



September 28, 2012

File: 5600-15-WAT-LIC-AWS

Sent by e-mail: Alain.Magnan@dfo-mpo.gc.ca

Alain (Al) Magnan, R.P. Bio., CPESC
Senior Habitat Biologist
Habitat Management
South Coast
Fisheries and Oceans Canada
3225 Stephenson Point Road
Nanaimo, BC
V9T 1K3

Re: Englishman River Water Intake

Dear Mr. Magnan,

This is in response to your letter on September 20, 2012 regarding the proposed Englishman River Water Intake. The Arrowsmith Water Service (AWS) would like to take the opportunity to correct your understanding and points of view in this matter. Following is an account of recorded minutes and public documents in relation to planning for the proposed water intake.

An initial meeting was held with Richard Eliassen, Division Habitat Manager, Fisheries Branch of Fisheries and Oceans Canada on May 8, 1991 to outline the future water supply project and to gain input from DFO regarding habitat protection, proposed extraction point, intake type and previous DFO reports outlining minimum flow release requirement. Mr. Eliassen indicated that the minimum flow figure originally provided by the Department of Fisheries and Oceans was based on an estimate of Hamilton and Kosakowski (1982) study entitled, Water Requirements for the Fisheries Resources of the Englishman River, Vancouver Island, B.C. The document is the current study hosted on DFO's website in the following location:

http://dsp-psd.pwgsc.gc.ca/collection_2007/dfo-mpo/Fs97-4-1676E.pdf

This document indicates a minimum or critical rearing flow of 0.71 m³/s be maintained in the lower reaches of the Englishman River after full water extraction. This position was challenged by DFO and Ministry of Environment, Lands and Parks during a workshop held in April 9, 1992 in favour of a recommendation for 1.13 m³/s minimum flow. The purpose of this workshop was to inform regulators and other stakeholders of the plans of the proposed regional water system that included specific discussions on dam storage volumes, fisheries flow requirements and intake locations (see attached summary of workshop discussion). Two subsequent meetings were held on April 22, 1992 and October 13, 1992 with DFO and MOELP officials to specifically discuss:

- i. Compensation for possible fisheries habitat lost in the development of the Arrowsmith Lake reservoir; and
- ii. Ensure that potential habitat reduction associated with the withdrawal of water for domestic purposes will be prevented by providing compensation flows. It is a further requirement by both senior levels of government to release additional water during low flow periods, over and above what will be extracted for domestic use, to provide better than presently occurring natural conditions for fish propagation.

In July 1992 the Regional District of Nanaimo issued a Draft Predesign Report on the Regional Water Supply System - Englishman River prepared by KRC Consultants. This report clearly identified two options for the proposed intake location;

- a gravity intake located above the Englishman River Falls located at elevation 195m geodetic and
- a pumped option located below the confluence of the South Englishman River and the Englishman River at elevation 36m geodetic (see attached Figure 8.1 & 8.3 from this report for reference).

This report was sent to Mr. Richard Eliassen of DFO and Mr. George Reid of Fisheries, Vancouver Island Region, Ministry of Environment for review and their comments. On October 28, 1992, we received a reply letter from Mr. George Reid (see attached) and November 30, 1992 a letter was received back from Mr. Richard Eliassen (see attached).

Summary of Federal Fisheries (Mr. Eliassen) comments:

- *“The recommended stream flows as measured at the WSC gauge (08HB002); spawning flow should be maintained at 8.5 m³/s from October to December and should not fall below 5.67 m³/s during this period of the year.*
- *Rearing flow should be maintained at 1.13 m³/s as measured at the WSC gauge (08HB002), through the summer low flow period generally from July to October and should never fall below 0.71 m³/s.”*

Mr. Eliassen further acknowledges the relocation of the intake by stating;

“The Department has a strong preference for the water intake to be sited at a location as far downstream as is technically feasible on the Englishman River. This is to maintain as much flow and wetted area for fish over the longest possible distance in the river prior to the withdrawal point.”

