

ROCK DESCRIPTIONS SHEAR PROPERTY ASPEN GROVE

031155

LOCATION Big Sioux - ROAD CUT
14 - 50m

SAMPLE NO.	DESCRIPTION	COMMENTS									
		Py	Cpy	Epidote		K.feld		Carbonate		Magnetic	
				Perv	Vein	Perv	Vein	Perv	Vein		
0+24m	Med to dk green, 1mm mafic (alt) phenocrysts (anhedral) in fine mafic groundmass. Fairly hard (sil?) weak groundmass epidote numerous epidote veinlets. Irregular weak pervasive K.feldspar strongest along vein margins. blkby fine/med Py minor Cpy in veinlets.	Sp.	sp.	W	M-S	W	N-M		W-M	M	
0+30m	Med grey green as above brecciated. some small angular mafic xenoliths. Groundmass epidote very weak. moderate epidote veining (late)	sp		VW	M-S		as above anhedral		W-M	M	
0+35m	medium green grey - good breccia textures subrounded to subangular fragments to 5cm mafic volcanics and lighter medium grained microdiorite. weak pervasive epidote numerous late epidote veinlets which are post fragments (cross them) moderate to strong pervasive K.feldspar alt of g.mass.	sp		VW	M-S	S	?	-	W	W-M	
0+40m	Very similar to above good breccia textures, subrounded fragments. Fewer epidote veinlets. Fine Pyrite and Cpy along veinlets, malachite on weathered surfaces.	sp	sp	VW	N-M		anhedral g.mass		W-M	M	
0+45m	medium to dark green, fine grained andesite - basalt with small partially assimilated mafic xenoliths. Numerous fine irregular epidote veinlets, pervasive epidote alt sparse sulfides.	sp		W-M	W-M	-	-		W	M	
0+50m	light grey, pervasive silicified microdiorite? coarse brecciated predominantly fine-medium grained equigranular, local fine epidote veinlets	sp.	local spicks	-	W	W	patchy	-	-	Patchy W	

ROCK DESCRIPTIONS SHEAR PROPERTY ASPEN GROVE

LOCATION Big Sioux ROAD CUT
50-78m.

SAMPLE NO.	DESCRIPTION	COMMENTS								
		Epidote		K. feld.		Carbonate		Magnetite		
		Pg	CPY	P	V	P	V	P	V	
0+52m	Med to dark green, fine grained to fine med grained andesite sp basalt, small anhedra mafic phenocrysts some epid altered. strong epidote veining upto 1cm wide with coarse carb minor qtz. ep veinlets have rectangular pattern 1-2cm spacing			w-m	m-s	not done	w	m-s	m-s	
0+61m	med grey - medium (to 0.5-1cm) breccia, fine to medium grained microdiorite? ^{plag phenos to 1mm} subrounded to subangular fragments fairly hard (silicified!). Patchy pervasive & weak k.feldsp. (g.mass) sparse sulfides.		sp	w	-	Patchy w	-	-	spotty w-m.	
0+65m	As above darker coloured (less silicified) more numerous epidote and carbonate veinlets, moderate pervasive epidote. epidote alteration of some feldspar phenocrysts. Breccia texture obscured by alteration and veining.		sp	w-m	m	patchy not done w to w-m	vw	m	m	
0+70m	Hard med grey green patchy silicified weak porphyritic (1m anhedra mafic) andesite. Numerous linear epidote-carbonate veinlets - 2cm spacing.			-	w	vw not done	-	w-m	m	
0+72m	medium green gray, fine med equigranular andesite - microdiorite? moderate to strong pervasive carbonate alteration weak fracturing sparse epidote veinlets (very fine)		sp.	vw	sp	-	-	m-s	m-s	m
0+78m	Med to dark green weak (plag) feldspar porphyritic fine grained andesite. Good Propylitic alteration, epidote- carbonate - hematite - more Fracture density less than 0.5mm rectilinear		sp.	m	m-s	w-m not done how much is primary?	m	m-s	m-s	

