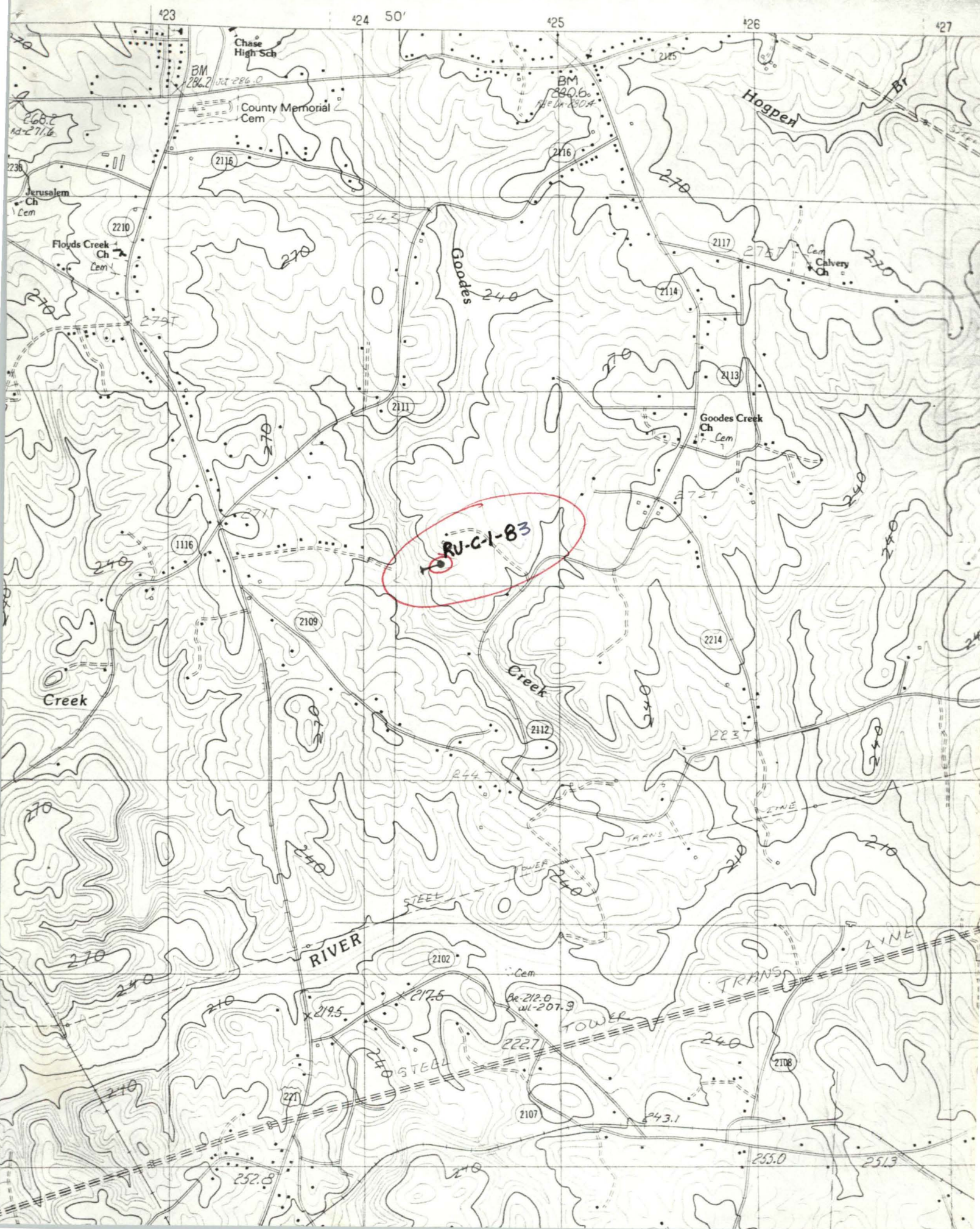
