
ENVIRONMENTAL ASSESSMENT

**Proposed Agreements to Resolve Revelstoke
Filling Issues and Access Reservoir
Storage Space in Canada**



**Office of Power and Resources Management
BONNEVILLE POWER ADMINISTRATION**

OCTOBER 1983

APPENDIX C

PROPOSED AGREEMENT BETWEEN BPA AND B.C. HYDRO

B.C. HYDRO

Contract No. DE-MS79-83BP90945

DRAFT

AGREEMENT

executed by the

UNITED STATES OF AMERICA

DEPARTMENT OF ENERGY

acting by and through the

BONNEVILLE POWER ADMINISTRATION

and

BRITISH COLUMBIA HYDRO AND POWER AUTHORITY

Relating to: (1) Initial Filling of Non-Treaty Reservoirs;
(2) Use of Columbia River Non-Treaty Storage;
and
(3) Mica and Arrow Reservoir Refill Enhancement

Operations Engineering Division

AGREEMENT RELATING TO:
(1) INITIAL FILLING OF NON-TREATY RESERVOIRS,
(2) THE USE OF COLUMBIA RIVER NON-TREATY STORAGE AND
(3) MICA AND ARROW RESERVOIR REFILL ENHANCEMENT

BPA CONTRACT NO. DE-MS79-83BP90946

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This AGREEMENT, executed on the _____ day of _____, 1983, by the UNITED STATES OF AMERICA (the Government, Department of Energy, acting by and through the BONNEVILLE POWER ADMINISTRATION (BPA)), and BRITISH COLUMBIA HYDRO AND POWER AUTHORITY (BCH), established by legislation of the Province of British Columbia and continued under the Hydro and Power Authority Act, Revised Statutes of British Columbia 1979, chapter 188, as amended

W I T N E S S E T H T H A T:

WHEREAS BCH is engaged in the sale and delivery of electric power and energy to customers in British Columbia, and is the owner of an electric generation, transmission and distribution system which is used by it to supply electric power and energy to such customers; and

WHEREAS BPA is authorized pursuant to U.S. law to dispose of electric power generated at various Federal hydroelectric projects in the Pacific Northwest, or acquired from other resources, to construct and operate transmission facilities, to provide transmission and other services, and to enter into agreements to carry out such authority; and

WHEREAS the Governments of the United States of America and Canada on 16 September 1964 ratified the Treaty Between Canada and the United States of America Relating to the Cooperative Development of the Water Resources of the Columbia River Basin signed at Washington on 17 January 1961, and by an Exchange of Notes dated 22 January 1964, the two Governments agreed upon the terms of a Protocol with effect from the date of the exchange of instruments of ratification of the aforesaid Treaty (which Treaty and Protocol are hereinafter referred to as the "Treaty"); and

WHEREAS BCH has constructed Mica and Arrow dams pursuant to the Treaty providing approximately 7,000,000 acre-feet of storage at Mica, (hereinafter called "Mica"), and approximately 7,100,000 acre-feet of storage at Keenleyside (hereinafter called "Arrow") and BCH is authorized to operate such storage; and

WHEREAS the Parties desire by this Agreement to settle a dispute which has arisen between the Parties and others concerning past and anticipated permanent filling of inactive storage space at BCH Storage Reservoirs and to provide means whereby BCH may acquire release and discharge from any and all claims associated with the dispute; and

WHEREAS BPA desires to enhance the probability of Mica refill and to obtain additional flexibility and other benefits in the operation of its system by delivering energy to BCH for storage in Treaty Storage Space in Mica; and

WHEREAS BCH desires to obtain additional flexibility and other benefits in the operation of its system by delivering energy to BPA for storage in Treaty Storage Space in Mica and Arrow; and

WHEREAS the Parties desire to obtain further flexibility and other benefits in the operation of their systems by storing water in non-Treaty storage space;

NOW, THEREFORE, the Parties hereto mutually agree as follows:

1 DEFINITION OF TERMS

In this Agreement:

"Active Storage Space" shall mean that non-Treaty storage space which, pursuant to Section 5(a), has been declared available and remains available at BCH Storage Reservoirs.

"BCH Project" shall mean any hydroelectric generating facility at or downstream from a BCH Storage Reservoir which BCH is or shall be entitled to determine the operation of by virtue of ownership, contract or otherwise.

"BCH Storage Reservoir" shall mean any reservoir on the Columbia River and its tributaries in Canada which BCH is or shall be entitled to determine the operation of by virtue of ownership, contract or otherwise. BCH Storage Reservoirs shall include, but shall not be limited to, Mica, Revelstoke, and Arrow.

"Contract Year" shall mean 1 August through 31 July.

"Daily Conversion Factor" shall mean the incremental or decremental rate, in kilowatts per cfs, at which water being released or stored under this Agreement can be, or could have been, converted to energy at specified projects. The incremental or decremental rate at which water can be converted to energy at each project shall be based on a change in water release equivalent to the amount of water being released or stored and shall be computed on the same day as the return or storage.

"Delivering Party" shall mean the Party who is returning energy generated from a release of water stored under this Agreement to the Party who requested the release.

"Detailed Operating Plan" shall mean those hydroelectric operating plans prepared in accordance with Article XIV Section 2 (k) of the Treaty.

"Downstream U.S. Projects" shall mean the six Federal (Grand Coulee, Chief Joseph, McNary, John Day, The Dalles, and Bonneville) and five non-Federal (Wells, Rocky Reach, Rock Island, Wanapum, and Priest Rapids) hydroelectric generating facilities on the Columbia River in the United States.

"Federal Energy" shall mean any energy generated at the six Federal hydroelectric generating facilities on the Columbia River in the United States.

"Heavy Load Hours" shall be 0700 hours through 2200 hours on Monday through Saturday.

"Inactive Storage Space" shall mean that non-Treaty storage space which, pursuant to Section 4, both Parties have an equal obligation to fill and from which no water can be released for generation under this Agreement.

"Light Load Hours" shall be all hours not included in Heavy Load Hours.

"Non-Federal Energy" shall mean any energy generated at the five non-Federal hydroelectric generating facilities on the Columbia River in the United States.

