

UNITED STATES DEPARTMENT OF THE INTERIOR  
GEOLOGICAL SURVEY

Anomalous Concentration of Metals in Soils  
in the Wickes Mining District,  
Jefferson County, Montana

By

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Open-File Report 76-291

1976

This report is preliminary and has not been edited or reviewed for conformity with U.S. Geological Survey standards and nomenclature.

A soil sampling survey was conducted in the Wickes mining district in 1956 by this writer under the general supervision of T. S. Lovering. A summary of the results are in U.S. Geological Survey Professional Paper 428, along with a map (plate 5) showing the location of the sample sites and the concentration of copper, manganese, silver, and lead in the samples. The concentrations of the metals are arranged into four categories, and symbols indicating each category are given on that map. The analytical results were not included in Professional Paper 428.

This report contains the analytical results (table 1) and a map (figure 1) that relates sample number to sample locality. It also includes data for zinc that were not included in the earlier report.

The samples were taken from the B soil whenever possible. At some places the soil was so thin that the A, B, and C zones were not distinguishable, and, at these places, the available soil was sampled. The samples were analyzed by semiquantitative spectrographic methods by Mr. U. Oda. The lower limit of measurement for each element is indicated on Table 1 by the symbol <.

The samples were taken along north-trending lines at intervals of 200 feet (320 m) and are numbered sequentially along the lines shown on Figure 1. The sample localities shown on Figure 1 are for samples of the CW-56 series given in Table 1. A few samples in this series were taken at midpoint in the 200-foot (320-m) intervals. The location for these samples is not shown on the map, but they are identified on Table 1 by sequential numbers such as 17, 17.5, 18, etc., which indicates a sample from midway between sites 17 and 18.

Anomalous concentrations of metals were found at two places in the sampled area of Figure 1. One place on the western edge of the area, known as the Montana Tunnels area, contains unusual concentrations of all metals looked for and is described in Professional Paper 428. The other place is at the extreme southeast corner of the sampled area. The anomalous concentrations at this place could be either from natural causes or from the works of man. Veins exposed to the east may underlie the area at shallow depth; a north-trending fault probably separates Tertiary volcanic rocks on the west from Cretaceous volcanic rocks on the east in the area of the anomaly; a road formerly used for hauling ore borders the anomaly at slightly higher elevation; and drainage water from the Minah mine passes through the anomaly. The geologic and geographic features are shown on Plates 1 and 5 of Professional Paper 428.

Table 1 of this report contains data of samples from two other areas: the Elkhorn mining district several miles to the east, and the outcrop area of the Mount Washington vein about one mile to the west. Maps showing sample sites in these areas are no longer available, but this is of little importance since neither area sampled contains anomalous amounts of metals.

UNITED STATES  
DEPARTMENT OF THE INTERIOR  
GEOLOGICAL SURVEY

Report No. GSD-1174

For

Date October 23, 1956

-quantitative Spectrographic Analysis  
Requested by T. S. Lovering

of No. Four hundred sixty five (465) soil samples--Corbin Wickes Area, Boulder, Montana.

<u>Serial No.</u>	<u>Field No.</u>	<u>ppm-Cu</u>	<u>ppm-Pb</u>	<u>ppm-Zn</u>	<u>ppm-Ag</u>	<u>ppm-Mn</u>
56-3149	C W - 1	150	75	<500	<2	750
3150	2	200	150	<500	<2	750
3151	3	200	100	<500	<2	1000
3152	4	350	750	2000	7.5	5000
3153	5	150	750	<500	5	750
3154	6	150	35	<500	<2	500
3155	7	100	75	<500	<2	500
3156	8	100	50	<500	<2	500
3157	9	150	150	<500	<2	750
3158	10	200	500	1000	5	5000
3159	11	500	750	3500	7.5	5000
3160	12	500	750	2000	7.5	5000
3161	13	750	750	3500	10	5000
3162	14	200	150	1000	5	10,000
3163	15	200	350	1000	5	2000
3164	16	200	500	1500	7.5	1000
3165	17	200	100	500	2	500
3166	17.5	150	200	750	5	2000
3167	18	75	75	500	<2	1000
3168	19	100	100	<500	<2	750
3169	20	75	100	<500	<2	750
3170	21	75	20	<500	<2	500
3171	22	75	50	<500	<2	500
3172	23	75	35	<500	<2	750
3173	24	75	20	<500	<2	750
3174	25	75	75	<500	<2	750
3175	26	100	75	<500	<2	750
3176	27	75	50	<500	<2	750
3177	28	75	20	<500	<2	750
3178	28.5	75	35	<500	<2	750
3179	29	75	50	<500	<2	750
3180	29.5	75	20	<500	<2	750
3181	30	150	150	<500	<2	1000
3182	30.5	100	20	<500	<2	500
3183	31.0	100	75	<500	<2	500

UNITED STATES  
DEPARTMENT OF THE INTERIOR  
GEOLOGICAL SURVEY

Report No. GSD-1174 (Cont.) For

Date October 23, 1956

Semi-quantitative Spec.

