

DATE 9/15/78	INSTRUMENT MAN G. Cotcamp	ROD MAN R. Hulsey	PARTY NUMBER 6884	NOTES CHECKED BY G.W.C.	LINE NO. 3	PAGE 1 of 25
AREA Michigan	TOPO MAP Summer	STATE Michigan	COUNTY Spartan	TWP 10N	RANGE 4W	PPM
					PARTY MANAGER L.O. Davis	

STATION NO.	SLOPE DISTANCE	PLOTTING DISTANCE	AZIMUTH FROM MAGNETIC NORTH	DEC	ROD READING	VERTICAL ANGLE	VERTICAL CHANGE	DIFFERENCE IN ELEVATION	ELEVATION OF INSTRUMENT	ELEVATION OF STATION	BS X TP	COORDINATES		REMARKS	
												NORTH + SOUTH - LAT.	EAST + WEST - DEP.		Y
TT				-2°42'						771.0				653,495, 1,871,290	→ R (scaled)
	2690		3°20' +120"	-2.7°	+4.9	-		+4.9			BS	-2690	-30		Intersect. El. 771
	2690				+9.7	89°54'	-4.7	+5.0	776.0		BS				Washington
1	2640		3°08'	-2.7°	4.8	-		-4.8		771.2		+2640	+20	653,445, 1,871,280	Ferris
2	2420		" "	-2.7°	3.5	-		-3.5		772.5		+2420	+18	653,225, 1,871,278	
3	2200		" "	-2.7°	4.8	-		-4.8		771.2		+2200	+17	653,005, 1,871,277	
4	1980		" "	-2.7°	5.7	-		-5.7		770.3		+1980	+15	652,785, 1,871,275	
5	1760		" "	-2.7°	6.0	-		-6.0		770.0		+1760	+13	652,565, 1,871,273	
6	1540		" "	-2.7°	5.9	-		-5.9		770.1		+1540	+12	652,345, 1,871,272	
7	1320		" "	-2.7°	5.9	-		-5.9		770.1		+1320	+10	652,125, 1,871,270	
8	1100		" "	-2.7°	5.3	-		-5.3		770.7		+1100	+8	651,905, 1,871,268	
9	880		" "	-2.7°	5.0	-		-5.0		771.0		+880	+7	651,685, 1,871,267	
10	660		" "	-2.7°	4.7	-		-4.7		771.3		+660	+5	651,465, 1,871,265	
11	440		" "	-2.7°	4.6	-		-4.6		771.4		+440	+3	651,245, 1,871,263	
12	220		" "	-2.7°	4.6	-		-4.6		771.4		+220	+2	651,025, 1,871,262	
13	0		" "		5.4	-		-5.4		770.6	X	0	0	650,805, 1,871,260	
14	220		183°01'	-2.7°	5.6	-		-5.6		770.4		-220	-1	650,585, 1,871,259	
15	440		" "	-2.7°	5.5	-		-5.5		770.5		-440	-2	650,365, 1,871,258	
16	660		" "	-2.7°	6.1	-		-6.1		769.9		-660	-4	650,145, 1,871,256	
17	880		" "	-2.7°	6.7	-		-6.7		769.3		-880	-5	649,925, 1,871,255	
18	1100		" "	-2.7°	6.7	-		-6.7		769.3		-1100	-6	649,705, 1,871,254	

SURVEY NOTES-HIGH RESOLUTION DATA
GEO-445

Geosource Inc.

DATE		INSTRUMENT MAN		ROD MAN		PARTY NUMBER		NOTES CHECKED BY		LINE NO.	PAGE						
9/15/78		G. Co. comp		R. Hulsey		6837		G. w. C.		3	2						
AREA		TOPO MAP		STATE		COUNTY		TWP		RANGE	PPM	PARTY MANAGER					
Michigan		Sumner		Michigan		Gratiot		10N		4W		L. O. Davis					
STATION NO.	SLOPE DISTANCE	PLOT DISTANCE	AZIMUTH FROM MAGNETIC NORTH	DEC	ROD READING	VERTICAL ANGLE	VERTICAL CHANGE	DIFFERENCE IN ELEVATION	ELEVATION OF INSTRUMENT	ELEVATION OF STATION	BS X TP	NORTH + SOUTH -	EAST + WEST -	COORDINATES		REMARKS	
												LAT.	DEP.	Y	X		
									776.0								
19	1320		183° 01'	-2.7°	6.0	-		-6.0		770.0		-1320	-7	649,485	1,871,253		
20	1540		" "	-2.7°	6.2	-		-6.2		769.8		-1540	-9	649,265	1,871,251		
21	1760		" "	-2.7°	7.9	-		-7.9		768.1		-1760	-10	649,045	1,871,250		
22	1980		" "	-2.7°	8.7	-		-8.7		767.3		-1980	-11	648,825	1,871,249		
23	2200		" "	-2.7°	8.8	-		-8.8		767.2		-2200	-12	648,605	1,871,248		
24	2420		" "	-2.7°	8.4	-		-8.4		767.6		-2420	-13	648,385	1,871,247		
25	2515		182° 54.5'	-2.7°	7.8	-		-7.8		768.2		-2515	-9	648,290	1,871,251	1,871,245 + 648,285 (scaled) 4-way Intersect	
25	2640		183° 01'	-2.7°	8.6	-		-8.6			TP	-2640	-15	648,165	1,871,245	(Fill more) El. 769	
	2640				14.7	89° 32'	+6.2	-8.5		767.5	TP		-				
	2640		3° 15' + 180°	-2.7°	+2.3	-		+2.3	769.8		BS	-2640 + 16	-25				
	2640				14.6	89° 44'	-12.3	+2.3			BS						
26	2420		3° 15'	-2.7°	2.0	-		-2.0		767.8		+2420	+23	647,961	1,871,243		
27	2200		" "	-2.7°	0.6	-		-0.6		769.2		+2200	+21	647,741	1,871,241		
28	1980		" "	-2.7°	0.7	-		-0.7		769.1		+1980	+19	647,521	1,871,239		
29	1760		" "	-2.7°	1.9	-		-1.9		767.9		+1760	+17	647,301	1,871,237		
30	1540		" "	-2.7°	2.2	-		-2.2		767.6		+1540	+15	647,081	1,871,235		
31	1320		" "	-2.7°	2.9	-		-2.9		766.9		+1320	+13	646,861	1,871,233		
32	1100		" "	-2.7°	2.9	-		-2.9		766.9		+1100	+11	646,641	1,871,231		
33	880		" "	-2.7°	2.1	-		-2.1		767.7		+880	+8	646,421	1,871,228		
34	660		" "	-2.7°	2.2	-		-2.2		767.6		+660	+6	646,201	1,871,226		

DATE		INSTRUMENT MAN		ROD MAN		PARTY NUMBER		NOTES CHECKED BY		LINE NO.	PAGE				
9/15/78		G. Coitcamp		R. Hulsey		6834		G.W.C.		3	3				
AREA		TOPO MAP		STATE		COUNTY		TWP	RANGE	PPM	PARTY MANAGER				
Michigan		Summer		Michigan		Gratiot		10N	4W		L.O. Davis				
STATION NO.	SLOPE DISTANCE	PLOTTING DISTANCE	AZIMUTH FROM MAGNETIC NORTH	DEC	ROD READING	VERTICAL ANGLE	VERTICAL CHANGE	DIFFERENCE IN ELEVATION	ELEVATION OF INSTRUMENT	ELEVATION OF STATION	BS TP	COORDINATES		REMARKS	
												NORTH + SOUTH - LAT.	EAST + WEST - DEP.		Y
									769.8						
35	440		3°15'	-27°	2.8	-		-2.8		767.0		+440	+4	645,981	1,871,224
36	220		"	-27°	3.2	-		-3.2		766.6		+220	+2	645,761	1,871,222
37	128		4°45'	-27°	3.7	-		-3.7		766.1		+128	+5	645,669	1,871,225 <i>645,650 + 1,871,225 (scaled) T-rd (west) El. 767</i>
37	0				5.4	-		-5.4		764.4	TP	0	0	645,541	1,871,220 (Humphrey)
38	220		183 5.7'	-27°	4.3	-		-4.3		765.5		-220	+2	645,321	1,871,218
39	440		"	-27°	3.9	-		-3.9		765.9		-440	-3	645,101	1,871,217
40	660		"	-27°	3.2	-		-3.2		766.6		-660	-5	644,881	1,871,215
41	880		"	-27°	3.6	-		-3.6		766.2		-880	-6	644,661	1,871,214
42	1100		"	-27°	3.2	-		-3.2		766.6		-1100	-8	644,441	1,871,212
43	1320		"	-27°	3.5	-		-3.5		766.3		-1320	-9	644,221	1,871,211
44	1540		"	-27°	3.6	-		-3.6		766.2		-1540	-11	644,001	1,871,209
45	1760		"	-27°	3.6	-		-3.6		766.2		-1760	-12	643,781	1,871,208
46	1980		"	-27°	2.4	-		-2.4		767.4		-1980	-14	643,561	1,871,206
47	2200		"	-27°	1.0	-		-1.0		768.8		-2200	-15	643,341	1,871,205
48	2420		"	-27°	3.2	-		-3.2		766.6		-2420	-17	643,121	1,871,203
48	2495		182° 58'	-27°	3.6	-		-3.6		766.2		-2495	-12	643,046	1,871,208 <i>page 31 643,045 + 1,871,205 (Line #2) 4-way Intersect. El. 766</i>
49	2640		183° 5.7'	-26°	3.9	-		-3.9	-4.0	765.8	TP	-2640	-23	642,901	1,871,197 Pierce + Ferris (Line #2)
49	2640				14.9	89°46'	+10.7	-4.2			TP				
	2640		3°16' +180°	-26°	+5.0	-		+5.0	770.9	+5.1	BS	-2640	-31		
	2640				+14.4	89°48'	-9.2	+5.2			BS				

SURVEY NOTES-HIGH RESOLUTION DATA

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Geosource Inc.