Summary of Provincial Fisheries (Mr. Reid) comments:

- *“The proposed storage on Arrowsmith Lake should provide minimum summer flow, in excess of all other withdrawals, as measured at the WSC gauge (08HB002) downstream of Highway 19 bridge crossing to be maintained at or above 1.13 m³/s on a 1:20 year drought return period.”*

Mr. Reid further acknowledges the relocation of the intake by stating:

“The tenor of the draft predesign report seemed to favour water withdrawal at the downstream pumping site; however, it was iterated at the meeting that the upstream gravity fed withdrawal site was presently being favoured for unspecified reasons. It should be noted that B.C. Environment, Fisheries Section, have a strong preference for water withdrawal at the downstream site, which would maximize the area of wetted fish habitat in the river.”

Given the above comments and recommendations, a formal Water Licence Application was submitted by the Regional District of Nanaimo on behalf of AWS to the Ministry of Environment, Lands and Parks Water Management on August 10, 1995 referencing the proposed point of diversion at the confluence of the Englishman River and the South Englishman River. A final Predesign Report was prepared in September 1995 recommending the intake be located at the downstream pumped option at the confluence of the South Englishman River and Englishman River and that such works be constructed on a phased approach. On October 23, 1995 a further meeting was held with MOELP, DFO, City and RDN staff to discuss the licensing application and to review Fisheries requirements based on the intake being just below the confluence of the South Englishman River and the Englishman River (see attached meeting summary).

On April 18, 1996 a joint Regional and City partnership water licence application was submitted to Mr. George Bryden, Head of Water Allocation and Regulation, MOELP indicating our proposed intake location and phased work plan.

As part of the stakeholder consultation process for our Water Licence, an Application Report was prepared by Mr. Bob Cook of the Ministry of Environment on November 8, 1996. This report recommended separate water licenses be issued for both waterworks diversion and storage. The report reviewed future water extraction, storage requirements, landowner concerns, legal objectors, current surface water users, stakeholders, First Nations comments, Provincial Fisheries requirements and Federal Fisheries requirements. This report references utilizing the City of Parksville intake and future plans for re-locating the intake by stating:

“Future plans are to re-locate the intake further upstream above the urban development. The initial water licence application indicated that the intake location be near the confluence with the South Englishman River. In discussions with the applicants and fisheries agencies, the future intake location would be located on the Englishman River between the South Englishman River confluence and the new Island Highway bridge. A Change of Works application will be submitted when the location and design specifications are finalized.”

On March 4, 1997 a Conditional Water Licence was issued based on the premise of utilizing the existing City of Parksville intake in the interim until such time the future water intake location would be located on the Englishman River between the South Englishman River confluence and the Highway 19 bridge. Along with the Conditional Water Licence, a Provisional Operation Rule was provided to us that stipulates our extraction rates and minimum river flow requirements, specifically;

- Section 1, stipulates all flow are recorded at the Water Survey Canada hydrometric gauge (08HB002) located at the Highway 19A bridge,
- Section 3, stipulates a minimum flow of $1.6\text{m}^3/\text{s}$ shall be maintained from June 1 to October 31 and that $1.6\text{m}^3/\text{s}$ is a value greater than instream fish flow maintenance plus future maximum monthly water withdrawal demand and
- Section 6 of the Provisional Operation Rule stipulates that the rule shall be revised when the intake works are relocated above the Englishman River hydrometric gauge.

In 1997 the AWS was formed and all efforts were concentrated on the design and construction of the Arrowsmith Dam. The Arrowsmith Dam was completed in the fall of 1998 and fully commissioned in 1999 to 2000.

