APPENDIX 7-23

BLIND, CRANDALL, AND HORSE CREEK FLOW DATA

ENVIRONMENTAL INDUSTRIAL SERVICES
P.O. Box 358 - Desert Lake Road - Elmo, Utah 84521 - Telephone (801) 653-2606

October 5, 1992

Mr. Larry Johnson
Genwal Coal Company Inc.
195 N. 100 W.
P.O. Box 1201
Huntington, Utah 84528

Re: Perennial Stream Determination
LBA #9

Dear Mr. Johnson:

As per your instruction, on September 28, 1992, personnel from E.I.S. walked from the confluence of Huntington Creek up No Name Canyon, Blind Canyon, Horse Canyon and Crandall Canyons. The purpose was to determine what portion of each of these drainages would be considered as perennial in as much as they had a static flow or standing water level.

The results of that survey are indicated on attached Plate 14-5 and in brief are described below:

Horse Canyon	Right fork - dry approximately 340 feet above the forks. Left fork - dry above forks
No Name Canyon	Dry
Blind Canyon	Dry
Crandall Canyon	Left fork - intermittent flow above forks to CS-5 Right fork - flow to CN-4 canyon top

Sincerely,

Melvan A. Coonrod
E.I.S.

STREAM FLOW AND TEMPERATURE MEASUREMENTS 1991

STATION	APR 15		MAY 28		JUN 12–13		JUL 1–3		JUL 14–16	
	FLOW (gpm)	TEMP (C)	FLOW (gpm)	TEMP (C)	FLOW (gpm)	TEMP (C)	FLOW (gpm)	TEMP (C)	FLOW (gpm)	TEMP (C)
CRANDALL CREEK										
CN–1	188	2	754	6	1997	6	4.7	14	592	11
CN–2	(s)	(s)	673	6	2370	4	4.7	15	250	11
CN–3	(s)	(s)	(s)	(s)	2985	4	–	–	–	–
CN–4	(s)	(s)	(s)	(s)	1683	4	–	–	167	11
CN–5	(s)	(s)	(s)	(s)	422	4	1.5	14	19	9
CN–6	(s)	(s)	(s)	(s)	148	4	1.5	14	8.5	10
CN–7	(s)	(s)	(s)	(s)	447	4	2	16	8	9
CS–1	241	2	467	5	3357	4	3590	10	1037	7
CS–2	(s)	(s)	337	5	2100	4	1234	12	215	6
CS–3	(s)	(s)	930	5	1961	4	185	7	262	5
CS–4	(s)	(s)	DRY	–	1010	3	202	10	DRY	–
CS–5	(s)	(s)	(s)	(s)	1041	3	195	10	34	8
CS–6	(s)	(s)	(s)	(s)	505	2	5	20	DRY	–
CS–7	(s)	(s)	(s)	(s)	107	1	1	13	DRY	–
CF–1	300	4	1400	6	3200	6	1200	12	1647	12
CF–2	300	4	1400	6	3200	6	1200	12	1378	12
BLIND CYN. CREEK										
B–1	(s)	(s)	673	7	1260	7	1005	16	399	18
B–2	(s)	(s)	673	7	1795	7	–	–	–	–
B–3	(s)	(s)	609	6	1000	7	447	12	281	18
B–4	(s)	(s)	448	6	1120	7	207	15	247	16
B–5	(s)	(s)	(s)	(s)	1120	6	419	16	228	19
B–6	(s)	(s)	(s)	(s)	673	4	495	15	–	–
B–7	(s)	(s)	(s)	(s)	337	4	600	15	117	16
B–8	(s)	(s)	(s)	(s)	107	4	280	13	1	320
BF	(s)	(s)	670	7	1000	7	218	18	220	16
HORSE CREEK										
H–1	(s)	(s)	2513	7	705	6	265	19	201	14
H–2	(s)	(s)	1997	7	2000	6	396	18	311	17
H–3	235	1	1387	7	2890	7	300	17	250	13
HN–1	(s)	(s)	590	7	673	4	–	–	3	10
HS–1	(s)	(s)	758	7	1293	3	–	–	20	14
HS–2	(s)	(s)	785	7	1515	3	–	–	31	14
HS–3	(s)	(s)	978	7	1680	4	–	–	100	14
HS–4	(s)	(s)	780	7	2423	6	496	18	167	14
HS–5	(s)	(s)	747	7	2356	6	319	17	131	14
HS–0	(s)	(s)	(s)	(s)	1185	2	97	14	50	14
HS–20	(s)	(s)	(s)	(s)	2015	2	186	16	150	13
HS–30	(s)	(s)	(s)	(s)	1777	1	80	13	71	13
HS–40	(s)	(s)	(s)	(s)	1777	1	65	12	10	13
HS–50	(s)	(s)	(s)	(s)	(s)	(s)	56	12	6	13

STREAM FLOW AND TEMPERATURE MEASUREMENTS 1991

STATION	AUG 9		AUG 20–21		SEP 5–6		SEP 25–26		OCT 10	
	FLOW (gpm)	TEMP (C)	FLOW (gpm)	TEMP (C)	FLOW (gpm)	TEMP (C)	FLOW (gpm)	TEMP (C)	FLOW (gpm)	TEMP (C)
CRANDALL CREEK										
CN–1	200	11	103	12	337	10	19	8	25	7
CN–2	112	10	84	12	154	9	25	7	11	6
CN–3	45	12	16	15	309	9	19	5	10	4
CN–4	58	12	55	13	238	9	15	6	5.6	5
CN–5	0.2	12	3	9	10	9	DRY	–	DRY	–
CN–6	1.6	9	DRY	–	66	8	DRY	–	DRY	–
CN–7	0.2	12	DRY	–	25	9	DRY	–	DRY	–
CS–1	337	8	300	8	583	6	210	5	105	7
CS–2	135	8	140	7	95	6	13	7	1.6	8
CS–3	140	6	100	7	75	5	19	6	37	5
CS–4	DRY	–	DRY	–	DRY	–	DRY	–	DRY	–
CS–5	14	10	6	9	17	7	2.7	7	30	5
CS–6	DRY	–	DRY	–	DRY	–	DRY	–	DRY	–
CS–7	DRY	–	DRY	–	DRY	–	DRY	–	DRY	–
CF–1	956	13	620	12	1054	7	406	7	619	8
CF–2	1328	13	620	12	1054	7	406	6	619	8
BLIND CYN. CREEK										
B–1	100	–	56	13	65	11	44	8	30	4
B–2	–	–	56	12	45	11	25	9	31	8
B–3	42	–	18	12	14	11	3.3	7	17	4
B–4	4.4	–	28	11	1.7	11	2	7	6	6
B–5	10.4	–	5	14	0.25	11	2.3	12	–	–
B–6	–	–	8	12	0.25	13	–	–	0.3	18
B–7	–	–	2	12	2	13	0.8	8	0.5	12
B–8	–	–	4	18	5.6	16	0.7	16	0.6	12
BF	229	–	146	14	73	11	146	8	109	5
HORSE CREEK										
H–1	50	17	28	14	14	14	28	7	50	7
H–2	21	17	–	–	12	14	28	8	22	7
H–3	42	18	42	15	12	14	42	10	35	7
HN–1	DRY	–	DRY	–	DRY	–	DRY	–	DRY	–
HS–1	3.5	18	5	13	6	14	6	6	5.6	6
HS–2	13	17	6	13	12	14	9	6	19	4
HS–3	18.7	16	17	13	8	14	13	6	9	5
HS–4	21	17	25	15	8	15	23	6	–	–
HS–5	21	17	16	14	6	14	33	6	72	7
HS–0	1.5	19	5	16	1.5	15	2.3	6	1.5	5
HS–20	0.5	21	0.2	16	0.7	18	2	8	1	6
HS–30	1.0	18	0.5	15	0.5	16	0.2	7	1.5	5
HS–40	0.2	18	DRY	–	DRY	–	0.15	8	DRY	–
HS–50	DRY	–	DRY	–	DRY	–	DRY	–	DRY	–

STREAM FLOW AND TEMPERATURE MEASUREMENTS 1991

STATION	NOV 6–13 FLOW (gpm)	NOV 6–13 TEMP (C)
CRANDALL CREEK		
CN–1	112	5
CN–2	112	1
CN–3	75	2
CN–4	19	1
CN–5	12	2
CN–6	0.5	1
CN–7	DRY	–
CS–1	337	5
CS–2	150	5
CS–3	93	4
CS–4	DRY	–
CS–5	2	1
CS–6	DRY	–
CS–7	DRY	–
CF–1	FRZN	–
CF–2	FRZN	–
BLIND CYN. CREEK		
B–1	168	4
B–2	125	4
B–3	40	4
B–4	18.7	3
B–5	62	3
B–6	–	–
B–7	15.6	2
B–8	15.6	2
BF	FRZN	–
HORSE CREEK		
H–1	701	2
H–2	96	2
H–3	344	1
HN–1	DRY	–
HS–1	37	4
HS–2	93	4
HS–3	84	4
HS–4	84	4
HS–5	122	2
HS–0	112	4
HS–20	9.3	5
HS–30	DRY	–
HS–40	DRY	–
HS–50	DRY	–

(S) Inaccessible due to snow lining stream and/or covering stream.

(–) No data.

(FRZN) Flume frozen.

* Heavy rains fell during Sept 5–6 and July 14–16 surveys. Snow covering and lining the stream was melting during Nov. 6–13 survey

BLIND CREEK FLOW CALCULATIONS

Watershed Characteristics

Area = 1148 acres (1.79 mi^2) - see watershed area map (Figure 14-11 of this appendix)

Average elevation = 8998 feet - see grid point map (Figure 14-12 of this appendix). Average elevation determined from 211 points on 500 foot centers across basin.

Return-Period/Peak-Flow Estimates

With an average elevation greater than 8000 feet, Blind Canyon lies in the High Plateaus Flood region of Thomas and Lindskov (1983). Flood peak flows in this region can be estimated from the equations:

$$Q_{10} = 680\ A^{0.706}\ E^{-1.3}$$

$$Q_{25} = 10{,}000\ A^{0.672}\ E^{-2.33}$$

$$Q_{50} = 64{,}200\ A^{0.651}\ E^{-3.03}$$

$$Q_{100} = 347{,}000\ A^{0.631}\ E^{-3.68}$$

Q_N = peak flow (cfs) with a return period of N years
A = drainage area (mi^2)
E = average basin elevation (thousands of feet)

For the Blind Canyon watershed:

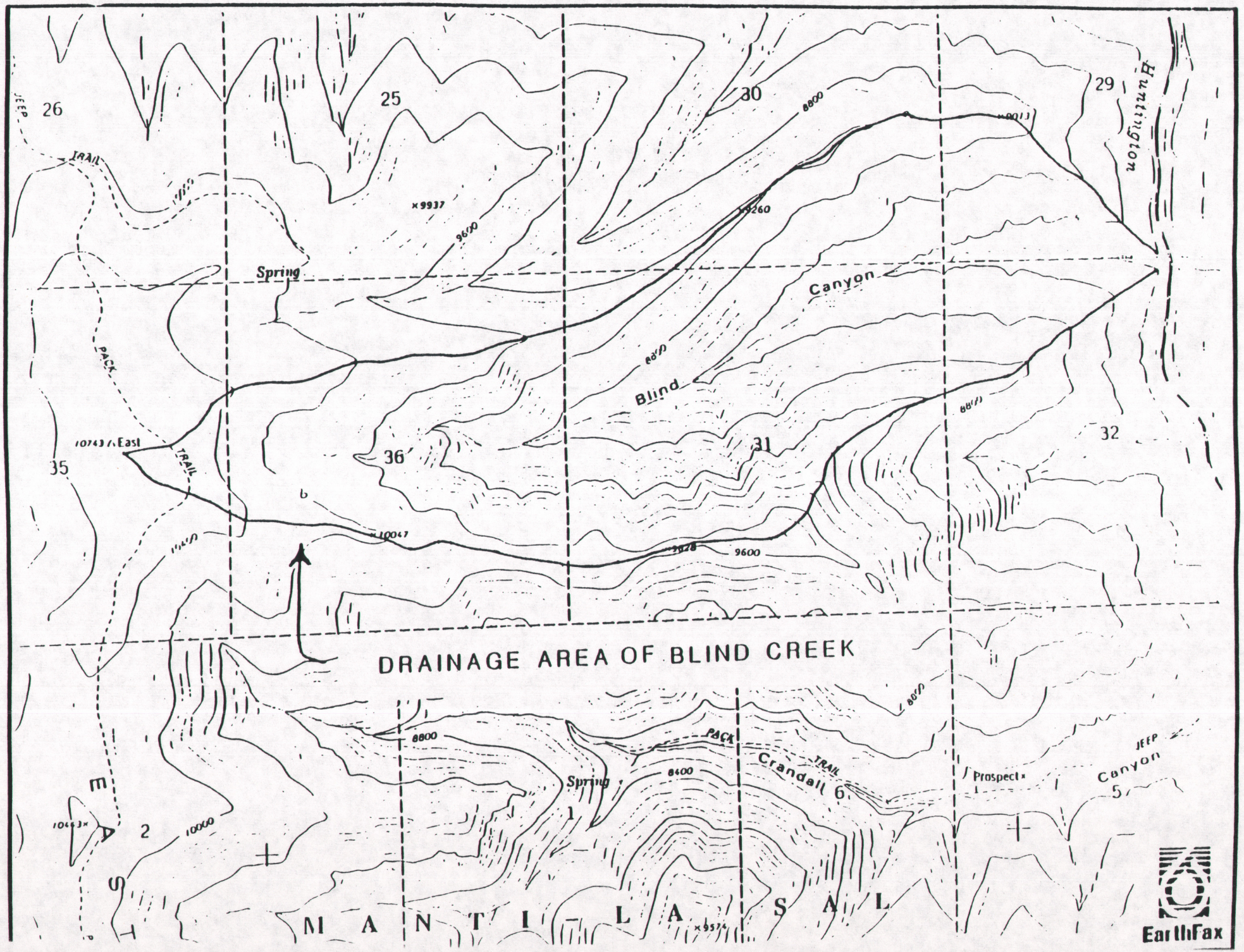
Q_{10} = 59 cfs

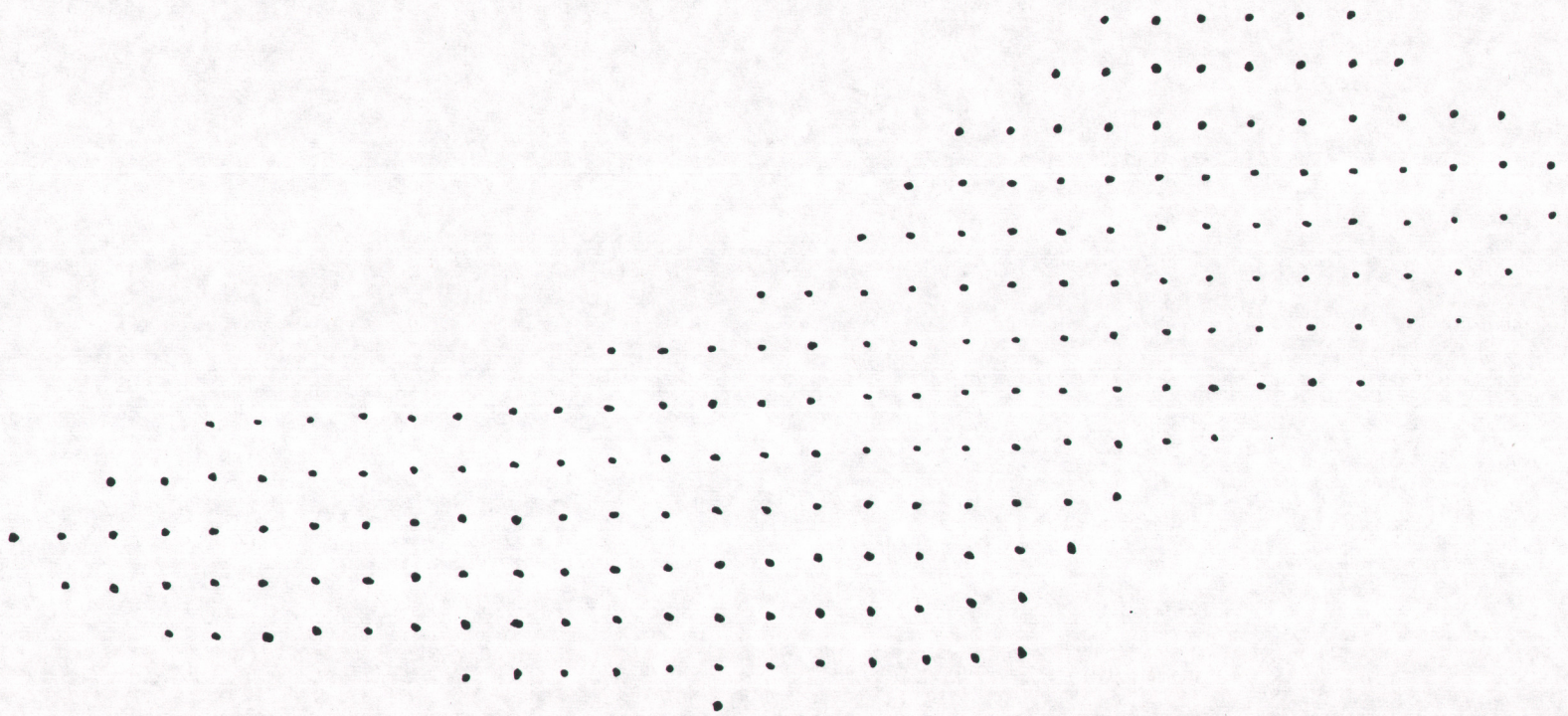
Q_{25} = 88 cfs

Q_{50} = 121 cfs

Q_{100} = 154 cfs

Reference: Thomas, B. E., Lindskov, K. L., 1983, Methods for Estimating Peak Discharge and Flood Boundaries of Streams in Utah, U.S. Geological Survey, Water-Resources Investigations Report 83-4129, 77 p.


DRAINAGE AREA OF BLIND CREEK
MANTI LA SAL
EAST
Spring
Canyon
Blind
Crandall
Prospect
Canyon
Huntington
PACK TRAIL
JEEP TRAIL
TRAIL
25
26
30
29
31
32
36
35
1
2
5
6
8800
8600
9600
10000
EarthFax



211 POINTS: MEAN ELEVATION 8997 FEET

EarthFax

STATE OF UTAH

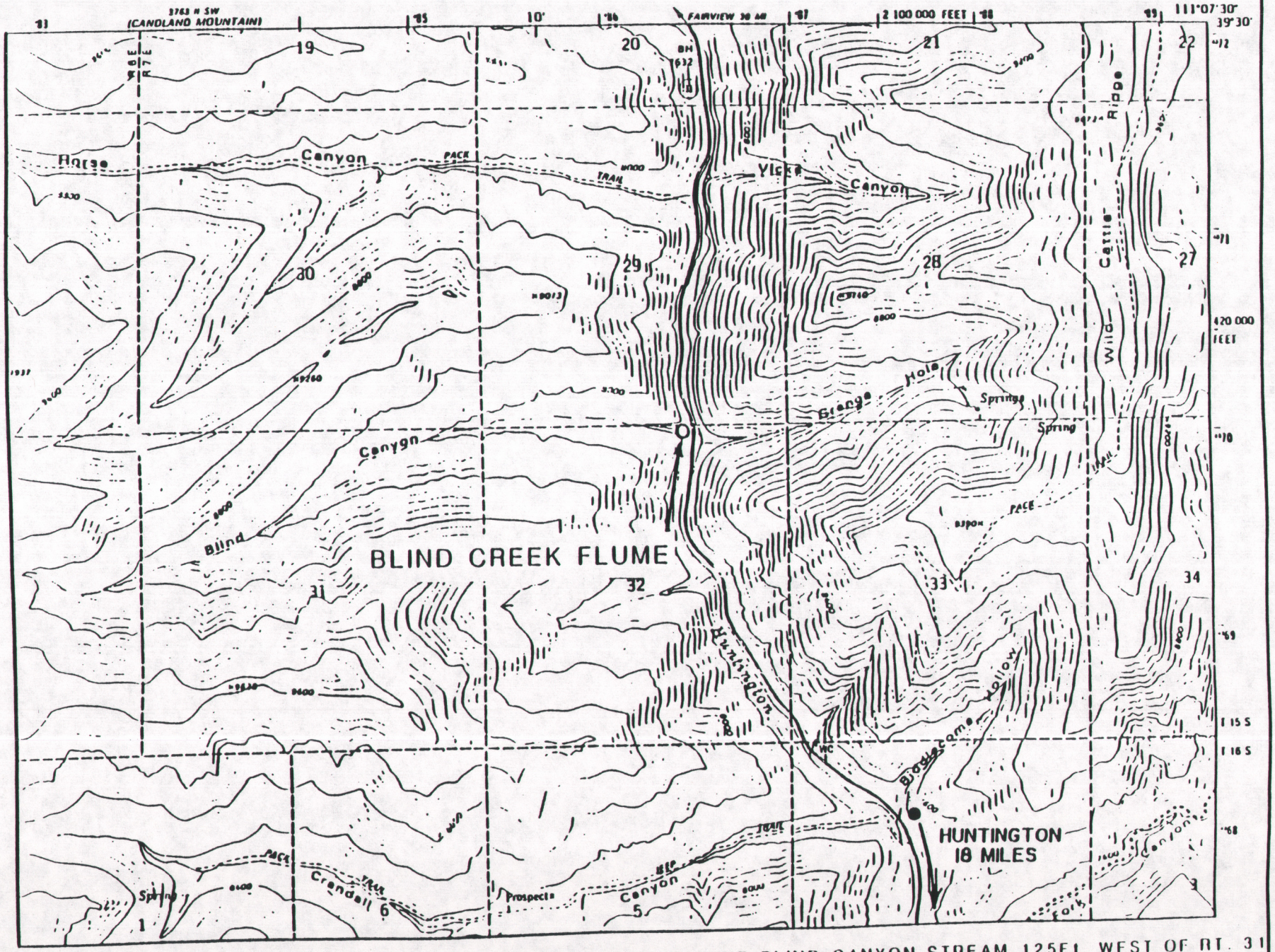
UTAH GEOLOGICAL AND MINERAL SURVEY

RILDA CANYON QUADRANGLE

UTAH

7.5 MINUTE SERIES (TOPOGRAPHIC)

NW/4 HIAWATHA 15' QUADRANGLE



PARSHALL FLUME ON THE BLIND CANYON STREAM 125Ft. WEST OF RT. 31

T15S-R7E-Sec-32.

BLIND CANYON			
DATE	HEIGHT (ft)	WIDTH (ft)	DISCHARGE (cfs)
07/02/91	0.18	1	0.29
07/03/91	0.18	1	0.29
07/04/91	0.18	1	0.29
07/05/91	0.18	1	0.29
07/06/91	0.18	1	0.29
07/07/91	0.17	1	0.27
07/08/91	0.17	1	0.27
07/09/91	0.17	1	0.27
07/10/91	0.17	1	0.27
07/11/91	0.16	1	0.25
07/12/91	0.16	1	0.25
07/13/91	0.17	1	0.27
07/14/91	0.18	1	0.29
07/15/91	0.15	1	0.22
07/16/91	0.15	1	0.22
07/17/91	0.17	1	0.27
07/18/91	0.16	1	0.25
07/19/91	0.14	1	0.20
07/20/91	0.14	1	0.20
07/21/91	0.14	1	0.20
07/22/91	0.14	1	0.20
07/23/91	0.13	1	0.18
07/24/91	0.13	1	0.18
07/25/91	0.13	1	0.18
07/26/91	0.13	1	0.18
07/27/91	0.12	1	0.16
07/28/91	0.12	1	0.16
07/29/91	0.12	1	0.16
07/30/91	0.12	1	0.16
07/31/91	0.11	1	0.14
08/01/91	0.1	1	0.12
08/02/91	0.11	1	0.14
08/03/91	0.1	1	0.12
08/04/91	0.13	1	0.18
08/05/91	0.16	1	0.25
08/06/91	0.13	1	0.18
08/07/91	0.14	1	0.20
08/08/91	0.15	1	0.22
08/09/91	0.13	1	0.18
08/10/91	0.12	1	0.16

BLIND CANYON			
DATE	HEIGHT (ft)	WIDTH (ft)	DISCHARGE (cfs)
08/11/91	0.11	1	0.14
08/12/91	0.11	1	0.14
08/13/91	0.1	1	0.12
08/14/91	0.11	1	0.14
08/15/91	0.11	1	0.14
08/16/91	0.1	1	0.12
08/17/91	0.1	1	0.12
08/18/91	0.11	1	0.14
08/19/91	0.1	1	0.12
08/20/91	0.1	1	0.12
08/21/91	0.1	1	0.12
08/22/91	0.1	1	0.12
08/23/91	0.1	1	0.12
08/24/91	0.1	1	0.12
08/25/91	0.1	1	0.12
08/26/91	0.1	1	0.12
08/27/91	0.09	1	0.10
08/28/91	0.13	1	0.18
08/29/91	0.14	1	0.20
08/30/91	0.6	1	1.84
08/31/91	0.12	1	0.16
09/01/91	0.1	1	0.12
09/02/91	0.1	1	0.12
09/03/91	0.09	1	0.10
09/04/91	0.09	1	0.10
09/05/91	0.09	1	0.10
09/06/91	0.19	1	0.32
09/07/91	0.13	1	0.18
09/08/91	0.1	1	0.12
09/09/91	0.1	1	0.12
09/10/91	0.11	1	0.14
09/11/91	0.11	1	0.14
09/12/91	0.09	1	0.10
09/13/91	0.16	1	0.25
09/14/91	0.09	1	0.10
09/15/91	0.08	1	0.09
09/16/91	0.08	1	0.09
09/17/91	0.07	1	0.07
09/18/91	0.07	1	0.07
09/19/91	0.07	1	0.07

BLIND CANYON			
DATE	HEIGHT (ft)	WIDTH (ft)	DISCHARGE (cfs)
09/20/91	0.07	1	0.07
09/21/91	0.07	1	0.07
09/22/91	0.07	1	0.07
09/23/91	0.07	1	0.07
09/24/91	0.06	1	0.06
09/25/91	0.06	1	0.06
09/26/91	0.06	1	0.06
09/27/91	0.07	1	0.07
09/28/91	0.06	1	0.06
09/29/91	0.06	1	0.06
09/30/91	0.05	1	0.04
FLUME FROZEN FROM 09/30/91 TO 06/01/92			
06/01/92	0.33	1	0.74
06/02/92	0.31	1	0.67
06/03/92	0.3	1	0.64
06/04/92	0.29	1	0.61
06/05/92	0.28	1	0.58
06/06/92	0.27	1	0.55
06/07/92	0.26	1	0.51
06/08/92	0.26	1	0.51
06/09/92	0.24	1	0.46
06/10/92	0.23	1	0.43
06/11/92	0.22	1	0.40
06/12/92	0.2	1	0.35
06/13/92	0.19	1	0.32
06/14/92	0.2	1	0.35
06/15/92	0.2	1	0.35
06/16/92	0.2	1	0.35
06/17/92	0.19	1	0.32
06/18/92	0.18	1	0.29
06/19/92	0.17	1	0.27
06/20/92	0.16	1	0.25
06/21/92	0.155	1	0.23
06/22/92	0.15	1	0.22
06/23/92	0.14	1	0.20
06/24/92	0.14	1	0.20
06/25/92	0.14	1	0.20
06/26/92	0.15	1	0.22
06/27/92	0.1	1	0.12
06/28/92	0.09	1	0.10

BLIND CANYON			
DATE	HEIGHT (ft)	WIDTH (ft)	DISCHARGE (cfs)
06/29/92	0.08	1	0.09
06/30/92	0.08	1	0.09
07/01/92	0.08	1	0.09
07/02/92	0.09	1	0.10
07/03/92	0.08	1	0.09
07/04/92	0.08	1	0.09
07/05/92	0.05	1	0.04
07/06/92	0.05	1	0.04
07/07/92	0.05	1	0.04
07/08/92	0.055	1	0.05
07/09/92	0.058	1	0.05
07/10/92	0.059	1	0.05
07/11/92	0.05	1	0.04
07/12/92	0.05	1	0.04
07/13/92	0.06	1	0.06
07/14/92	0.07	1	0.07
07/15/92	0.059	1	0.05
07/16/92	0.059	1	0.05
07/17/92	0.05	1	0.04
07/18/92	0.05	1	0.04
07/19/92	0.05	1	0.04
07/20/92	0.05	1	0.04
07/21/92	0.05	1	0.04
07/22/92	0.05	1	0.04
07/23/92	0.05	1	0.04
07/24/92	0.05	1	0.04
07/25/92	0.04	1	0.03
07/26/92	0.04	1	0.03
07/27/92	0.04	1	0.03
07/28/92	0.04	1	0.03
07/29/92	0.04	1	0.03
07/30/92	0.04	1	0.03
07/31/92	0.04	1	0.03
08/01/92	0.04	1	0.03
08/02/92	0.04	1	0.03
08/03/92	0.04	1	0.03
08/04/92	0.04	1	0.03
08/05/92	0.04	1	0.03
08/06/92	0.06	1	0.06
08/07/92	0.07	1	0.07

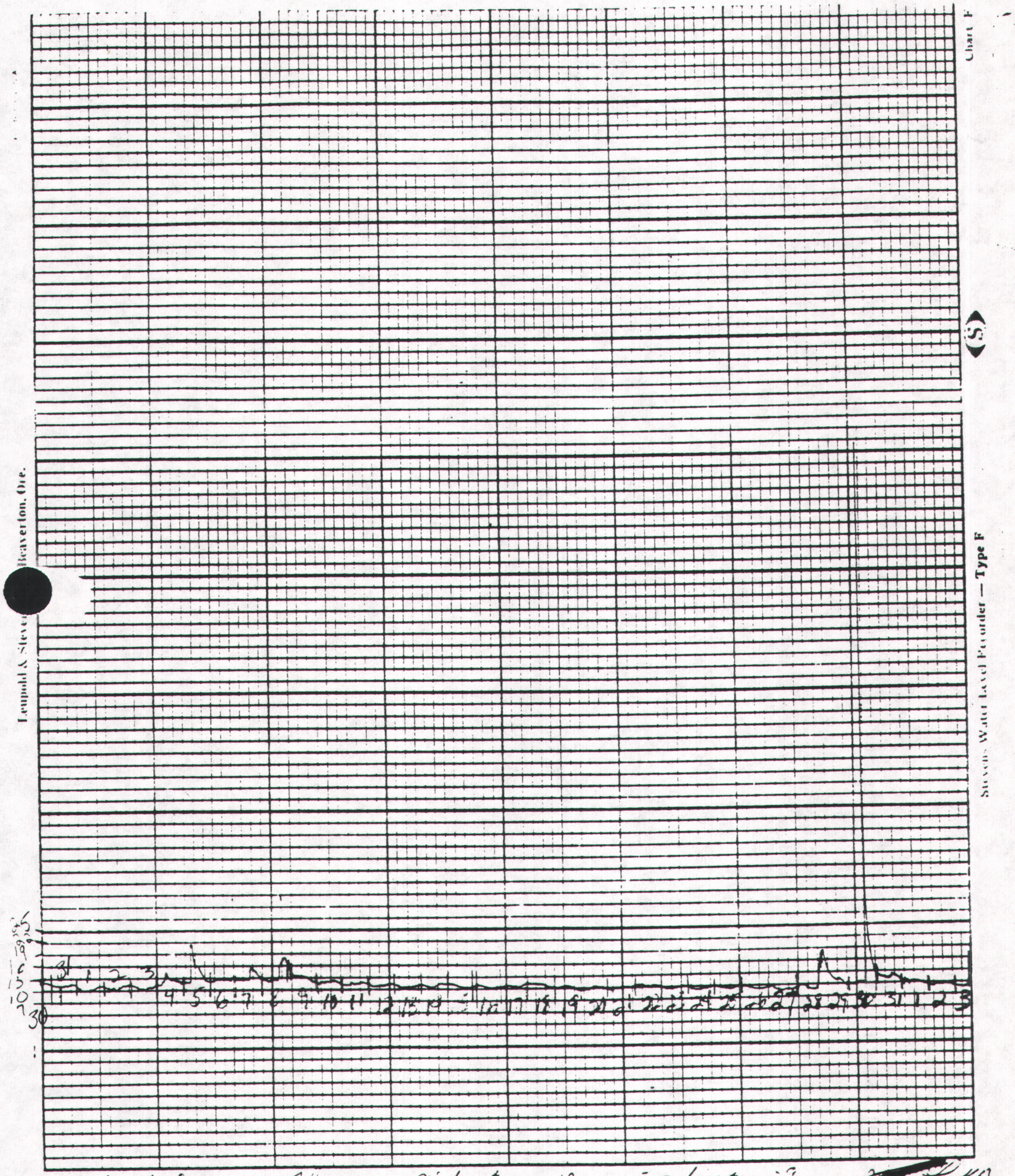
BLIND CANYON			
DATE	HEIGHT (ft)	WIDTH (ft)	DISCHARGE (cfs)
08/08/92	0.06	1	0.06
08/09/92	0.05	1	0.04
08/10/92	0.05	1	0.04
08/11/92	0.05	1	0.04
08/12/92	0.05	1	0.04
08/13/92	0.05	1	0.04
08/14/92	0.05	1	0.04
08/15/92	0.05	1	0.04
08/16/92	0.05	1	0.04
08/17/92	0.05	1	0.04
08/18/92	0.05	1	0.04
08/19/92	0.05	1	0.04
08/20/92	0.05	1	0.04
08/21/92	0.05	1	0.04
08/22/92	0.055	1	0.05
08/23/92	0.055	1	0.05
08/24/92	0.06	1	0.06
08/25/92	0.05	1	0.04
08/26/92	0.05	1	0.04
08/27/92	0.05	1	0.04
08/28/92	0.05	1	0.04
08/29/92	0.04	1	0.03
08/30/92	0.04	1	0.03
08/31/92	0		DRY
09/01/92	0		DRY
09/02/92	0		DRY
09/03/92	0		DRY
09/04/92	0.04	1	0.03
09/05/92	0		DRY
09/06/92	0		DRY
09/07/92	0		DRY
09/08/92	0		DRY
09/09/92	0		DRY
09/10/92	0		DRY
09/12/92	0		DRY
09/13/92	0		DRY
09/14/92	0		DRY
09/15/92	0		DRY
09/16/92	0.04	1	0.03
09/17/92	0		DRY

BLIND CANYON			
DATE	HEIGHT (ft)	WIDTH (ft)	DISCHARGE (cfs)
09/18/92	0		DRY
09/19/92	0		DRY
09/20/92	0		DRY
09/21/92	0		DRY
09/22/92	0		DRY
09/23/92	0		DRY
09/24/92	0		DRY
09/25/92	0		DRY
09/26/92	0		DRY
09/27/92	0		DRY
09/28/92	0		DRY
09/29/92	0		DRY
09/30/92	0		DRY
10/01/92	0		DRY
10/02/92	0		DRY
10/03/92	0		DRY
10/04/92	0		DRY
10/05/92	0		DRY
10/06/92	0		DRY
10/07/92	0		DRY
10/08/92	0		DRY
10/09/92	0		DRY
10/10/92	0		DRY
10/11/92	0		DRY
10/12/92	0		DRY
10/13/92	0		DRY
10/14/92	0		DRY
10/15/92	0		DRY
10/16/92	0		DRY
10/17/92	0		DRY
10/18/92	0		DRY
10/19/92	0		DRY
10/20/92	0		DRY
10/21/92	0		DRY
10/22/92	0		DRY
10/23/92	0		DRY
10/24/92	0		DRY
10/25/92	0		DRY
10/26/92	0		DRY
10/27/92	0		DRY

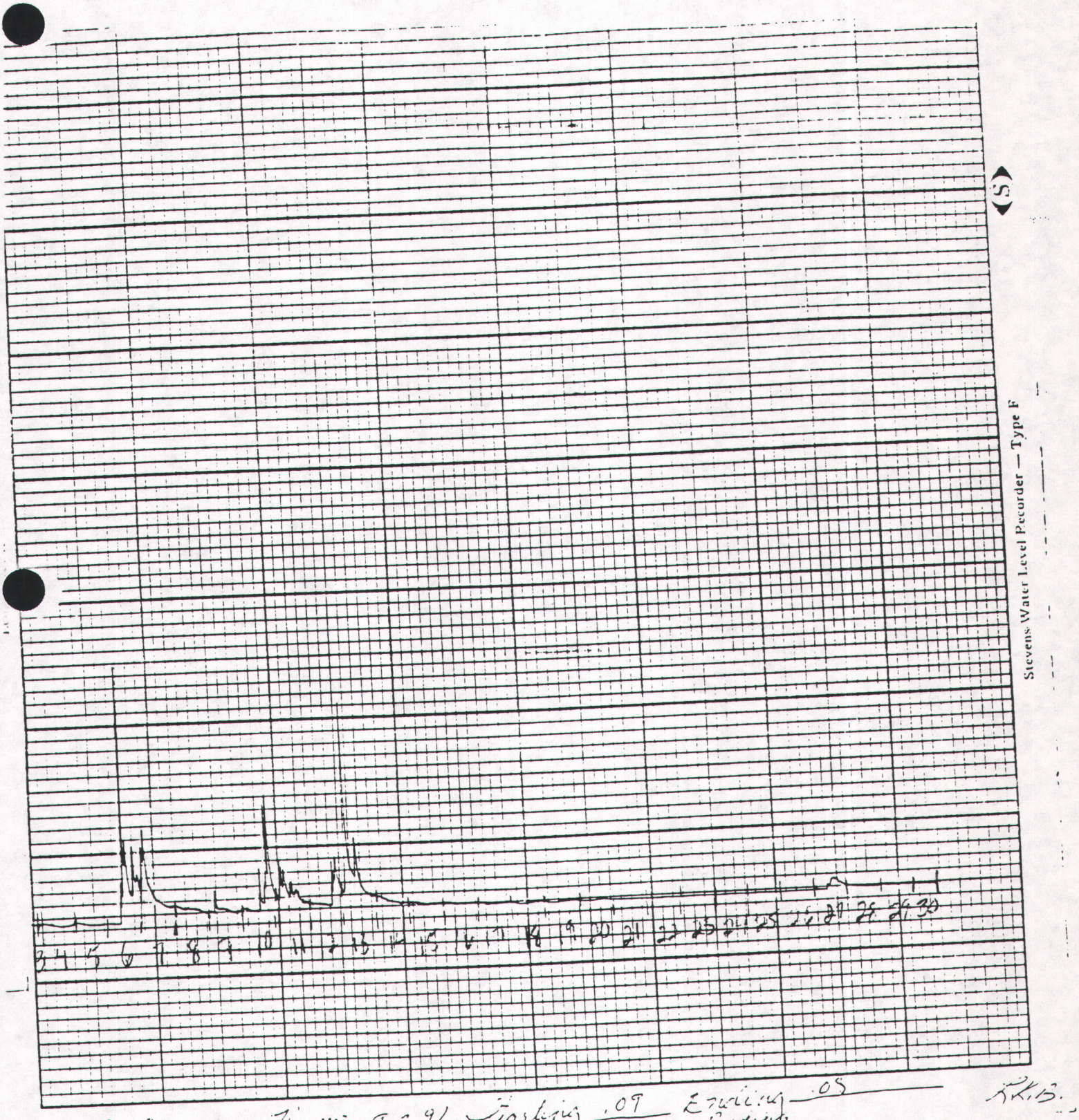
BLIND CANYON			
DATE	HEIGHT (ft)	WIDTH (ft)	DISCHARGE (cfs)
10/28/92	0		DRY
10/29/92	0		DRY
10/30/92	0		DRY
10/31/92	0		DRY
FLUME FROZEN FROM 11/01/92 TO 12/31/92			

Leupold & Stevens, Inc. Beaverton, Ore.

Stevens Water Level Recorder — Type F



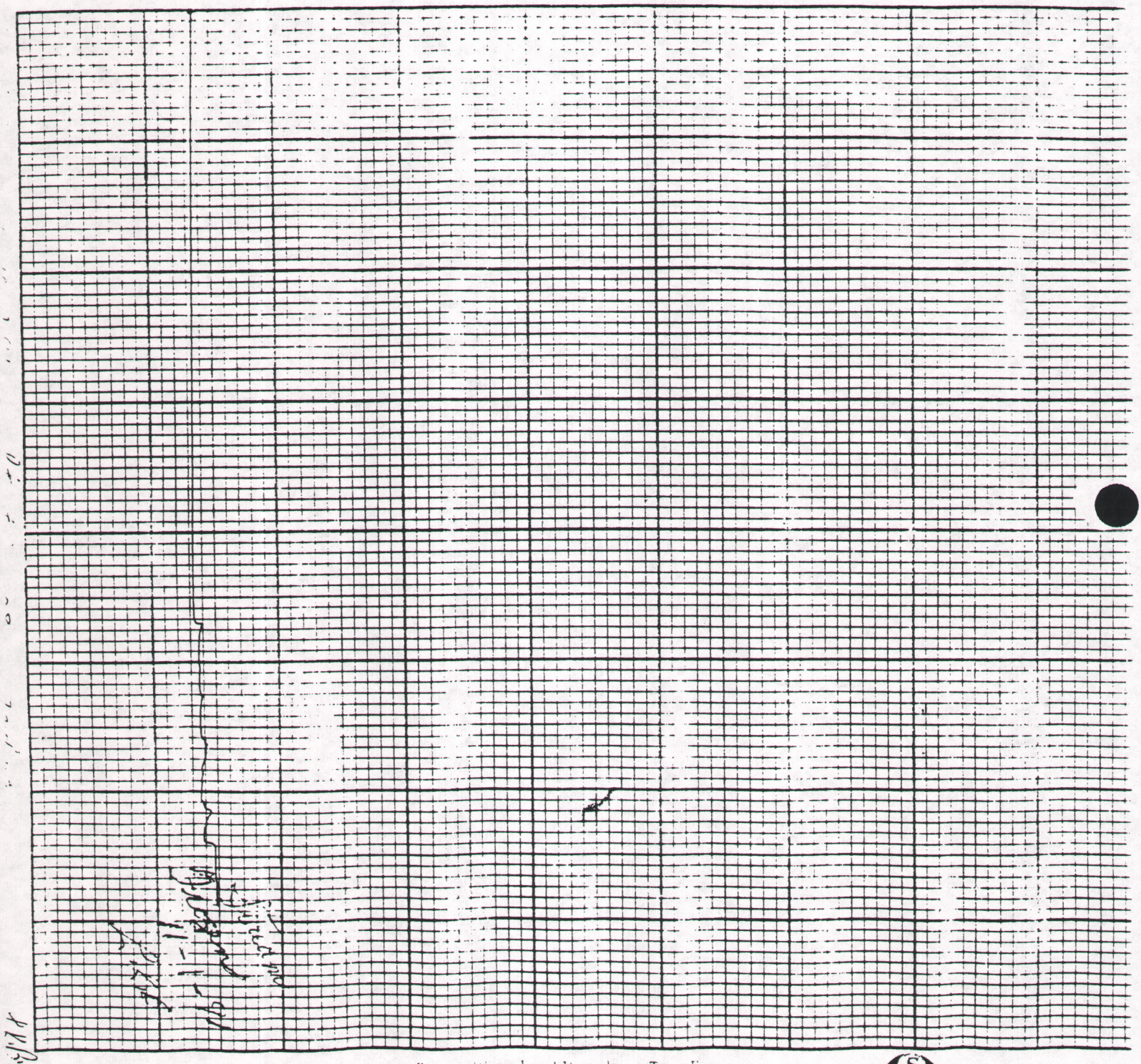
Blind Canyon Flume 7-30 Beginning .12 Ending



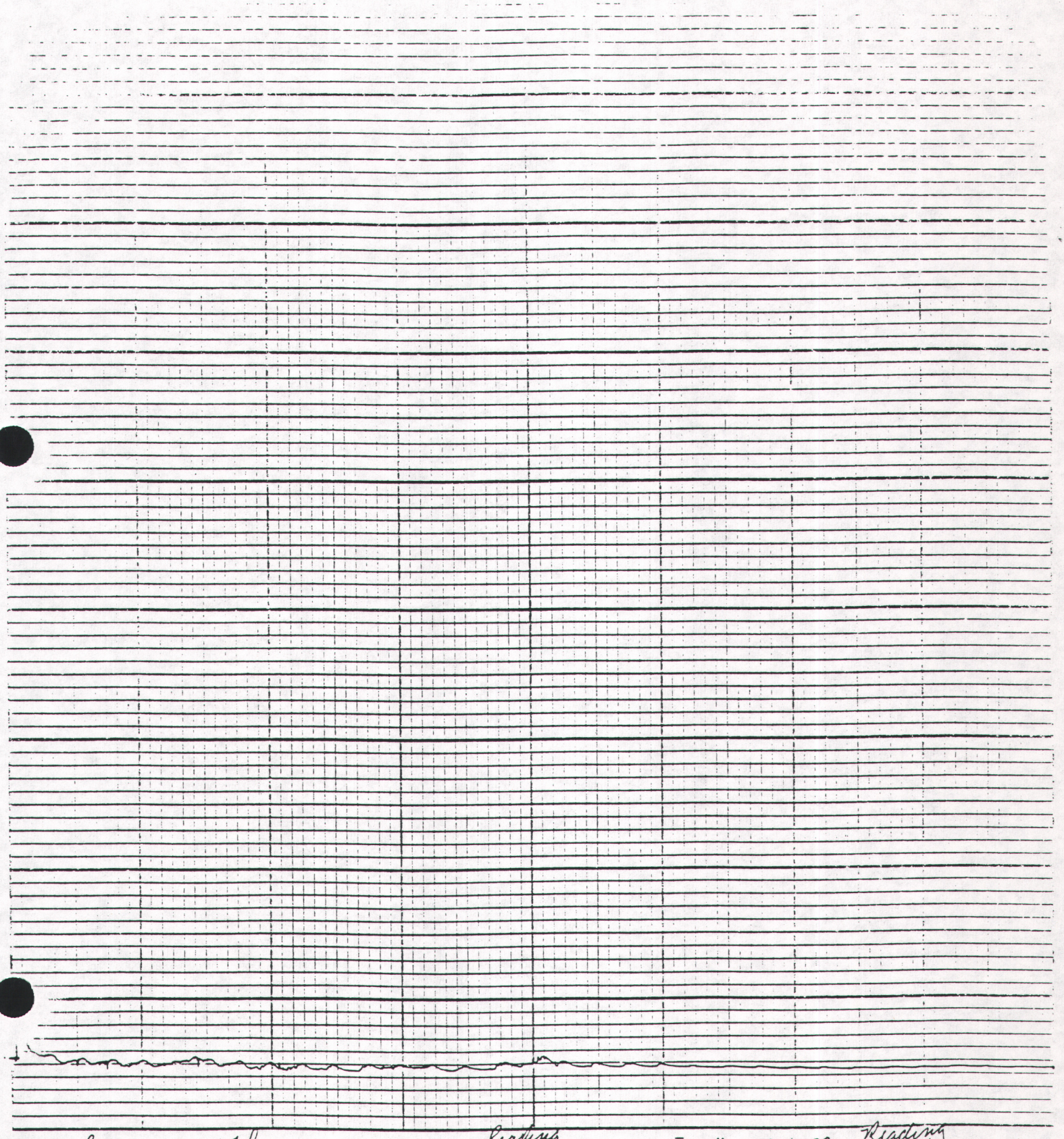
Flood Crevasse Flume 9-3-91 Starting Reading .09 Ending Reading .05 K.K.B.

