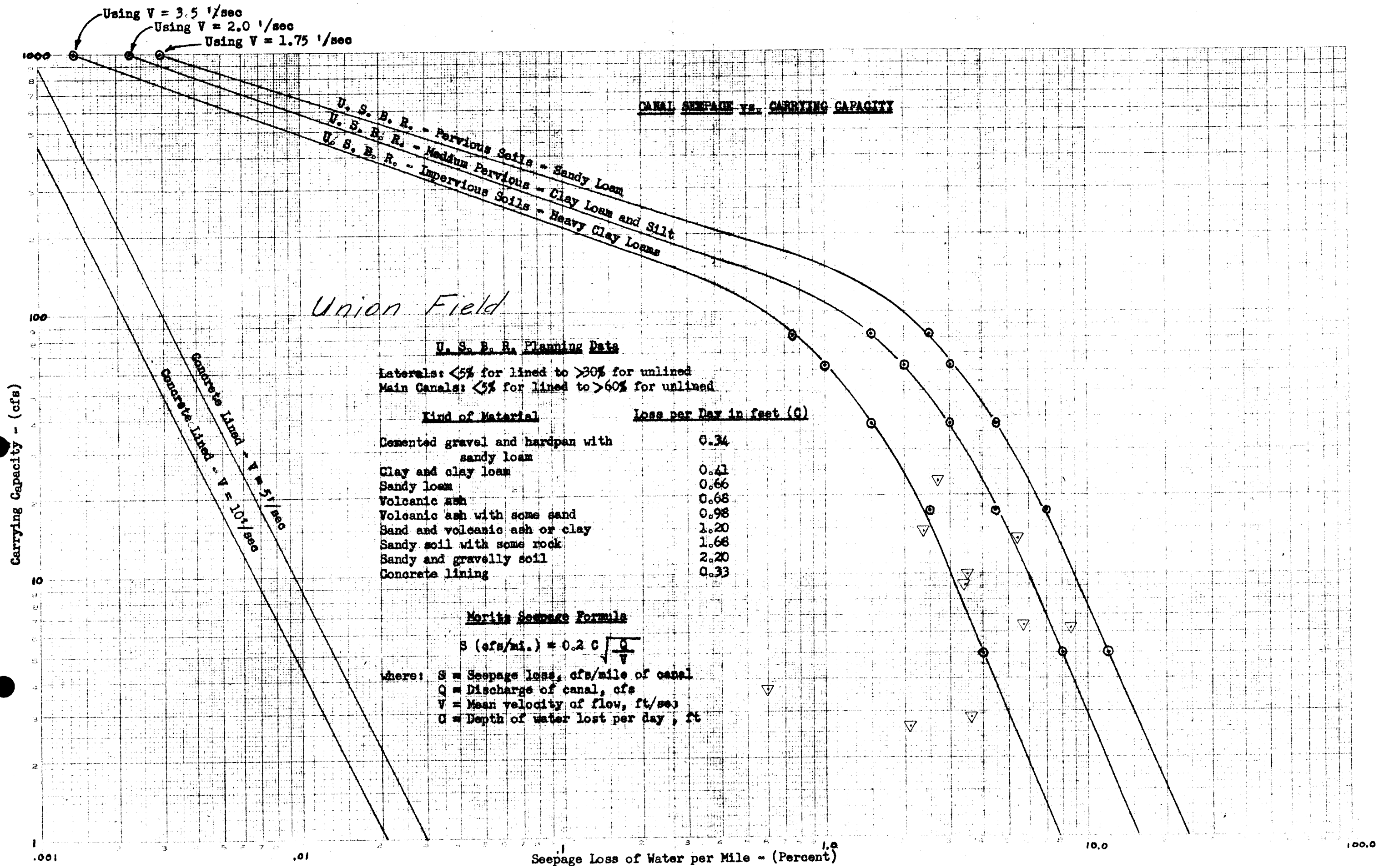


U. S. B. R. Planning Data

Laterals: <5% for lined to >30% for unlined
Main Canals: <5% for lined to >60% for unlined