Requested by T. S. Lovering

Lot No. _____						
Serial No.	Field No.	ppm-Cu	ppm-Pb	ppm-Zn	ppm-Ag	ppm-Mn
56-3184	C W - 31.5	150	150	<500	0	1000
3185	32	150	100	<500	0	500
3186	38	150	150	<500	0	750
3187	39	150	100	<500	0	1000
3188	40	75	75	<500	0	750
3189	41	75	10	<500	0	500
3190	42	50	10	<500	0	500
3191	43	75	20	<500	0	750
3192	44	75	35	<500	0	750
3193	45	75	10	<500	0	750
3194	46	150	500	<500	5	1000
3195	47	75	150	<500	2	750
3196	48	100	100	<500	0	750
3197	49	150	100	<500	0	1000
3198	50	100	50	<500	0	750
3199	51	100	75	<500	0	1000
3200	52	75	75	<500	5	1000
3201	53	75	50	<500	0	500
3202	54	150	50	<500	0	500
3203	56	100	35	<500	0	500
3204	57	100	50	<500	0	350
3205	58	100	10	<500	0	350
3206	59	100	35	<500	0	500
3207	60	150	75	<500	0	500
3208	61	150	15	<500	0	750
3209	62	150	15	<500	0	500
3210	63	100	15	<500	0	750
3211	64	150	75	<500	0	500
3212	65	75	15	<500	0	200
3213	66	150	150	<500	0	1000
3214	67	75	50	<500	0	750
3215	68	75	75	<500	7.5	500
3216	69	50	10	<500	0	200
3217	70	75	100	<500	0	500
3218	71	75	35	<500	0	500
3219	72	75	35	<500	0	500
3220	72.5	50	15	<500	0	200

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Report No. GSD-1174 (Cont.) For

Date October 23, 1956

Semi-quantitative Spec.

Requested by T. S. Lovering

Lot No. \_\_\_\_\_

<u>Serial No.</u>	<u>Field No.</u>	<u>ppm-Cu</u>	<u>ppm-Pb</u>	<u>ppm-Zn</u>	<u>ppm-Ag</u>	<u>ppm-Mn</u>
56-3221	C W - 73	50	50	<500	42	500
3222	74	35	50	<500	42	200
3223	74.5	75	20	<500	42	500
3224	75	75	50	<500	42	750
3225	76	75	10	<500	42	200
3226	76.5	75	15	<500	42	350
3227	77	50	35	<500	42	350
3228	77.5	75	20	<500	42	500
3229	78	100	75	<500	42	500
3230	78.5	75	75	<500	42	750
3231	79	75	75	<500	42	350
3232	80	75	50	<500	42	200
3233	81	50	35	<500	42	500
3234	82	75	150	<500	42	200
3235	82.5	50	50	<500	42	350
3236	83	50	20	<500	42	200
3237	84	100	150	500	2	1000
3238	85	75	750	750	5	1000
3239	86	750	3500	10,000	75	5000
3240	87	75	20	<500	42	500
3241	88	75	10	<500	42	350
3242	89	150	100	<500	2	500
3243	90	150	50	<500	42	500
3244	91	150	75	<500	42	500
3245	92	100	20	<500	42	350
3246	93	75	50	<500	42	350
3247	94	75	50	<500	42	350
3248	95	75	50	<500	42	500
3249	96	75	75	<500	42	750
3250	97	75	50	<500	42	750
3251	98	75	150	<500	42	1000
3252	99	75	150	<500	42	750
3253	100	75	100	<500	42	500
3254	101	75	15	<500	42	350
3255	102	75	50	<500	42	500
3256	103	75	50	<500	42	500
3257	104	75	100	<500	42	1000

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Date October 23, 1956

Requested by T. S. Lovering

Lot No. _____						
<u>Serial No.</u>	<u>Field No.</u>	<u>ppm-Cu</u>	<u>ppm-Pb</u>	<u>ppm-Zn</u>	<u>ppm-Ag</u>	<u>ppm-Mn</u>
56-3258	C W - 105	75	20	<500	2	750
3259	106	75	50	<500	2	750
3260	107	75	20	<500	2	750
3261	108	75	35	<500	2	500
3262	109	100	35	<500	2	750
3263	110	100	75	<500	2	1000
3264	111	75	20	<500	2	500
3265	112	75	35	<500	2	500
3266	113	50	20	<500	2	500
3267	114	15	10	<500	2	200
3268	115	75	50	<500	2	200
3269	116	100	150	<500	2	500
3270	119	35	50	<500	2	500
3271	120	35	20	<500	2	200
3272	121	50	100	<500	2	200
3273	122	75	10	<500	2	200
3274	123	75	10	<500	2	500
3275	124	150	150	<500	2	500
3276	125	20	50	<500	2	200
3277	126	75	15	<500	2	2000
3278	127	50	10	<500	2	750
3279	128	75	50	<500	2	500
3280	129	75	15	<500	2	500
3281	130	150	50	<500	2	500
3282	131	20	20	<500	2	200
3283	132	50	20	<500	2	500
3284	133	150	100	<500	2	500
3285	134	100	75	<500	2	500
3286	135	75	75	<500	2	500
3287	136	200	200	2000	5	2000
3288	137	150	150	500	2	750
3289	138	150	100	<500	2	750
3290	139	150	50	<500	2	500
3291	140	150	20	<500	2	750
3292	141	75	10	<500	2	500
3293	142	150	15	<500	2	500
3294	143	200	150	<500	2	1000