Following the construction of the Arrowsmith Dam, efforts were focused on land acquisition of Block 602 and preliminary design of the new intake. On December 12, 2003 a meeting was held with Mr. Mel Sheng, Mr. Russell Doucet and Esther Guimond of DFO with Tony Koers of Koers and Associated Engineering. Topics discussed at the meeting were:

- the preferred intake location downstream of the confluence of the Englishman River and South Englishman River,
- side channel opportunities for Fisheries benefits given the purchase of Block 602,
- intake location in relation to DFO works and
- side inlet intake preliminary design

Preliminary drawings were submitted to DFO at this time for review, comments and approval. On May 26, 2004 Mr. Russell Doucet replied to Tony Koers by e-mail indicating that they had reviewed the preliminary design plans and that they had no concerns.

On June 8, 2004 a meeting was held with RDN, Nature's Trust, DFO, MWLAP and other stakeholder staff to discuss the logistics of the DFO side channel project in relation to the intake and Block 602.

On July 2005 Koers and Associates Engineering presented a Draft Capital Plan Update report to the AWS Management Board. The report reviewed the option of locating the intake further downstream as it presented major cost savings and provided significant additional Fisheries benefits. The AWS Management Board approved this recommendation and directed staff to further investigate the downstream intake option. A meeting was held on December 8, 2005 with DFO and the Vancouver Island Health Authority (VIHA) staff to discuss this option. VIHA formally replied on May 23, 2006 and indicated that they would be willing to consider a downstream site, provided a risk assessment carried out by AWS could show that risks can be adequately managed.

In 2009 AWS engaged the services of Associated Engineering (BC) Ltd. to review the downstream option and determine the best location for the intake and future water treatment plant. On April 2011 Associated Engineering (BC) Ltd. finalized the report and concluded (based on a triple line bottom approach of analyzing risk, social and environmental factors) that the best location for the downstream intake location is just above the Highway 19 Bridge. The report also concluded that both future domestic water supply and fisheries flow requirements can be achieved by the release of additional flows from the Arrowsmith Dam during critical summer months.

Given the above, our recorded minutes, reports and public documents, we strongly disagree with the statement that DFO recommendations provided to BC Water Management were based on the intake being permanently located downstream of the Water Survey Canada hydrometric gauge (the existing location). This option was clearly never referenced in any of our plans including the Regional Water Supply System Englishman River Draft Predesign Report or presented to DFO and MOELP officials. Issuance of the water licence which was partly based on input from DFO and Provincial Fisheries, resulted in AWS proceeding with the AWS project, the construction of the Arrowsmith Dam, and with extensive studies associated with determination of a new intake location and treatment plant site. A change in DFO's position at this stage would have significant and unacceptable economic, scheduling and public implications for AWS.

As indicated in our letter dated June 12, 2012 to you, the construction of the Arrowsmith Dam and resulting summer flow augmentation has made significant fisheries improvements to the Englishman River and will continue to do so after full water extraction over and above the existing (pre dam construction) condition. Furthermore, it is clear to us that regardless of the intake location, the flow requirements laid out in the permit, originally determined by both Provincial and Federal fisheries staff, will be met along the entire length of the river and such flows are greater than historical flows.

The construction of the Arrowsmith Dam was the start of our plans for a regional water supply system. It is our position that the proposed intake does not constitute a new project as we are merely following our original plan presented to senior government officials as a phased approach, that being:

- First Phase: construction of the Arrowsmith Dam and provide interconnection to each region as required
- Second Phase: construct a new intake
- Final Phase: provide enhanced water treatment

Significant local water rate tax dollars have been spent to date on a Federal mandate and we can appreciate DFO wanting to update their instream flow studies with current information. However, we cannot commit to spending additional local water revenues until DFO formally recognizes and acknowledges the following:

1. The additional storage provided in the Arrowsmith Dam for fisheries benefits has demonstrated a net fisheries gain in the Englishman River during critical summer flows.
2. The Fisheries rearing flow requirement after full maximum monthly water extraction is $1.13\text{m}^3/\text{s}$ as per DFO's original recommendations.