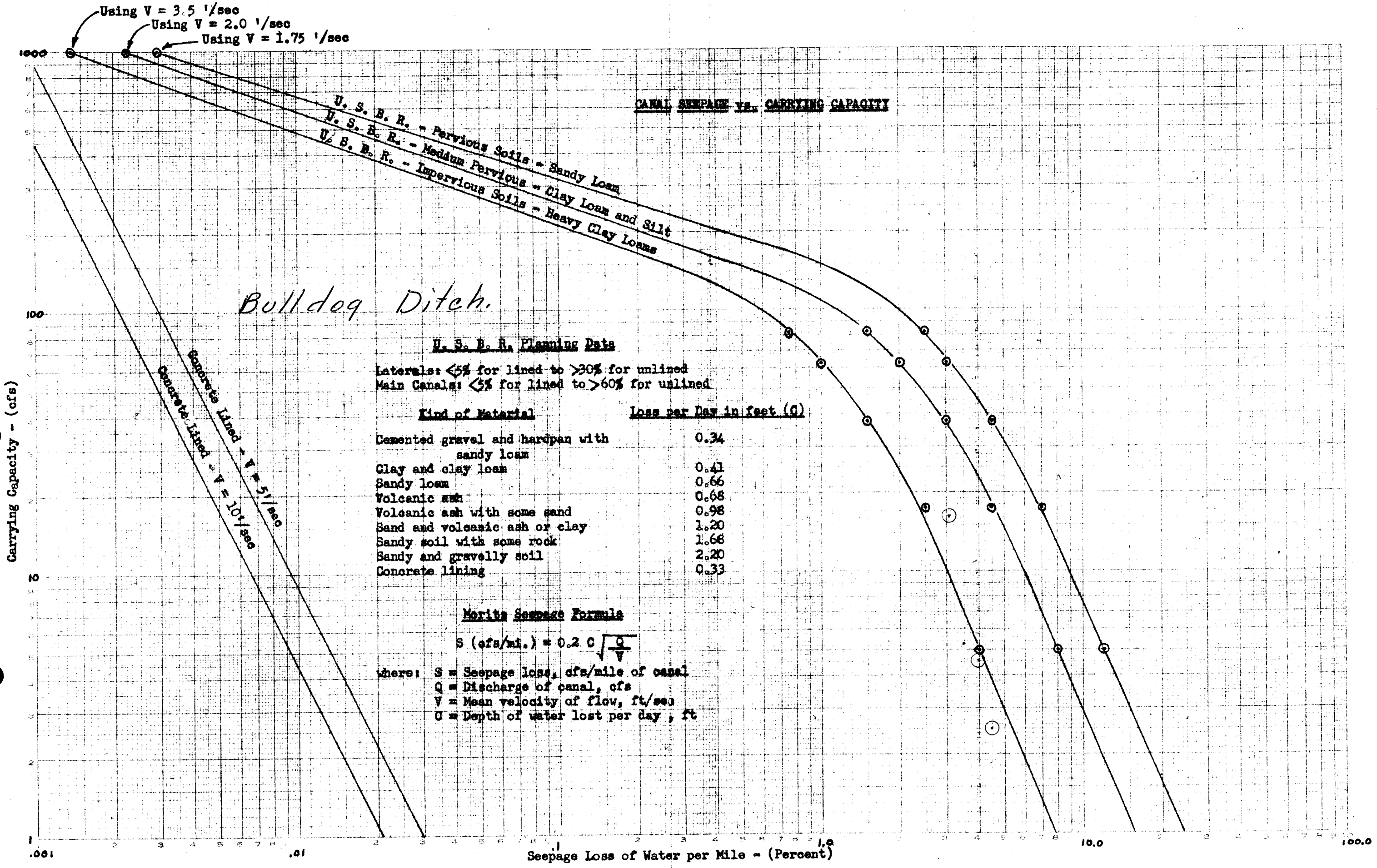
Kind of Material	Loss per Day in feet (C)
Cemented gravel and hardpan with sandy loam	0.34
Clay and clay loam	0.41
Sandy loam	0.66
Volcanic ash	0.68
Volcanic ash with some sand	0.98
Sand and volcanic ash or clay	1.20
Sandy soil with some rock	1.68
Sandy and gravelly soil	2.20
Concrete lining	0.33

Morita Seepage Formula

$$S\ (\text{cfs/mi.}) = 0.2\ C \sqrt{\frac{Q}{V}}$$

where: S = Seepage loss, cfs/mile of canal
Q = Discharge of canal, cfs
V = Mean velocity of flow, ft/sec
C = Depth of water lost per day, ft

Canal or Ditch	Type of Soil	Max. Cap.	Date	First Measurment	Second Measurment	Distance Between Measurments	Loss/Mile	Remarks
Bulldog	Natural alluvial	16 c.f.s.	June 14	16.20	15.21	10,700'	3.02	
	creek channel of gravel & silt.		June 26	5.22	4.85	10,700'	3.49	
			June 28	2.50	2.28	10,700'	4.34	



