

LOWER LITTLE ANDROSCOGGIN WATER QUALITY DATA

Appendix E-2

Lower Little Androscoggin Water Quality Data*

Station	Time	D.O.	Temp.	Date
Welchville	9:47	7.6	20.0	7/23/86
	9:50	7.5	22.0	7/24/86
	10:00	7.5	22.0	7/25/86
	14:34	7.7	24.0	7/25/86
Hackett Mills	16:30	7.8	23.0	7/23/86
	10:24	8.3	22.8	7/24/86
	10:05	9.2	23.2	7/25/86
	14:56	8.3	23.9	7/25/86
Mechanic Falls	16:14	8.3	24.0	7/23/86
	10:07	8.1	22.3	7/24/86
	9:30	8.6	23.0	7/25/86
	14:47	9.4	26.0	7/25/86
Littlefield	16:45	8.6	23.2	7/23/86
	10:42	8.4	22.5	7/24/86
	15:12	9.4	25.0	7/25/86

* Data provided by Paul Mitnik of the Maine Department of Environmental Protection. The Welchville, Hackett Mills, and Mechanic Falls dams are all located upstream of the Littlefield site.

MINICIPAL WASTEWATER TREATMENT FACILITIES

APPENDIX E-3

Municipal Wastewater Treatment Facilities

Name of Treatment Facility	Process ¹	Design Flow	Flow - MGD		Receiving Water	Sever ²	Classification ³	Comments
			Actual Flow	Sever ²				
Brunswick	1	3.4	2.536		Androscoggin	C	C	
Lisbon Falls	2	1.5	1.237		Androscoggin	C	C	- Secondary system may be constructed in 1982
Sabbatus	1				Sabbatus River	C	C	
Lewiston (Randall Rd.)	2	0.25	0.494		No Name Pond Brook	C	C	- Operational problems from excessive waste; facility will eventually be closed and wastes pumped to Lewiston-Auburn
Lewiston-Auburn	2	14.2	12.155		Androscoggin	C	C	- Receives pretreated effluent from several large industries
Mechanic Falls	1				Little Androscoggin	C	C	- Scheduled for completion in 9/81
South Paris	2	1.85	0.836		Little Androscoggin	C	D	- Receives pretreated industrial waste from A.C. Lawrence Tannery and A.L. Stewart Cannery; design standards exceeded; solutions have been recommended
Norway	2	0.65	0.555		Little Androscoggin	C	D	- Combined sewer flows, lack of maintenance, and sewage have caused system failure; plans for redesigning and reconstructing temporarily halted
Livermore Falls	2	1.0	0.827		Androscoggin	C	C	
Livermore Falls	2	0.01	0.009		Clay Brook	S	B-1	- Facility has tendency to clog with silt and clay; solutions have not been determined
Jay	2	0.06	0.039		Seven Mile Stream	S	B-2	- Serves approximately 400 people in North Jay
Dixfield	1				Androscoggin	C	C	- Waste will go to Rumford-Mexico
Rumford-Mexico	2	2.65	1.403		Androscoggin	C	C	
Rumford Point	2	0.02	0.007		Androscoggin	S	C	
Bethel	2	0.3	0.186		Androscoggin	C	C	- Lack of consistent compliance due to malfunction; detailed design phase for problem correction has begun
Corham	1	0.75	0.274		Androscoggin	S	<C	- Scheduled for completion by 8/81
Berlin	2	4.1	1.360		Androscoggin	C	<C	
Rangeley	3				Haley Pond	S		- Tertiary treatment (phosphorous removal) added in 1975 to correct cultural eutrophication problems

1/1 - primary, 2 - secondary, 3 - tertiary

2/S - separate, C - combined

Source: ME DEP, Personal Communication, 7/80
 ME DEP, 1980
 NH WSPCC, 1979a

SOURCE: New England River Basins Commission,
 Androscoggin River Basin Overview, September, 1981.

SUMMARY REPORT OF SELF MONITORED
PARAMETERS FOR MUNICIPAL LICENSES

APPENDIX E-4

STATE OF MAINE - DEPARTMENT OF ENVIRONMENTAL PROTECTION
SUMMARY REPORT OF SELF MONITORED PARAMETERS FOR MUNICIPAL LICENSES

DATE 08/04/82
PAGE 108

ER65B

COUNTY OF OXFORD

PARAMETERS	LICENSE #: 002647 NPDES #: MEO100455												TOTAL-AVE
	JAN 1982	FEB 1982	MAR 1982	APR 1982	MAY 1982	JUN 1982	JUL 1981	AUG 1981	SEP 1981	OCT 1981	NOV 1981	DEC 1981	
NORWAY TOWN OF NORWAY													LICENSE STATUS IS ACTIVE
POINT SOURCE 01 IS TREATMENT FAC OUTFALL													
FLOW RATE	MIN 3066	0.3246	2422	0.2849	3018	0.3148	NORPT	0.1070	260	0.3430	0.3216	NORPT	0.1070
MGD	AVE 3466	0.3507	3448	0.3435	3463	0.3519	NORPT	0.3716	NORPT	0.3582	0.3413	NORPT	1037.9460
	MAX 3874	0.3760	3814	0.3900	3905	0.4011	NORPT	0.4183	310	0.3758	0.3839	NORPT	3905.0000
	SAM 031	0.28	0.31	0.30	0.31	0.30	0.31	0.30	0.31	0.30	0.30	0.31	304
	EXC 000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	00
BOD LB/DAY	MIN NORPT	NORPT	NORPT	NORPT	NORPT	NORPT	NORPT	NORPT	NORPT	NORPT	NORPT	NORPT	NONE
	AVE NORPT	NORPT	NORPT	NORPT	NORPT	NORPT	NORPT	NORPT	NORPT	NORPT	NORPT	NORPT	NONE
	MAX NORPT	NORPT	NORPT	NORPT	NORPT	NORPT	NORPT	NORPT	NORPT	NORPT	NORPT	NORPT	NONE
	SAM 000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	00
	EXC 000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	00
BOD MG/L	MIN 81	174	141	24	39	47	17	18	25	35	32	24	17.0000
	AVE 112	180	170	53	62	58	27	23	32	43	36	29	68.7500
	MAX 159	188	191	88	108	75	34	30	48	48	38	43	191.0000
	SAM 004	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.05	51
	EXC 004	0.04	0.04	0.02	0.02	0.01	0.00	0.00	0.00	0.02	0.01	0.00	20
SUSP. SOLIDS LB/DAY	MIN NORPT	NORPT	NORPT	NORPT	NORPT	NORPT	NORPT	NORPT	NORPT	NORPT	NORPT	NORPT	NONE
	AVE NORPT	NORPT	NORPT	NORPT	NORPT	NORPT	NORPT	NORPT	NORPT	NORPT	NORPT	NORPT	NONE
	MAX NORPT	NORPT	NORPT	NORPT	NORPT	NORPT	NORPT	NORPT	NORPT	NORPT	NORPT	NORPT	NONE
	SAM 000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	00
	EXC 000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	00
SUSP. SOLIDS MG/L	MIN 39	29	25	40	86	70	46	110	94	59	70	26	NONE
	AVE 48	34	26	110	102	80	72	174	118	68	88	34	57.8333
	MAX 004	0.04	0.04	0.04	0.04	0.04	0.05	0.04	0.04	0.05	0.04	0.05	174.0000
	SAM 001	0.00	0.00	0.01	0.04	0.04	0.01	0.04	0.04	0.05	0.04	0.05	51
	EXC 001	0.00	0.00	0.01	0.04	0.04	0.01	0.04	0.04	0.05	0.04	0.05	28
SETT. SOLIDS ML/L	MIN KO.1	KO.1	KO.1	KO.1	KO.1	KO.1	KO.1	KO.1	KO.1	KO.1	KO.1	KO.1	0.1000
	AVE NORPT	NORPT	NORPT	NORPT	NORPT	NORPT	NORPT	NORPT	NORPT	NORPT	NORPT	NORPT	0.1000
	MAX 0.2	0.2	KO.1	0.1	1.5	0.5	0.5	0.3	0.3	KO.1	0.1	KO.1	1.5000
	SAM 020	0.19	0.23	0.18	0.20	0.22	0.22	0.21	0.21	0.21	0.18	0.22	247
	EXC 000	0.00	0.00	0.00	0.00	0.02	0.01	0.00	0.00	0.00	0.00	0.00	03
FECAL COLIFORM COL/100	MIN 14400	98800	174000	1120	0	0	0	0	0	2400	2100	300	0.0000
	AVE 23700	123450	242750	47780	0	5	0	0	0	4950	9425	2860	37910.0000
	MAX 36800	152000	324000	140000	0	20	0	0	0	8300	21200	10400	324000.0000
	SAM 004	0.04	0.04	0.01	0.04	0.04	0.05	0.03	0.04	0.05	0.01	0.05	44
	EXC 000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	00
CHLORINE MG/L	MIN NORPT	NORPT	NORPT	1.0	1.0	1.0	1.0	1.0	1.0	NORPT	NORPT	NORPT	1.0000
	AVE ---	---	---	---	---	---	---	---	---	---	---	---	NONE
	MAX NORPT	NORPT	NORPT	2.0	2.0	2.0	2.7	2.9	2.5	NORPT	NORPT	NORPT	2.9000
	SAM 000	0.00	0.00	0.17	0.31	0.30	0.31	0.31	0.23	0.00	0.00	0.00	163
	EXC 000	0.00	0.00	0.10	0.00	0.00	0.02	0.07	0.02	0.00	0.00	0.00	21

APPENDIX E-4 (continued)

ER65B

STATE OF MAINE - DEPARTMENT OF ENVIRONMENTAL PROTECTION
SUMMARY REPORT OF SELF MONITORED PARAMETERS FOR MUNICIPAL LICENSES

DATE 08/04/82
PAGE 109

COUNTY OF OXFORD

NORWAY TOWN OF
POINT SOURCE 01 IS TREATMENT FAC OUTFALL

LICENSE #: 002647 NPDES #: ME0100455 LICENSE STATUS IS ACTIVE

PARAMETERS	JAN 1982	FEB 1982	MAR 1982	APR 1982	MAY 1982	JUN 1982	JUL 1981	AUG 1981	SEP 1981	OCT 1981	NOV 1981	DEC 1981	TOTAL-AVE
PH	6.7	6.7	6.4	6.3	6.8	6.7	6.6	7.0	6.8	6.6	7.6	6.9	6.3000
AVE	7.1	6.9	6.8	7.1	9.1	8.5	7.8	8.0	7.6	8.9	8.4	7.6	NONE
MAX	020	019	023	018	020	022	022	021	021	021	018	022	9.1000
SAM	000	000	000	000	004	000	000	000	000	000	000	000	247
EXC	000	000	000	000	000	000	000	000	000	000	000	000	04

SOURCE: New England River Basins Commission, Androscoggin River Basin Overview, September 1981

APPENDIX E-4 (continued)
 STATE OF MAINE - DEPARTMENT OF ENVIRONMENTAL PROTECTION
 SUMMARY REPORT OF SELF MONITORED PARAMETERS FOR MUNICIPAL LICENSES

COUNTY OF OXFORD

PARIS UTILITIES DISTRICT		LICENSE # : 000632 NPDES # : ME0100951												LICENSE STATUS IS ACTIVE	
POINT SOURCE 01 IS FINAL EFFLUENT		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL-AVE	
PARAMETERS		1982	1982	1982	1982	1982	1982	1981	1981	1981	1981	1981	1981		
FLOW RATE MGD	MIN	0.28	0.27	0.24	0.27	0.25	0.22	0.40	0.27	0.28	0.30	0.25	0.27	0.2200	
	AVE	0.688	0.682	0.913	1.038	0.665	0.724	0.959	0.806	0.800	0.960	0.751	0.698	0.8070	
	MAX	2.70	3.72	4.86	4.80	2.57	6	6.00	6.00	6.00	6.00	4.75	5.50	6.0000	
	SAM	031	028	031	030	031	030	031	031	030	031	030	031	365	
EXC	000	000	000	000	000	000	000	000	000	000	000	000	000	00	
BOD LB/DAY	MIN	106	117	107	174	126	105	236	154	145	153	113	94	94.0000	
	AVE	576	205	371	516	216	350	716	350	421	385	263	212	381.7500	
	MAX	2560	319	1391	2942	795	1249	4918	1516	1258	1989	563	455	4918.0000	
	SAM	012	012	013	014	012	013	014	012	012	012	010	013	149	
EXC	004	000	001	002	000	001	003	003	002	003	002	000	000	18	
BOD MG/L	MIN	21	17	14	19	20	19	26	22	20	17	23	17	14.0000	
	AVE	77	29	42	48	31	40	69	43	37	38	35	28	43.0833	
	MAX	328	43	133	239	108	89	405	160	67	115	78	51	405.0000	
	SAM	012	012	013	014	012	013	014	012	012	012	010	013	149	
EXC	008	000	004	005	002	006	008	008	003	004	003	001	000	44	
SUSP. SOLIDS LB/DAY	MIN	163	134	183	128	126	162	162	162	201	136	122	178	122.0000	
	AVE	419	249	748	1207	331	684	1599	645	702	558	234	303	639.9166	
	MAX	1374	712	3953	9060	1738	3088	15154	3335	2028	4324	462	660	15154.0000	
	SAM	012	012	013	014	012	013	014	012	012	012	010	013	149	
EXC	001	000	003	006	001	005	007	003	005	005	002	000	000	33	
SUSP. SOLIDS MG/L	MIN	22	18	22	14	16	26	18	55	30	20	16	26	14.0000	
	AVE	57	35	82	108	47	74	146	77	58	46	31	42	66.9166	
	MAX	176	96	378	736	236	220	1248	352	124	250	64	74	1248.0000	
	SAM	012	012	013	014	012	013	014	012	012	012	010	013	149	
EXC	004	001	007	007	003	008	007	006	007	007	003	000	003	56	
CHROMIUM LB/DAY	MIN	2.50	2.39	2.59	2.57	2.98	4.16	2.48	3.3	2.71	1.69	1.55	4.25	1.5500	
	AVE	6.08	3.46	3.58	6.07	4.54	11	13.76	9.7	1526	3.55	4.90	9.82	133.5383	
	MAX	15.61	4.13	4.48	12.27	7.05	21.38	27.36	18.4	45.30	5.34	9.17	18.33	45.3000	
	SAM	004	004	004	005	004	004	005	004	004	005	004	005	52	
EXC	002	000	000	002	000	002	004	004	002	002	000	000	003	17	
CHROMIUM UG/L	MIN	290	380	330	280	380	570	270	470	410	220	200	620	200.0000	
	AVE	778	490	432	620	712	1468	1494	1168	1220	434	802	1722	945.0000	
	MAX	2000	750	520	1110	1130	2600	3200	1550	2750	570	1950	4370	4370.0000	
	SAM	004	004	004	005	004	004	005	004	004	005	004	005	52	
EXC	002	001	001	002	002	004	004	004	001	003	002	002	005	28	
HEX-CHROMIUM UG/L	MIN	0	0	0	0	0	0	0	0	0	0	0	0	0.0000	
	AVE	0	0	0	0	0	0	0	0	0	0	0	0	0.0000	
	MAX	0	0	0	0	0	0	0	0	0	0	0	0	0.0000	
	SAM	004	004	004	005	004	004	005	004	004	005	004	005	005	52
EXC	000	000	000	000	000	000	000	000	000	000	000	000	000	00	

APPENDIX E-4 (continued)

ER65B

STATE OF MAINE - DEPARTMENT OF ENVIRONMENTAL PROTECTION
SUMMARY REPORT OF SELF MONITORED PARAMETERS FOR MUNICIPAL LICENSES

DATE 08/04/82
PAGE 111

COUNTY OF OXFORD

PARIS UTILITIES DISTRICT		PARIS UTILITIES DISTRICT												LICENSE STATUS IS ACTIVE	
POINT SOURCE 01 IS FINAL EFFLUENT		LICENSE #: 000632 NPDES #: MEO100951													
PARAMETERS		JAN 1982	FEB 1982	MAR 1982	APR 1982	MAY 1982	JUN 1982	JUL 1981	AUG 1981	SEP 1981	OCT 1981	NOV 1981	DEC 1981	TOTAL-AVE	
OIL-GREASE		MIN 8.77	3.03	3.24	4.88	4.16	3.67	7.41	3.08	1.34	2.70	2.51	3.73	1.3400	
MG/L		AVE 19.17	6.60	8.26	7.53	5.83	4.63	11.72	5.82	4.96	3.96	3.54	4.86	7.2400	
		MAX 35.11	11.27	14.45	12.10	7.85	5.76	18.99	8.63	9.71	6.55	4.96	5.48	35.1100	
		SAM 004	004	005	004	004	005	005	004	004	005	004	005	35.1100	
		EXC 002	000	000	000	000	000	001	000	000	000	000	000	53	
SETT. SOLIDS		MIN KO.1	KO.1	KO.1	KO.1	KO.1	KO.1	0	KO.1	KO.1	KO.1	KO.1	KO.1	0.0000	
ML/L		AVE 0.05	0.05	5.6	0.8	0.04	1.35	2.8	0.2	0.3	0.3	0.05	0.07	0.9675	
		MAX 0.4	0.5	147.0	14.5	0.2	56	100.0	7.5	13.0	9.5	0.8	0.8	147.0000	
		SAM 051	045	054	047	050	051	053	052	051	052	049	053	608	
		EXC 001	002	007	007	000	008	012	003	006	004	003	003	56	
FECAL COLIFORM		MIN 0	0	0	0	0	0	0	0	0	0	0	0	0.0000	
COL/100		AVE 1233	0	221	1731	0	146	27822	3991	467	2365	4839	1146	3663.4166	
		MAX 13200	0	1550	17000	0	1280	250000	TNTC	TNTC	TNTC	25200	12400	250000.0000	
		SAM 012	012	014	013	012	014	013	013	013	013	012	014	155	
		EXC 002	000	003	002	000	002	004	003	006	011	006	003	42	
CHLORINE		MIN 0	0.2	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0000	
MG/L		AVE ---	---	---	---	---	---	---	---	---	---	---	---	NONE	
		MAX 2.6	2.1	1.7	2.3	2.7	2.6	3.0	2.5	3.0	1.7	1.6	2.8	3.0000	
		SAM 051	045	054	047	050	051	053	052	048	028	049	053	581	
		EXC 016	010	010	023	046	025	031	004	007	001	003	019	195	
PH		MIN 6.4	5.5	7.0	6.3	3.3	3.0	3.5	3.7	2.9	2.9	4.0	6.0	2.9000	
SU		AVE ---	---	---	---	---	---	---	---	---	---	---	---	NONE	
		MAX 9.8	8.0	7.8	7.7	7.6	7.2	7.6	7.4	7.0	7.6	7.8	7.8	9.8000	
		SAM 051	045	054	047	050	051	053	052	051	052	049	053	608	
		EXC 002	001	000	000	003	020	008	011	027	008	006	000	86	

SOURCE: New England River Basins Commission, Androscoggin River Basin Overview, September 1981.

LICENSED INDUSTRIAL DISCHARGES

APPENDIX E-5
Licensed Industrial Discharges

Basin/Name	Location	Receiving Water	Product or Process	Nature of Discharge(s)
<u>Androscoggin basin</u>				
Brown Company	Berlin, NH	Androscoggin River	pulp & paper	treated process water; cooling water
Mt. Zircon Springs	Rumford, ME	Androscoggin River	beverage canner	wash water
Breau's Dairy	Rumford, ME	unnamed tributary	dairy	cooling water
Boise Cascade Paper Co.	Rumford, ME	Androscoggin River	pulp & paper	treated process water, cooling water
Diamond Int'l Company	West Peru, ME	Androscoggin River	clothespins & towels	cooling water; treated sanitary
International Paper Co.	Jay, ME	Androscoggin River	pulp & paper	treated process water; treated sanitary
James River Otis, Inc.	Jay, ME	Androscoggin River	paper	cooling water
Bonneau's Supermarket	Lewiston, ME	tributary to Androscoggin	supermarket	cooling water
Phillips Elmet Corp.	Lewiston, ME	tributary to Hart Brook	manufacturing	cooling water
Bates Fabrics, Inc.	Lewiston, ME	Androscoggin River	bedspreads	cooling water
U.S. Gypsum	Lisbon Falls, ME	Androscoggin River	insulating board	treated backwash
Pejepscot Paper Co.	Topsham, ME	Androscoggin River	pulp & paper	treated process water
Central Maine Power Co.	Brunswick, ME	Androscoggin River	hydroelectricity	sump water
Webster Rubber Co.	Sabattus, ME	Sabattus River	heels & soles	cooling water
Maine Electronics, Inc.	Lisbon, ME	Sabattus River	printed circuit boards	treated process water
<u>Little Androscoggin basin</u>				
Robinson Manufacturing Co.	Oxford, ME	Thompson Lake Outlet	wool products	treated process water; cooling water
Marcal Paper Mill, Inc.	Mechanic Falls, ME	Little Androscoggin River	paper	treated process water
Bonan Footwear Co.	Auburn, ME	Little Androscoggin River	rubber fabrics	cooling water
Pioneer Plastics Corp.	Auburn, ME	Little Androscoggin River	laminated plastic sheets	cooling water

Source: ME DEP, 1980
 NEWSFCC, 1979

SOURCE: New England River Basins Commission, Androscoggin River Basin Overview, September 1981.

