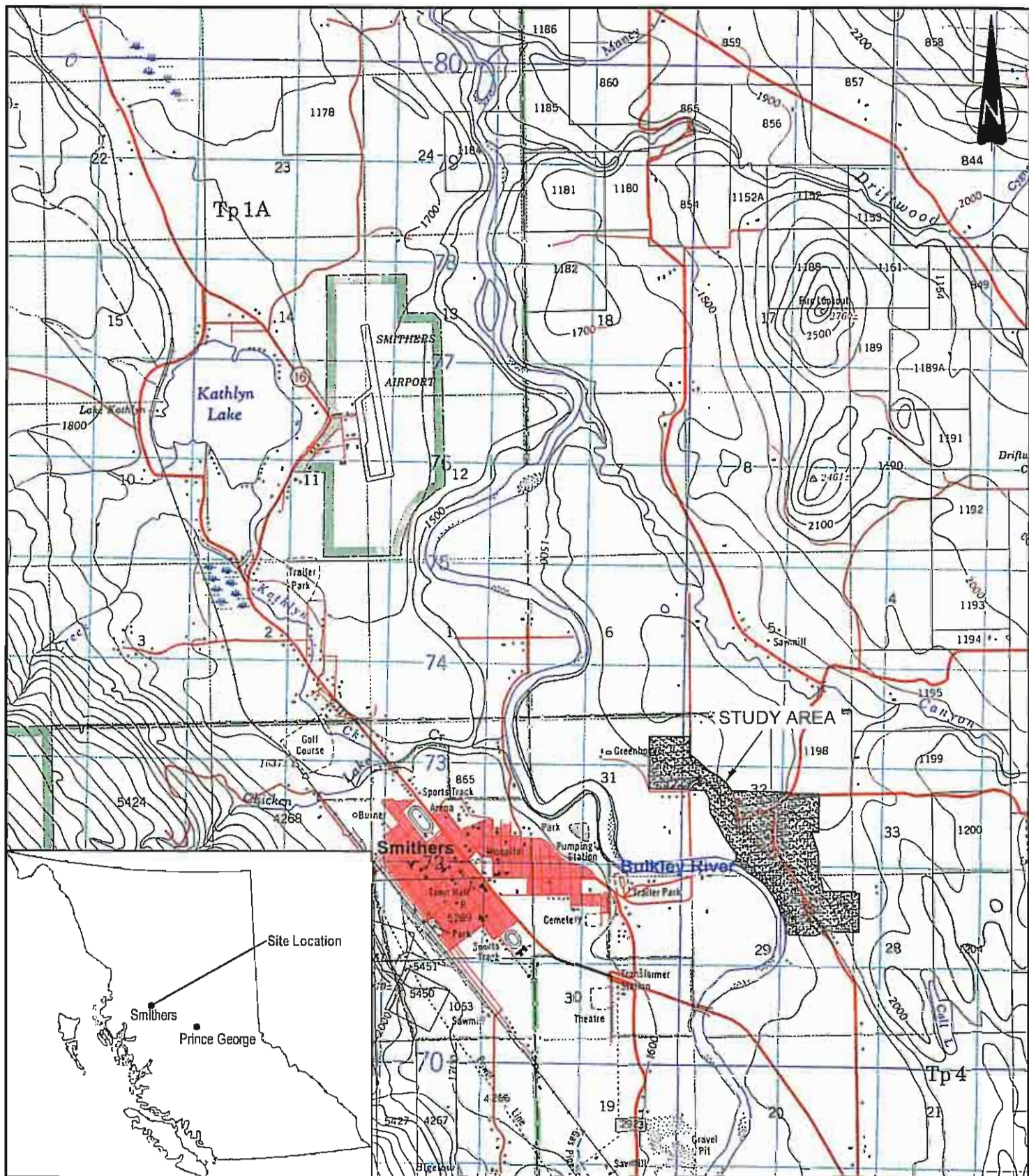


APPENDIX A

Figure 1	Location Plan
Figure 2	Site Plan - Topography
Figure 3	Airphoto Site Plan – Terrain Features
Figure 4	Airphoto Site Plan – Landslide Features (Study Area A)
Figure 5	Typical Sections (Assumed Geology)
Table A	Property Observation Summary



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 Fax (250) 562-7045



NOTE: IMAGE PROVIDED BY SPECTRUM DIGITAL MAPPING 1:50 000 NTS MAP SHEET 93L14

CLIENT
REGIONAL DISTRICT OF BULKLEY-NECHAKO

TITLE	LOCATION PLAN
PROJECT	GEOTECHNICAL ASSESSMENT LOWER VIEWMOUNT ROAD SMITHERS, BC

DWN BY:	S. Ruiz	DATUM:	NAD83	DATE:	DECEMBER 2006
CHK'D BY:	N. Polysou	REV. NO.:	A	PROJECT NO.:	KX04813
PROJECTION:	UTM Zone 10	SCALE:	1:50 000	FIGURE No.:	FIGURE 1

L: DRAFTING-REPORTING-PROPOSALS Prince George (1290) KX04813(BulkleyNechakoRD) KX04813-Drafting KX04813-fig1-NTS.dwg - FIGURE 1 - Dec. 01, 2006 8:37am - shelley.ruiz



NOTE: Original drawing provided by the Regional District of Bulkley-Nechako.