ROCK DESCRIPTIONS SHEAR PROPERTY ASPEN GROVE

LOCATION Big Sioux - ROAD CUT

78m-102

SAMPLE NO.	DESCRIPTION	COMMENTS									
		Py	Cpy	Epidote		K-feldsp		Carbonate		Magnetic	
		P	V	P	V	P	V	P	V		
82-84m *	Light grey, hard, hbl, feldsp (1-2mm phenos - laths) porphyritic Monzonite. Phenos are euhedral and tabular, g.mass is med- fine with k.feldspar & qtz. 10% mafic (hbl) phenos. Fresh with no epidote veinlets some carbonate	Sp.		-	-	✓ primar? m-s		✓		m	
87m	Very dark coloured, fine grained spars fine plagioclase phenocrysts (subhedral). Local epidote carbonate (fine) veinlets 1-4cm spacing. Appears more chloritic than epidotitic	sp		w	w	not done	w	✓m		m-s	
95m	As above 3-4% subhedral to anhedral plagioclase phenocrysts. very fine epidote veinlets 1-3cm spacing	sp		w	w	w phenos sparse fine veinlets	v.w	w		m-s	
98m	As above but with pervasive epidote alteration (patchy) infrequent epidote veinlets (very fine). Rock is dark coloured significant groundmass chlorite?	sp		w-m	w	w patchy more veinlets w	w	w		w	
100m	Med grey green coarse (1-2mm) predom equigranular diorite epidote is predom as weak pervasive alteration local (mm carbonate veinlets (linear) some with hematite	sp.		w	w		m	m		spotty m	
102m	Medium grey crowded (fine) feldspar plagioclase porphyritic, coarser hbl (1-3mm) fine med grained groundmass. diorite. Much epidote veining very close spacing - pervasive (moderate) epidote. epidote alt of some phenos.	sp		na	m-s	minor primar? along veinlets	✓	m	m	m	

Plagioclase

hbl, plagioclase

↑
stain

ROCK DESCRIPTIONS SHEAR PROPERTY ASPEN GROVE

LOCATION 316, SIOUX ROAD CUT
102-138M

SAMPLE NO.

DESCRIPTION

COMMENTS

Py Cpy Epid K-Field carbonate Mag.
P V P V P V

104m Int?

medium green, crowded feldspar porphyry, weakly brecciated some volc. material. local fine epidote veinlets. weak silicification

w w

Not done

vw w-m m

105m

As above porphyry epidote alt masking textures. carbonate veinlets (widely spaced) no epidote associated (late)

m -

w -

w m-s m

110m

light medium green weakly porphyritic volcanic? microfractured (close spacing rectangular) little epidote late linear carbonate veins to 1cm no epidote. 0.5% fracture controlled by aggregates

w 0.5

vw vw

NW sp. fine veinlets

m m-s w

113-114m

hbl. augite? feldspar (fine) porphyritic fine andesite. euhedral, sub. phenos up to 1% fm. fine clusters Py

1%

w-m w

vw -

m m w-m

116m Int.

Crowded fine feldspar porphyry. euhedral/subhedral 1mm feldspar phenos in med grey fine g.mass intrusive? Numerous carb veinlets sparse fracture controlled fm. Py

sp

- -

vw -

w-m m w-m

119m

As above 1-2mm laths sparser hbl. rectangular veinlets some k.feldspar 1cm spacing (variable)

sp

- sp

w-m gmass veinlet

w w-m w-m

124m

med green andesitic volc. moderately broken with dk chloritic fracture and massive fm Py, local cpy fill. Sulfides are strongly controlled by fractures, microfractures.

5% 0.5

sp vw

m-s fracture controlled

m w-m w-m patchy w-m

130m

Int.

med grey crowded feldspar porphyry ^{Manganite!} tabular phenos to 3mm commonly saussuritized (sp) closely spaced epidote veinlets g.mass is fm grained with k.feldspar. Pyrite is largely as veins (fracture controlled) with strong k.feldspar envelopes. disseminated cpy

1-2%

0.5 w-m

m m S

vw w-m

m

↓

~~131-132m~~

med green andesitic volc. moderately brecciated numerous epidote

w m

w w

w m-s w-m

134-138m

carbonate veinlets up to 1cm - rectangular pattern. patchy k.feldspar in volc. (primary?) some secondary veinlets. g.mass is fairly chloritic 0.5% fracture controlled by specks cpy