9-30-91

3.11

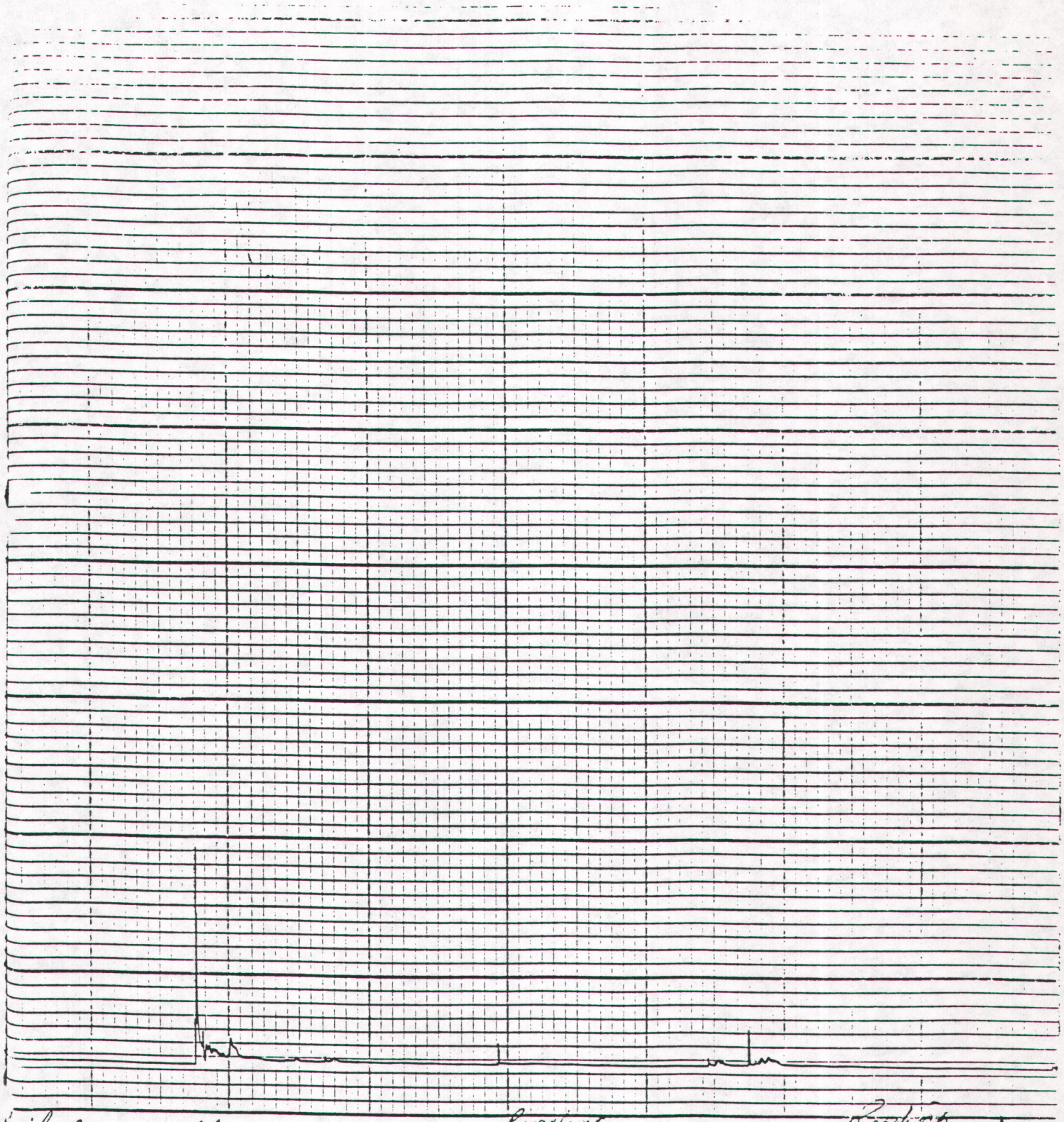


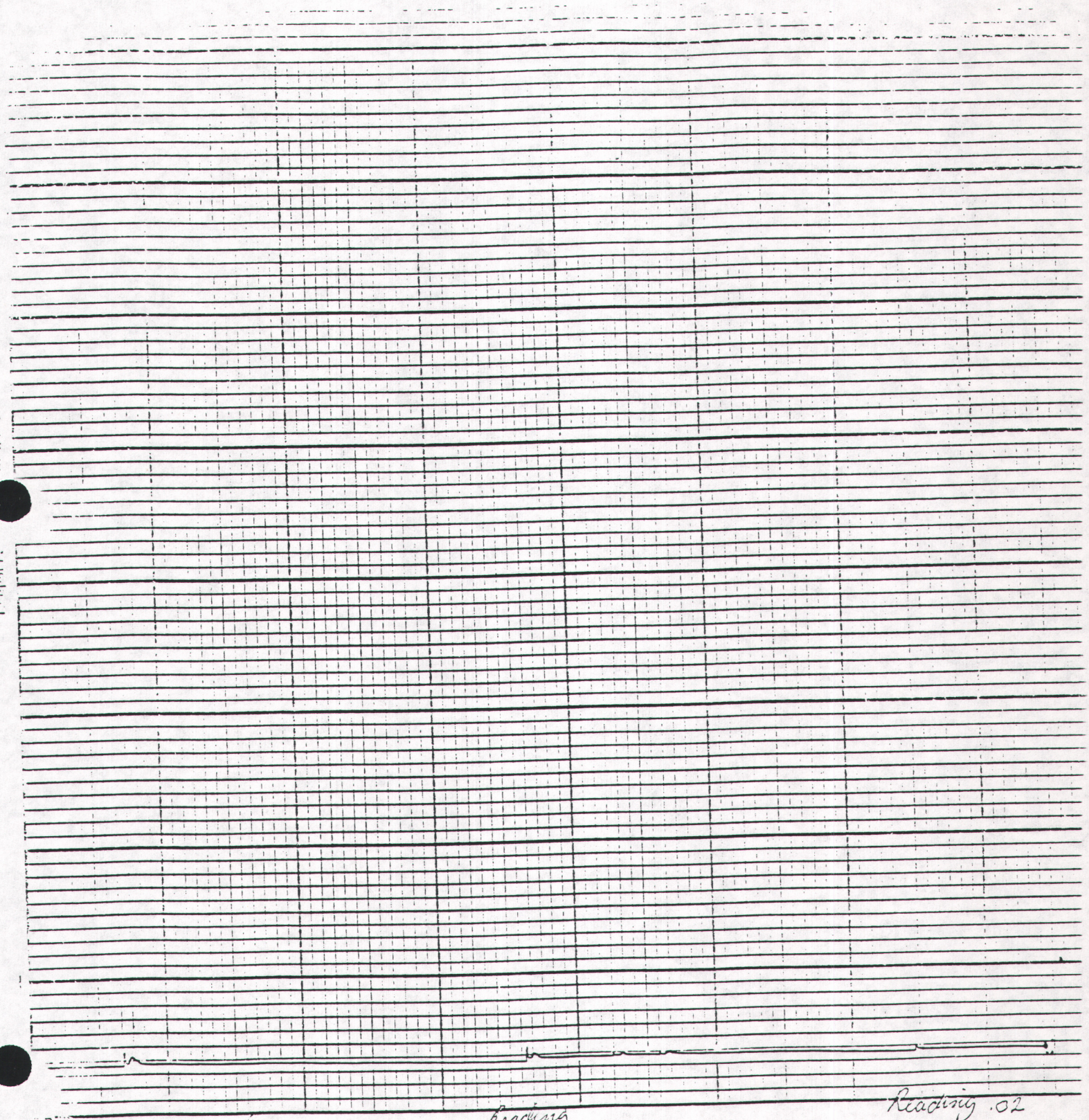
Leupold & Stevens, Inc., Beaverton, Ore.
Stevens Water Level Recorder — Type F
Blind Canyon Flume Starting 6-1-92 Reading .36 Ending .14 Reading



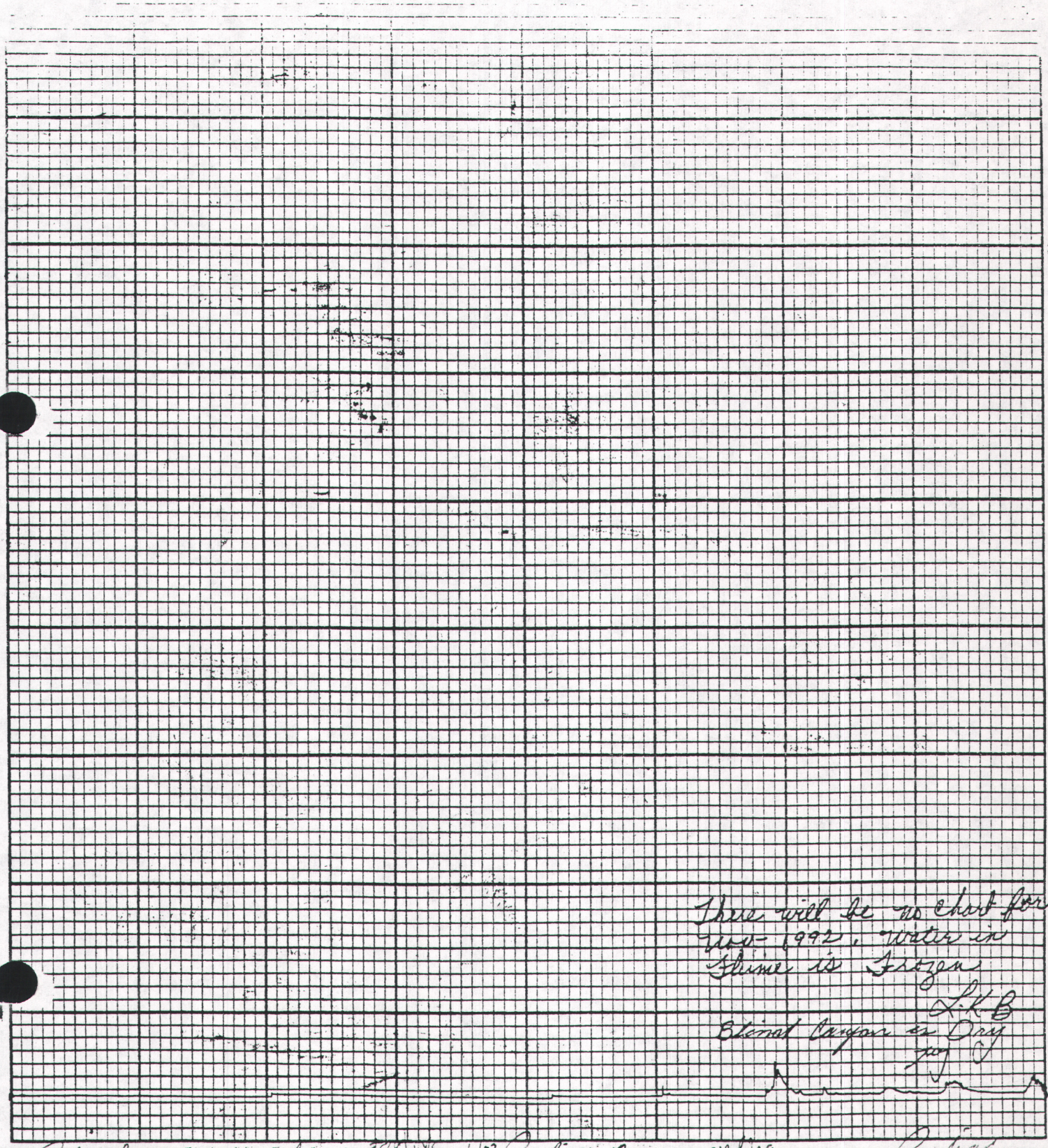
Reading

Ending 8-1-92 Reading .04


Mid Canyon Flume Starting 8-1-92 Reading .04
Ending 9-1-92 Reading .03
DRY



Blind Canyon Flume Starting 9-1-92 Reading .03 Ending 10-1-92 Reading .02


There will be no chart for
1991-1992. Water in
Elsinor is Frozen
L.K.B
Elsinor Canyon is Dry
Leupold & Stevens, Inc., Beaverton, Ore.
Stevens Water Level Recorder — Type F

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CRANDALL CREEK – UPPER FLUME

Synthesized Lab #	DATE	HEIGHT(ft)	WIDTH(ft)	DISCHARGE(cfs)
8805030 U	05/03/88	1.66	3	26.54
8805040 U	05/04/88	1.67	3	26.79
8805050 U	05/05/88	1.66	3	26.54
8805060 U	05/06/88	1.64	3	26.04
8805070 U	05/07/88	1.63	3	25.79
8805080 U	05/08/88	1.63	3	25.79
8805090 U	05/09/88	1.62	3	25.54
8805100 U	05/10/88	1.61	3	25.30
8805110 U	05/11/88	1.56	3	24.08
8805120 U	05/12/88	1.5	3	22.64
8805130 U	05/13/88	1.43	3	21.01
8805140 U	05/14/88	1.34	3	18.98
8805150 U	05/15/88	1.29	3	17.88
8805160 U	05/16/88	1.23	3	16.60
8805173 U	05/17/88	1.2	3	15.97
8805182 U	05/18/88	1.18	3	15.55
8805190 U	05/19/88	1.19	3	15.76
8805200 U	05/20/88	1.2	3	15.97
8805210 U	05/21/88	1.21	3	16.17
8805220 U	05/22/88	1.2	3	15.97
8805230 U	05/23/88	1.2	3	15.97
8805240 U	05/24/88	1.21	3	16.17
8805250 U	05/25/88	1.22	3	16.38
8805260 U	05/26/88	1.22	3	16.38
8805270 U	05/27/88	1.22	3	16.38
8805280 U	05/28/88	1.23	3	16.60
8805290 U	05/29/88	1.22	3	16.38
8805300 U	05/30/88	1.24	3	16.81
8805110 S	05/31/88	1.25	3	17.02
8806010 U	06/01/88	1.22	3	16.38
8806020 U	06/02/88	1.15	3	14.94
8806030 U	06/03/88	1.15	3	14.94
8806042 U	06/04/88	1.2	3	15.97
8806050 U	06/05/88	1.25	3	17.02
8806060 U	06/06/88	1.24	3	16.81
8806070 U	06/07/88	1.17	3	15.35
8806080 U	06/08/88	1.1	3	13.93
8806090 U	06/09/88	1.08	3	13.54
8806100 U	06/10/88	1	3	12.00
8806110 U	06/11/88	0.94	3	10.89
8806120 U	06/12/88	0.89	3	10.00
8806130 U	06/13/88	0.79	3	8.30

04

3-11-88 8804733 S (04)

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Syn Lab #

	CRANDALL CREEK–UPPER FLUME				GPM
	DATE	HEIGHT(ft)	WIDTH(ft)	DISCHARGE(cfs)	
8806140 u	06/14/88	0.74	3	7.49	
8806150 u	06/15/88	0.69	3	6.71	
8806160 u	06/16/88	0.69	3	6.71	
8806170 u	06/17/88	0.65	3	6.11	
8806180 u	06/18/88	0.64	3	5.97	
8806190 u	06/19/88	0.64	3	5.97	
8806200 u	06/20/88	0.59	3	5.25	
8806210 u	06/21/88	0.54	3	4.57	
8806220 u	06/22/88	0.49	3	3.93	
8806230 u	06/23/88	0.4	3	2.86	
8806240 u	06/24/88	0.38	3	2.64	
8806250 u	06/25/88	0.43	3	3.20	
8806260 u	06/26/88	0.38	3	2.64	
8806270 u	06/27/88	0.33	3	2.11	
8806280 u	06/28/88	0.38	3	2.64	
8806290 u	06/29/88	0.28	3	1.63	731.5
8806308 u	06/30/88	0.23	3	1.20	538.6
8807010 u	07/01/88	0.18	3	0.82	368.0
8807020 u	07/02/88	0.23	3	1.20	
	07/03/88/ to 07/27/88	No Readings	3	0.00	
8807285 u	07/28/88	0.21	3	1.04	466.8
8807290 u	07/29/88	0.21	3	1.04	
8807300 u	07/30/88	0.21	3	1.04	
8807310 u	07/31/88	0.21	3	1.04	
8808010 u	08/01/88	0.21	3	1.04	
8808020 u	08/02/88	0.21	3	1.04	
8808030 u	08/03/88	0.21	3	1.04	
8808040 u	08/04/88	0.26	3	1.46	655.2
8808050 u	08/05/88	0.21	3	1.04	
8808060 u	08/06/88	0.21	3	1.04	
8808070 u	08/07/88	0.21	3	1.04	
8808080 u	08/08/88	0.21	3	1.04	
8808090 u	08/09/88	0.21	3	1.04	
8808100 u	08/10/88	0.21	3	1.04	
8808110 u	08/11/88	0.21	3	1.04	
8808120 u	08/12/88	0.21	3	1.04	
8808130 u	08/13/88	0.21	3	1.04	
8808140 u	08/14/88	0.21	3	1.04	
8808150 u	08/15/88	0.21	3	1.04	
8808160 u	08/16/88	0.21	3	1.04	
8808170 u	08/17/88	0.21	3	1.04	
8808180 u	08/18/88	0.21	3	1.04	

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CRANDALL CREEK–UPPER FLUME

		DATE	HEIGHT(ft)	WIDTH(ft)	DISCHARGE(cfs)	GPM
88081940	u	08/19/88	0.21	3	1.04	466.8
8808200	u	08/20/88	0.21	3	1.04	
8808210	u	08/21/88	0.21	3	1.04	
8808220	u	08/22/88	0.21	3	1.04	
8808230	u	08/23/88	0.21	3	1.04	
8808240	u	08/24/88	0.21	3	1.04	
8808250	u	08/25/88	0.21	3	1.04	
DUP		08/25/88	0.21	3	1.04	
8808260	u	08/26/88	0.21	3	1.04	
8808270	u	08/27/88	0.21	3	1.04	
8808280	u	08/28/88	0.21	3	1.04	
8808294	u	08/29/88	0.21	3	1.04	
8808300	u	08/30/88	0.21	3	1.04	
8808310	u	08/31/88	0.21	3	1.04	
8809010	u	09/01/88	0.21	3	1.04	
8809020	u	09/02/88	0.21	3	1.04	
8809030	u	09/03/88	0.3	3	1.82	816.8
8809040	u	09/04/88	0.21	3	1.04	
8809050	u	09/05/88	0.21	3	1.04	
8809060	u	09/06/88	0.21	3	1.04	
8809070	u	09/07/88	0.2	3	0.96	430.8
8809080	u	09/08/88	0.2	3	0.96	
8809090	u	09/09/88	0.2	3	0.96	
8809100	u	09/10/88	0.2	3	0.96	
8809110	u	09/11/88	0.2	3	0.96	
8809120	u	09/12/88	0.19	3	0.89	399.4
8809130	u	09/13/88	0.19	3	0.89	
8809140	u	09/14/88	0.19	3	0.89	
8809150	u	09/15/88	0.19	3	0.89	
8809160	u	09/16/88	0.19	3	0.89	
8809170	u	09/17/88	0.19	3	0.89	
8809180	u	09/18/88	0.18	3	0.82	
8809194	u	09/19/88	0.18	3	0.82	368.0
8809202	u	09/20/88	0.18	3	0.82	
8809210	u	09/21/88	0.18	3	0.82	
8809220	u	09/22/88	0.18	3	0.82	
8809230	u	09/23/88	0.17	3	0.75	336.6
8809240	u	09/24/88	0.17	3	0.75	
8809250	u	09/25/88	0.17	3	0.75	
8809260	u	09/26/88	0.17	3	0.75	
8809270	u	09/27/88	0.17	3	0.75	
8809280	u	09/28/88	0.17	3	0.75	

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CRANDALL CREEK – UPPER FLUME

	DATE	HEIGHT(ft)	WIDTH(ft)	DISCHARGE(cfs)	
8809290 u	09/29/88	0.16	3	0.68	305.2
8906220 s	09/30/88	0.16	3	0.68	
8810010 u	10/01/88	0.16	3	0.68	
8810020 u	10/02/88	0.16	3	0.68	
8810030 u	10/03/88	0.16	3	0.68	
8810040 u	10/04/88	0.15	3	0.61	273.8
8810050 u	10/05/88	0.15	3	0.61	
8810060 u	10/06/88	0.15	3	0.61	
8810070 u	10/07/88	0.15	3	0.61	
8810080 u	10/08/88	0.15	3	0.61	
8810090 u	10/09/88	0.15	3	0.61	
8810100 u	10/10/88	0.15	3	0.61	
8810110 u	10/11/88	0.15	3	0.61	
8810120 u	10/12/88	0.15	3	0.61	
8810130 u	10/13/88	0.15	3	0.61	
8810140 u	10/14/88	0.15	3	0.61	
8810150 u	10/15/88	0.15	3	0.61	
8810160 u	10/16/88	0.15	3	0.61	
8810170 u	10/17/88	0.15	3	0.61	273.8
8810180 u	10/18/88	0.15	3	0.61	
8810190 u	10/19/88	0.15	3	0.61	
8810200 u	10/20/88	0.15	3	0.61	
8810210 u	10/21/88	0.15	3	0.61	
8810220 u	10/22/88	0.15	3	0.61	
8810230 u	10/23/88	0.15	3	0.61	
8810240 u	10/24/88	0.15	3	0.61	
8810250 u	10/25/88	0.15	3	0.61	
8810260 u	10/26/88	0.15	3	0.61	
8810270 u	10/27/88	0.15	3	0.61	
8810280 u	10/28/88	0.15	3	0.61	
8810290 u	10/29/88	0.15	3	0.61	
8810300 u	10/30/88	0.15	3	0.61	
8810310 u	10/31/88	0.15	3	0.61	
8811010 u	11/01/88	0.15	3	0.61	
8906498 s	11/02/88	0.15	3	0.61	
8811030 u	11/03/88	0.15	3	0.61	
	11/04/88 to 3/31/89	Frozen	3	0.00	
8904010 u	04/01/89	0.2	3	0.96	430.8
8904020 u	04/02/89	0.2	3	0.96	
8904030 u	04/03/89	0.2	3	0.96	
8904040 u	04/04/89	0.2	3	0.96	
8904050 u	04/05/89	0.2	3	0.96	

11-04-88 8811040 u (11)

12-00-88 88120 u (11)

3-31-89 8909573 g (04) (no flow data)

1-00-89 89010 u (11) frozen

2-00-89 89020 u (11) frozen

	CRANDALL CREEK–UPPER FLUME				
	DATE	HEIGHT(ft)	WIDTH(ft)	DISCHARGE(cfs)	
89040603 u	04/06/89	0.2	3	0.96	430.8
8904070 u	04/07/89	0.2	3	0.96	
8904081 u	04/08/89	0.23	3	1.20	538.6
8904090 u	04/09/89	0.25	3	1.37	614.9
8904100 u	04/10/89	0.27	3	1.54	691.2
8904110 u	04/11/89	0.26	3	1.46	655.2
8904120 u	04/12/89	0.26	3	1.46	
8904130 u	04/13/89	0.26	3	1.46	
8904140 u	04/14/89	0.26	3	1.46	
8904150 u	04/15/89	0.26	3	1.46	
8904160 u	04/16/89	0.27	3	1.54	691.2
8904170 u	04/17/89	0.27	3	1.54	
8904180 u	04/18/89	0.3	3	1.82	816.8
8904190 u	04/19/89	0.31	3	1.92	861.7
8904200 u	04/20/89	0.33	3	2.11	
8904210 u	04/21/89	0.37	3	2.53	
8904220 u	04/22/89	0.42	3	3.08	
8904230 u	04/23/89	0.43	3	3.20	
8904240 u	04/24/89	0.43	3	3.20	
8904250 u	04/25/89	0.44	3	3.32	
8904260 u	04/26/89	0.46	3	3.56	
8904270 u	04/27/89	0.46	3	3.56	
8904280 u	04/28/89	0.45	3	3.44	
8904290 u	04/29/89	0.44	3	3.32	
8904300 u	04/30/89	0.41	3	2.97	
8905010 u	05/01/89	0.4	3	2.86	
8905020 u	05/02/89	0.39	3	2.75	
8905030 u	05/03/89	0.4	3	2.86	
8905040 u	05/04/89	0.4	3	2.86	
8905050 u	05/05/89	0.41	3	2.97	
8905060 u	05/06/89	0.41	3	2.97	
8905070 u	05/07/89	0.41	3	2.97	
8905080 u	05/08/89	0.46	3	3.56	
8905090 u	05/09/89	0.52	3	4.31	
8905100 u	05/10/89	0.52	3	4.31	
8905110 u	05/11/89	0.54	3	4.57	
8905120 u	05/12/89	0.55	3	4.71	
8905130 u	05/13/89	0.56	3	4.84	
8905140 u	05/14/89	0.57	3	4.98	
8905150 u	05/15/89	0.58	3	5.11	
8905160 u	05/16/89	0.58	3	5.11	
8905170 u	05/17/89	0.57	3	4.98	

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CRANDALL CREEK–UPPER FLUME

	DATE	HEIGHT(ft)	WIDTH(ft)	DISCHARGE(cfs)
8905180 u	05/18/89	0.56	3	4.84
8905190 u	05/19/89	0.55	3	4.71
8905200 u	05/20/89	0.55	3	4.71
8905210 u	05/21/89	0.54	3	4.57
8905220 u	05/22/89	0.54	3	4.57
8905230 u	05/23/89	0.54	3	4.57
8905248 u	05/24/89	0.52	3	4.31
8905252 u	05/25/89	0.52	3	4.31
8905260 u	05/26/89	0.51	3	4.18
8905270 u	05/27/89	0.49	3	3.93
8905280 u	05/28/89	0.49	3	3.93
8905290 u	05/29/89	0.47	3	3.68
8905300 u	05/30/89	0.48	3	3.80
8905310 u	05/31/89	0.43	3	3.20
8906010 u	06/01/89	0.42	3	3.08
8906020 u	06/02/89	0.4	3	2.86
8906030 u	06/03/89	0.4	3	2.86
8906040 u	06/04/89	0.39	3	2.75
8906050 u	06/05/89	0.4	3	2.86
8906060 u	06/06/89	0.39	3	2.75
8906070 u	06/07/89	0.39	3	2.75
8906080 u	06/08/89	0.39	3	2.75
8906090 u	06/09/89	0.39	3	2.75
8906100 u	06/10/89	0.4	3	2.86
8906110 u	06/11/89	0.39	3	2.75
8906120 u	06/12/89	0.39	3	2.75
8906130 u	06/13/89	0.38	3	2.64
8906140 u	06/14/89	0.38	3	2.64
8906150 u	06/15/89	0.38	3	2.64
8906160 u	06/16/89	0.37	3	2.53
8906170 u	06/17/89	0.37	3	2.53
8906183 u	06/18/89	0.37	3	2.53
8906190 u	06/19/89	0.36	3	2.42
8906202 u	06/20/89	0.36	3	2.42
8906210 u	06/21/89	0.35	3	2.32
8909786 q	06/22/89	0.35	3	2.32
8906230 u	06/23/89	0.34	3	2.22
8906240 u	06/24/89	0.34	3	2.22
8906250 u	06/25/89	0.34	3	2.22
8906260 u	06/26/89	0.33	3	2.11
8906272 u	06/27/89	0.33	3	2.11
8906280 u	06/28/89	0.32	3	2.01

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CRANDALL CREEK–UPPER FLUME

	DATE	HEIGHT(ft)	WIDTH(ft)	DISCHARGE(cfs)	GPM
8906290 u	06/29/89	0.31	3	1.92	862
8906300 u	06/30/89	0.31	3	1.92	
8907010 u	07/01/89	0.31	3	1.92	
8907020 u	07/02/89	0.3	3	1.82	817
8907030 u	07/03/89	0.29	3	1.73	776
8907040 u	07/04/89	0.28	3	1.63	732
8907050 u	07/05/89	0.28	3	1.63	
8907060 u	07/06/89	0.28	3	1.63	
8907070 u	07/07/89	0.26	3	1.46	655
8907080 u	07/08/89	0.26	3	1.46	
8907090 u	07/09/89	0.25	3	1.37	615
8907100 u	07/10/89	0.25	3	1.37	
8907110 u	07/11/89	0.25	3	1.37	
8907120 u	07/12/89	0.24	3	1.28	574
8907130 u	07/13/89	0.24	3	1.28	
8907142 u	07/14/89	0.24	3	1.28	
8907150 u	07/15/89	0.22	3	1.12	503
8907160 u	07/16/89	0.22	3	1.12	
8907170 u	07/17/89	0.21	3	1.04	467
8907180 u	07/18/89	0.21	3	1.04	
8907190 u	07/19/89	0.2	3	0.96	431
8907200 u	07/20/89	0.2	3	0.96	
8907210 u	07/21/89	0.2	3	0.96	
8907220 u	07/22/89	0.2	3	0.96	
8907230 u	07/23/89	0.22	3	1.12	
8907240 u	07/24/89	0.34	3	2.22	
8907250 u	07/25/89	0.2	3	0.96	
8907260 u	07/26/89	0.2	3	0.96	
8907270 u	07/27/89	0.21	3	1.04	
8907280 u	07/28/89	0.2	3	0.96	
8907290 u	07/29/89	0.2	3	0.96	
8907300 u	07/30/89	0.2	3	0.96	
8907310 u	07/31/89	0.2	3	0.96	
8908010 u	08/01/89	0.2	3	0.96	
8908020 u	08/02/89	0.2	3	0.96	
8908030 u	08/03/89	0.2	3	0.96	
8908040 u	08/04/89	0.2	3	0.96	
8908050 u	08/05/89	0.2	3	0.96	
8908060 u	08/06/89	0.2	3	0.96	
8908070 u	08/07/89	0.2	3	0.96	
8908080 u	08/08/89	0.19	3	0.89	399
8908090 u	08/09/89	0.19	3	0.89	

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CRANDALL CREEK – UPPER FLUME

	DATE	HEIGHT(ft)	WIDTH(ft)	DISCHARGE(cfs)	
8908100 u	08/10/89	0.19	3	0.89	399
8908110 u	08/11/89	0.19	3	0.89	
8908120 u	08/12/89	0.19	3	0.89	
8908130 u	08/13/89	0.19	3	0.89	
8908140 u	08/14/89	0.19	3	0.89	
8908150 u	08/15/89	0.19	3	0.89	
8908160 u	08/16/89	0.18	3	0.82	368
8908170 u	08/17/89	0.18	3	0.82	
8908180 u	08/18/89	0.18	3	0.82	
8908190 u	08/19/89	0.18	3	0.82	
8908200 u	08/20/89	0.18	3	0.82	
8908210 u	08/21/89	0.18	3	0.82	
8908222 u	08/22/89	0.18	3	0.82	
8908230 u	08/23/89	0.18	3	0.82	
8908240 u	08/24/89	0.17	3	0.75	336.6
8908250 u	08/25/89	0.17	3	0.75	
8908260 u	08/26/89	0.17	3	0.75	
8908270 u	08/27/89	0.17	3	0.75	
8908280 u	08/28/89	0.17	3	0.75	
8908290 u	08/29/89	0.17	3	0.75	
8908300 u	08/30/89	0.17	3	0.75	
8908310 u	08/31/89	0.17	3	0.75	
8909010 u	09/01/89	0.16	3	0.68	305
8909020 u	09/02/89	0.16	3	0.68	
8909030 u	09/03/89	0.16	3	0.68	
8909040 u	09/04/89	0.16	3	0.68	
8909051 u	09/05/89	0.16	3	0.68	
8909060 u	09/06/89	0.16	3	0.68	
8909070 u	09/07/89	0.16	3	0.68	
8909080 u	09/08/89	0.16	3	0.68	
8909090 u	09/09/89	0.16	3	0.68	
8909100 u	09/10/89	0.16	3	0.68	
8909110 u	09/11/89	0.17	3	0.75	
8909120 u	09/12/89	0.17	3	0.75	
8909130 u	09/13/89	0.17	3	0.75	
8909140 u	09/14/89	0.17	3	0.75	
8909150 u	09/15/89	0.17	3	0.75	
8909160 u	09/16/89	0.17	3	0.75	
8909170 u	09/17/89	0.17	3	0.75	
8909180 u	09/18/89	0.17	3	0.75	
8909190 u	09/19/89	0.17	3	0.75	
8909200 u	09/20/89	0.17	3	0.75	

12-18-89 8910217 q (04)
10-00-89 8910 u (11) frozen
11-00-89 89110 u (11)

01-29-90 9020258 q (04)
07-23-90 9010524 q (04)
02-00-90 90020 u (11)
03-00-90 90030 u (11)
04-01-90 9004010 u (11)

CRANDALL CREEK – UPPER FLUME

	DATE	HEIGHT(ft)	WIDTH(ft)	DISCHARGE(cfs)	
8909210 u	09/21/89	0.17	3	0.75	
8909221 u	09/22/89	0.18	3	0.82	368.0
8909230 u	09/23/89	0.18	3	0.82	
8909240 u	09/24/89	0.18	3	0.82	
8909250 u	09/25/89	0.18	3	0.82	
8909260 u	09/26/89	0.18	3	0.82	
8909270 u	09/27/89	0.18	3	0.82	
8910047 q	09/28/89	0.18	3	0.82	
8909290 u	09/29/89	0.18	3	0.82	
8909300 u	09/30/89	0.18	3	0.82	
8910010 u	10/01/89	0.18	3	0.82	
8910020 u	10/02/89	0.18	3	0.82	
	10/02/89 to 04/01/90	Frozen	3	0.00	
9004020 u	04/02/90	0.19	3	0.89	399
	4/03/90 to 5/01/90	No Readings	3	0.00	
9005020 u	05/02/90	0.22	3	1.12	502.7
9005030 u	05/03/90	0.23	3	1.20	538.6
9005040 u	05/04/90	0.26	3	1.46	655
9005050 u	05/05/90	0.31	3	1.92	861.7
9005060 u	05/06/90	0.33	3	2.11	947
9005070 u	05/07/90	0.31	3	1.92	861.7
9005080 u	05/08/90	0.31	3	1.92	
9005090 u	05/09/90	0.31	3	1.92	
9005100 u	05/10/90	0.31	3	1.92	
9005110 u	05/11/90	0.31	3	1.92	
9005120 u	05/12/90	0.31	3	1.92	
9005130 u	05/13/90	0.31	3	1.92	
9005140 u	05/14/90	0.31	3	1.92	
9005150 u	05/15/90	0.31	3	1.92	
9005160 u	05/16/90	0.31	3	1.92	
9005170 u	05/17/90	0.31	3	1.92	
9005180 u	05/18/90	0.34	3	2.22	
9005190 u	05/19/90	0.36	3	2.42	
9005200 u	05/20/90	0.36	3	2.42	
9005210 u	05/21/90	0.37	3	2.53	
9005220 u	05/22/90	0.39	3	2.75	
9005230 u	05/23/90	0.42	3	3.08	
9005240 u	05/24/90	0.44	3	3.32	
	5/25/90 to 9/03/90	Recorder Broken – Replacement On Order			
9009040 u	09/04/90	0.14	3	0.55	240.8
9009050 u	09/05/90	0.12	3	0.43	193
9009060 u	09/06/90	0.12	3	0.43	

11-21-90 9056975 U (04)
10-10-90 9010661 q (04)
10-01-90 9010010 u (11) frozen
12-00-90 90120 u (11) frozen

01-14-91 9110921 q (04)
04-26-91 9111105 q (04)
01-12-91 121501 u (20)
02-00-91 91020 u (11) frozen
03-00-91 91030 u (11) frozen
05-00-91 91050 u (11) frozen

CRANDALL CREEK–UPPER FLUME

	DATE	HEIGHT(ft)	WIDTH(ft)	DISCHARGE(cfs)	
9009070 u	09/07/90	0.12	3	0.43	193
9009080 u	09/08/90	0.11	3	0.38	170.5
9009090 u	09/09/90	0.11	3	0.38	
9009103 u	09/10/90	0.11	3	0.38	
9009110 u	09/11/90	0.11	3	0.38	
9009122 u	09/12/90	0.11	3	0.38	
9009130 u	09/13/90	0.11	3	0.38	
9009140 u	09/14/90	0.11	3	0.38	
9009150 u	09/15/90	0.11	3	0.38	
9009160 u	09/16/90	0.11	3	0.38	
9009170 u	09/17/90	0.11	3	0.38	
9009180 u	09/18/90	0.11	3	0.38	
9009190 u	09/19/90	0.11	3	0.38	
9009200 u	09/20/90	0.11	3	0.38	
9009210 u	09/21/90	0.11	3	0.38	
9009220 u	09/22/90	0.11	3	0.38	
9009230 u	09/23/90	0.11	3	0.38	
9009240 u	09/24/90	0.11	3	0.38	
9009250 u	09/25/90	0.11	3	0.38	
9009262 u	09/26/90	0.11	3	0.38	
9009270 u	09/27/90	0.11	3	0.38	
9009280 u	09/28/90	0.11	3	0.38	
9009291 u	09/29/90	0.11	3	0.38	
9009300 u	09/30/90	0.11	3	0.38	
06-27-91 ⇒ 9106270 u	10/1/90 to 6/27/91	Frozen	3	0.00	
9106280 u	06/28/91	0.48	3	3.80	
9106290 u	06/29/91	0.46	3	3.56	
9106300 u	06/30/91	0.44	3	3.32	
9107010 u	07/01/91	0.42	3	3.08	
9107020 u	07/02/91	0.41	3	2.97	
9107030 u	07/03/91	0.39	3	2.75	
9107040 u	07/04/91	0.37	3	2.53	
9107050 u	07/05/91	0.36	3	2.42	
9107060 u	07/06/91	0.36	3	2.42	
9107070 u	07/07/91	0.4	3	2.86	
9107080 u	07/08/91	0.43	3	3.20	
9107090 u	07/09/91	0.36	3	2.42	
9107100 u	07/10/91	0.35	3	2.32	
9107110 u	07/11/91	0.69	3	6.71	
9107120 u	07/12/91	0.35	3	2.32	
9107130 u	07/13/91	0.34	3	2.22	
9107140 u	07/14/91	0.33	3	2.11	

	CRANDALL CREEK–UPPER FLUME				
	DATE	HEIGHT(ft)	WIDTH(ft)	DISCHARGE(cfs)	
9107150 u	07/15/91	0.32	3	2.01	
9107160 u	07/16/91	0.32	3	2.01	
9107170 u	07/17/91	0.32	3	2.01	
9107180 u	07/18/91	0.31	3	1.92	861.7
9107190 u	07/19/91	0.31	3	1.92	
9107200 u	07/20/91	0.31	3	1.92	
9111395 g	→ 07/21/91	0.3	3	1.82	816.8
9107220 u	07/22/91	0.29	3	1.73	776.4
9107230 u	07/23/91	0.29	3	1.73	
9107240 u	07/24/91	0.31	3	1.92	
9107250 u	07/25/91	0.29	3	1.73	
9107260 u	07/26/91	0.29	3	1.73	
9107270 u	07/27/91	0.28	3	1.63	731.5
9107280 u	07/28/91	0.28	3	1.63	
9107290 u	07/29/91	0.28	3	1.63	
9107300 u	07/30/91	0.28	3	1.63	
9107310 u	07/31/91	0.28	3	1.63	
9108010 u	08/01/91	0.28	3	1.63	
9108020 u	08/02/91	0.28	3	1.63	
9108030 u	08/03/91	0.32	3	2.01	
9108040 u	08/04/91	0.28	3	1.63	
*9108050 u	08/05/91	0.27	3	1.54	691.2
9108060 u	08/06/91	0.29	3	1.73	776.4
9108070 u	08/07/91	0.34	3	2.22	
9108080 u	08/08/91	0.27	3	1.54	
9108090 u	08/09/91	0.26	3	1.46	655.2
9108100 u	08/10/91	0.26	3	1.46	
9108110 u	08/11/91	0.27	3	1.54	
9108120 u	08/12/91	0.26	3	1.46	
9108130 u	08/13/91	0.25	3	1.37	614.9
9108140 u	08/14/91	0.25	3	1.37	
9108150 u	08/15/91	0.25	3	1.37	
9108160 u	08/16/91	0.25	3	1.37	
9108170 u	08/17/91	0.24	3	1.28	574.5
9108180 u	08/18/91	0.24	3	1.28	
9108190 u	08/19/91	0.24	3	1.28	
9108200 u	08/20/91	0.24	3	1.28	
9108210 u	08/21/91	0.24	3	1.28	
9108220 u	08/22/91	0.23	3	1.20	538.6
9108230 u	08/23/91	0.23	3	1.20	
9108240 u	08/24/91	0.23	3	1.20	
9108250 u	08/25/91	0.23	3	1.20	

10-11-91 9111614 q (04)
10-11-91 1011501 u (04)
11-00-91 91110 u (11) frozen
12-00-91 91120 u (11) frozen

03-08-92 9211914 q (04)
03-10-92 301501 u (11)
01-00-92 92010 u (11)
02-00-92 92020 u (11)
04-02-92 9204020 u (11)

