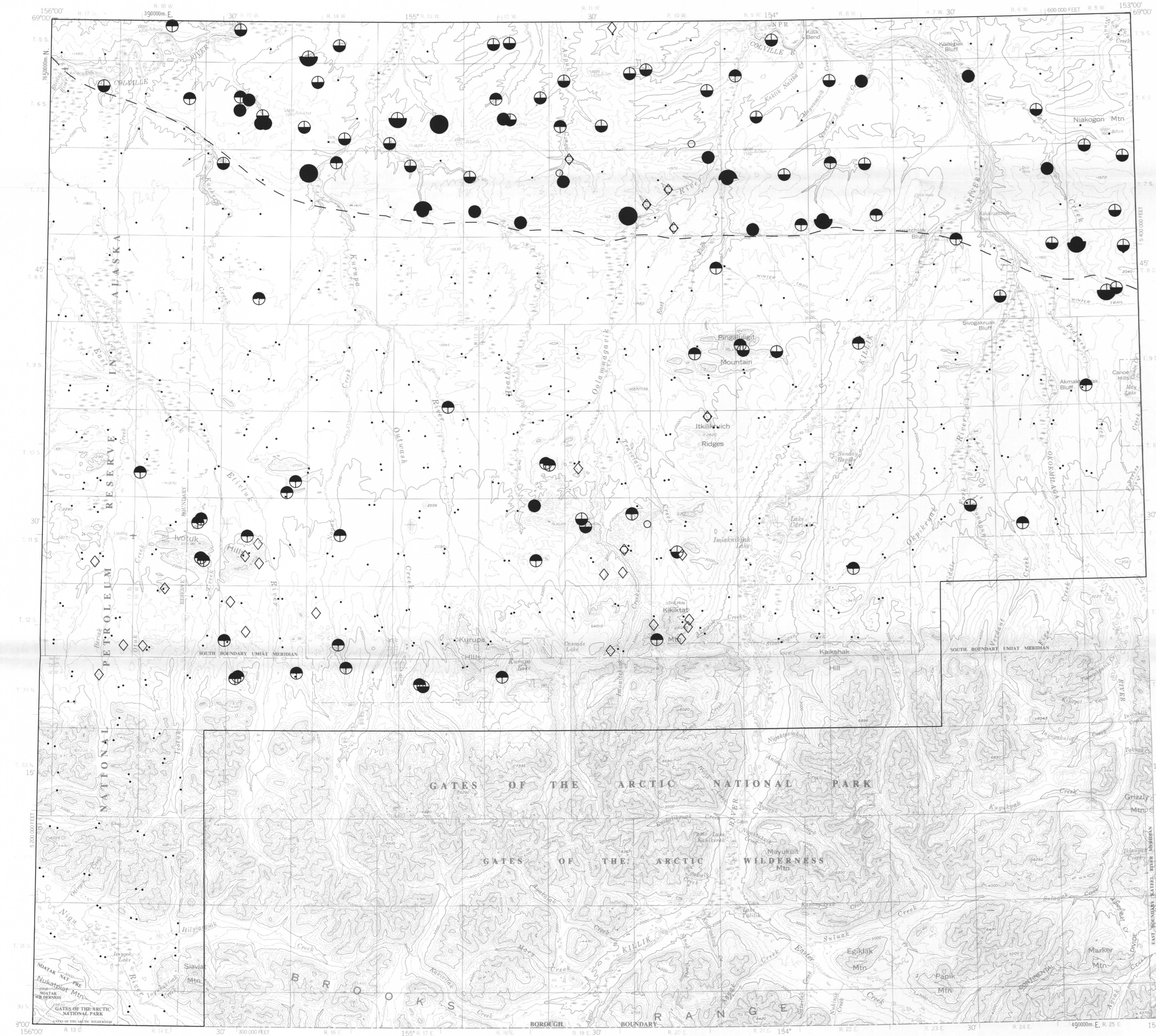


MAP C. DISTRIBUTION OF SEDIMENT SAMPLES CONTAINING ANOMALOUS CONCENTRATIONS OF As, Co, Fe, AND Mn



MAP D. DISTRIBUTION OF SEDIMENT SAMPLES CONTAINING ANOMALOUS CONCENTRATIONS OF Cr AND Ni

Table 1. Methods of analyses and lower limits of detection for minus-100-mesh sediment samples
[All values in parts per million unless otherwise noted; XRF, Energy dispersive X-ray fluorescence; INAA, instrumental neutron activation analysis; DNC, delayed neutron counting; *, lower detection limit varies depending on composition of sample (adjustment to a common lower limit was made)]