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Report No. GRD-1174 (Cont.) For

Date October 23, 1956

Semi-quantitative Spectrographic Analysis

Requested by T. S. Lovering

Lot No. _____						
<u>Serial No.</u>	<u>Field No.</u>	<u>ppm-Cu</u>	<u>ppm-Pb</u>	<u>ppm-Zn</u>	<u>ppm-Ag</u>	<u>ppm-In</u>
56-3295	C W - 144	100	20	<500	2	500
3296	145	200	50	<500	2	500
3297	146	200	75	<500	2	500
3298	147	100	75	<500	2	500
3299	148	100	35	<500	2	500
3300	149	150	50	<500	2	750
3301	150	50	10	<500	2	500
3302	151	75	10	<500	2	750
3303	152	150	100	500	2	750
3304	153	100	20	<500	2	750
3305	154	150	100	<500	2	750
3306	155	100	50	<500	2	750
3307	156	75	15	<500	2	500
3308	157	75	15	<500	2	500
3309	158	100	75	<500	2	750
3310	159	100	75	<500	2	1000
3311	160	75	75	<500	2	1000
3312	161	150	100	<500	2	2000
3313	162	75	50	<500	2	750
3314	163	75	50	<500	2	2000
3315	164	75	50	<500	2	500
3316	165	100	50	<500	2	750
3317	166	50	150	<500	2	500
3318	167	100	75	<500	2	1000
3319	168	75	50	<500	2	750
3320	169	75	75	<500	2	750
3321	170	75	75	<500	2	350
3322	171	75	15	<500	2	750
3323	172	100	35	<500	2	750
3324	173	75	15	<500	2	350
3325	174	75	15	<500	2	500
3326	175	100	15	<500	2	500
3327	176	75	15	<500	2	500
3328	177	75	20	<500	2	750
3329	178	100	50	<500	2	500
3330	179	75	15	<500	2	200
3331	180	75	15	<500	2	200



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Semi-quantitative Spectrographic Analysis

Requested by T. S. Lovering

Lot No. \_\_\_\_\_

<u>Serial No.</u>	<u>Field No.</u>	<u>ppm-Cu</u>	<u>ppm-Pb</u>	<u>ppm-Zn</u>	<u>ppm-Ag</u>	<u>ppm-Pn</u>
56-3332	C W - 181	75	75	<500	2	500
3333	182	50	50	<500	2	750
3334	183	75	75	<500	2	750
3335	184	15	15	<500	2	200
3336	185	100	75	<500	2	500
3337	186	150	100	<500	2	1000
3338	187	75	20	<500	2	500
3339	188	100	100	<500	2	200
3340	189	100	75	<500	2	750
3341	190	75	75	<500	2	500
3342	191	150	150	<500	2	1000
3343	192	100	50	<500	2	350
3344	193	100	75	<500	2	750
3345	194	150	75	<500	2	750
3346	195	100	75	<500	2	750
3347	196	150	75	<500	2	750
3348	197	100	75	<500	2	500
3349	198	150	100	<500	2	750
3350	199	200	500	1000	2	1000
3351	200	100	20	<500	2	750
3352	201	100	20	<500	2	500
3353	202	75	15	<500	2	500
3354	203	75	35	<500	2	350
3355	204	50	20	<500	2	350
3356	205	75	75	<500	2	750
3357	206	75	50	<500	2	750
3358	207	75	35	<500	2	500
3359	208	75	20	<500	2	500
3360	209	75	75	<500	2	500
3361	210	75	35	<500	2	500
3362	211	75	20	<500	2	350
3363	212	150	150	<500	2	500
3364	213	150	350	<500	5	500
3365	214	100	200	<500	2	1000
3366	215	75	150	<500	2	1000
3367	216	75	200	<500	2	1000
3368	217	100	150	<500	2	1000

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Report No. GSD-1174 (Cont.) For