We would be willing to discuss participating in an instream flow study in the middle (above our current proposed intake) and lower Englishman River (below the proposed intake) providing that the study examines:

1. Pre-Dam existing low flow river conditions (pre 1998).
2. Current low flow river conditions after current water extraction.
3. Future low flow river conditions after full build out maximum monthly water extraction of $0.34\text{ m}^3/\text{s}$.

We look forward to continuing to work cooperatively together on common interest projects. Should you have any questions, please feel free to contact me.

Regards,



Mike Squire, ASCT

Program Manager – Arrowsmith Water Service / Englishman River Water Service

cc: Nick Leone, DFO (e-mail)
John Clark, DOJ (e-mail)
Mike McCulloch, MFLNO - Fish and Wildlife (e-mail)
Paul Marquis, MFLNRO – Water Stewardship (e-mail)
Arnis Dambergs, MFLNRO – Water Stewardship (e-mail)
Bob Weir, TQB (e-mail)
John Finnie, RDN (e-mail)
Mike Donnelly, RDN (e-mail)
AWS Management Board (e-mail)

Attachments: Figure 8.1 & 8.3 – Regional Water Supply System – Englishman River
MOELP – Letter regarding Fisheries Maintenance Flows in Englishman River
DFO - Letter regarding Englishman River Fish Maintenance Flow Requirements
April 9, 1992 – Workshop – Summary of Discussion

File: P:\USERS\AWS & ERWS\2012\Reply to Alain Magnan DFO September 25, 2012.doc

ARROWSMITH DAM

EL 828.5

1km FROM DAM
EL 510.0

UPPER INTAKE G-1
15km FROM DAM
EL 195.0

WATER TREATMENT PLANT
2.3km FROM G-1 INTAKE
EL 185.0

CONTROL RESERVOIR
4.5km FROM WTP
NEAR LITTLE MOUNTAIN
EL 160.0

CONTROL RESERVOIR
2.5km FROM WTP
P-1 (EL 140)
P-2 (EL 160)

GRAVITY TRANSMISSION MAINS
(LANTZVILLE - QUALICUM BEACH)

QUALICUM BEACH

GRAVITY SUPPLY
MAIN

GRAVITY SUPPLY
MAIN

ENGLISHMAN
RIVER

DISTRIBUTION
RESERVOIR (TYP)

EXISTING WELL &
PUMP STATION (TYP)

RIVER CROSSING

FALLS

PUMPING
MAIN

PRESSURE
REDUCING VALVE &
METER STATION (TYP)
TO BE LOCATED AT
CONNECTION TO
EX. DISTRIBUTION
SYSTEM

EXISTING LOCAL
DISTRIBUTION
SYSTEMS (TYP)

LOWER INTAKE G-2
& PUMP STATION
& 400m FROM WTP
EL 158.0

ENGLISHMAN
RIVER

STRAIT OF
GEORGIA

SOUTH ENGLISHMAN
RIVER

INTAKE P-1 & P-2
& PUMP STATION
7km FROM FALLS
EL 36.0

WATER TREATMENT PLANT
& HIGH LIFT PUMP STATION
EL 42.0

LANTZVILLE

REGIONAL DISTRICT OF NANAIMO
WATER SUPPLY PREDESIGN
ENGLISHMAN RIVER

SCHEMATIC OF
SUPPLY ALTERNATIVES

krc Koers & Associates Engineering Ltd.
CONSULTANTS Reid Crowther & Partners Ltd.