SUMMARY REPORT OF SELF MONITORED PARAMETERS
FOR INDUSTRIAL AND COMMERCIAL LICENSES

APPENDIX E-6

ER85B

STATE OF MAINE - DEPARTMENT OF ENVIRONMENTAL PROTECTION
 SUMMARY REPORT OF SELF MONITORED PARAMETERS FOR INDUSTRIAL AND COMMERCIAL LICENSES
 SELECTED FOR THE FOLLOWING SIC CODES : ALL

DATE 08/04/82
 PAGE 218

COUNTY OF OXFORD

ROBINSON MANUFACTURING COMPANY, OXFORD
 POINT SOURCE 01 IS PROCESS TRTD

LICENSE #: 000612 NPDES #: ME0002526

LICENSE STATUS IS ACTIVE

PARAMETERS	JAN 1982	FEB 1982	MAR 1982	APR 1982	MAY 1982	JUN 1982	JUL 1981	AUG 1981	SEP 1981	OCT 1981	NOV 1981	DEC 1981	TOTAL-AVE
FLOW RATE													
MIN	0.264	0.287	0.2354	0.1843	0.153	0.2135	0.2926	0.2763	0.287	0.2634	0.257	0.236	0.1530
AVE	0.319	0.324	0.2964	0.2496	0.250	0.3310	0.3435	0.3232	0.337	0.3414	0.313	0.345	0.3144
MAX	0.381	0.357	0.3343	0.3010	0.355	0.3952	0.4373	0.4166	0.409	0.3904	0.372	0.397	0.4373
MGD													
SAM	031	028	031	030	031	030	031	031	030	031	030	031	365
EXC	001	001	000	000	000	001	001	001	001	001	001	001	09
BOD													
MIN	111	131	24	22	51	69	19	7	25	4	11	48	4.0000
AVE	200	155	58	80	80	242	87	51	100	9	18	124	100.3333
MAX	289	187	116	170	164	542	272	91	248	19	29	240	542.0000
MG/L													
SAM	004	004	005	004	004	005	005	004	004	004	004	005	52
EXC	003	001	000	000	000	003	001	000	001	000	000	002	11
SUSP. SOLIDS													
MIN	375	506	89	99	131	172	274	480	305	116	114	435	89.0000
AVE	781	658	238	268	347	294	427	698	1071	136	400	828	512.1666
MAX	1366	785	342	427	832	357	881	937	2969	160	1037	1703	2969.0000
LB/DAY													
SAM	004	004	005	004	004	005	005	004	004	004	004	005	52
EXC	003	004	000	000	001	000	002	004	002	000	001	004	21
SUSP. SOLIDS													
MIN	129	196	39	48	78	70	82	192	106	36	42	143	36.0000
AVE	280	240	91	135	149	104	208	252	370	43	150	285	192.2500
MAX	480	275	117	245	329	133	554	360	1060	50	393	610	1060.0000
MG/L													
SAM	004	004	005	004	004	005	005	004	004	004	004	005	52
EXC	003	003	000	001	001	000	002	006	002	000	001	003	22
COD													
MIN	3105	2250	375	350	358	366	1360	1318	388	237	1037	1896	237.0000
AVE	4074	2546	560	639	1214	903	1841	2265	2820	1458	1716	2804	1903.3333
MAX	5410	3136	928	1170	2557	1454	2098	3513	6566	2334	2733	3897	6566.0000
LB/DAY													
SAM	004	004	004	004	004	004	005	004	004	004	004	005	50
EXC	005	002	000	000	000	000	000	002	002	000	000	003	14
COD													
MIN	1246	830	140	170	257	121	504	527	135	77	484	623	77.0000
AVE	1470	930	209	327	522	329	809	786	957	456	673	957	702.0833
MAX	1901	1099	318	671	1010	558	1319	1011	2344	728	1036	1265	2344.0000
MG/L													
SAM	004	001	004	004	004	004	005	004	004	004	004	005	47
EXC	005	001	000	000	000	000	002	000	002	000	000	003	13
CHROMIUM													
MIN	---	---	0.3	---	---	0.66	---	---	KO.4	---	---	NORPT	0.3000
AVE	---	---	0.3	---	---	0.66	---	---	KO.4	---	---	NORPT	0.4533
MAX	---	---	0.3	---	---	0.66	---	---	KO.4	---	---	KO.3	0.6600
LB/DAY													
SAM	000	000	001	000	000	001	000	000	001	000	000	001	04
EXC	000	000	000	000	000	000	000	000	000	000	000	000	00

APPENDIX E-6 (continued)

ER85B

STATE OF MAINE - DEPARTMENT OF ENVIRONMENTAL PROTECTION
 SUMMARY REPORT OF SELF MONITORED PARAMETERS FOR INDUSTRIAL AND COMMERCIAL LICENSES
 SELECTED FOR THE FOLLOWING SIC CODES : ALL

DATE 08/04/82
 PAGE 219

COUNTY OF OXFORD

ROBINSON MANUFACTURING COMPANY, OXFORD
 POINT SOURCE 01 IS PROCESS TRTD

LICENSE #: 000612 NPDES #: ME0002526 LICENSE STATUS IS ACTIVE

PARAMETERS	JAN 1982	FEB 1982	MAR 1982	APR 1982	MAY 1982	JUN 1982	JUL 1981	AUG 1981	SEP 1981	OCT 1981	NOV 1981	DEC 1981	TOTAL-AVE
CHROMIUM UG/L	MIN	---	---	---	---	270	---	---	120	---	---	NORPT	120.0000
	AVE	---	---	---	---	270	---	---	120	---	---	NORPT	170.0000
	MAX	---	---	---	---	270	---	---	120	---	---	110	270.0000
	SAM	000	000	001	000	001	000	000	001	000	000	001	04
	EXC	000	000	000	000	000	000	000	000	000	000	000	00
PHENOLICS LB/DAY	MIN	---	---	---	---	KO.02	---	---	KO.02	---	---	NORPT.	0.0200
	AVE	---	---	---	---	KO.02	---	---	KO.02	---	---	NORPT	0.0200
	MAX	---	---	---	---	K.02	---	---	KO.02	---	---	KO.02	0.0200
	SAM	000	000	001	000	001	000	000	001	000	000	001	04
	EXC	000	000	000	000	000	000	000	000	000	000	000	00
PHENOLICS UG/L	MIN	---	---	---	---	K6	---	---	K6	---	---	NORPT	6.0000
	AVE	---	---	---	---	K6	---	---	K6	---	---	NORPT	6.0000
	MAX	---	---	---	---	K6	---	---	K6	---	---	K6	6.0000
	SAM	000	000	001	000	001	000	000	001	000	000	001	04
	EXC	000	000	000	000	000	000	000	000	000	000	000	00
SULFIDE LB/DAY	MIN	---	---	---	---	1.2	---	---	K1	---	---	NORPT	0.8000
	AVE	---	---	---	---	1.2	---	---	K1	---	---	NORPT	1.0000
	MAX	---	---	---	---	1.2	---	---	K1	---	---	0.9	1.2000
	SAM	000	000	001	000	001	000	000	001	000	000	001	04
	EXC	000	000	000	000	000	000	000	000	000	000	000	00
SULFIDE MG/L	MIN	---	---	---	---	0.44	---	---	KO.3	---	---	NORPT	0.3000
	AVE	---	---	---	---	0.44	---	---	0.1	---	---	NORPT	0.2800
	MAX	---	---	---	---	0.44	---	---	0.3	---	---	0.3	0.4400
	SAM	000	000	001	000	001	000	000	001	000	000	001	04
	EXC	000	000	000	000	000	000	000	000	000	000	000	00
SETT. SOLIDS ML/L	MIN	KO.1	KO.1	KO.1	KO.1	0	KO.1	KO.1	KO.1	KO.1	KO.1	KO.1	0.0000
	AVE	0.1	KO.1	KO.1	0.1	0	KO.1	0.1	0.1	KO.1	KO.1	KO.1	0.1333
	MAX	0.3	0.3	0.3	0.3	0.1	2.0	0.3	0.3	0.3	0.3	0.3	2.0000
	SAM	012	012	014	013	012	013	015	013	013	013	013	153
	EXC	000	000	000	000	000	002	000	000	000	000	000	05
CHLORINE MG/L	MIN	0	0	0	0	0	0.1	0.1	0.1	0.1	0.1	0	0.0000
	AVE	---	---	---	---	---	---	---	---	---	---	---	NONE
	MAX	0.2	0.2	0.8	1.0	0.1	0.2	0.2	0.3	1.0	0.3	0.3	1.0000
	SAM	012	012	014	013	012	015	010	013	013	013	013	155
	EXC	000	000	000	000	000	000	000	000	000	000	000	00
FECAL COLIFORM COL/100	MIN	---	---	---	---	---	---	---	---	---	---	---	NONE
	AVE	---	---	---	---	---	---	---	---	---	---	---	NONE
	MAX	443	635	1643	692	11111	11111	11111	11111	7	0	290	111111.0000
	SAM	004	004	005	004	004	005	003	004	004	004	005	51
	EXC	001	002	001	001	002	004	004	002	000	000	001	22

APPENDIX E-6 (continued)

STATE OF MAINE - DEPARTMENT OF ENVIRONMENTAL PROTECTION
 SUMMARY REPORT OF SELF MONITORED PARAMETERS FOR INDUSTRIAL AND COMMERCIAL LICENSES
 SELECTED FOR THE FOLLOWING SIC CODES : ALL

ER85B

DATE 08/04/82
 PAGE 220

COUNTY OF OXFORD

ROBINSON MANUFACTURING COMPANY, OXFORD
 POINT SOURCE 01 IS PROCESS TRTD

PARAMETERS	LICENSE # : 000612 NPDES # : ME0002526 LICENSE STATUS IS ACTIVE												
	JAN 1982	FEB 1982	MAR 1982	APR 1982	MAY 1982	JUN 1982	JUL 1981	AUG 1981	SEP 1981	OCT 1981	NOV 1981	DEC 1981	TOTAL-AVE
PH	6.70	6.50	6.2	6.2	6.6	6.10	6.75	7.1	7.1	7.10	6.95	6.5	6.1000
AVE	---	---	---	---	---	---	---	---	---	---	---	---	NONE
MAX	7.55	7.55	7.55	7.8	7.6	7.45	7.70	7.7	7.8	7.65	7.60	7.4	7.8000
SAM	031	028	031	030	031	030	015	031	030	031	030	031	349
EXC	000	000	000	000	000	000	000	000	000	000	000	000	00

SOURCE: New England River Basins Commission, Androscoggin River Basin Overview, September 1981.

APPENDIX E-6 (continued)

ER85B

STATE OF MAINE - DEPARTMENT OF ENVIRONMENTAL PROTECTION
 SUMMARY REPORT OF SELF MONITORED PARAMETERS FOR INDUSTRIAL AND COMMERCIAL LICENSES
 SELECTED FOR THE FOLLOWING SIC CODES : ALL

DATE 08/04/82
 PAGE 11

COUNTY OF ANDROSCOGGIN

PARAMETERS	LICENSE # : 000556 NPDES # : ME0002011												TOTAL-AVE
	JAN 1982	FEB 1982	MAR 1982	APR 1982	MAY 1982	JUN 1982	JUL 1981	AUG 1981	SEP 1981	OCT 1981	NOV 1981	DEC 1981	
MARCEL PAPER MILL INC POINT SOURCE 01 IS PROCESS, TRTD	LICENSE STATUS IS ACTIVE												
FLOW RATE	MIN	NDRPT	NDEFF	NDEFF	NDEFF	0.911	0.635	1227.1	NDRPT	0.074	NDRPT	NDEFF	0.0104
MGD	AVE	NDRPT	NDEFF	NDEFF	NDEFF	1.209	2.076	2095.6	NDRPT	0.514	NDRPT	NDEFF	300.2208
	MAX	NDRPT	NDEFF	NDEFF	NDEFF	1.935	2.715	2730.1	NDRPT	1.193	NDRPT	NDEFF	2730.1000
	SAM	000	000	000	000	030	031	031	014	005	000	000	166
	EXC	000	000	000	000	000	000	000	000	000	000	000	00
BOD	MIN	---	---	---	---	---	---	---	---	---	---	---	NONE
LB/DAY	AVE	NDRPT	NDEFF	NDEFF	NDEFF	96	442.38	477.64	32	NDRPT	NDRPT	NDEFF	233.4950
	MAX	NDRPT	NDEFF	NDEFF	NDEFF	162	448.98	816.98	41	NDRPT	NDRPT	NDEFF	816.9800
	SAM	000	000	000	000	004	003	004	002	000	000	000	22
	EXC	000	000	000	000	000	000	001	000	000	000	000	01
SUSP. SOLIDS	MIN	---	---	---	---	---	---	---	---	---	---	---	NONE
LB/DAY	AVE	NDRPT	NDEFF	NDEFF	NDEFF	74	193.22	233.38	78	68.6	NDRPT	NDEFF	138.6000
	MAX	NDRPT	NDEFF	NDEFF	NDEFF	159	345.66	301.09	197	121	NDRPT	NDEFF	570.0000
	SAM	000	000	000	000	004	003	004	002	005	000	000	27
	EXC	000	000	000	000	000	000	000	000	000	000	000	00
WATER TEMP.	MIN	---	---	---	---	---	---	---	---	---	---	---	NONE
DEG-F	AVE	NDRPT	NDEFF	NDEFF	NDEFF	62	78	84	62	58	NDRPT	NDEFF	66.0000
	MAX	NDRPT	NDEFF	NDEFF	NDEFF	64	86	87	77	60	NDRPT	NDEFF	87.0000
	SAM	000	000	000	000	030	114	093	084	030	000	000	621
	EXC	000	000	000	000	000	000	000	000	000	000	000	00
OIL-GREASE	MIN	NDRPT	NDEFF	NDEFF	NDEFF	5	1.4	1.0	1.0	NDRPT	NDRPT	---	1.0000
MG/L	AVE	NDRPT	NDEFF	NDEFF	NDEFF	5.5	1.4	1.0	1.0	NDRPT	NDRPT	---	12.2333
	MAX	NDRPT	NDEFF	NDEFF	NDEFF	6	1.4	1.0	1.0	NDRPT	NDRPT	NDEFF	99.0000
	SAM	000	000	000	000	002	001	002	001	000	000	000	10
	EXC	000	000	000	000	000	000	000	000	000	000	000	02
CHROMIUM	MIN	---	---	---	---	---	---	---	---	---	---	---	NONE
UG/L	AVE	---	---	---	---	---	---	---	---	---	---	---	NONE
	MAX	---	---	---	---	0.005	---	---	---	---	NDEFF	---	0.0050
	SAM	000	000	000	000	001	000	000	000	000	000	000	01
	EXC	000	000	000	000	000	000	000	000	000	000	000	00
ZINC	MIN	---	---	---	---	---	---	---	---	---	---	---	NONE
UG/L	AVE	---	---	---	---	---	---	---	---	---	---	---	NONE
	MAX	---	---	---	---	0.02	---	---	---	---	NDEFF	---	0.0200
	SAM	000	000	000	000	001	000	000	000	000	000	000	01
	EXC	000	000	000	000	000	000	000	000	000	000	000	00
LEAD (INFLUENT)	MIN	---	---	---	---	---	---	---	---	---	---	---	NONE
UG/L	AVE	---	---	---	---	---	---	---	---	---	---	---	NONE
	MAX	---	---	---	---	0.002	---	---	---	---	NDEFF	---	0.0020
	SAM	000	000	000	000	001	000	000	000	000	000	000	01
	EXC	000	000	000	000	000	000	000	000	000	000	000	00

ER85B

STATE OF MAINE - DEPARTMENT OF ENVIRONMENTAL PROTECTION
 SUMMARY REPORT OF SELF MONITORED PARAMETERS FOR INDUSTRIAL AND COMMERCIAL LICENSES
 SELECTED FOR THE FOLLOWING SIC CODES : ALL

DATE 08/04/82
 PAGE 12

COUNTY OF ANDROSCOGGIN

PARAMETERS	JAN 1982	FEB 1982	MAR 1982	APR 1982	MAY 1982	JUN 1982	JUL 1981	AUG 1981	SEP 1981	OCT 1981	NOV 1981	DEC 1981	TOTAL-AVE
MARCAL PAPER MILL INC , MECHANIC FALLS , LICENSE #: 000556 NPDES #: ME0002011 LICENSE STATUS IS ACTIVE													
POINT SOURCE 01 IS PROCESS, TRTD													
LEAD (EFFLUENT) UG/L	MIN ---	---	---	---	---	---	---	---	---	---	---	---	NONE
	AVE ---	---	---	---	---	---	---	---	---	---	---	---	NONE
	MAX ---	---	---	---	---	---	---	---	---	---	---	---	NONE
	SAM 000	000	000	000	000	0.002	000	000	000	000	000	000	0.0020
	EXC 000	000	000	000	000	000	000	000	000	000	000	000	01
													00
LEAD DIFFERENCE UG/L	MIN ---	---	---	---	---	---	---	---	---	---	---	---	NONE
	AVE ---	---	---	---	---	---	---	---	---	---	---	---	NONE
	MAX ---	---	---	---	---	---	---	---	---	---	---	---	NONE
	SAM 000	000	000	000	000	001	000	000	000	000	000	000	0.0000
	EXC 000	000	000	000	000	000	000	000	000	000	000	000	01
													00
MERCURY (INFLNT) UG/L	MIN ---	---	---	---	---	---	---	---	---	---	---	---	NONE
	AVE ---	---	---	---	---	---	---	---	---	---	---	---	NONE
	MAX ---	---	---	---	---	---	---	---	---	---	---	---	NONE
	SAM 000	000	000	000	000	6.1	000	000	000	000	000	000	6.1000
	EXC 000	000	000	000	000	000	000	000	000	000	000	000	01
													00
MERCURY (EFFLNT) UG/L	MIN ---	---	---	---	---	---	---	---	---	---	---	---	NONE
	AVE ---	---	---	---	---	---	---	---	---	---	---	---	NONE
	MAX ---	---	---	---	---	---	---	---	---	---	---	---	NONE
	SAM 000	000	000	000	000	1.5	000	000	000	000	000	000	1.5000
	EXC 000	000	000	000	000	000	000	000	000	000	000	000	01
													00
MERCURY (DIFFNC) UG/L	MIN ---	---	---	---	---	---	---	---	---	---	---	---	NONE
	AVE ---	---	---	---	---	---	---	---	---	---	---	---	*NONE
	MAX ---	---	---	---	---	---	---	---	---	---	---	---	0.0000
	SAM 000	000	000	000	000	0	000	000	000	000	000	000	01
	EXC 000	000	000	000	000	000	000	000	000	000	000	000	00
													00
TURBIDITY JCU	MIN NORPT	NORPT	NORPT	9	7	7	10.0	9.0	6.0	4	NORPT	NORPT	4.0000
	AVE NORPT	NORPT	NORPT	12.4	13	13.5	26.4	23.0	15.0	25	NORPT	NORPT	18.3285
	MAX NORPT	NORPT	NORPT	20	20	22	40.0	40.0	35.0	40	NORPT	NORPT	40.0000
	SAM 000	000	000	030	031	030	031	031	030	031	000	000	2.14
	EXC 000	000	000	000	000	000	000	000	000	000	000	000	00
													00
PH	MIN NORPT	NORPT	NORPT	6.1	6.8	6.2	6.0	6.0	6.0	6.0	NORPT	NORPT	6.0000
	AVE ---	---	---	---	---	---	---	---	---	---	---	---	NONE
	MAX NORPT	NORPT	NORPT	7.0	7.2	7.2	7.0	7.0	7.1	7.6	NORPT	NORPT	7.6000
	SAM 000	000	000	144	126	154	114	093	084	030	000	000	745
	EXC 000	000	000	000	000	000	000	000	000	000	000	000	00

SOURCE: New England River Basins Commission, Androscoggin River Basin Overview, September 1981.