"Normal Service Area" shall mean: for BCH - the province of British Columbia and those adjacent areas in which BCH normally serves firm loads; for BPA - the states of Oregon, Washington, Idaho, and that portion of Montana west of the continental divide and those adjacent areas in which BPA normally serves firm loads.

"Recallable Storage Space" shall mean that non-Treaty storage space which, pursuant to Section 5(b), has been declared available and remains available at BCH Storage Reservoirs.

"Receiving Party" shall mean the Party who is receiving energy generated by the Delivering Party from a release of water stored under this Agreement.

"Treaty Storage Space" shall mean any part of the 7.0 million acre-feet of space in Mica or the 7.1 million acre-feet in Arrow, or both, as the case may be, which is operated pursuant to the Treaty and which is vacant as a result of operations under the Detailed Operating Plan.

2 TERM

(a) Term of Agreement

Subject to Section 17, this Agreement shall be effective beginning 1 October 1983, and all of its provisions other than Section 15 and those provisions which are necessary to enable the Parties to fulfill their obligations under Section 4(a)(2) (hereinafter called Extended Provisions) shall terminate at 2400 hours on 31 July 1993; provided, however, that either Party may terminate this Agreement other than the Extended Provisions at 2400 hours on 31 July of any year between 1988 and 1992 by the following procedure:

- (1) Either Party desiring to terminate this Agreement shall give written notice to the other Party not later than 1 September of any year of its intent to terminate at 2400 hours on 31 July of the Contract Year ending 4 years following the end of the Contract Year in which such notice was given. Such notice shall include such Party's causes for desiring to terminate the Agreement.

- (2) Both Parties to this Agreement shall, between the time any notice is given pursuant to Section 2(a)(1) and the time the subsequent notice is to be given pursuant to Section 2(a)(3), negotiate in good faith in an attempt to resolve the cause(s) for termination given in the notice.
- (3) If the causes(s) for desiring to terminate this Agreement have not been resolved during negotiation pursuant to Section 2(a)(2), the Party who gave notice of intent to terminate shall give final written notice of termination to the other Party not later than 1 February of the same Contract Year in which notice was given pursuant to Section 2(a)(1) and the Agreement shall terminate on the date given in the notice pursuant to Section 2(a)(1).

The date that the Agreement, other than the Extended Provisions, terminates shall be called the Initial Termination Date.

(b) Extension of Agreement

The Extended Provisions shall remain in force until the Final Termination Date which shall be the earlier of: (i) 7 years after the Initial Termination Date or (ii) the date the Inactive Storage Accounts referred to in Section 4 are filled.

3 INITIAL FILLING OF BCH NON-TREATY STORAGE RESERVOIRS AND SETTLEMENT OF DISPUTE REGARDING INITIAL FILLING BY RELEASE AND DISCHARGE

(a) Dispute and Settlement Generally

It is understood and agreed between the Parties that, at the commencement of this Agreement, BCH's position regarding initial filling, which position BPA wholly disputes, is that BCH has, and has always had, the right to initially fill non-Treaty storage reservoirs in Canada, and without limiting the generality thereof, those non-Treaty storage reservoirs identified in Section 3(b) without making any compensation to BPA or anyone for the withholding, storing or otherwise interrupting the flow of water to so initially fill them, and without being in breach of the Treaty or anything.

It is understood and agreed between the Parties that, at the commencement of this Agreement, BPA's position regarding initial filling, which position BCH wholly disputes, is that BPA and other downstream United States power generators have a right pursuant to the Treaty to be compensated by BCH for any losses of electric power occurring as a result of any reduction caused by BCH in the flow of water at the U.S.-Canadian border below that which would occur as a result of natural flows being augmented by operation of

Treaty storage space in accordance with the Detailed Operating Plan.

It is also understood and agreed between the Parties that BCH and BPA by entering into this Agreement, and by accepting whatever individual releases and discharges that may be granted, admit no liability of whatever nature or kind, and maintain their positions regarding initial filling as understood and agreed above.

It is further understood and agreed between the Parties that, except insofar as BPA grants to BCH and BCH accepts from BPA release and discharge satisfactory to BCH in respect of any initial filling, BPA and BCH are at liberty to seek to have their rights under the Treaty declared or damages assessed by a tribunal or court of competent jurisdiction in respect of that initial filling; provided, however, that each Party agrees that in such event it shall not directly or indirectly introduce this Agreement or any of its provisions into the proceedings before the tribunal or court or in any way refer in such proceedings to the Agreement or any of its provisions.

(b) General

BCH shall endeavour to initially fill the following of its non-Treaty storage reservoirs, constructed, or yet to be constructed which become operable prior to the Initial Termination Date, to the levels and volumes indicated below by one or more of the methods provided hereinafter, and BPA agrees to grant to BCH, subject to it being earned, release and discharge as set out in Section 3(d) from the claims that BPA and the utilities listed in Schedule I to this Agreement assert or may assert against BCH in connection with such initial filling:

- (1) Revelstoke to maximum permitted operating elevation but not to exceed El. 1880 based on geodetic survey of Canada datum which represents a volume of water of approximately 2168 kcfs-days;
- (2) Seven Mile from El. 1715 to maximum permitted operating elevation but not to exceed El. 1730 based on geodetic survey of Canada datum which represents a volume of water of approximately 7.7 kcfs-days; and
- (3) Murphy Creek to maximum permitted operating elevation but not to exceed El. 1401 based on geodetic survey of Canada datum which represents a volume of water of approximately 55 kcfs-days.

(c) Method of Initial Filling and Discharge of Obligations

(1) Method of Initial Filling

The Parties agree that to the extent it is practicable or available the method by which each of the reservoirs identified in Section 3(b) will be initially filled is by BCH transferring water from non-Treaty storage space to such reservoirs.

(2) Discharge of BCH's Obligation

Subject to Section 4(b), BCH's obligation to initially fill each of the reservoirs identified in Section 3(b) will be wholly discharged by BCH permanently storing an amount of water equal to one-half the available storage space at such reservoir in non-Treaty storage space under Section 6(a) in the BCH Inactive Storage Accounts.

(3) Discharge of BPA's Obligation

Subject to Section 4(b), BPA's obligation to initially fill each of the reservoirs identified in Section 3(b) will be wholly discharged by BPA permanently storing an amount of water equal to one-half of the available storage space at such reservoir in non-Treaty storage space under Section 7(a) in the BPA Inactive Storage Accounts.