CRANDALL CREEK—UPPER FLUME

		DATE	HEIGHT(ft)	WIDTH(ft)	DISCHARGE(cfs)	
9108260	u	08/26/91	0.22	3	1.12	502.7
9108270	u	08/27/91	0.22	3	1.12	
881501	u	08/28/91	0.22	3	1.12	
9108290	u	08/29/91	0.43	3	3.20	
9108300	u	08/30/91	0.21	3	1.04	466.8
9108310	u	08/31/91	0.21	3	1.04	
9109010	u	09/01/91	0.21	3	1.04	
9109020	u	09/02/91	0.21	3	1.04	
9109034	u	09/03/91	0.2	3	0.96	430.8
9109040	u	09/04/91	0.2	3	0.96	
9109050	u	09/05/91	0.2	3	0.96	
9109060	u	09/06/91	0.28	3	1.63	731.5
9109070	u	09/07/91	0.24	3	1.28	574.5
9109080	u	09/08/91	0.2	3	0.96	
9109090	u	09/09/91	0.19	3	0.89	399.4
9109101	u	09/10/91	0.19	3	0.89	
9109111	u	09/11/91	0.31	3	1.92	861.7
9109121	u	09/12/91	0.19	3	0.89	
9109130	u	09/13/91	0.21	3	1.04	
9109140	u	09/14/91	0.25	3	1.37	614.9
9109150	u	09/15/91	0.18	3	0.82	368
9109160	u	09/16/91	0.18	3	0.82	
9109174	u	09/17/91	0.18	3	0.82	
9109182	u	09/18/91	0.18	3	0.82	
9109190	u	09/19/91	0.18	3	0.82	
9109201	u	09/20/91	0.18	3	0.82	
9109211	u	09/21/91	0.17	3	0.75	336.6
9109221	u	09/22/91	0.17	3	0.75	
9109231	u	09/23/91	0.17	3	0.75	
9109241	u	09/24/91	0.17	3	0.75	
9109251	u	* 09/25/91	0.17	3	0.75	
9109261	u	09/26/91	0.17	3	0.75	
9109270	u	09/27/91	0.16	3	0.68	305.2
9109280	u	09/28/91	0.16	3	0.68	
9109290	u	09/29/91	0.16	3	0.68	
9109300	u	09/30/91	0.16	3	0.68	
9110010	u	10/01/91	0.16	3	0.68	
9110020	u	10/02/91	0.15	3	0.61	273.8
		10/03/91 to 4/2/92	Frozen	3	0.00	

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CRANDALL CREEK–UPPER FLUME

		DATE	HEIGHT(ft)	WIDTH(ft)	DISCHARGE(cfs)	GPM
9204030	u	04/03/92	0.18	3	0.82	368
9204040	u	04/04/92	0.18	3	0.82	
9204050	u	04/05/92	0.18	3	0.82	
9204060	u	04/06/92	0.18	3	0.82	
9204070	u	04/07/92	0.18	3	0.82	
9204080	u	04/08/92	0.18	3	0.82	
9204090	u	04/09/92	0.18	3	0.82	
9204100	u	04/10/92	0.18	3	0.82	
9204110	u	04/11/92	0.19	3	0.89	399
9204120	u	04/12/92	0.2	3	0.96	431
9204130	u	04/13/92	0.21	3	1.04	467
9204140	u	04/14/92	0.22	3	1.12	503
9204150	u	04/15/92	0.22	3	1.12	
9204160	u	04/16/92	0.21	3	1.04	
9204170	u	04/17/92	0.22	3	1.12	
9204180	u	04/18/92	0.225	3	1.16	521
9204190	u	04/19/92	0.22	3	1.12	
9204200	u	04/20/92	0.22	3	1.12	
9204210	u	04/21/92	0.23	3	1.20	539
9204220	u	04/22/92	0.22	3	1.12	
9204230	u	04/23/92	0.22	3	1.12	
9204240	u	04/24/92	0.225	3	1.16	
9204250	u	04/25/92	0.24	3	1.28	574
9204260	u	04/26/92	0.25	3	1.37	615
9204270	u	04/27/92	0.28	3	1.63	732
9204280	u	04/28/92	0.31	3	1.92	862
9204290	u	04/29/92	0.33	3	2.11	
9204300	u	04/30/92	0.36	3	2.42	
9205010	u	05/01/92	0.34	3	2.22	
9205020	u	05/02/92	0.35	3	2.32	
9205030	u	05/03/92	0.42	3	3.08	
9205040	u	05/04/92	0.46	3	3.56	
9205050	u	05/05/92	0.48	3	3.80	
9205060	u	05/06/92	0.49	3	3.93	
9205070	u	05/07/92	0.52	3	4.31	
9205080	u	05/08/92	0.52	3	4.31	
9205090	u	05/09/92	0.53	3	4.44	
9205100	u	05/10/92	0.52	3	4.31	
9205110	u	05/11/92	0.52	3	4.31	
9205120	u	05/12/92	0.53	3	4.44	
9205130	u	05/13/92	0.49	3	3.93	
9205140	u	05/14/92	0.5	3	4.05	
9205150	u	05/15/92	0.49	3	3.93	
9205160	u	05/16/92	0.49	3	3.93	

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CRANDALL CREEK–UPPER FLUME

	DATE	HEIGHT(ft)	WIDTH(ft)	DISCHARGE(cfs)
9205170 u	05/17/92	0.48	3	3.80
9205180 u	05/18/92	0.48	3	3.80
9205190 u	05/19/92	0.5	3	4.05
9205200 u	05/20/92	0.51	3	4.18
9205210 u	05/21/92	0.52	3	4.31
9205220 u	05/22/92	0.49	3	3.93
9205230 u	05/23/92	0.49	3	3.93
9205240 u	05/24/92	0.48	3	3.80
9205250 u	05/25/92	0.48	3	3.80
9205260 u	05/26/92	0.52	3	4.31
9205270 u	05/27/92	0.52	3	4.31
9205280 u	05/28/92	0.5	3	4.05
9205290 u	05/29/92	0.49	3	3.93
9205300 u	05/30/92	0.48	3	3.80
9205310 u	05/31/92	0.48	3	3.80
9206010 u	06/01/92	0.48	3	3.80
9206020 u	06/02/92	0.46	3	3.56
9206030 u	06/03/92	0.44	3	3.32
9206040 u	06/04/92	0.43	3	3.20
9206050 u	06/05/92	0.43	3	3.20
9206060 u	06/06/92	0.43	3	3.20
9206070 u	06/07/92	0.42	3	3.08
9206080 u	06/08/92	0.42	3	3.08
9206092 u	06/09/92	0.418	3	3.06
9206100 u	06/10/92	0.415	3	3.03
9206110 u	06/11/92	0.41	3	2.97
9206120 u	06/12/92	0.41	3	2.97
9206130 u	06/13/92	0.4	3	2.86
9206140 u	06/14/92	0.4	3	2.86
9206154 u	06/15/92	0.39	3	2.75
9206162 u	06/16/92	0.38	3	2.64
9206170 u	06/17/92	0.375	3	2.58
9206180 u	06/18/92	0.365	3	2.48
9206190 u	06/19/92	0.36	3	2.42
9206200 u	06/20/92	0.35	3	2.32
9206210 u	06/21/92	0.34	3	2.22
9206220 u	06/22/92	0.33	3	2.11
9206230 u	06/23/92	0.33	3	2.11
9206240 u	06/24/92	0.325	3	2.06
9206250 u	06/25/92	0.32	3	2.01
9206260 u	06/26/92	0.32	3	2.01
9206270 u	06/27/92	0.32	3	2.01
9206280 u	06/28/92	0.31	3	1.92
9206290 u	06/29/92	0.31	3	1.92

862

173154-3

CRANDALL CREEK–UPPER FLUME

	DATE	HEIGHT(ft)	WIDTH(ft)	DISCHARGE(cfs)	
9206300 u	06/30/92	0.305	3	1.87	939
9207010 u	07/01/92	0.3	3	1.82	817
9207020 u	07/02/92	0.305	3	1.87	
9207030 u	07/03/92	0.3	3	1.82	
9207040 u	07/04/92	0.29	3	1.73	776
9207050 u	07/05/92	0.29	3	1.73	
9207060 u	07/06/92	0.29	3	1.73	
9207070 u	07/07/92	0.285	3	1.68	754
9207082 u	07/08/92	0.285	3	1.68	
9207090 u	07/09/92	0.285	3	1.68	
9207100 u	07/10/92	0.285	3	1.68	
9207110 u	07/11/92	0.285	3	1.68	
9207120 u	07/12/92	0.285	3	1.68	
9207130 u	07/13/92	0.285	3	1.68	
9207140 u	07/14/92	0.285	3	1.68	
9207150 u	07/15/92	0.285	3	1.68	
9207160 u	07/16/92	0.285	3	1.68	
9207170 u	07/17/92	0.285	3	1.68	
9207180 u	07/18/92	0.285	3	1.68	
9207190 u	07/19/92	0.285	3	1.68	
9207200 u	07/20/92	0.285	3	1.68	
9207210 u	07/21/92	0.285	3	1.68	
9207220 u	07/22/92	0.285	3	1.68	
9207230 u	07/23/92	0.285	3	1.68	
9207240 u	07/24/92	0.285	3	1.68	
9207250 u	07/25/92	0.28	3	1.63	732
9207260 u	07/26/92	0.28	3	1.63	
9207270 u	07/27/92	0.28	3	1.63	
9207280 u	07/28/92	0.28	3	1.63	
9207290 u	07/29/92	0.28	3	1.63	
9207300 u	07/30/92	0.28	3	1.63	
9207310 u	07/31/92	0.28	3	1.63	
9208010 u	08/01/92	0.28	3	1.63	
9208020 u	08/02/92	0.28	3	1.63	
9208030 u	08/03/92	0.28	3	1.63	
9208040 u	08/04/92	0.28	3	1.63	
	08/05/92	Floom Flooded	Beaver Dam	Not Measurable	
	08/06/92	Floom Flooded	Beaver Dam	Not Measurable	
	08/17/92	Floom Flooded	Beaver Dam	Not Measurable	
	08/18/92	Floom Flooded	Beaver Dam	Not Measurable	
	08/19/92	Floom Flooded	Beaver Dam	Not Measurable	
	08/20/92	Floom Flooded	Beaver Dam	Not Measurable	

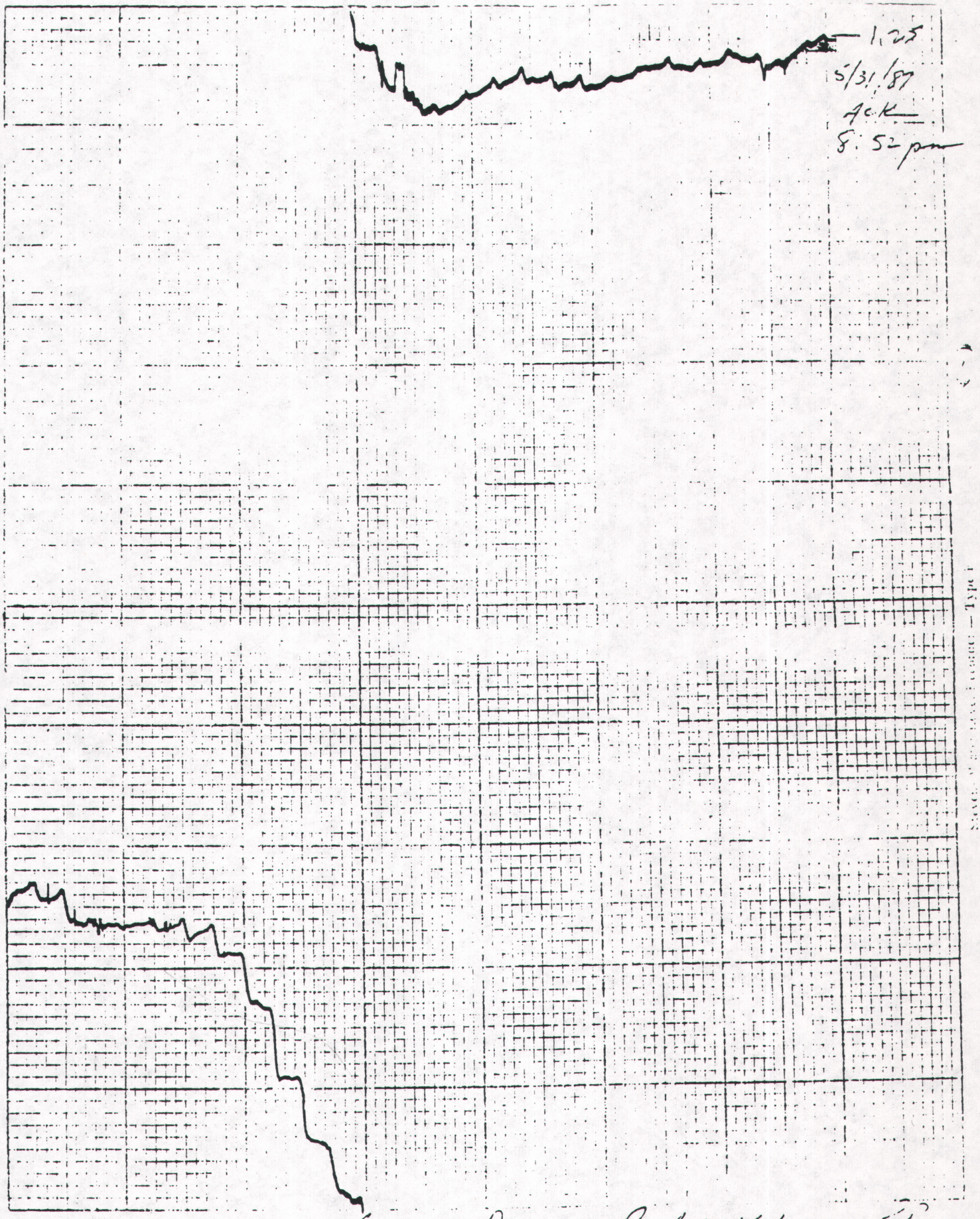
GPM

CRANDALL CREEK–UPPER FLUME

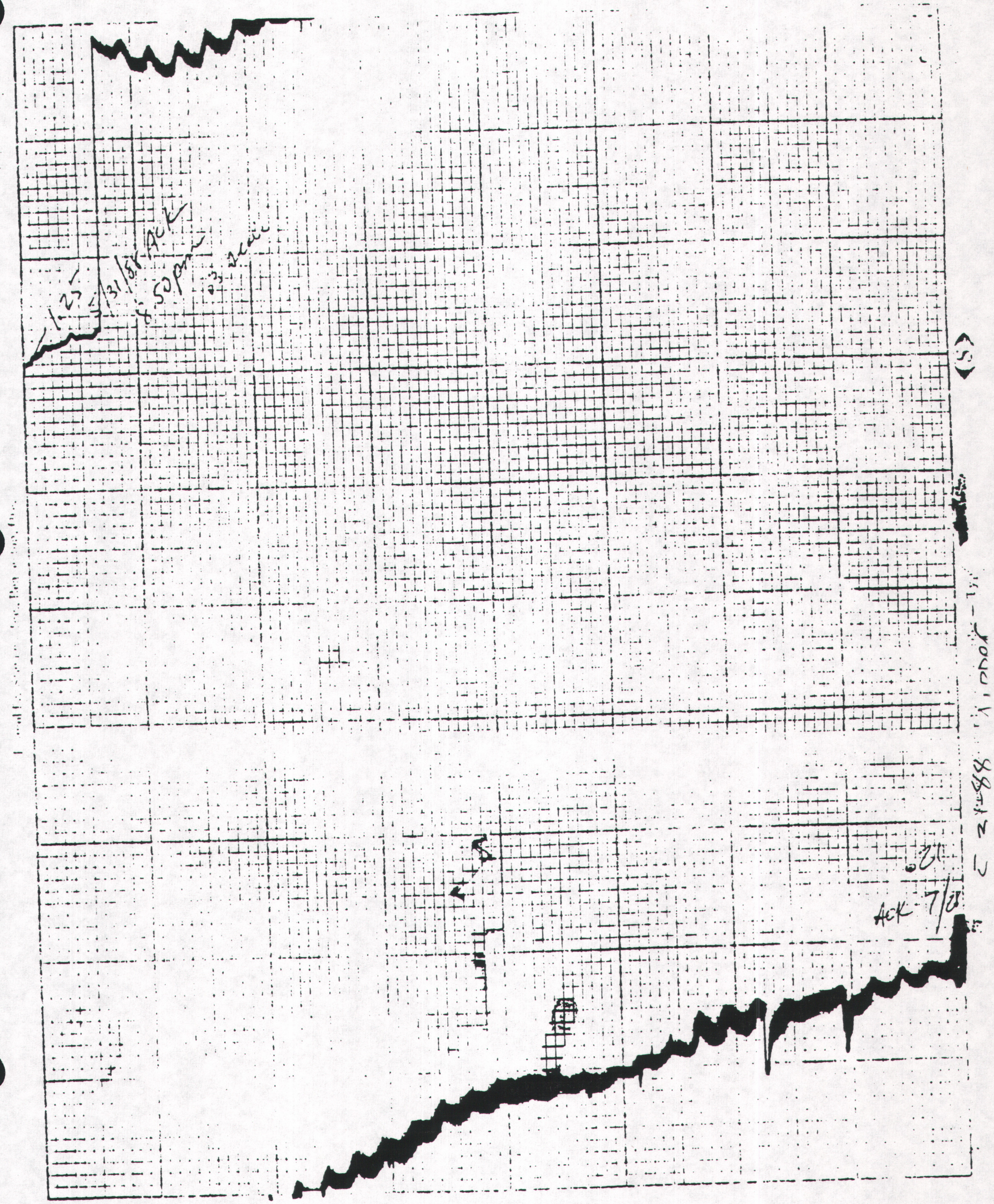
	DATE	HEIGHT(ft)	WIDTH(ft)	DISCHARGE(cfs)	
	08/21/92	Floom Flooded	Beaver Dam	Not Measurable	
	08/22/92	Floom Flooded	Beaver Dam	Not Measurable	
	08/23/92	Floom Flooded	Beaver Dam	Not Measurable	
	08/24/92	Floom Flooded	Beaver Dam	Not Measurable	
	08/25/92	Floom Flooded	Beaver Dam	Not Measurable	
	08/26/92	Floom Flooded	Beaver Dam	Not Measurable	
	08/27/92	Floom Flooded	Beaver Dam	Not Measurable	
	08/28/92	Floom Flooded	Beaver Dam	Not Measurable	
	08/29/92	Floom Flooded	Beaver Dam	Not Measurable	
	08/30/92	Floom Flooded	Beaver Dam	Not Measurable	
	08/31/92	Floom Flooded	Beaver Dam	Not Measurable	
	09/01/92	Floom Flooded	Beaver Dam	Not Measurable	
9209020 u	09/02/92	0.16	3	0.68	305
9209031 u	09/03/92	0.165	3	0.71	319
9209040 u	09/04/92	0.165	3	0.71	
9209050 u	09/05/92	0.17	3	0.75	336.6
9209060 u	09/06/92	0.17	3	0.75	
9209070 u	09/07/92	0.17	3	0.75	
9209080 u	09/08/92	0.17	3	0.75	
9209092 u	09/09/92	0.17	3	0.75	
9209100 u	09/10/92	0.17	3	0.75	
9209110 u	09/11/92	0.17	3	0.75	
9209120 u	09/12/92	0.17	3	0.75	
9209130 u	09/13/92	0.175	3	0.78	350
9209140 u	09/14/92	0.175	3	0.78	
9209150 u	09/15/92	0.16	3	0.68	305
9209160 u	09/16/92	0.16	3	0.68	
9209170 u	09/17/92	0.16	3	0.68	
9209180 u	09/18/92	0.16	3	0.68	
9209190 u	09/19/92	0.165	3	0.71	319
9209200 u	09/20/92	0.165	3	0.71	
9209210 u	09/21/92	0.165	3	0.71	
9209220 u	09/22/92	0.165	3	0.71	
9209230 u	09/23/92	0.165	3	0.71	
9209240 u	09/24/92	0.165	3	0.71	
9209250 u	09/25/92	0.165	3	0.71	
9209260 u	09/26/92	0.17	3	0.75	
9209270 u	09/27/92	0.17	3	0.75	
9209280 u	09/28/92	0.165	3	0.71	
9212545 g	09/29/92	0.15	3	0.61	274

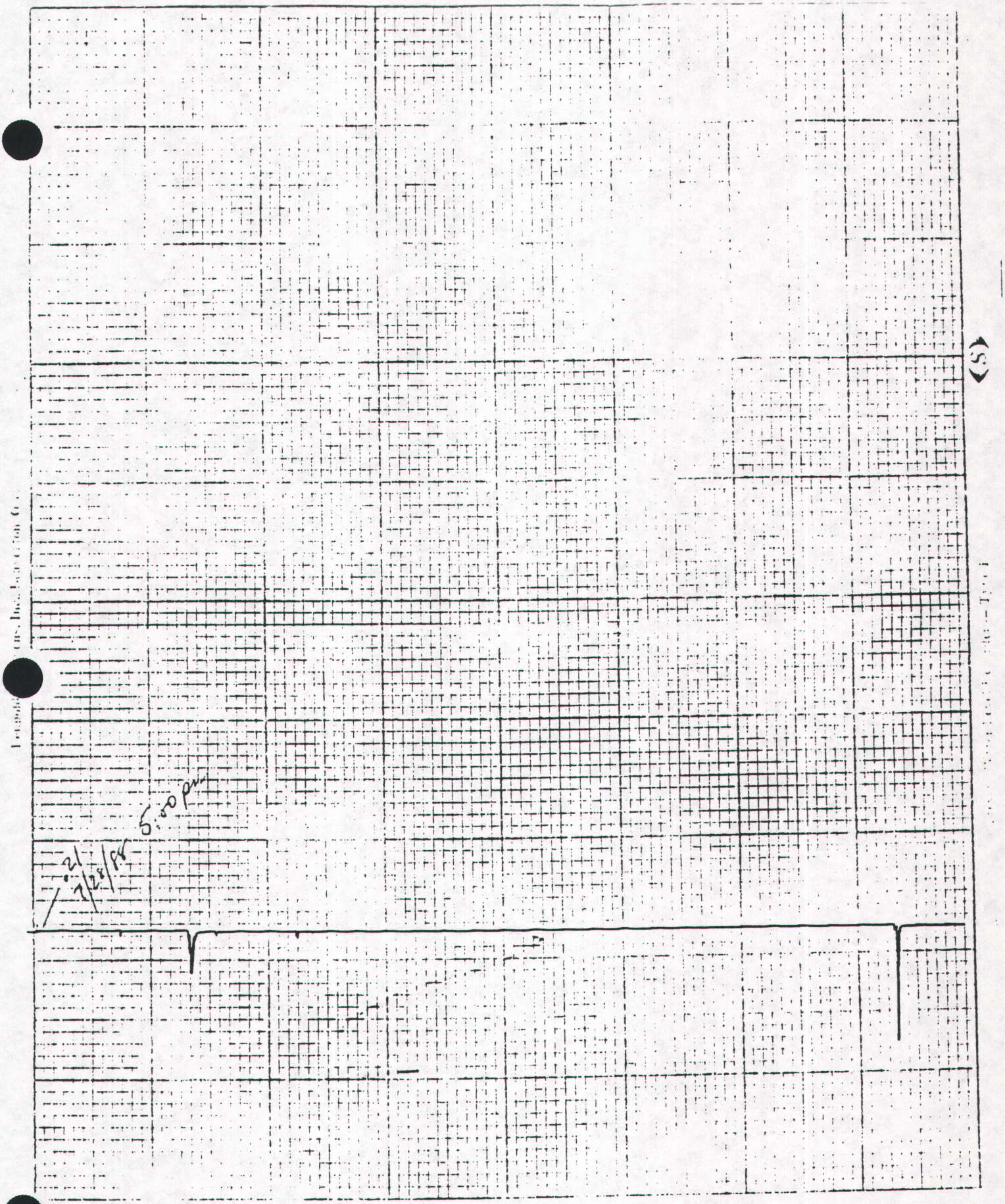
	CRANDALL CREEK–UPPER FLUME				
	DATE	HEIGHT(ft)	WIDTH(ft)	DISCHARGE(cfs)	
9209300 u	09/30/92	0.15	3	0.61	274
9210010 u	10/01/92	0.15	3	0.61	
9210020 u	10/02/92	0.14	3	0.55	247
9210030 u	10/03/92	0.14	3	0.55	
9210040 u	10/04/92	0.14	3	0.55	
9210050 u	10/05/92	0.14	3	0.55	
9210060 u	10/06/92	0.14	3	0.55	
9210070 u	10/07/92	0.14	3	0.55	
9210080 u	10/08/92	0.14	3	0.55	
9210090 u	10/09/92	0.14	3	0.55	
9210100 u	10/10/92	0.14	3	0.55	
9210110 u	10/11/92	0.14	3	0.55	
9210120 u	10/12/92	0.14	3	0.55	
9210130 u	10/13/92	0.14	3	0.55	
9210140 u	10/14/92	0.14	3	0.55	
9210150 u	10/15/92	0.14	3	0.55	
9210160 u	10/16/92	0.14	3	0.55	
9210170 u	10/17/92	0.14	3	0.55	
9210180 u	10/18/92	0.14	3	0.55	
9210190 u	10/19/92	0.14	3	0.55	
	10/20/92 to 12/31/92	Frozen	3	0.00	

12-16-92 1261501 u (10)
10-20-92 92102 u (11) frozen
11-00-92 92110 u (11) frozen
12-31-92 92120 u (11) frozen

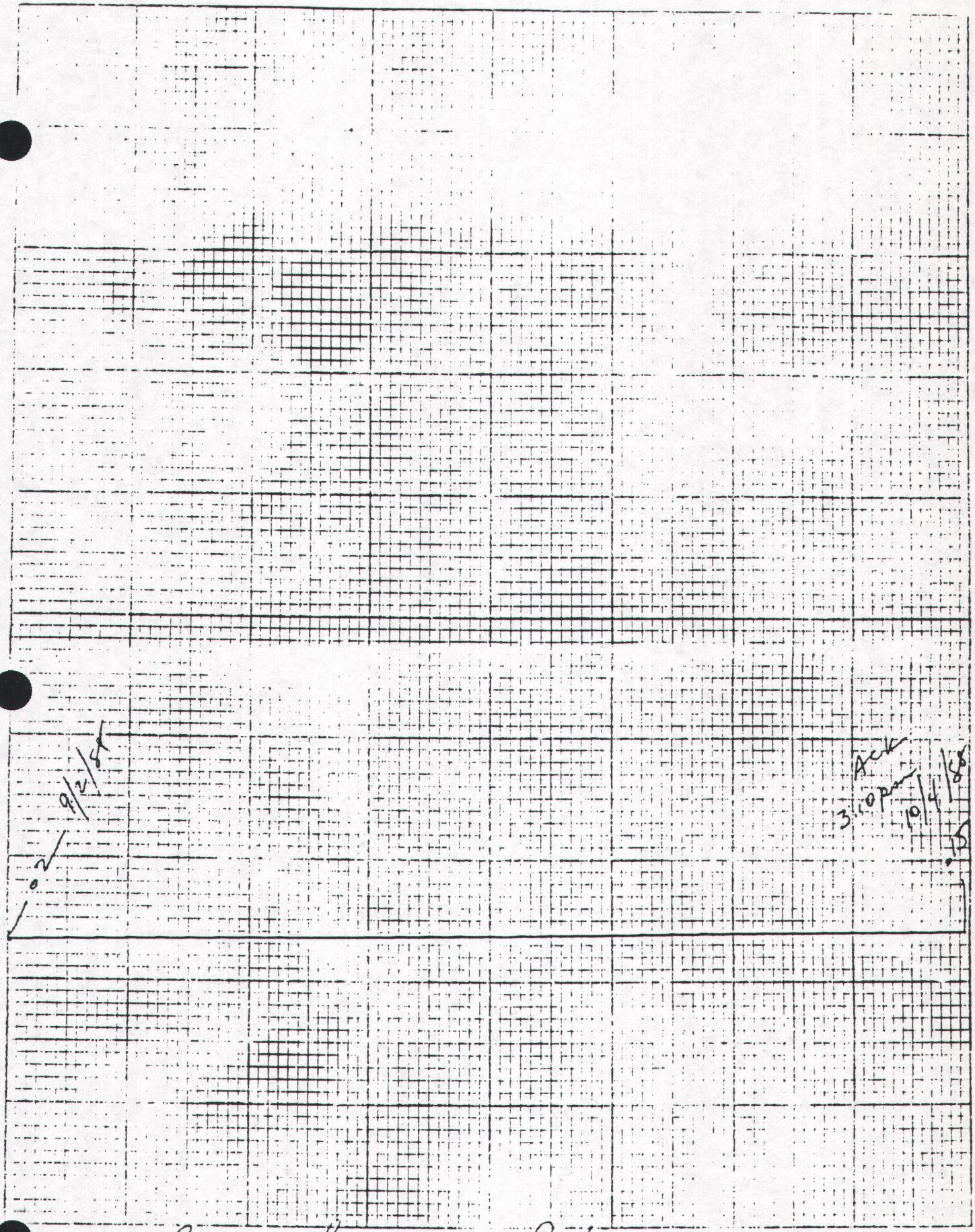


5-3-88 upper Beaver Dam Reading 16 ½ T.D.

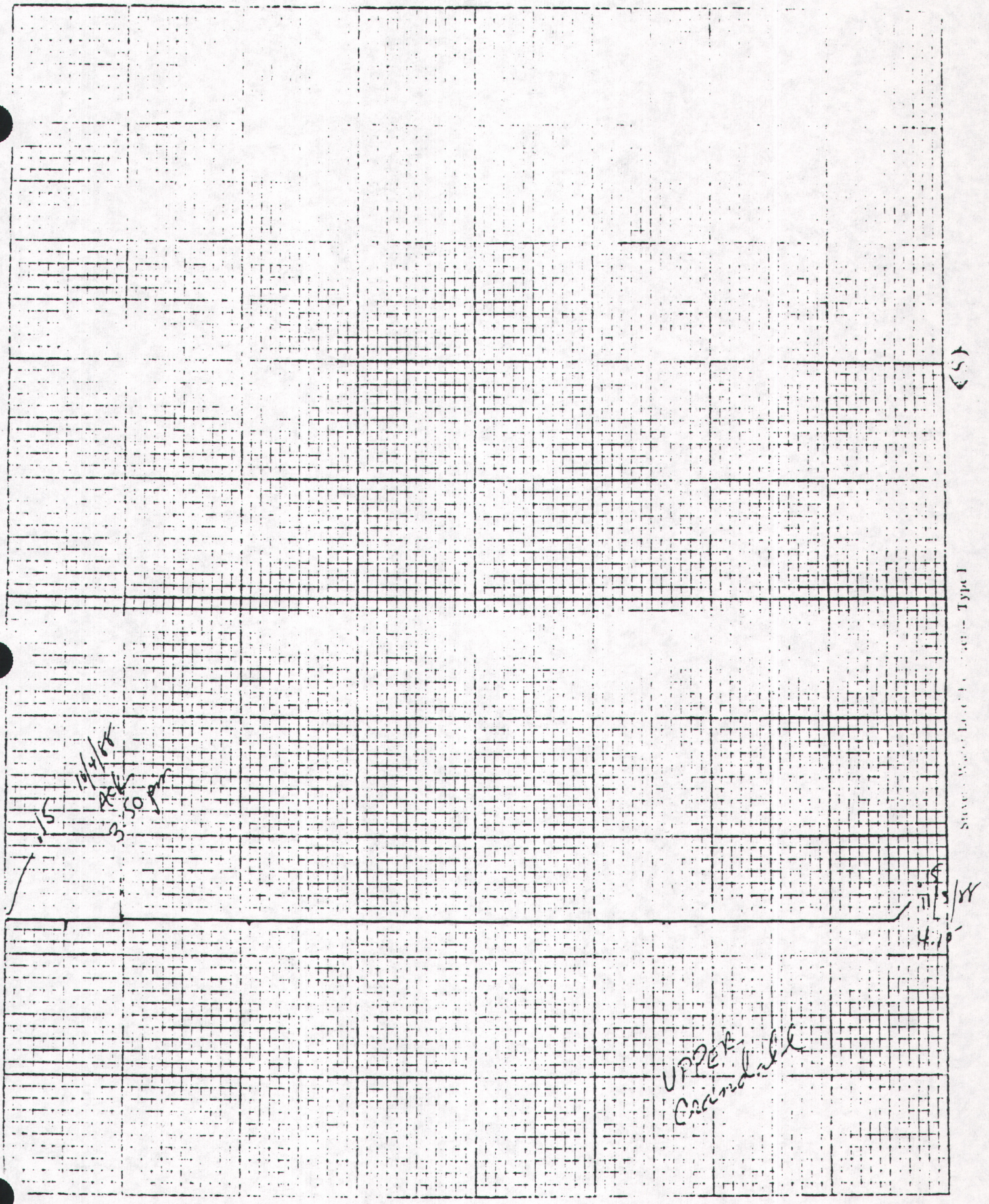


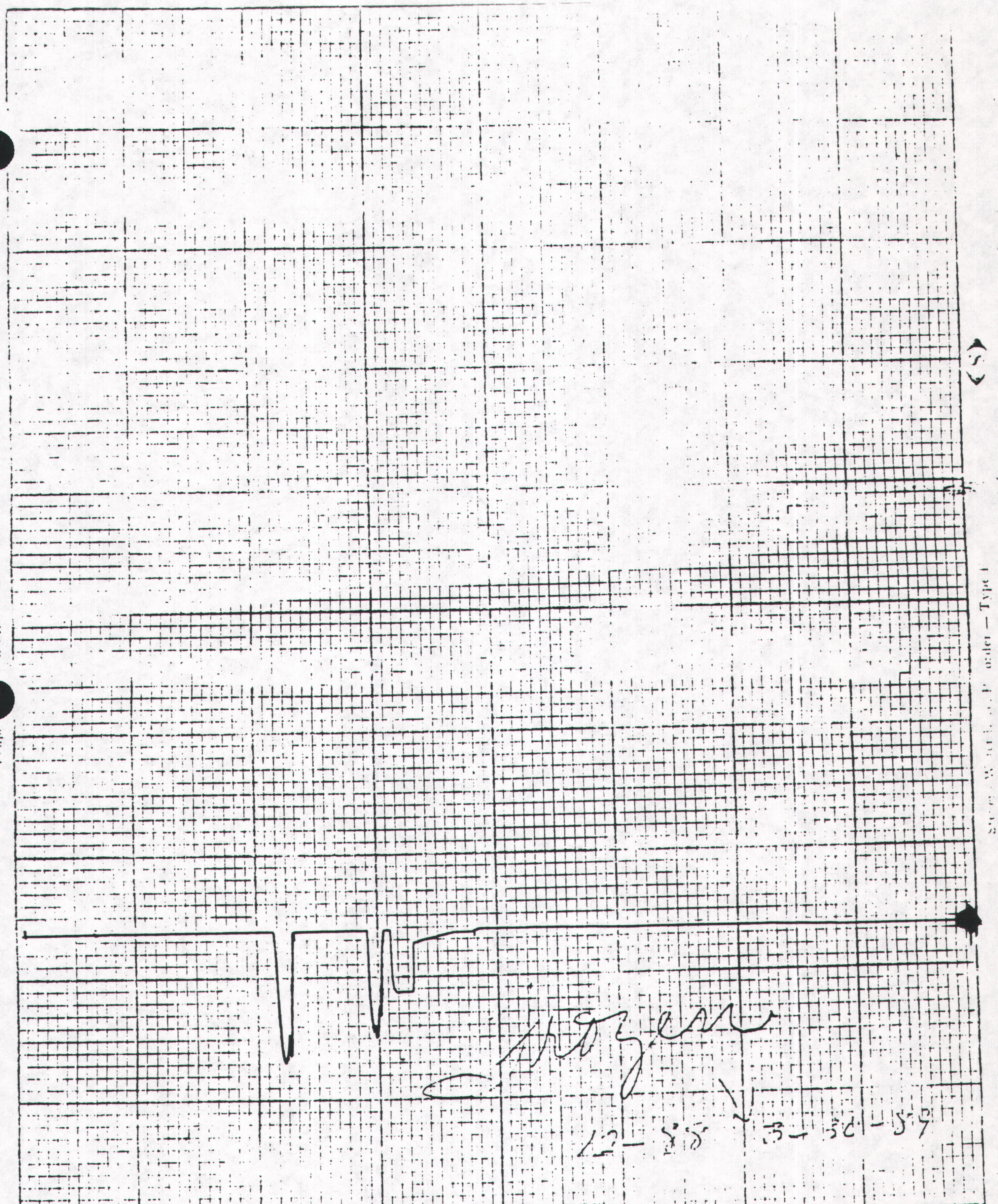


7-28-88 Upper



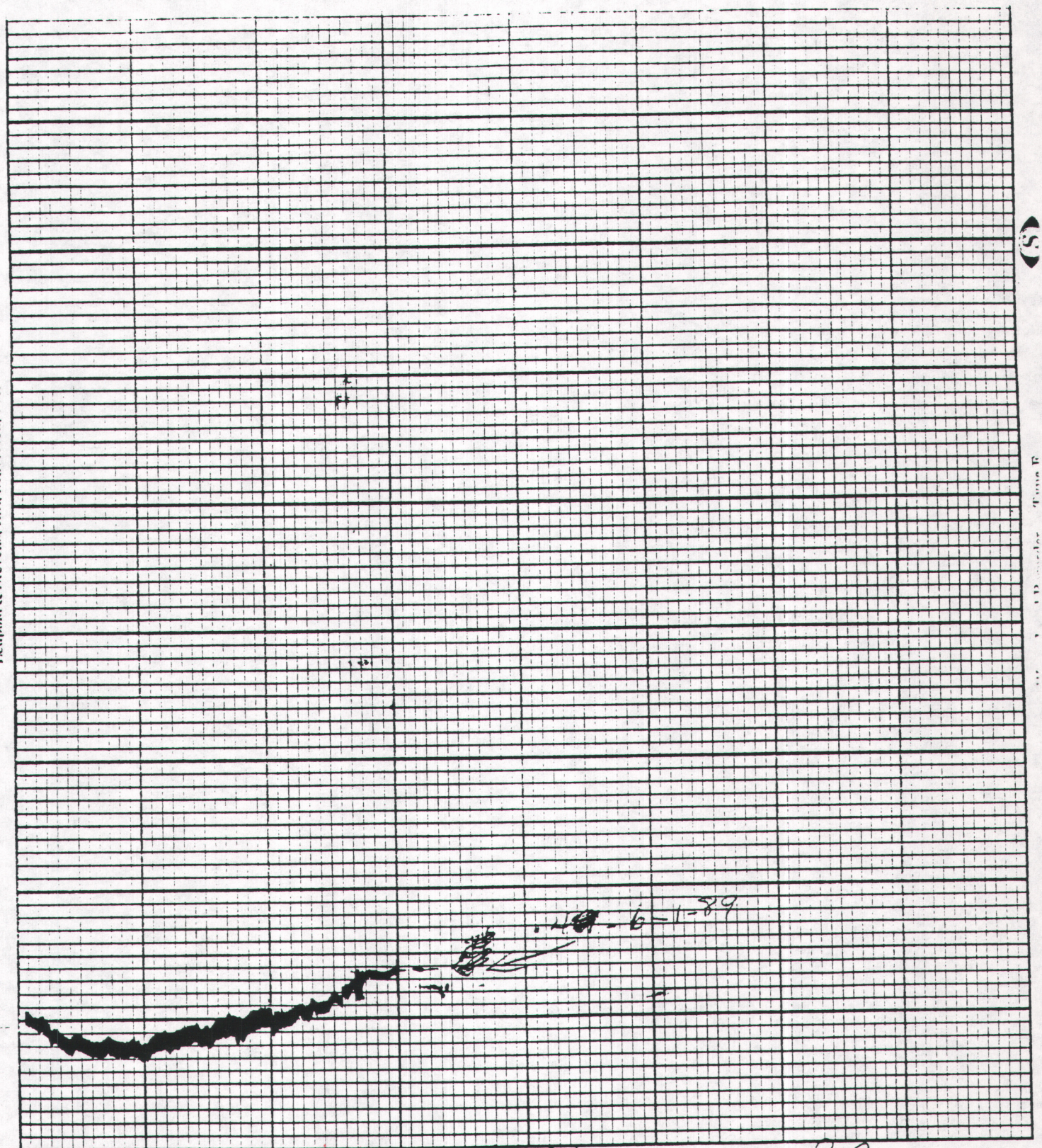
Upper Beaver Dam 9-2-88 Reading 2 300 PM


10/4/88
ACE
3:50 pm
11/5/88
4.10'
Upper
Cascade Silt



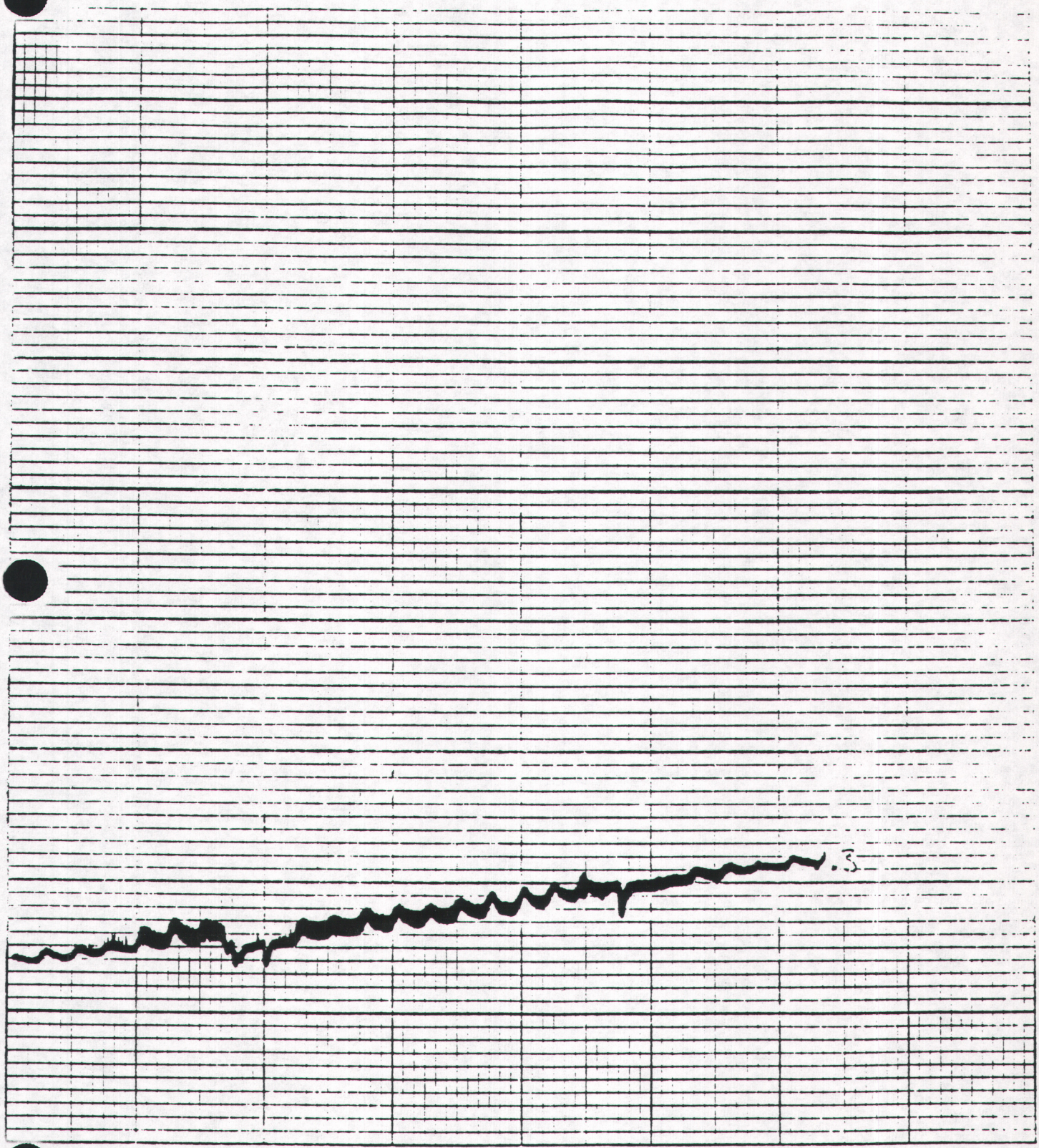
11-3-88 reading

Leupold & Stevens, Inc., Beaverton, Ore.
Stevens Water Level Recorder — Type F
5-5-89
Upper Measure 4-1-89 Reading .2