Date October 23, 1956

Semi-quantitative Spectrographic Analysis

Requested by T. S. Lovering

Lot No. _____						
<u>Serial No.</u>	<u>Field No.</u>	<u>ppm-Cu</u>	<u>ppm-Pb</u>	<u>ppm-Zn</u>	<u>ppm-Ag</u>	<u>ppm-Pb</u>
56-3369	C W - 218	100	100	<500	<2	1000
3370	219	75	150	<500	<2	1000
3371	220	100	50	<500	2	2000
3372	221	75	50	<500	2	750
3373	222	150	150	<500	2	1000
3374	223	75	50	<500	<2	200
3375	224	50	50	<500	<2	200
3376	225	50	20	<500	<2	200
3377	226	50	20	<500	<2	200
3378	227	75	50	<500	<2	350
3379	228	50	20	<500	<2	500
3380	229	75	10	<500	<2	750
3381	230	50	15	<500	<2	500
3382	231	50	20	<500	<2	500
3383	232	20	10	<500	<2	200
3384	233	100	100	<500	5	750
3385	234	150	75	<500	<2	750
3386	235	150	150	<500	2	1000
3387	236	150	150	<500	<2	500
<u>Mt. Washington Area</u>						
3388	34	20	50	<500	<2	500
3389	33	50	50	<500	<2	750
3390	32	50	75	<500	<2	750
3391	31	75	100	<500	<2	1000
3392	30	75	150	<500	<2	750
3393	29	75	150	<500	<2	750
3394	28	35	35	<500	<2	500
3395	27	35	20	<500	<2	500
3396	26	75	50	<500	<2	500
3397	25	100	75	<500	<2	500
3398	24	75	35	<500	<2	500
3399	23	50	50	<500	<2	350
3400	22	75	50	<500	<2	750
3401	21	75	10	<500	<2	1000
3402	20	75	50	<500	<2	750
3403	19	50	75	<500	<2	200
3404	18	75	10	<500	<2	500

UNITED STATES  
DEPARTMENT OF THE INTERIOR  
GEOLOGICAL SURVEY

Report No. GSD-1174 (Cont.) For  
Spectrographic Analysis

Date October 23, 1956

Requested by T. S. Lovering

Lot No. _____						
<u>Serial No.</u>	<u>Field No.</u>	<u>ppm-Cu</u>	<u>ppm-Pb</u>	<u>ppm-Zn</u>	<u>ppm-Ag</u>	<u>ppm-In</u>
<u>Mt. Washington Area</u>						
56-3405	17	75	20	<500	22	500
3406	16	75	50	<500	22	500
3407	15	75	50	<500	22	500
3408	14	50	20	<500	22	350
3409	13	75	75	<500	22	750
3410	12	150	75	<500	22	1000
3411	11	75	100	<500	22	500
3412	10	150	50	<500	22	500
3413	9	150	100	<500	22	750
3414	8	100	75	<500	22	500
3415	7	75	20	<500	22	350
3416	6	75	20	<500	22	500
3417	5	75	15	<500	22	500
3418	4	150	75	<500	22	750
3419	3	100	50	<500	22	750
3420	2	75	10	<500	22	500
3421	1	75	15	<500	22	500
3422	<u>C W -237</u>	100	50	<500	22	350
3423	238	75	50	<500	22	500
3424	239	50	50	<500	22	200
3425	240	50	15	<500	22	500
3426	241	150	75	<500	22	500
3427	242	50	50	<500	22	500
3428	243	75	50	<500	22	500
3429	244	150	100	<500	22	750
3430	245	100	50	<500	22	750
3431	246	100	100	<500	22	750
3432	247	200	150	<500	22	750
3433	249	200	150	<500	22	750
3434	250	200	150	<500	22	750
3435	251	100	20	<500	22	350
3436	252	150	75	<500	22	500
3437	253	75	50	<500	22	200
3438	254	100	100	<500	22	500
3439	255	75	50	<500	22	750
3440	256	100	150	<500	2	1000

UNITED STATES  
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GEOLOGICAL SURVEY

Report No. GSD-1174 (Cont.) For  
Semi-quantitative Spectrographic Analysis  
Requested by T. S. Lovering

Date October 23, 1956

Lot No. _____						
<u>Serial No.</u>	<u>Field No.</u>	<u>ppm-Cu</u>	<u>ppm-Pb</u>	<u>ppm-Zn</u>	<u>ppm-Ag</u>	<u>ppm-Mn</u>
56-3441	C W - 257	50	10	<500	2	200
3442	258	75	50	<500	2	500
3443	260	150	150	<500	2	750
3444	261	100	100	<500	2	750
3445	262	75	50	<500	2	200
3446	263	100	50	<500	2	750
3447	264	100	150	<500	2	750
3448	265	75	100	<500	2	750
3449	266	50	75	<500	2	500
3450	267	75	75	<500	2	750
3451	268	75	50	<500	2	500
3452	269	100	50	<500	2	1000
3453	270	100	50	<500	2	1000
3454	271	100	100	<500	2	750
3455	272	150	350	<500	2	1000
3456	273	75	75	<500	2	1000
3457	274	50	50	<500	2	1000
3458	275	150	100	<500	2	1000
3459	276	100	75	<500	2	750
3460	277	75	75	<500	2	1000
3461	278	50	50	<500	2	500
3462	279	35	50	<500	2	500
3463	280	50	20	<500	2	200
3464	281	50	20	<500	2	350
3465	282	50	20	<500	2	500
3466	283	50	15	<500	2	350
3467	284	75	50	<500	2	500
3468	285	50	15	<500	2	350
3469	286	75	15	<500	2	200
3470	287	150	50	<500	2	500
3471	288	200	350	<500	2	1000
3472	289	100	10	<500	2	350
3473	290	100	75	<500	2	750
3474	291	75	50	<500	2	750
3475	292	150	150	<500	2	750
3476	293	150	200	<500	2	750
3477	294	200	350	500	5	1500