(d) Form and General Terms of Release and Discharge

Subject to Section 3(c)(2), BPA shall grant on the Final Termination Date and on 1 October of each Contract Year, in the form set out in Schedule II to this Agreement, a release and discharge generally in the terms set out below for each of the reservoirs identified in Section 3(b):

BPA for and on behalf of itself and the utilities listed in Schedule I to this Agreement shall remise, release and forever discharge BCH, its successors and assigns, from any and all claims, damages, actions, causes of action, suits, costs, expenses or the like that it or they has or have now or may have in the future in connection with BCH's initial filling of reservoirs pursuant to this Agreement. BPA hereby warrants and represents that it has obtained the requisite authority from the utilities listed in Schedule I to this Agreement to give this Release and Discharge on their behalf.

BCH shall be entitled to demand, and BPA shall grant, a release and discharge for initial filling of each of the reservoirs identified in Section 3(b) in direct proportion to the amount of water BCH has

permanently stored under Section 6(a) in the BCH Inactive Storage Accounts.

(e) Initial Filling of Seven Mile to El. 1715

BCH and BPA acknowledge and agree that the initial filling of Seven Mile to El. 1715 was accomplished in November 1979 under mutually satisfactory circumstances. BCH shall earn, and BPA shall grant, a release and discharge from any and all claims of BPA and the utilities listed in Schedule I arising from the initial filling of Seven Mile to El. 1715 by releasing from Mica Storage 34.3 kcfs-days of water at such times and at such rates of release between 1 October 1983 and 31 March 1985 as BPA may request; provided, however, that such rates of release shall be consistent with BCH's operational constraints.

(f) Disposition of Water Stored in 1983

Water stored in Mica and Arrow between 1 June and 30 September 1983 under BPA Contract No. DE-MS79-83BP91290 shall be credited one-half to the BCH Inactive Storage Account and one-half to the BPA Inactive Storage Account at such times as Inactive Storage Space is declared available.

4 OBLIGATIONS FOR FILLING OF STORAGE

(a) Reservoir Filling

BCH and BPA agree as hereinafter provided to share equally the costs and responsibilities associated with the initial filling of the amount of storage space in each of the reservoirs identified in Section 3(b). It is recognized in Section 3(c)(1) that such obligation for initial filling may actually consist of an obligation to refill non-Treaty storage space. To accomplish this, the Parties agree to the following:

- (1) Each Party shall have an obligation to fill an amount of non-Treaty storage space equal to one-half of the storage space declared available by BCH at Revelstoke less 2.0 MAF (1008 kcfs-days) by 1 October of each year which follows by at least 18 months each declaration of available storage space at Revelstoke. Each Party's filling obligation shall not exceed 1.15 MAF (580 kcfs-days). Subject only to the availability of operable storage space at Revelstoke after project closure, BCH shall declare 2.3 MAF (1160 kcfs-days) (1.15 MAF [580 kcfs-days] for each account) available as Inactive Storage Space for filling by BCH and BPA under this Agreement.
- (2) On the Initial Termination Date each Party shall have an obligation to fill an additional amount of Inactive Storage

Space. Such amount for each Party shall be 1.0 MAF (504 kcfs-days) reduced by the product of (i) 0.215 MAF (108 kcfs-days) and (ii) the number of years the Initial Termination Date preceeds 31 July 1993; provided, however, that if the Initial Termination Date is 31 July 1988, such amount shall be zero. All of the water in each Party's Active Storage Accounts on the Initial Termination Date shall be transferred into each respective Party's Inactive Storage Account. If, after such transfer, the amount of water in each Party's Inactive Storage Account is less than that Party's obligation to fill Inactive Storage Space, the Extended Provisions shall continue in force as provided in Section 2(b).

- (3) Each Party shall have an obligation to fill one-half of the available storage space at each of the projects identified in Sections 3(b)(2) and 3(b)(3) within 12 months of the date the space is declared available. Subject only to the availability of operable storage space at such projects BCH shall declare such space available as Inactive Storage Space for filling by BCH and BPA under this Agreement.

Water stored by each Party to accomplish this requirement for filling shall be accounted for in two special storage accounts, namely, the BPA Inactive Storage Account and the BCH Inactive Storage Account.

5 AVAILABILITY OF COLUMBIA RIVER NON-TREATY STORAGE SPACE

(a) Active Storage Space

BCH shall, subject only to the availability of operable storage space after the closure of Revelstoke, declare 2.0 MAF (1008 kcfs-days) of vacant storage space available as Active Storage Space for use by BCH and BPA until the Initial Termination Date.

(b) Recallable Storage Space

When BCH determines that it will make additional vacant space available as Recallable Storage Space for use under the terms of this Agreement, BCH shall notify BPA 30 days in advance of the date

when such space shall become available. BCH shall concurrently advise BPA how such non-Treaty storage space is categorized amongst the following:

- (1) available until the Initial Termination Date unless recalled by BCH,
- (2) available for a specific period of time each year unless recalled by BCH, or
- (3) available for any other period of time specified by BCH unless recalled by BCH.

When BCH determines that it is reasonably necessary to recall any Recallable Storage Space, BCH shall, except as provided in Section 5(d), notify BPA in writing at least 180 days in advance of the date by which the recall must be complete. Such notice shall specify the date of the beginning and end of such recall and the rates at which Recallable Storage Space shall be recalled.

(c) Refill Space

BCH shall maintain the right to fill, pursuant to Section 6(a), vacant non-Treaty storage space that is not available as Active Storage Space, Inactive Storage Space or Recallable Storage Space. BCH shall notify BPA 30 days in advance of the date such space shall become available for filling by BCH. No water can be released from such space for generation at Downstream U.S. Projects under this Agreement.

(d) Emergency Evacuation of Non-Treaty Storage Space

BCH shall maintain the right to evacuate any non-Treaty storage space which was wholly or partly filled with water belonging to either BCH or BPA if BCH determines that evacuation is necessary for flood control in British Columbia, safety, protection of structures, or any other cause that BCH reasonably determines constitutes an emergency. If such storage space is evacuated in this manner, the Recallable Storage Accounts shall be evacuated first, followed by the Active Storage Accounts and finally the Inactive Storage Accounts subject to the provisions of Section 11(a). In the event of an emergency evacuation of Inactive Storage Space the date by which refill of the BCH and BPA Inactive Storage Accounts must be accomplished and the procedures for such refill will be equitably adjusted.