AGENCY CORRESPONDENCE

AGENCY CORRESPONDENCE

<u>Consultation</u>	<u>Date</u>
Maine Historic Preservation Commission to FERC	8/14/84
Maine Historic Preservation Commission to Applicant's Environmental Consultant	9/24/84
Maine Department of Conservation to Applicant	9/24/84
U.S. Environmental Protection Agency to Applicant	10/15/84
U.S. Department of the Interior, Fish and Wildlife Service to Applicant	10/19/84
U.S. Department of Commerce, National Marine Fisheries Service to Applicant	10/19/84
Maine Department of Environmental Protection to Applicant	10/22/84
Applicant to U.S. Environmental Protection Agency	10/23/84
Maine Department of Inland Fisheries and Wildlife to Applicant	12/19/84
Maine Department of Marine Resources to Applicant	1/30/85
Applicant to Maine Historic Preservation Commission	7/8/85
Applicant to Maine Historic Preservation Commission	11/4/85
Applicant to Agencies**	11/22/85
Department of the Army, New England Division Corps of Engineers to Applicant	11/26/85
U.S. Department of the Interior Fish and Wildlife Service to Applicant	11/27/85
Maine Department of Environmental Protection to Applicant	12/2/85
U.S. Environmental Protection Agency to Applicant	12/13/85

**Because all Agencies received identical letters, only one sample letter is included in this Appendix.

Applicant to Maine Department of Environmental Protection (Requesting 401 Water Quality Certification)	4/22/86
Maine Department of Environmental Protection to Applicant	5/6/86
Applicant to U.S. Department of the Interior, Fish and Wildlife Service	5/6/86
Federal Energy Management Agency to Applicant	5/19/86
Applicant's Biological Consultant to U.S. Department of the Interior, Fish and Wildlife Service	7/10/86
Applicant's Archaeological Consultant to Maine Historic Preservation Commission	7/11/86
Maine Historic Preservation Commission to Applicant	7/31/86
Applicant to Department of the Army, New England Division Corps of Engineers (requesting general permit under Section 404)	8/28/86
Applicant to Agencies**	11/14/86
Maine Department of Energy Resources to Applicant	11/19/86
Department of the Army, New England Division Corps of Engineers to Applicant	11/21/86
Maine Historic Preservation Commission to Applicant	12/1/86
Maine Department of Conservation to Applicant	12/10/86
Atlantic Sea Run Salmon Commission to Applicant	12/10/86
U.S. Department of the Interior Geological Survey to Applicant	12/19/86
U.S. Department of the Interior Fish and Wildlife Service to Applicant	12/31/86
Maine Department of Marine Resources to Applicant	1/9/87
Maine Department of Inland Fisheries and Wildlife to Applicant	1/20/87
Maine Department of Environmental Protection to Applicant	1/29/87

Applicant to Maine Department of Inland Fisheries and Wildlife	2/6/87
Applicant to U.S. Department of the Interior, Fish and Wildlife Service	2/6/87
Applicant to Atlantic Sea Run Salmon Commission	2/6/87
Applicant to Maine Department of Marine Resources	2/6/87
Applicant to Maine Department of Inland Fisheries and Wildlife	3/20/87
Applicant to U.S. Department of the Interior, Fish and Wildlife Service	3/20/87
Applicant to Atlantic Sea Run Salmon Commission	3/20/87
Applicant to Maine Department of Marine Resources	3/20/87
Applicant to Maine Historic Preservation Commission	3/20/87
Applicant to Federal Emergency Management Agency	3/25/87

MAINE HISTORIC PRESERVATION COMMISSION
55 CAPITOL STREET
AUGUSTA, MAINE 04333

August 14 1984

Mr. Kenneth F. Plumb, Secretary
Federal Energy Regulatory Commission
825 North Capitol Street, NE
Washington, D. C. 20426

re: COMMENT: FERC 8158, Littlefield Project, Auburn

Dear Mr. Plumb:

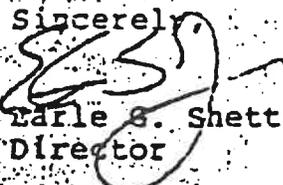
Applicant proposes major redevelopment of an existing dam and reflooding of an impoundment to its original elevation, plus addition of 2-foot flash boards.

The impoundment area has never been surveyed by a professional archaeologist, but the existence of at least one prehistoric (Indian) archaeological site (Maine Archaeological Survey number 23.11) is already known within the project area. It is likely that archaeological sites of significance to the National Register of Historic Places are located in the project area.

We request that FERC require a phased archaeological survey as part of the environmental studies for this project designed 1) to locate and assess the significance of archaeological sites in the project area; 2) if any are found, to prepare plans for mitigation of any impact done to restored water levels; and 3) carry out such mitigation before/during construction.

Applicant is urged to contact Dr. Arthur Spiess, archaeologist, of my staff, at their convenience to begin planning for the necessary archaeological survey. Dr. Spiess can recommend archaeological consultants with experience in Maine.

Sincerely,


Earle S. Shettleworth, Jr.
Director

cc: Denise R. Diesen, Applicant
Fred Springer, FERC

E-7-1

EGS/slm



SEP 25 1984

✓cc: Tex
Littlefields
Licensing

MAINE HISTORIC PRESERVATION COMMISSION
55 Capitol Street
State House Station 65
Augusta, Maine 04333

Earle G. Shettleworth, Jr.
Director

Telephone
207-289-213

September 24, 1984

Mr. Warren Guinan
Power Technics, Incorporated
190 Charles Street
Rochester, New Hampshire 03867

re: FERC 8158, Littlefield Project

Dear Mr. Guinan:

Our comments of August 14, 1984 to FERC concerning the necessity of a professional archaeological survey of the Littlefield Project impoundment margins are hereby transmitted to you (copy enclosed). The comment on p. 44 of the FERC license application that "no known... archaeological sites within the project bounds have been identified" is in error, as you can see by the enclosed letter.

Site #23.11 was discovered by a Maine State Museum crew during the 1982 or 1983 field season. It is now considered likely that restoration of the pool elevation will have an effect on significant archaeological properties that will have to be mitigated.

Again, you should contact Dr. Arthur Spiess of my staff to begin the process of hiring a contract archaeologist to do the work.

Sincerely,

Earle G. Shettleworth, Jr.
State Historic Preservation Officer



JOSEPH E. BRENNAN
GOVERNOR

STATE OF MAINE
MAINE DEPARTMENT OF CONSERVATION

STATE HOUSE STATION 22
AUGUSTA, MAINE 04333
TEL 207-289-2211

167
RICHARD B. ANDERSON
COMMISSIONER

September 24, 1984

Mr. Warren A. Guinan
Power Technics, Inc.
190 Charles Street
Rochester, NH 03867

Dear Mr. Guinan:

We have reviewed your report for the Littlefield Hydroelectric Development Project.

In our letter of August 30, 1984, to FERC on this project, we raised two issues:

- 1) Considering that a 101-acre impoundment is being recreated, the applicant should examine the need for a boat access site.
- 2) The applicant should inventory canoeing use and determine whether there is a need for a portage trail around the dam. If a portage trail is needed, we indicated that we would request that it be provided by the applicant.

While the application indirectly discusses these issues by describing the restrictive water quality, and by indicating that a canoe portage trail could be built, we feel that the report ought to address our concerns more specifically and directly.

Sincerely,

Ellen Baum
Planning Coordinator

EB/ehp

E-7-3



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION I

J. F. KENNEDY FEDERAL BUILDING, BOSTON, MASSACHUSETTS 02203

October 15, 1984

Warren A. Guinan, P.E.
Project Coordinator
Power Technics, Inc.
190 Charles Street
Rochester, NH 03867

RE: Coordination for License
Littlefield Hydroelectric Development Project

Dear Mr. Guinan:

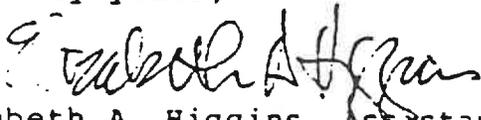
Thank you for sending us a copy of your Draft Application for License of Small Hydroelectric Power Project for the Littlefield Hydroelectric Development Project located on the Little Androscoggin River in Androscoggin County, Maine. Based on the information contained in your project description and environmental report, we do not object to issuance of a license. However we offer the following comments for your use in preparing the final license application.

As you know, the project may require a U.S. Army Corps of Engineers permit (individual or general) under Section 404 of the Clean Water Act. We suggest that the final environmental report address whether a Section 404 permit will be required. EPA participates in the review of 404 permit applications and will evaluate any proposed 404 action using "EPA's Guidelines for Specification of Disposal Sites for Dredged or Fill Material" (40 CFR Part 230), also known as 404 (b)(1) Guidelines.

This project must be operated in a manner which provides for an instantaneous minimum flow release sufficient to protect water quality downstream of the project. Because flows less than 7Q10 may not provide adequate assimilative capacity to prevent violations of water quality standards downstream, the project should at no time, except as limited by inflow, release flows less than 7Q10. We request that you calculate the 7Q10 for the project area and compare it to your proposed instantaneous minimum flow of 20 cfs. A long-term flow of 7Q10, however, could result in a significant detriment to the physical and biological quality of the stream, and therefore a higher flow may be necessary. An appropriate flow requirement for this project should be developed through consultation with FERC, the state agency responsible for issuing water quality certifications under Section 401 of the Clean Water Act, and the U.S. Fish and Wildlife Service. A site specific instream study may be determined to be necessary.

We will provide formal comments on the project during the FERC public notice process. Should you have any questions, please contact Donald Cooke of my staff at 617/223-1739.

Sincerely yours,



Elizabeth A. Higgins, Assistant Director
for Environmental Review
Office of Government Relations
& Environmental Review (RGR)



United States Department of the Interior

FISH AND WILDLIFE SERVICE
ECOLOGICAL SERVICES
P.O. BOX 1518
CONCORD, NEW HAMPSHIRE 03301

OCT 19 1984

Mr. Warren A. Guinan
Power Technics, Inc.
190 Charles Street
Rochester, New Hampshire 03867

Dear Mr. Guinan:

This responds to your letter, dated September 19, 1984, requesting our comments on the draft application for license for the Littlefield Hydroelectric Project, FERC No. 9158, located on the Little Androscoggin River in Maine.

We note that Littlefield Hydro Company (Applicant) has pending before the Federal Energy Regulatory Commission (FERC) an application for preliminary permit. This permit would allow for feasibility studies over an 18-month period, including an assessment of impacts on fish and wildlife resources, and of mitigation requirements.

Your draft application for license would appear to be premature, as it contains no report on studies of impacts on fish and wildlife resources, as would be required under the preliminary permit. The Littlefield project involves rebuilding a breached dam and restoration of an impoundment in a presently free-flowing segment of the Little Androscoggin River. The proposal also calls for a cycling mode of operation, with pond refilling and limited project outflows lasting up to a week during low flow conditions. Both the construction and operation of this project could therefore have significant impacts on fish and wildlife resources.

We suggest the following studies as a partial means of determining the environmental feasibility of this project:

1. Habitat Assessment: The fish and wildlife habitats that would be affected by this project include the proposed impoundment area and downstream river segment. A technique such as the Fish and Wildlife Service's Habitat Evaluation Procedures (HEP) would be used to assess existing and potential aquatic habitat, both with and without the project. Resident and anadromous fish species, including Atlantic salmon, American shad and alewife, should be used in the evaluation. The analysis should include determination of mitigation measures needed to offset losses in habitat value.

2. Instream Flow Study: The proposed cycling mode of operation would affect downstream aquatic habitat. Studies such as the Fish and Wildlife Service's Instream Flow Incremental Methodology should be employed to determine an optimum flow release that will protect and enhance downstream aquatic resources.
3. Cumulative Impact Assessment: The proposed project would be located in a river basin which is already heavily developed for hydropower. Programs related to the restoration of anadromous fish, and achievement of Clean Water Act goals (Class B water quality) are affected by the cumulative impact of individual hydropower projects.
4. Evaluation of Existing and Potential Angling Opportunities: As anadromous fish are restored to the Little Androscoggin, we would expect angling to increase. Fishing for salmon and shad take place in free-flowing waters. Therefore, construction of this project may reduce potential angling opportunities for these species. Such impacts need to be assessed by identifying potential angling sites in the project area and in the downstream river segment that would be subjected to fluctuating flow releases. Angling activity for resident species, both now and in the future should also be assessed.

After we receive the results of these studies, we will be better able to complete our evaluation of project-related impacts and prescribe needed mitigation. If you have any questions, please contact Mr. Gordon Russell of my staff at (603) 224-2585.

Sincerely yours,

Gordon E. Beckett
for Gordon E. Beckett
Supervisor
New England Field Office



UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE

Services Division
Habitat Protection Branch
14 Elm Street
Gloucester, MA 01930

October 19, 1984

Mr. Warren A. Guinan, PE
Project Coordinator
Power Technics, Inc.
190 Charles Street
Rochester, New Hampshire 03867

Dear Mr. Guinan:

We have reviewed the information provided in your September 19, 1984, letter regarding the Littlefield Hydroelectric Project on the Little Androscoggin River, in Androscoggin County, Maine.

The enhancement of commercially valuable Atlantic salmon and American shad stocks is an important goal of the National Marine Fisheries Service (NMFS). The State of Maine Department of Marine Resources is currently involved in reestablishing anadromous fish runs in the lower Androscoggin and the Little Androscoggin Rivers. The NMFS supports the state's efforts to restore anadromous fish runs. Therefore, we will recommend to the Federal Energy Regulatory Commission that the applicant address the construction of adequate fish passage facilities to accommodate the anadromous fish runs that are planned for reintroduction into the Little Androscoggin River.

Sincerely,

Thomas E. Bigford
Branch Chief



✓ LITTLEFIELD

OCT 25 1984

STATE OF MAINE

Department of Environmental Protection

MAIN OFFICE: RAY BUILDING, HOSPITAL STREET, AUGUSTA
MAIL ADDRESS: State House Station 17, Augusta, 04333



JOSEPH E. BRENNAN
GOVERNOR

HENRY E. WARREN
COMMISSIONER

October 22, 1984

Mr. Warren A. Guinan, P.E.
Project Coordinator
POWER TECHNICS, INC.
190 Charles Street
Rochester, N.H. 03867

RE: Littlefield Hydro Project
FERC No. 8758

Dear Mr. Guinan:

The Department has reviewed your letter of September 19 and the accompanying Draft Application for Minor License for the proposed Littlefield Hydro Project, located on the Little Androscoggin River in the City of Auburn, Androscoggin County, Maine.

In response to your consultation request, we offer the following comments.

1. Statutory and Regulatory Requirements, Pages 2-8: Paragraphs I.A, I.B, I.C, and I.D should be deleted, as the statutes cited no longer regulate hydropower development activities, and should be replaced by a reference to the Maine Waterway Development and Conservation Act, (MWD&CA) 38 M.R.S.A. Section 630-636 (copy enclosed); Paragraph II.A should be deleted, as the statute cited no longer regulates hydropower development activities; Paragraph V.A should be deleted and replaced by a reference to the MWD&CA; Paragraphs VI. C. 1-3 should be deleted and replaced by a reference to the Maine Dam Inspection, Registration, and Abandonment Act, 38 M.R.S.A. Sections 815-840, which is administered by DEP (copy enclosed).

We also note that FERC's regulations require that an applicant for a hydro project license have received or at least filed with the State for a Water Quality Certification pursuant to Section 401 of the Clean Water Act. We will accept and will acknowledge for inclusion in the final license application a brief written request for such certification.

2. Please provide a description of the size and surface elevations of the existing impoundment under representative low, normal, and high flow conditions.
3. Please provide a detailed map illustrating the extent of the current impoundment and the proposed impoundment.

4. We note that the City of Auburn has adopted flood plain zoning regulations along the Little Androscoggin River based on the 100-year flood plain as mapped by the Army Corps of Engineers for the Federal Emergency Management Agency Flood Insurance Study. The Corps' mapping assumed the Littlefield Dam in its current breached condition. The applicant will therefore be required to conduct a hydraulic backwater analysis according to FEMA guidelines to determine the boundaries of the new 100-year flood plain based on final project design. (We note that such a requirement was imposed in the State permit and FERC license for the Barker Mill Upper Project.)
5. The description in Exhibit A of the proposed plant operation mentions flashboards. The presence of flashboards is not, however, discussed in either the description of the original dam, the existing dam, or proposed redevelopment activities. Please clarify.
6. We note that the applicant proposes a cycling mode of operation, with an instantaneous minimum flow of 20 cfs or inflow, whichever is less, to be maintained at all times.

The DEP previously approved a similar cycling regime and minimum flow release for the Barker Mill Upper Project, which is located immediately below the Littlefield Dam. In issuing the license for this project, FERC also approved the cycling regime but imposed 20 cfs as an interim flow with a requirement for a minimum flow study.

Similarly, FERC has issued a license for the Hackett Mills Project, located immediately above the Littlefield Dam, imposing 40 cfs or inflow, whichever is less, as an interim flow with a requirement for a minimum flow study. DEP and FERC approved this project to operate in an instantaneous run-of-river mode, except as modified under critical water quality conditions.

We note that the draft application contains no analysis of the adequacy of the proposed minimum flow release for the protection and enhancement of aquatic resources. ✓

7. We recommend that the applicant consult with the Maine Bureau of Parks and Recreation regarding the possible need for a canoe portage or other recreational facilities at the site.
8. A detailed description of all proposed site development and construction activities, especially all in-stream work, should be provided in the Application to DEP for Project Approval Under the Maine Waterway Development and Conservation Act and Water Quality Certification.
9. The applicant should contact the City of Auburn regarding requirements for local shoreland zoning approvals.

Warren A. Guinan
October 22, 1984
Page -3-

10. We encourage the applicant to file concurrently with DEP and FERC. Our substantive review of the project will commence upon our receipt of the required number of copies of a completed State application and Application for License as filed with FERC. We will make final comments to FERC following the conclusion of the State review process and the issuance of our Findings of Fact and Order on Water Quality Certification.

Thank you for this opportunity to comment. If you should have any questions, please feel free to call me at 207-289-2111.

Sincerely,

Dana Paul Murch

DANA PAUL MURCH
Hydropower Coordinator
Bureau of Land Quality Control

DPM/jp

Enclosures

cc: Gordon Russell, USF&WS
Steve Timpano, IF&W
Lew Flagg, DIR
Ed Baum, ASRSC
Annee Tara, DOC
Betsy Elder, OER

POWER TECHNICS INC.

P.O. BOX 1469
DOVER, NH 03820
603-~~749-2892~~ 335-2606

*OS
me
Tiller*

October 23, 1984

Elizabeth A. Higgins,
Asst. Dir. for Environmental Review
Office of Government Relations
& Environmental Review (RGR)
United States Environmental Protection Agency
Region I
J.F. Kennedy Federal Building
Boston, Mass. 02203

✓

Subject: Littlefield Hydroelectric Development Project

Dear Ms. Higgins:

Thank you for your letter of October 15, 1984 in response to our draft application for license for the subject project.

Your comments for preparing the final license application will be carefully considered.

In preparing the draft application, the low-flow release specified was identical to the interim low-flow release contained in the license of Barker Mill Upper Project FERC No. 3562-001, which is the dam immediately downstream of the Littlefield Project. The 7Q10 is about 30 cfs which is based on statistics of the USGS. The gaging station used is #01058500 at Auburn, Me. (discontinued October 1, 1982) for the 42-years of record. However, a minimum flow study is required and a report of results to be filed with the Commission with recommendations for minimum flow releases from Upper Barker's Mill facilities. The interim 20 cfs for Upper Barker Mill was in turn based on a 20 cfs low-flow release as given in the license for Barker's Mill Hydroelectric Project No. 2808 issued February 23, 1979. This latter project is downstream of the others and is but a short distance above the confluence of the Little Androscoggin with the Androscoggin River. Until the study required for Barker Upper is completed and the Commission establishes the required release, we see no compelling reason to increase the low-flow release at Littlefield. Once the required release at Barker Upper is established, the proper release for Littlefield should be adjusted accordingly.

I trust that the above responds to your comments concerning the low-flow release. We look forward to your comments during the

Elizabeth A. Higgins
Power Technics, Inc.
Re: Littlefield Hydroelectric Dev. Project
October 23, 1984
Page Two

FERC public notice process. Should you have any questions or require additional information, please contact me.