UNITED STATES  
DEPARTMENT OF THE INTERIOR  
GEOLOGICAL SURVEY

Report No. CDD-1174 (Cont.) For

Date October 23, 1956

Semi-quantitative Spectrographic Analysis  
Requested by T. S. Lovering

Lot No. \_\_\_\_\_

<u>Serial No.</u>	<u>Field No.</u>	<u>ppm-Cu</u>	<u>ppm-Pb</u>	<u>ppm-Zn</u>	<u>ppm-Ag</u>	<u>ppm-Ir</u>
56-3478	C W - 295	100	50	<500	2	750
3479	296	75	35	<500	2	500
3480	297	100	50	<500	2	1000
3481	298	100	35	<500	2	750
3482	299	75	20	<500	2	1000
3483	300	75	35	<500	2	500
3484	301	100	50	<500	2	350
3485	302	100	35	<500	2	500
3486	303	75	20	<500	2	200
3487	304	200	350	<500	2	750
3488	305	100	20	<500	2	750
3489	306	150	100	<500	2	500
3490	307	50	150	<500	2	500
3491	308	75	50	<500	2	500
3492	309	75	75	<500	2	500
3493	310	50	75	<500	2	750
3494	311	50	50	<500	2	350
3495	312	75	75	<500	2	750
3496	313	75	75	<500	2	500
3497	314	50	10	<500	2	350
3498	315	75	20	<500	2	350
3499	316	75	75	<500	2	200
3500	317	75	100	<500	2	500
3501	319	100	75	<500	2	500
3502	320	75	150	<500	2	350
3503	321	75	100	<500	2	350
3504	322	100	150	<500	2	500
3505	323	75	10	<500	2	200
3506	324	100	35	<500	2	350
3507	325	75	150	<500	2	750
3507-1	326	50	50	<500	2	350
3509	327	75	75	<500	2	500
3510	328	50	100	<500	2	500
3511	329	100	150	<500	2	500
3512	330	75	75	<500	2	500
3513	331	75	50	<500	2	500
3514	332	75	75	<500	2	500

UNITED STATES  
DEPARTMENT OF THE INTERIOR  
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Report No. GSD-1174 (Cont.) For

Date October 23, 1956

Requested by T. S. Loering

Lot No. \_\_\_\_\_

<u>Serial No.</u>	<u>Field No.</u>	<u>ppm-Cu</u>	<u>ppm-Pb</u>	<u>ppm-Zn</u>	<u>ppm-Ag</u>	<u>ppm-Mn</u>
56-3515	C W - 333	100	75	<500	<2	500
3516	334	200	100	<500	<2	1000
3517	335	100	20	<500	<2	200
3518	336	150	100	<500	<2	500
3519	337	100	75	<500	<2	350
3520	338	75	10	<500	<2	200
3521	339	100	50	<500	<2	750
3522	340	150	150	<500	<2	750
3523	341	150	150	<500	<2	750
3524	342	75	50	<500	<2	750
3525	343	50	50	<500	<2	200
3526	344	150	75	<500	<2	500
3527	345	150	150	<500	<2	750
3528	346	75	10	<500	<2	500
3529	347	150	100	<500	<2	500
3530	348	200	150	<500	<2	500
3531	349	100	20	<500	<2	350
3532	350	150	20	<500	<2	500
3533	351	150	15	<500	<2	350
3534	352	100	10	<500	<2	350
3535	353	75	10	<500	<2	200
3536	354	150	15	<500	<2	500
3537	355	75	20	<500	<2	500
3538	356	75	50	<500	<2	350
3539	357	75	50	<500	<2	500
3540	358	150	75	<500	<2	500
3541	359	100	75	<500	<2	500
3542	360	100	75	<500	<2	750
3543	361	100	100	<500	<2	1000
3544	362	75	75	<500	<2	1000
3545	363	100	100	<500	2	1000
3546	364	200	150	<500	2	1000
3547	365	200	150	<500	2	1000
3548	366	150	100	<500	2	1000
3549	367	200	150	<500	2	1000
3550	368	50	20	<500	<2	500
3551	369	75	35	<500	2	350

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Report No. GSD-1174 (Cont.) For