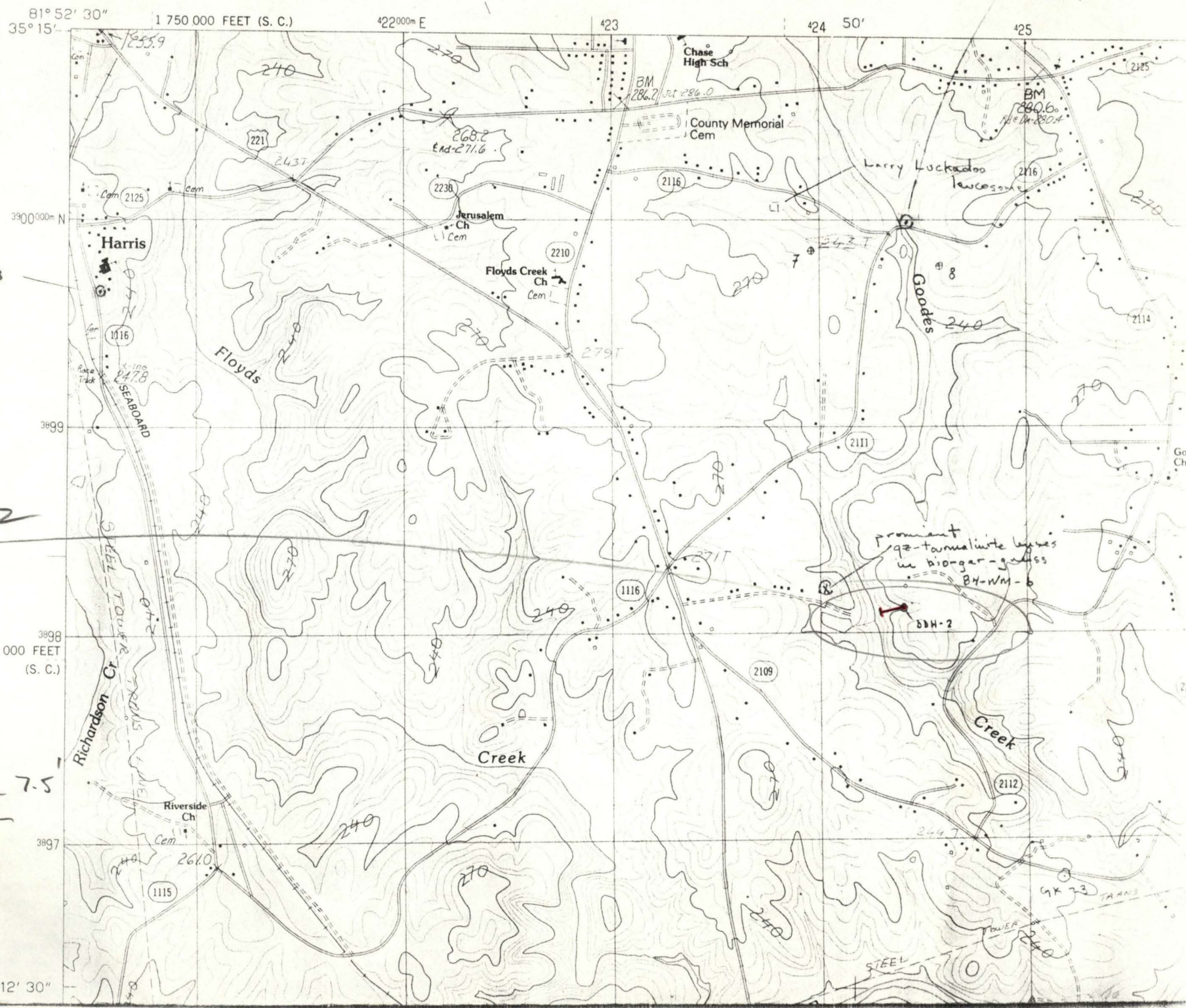