DATE 9/15/78	INSTRUMENT MAN G. Cotcamp	ROD MAN R. Hulsey	PARTY NUMBER 6837	NOTES CHECKED BY G.W.C.	LINE NO. 3	PAGE 4
AREA Michigan	TOPO MAP Summer	STATE Michigan	COUNTY Gratiot	TWP 10N	RANGE 4W	PPM
				PARTY MANAGER L.O. Davis		

STATION NO.	SLOPE DISTANCE	PLOTTING DISTANCE	AZIMUTH FROM MAGNETIC NORTH	DEC	ROD READING	VERTICAL ANGLE	VERTICAL CHANGE	DIFFERENCE IN ELEVATION	ELEVATION OF INSTRUMENT	ELEVATION OF STATION	BS X TP	NORTH + SOUTH -	EAST + WEST -	COORDINATES		REMARKS
												LAT.	DEP.	Y	X	
									770.9							
50	2420		3°16'	-2.6°	6.0	-		-6.0		764.9		+2420	+28	642,681	1,871,194	
51	2200		" "	-2.6°	7.0	-		-7.0		763.9		+2200	+26	642,461	1,871,192	
52	1980		" "	-2.6°	5.7	-		-5.7		765.2		+1980	+23	642,241	1,871,189	
53	1760		" "	-2.6°	6.3	-		-6.3		764.6		+1760	+20	642,021	1,871,186	
54	1540		" "	-2.6°	7.2	-		-7.2		763.7		+1540	+18	641,801	1,871,184	
55	1320		" "	-2.6°	7.0	-		-7.0		763.9		+1320	+15	641,581	1,871,181	
56	1100		" "	-2.6°	6.1	-		-6.1		764.8		+1100	+13	641,361	1,871,179	
57	880		" "	-2.6°	5.7	-		-5.7		765.2		+880	+10	641,141	1,871,176	
58	660		" "	-2.6°	5.0	-		-5.0		765.9		+660	+8	640,921	1,871,174	
59	440		" "	-2.6°	6.2	-		-6.2		764.7		+440	+5	640,701	1,871,171	
60	220		" "	-2.6°	4.1	-		-4.1		766.8		+220	+3	640,481	1,871,169	
7E	147		4°47'	-2.6°	4.1	-		-4.1		766.8		+147	+6	640,408	1,871,172	640,420+1,871,180 (scaled) 4-way El. 767
61	0				5.4	-		-5.4		765.5	7	0	0	640,261	1,871,166	(Roggy)
62	220		183° 10'	-2.6°	8.0	-		-8.0		762.9		-220	-2	640,041	1,871,164	
63	440		" "	-2.6°	8.4	-		-8.4		762.5		-440	-4	639,821	1,871,162	
64	660		" "	-2.6°	8.1	-		-8.1		762.8		-660	-7	639,601	1,871,159	Note: scaled distance
65	880		" "	-2.6°	7.7	-		-7.7		763.2		-880	-9	639,381	1,871,157	between Roggy rd. +
66	1100		" "	-2.6°	8.9	-		-8.9		762.0		-1100	-11	639,161	1,871,155	Buchanan (1/2 mile south)
67	1320		" "	-2.6°	8.0	-		-8.0		762.9		-1320	-13	638,941	1,871,153	is 2,575' -chained
68	1540		" "	-2.6°	7.4	-		-7.4		763.5		-1540	-15	638,721	1,871,151	distance (steel tape +

SURVEY NOTES-HIGH RESOLUTION DATA

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Geosource Inc.

DATE		INSTRUMENT MAN		ROD MAN		PARTY NUMBER		NOTES CHECKED BY		LINE NO.	PAGE					
9/15/78		G. Catcamp		R. Hulsey		6837		G.W.C.		3	5					
AREA		TOPO MAP		STATE	COUNTY		TWP	RANGE	PPM	PARTY MANAGER						
Michigan				Michigan	Gratiot		10 N	4 W		L.O. Davis						
STATION NO.	SLOPE DISTANCE	PLOTTING DISTANCE	AZIMUTH FROM MAGNETIC NORTH	DEC	ROD READING	VERTICAL ANGLE	VERTICAL CHANGE	DIFFERENCE IN ELEVATION	ELEVATION OF INSTRUMENT	ELEVATION OF STATION	BS X TP	COORDINATES		REMARKS		
												NORTH + SOUTH - LAT.	EAST + WEST - DEP.		Y	X
									770.9							
69	1760		183°10'	-26°	6.9	-		-6.9		764.0		-1760	-17	638,501	1,871,149	fiberglass tape is
70	1980		"	-26°	6.9	-		-6.9		764.0		-1980	-20	638,281	1,871,146	2,632' - this accounts
71	2200		"	-26°	6.2	-		-6.2		764.7		-2200	-22	638,061	1,871,144	for the 60" difference.
72	2420		"	-26°	4.7	-		-4.7		766.2		-2420	-24	637,841	1,871,142	
72	2485		183°6.3'	-26°	3.9	-		-3.9		767.0		-2485	-22	637,776	1,871,144	637,825 + 1,871,155 4-way Intersect
73	2640		183°10'	-26°	5.3	-		-5.3	-54	765.5	TP	-2640	-26	637,621	1,871,140	(Buchanan)
73	2640				10.2	89°51'	+4.6	-5.6			TP					
	2640		3°13.4' + 180°	-26°	+2.5	-		+2.5	768.1	+2.6	GS	-2640	-29			
	2640				15.0	89°44'	-12.3	+2.7			GS					
X	2670		5°17'	-26°	14.7	TH	+13.4	-1.3		766.8		+2667	+125	637,648	1,871,236	chiseled □ El. 767
74	2420		3°13.4'	-26°	3.9	-		-3.9		764.2		+2420	+26	637,401	1,871,137	
75	2200		"	-26°	3.5	-		-3.5		764.6		+2200	+24	637,181	1,871,135	
76	1980		"	-26°	5.7	-		-5.7		762.4		+1980	+22	636,961	1,871,133	
77	1760		"	-26°	6.0	-		-6.0		762.1		+1760	+19	636,741	1,871,130	
78	1540		"	-26°	6.2	-		-6.2		761.9		+1540	+17	636,521	1,871,128	
79	1320		"	-26°	6.7	-		-6.7		761.4		+1320	+14	636,301	1,871,125	
80	1100		"	-26°	6.7	-		-6.7		761.4		+1100	+12	636,081	1,871,123	
81	880		"	-26°	5.7	-		-5.7		762.4		+880	+10	635,861	1,871,121	
82	660		"	-26°	5.2	-		-5.2		762.9		+660	+7	635,641	1,871,118	
83	440		"	-26°	4.8	-		-4.8		763.3		+440	+5	635,421	1,871,116	

DATE 9/15/78	INSTRUMENT MAN G. Cotcamp	ROD MAN R. Hulsey	PARTY NUMBER 6834	NOTES CHECKED BY GWC	LINE NO. 3	PAGE 6
AREA Michigan	TOPO MAP	STATE Michigan	COUNTY Gratiot	TWP 10N	RANGE 4W	PPM
				PARTY MANAGER L. O. Davis		

STATION NO.	SLOPE DISTANCE	PLOTTING DISTANCE	AZIMUTH FROM MAGNETIC NORTH	DEC	ROD READING	VERTICAL ANGLE	VERTICAL CHANGE	DIFFERENCE IN ELEVATION	ELEVATION OF INSTRUMENT	ELEVATION OF STATION	BS X TP	NORTH + SOUTH -		EAST + WEST -		COORDINATES		REMARKS
												LAT.	DEP.	Y	X			
									768.1									
84	220		3°13.4'	-2.6°	5.4	-		-5.4		762.7		+220	+2	635,201	1,871,113			
84	152		3°57'	-2.6°	4.8	-		-4.8		763.3		+152	+4	635,133	1,871,115			635,180+1,871,120 4-way El. 763
85	0				5.4	-		-5.4		762.7	X	0	0	634,981	1,871,111			(Bennett)
86	220		183°20'	-2.6°	6.0	-		-6.0		762.1		-220	-3	634,761	1,871,108			
87	440		" "	-2.6°	5.8	-		-5.8		762.3		-440	-6	634,541	1,871,105			
88	660		" "	-2.6°	5.8	-		-5.8		762.3		-660	-8	634,321	1,871,103			
89	880		" "	-2.6°	6.0	-		-6.0		762.1		-880	-11	634,101	1,871,100			
90	1100		" "	-2.6°	6.9	-		-6.9		761.2		-1100	-14	633,881	1,871,097			
91	1320		" "	-2.6°	6.9	-		-6.9		761.2		-1320	-17	633,661	1,871,094			
92	1540		" "	-2.6°	5.4	-		-5.4		762.7		-1540	-20	633,441	1,871,091			
93	1760		" "	-2.6°	5.4	-		-5.4		762.7		-1760	-23	633,221	1,871,088			
94	1980		" "	-2.6°	5.5	-		-5.5		762.6		-1980	-25	633,001	1,871,086			
95	2200		" "	-2.6°	6.3	-		-6.3		761.8		-2200	-28	632,781	1,871,083			
96	2420		" "	-2.6°	6.2	-		-6.2		761.9		-2420	-31	632,561	1,871,080			horizontal, correct, y=+64, x=0 632,540+1,871,080(scaled)
96	2490		183°18'	-2.6°	5.9	-		-5.9		762.2		-2490	-30	632,491	1,871,081			T-rod (west) El. 762
97	2640		183°20'	-2.6°	6.8	-		-6.8	-6.9	761.2	TP	-2640	-34	632,341	1,871,077			(Johnson)
97	2640				14.7	89°50'	+7.7	-7.0			TP							
	2200		3°37' +180°	-2.6°	+7.5	-		+7.5	768.7		BS	-2200	-39					
	2200				+14.0	89°50'	-6.4	+7.6			BS							
98	1980		3°37'	-2.6°	8.0	-		-8.0		760.7		+1980	+35	632,121	1,871,073			

SURVEY NOTES-HIGH RESOLUTION DATA
GEO-445

Geosource Inc.