Date October 23, 1956

Semi-quantitative Spectrographic Analysis

Requested by T. S. Lovering

Lot No. _____						
<u>Serial No.</u>	<u>Field No.</u>	<u>ppm-Cu</u>	<u>ppm-Pb</u>	<u>ppm-Zn</u>	<u>ppm-Ag</u>	<u>ppm-Mn</u>
56-3552	C W - 370	100	50	<500	<2	500
3553	371	75	35	<500	<2	500
3554	372	100	35	<500	<2	500
3555	373	75	50	<500	<2	500
3556	374	50	75	<500	<2	500
3557	375	75	20	<500	<2	500
3558	376	50	20	<500	<2	350
3559	377	50	20	<500	<2	200
3560	378	150	75	<500	<2	500
3561	379	50	35	<500	<2	350
3562	380	75	50	<500	<2	500
3563	381	50	15	<500	<2	500
3564	382	50	20	<500	<2	200
3565	383	75	75	<500	<2	500
3566	384	50	20	<500	<2	350
3567	385	50	75	<500	<2	350
3568	387	50	150	<500	<2	750
3569	388	50	50	<500	<2	350
3570	389	50	35	<500	<2	350
3571	390	50	150	<500	<2	500
3572	391	30	100	<500	<2	350
3573	392	20	100	<500	<2	500
3574	393	35	35	<500	<2	350
3575	394	35	20	<500	<2	500
3576	395	50	150	<500	<2	350
3577	396	75	150	<500	<2	750
3578	397	75	150	<500	<2	500
3579	398	75	75	<500	<2	500
3580	399	50	75	<500	<2	350
3581	400	50	50	<500	<2	350
3582	401	50	20	<500	<2	500
3583	402	100	200	<500	2	1000
3584	403	75	75	<500	3 (5)	750
3585	404	100	750	500	10	2000
3586	405	75	500	500	7.5	2000
3587	406	750	200	>10,000	10	500
3588	407	75	500	1000	7.5	1000
3589	408	75	150	2000	5	750

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Date October 23, 1956

Semi-quantitative Spectrographic Analysis  
Requested by T. S. Lovering

Lot No.	Serial No.	Field No.	ppm-Cu	ppm-Pb	ppm-Zn	ppm-Ag	ppm-Mn
	56-3590	C W - 409	100	100	<500	2	500
	3591	410	75	100	<500	2	1000
	3592	411	200	500	<500	2	1000
	3593	413	150	150	<500	2	750
	3594	414	150	50	<500	2	750
	3595	415	150	75	<500	2	1000
	3596	416	150	500	<500	5	500
	3597	417	50	75	<500	2	200
	3598	418	75	50	<500	2	350
	3599	419	150	150	<500	2	500
	3600	420	100	50	<500	2	350
	3601	421	100	50	<500	2	500
	3602	422	150	75	<500	2	1000
	3603	423	150	35	<500	2	500
	3604	424	100	50	<500	2	1000
	3605	425	100	100	<500	2	750
	3606	426	75	75	<500	2	200
	3607	427	150	500	<500	7.5	500
	3608	428	200	3500	500	35	2000
	3609	429	150	750	750	7.5	2000
	3610	430	150	750	2000	7.5	2000
	3611	431	150	3500	<500	7.5	750
	3612	432	150	2000	500	7.5	500
	3613	433	150	1500	1500	10	5000
	3614	434	200	2000	750	7.5	1000
	3615	435	200	2000	750	20	3500
	3616	436	150	350	<500	10	5000
	3617	437	150	150	<500	7.5	1000
	3618	438	75	200	<500	2	1000
	3619	439	150	750	1000	35	5000
	3620	440	150	750	500	7.5	1500
	3621	441	100	150	<500	10	750
	3622	442	75	10	<500	2	150
	3623	443	75	15	<500	2	500
	3624	444	75	10	<500	2	150
	3625	445	75	20	<500	2	750
	3626	446	150	75	<500	2	1000



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Report No. GSD-1174 (Cont.) For

Date October 23, 1956

Semi-quantitative Spectrographic Analysis

Requested by T. S. Lovering

Lot No. \_\_\_\_\_

Serial No.	Field No.	ppm-Cu	ppm-Pb	ppm-Zn	ppm-Ag	ppm-Ir
56-3627	C W - 447	100	100	<500	<2	500
3628	448	100	350	<500	<5	500
3629	449	50	100	<500	<2	200
3630	450	100	500	<500	5	500
3631	451	100	1500	<500	7.5	1000
3632	452	150	1500	500	10	750
3633	453	150	150	<500	7.5	1000
3634	454	100	100	<500	7.5	1000
3635	455	150	350	<500	7.5	2000
3636	456	50	75	<500	<2	1000
3637	457	100	500	<500	35	5000
3638	458	100	200	<500	20	5000
3639	459	75	150	<500	<2	750
3640	460	20	50	<500	<2	500
3641	461	50	50	<500	<2	350
3642	462	50	75	<500	<2	750
3643	463	50	50	<500	<2	500
3644	464	100	500	<500	<2	1000
3645	465	35	10	<500	<2	500

Semi-quantitative Spectrographic Analysis

Samples analyzed in the field

Analyst: U. Oda U. O.Reviewed by F. H. Ward F. H. Ward

By

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Geochemistry and Petrology Branch

UNITED STATES  
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GEOLOGICAL SURVEY

Report No. GSD-1175

For

Date November 28, 1956

Requested by T. S. Lovering

Lot No. One hundred ninety three (193) soil samples--Elk Horn area and Corbin Wickes area, Montana.