6 BCH STORAGE TRANSACTIONS

(a) Storage

When BCH determines that:

- (1) it has energy available for storage under this Agreement, and
- (2) it can accept flow reductions at the affected BCH Storage Reservoirs,

BCH shall designate one or more of the accounts specified in Section 6(c) into which it desires to store; and if BPA determines that:

- (1) it can accept such energy, and
- (2) it can accept the resulting reduction in flow at Downstream U.S. Projects,

BCH shall reduce the release of water from the affected BCH Storage Reservoir(s) below the levels which would otherwise occur as a result of operation pursuant to the Detailed Operating Plan and make a corresponding reduction in flow of the Columbia River at the U.S.-Canadian border on the same day; and BCH shall schedule to BPA the energy that would have been produced at Downstream U.S. Projects, based on the Daily Conversion Factor, if such reductions had not been made, at delivery rates and times as agreed upon in advance by the Parties. These delivery rates shall be subject to the provisions in Section 12. To be considered responsive to BCH's request to store water, BPA's determination shall be made and communicated to BCH promptly.

Prior to scheduling energy hereunder, BCH shall give BPA as much notice as is practicable as to the amounts of energy that it expects to have available for the following day or days, and BPA shall give BCH similar notice of the amounts of energy that it expects to be able to accept.

(b) Return

When BCH requests release of water stored under Section 6(a) in one or more of the following accounts, namely, BCH Active Storage Accounts, BCH Recallable Storage Accounts, BCH Mica Storage Account and BCH Arrow Storage Account, and if BPA determines that:

- (1) it can provide energy for return, and
- (2) it can accept the resulting increase in flow at Downstream U.S. Projects,

BCH shall release the requested amount of water by increasing the discharge at the affected BCH Storage Reservoir(s) above the levels which would otherwise occur as a result of operation pursuant to the Detailed Operating Plan and by increasing the flow of the Columbia River at the U.S.-Canadian border by a corresponding amount on the same day; and BPA shall schedule to BCH the energy which can be produced at Downstream U.S. Projects, based on the Daily Conversion Factor, by such releases at delivery rates and times as agreed upon in advance by the Parties. To be considered responsive to BCH's request to release water, BPA's determination shall be made and communicated to BCH promptly. BPA shall take reasonable efforts to avoid spill of storage releases and shall notify BCH with as much notice as practicable if it appears likely that released water will be subject to spill.

BPA shall take reasonable efforts to return energy hereunder; however, BPA shall not be obligated to return energy at a rate of delivery in excess of the hydro generating capacity of its system which it determines is available for that purpose, or to operate its system in such a manner as to affect adversely its sales to utilities or service to its customers. The delivery rates shall be subject to the provisions of Section 12.

BPA shall have no obligation to return to BCH energy which can be generated from release of any water remaining in the accounts referred to in Section 6(c) after the Initial Termination Date.

(c) Storage Accounts

Water stored under Section 6(a) or returned under Section 6(b) shall be accounted for in one or more of the following special storage accounts kept in units of water (kcfs-days):

(1) BCH Mica Storage Account

Water stored in this account shall be located in Treaty Storage Space in Mica.

(2) BCH Arrow Storage Account

Water stored in this account shall be located in Treaty Storage Space in Arrow.

(3) BCH Active Storage Accounts

A separate account shall be maintained for each BCH Storage Reservoir which has Active Storage Space. Water stored in these accounts shall be located in Active Storage Space as designated by BCH.

(4) BCH Recallable Storage Accounts

A separate account shall be maintained for each BCH Storage Reservoir which has Recallable Storage Space. Water stored in these accounts shall be located in Recallable Storage Space as designated by BCH.

(5) BCH Inactive Storage Accounts

A separate account shall be maintained for each BCH Storage Reservoir which has Inactive Storage Space. Water stored in these accounts shall be located in Inactive Storage Space as designated by BCH. BPA shall not be obligated to return energy which can be generated from any releases from the BCH Inactive Storage Accounts.

(6) BCH Refill Account

Water stored in this account shall be located in non-Treaty storage space. BPA shall not be obligated to return energy which can be generated from any releases from the BCH Refill Account.

(d) Transfer of Water into the BCH Inactive Storage Accounts

BCH may, but shall not be obligated to, transfer water stored in any of the above storage accounts into the BCH Inactive Storage Accounts.

No charge shall be applied to such transfers.

7 BPA STORAGE TRANSACTIONS

(a) Storage

When BPA desires to store water in the BPA Inactive Storage Account, or to initially fill the BPA Active Storage Account, it shall do so under the provisions of Section 7(a)(1). Otherwise BPA shall store water under the provisions of Section 7(a)(2).

(1) Initial Filling

When BPA determines that:

- (A) it can accept reductions in energy generated at downstream U.S. Projects, and
- (B) it can accept flow reductions at downstream U.S. Projects,

BPA shall, subject to the provisions below, designate one or more of the following accounts, namely, BPA Inactive Storage Accounts and BPA Active Storage Accounts into which it desires to store; and if BCH determines that:

- (A) it can accept the resulting reduction in energy generation on its system, and
- (B) it can accept the resulting reduction in flow at affected BCH Storage Reservoirs,

BCH shall reduce the release of water from the affected BCH Storage Reservoirs below the levels which would otherwise occur as a result of operation pursuant to the Detailed Operating Plan and make a corresponding reduction in flow of the Columbia River at the U.S.-Canadian border on the same day. To be considered responsive to BPA's request to store water, BCH's determination shall be made and communicated to BPA promptly.

Prior to storing water hereunder, BPA shall give BCH as much notice as practicable of the amounts of water that it expects to store in the following day or days, and BCH shall give BPA similar notice of the amounts of water that it expects to be able to accept.