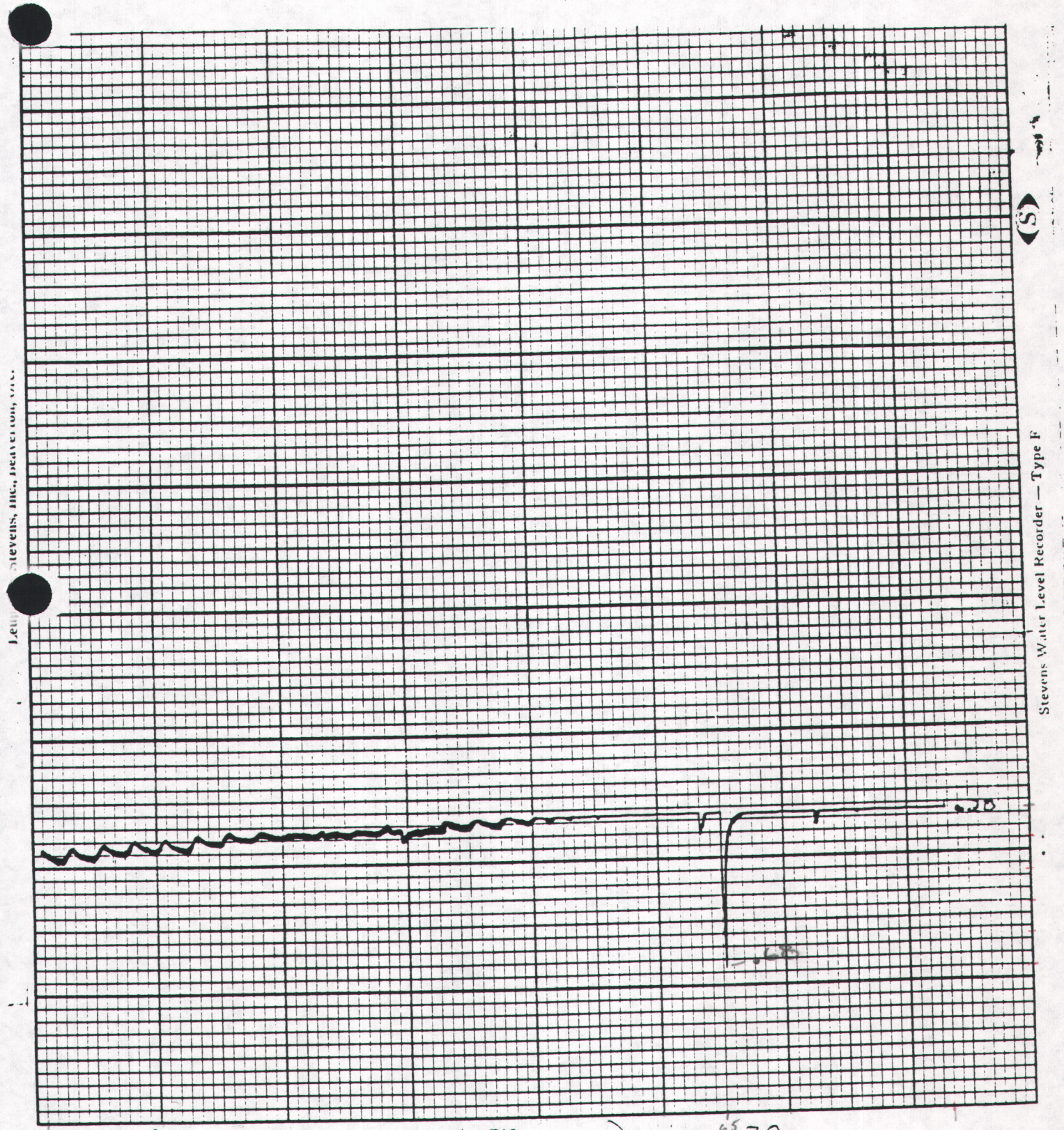


upper measure 5-8-89 Reading .5 3PM. SB

Leupold & Stevens, Inc., Beaverton, Ore.



per. Mariette 6-1-89 3:30 PM Reading .4 LB



Stevens Water Level Recorder — Type F

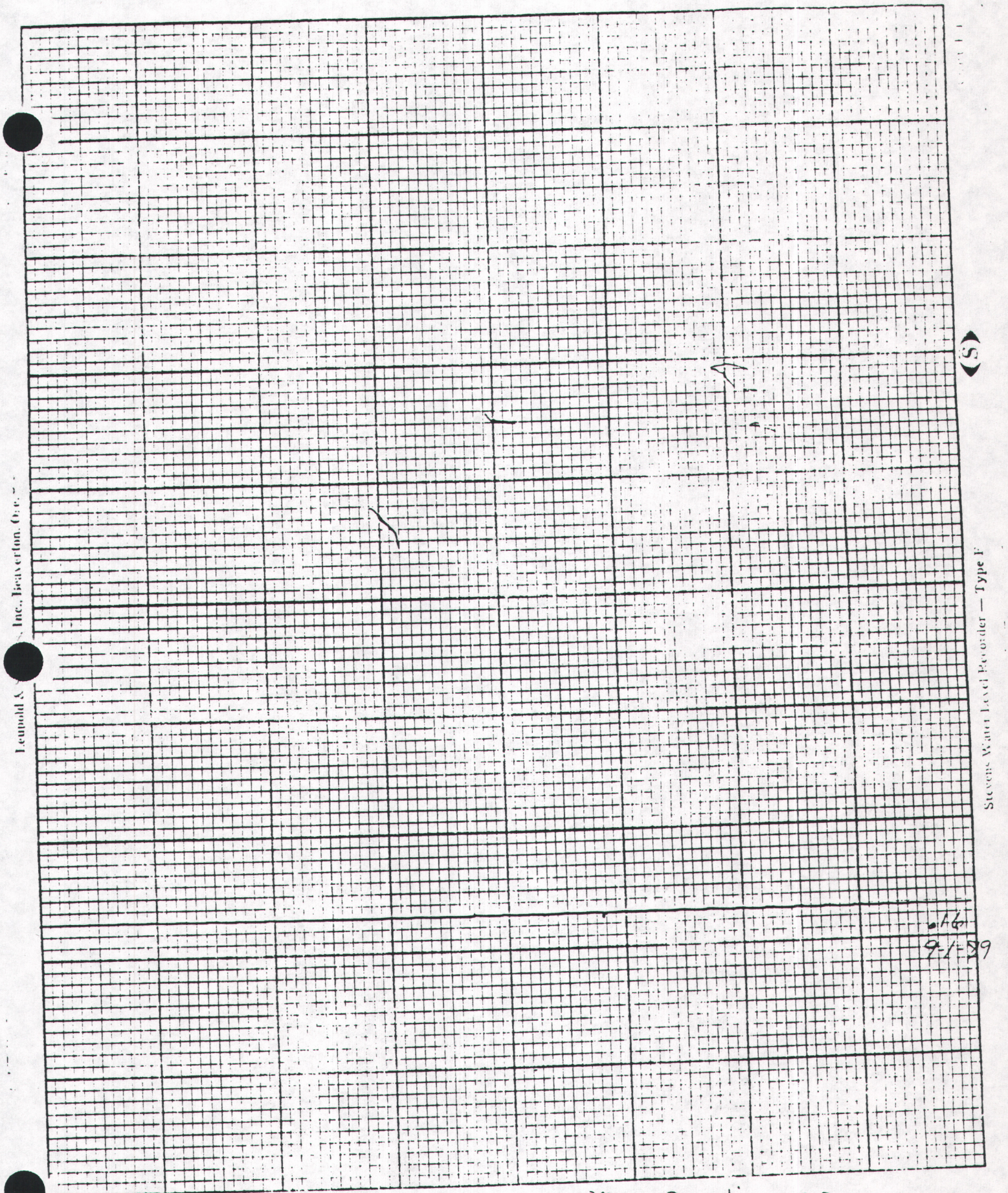
UPPER MEASURE 7-1-89 READING .65 .30

7/31

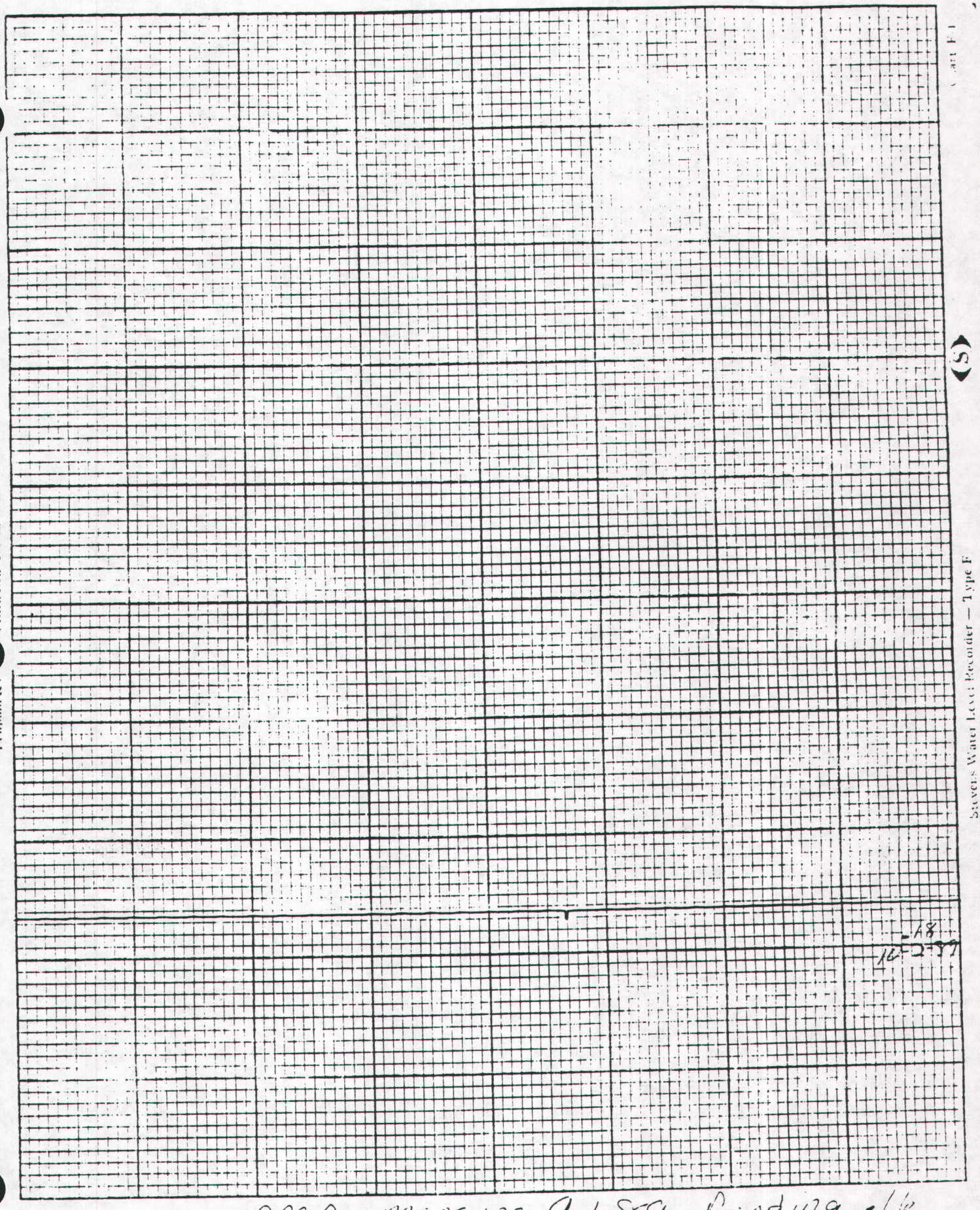
87 94 58-

30 days = 2.9

.68 on 7/21



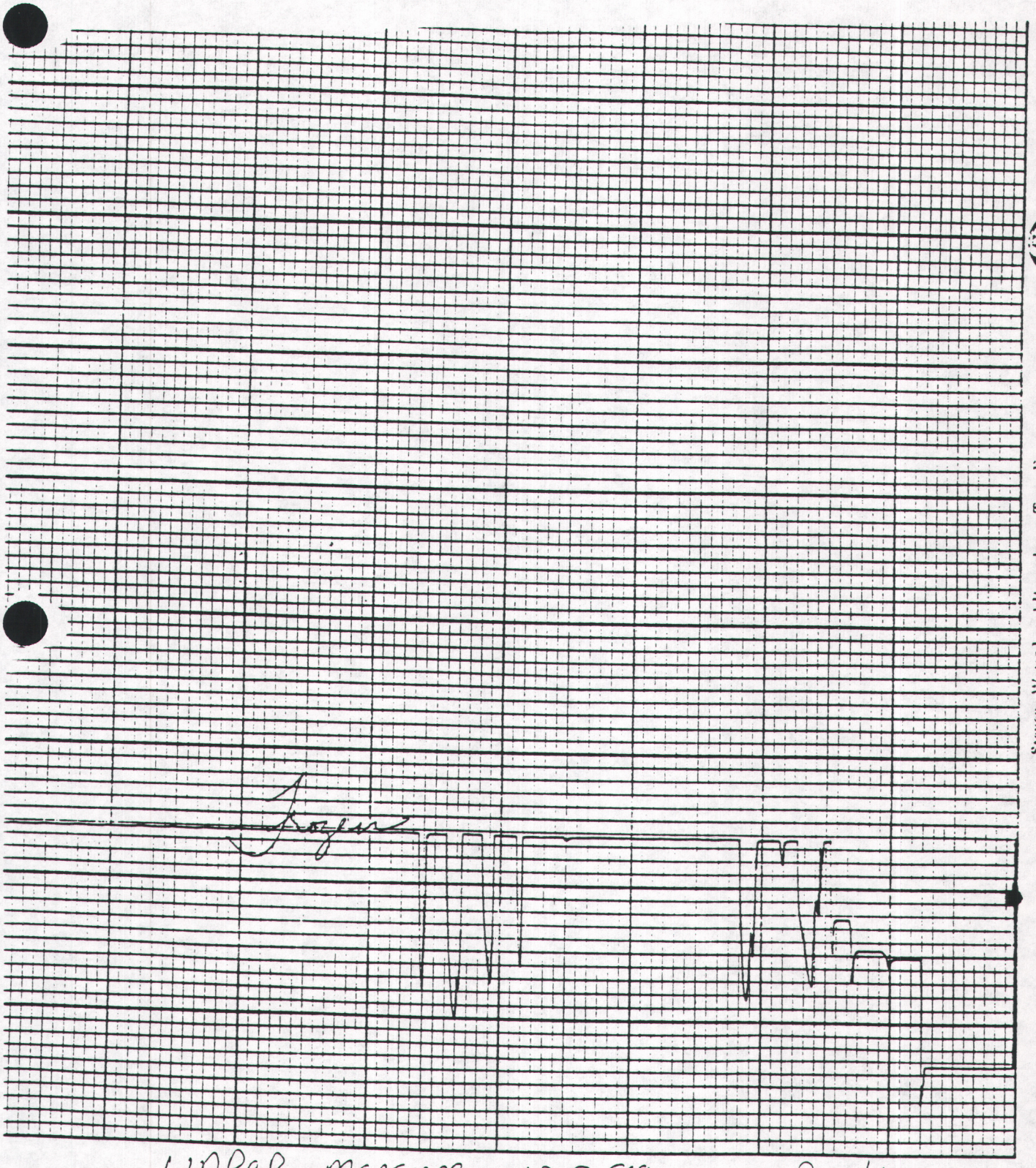
UPPER Measure 7-31-89 6:15 PM Reading .20



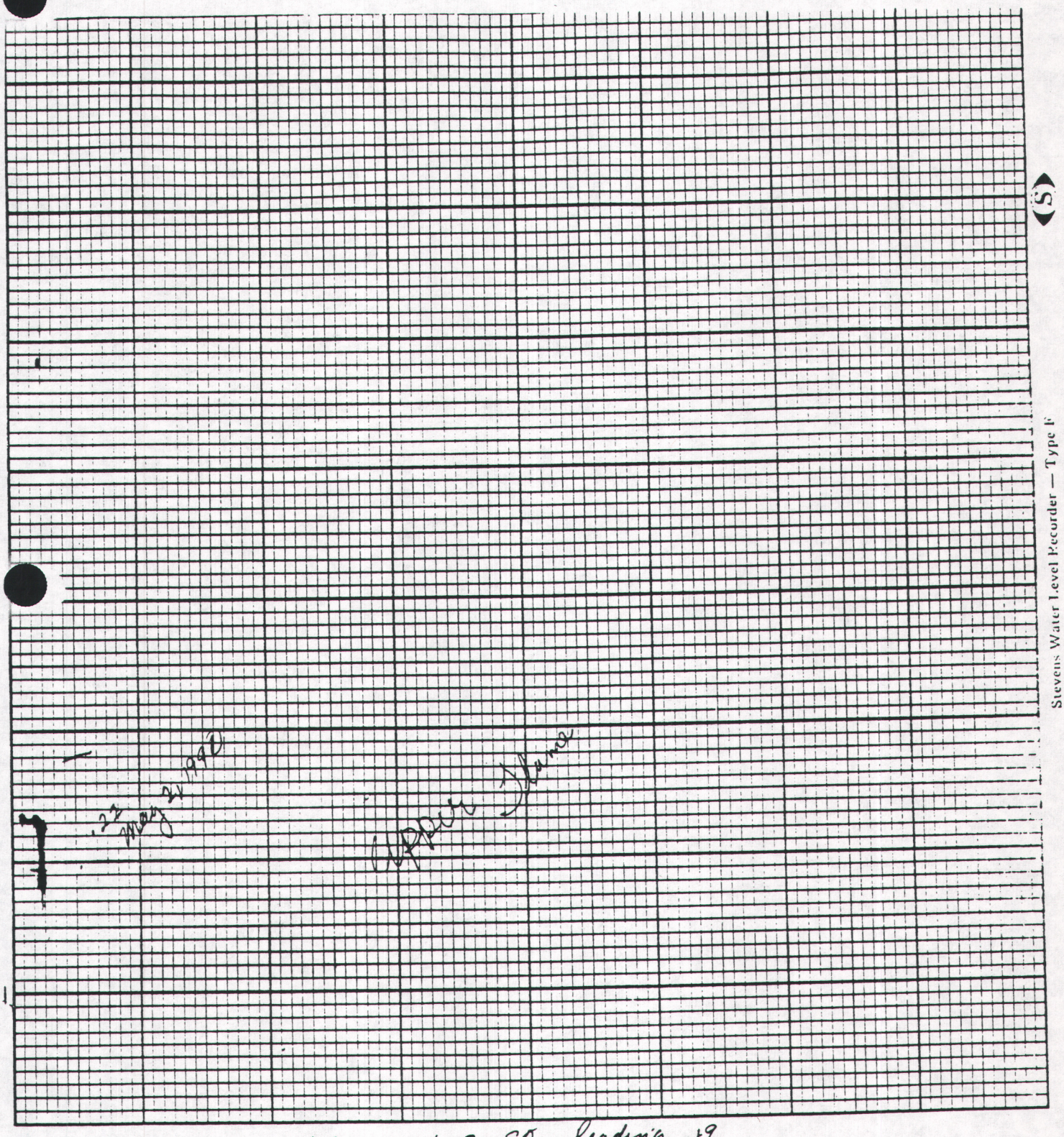
Leupold & Stevens, Inc., Beaverton, Ore.

Stevens Water Level Recorder — Type F

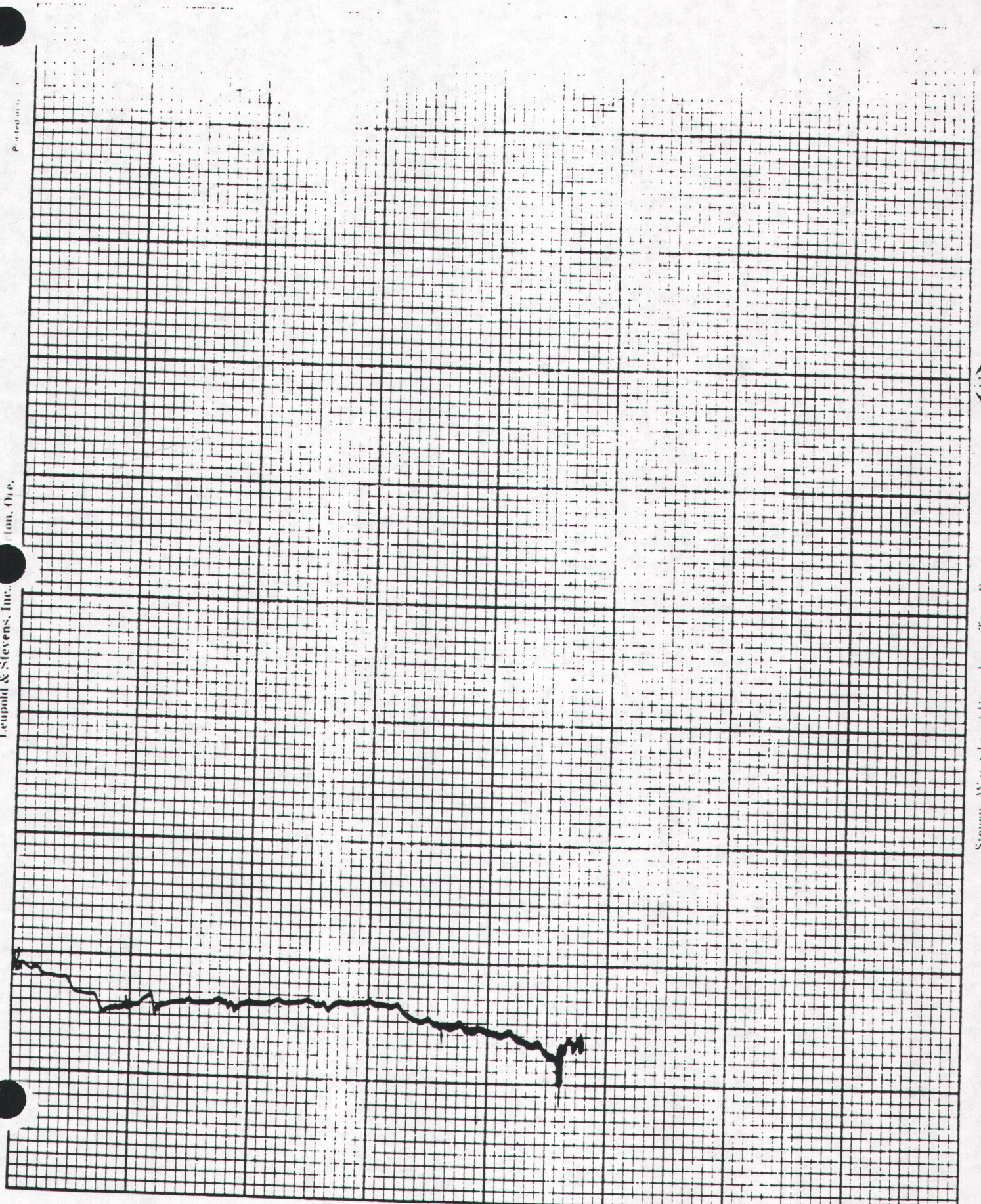
UPPER measure 9-1-89 Reading .16



UPPER MEASURE 10-2-89 .18 READING



upper measure 4-2-80 Reading .19

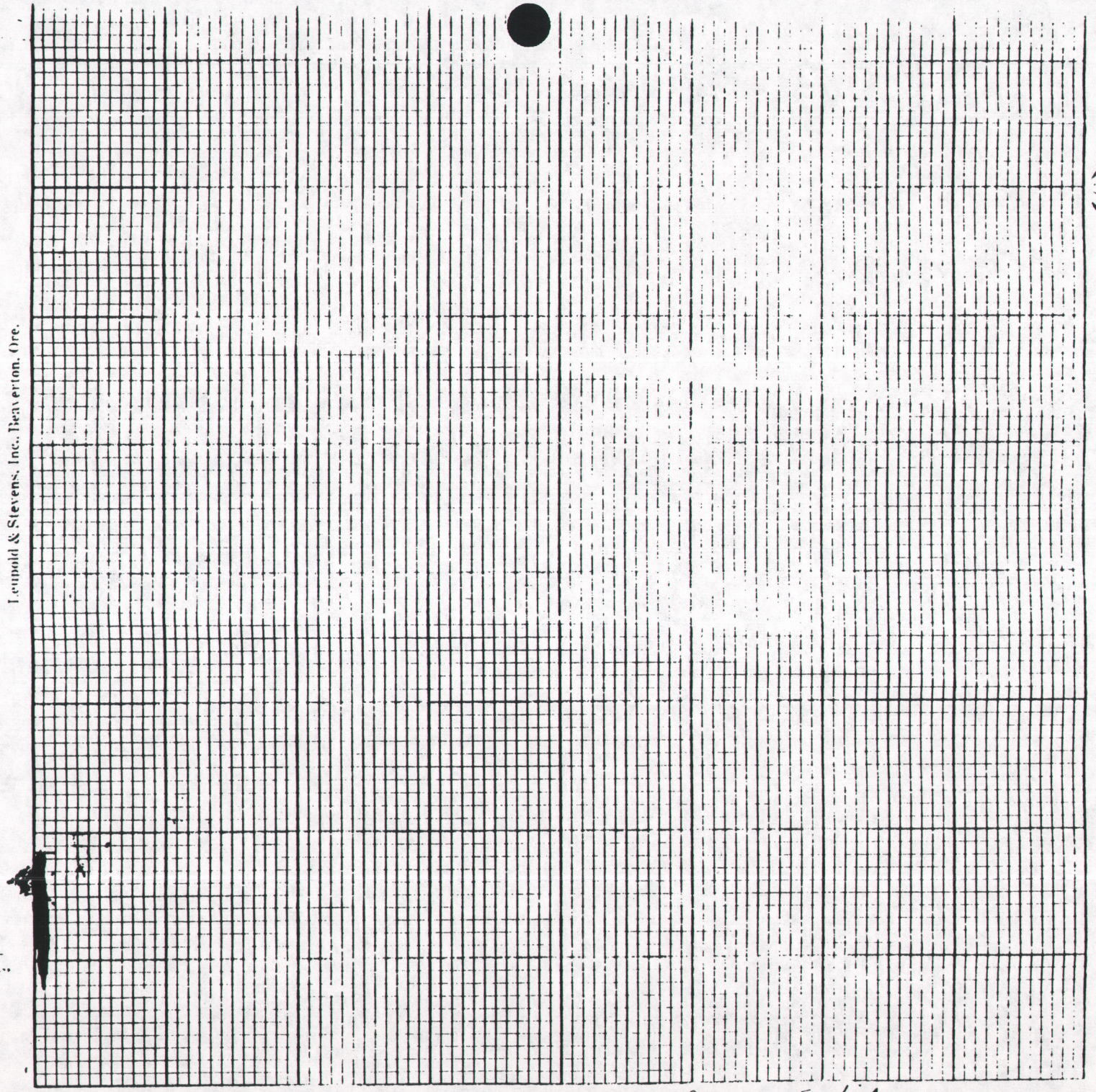


Leupold & Stevens, Inc. ... tion, Ore.

Stevens-Warren Recorder — Type F

Upper Measure May 21, 1990 Beginning Reading .22 Ending .40

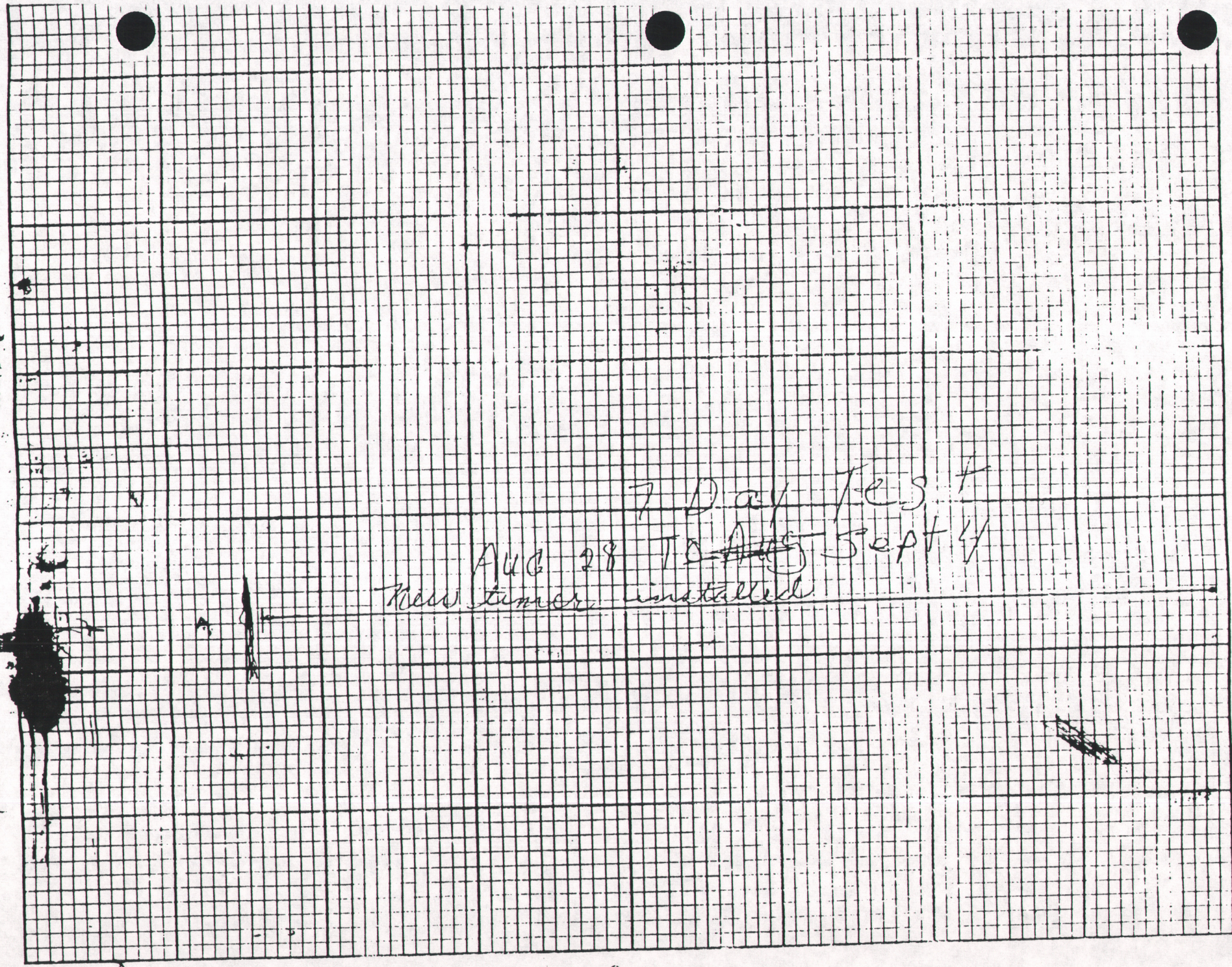
LKB



Leupold & Stevens, Inc., Beaverton, Ore.

upper Measure June 7 - 1990 Beginning Reading Ending

L.K.B.



Upper Measure July 3-1990 LiKiB .10

Leupold & Stevens, Inc., Beaverton, Ore.
Stevens Water Level Recorder — Type F

GENWAL COAL COMPANY

GENWAL COAL COMPANY
WATER MONITORING

DATE: August 14, 1990

RE: Upper Flume

==========

The upper flume timer broke down and was disabled during the month of July, 1990. On July 20, parts were ordered to repair it. The part that came in did not resolve the problem; therefore, on August 8, a complete timer was ordered. At the present, we are still waiting for it to be delivered so that this situation can be rectified.

P.O. Box 1201 • Huntington, Utah 84528 Telephone (801) 687-9813

Stevens Water Level Recorder — Type F

Leupold & Stevens, Inc., Beaverton, Ore.

Upper Marine Sept 4-90 Beginning .10 Ending .11

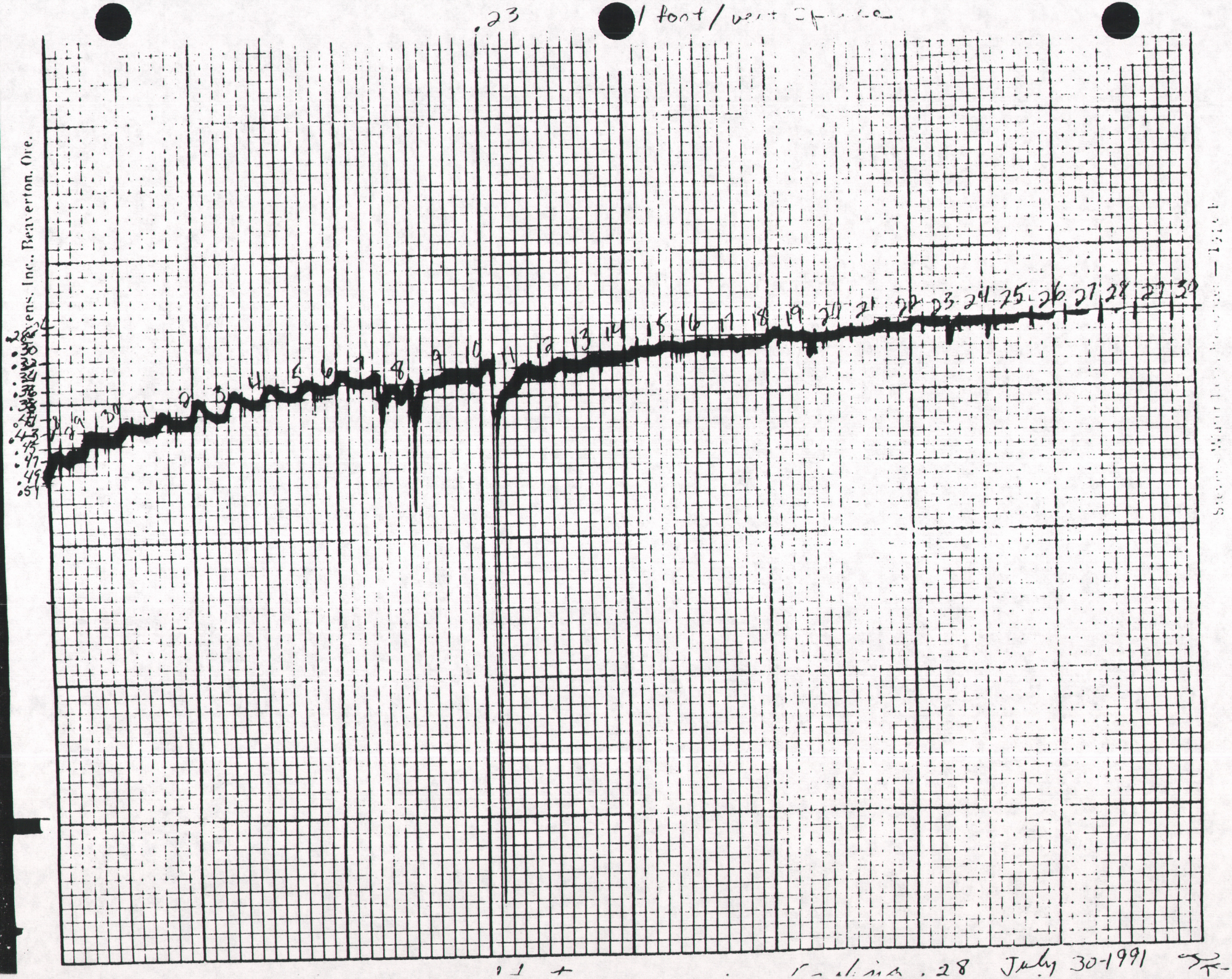
K.K.B

Upper Treasure

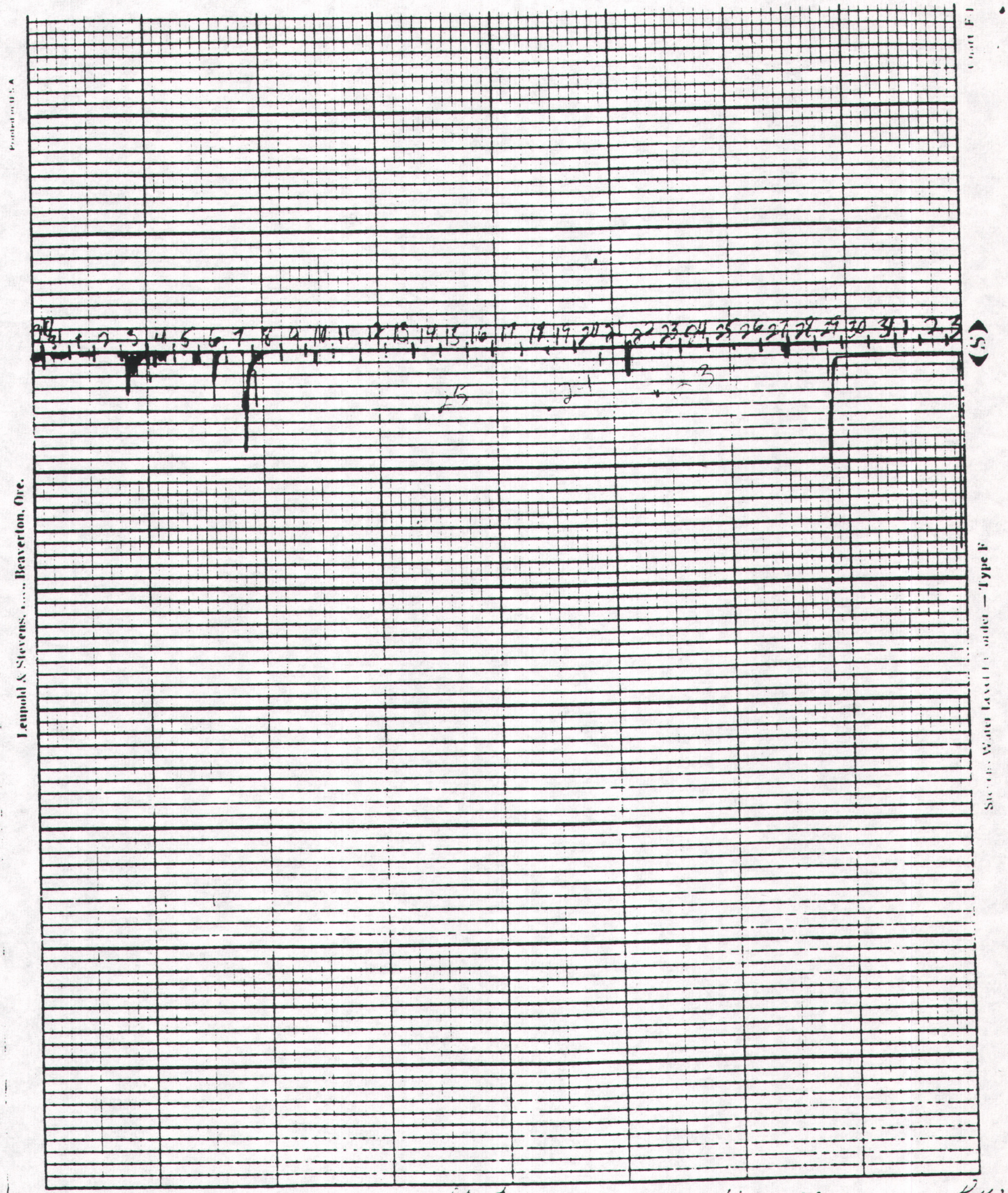
Oct 11, 1990

Frozen, no accurate reading

L.B

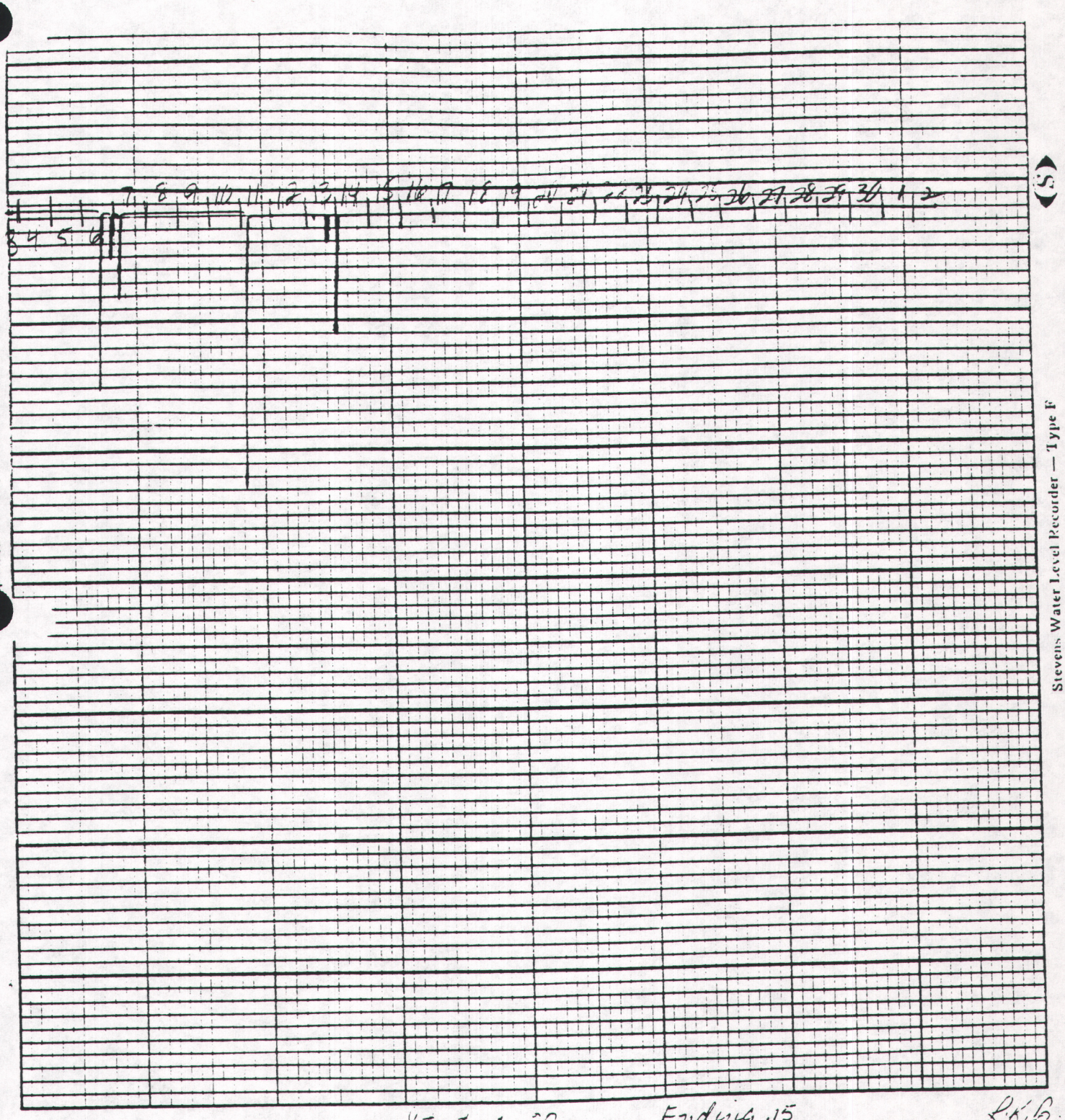

.23
1 foot / vert space
July 30-1991

.08



July 30-1991 Station

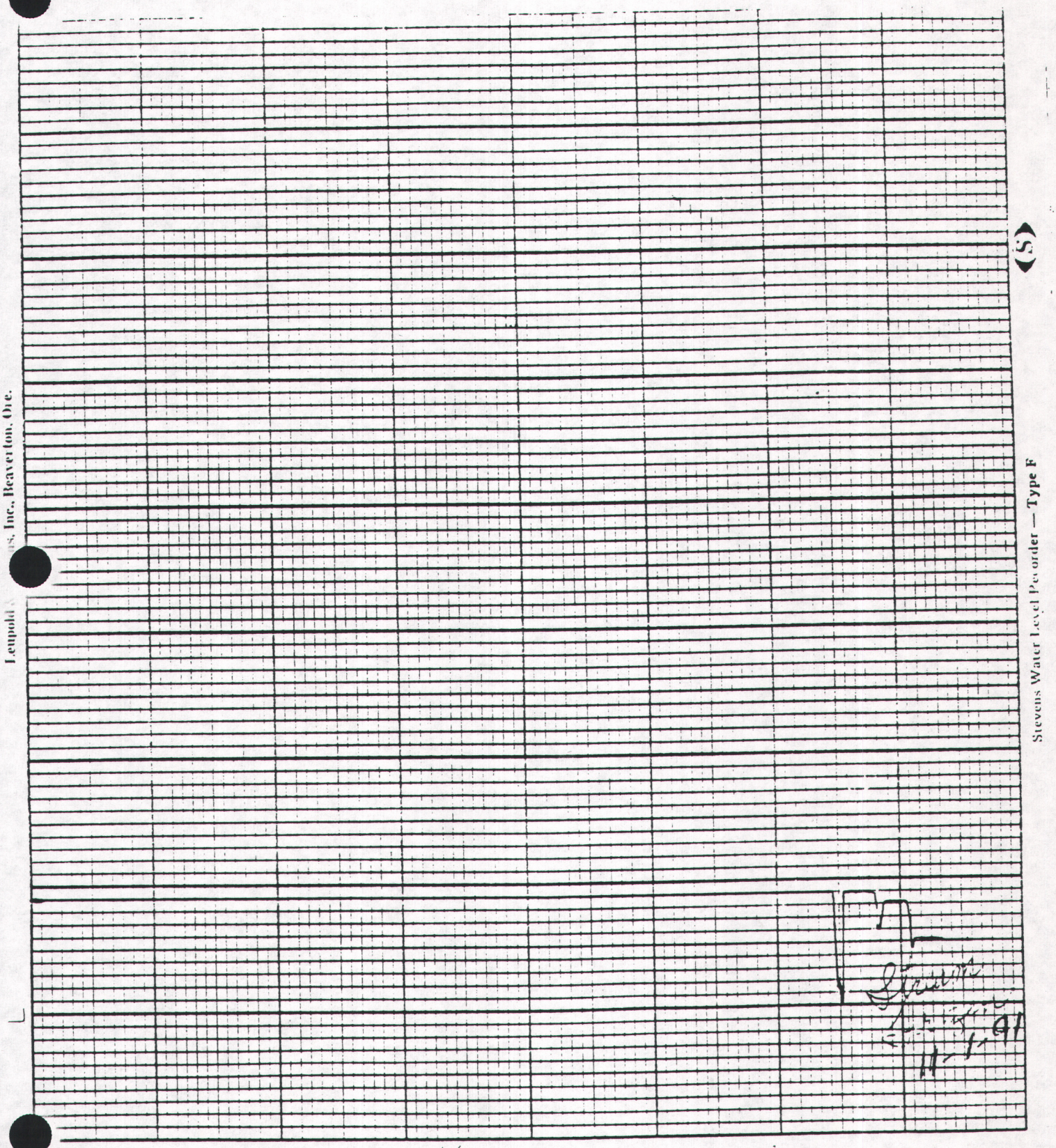
Upper Reservoir .28 .20?