0.5 sp to 2%

ROCK DESCRIPTIONS SHEAR PROPERTY ASPEN GROVE

LOCATION Big Sioux Road cut.
138 - 170m

SAMPLE NO.	DESCRIPTION	COMMENTS									
		Py	cpy	Epid		K.feld		carb		Mag	
				P	V	P	V	P	V		
140m int	Medium gray feldsp minor vol. crowded porphyry, med grained significant g.mass k.feld - monzonite widely spaced fine carb veinlets minor epidote. 1-2% fracture controlled fm. Py	1-2%	sp.	-	w	✓	vw.	vw	w	m.	
143	As above upto 5% bleby fm. pyrite - patches upto 1cm disseminated and fracture controlled.	5%	sp- os								
148m	Augite? andesite, textures obscured by med to strong epid alteration also veinlets. dissem weak fracture controlled py less than 1%. other sample 75% as above	21%	sp.	m-s	m	m	m.	vw	w	m-s	
150m Int?	Med gray - equigranular to weak feldsp porphyritic - microdiorite? Patchy k.feld & vein k.feld throughout locally v. strong. late qtz vein 0.5cm - no k.spar halo. later k.feldspar halos to Pyrite veins locally +10% or 3-4% locally v. coarse grained upto 3% patchy m/c cpy with Py	3-10%	up to 2%	-	-	patchy m-s	S	-	-	w-m	
157-158m	contact zone between intrusive above and finer med grained equigranular microdiorite? moderately brecciated with irregular epidote veinlets. Perovsine and veinlet k. spar esp in pyritic areas. +5% medium/coarse Py with qtz carb. K.spar/carb/pyrite breccias locally. Py mainly fracture controlled	75%	21%	w	w-m	m-s	m-s	m	m-s	w-m	
162m	med to darker gray, equigranular fine/med grained microdiorite. similar to above. K.feld is strong as alteration halos to pyritic veins (m/c) upto 5% Pyrite locally minor carb (with Py) local epidote veinlets.			vw	w	w-m	S	w	w	m	
170m	light grey/green augite porph. andesite >5% euhedral augite phenos. fine gmass weak k.feld. weak fracturing (fine) with k.feld. irregular chloritic veinlets (late)	<1%	sp	-	vw	vw	w	m-s	m	patchy m.	

ROCK DESCRIPTIONS SHEAR PROPERTY ASPEN GROVE

LOCATION BIG SIOUX ROAD CUT
170 - 225M

SAMPLE NO.	DESCRIPTION	COMMENTS									
		Py	CPY	Epid		K.feld		Carb		Mag.	
				P	V	P	V	P	V		
175, 185m Int	Monzonite Medium grey green, ^{Plag} feld. porph (euhedral 2-3mm), equigranular g. mass. Primary? k. feld. Epid alteration of phenos. Numerous very fine epidote veinlets with carb. Spotty fm. Py aggregates	<1%	Sp.	W A M	W local M	M Pr.	-	W	W/M.	weak spotty M.	
190m	Brecciated augite porph. andesite 5% 1mm euhedral phenos Patched pervasive epid alteration with areas of stray alt. numerous veinlets of epid. local late carbonate fill 2-3% fracture controlled pyrite (M) lenses and veins Pervasive k. feld, k. feld. veins. local specks of cpy	2-3%	Sp.	M-S	M-S	M-S	M-S	M-S	M	M,	
192m	As above stronger epidote veinlets										
194m	" " " "										
200m	Better developed breccia some sub angular microdiorte clasts? numerous epidote (fine) veinlets. sparse dissem. Py	Sp to 2%		W-M	W	Not devel	M	W-M		M	
205m Int	Coarse hbl. ^{2-3mm} phenos, crowded small feld. (Plag) phenos 1-2mm med. grey fine to fine med grained g. mass mafic + k. feldsp. P. epidote alteration, numerous epidote veinlets minor carb. sparse dissem Py.	Sp		W	W-M	g. mass Pr.		VW to W	W	M local S.	
210m	Patched epid alt ^{mafic} andesite. alteration obscures textures local dissem Py (fm). DK green. with lighter blotches (5mm).	0.5		W-M M	W	W	-	W-M	W	S	
215m	similar to @ 200m linear epidote veinlets. darker green, grey colour (patchy) some microdiorte (1.5cm) clasts? mixed Volc/Int.	Sp		VW	VW	M P	-	VW	W	M	
220m Int	similar @ 205 feldsp → hbl. which is smaller 1mm med grey fine/med g. mass significant k. spar. Epid veinlets sparse fine Py some coarser in veins with epid, carb.	Sp		V	W	M Pr.		VW	W	M-S	
225 Int	very similar to @ 205 hbl coarser Plag crowded feld. porph. few fine epidote veinlets. Sp. dissem fm. Py	Sp.		VW	W	Pr		-	W		