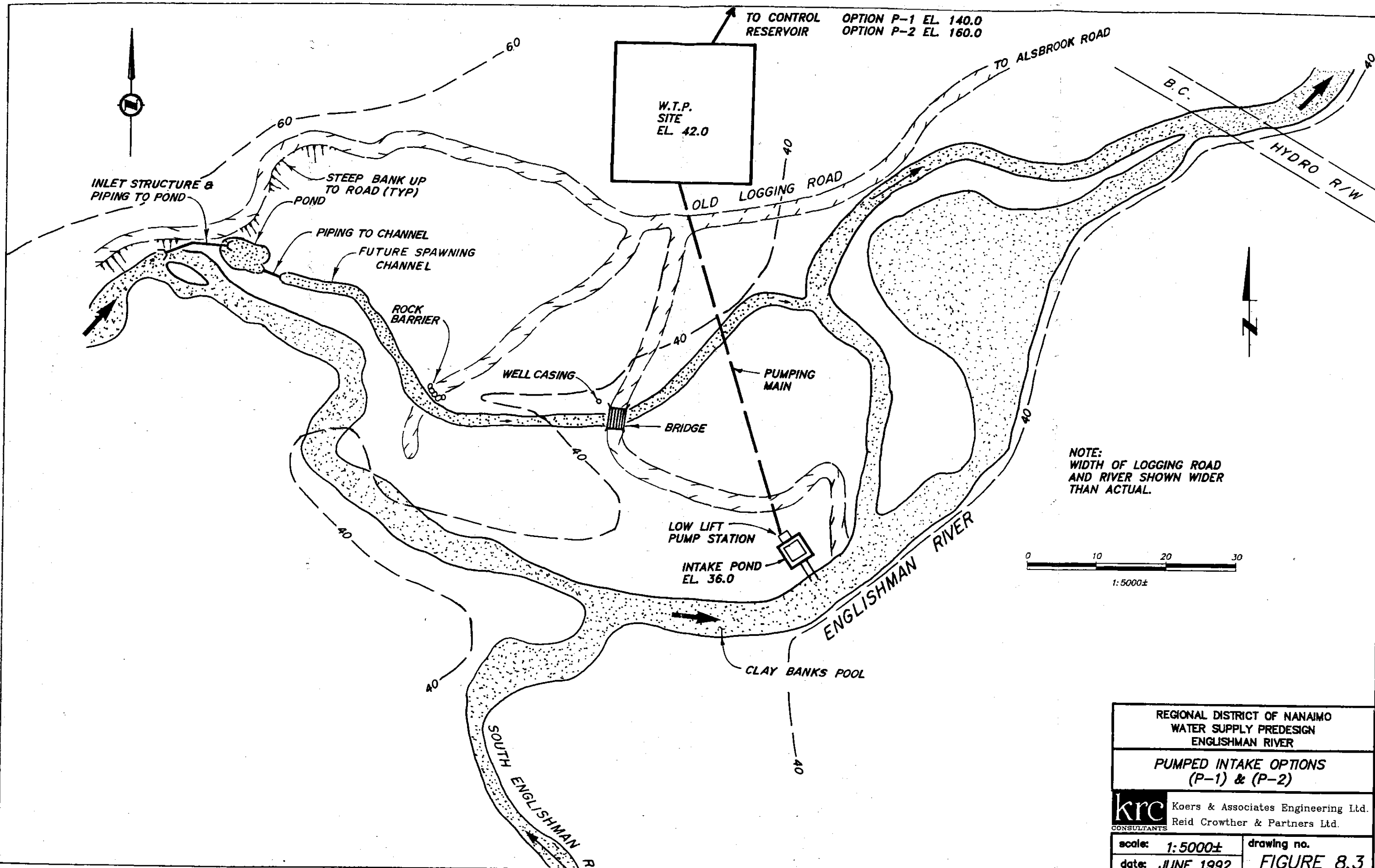
scale: N.T.S

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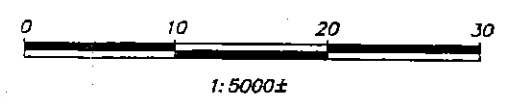
date: JUNE 1992


FIGURE 8.1

81.DWG 1=1



NOTE:
WIDTH OF LOGGING ROAD
AND RIVER SHOWN WIDER
THAN ACTUAL.