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Merits Seepage Formula

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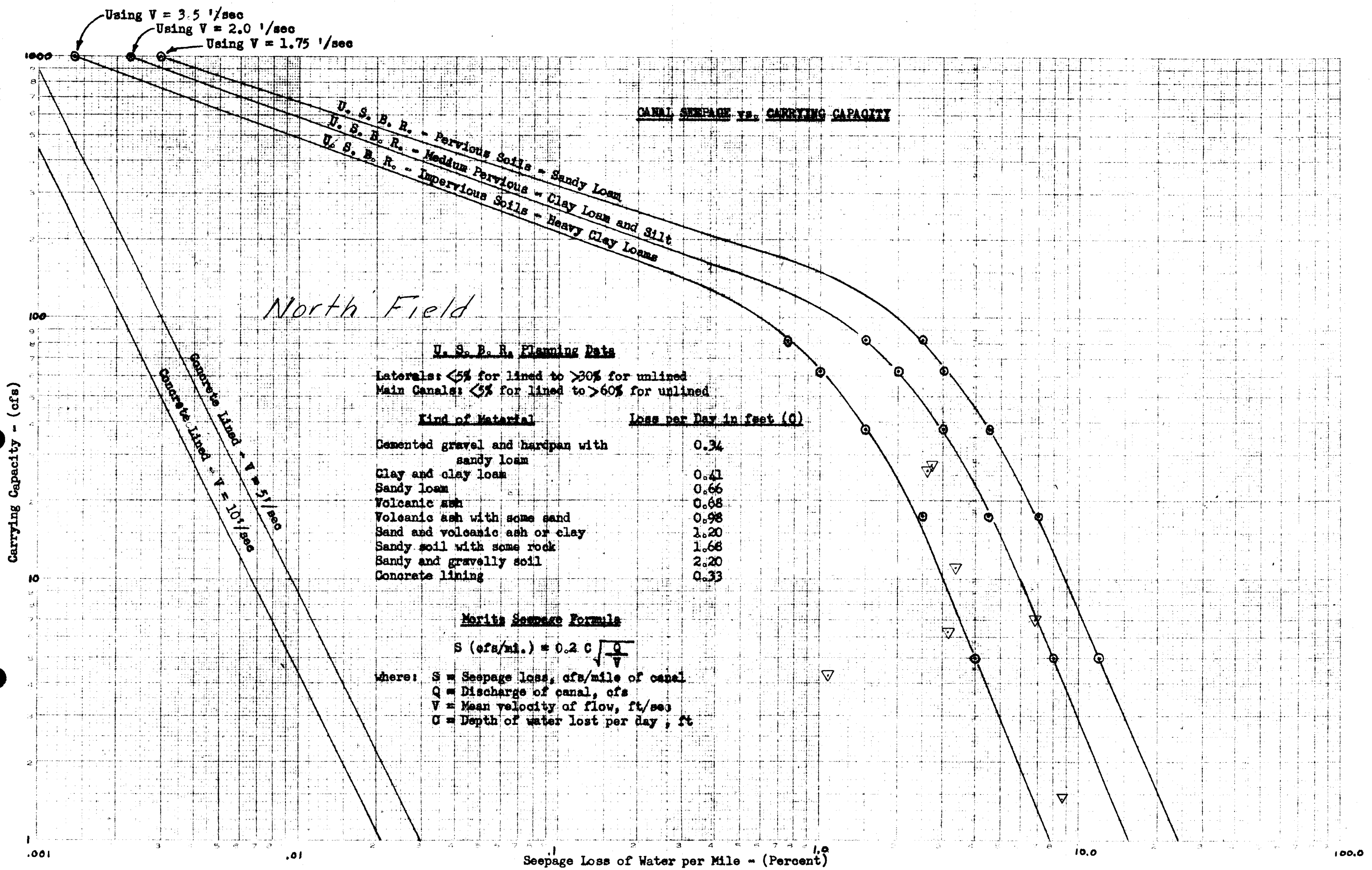
North Field

Canal or Ditch	Type of Soil	Max. Cap.	Date	First Measurment	Second Measurment	Distance Between Measurments	Loss/Mile	Remarks
	Well Graded Alluvial fill. This ditch is representive of Cedar Valley	35 c.f.s.	June 11	26.0	25.56	3400'	2.63	
			June 14	27.5	27.02	3400'	2.71	
			July 9	7.00	6.69	3400'	6.86	
			July 11	6.32	5.81	3400'	3.11	
			July 12	11.06	10.70	3400'	3.34	
			July 24	4.31	4.28	3400'	1.08	
			July 29	3.33	3.48	3400'	None	
			Sept 10	1.42	1.34	3400'	8.75	