CHESNEE 7.5 QUAD



GEOLOGICAL SURVEY

Sandy Wash



"25", JJ-8

DDN-2

Chassee 7.5
SC-NC

prominent
qz-tourmaline lenses
in biogranite gneiss
BH-WM-6

DDN-2

9K 73

STEEL TOWER
STEEL

RU-C-1-83

DRILL HOLE GEOLOGIC LOG

Toluca IN Project

TENDERSON PROPERTY

21 m. N71°W of L-160N, 360W

Hole Number DDH-2 Section Tol-2 Twn. _____ Rge. _____ Grid Coordinates _____ N _____ E
 Collar Elevation 800' Azimuth S67W Dip -60° Logged by B. REELY Date 9-12-83 TOLUCA

Page 1 of 7

From	To	Interval	Recovery %	Lithology	From	To	Structure	From	To	Mineralization/Alteration	From	To	Interval	Sample No. (s)	XRF
0	20.0			Overburden - Saprolite											
20.0	99.9	79.9	100%	Quartz, feldspar, biotite, garnet Gneiss, Dark-medium gray fine -med gr. Numerous quartz Feldspar, tourmaline, garnet = biotite leucosomes. Garnets are red & pink; tourmaline is black. Gneiss contains amphibole in lower part of interval. Approx imately 60% bi; 40% leucosome q.f. g. tourmaline (black) leucosome. Garnets are pink.	20.0	59.1	Foliation 80° to core axis	20.0	22.2	Zone of weathering	35.6	42.3	6.48	407	6
					59.1	62.4	Foliation 70° to core axis				44.0	50.8	6.84	406	1
					62.4	99.9	Foliation 80° to core axis				84.0	90.9	6.93	405	5
20.1	20.3	0.2	100%	q.f. g. tourmaline (black) leucosome. Garnets are pink.											
22.8	23.0	0.2	100%	q.f. bi. g (pink) leucosome											
24.3	24.5	0.2	100%	q.f. g (pink) tourmaline (black) leucosome											
25.3	26.1	0.8	100%	q.f. g (pink) tourmaline (black) leucosome											
26.4	26.6	0.2	100%	q.f. tourmaline (black) leucosome w/ tr. FeS ₂											
27.3	27.7	0.5	100%	q.f. g (pink) biotite leucosome w/ tr. tourmaline (black)											
28.2	28.4	0.2	100%	q.f. g (pink) tourmaline (black) bi leucosome	28.2	28.4	Leucosome apparently truncates foliation								
29.2	29.4	0.2	100%	q.f. g (pink) bi tourmaline (black) leucosome w/ tr. FeS ₂											
30.6	30.8	0.2	100%	q.f. g (pink) bi leucosome											
31.3	31.7	0.4	100%	q.f. bi. g (pink) tourmaline (black) leucosome											
32.3	32.5	0.2	100%	q.f. g (pink) leucosome											
32.7	32.9	0.2	100%	q.f. bi leucosome											
33.2	34.7	1.5	100%	q.f. bi. tourmaline (black) leucosome											
35.3	35.6	0.3	100%	q.f. tourmaline (black) g (pink) leucosome											
40.7	40.8	0.1	100%	tourmaline lenses											
42.3	43.3	1.0	100%	q.f. tourmaline (black) leucosome											
43.5	43.7	0.2	100%	FeS ₂ lenses											
43.7	48.0	4.3	100%	q.f. tourmaline (black) garnet (pink) leucosome. Minor Mn in mineral inclusions in biotite.											
48.0	48.9	0.9	100%	q.f. tourmaline (black) leucosome											
48.9	49.0	0.1	100%	q.f. garnet (pink) leucosome											

THIN SECTIONS

- 42' - bio gneiss
- 44' - leucosome w/ garnet + pink gneiss (0406)
- 170' - low w/ amphib (?) + tour. 403
- 246 - calc silicate lens
- 257 - bio-amph gneiss
- 102 - tour leucosome
- 371 - "feldspathic" gneiss (0371)
- 405 - coarse grn qz-kf-tour leucosome (0396)
- 442 - altered gneiss (0394)
- 468 - coarse grn qz-kf rh
- 412 - "granite" (0389)
- 602 - bio schist "tourmaline" w thin qz-kf lenses (0386)

814951
351330

DRILL HOLE GEOLOGIC LOG

Hole Number DDH-2 Tol-2 Section _____ Twn _____ Rge _____ Grid Coordinates _____ N _____ E
 Collar Elevation 800' Azimuth S67W Dip -60° Logged by B. REELY Date 9-12-83 TOLUCA Page 2 of 7