Sincerely yours,



Warren A. Guinan, P.E.
Project Coordinator

WAG:reb

cc: Olof Nelson ✓



DEC 22 1984

DEPARTMENT OF
INLAND FISHERIES AND WILDLIFE

284 STATE STREET
STATE HOUSE STATION 41
AUGUSTA, MAINE 04333

WENN H. MANUEL
COMMISSIONER

NORMAN E. TRASK
DEPUTY COMMISSIONER

December 19, 1984

Mr. Warren A. Guinan
Power Technics, Inc.
190 Charles Street
Rochester, New Hampshire 03867

RE: Littlefield Hydro Project
FERC No. 8158
Little Androscoggin River
Auburn, Androscoggin County

Dear Mr. Guinan:

We have reviewed the Littlefield Hydro Project Draft application for minor license (FERC) and have the following comments:

Department of Inland Fisheries and Wildlife is currently involved in a passive management program on the Little Androscoggin River for the indigenous fish species present. The principal species would include brook trout, brown trout, landlocked salmon, smallmouth and largemouth bass, chain pickerel, and white perch. This passive effort is due mainly because of the water quality limitations that currently prevent initiation of a fishery enhancement program. However, water quality has improved in recent years and as additional upstream municipalities and industries install pollution abatement facilities water quality is expected to show further improvement. The improvement in water quality due to the clean-up efforts in recent years has already contributed to the rebound of warmwater fish populations in this river. The Little Androscoggin is becoming and will continue to become an increasingly important resource to the state of Maine. There are nearly 100,000 people living in the Lewiston-Auburn area and demands on the recreational resources are increasing throughout the state of Maine. The resources of the Little Androscoggin River can help meet the future demands for recreation in this populated area of the state.

It is felt that the application does not adequately address this issue nor does it adequately address the existing and potential habitat or flow releases necessary to protect or enhance the aquatic resources for species likely targeted for enhancement. The application also does not adequately address the impacts of this project on the existing and potential aquatic resources nor the cumulative impact of this project in relation to existing development on the river. Therefore,

December 19, 1984

it is requested that the applicant further assess the impact of this proposed project on water quality and on the existing aquatic habitat and indigenous fish species present. This assessment should include the use of the U.S. Fish and Wildlife Services Habitat Evaluation Procedures (HEP) and Instream Flow Incremental Methodology as techniques to determine existing and potential habitat and optimum flow releases necessary to protect and enhance aquatic resources for the fish species most likely targeted for enhancement. Present angling opportunities are limited due mainly to the passive efforts of DIFW on the river; however, if an active management program was initiated on the river, angling activity would most likely increase. Therefore, it is also recommended that the applicant consider provisions for additional access above and below the project site to accommodate increases in angler use in the event an active fishery enhancement program is initiated.

DIFW does not anticipate a need for fish passage at this time but reserves the right to request an upstream and downstream passage facility to be installed if needed in the future.

We would be pleased to continue the consultation process with you regarding necessary studies and assessments. If you have questions, please contact Steve Timpano of our staff at (207)289-3286.

Sincerely,


Norman E. Trask
Deputy Commissioner

NET:SAT:jmk

cc: Gray Reg. Hdqtrs.
ASPSC (E. Baum)
DMS (L. Flagg)
DEF (D. M...)
DEPENS (C. Russell)



STATE OF MAINE
DEPARTMENT OF MARINE RESOURCES
STATE HOUSE - STATION 21
AUGUSTA, MAINE 04333

Jan. 30, 1985

Mr. Warren A. Guinan
Power Technics, Inc.
190 Charles Street
Rochester, New Hampshire 03867

Dear Mr. Guinan:

The Department has reviewed the application for licensing for the Littlefield Hydroelectric Development Project (FERC project No. 8158-000) and offer the following comments:

The Department of Marine Resources is currently in the process of restoring sea run (anadromous) shad and alewives to the lower Androscoggin River as far upstream as Lewiston Falls to include the Little Androscoggin River and the Sabattus River. There are plans for restoring runs of shad and alewives in the Little Androscoggin as far upriver as Bisco Falls. Currently alewives are being collected at the fish passage and trapping facility at the Head-of-Tide Dam, the Brunswick Hydroelectric Project, FERC #2284. From this site they are transported to appropriate upriver spawning and nursery areas. During 1983, two lake systems, Marshall and Tripp Pond, which drain into the Little Androscoggin River above Littlefield dam were stocked with adult alewives. During late summer and fall, large numbers of juveniles were observed migrating seaward. In 1984 adult alewives were again stocked in Marshall Pond and Tripp Pond, and as in 1983 large numbers of juveniles were observed migrating seaward.

In subsequent years, we expect to stock additional alewives in the Range Ponds, Whitney Pond, Hogan Pond, and Thompson Lake. All of these ponds/lakes are located above the Littlefield Dam. In addition to alewives, we will be stocking American shad in the riverine areas above Littlefield Dam as shad numbers increase at Brunswick.

As the numbers of anadromous fish increase in the Little Androscoggin River, we would expect angling to also increase. Fishing for shad takes place in free flowing waters, therefore, construction of this project may reduce potential angling sites for shad.

At the present there are 3 dams on the mainstem of the Androscoggin River below Lewiston Falls of which the first dam, the Brunswick Hydroelectric Project, (FERC #2284), has an upstream fish passage and trapping facility incorporated in it. Currently a downstream migrant facility is under study.

The next dam upriver, the Pejepscot Project, (FERC #4784) has provisions in its recently issued license for the construction of a downstream migrant fish passage facility concurrent with the reconstruction of the project. An upstream fish passage facility will be required at this site, at such time that 10,000 adult alewives or 500 adult American shad are passed through the Brunswick fishway (FERC #2284), with a provision that the request for upstream passage would not be initiated for a minimum of five years of fish passage at Brunswick. Based on results of the past two years' operation at Brunswick, we will be requesting upstream fish passage be built concurrent with redevelopment of the dam.

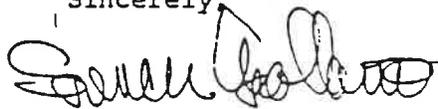
The next upriver dam, the Worumbo Hydroelectric Project (FERC #3428) has plans for redevelopment and license application has been filed. Downstream migrant fish passage facilities have been requested to be built concurrent with the construction of the project. Requirements for upstream passage would be the same as requested for the Pejepscot Project (FERC #4784). Based on results of the past two years' operation at Brunswick, we will be requesting upstream fish passage be built concurrent with redevelopment of the dam.

In order to assure continued progress in the Androscoggin River anadromous fish restoration efforts, we recommend the following studies, as previously requested in the preliminary permit comments, to assess the environmental impact of this project:

1. The impacts of upstream and downstream losses on anadromous alewives and American shad by this project and other existing projects in the watershed.
2. How the applicant will mitigate for upstream and downstream losses caused by this project, and what provisions will be made for upstream and downstream passage of fish.
3. What will be the impact of inundation of riverine habitat in the project area on production of American shad and other riverine dependent species. How will these impacts be mitigated?
4. Identify potential fishing sites for American shad and address mitigation for lost angling sites.
5. Address how flows will be managed to maintain downstream aquatic resources.

After receiving results of the above studies, we will be better able to complete an evaluation of project related impacts. If you have questions pertaining to these comments, please contact Mr. Lewis Flagg at (207) 289-2291.

Sincerely,



SPENCER APOLLONIO
Commissioner

CC: Denise R. Diesen, ESI Hydropower
Fred E. Springer, FERC
Director, SPO
Director, Bureau of Civil Emergency Preparedness
Director, OER
Commissioner, DOC
Commissioner, IF&W
Commissioner, DEP
Director, Historic Preservation Commission
Gordon Beckett, USFWS
Bruce Higgins, NMFS

MS/kg

E-7-17

July 8, 1985

Dr. Arthur Spiess
Maine Historic Preservation Commission
55 Capitol Street
Augusta, ME 04333

Dear Dr. Spiess:

Thank you for taking the time to meet with me and discuss your Agency's concerns regarding the development of the Littlefield Hydroelectric project.

At this time, I would like to initiate "phase I" of the archaeological survey required. Will you please contact parties who you feel are qualified and interested in doing the reconnaissance survey. I will be in contact with you to see who is available, when they are available, and their cost. A decision for continuing will be made at that juncture.

If you have any questions, please feel free to call me in New Hampshire at (603)431-4412, or in Connecticut at (203)661-4203. Thank you for your time and help.

Sincerely,

Jason James

cc: Carol Cunningham, MK Engineering

/spiess/ehm

E-7-18

November 4, 1985

Dr. Arthur E. Spiess
Maine Historic Preservation Commission
55 Capitol Street
Augusta, ME 04333

Re: Littlefield archaeology study

Dear Dr. Spiess:

Per our telephone conversation regarding the archaeological study required for the Auburn area by your commission, please find enclosed a backwater study performed by our consulting engineers which clearly shows the area effected by repairing the breached dam.

We would like you to submit it to all acceptable archaeological contractors for bid. We would like the bid to contain:

- a. the availability date of services
- b. initial survey sites identified
- c. time frame required for surveys
- d. cost of labor per hour per person
- e. total cost

The bids should be submitted to my attention at the above address. If there are questions please call.

Sincerely,

Jason James

*Sample sent
to all agencies*

November 22, 1985

Mr. Lewis Flagg
State of Maine
Department of Marine Fisheries
State House Station 21
Augusta, ME 04333

Re: Littlefield Hydroelectric Project
FERC Project #8158
Phase 1 Consultation (Continued)

Dear Mr. Flagg:

In 1984, a Draft Application for License of Small Hydroelectric Power Project for the Littlefield Hydroelectric Development Project, located on the Little Androscoggin River in Auburn, Maine, was sent to your agency for review and comment. Since that time, we have completed a number of engineering studies and discussed the project with the agencies which made substantive comments on our initial submittal. Based on the studies and consultation, we have changed the proposed mode of operation and type of equipment to be installed at the site.

Previously, the proposed mode of operation was to be run of river with cycling at low flows. The equipment consisted of four vertical Francis turbines, which could operate over a flow range of 84 to 1000 cfs.

We now propose a strictly run-of-river operation: all inflow to the Project will be released through the powerhouse, over the spillway, or through the fish passage facility. Simply put, inflow will equal outflow. The Francis turbines will be replaced by a single 1.3MW full Kaplan turbine capable of operating at flows of 100 to 900 cfs.

If you require additional information or wish to discuss these proposed changes, please feel free to contact me. We would appreciate your agency's comments on the above changes within 30 days. We look forward to hearing from you.

Very truly yours,

Jason James

cc: Carol Cunningham
MK Engineers



DEPARTMENT OF THE ARMY
NEW ENGLAND DIVISION, CORPS OF ENGINEERS
424 TRAPELO ROAD
WALTHAM, MASSACHUSETTS 02254

Handwritten notes:
F
W
V

REPLY TO
ATTENTION OF

26 November 1985

Planning Division
Basin Management Branch

Mr. Jason James
c/o ESI Hydropower Co, Inc.
2 Greenwich Plaza
Greenwich, CT 06830

Dear Mr. James:

Reference is made to your letter of November 22, 1985 in which you advised that changes had been made in the proposed mode of operation and equipment to be included in an application for a license from the Federal Energy Regulatory Commission (FERC), for Project No. 8158, Littlefield Hydroelectric Development Project to be located on the Little Androscoggin River in Auburn, Maine.

It appears from a preliminary review that these proposed changes will not have impacts on Corps of Engineer responsibilities. We have no further comments at this time concerning the proposed project. We reserve the right to make additional comments when FERC initiates a formal project review.

I trust that the above comments will meet your needs in this matter.

Sincerely,

Handwritten signature of Joseph L. Ignazio
Joseph L. Ignazio
Chief, Planning Division



United States Department of the Interior

FISH AND WILDLIFE SERVICE
ECOLOGICAL SERVICES
P.O. BOX 1518
CONCORD, NEW HAMPSHIRE 03301

Handwritten notes:
OK
cc: MHE
Per Sp...
File Littlefield
licensing

REF: FERC #8158

Mr. Jason James
Energy Supply International, Inc.
Two Greenwich Plaza
Greenwich, Connecticut 06830

NOV 27 1985

Dear Mr. James:

This responds to your letter, dated November 6, 1985, regarding the Littlefield Hydroelectric Project, located on the Little Androscoggin River in Androscoggin County, Maine.

You state that the proposed mode of operation for this project has been changed from cycling to run-of-river. This will make our previously recommended instream flow studies (see enclosed letter, dated October 19, 1984) unnecessary. However, other studies addressing habitat impacts, angling, and cumulative effects will still be required. In addition upstream and downstream fish-passage facilities should be conceptually designed prior to filing a license application.

If you have any questions or would like to further discuss this project, please contact Mr. Gordon Russell of my staff at (603) 224-2585.

Sincerely yours,

Handwritten signature: Gordon E. Beckett
Gordon E. Beckett
Supervisor
New England Area

Enclosure



STATE OF MAINE

Department of Environmental Protection

MAIN OFFICE: RAY BUILDING, HOSPITAL STREET, AUGUSTA
MAIL ADDRESS: State House Station 17, Augusta, 04333

*cc: Files
MHC*

JOSEPH E. BRENNAN
GOVERNOR

HENRY E. WARREN
COMMISSIONER

December 2, 1985

Mr. Jason James
Energy Supply International, Inc.
Two Greenwich Plaza
Greenwich, CT 06830

RE: Littlefield Hydro Project
FERC No. 8158

Dear Mr. James:

This is in response to your letter of November 22 requesting comments on the modification of the proposed mode of operation of the Littlefield Hydro Project from cycling to run-of-river.

We have no objections to a strict run-of-river operation in which outflow equals inflow on an instantaneous basis and we see no need for instream flow studies. We therefore deem item #6 in our comment letter of October 22, 1984 to be deleted; all other items remain as stated.

Please feel free to contact me if you have any further questions.

Sincerely,

Dana Paul Murch

DANA PAUL MURCH
Hydropower Coordinator
Bureau of Land Quality Control

cc: Gordon Russell, U.S.F. & W.S.
Steve Timpano, I.F. & W.
Lew Flagg, DMR

DPM/lo

E-7-23



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION I

J. F. KENNEDY FEDERAL BUILDING, BOSTON, MASSACHUSETTS 02203

Handwritten notes:

Littlefield
12-14
U.S. Army Corps

December 13, 1985

Mr. Jason James
Energy Supply International, Inc.
Two Greenwich Plaza
Greenwich, CT 06830

RE: License Coordination
Littlefield Hydroelectric Project
FERC No. 8158

Dear Mr. James:

Thank you for your letter dated November 22, 1985, regarding the proposed change in mode of operation for the Littlefield Hydroelectric Project located on the Little Androscoggin River in Androscoggin County, Maine.

The mode of operation now proposed is strict run-of-river operation: all inflow to the project will be released through the powerhouse, over the spillway, or through the fish passage facility. Based on the information provided in the 1984 Draft Application for License and the new proposed mode of operation, we do not object to issuance of a license. However, we believe the proposed project may be subject to either an individual or general permit issued by the U.S. Army Corps of Engineers under Section 404 of the Clean Water Act. We request that the final application for license address whether a Section 404 permit will be required. EPA participates in the review of 404 permit applications and will evaluate any proposed 404 action using "EPA's Guidelines for Specification of Disposal Sites for Dredged or Fill Material" (40 CFR Part 230), also known as 404(b)(1) Guidelines.

We will provide formal comments on the project during the FERC public notice process. Should you have any questions, please contact Donald Cooke of my staff at 617/223-1739.

Sincerely yours,

Elizabeth A. Higgins, Assistant Director
for Environmental Review
Office of Government Relations
& Environmental Review (RGR-2203)

cc: Dana Paul Murch, ME DEP
Gordon Russell, USFWS

CONSOLIDATED HYDRO, INC.

April 22, 1986

Mr. Dana Murch
Dept. of Environmental Protection
Station #17, State House
Augusta, ME 04333

Dear Dana:

As required by FERC regulations we are applying for a Water Quality Certificate pursuant to Section 401 of the Clean Water Act for the Littlefield Hydroelectric Project, FERC #8158. We'll be sending you Phase II of our license application shortly.

Regards,

Jason James

E-7-25



STATE OF MAINE

Department of Environmental Protection

MAIN OFFICE: RAY BUILDING, HOSPITAL STREET, AUGUSTA
MAIL ADDRESS: State House Station 17, Augusta, 04333

JOSEPH E. BRENNAN
GOVERNOR

HENRY E. WARREN
COMMISSIONER

May 6, 1986

MAY 5 1986

Mr. Jason James
Consolidated Hydro, Inc.
Two Greenwich Plaza
Greenwich, CT 06830

Re: Littlefield Hydroelectric Project
FERC No. 8158

Dear Jason:

The Department is in receipt of your letter of April 22 requesting Water Quality Certification, pursuant to Section 401 of the Federal Clean Water Act, for the proposed Littlefield Hydroelectric Project.

We accept this request for filing. We note that Consolidated's proposal will involve the reconstruction of a hydropower project. The proposal is thus subject to the permit requirements of Title 38 MRSA Section 633.

Substantive review of Consolidated's request will commence upon our receipt of a completed Application for Project Approval Under the Maine Waterway Development and Conservation Act and Water Quality Certification and a copy of the Application for License as filed with the Federal Energy Regulatory Commission.

Upon preparing to file the required applications with this office, please contact me to discuss distribution to other State review agencies.

If you should have any questions, please feel free to contact me.

Sincerely

DANA PAUL MURCH
Hydropower Unit
Bureau of Land Quality Control

DPM/jw

E-7-26

GERALD G. TAYLOR
BIOLOGIST CONSULTANT
310 DOUGLAS DRIVE
WEST CHESTER, PA. 19380
(215) 696- 3684

*File
Littlefield
Hunting phase
TT*

May 6, 1986

Mr. Gordon Beckett
US Department of the Interior
Fish and Wildlife Service
P.O. Box 1518
Concord, New Hampshire 03301

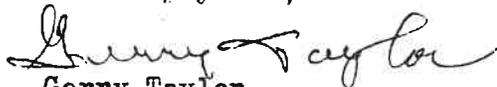
Dear Gordon:

Attached is a copy of Consolidated Hydro's revised draft of the Application For License of the Littlefield hydroelectric project. Please review the draft and provide me with your comments.

I am grateful for the opportunity and time you allowed for us to get together and discuss the fishery problems and for the valuable suggestions that you and G. Russell gave. Accordingly, we have revised the appropriate sections in the application. I hope the revisions meet with your approval.

Please call me, when convenient.

Sincerely yours,


Gerry Taylor

E-7-27



100-100-100
MAY 2 1986
MAY 19 1986
File
Littlefield
Backwater Study

Federal Emergency Management Agency

Region I J.W. McCormack Post Office and Court House
Boston, Massachusetts 02109

Mr. Jason James
Consolidated Hydro, Inc.
Two Greenwich Plaza
Greenwich, CT 06830

Dear Mr. James:

This is in response to your April 16, 1986 letter concerning a proposal to reconstruct the Upper Barker Mill Dam on the Little Androscoggin River in Auburn, Maine.

We have reviewed the report and maps prepared by Morrison-Knudsen Engineers (MKE) for the stretch of the river from the Lower Barker Dam to the Minot town line. Since the report included the effects of both the Upper Barker Dam and the Littlefield Dam, we will provide comments on both projects.

There is an apparent discrepancy regarding station identification in the notes associated with tables 1 and 3 in the MKE Report. We are assuming that table 2 shows the correct stationing notes.

The report indicates that with the proposed projects in place the 100 year flood water surface elevations in the reach from Lower Barker Dam upstream to the Littlefield Dam will be lowered. Immediately upstream of the Littlefield Dam, the 100 year flood elevations will increase 5.51 feet. This increase will diminish to .05 feet at a point 430 feet upstream of the Auburn-Minot town line.

The Little Androscoggin River was studied in detail as part of the Flood Insurance Study of Auburn, Maine, and a regulatory floodway was delineated. The minimum floodplain management requirements of the National Flood Insurance Program (NFIP) mandate that a regulatory floodway be adopted as part of local floodplain management regulation. These regulations must be adopted as a prerequisite to participation in the National Flood Insurance Program. The City of Auburn adopted a zoning ordinance on July 7, 1980, which was amended on February 2, 1981, meeting the minimum criteria of the NFIP.

It appears that the reconstruction of the Upper Barker Dam is consistent with the minimum requirements of the NFIP and therefore we have no objection to that portion of the project.