DATE		INSTRUMENT MAN		ROD MAN		PARTY NUMBER		NOTES CHECKED BY		LINE NO.	PAGE				
9/15/78		S. Catcamp		R. Hulsey		6834		G.W.C.		3	7				
AREA		TOPO MAP		STATE		COUNTY		TWP	RANGE	PPM	PARTY MANAGER				
Michigan				Michigan		Gratiot		10 N	4 W		L.O. Davis				
STATION NO.	SLOPE DISTANCE	PLOTTING DISTANCE	AZIMUTH FROM MAGNETIC NORTH	DEC	ROD READING	VERTICAL ANGLE	VERTICAL CHANGE	DIFFERENCE IN ELEVATION	ELEVATION OF INSTRUMENT	ELEVATION OF STATION	BS X TP	COORDINATES		REMARKS	
												NORTH + SOUTH - LAT.	EAST + WEST - DEP.		Y
									768.7						
99	1200		3°37'	-26°	7.9	-		-7.9		760.8		+1760	+31	631,901	1,871,069
100	1540		" "	-26°	7.0	-		-7.0		761.7		+1540	+27	631,681	1,871,065
101	1320		" "	-26°	6.8	-		-6.8		761.9		+1320	+23	631,461	1,871,061
102	1120		" "	-26°	6.1	-		-6.1		762.6		+1100	+20	631,241	1,871,058
103	880		" "	-26°	5.7	-		-5.7		763.0		+880	+16	631,021	1,871,054
104	660		" "	-26°	5.3	-		-5.3		763.4		+660	+12	630,801	1,871,050
105	440		" "	-26°	4.8	-		-4.8		763.9		+440	+8	630,581	1,871,046
106	220		" "	-26°	4.4	-		-4.4		764.3		+220	+4	630,361	1,871,042
107	0				5.4	-		-5.4		763.3	X	0	0	630,141	1,871,038
108	220		183°30.8'	-26°	4.9	-		-4.9		763.8		-220	-4	629,921	1,871,034
109	294		182°34'	-26°	4.3	-		-4.3		764.4		-294	0	629,847	1,871,038
110	440		183°30.8'	-26°	3.7	-		-3.7		765.0		-440	-7	629,701	1,871,031 (Hill)
111	660		" "	-26°	2.2	-		-2.2		766.5		-660	-11	629,481	1,871,027
112	880		" "	-26°	3.9	TH	+4.4	+0.5		769.2		-880	-14	629,261	1,871,024
113	1100		" "	-26°	0.8	TH	+5.5	+4.7		773.4		-1100	-18	629,041	1,871,020
114	1320		" "	-26°	13.6	89°	+23.0	+9.4		778.1		-1320	-21	628,821	1,871,017
115	1540		" "	-26°	12.3	89°	+26.9	+14.6		783.3		-1540	-25	628,601	1,871,013
116	1760		183°30.8'	-26°	9.8	89°20'	+20.5	+10.7		779.4	TP	-1760	-28	628,381	1,871,010
117	1760				14.8	89°10'	+25.6	+10.8			TP				

629,830 + 1,871,030
= rd (east) El. 764

SURVEY NOTES-HIGH RESOLUTION DATA

GEO-445

Geosource Inc.

DATE		INSTRUMENT MAN			ROD MAN			PARTY NUMBER		NOTES CHECKED BY			LINE NO.	PAGE			
9/15/78		G. Cotcamp			R. Hulsey			6834		R.J.H.			3	8			
AREA		TOPO MAP		STATE	COUNTY		TWP	RANGE	PPM	PARTY MANAGER							
Michigan		Carson City		Michigan	Gratiot		10N	4W		L.O. Davis							
STATION NO.	SLOPE DISTANCE	PLOTTING DISTANCE	AZIMUTH FROM MAGNETIC NORTH	DEC	ROD READING	VERTICAL ANGLE	VERTICAL CHANGE	DIFFERENCE IN ELEVATION	ELEVATION OF INSTRUMENT	ELEVATION OF STATION	BS X TP	NORTH + SOUTH -	EAST + WEST -	COORDINATES		REMARKS	
												LAT.	DEP.	Y	X		
115										779.4							
	2200		3°38.3' +180°	-2.6°	78.4	BH	+11.0	+19.4			BS	-2200	-40				
	2200				14.2	90°08'	+5.1	+19.3	778.7		BS						
116	1980		3°38.3'	-2.6°	12.8	BH	-9.9	-22.7		776.0		+1980	+36	628,161	1,871,006		
117	1760		"	-2.6°	9.2	90°30'	-15.4	-24.6		774.1		+1760	+32	627,941	1,871,002		
118	1540		"	-2.6°	8.8	90°30'	-13.4	-22.2		776.5		+1540	+28	627,721	1,870,998		
119	1320		"	-2.6°	9.8	90°30'	-11.5	-21.3		777.4		+1320	+24	627,501	1,870,994		
120	1100		"	-2.6°	10.7	90°30'	-9.6	-20.3		778.4		+1100	+20	627,281	1,870,990		
121	1022		"	-2.6°	9.6	90°30'	-8.9	-18.5		780.2		+1022	+19	627,203	1,870,989	627,205 + 1,870,980 4-way El. 780	
121	880		"	-2.6°	10.8	90°30'	-7.7	-18.5		780.2		+880	+16	627,061	1,870,986	(Hayes)	
122	660		"	-2.6°	13.2	-		-13.2		785.5		+660	+12	626,841	1,870,982		
123	440		"	-2.6°	8.4	-		-8.4		790.3		+440	+8	626,621	1,870,978		
124	220		"	-2.6°	9.2	-		-9.2		789.5		+220	+4	626,401	1,870,974		
125	0		"		5.4	-		-5.4		793.3	π	0	0	626,181	1,870,970		
126	220		183°27.2'	-2.6°	8.1	-		-8.1		790.6		-220	-3	625,961	1,870,967		
127	440		"	-2.6°	7.0	-		-7.0		791.7		-440	-7	625,741	1,870,963		
128	660		"	-2.6°	9.2	-		-9.2		789.5		-660	-10	625,521	1,870,960		
129	880		"	-2.6°	10.8	-		-10.8		787.9		-880	-13	625,301	1,870,957		
130	1100		"	-2.6°	11.3	-		-11.3		787.4		-1100	-16	625,081	1,870,954		
131	1320		"	-2.6°	9.5	-		-9.5		789.2		-1320	-20	624,861	1,870,950		
132	1540		"	-2.6°	7.0	BH	-7.7	-14.7		784.0		-1540	-23	624,641	1,870,947		

SURVEY NOTES-HIGH RESOLUTION DATA

GEO-445

Geosource Inc.

DATE		INSTRUMENT MAN		ROD MAN		PARTY NUMBER		NOTES CHECKED BY		LINE NO.	PAGE					
9/15/78		G. Cotcamp		R. Hulsey		6834		R. J. H.		3	9					
AREA		TOPO MAP		STATE	COUNTY		TWP	RANGE	PPM	PARTY MANAGER						
Michigan		Carson City 7.5'		Michigan	Gratiot		10 N	4 W		L. O. Davis						
STATION NO.	SLOPE DISTANCE	PLOTTING DISTANCE	AZIMUTH FROM MAGNETIC NORTH	DEC	ROD READING	VERTICAL ANGLE	VERTICAL CHANGE	DIFFERENCE IN ELEVATION	ELEVATION OF INSTRUMENT	ELEVATION OF STATION	BS X TP	COORDINATES		REMARKS		
												NORTH+ SOUTH - LAT.	EAST+ WEST - DEP.		Y	X
									798.7							
#	1600		183°15'	-2.6°	7.5	BH	-8.0	-15.5		783.2		-1600	-18	624,581	1,870,954	624,575+1870,950 4-way Intersect. el. 785.
133	1760		183°27.2'	-2.6°	10.0	90°20'	-10.2	-20.2		778.5		-1760	-26	624,421	1,870,944	(Nelson)
134	1980		" "	-2.6°	13.2	90°20'	-11.5	-24.7		774.0		-1980	-29	624,201	1,870,941	
(135)	2200		183°27.2'	-2.6°	11.9	90°20'	-12.8	-24.7			TP	-2200-4	-33	623,977	1,870,937	
135	2200				14.4	90°16'	-10.2	-24.6		774.1	TP					
	1760		3°43.6' +180°	-2.6°	+3.4	TH	-8.8	-5.4			BS	-1760-4	-35			
	1760				4.9	89°40'	-10.2	-5.3	768.8		BS					
136	1540		3°43.6'	-2.6°	3.5	TH	+7.7	+4.2		773.0		+1540	+30	623,753	1,870,932	
137	1320		" "	-2.6°	4.3	TH	+6.6	+2.3		771.1		+1320	+26	623,533	1,870,928	
138	1100		" "	-2.6°	4.3	TH	+5.5	+1.2		770.0		+1100	+22	623,313	1,870,924	
139	880		" "	-2.6°	4.0	TH	+4.4	+0.4		769.2		+880	+17	623,093	1,870,919	
(140)	660		" "	-2.6°	0.6	-		-0.6		768.2		+660	+13	622,873	1,870,915	
141	440		" "	-2.6°	2.9	-		-2.9		765.9		+440	+9	622,653	1,870,911	
142	220		" "	-2.6°	4.6	-		-4.6		764.2		+220	+4	622,433	1,870,906	
143	0		" "		5.3	-		-5.3		763.5	X	0	0	622,213	1,870,902	
144	220		181°19'	-2.6°	6.1	-		-6.1		762.7		-220	+5	621,993	1,870,907	
#					r											
#	295		177°49'	-2.6°	5.0	-		-5.0		763.8		-294	+25	621,919	1,870,927	621,910+1870,910 T-rd(west)
145	440		176°45'	-2.6°	5.8	-		-5.8		763.0		-438	+45	621,775	1,870,947	(Grant)

SURVEY NOTES-HIGH RESOLUTION DATA

GEO-445

Geosource Inc.