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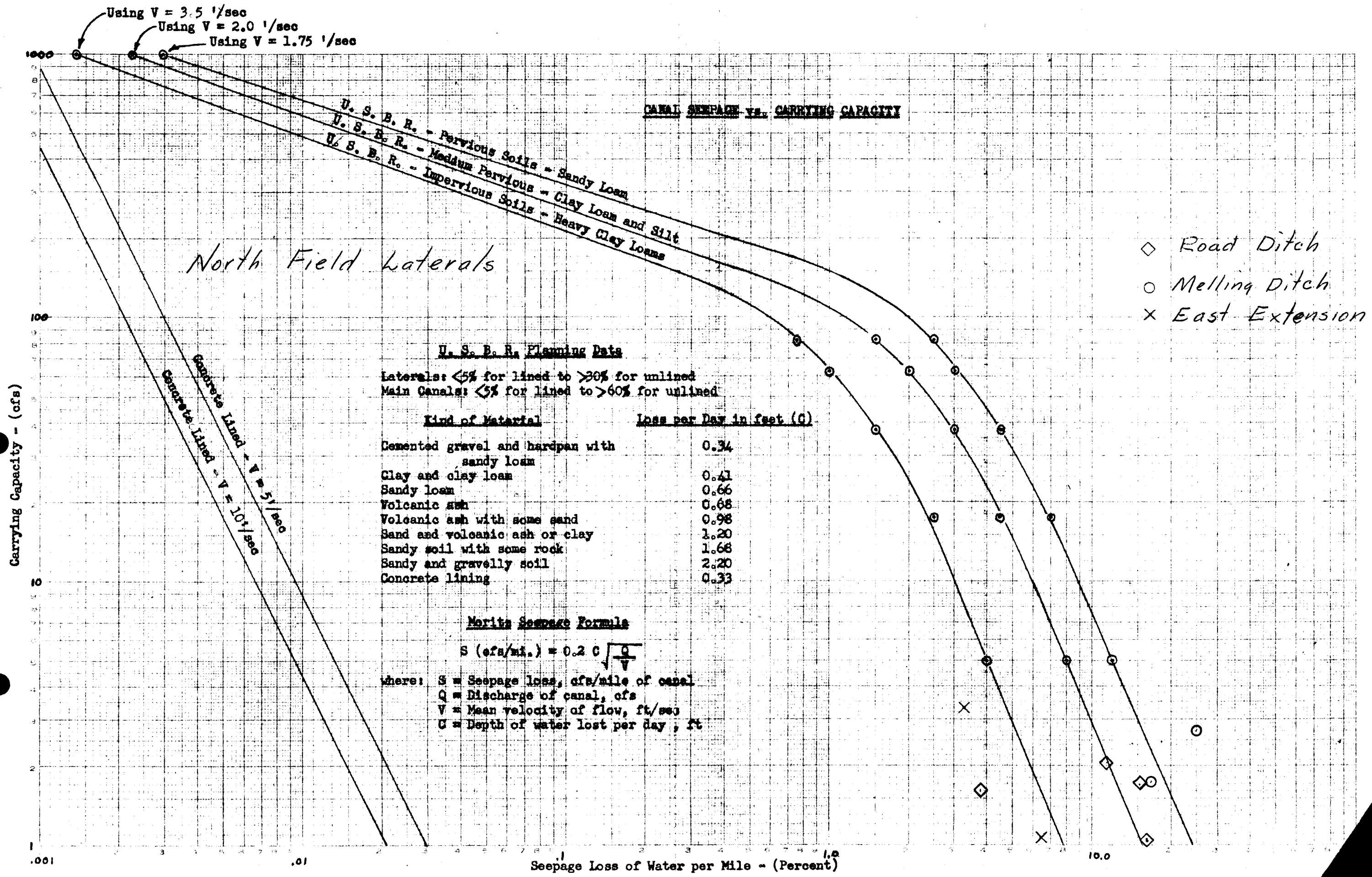
North Field Laterals

Canal or Ditch	Type of Soil	Max. Cap.	Date	First Measurment	Second Measurment	Distance Between Measurments	Loss/Mile	Remarks
East Extension Melling Ditch Road Ditch	Fine Sand	8 cfs.	July 9	1.59	1.53	1 Mi	3.77	* included the loss in 1½ Mi of Concrete ditch.
			July 23	2.04	1.67	1.6 Mi	11.33	① Due to several leaking headgates
			July 29	1.68	1.19	1.9 Mi	15.30	East Extension runs Fresh & is seldom cleaned
			Aug 27	1.03	.81	1.4 Mi	16.64	Melling ditch sands up & has a lot of vegetation
		9 cfs.	June 26	2.43	1.84	1.3 Mi	18.67 ①	Road Ditch is loamy soil with heavy grass banks.
			July 9	1.73	1.44	1 Mi	16.76	
		16 cfs.	July 9	3.37	3.26	1 Mi	3.26	
			* Aug 12	1.08	1.01	1 Mi	6.48	