REGIONAL DISTRICT OF NANAIMO WATER SUPPLY PREDESIGN ENGLISHMAN RIVER	
PUMPED INTAKE OPTIONS (P-1) & (P-2)	
 Koers & Associates Engineering Ltd. Reid Crowther & Partners Ltd.	
scale: 1:5000±	drawing no.
date: JUNE 1992	FIGURE 8.3

83.DWG 1=1



APPROVED
OCT 28 1992

Mg/08

October 22, 1992

File: 39000-01

D. Antonie Koers, Ph.D., P. Eng.
KRC Consultants
P.O. Box 1289
Parksville, B.C.
V9P 2H3

Dear D. Antonie Koers:

Re: Fisheries Maintenance Flows in Englishman River

As outlined in our meeting of October 13, 1992, the following statement summarizes our requirements for minimum fisheries maintenance flows in the Englishman River based on proposed Arrowsmith Lake dam storage:

- minimum summer flow, in excess of all other withdrawals, as measured at the Water Survey of Canada Gauging Station Number 08HB002 (downstream of Highway 19 bridge crossing) to be maintained at or above 40 cfs (1.13m³/sec) on a 1:20 year return period.

If this condition cannot be met, then further options for storage should be explored.

It was noted that the draft predesign report specifies Englishman River flows at the Highway 19 Gauging Station should, with the storage proposed at the Arrowsmith Lake dam, be maintained at:

- 90 cfs in an average year (1:1 year return period)
- 45 cfs in a low flow year (1:14 year return period)
- 23 cfs in a composite low flow year (1:79 year return period)

The flows specified above appear adequate to meet presently specified minimum fisheries maintenance flow requirements.

Other salient points discussed at the meeting:

- The concept of forming a watershed management committee as mentioned in the draft predesign report was

endorsed. It was felt that this committee would consider matters such as appropriate minimum fisheries flows in years where storage would not provide 40 cfs throughout the anticipated dry summer period.

- 40 cfs is approximately 8% of mean annual discharge (MAD). We regard 15% of MAD (approximately 75 cfs) as optimal fisheries maintenance flows.
- We will require increased minimum flows in the event of further water storage development within the Englishman River watershed, with the target of providing 15% MAD for fisheries maintenance flows.
- The tenor of the draft predesign report seemed to favour water withdrawal at the downstream pumping site; however, it was iterated at the meeting that the upstream gravity fed withdrawal site was presently being favoured for unspecified reasons. It should be noted that B.C. Environment, Fisheries Section, have a strong preference for water withdrawal at the downstream site, which would maximize the area of wetted fish habitat in the river.
- The matter of mitigation for loss of recreational fisheries values resulting from the proposed dam at Arrowsmith Lake was raised. It is noted in the report that provision to ensure continued road access to Arrowsmith and Hidden Lakes, and that facilities for launching cartop boats and canoes will be provided at Arrowsmith Lake. In addition, there is the question of loss of spawning habitat in the inlet stream(s) due to flooding and draw-down of the lake. It was stated at the meeting that options would be explored to provide alternative spawning habitat for lake resident fish, perhaps through provision of gravel spawning platforms upstream of high water levels if suitable sites could be identified. This would best be carried out during the construction phase while equipment was on site.

There were several errors or omissions related to fisheries matters in the draft predesign report. These were:

- Page 6-1, 2nd paragraph, add: Arrowsmith Lake supports a popular fishery for wild rainbow trout. These are naturally reproducing (not hatchery stocked) populations.
- Page 6-2, 4th paragraph: 2,500 angler hours should read 250 angler days.

- Drawing 6-1 (Fisheries Map), should include the distribution of steelhead in the lower South Fork of Englishman River, from the falls at the main logging road crossing to the Englishman River

Your continued consultations in matters relating to watershed development on the Englishman River are appreciated.