Stevens Water Level Recorder — Type F

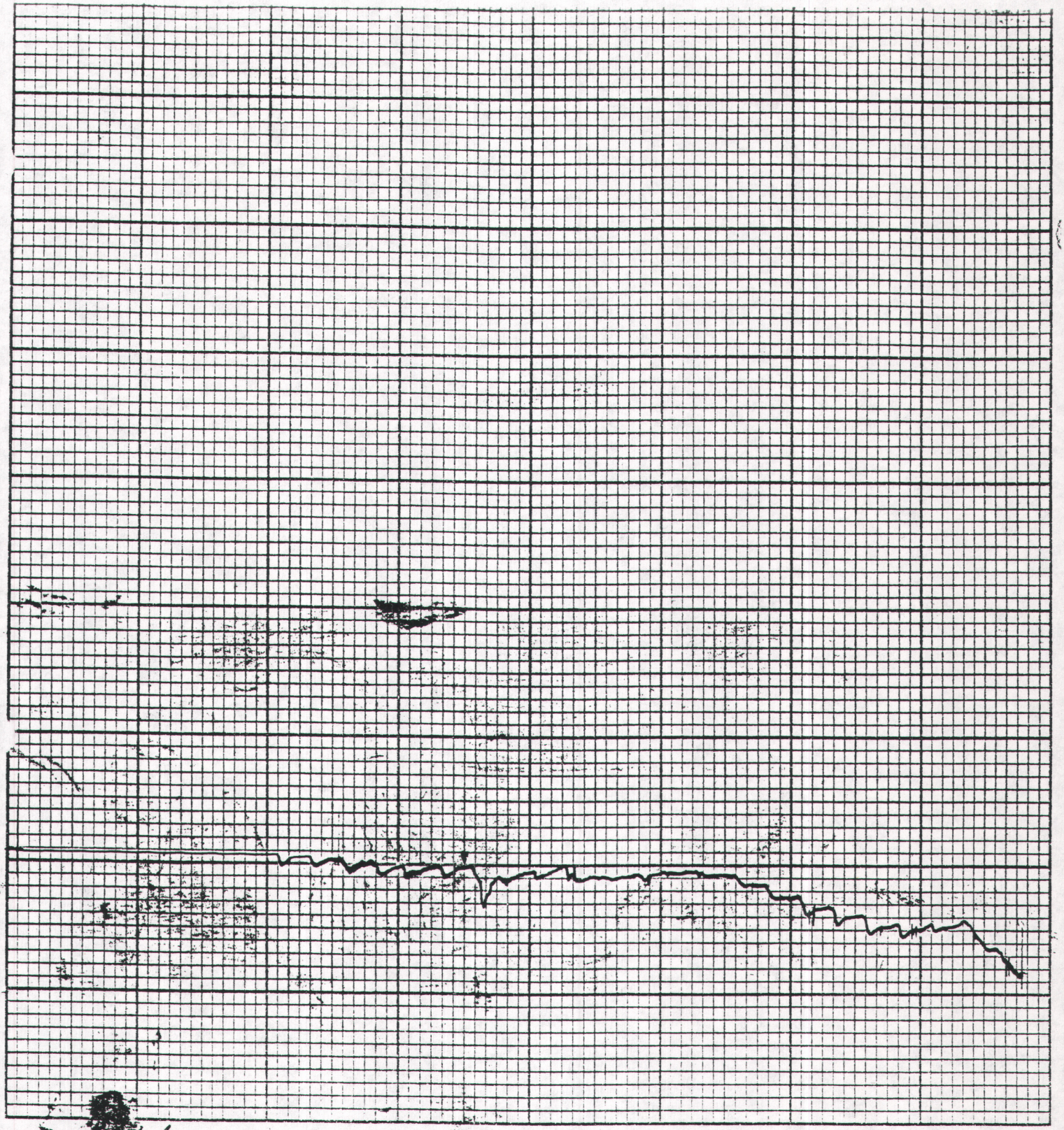
Leupold & Stevens, Inc., Beaverton, Ore.

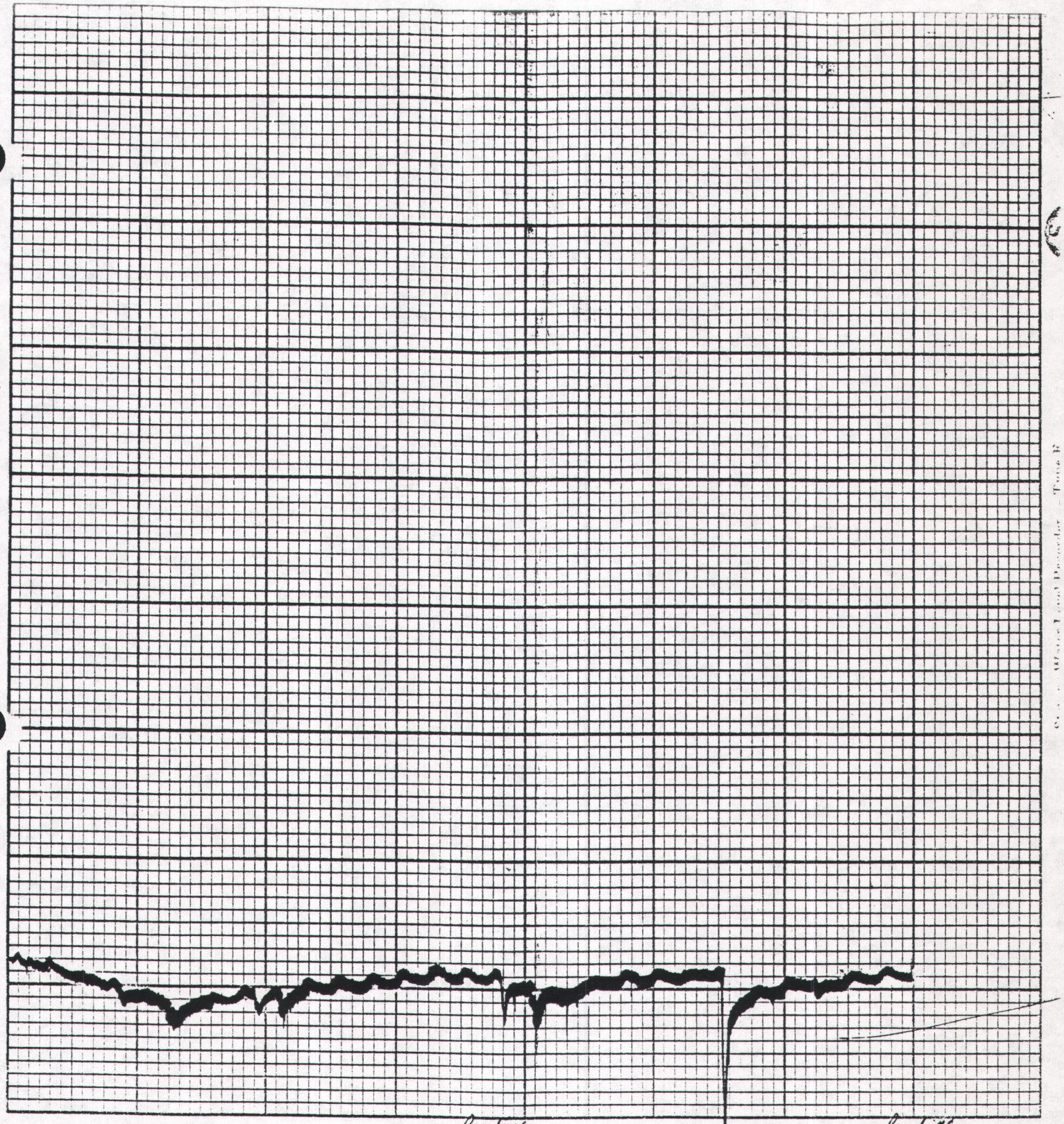
9-3-91 upper manual Starting .20 Ending .15 R.K.G.



Stevens Water Level Recorder — Type F

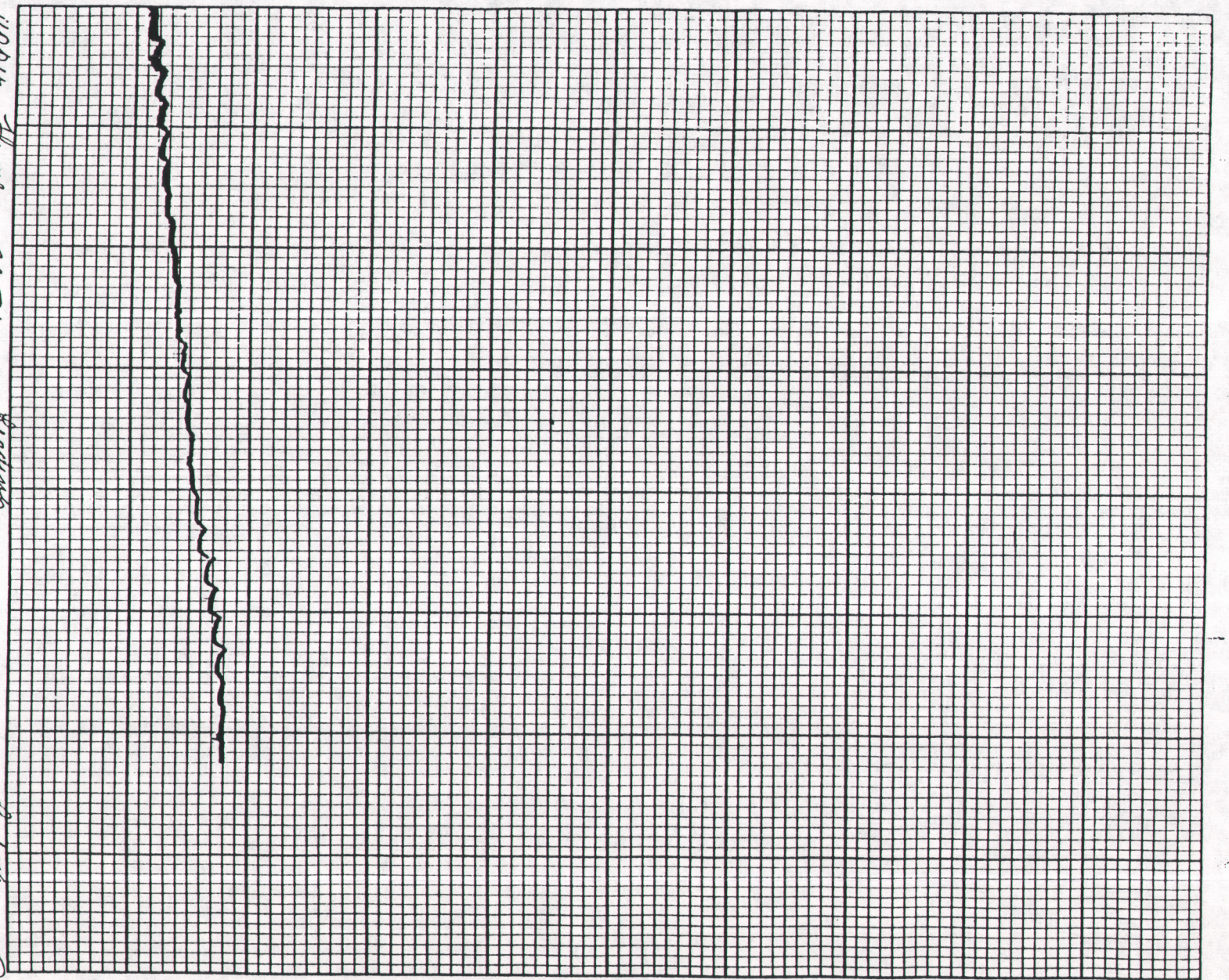
Leupold & Stevens, Inc., Beaverton, Ore.


Leupold & Stevens, Inc., Beaverton, Ore.
upper flume
4-3-92 Starting .18
Ending 5-4-92 .46



Upper Flume Starting 5-4-92 Reading .46 Ending 6-1-92 Reading .348

Leupold & Stevens, Inc., Beaverton, Ore.

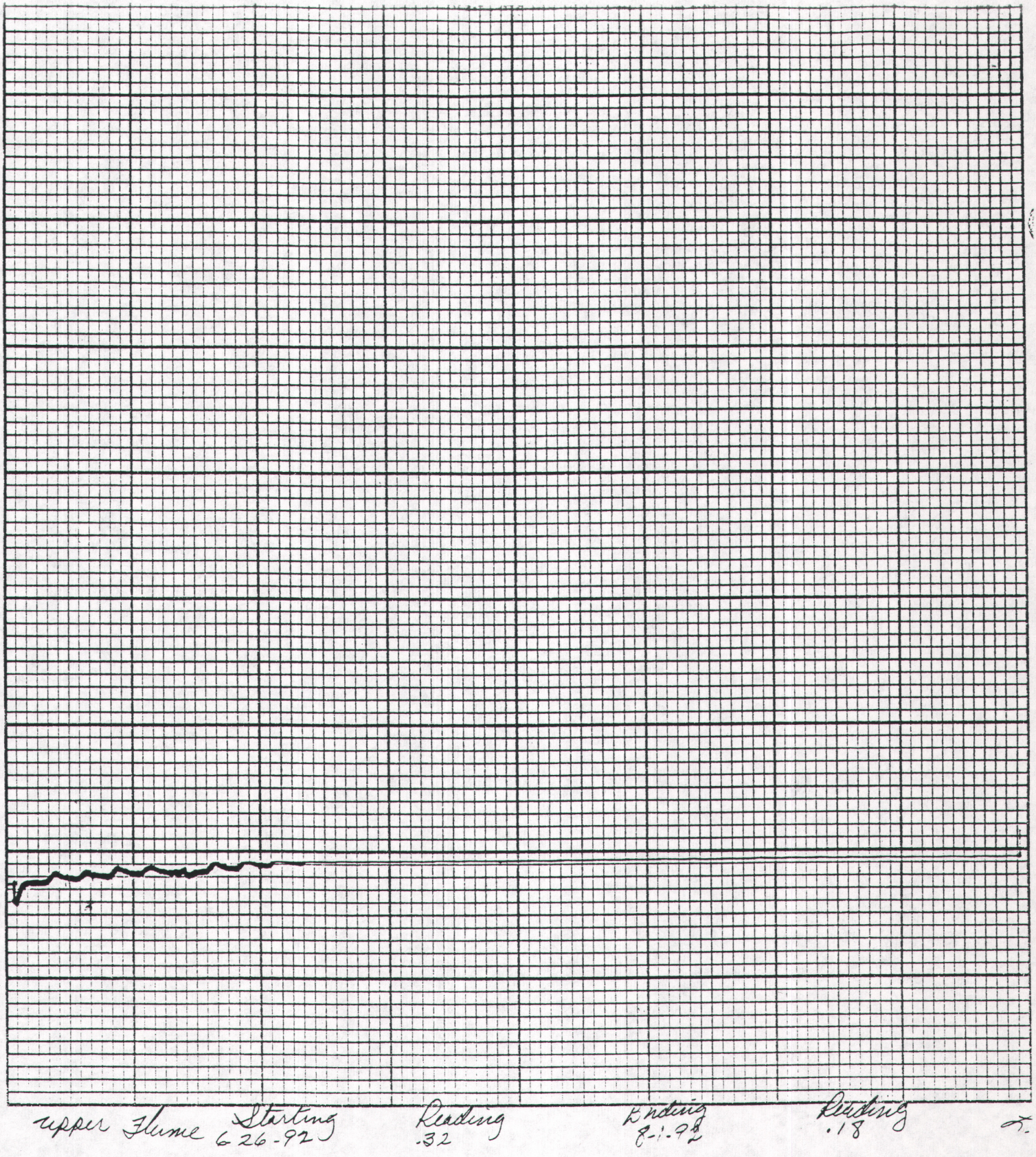


Upper Flume Starting 6-1-92 Reading .48

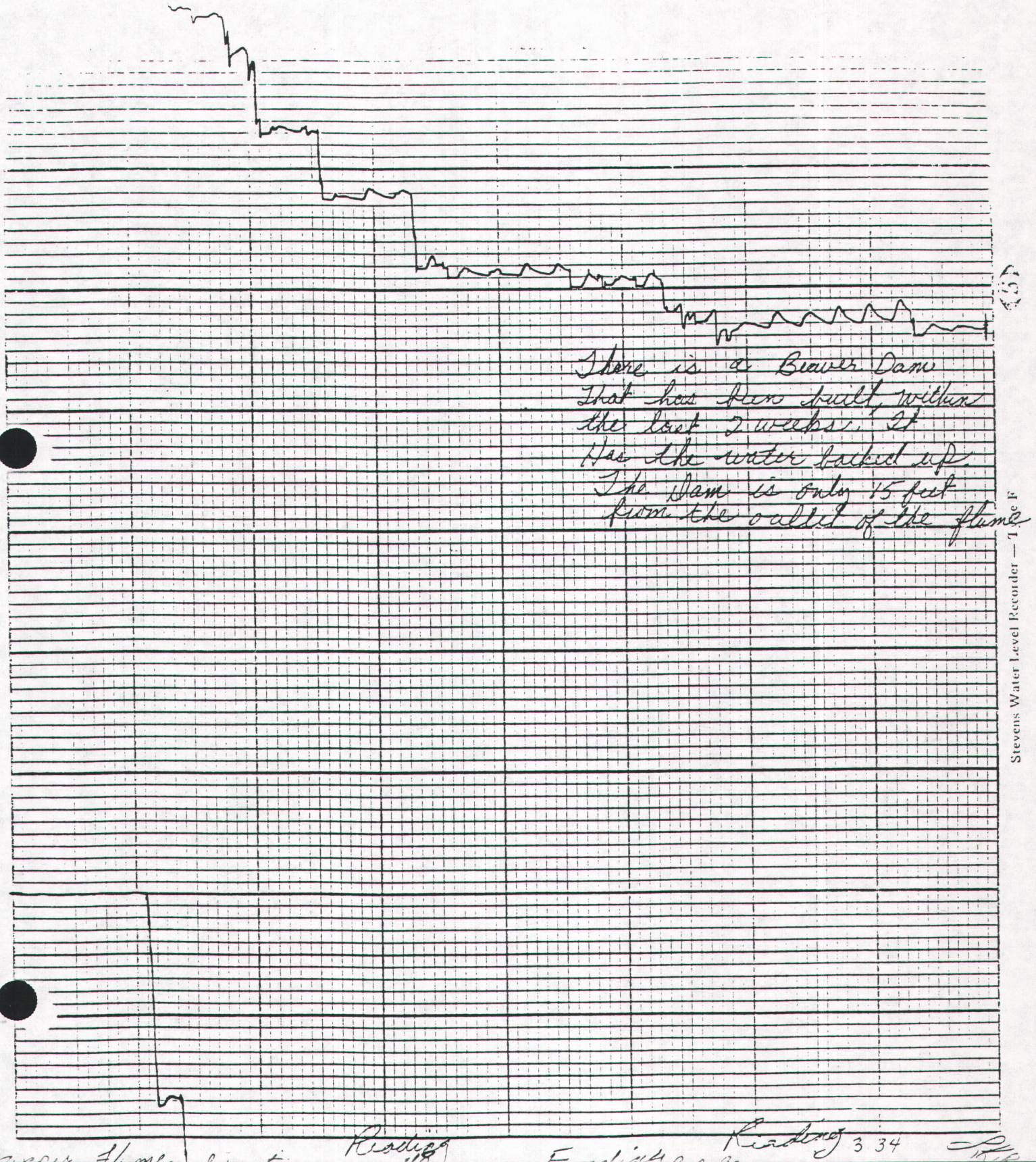
Ending 6-26-92 Reading .32

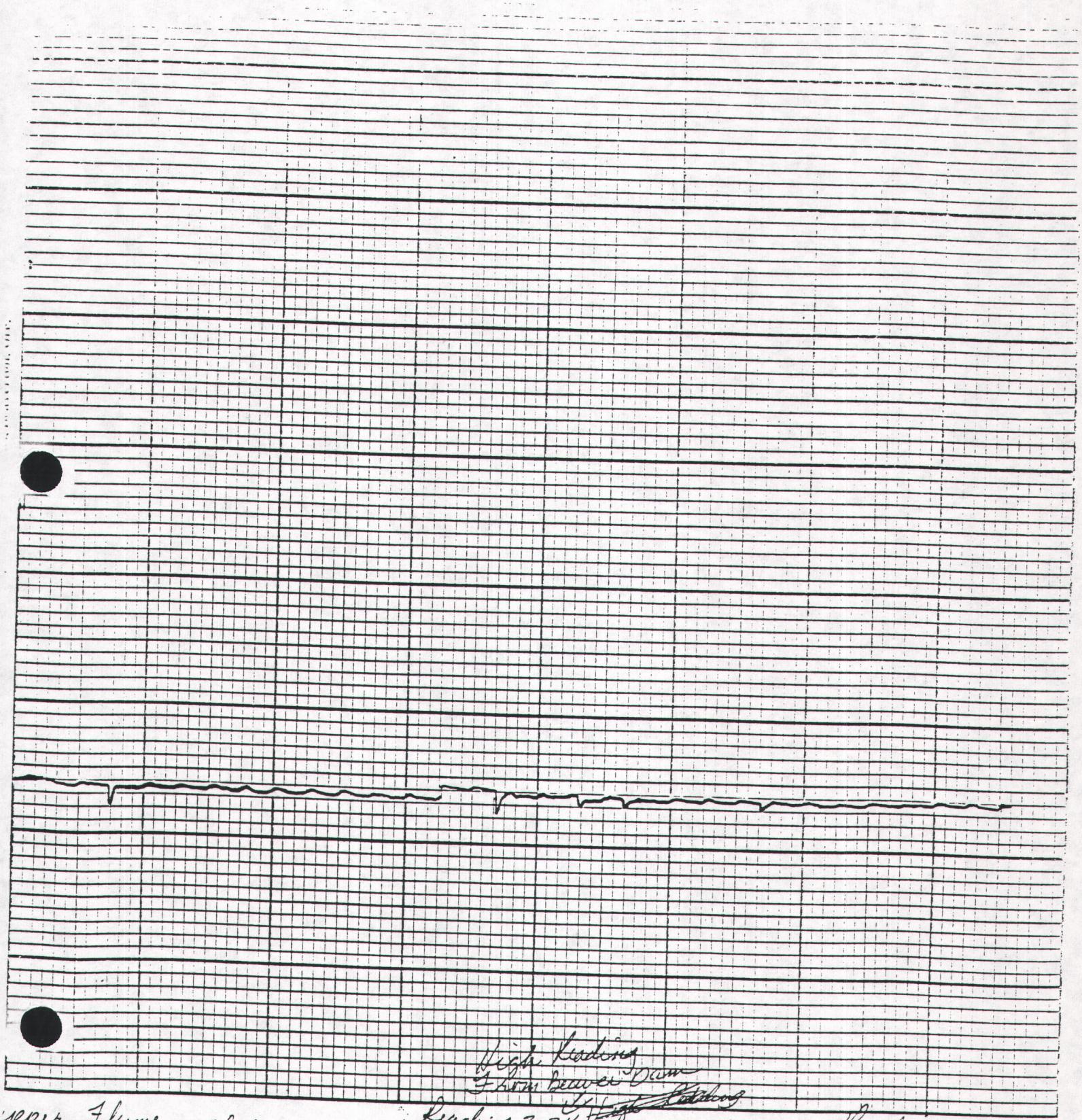
RWS

Stevens Water Level Recorder — Type F (S) Chart F-1



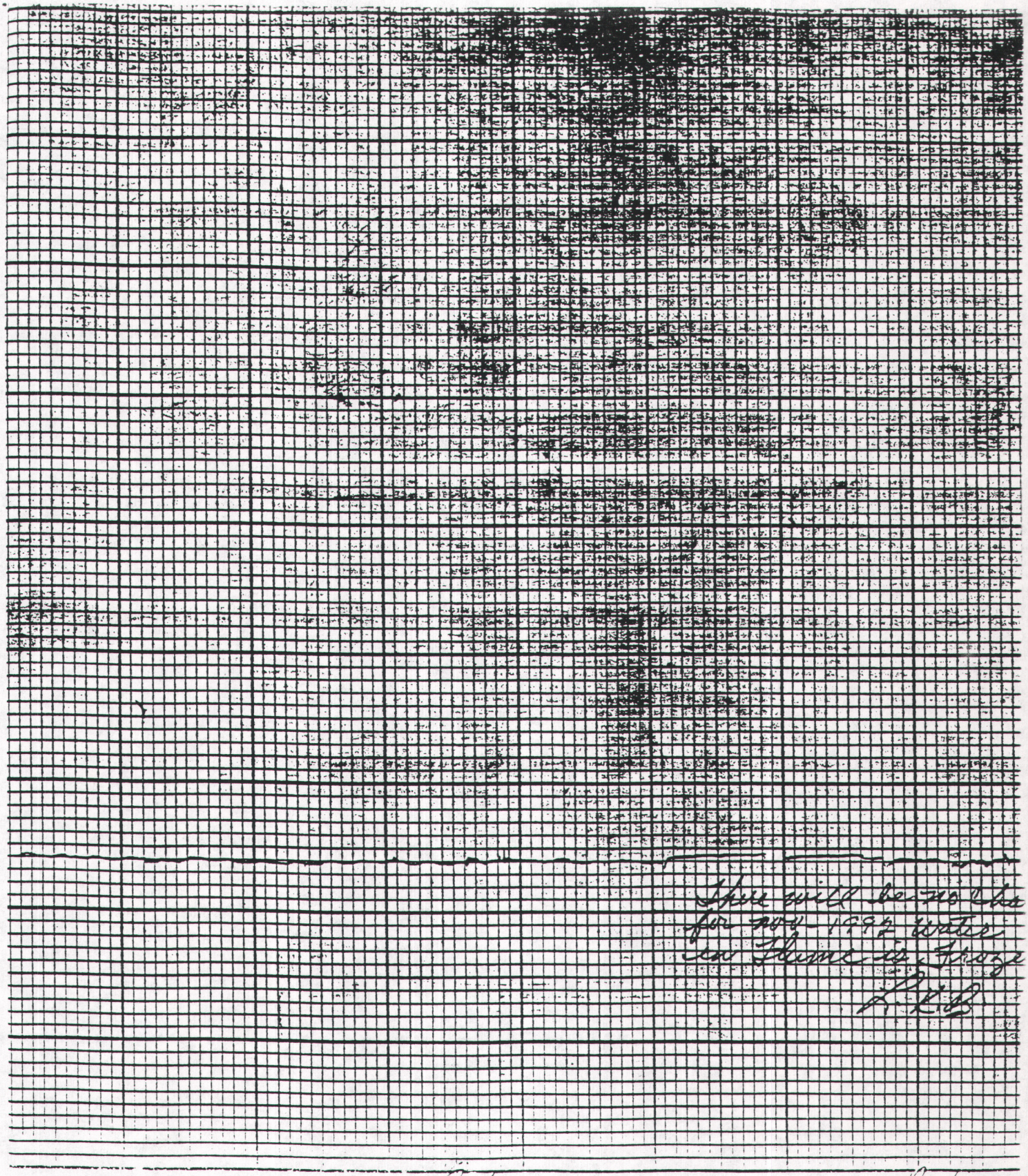
Leupold & Stevens, Inc., Beaverton, Ore.


There is a Beaver Dam
that has been built within
the last 2 weeks. It
has the water backed up.
The dam is only 15 feet
from the outlet of the flume.
Stevens Water Level Recorder — Type F



Upper Flume Starting 9-2-92 Reading 3.34 Accurate Reading .16 Ending 10-1-92 Reading .14

High Readings From Beaver Dam



Rockland 14

Rockland

Upper Stone Starting 10-1-22

4-2-96
713

Synthesized Lab # 173155-3

	CRANDALL CREEK–LOWER FLUME			
	DATE	HEIGHT(ft)	WIDTH(ft)	DISCHARGE(cfs)
880503 u	05/03/88	0.3	3	1.82
880504 u	05/04/88	0.3	3	1.82
880505 u	05/05/88	0.46	3	3.56
880506 u	05/06/88	0.6	3	5.39
880507 u	05/07/88	0.65	3	6.11
880508 u	05/08/88	0.71	3	7.02
880509 u	05/09/88	0.84	3	9.13
880510 u	05/10/88	0.92	3	10.53
880511 u	05/11/88	0.98	3	11.63
880512 u	05/12/88	1.13	3	14.53
880513 u	05/13/88	1.17	3	15.35
880514 u	05/14/88	1.09	3	13.73
880515 u	05/15/88	1.03	3	12.57
880516 u	05/16/88	1	3	12.00
880517 u	05/17/88	0.88	3	9.82
880518 u	05/18/88	0.88	3	9.82
880519 u	05/19/88	0.88	3	9.82
880520 u	05/20/88	1	3	12.00
880521 u	05/21/88	1	3	12.00
880522 u	05/22/88	0.88	3	9.82
880523 u	05/23/88	0.86	3	9.48
880524 u	05/24/88	0.85	3	9.30
880525 u	05/25/88	0.87	3	9.65
880526 u	05/26/88	0.85	3	9.30
880527 u	05/27/88	0.84	3	9.13
880528 u	05/28/88	0.86	3	9.48
880529 u	05/29/88	0.84	3	9.13
880530 u	05/30/88	0.8	3	8.46
8805111 s	05/31/88	0.79	3	8.30
880601 u	06/01/88	0.74	3	7.49
880602 u	06/02/88	0.71	3	7.02
880603 u	06/03/88	0.69	3	6.71
880604 u	06/04/88	0.69	3	6.71
880605 u	06/05/88	0.7	3	6.86
880606 u	06/06/88	0.71	3	7.02
880607 u	06/07/88	0.69	3	6.71
880608 u	06/08/88	0.68	3	6.56
880609 u	06/09/88	0.64	3	5.97
880610 u	06/10/88	0.62	3	5.68
880611 u	06/11/88	0.59	3	5.25

	CRANDALL CREEK–LOWER FLUME				
	DATE	HEIGHT(ft)	WIDTH(ft)	DISCHARGE(cfs)	
880612 u	06/12/88	0.57	3	4.98	
880613 u	06/13/88	0.54	3	4.57	
880614 u	06/14/88	0.52	3	4.31	
880615 u	06/15/88	0.5	3	4.05	
880616 u	06/16/88	0.48	3	3.80	
880617 u	06/17/88	0.48	3	3.80	
880618 u	06/18/88	0.46	3	3.56	
880619 u	06/19/88	0.43	3	3.20	
880620 u	06/20/88	0.43	3	3.20	
880621 u	06/21/88	0.41	3	2.97	
880622 u	06/22/88	0.39	3	2.75	
880623 u	06/23/88	0.38	3	2.64	
880624 u	06/24/88	0.36	3	2.42	
880625 u	06/25/88	0.33	3	2.11	
880626 u	06/26/88	0.37	3	2.53	
880627 u	06/27/88	0.32	3	2.01	
880628 u	06/28/88	0.33	3	2.11	
880629 u	06/29/88	0.32	3	2.01	
880630 u	06/30/88	0.29	3	1.73	
880701 u	07/01/88	0.28	3	1.63	
880702 u	07/02/88	0.27	3	1.54	
	7/03/88 to 7/27/88	No Readings	3	0.00	
880728 u	07/28/88	0.15	3	0.61	
880729 u	07/29/88	0.15	3	0.61	
880730 u	07/30/88	0.15	3	0.61	
880731 u	07/31/88	0.15	3	0.61	273.77 GPM
880801 u	08/01/88	0.15	3	0.61	
880802 u	08/02/88	0.15	3	0.61	
880803 u	08/03/88	0.15	3	0.61	
880804 u	08/04/88	0.17	3	0.75	
880805 u	08/05/88	0.16	3	0.68	
880806 u	08/06/88	0.15	3	0.61	
880807 u	08/07/88	0.15	3	0.61	
880808 u	08/08/88	0.15	3	0.61	
880809 u	08/09/88	0.15	3	0.61	
880810 u	08/10/88	0.15	3	0.61	
880811 u	08/11/88	0.15	3	0.61	
880812 u	08/12/88	0.15	3	0.61	
880813 u	08/13/88	0.15	3	0.61	
880814 u	08/14/88	0.15	3	0.61	

? 9-30-88 ⇒ 04 Sample Type?
8806221S

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	CRANDALL CREEK–LOWER FLUME			
	DATE	HEIGHT(ft)	WIDTH(ft)	DISCHARGE(cfs)
880815 U	08/15/88	0.15	3	0.61
880816 U	08/16/88	0.15	3	0.61
880817 U	08/17/88	0.15	3	0.61
880818 U	08/18/88	0.15	3	0.61
880819 U	08/19/88	0.15	3	0.61
880820 U	08/20/88	0.15	3	0.61
880821 U	08/21/88	0.15	3	0.61
880822 U	08/22/88	0.15	3	0.61
880823 U	08/23/88	0.15	3	0.61
880824 U	08/24/88	0.15	3	0.61
880825 U	08/25/88	0.15	3	0.61
DUP	08/25/88	0.15	3	0.61
880826 U	08/26/88	0.15	3	0.61
880827 U	08/27/88	0.15	3	0.61
880828 U	08/28/88	0.15	3	0.61
880829 U	08/29/88	0.15	3	0.61
880830 U	08/30/88	0.15	3	0.61
880831 U	08/31/88	0.15	3	0.61
880901 U	09/01/88	0.15	3	0.61
880902 U	09/02/88	0.15	3	0.61
880903 U	09/03/88	0.21	3	1.04
880904 U	09/04/88	0.15	3	0.61
880905 U	09/05/88	0.15	3	0.61
880906 U	09/06/88	0.15	3	0.61
	9/07/88 to 10/03/88	No Readings	3	
881004 U	10/04/88	0.15	3	0.61
881005 U	10/05/88	0.15	3	0.61
881006 U	10/06/88	0.19	3	0.89
881007 U	10/07/88	0.15	3	0.61
881008 U	10/08/88	0.15	3	0.61
881009 U	10/09/88	0.15	3	0.61
881010 U	10/10/88	0.15	3	0.61
881011 U	10/11/88	0.15	3	0.61
881012 U	10/12/88	0.15	3	0.61
881013 U	10/13/88	0.15	3	0.61
881014 U	10/14/88	0.15	3	0.61
881015 U	10/15/88	0.15	3	0.61
881016 U	10/16/88	0.15	3	0.61
881017 U	10/17/88	0.15	3	0.61
881018 U	10/18/88	0.15	3	0.61

273.77 GPM

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CRANDALL CREEK—LOWER FLUME

	DATE	HEIGHT(ft)	WIDTH(ft)	DISCHARGE(cfs)	GPM
881019 u	10/19/88	0.14	3	0.55	246.84
881020 u	10/20/88	0.14	3	0.55	
881021 u	10/21/88	0.14	3	0.55	
881022 u	10/22/88	0.14	3	0.55	
881023 u	10/23/88	0.14	3	0.55	
881024 u	10/24/88	0.14	3	0.55	
881025 u	10/25/88	0.14	3	0.55	
881026 u	10/26/88	0.14	3	0.55	
881027 u	10/27/88	0.14	3	0.55	
881028 u	10/28/88	0.14	3	0.55	
881029 u	10/29/88	0.14	3	0.55	
881030 u	10/30/88	0.14	3	0.55	
881031 u	10/31/88	0.14	3	0.55	
881101 u	11/01/88	0.14	3	0.55	
	11/02/88	0.14	3	0.55	
881103 u	11/03/88	0.14	3	0.55	
	11/04/88 to 3/31/89	Frozen	3	0.00	
890401 u	04/01/89	0.18	3	0.82	368 GPM
890402 u	04/02/89	0.18	3	0.82	
890403 u	04/03/89	0.18	3	0.82	
890404 u	04/04/89	0.18	3	0.82	
890405 u	04/05/89	0.18	3	0.82	
890406 u	04/06/89	0.18	3	0.82	
890407 u	04/07/89	0.18	3	0.82	
890408 u	04/08/89	0.18	3	0.82	
890409 u	04/09/89	0.21	3	1.04	466.75 GPM
890410 u	04/10/89	0.18	3	0.82	
890411 u	04/11/89	0.2	3	0.96	430.85 GPM
890412 u	04/12/89	0.2	3	0.96	
890413 u	04/13/89	0.02	3	0.03	13.46 GPM
890414 u	04/14/89	0.18	3	0.82	
890415 u	04/15/89	0.18	3	0.82	
890416 u	04/16/89	0.18	3	0.82	
890417 u	04/17/89	0.21	3	1.04	
890418 u	04/18/89	0.23	3	1.20	538.56 GPM
890419 u	04/19/89	0.26	3	1.46	655.25 GPM
890420 u	04/20/89	0.25	3	1.37	614.86 GPM
890421 u	04/21/89	0.27	3	1.54	
890422 u	04/22/89	0.29	3	1.73	
890423 u	04/23/89	0.3	3	1.82	

11-88 8811u Frozen - no access (11)
12-88 8812u Frozen - no access (11)
01-89 8901u Frozen - no access (11)
02-89 8902u Frozen - no access (11)
03-31-89 8909572 g

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GPM

	CRANDALL CREEK–LOWER FLUME				
	DATE	HEIGHT(ft)	WIDTH(ft)	DISCHARGE(cfs)	
890424 u	04/24/89	0.3	3	1.82	816.82
890425 u	04/25/89	0.3	3	1.82	
890426 u	04/26/89	0.29	3	1.73	
890427 u	04/27/89	0.26	3	1.46	655.25
890428 u	04/28/89	0.22	3	1.12	
890429 u	04/29/89	0.23	3	1.20	538.56
890430 u	04/30/89	0.23	3	1.20	
890501 u	05/01/89	0.23	3	1.20	
890502 u	05/02/89	0.24	3	1.28	574.46
890503 u	05/03/89	0.24	3	1.28	
890504 u	05/04/89	0.24	3	1.28	
890505 u	05/05/89	0.24	3	1.28	
890506 u	05/06/89	0.26	3	1.46	655.25
890507 u	05/07/89	0.29	3	1.73	776.42
890508 u	05/08/89	0.35	3	2.32	
890509 u	05/09/89	0.44	3	3.32	
890510 u	05/10/89	0.46	3	3.56	
890511 u	05/11/89	0.46	3	3.56	
890512 u	05/12/89	0.47	3	3.68	
890513 u	05/13/89	0.46	3	3.56	
890514 u	05/14/89	0.46	3	3.56	
890515 u	05/15/89	0.45	3	3.44	
890516 u	05/16/89	0.43	3	3.20	
890517 u	05/17/89	0.42	3	3.08	
890518 u	05/18/89	0.41	3	2.97	
890519 u	05/19/89	0.4	3	2.86	
890520 u	05/20/89	0.39	3	2.75	
890521 u	05/21/89	0.38	3	2.64	
890522 u	05/22/89	0.38	3	2.64	
890523 u	05/23/89	0.38	3	2.64	
890524 u	05/24/89	0.38	3	2.64	
890525 u	05/25/89	0.38	3	2.64	
890526 u	05/26/89	0.37	3	2.53	
890527 u	05/27/89	0.36	3	2.42	
890528 u	05/28/89	0.36	3	2.42	
890529 u	05/29/89	0.36	3	2.42	
890530 u	05/30/89	0.36	3	2.42	
890531 u	05/31/89	0.35	3	2.32	
890601 u	06/01/89	0.36	3	2.42	
890602 u	06/02/89	0.34	3	2.22	
890603 u	06/03/89	0.34	3	2.22	
890604 u	06/04/89	0.34	3	2.22	
890605 u	06/05/89	0.33	3	2.11	

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CRANDALL CREEK – LOWER FLUME

	DATE	HEIGHT(ft)	WIDTH(ft)	DISCHARGE(cfs)	GPM
8906006 u	06/06/89	0.33	3	2.11	
8906007 u	06/07/89	0.33	3	2.11	
8906008 u	06/08/89	0.31	3	1.92	861.7
8906009 u	06/09/89	0.33	3	2.11	
8906010 u	06/10/89	0.33	3	2.11	
8906011 u	06/11/89	0.32	3	2.01	
8906012 u	06/12/89	0.31	3	1.92	
8906013 u	06/13/89	0.31	3	1.92	
8906014 u	06/14/89	0.3	3	1.82	816.8
8906015 u	06/15/89	0.29	3	1.73	776.4
8906016 u	06/16/89	0.28	3	1.63	731.5
8906017 u	06/17/89	0.28	3	1.63	
8906018 u	06/18/89	0.27	3	1.54	691.2
8906019 u	06/19/89	0.27	3	1.54	
8906020 u	06/20/89	0.27	3	1.54	
8906021 u	06/21/89	0.26	3	1.46	1055.25
8909787 2	→ 06/22/89	0.26	3	1.46	
8906023 u	06/23/89	0.26	3	1.46	
8906024 u	06/24/89	0.26	3	1.46	
8906025 u	06/25/89	0.26	3	1.46	
8906026 u	06/26/89	0.26	3	1.46	
8906027 u	06/27/89	0.25	3	1.37	614.86
8906028 u	06/28/89	0.24	3	1.28	574.46
8906029 u	06/29/89	0.24	3	1.28	
8906030 u	06/30/89	0.23	3	1.20	538.56
8907001 u	07/01/89	0.23	3	1.20	
	7/02/89 to 7/30/89	No Readings	3	0.00	
8907031 u	07/31/89	0.1	3	0.33	148.1
8908001 u	08/01/89	0.1	3	0.33	
8908002 u	08/02/89	0.1	3	0.33	
8908003 u	08/03/89	0.1	3	0.33	
8908004 u	08/04/89	0.1	3	0.33	
8908005 u	08/05/89	0.1	3	0.33	
8908006 u	08/06/89	0.1	3	0.33	
8908007 u	08/07/89	0.1	3	0.33	
8908008 u	08/08/89	0.1	3	0.33	
8908009 u	08/09/89	0.09	3	0.28	125.66
8908010 u	08/10/89	0.09	3	0.28	
8908011 u	08/11/89	0.09	3	0.28	
8908012 u	08/12/89	0.09	3	0.28	