DATE		INSTRUMENT MAN		ROD MAN		PARTY NUMBER		NOTES CHECKED BY		LINE NO.	PAGE				
9/19/78		G. Cotcamp		R. Hulsey		6834		R. J. H.		3	10				
AREA		TOPO MAP		STATE		COUNTY		TWP		RANGE	PPM	PARTY MANAGER			
Michigan		Carson City		Michigan		Gratiot		9 N		4 W		L.O. Davis			
STATION NO.	SLOPE DISTANCE	PLOTTING DISTANCE	AZIMUTH FROM MAGNETIC NORTH	DEC	ROD READING	VERTICAL ANGLE	VERTICAL CHANGE	DIFFERENCE IN ELEVATION	ELEVATION OF INSTRUMENT	ELEVATION OF STATION	BS X TP	COORDINATES		REMARKS	
												NORTH + SOUTH -	EAST + WEST -		Y
									768.8						
146	660		175°44.2'	-24°	6.0	-		-6.0		762.8	TP	-656	+77	621,557	1,870,979
146	660				9.3	TH	+3.3	-6.0			TP				
	2640		3°4.6' ±180°	-24°	+7.1	-		+7.1		769.9	BS	-2640	-31		
	2640				+14.8	89°50'	-7.7	+7.1			BS				
147	2420		3°4.6'	-24°	7.0	-		-7.0		762.9		+2420	+29	621,337	1,870,977
148	2200		"	-24°	6.8	-		-6.8		763.1		+2200	+26	621,117	1,870,974
149	1980		"	-24°	6.8	-		-6.8		763.1		+1980	+23	620,897	1,870,971
150	1760		"	-24°	7.1	-		-7.1		762.8		+1760	+21	620,677	1,870,969
151	1540		"	-24°	6.6	-		-6.6		763.3		+1540	+18	620,457	1,870,966
152	1320		"	-24°	5.0	-		-5.0		764.9		+1320	+16	620,237	1,870,964
153	1100		"	-24°	3.9	-		-3.9		766.0		+1100	+13	620,017	1,870,961
154	880		"	-24°	5.3	-		-5.3		764.6		+880	+10	619,797	1,870,958
155	660		"	-24°	6.6	-		-6.6		763.3		+660	+8	619,577	1,870,956
156	440		"	-24°	7.7	-		-7.7		762.2		+440	+5	619,357	1,870,953
156	411		3°59'	-24°	7.6	-		-7.6		762.3		+411	+11	619,328	1,870,951
157	220		3°4.6'	-24°	7.2	-		-7.2		762.7		+220	+3	619,137	1,870,951 (Cotter)
158	0				5.4	-		-5.4		764.5	X	0	0	618,917	1,870,948
159	220		183°4.6'	-24°	7.9	-		-7.9		762.0		-220	-3	618,697	1,870,945
160	440		"	-24°	8.0	-		-8.0		761.9		-440	-5	618,477	1,870,943
161	660		"	-24°	8.2	-		-8.2		761.7		-660	-8	618,257	1,870,940

619,330 + 1,870,775
T-rd (east) El. 763

SURVEY NOTES - HIGH RESOLUTION DATA

GEO-445

Geosource Inc.

DATE		INSTRUMENT MAN		ROD MAN		PARTY NUMBER		NOTES CHECKED BY		LINE NO.	PAGE						
9/19/78		G. Cotcamp		R. Hulsey		2805		R. J. H.		3	11						
AREA		TOPO MAP		STATE	COUNTY		TWP	RANGE	PPM	PARTY MANAGER							
Michigan		Carson City 7.5'		Michigan	Grafton		9N	4W		L. J. J. J.							
STATION NO.	SLOPE DISTANCE	PLOTTING DISTANCE	AZIMUTH FROM MAGNETIC NORTH	DEC	ROD READING	VERTICAL ANGLE	VERTICAL CHANGE	DIFFERENCE IN ELEVATION	ELEVATION OF INSTRUMENT	ELEVATION OF STATION	BS X TP	NORTH + SOUTH -	EAST + WEST -	COORDINATES		REMARKS	
												LAT.	DEP.	Y	X		
									769.9								
162	880		183°46'	-2.4°	8.1	-		-8.1		761.8		-880	-10	618,037	1,870,938		
163	1100		"	-2.4°	6.6	-		-6.6		763.3		-1100	-13	617,817	1,870,935		
164	1320		"	-2.4°	8.2	-		-8.2		761.7		-1320	-16	617,597	1,870,932		
165	1540		"	-2.4°	10.8	-		-10.8		759.1		-1540	-18	617,377	1,870,930		
166	1760		"	-2.4°	10.8	-		-10.8		759.1		-1760	-21	617,157	1,870,927		
167	1980		"	-2.4°	9.7	-		-9.7		760.2		-1980	-23	616,937	1,870,925		
168	2200		"	-2.4°	7.9	-		-7.9		762.0		-2200	-26	616,717	1,870,922		
168	2232		182°52'	-2.4°	7.1	-		-7.1		762.8		-2232	-18	616,685	1,870,930	616,680 + 1,870,925 4-Way Intersect. E1.763	
169	2420		183°46'	-2.4°	7.3	-		-7.3		762.6		-2420	-29	616,497	1,870,919	Garfield & Ferris	
170	2640		183°46'	-2.4°	6.1	-		-6.1	-6.2	763.9	TP	-2640	-31	616,277	1,870,917		
170	2640				14.0	89°30'	+7.7	-6.3			TP						
	2640		3°2' +180°	-2.4°	+1.8	-		+1.8	765.5		BS	-2640	-29				
	2640				+14.9	TH	-13.2	+1.7			BS						
171	2420		3°2'	-2.4°	12.0	TH	+12.1	+0.1		765.6		+2420	+27	616,057	1,870,915		
172	2200		"	-2.4°	0.8	-		-0.8		764.7		+2200	+24	615,837	1,870,912		
173	1980		"	-2.4°	2.0	-		-2.0		763.5		+1980	+22	615,617	1,870,910		
174	1760		"	-2.4°	3.1	-		-3.1		762.4		+1760	+19	615,397	1,870,907		
175	1540		"	-2.4°	4.9	-		-4.9		760.6		+1540	+17	615,177	1,870,905		
176	1320		"	-2.4°	5.0	-		-5.0		760.5		+1320	+15	614,957	1,870,903		
177	1100		"	-2.4°	5.2	-		-5.2		760.3		+1100	+12	614,737	1,870,900		

SURVEY NOTES-HIGH RESOLUTION DATA

GEO-445

Geosource Inc.

DATE		INSTRUMENT MAN		ROD MAN		PARTY NUMBER		NOTES CHECKED BY		LINE NO.		PAGE			
9/19/78		G. Cotcamp		R. Hulsey		6834		R. J. H.		3		12			
AREA		TOPO MAP		STATE		COUNTY		TWP		RANGE		PPM		PARTY MANAGER	
Michigan		Carson City		Michigan		Grand		9 N		4 W				L.O. Davis	
STATION NO.	SLOPE DISTANCE	PLOTTING DISTANCE	AZIMUTH FROM MAGNETIC NORTH	DEC	ROD READING	VERTICAL ANGLE	VERTICAL CHANGE	DIFFERENCE IN ELEVATION	ELEVATION OF INSTRUMENT	ELEVATION OF STATION	BS X TP	COORDINATES		REMARKS	
												NORTH + SOUTH -	EAST + WEST -		Y
									765.5						
178	880		3° 2'	-24°	4.6	-		-4.6		760.9		+880	+10	614,517	1,870,898
179	660		" "	-24°	3.8	-		-3.8		761.7		+660	+7	614,297	1,870,895
180	440		" "	-24°	2.0	-		-2.0		763.5		+440	+5	614,077	1,870,893
181	408		3° 58'	-24°	2.0	-		-2.0		763.5		+408	+11	614,045	1,870,899 <i>radial E. 765</i>
182	220		3° 2'	-24°	3.8	-		-3.8		761.7		+220	+2	613,857	1,870,890
183	0				5.3	-		-5.3		760.2	TP	0	0	613,637	1,870,888
184	220		183° 11.2'	-24°	6.2	-		-6.2		759.3		-220	-3	613,417	1,870,885
185	440		" "	-24°	6.0	-		-6.0		759.5		-440	-6	613,197	1,870,882
186	660		" "	-24°	6.2	-		-6.2		759.3		-660	-9	612,977	1,870,879
187	880		" "	-24°	6.2	-		-6.2		759.3		-880	-12	612,757	1,870,876
188	1100		" "	-24°	5.9	-		-5.9		759.6		-1100	-15	612,537	1,870,873
189	1320		" "	-24°	5.0	-		-5.0		760.5		-1320	-18	612,317	1,870,870
190	1540		" "	-24°	5.1	-		-5.1		760.4		-1540	-21	612,097	1,870,867
191	1760		" "	-24°	5.9	-		-5.9		759.6		-1760	-24	611,877	1,870,864
192	1980		" "	-24°	6.0	-		-6.0		759.5		-1980	-27	611,657	1,870,861
193	2200		" "	-24°	3.8	-		-3.8		761.7		-2200	-30	611,437	1,870,858
194	2420		183° 3.3'	-24°	3.4	-		-3.4		762.1		-2230	-25	611,407	1,870,863 <i>4-Way Intersect</i>
195	2640		183° 11.2'	-24°	6.0	-		-6.0		759.5		-2420	-33	611,217	1,870,855 <i>Clearland + Faces</i>
196	2860		183° 11.2'	-23°	7.5	-		-7.5		758.0	TP	-2640	-41	610,997	1,870,847
197	3080				13.7	89° 32'	+6.2	-7.5			TP				

SURVEY NOTES-HIGH RESOLUTION DATA

GEO-445

Geosource Inc.