CLIENT

REGIONAL DISTRICT OF BULKLEY-NECHAKO

AMEC Earth & Environmental

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DWN BY: S.Ruiz
 CHKO BY: N.Polysou
 DATUM: NAD83
 PROJECTION: UTM Zone 10
 SCALE: 1:10 000

TITLE

SITE PLAN - TOPOGRAPHY

PROJECT

GEOTECHNICAL ASSESSMENT
 LOWER VIEWMOUNT ROAD
 SMITHERS, BC

REV. NO.:

A

DATE:

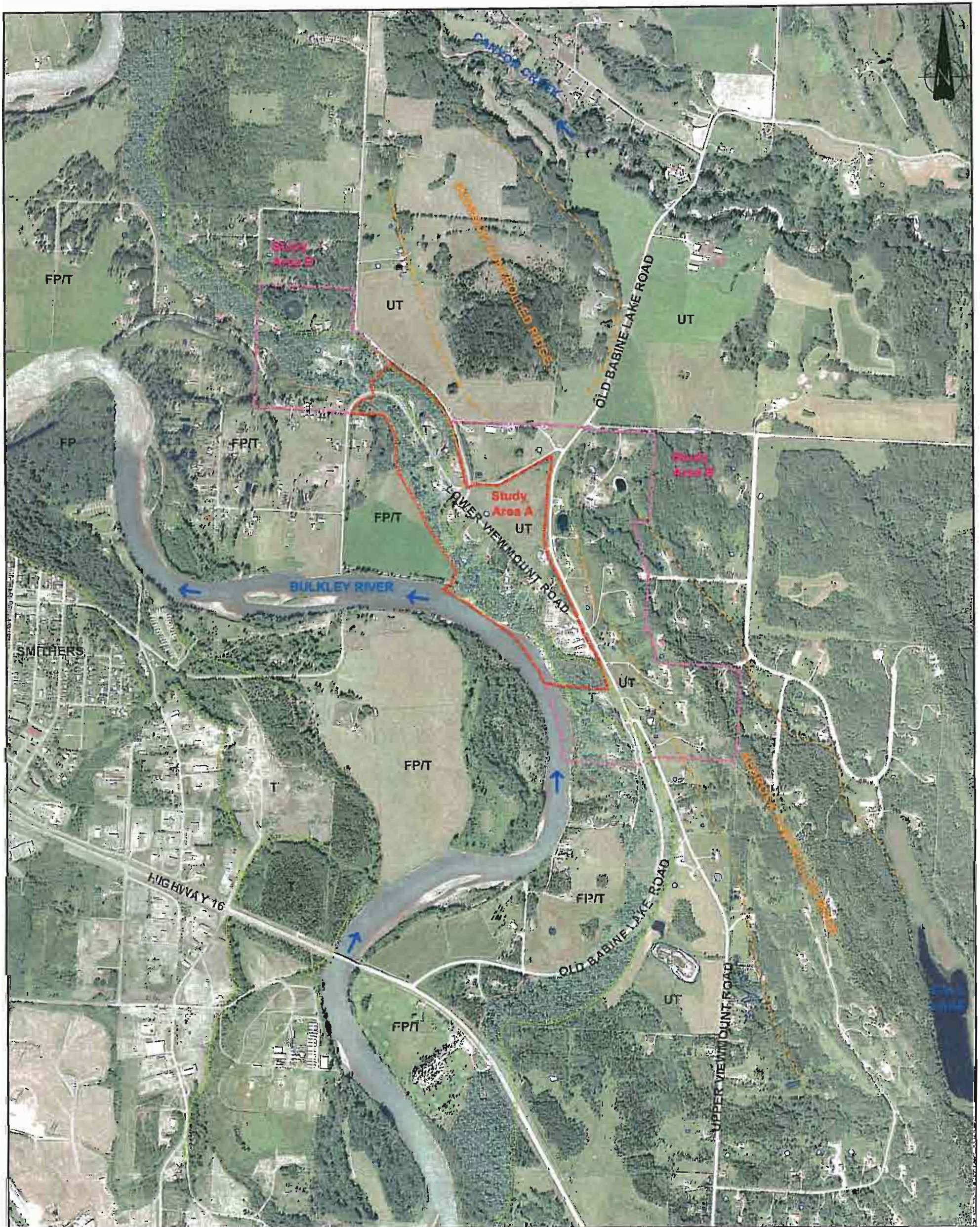
DECEMBER 2006

PROJECT NO.:

KX04813

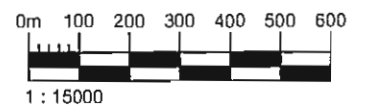
FIGURE No.