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GPM

	CRANDALL CREEK–LOWER FLUME				
	DATE	HEIGHT(ft)	WIDTH(ft)	DISCHARGE(cfs)	
890813u	08/13/89	0.09	3	0.28	125.66
890814u	08/14/89	0.09	3	0.28	
890815u	08/15/89	0.09	3	0.28	
890816u	08/16/89	0.09	3	0.28	
890817u	08/17/89	0.09	3	0.28	
890818u	08/18/89	0.09	3	0.28	
890819u	08/19/89	0.09	3	0.28	
890820u	08/20/89	0.09	3	0.28	
890821u	08/21/89	0.09	3	0.28	
890822u	08/22/89	0.09	3	0.28	
890823u	08/23/89	0.09	3	0.28	
890824u	08/24/89	0.09	3	0.28	
890825u	08/25/89	0.09	3	0.28	
890826u	08/26/89	0.09	3	0.28	
890827u	08/27/89	0.09	3	0.28	
890828u	08/28/89	0.09	3	0.28	
890829u	08/29/89	0.09	3	0.28	
890830u	08/30/89	0.09	3	0.28	
890831u	08/31/89	0.09	3	0.28	
890901u	09/01/89	0.09	3	0.28	
890902u	09/02/89	0.09	3	0.28	
890903u	09/03/89	0.09	3	0.28	
890904u	09/04/89	0.09	3	0.28	
890905u	09/05/89	0.09	3	0.28	
890906u	09/06/89	0.09	3	0.28	
890907u	09/07/89	0.09	3	0.28	
890908u	09/08/89	0.09	3	0.28	
890909u	09/09/89	0.09	3	0.28	
890910u	09/10/89	0.09	3	0.28	
890911u	09/11/89	0.09	3	0.28	
890912u	09/12/89	0.09	3	0.28	
890913u	09/13/89	0.09	3	0.28	
890914u	09/14/89	0.09	3	0.28	
890915u	09/15/89	0.09	3	0.28	
890916u	09/16/89	0.09	3	0.28	
890917u	09/17/89	0.09	3	0.28	
890918u	09/18/89	0.09	3	0.28	
890919u	09/19/89	0.09	3	0.28	
890920u	09/20/89	0.09	3	0.28	
890921u	09/21/89	0.09	3	0.28	

Syn. Lab #

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GPM

CRANDALL CREEK–LOWER FLUME

Syn. Lab #	DATE	HEIGHT(ft)	WIDTH(ft)	DISCHARGE(cfs)	GPM
890922 u	09/22/89	0.09	3	0.28	125.66
890923 u	09/23/89	0.09	3	0.28	
890924 u	09/24/89	0.09	3	0.28	
890925 u	09/25/89	0.08	3	0.23	103.2
890926 u	09/26/89	0.08	3	0.23	
890927 u	09/27/89	0.08	3	0.23	
8910048 g	09/28/89	0.08	3	0.23	
890929 u	09/29/89	0.08	3	0.23	
890930 u	09/30/89	0.08	3	0.23	
891001 u	10/01/89	0.08	3	0.23	
891002 u	10/02/89	0.08	3	0.23	
	10/03/89 to 4/01/90	Frozen	3	0.00	
900402 u	04/02/90	0.15	3	0.61	273.8
900403 u	04/03/90	0.15	3	0.61	
900404 u	04/04/90	0.15	3	0.61	
900405 u	04/05/90	0.15	3	0.61	
900406 u	04/06/90	0.15	3	0.61	
900407 u	04/07/90	0.15	3	0.61	
900408 u	04/08/90	0.15	3	0.61	
900409 u	04/09/90	0.15	3	0.61	
900410 u	04/10/90	0.15	3	0.61	
900411 u	04/11/90	0.15	3	0.61	
900412 u	04/12/90	0.17	3	0.75	336.6
900413 u	04/13/90	0.17	3	0.75	
900414 u	04/14/90	0.18	3	0.82	368.0
900415 u	04/15/90	0.17	3	0.75	
900416 u	04/16/90	0.17	3	0.75	
900417 u	04/17/90	0.17	3	0.75	
900418 u	04/18/90	0.16	3	0.68	305.2
900419 u	04/19/90	0.16	3	0.68	
900420 u	04/20/90	0.17	3	0.75	
900421 u	04/21/90	0.17	3	0.75	
900422 u	04/22/90	0.17	3	0.75	
900423 u	04/23/90	0.17	3	0.75	
900424 u	04/24/90	0.18	3	0.82	
900425 u	04/25/90	0.17	3	0.75	
900426 u	04/26/90	0.17	3	0.75	
900427 u	04/27/90	0.17	3	0.75	
900428 u	04/28/90	0.17	3	0.75	
900429 u	04/29/90	0.18	3	0.82	

10-03-89 891003 u - Frozen

11-89 8911 u - Frozen

12-18-89 8910215 g

01-30-90 9010264 g

02-90 9002 u - Frozen

03-90 9003 u - Frozen

04-01-90 900401 u - Frozen

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CRANDALL CREEK–LOWER FLUME

	DATE	HEIGHT(ft)	WIDTH(ft)	DISCHARGE(cfs)	GPM
900430 u	04/30/90	0.17	3	0.75	336.6
900501 u	05/01/90	0.16	3	0.68	305.2
900502 u	05/02/90	0.15	3	0.61	273.8
900503 u	05/03/90	0.22	3	1.12	502.7
900504 u	05/04/90	0.22	3	1.12	
900505 u	05/05/90	0.22	3	1.12	
900506 u	05/06/90	0.22	3	1.12	
900507 u	05/07/90	0.23	3	1.20	538.6
900508 u	05/08/90	0.26	3	1.46	655.2
900509 u	05/09/90	0.25	3	1.37	614.9
900510 u	05/10/90	0.26	3	1.46	
900511 u	05/11/90	0.25	3	1.37	
900512 u	05/12/90	0.25	3	1.37	
900513 u	05/13/90	0.25	3	1.37	
900514 u	05/14/90	0.25	3	1.37	
900515 u	05/15/90	0.23	3	1.20	
900516 u	05/16/90	0.23	3	1.20	
900517 u	05/17/90	0.23	3	1.20	
900518 u	05/18/90	0.23	3	1.20	
900519 u	05/19/90	0.25	3	1.37	
900520 u	05/20/90	0.26	3	1.46	
900521 u	05/21/90	0.27	3	1.54	691.2
900522 u	05/22/90	0.28	3	1.63	731.5
900523 u	05/23/90	0.28	3	1.63	
900524 u	05/24/90	0.3	3	1.82	816.8
900525 u	05/25/90	0.31	3	1.92	861.7
900526 u	05/26/90	0.33	3	2.11	
900527 u	05/27/90	0.34	3	2.22	
900528 u	05/28/90	0.34	3	2.22	
900529 u	05/29/90	0.34	3	2.22	
900530 u	05/30/90	0.33	3	2.11	
900531 u	05/31/90	0.36	3	2.42	
900601 u	06/01/90	0.36	3	2.42	
900602 u	06/02/90	0.34	3	2.22	
900603 u	06/03/90	0.35	3	2.32	
900604 u	06/04/90	0.34	3	2.22	
900605 u	06/05/90	0.34	3	2.22	
900606 u	06/06/90	0.33	3	2.11	
900607 u	06/07/90	0.33	3	2.11	
900608 u	06/08/90	0.33	3	2.11	

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	CRANDALL CREEK–LOWER FLUME				
	DATE	HEIGHT(ft)	WIDTH(ft)	DISCHARGE(cfs)	
900609 u	06/09/90	0.34	3	2.22	
900610 u	06/10/90	0.39	3	2.75	
900611 u	06/11/90	0.4	3	2.86	
900612 u	06/12/90	0.37	3	2.53	
900613 u	06/13/90	0.36	3	2.42	
900614 u	06/14/90	0.35	3	2.32	
900615 u	06/15/90	0.35	3	2.32	
900616 u	06/16/90	0.33	3	2.11	
900617 u	06/17/90	0.33	3	2.11	
900618 u	06/18/90	0.32	3	2.01	
900619 u	06/19/90	0.31	3	1.92	861.7
900620 u	06/20/90	0.31	3	1.92	
900621 u	06/21/90	0.3	3	1.82	816.8
900622 u	06/22/90	0.29	3	1.73	776.4
900623 u	06/23/90	0.29	3	1.73	
900624 u	06/24/90	0.29	3	1.73	
900625 u	06/25/90	0.28	3	1.63	731.5
900626 u	06/26/90	0.27	3	1.54	691.2
900627 u	06/27/90	0.26	3	1.46	655.2
900628 u	06/28/90	0.26	3	1.46	
900629 u	06/29/90	0.26	3	1.46	
900630 u	06/30/90	0.24	3	1.28	574.5
900701 u	07/01/90	0.24	3	1.28	
900702 u	07/02/90	0.24	3	1.28	
900703 u	07/03/90	0.24	3	1.28	
900704 u	07/04/90	0.23	3	1.20	538.6
900705 u	07/05/90	0.22	3	1.12	502.7
900706 u	07/06/90	0.21	3	1.04	466.8
900707 u	07/07/90	0.21	3	1.04	
900708 u	07/08/90	0.22	3	1.12	502.7
900709 u	07/09/90	0.21	3	1.04	
900710 u	07/10/90	0.18	3	0.82	368.0
900711 u	07/11/90	0.27	3	1.54	
900712 u	07/12/90	0.21	3	1.04	
900713 u	07/13/90	0.18	3	0.82	
900714 u	07/14/90	0.17	3	0.75	336.6
900715 u	07/15/90	0.15	3	0.61	273.8
900716 u	07/16/90	0.15	3	0.61	
900717 u	07/17/90	0.14	3	0.55	246.8
900718 u	07/18/90	0.14	3	0.55	

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	CRANDALL CREEK–LOWER FLUME				
	DATE	HEIGHT(ft)	WIDTH(ft)	DISCHARGE(cfs)	
900719 u	07/19/90	0.13	3	0.49	219.9
900720 u	07/20/90	0.13	3	0.49	
900721 u	07/21/90	0.14	3	0.55	246.8
900722 u	07/22/90	0.14	3	0.55	
900723 u	07/23/90	0.12	3	0.43	193.0
9010523 2	07/24/90	0.12	3	0.43	
900725 u	07/25/90	0.12	3	0.43	
900726 u	07/26/90	0.12	3	0.43	
900727 u	07/27/90	0.12	3	0.43	
900728 u	07/28/90	0.12	3	0.43	
900729 u	07/29/90	0.12	3	0.43	
900730 u	07/30/90	0.12	3	0.43	
900731 u	07/31/90	0.12	3	0.43	
900801 u	08/01/90	0.12	3	0.43	
900802 u	08/02/90	0.12	3	0.43	
900803 u	08/03/90	0.11	3	0.38	170.5
900804 u	08/04/90	0.1	3	0.33	148.1
900805 u	08/05/90	0.1	3	0.33	
900806 u	08/06/90	0.1	3	0.33	
900807 u	08/07/90	0.1	3	0.33	
900808 u	08/08/90	0.1	3	0.33	
900809 u	08/09/90	0.1	3	0.33	
900810 u	08/10/90	0.1	3	0.33	
900811 u	08/11/90	0.1	3	0.33	
900812 u	08/12/90	0.1	3	0.33	
900813 u	08/13/90	0.1	3	0.33	
900814 u	08/14/90	0.1	3	0.33	
900815 u	08/15/90	0.1	3	0.33	
900816 u	08/16/90	0.1	3	0.33	
900817 u	08/17/90	0.1	3	0.33	
900818 u	08/18/90	0.1	3	0.33	
900819 u	08/19/90	0.1	3	0.33	
900820 u	08/20/90	0.1	3	0.33	
900821 u	08/21/90	0.1	3	0.33	
900822 u	08/22/90	0.1	3	0.33	
900823 u	08/23/90	0.1	3	0.33	
900824 u	08/24/90	0.1	3	0.33	
900825 u	08/25/90	0.1	3	0.33	
900826 u	08/26/90	0.1	3	0.33	
900827 u	08/27/90	0.1	3	0.33	

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CRANDALL CREEK–LOWER FLUME

	DATE	HEIGHT(ft)	WIDTH(ft)	DISCHARGE(cfs)	
900828u	08/28/90	0.1	3	0.33	148.1
900829u	08/29/90	0.1	3	0.33	
900830u	08/30/90	0.09	3	0.28	125.7
900831u	08/31/90	0.09	3	0.28	
900901u	09/01/90	0.09	3	0.28	
900902u	09/02/90	0.09	3	0.28	
900903u	09/03/90	0.09	3	0.28	
900904u	09/04/90	0.1	3	0.33	
900905u	09/05/90	0.11	3	0.38	170.5
900906u	09/06/90	0.11	3	0.38	
900907u	09/07/90	0.11	3	0.38	
900908u	09/08/90	0.11	3	0.38	
900909u	09/09/90	0.11	3	0.38	
900910u	09/10/90	0.1	3	0.33	
900911u	09/11/90	0.1	3	0.33	
900912u	09/12/90	0.1	3	0.33	
900913u	09/13/90	0.09	3	0.28	
900914u	09/14/90	0.09	3	0.28	
900915u	09/15/90	0.09	3	0.28	
900916u	09/16/90	0.09	3	0.28	
900917u	09/17/90	0.09	3	0.28	
900918u	09/18/90	0.09	3	0.28	
900919u	09/19/90	0.09	3	0.28	
900920u	09/20/90	0.09	3	0.28	
900921u	09/21/90	0.09	3	0.28	
900922u	09/22/90	0.09	3	0.28	
900923u	09/23/90	0.09	3	0.28	
900924u	09/24/90	0.09	3	0.28	
900925u	09/25/90	0.09	3	0.28	
900926u	09/26/90	0.09	3	0.28	
900927u	09/27/90	0.09	3	0.28	
900928u	09/28/90	0.08	3	0.23	103.2
900929u	09/29/90	0.08	3	0.23	
900930u	09/30/90	0.08	3	0.23	
	10/1/90 to 6/27/91	Frozen	3	0.00	
910628u	06/28/91	0.47	3	3.68	
910629u	06/29/91	0.46	3	3.56	
910630u	06/30/91	0.43	3	3.20	
910701u	07/01/91	0.42	3	3.08	
910702u	07/02/91	0.4	3	2.86	

10-1-90 9010662 g

11-21-90 90506974 U

12-00-90 9012 u Frozen

01-14-91 9110920 g (04)

01-14-91 9110922 g (04)

04-04-91 9111106 g (04)

01-12-91 121502 u (20)

02-00-91 9102 u (11)

03-00-91 9103 u (11)

05-00-91 9105 u (11)

06-27-91 910627 u (11)

	CRANDALL CREEK–LOWER FLUME				
	DATE	HEIGHT(ft)	WIDTH(ft)	DISCHARGE(cfs)	GPM
910703 u	07/03/91	0.38	3	2.64	
910704 u	07/04/91	0.37	3	2.53	
910705 u	07/05/91	0.36	3	2.42	
910706 u	07/06/91	0.34	3	2.22	
910707 u	07/07/91	0.32	3	2.01	
910708 u	07/08/91	0.4	3	2.86	
910709 u	07/09/91	0.42	3	3.08	
910710 u	07/10/91	0.34	3	2.22	
910711 u	07/11/91	0.6	3	5.39	
910712 u	07/12/91	0.31	3	1.92	861.7
910713 u	07/13/91	0.29	3	1.73	776.4
910714 u	07/14/91	0.28	3	1.63	731.5
910715 u	07/15/91	0.27	3	1.54	691.2
910716 u	07/16/91	0.26	3	1.46	655.2
910717 u	07/17/91	0.26	3	1.46	
910718 u	07/18/91	0.26	3	1.46	
910719 u	07/19/91	0.25	3	1.37	614.9
910720 u	07/20/91	0.25	3	1.37	
9111390 g	07/21/91	0.25	3	1.37	
910722 u	07/22/91	0.23	3	1.20	538.6
910723 u	07/23/91	0.23	3	1.20	
910724 u	07/24/91	0.23	3	1.20	
910725 u	07/25/91	0.23	3	1.20	
910726 u	07/26/91	0.22	3	1.12	502.7
910727 u	07/27/91	0.24	3	1.28	574.5
910728 u	07/28/91	0.23	3	1.20	
910729 u	07/29/91	0.22	3	1.12	
910730 u	07/30/91	0.21	3	1.04	466.8
910731 u	07/31/91	0.2	3	0.96	430.8
910801 u	08/01/91	0.2	3	0.96	
910802 u	08/02/91	0.2	3	0.96	
910803 u	08/03/91	0.22	3	1.12	
910804 u	08/04/91	0.2	3	0.96	
910805 u	08/05/91	0.21	3	1.04	
910806 u	08/06/91	0.21	3	1.04	
910807 u	08/07/91	0.23	3	1.20	
910808 u	08/08/91	0.19	3	0.89	399.4
910809 u	08/09/91	0.19	3	0.89	
910810 u	08/10/91	0.19	3	0.89	
910811 u	08/11/91	0.19	3	0.89	

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CRANDALL CREEK–LOWER FLUME

	DATE	HEIGHT(ft)	WIDTH(ft)	DISCHARGE(cfs)	
910812 u	08/12/91	0.19	3	0.89	399.4
910813 u	08/13/91	0.18	3	0.82	368.0
910814 u	08/14/91	0.18	3	0.82	
910815 u	08/15/91	0.18	3	0.82	
910816 u	08/16/91	0.18	3	0.82	
910817 u	08/17/91	0.18	3	0.82	
910818 u	08/18/91	0.18	3	0.82	
910819 u	08/19/91	0.18	3	0.82	
910820 u	08/20/91	0.18	3	0.82	
910821 u	08/21/91	0.17	3	0.75	336.6
910822 u	08/22/91	0.17	3	0.75	
910823 u	08/23/91	0.17	3	0.75	
910824 u	08/24/91	0.17	3	0.75	
910825 u	08/25/91	0.17	3	0.75	
910826 u	08/26/91	0.17	3	0.75	
910827 u	08/27/91	0.17	3	0.75	
Turbidity only 881502 u	→ 08/28/91	0.16	3	0.68	305.2
910829 u	08/29/91	0.24	3	1.28	574.5
910830 u	08/30/91	0.16	3	0.68	305.2
910831 u	08/31/91	0.16	3	0.68	
910901 u	09/01/91	0.16	3	0.68	
910902 u	09/02/91	0.16	3	0.68	
910903 u	09/03/91	0.15	3	0.61	273.8
910904 u	09/04/91	0.15	3	0.61	
910905 u	09/05/91	0.15	3	0.61	
910906 u	09/06/91	0.21	3	1.04	460.8
910907 u	09/07/91	0.18	3	0.82	
910908 u	09/08/91	0.15	3	0.61	
910909 u	09/09/91	0.15	3	0.61	
9109100 u	09/10/91	0.14	3	0.55	246.8
9109110 u	09/11/91	0.23	3	1.20	538.6
9109120 u	09/12/91	0.14	3	0.55	
910913 u	09/13/91	0.17	3	0.75	
910914 u	09/14/91	0.14	3	0.55	
910915 u	09/15/91	0.14	3	0.55	
910916 u	09/16/91	0.14	3	0.55	
910917 u	09/17/91	0.14	3	0.55	
910918 u	09/18/91	0.14	3	0.55	
910919 u	09/19/91	0.14	3	0.55	
9109200 u	09/20/91	0.13	3	0.49	219.9

10-11-91 9111612 q (04)
10-11-91 1011502 u (04) Turbidity only
10-03-91 911003 u (11)
11-00-91 9111 u (11)
12-00-91 9112 u (11)

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03-08-92 9211916 q (04) (no field)
03-10-92 301502 u (11)
01-00-92 9201 u (11)
02-00-92 9202 u (11)
04-02-92 920402 u (11)

CRANDALL CREEK—LOWER FLUME

	DATE	HEIGHT(ft)	WIDTH(ft)	DISCHARGE(cfs)	GPM
9109210 u	09/21/91	0.13	3	0.49	219.9
9109220 u	09/22/91	0.13	3	0.49	
9109230 u	09/23/91	0.13	3	0.49	
9109240 u	09/24/91	0.13	3	0.49	
9109250 u	09/25/91	0.13	3	0.49	
9109260 u	09/26/91	0.13	3	0.49	
910927 u	09/27/91	0.13	3	0.49	
910928 u	09/28/91	0.13	3	0.49	
910929 u	09/29/91	0.12	3	0.43	193.0
910930 u	09/30/91	0.12	3	0.43	
911001 u	10/01/91	0.12	3	0.43	
911002 u	10/02/91	0.12	3	0.43	
	10/03/91 to 04/02/92	Frozen	3	0.00	
920403 u	04/03/92	Dry	3	0.00	
920404 u	04/04/92	Dry	3	0.00	
920405 u	04/05/92	Dry	3	0.00	
920406 u	04/06/92	Dry	3	0.00	
920407 u	04/07/92	Dry	3	0.00	
920408 u	04/08/92	Dry	3	0.00	
920409 u	04/09/92	Dry	3	0.00	
920410 u	04/10/92	Dry	3	0.00	
920411 u	04/11/92	0.02	3	0.03	13.5
920412 u	04/12/92	0.02	3	0.03	
920413 u	04/13/92	0.1	3	0.33	148.1
920414 u	04/14/92	0.1	3	0.33	
920415 u	04/15/92	Dry	3	0.00	
920416 u	04/16/92	Dry	3	0.00	
920417 u	04/17/92	0.1	3	0.33	
920418 u	04/18/92	0.1	3	0.33	
920419 u	04/19/92	0.05	3	0.11	49.4
920420 u	04/20/92	Dry	3	0.00	
920421 u	04/21/92	0.1	3	0.33	
920422 u	04/22/92	0.1	3	0.33	
920423 u	04/23/92	0.1	3	0.33	
920424 u	04/24/92	0.1	3	0.33	
920425 u	04/25/92	0.12	3	0.43	193.0
920426 u	04/26/92	0.15	3	0.61	273.8
920427 u	04/27/92	0.2	3	0.96	430.8
920428 u	04/28/92	0.22	3	1.12	502.7
920429 u	04/29/92	0.25	3	1.37	u14.9
920430 u	04/30/92	0.28	3	1.63	731.5
920501 u	05/01/92	0.25	3	1.37	u14.9
920502 u	05/02/92	0.29	3	1.73	776.4

	CRANDALL CREEK–LOWER FLUME				
	DATE	HEIGHT(ft)	WIDTH(ft)	DISCHARGE(cfs)	
920503 u	05/03/92	0.35	3	2.32	
920504 u	05/04/92	0.45	3	3.44	
920505 u	05/05/92	0.5	3	4.05	
920506 u	05/06/92	0.51	3	4.18	
920507 u	05/07/92	0.55	3	4.71	
920508 u	05/08/92	0.58	3	5.11	
920509 u	05/09/92	0.6	3	5.39	
920510 u	05/10/92	0.54	3	4.57	
920511 u	05/11/92	0.54	3	4.57	
920512 u	05/12/92	0.55	3	4.71	
920513 u	05/13/92	0.51	3	4.18	
920514 u	05/14/92	0.51	3	4.18	
920515 u	05/15/92	0.5	3	4.05	
920516 u	05/16/92	0.49	3	3.93	
920517 u	05/17/92	0.48	3	3.80	
920518 u	05/18/92	0.47	3	3.68	
920519 u	05/19/92	0.51	3	4.18	
920520 u	05/20/92	0.51	3	4.18	
920521 u	05/21/92	0.5	3	4.05	
920522 u	05/22/92	0.48	3	3.80	
920523 u	05/23/92	0.47	3	3.68	
920524 u	05/24/92	0.46	3	3.56	
920525 u	05/25/92	0.45	3	3.44	
920526 u	05/26/92	0.6	3	5.39	
920527 u	05/27/92	0.5	3	4.05	
920528 u	05/28/92	0.48	3	3.80	
920529 u	05/29/92	0.48	3	3.80	
920530 u	05/30/92	0.45	3	3.44	
920531 u	05/31/92	0.4	3	2.86	
920601 u	06/01/92	0.4	3	2.86	
920602 u	06/02/92	0.37	3	2.53	
920603 u	06/03/92	0.35	3	2.32	
920604 u	06/04/92	0.34	3	2.22	
920605 u	06/05/92	0.335	3	2.16	
920606 u	06/06/92	0.33	3	2.11	
920607 u	06/07/92	0.32	3	2.01	
920608 u	06/08/92	0.31	3	1.92	841.7
920609 u	06/09/92	0.3	3	1.82	816.8
920610 u	06/10/92	0.3	3	1.82	
920611 u	06/11/92	0.3	3	1.82	
920612 u	06/12/92	0.29	3	1.73	776.4
920613 u	06/13/92	0.28	3	1.63	731.5

06-18-92 9212169 q 13:30 (04)

		CRANDALL CREEK–LOWER FLUME				GPM
		DATE	HEIGHT(ft)	WIDTH(ft)	DISCHARGE(cfs)	
920614	u	06/14/92	0.27	3	1.54	691.2
920615	u	06/15/92	0.25	3	1.37	614.9
920616	u	06/16/92	0.23	3	1.20	538.6
920617	u	06/17/92	0.27	3	1.54	
9212168	q	06/18/92	(04) 0.24	3	1.28	574.5
920619	u	06/19/92	0.23	3	1.20	
920620	u	06/20/92	0.23	3	1.20	
920621	u	06/21/92	0.225	3	1.16	520.6
920622	u	06/22/92	0.225	3	1.16	
920623	u	06/23/92	0.22	3	1.12	502.7
920624	u	06/24/92	0.22	3	1.12	
920625	u	06/25/92	0.22	3	1.12	
920626	u	06/26/92	0.22	3	1.12	
920627	u	06/27/92	0.23	3	1.20	
920628	u	06/28/92	0.21	3	1.04	466.8
9212544	q	06/29/92	0.2	3	0.96	430.8
920630	u	06/30/92	0.19	3	0.89	399.4
920701	u	07/01/92	0.19	3	0.89	
920702	u	07/02/92	0.19	3	0.89	
920703	u	07/03/92	0.18	3	0.82	368.0
920704	u	07/04/92	0.18	3	0.82	
920705	u	07/05/92	0.18	3	0.82	
920706	u	07/06/92	0.18	3	0.82	
920707	u	07/07/92	0.18	3	0.82	
920708	u	07/08/92	0.18	3	0.82	
920709	u	07/09/92	0.17	3	0.75	336.6
920710	u	07/10/92	0.17	3	0.75	
920711	u	07/11/92	0.17	3	0.75	
920712	u	07/12/92	0.16	3	0.68	305.2
920713	u	07/13/92	0.16	3	0.68	
920714	u	07/14/92	0.16	3	0.68	
920715	u	07/15/92	0.16	3	0.68	
920716	u	07/16/92	0.16	3	0.68	
920717	u	07/17/92	0.16	3	0.68	
920718	u	07/18/92	0.15	3	0.61	273.8
920719	u	07/19/92	0.15	3	0.61	
920720	u	07/20/92	0.15	3	0.61	
920721	u	07/21/92	0.15	3	0.61	
920722	u	07/22/92	0.15	3	0.61	
920723	u	07/23/92	0.14	3	0.55	246.8
920724	u	07/24/92	0.14	3	0.55	
920725	u	07/25/92	0.14	3	0.55	

		CRANDALL CREEK–LOWER FLUME				GPM
		DATE	HEIGHT(ft)	WIDTH(ft)	DISCHARGE(cfs)	
920726	u	07/26/92	0.14	3	0.55	246.8
920727	u	07/27/92	0.14	3	0.55	
920728	u	07/28/92	0.14	3	0.55	
920729	u	07/29/92	0.14	3	0.55	
920730	u	07/30/92	0.14	3	0.55	
920731	u	07/31/92	0.14	3	0.55	
920801	u	08/01/92	0.14	3	0.55	
920802	u	08/02/92	0.14	3	0.55	
920803	u	08/03/92	0.14	3	0.55	
920804	u	08/04/92	0.14	3	0.55	
920805	u	08/05/92	0.14	3	0.55	
920806	u	08/06/92	0.14	3	0.55	
920807	u	08/07/92	0.14	3	0.55	
920808	u	08/08/92	0.14	3	0.55	
920809	u	08/09/92	0.14	3	0.55	
920810	u	08/10/92	0.14	3	0.55	
920811	u	08/11/92	0.14	3	0.55	
920812	u	08/12/92	0.13	3	0.49	219.9
920813	u	08/13/92	0.13	3	0.49	
920814	u	08/14/92	0.13	3	0.49	
920815	u	08/15/92	0.13	3	0.49	
920816	u	08/16/92	0.13	3	0.49	
920817	u	08/17/92	0.13	3	0.49	
920818	u	08/18/92	0.13	3	0.49	
920819	u	08/19/92	0.13	3	0.49	
920820	u	08/20/92	0.13	3	0.49	
920821	u	08/21/92	0.13	3	0.49	
920822	u	08/22/92	0.13	3	0.49	
920823	u	08/23/92	0.13	3	0.49	
920824	u	08/24/92	0.12	3	0.43	193.0
920825	u	08/25/92	0.12	3	0.43	
920826	u	08/26/92	0.12	3	0.43	
920827	u	08/27/92	0.12	3	0.43	
920828	u	08/28/92	0.12	3	0.43	
920829	u	08/29/92	0.12	3	0.43	
920830	u	08/30/92	0.12	3	0.43	
920831	u	08/31/92	0.12	3	0.43	
920901	u	09/01/92	0.12	3	0.43	
920902	u	09/02/92	0.11	3	0.38	170.5
920903	u	09/03/92	0.13	3	0.49	
920904	u	09/04/92	0.1	3	0.33	
920905	u	09/05/92	0.15	3	0.61	

	CRANDALL CREEK–LOWER FLUME				
	DATE	HEIGHT(ft)	WIDTH(ft)	DISCHARGE(cfs)	
920906 u	09/06/92	0.14	3	0.55	146.8
920907 u	09/07/92	0.14	3	0.55	
920908 u	09/08/92	0.13	3	0.49	219.9
920909 u	09/09/92	0.12	3	0.43	193.0
920910 u	09/10/92	0.12	3	0.43	
920911 u	09/11/92	0.1	3	0.33	148.1
920912 u	09/12/92	0.09	3	0.28	
920913 u	09/13/92	0.13	3	0.49	
920914 u	09/14/92	0.13	3	0.49	
920915 u	09/15/92	0.12	3	0.43	
920916 u	09/16/92	0.12	3	0.43	
920917 u	09/17/92	0.12	3	0.43	
920918 u	09/18/92	0.11	3	0.38	170.5
920919 u	09/19/92	0.11	3	0.38	
920920 u	09/20/92	0.12	3	0.43	
920921 u	09/21/92	0.11	3	0.38	
920922 u	09/22/92	0.11	3	0.38	
920923 u	09/23/92	0.12	3	0.43	
920924 u	09/24/92	0.1	3	0.33	
920925 u	09/25/92	0.11	3	0.38	
920926 u	09/26/92	0.12	3	0.43	
920927 u	09/27/92	0.12	3	0.43	
920928 u	09/28/92	0.08	3	0.23	103.2
920929 u	09/29/92	0.1	3	0.33	
920930 u	09/30/92	0.1	3	0.33	
921001 u	10/01/92	0.1	3	0.33	
	10/02/92 to 12/31/92	Frozen	3	0.00	

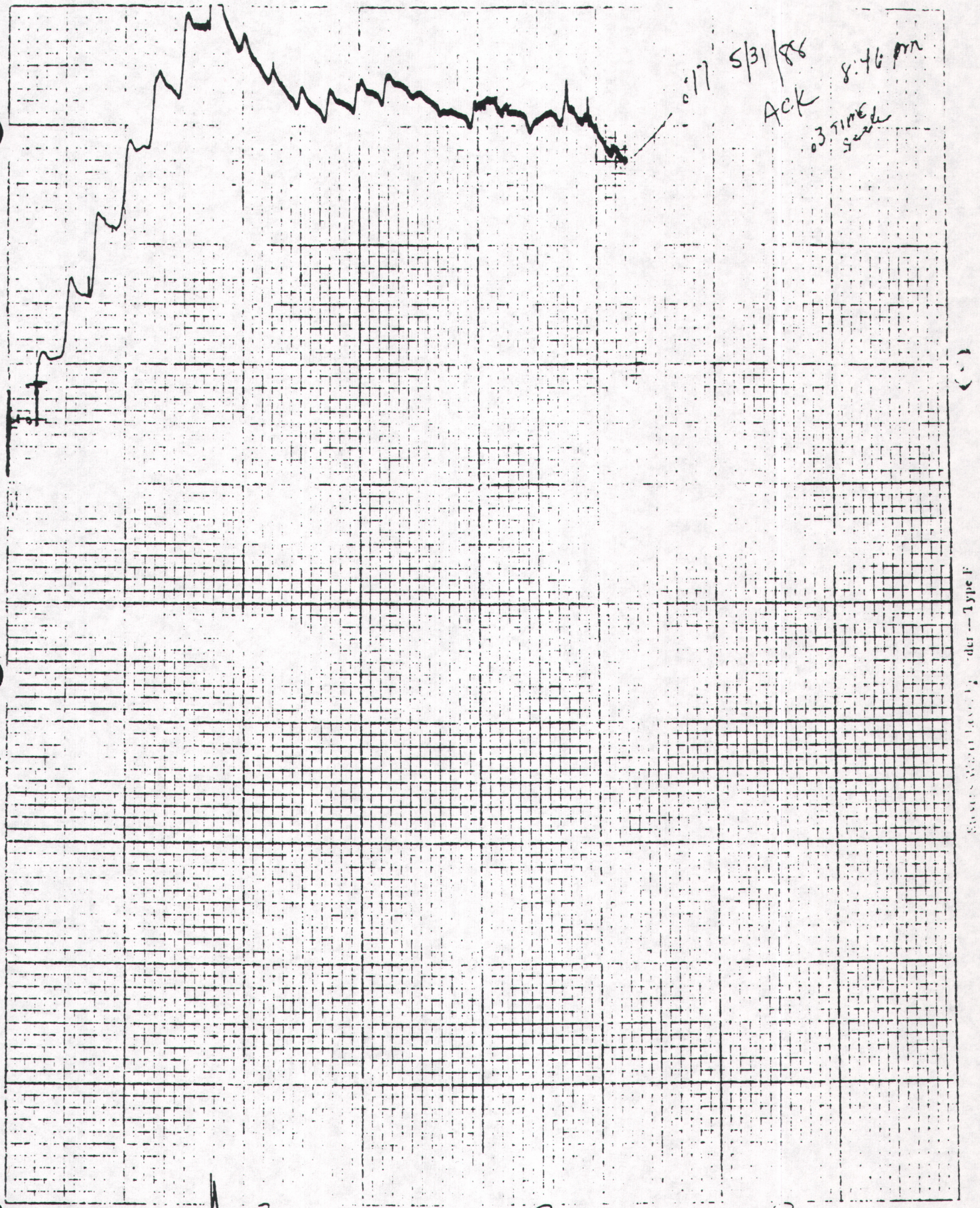
NOTE: From 09/02/92 through 10/01/92, approximately 135 gpm were pumped from above the lower Crandall Creek flume for 2 to 3 hours a day for use underground.

12-16-92 9212760 q (04)

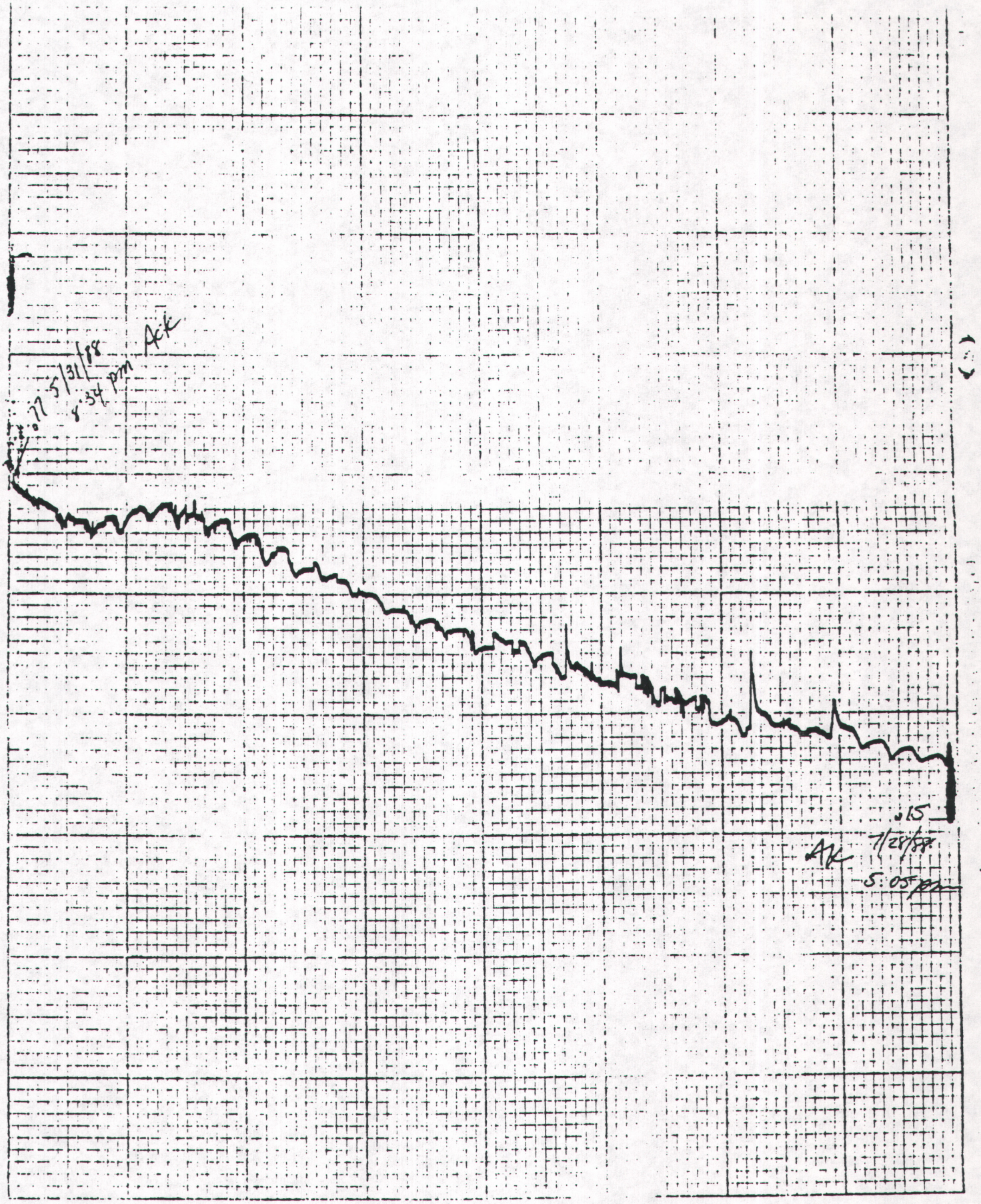
10-02-92 921002 u frozen (11)

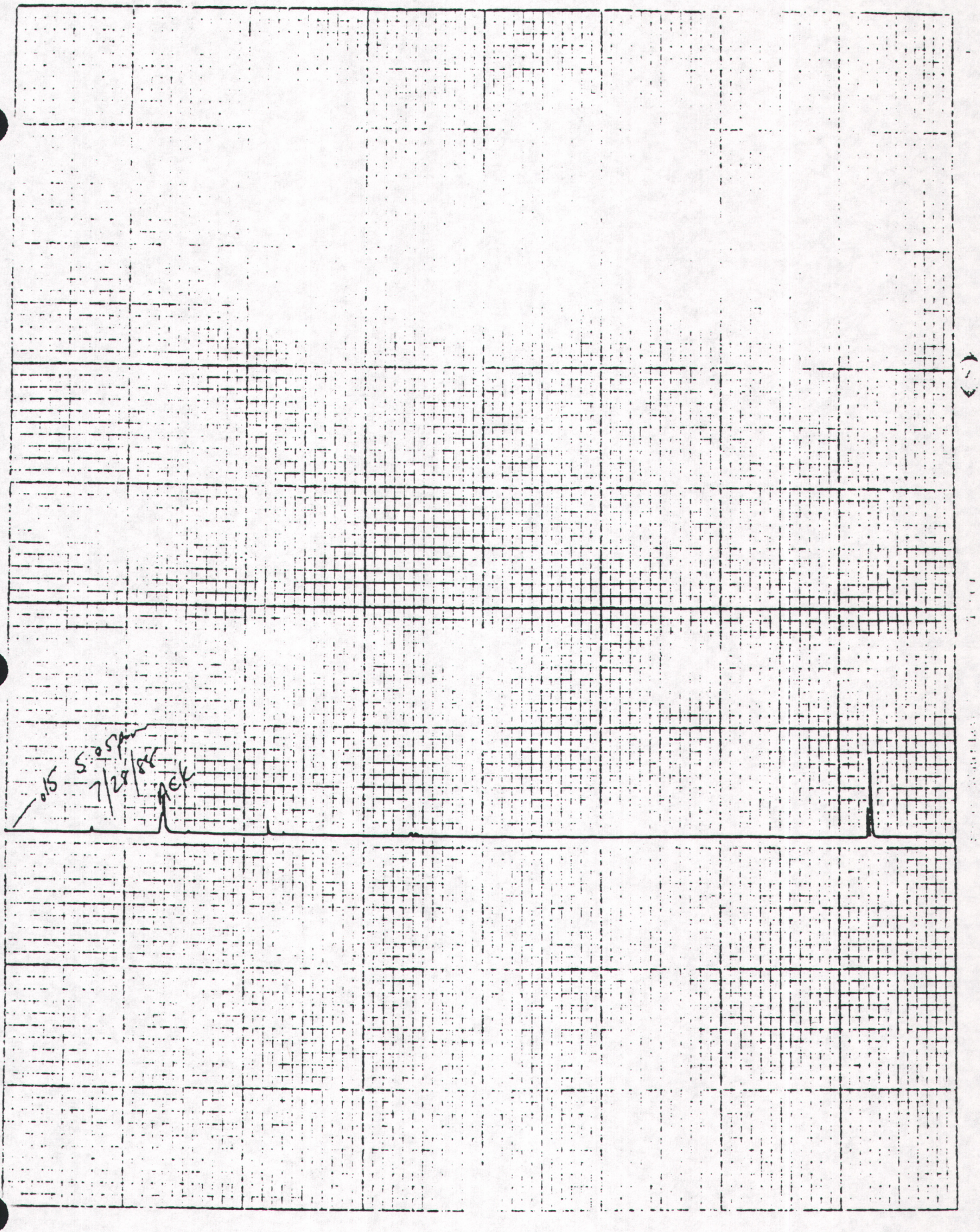
11-00-92 9211 u frozen (11)

12-31-92 921231 u frozen (11)