From	To	Interval	Recovery %	Lithology	From	To	Structure	From	To	Mineralization/Alteration	From	To	Interval	Sample No. (s)	PPM Sn	PPM Au
48.8	52.7	3.9	100%	q.f. tourmaline (black), garnet (pink) leucosome												
53.0	53.1	0.1	100%	q.f. tourmaline (black) garnet (pink) leucosome												
55.7	55.8	0.1	100%	q.f. bi leucosome												
58.4	58.6	0.2	100%	q.f. bi, garnet, tourmaline leucosome												
60.8	61.1	0.3	100%	q.f. leucosome (coarse)												
61.2	61.3	0.1	100%	q.f. g leucosome												
62.0	62.3	0.3	100%	q.f. g, tm leucosome												
63.2	64.0	0.8	100%	q.f. g, bi, tm leucosome												
67.0	67.5	0.5	100%	q.f. bi leucosome												
76.6	77.3	0.7	100%	q.f. bi, g, tm leucosome												
78.0	80.2	2.2	100%	q.f. bi, g, tm leucosome w/ minor bio. gn.												
84.2	84.9	0.7	100%	q.f. g, bi, tm, mus leucosome												
86.9	88.1	1.2	100%	q.f. tourmaline (black), g (pink) bi leucosome												
88.4	88.5	0.1	100%	q.f. bi g (pink) leucosome												
88.7	88.8	0.1	100%	q.f. g (pink), tourmaline (black) leucosome												
89.1	89.3	0.2	100%	q.f. tourmaline (black) leucosome												
90.1	90.2	0.1	100%	q.f. bi g (pink) leucosome												
92.0	92.5	0.5	100%	q.f. g (pink) leucosome												
93.0	93.9	0.9	100%	q.f. tourmaline (black), g (pink) leucosome. Minor FeS ₂												
94.2	94.4	0.2	100%	q.f. bi, tourmaline (black), g (pink) leucosome. Minor FeS ₂												
94.8	94.9	0.1	100%	q.f. bi, tourmaline (black), g (pink) leucosome. Minor FeS ₂							104.0	110.9	6.9	404	1	
											164.0	170.9	6.6	403	5	
95.7	96.3	0.6	100%	q.f. tourmaline (black), g (pink) leucosome w/ minor FeS ₂							204.0	210.7	6.8	402	41	
											231.0	237.0	6.0	401	3	
98.3	99.9	1.6	100%	q.f. tourmaline (black), g (pink), muscovite leucosome							346.3	353.1	6.8	400	15	
99.9	367.9			Interbedded amphibole quartz foliation, massive - 80% to coarse AAS with minor local variations	99.9	367.9					250.4	255.3	4.9	310	8	
											255.3	261.9	6.7	311	9	
											261.9	268.5	6.7	312	22	
											268.5	275.1	6.6	313	14	45
											275.1	277.6	2.5	314	12	
											307.5	314.0	6.8	345	14	
											314.0	320.7	6.7	346	17	
											320.7	327.4	6.8	347	12	
											327.4	334.0	6.7	348	45	45
100.9	101.9	1.5	100%	q.f. bi leucosome							334.0	340.7	6.8	349	25	
											340.7	346.3	5.9	350	10	

DRILL HOLE GEOLOGIC LOG

Hole Number DDH-2 Tol-2 Section _____ Twn. _____ Rge. _____ Grid Coordinates _____ N _____ E
 Collar Elevation 800' Azimuth 567 W Dip -60° Logged by B. REELY Date SEPT. 83 TOLUCA