FIGURE 2

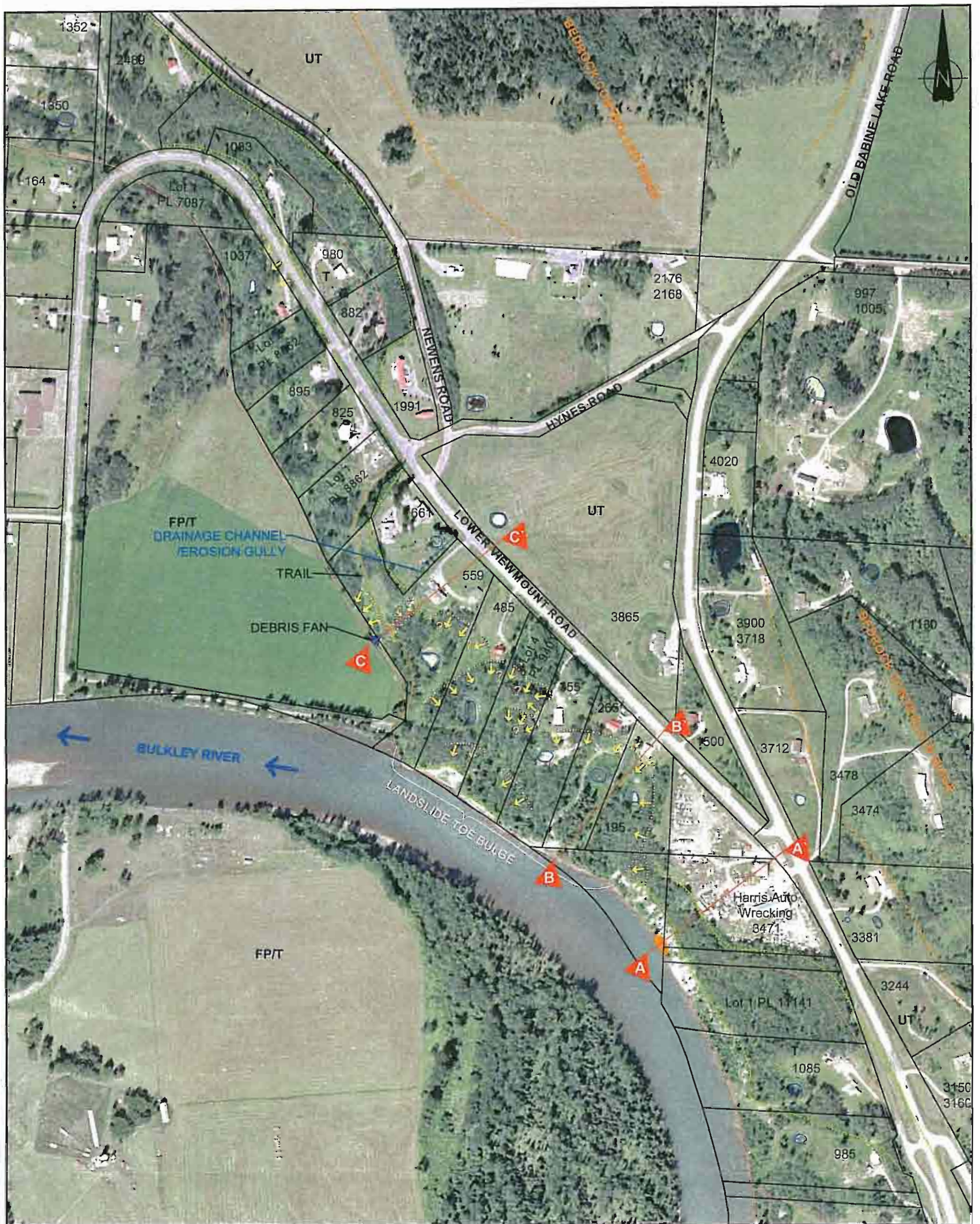


LEGEND:

- | | | | |
|----|---------------------|--|--------------------|
| FP | FLOOD PLAIN | | CREST OF SLOPE |
| T | FLUVIAL TERRACE | | TOE OF SLOPE |
| UT | UPPER TERRACE LEVEL | | BEDROCK RIDGE |
| | STUDY AREA A | | LAGOON/POND |
| | STUDY AREA B | | LANDSLIDE SCARP |
| | | | RIVER VALLEY SLOPE |



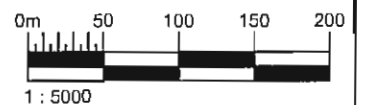
NOTE: 2003 Orthomosaic provided by the Regional District of Bulkley-Nechako.	CLIENT REGIONAL DISTRICT OF BULKLEY-NECHAKO	DWN BY: S.Ruiz	TITLE TERRAIN FEATURES	REV. NO.: A
		CHK'D BY: N.Polysou		DATE: DECEMBER 2006
AMEC Earth & Environmental 3456 Ople Crescent Prince George, BC, CANADA V2N 2P9 Tel. (250) 564-3243 Fax (250) 562-7045		OATUM: NAD83	PROJECT GEOTECHNICAL ASSESSMENT LOWER VIEWMOUNT ROAD SMITHERS, BC	PROJECT NO: KX04813
		PROJECTION: UTM Zone 10		FIGURE No. FIGURE 3
		SCALE: 1:15 000		



LEGEND:

- FP FLOOD PLAIN
- T FLUVIAL TERRACE
- UT UPPER TERRACE LEVEL
- ▲ TYPICAL SECTION (SEE FIGURE 5)

- CREST OF SLOPE
- TOE OF SLOPE
- BEDROCK RIDGE
- BEDROCK OUTCROP
- LAGOON/POND
- LANDSLIDE SCARP
- POSSIBLE LANDSLIDE SCARP
- APPROXIMATE PROPERTY LINES



NOTE: 2003 Orthomosaic provided by the Regional District of Bulkley-Nechako.