Yours truly,



G. E. Reid, Head
Fisheries Section

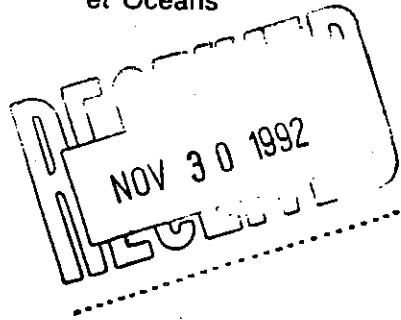
cc: L. Benoit, Regional District of Nanaimo, Nanaimo
R. Colclough, Regional District of Nanaimo, Nanaimo
L. Ford, Reid Crowther & Partners Ltd., Burnaby
D. Osmond, Gartner Lee, Burnaby
R. Eliason, Department of Fisheries and Oceans, Nanaimo
R. J. Cook, Community Water Supply Technician
D. W. Rimmer, Fisheries Biologist



Fisheries
and Oceans

Pêches
et Océans

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3225 Stephenson Pt. Rd.
Nanaimo, B.C. V9T 1K3
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UNCLASSIFIED

Your file Votre référence

Our file Notre référence

5903-85-E65

November 24, 1992

Mr. D.A. Koers, Ph.D., P. Eng.
KRC Consultants
P.O. Box 1289
Parksville, B.C. V9P 2H3

Dear Mr. Koers:

Re: ENGLISHMAN RIVER FISH MAINTENANCE FLOW REQUIREMENTS

This will acknowledge the Department of Fisheries and Ocean's review of the "Regional Water Supply System Englishman River Draft Predesign Report" Volume I and II and our comments forwarded at the joint meeting on October 13, 1992.

As you know, the Department's minimum fisheries resource flows for salmon species have been addressed in detail in the Manuscript Report #1676 "Water Requirements for the Fisheries Resource of the Englishman River" by R. Hamilton/G. Kasakoski dated September, 1982. This report clearly recommends lower river flows of 40 cfs for rearing and 200-300 cfs for spawning. Five transects at 2 study sites were established in the lower river and data plotted to determine optimum to minimum or critical flows requirements. Rearing flows were determined by the relationship between surface area and stream discharge (Wetted Perimeter Method). Spawning flows were determined using the relationship between preferred depth and velocity criteria for chum salmon spawning (Colling's 1974 Method). These Methods have commonly been used by the Department for minimum flow analysis related to coastal rivers in British Columbia.

Rearing data obtained from the plotted graphs shows a rapid decrease in wetted perimeter (rearing habitat) below about 25 cfs. A discharge of 25 cfs must, therefore, be considered as the critical rearing flow (absolute lowest sustainable rearing flow) for the lower Englishman River.

Therefore, measured at the lower river gauge # 08HB002, spawning flow should be maintained at 300 cfs (8.50 cms) from October to December and should not fall below 200 cfs (5.67 cms) during this period of the year. Rearing flow should be maintained at 40 cfs (1.13 cms) through the summer low flow period generally from July to October and should never (even in a drought year) fall below 25 cfs (0.71 cms).

Canada

The Draft Predesign Report (Volume I) confirms a reservoir design capacity of 9,000,000 cubic metres of storage in Arrowsmith Lake. Based on this storage capacity it is possible to supply the anticipated domestic water demand till the year 2021 and still maintain the preferred minimum fish flows earlier stated in all but the very worst of drought years. Your hydrological analysis suggests a recurrence interval of approximately 1:15 to 1:20 years for such an extremely dry event. Additionally, 11 cfs (0.32 cms) is available if existing ground water (wells) are retained which could augment necessary water demands during periods of very low flows.

Several other relevant issues were not included in our 1982 Report but were to some extent included in your July 1992 Draft Predesign Report. These were discussed with you in earlier meetings with MOELP, Mr. R. Hamilton, and the writer and include the following:

- The requirement in some years to provide **fish migration pulse flows** in late August-early September to move chinook stocks upstream to their spawning grounds. Pulse flows are generally in the magnitude of some X3 to X8 the preferred rearing flow and are required for 2 to 4 days.

- The requirement to develop an **operating rule curve** so that a **reservoir operating plan** (storage and release regime) can be completed to ensure adequate annual water requirements for all user groups.