<u>Serial No.</u>	<u>Field No.</u>	<u>ppm-Cu</u>	<u>ppm-Pb</u>	<u>ppm-Mn</u>
56-3692	Elk Horn 1	75	20	1000
3693	2	75	10	1000
3694	3	100	10	750
3695	4	35	10	500
3696	5	100	150	1000
3697	6	75	50	750
3698	7	35	20	500
3699	8	50	20	500
3700	9	35	10	500
3701	10	35	△10	500
3702	11	50	20	750
3703	12	20	△10	350
3704	13	150	△10	750
3705	14	150	10	1000
3706	15	150	35	1000
3707	16	150	10	2000
3708	17	50	10	750
3709	18	100	75	1000
3710	19	35	△10	750
3711	20	35	10	750
3712	21	50	100	2000
3713	22	50	20	1000
3714	23	75	50	1000
3715	24	35	10	750
3716	25	35	20	750
3717	26	35	10	750
3718	27	35	10	750
3719	27 A	1	△10	75
3720	28	35	10	750
3721	29	35	10	1000
3722	30	35	10	750
3723	31	35	10	1000
3724	32	35	10	1000
3725	33	50	10	750
3726	34	75	20	1000

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Report No. GSD-1175 (Cont.) For

Date November 28, 1956

Requested by T. S. Lovering

Lot No.	Serial No.	Field No.	ppm-Cu	ppm-Pb	ppm-Mn
	56-3727	Elk Horn 35	75	20	1500
	3728	36	35	10	750
	3729	37	50	10	1000
	3730	38	75	20	1000
	3731	39	75	20	1000
	3732	40	75	50	750
	3733	41	50	10	1000
	3734	42	150	75	1000
	3735	43	150	100	2000
	3736	44	75	15	1000
	3737	45	75	10	750
	3738	46	75	10	750
	3739	47	150	10	1000
	3740	48	150	35	1000
	3741	49	75	20	1000
	3742	50	100	10	1500
	3743	51	100	10	1000
	3744	52	100	15	1000
	3745	53	Δ	Δ 10	100
	3746	54	Δ	Δ 10	100
	3747	54 A	Δ	Δ 10	750
	3748	55	75	75	750
	3749	56	35	20	750
	3750	57	100	100	1000
	3751	58	75	20	750
	3752	59	75	50	750
	3753	60	50	10	500
	3754	61	150	75	1500
	3755	62	75	50	1000
	3756	63	75	75	1500
	3757	64	35	10	350
	3758	65	35	Δ 10	350
	3759	66	35	10	350
	3760	67	35	Δ 10	350
	3761	68	35	Δ 10	500
	3762	69	50	20	750
	3763	70	50	10	500

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Report No. GSD-1175 (Cont.) For

Date November 28, 1956

Requested by T. S. Lovering

Lot No. \_\_\_\_\_

<u>Serial No.</u>	<u>Field No.</u>	<u>ppm-Cu</u>	<u>ppm-Pb</u>	<u>ppm-Mn</u>
56-3764	Elk Horn 71	35	35	350
3765	72	35	50	350
3766	73	75	15	350
3767	74	100	20	750
3768	75	75	10	750
3769	76	75	10	750
3770	77	100	10	1000
3771	78	50	<10	350
3772	79	35	10	350
3773	80	20	<10	200
3774	81	50	10	200
3775	82	35	10	500
3776	83	35	10	500
3777	84	50	20	2000
3778	85	35	20	2000
3779	86	75	35	1500
3780	87	50	20	1500
3781	88	150	150	1500
56-4317	Contact Dump	50	100	150

Note: All samples for Zn and Ag were reported as follows:

<u>Serial No.</u>	<u>Field No.</u>	<u>ppm-Cu</u>	<u>ppm-Pb</u>	<u>ppm-Mn</u>	<u>ppm-Ag</u>
56-4318	OW-56-487	35	10	500	<1
4319	488	75	75	500	<1
4320	489	35	10	500	<1
4321	490	35	15	1000	<1
4322	491	35	10	500	<1
4323	492	35	20	500	<1
4324	493	35	10	500	<1
4325	494	35	15	750	<1
4326	495	20	10	500	<1
4327	496	20	10	500	<1
4328	497	35	10	500	<1

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Report No. GSD-1175 (Cont.) For