Element	Analytical method	Lower detection limit*
Ag	XRF	5
As	INAA	0.02
Au	XRF	0.2
Ba	INAA	285
Be	XRF	5
Bi	INAA	0.2
Bismuth	XRF	0.2
Br	INAA	24
Cd	INAA	0.2
Ce	INAA	2.2
Co	INAA	10
Cr	INAA	0.9
Cu	INAA	3.6
Dysprosium	XRF	0.1
Eu	INAA	1.3
Ga	INAA	0.28
Ge	INAA	10
Hf	INAA	205
Hg	INAA	10
Indium	XRF	15
Irbidium	XRF	15
Iron	XRF	15
Lead	XRF	5
Lithium	XRF	148
Lanthanum	INAA	5
Mercury	INAA	3.2
Manganese	INAA	2
Molybdenum	XRF	898
Nickel	INAA	4.1
Niobium	INAA	0.27
Orbitronium	DNC	15
Vanadium	INAA	15
Yttrium	INAA	3.4
Zinc	INAA	150
Zirconium	XRF	5

Table 2. Analytical limits of detection for minus-80-mesh stream-sediment samples using semiquantitative emission spectrography
[All values in parts per million unless otherwise noted]

Element	Lower limit	Upper limit
Ca%	0.05	20
Fe%	0.05	20
Mg%	0.2	10
Ni%	0.2	10
Ps%	0.2	10
TRIS	0.002	1
Ag	0.5	5,000
As	200	10,000
Au	10	5,000
B	10	2,000
Bi	5,000	20
Bismuth	5	5,000
Br	1	1,000
Cd	10	5,000
Ce	10	2,000
Co	10	5,000
Cr	5	20,000
Cu	5	500
Dysprosium	10	100
Eu	5	500
Ga	5	2,000
Ge	5	5,000
Hf	10	5,000
Hg	5	2,000
Indium	5	5,000
Irbidium	5	2,000
Iron	5	5,000
Lead	5	5,000
Lithium	5	5,000
Lanthanum	5	5,000
Mercury	5	5,000
Manganese	5	5,000
Molybdenum	5	5,000
Nickel	5	5,000
Niobium	5	5,000
Orbitronium	5	5,000
Vanadium	5	5,000
Yttrium	5	5,000
Zinc	5	5,000
Zirconium	5	5,000

Table 3. Statistical summary of selected elements for minus-100-mesh sediment samples collected from the Killik River quadrangle
[All concentrations in parts per million unless otherwise noted; method of analysis for each element is listed in Table 1; UQV, number of samples with unqualified values; L, number of samples qualified with "L" (less than lower detection limit); DR, detection ratio or the number of samples with unqualified values divided by the total number of samples; --, not calculated because DR is less than 0.40; +, threshold value listed only for elements shown graphically on maps B through D]