DATE		INSTRUMENT MAN		ROD MAN		PARTY NUMBER		NOTES CHECKED BY		LINE NO.		PAGE			
9/19/78		G. Colcamp		R. Hulsey		6834		R. J. H.		3		12			
AREA		TOPO MAP		STATE		COUNTY		TWP		RANGE		PPM		PARTY MANAGER	
Michigan		Carson City 75		Michigan		Gratiot		9 N		4 W				L. O. Davis	
STATION NO.	SLOPE DISTANCE	PLOTTING DISTANCE	AZIMUTH FROM MAGNETIC NORTH	DEC	ROD READING	VERTICAL ANGLE	VERTICAL CHANGE	DIFFERENCE IN ELEVATION	ELEVATION OF INSTRUMENT	ELEVATION OF STATION	BS X TP	COORDINATES		REMARKS	
												NORTH+ SOUTH - LAT.	EAST+ WEST - DEP.		Y
194										758.0					
	2640		3° 14.3' +180°	-23°	+4.4	-		+4.4			BS	-2640	-43		
	2640				+137	89° 48'	-9.2	+4.5	762.5		BS				
195	2420		3° 14.3'	-23°	4.5	-		-4.5		758.0		+2420	+40	610,777	1,870,844
196	2200		" "	-23°	4.3	-		-4.3		758.2		+2200	+36	610,557	1,870,840
197	1980		" "	-23°	4.3	-		-4.3		758.2		+1980	+32	610,337	1,870,836
198	1760		" "	-23°	4.1	-		-4.1		758.4		+1760	+29	610,117	1,870,833
199	1540		" "	-23°	3.8	-		-3.8		758.7		+1540	+25	609,897	1,870,829
200	1320		" "	-23°	4.3	-		-4.3		758.2		+1320	+22	609,677	1,870,826
201	1100		" "	-23°	4.9	-		-4.9		757.6		+1100	+18	609,457	1,870,822
202	880		" "	-23°	5.1	-		-5.1		757.4		+880	+14	609,237	1,870,818
203	660		" "	-23°	5.0	-		-5.0		757.5		+660	+11	609,017	1,870,815
204	440		" "	-23°	4.7	-		-4.7		757.8		+440	+7	608,797	1,870,811
205	220		" "	-23°	5.1	-		-5.1		757.4		+220	+4	608,577	1,870,808
206	0		" "		5.4	-		-5.4		757.1	π	0	0	608,357	1,870,804
==#==	182		181° 09'	-23°	4.6	-		-4.6		757.9		-182	+4	608,175	1,870,800 drainage ditch E.L. 758
207	220		183° 14.6'	-23°	4.8	-		-4.8		757.7		-220	-4	608,137	1,870,800
208	440		" "	-23°	4.8	-		-4.8		757.7		-440	-7	607,917	1,870,797
209	660		" "	-23°	3.9	-		-3.9		758.6		-660	-11	607,697	1,870,793
210	880		" "	-23°	3.9	-		-3.9		758.6		-880	-14	607,477	1,870,790
211	1100		" "	-23°	3.7	-		-3.7		758.8		-1100	-18	607,257	1,870,786

DATE		INSTRUMENT MAN		ROD MAN		PARTY NUMBER		NOTES CHECKED BY		LINE NO.		PAGE		
7/19/78		G. Colcamp		F. H. Hony		6834		R. J. H.		3		14		
AREA		TOPO MAP		STATE		COUNTY		TWP		RANGE		PPM		
Michigan		Carson City 7.5'		Michigan		Gratiot		9 N		4 W		L. O. Pous		
STATION NO.	SLOPE DISTANCE	PLOTTING DISTANCE	AZIMUTH FROM MAGNETIC NORTH	DEC	ROD READING	VERTICAL ANGLE	VERTICAL CHANGE	DIFFERENCE IN ELEVATION	ELEVATION OF INSTRUMENT	ELEVATION OF STATION	BS X TP	COORDINATES		REMARKS
												NORTH + SOUTH -	EAST + WEST -	
									762.5					
212	1320		183° 14.6'	-23°	3.0	-		-3.0		759.5		-1320	-22	607,037 1,870,782
213	1540		"	-23°	3.2	-		-3.2		759.3		-1540	-25	606,817 1,870,779
214	1760		"	-23°	2.9	-		-2.9		759.6		-1760	-29	606,597 1,870,775
215	1980		"	-23°	3.2	-		-3.2		759.3		-1980	-33	606,377 1,870,771
216	2200		"	-23°	4.0	-		-4.0		758.5		-2200	-36	606,157 1,870,768
217	2230		183° 4.7'	-23°	3.6	-		-3.6		758.9		-2230	-30	606,127 1,870,774 4-way
218	2420		183° 14.6'	-23°	6.2	-		-6.2		756.3		-2420	-40	605,937 1,870,764 Roosevelt & Ferris
218	2640		183° 14.6'	-23°	6.4	-		-6.4		756.1	TP	-2640	-43	605,717 1,870,761
218	2640				14.2	89° 50'	+7.7	-6.5			TP			
	2640		3° 5.7' +180°	-225°	+6.5	-		+6.5	762.6		BS	-2640	-39	
	2640				14.3	89° 50'	-7.7	+6.6			BS			
219	2420		3° 5.7'	-225°	6.0	-		-6.0		756.6		+2420	+36	605,497 1,870,758
220	2200		"	-225°	5.0	-		-5.0		757.6		+2200	+32	605,277 1,870,754
221	1980		"	-225°	2.0	-		-2.0		760.6		+1980	+29	605,057 1,870,751
222	1760		"	-225°	1.8	-		-1.8		760.8		+1760	+26	604,837 1,870,748
223	1540		"	-225°	1.1	-		-1.1		761.5		+1540	+23	604,617 1,870,745
224	1320		"	-225°	2.7	-		-2.7		759.9		+1320	+19	604,397 1,870,741
225	1100		"	-225°	4.3	-		-4.3		758.3		+1100	+16	604,177 1,870,738
226	880		"	-225°	4.8	-		-4.8		757.8		+880	+13	603,957 1,870,735
227	660		"	-225°	4.7	-		-4.7		757.9		+660	+10	603,737 1,870,732




horizontal correction y = +8'
x = 0'
606,125 1,870,775
4-way

SURVEY NOTES-HIGH RESOLUTION DATA

GEO-445

Geosource Inc.

DATE 9/19/78	INSTRUMENT MAN G. Cotcamp	ROD MAN R. Hulsey	PARTY NUMBER 6834	NOTES CHECKED BY R. J. H.	LINE NO. 3	PAGE 15
AREA Michigan	TOPO MAP Carson City	STATE Michigan	COUNTY Gratiot	TWP 9N	RANGE 4W	PARTY MANAGER L. O. Davis

STATION NO.	SLOPE DISTANCE 	PLOTTING DISTANCE 	AZIMUTH FROM MAGNETIC NORTH	DEC	ROD READING	VERTICAL ANGLE	VERTICAL CHANGE 	DIFFERENCE IN ELEVATION	ELEVATION OF INSTRUMENT	ELEVATION OF STATION	BS X TP	NORTH + SOUTH - LAT.	EAST + WEST - DEP.	COORDINATES		REMARKS	
														Y	X		
									762.6								
228	440		3° 5.7'	-2.25°	3.7	-		-3.7		758.9		+440	+6	603,517	1,870,728		
229	220		"	-2.25°	4.1	-		-4.1		758.5		+220	+3	603,297	1,870,725		
230	0				5.3	-		-5.3		757.3	TP	0	0	603,077	1,870,722		
231	220		183° 9.6'	-2.25°	8.1	-		-8.1		754.5		-220	-3	602,857	1,870,719		
232	440		"	-2.25°	10.2	-		-10.2		752.4		-440	-7	602,637	1,870,715		
233	660		"	-2.25°	11.2	-		-11.2		751.4		-660	-10	602,417	1,870,712		
234	880		"	-2.25°	12.2	-		-12.2		750.4		-880	-14	602,197	1,870,708		
235	1100		"	-2.25°	13.0	-		-13.0		749.6		-1100	-17	601,977	1,870,705		
236	1320		"	-2.25°	13.3	-		-13.3		749.3		-1320	-21	601,757	1,870,701		
237	1540		"	-2.25°	12.6	-		-12.6		750.0		-1540	-24	601,537	1,870,698		
238	1760		"	-2.25°	12.1	-		-12.1		750.5		-1760	-28	601,317	1,870,694		
239	1980		"	-2.25°	5.2	BH	-9.9	-15.1		747.5		-1980	-31	601,097	1,870,691		
240	2200		183° 9.6'	-2.25°	4.1	BH	-11.0	-15.1		747.5	TP	-2200	-35	600,877	1,870,687		
240	2200				15.0	-		-15.0			TP						
	2640		3° 11.7' +180°	-2.25°	+5.7	BH	+13.2	+18.9			BS	-2640	-44				
	2640				+14.2	90° 06'	+4.6	+18.8	766.3		BS						
241	2610		3° 18'	-2.25°	5.2	BH	-13.1	-18.3		748.0		+2610	+48	600,847	1,870,691	600840 + 1,870,685 4-Way Intersect. El. 748	
241	2420		3° 11.7'	-2.25°	6.0	BH	-12.1	-18.1		748.2		+2420	+40	600,657	1,870,683	Taft & Ferris	
242	2200		"	-2.25°	10.2	BH	-11.0	-21.2		745.1		+2200	+36	600,437	1,870,679		
243	1780		"	-2.25°	11.6	BH	-9.9	-21.5		744.0		+1780	+33	600,217	1,870,676		