CLIENT
REGIONAL DISTRICT OF BULKLEY-NECHAKO

DWN BY: S. Ruiz
CHK'D BY: N. Polysou
DATUM: NAD83
PROJECTION: UTM Zone 10
SCALE: 1:5 000

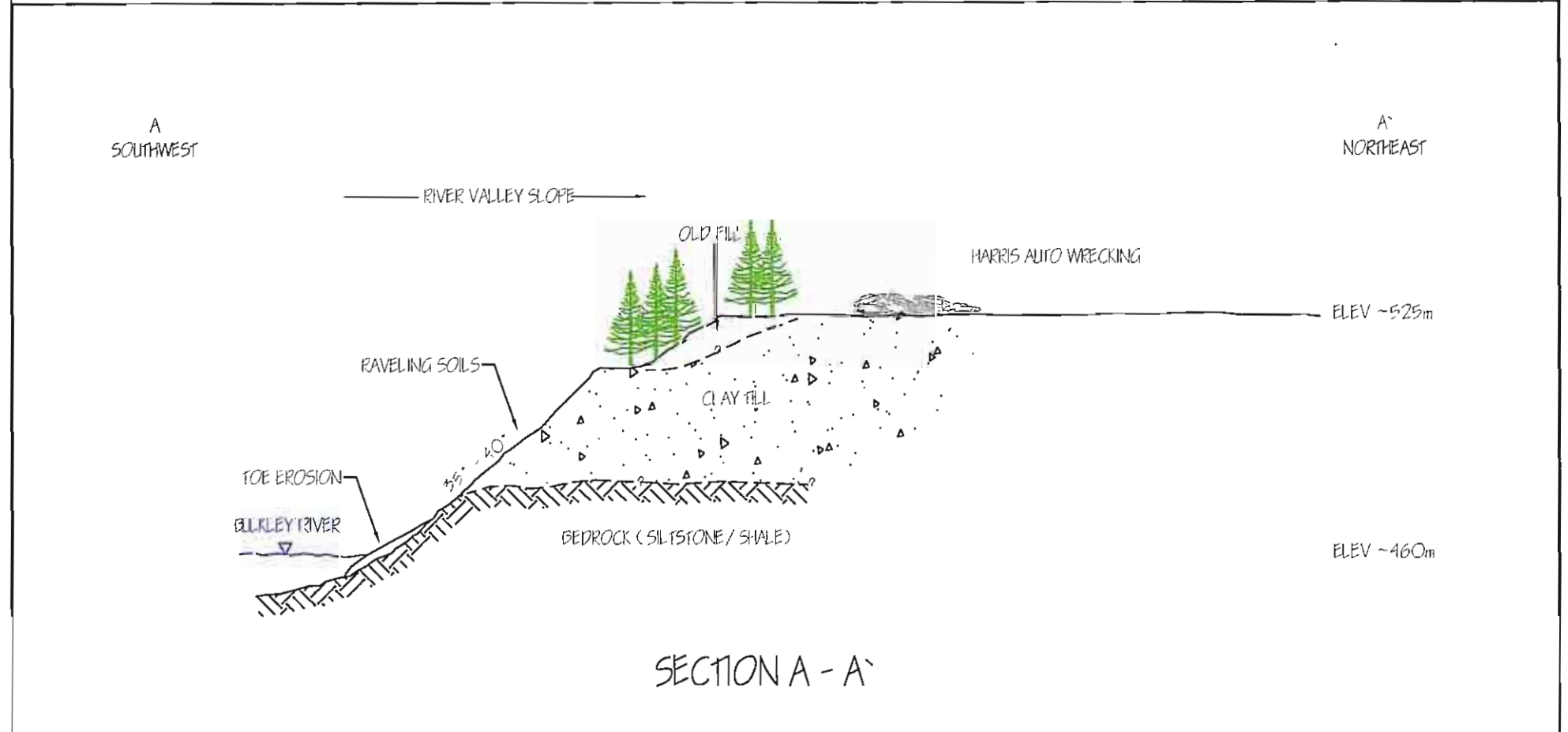
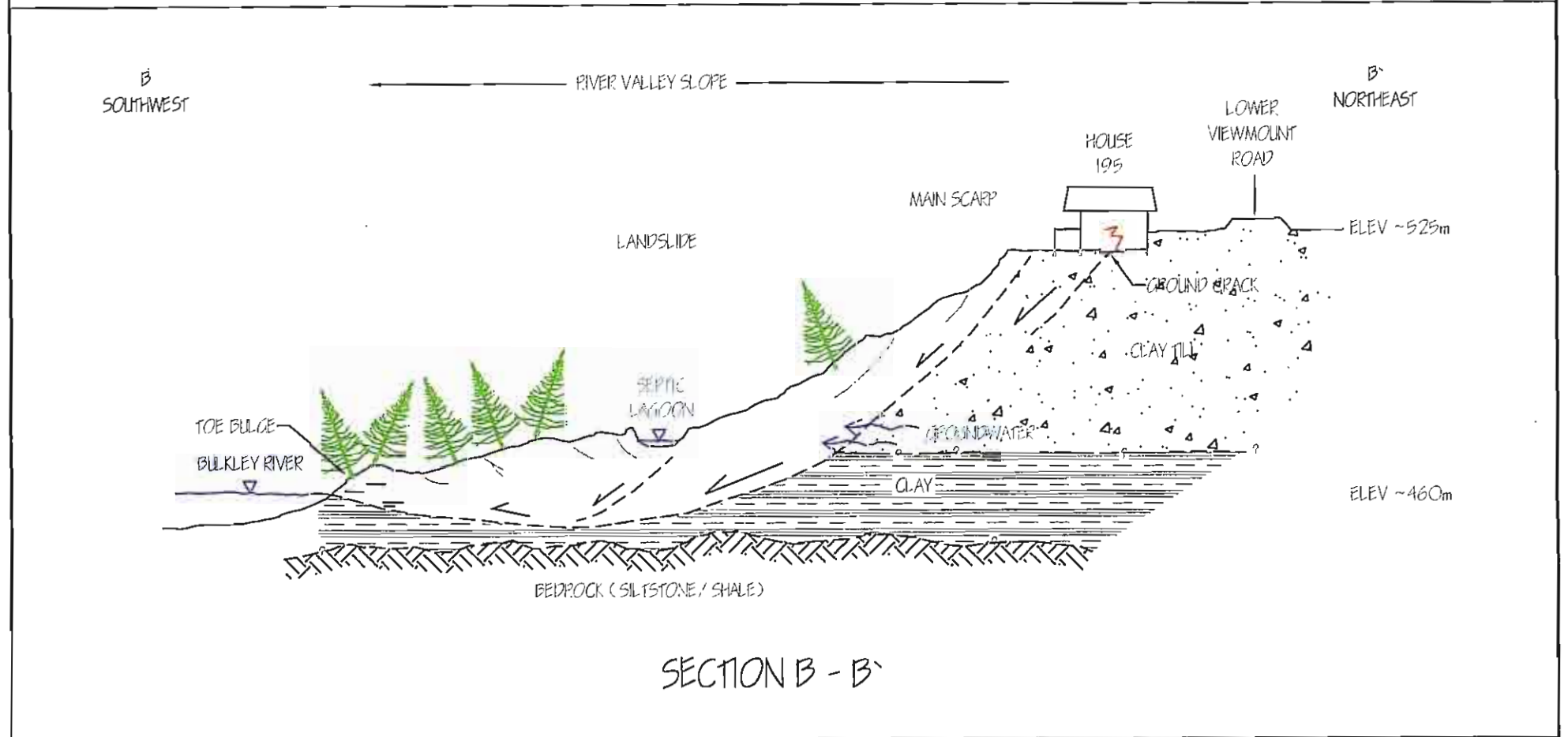
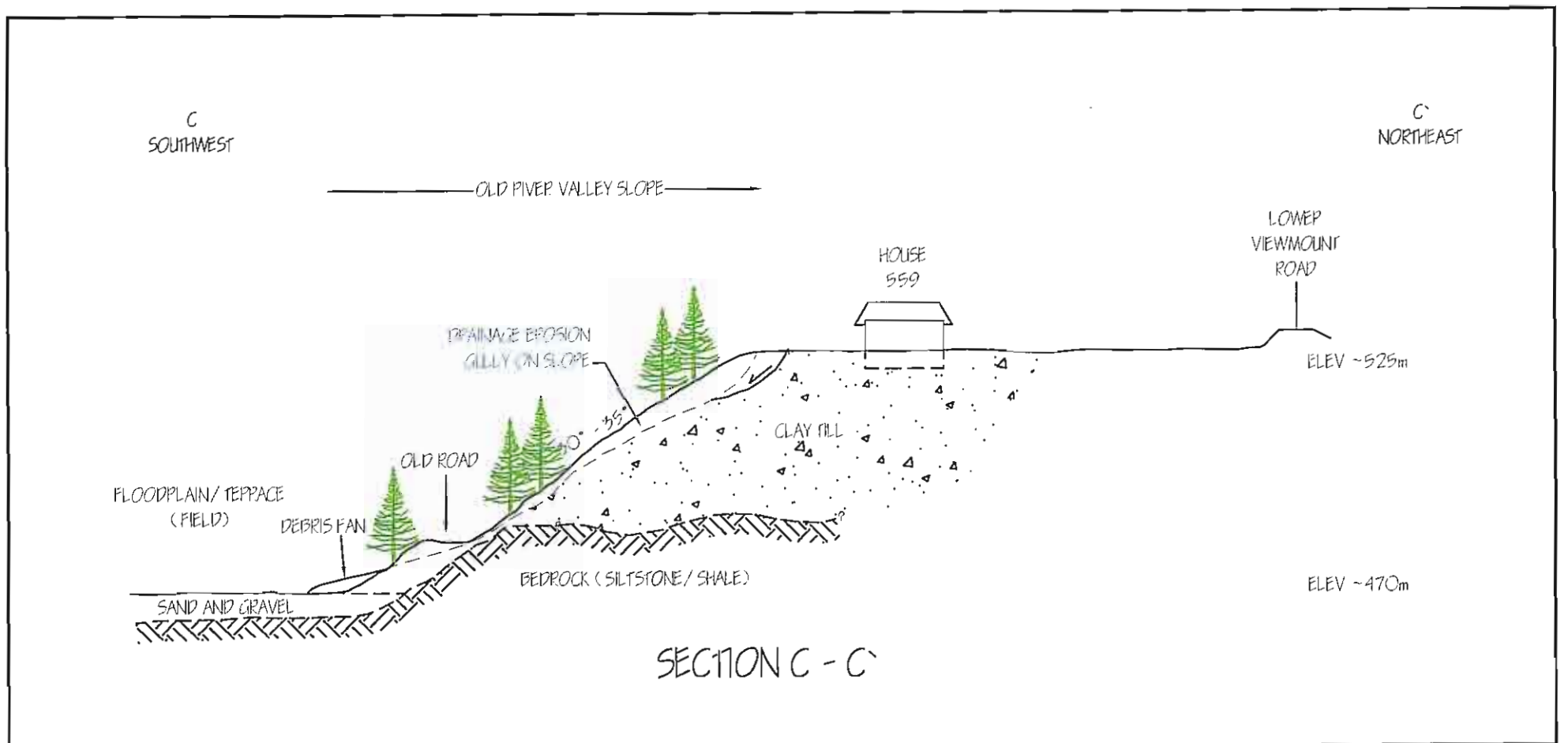
TITLE
LANDSLIDE FEATURES