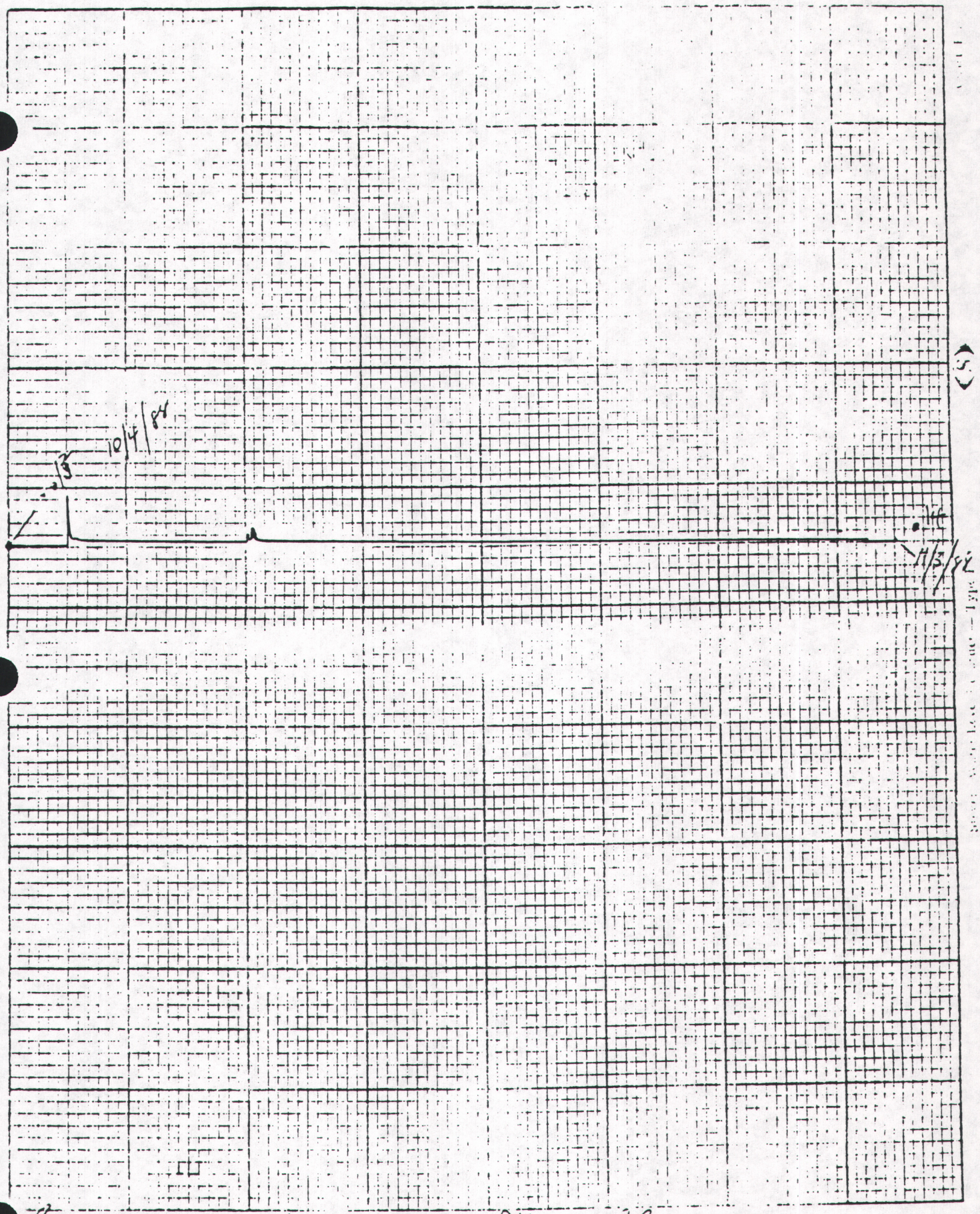


5-3-88 Lower 4:30 PM Recording 3

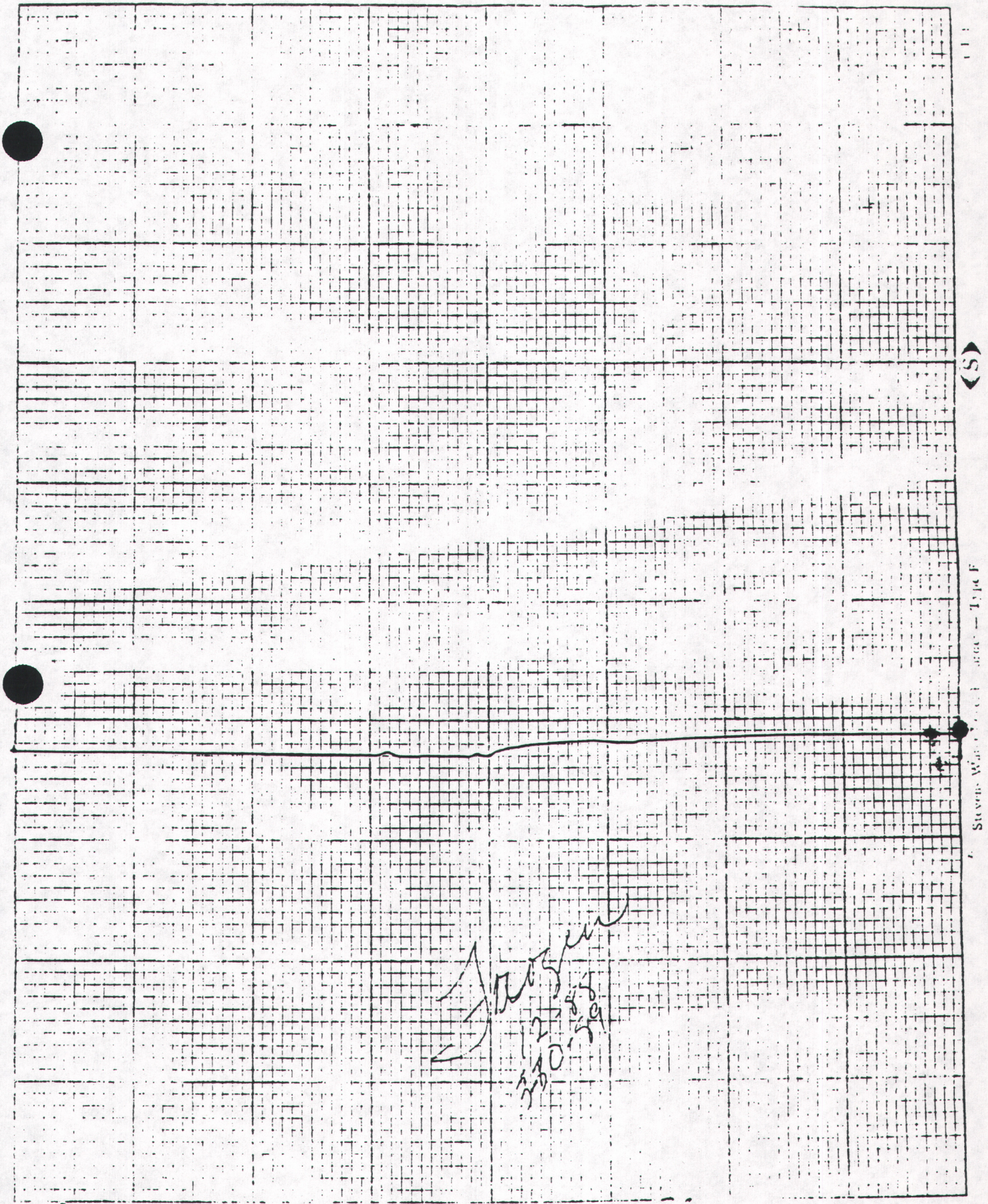

5/31/88
4:54 pm
AK
.15
7/28/88
5:05 pm
AK

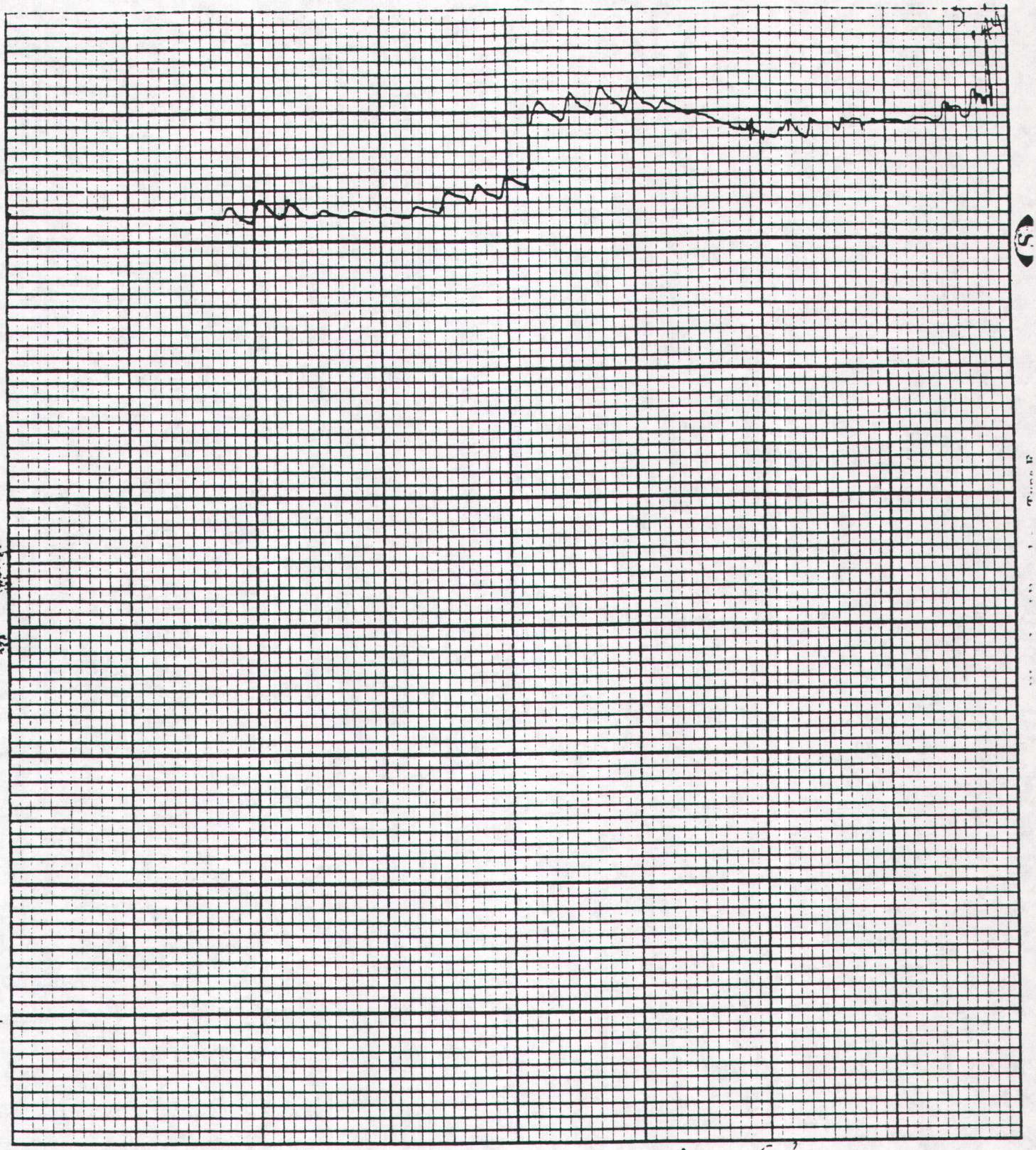


7-28-88 Lower

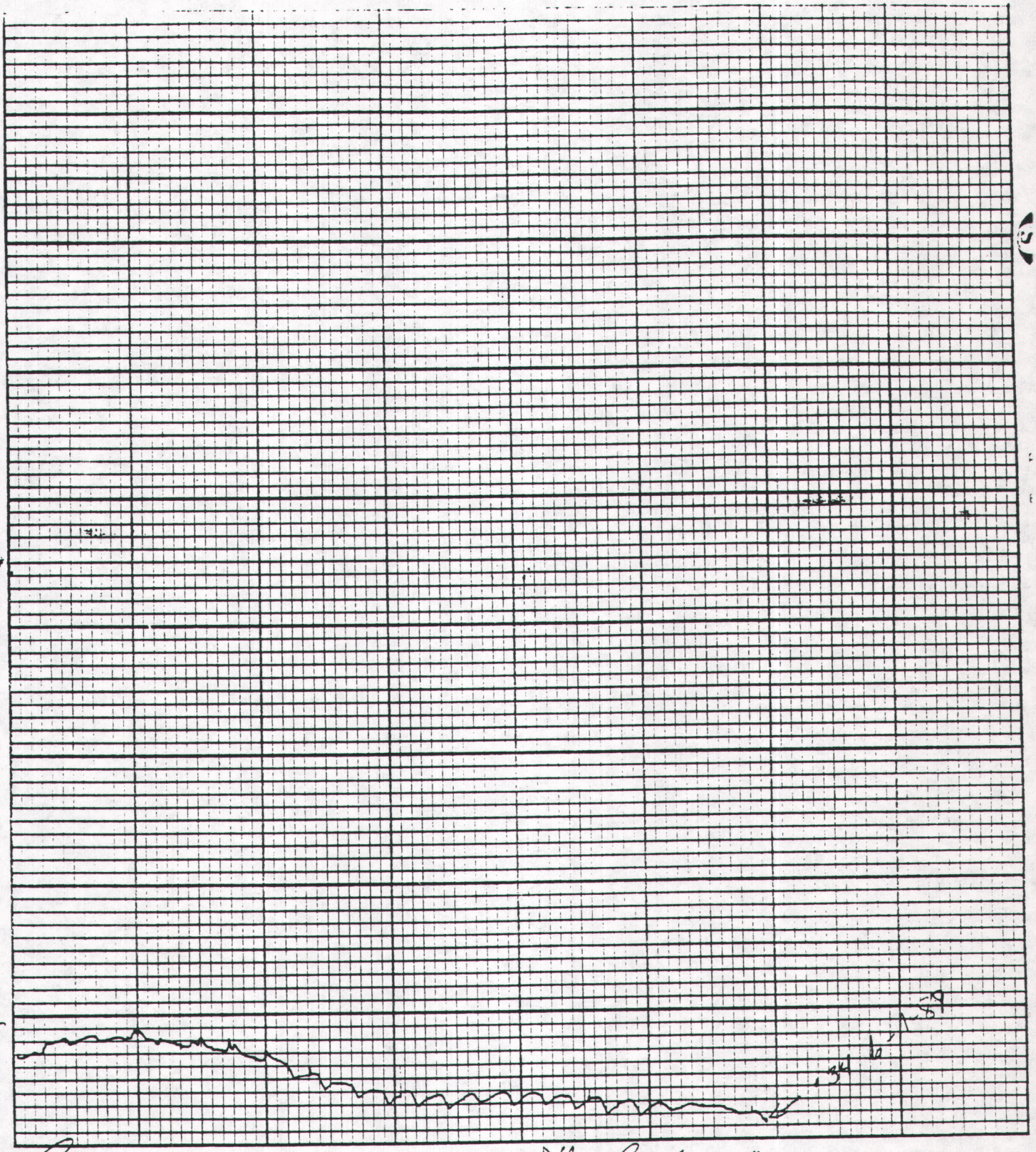


Power Reading 9-6-84 .05 330 P.M. L. Burnett


(S)
Steven Water Level Recorder — Type F

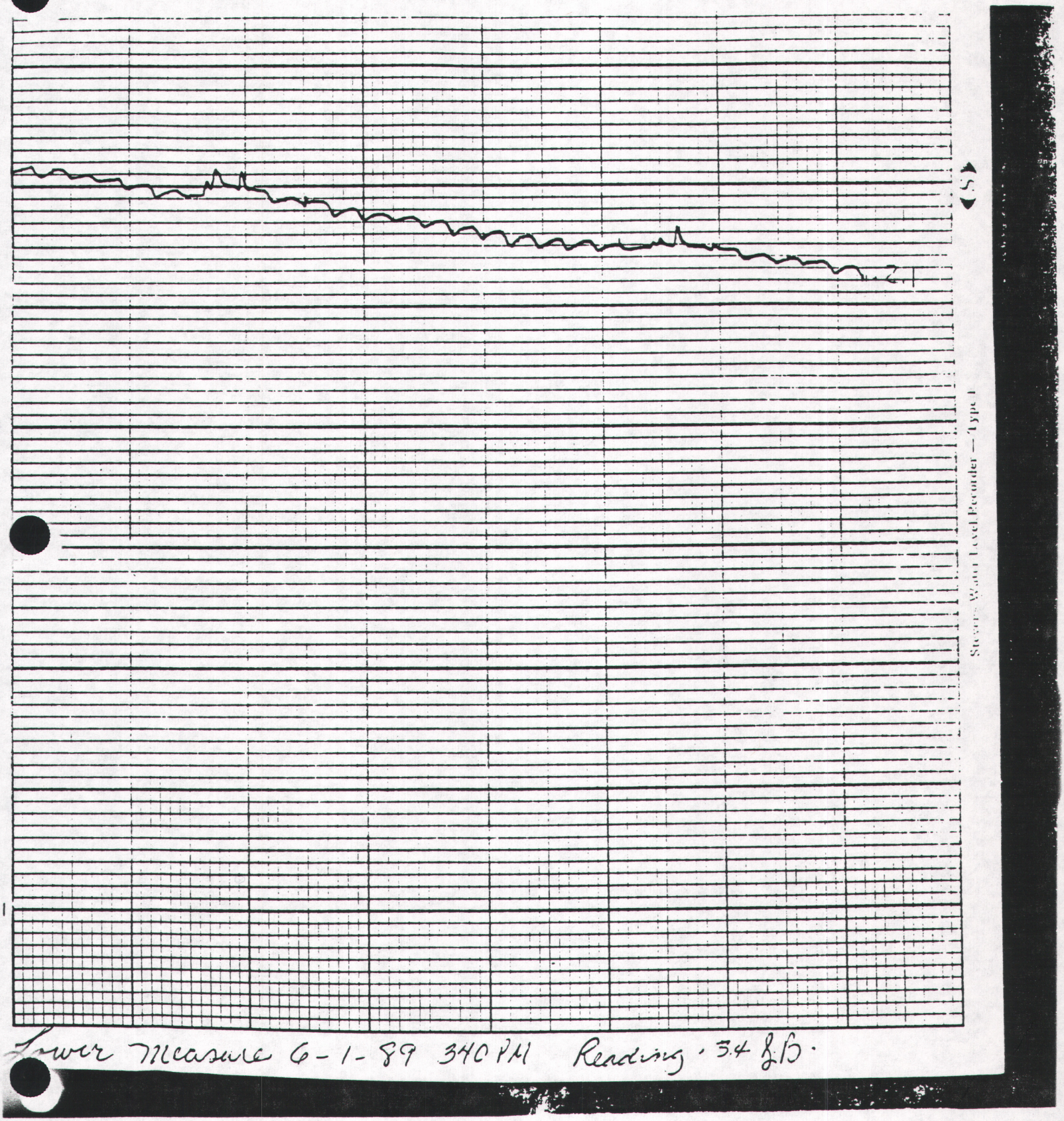


Lower Measure 4-1-89 Reading .18 3 P.M. F.15



Leupold & Stevens, Inc., Beaverton, Ore.

Lower Measure 5-8-89 310 P.M. Reading .44



Lower Measure 6-1-89 340 PM Reading · 3.4 ft.

30 days 2.633

22 days =

1.1

-79 58

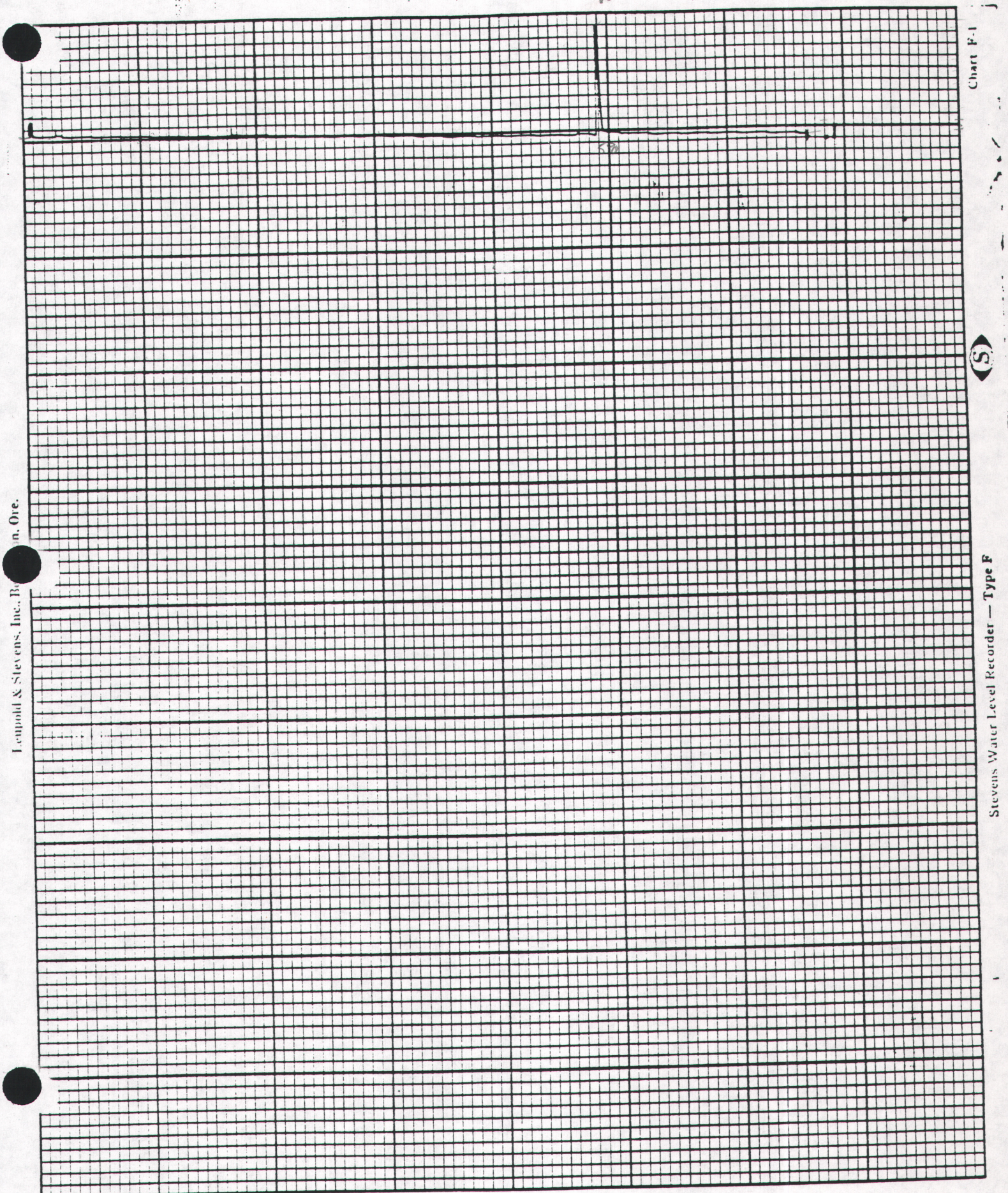
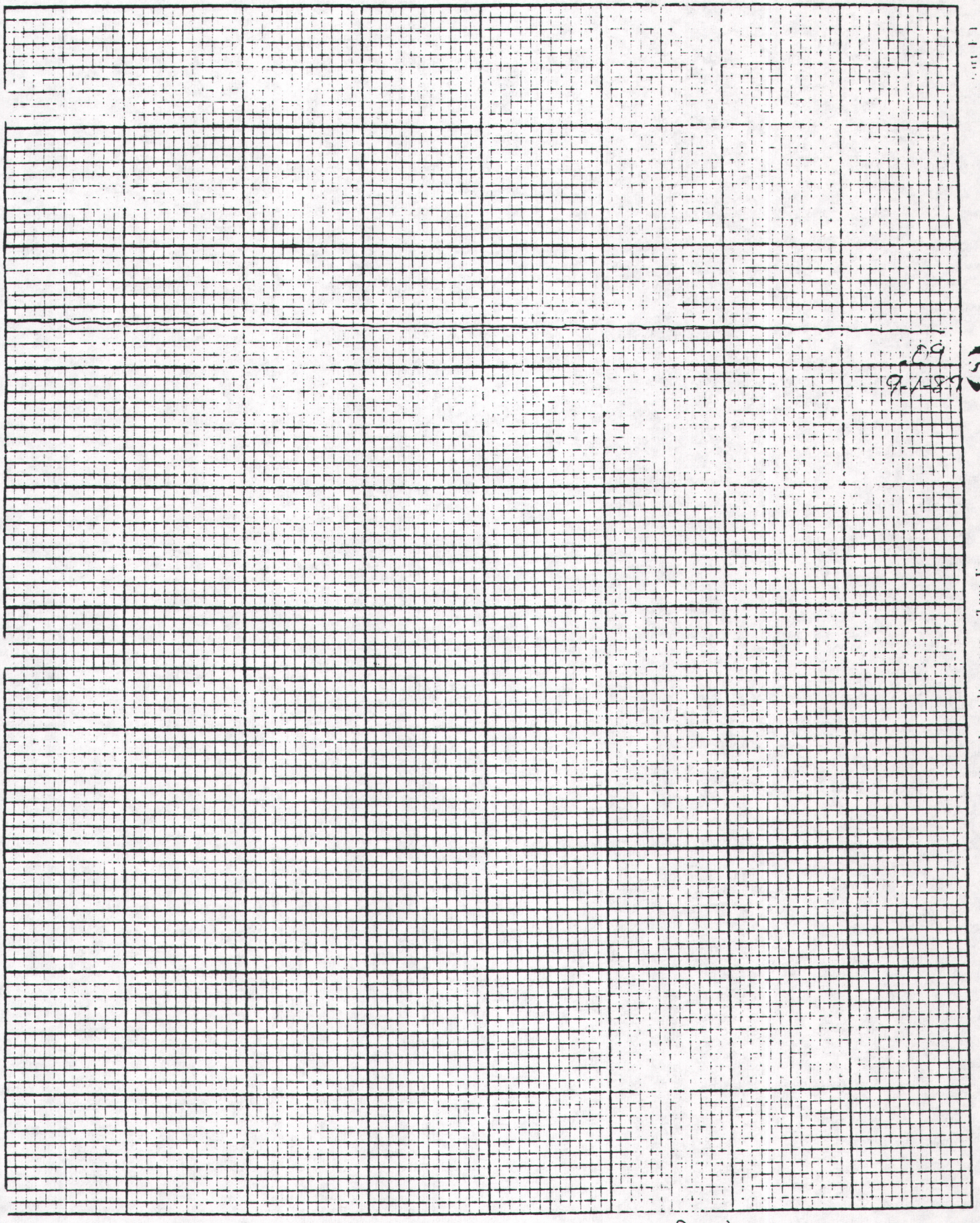


Chart F-1

Leupold & Stevens, Inc. Portland, Ore.

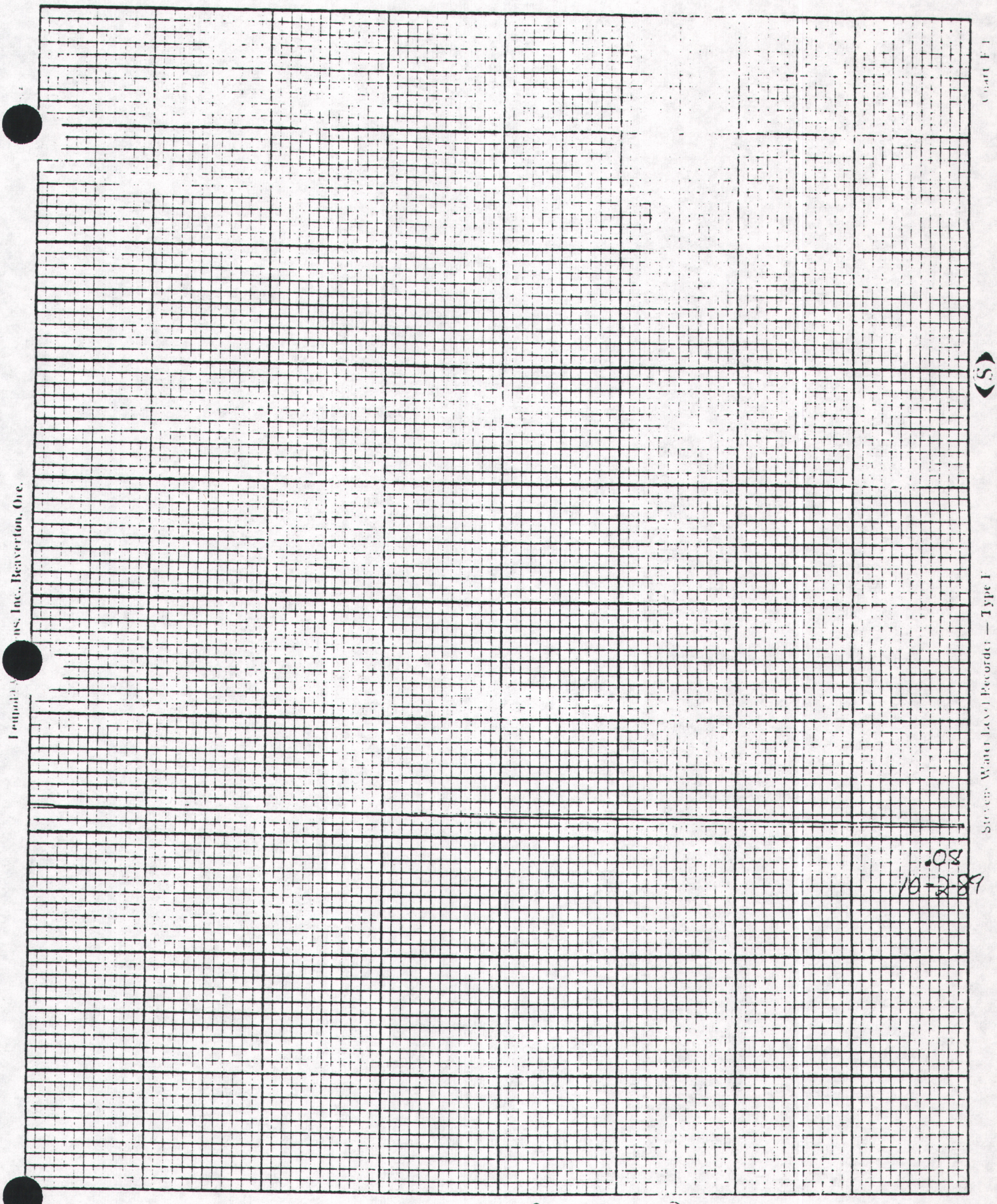
Stevens Water Level Recorder — Type F

Lower Measure 7-1-89 Reading ~~7~~ .21

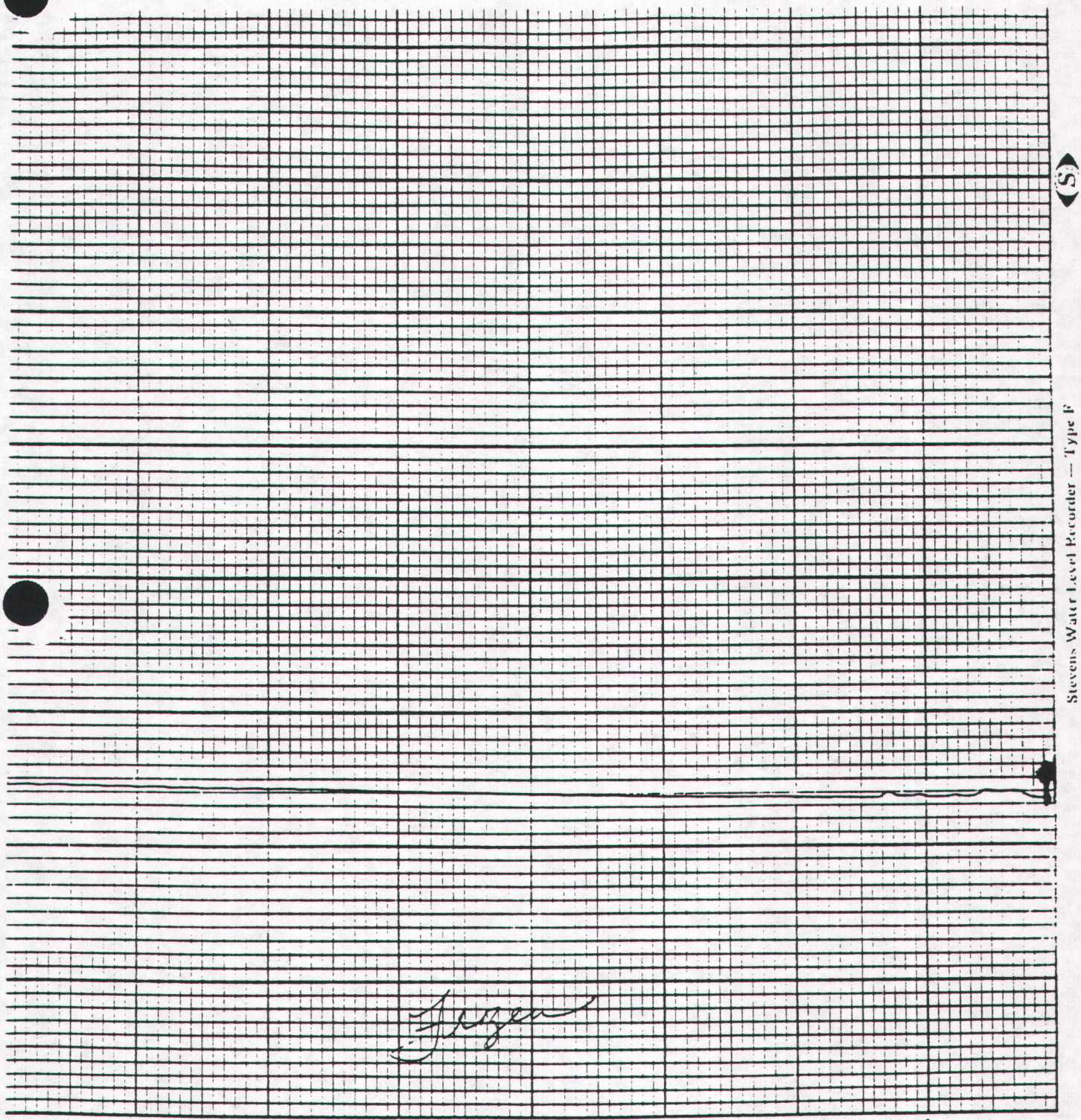


Lower measure 7-31-89 6:00pm Reading .1

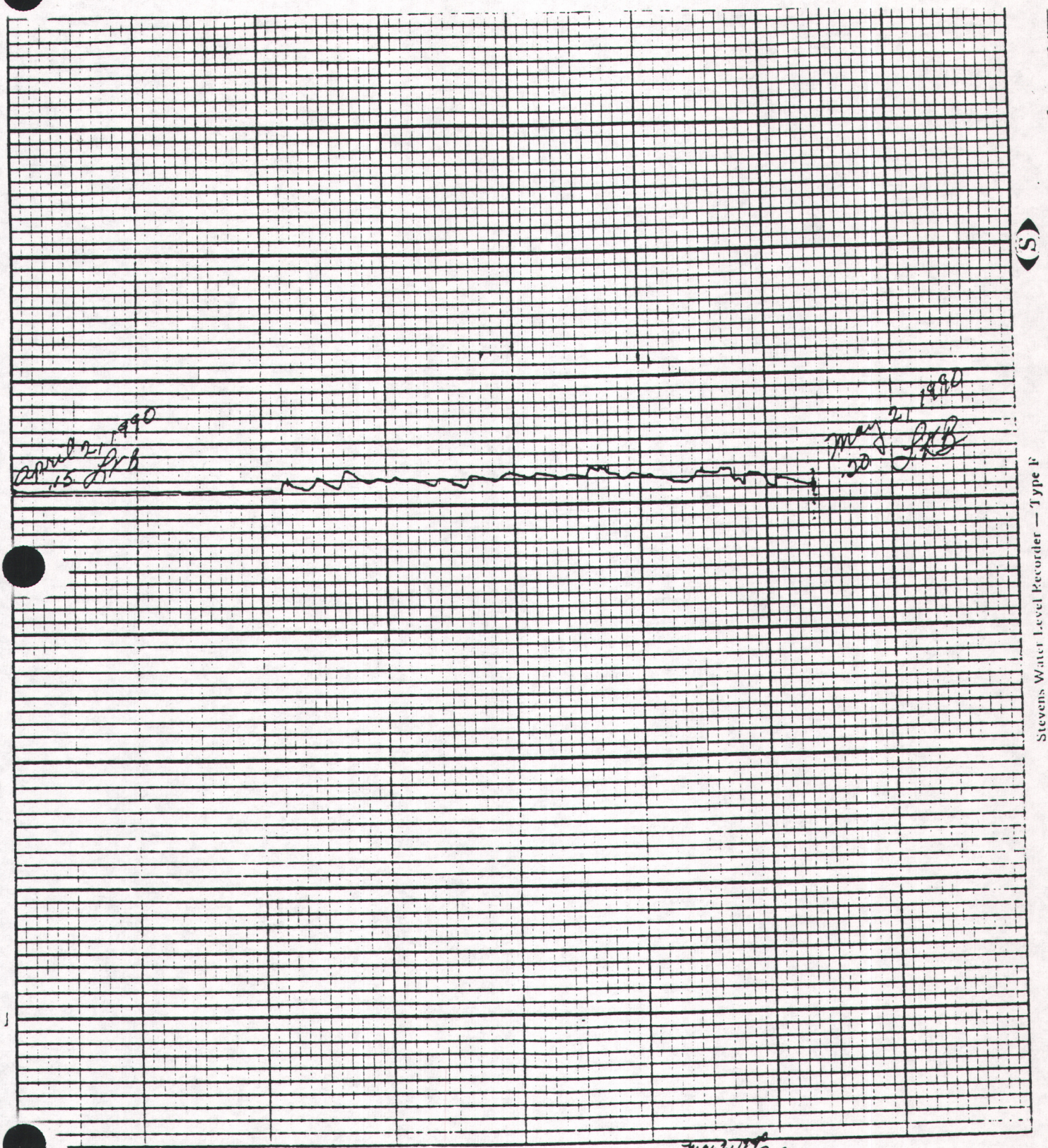
Leupold & St... Inc., Beaverton, Ore.
Stevens Water Level Recorder — Type F



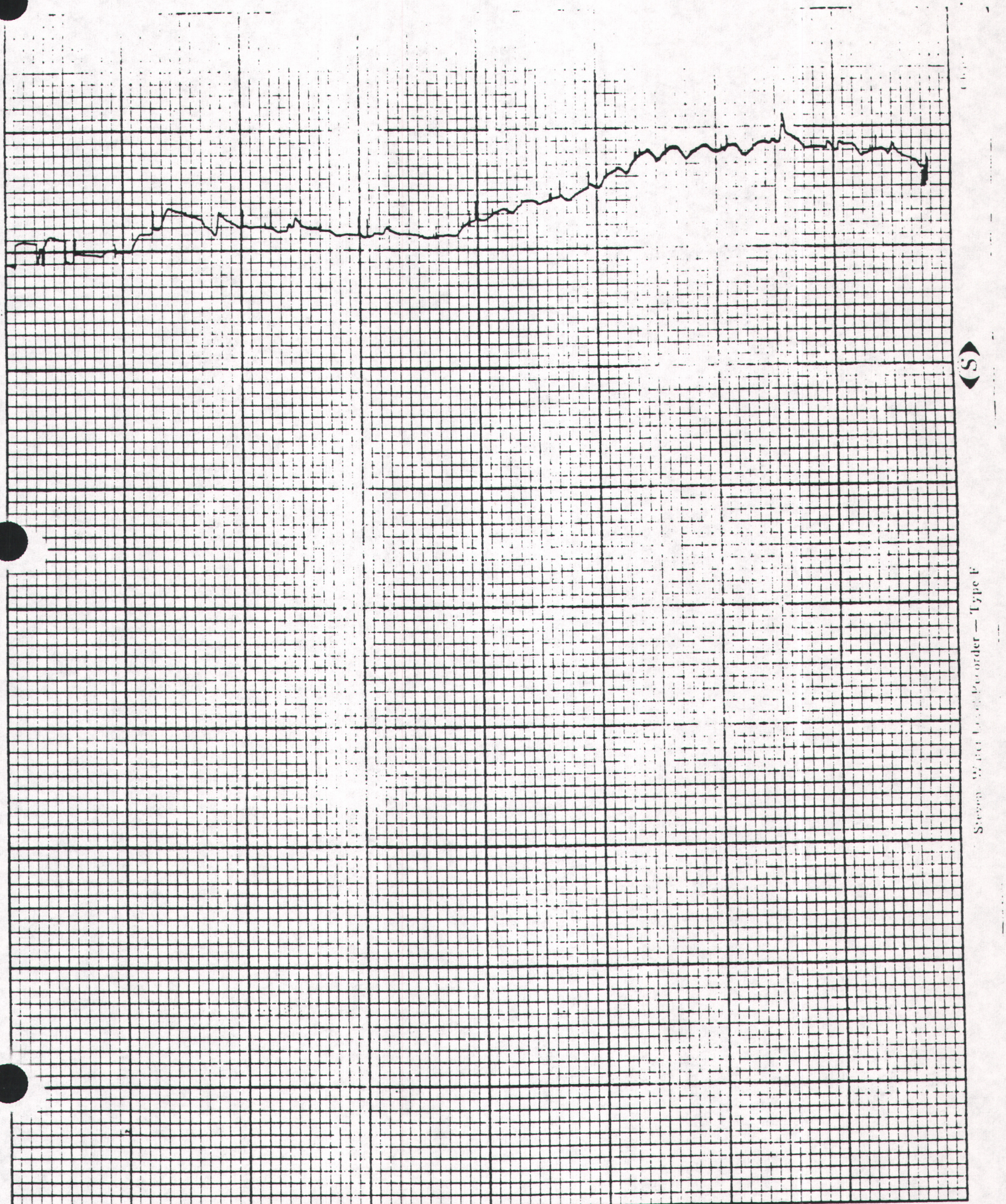
Lower Measure 9-1-89 Reading .09



Lower Measure 10-2-89 Reading .08 April 2-90 Reading 1.5



Lower measure 4-2-90 Reading .15 Ending May 2, 1990 20 L.B



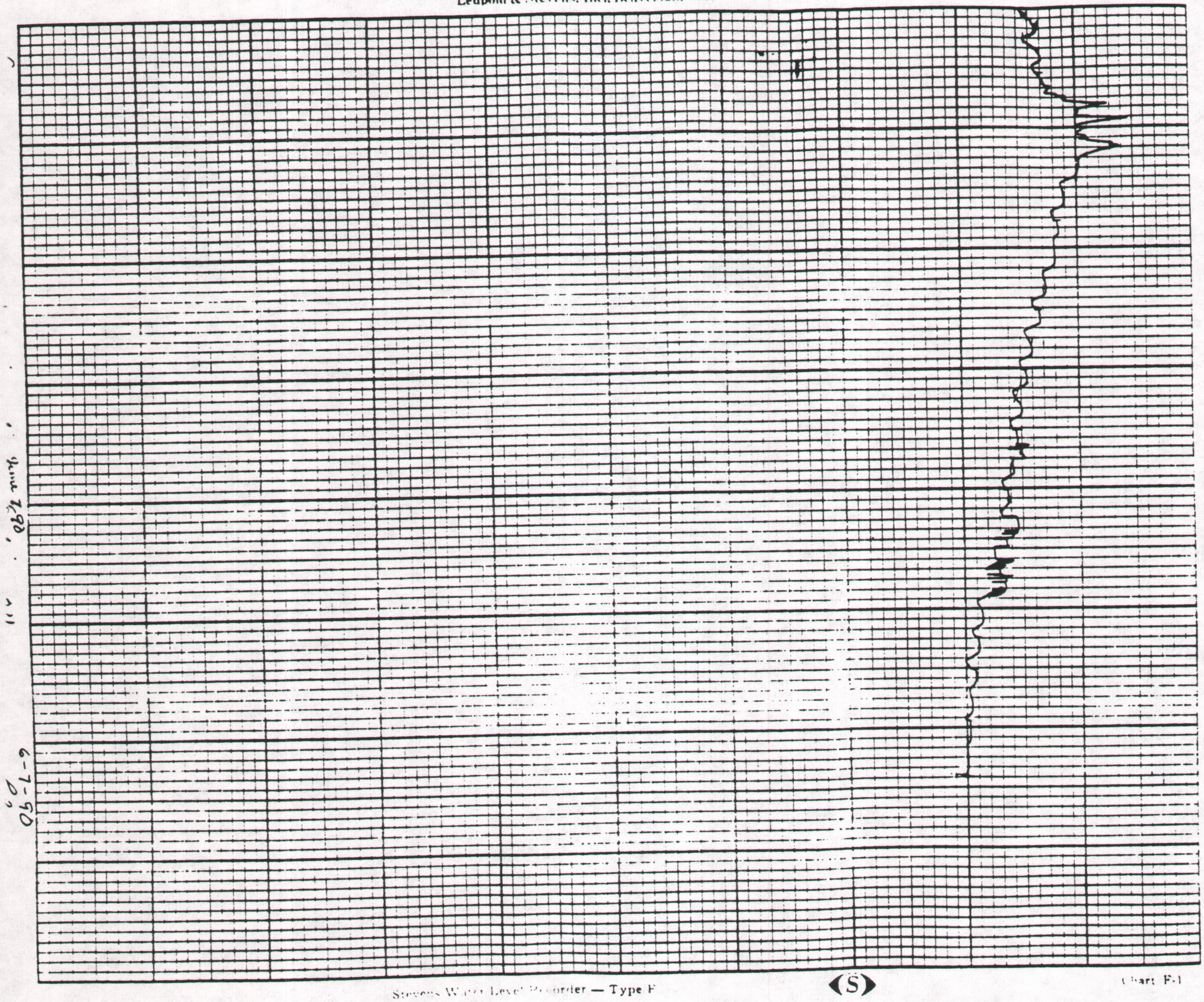
Leupold & Stevens, Inc., Beaverton, Ore.