DATE		INSTRUMENT MAN		ROD MAN		PARTY NUMBER		NOTES CHECKED BY		LINE NO.		PAGE			
7/20/78		G. Cotcamp		K. Hulsey		1		R.J.H.		3		16			
AREA		TOPO MAP		STATE		COUNTY		TWP		RANGE		PPM		PARTY MANAGER	
Michigan		Carson City 7.5'		Michigan		St. Clair		9 N		4 W				L. J. Davis	
STATION NO.	SLOPE DISTANCE	PLOTTING DISTANCE	AZIMUTH FROM MAGNETIC NORTH	DEC	ROD READING	VERTICAL ANGLE	VERTICAL CHANGE	DIFFERENCE IN ELEVATION	ELEVATION OF INSTRUMENT	ELEVATION OF STATION	BS X TP	COORDINATES		REMARKS	
												NORTH + SOUTH -	EAST + WEST -		Y
									766.3						
244	1760		3°11.7'	-2.25°	9.9	BH	-8.8	-18.7		747.6		+1760	+29	599,997	1,870,672
245	1540		"	-2.25°	8.4	BH	-7.7	-16.1		750.2		+1540	+25	599,777	1,870,668
246	1320		"	-2.25°	13.8	-		-13.8		752.5		+1320	+22	599,557	1,870,665
247	1100		"	-2.25°	11.4	-		-11.4		754.9		+1100	+18	599,337	1,870,661
248	880		"	-2.25°	9.0	-		-9.0		757.3		+880	+15	599,117	1,870,658
249	660		"	-2.25°	6.9	-		-6.9		759.4		+660	+11	598,897	1,870,654
250	440		"	-2.25°	7.0	-		-7.0		759.3		+440	+7	598,677	1,870,650
251	220		"	-2.25°	6.8	-		-6.8		759.5		+220	+4	598,457	1,870,647
252	0		"		5.4	-		-5.4		760.9	X	0	0	598,237	1,870,643
253	220		183°19.7'	-2.25°	8.3	-		-8.3		758.0		-220	-4	598,017	1,870,639
254	440		"	-2.25°	13.2	BH	-2.2	-15.4		750.9		-440	-8	597,797	1,870,635
255	660		"	-2.25°	9.1	91°	-11.5	-20.6		745.7		-660	-12	597,577	1,870,631
256	880		"	-2.25°	8.3	91°	-15.4	-23.7		742.6		-880	-17	597,357	1,870,626
257	1100		"	-2.25°	5.1	91°	-19.2	-24.3		742.0		-1100	-21	597,137	1,870,622
258	1320		"	-2.25°	11.1	90°30'	-11.5	-22.6		743.7		-1320	-25	596,917	1,870,618
259	1540		"	-2.25°	6.0	90°30'	-13.4	-19.4		746.9		-1540	-29	596,697	1,870,614
260	1760		"	-2.25°	8.5	BH	-8.8	-17.3		749.0		-1760	-33	596,477	1,870,610
261	1980		"	-2.25°	8.3	BH	-9.9	-18.2		748.1		-1980	-37	596,257	1,870,606
262	2200		"	-2.25°	7.1	BH	-11.0	-18.1		748.2		-2200	-41	596,037	1,870,602
263	2420		"	-2.25°	6.9	BH	-12.1	-19.0		747.3		-2420	-46	595,817	1,870,597

DATE		INSTRUMENT MAN			ROD MAN			PARTY NUMBER		NOTES CHECKED BY			LINE NO.	PAGE		
9/20/78		G. Catcamp			R. Hulsev			6834		R. J. H.			3	17		
AREA		TOPO MAP		STATE	COUNTY			TWP	RANGE	PPM	PARTY MANAGER					
Michigan		Carson City/Hubbardston		Michigan	Grafton			9N	4W		L. S. Davis					
STATION NO.	SLOPE DISTANCE	PLOTTING DISTANCE	AZIMUTH FROM MAGNETIC NORTH	DEC	ROD READING	VERTICAL ANGLE	VERTICAL CHANGE	DIFFERENCE IN ELEVATION	ELEVATION OF INSTRUMENT	ELEVATION OF STATION	BS X TP	NORTH + SOUTH -	EAST + WEST -	COORDINATES		REMARKS
												LAT.	DEP.	Y	X	
264	2640		183° 19.7'	-2.25°	5.5	BH	-13.2	-18.7		747.6	TP	-2640	-50	595,597	1,870,593	
264	2640				14.1	90° 06'	-4.6	-18.7			TP					
	2641		3° 6.2' +180°	-2.25°	+1.2	TH	-13.2	-12.0			BS	-2640	-39			
	2642				+3.5	279° 0'	-15.4	-11.9	735.7		BS					
265	2643		3° 13'	-2.25°	1.8	TH	+13.1	+11.3		747.0		+2610	+44	595,567	1,870,598	4-Way Intersect.
265	2640		3° 6.2'	-2.25°	4.6	TH	+12.1	+7.5		743.2		+2420	+36	595,377	1,870,590	Wilson & Ferris
266	2630		" "	-2.25°	2.0	TH	+11.0	+9.0		744.7		+2200	+33	595,157	1,870,587	
267	1990		" "	-2.25°	0.3	TH	+9.9	+9.6		745.3		+1980	+29	594,937	1,870,583	
268	1700		" "	-2.25°	3.8	TH	+8.8	+5.0		740.7		+1760	+26	594,717	1,870,580	
269	1540		" "	-2.25°	3.9	TH	+7.7	+3.8		739.5		+1540	+23	594,497	1,870,577	
270	1320		" "	-2.25°	3.0	TH	+6.6	+3.6		739.3		+1320	+20	594,277	1,870,574	
271	1120		" "	-2.25°	3.4	TH	+5.5	+2.1		737.8		+1100	+16	594,057	1,870,570	
272	860		" "	-2.25°	0.9	TH	+4.4	+3.5		739.2		+880	+13	593,837	1,870,567	
273	600		" "	-2.25°	1.1	TH	+3.3	+2.2		737.9		+660	+10	593,617	1,870,564	
274	440		" "	-2.25°	1.1	TH	+2.2	+1.1		736.8		+440	+7	593,397	1,870,561	
275	220		" "	-2.25°	0.4	-		-0.4		735.3		+220	+3	593,177	1,870,557	
276	0		" "		5.4	-		-5.4		730.3	TP	0	0	592,957	1,870,554	
277	0		183° 13.8'	-2.25°	9.1	-		-9.1		726.6		-220	-4	592,737	1,870,550	
278	0		" "	-2.25°	9.8	-		-9.8		725.9		-440	-8	592,517	1,870,546	last sta. in Carson City
279	0		" "	-2.25°	10.2	-		-10.2		725.5		-660	-11	592,297	1,870,543	first sta. in Hubbardston

SURVEY NOTES-HIGH RESOLUTION DATA
GEO-445

Geosource Inc.

DATE		INSTRUMENT MAN		ROD MAN		PARTY NUMBER		NOTES CHECKED BY		LINE NO.	PAGE				
9/20/78		G. C. Coamp		J. Vidley		6834		R. J. H.		3	18				
AREA		TOPO MAP		STATE		COUNTY		TWP		RANGE	PPM	PARTY MANAGER			
Michigan		Hubbardston		Michigan		Gratiot/Clinton		8N/9N		4W		L. O. Davis			
STATION NO.	SLOPE DISTANCE	PLOTTING DISTANCE	AZIMUTH FROM MAGNETIC NORTH	DEC	ROD READING	VERTICAL ANGLE	VERTICAL CHANGE	DIFFERENCE IN ELEVATION	ELEVATION OF INSTRUMENT	ELEVATION OF STATION	BS X TP	COORDINATES		REMARKS	
												NORTH + SOUTH - LAT.	EAST + WEST - DEP.		Y
									735.7						
280	880		183° 13.8'	-2.25°	11.1	-		-11.1		724.6		-880	-15	592,077	1,870,539
281	1100		"	-2.25°	11.0	-		-11.0		724.7		-1100	-19	591,857	1,870,535
282	1320		"	-2.25°	10.2	-		-10.2		725.5		-1320	-23	591,637	1,870,531
283	1540		"	-2.25°	8.9	-		-8.9		726.8		-1540	-26	591,417	1,870,528
284	1760		"	-2.25°	4.0	-		-4.0		731.7		-1760	-30	591,197	1,870,524
285	1980		"	-2.25°	5.5	-		-5.5		730.2		-1980	-34	590,977	1,870,520
286	2200		"	-2.25°	2.7	-		-2.7		733.0		-2200	-38	590,757	1,870,516
287	2420		183° 13.8'	-2.25°	11.8	TH	+12.1	+0.3		736.0		-2420	-41	590,537	1,870,513
288	2640		183° 13.8'	-2.0°	13.5	89°50'	+7.7	-5.8		729.9	TP	-2639	-57	590,318	1,870,497
288	2640				12.0	89°52'	+6.2	-5.8			TP				
	219		20°33.3' +180°	-2.0°	+4.8	92°-	+7.6	+12.4	742.3		BS	-208	-70		
	219				+6.7	91°30'	+5.7	+12.4			BS				Gratiot Co. T9N
BM	268		12° 2'	-2.0°	4.4	91°30'	-7.0	-11.4		730.9		+264	+47	590,374	1,870,474 U.S.G.S. E1.732
BM	175		5°36'	-2.0°	11.4	91°	-3.1	-14.5		727.8		+175	+11	590,285	1,870,438 590,285 + 1,870,438 offset 4-Way
289	0				5.3	-		-5.3		737.0	X	0	0	590,110	1,870,427 Clinton Co.
290	220		182° 21.2'	-2.0°	0.4	TH	+1.1	+0.7		743.0		-220	-1	589,890	1,870,426 T8N
291	440		"	-2.0°	6.8	89°-	+7.7	+0.9		743.2		-440	-3	589,670	1,870,424
292	660		"	-2.0°	10.0	89°-	+11.5	+1.5		743.8		-660	-4	589,450	1,870,423
293	880		"	-2.0°	12.1	89°-	+15.4	+3.3		745.6		-880	-5	589,230	1,870,422

DATE		INSTRUMENT MAN		ROD MAN		PARTY NUMBER		NOTES CHECKED BY		LINE NO.	PAGE						
9/22/78		G. Cotcamp		L. Hulsey		6837		R. J. H.		5	19						
AREA		TOPO MAP		STATE		COUNTY		TWP	RANGE	PPM	PARTY MANAGER						
Michigan		Hubbardston		Michigan		Stanton		8 N	4 W		L. C. Davis						
STATION NO.	SLOPE DISTANCE	PLOTTING DISTANCE	AZIMUTH FROM MAGNETIC NORTH	DEC	ROD READING	VERTICAL ANGLE	VERTICAL CHANGE	DIFFERENCE IN ELEVATION	ELEVATION OF INSTRUMENT	ELEVATION OF STATION	BS X TP	NORTH + SOUTH - LAT.	EAST + WEST - DEP.	COORDINATES		REMARKS	
														Y	X		
									742.3								
294	1100		182° 21.2'	-2.2°	8.9	89° 30'	+9.6	+0.7			TP	-1100	-3	589,010	1,870,424		
294	1100				13.9	89° 14'	+14.7	+0.8		743.1	TP						
	1760		2° 51.6' + 180°	-2.2°	+2.8	-		+2.8			BS	-1760	-20				
	1760				4.9	89° 56'	-2.0	+2.9	746.0		BS						
295			2° 51.6'	-2.2°	5.2	-		-5.2		740.8		+1540	+18	588,790	1,870,422		
296			"	-2.2°	6.3	-		-6.3		739.7		+1320	+15	588,570	1,870,419		
297			"	-2.2°	8.2	-		-8.2		737.8		+1100	+13	588,350	1,870,417		
298			"	-2.2°	11.2	-		-11.2		734.8		+880	+10	588,130	1,870,414		
299	550		"	-2.2°	12.4	-		-12.4		733.6		+660	+8	587,910	1,870,412	sta. 299 is 30' N of bridge c/1	
300	440		"	-2.2°	10.3	-		-10.3		735.7		+440	+5	587,690	1,870,409		
301	220		"	-2.2°	7.8	-		-7.8		738.2		+220	+3	587,470	1,870,407		
302	0		"		5.3	-		-5.3		740.7	TP	0	0	587,250	1,870,404		
303	220		182° 39'	-2.2°	2.5	-		-2.5		743.5		-220	-2	587,030	1,870,402		
304	440		"	-2.2°	1.1	-		-1.1		744.9		-440	-3	586,810	1,870,401		
305	660		"	-2.2°	2.3	TH	+3.3	+1.0		747.0		-660	-5	586,590	1,870,399		
306	880		"	-2.2°	2.0	TH	+4.4	+2.4		748.4		-880	-7	586,370	1,870,397		
307	1100		"	-2.2°	3.1	TH	+5.5	+2.4		748.4		-1100	-9	586,150	1,870,395		
308	1320		"	-2.2°	2.7	TH	+6.6	+3.9		749.9		-1320	-10	585,930	1,870,394		
309	1540		"	-2.2°	1.2	TH	+7.7	+6.5		752.5		-1540	-12	585,710	1,870,392		