In addition to accounting for the water stored under this Section in either the BPA Active Storage Accounts or the BPA Inactive Storage Accounts, this water shall be accounted for in a special storage account. The amount of water stored in this account shall not exceed one-half of the sum of the Active Storage Space and the Inactive Storage Space. This account will not be reduced even if this water is withdrawn from the BPA Active Storage Accounts under Section 7(b).

(2) Other Filling

When BPA determines that:

- (A) Federal or Non-Federal Energy is available for storage under this Agreement, and
- (B) it can accept flow reductions at Downstream U.S. Projects,

BPA shall designate one or more of the following accounts, namely, BPA Recallable Storage Accounts, BPA Active Storage Accounts, BPA Mica Storage Account, and, subject to the conditions in Section 7(c)(2), the BPA Mica Surplus Storage Account, into which it desires to store; and if BCH determines that:

- (A) it can accept such energy, and
- (B) it can accept the resulting reduction in flow at the affected BCH Storage Reservoirs,

BCH shall reduce the release of water from the affected BCH Storage Reservoirs below the levels which would otherwise occur as a result of operation pursuant to the Detailed Operating Plan and make a corresponding reduction in flow of the Columbia River at the U.S.-Canadian border on the same day; and BPA shall schedule to BCH the energy that would have been produced at BCH Projects, based on the Daily Conversion Factor, if such reductions had not been made, at delivery rates and times as agreed upon in advance by the Parties. These delivery rates shall be subject to the provisions in Section 12. To be considered responsive to BPA's request to store water, BCH's determination shall be made and communicated to BPA promptly.

Prior to scheduling energy hereunder, BPA shall give BCH as much notice as is practicable of the amounts of energy that it expects to have available for the following day or days, and BCH shall give BPA similar notice of the amounts of energy that it expects to be able to accept.

(b) Return

When BPA requests release of water stored under Section 7(a) in one or more of the following accounts, namely, BPA Recallable Storage Accounts, BPA Active Storage Accounts, BPA Mica Storage Account and BPA Mica Surplus Storage Account, and if BCH determines that:

- (1) it can provide energy for return, and
- (2) it can accept the resulting increase in flow at the affected BCH Storage Reservoirs,

BCH shall release the requested amount of water by increasing the discharge at the affected BCH Storage Reservoirs above the levels which would otherwise occur as a result of operation pursuant to the Detailed Operating Plan and by increasing the flow of the Columbia River at the U.S.-Canadian border by a corresponding amount on the same day; and BCH shall schedule to BPA the energy which can be produced at BCH Projects, based on the Daily Conversion Factor, by such releases at delivery rates and times as agreed upon in advance by the Parties. To be considered responsive to BPA's request to release water, BCH's determination shall be made and communicated to BPA promptly. BCH shall take reasonable efforts to avoid spill of storage releases and shall notify BPA with as much notice as practicable if it appears likely that released water may be subject to spill.

BCH shall take reasonable efforts to return energy hereunder, however BCH shall not be obligated to return energy at a rate of delivery in excess of the hydro generating capacity of its system which it determines is available for that purpose, or to operate its system in such a manner as to affect adversely its sales to utilities or service to its customers. The delivery rates shall be subject to the provisions of Section 12.

BCH shall have no obligation to return to BPA energy which can be generated at BCH Projects from release of any storage remaining in the accounts referred to in Section 7(c) after the Initial Termination Date.

(c) Storage Accounts

Water stored under Section 7(a) or returned under Section 7(b) shall be accounted for in one or more of the following special storage accounts kept in units of water (kcfs-days):

(1) BPA Mica Storage Account

Water stored in this account shall be located in Treaty Storage Space in Mica.

(2) BPA Mica Surplus Storage Account

Water stored in this account shall be located in Treaty Storage Space in Mica. BPA may store in this account only if BCH and BPA mutually agree upon an advance storage payment which must be not less than 20 percent and not more than 50 percent of the amount of energy delivered to BCH for storage. Such percentage shall be deducted from the amount of energy delivered before the energy is put into the BPA Mica Surplus Storage Account. Such deduction shall constitute full compensation to BCH for the storage service.

(3) BPA Active Storage Accounts

A separate account shall be maintained for each BCH Storage Reservoir which has Active Storage Space. Water stored in these accounts shall be located in Active Storage Space as designated by BPA.

(4) BPA Recallable Storage Accounts

A separate account shall be maintained for each BCH Storage Reservoir which has Recallable Storage Space. Water stored in these accounts shall be located in Recallable Storage Space as designated by BPA.

(5) BPA Inactive Storage Accounts

A separate account shall be maintained for each BCH Storage Reservoir which has Inactive Storage Space. Water stored in these accounts shall be located in Inactive Storage Space as designated by BPA. BCH shall not be obligated to return to BPA any energy which can be generated from any releases from the BPA Inactive Storage Accounts.

(d) Transfer of Water into the BPA Inactive Storage Accounts

BPA may, but shall not be obligated to, transfer water stored in any of the above storage accounts into the BPA Inactive Storage Accounts.

No charge shall be applied to such transfers.

8 DISPLACEMENT OF STORAGE

(a) Displacement by BCH

BCH shall have the right to displace:

- (1) any water stored by BPA in a Recallable Storage Account in an amount greater than one-half of the Recallable Storage Space in each BCH Storage Reservoir,
- (2) any water stored by BPA in an Active Storage Account in an amount greater than one-half of the Active Storage Space in each BCH Storage Reservoir, and
- (3) any water stored by BPA in Mica Treaty Storage Space in an amount greater than one-half of the Mica Treaty Storage Space.

When BCH desires to displace any water which it has a right to displace, BCH shall designate one or more of the BPA storage accounts subject to displacement provided, however, if the displacement is from Mica Treaty Storage Space BPA shall determine which account will be displaced. Such displacement will be accomplished by BCH delivering to BPA the energy that BPA would receive under Section 7(b) plus the energy that BPA would receive under Section 6(a). For the purpose of the calculations under this section, the water being displaced will be considered to be an increment of water released which is subsequently replaced by an increment of water stored. If the displacement right is exercised, the designated BPA storage accounts shall be reduced by the amount of the displacement and the corresponding BCH storage accounts shall be increased by the amount of the displacement.