From	To	Interval	Recovery %	Lithology	From	To	Structure	From	To	Mineralization/Alteration	From	To	Interval	Sample No.(s)	XRF		
															Fe ₂ O ₃	PP ₄₄	% Sn
103.1	103.3	0.2	100%	q.f. bi. Amph. bdt. leucosome (black)													
				g (pink) leucosome													
104.1	104.7	0.6	100%	feldspathic bg.													
115.0	116.0	1.0	100%	q.f. bi. g (pink) leucosome													
125.5	126.5	1.0	100%	q.f. bi. g (pink) leucosome													
134.9	135.2	0.3	100%	q.f. amphib. bdt. leucosome w/ minor Fe ₂ O ₃													
142.0	142.2	0.2	100%	Tinted yellow Amphibole - biotite													
				Gneiss w/ q.f. Amphib. bdt. leucosomes													
157.4	158.4	1.0	100%	"Leucocratic" granitic gneiss w/ pink K-spon													
158.9	159.5	0.6	100%	"Leucocratic" granitic gneiss w/ pink K-spon	187.6	188.4	Broken zone										
193.5	194.0	0.5	100%	q.f. Amphib. bdt. leucosome													
214.8	215.2	0.4	100%	q.f. muscovite leucosome													
225.4	230.0	4.8	100%	Zone 2 epidote disseminated in biotite-amphibole gneiss													
244.6	245.4	0.8	100%	epidote-garnet calc. silicate													
277.6	278.3	0.7	100%	q.f. bi. g (pink) leucosome Fe ₂ O ₃ tourmaline(?)	255.3	256.1	Corroded foliation with aptite - biotite gneiss (Silicopane?)				277.6	278.6	1.0	315	72		
											278.6	280.1	1.44	316	34		
											280.1	282.0	1.94	317	25		
285.2	285.5	0.3	100%	q.f. g (pink) tourmaline bi leucosome							282.0	284.0	2.36	318	28		
											284.0	285.1	1.08	319	41		
285.8	286.6	0.8	100%	q.f. tourmaline (black), garnet (pink), biotite leucosome w/ fibrous blue mineral i. cassiterite(?)							285.1	285.9	0.72	320	135		
											285.9	286.7	0.85	321	1660	45	0.134
287.3	287.5	0.2	100%	q.f. biotite (black), g (pink) tourmaline (black) leucosome w/ minor blue fibrous mineral i. cassiterite(?)							286.7	287.3	0.56	322	20		
											287.3	287.6	0.30	323	1000		0.130
											287.6	288.0	0.46	324	117		
288.0	288.3	0.3	100%	q.f. bi. g (pink) tourmaline (black) leucosome							288.0	288.4	0.33	325	158		
											288.4	290.3	1.90	326	9		
290.3	290.6	0.3	100%	q.f. tourmaline (black) leucosome							290.3	291.8	1.44	327	356		
290.9	291.1	0.2	100%	q.f. g (pink) tourmaline (black), bi. leucosome w/ cassiterite(?)													
291.6	292.4	0.8	100%	q.f. tourmaline (black), garnet (pink), biotite leucosome w/ blue fibrous mineral i. cassiterite(?)							291.8	292.6	0.79	328	2340	45	0.254
											292.6	293.9	1.35	329	19		
293.7	294.1	0.4	100%	q.f. tourmaline (black), garnet (pink) bi leucosome							293.9	294.2	0.39	330	700		
											294.2	294.5	0.30	331	65		
294.5	298.4	0.9	100%	q.f. tourmaline (black), g (pink) leucosome w/ coarse cassiterite(?) & blue fibrous mineral							294.5	295.6	1.08	332	2700	45	0.317
											295.6	296.4	0.98	333	108		
296.2	296.4	0.2	100%	q.f. bi. g (pink) leucosome							296.4	298.4	2.03	334	24		
297.7	297.8	0.1	100%	epidote calc. silicate													
298.5	298.7	0.2	100%	q.f. bi. g (pink) tourmaline (black) leucosome							298.4	298.6	0.23	335	163		

DRILL HOLE GEOLOGIC LOG

Hole Number DDH-2 Section TOL-2 Twn. _____ Rge. _____ Grid Coordinates _____ N _____ E
 Collar Elevation 800' Azimuth 567W Dip -60° Logged by B. REELY Date SEPT. 83 Toluca

From	To	Interval	Recovery %	Lithology	From	To	Structure	From	To	Mineralization/Alteration	From	To	Interval	Sample No. (s)	PPM Sn	Au
299.0	299.7	0.7	100%	q, f, bi, g (pink) leucosome (black)							298.65	299.0	0.36	336	32	
				leucosome							299.0	299.8	0.79	337	340	
300.2	300.5	0.3	100%	q, f, g (pink) leucosome							299.8	300.3	0.49	338	107	
303.4	303.6	0.2	100%	q, f, bi, g (pink) leucosome							300.3	300.6	0.33	339	69	
304.0	306.5	2.5	100%	q, f, bi, g (pink) leucosome (black), g (pink) leucosome w/ cassiterite (?) & blue fibrous mineral							300.6	303.4	2.79	340	30	
											303.4	303.8	0.33	341	528	
											303.8	304.2	0.39	342	69	
											304.2	306.7	2.46	343	750	
333.6	333.8	0.2	100%	q, f, bi leucosome w/ laminae FeS ₂ & pink Kspine							306.7	307.5	0.82	344	145	45
341.5	345.6	4.1	100%	Several zones of tourmalinite interlayered w/ bi-g amphibole gneiss. 341.3-345.6 tourmalinite horizon												
349.7	349.9	0.2	100%	q, f, bi, g (pink) leucosome												
357.6	358.2	0.6	100%	q, f, g (pink) leucosome												
358.3	358.4	0.1	100%	q, f, g (pink) tourmaline (black) leucosome												
359.9	360.2	0.3	100%	q, f, tourmaline (black), g (pink) leucosome												
360.9	364.6	3.5	100%	q, f, bi, g (pink), tourmaline (black) leucosome												
367.4	367.9	0.5	100%	q, f, bi, tourmaline (black) leucosome												
367.9	371.8	3.9	100%	Foliated biotite gneiss, light grey; finely xls. Numerous thin q, f leucosomes w/ minor garnet (pink)	367.9	371.8	Foliation 70° to core axis				365.1	372.5	7.4	399	4	
371.8	382.7	10.9	100%	Quartz, feldspar, biotite-quartz feldspar Amphibole Gneiss w/ garnet (pink). Fine to med. sh; dark to med. grey. Minor q, f, bi, g (pink) leucosomes	371.8	382.7	Foliation 65° to core axis				372.5	379.1	6.5	598	41	
				Amphibole rich (amphibole) zone												
374.5	374.7	0.2	100%	q, f, bi, g (pink) leucosomes												
378.1	378.4	0.3	100%	q, f, g (pink), bi, tourmaline (black) leucosome. Minor FeS ₂												
382.7	388.2	5.5	100%	Biotite, garnet, quartz schist. Dark med. brown schist. Area pink up to 2 cm dia FeS ₂ in disseminated throughout	382.7	384.0	Foliation 70° to core axis				383.0	388.3	5.3	397	41	
					384.0	388.2	Foliation 80° to core axis									
388.2	434.7	46.5	100%	Quartz, feldspar, biotite gneiss with numerous q, f, bi, g (pink) leucosomes & garnet & biotite leucosomes. Approx 60% bi, g; 40% leucosome gneiss in alternating phases	388.2	434.7	Foliation varies between 80° & 90° to core axis				400.3	407.0	6.5	396	1	
											411.4	417.8	6.4	395	1	