Element	UQV	L	DR	Concentration		Percentile			Threshold value*
				Min	Max	50th	80th	90th	
Ag	1	618	0.002	<4	6	--	--	--	--
As	616	4	0.99	<0.5	9.5	5.5	6.5	7	35
Au	605	18	0.97	<0.5	183	14	19	35	8000
Ba	530	80	0.85	<265	64,350	697	1024	2566	--
Be	7	663	0.01	<5	24	--	--	--	5
Bi	192	438	0.31	<0.34	24	--	--	--	5
Bismuth	18	664	0.03	<5	24	--	--	--	5
Br	572	48	0.92	<25	119	56	68	75	--
Cd	19	663	0.03	<5	219	18	25	41	80
Ce	581	39	0.94	<41	2,340	109	152	213	200
Co	284	358	0.43	<1.2	166	3.5	--	--	5.8
Cu	509	11	0.98	<10	114	31	43	52	75
Dysprosium	560	30	0.95	<4	31	--	--	--	5.8
Eu	555	3	0.89	<0.9	11.8	1.2	1.6	1.8	1.8
Fe	617	70	0.99	<1.2	34.2	4.0	9.2	10	8.8
Ga	448	172	0.72	<0.81	2.6	27	31	35	--
Ge	590	70	0.81	<16	49	27	32	37	--
Hf	610	30	0.99	<11	58	4.8	5.8	6.8	8.8
Hg	530	80	0.85	<2.7	4.9	0.091	0.17	0.28	0.48
Indium	504	116	0.81	<0.28	3.27	0.08	0.15	0.18	0.48
Irbidium	620	0	1.0	0.007	4.78	0.091	0.17	0.28	0.48
Vanadium	619	0	1.0	0.045	1.7	0.64	0.84	1.08	--
Ni	608	14	0.98	<15	241	42	58	74	70
Niobium	530	80	0.85	<15	73	5	9	11	30
Orbitronium	619	0.002	<151	151	30	13	15	17	--
Vanadium	530	80	0.85	<2.2	26	3	4.8	5.2	--
Ta	2	618	0.003	<2	4	--	--	--	--
Tb	576	44	0.93	<4.1	18.1	2.3	3.7	4.7	9.55
Tm	524	86	0.85	<0.27	0.78	0.44	0.51	0.54	--
U	19	601	0.03	<15	30	2.8	3.2	3.52	--
V	608	14	0.98	<31	272	124	153	172	--
W	19	601	0.03	<15	30	2.8	3.2	3.52	--
Y	339	281	0.85	<3.4	5.8	3.8	4.7	5	250
Zn	100	630	0.16	<100	534	165	214	254	--
Zr	615	5	0.99	<22	539	165	214	254	--

Table 4. Statistical summary of minus-80-mesh stream-sediment samples collected from the Killik River quadrangle
[All concentrations in parts per million unless otherwise noted; analysis by emission spectrography; UQV, number of samples with unqualified values; N, number of samples qualified with "N" (not detected at lower detection limit); L, number of samples qualified with "L" (less than lower detection limit); G, number of samples qualified with "G" (greater than upper detection limit); DR, detection ratio or the number of samples with unqualified values divided by the total number of samples; --, not calculated because DR is less than 0.40; +, threshold value listed only for elements shown graphically on maps B through D]

Element	UQV	N	L	G	DR	Concentration		Percentile			Threshold Value*
						Min	Max	50th	80th	90th	
Fe%	65	0	0	0	1.0	1.8	10	18	7	7	10
Mg%	65	0	0	0	1.0	0.07	2	0.5	1	2	1
Ca%	60	0	5	0	0.92	<0.05	5	0.1	0.3	1	--
Tm	61	0	0	1.0	0.1	0.3	0.1	0.3	0.5	0.5	5,000
Mn	62	0	0	3	0.99	<300	>5,000	1,500	2,000	5,000	5,000
Ag	9	51	5	0	0.14	<0.5	2	1.5	2	2	0.5
Ba	65	0	0	0	1.0	20	500	100	100	175	5,000
Be	44	0	0	21	0.87	150	>15,000	>15,000	>15,000	>15,000	5,000
Bi	59	0	6	0	0.91	<1	3	1.5	2	2	70
Br	65	0	0	0	1.0	20	1,000	150	200	300	300
Cd	65	0	0	0	1.0	20	1,000	150	200	300	300
Cu	48	16	1	0	0.74	<20	50	50	50	50	50
La	12	43	10	0	0.18	<5	20	5	5	5	20
Nb	24	29	12	0	0.35	<20	20	20	100	125	100
Ni	65	0	0	0	1.0	10	100	20	30	40	50
Pb	59	0	6	0	0.91	<10	50	20	30	40	50
Sn	65	0	0	0	1.0	80	150	20	30	40	50
Sr	25	20	20	0	0.38	<100	5,000	<100	150	175	150
V	19	601	0.03	<15	30	2.8	3.2	3.52	3.52	3.52	3,000
Y	64	1	0	0	0.99	10	100	20	50	50	50
Zn	28	22	17	0	0.41	<200	500	<200	500	200	300
Zr	65	0	0	0	1.0	50	300	100	150	200	--