The proposal to reconstruct Littlefield Dam does not meet the requirement of section 60.3(d)(3) of the rules and regulations of the NFIP. That section requires that the community prohibit encroachments within the adopted regulatory floodway that would result in any increase in flood levels within the community during the occurrence of the base flood discharge. The effects of these increased flood heights must be addressed before FEMA will concur with the reconstruction of the Littlefield Dam as proposed.

FEMA conditions
of approval

The issue of the impacts of the minimum standards of the NFIP on dam construction projects which increase base flood elevations has been addressed by FEMA. A policy has been adopted that requires the applicant for a local floodplain development permit for construction of a dam in a regulatory floodway to first avoid encroachment on the floodway or to modify the floodway in such a way to meet the minimum standards of the NFIP.

If it is demonstrably inappropriate to design the Littlefield Dam in accordance with the NFIP floodway requirements of 44 CFR 60.3(d), FEMA has determined that the project may be approved only if the following conditions are met:

- 1) A location hydraulic study has been performed in accordance with standard engineering practice, and compatible with hydraulic analysis performed in the development of flood insurance studies. The location hydraulic study should consider several alternatives of location and size of structure.
- 2) The applicant has made appropriate arrangements with affected property owners and the community to obtain flooding easements or otherwise compensate them for future flood losses due to the effects of the project.
- 3) The applicant has made appropriate arrangements to assure that the National Flood Insurance Program and Flood Insurance Fund do not incur any liability for additional future flood losses to existing structures which are insured under the Program and grandfathered in under the risk status existing prior to the construction of the structure.
- 4) The applicant provides FEMA with revised flood profiles, floodway and floodplain mapping, and background technical data necessary for FEMA to issue revised Flood Insurance Rate Maps and Flood Boundary and Floodway Maps for the affected area upon completion of the structure.

The hydraulic analysis performed by MKE is acceptable for the proposed project with the condition that the stationing inconsistencies are rectified. To fully meet condition number 1, other alternatives should be analyzed to determine if a practicable alternative that does not increase flood heights is available.

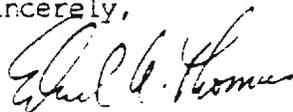
With regard to condition numbers 2 and 3, the applicant must certify that appropriate agreements have been made to assure that any future flood losses are compensated and indicate if any insurable structures will be impacted by the project.

If insurable structures are impacted, the severity of the impact on the Flood Insurance fund will be evaluated and appropriate action will be taken.

The technical backup data that was generated by MKE must be submitted to FEMA as support to a map revision and to meet the requirement of condition 4. FEMA will not undertake a map revision until the project is substantially complete. We, therefore, request that you provide the information required in condition 4 and certify that the work has been completed as designed when the project is substantially complete.

We would like to thank you for your cooperation in this process. If you have any questions or if we can be of any assistance, please contact Robert Sornichsen of this office at (617) 223-2616.

Sincerely,



Edward A. Thomas, Chief
Natural & Technological Hazards Division

CONSOLIDATED HYDRO, INC.

July 10, 1986

Dear Gentlemen:

This letter is to confirm our meeting on July 21, 10:00 A.M. at Gray, Maine.

The meeting (as described by telephone) is an orientation meeting between personnel participating in the study of the Littlefield Hydroelectric Project. Since I have been in contact with you by telephone, prior to this meeting, it will not be necessary to describe particulars at this time, except to emphasize that the primary purpose is to review the field data measurement and data collection methods prior to the field data collections scheduled during the remainder of the week, July 21-25 (described in my Proposal).

Again, your advice and assistance is appreciated.

Sincerely yours,

Gerry Taylor
CHI Biologist Consultant
215/696-3684

E-7-31

ME DEPT. OF INLAND FISHERIES &
WILDLIFE DEPT.
Fisheries Division
P.O. Box 1298
Bangor, ME 04401

CONSOLIDATED HYDRO, INC.
TWO GREENWICH PLAZA
GREENWICH CONNECTICUT 06830

ell
Wildlife Service
18
05501

Mr. Urban Pierce
Regional Biologist
MAINE DEPT. INLAND FISHERIES
AND WILDLIFE
R.R. #1
328 Shaker Road
Gray, ME 04039

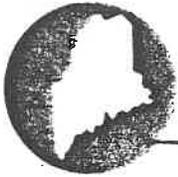
CONSOLIDATED HYDRO, INC.
TWO GREENWICH PLAZA
GREENWICH CONNECTICUT 06830

Mr. Warren Eldridge
ME Inland Fisheries
+ Wild
328 Shaker Rd
Gray 04039

Mr. Steven Timpano
ME DEPT. OF INLAND FISHERIES
& WILDLIFE
284 State Street
Station 41
Augusta, ME 04333

CONSOLIDATED HYDRO, INC.
TWO GREENWICH PLAZA
GREENWICH CONNECTICUT 06830

Mr. Louis Flagg
MAINE DEPT. MARINE RESOURCES
State Office Building
Augusta, ME 04333



UNIVERSITY OF MAINE *at Farmington*

*ON
L.H.
Littlefield
archaeology study*

Department of Social Sciences and Business

112 Main Street
Farmington, Maine 04938
207-778-3501

July 11, 1986

Dr. Arthur E. Spiess
Maine Historic Preservation
Commission
55 Capitol Street
Augusta, ME 04333

Dear Art:

I write to inform you about the preliminary results of our Littlefield phase I archaeology survey in the Towns of Auburn, Poland and Minot, Maine. As I earlier reported to you, we encountered three unequivocal prehistoric aboriginal archaeological sites and another two possible sites during the course of the Littlefield survey, the salient details of which I will try to summarize here along with our methodology and further recommendations.

Field work was initiated on June 12, 1986, by a small crew of three under the direct supervision of Michael J. Heckenberger, one of my senior and most trusted field assistants. The final phase I field work was completed on July 2. I also visited the Littlefield study area several times during this period and as a result, the following comments are a composite of observations made by both of us. As stated in the scope-of-work, the principal goal of the survey was the location of all archaeological sites in the proposed project area, or determination with reasonable assurance that none exist there, as mandated by the Historic Preservation Act of 1966, as amended.

Testing proceeded with excavation of select and systematic transects of hand excavated shovel test pits along with systematic surface collection after a preliminary examination of the area by the crew to prioritize testing areas. As you may remember, David Putnam and I earlier examined the study area, in part, in November, 1985, prior to our preparation of the phase I scope-of-work and so, I am quite confident that we were able to select suitable testing localities given the amount of time available for phase I testing. As is so often the case, however, Michael and I agree that too little time was allocated for the phase I survey in that many additional test pits would be necessary to completely exhaust all possible site locations.

In any case, a total of 136 0.50x0.50 m test pits were excavated and screened through 6 mm (1/4") mesh hardware cloth in 52 different transects. In nearly all cases, the test pits had to be taken

quite deep (ca. 0.8 - 1.0 m) due to the nature of the alluvial deposits. Pits excavated on terraces less than 2.5 m above the current river level consistently revealed homogenous (texture and color) sediments, primarily silt, which are reflective of relatively recent alluvial deposition. Nonetheless, of the 136 pits, 50(+) were 'seemingly positive for the presence of prehistoric artifacts, with 18 containing definite artifacts (e.g., flakes, fire-cracked rocks, etc.) and another 32 containing likely artifacts (e.g., fire-cracked rocks). All of these 32 positive pits were excavated at two of the three unequivocal sites (sites #1 and #3 on the attached map), whereas the third unequivocal site (#2) was noted solely on the basis of surface-collected artifacts in a cultivated field. Still two other possible sites (#4 and #5 on the map) were noted on the basis of a singular artifact (fire-cracked rock) in one test pit each. In addition, the likely existence of minimally one other site was reported through an informant contact, for a total of six unequivocal or possible sites beyond the previously reported site (ME 23-11) now known in the study area. It seems likely that additional sites remain to be identified there, as well.

Of the five recently identified unequivocal or possible sites, all are threatened to some degree by the proposed hydroelectric development, particularly when one realizes that the inundation map supplied to us is not wholly reflective of what (through field inspection and landowner reports of flooding) will be actually flooded by an increased water level. Several landowners cited the frequent nature of floods and the resultant erosion and deposition that occur at current water levels, with more than 3.5 m of water rise at some times. It is, therefore, suggested that a phase II archaeological testing project be undertaken prior to approval of the hydroelectric project by the Maine Historic Preservation Commission. Specific details and site by site recommendations follow.

Site 1, some 200m² in size and 2.5m above the river, will be entirely inundated or eroded by the proposed project. It appears to be highly significant in any terms since it produced both quartz and chert flakes, a quartz scraper, a quartz core and fire-cracked rocks from uncultivated, intact natural soil horizons to a depth of 0.8m. We, therefore, recommend considerably more testing there, minimally 10-20m² in actual excavation units (1x1m).

Site 2, some 1,000-1,600m² in size across two terraces in a cultivated field, lies ca. 2.5-4.0m above the river and appears to have been largely disturbed by historic farming practices. Nonetheless, it produced fire-cracked rocks and a Kineo rhyolite drill (possible Late Archaic period, ca. 1,500 B.C. ?), a raw material which is clearly exotic to the study area. Although it will be only partially affected by inundation, it will likely suffer from erosion given higher water levels. Additional test pits are, therefore,

Dr. Arthur Spiess
11 July 1986

3

recommended there, minimally covering 5-10m² (20-40 pits).

Site 3, located on two different "high" terraces, is adjacent to where an old river channel (oxbow) intersects the modern channel. Although these terraces are 3.5m and 5.0m above the current water level, it is unquestionable that any increase in water level will erode these two site loci in that both terraces are currently being eroded by the river because of the nature of the stream flow, sediment structure and surface topography. Together, the site loci cover an estimated area of about 350m² and they constitute the most productive site in the study area, having produced 30-40 flakes and unequivocal fire-cracked rocks in uncultivated, intact soil horizons to a depth of 0.40-0.50m. Therefore, we recommend that a minimum sample of 10-20m² be excavated there in actual excavation units (1x1m).

Possible sites 4 and 5 are both located ca. 2.0-3.0m above the current water level and will be severely eroded by any increase in water level. However, we only recommend excavation of about 2.5m² (10 pits) at each using additional test pits since both seemed relatively unproductive in the phase I survey.

Finally, we must recommend excavation of a total of 30-40 additional pits (7.5-10m²) in the area of the informant reported site and at several other stream confluence and terrace settings which could not be tested during the phase I survey due to the previously mentioned time constraints. In sum, we recommend a total of some 37.5 to 65m² of additional testing in the Littlefield study area.

Please feel free to make any adjustments to our recommendations which you may deem necessary. I will be happy to provide you with additional information should that be necessary. Please also note that Jason James and Energy Supply International asked us to include provision for a phase II survey, if deemed necessary, in the 1986 field season when we drew up a formal contract with them, presumably to allow them to meet their proposed licensing timetable (see enclosed copy of contract between ESI and UMF). I am, therefore, asking you to give this matter your expeditious consideration so that we can, in fact, schedule such a phase II study in the near future, pending a negotiated contract. Thank you very much for your assistance in this regard and, as always, continued best regards!

Sincerely,



James B. Petersen, Ph.D.

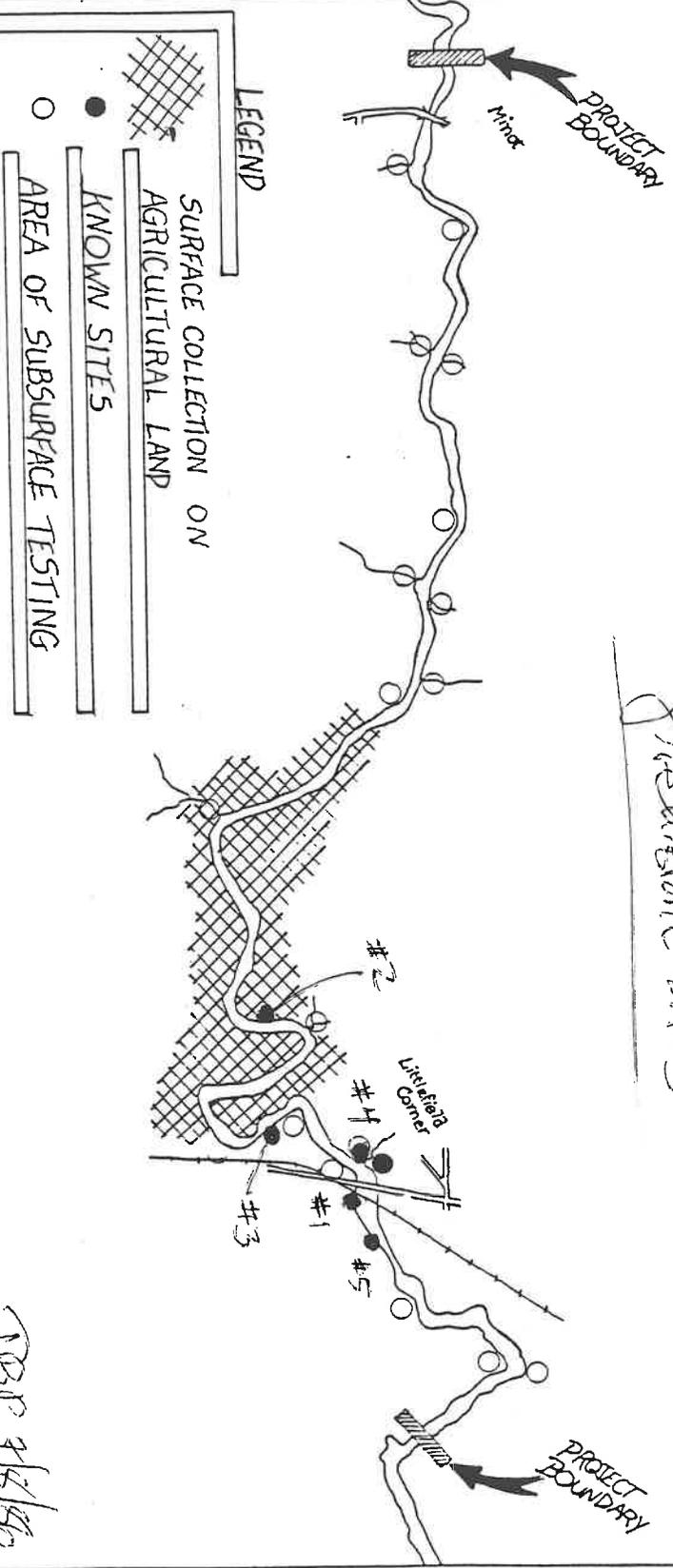
JBP/g
encl.

cc - Jason James
Michael Heckenberger

E-7-35

LITTLEFIELD HYDROELECTRIC PROJECT
 ARCHAEOLOGICAL STUDY

*Phase I unexcavated + possible
 prehistoric sites*



*JBP 4/8/80
 +
 MTH*



MAINE HISTORIC PRESERVATION COMMISSION
55 Capitol Street
State House Station 65
Augusta, Maine 04333

AUG - 7 1986

ON-BM-TM-KT-RS-JJ

Earle G. Shettleworth, Jr.
Director

Telephone
207-289-2133

July 31, 1986

Mr. Jason James
Energy Supply International
Two Greenwich Plaza
Greenwich, Connecticut 06830

Re: FERC 8158 Littlefield Project Archaeological Survey

Dear Mr. James:

Dr. James Petersen's detailed letter-form preliminary report on the Littlefield Project has been examined in detail by Dr. Spiess of my staff. In this letter we outline our requirements for the next phase of archaeological work on the project. Please feel free to contact Dr. Petersen, or any contractor on our recommended list, to obtain bids and to proceed with the work.

We have assigned the following Maine Archaeological Survey site numbers to the sites listed in Petersen's letter:

Site 1 assigned site #23.15
Site 2 assigned site #23.16
site 3 assigned site #23.17
Site 4 assigned site #23.18
Site 5 assigned site #23.19

"Informant reported" site is assigned site 23.20 in anticipation of its confirmation.

Our requirements, expressed in terms of minimal excavation and testing areas for Phase II work, are as follows:

- 1) On site 1/23.15, a minimum of 20 meter square excavation to develop information sufficient to judge eligibility of the site to the National Register of Historic Places.
- 2) On site 2/23.16, a minimum of 10 m. square in shovel testpitting to determine if any concentrations of cultural

MAINE HISTORIC PRESERVATION COMMISSION

55 Capitol Street
State House Station 65
Augusta, Maine 04333



-2-

material can be identified and if any unplowed deposits can be located.

- 3) Site 3/23.17, minimum of 20 meter square excavation to develop information leading to a determination of National Register eligibility.
- 4) Possible sites 4/23.18 and 5/23.19, 10 shovel pits at each to develop further information on their cultural content.
- 5) Excavation of 30 shovel testpits minimum in the area of the informant reported site (23.20) to confirm its presence and being characterization.

Additionally, we recommend that ESI include funds for an additional 10 square meters of excavation area as a contingency, should either of possible sites 4 or 5 or the "Informant reported" site show substantial promise of yielding significant information. This contingency budget should be used to develop information necessary for a National Register eligibility determination on each site.

We are particularly disturbed by Petersen's report based on his field experience and landowner reports of flooding that the inundation map supplied by the applicant may not be accurate. An accurate, verifiable inundation map will be required by this office as part of future decision making concerning archaeological mitigation measures should any of these sites in fact prove eligible to the National Register of Historic Places. Based on Petersen's comment we will not use the current applicant-supplied inundation map without either further data showing that it is accurate, or modification to improve its reliability.

Sincerely,

Earle G. Shettleworth, Jr.
State Historic Preservation Officer

cc: Dr. James B. Petersen
Mr. Kenneth Plumb, Secretary, FERC
Mr. Dana Murch, MDEP

E-7-38

CONSOLIDATED HYDRO, INC.

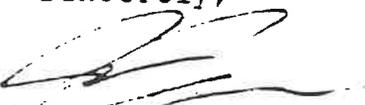
August 28, 1986

Joseph C. Ignazio
Chief, Planning Division
Department of the Army
New England Division
Corps of Engineers
424 Trapelo Road
Waltham, MA 02254

Dear Mr. Ignazio:

By way of this letter we request under Section 404 of the Clean Water Act a general permit for the Littlefield Hydroelectric Project, FERC No. 9661, located in Auburn, Maine. The Project is in the licensing stage. Thank you.

Sincerely,


Jason D. James
Operations Manager

JDJ/tcb

E-7-39

CONSOLIDATED HYDRO INC.

*Littlefield
phase II*

November 14, 1986

US Environmental Protection Agency
Region 1
JFK Federal Building
Boston, MA

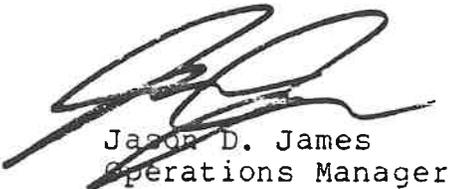
Attn: Donald Cooke

Dear Mr. Cooke:

Enclosed is Phase II of the license application that will be submitted to the Federal Energy Regulatory Commission after receiving, considering and incorporating your comments where appropriate for the Littlefield Hydroelectric Project located on the Little Androscoggin River in Auburn, Maine. According to the licensing regulations you must be given 30 days to supply written comments on the proposal.

Please mail your comments to my attention by December 31, 1986. If you have any questions or need clarification of any matter please call me. Thank you.

Sincerely,



Jason D. James
Operations Manager

Enclosures

JDJ/mos

E-7-40



Joseph E. Brennan
Governor

State of Maine
Executive Department
OFFICE OF ENERGY RESOURCES
State House Station 53
Augusta, Maine 04333
(207) 289-3811



Anthony A. Armstrong
Director

November 19, 1986

Jason James
Littlefield Hydro Company
Consolidated Hydro Inc.
Two Greenwich Plaza
Greenwich, CT 06830
(203) 661-4203

NOV 24 1986

Dear Mr. James:

We have reviewed the initial consultation document for Consolidated Hydro Inc. Company's Littlefield Project on the Androscoggin River in the town of Auburn, Maine.

The OER strongly favors the redevelopment of this hydroelectric facility which would provide Maine with approximately 5,062 MWh/year of renewable, inflation-proof electricity. The crude oil displaced by the project is equivalent to 8,473 bbls/year and OER believes that the generation capabilities of this facility have substantial public benefit. The installed capacity of 1,350 KW provides a significant contribution to the generation of indigenous hydropower in Maine which we encourage discriminately, as specified by our Comprehensive Hydropower Plan. We have no objections to the Littlefield Project and favor its rehabilitation.

Thank you for inviting the comments of this office.