PROJECT
GEOTECHNICAL ASSESSMENT LOWER VIEWMOUNT ROAD SMITHERS, BC

REV. NO.: A
DATE: DECEMBER 2006
PROJECT NO: KX04813
FIGURE No. **FIGURE 4**

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CLIENT	REGIONAL DISTRICT OF BULKLEY-NECHAKO	DWN BY:	S.Ruiz	TITLE	REV. NO.:	A
		CHK'D BY:	N.Polysou	TYPICAL SECTIONS (ASSUMED GEOLOGY)	DATE:	AUGUST 2006
AMEC Earth & Environmental 3456 Ople Crescent Prince George, BC, CANADA V2N 2P9 Tel. (250) 564-3243 Fax (250) 562-7045		DATUM:	NAD83	PROJECT	PROJECT NO.:	KX04813
		PROJECTION:	UTM Zone 10	GEOTECHNICAL ASSESSMENT LOWER VIEWMOUNT ROAD SMITHERS, BC	FIGURE No.:	FIGURE 5
		SCALE:	NOT TO SCALE			

TABLE 1 - PROPERTY OBSERVATION SUMMARY

Study Area	Lot	Plan	Street Number	Owner	Year Subdivided	Year Built	Lot Topography	Contacted	Visited	Water	Sewer	Observations / Issues
B	2	11141	1085	Henderson	1994	~1996	crest/slope	Y	N	well at river	lagoon above slope	<ul style="list-style-type: none"> - property spans crest of river valley slope and slope to river - developed home site well back from crest of slope - no geotechnical problems reported by owners - slope to river over-steepened and marginally stable, surficial sloughing and toe erosion but no sign of deep seated landsliding - existing home site unlikely to have significant slope stability issues as presently developed
A	1	11141	n/a	McDonald	1994	n/a	crest/slope	N	Y	n/a	n/a	<ul style="list-style-type: none"> - property spans crest of river valley slope and slope to river - area above river valley slope recently cleared, cut failure in clay till and water seepage on access trail from Glover Road - slope to river over-steepened and marginally stable, surficial sloughing (surficial sand, gravel, clay till derived colluvium) and toe erosion but no sign of deep seated landsliding - some low areas of organic soils and minor water ponding set back from crest of slope - probable room for house site with appropriate set back from crest of slope, but requires specific geotechnical assessment
A	1	4305	3471	Harris Auto Wrecking	1962	ongoing since 1950's	crest/slope	Y	Y	no well	no septic	<ul style="list-style-type: none"> - property spans crest of river valley slope and slope to river - area above river valley slope developed for wrecking yard, some fills encroach near crest of slope, buildings set back some distance - slope to river is over-steepened, surface unstable, subject to toe erosion and surficial sloughing - soils are surficial sand/gravel, clay till derived colluvium, overlying shale bedrock - adjacent property adjacent to (south of) a deep-seated, active landslide area that is affecting adjoining property and possibly extreme northwest corner of this property - owner reports no geotechnical problems, except a "cave-in" near crest of slope (northwest corner of property)
A	1	3874			1959			Y	Y	no well	no septic	<ul style="list-style-type: none"> - existing structures as currently sited are unlikely to have slope stability problems related to river valley slope, but may need to be assessed in future depending on slope performance over long term, site development activities, and possible retrogression of adjacent landslide area - further geotechnical assessment required to determine risk to property and future suitable building sites and/or development
A	1	9401	195	Huttema	1979	1994	crest/slope	Y	Y	no well	lagoon on slope	<ul style="list-style-type: none"> - property spans crest of river valley slope and slope to river - slope to river is an active landslide with toe bulge into river - soils appeared to be clay tills, colluvium, with high plastic clay exposed at river level - numerous tilted trees, areas of ponded water, some ground cracking on slope - house spans scarp of active landslide, 23 cm of vertical displacement, 10 cm of horizontal displacement - tension crack (original back scarp or possibly a recent retrogression of slide) visible across property and through house - septic lagoon located on slope/landslide, sewer line crosses slide, probable breaks