Date November 28, 1956

Requested by T. S. Lovering

Lot No.	Serial No.	Field No.	ppm-Cu	ppm-Pb	ppm-Mn	ppm-Ag
	56-4329	OW-56-498	20	10	500	Δ
	4330	499	10	10	200	Δ
	4331	500	20	20	500	Δ
	4332	501	35	10	750	Δ
	4333	502	7	10	500	Δ
	4334	503	150	150	500	Δ
	4335	504	75	15	200	Δ
	4336	505	35	10	500	Δ
	4337	506	20	Δ10	200	Δ
	4338	507	20	Δ10	200	Δ
	4339	508	75	35	350	Δ
	4340	509	75	75	500	Δ
	4341	510	50	20	500	Δ
	4342	511	50	50	500	Δ
	4343	512	20	50	500	Δ
	4344	513	100	50	500	Δ
	4345	514	35	15	350	Δ
	4346	515	20	Δ10	350	Δ
	4347	516	35	10	500	Δ
	4348	517	100	50	500	Δ
	4349	518	150	75	750	Δ
	4350	519	75	10	500	Δ
	4351	520	75	50	500	Δ
	4352	521	75	10	500	Δ
	4353	522	150	20	500	Δ
	4354	523	150	35	500	Δ
	4355	524	100	150	750	Δ
	4356	525	35	10	500	Δ
	4357	526	75	35	500	Δ
	4358	527	50	50	350	Δ
	4359	528	35	10	350	Δ
	4360	529	35	10	350	Δ
	4361	530	150	350	750	Δ
	4362	531	150	200	750	Δ
	4363	532	100	150	750	Δ
	4364	533	100	100	750	Δ
	4365	534	75	10	750	Δ
	4366	535	35	50	750	Δ

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Report No. GCD-1175 (Cont.) For

Date November 28, 1956

Requested by T. S. Lovering

Lot No.	Serial No.	Field No.	ppm-Cu	ppm-Pb	ppm-In	ppm-Ag
	56-4367	CN-56-536	35	50	500	△
	4368	537	20	20	500	△
56-3646		CN 27 A	35	50	500	△△
	3647	27 B	35	20	500	△△△
	3648	27 C	50	75	750	△△△
	3649	28 A	75	75	750	△△△
	3650	28.5 A	35	10	500	△△△
	3651	29 A	20	10	750	△△△
	3652	29.5 A	35	35	750	△△△
	3653	30 A	50	20	750	△△△
	3654	30.5 A	20	35	350	△△△
	3655	31 A	20	20	500	△△
	3656	32 A	100	150	750	1
	3657	32 B	150	750	750	2
	3658	32 C	100	75	750	△△
	3659	33	35	35	750	△△
	3660	33 A	20	10	350	△△
	3661	33 B	35	10	750	△△
	3662	34	75	20	350	△△
	3663	34 A	50	10	500	△△
	3664	35	75	75	750	△△
	3665	35 A	35	10	500	△△
	3666	35 B	50	20	750	△△
	3667	35 C	35	△0	500	△△
	3668	36	50	50	750	△△
	3669	36 A	35	△0	500	△△
	3670	36 B	35	10	500	△△
	3671	36 C	35	10	500	△△
	3672	37	20	10	500	△△
	3673	37 A	50	20	500	△△
	3674	37 A 1	35	10	500	△△
	3675	37 A 2	75	75	750	△△
	3676	37 A 3	50	10	750	△△
	3677	37 B	75	100	750	△△
	3678	37 B 1	50	10	750	△
	3679	37 B 3	75	100	750	1

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Report No. GSD-1175 (Cont.) For

Date November 28, 1956

Requested by T. S. Lovering

Lot No.	Serial No.	Field No.	ppm-Cu	ppm-Pb	ppm-Zn	ppm-Ag
56-	3680	GW 37 C	75	15	750	△
	3681	37 C 1	75	75	750	△△
	3682	37 C 2	75	50	750	△△△
	3683	37 C 3	75	50	750	△△△△
	3684	37 D	75	75	750	△△△△△
	3685	37 D 1	75	20	750	△△△△△△
	3686	37 D 2	75	100	750	△△△△△△△
	3687	37 D 3	75	50	750	△△△△△△△
	3688	37 E	75	50	750	△△△△△△△
	3689	37 E 1	75	75	750	△△△△△△△
	3690	37 E 2	75	50	750	△△△△△△△
	3691	37 E 3	75	50	750	△△△△△△△
	3958	37 F	50	10	500	△△△△△△△
	3959	37 F 1	75	35	500	△△△△△△△
	3960	37 F 2	50	20	500	△△△△△△△
	3961	37 F 3	75	50	750	△△△△△△△
	3962	37 G 2	50	10	500	△△△△△△△

Note: All samples for Zn were reported as &lt;500 ppm.

Date received: 11/24/56

Method: Semi-quantitative Spectrographic Analysis

Analyst: U. Oda U.O.

Geochemical Exploration Laboratory

Reviewed by F. H. Ward \_\_\_\_\_

By

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Geochemistry and Petrology Branch