Sincerely,

Betsy Elder

Betsy Elder
Hydropower Planner

BE/jr

NOV 26 1986



DEPARTMENT OF THE ARMY
NEW ENGLAND DIVISION, CORPS OF ENGINEERS
424 TRAPELO ROAD
WALTHAM, MASSACHUSETTS 02254-9149
November 21, 1986

*File Littlefield
Phase II
comments*

REPLY TO
ATTENTION OF

Planning Division
Basin Management Branch

Mr. Jason D. James
Operations Manager
Consolidated Hydro, Inc.
Two Greenwich Plaza
Greenwich, CT 06830

Dear Mr. James:

Reference is made to your letter of November 14, 1986 in which you requested a Phase II review of plans for licensing the Littlefield Hydroelectric Project located on the Little Androscoggin River in Auburn, Maine.

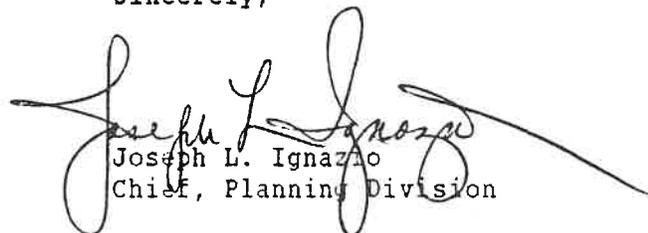
The draft license application enclosed with your letter has been briefly reviewed to ascertain any potential impacts on Corps of Engineers responsibilities in the areas of navigation, flood control, water supply and water quality under Section 404 of the Clean Water Act.

The proposed project would not involve any federally-owned land utilized for water resource purposes under Corps jurisdiction. The proposed operational procedures, as described in the application, would not affect Corps flood control activities.

Since work will be performed below the ordinary high water line of the Little Androscoggin River a Department of Army permit will be required under Section 404 of the Clean Water Act. It is noted that the applicant has requested the issuance of such a permit.

Although we have no further comments at this time concerning the proposed project, we reserve the right to make additional comments as necessary when the Federal Energy Regulatory Commission requests a formal agency review of the license application.

Sincerely,


Joseph L. Ignazio
Chief, Planning Division

DEC 10 1986 Phase II



MAINE HISTORIC PRESERVATION COMMISSION
55 Capitol Street
Augusta, Maine 04333

Earle G. Shettleworth, Jr.
Director

Telephone:
207-289-2133

December 1, 1986

Mr. Jason James
Consolidated Hydro, Incorporated
Tow Greenwich Plaza
Greenwich, Connecticut 06830

re: FERC 8158, Littlefield Hydroelectric Development

Dear Mr. James:

This letter includes our comments on the project application for license transmitted to Dr. Spiess of our staff with your letter of November 14, 1986.

We have no concern over the historic nature of the dam and powerhouse, which are not eligible for the National Register of Historic Places.

Our comments on archaeological resources as follows reflect our present knowledge, which consists of what was known about the project area before inception of the hydropower project, plus a letter from Dr. James Petersen of July 11, 1986, with preliminary indication of Phase I survey findings. Our comments on Dr. Petersen's letter are adequately summarized on page 45 of your license application; with one minor and one major exception to be treated below.

Before giving a formal "conditional no adverse effect" to your project, of course, we must have the final report on Phase I site location and Phase II site eligibility work, as well as an approved mitigation plan (Phase III, or site excavation). Currently, we have simply reviewed Dr. Petersen's initial letter-form statement and reacted to it.

Our minor problem with page 45 deals with the wording of the last sentence of ¶1. Your Phase II survey will be directed toward determining the eligibility of archaeological sites to the National Register of Historic Places, which is the legal wording that should be used in place of "significant historical value".

Our major problem with the project's potential impact on archaeological and historical resources revolves around the issue of exact limits of the pool behind the site, and potential (100 year flood) damage limits. Dr. Petersen's

MAINE HISTORIC PRESERVATION COMMISSION

55 Capitol Street
State House Station 65
Augusta, Maine 04333



-2-

July 11th letter to you expressed concern over the availability of verifiable inundation maps, and over accomplishing archaeological survey to adequately cover the full potential (100 year flood) inundation area.

We note that Dr. Petersen's Phase I archaeological survey scope of work called for consideration of all ground in the project area below 215 feet above mean sea level. The normal project pool described in the November 1986 application for license is 216 feet. By comparing the map available to this office and to Dr. Petersen for planning the Phase I fieldwork with your license application, we note that Dr. Petersen was using an enlarged copy of Inundation Map I as reproduced in the license application. Comparison of Map I with Inundation Map II shows significantly more terrain being flooded, especially the valley of a small north-south trending stream just west of Hotel Road, and additional ground between Hotel Road and the Dam location. The projected 100-year flood pool on Inundation Map II appears to coincide with a 220 foot amsl pool elevation.

Thus, it appears possible that the Phase I archaeological survey information gathered to date will be inadequate in terms of geographic coverage, and that you will be responsible for further work on landforms between 215 and 220 feet elevation. Dr. Petersen has indicated verbally to Dr. Spiess that he did adjust his Phase I coverage slightly upon realizing that the inundation map that you had supplied to him was inadequate. Therefore, we will have to await the details of his final report before making an assessment of what, if any, further Phase I archaeological survey average is necessary.

Sincerely,



Earle G. Shettleworth, Jr.
State Historic Preservation Officer

cc: James B. Petersen
Kenneth Plumb, Secretary, FERC
Edwin Slater, Archaeologist, FERC

EGS/slm



JOSEPH E. BRENNAN
GOVERNOR

DEPARTMENT OF CONSERVATION

STATE HOUSE STATION 22

AUGUSTA, MAINE 04333

TEL. 207-289-2212 December 10, 1986



RICHARD B. ANDERSON
COMMISSIONER

*Littlefield
Pass II*

Jason D. James, Operations Manager
Consolidated Hydro Inc.
Two Greenwich Plaza
Greenwich, Ct. 06830

DEC 16 1986

Dear Mr. James:

The Department of Conservation has reviewed the Littlefield Hydroelectric Development Project Second Stage of Consultation document. The following comments are made by the Bureau of Parks and Recreation.

The Second Stage of Consultation document states that it is not anticipated that recreational boating will occur in the area and therefore no boat launching facility is needed (page 36). However, it is acknowledged that fishing and canoeing take place on the river now and that use is expected to increase as fish become more abundant; and that public access will be provided at the site for fishing and canoeing purposes. Because people fishing in the impoundment may wish to use boats we suggest that further consideration be given to providing boat launching facilities at the site.

It is the Department of Conservation's policy that the applicant should bare the full cost of providing boat launching facilities; the policy is attached for your information.

Thank you for providing us the opportunity to comment on your project.

Sincerely,

Richard B. Anderson, Commissioner
Maine Department of Conservation

c.c. FERC Coordinating Committee
Herbert Hartman, Dir., BPR

Attachment

NORMAND RODRIGUE, DIRECTOR OF ADMINISTRATIVE SERVICES/MARK SULLIVAN, DEPUTY COMMISSIONER
SUPPORT THE MAINE RIVERS FUND

Commission

Glenn H. Manuel, Commissioner
Dept. Inland Fisheries & Wildlife
Chairman

Spencer Apollonio, Commissioner
Dept. Marine Resources

Harlow "Joe" Floyd
Bangor, Maine
Public Member



ATLANTIC SEA RUN SALMON COMMISSION
P.O. Box 1298
BANGOR
04401

TELEPHONE
(207) 347-5821

file
Littlefield
Phase II

December 10, 1986

Mr. Jason D. James
Operations Manager
Consolidated Hydro Inc.
Two Greenwich Plaza
Greenwich, CT 06830

Dear Mr. James:

We have just reviewed the environmental study by Gerald Taylor submitted in support of the Littlefield Hydroelectric Project. We would like to offer the following comments.

1. The study documentation should include habitat inventory data for the habitat lost due to project construction and habitat gained as a result of the mitigation proposal. A schematic map detailing the location of Atlantic salmon (or resident salmonid) spawning and nursery substrate should be included in that documentation.
2. The mitigation proposal is flawed in its proposed release of mitigation flows during Atlantic salmon or resident salmonid spawning periods. Atlantic salmon spawn in late October and early November, and although the eggs may hatch as early as March, the fry may emerge from the stream gravels as late as early June in some instances. Furthermore, it takes two years after hatching for an Atlantic salmon to reach the smolt stage. Brown trout and other resident salmonids have similar nursery habitat requirements. Dewatering a salmonid nursery habitat after fry emergence would negate any benefits produced by releasing spawning and incubation flows.

Thank you for the opportunity to comment upon this material. Feel free to contact us if we may be of any further assistance.

Sincerely,

Kenneth F. Beland
Kenneth F. Beland
Fishery Biologist

KFB:jpn

cc: S. Timpano, P. Andrews, U.D. Pierce, IF&W
G. Russell, USFWS
D. Murch, DEP
L. Flagg, DMR



United States Department of the Interior

GEOLOGICAL SURVEY
26 Ganneston Drive
Augusta, Maine 04330

December 19, 1986

Mr. Jason D. James
Operations Manager
Consolidated Hydro Inc.
Two Greenwich Plaza
Greenwich, Connecticut 06830

Dear Mr. James:

The Maine Office has reviewed your Phase II report for the Littlefield Hydroelectric Project and has the following comments.

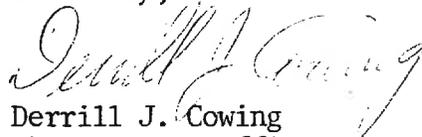
- The flow duration curve shown in figure 1 was based on the period 1941-1978. Why wasn't the entire period of available record used for calculation of this curve. (1941-1982)?
- The figures in Table 1 also should be calculated using the entire period of record at the gage. The calculated flow figures differ up to 26% when the 1941-1978 period is compared to the 1941-1982 period.

Month	Average Flow (cfs)		Median Flow	
	1941-1978	1941-1982	1941-1978	1941-1982
April	1720	1710	1750	1550
May	890	866	838	696
June	487	469	466	361
July	268	256	239	190
August	180	191	142	139
September	206	204	146	134
October	245	308	185	170
November	518	524	472	370

- The remaining streamflow information in the report agrees closely with our records.

If you have any questions regarding the revised flow figures or comments, contact Bill Bartlett at telephone number 207-622-8209.

Sincerely,


Derrill J. Cowing
Chief, Maine Office



United States Department of the Interior

FISH AND WILDLIFE SERVICE
ECOLOGICAL SERVICES
P.O. BOX 1518
CONCORD, NEW HAMPSHIRE 03301

REF: FERC #2153

DEC 3 1968

Mr. Jason D. James
Consolidated Hydro Inc.
Two Greenwich Plaza
Greenwich, Connecticut 06830

Dear Mr. James:

We have reviewed the draft license application, including the results of the HEP study for the Littlefield Hydroelectric Project, located on the Little Androscoggin River in Androscoggin County, Maine. As acknowledged in the application we had requested that various impact assessment studies, including the HEP, be completed as part of the pre-filing consultation process. As discussed below, we believe the studies are incomplete. Therefore, you should not submit your final license application. We would like to have with you and your consultant, Gerald Taylor, to discuss what has been accomplished so far and identify what additional information is needed.

1. HEP Analysis: It is unclear how the results of the HEP study were obtained, as standard HEP forms were not included to show the calculations including determination of HSI values. We are also unsure if all project-affected areas were assessed, as there is no cover-type map in the report that shows with- and without-project conditions. It also appears that the evaluation only covered baseline conditions and did not make quantified future projections. This is a significant omission as land use changes and natural succession could alter habitat suitability during the life of the project.

We also disagree with the process used to assess potential mitigation for project-related losses. The selection of mitigation objectives is the prerogative of the fish and wildlife agencies. It is inappropriate for the applicant to unilaterally decide if, and how losses in various habitat types should be mitigated. We also believe that different mitigation strategies should be evaluated instead of increasing flows in the bypassed reaches below Barkers Mill Lower Dam (FERC No. 2153) and the Hercul Dam (Formerly FERC No. 1756). Both sites are active hydroelectric projects, and even though only the former is licensed, opportunities exist or are likely to exist within the proposed life of the Littlefield Project for augmenting flows below these dams through normal FERC licensing procedures.

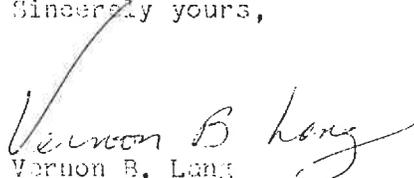
The deficiencies in the HEP study could likely have been avoided if there had been more coordination between your consultant and other members of the HEP team, especially following the collection of data in the field. Normally, team members review and participate in assigning USI determinations for all cover types, even if one party makes the actual measurements. The HEP team should also review and agree on the extent of the study area and cover types to ensure adequate data collection. They should also cooperate in formulating mitigation objectives and in evaluating potential compensation areas (assessing potential compensation requires the same level of effort and coordination as that conducted for the impact area).

2. Other Required Studies: As discussed in our letters, dated October 19, 1984, and November 25, 1985, copies of which are in the application, studies are also needed to address cumulative impacts and potential losses in angling opportunity. The proposed project would be located in a river basin that is already heavily developed for hydropower. A new dam and subsequent loss of a free-flowing river segment will add to the cumulative impact of similar projects, thereby adversely affecting fisheries management/restoration programs and ongoing efforts to achieve Clean Water Act goals (Class B water quality). Similarly, the Littlefield Project will result in the loss of angling opportunity. This impact is inadequately addressed in the application, and should be further evaluated.

The HEP study was not designed to address cumulative impacts or angling losses. We recommend additional consultation with the resource agencies to outline what additional studies should be conducted. We also recommend that you develop conceptual design plans for upstream and downstream fish-passage facilities for this project prior to filing the final application for license.

The FERC pre-filing consultation process (Section 4.3) calls for applicants to complete all studies requested by fish and wildlife agencies prior to filing an application for license. In order to avoid processing delays at FERC and possible rejection of the application as patently deficient, we recommend further consultation with us and the Maine fish and wildlife agencies. If you have any questions or wish to arrange a meeting, please contact Gordon Russell of this office at (551) 225-1466.

Sincerely yours,


Vernon B. Lang
Acting Supervisor
New England Area

CC: RO/FJE Reading File
FERC, Wash, D.C. (Dean Shuaway)
FA, Laconia
ME DEP, Augusta
ME IFW, Augusta
ME DMR, Augusta
ME IFM, Gray Regional HQ
ME ASRSC, Bangor
WMFS, Gloucester
EPA, Boston
ES: Grussell:jd:12-31-35:014-4411



STATE OF MAINE
DEPARTMENT OF MARINE RESOURCES
STATE HOUSE — STATION 21
AUGUSTA, MAINE 04333

December 31, 1986

Jason James
Operations Manager
Consolidated Hydro, Inc.
Two Greenwich Plaza
Greenwich, CT 06830

Dear Mr. James:

We have reviewed the Phase II license application for the Littlefield Hydroelectric Project and offer the following comments:

Page 40, 3rd paragraph. The application states that state and federal fishery agencies are currently conducting studies and plans for development of anadromous fisheries, such as Atlantic salmon and shad, and implies that the applicant will address fisheries issues when plans are completed. The DMR is not developing plans concerning shad and alewives as we have had an ongoing restoration program since the spring of 1982. Our program is outlined in the Brunswick Hydropower Project Application (FERC #2284), which was licensed in February, 1979. The Littlefield Application has failed to adequately address our ongoing program and fishery resource concerns as outlined on page 41. The application mentions that cumulative impacts will occur but no quantification of those impacts is provided; therefore, proposed mitigation measures are not meaningful. The question of what effects the Littlefield Dam, in conjunction with other existing dams upstream and downstream of the project, will have on anadromous fish runs in the basin has not been answered. The applicant proposes to install downstream passage at the Littlefield Project to protect downstream fish migrants. Even with downstream passage, unavoidable losses will occur. How will the applicant mitigate these unavoidable losses? This project will result in another barrier to upstream fish migration in the Little Androscoggin River. The dam owner is responsible for passing fish at this project. The applicant has not addressed this responsibility.

The applicant did a HEP analysis for alewife, brook trout, smallmouth bass, Atlantic salmon, and shad. There is no data provided to determine how the applicant arrived at its values: what are the mean number of zooplankton presently or how did the applicant project what it will be?

Jason James
31Dec86
Page 2

Increasing flow in the bypass canals at Lower Barker Mills and Mechanic Falls Dams is not a legitimate mitigation for shad habitat loss at Littlefield Corners. The needed flow at the Lower Barker bypass needs to be addressed under the context of existing license for Lower Barker. Since Mechanic Falls is an unlicensed facility, how can the FERC enforce a minimum flow condition at this project? In addition, since shad would not have upstream passage at the Littlefield Corners Dam, how would these fish reach the Mechanic Falls Dam to utilize the habitat proposed to be provided in the Mechanic Falls bypass?

Based on our current review of the application in its present form, we recommend that it be rejected as deficient.

Sincerely,



SPENCER APOLLONIO
Commissioner

SA/jcm

cc: State FERC Coordinating Committee
Steve Timpano, IF&W
Dana Murch, DEP
Gordon Russell, USF&WS
Tom Bigford, NMFS



DEPARTMENT OF
INLAND FISHERIES AND WILDLIFE

284 STATE STREET
STATE HOUSE STATION 41
AUGUSTA, MAINE 04333

GLENN H. MANUEL
COMMISSIONER

NORMAN E. TRASK
DEPUTY COMMISSIONER

January 20, 1987

Jason D. James
Operations Manager
Consolidated Hydro, Inc.
Two Greenwich Plaza
Greenwich, Connecticut 06830

Re: Littlefield Hydroelectric Project
Little Androscoggin River
FERC No. 8158

Dear Mr. James:

We have completed our review of your Phase II license application document for the Littlefield hydroelectric project on the Little Androscoggin River in Auburn. Of particular interest, and the focus of the following comments, was the report on the HEP studies undertaken for the project. As stated in the USF&WS letter of December 31, 1986, we also feel consultation regarding the results of the studies and the proposed mitigation should be continued before a final license application is developed. The following items are recommended for further consultation:

1. Overall, the Little Androscoggin River presently has a high proportion of slow moving pool or pool/run habitat. Riffle or faster run habitat is quite limited and, hence, considered at a premium. Based upon present knowledge, we recommend loss of this habitat should be fully mitigated in kind. Options or opportunities for mitigation should be explored further by the HEP team.
2. Although the HEP Study showed substantial improvement in H.U.'s for alewife and smallmouth bass, there is already substantial habitat for these species in the drainage, and it is thus of limited value considering DIF&W's emphasis on maintaining or improving salmonid species and angling opportunity. Angling opportunity and interest in (or emphasis upon) different species needs to be discussed.

Jason D. James
Page 2
January 20, 1987

3. The increases in habitat percentages quoted in the summary do not match the H.U. figures on page 15. Brook trout units, for example, don't increase by 119% as stated, but only by 19%. Even so, this modest increase will likely be more than offset by the increase in smallmouth bass (and implicitly, chain pickerel) habitat; ultimately resulting in increased predation on salmonids. This should be recognized and discussed as part of the report.
4. Although adult brook trout habitat may increase somewhat in the project area, loss of riffle sections would no doubt reduce reproductive and early juvenile habitat for this species. Documentation that adverse water quality (summer high temperatures) would limit utilization of this habitat needs to be provided. At this time we contend that water quality may not in fact preclude productive utilization by salmonids, including brook trout.
5. As clearly stated by the ASRSC in their comments dated 12/10/86, the proposed flow durations at mitigation sites 1 and 2 are too limited. Juvenile stages of Atlantic salmon and both juvenile and adult stages of brown trout would be expected to inhabit these sites year-round. We also note that the recommended flow at the Marcal Bypass site (20 cfs) is substantially less than even the 7.Q10 flow for this river (about 30 cfs).

As also expressed in the USF&WS letter of 12/31/86, choice of the Marcal and Barkers Mill Lower sites as mitigation areas may not be appropriate for the Littlefield project. There should be further consultation as in item number 1 above.

We would appreciate the opportunity to meet with you and/or your consultant to address these issues further. Please contact Steve Timpano at this address, or by telephone at (207)289-3286 to arrange further consultation.