TABLE 1 - PROPERTY OBSERVATION SUMMARY

Study Area	Lot	Plan	Street Number	Owner	Year Subdivided	Year Built	Lot Topography	Contacted	Visited	Water	Sewer	Observations / Issues
A	2	9401	265	Mowjelski	1979	1990	crest/slope	Y	Y	well at river	lagoon on slope	<ul style="list-style-type: none"> - property spans crest of river valley slope and slope to river - slope to river is an active landslide with toe bulge into river - soils appeared to be clay tills, colluvium, with high plastic clay exposed at river level - numerous tilted trees, areas of ponded water, some ground cracking on slope - house adjacent to/slightly set back (2-3 m) from scarp of active landslide - signs of recent movement on scarp, and on slope to river - owner reports minor 12 mm crack developing in foundation/crawlspace - lagoon on slope has had ground movement problems - water line up slope constantly breaks
A	3	9401	355	Uyesugi	1979	1989	crest/slope	Y	Y	well at river	lagoon on slope	<ul style="list-style-type: none"> - property spans crest of river valley slope and slope to river - slope to river is an active landslide with toe bulge into river - soils appeared to be clay tills, colluvium, with interbedded sands, silts, high plastic clay exposed at river level - numerous tilted trees, areas of ponded water, some ground cracking on slope, possible old graben features - house set back several meters from scarp of landslide, no distress reported by owner of visible - owner has done some re-sloping/drainage of scarp area - lagoon on slide area, water and sewer lines cross slide (possible breaks)
A	4	9401		Kreke	1979	n/a	crest/slope	Y (agent)	Y	n/a	n/a	<ul style="list-style-type: none"> - property spans crest of river valley slope and slope to river - slope to river is an active landslide with toe bulge into river - soils appeared to be clay tills, colluvium, with interbedded sands, silts, high plastic clay exposed at river level - numerous tilted trees, areas of ponded water, some ground cracking on slope, possible old graben features - property is mostly undeveloped, possibly some minor clearing, earthworks, fill placement above crest, and trail construction on slope - location of back scarp of landslide uncertain - may not be room for house with appropriate set back from scarp of landslide
A	5	9401	485	Goodacre	1979	1992?	crest/slope	Y	Y	well at river	lagoon on slope	<ul style="list-style-type: none"> - property spans crest of river valley slope and slope to river - slope to river is an active landslide with toe bulge into river - soils appeared to be clay tills, colluvium, with interbedded sands, silts, high plastic clay exposed at river level - some tilted trees, areas of ponded water, possible old graben features near toe of slope - house close to but set back from crest of slope, possible edge of old landslide - no signs of distress to house - lagoon on slope below house, some ground movement in area, possible sewer line break - location of back scarp of landslide uncertain, probably between house and lagoon
A	A	14079	559	Gemmell	1994	1996	crest/slope	Y	Y	well at river	lagoon on slope	<ul style="list-style-type: none"> - transitional area, property spans crest and slope of old (abandoned) river valley slope and some portion of adjacent active landslide toe at river - old road alignment (now trail) cuts and fills across lower portion of old river valley slope - fill failure in old road alignment with 1 to 2 m of displacement - stream channel diversion for drainage and upper property development has resulted in erosion gully and related slide activity on face of slope, debris fan deposit in field at toe of slope - soils appeared to be primarily till overlying bedrock, as exposed in erosion gully - lagoon on slope below house - house set back 10 to 15 meters from crest of slope, no distress observed or reported - location of back scarp of adjacent landslide uncertain, probably between house and lagoon, possible sewer and water line breaks