- The requirement to establish a **water management committee** which would meet each spring to determine a water release schedule based on snow pack, reservoir levels, and other relevant factors. This committee should include DFO, MOELP, RDN, and municipal waterworks staff. Each year a minimum target reservoir level will need to be set to ensure sufficient water will be available for the summer low flow period. If, at any time, the projected water demand appears to exceed supply level, an immediate consultation should be arranged with the Federal/Provincial Fisheries Agencies.

- The Department has a strong preference for the water intake to be sited at a location as far downstream as is technically feasible on the Englishman River. This is to maintain as much flow and wetted area for fish over the longest possible distance in the river prior to the withdrawal point.

I trust this letter clearly outlines our concerns for minimum fisheries flows for the protection of the Englishman River fisheries resource. Should you have any questions relating to this matter, you may contact me at 756-7278 at our Divisional Office in Nanaimo. Your favourable consideration and continued co-operation will be sincerely appreciated.

Yours truly,



R. Eliassen, Eng. Tech.
Habitat Engineering Manager
Habitat Management Unit

cc: R. Higgins DFO, Nanaimo.
J.A. MacDonald F/O, Parksville.
G.E. Reid MOELP, Nanaimo.
L. Benoit RDN, Nanaimo.
R. Colclough RDN, Nanaimo.
D. Osmond, Gartner Lee, Burnaby.
L. Ford, Reid Crowther & Partners, Burnaby.
R. Hurst SEP, Nanaimo.

Confirmation of understanding of future location near confluence of South Englishman during the water licence application process.

MEETING SUMMARY

Larry Barr, Regional Hydrologist
George Reid, Head, Fisheries Section
Bob Cook, Water Supply Technician
Skip Rimmer, Fisheries Biologist
George Bryden, Water Management Engineer
Bob Colclough, Director of Operational Services, RDN
Norm Winton, Project Engineer, Koers & Associates
Dave Osmond, Project Biologist, Gartner Lee Limited

October 23, 1995 Time: 10:30 a.m.

B.C. Environment Regional Office
Nanaimo

. Purpose of meeting was to discuss developments since 1992, review licensing application process, review fisheries requirements as previously summarized in George Reid's letter dated, October 22, 1992 to Antonie Koers.

. Bob Colclough and study team updated progress of the Open Houses to date and found attendees to be generally in favour of the project. Nonetheless, some environmental concerns had been raised partly related to inadequate fisheries flows, the possibility of several more dams, etc.

. BCE Staff requested clarification and assurance on the following points:-

- (i) that the existing Parksville water license for withdrawal of 1.25 million gallons per day from the Englishman River would not be exceeded in the interim period when Parksville would augment water supplies to Nanoose (and Lantzville) before the Arrowsmith Dam is built.
- (ii) that Arrowsmith Lake is the storage location. Further study after the Referendum would be required on the fisheries habitat conditions in 'Arrowsmith Creek' downstream from the lake to determine fisheries presence and on the area exposed as a result of lake drawdown. The results of the Arrowsmith Creek study will have a bearing on storage and both latter points will relate to habitat compensation.
- (iii) that the intake location would be downstream from, but in the general vicinity of the confluence of the main stem and the South Englishman. Later studies would be required to identify and screen suitable sites.

. The Regional District agreed with BCE these points.

- . BCE indicated that George Reid's letter of October 22, 1992 provided agreement with the other fisheries maintenance flow, watershed management and mitigation aspects as proposed by the study team.
- . Skip Rimmer asked that he be notified of the timing of the Arrowsmith Creek fish presence/habitat study so he could come along.
- . BCE Water Management staff indicated that a water license would not be issued prior to the Referendum because they felt that a Public Hearing may be useful in this case, but that the Hearing should not precede the Referendum.
- . the need for 'pulse flows' was discussed.

This meeting summary was prepared by Dave Osmond and comments or corrections should be relayed to him.

cc. Richard Eliassen, DFO
A. Koers

DO/jcs