(b) Displacement by BPA

BPA shall have the right to displace:

- (1) any water stored by BCH in a Recallable Storage Account in an amount greater than one-half of the Recallable Storage Space in each BCH Storage Reservoir,
- (2) any water stored by BCH in an Active Storage Account in an amount greater than one-half of the Active Storage Space in each BCH Storage Reservoir, and
- (3) any water stored by BCH in Mica Treaty Storage Space in an amount greater than one-half of the Mica Treaty Storage Space.

When BPA desires to displace any water which it has a right to displace, BPA shall designate one or more of the BCH storage accounts subject to displacement. Such displacement will be accomplished by BPA delivering to BCH the energy that BCH would receive under Section 6(b) plus the energy that BCH would receive under Section 7(a). For the purpose of the calculations under this section, the water being displaced will be considered to be an increment of water released which is subsequently replaced by an increment of water stored. If the displacement right is exercised, the designated BCH storage accounts shall be reduced by the amount of the displacement and the corresponding BPA storage accounts shall be increased by the amount of the displacement.

9 PURCHASE OF NON-TREATY STORAGE

(a) Purchase by BCH

BCH shall have the right to purchase:

- (1) any water stored by BPA in a Recallable Storage Account in an amount greater than one-half of the Recallable Storage Space in each BCH Storage Reservoir, and
- (2) any water stored by BPA in an Active Storage Account in an amount greater than one-half of the Active Storage Space in each BCH Storage Reservoir.

When BCH desires to purchase any water which it has a right to purchase, BCH shall designate one or more of the BPA storage accounts subject to purchase. The purchase price shall be as specified in Section 14(c). If the purchase right is exercised, the designated BPA storage accounts shall be reduced by the amount of the purchase and the corresponding BCH storage accounts shall be increased by the amount of the purchase.

(b) Purchase by BPA

BPA shall have the right to purchase:

- (1) any water stored by BCH in a Recallable Storage Account in an amount greater than one-half of the Recallable Storage Space in each BCH Storage Reservoir, and
- (2) any water stored by BCH in an Active Storage Account in an amount greater than one-half of the Active Storage Space in each BCH Storage Reservoir.

When BPA desires to purchase any water which it has a right to purchase, BPA shall designate one or more of the BCH storage accounts subject to purchase. The purchase price shall be as specified in Section 14(c). If the purchase right is exercised, the designated BCH storage accounts shall be reduced by the amount of the purchase and the corresponding BPA storage accounts shall be increased by the amount of the purchase.

10 FORCED TRANSFER OF STORAGE

If Active Storage Space, Recallable Storage Space or Inactive Storage Space is available and BPA or BCH water stored in Treaty Storage Space would be displaced by operation pursuant to the Detailed Operating Plan because: (i) such water would otherwise exceed Treaty Storage Space, or (ii) flood control space must be maintained as prescribed by the Columbia River Treaty Flood Control Operating Plan, each Party may elect either to return their storage pursuant to Section 11(b) or to transfer their storage to Active Storage Space, Recallable Storage Space, or Inactive Storage Space. If a Party elects to transfer their storage to Active Storage Space, Recallable Storage Space, or Inactive Storage Space, the daily amount of water that shall be deducted from any balance remaining in the BPA Mica Storage Account or the BPA Mica Surplus Storage Account, at BPA's option, or the BCH Mica or Arrow Storage Accounts and transferred to the respective BPA storage account designated by BPA or the BCH storage account designated by BCH shall be that water which is actually displaced from Treaty Storage Space. If both Parties have water stored pursuant to this Agreement in Mica Treaty Storage Space and have elected to transfer their storage to Active Storage Space, Recallable Storage Space, or Inactive Storage Space and any such stored water is displaced from Treaty Storage Space, water from the BPA account designated by BPA and from the BCH account shall be transferred in equal amounts for both Parties. Both Parties shall notify each other as much in advance as practicable if it appears likely that water will be displaced.

11 FORCED EVACUATION OF STORAGE(a) Forced Evacuation of Storage from Non-Treaty Storage Space

If water stored by BPA or BCH in any non-Treaty account must be evacuated because the storage space is no longer available, the storage space has been recalled as specified pursuant to Section 5(b), emergency evacuation of the storage space is necessary pursuant to Section 5(d), or on-call flood control operation is required pursuant to the Treaty:

- (1) If the amount of water stored in such account of one Party is greater than the amount of water stored in the corresponding account of the other Party, all water that must be evacuated shall be deducted from the account of the Party having the larger amount of water so stored until the amount of water stored by that Party is reduced to the amount of water stored in such account by the other Party.
- (2) If the amounts of water stored in such accounts of both Parties are equal, the accounts of both Parties shall each be reduced by one-half of the water that must be evacuated.

If water must be evacuated to provide on-call flood control space, the order of evacuation of accounts shall be the same as for emergency evacuation as set forth in Section 5(d).

Available generating facilities shall be used to generate energy from return of storage pursuant to Section 6(b) or 7(b) before being used to generate energy from forced evacuation of storage pursuant to Section 11(a).

(b) Forced Evacuation of Storage from Treaty Storage Space

If any water stored by BPA or BCH in any Treaty Storage Space must be evacuated due to operation pursuant to the Detailed Operating Plan because: (i) such water would otherwise exceed Treaty Storage Space; or (ii) flood control space must be maintained as prescribed by the Columbia River Treaty Flood Control Operating Plan, and either no Active Storage Space, Recallable Storage Space, or Inactive Storage Space is available for transfer of such water or one or both Parties have elected to return their storage rather than transfer their storage to Active Storage Space, Recallable Storage Space, or Inactive Storage Space, the daily amount of water that shall be deducted from any balance in the BPA Mica Storage Account or the BPA Mica Surplus Storage Account, at BPA's option, or the BCH Mica or Arrow Storage Account shall be that water which is actually evacuated from Treaty Storage Space. If both Parties have water stored pursuant to this Agreement in Mica Treaty Storage Space, and any such stored water must be evacuated from Mica Treaty Storage Space:

- (1) If the amount of water stored in such space by one Party is greater than the amount of water stored in such space by the other Party, all water that must be evacuated shall be deducted from the account of the Party having the larger amount of water so stored until the amount of water stored by that Party is reduced to the amount of water stored in such space by the other Party.
- (2) If the amounts of water stored in such space by the Parties are equal, the accounts of both Parties shall each be reduced by one-half of the water that must be evacuated.