Table 5. Average worldwide abundances of selected trace elements in unaltered and unmineralized shale and chert
[All values in parts per million; nd, no data; (1), Levinson (1974); (2), Vine and Tourtelot (1970); (3), Maynard (1991); and (4), Adachi and others (1958)]

Rock type and reference	Ag	As	Ba	Cd	Co	Cr	Cu	Mn	Ni	Pb	Sb	Zn
Shale (1)	0.05	15	700	0.2	20	100	50	850	70	20	1	100
Black shale (2)	<1.0	nd	300	nd	10	100	70	150	50	20	nd	300
Host shale of Pb and Zn rich deposits (3)	nd	nd	6,550	nd	3	nd	28	330	40	24	nd	129
Host shale of Pb and Zn rich deposits (4)	nd	nd	5,047	nd	2	nd	18	123	16	13	nd	35
Quartz chert (4)	nd	nd	nd	nd	6	nd	180	2,700	25	12	nd	25
Continental chert (4)	nd	nd	140	nd	4	nd	59	253	14	8	nd	29

Table 6. Concentrations of selected elements in rock samples collected from the northern part of the Killik River quadrangle
[locations of rock samples on index map; N, not detected; NA, not analyzed; all values in parts per million except Fe, which is in percent; *, analyses for Ag, As, Au, Cd, and Zn by atomic absorption method; analyses for all other elements are by emission spectrographic method]

Area	Sample no.	Latitude	Longitude	Fe	Ag	Au	As	As*	Au*	Ba	Cd	Co	Co*	Cr	Cu	Mn	Ni	Pb	Zn*	Zn	Rock description (map-unit symbols from map A)	
Ouk Creek	AKD25A	68 19 27	155 41 45	10	N	N	N	N	N	50	0.5	10	<10	10	10	5,000	<10	120	200	vein in unit MA		
	AKD25B	68 19 27	155 41 45	20	N	2.3	N	N	N	>9,000	0.8	N	<10	<10	10	3,000	20	15	20	1,500	concretion in unit MA; contains sphalerite	
	AKD25C	68 19 27	155 41 45	20	N	0.3	N	N	N	300	0.8	N	<10	<10	10	3,000	20	15	20	1,500	concretion in unit MA; contains pyrite, calcite	
	AKD25D	68 19 27	155 41 45	20	N	2.3	N	N	N	100	0.8	N	<10	<10	10	3,000	20	15	20	1,500	vein in chert; unit PKW	
	AKD25E	68 19 27	155 41 45	>20	N	0.05	N	N	N	500	0.5	N	<10	<10	10	3,000	20	15	20	1,500	vein in unit MA	
AKD25F	68 19 27	155 41 45	1	3	N	N	N	N	N	700	1.5	N	<1	100	30	500	50	N	150	200	chert; unit PKW	
Ivotuk Hills	AKD106	68 02 21	155 43 42	0.5	7	NA	N	NA	NA	>9,000	NA	30	NA	200	150	1,500	150	10	NA	1,000	black shale, Ouk Formation?	
	AKD27A	68 05 31	150 42 02	2	2	N	N	N	N	>9,000	0.4	N	<5	50	50	50	30	N	20	<200	chert	
	AKD27C	68 05 31	150 42 02	>20	N	N	N	N	300	700	0.3	N	<10	100	200	10	100	100	100	<100	chert	
	AKD27D	68 05 38	150 43 13	7	N	N	N	N	20	>9,000	0.4	N	200	<10	800	>5,000	100	N	150	200	chert	
	AKD28A	68 05 38	150 43 13	2	N	NA	N	N	10	N	>9,000	0.6	N	>100	200	100	110	175	<200	chert		
	AKD28B	68 01 56	151 01 51	3	N	NA	N	N	N	>9,000	0.3	N	20	50	100	150	50	<10	105	<200	chert	
	AKD28C	68 03 02	150 52 31	2	0.5	NA	N	N	10	N	>9,000	0.6	N	20	50	100	200	150	110	<200	chert	
	AKD29	68 03 32	150 57 40	2	3	N	N	N	20	N	>9,000	0.9	N	30	50	200	3,000	100	15	110	200	yellow weathering shale
	AKD30A	68 03 32	150 57 40	5	N	NA	N	N	N	N	>9,000	0.4	N	20	50	200	70	<10	70			