DATE		INSTRUMENT MAN		ROD MAN		PARTY NUMBER		NOTES CHECKED BY		LINE NO.	PAGE				
9/22/78		G. Cotcamp		R. Hulsey		6834		R. J. H.		3	20				
AREA		TOPO MAP		STATE		COUNTY		TWP		RANGE		PPM		PARTY MANAGER	
Michigan		Hubbardston		Michigan		Clinton		8N		4W				L. O. Davis	
STATION NO.	SLOPE DISTANCE	PLOTTING DISTANCE	AZIMUTH FROM MAGNETIC NORTH	DEC	ROD READING	VERTICAL ANGLE	VERTICAL CHANGE	DIFFERENCE IN ELEVATION	ELEVATION OF INSTRUMENT	ELEVATION OF STATION	BS X TP	COORDINATES		REMARKS	
												NORTH + SOUTH - LAT.	EAST + WEST - DEP.		Y
									746.0						
310	1760		182°39'	-2.2°	6.9	89°30'	+15.4	+8.5		754.5	TP	-1760	-14	585,490	1,870,390
310	1760				15.0	89°14'	+23.5	+8.5			TP				
	2640		2°45.1 +180°	-2.2°	+6.8	-		+6.8			BS	-2640	-25		
	2640				+14.7	89°50'	-7.7	+7.0	761.5		BS				
FF	2490		2°50'	-2.2°	6.8	-		-6.8		754.7		+2490	+28	585,340	1,870,393 4-way Intersect. El. 758
311	2420		2°45.1	-2.2°	6.9	-		-6.9		754.6		+2420	+23	585,270	1,870,388 Maple
312	2200		'	-2.2°	8.1	-		-8.1		753.4		+2200	+21	585,050	1,870,386
313	2200		'	-2.2°	7.9	-		-7.9		753.6		+1980	+19	584,830	1,870,384
314	1760		'	-2.2°	6.7	-		-6.7		754.8		+1760	+17	584,610	1,870,382
315	1540		'	-2.2°	6.8	-		-6.8		754.7		+1540	+15	584,390	1,870,380
316	1320		'	-2.2°	7.5	-		-7.5		754.0		+1320	+13	584,170	1,870,378
317	1100		'	-2.2°	7.9	-		-7.9		753.6		+1100	+11	583,950	1,870,376
318	880		'	-2.2°	7.8	-		-7.8		753.7		+880	+8	583,730	1,870,373
319	660		'	-2.2°	6.9	-		-6.9		754.6		+660	+6	583,510	1,870,371
320	440		'	-2.2°	5.7	-		-5.7		755.8		+440	+4	583,290	1,870,369
321	220		'	-2.2°	4.7	-		-4.7		756.8		+220	+2	583,070	1,870,367
322	0				5.3	-		-5.3		756.2	TP	0	0	582,850	1,870,365
323	660		182°52.7'	-2.2°	5.3	-		-5.3		756.2		-220	-3	582,630	1,870,362
324	440		'	-2.2°	4.5	-		-4.5		757.0		-440	-5	582,410	1,870,360
325	660		'	-2.2°	3.7	-		-3.7		757.8		-660	-8	582,190	1,870,357

SURVEY NOTES-HIGH RESOLUTION DATA

GEO-445

Geosource Inc.

DATE		INSTRUMENT MAN		ROD MAN		PARTY NUMBER		NOTES CHECKED BY		LINE NO.		PAGE			
9/22/78		G. Cotcamp		R. Hulsey		6834		R.J.H.		3		21			
AREA		TOPO MAP		STATE		COUNTY		TWP		RANGE		PPM		PARTY MANAGER	
Michigan		Hubbarston		Michigan		Clinton		8N		4W				L.O. Davis	
STATION NO.	SLOPE DISTANCE	PLOTTING DISTANCE	AZIMUTH FROM MAGNETIC NORTH	DEC	ROD READING	VERTICAL ANGLE	VERTICAL CHANGE	DIFFERENCE IN ELEVATION	ELEVATION OF INSTRUMENT	ELEVATION OF STATION	BS X TP	COORDINATES		REMARKS	
												NORTH + SOUTH - LAT.	EAST + WEST - DEP.		Y
									761.5						
326	880		182°52.7'	-22°	1.7	-		-1.7		759.8		-880	-10	581,970	1,870,355
327	1100		"	-22°	2.4	-		-2.4		759.1		-1100	-13	581,750	1,870,352
328	1320		"	-22°	8.2	-		-8.2		753.3		-1320	-16	581,530	1,870,349
329	1540		"	-22°	9.9	-		-9.9		751.6		-1540	-18	581,310	1,870,347
330	1760		"	-22°	9.5	-		-9.5		752.0		-1760	-21	581,090	1,870,344
331	1980		"	-22°	8.2	-		-8.2		753.3		-1980	-23	580,870	1,870,342
332	2200		182°52.7'	-24°	10.7	-		-10.7		750.8	TP	-2200	-18	580,650	1,870,347
332	2200				14.6	89°34'	+3.9	-10.0			TP				
	2200		3°22.7' +180°	-24°	+0.1	-		+0.1	750.9		BS	-2200	-38		
	2200				+4.0	89°34'	-3.9	+0.1			BS				
333	1980		3°22.7'	-24°	8.9	TH	+9.9	+1.0		751.9		+1980	+34	580,430	1,870,343
334	1760		"	-24°	3.6	-		-3.6		747.3		+1760	+30	580,210	1,870,339
JL IF	1590		3°26.5'	-24°	4.4	-		-4.4		746.5		+1590	+29	580,040	1,870,338 4-Way Intersect E1.748
335	1540		3°22.7'	-24°	5.5	-		-5.5		745.4		+1540	+26	579,990	1,870,335 Island
336	1320		"	-24°	7.8	-		-7.8		743.1		+1320	+23	579,770	1,870,332
337	1100		"	-24°	8.9	-		-8.9		742.0		+1100	+19	579,550	1,870,328
338	880		"	-24°	11.1	-		-11.1		739.8		+880	+15	579,330	1,870,324
339	660		"	-24°	10.3	-		-10.3		740.6		+660	+11	579,110	1,870,320
340	440		"	-24°	8.2	-		-8.2		742.7		+440	+8	578,890	1,870,317
341	220		"	-24°	8.0	-		-8.0		742.9		+220	+4	578,670	1,870,313

DATE		INSTRUMENT MAN		ROD MAN		PARTY NUMBER		NOTES CHECKED BY		LINE NO.	PAGE				
9/22/78		G. CoTcamp		R. Hulsey		6834		R. J. H.		3	22				
AREA		TOPO MAP		STATE	COUNTY		TWP	RANGE	PPM	PARTY MANAGER					
Michigan		Hubbarston		Michigan	Clinton		8 N	4 W		L. O. Davis					
STATION NO.	SLOPE DISTANCE	PLOTTING DISTANCE	AZIMUTH FROM MAGNETIC NORTH	DEC	ROD READING	VERTICAL ANGLE	VERTICAL CHANGE	DIFFERENCE IN ELEVATION	ELEVATION OF INSTRUMENT	ELEVATION OF STATION	BS X TP	COORDINATES		REMARKS	
												NORTH + SOUTH - LAT.	EAST + WEST - DEP.		Y
									750.9						
342	0			-	5.3	-		-5.3		745.6	π	0	0	578,450	1,870,309
343	220		183°48'	-2.4°	11.1	-		-11.1		739.8		-220	-5	578,230	1,870,304
344	440		"	-2.4°	13.5	BH		-2.2	-15.7	735.2		-440	-11	578,010	1,870,298
345	660		"	-2.4°	13.3	90°30'		-5.8	-19.1	731.8		-660	-16	577,790	1,870,293
346	880		183°48'	-2.4°	7.5	91°-		-15.4	-22.9	728.0		-880	-22	577,570	1,870,287
≡	1070		183°32.3'	-2.4°	11.0	91°-		-18.7	-29.7	721.2		-1070	-21	577,380	1,870,288
															577,375 + 1,870,285 T-intersect. El. 723
															8,340' gap due to Maple R. Jor
≡										K 766.0				569,395	1,870,200
	1720		2°49.5'+180	-2.4°	+0.0	TH		-8.6	-8.6	757.4	BS	-1720x2	-13		T-intersect. El. 766
	1720				+1.2	89°40'		-10.0	-8.8		BS				French & Jones
384	1540		2°54.6'	-2.4°	3.0	TH		+7.7	+4.7	762.1		+1540	+14	569,217	1,870,201
385	1320		"	-2.4°	5.2	TH		+6.6	+1.4	758.8		+1320	+12	568,997	1,870,199
386	1100		"	-2.4°	4.9	TH		+5.5	+0.6	758.0		+1100	+10	568,777	1,870,197
387	880		"	-2.4°	2.0	TH		+4.4	+2.4	759.8		+880	+8	568,557	1,870,195
388	660		"	-2.4°	3.4	TH		+3.3	-0.1	757.3		+660	+6	568,337	1,870,193
389	440		"	-2.4°	6.0	TH			-6.0	751.4		+440	+4	568,117	1,870,191
390	220		"	-2.4°	7.9	-			-7.9	749.5		+220	+2	567,897	1,870,189
391	0				5.3	-			-5.3	752.1	π	0	0	567,677	1,870,187
392	220		182°37.4'	-2.4°	1.4	-			-1.4	756.0		-220	-1	567,457	1,870,186
393	440		"	-2.4°	2.5	TH		+2.2	-0.3	757.1		-440	-2	567,237	1,870,185