ROCK DESCRIPTIONS SHEAR PROPERTY ASPEN GROVE

LOCATION BIG SIOUX ROAD CUT
225M - 275

SAMPLE NO.

DESCRIPTION

COMMENTS

SAMPLE NO.	DESCRIPTION	Py		Epidote		K. Feld.		Carbonate		mag
		P	V	P	V	P	V	P	V	
230m. Int	As @ 220 some flow alignment of Plag. phenos sparse hbl. Numerous very fine epidote veinlets. Patchy silicification? epid alt. some plag phenos. local dissem med cubic Py. finer Py lenses	21%		w	w-m	v	-	-	vw	m-s
235m. Int.	Microdiorite Dark green fine med grained equigranular. Perivase and strong veinlet epidote. Patchy k. feld & silicification? with associated pyrite lenses/veinlets and cpy blebs. other sample has 25% carbonate veins upto 1cm. local hematite	5%	0.5	m	m-s	m-s	m-s	m	m-s	w spotty m.
242-247 Int	Grey to med green fm. equigranular textures obscured by epid alteration. 1-2cm spaced linear epidote veinlets + carbonate good k. feld haloes to veinlets.	1%	sp	w-m	w-m	w	m	w-m	w-m	m
255 Int	Brecciated microdiorite - light to med grey equigranular variably broken with chl. epid fractures with py lenses epid core, chl. halo local k. sp in veins. Microdiorite has significant groundmass k. feld. other samples more solid microdiorite	1-2	sp.	w upto m	m	p	local	w	w-m	m.
256 256 Int	As above 10-15% closely spaced epidote veinlets.									
257 Int	Contact between fine silicified epidote altered microdiorite and mauve feldsp ^{LATERAL} _{push} (flow aligned) monzonite - lathes to 4mm. significant k. feld gmass. 21% fracture controlled py	21%		m	m-s	dyke s prim m/d w.	-	vw	w	m
259 259-275 Int.	Number of similar samples with not a great deal of variation light coloured patchy silicified equigranular microdiorite groundmass k. sp but also veinlet k. sp with epidote. local hematite veinlets (linear). Epidote veinlets irregular 1-2 per cm upto 1 per 4cm.	sp to 1% dissem fine		vw	w-m	g. mass p	some k. sp veins	vw	w-m	m

ROCK DESCRIPTIONS SHEAR PROPERTY ASPEN GROVE

LOCATION Big Sioux ROAD CUT
275m - 325m

SAMPLE NO.	DESCRIPTION	COMMENTS									
		Py	CPY	Epid		K.feld		Carb		Mag.	
				P	V	P	V	P	V		
278 - 281m	Silicified fine marginal phase or contact (chilled)? Light to med grey green, fine grained, microfractured weakly silicified patchy weak K.spar local epidote veinlet 1-3% disse lensy Py locally specks of cpy	1-3%	sp	VW	W	VW	W	-	-	W-M	
282m Int.	htl porphyritic monzonite. hbl to 3mm. K.feld g.mass local plagioclase 1mm phenos. linear epidote veinlets 1cm spacing	sp	sp	W	M	g.mass	W	-	-	M	
285m	Equigranular microdiorite not silicified as @ 278										
288 - 316m Int.	Speckled green and white medium to medium coarse grained coarse hbl phenos. G.mass med grained much K.feld, plag Monzonites. sparse epidote, numerous qtz veins - but widely spaced. Generally less than 1% Py local specks of Cpy (rare). K.spar very strong at 311 - fine g.mass	41%	sp	-	-	g.mass	-	-	-	M	
319m	As above but fine grained silicified marginal phase little K.feldsp. coarser has K.feld.	sp		-	-	patchy	-	-	-	M	
320 - 322	Predominantly med grained microdiorite some plagioclase phenos become brecciated to 322 with qtz carb fill 1-3% disse med g cubic Py	1-3%		-	-	g.mass	-	-	-	W-M	
325m	Med to dk green fine grained andesite significant epidote veinlets	sp.		W	M-S	cannot do		W	M	M	