Stevens Water Level Recorder — Type F

Lower Measure May 31 1990 Beginning Reading 20 Ending 32

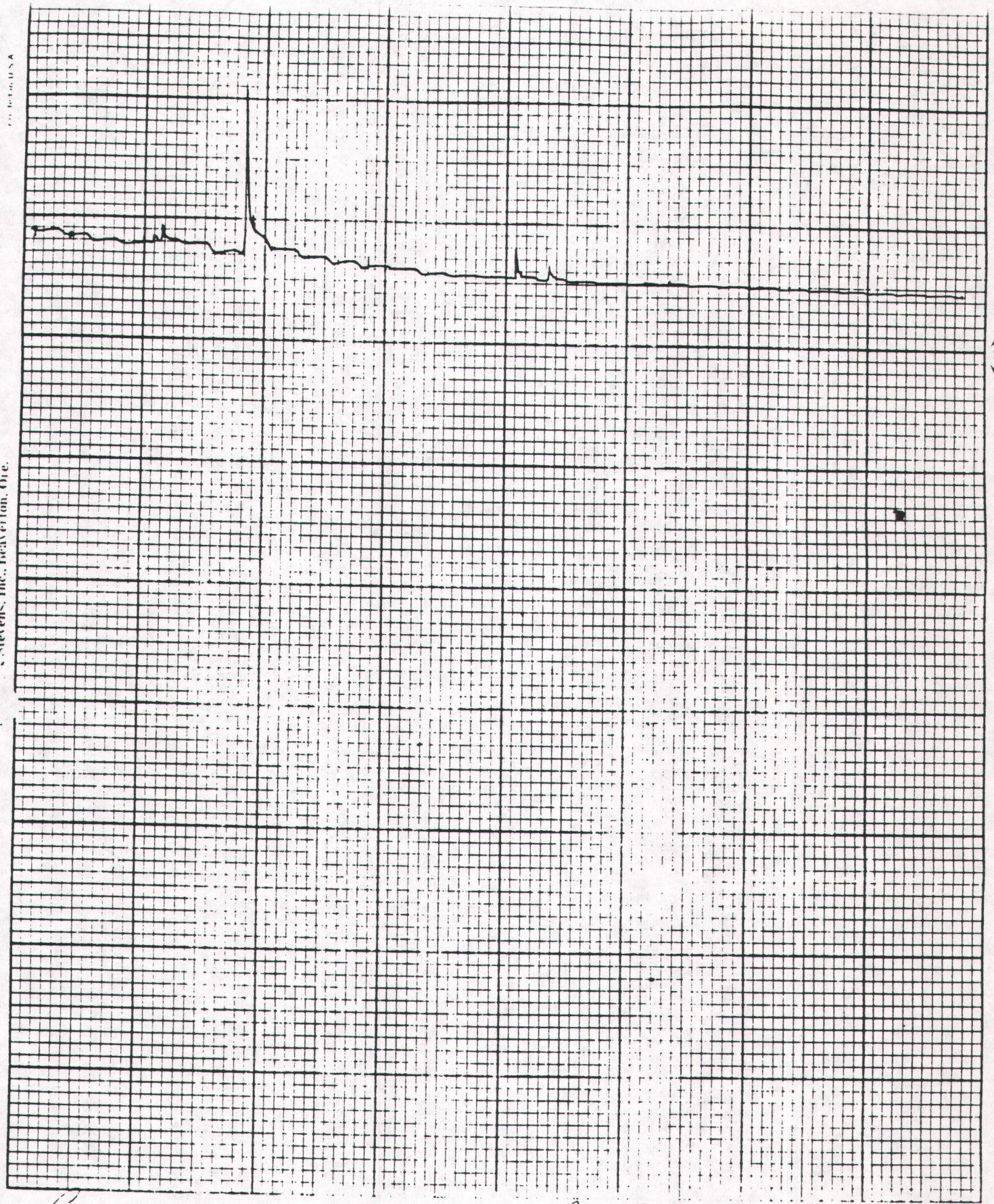
Leupold & Stevens, Inc., Beaverton, Ore.

Printed in U.S.A.



Stevens Water Level Recorder — Type F

Chart F-1


Lower Meadow 7-3-90 Ending Reading

Stevens Water Level Recorder — Type F

8-6-90 Beginning .10 ft

8-6-90 Ending .09

St. Louis, Illinois

Stevens Water Level Recorder — Type F

Leupold & Stevens, Inc., Beaverton, Ore.

Rain

Lower Measure 9-4-70 Beginning .09 Ending .08

F.B.

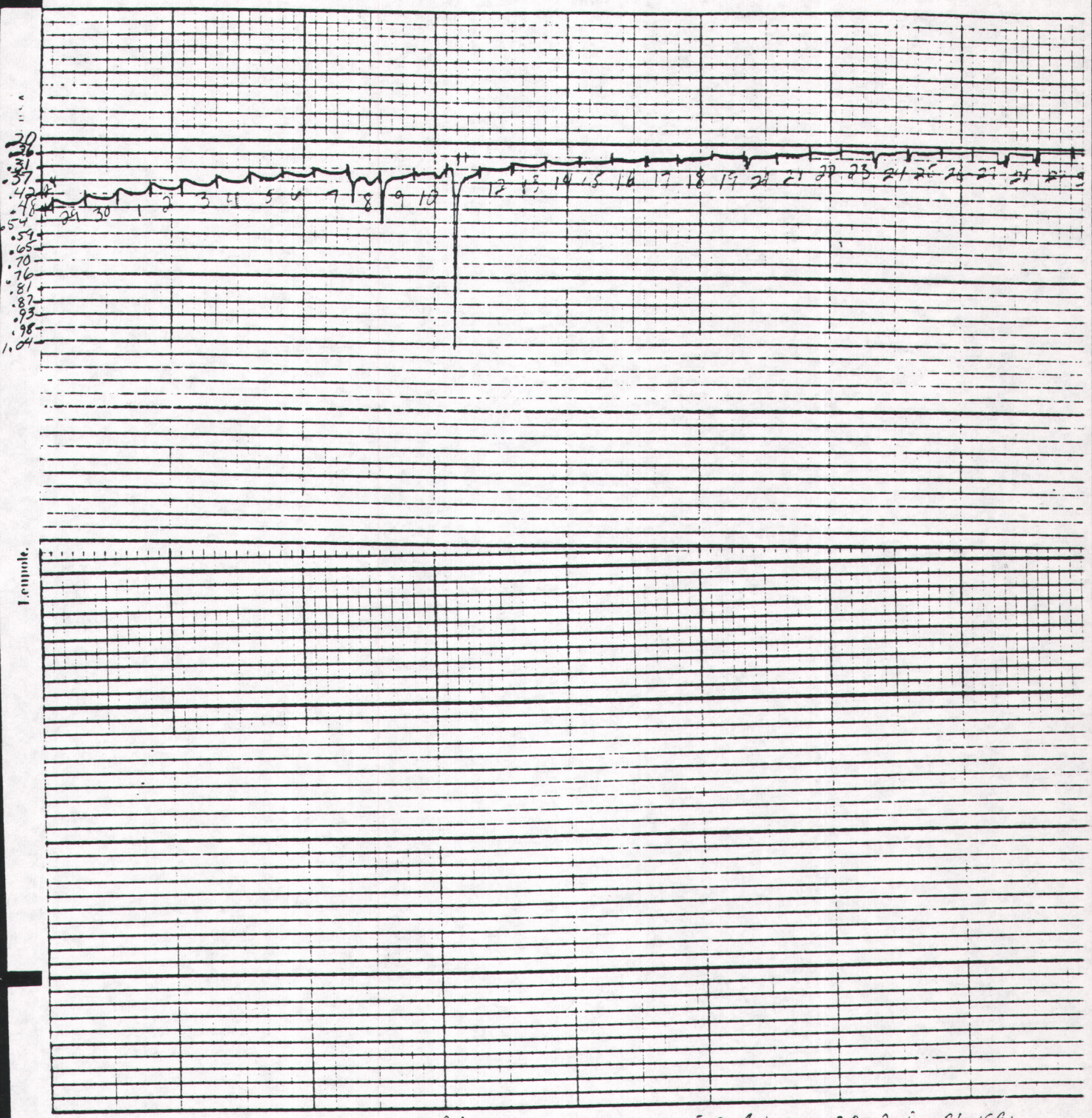
Lower Measure.

Oct 10, 1990

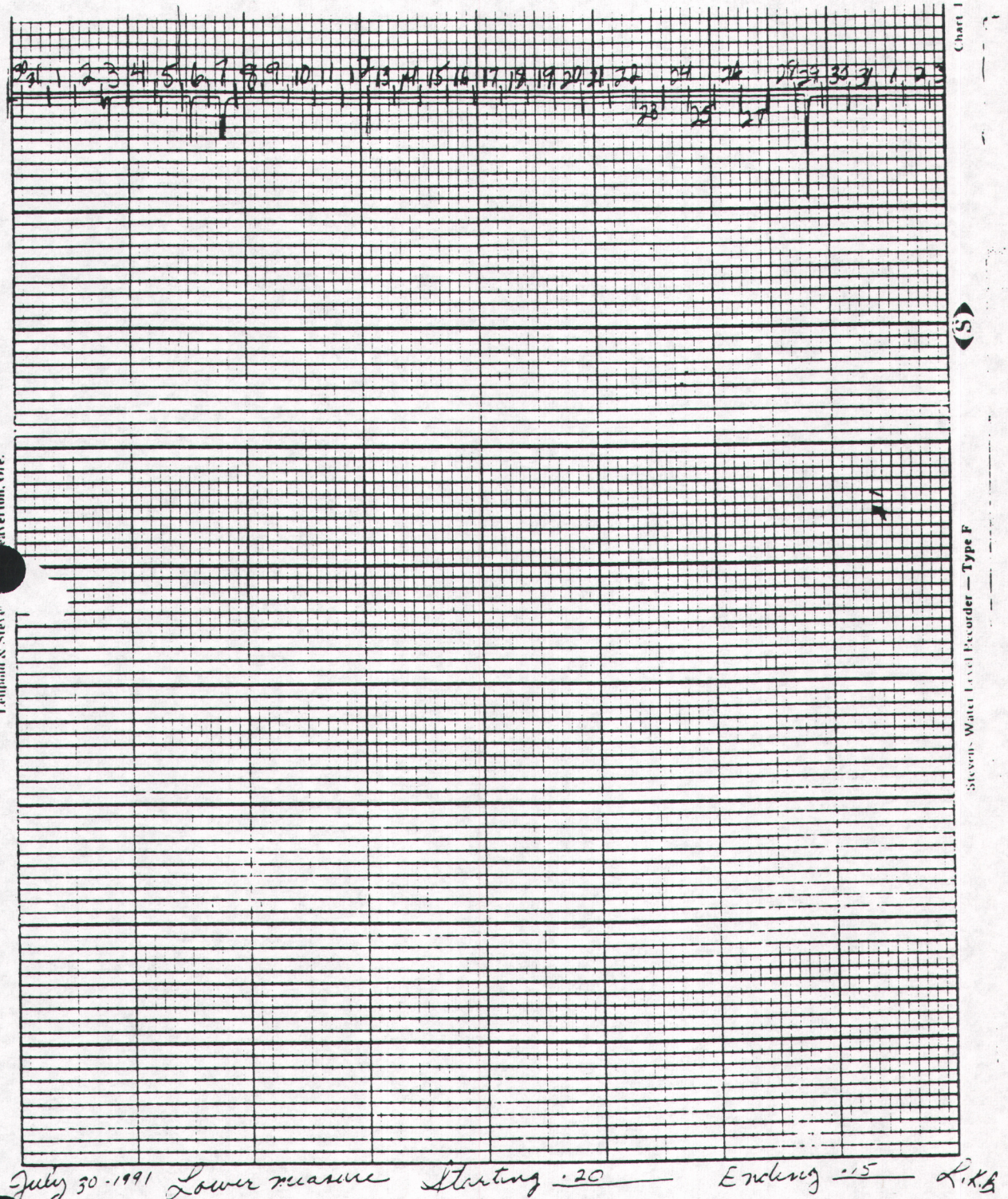
Frozen, no accurate Measure

L.B.

Leupold & Stevens, Inc., Beaverton, Ore.

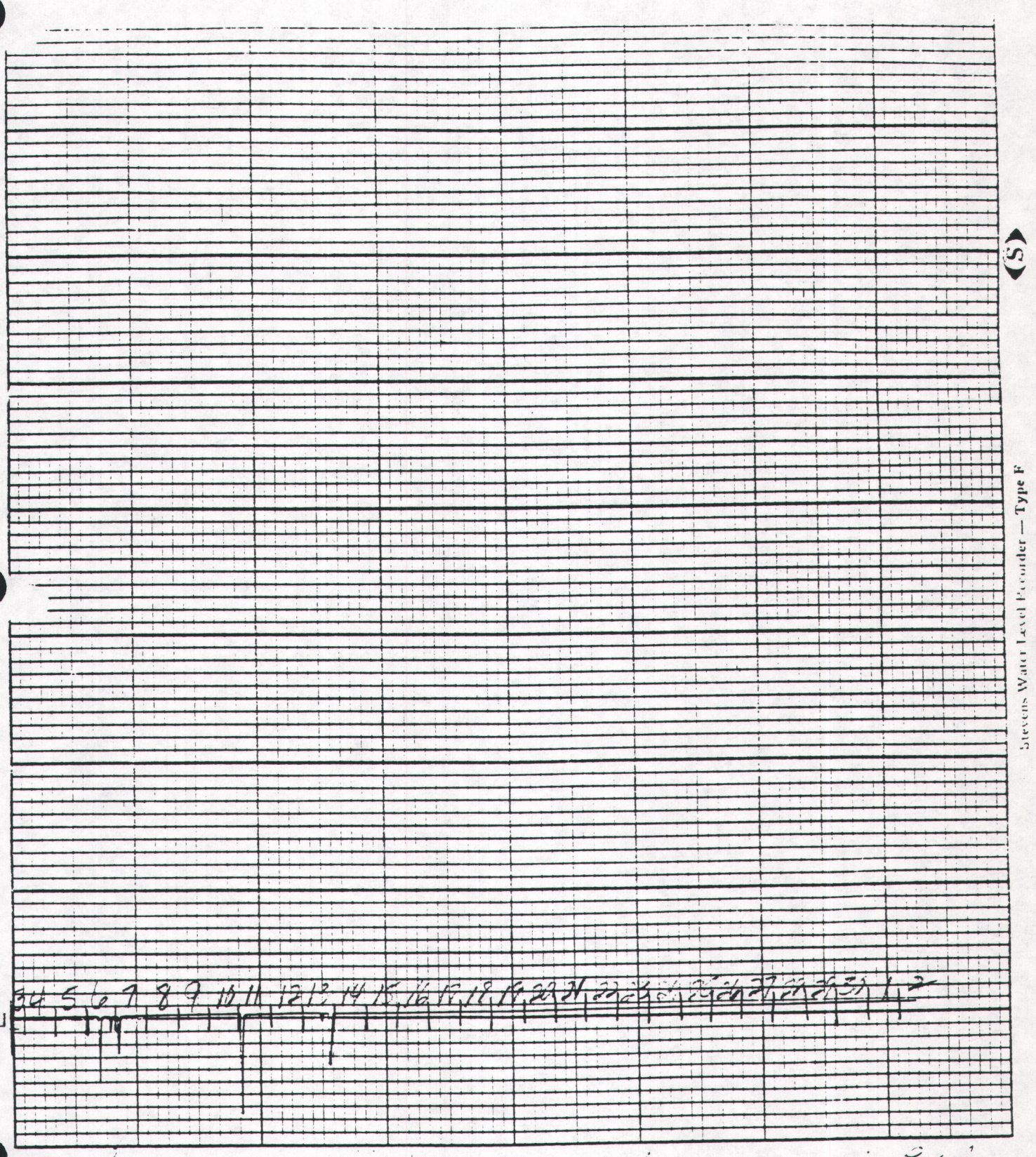


June 28-91 Lower Measure Starting .48 Ending .20 July 31-1991



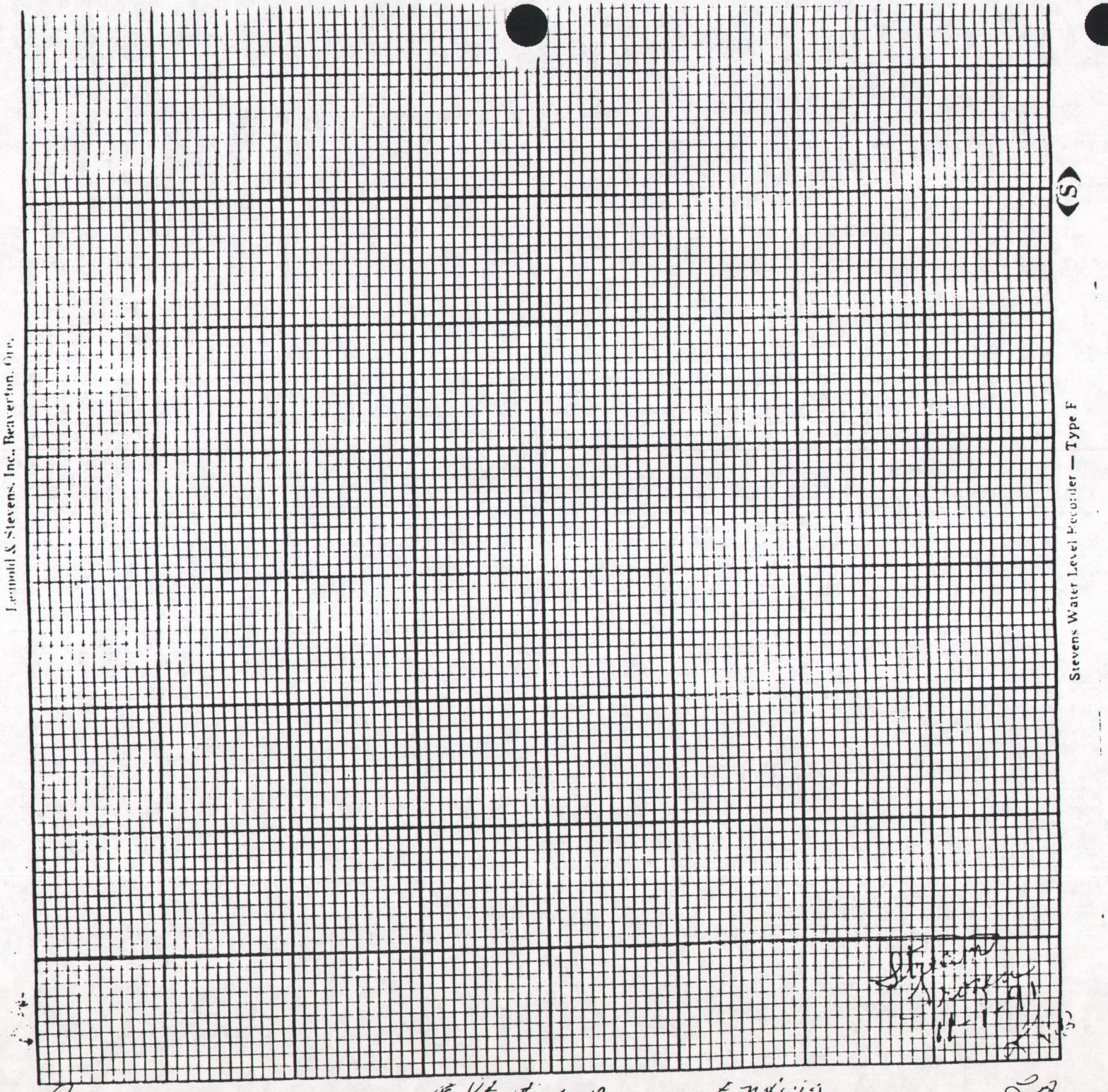
July 30-1991 Lower measure Starting 1.20 Ending 1.15 LKG

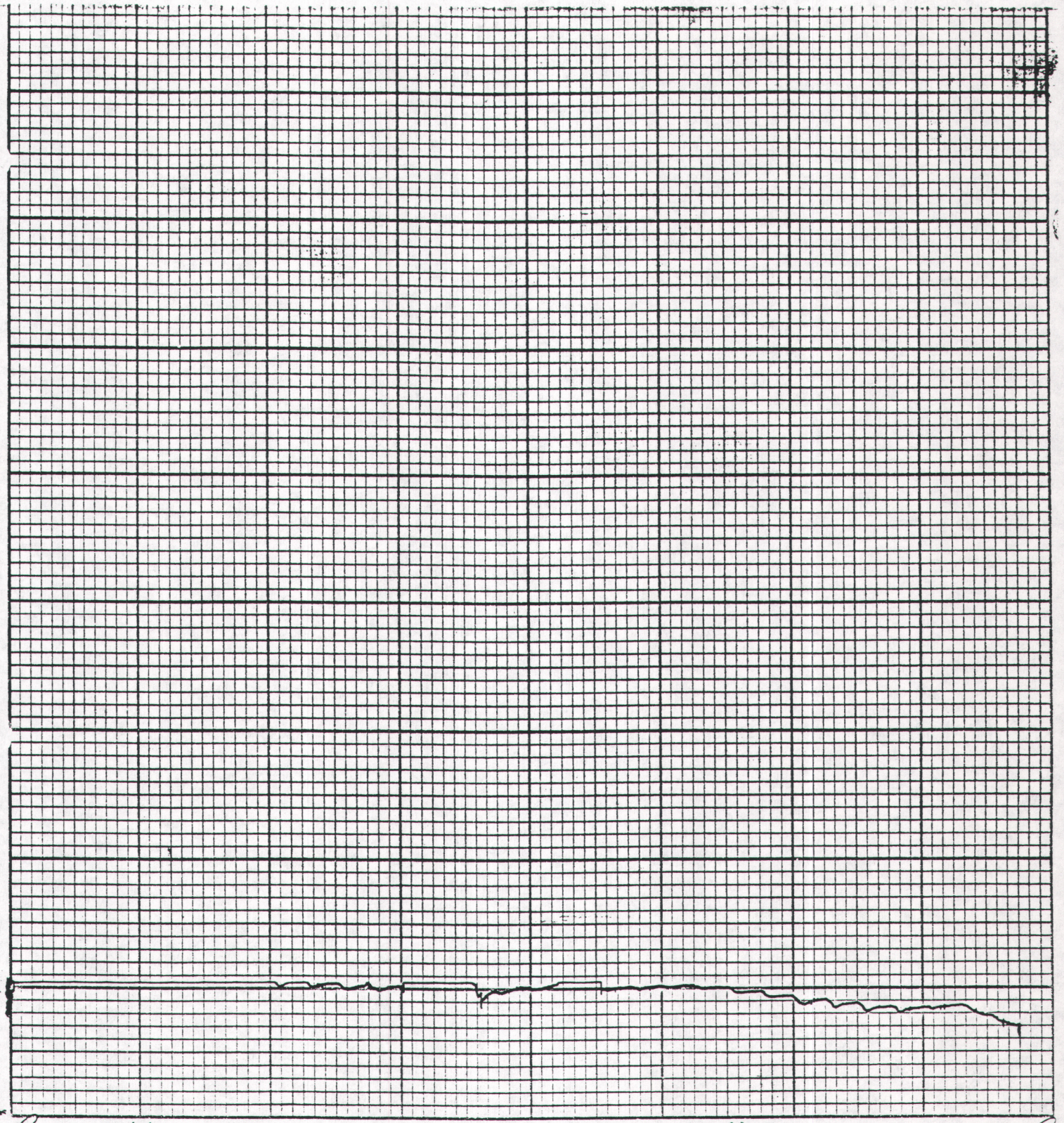
Assume 0.021 feet / vertical space for peaks



.91 Rise Time Starting .15 Ending .12

87 spaces .03 foot/

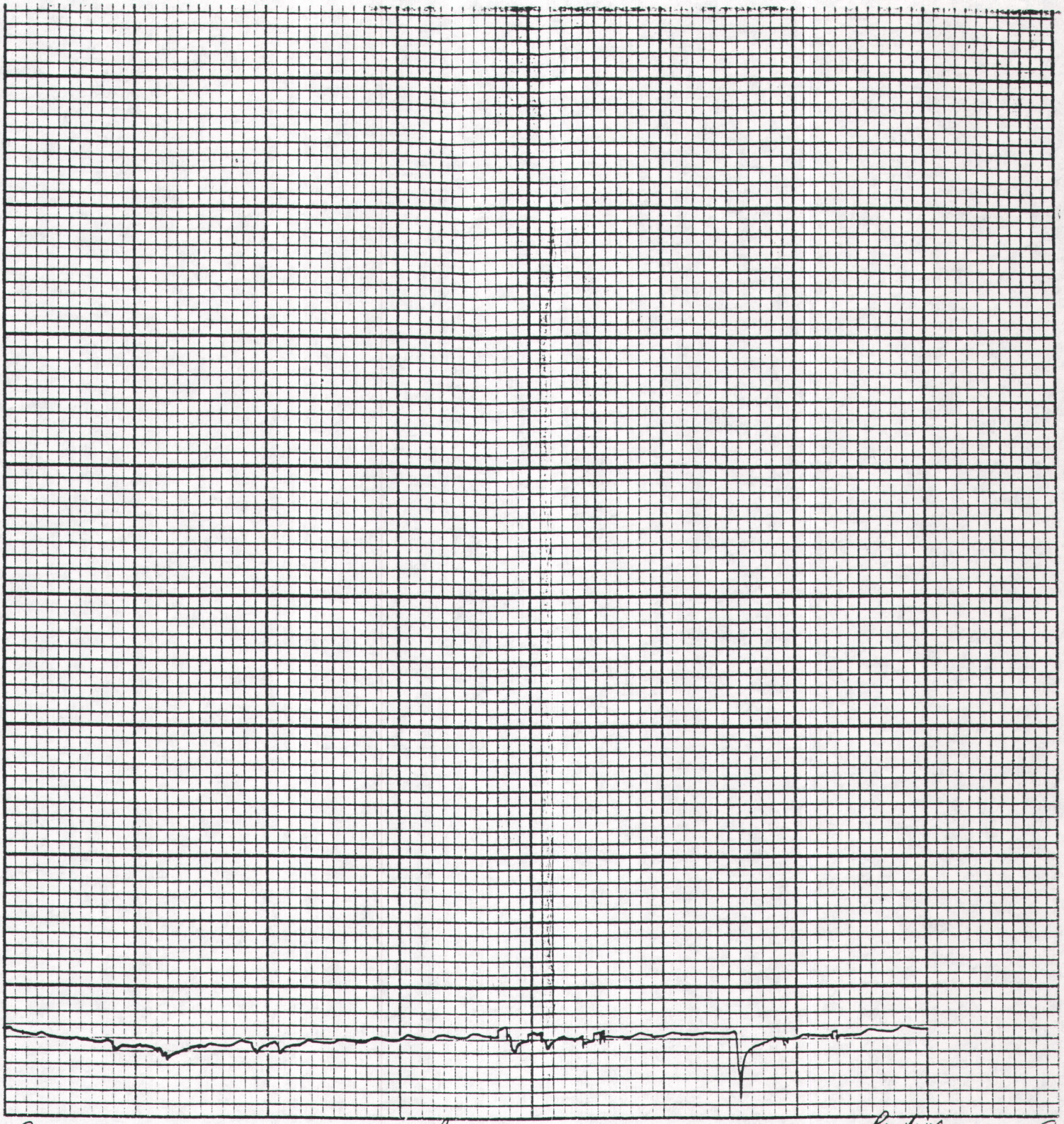

Leupold & Stevens, Inc., Beaverton, Ore.
Stevens Water Level Recorder — Type F
Lower Tillamook 10-2-91 Starting 12 Ending



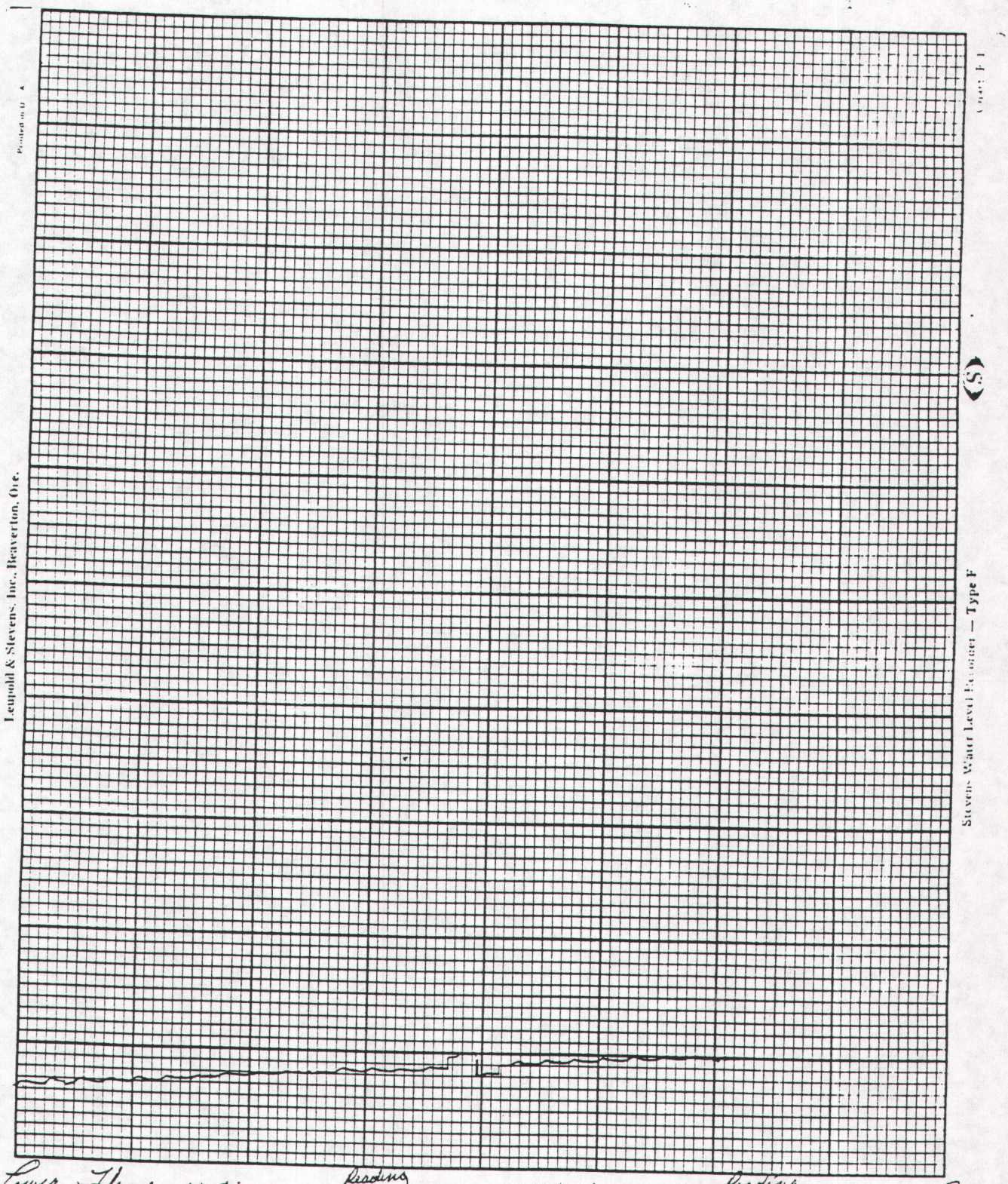
Leupold & Stevens, Inc., Beaverton, Ore.

Lower Flume 4-3-92 Starting .01 Ending 5-4-92 .42 RK

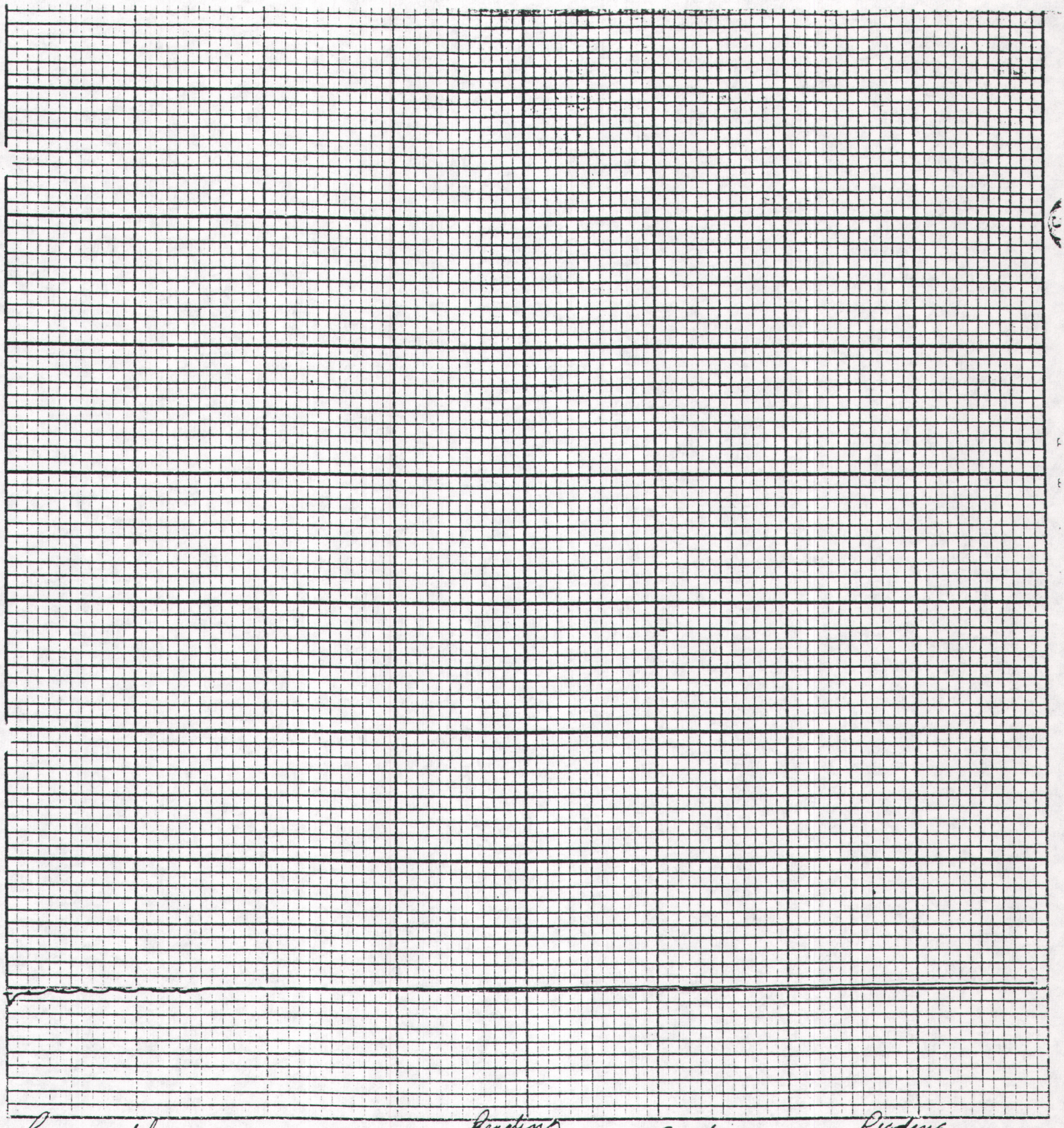
Leupold & Stevens, Inc., Beaverton, Ore.



Lower Flume Starting 5-4-92 Reading .42 Ending 6-1-92 Reading .40 L.K.



Lower Flume Starting 6-1-92 Reading .40 Ending 6-26-92 Reading .22

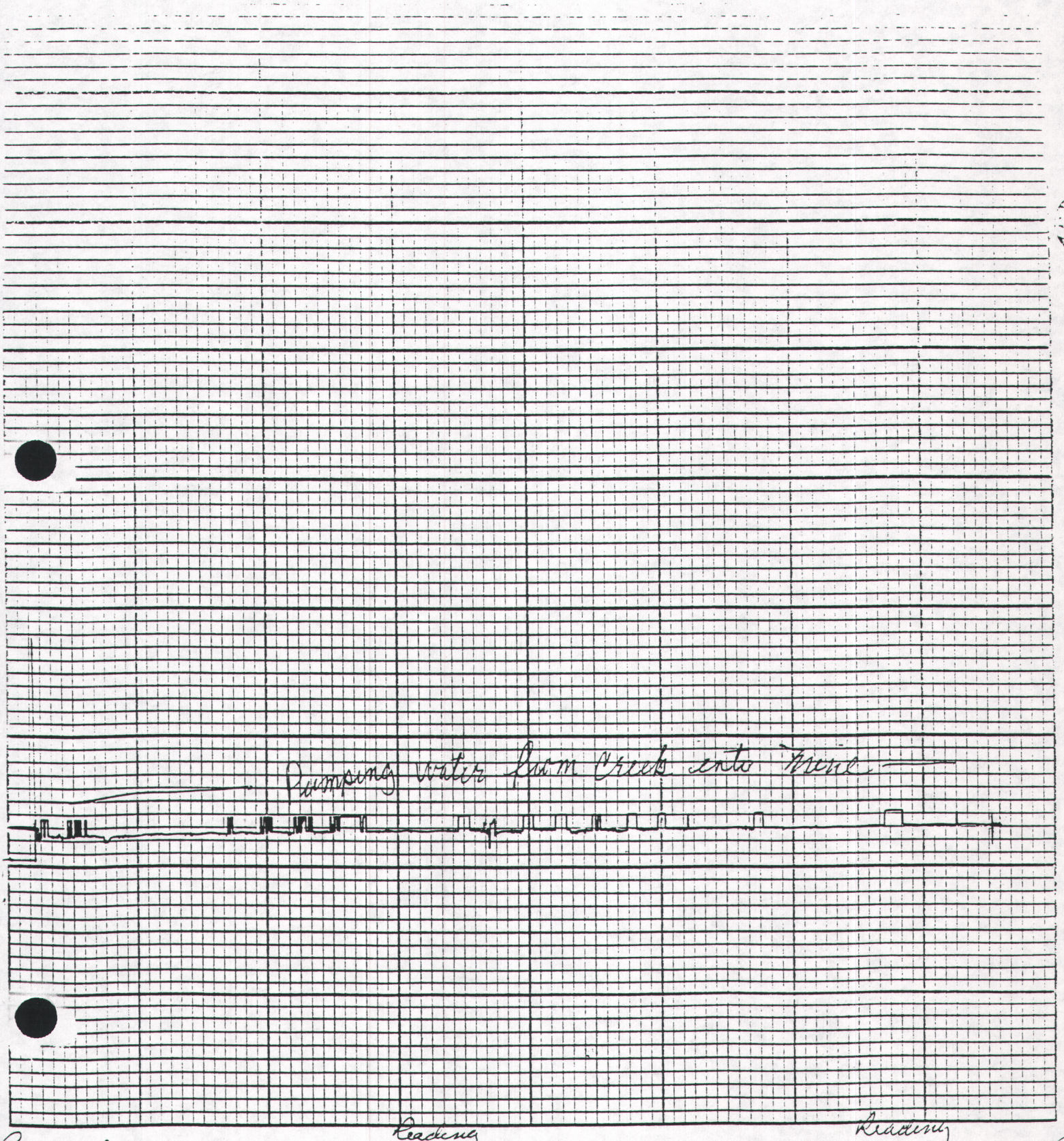


Lower Flume Starting 6-26-92 Reading .22 Ending 8-1-92 Reading .14

Leupold & Stevens, Inc., Beaverton, Ore.

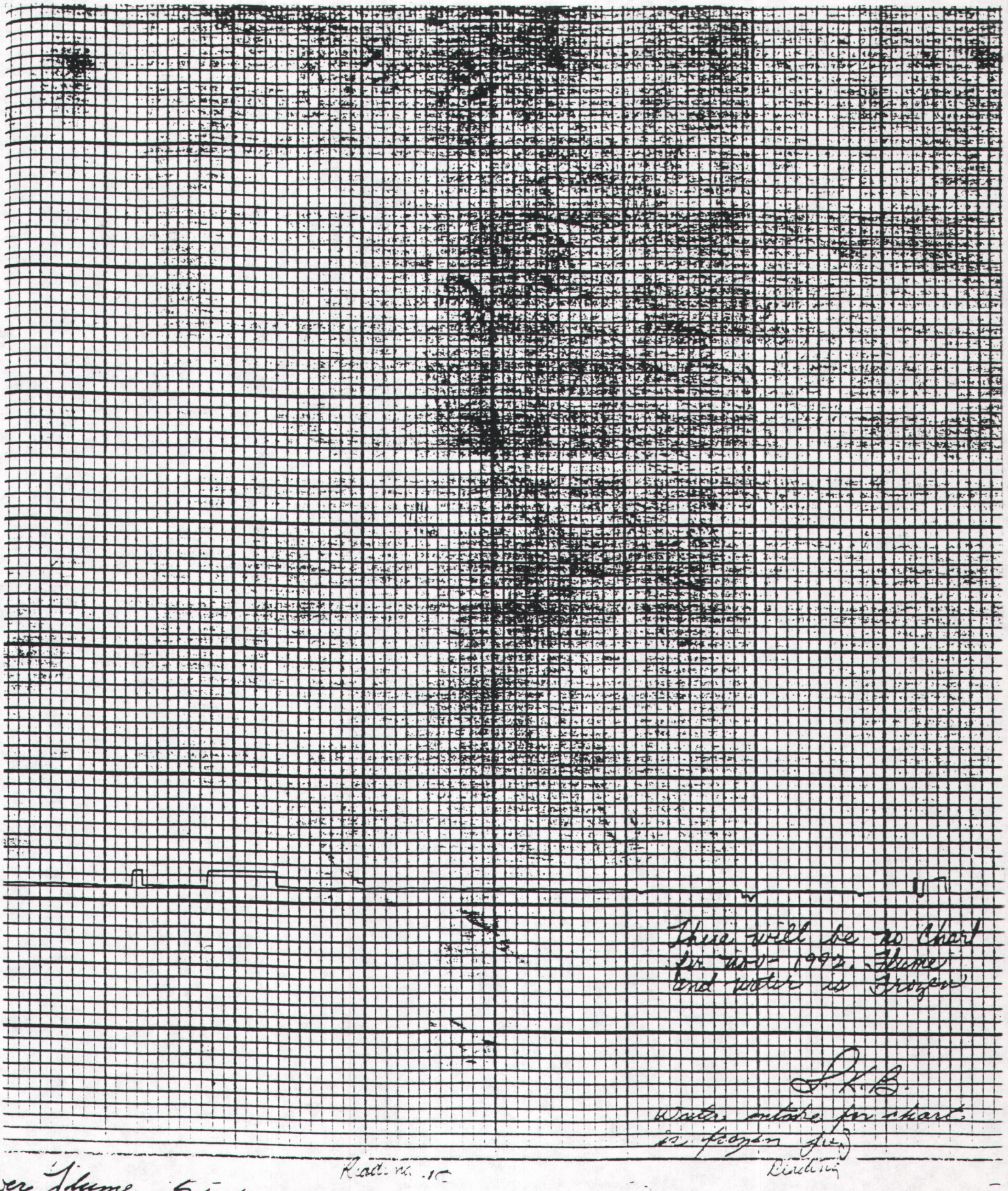
Lower Flume Starting 8-1-92 Reading 14

Ending 9-1-92 Reading 12



Stevens Water Level Recorder — Type F

Lower Flume starting 9-1-92 Reading .12 Ending 10-1-92 Reading



Lower Flume Starting 10-1-92