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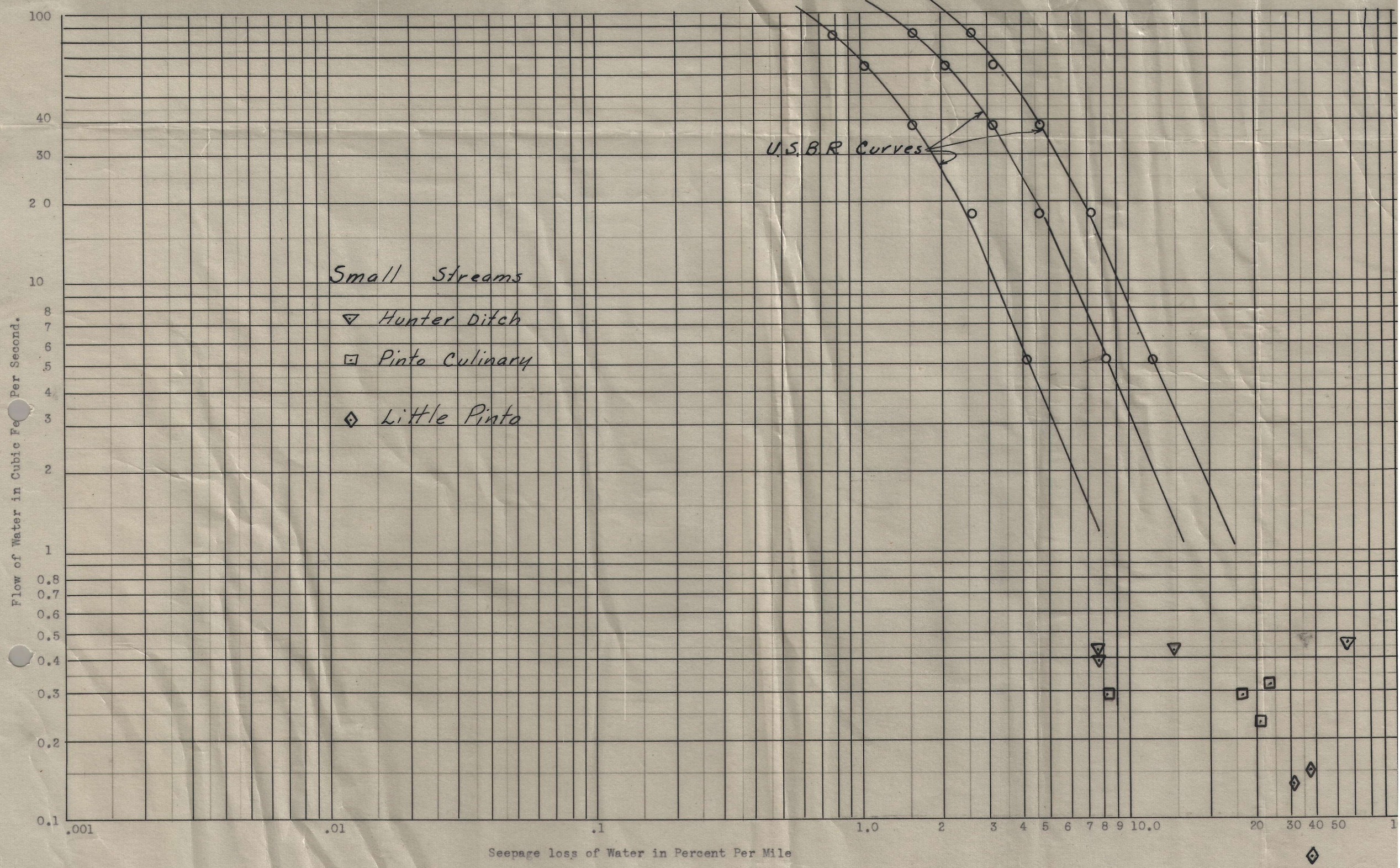
U.S.B.R. Curves
Small Streams
Hunter Ditch
Pinto Culinary
Little Pinto
Flow of Water in Cubic Feet Per Second.
100
40
30
20
10
8
7
6
5
4
3
2
1
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
.001
.01
.1
1.0
2
3
4
5
6
7
8
9
10.0
20
30
40
50
Seepage loss of Water in Percent Per Mile