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PHONE FOR PICK UP

JANUARY 5, 1990

VALUES IN PPM UNLESS OTHERWISE REPORTED

Y

16 ROCK SAMPLES RECEIVED JANUARY 3, 1990

ETK#	DESCRIPTIONS	AG	AL(I)	AS	B	BA	BI	CA(I)	CD	CO	CR	CU	FE(I)	K(I)	LA	MG(I)	MN	MO	NA(I)	NI	P	PB	SB	SM	SR	TI(I)	U	V	W	Y	ZN
4 - 2	27-38	.2	2.21	15	<2	50	<5	2.19	1	23	21	690	4.63	.13	<10	1.78	450	2	.08	7	2000	8	5	<20	81	.18	<10	127	<10	7	41
4 - 3	38-48	.4	2.01	20	<2	45	<5	2.25	1	29	83	2328	5.39	.10	<10	1.92	474	5	.07	24	1660	10	5	<20	87	.20	<10	143	<10	6	51
4 - 4	48-70	.2	2.13	15	<2	80	<5	2.49	<1	25	23	299	4.91	.11	<10	1.91	567	4	.07	9	2150	8	5	<20	79	.14	<10	134	<10	6	42
4 - 5	70-100	.2	1.97	15	180	30	<5	3.49	<1	32	62	213	5.08	.15	<10	2.52	787	2	.07	35	1420	6	5	<20	73	.17	<10	141	<10	7	49
4 - 6	100-120	.2	2.23	10	<2	40	<5	3.78	<1	31	59	138	4.85	.16	<10	2.59	782	2	.05	25	1280	10	5	<20	80	.18	<10	123	<10	6	50
4 - 7	120-130	1.0	1.89	10	2	30	<5	3.12	1	72	87	1759	6.02	.09	<10	2.38	693	5	.07	31	1420	12	<5	<20	49	.17	<10	176	<10	7	56
4 - 8	130-140	.2	2.27	15	476	50	<5	2.34	1	51	135	474	5.58	.15	<10	2.68	563	5	.08	46	1400	10	5	<20	49	.24	<10	148	<10	5	50
4 - 9	140-150	.4	2.32	15	10	35	<5	2.52	1	51	45	729	5.12	.20	<10	2.59	608	4	.07	24	1340	22	5	<20	74	.21	<10	117	<10	5	61
4 - 10	150-160	2.2	2.35	20	<2	25	<5	3.58	<1	86	44	4213	6.30	.30	<10	2.61	826	5	.07	30	1460	22	5	<20	73	.20	<10	152	10	5	64
4 - 11	160-190	.2	2.15	15	2	25	<5	3.52	<1	37	44	247	5.17	.16	<10	2.16	710	5	.06	21	1430	10	5	<20	76	.16	<10	124	<10	6	61
4 - 12	190-220	.2	1.87	15	<2	25	<5	1.68	1	32	39	133	5.12	.13	<10	1.90	480	3	.09	21	1590	8	5	<20	77	.21	<10	127	<10	7	54
4 - 13	220-250	.2	1.38	15	<2	20	<5	1.89	1	29	29	292	4.52	.08	<10	1.51	528	4	.08	10	1580	10	5	<20	58	.15	<10	105	<10	7	56
4 - 14	250-292	.2	1.32	10	<2	15	<5	2.76	1	31	16	340	3.98	.12	<10	1.29	624	3	.05	6	1390	12	<5	<20	84	.10	<10	88	<10	8	60
4 - 15	292-302	.2	.62	5	<2	130	<5	4.66	1	17	31	173	3.50	.23	<10	1.91	1354	3	.03	17	880	44	<5	<20	124	.02	<10	46	<10	7	73
4 - 16	302-322	.2	1.16	35	32	80	<5	2.26	<1	20	33	138	4.18	.10	<10	1.18	612	3	.06	10	1590	12	<5	<20	88	.11	<10	113	<10	9	79

NOTE: > = MORE THAN
 < = LESS THAN

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