Sincerely,

Norman E. Trask
Acting Commissioner

/ale

cc: Gray Regional Headquarters (Pierce)
Phil Andrews
ASRSC (Baum)
DEP (Murch)
DMR (Flagg)
USF&WS (Russell)

cc SSmili
Littlefield



STATE OF MAINE

Department of Environmental Protection

MAIN OFFICE: RAY BUILDING, HOSPITAL STREET, AUGUSTA
MAIL ADDRESS: State House Station 17, Augusta, 04333

JOHN R. MCKERNAN
GOVERNOR

KENNETH C. YOUNG, JR.
COMMISSIONER

January 29, 1987

Jason D. James
Operations Manager
Consolidated Hydro Inc.
Two Greewich Plaza
Greenwich, Connecticut 06830

RE: Phase II Consultation Comments
Littlefield Hydroelectric Project
FERC No. 8158

Dear Mr. James:

The Department has reviewed your letter of November 14, 1986 and the accompanying Draft Application for License for the proposed Littlefield Hydroelectric Project, FERC No. 8158, located on the Little Androscoggin River in the City of Auburn, Androscoggin County, Maine.

Our comments on the draft application are as follows:

1. The construction and operation of the proposed project will be subject to the permit and certification requirements of the Maine Waterway Development and Conservation Act and Section 401 of the Clean Water Act. An Application for Project Approval is enclosed for your use.
2. Please provide a detailed description of all project construction activities, especially all in-stream work, particularly cofferdamming/excavating. (See Item #3 of the Application for Project Approval for a more detailed explanation of the information required).
3. In the discussion of the cumulative impacts of the proposed project on fish resources (Exhibit E.2.2-1, page 41), it is indicated that the achievement of Class B water quality standards is a goal of the Clean Water Act. This is no longer the case under Maine's revised water quality classification system. (38 MRSA Section 464 et. seq.(1986). Class C waters now meet the "fishable/swimmable" goal of the CWA.
4. The final application should include a copy of DEP's May 6, 1986 letter (copy enclosed) acknowledging CHI's request for water quality certification.
5. The final application should respond to the May 19, 1986 comments of the Federal Emergency Management Agency regarding compliance of the project with the requirements of the National Flood Insurance Program.

Jason D. James
PAGE 2
January 29, 1987

Please feel free to contact me if you should have any questions regarding these comments.

Sincerely,



DANA PAUL MURCH
Hydropower Coordinator
Bureau of Land Quality Control

DPM/jw

Enclosures

cc: Ken Beland, ASRSC
Steve Groves, DEP Water
Lew Flagg, DMR
Craig Ten Broeck, DOC
Steve Timpano, IF&W
Art Spiess, MHPC
Betsy Elder, OER
Karen Massey, SPO
Gordon Russell, USF&Ws
Elizabeth Higgins, EPA-Region 1

CONSOLIDATED HYDRO INC.

February 6, 1987

Mr. Norman F. Trask
Acting Commissioner
Department of Inland Fisheries and Wildlife
284 State Street
State House Station 41
Augusta, Maine 04333

FEDERAL EXPRESS

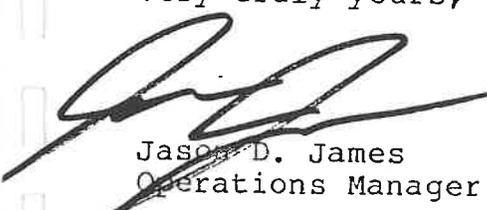
Subject: Littlefield Hydroelectric Project
FERC No. 8158
Supplemental Information to Draft License Application

Dear Mr. Trask:

Thank you for your letter of January 20, 1987. We appreciate your comments and agree that additional consultation is necessary. In response to your comments regarding the HEP study, we are enclosing for your review a copy of the original data forms prepared by our biological consultant, Mr. Gerald Taylor. These forms were used in the HEP Analysis and should help clarify how the results of the study were obtained. We apologize for their omission from the Draft License Application submitted to you on November 14, 1986.

We are anxious to complete the consultation process so that the License Application can be filed with FERC as quickly as possible. Unfortunately, Mr. Taylor is unavailable for a meeting at this time, however, he will be contacting you by telephone within the next week to answer any additional questions you might have about the HEP analysis. We will be contacting you after you speak to Mr. Taylor to discuss your remaining concerns and discuss how best to proceed to resolve the remaining outstanding issues.

Very truly yours,



Jason D. James
Operations Manager

cc: Mr. Steve Timpano (w/enclosures)
Mr. Sonny Pierce (w/enclosures)

E-7-57

CONSOLIDATED HYDRO INC.

February 6, 1987

Mr. Gordon Beckett
Supervisor, New England Area
U.S. Fish and Wild Life Service
Ecological Services
P.O. Box 1518
Concord, New Hampshire 03301

FEDERAL EXPRESS

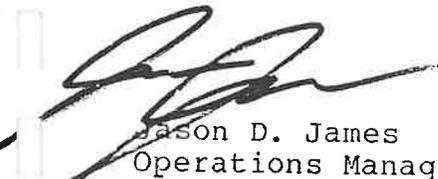
Subject: Littlefield Hydroelectric Project
FERC No. 8158
Supplemental Information to Draft License Application

Dear Mr. Beckett:

Thank you for your letter of December 31, 1986. We appreciate your comments and agree that additional consultation is necessary. In response to your comments regarding the HEP study, we are enclosing for your review a copy of the original data forms prepared by our biological consultant, Mr. Gerald Taylor. These forms were used in the HEP Analysis and should help clarify how the results of the study were obtained. We apologize for their omission from the Draft License Application submitted to you on November 14, 1986.

We are anxious to complete the consultation process so that the License Application can be filed with FERC as quickly as possible. Unfortunately, Mr. Taylor is unavailable for a meeting at this time, however, he will be contacting you by telephone within the next week to answer any additional questions you might have about the HEP analysis. We will be contacting you after you speak to Mr. Taylor to discuss your remaining concerns and discuss how best to proceed to resolve the remaining outstanding issues.

Very truly yours,



Jason D. James
Operations Manager

cc: Gordon Russell (w/enclosures)
Mr. Dana Murch, DEP (w/enclosures)

E-7-58

CONSOLIDATED HYDRO INC.

February 6, 1987

Mr. Kenneth F. Beland
Fisheries Biologist
Atlantic Run Salmon Commission
P.O. Box 1298
Bangor, Maine 04401

FEDERAL EXPRESS

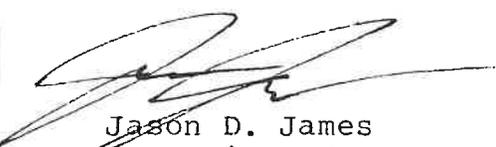
Subject: Littlefield Hydroelectric Project
FERC No. 8158
Supplemental Information to Draft License Application

Dear Mr. Beland:

Thank you for your letter of December 10, 1986. We appreciate your comments and agree that additional consultation is necessary. In response to your comments regarding the HEP study, we are enclosing for your review a copy of the original data forms prepared by our biological consultant, Mr. Gerald Taylor. These forms were used in the HEP Analysis and should help clarify how the results of the study were obtained. We apologize for their omission from the Draft License Application submitted to you on November 14, 1986.

We are anxious to complete the consultation process so that the License Application can be filed with FERC as quickly as possible. Unfortunately, Mr. Taylor is unavailable for a meeting at this time, however, he will be contacting you by telephone within the next week to answer any additional questions you might have about the HEP analysis. We will be contacting you after you speak to Mr. Taylor to discuss your remaining concerns and discuss how best to proceed to resolve the remaining outstanding issues.

Very truly yours,



Jason D. James
Operations Manager

E-7-59

CONSOLIDATED HYDRO INC.

February 6, 1987

Mr. Spencer Appolonio
Commissioner
Department of Marine Resources
State House - Station 21
Augusta, Maine 04333

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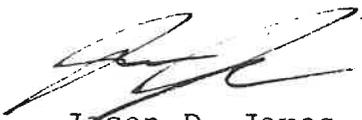
Subject: Littlefield Hydroelectric Project
FERC No. 8158
Supplemental Information to Draft License Application

Dear Mr. Appolonio:

Thank you for your letter of December 31, 1986. We appreciate your comments and agree that additional consultation is necessary. In response to your comments regarding the HEP study, we are enclosing for your review a copy of the original data forms prepared by our biological consultant, Mr. Gerald Taylor. These forms were used in the HEP Analysis and should help clarify how the results of the study were obtained. We apologize for their omission from the Draft License Application submitted to you on November 14, 1986.

We are anxious to complete the consultation process so that the License Application can be filed with FERC as quickly as possible. Unfortunately, Mr. Taylor is unavailable for a meeting at this time, however, he will be contacting you by telephone within the next week to answer any additional questions you might have about the HEP analysis. We will be contacting you after you speak to Mr. Taylor to discuss your remaining concerns and discuss how best to proceed to resolve the remaining outstanding issues.

Very truly yours,



Jason D. James
Operations Manager

cc: Mr. Lewis Flagg (w/enclosures)

E-7-60

CONSOLIDATED HYDRO INC.

March 20, 1987

Mr. Norman Trask
State of Maine
Department of Inland Fisheries and Wildlife
284 State Street, State House Station 41
Augusta, ME 04333

Subject: Littlefield Hydroelectric Project
FERC Project No. 8158 - Maine

Dear Mr. Trask:

In response to your comments of January 20, 1987 and as a follow up, both to our letter of February 6, 1987, and your telephone conversation with our biological consultant Mr. Gerald Taylor, on February 23, 1987, we would like to reiterate our position with respect to the Littlefield Hydroelectric Project.

We understand the importance and value of pre-filing agency consultation both in terms of expediting the licensing process and in ensuring the development of a successful project. As a result, we have made it a practice to approach hydropower development with a sincere concern for valuable and irreplaceable public resources. We believe that our approach to the development of the Littlefield Hydropower Project has been consistent with this practice, as evidenced by the changes we have made to the mode of operation and choice of turbine, as well as by our delay in filing the license application in order to accomodate your request for additional studies.

Unfortunately, conditions of our power purchase sales agreement with Central Maine Power are such that we can no longer delay filing without further jeopardizing this agreement and ultimately, the future of the Project. However, we believe that we have conducted the necessary studies for this project. In addition, although no formal studies were conducted on cumulative impacts or angling opportunities, these two concerns have been addressed in the license application.

With respect to the proposed mitigation measures, we apologize for not involving you more directly in the selection of mitigative measures. We understand your concerns pertaining to failure to provide full mitigation in kind, as well as the proposed flow durations at the two mitigation sites and their "legitimacy". We believe, however, that we have examined all alternatives that are economically feasible and have proposed the best possible mitigation with respect to compensation for loss of riffle habitat. While we agree that continuous flow releases at the mitigation sites would be ideal, such flows would have a significant adverse economic impact on the hydroelectric projects at these sites. Furthermore, we believe that the flow durations, as proposed, will provide partial compensation for loss of riffle habitat, in that some fish after hatching, would be able to move into pools immediately downstream from these sites.

We have been unable to identify any mitigation that would provide full compensation in kind. As to the legitimacy of our proposed mitigation, Consolidated Hydro, Inc., as sole owner of the Littlefield Hydroelectric Company, owns both of the proposed mitigation sites and is committed to implementing whatever procedures are required in order to provide the proposed flow releases.

In conclusion, we believe that we have addressed your comments in the license application to the fullest extent. We intend to file the application next week and will be providing you with a copy concurrent with our filing to the FERC. We appreciate the comments you have provided us to date and look forward to continued consultation with you throughout the development of this Project.

Sincerely,



Jason D. James
Operations Manager

Enclosures

JDJ/mos

cc's

Phil Andrews
Steve Timpano
Ken Beland, Atlantic Sea Run Salmon Commission
Gordon Russell, USFWS
Lewis Flagg, DMR

CONSOLIDATED HYDRO INC.

March 20, 1987

Mr. Gordon Beckett
US Department of the Interior
Fish and Wildlife Services
P.O. Box 1518
Concord, NH 03301

Subject: Littlefield Hydroelectric Project
FERC Project No. 8158 - Maine

Dear Mr. Beckett:

In response to your comments of December 31, 1986 and as a follow up, both to our letter of February 6, 1987, and your telephone conversation with our biological consultant Mr. Gerald Taylor, on February 23, 1987, we would like to reiterate our position with respect to the Littlefield Hydroelectric Project.

We understand the importance and value of pre-filing agency consultation both in terms of expediting the licensing process and in ensuring the development of a successful project. As a result, we have made it a practice to approach hydropower development with a sincere concern for valuable and irreplaceable public resources. We believe that our approach to the development of the Littlefield Hydropower Project has been consistent with this practice, as evidenced by the changes we have made to the mode of operation and choice of turbine, as well as by our delay in filing the license application in order to accomodate your request for additional studies.

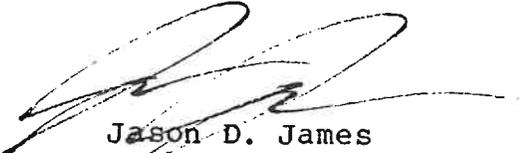
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Sincerely,



Jason D. James
Operations Manager

Enclosures

JDJ/mos

cc's

Steve Timpano
Gordon Russell, USFWS
Lewis Flagg
Ken Beland, Atlantic Sea Run Salmon Commission

CONSOLIDATED HYDRO INC.

March 20, 1987

Mr. Kenneth Beland
Atlantic Sea Run Salmon Commission
P.O. Box 1298
Bangor, ME 04401

Subject: Littlefield Hydroelectric Project
FERC Project No. 8158 - Maine

Dear Mr. Beland:

In response to your comments of December 10, 1986 and as a follow up, both to our letter of February 6, 1987, and your telephone conversation with our biological consultant Mr. Gerald Taylor, on February 23, 1987, we would like to reiterate our position with respect to the Littlefield Hydroelectric Project.

We understand the importance and value of pre-filing agency consultation both in terms of expediting the licensing process and in ensuring the development of a successful project. As a result, we have made it a practice to approach hydropower development with a sincere concern for valuable and irreplaceable public resources. We believe that our approach to the development of the Littlefield Hydropower Project has been consistent with this practice, as evidenced by the changes we have made to the mode of operation and choice of turbine, as well as by our delay in filing the license application in order to accommodate your request for additional studies.

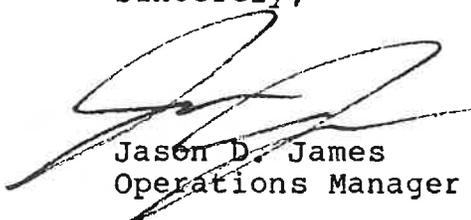
Unfortunately, conditions of our power purchase sales agreement with Central Maine Power are such that we can no longer delay filing without further jeopardizing this agreement and ultimately, the future of the Project. However, we believe that we have conducted the necessary studies for this project. In addition, although no formal studies were conducted on cumulative impacts or angling opportunities, these two concerns have been addressed in the license application.

With respect to the proposed mitigation measures, we apologize for not involving you more directly in the selection of mitigative measures. We understand your concerns pertaining to failure to provide full mitigation in kind, as well as the proposed flow durations at the two mitigation sites and their "legitimacy". We believe, however, that we have examined all alternatives that are economically feasible and have proposed the best possible mitigation with respect to compensation for loss of riffle habitat. While we agree that continuous flow releases at the mitigation sites would be ideal, such flows would have a significant adverse economic impact on the hydroelectric projects at these sites. Furthermore, we believe that the flow durations, as proposed, will provide partial compensation for loss of riffle habitat, in that some fish after hatching, would be able to move into pools immediately downstream from these sites.

We have been unable to identify any mitigation that would provide full compensation in kind. As to the legitimacy of our proposed mitigation, Consolidated Hydro, Inc., as sole owner of the Littlefield Hydroelectric Company, owns both of the proposed mitigation sites and is committed to implementing whatever procedures are required in order to provide the proposed flow releases.

In conclusion, we believe that we have addressed your comments in the license application to the fullest extent. We intend to file the application next week and will be providing you with a copy concurrent with our filing to the FERC. We appreciate the comments you have provided us to date and look forward to continued consultation with you throughout the development of this Project.

Sincerely,



Jason D. James
Operations Manager

Enclosures

JDJ/mos

cc's

Steve Timpano, IF&W
Gordon Russell, USFWS
Lewis Flagg, DMR

CONSOLIDATED HYDRO INC.

March 20, 1987

Mr. Spencer Appolonio
Department of Marine Resources
State House Station 21
Augusta, Maine 04333

Subject: Littlefield Hydroelectric Project
FERC Project No. 8158 - Maine

Dear Mr. Appolonio:

In response to your comments of December 31, 1986 and as a follow up, both to our letter of February 6, 1987, and your telephone conversation with our biological consultant Mr. Gerald Taylor, on February 23, 1987, we would like to reiterate our position with respect to the Littlefield Hydroelectric Project.

We understand the importance and value of pre-filing agency consultation both in terms of expediting the licensing process and in ensuring the development of a successful project. As a result, we have made it a practice to approach hydropower development with a sincere concern for valuable and irreplaceable public resources. We believe that our approach to the development of the Littlefield Hydropower Project has been consistent with this practice, as evidenced by the changes we have made to the mode of operation and choice of turbine, as well as by our delay in filing the license application in order to accomodate your request for additional studies.

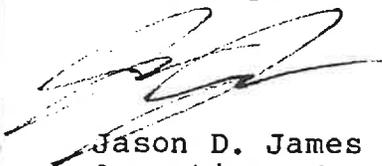
Unfortunately, conditions of our power purchase sales agreement with Central Maine Power are such that we can no longer delay filing without further jeopardizing this agreement and ultimately, the future of the Project. However, we believe that we have conducted the necessary studies for this project. In addition, although no formal studies were conducted on cumulative impacts or angling opportunities, these two concerns have been addressed in the license application.

With respect to the proposed mitigation measures, we apologize for not including you more directly in the selection of mitigative measures. We understand your concerns pertaining to failure to provide full mitigation in kind, as well as the proposed flow durations at the two mitigation sites and their "legitimacy". We believe, however, that we have examined all alternatives that are economically feasible and have proposed the best possible mitigation with respect to compensation for loss of riffle habitat. While we agree that continuous flow releases at the mitigation sites would be ideal, such flows would have a significant adverse economic impact on the hydroelectric projects at these sites. Furthermore, we believe that the flow durations, as proposed, will provide partial compensation for loss of riffle habitat, in that some fish after hatching, would be able to move into pools immediately downstream from these sites.

We have been unable to identify any mitigation that would provide full compensation in kind. As to the legitimacy of our proposed mitigation, Consolidated Hydro, Inc., as sole owner of the Littlefield Hydroelectric Company, owns both of the proposed mitigation sites and is committed to implementing whatever procedures are required in order to provide the proposed flow releases.

In conclusion, we believe that we have addressed your comments in the license application to the fullest extent. We intend to file the application next week and will be providing you with a copy concurrent with our filing to the FERC. We appreciate the comments you have provided us to date and look forward to continued consultation with you throughout the development of this Project.

Sincerely,



Jason D. James
Operations Manager

Enclosures

JDJ/mos

cc's

Lewis Flagg
Steve Timpano, IF&W
Gordon Russell, USFWS
Ken Beland, Atlantic Sea Run Salmon Commission

CONSOLIDATED HYDRO INC.

March 20, 1987

State of Maine
Historic Preservation Commission
55 Capitol Street
State House Station 65
Augusta, ME 04333

Attn: Dr. Arthur Spiess

Subject: Littlefield Hydroelectric Project
FERC Project No. 8158 - Maine

Dear Dr. Spiess:

Pursuant to your letter of December 1, 1986 and your subsequent telephone conversations with Ms. Susan Smillie of MK Engineers, I'd like to inform you as to the status of the Phase I archaeological work conducted by Dr. James Peterson. I assumed that you had already received a copy of the Phase I Report, as the field work had been completed last summer. I apologize for the misunderstanding.

A copy of the Phase I Archaeological report is being mailed out to you today for review. I understand that you have been in close contact with Dr. Peterson over the past several months so that the contents of the report should be consistent with the information he has provided you to date.

In response to your concerns regarding the geographic coverage of the Phase I survey, it is our understanding that Dr. Peterson did determine the Phase I coverage to be inadequate and is recommending additional survey work for a small area in the 100-year floodplain as part of Phase II. We will incorporate this recommendation into the Phase II workplan.

As soon we have received your comments on the Phase I report, we will submit the Phase II workplan for your review. We are anxious to begin the Phase II work as quickly as possible, as we intend to file the License Application with the FERC next week. You will receive a copy of the License Application concurrent to our filing with FERC.

We look forward to receiving your comments on Phase I and to continued consultation throughout the development of this Project.

Sincerely,



Jason D. James
Operations Manager

JDJ/mos

TWO GREENWICH PLAZA, GREENWICH, CONNECTICUT 06830
TELEPHONE (203) 661-4203 TELEEX 620496

E-7-69

CONSOLIDATED HYDRO INC.