If water must be deducted from a BPA account and BPA has water stored in both the BPA Mica Storage Account and the BPA Mica Surplus Storage Account, BPA shall designate which account shall be reduced first.

Both Parties shall notify each other as much in advance as practicable if it appears likely that water must be evacuated.

Available generating facilities shall be used to generate energy from return of storage pursuant to Section 6(b) and 7(b) before being used to generate energy from forced evacuation of storage pursuant to Section 11(b). Either Party may elect not to receive energy generated by releases of storage made under Section 11(b) to avoid the service charges referred to in Section 14(a) or 14(b).

12 PRIORITY OF USE OF FACILITIES

(a) Priority of the Columbia River Treaty

The use of Treaty space and the use of all other facilities at Mica and Arrow and Downstream U.S. Projects to fulfill the requirements of the Treaty shall receive priority over all uses provided for in this Agreement.

(b) Reservoir Operation

(1) Priority Between This and Other Agreements

The Party responsible for the operation of any reservoir shall have the right to determine which requests can be met between requests under this Agreement and other conflicting third party requests for the operation of such reservoir (including the ability of reservoir discharges to be decreased to discharge minimums or increased to discharge maximums).

(2) Priority of Requests Under This Agreement

When concurrent requests by BPA and BCH under this Agreement would result in a reservoir operation outside normal operating limits, reservoir operation shall be in accordance with this paragraph.

- (A) If concurrent requests by BPA and BCH to store water pursuant to Sections 6(a) and 7(a) would result in a reduction of project discharges below minimum discharge limits as defined by the owner or operator of such project or would result in filling of more than all the reservoir space available under this Agreement on the day of such requests, such requests shall be reduced as necessary to conform to such limits first by reducing the larger request by up to the amount it exceeds the smaller request and then by reducing each request by equal amounts.
- (B) If concurrent requests by BPA and BCH to release stored water pursuant to Sections 6(b) and 7(b) would result in a discharge at any at-site or downstream project in excess of that project's available generating capacity or maximum discharge limit as defined by the owner or operator of such project, such requests shall be reduced as necessary to conform to such limits first by reducing the larger request by up to the amount it exceeds the smaller request and then by reducing each request by equal amounts; provided, however, that one or both Parties may request the release of additional water which will produce additional energy at one or more projects but will produce a discharge in excess of the available generating capacity at one or more at-site or downstream generating projects. To the extent that such requests by both Parties for the release of additional water would result in a discharge in excess of the available generating capacity of the at-site or downstream generating project which would be next to spill, such requests shall be reduced as necessary to release equal daily amounts of water for use by each Party at each such project.

(3) Spill at Projects

The Delivering Party shall take reasonable efforts to avoid spill of water stored hereunder and shall notify the Receiving Party with as much notice as practicable if it appears likely that water returned under this Agreement will be spilled.

(c) Generating Facilities

(1) Priority Between This and Other Agreements

The Party responsible for the operation of any generating facility shall have the right to determine which requests can be met between requests under this Agreement and other conflicting third party requests for use of such generating facilities.

(2) Return of Energy

The Delivering Party shall take reasonable efforts to return energy to the other Party at uniform hourly rates within each day; however, if the Receiving Party requests the return of energy at hourly rates that are other than uniform because such Party's system cannot use the returned energy at a uniform hourly rate, the Delivering Party shall take reasonable efforts to return the energy as requested by the Receiving Party.

(3) Return of Energy when Exporting

If the generating capacity available at BCH or Downstream U.S. Projects limit the amounts of energy which can be generated hourly at any such project to return energy during any day as provided in Section 12(c)(2), the Delivering Party shall forego all or a portion of its nonfirm energy sales during such hours to entities outside its Normal Service Area to the extent necessary to return energy under this Agreement as provided in Section 12(c)(2), unless the Receiving Party is also making nonfirm energy sales to entities outside its Normal Service Area during such hours.

(4) Other Return of Energy

Energy not returned pursuant to Section 12(c)(2) and Section 12(c)(3) shall be returned at times and rates as agreed by the Parties.

13 SCHEDULING

Schedules for delivery and return of energy hereunder shall be effective at the Blaine or Boundary points of interconnection between the Parties, with no losses being assessed either Party as a result of these storage transactions. Schedules of energy hereunder shall be subject to appropriate terms of the Exchange Agreement between the Parties (BPA Contract No. 14-0333266, as amended or replaced). Notwithstanding the other provisions of this Agreement, all schedules for delivery or return of energy hereunder shall be limited to available transmission capacity.

14 PAYMENTS

All charges in mills per kilowatthour referred to in this Section shall be in U.S. Currency. A bill shall be issued for each of the charges described in Section 14(a), 14(b), and 14(c) and all payments shall be made in full on or before the thirtieth day after the bill is issued.

(a) BPA Payments

BPA shall pay BCH each month during the term hereof: (i) 5.3 mills for each kilowatthour of energy returned by BCH during Light Load Hours and 7.3 mills for each kilowatthour of such energy returned by BCH during Heavy Load Hours by release of water from the BPA Mica Storage Account; and (ii) 6.3 mills for each kilowatthour of energy transferred from the BPA Mica Storage Account to the BPA Active Storage Accounts or the BPA Recallable Storage Accounts. No charge shall be assessed for energy transferred from the BPA Mica Surplus Storage Account to the BPA Active Storage Accounts or the BPA Recallable Storage Accounts.

(b) BCH Payments

BCH shall pay BPA each month during the term hereof: (i) 5.3 mills for each kilowatthour of energy returned by BPA during Light Load Hours and 7.3 mills for each kilowatthour of such energy returned by BPA during Heavy Load Hours by release of water from the BCH Mica or Arrow Storage Account; and (ii) 6.3 mills for each kilowatthour of energy transferred from the BCH Mica or Arrow Storage Accounts to the BCH Active Storage Accounts or the BCH Recallable Storage Accounts.

