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JAN 30 2001

SENEY NATIONAL
WILDLIFE REFUGE

Mike:

January 16, 2001

Here is a working copy of the water data collected during the two periods in 2000. In October I carried the .02 meter and compared results of Temperature and conductivity with the Hack kit results. Note the good agreement on conductivity.

The temp agreement is fairly good also considering that the sampling points are not identical for the two methods, i.e. Depth of water where sampled.

The O₂ results show essentially saturation at these low temperatures except in the Creeks (Mack & Dugy) where there was no obvious flow of water. (marginally lower in Clark Ditch.

I also carried the new flow meter to the M-28 Bridge but the flow (water depth) was too low to measure except (of course) the Driggs. I did check out the flow meter for operation. It seems to work very well and relatively easy to use except for ~~an~~ ^{it} ~~extra~~ length.

I don't have a copy ^{here} of the flow data we took ~~on~~ the Walsh ditch below the spread. I recall leaving the field notes and calculations at the Refuge before I left. The flow rate below the spread was a reasonable measurement but the one at ^{the} higher elevations was questionable because of the shallow water.

I plan on coming by in early March • as weather permits.

Ed Callie

PS. ~~By~~ Sorry for the incomplete data sheets. The originals are on the computer in the UP and my computer here is temporarily disabled.

Stream Flow Calculations at End of Spread

8/10/2000

EJC

Combined East & West streams
directly below beaver dam

Total stream width ~8.5 ft.

Segment	Clicks	^{Calc} ft/sec	depth	width	ft ³ /sec	
1	30	1.11	1.0	1.65 1.25	1.83	1.38
2	27	1.00	1.1	1.25 .86	1.65	.95
3	27	1.00	.6	1.25 1.25	.99	.75
4 estimated (est)		.27	.2 (est)	3.5 5.0	.75	.27
					<u>4.72</u>	<u>3.35</u>

Conductivity 250 $\mu S/cm$
210 " "
235 " "

O₂ 8.9 mg/l, air

temp 19 °C

Formula for Flow rate

$$ft/sec = \frac{\text{clicks}}{\text{seconds}} \times 2.18 + .02 \quad \text{from meter inst}$$

8/10/00
CNC

West Fork of Spread

② South piezometer sites
total width ~ 6.6 ft

Segment	Clicks/min	(Calculated) ft/sec	Depth of Seg ft	Width of seg (ft)	ft ³ /sec
1	17 (est)	.638	.5	2.2	~ .7
2	17 actual	.638	.6	2.2	.91
3	17 (est)	.638	.5	2.2	~ .7
					2.31 ft ³

Conductivity

227

O₂

6.0 mg/liter

Temp

18.7 °C

$$\text{ft/sec} = \frac{\text{Rev}}{\text{Time}} \times 2.18 + .02$$

$$\frac{17}{60} \times 2.16 + .02 = .638$$

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9, 10 & 11

WATER QUALITY DATA OCTOBER 2000

Seney National Wildlife Refuge

Sample	pH	Temp C	Conductivity	Alkalinity	Iron	Color	Temp °C	Conductivity	O ₂
J-1 Inlet	7.25	4.7	175	60	or	147	NR	NR	NR
J1-I1	7.35	8.2	161	58	0.24	19	6.4	160	12.2
I1-F1	7.7	8	129	35	0.47	33	7.1	131	13.7
F1-E1	7.8	13.9	121	87	0.31	23	9.1	120	9.1
H1-E1	7.7	13.7	131	48	0.25	29	12.0	133	10.5
E1-C1	6.75	6.9	115	30	0.085	21	NR	NR	NR
C1-B1	6.6	6.9	111	31	0.04	25	NR	NR	NR
B1-A1	7.73	10.3	83	49	0.15	19	8.1	84	14.3
A1	7.79	11.8	129	22	0.25	35	10.1	132	12.9
G1-D1	7.8	12.5	100	34	0.17	28	11.2	102	9.9
D1	7.78	10.3	79	20	0.06	11	9.9	79	14.6
A2	7.68	11	114	27	0.17	24	9.8	116	12.4
C2	7.4	11.2	80	49	0.17	24	10.9	81	12.1
M2	7.71	11.4	70	31	0.19	23	9.2	71	13.7
T2	7.43	10.2	26	12	0.15	43	10.1	26	7.7
Marsh Creek Pool	7.13	8.8	52	11	0.65	51	7.8	53	10.2
C-3	7.2	7.4	152	46	0.3	31	7.1	155	NR
Marsh Creek	6.82	8.6	191	52	0.84	500	8.2	189	4.5
Ducy Creek	6.85	7.9	192	63	or	239	7.7	195	4.3
Walsh Creek	6.7	7	136	37	1.15	151	6.3	136	11.9
Driggs River	7.06	7.2	128	38	0.65	46	6.8	131	13.6
Holland Ditch	7.24	11.6	169	56	1.27	72	7.2	169	11.4
Clark Ditch	6.9	9.1	158	52	0.73	162	6.7	—	8.6

* Sampled at m-28 Bridge on Oct 11

WATER QUALITY DATA MAY 2000**Seney National Wildlife Refuge**

<u>Sample **</u>	<u>pH</u>	<u>Temp. C</u>	<u>Conductivity</u>	<u>Alkalinity</u>	<u>Iron</u>	<u>Color</u>
J-1 Inlet	6.61	19.8	175	72	or	3
J1-I1	6.93	17.6	154	64	1.39	10
I1-F1	7.34	16.8	121	48	0.54	4
F1-E1	7.37	13.5	104	38	0.61	7
H1-E1	7.21	14.1	115	40	0.16	11
E1-C1	7.93	14.6	102	40	nr	nr
C1-B1	6.80	15.2	94.3	34	0.17	30
B1-A1	8.41	14.6	79.8	17	0.18	4
A1	7.97	15.8	86	21	0.30	1
G1-D1	7.04	14.5	72.5	20	0.12	0
D1	8.65	14.8	68.4	25	0.09	22
A2 ***	8.02	14.8	89.9	19	0.44	12
C2	7.91	15.3	69.6	17	0.29	10
M2	7.96	14.8	59.3	9	0.32	10
T2	7.66	16.1	29.1	5	0.26	11
C3-Marsh **	7.71	13.4	166	65	or	9
C3-Walsh	7.97	14.3	134	51	0.42	7
Marsh Pool	7.74	15.6	46.3	9	0.79	12
Marsh Creek *	6.96	15.9	77.1	30	0.91	1
Ducy Creek	7.59	16.1	86.1	35	or	9
Walsh Creek	7.76	14.5	124	51	or	16
Driggs River	8.08	14.3	135	62	1.02	2
Holland Ditch	8.09	14.1	166	69	or	7
Clark Ditch	7.49	16.3	159	64	or	22

* Sampled on 5/15/00 @ m-28 Bridge

** Sampled 5/18/00

***Sampled 5/17/00