March 25, 1987

Mr. Edward A. Thomas, Chief
Natural and Technological Hazards Division
Federal Emergency Management Agency
Region 1
J.W. McCormack Post Office and Court House
Boston, MA 02109

Subject: Littlefield Hydroelectric Project,
FERC Project No. 8158-Maine

Dear Mr. Thomas:

We will be filing our License Application for the Littlefield Hydroelectric Project with the Federal Energy Regulatory Commission shortly. We would like to take this opportunity to provide you with the information requested in your letter of May 19, 1986. As indicated in the letter, FEMA determined that our proposal to reconstruct the Littlefield Dam did not meet the requirement of Section 60.3 (d)(3) of the rules and regulations of the National Flood Insurance Program (NFIP). FEMA also determined that the project may be approved only if the following conditions were met:

1. A location hydraulic study has been performed in accordance with standard engineering practice, and compatible with hydraulic analysis performed in the development of flood insurance studies. The location hydraulic study should consider several alternatives of location and size of structure.
2. The applicant has made appropriate arrangements with affected property owners and the community to obtain flooding easements or otherwise compensate them for future flood losses due to the effects of the project.
3. The applicant has made appropriate arrangements to assure that the National Flood Insurance Program and Flood Insurance Fund do not incur any liability for additional future flood losses to existing structures which are insured under the Program and grandfathered in under the risk status existing prior to the construction of the structure.
4. The applicant provides FEMA with revised flood profiles, floodway and floodplain mapping, and background technical data necessary for FEMA to issue revised Flood Insurance Rate Maps and Flood Boundary and Floodway Maps for the affected area upon completion of the structure.

E-7-70

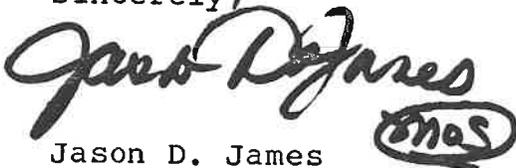
March 25, 1987

We offer the following information in response to these conditions:

1. Various alternatives were considered during the design of the Littlefield Dam. A practical alternative to increasing the flood height could not be found. The new 100 year flood elevation is 5.5 feet above the FEMA established 100 year flood at the dam. Since the 100 year flood is approximately the same as the normal pool level, it would be difficult to drop the pool to the FEMA 100 year flood level. However, the proposed system of flashboards and stanchion sections can pass a 100 year flood without increasing the elevation at the dam beyond the normal pool level.
2. Reconstruction of the Littlefield Dam will restore the pond upstream of the dam to that which existed before the 1936 flood. Therefore, because of riparian rights, we do not believe that it is necessary to obtain flooding easements or provide compensation. However, we are in the process of identifying all owners whose properties abut the project site, and will notify them through public notice regarding the proposed project.
3. No existing structures insured under the NFIP are present. Therefore, we do not believe that it is not necessary to make arrangements to assure that the NFIP and Flood Insurance Fund do not incur liability for additional future flood losses.
4. The technical data required is attached.

We believe that the submittal of this information should satisfy the above conditions. If you have any questions, or require additional information, please do not hesitate to call me.

Sincerely,

A handwritten signature in cursive script that reads "Jason D. James". To the right of the signature is a circular stamp containing the initials "mas".

Jason D. James
Operations Manager

Enclosures

JDJ/mos

BACKWATER STUDIES

LITTLE ANDROSCOGGIN RIVER, AUBURN MAINE

INTRODUCTION

The Maine Hydroelectric Development Corporation (MHDC) has been issued a license by the Federal Energy Regulatory Commission (FERC) to construct, operate, and maintain a hydroelectric facility (FERC Project No. 3562-001) at the Upper Barker Mill Dam on the Little Androscoggin River near the City of Auburn, Maine. While the Maine Department of Environmental Protection (DEP) has issued a Water Quality Certification for the project, they have requested that MHDC conduct a hydraulic backwater analysis based on the final project design in order to determine the new 100-year flood plain resulting from the restoration of Upper Barker Dam. Article 29 of the FERC license directs the Licensee to prepare this study and file a letter of acceptance of the study by FEMA. Morrison-Knudsen Engineers (MKE) was retained by the Licensee to perform the required studies.

The Licensee is also involved with the restoration of Littlefield Dam, located 18,635 feet upstream of the Upper Barker Dam. Since Littlefield Dam will influence the flood plain on the lower reaches of the Little Androscoggin River, it was included in the study.

Backwater studies were done of the lower reach of the Little Androscoggin River to determine what effect rebuilding Upper Barker and Littlefield dams would have on the water surface profile. The river reach studied extends from the Lower Barker Dam in Auburn upstream to just past the Minot town line. This winding stretch of the river drops 60 feet over a distance of approximately 7.3 miles. There are three dams in this section of the river: The Lower Barker Dam (also known as Barker's Mill); the Upper Barker Dam, which is located 2840 feet upstream of the Lower Barker Dam; and the Littlefield Dam, which is located 18,635 feet upstream of the Lower Barker Dam.

METHODOLOGY

The backwater studies were done using HEC-2, a computer program developed by the U.S. Army Corp of Engineers (COE). This program uses the standard step distance method of calculating water surface profiles. Thirty-three cross sections were used to describe the river section studied. The distance between cross sections varied from one foot to greater than 4100 feet. Special sections were used to model four bridges. Figure 1 shows the location of the cross sections and three dams. The cross sections were obtained from the COE and are the same as those used by the COE to produce floodway and flood boundary maps for the City of Auburn, Maine for the Federal Emergency Management Agency (FEMA) Flood Insurance Study.

BACKWATER STUDIES

The flow range studied varied from 200 cfs to 30,000 cfs (greater than the 500-year flood). The model was run three times, each reflecting different conditions of the various dams.

The first run duplicated backwater studies done by the COE in the late 1970's as part of a flood insurance study. This run was used to compare the computer program and model used by MKE with the COE computer program.

1. For this run, the upper two dams were modeled as breached and there were no flashboards or hydrogenerating facilities at Lower Barker Dam.
2. The second run modeled existing conditions and differed from the first in that Lower Barker Dam now includes flashboards and a hydroelectric station.
3. The third and last run modeled the proposed restoration of Upper Barker Dam and Littlefield Dam.

For the purposes of the backwater calculations, the dams were treated as weirs and the standard weir formula was used to determine a headwater curve for each of the dams. Representative characteristics of the three dams used to develop the headwater curves were as follows:

LOWER BARKER DAM

A. Main Spillway

Length	130 feet
Crest Width	2 feet
Crest Elevation:	
With Flashboards	167.50 feet
Without Flashboards	163.86 feet
Upstream Slope Face	2H:1V
Downstream Slope Face	Vertical
"C" Coefficient:	
With Flashboards	3.24
Without Flashboards	3.66

B. Waste Gates

Number	2
Size (each)	8 feet x 8 feet
Invert Elevation	140 feet
Maximum Capacity (each)	1,500 cfs
"C" Coefficient	0.62
Discharge Formula	$CA(2gH)^{1/2}$

C. Auxiliary Spillway

Length	140 feet
Crest Width	10 feet
Crest Elevation	163.86 feet
"C" Coefficient	2.64

D. Walkway Section

Length	60 feet
Crest Width	12 feet
Crest Elevation	170.0 feet
"C" Coefficient	2.65

Operating Sequence

1. When river flows exceed the turbine capacity, water spills over the flashboards.
2. When the water surface elevation approaches El. 169, waste gates are opened, releasing approximately 3,000 cfs.
3. When water surface elevation reaches El. 169.5, flashboards on main spillway fail.
4. When water surface elevation approaches El. 170, stanchion (needle) sections on top of the auxiliary spillway are tripped.

5. When water surface elevation exceeds El. 170, water begins spilling over the walkway section.

Comments: The configuration and operation of Lower Barker Dam have been modified since the COE backwater studies were done in the late 1970's. The current studies were done using information provided by the current operator of the dam.

UPPER BARKER DAM

A. Main Spillway

Length	86 feet
Crest Width	4 feet
Crest Elevation:	
With Flashboards	192.0
Without Flashboards	189.0
Upstream Face	2H:1V
Downstream Face	Vertical
"C" Coefficient:	
With Flashboards	3.24
Without Flashboards	2.83 - 3.57

B. Gated Spillway

Number	2
Length	15 feet
Shape	Ogee
Design Head	20 feet
Crest Elevation	175 feet
"C" Coefficient	3.20 - 3.65

Operating Sequence

1. When river flows exceed the turbine capacity, gates are gradually opened, keeping the water surface elevation at El. 192 (top of flashboards).
2. When excess flow exceeds 7360 cfs, (the total capacity of both gated spillways at El. 192) the water level will rise and water will spill over the flashboards.
3. When the water surface elevation exceeds El. 194 feet, the flashboards will fail.

Comments: The proposed gated spillway has been sized to maintain the water surface elevation of 198.7 ft under the 100 year flood.

LITTLEFIELD DAM

A. Main Spillway

Length	207 feet
Shape	Modified Ogee
Crest Elevation:	
With Flashboards	216 feet
Without Flashboards	213 feet
"C" Coefficient:	
With Flashboards	3.24
Without Flashboards	3.32 - 3.50

B. Old Powerhouse

Length	109 feet
Crest Width	28 feet
Crest Elevation:	
With Flashboards	216 feet
Without Flashboards	213 feet
"C" Coefficient:	
With Flashboards	3.32
Without Flashboards	2.63

C. Auxiliary Spillway

Length	100 feet
Shape	Ogee
Design Head	6 feet
Crest Elevation	209 feet
"C" Coefficient	3.16 - 3.85

Operating Sequence

1. When river flows exceed the turbine capacity, water spills over the flashboards.
2. Flashboards on the main spillway and the old powerhouse fail when the water surface elevation approaches El. 217 feet.
3. Stanchion (needle) sections on the auxiliary spillway are tripped when the water surface elevation reaches El. 217.5 feet.

Comments: Auxiliary spillway designed to maintain a water surface elevation of approximately 218 feet under the 100 year flood.

RESULTS

Table 1 summarize the results of the COE's backwater studies done in the late 1970's for FEMA and MKE's duplication of the COE study using HEC-2. The water surface elevation determined by both models are quite similar, except near Lower Barker Dam, which is outside the range of this study. However, there was good correlation between the two models beginning at Upper Barker Dam and extending upstream to Minot town line, the upstream limit of the study. MKE therefore concluded that the HEC-2 program was suitable for use in the backwater studies.

Since the COE studies were done, modifications have been made to the Lower Barker Dam. (The dam is also known as Barker's Mill Dam). These modifications include installation of hydrogenerating facilities and changes to the dam crest, gates, and auxiliary spillway. The second MKE HEC-2 run accounted for the changed conditions at Lower Barker Dam and is considered representative of the existing conditions. A third HEC-2 run was made which modeled the proposed changes to Upper Barker and Littlefield Dam. Tables 2 and 3 summarize the water surface profile under the existing and proposed conditions for average flow conditions and 100-year-flood flows, respectively.

Under average flow conditions the water surface elevation increases 10.5 feet immediately upstream of Upper Barker Dam and gradually decreases, to 3.44 feet 15,575 feet upstream. At Littlefield Dam, the water surface profile increases 12.68 feet just upstream of the dam, and decreases to 5.78 feet at the Auburn-Minot town line. Under the 100-year-flood condition, the water surface profile decreases slightly (0.22 feet) at Upper Barker Dam. At Littlefield Dam, the water surface profile increases 5.5 feet just upstream of the dam and decreases to 0.13 feet about 2500 feet upstream.

Since no negative impact is expected at Upper Barker Dam, modifications are not required to the 100-year-flood plain. The areas upstream of Littlefield Dam which are impacted under 100-year-flood conditions are shown on Figure 2. Figure 3 shows the areas upstream of Littlefield Dam which would be flooded under average flow with the Dam restored to its original condition.

Table 1

COMPARISON OF COE AND MKE MODELS
WATER SURFACE ELEVATION FOR 100 YEAR FLOOD

Station	Distance Above		Water Surface Elevation (ft)			Notes
	Lower Barker (ft)	Flow (cfs)	COE Study	MKE HEC-2 Run	Difference (ft)	
1	0	22,100	173.75	172.50	-1.25	Barker Mill Dam
2	2,280	22,100	175.15	174.34	+0.81	
3	3,660	22,100	198.70	198.70	0.0	220 ft U/S Upper Barker Dam
4	4,340	21,300	199.68	199.27	-0.41	
5	6,560	21,300	200.76	200.42	-0.34	
6	6,890	21,300	200.03	199.73	-0.30	D/S of Maine Central RR Bridge
6.1	6,891	21,300	200.03	199.73	-0.30	D/S Face of RR Bridge
8	6,911	21,300	200.16	199.86	-0.30	U/S Face of RR Bridge
8.1	6,912	21,300	200.16	199.87	-0.29	U/S of Maine Central RR Bridge
9	8,792	21,300	202.94	202.56	-0.38	
10	11,012	21,300	203.94	203.74	-0.2	
11	14,642	21,300	204.40	204.16	-0.24	D/S of U.S. Rte 202 Northbound
11.1	14,643	21,300	204.40	204.16	-0.24	D/S Face of U.S. Rte 202 N
13	14,693	21,300	205.45	205.19	-0.26	
13.1	14,694	21,300	205.45	205.19	-0.26	
913	14,774	21,300	205.90	205.65	-0.25	
14	15,454	21,300	205.68	205.43	-0.25	D/S of U.S. Rte 202 Southbound
14.1	15,455	21,300	205.68	205.43	-0.25	D/S Face of U.S. Rte 202 S
16	15,555	21,300	205.72	205.47	-0.25	
916	15,635	21,300	206.14	205.90	-0.24	
17	18,635	21,300	206.91	206.71	-0.2	
18	18,835	21,000	212.22	212.22	0.0	200 ft U/S of Littlefield Dam
19	19,685	21,000	213.64	213.64	0.0	
20	21,305	21,000	217.39	217.39	0.0	D/S of Old Hotel Road Bridge
20.1	21,306	21,000	217.43	217.43	0.0	D/S Face of Bridge
22	21,326	21,000	220.93	220.93	0.0	U/S Face of Bridge
22.1	21,406	21,000	221.61	221.61	0.0	U/S of Old Hotel Road Bridge
23	21,936	21,000	225.73	225.66	-0.07	
24	26,566	21,000	227.53	227.48	-0.05	
25	28,356	21,000	227.80	227.76	-0.04	
26	32,476	21,000	229.06	229.03	-0.03	1750 ft U/S of Davis Brook
27	36,126	21,000	229.95	229.92	-0.03	
28	38,556	21,000	230.50	230.47	-0.03	430 ft U/S of Auburn-Minot Townline

Table 2

COMPARISON OF EXISTING AND PROPOSED CONDITIONS FOR AVERAGE FLOW CONDITIONS

Station	Distance Above		Water Surface Elevation (ft)			Notes
	Lower Barker (ft)	Flow (cfs)	Existing ⁽¹⁾ Conditions	Proposed Conditions	Difference (ft)	
1	0	600	169.00	168.76	-0.24	Barker Mill Dam
2	2,280	600	169.00	168.77	-0.23	
3	3,060	600	181.50	192.00	+10.5	220 ft U/S Upper Barker Dam
4	4,340	600	181.54	192.00	+10.46	
5	6,560	600	183.79	192.01	+8.22	
6	6,890	600	184.25	192.01	7.76	D/S of Maine Central RR Bridge
6.1	6,891	600	184.25	192.01	+7.76	D/S Face of RR Bridge
8	6,911	600	184.26	192.01	+7.75	U/S Face of RR Bridge
8.1	6,912	600	184.27	192.01	7.74	U/S of Maine Central RR Bridge
9	8,792	600	184.86	192.02	7.16	
10	11,012	600	185.26	192.04	6.78	
11	14,642	600	187.13	192.07	4.94	D/S of U.S. Rte 202 Northbound
11.1	14,643	600	187.13	192.07	4.94	D/S Face of U.S. Rte 202 N
13	14,693	600	187.13	192.07	4.94	
13.1	14,694	600	187.13	192.07	4.94	
913	14,774	600	187.17	192.07	4.90	
14	15,454	600	187.45	192.07	4.62	D/S of U.S. Rte 202 Southbound
14.1	15,455	600	187.45	192.07	4.62	D/S Face of U.S. Rte 202 S
16	15,555	600	187.45	192.07	4.62	
916	15,635	600	187.57	192.08	4.51	
17	18,635	600	188.70	192.14	3.44	
18	18,835	600	204.00	216.68	+12.68	200 ft U/S of Littlefield Dam
19	19,685	600	204.05	216.68	+12.63	
20	21,305	600	207.14	216.68	+9.54	D/S of Old Hotel Road Bridge
20.1	21,306	600	207.16	216.68	+9.52	D/S Face of Bridge
22	21,326	600	207.70	216.68	+8.98	U/S Face of Bridge
22.1	21,406	600	208.17	216.68	+8.51	U/S of Old Hotel Road Bridge
23	21,936	600	209.00	216.69	+7.69	
24	26,566	600	209.64	216.72	+7.08	
25	28,356	600	209.82	216.72	+6.90	
26	32,476	600	210.51	216.75	+6.24	1750 ft U/S of Davis Brook
27	36,126	600	210.86	216.77	+5.91	
28	38,556	600	211.01	216.79	+5.78	430 ft U/S of Auburn-Minot Townline

(1) Includes modifications which have been made to Barkers Mill Dam since the COE backwater studies were done.

Table 3

COMPARISON OF EXISTING AND PROPOSED CONDITIONS FOR 100 YEAR FLOOD

Station	Distance Above		Water Surface Elevation (ft)			Notes
	Lower Barker (ft)	Flow (cfs)	Existing ⁽¹⁾ Conditions	Proposed Conditions	Difference (ft)	
1	0	22,100	173.62	173.62	0.0	Barker Mill Dam
2	2,280	22,100	174.99	174.98	-0.01	
3	3,660	22,100	198.70	198.48	-0.22	220 ft U/S Upper Barker Dam
4	4,340	21,300	199.27	198.75	-0.52	
5	6,560	21,300	200.42	200.01	-0.41	
6	6,890	21,300	199.73	199.29	-0.44	D/S of Maine Central RR Bridge
6.1	6,891	21,300	199.73	199.29	-0.44	D/S Face of RR Bridge
8	6,911	21,300	199.86	199.44	-0.42	U/S Face of RR Bridge
8.1	6,912	21,300	199.87	199.44	-0.43	U/S of Maine Central RR Bridge
9	8,792	21,300	202.56	202.31	-0.25	
10	11,012	21,300	203.74	203.55	-0.19	
11	14,642	21,300	204.16	204.00	-0.16	D/S of U.S. Rte 202 Northbound
11.1	14,643	21,300	204.16	204.00	-0.16	D/S Face of U.S. Rte 202 N
13	14,693	21,300	205.19	205.04	-0.15	
13.1	14,694	21,300	205.19	205.04	-0.15	
913	14,774	21,300	205.65	205.51	-0.14	
14	15,454	21,300	205.43	205.28	-0.15	D/S of U.S. Rte 202 Southbound
14.1	15,455	21,300	205.43	205.28	-0.15	D/S Face of U.S. Rte 202 S
16	15,555	21,300	205.47	205.32	-0.15	
916	15,635	21,300	205.90	205.75	-0.15	
17	18,635	21,300	206.71	206.60	0.11	
18	18,835	21,000	212.22	217.73	+5.51	200 ft U/S of Littlefield Dam
19	19,685	21,000	213.64	218.04	+4.40	
20	21,305	21,000	217.39	217.52	+0.13	D/S of Old Hotel Road Bridge
20.1	21,306	21,000	217.43	217.54	+0.11	D/S Face of Bridge
22	21,326	21,000	220.93	221.44	+0.51	U/S Face of Bridge
22.1	21,406	21,000	221.61	222.03	+0.42	U/S of Old Hotel Road Bridge
23	21,936	21,000	225.66	225.85	+0.19	
24	26,566	21,000	227.48	227.60	+0.12	
25	28,356	21,000	227.76	227.87	+0.11	
26	32,476	21,000	229.03	229.11	+0.08	1750 ft U/S of Davis Brook
27	36,126	21,000	229.92	229.98	+0.06	
28	38,556	21,000	230.47	230.52	+0.05	430 ft U/S of Auburn-Minot Townline

(1) Includes modifications which have been made to Barkers Mill Dam since the COE backwater studies were done.

FIGURES 1, 2 AND 3 OF THE BACKWATER STUDIES
CORRESPOND TO FIGURES E-5, E-4, AND E-3,
RESPECTIVELY, IN EXHIBIT E OF THE
LICENSE APPLICATION.