DATE		INSTRUMENT MAN		ROD MAN		PARTY NUMBER		NOTES CHECKED BY		LINE NO.	PAGE			
9/23/78		R. Hulsey		G. Cotcamp		6834		R.J.H.		3	23			
AREA		TOPO MAP		STATE		COUNTY		TWP		RANGE	PPM	PARTY MANAGER		
Michigan		Hubbardston		Michigan		Clinton		8 N		4 W		L.O. Davis		
STATION NO.	SLOPE DISTANCE	PLOTTING DISTANCE	AZIMUTH FROM MAGNETIC NORTH	DEC	ROD READING	VERTICAL ANGLE	VERTICAL CHANGE	DIFFERENCE IN ELEVATION	ELEVATION OF INSTRUMENT	ELEVATION OF STATION	BS X TP	COORDINATES		REMARKS
												NORTH+ SOUTH-	EAST+ WEST-	
									757.4					
394	660		182° 37.4'	-24°	3.3	TH	+3.3	-0.0		757.4		-660	-3	567,017 1,870,184
395	880		" "	-24°	4.8	TH	+4.4	-0.4		757.0		-880	-3	566,797 1,870,184
396	1100		" "	-24°	2.0	TH	+5.5	+3.5		760.9		-1100	-4	566,577 1,870,183
397	1320		" "	-24°	0.2	TH	+6.6	+6.4		763.8		-1320	-5	566,357 1,870,182
398	1540		" "	-24°	0.1	TH	+7.7	+7.6		765.0		-1540	-6	566,137 1,870,181
399	1760		182° 37.4'	-24°	0.6	89°40'	+10.2	+9.6			TP	-1760+2	-7	565,919 1,870,180
399	1760				5.7	89°30'	+15.4	+9.7			TP			
	1100		3° 31.9'	-24°	+11.9	-		+11.9	779.0		BS	-1100+2	-22	
	1100				+6.4	BH	+5.5	+11.9			BS			
400	880		3° 31.9'	-24°	10.9	-		-10.9		768.1		+880	+17	565,701 1,870,175
401	660		" "	-24°	10.0	-		-10.0		769.0		+660	-13	565,481 1,870,171
402	440		" "	-24°	8.8	-		-8.8		770.2		+440	+9	565,261 1,870,167
403	220		" "	-24°	6.5	-		-6.5		772.5		+220	+4	565,041 1,870,162
404	0			-	5.4	-		-5.4		773.6	TP	0	0	564,821 1,870,158
405	220		183° 11.6'	-24°	13.2	90°30'	-1.9	-15.1		763.9		-220	-3	564,601 1,870,155
406	440		" "	-24°	10.3	92°0'	-15.3	-25.6		753.4		-440	-6	564,381 1,870,152
407	660		" "	-24°	8.3	92°	-23.0	-31.3		747.7		-660	-9	564,161 1,870,149
FF	710		183° 22.5'	-24°	6.5	92°	-24.8	-31.3		747.7		-710	-12	564,111 1,870,146
408	880		183° 11.6'	-24°	1.9	92°	-30.7	-32.6		746.4		-880	-12	563,941 1,870,146

564,115+1,870,145
4-way
Colony & Jones

DATE		INSTRUMENT MAN		ROD MAN		PARTY NUMBER		NOTES CHECKED BY		LINE NO.	PAGE					
9/23/78		R. Hulsey		G. Cotcamp		6834		R.J.H.		3	24					
AREA		TOPO MAP		STATE		COUNTY		TWP		RANGE	PPM	PARTY MANAGER				
Michigan		Hubbardston		Michigan		Clinton		8N		4W		L.O. Davis				
STATION NO.	SLOPE DISTANCE	PLOTTING DISTANCE	AZIMUTH FROM MAGNETIC NORTH	DEC	ROD READING	VERTICAL ANGLE	VERTICAL CHANGE	DIFFERENCE IN ELEVATION	ELEVATION OF INSTRUMENT	ELEVATION OF STATION	BS X TP	NORTH + SOUTH -	EAST + WEST -	COORDINATES		REMARKS
												LAT.	DEP.	Y	X	
									779.0							
409	1100		183° 11.6'	-2.3°	14.5	91° 12'	-23.0	-37.5		741.5	TP	-1100 +2	-17	563,723	1,870,141	
409	1100				12.0	91° 20'	-25.6	-37.6			TP					
	1760		2° 29.6' +180°	-2.3°	16.0	89° 30'	-15.4	-9.4			BS	-1760	-6			
	1760				11.3	89° 20'	-20.5	-9.2	732.3		BS					
410	1540		2° 29.6'	-2.3°	11.0	89° 20'	+17.9	+6.9		739.2		+1540	+5	563,503	1,870,140	
411	1320		" "	-2.3°	9.9	89° 20'	+15.4	+5.5		737.8		+1320	+4	563,283	1,870,139	
412	1100		" "	-2.3°	10.9	89° 20'	+12.8	+1.9		734.2		+1100	+3	563,063	1,870,138	
413	880		" "	-2.3°	11.1	89° 20'	+10.2	-0.9		731.4		+880	+3	562,843	1,870,138	
414	660		" "	-2.3°	10.5	89° 20'	+7.7	-2.8		729.5		+660	+2	562,623	1,870,137	
415	440		" "	-2.3°	4.0	-	-	-4.0		728.3		+440	+1	562,403	1,870,136	
416	220		" "	-2.3°	5.2	-	-	-5.2		727.1		+220	+1	562,183	1,870,136	
417	0				5.3	-	-	-5.3		727.0	TP	0	0	561,963	1,870,135	Set-up across from
418	220		183° 9.3'	-2.3°	5.6	-	-	-5.6		726.7		-220	-3	561,743	1,870,132	Sta. 417
419	440		" "	-2.3°	5.8	-	-	-5.8		726.5		-440	-7	561,523	1,870,128	
420	660		" "	-2.3°	5.1	-	-	-5.1		727.2		-660	-10	561,303	1,870,125	
421	880		" "	-2.3°	3.8	-	-	-3.8		728.5		-880	-13	561,083	1,870,122	
422	1100		" "	-2.3°	1.7	-	-	-1.7		730.6		-1100	-16	560,863	1,870,119	
423	1320		" "	-2.3°	2.2	-	-	-2.2		730.1		-1320	-20	560,643	1,870,115	
424	1540		" "	-2.3°	3.3	-	-	-3.3		729.0		-1540	-23	560,423	1,870,112	

DATE		INSTRUMENT MAN		ROD MAN		PARTY NUMBER		NOTES CHECKED BY		LINE NO.		PAGE			
9/23/78		R. Hulsey		G. Cotcamp		6834		R. J. H.		3		25 of 25			
AREA		TOPO MAP		STATE		COUNTY		TWP		RANGE		PPM		PARTY MANAGER	
Michigan		Hubbardston		Michigan		Clinton		8N		4W				L. O. Davis	
STATION NO.	SLOPE DISTANCE	PLOTTING DISTANCE	AZIMUTH FROM MAGNETIC NORTH	DEC	ROD READING	VERTICAL ANGLE	VERTICAL CHANGE	DIFFERENCE IN ELEVATION	ELEVATION OF INSTRUMENT	ELEVATION OF STATION	BS X TP	COORDINATES		REMARKS	
												NORTH + SOUTH - LAT.	EAST + WEST - DEP.		Y
									732.3						
425	1760		183° 9.3'	-23°	6.2	-		-6.2		726.1	TP	-1760	-26	560,203	1,870,109
425	1760				11.4	89°50'	+5.1	-6.3			TP				
	1320		2° 33.5' +180	-23°	0.7	89°56'	-1.5	-0.8	725.3		BS	-1320	-6		
	1320				+1.5	89°54'	-2.3	-0.8			BS				
426	1100		2° 33.5'	-23°	5.7	-		-5.7		719.6		+1100	+5	559,983	1,870,108
427	880		" "	-23°	9.0	-		-9.0		716.3		+880	+4	559,763	1,870,107
428	660		" "	-23°	9.2	-		-9.2		716.1		+660	+3	559,543	1,870,106
429	440		" "	-23°	8.7	-		-8.7		716.6		+440	+2	559,323	1,870,105
430	220		" "	-23°	7.6	-		-7.6		717.7		+220	+1	559,103	1,870,104
431	0				5.3	-		-5.3		720.0	π	0	0	558,883	1,870,103
π	75		176° 16'	-23°	3.7	-		-3.7		721.6		-75	+8	558,808	1,870,111
															558,820 + 1,870,105 Offset 4-way
432	215		156° 28.4'	-23°	4.3	TH	+1.1	-3.2		722.1	TP	-194	+94	558,689	1,870,197
432	215				4.5	89°40'	+1.3	-3.2			TP				
	1100		2° 16.1' +180	-23°	+11.0	BH	+5.5	+16.5	738.6		BS	-1100	+1		
	1100				+13.2	90°10'	+3.2	+16.4			BS				
433	880		2° 16.1'	-23°	10.1	90°10'	-2.6	-12.7		725.9		+880	0	558,969	1,870,198
434	660		" "	-23°	9.3	-		-9.3		729.3		+660	0	558,249	1,870,198
435	440		" "	-23°	5.1	-		-5.1		733.5		+440	0	558,029	1,870,198
436	220		" "	-23°	5.9	-		-5.9		732.7		+220	0	557,809	1,870,198
437	0				5.3	-		-5.3		733.3	π	0	0	557,589	1,870,198