TABLE 1 - PROPERTY OBSERVATION SUMMARY

Study Area	Lot	Plan	Street Number	Owner	Year Subdivided	Year Built	Lot Topography	Contacted	Visited	Water	Sewer	Observations / Issues
A	C	4856	661	Konst	1965	1976-1981	at crest of slope	Y	Y	well at toe	field above slope	<ul style="list-style-type: none"> - property located above and adjacent to crest of old (abandoned) river valley slope - old road alignment (now trail) cuts across slope below property - native soils exposed on slope below are clay tills - house set back several meters from slope crest, no signs of distress observed or reported - steep (33-35°) cut slope for old access road/trail below crest of slope, only surficial sloughing - ornamental pond/lagoon above crest of slope, may contribute to adjacent drainage gully to south
A	1	8862	825	Warren	1978	1989	on slope	Y	Y	n/a	n/a	<ul style="list-style-type: none"> - property (consists of 2 lots) located on lower slope of old valley sidewall slope - native soils obscured/unknown, possibly till/colluvium with some sand lenses - extensive earthworks (cut/fill/retaining wall) to develop house site and driveway on northern lot (1) - southern lot (B) mostly undeveloped, probably has significant fill - no signs or reports of ground movement or foundation distress noted or reported by owner - septic disposal mound/field on slope below house
A	B	11423			1985					well at toe	field/mound on slope	
A	A	11423	895	Lafountain	1985	1991	on slope	Y	N	well at toe	field on slope	<ul style="list-style-type: none"> - property located on lower slope of old valley sidewall - native soils unknown, possibly till/colluvium with some sand lenses - some earthworks (cut/fill) to develop house site and driveway - no signs of ground movement or foundation distress noted or reported by owner - deck posts possibly on fill, possibly some settlement - septic disposal by way of field on slope below house
A	2	8862		King	1978	n/a	on slope	N	N	n/a	n/a	<ul style="list-style-type: none"> - property located on lower slope of old valley sidewall - native soils unknown, possibly till/colluvium - site currently undeveloped - some signs of surficial soil movement/creep noted - cuts and fills likely required to develop house site, further geotechnical assessment required
A	3	8862	1037	Groote	1978	1980	on slope	Y	Y	well at toe	lagoon on slope	<ul style="list-style-type: none"> - property located on lower slope of old valley sidewall - fairly extensive earthworks (cut/fill) for house site and driveway - native soils unknown, possibly till/colluvium - previous septic field/mound, now utilizes pond/lagoon on slope, possible sewer line breaks - possible surficial movements on lower, undeveloped portions of slope - local fill instability associated with driveway intersection, site fills north of house, below driveway and embankment failure along Lower Viewmount Road - some cracking of foundation corners noted, but owner reports no problems with foundation - requires further geotechnical assessment
A	1	7087		?	1973	n/a	on slope	N	N	n/a	n/a	<ul style="list-style-type: none"> - property located on lower slope of old valley sidewall - some signs of seepage and surficial slope movement - native soils unknown, possibly till/colluvium - property undeveloped at present - earthworks (cut/fill) required to develop site - requires further geotechnical assessment

TABLE 1 - PROPERTY OBSERVATION SUMMARY

Study Area	Lot	Plan	Street Number	Owner	Year Subdivided	Year Built	Lot Topography	Contacted	Visited	Water	Sewer	Observations / Issues
A	1	8945	1083	Struthers	1978	prior to 1980	on slope, east of Lower Viewmount Road	Y	N	~180' well	lagoon below house	<ul style="list-style-type: none"> - property located on terrace/bench in upper slope of old valley sidewall - native soils obscured, possibly till/colluvium over bedrock - some minor earthworks (cut/fill) to develop site - cutslope for lower Viewmount Road below and north of site shows signs of surficial instability/erosion - no signs of ground movement or foundation distress noted or reported by owner
A	3	8245	980	Pettett	1976	~1986	on slope, east of Lower Viewmount Road	Y	N	~162' well	septic field	<ul style="list-style-type: none"> - property located on terrace/bench in upper slope of old valley sidewall - native soils obscured, possibly till/colluvium with sand lenses over bedrock - some minor earthworks (cut/fill) to develop site - no signs of ground movement or foundation distress noted or reported by owner
A	2	8245	882	Peters	1976	~1976	on slope, east of Lower Viewmount Road	Y	Y	~150' well	septic field	<ul style="list-style-type: none"> - property located on terrace/bench in upper slope of valley sidewall - native soils obscured, possibly till/colluvium with sandy lenses over bedrock - some minor earthworks (cut/fill) to develop site - no signs of ground movement or foundation distress noted or reported by owner
A	1	8245	1991	Schrader	1976	prior to 1983	behind crest, east of Lower Viewmount Road	Y	Y	no well	septic field	<ul style="list-style-type: none"> - property located above crest of valley sidewall slope and soil cut for Lower Viewmount Road - native soils obscured, likely till with sandy lenses over bedrock - house set back several meters from slope, no signs of distress ground movement or foundation distress noted or reported by owner - soil cut for Lower Viewmount road appears stable
A	A	8861	3865	Poirer	1978	~1995	behind crest, east of Lower Viewmount Road	Y	Y	well at river	lagoon	<ul style="list-style-type: none"> - property located back from crest of valley sidewall slope - native soils obscured, likely clay till - no signs of ground movement or foundation distress noted or reported by owner - existing structures as currently sited are unlikely to have slope stability problems related to river valley slope, but may need to be assessed in future depending on slope performance over long term, site development activities, and possible retrogression of adjacent landslide area - further geotechnical assessment required to determine risk to property and future suitable building sites and/or development
A	2	3874	1500	Leffer	1959	before 1990?	behind crest, east of Lower Viewmount Road	N	N	well at river	septic field	<ul style="list-style-type: none"> - property located back from crest of valley sidewall slope - native soils obscured, likely clay till - no signs of ground movement or foundation distress noted - existing structures as currently sited are unlikely to have slope stability problems related to river valley slope, but may need to be assessed in future depending on slope performance over long term, site development activities, and possible retrogression of adjacent landslide area - further geotechnical assessment required to determine risk to property and future suitable building sites and/or development