(c) Payments for Purchase of Storage

If either Party elects to purchase the other Party's stored water pursuant to Section 9, the purchasing Party shall pay the other Party 16.8 mills per kilowatthour times the amount of energy purchased. The amount of energy purchased shall be computed from the volume of water purchased and the following water-to-energy conversion factors (expressed in MW-days per ksfd):

Mica	43.0
Revelstoke	31.4
Arrow	2.4
Murphy Creek	3.3
Downstream U.S. Projects	86.35

If water is purchased prior to the installation of generating facilities at Arrow or Murphy Creek, a zero water-to-energy conversion factor shall be used for such project to calculate the amount of energy purchased.

(d) Adjustment of Charges

It is the intent of both Parties to adjust each of the service charges set forth in Sections 14(a), 14(b), and 14(c) from time to time to reflect the then current value of nonfirm energy in the Pacific Northwest. Unless either Party notifies the other Party in writing that it desires to use another method, such service charges shall be adjusted each time BPA revises its wholesale nonfirm rate schedule by multiplying each such charge by the contract rate specified in BPA's then current wholesale nonfirm power rate schedule, dividing the results by 11.2 mills per kilowatthour and rounding the result to the nearest 0.1 mills per kilowatthour. If either Party gives such notice, both Parties hereby agree to negotiate in good faith another method of adjusting such service charges which more closely represents the intent of the Parties. If another method is agreed upon, it shall be evidenced by an exchange of letters between the Parties and shall replace the method set forth in this subsection.

15 MICA HEAD LOSSES

Beginning on the Initial Termination Date, BPA shall deliver energy to BCH to compensate for energy generation losses at Mica due to reduced head at Mica. Such energy generation losses shall be computed and delivered as described below.

A shadow elevation at Mica shall be computed daily by BCH. Such elevation shall be the elevation corresponding to the sum of Mica's actual storage content on such day and the amount by which BPA's Inactive Storage Account on such day is less than BPA's obligation to fill Inactive Storage Space as provided in Section 4(a)(2); provided, however, that if the shadow elevation so computed exceeds the maximum elevation at which Mica could be operated on such day because (i) it exceeds Mica's normal full elevation, (ii) it exceeds the maximum flood control elevation on such day as prescribed in the Columbia River Treaty Flood Control Operation Plan, or (iii) it exceeds any other limits on maximum elevations at Mica as determined by BCH, such shadow elevation shall be deemed to be equal to the lowest of any of the three such maximum elevations on such day. The amount of such head loss energy in megawatthours shall be computed daily and shall be equal to the product of: (i) 24; (ii) the average turbine discharge in kcfs at Mica on such day; and (iii) the difference in the Mica energy conversion factor as determined from Column 3 of Schedule III using Mica's actual elevation and its shadow elevation on such day. BPA shall deliver the amount of head loss energy so computed during each week to BCH at a uniform hourly rate during the Light Load Hours of the immediately following week.

IN WITNESS WHEREOF, the Parties hereto have executed this agreement in several counterparts.

UNITED STATES OF AMERICA
Department of Energy

By _____
Bonneville Power Administrator

BRITISH COLUMBIA HYDRO AND POWER AUTHORITY

By _____
Title _____

ATTEST:

By _____
Title _____

DRAFT

BCH. This is SCHEDULE I to, and forms part of, the Agreement between BPA and

The following are the utilities referred to in this Agreement.

1. Puget Sound Power and Light Co.
2. Portland General Electric Co.
3. Pacific Power and Light Co.
4. The Washington Water Power Co.
5. Seattle City Light
6. Tacoma City Light
7. PUD No. 2 of Grant County
8. Eugene Water and Electric Board
9. PUD No. 1 of Cowlitz County
10. PUD No. 1 of Kittitas County
11. City of Forest Grove
12. City of McMinville
13. Milton-Freewater Light and Power
14. Okanogan County PUD
15. Colockum Transmission Co., Inc.
16. PUD No. 1 of Douglas County
17. PUD No. 1 of Chelan County

SCHEDULE II

Form of

RELEASE AND DISCHARGE

Whereas the Administrator of the Bonneville Power Administration and British Columbia Hydro and Power Authority (B.C. Hydro) entered into an Agreement dated _____ (Contract No. DE-MS-83BP90946) providing, inter alia, for B.C. Hydro to earn and the Administrator to grant, for and on behalf of itself and others, release and discharge from any claims arising from B.C. Hydro's filling inactive storage space at certain Canadian reservoirs in the Columbia River basin;

Whereas the Administrator for, and on behalf of itself and in its representative capacity, acknowledges that, as of _____ (date), B.C. Hydro has earned this Release and Discharge for filling _____ MAF (cfs-days) of inactive storage space at (name reservoir);

NOW THEREFORE,

The Administrator hereby grants B.C. Hydro release and discharge for such filling.

Date _____

UNITED STATES OF AMERICA
Department of Energy

By _____
Bonneville Power Administrator

SCHEDULE III
MICA PLANT CHARACTERISTICS

<u>Column (1)</u>	<u>Column (2)</u>	<u>Column (3)</u>
Reservoir	Storage	Water-to-Energy
Elevation	Contents	Conversion Factor
<u>Feet</u>	<u>kcms-days</u>	<u>kW/cfs*1</u>
2475.0	10121.1	45.56
2470.0	9854.8	45.19
2465.0	9592.7	44.83
2460.0	9334.8	44.46
2455.0	9081.0	44.09
2450.0	8831.4	43.72
2445.0	8586.0	43.35
2440.0	8344.8	42.97
2435.0	8107.8	42.59
2430.0	7874.9	42.21
2425.0	7646.2	41.83
2420.0	7421.6	41.44
2415.0	7201.3	41.05
2410.0	6985.1	40.66
2405.0	6773.0	40.27
2400.0	6565.1	39.87
2395.0	6363.4	39.47
2390.0	6170.1	39.07
2385.0	5984.8	38.67
2380.0	5806.7	38.26
2375.0	5635.2	37.85
2370.0	5469.9	37.44
2365.0	5310.2	37.02
2360.0	5155.7	36.60
2355.0	5005.8	36.18
2350.0	4860.1	35.76
2345.0	4718.3	35.33
2340.0	4580.0	34.90
2335.0	4444.1	34.47
2330.0	4310.2	34.03
2325.0	4178.2	33.59
2320.0	4048.1	33.15

*1 Tailwater elevation assumed to be 1880.7 feet based on 30,000 cfs Mica discharge with Revelstoke in-service.