side zone

interval zone
Bas
zone

XRF

DRILL HOLE GEOLOGIC LOG

Hole Number DDH-2 Tol-2 Section _____ Twn. _____ Rge. _____ Grid Coordinates _____ N _____ E
 Collar Elevation 800' Azimuth 567W Dip -60° Logged by B. REELY Date SEPT. 83 TOLUCA

From	To	Interval	Recovery %	Lithology	From	To	Structure	From	To	Mineralization/Alteration	From	To	Interval	Sample No.(s)
389.7	390.0	0.3	100%	q, f, g (pink) leucosome										
393.7	396.0	2.3	100%	q, f, bi(chl)bitic, g(pink) leucosome										
400.2	400.4	0.6	100%	q, f, tourmaline (brown) leucosome										
401.5	402.1	0.6	100%	q, f, tourmaline (brown) leucosome										
402.6	405.4	0.8	100%	q, f, bi(chl)bitic, tourmaline (black) leucosome										
403.8	406.0	2.2	100%	q, f, tourmaline (black-dark brown), muscovite leucosome w/ tr. FeS ₂										
406.2	408.0	1.8	100%	q, f, tourmaline (black), g(pink), bi(chl)bitic leucosome, tr. FeS ₂ ; several thin tourmaline interlayers										
409.6	410.0	0.4	100%	q, f, tourmaline (black) bi(chl)bitic, g(pink) leucosome w/ bi interlayer	410.9	411.9				Reactive chloritization within bg				
411.9	413.7	1.8	100%	q, f, g(pink) bi(chl)bitic leucosome	413.7	414.2				Reactive chloritization within bg				
414.2	415.9	1.7	100%	q, f, g(pink), bi(chl)bitic leucosome w/ minor tourmaline (black)										
416.0	418.0	2.0	100%	q, f, tourmaline (brown & black), g(pink), bi(chl)bitic, muscovite leucosome w/ several chlorite bi interlayers										
418.7	420.8	2.1	100%	q, f, bi(chl)bitic leucosome w/ minor g(pink)	420.8	421.7				Reactive chloritization within bg				
421.7	424.2	2.5	100%	q, f, bi(chl)bitic, g(pink), muscovite leucosome	424.2	424.5				Reactive chloritization within bg				
424.5	425.0	0.5	100%	q, f, bi(chl)bitic, g(pink) leucosome w/ minor tourmaline (black)	425.0	425.3				Reactive chloritization within bg				
425.5	427.0	1.5	100%	q, f, bi(chl)bitic, g(pink) leucosome										
430.6	431.3	0.7	100%	q, f, bi(chl)bitic, g(pink) leucosome w/ minor tourmaline (black) & pink K-spars										
431.6	432.3	0.7	100%	q, f, bi(chl)bitic leucosome w/ pink K-spars										
432.6	432.8	0.2	100%	q, f, bi(chl)bitic leucosome										
433.1	433.5	0.4	100%	q, f, bi(chl)bitic, g(pink), leucosome w/ tr. FeS ₂ , to rim of w (black)										

DRILL ZONE

DRILL HOLE GEOLOGIC LOG

Hole Number DDH 2 Section Tol-2 Twn. _____ Rge. _____ Grid Coordinates _____ N _____ E
 Collar Elevation 800' Azimuth SGTW Dip -60° Logged by B. REELY Date SEPT 83

From	To	Interval	Recovery %	Lithology	From	To	Structure	From	To	Mineralization/Alteration	From	To	Interval	Sample No.(s)	XRF Feet 5m
434.3	434.5	0.2	100%	q, f, g (pink) leucosome											
434.7	456.3	21.6	100%	Altered quartz, feldspar biotite gneiss w/ several q, f, bi (chloritic) leucosomes	434.7	456.3	Foliation averages 80° to core axis. Disrupted in fault zone. Fault zone. Fault oriente ed ~10° to core axis. Rec- ciliation throughout fault zone.	434.7	456.3	Intense chloritization & feldspar alteration through- out section. Related to Fault zone?	434.6	441.0	7.2	394	41
438.1	439.3	1.2	100%	q, f, bi (chloritic) leucosome	443.2	449.5									
447.8	454.6	6.8	100%	q, f, bi (chloritic) leucosome											
454.9	455.2	0.3	100%	q, f, bi (chloritic) muscovite leucosome											
455.2	455.5	0.3	100%	q, f, bi (chloritic) muscovite, leucosome w/ tourmaline (black)											
456.3	506.2	49.9	100%	Quartz, feldspar, biotite leucosome. Minor Pink K-spar throughout section. Light grey to white. Pseudotachylite appearance w/ equiaxed texture.	456.3	506.2	Slight foliation (defined by biotite inclusions) is ~80° to core axis				460.6	467.5	6.9	393	41
506.2	582.8	76.6	100%	Quartz, feldspar, biotite ± garnet (pink) gneiss w/ numerous q, f, bi ± g (pink) leucosome. Several zones with biotite gneiss-biotite schist "intermediate" lithologies.	506.2	582.8	Foliation varies between 70° & 80° to core axis				524.0	530.3	6.6	392	41
											552.3	558.2	5.9	391	41
510.1	510.4	0.3	100%	Recrystallized q, f, bi leucosome w/ pink K-spar				506.2	510.0	Intense chloritization & feldspar alteration throughout section					
510.7	511.0	0.3	100%	Recrystallized q, f, bi leucosome w/ pink K-spar											
511.1	513.7	2.6	100%	q, f, bi peralitic leucosome w/ bi inclusions near base	513.7	518.6	"Graded beds (?) & possible facies transitions (?) present								
518.6	519.4	0.8	100%	q, f, bi leucosome w/ minor feldspar											
522.5	523.0	0.5	100%	q, f, bi, muscovite leucosome											
523.3	524.2	0.9	100%	q, f, bi, muscovite leucosome											
532.4	534.3	1.9	100%	q, f, bi, muscovite leucosome	524.2	532.4	"Graded beds (?) present								
535.8	536.5	0.7	100%	q, f, bi, g (pink) leucosome											
537.6	538.4	0.8	100%	q, f, bi leucosome											
539.4	539.9	0.5	100%	q, f, bi leucosome											
540.5	545.0	4.5	100%	q, f, bi leucosome	545.0	551.5	"Graded beds (?) present								
551.5	559.1	7.6	100%	q, f, bi leucosome											
561.6	562.2	0.6	100%	q, f, bi, g (pink) leucosome				563.3	564.1	Pervasive chloritization & feldspar alteration					
565.3	567.3	2.0	100%	q, f, bi, g (pink) leucosome											
569.1	572.6	3.5	100%	q, f, bi (chloritic), g (pink) leucosome w/ pink K-spar				572.6	573.9	Pervasive chloritization & feldspar alteration					
574.4	576.5	2.1	100%	q, f, bi (chloritic) leucosome w/ pink K-spar											
581.9	582.8	0.9	100%	q, f, bi (chloritic) leucosome w/ pink K-spar				577.1	581.9	Pervasive chloritization & feldspar alteration					

Point

Target

C

C

