DETAILED OPERATING PLAN FOR COLUMBIA RIVER TREATY STORAGE

1 AUGUST 1976
THROUGH 31 JULY 1977

COLUMBIA RIVER TREATY OPERATING COMMITTEE

SEPTEMBER 1976

September 1976

DETAILED OPERATING PLAN FOR COLUMBIA RIVER TREATY STORAGE 1 AUGUST 1976 THROUGH 31 JULY 1977

1. REFERENCES AND INTERPRETATION

In this document

(a) "Principles and Procedures" means the document "Principles and Procedures for the Preparation and Use of Hydroelectric Operating Plans for Canadian Treaty Storage," dated 25 July 1967, as amended;

(b) "Assured Operating Plan" means the document "Columbia River Treaty Hydroelectric Operating Plan-Assured Operating Plan for Operating Year 1976-77," dated January 1972;

(c) "Flood Control Plan" means the document "Columbia River Treaty Flood Control Operating Plan," October 1972;

(d) "Operating Year" means the period from 1 August 1976 through 31 July 1977;

(e) "Operating Committee" means the Columbia River Treaty Operating Committee;

(f) "Detailed Operating Plan" means a detailed operating plan prepared for the Operating Year by the Operating Committee pursuant to the Principles and Procedures and consisting of the contents of this document;

(g) "Runoff Volume Forecast Program for Canadian Columbia River Treaty Reservoirs" means the document of that title dated 15 August 1969, with subsequent modifications as agreed by the Operating Committee.

2. PREPARATION AND SCOPE

This Detailed Operating Plan has been developed from the Assured Operating Plan for the 1976-77 Operating Year. System load and resource estimates, duration of critical period, flood control and other criteria have been reviewed and revised in accordance with the Principles and Procedures as necessary. The Critical Period duration is 43½ months extending from 16 August 1976 through 31 March 1980 with hydro capability based on the 1928-29 through 1931-32 water years. During the Operating Year it is expected that the generating facilities at Mica will become operational and the necessary operating criteria, as tested in the 1976-77 Assured Operating Plan, have been incorporated in the Detailed Operating Plan. The data, criteria and procedures presented herein will be used as described for the formation and use of Operating Rule Curves for each of the Canadian storage reservoirs, Duncan, Arrow and McNaughton Lake (Mica), and for the whole of Canadian storage as well as Lake Koocanusa (Libby).

The Entity agreement on the downstream benefit computation for the 1977-78 Operating Year indicated that the U.S. Entity is entitled to receive from B.C. Hydro and Power Authority 1.5 megawatts of capacity and 5.5 megawatts of energy during the period 1 April 1977 through 31 March 1978. This commitment

will commence during the 1976-77 Operating Year and suitable arrangements for delivery will be made between Bonneville Power Administration and B.C. Hydro.

The usable Columbia River Treaty storage space available for power purposes during the Operating Year is 15.5 million acre-feet in Canada and 4.9336 million acre-feet at Libby in the United States, distributed as follows:

Duncan Reservoir

1.4 million acre-feet (705.8 thousand second-foot-days) between elevations 1892.0 feet and 1794.2 feet measured at Duncan forebay. (Based on B.C. Hydro table dated 21 February 1973.)

Arrow Reservoir

7.1 million acre-feet (3579.6 thousand second-foot-days) between elevation 1444.0 feet and 1377.9 feet measured at Fauquier, B.C. (Based on B.C. Hydro table dated 28 February 1974.)

McNaughton Lake (Mica)

7.0 million acre-feet (3529.2 thousand second-foot-days) measured at Mica forebay (Based on B.C. Hydro table dated 25 March 1974.)

Lake Koocanusa (Libby)

4.9336 million acre-feet (2487.3 thousand second-foot-days) between elevation 2459.0 feet and 2287.0 feet measured at Libby forebay. (Based on Corps of Engineers DM #4, File No. E53-49-21).

The usable Canadian storage available for normal flood-control purposes for the Operating Year is 1.27 million acre-feet in Duncan Reservoir below elevation 1892.0 feet; 5.1 million acre-feet in Arrow Reservoir below elevation 1444.0 feet; and 2.08 million acre-feet in McNaughton Lake (Mica Reservoir) except that additional storage may also be operated for flood control purposes under special circumstances, as described in the Flood Control Plan. The foregoing assumes a 2.0 million acre-feet transfer of flood-control storage from Arrow Reservoir to McNaughton Lake as detailed in the Flood Control Plan.

3. OPERATING RULE CURVE

The Operating Rule Curve for each of the Duncan, Arrow and Mica Reservoirs and for the whole of Canadian storage during the period 1 August 1976 through 31 July 1977, to be determined in accordance with the reference documents of Section 1, is defined as follows:

a. During the period 1 August 1976 through 31 December 1976, it is the higher of the First Critical Rule Curve and the Assured Refill Curve.

b. During the period 1 January 1977 through 31 March 1977 it is the higher of the First Critical Rule Curve or the Assured Refill Curve, unless the Variable Refill Curve is below the higher of the above two curves; then it is defined by the Variable Refill Curve.

c. During the period 1 January 1977 through 31 March 1977 it will not be lower than a rule curve developed for the 1976-77 Operating Year using 1936-37 hydro conditions (Exhibit 4).

d. During the period 1 April 1977 through 31 July 1977, it is the higher of the First Critical Rule Curve or the Assured Refill Curve unless the Flood Control Refill Curve is below the higher of the above two curves; then it is defined by the Flood Control Refill Curve.

e. During any period in the 1976-77 Operating Year, it will not be higher than the Upper Rule Curve.

f. Operation of Mica will be in accordance with the monthly average outflows tabulated with specified qualifications under Operating Limits. The obligation to operate Mica to produce optimum benefits in Canada and downstream in the United States will be deemed to have been fulfilled by operating to these criteria.

The Operating Rule Curve for Libby Reservoir is defined in a manner similar to that for Canadian storage.

4. OPERATIONS

The operation of Treaty storage by the Columbia River Treaty Operating Committee during the period 1 August 1976 through 31 July 1977 will be in accordance with the reference documents of Section 1, and the following operating guides:

a.	1976-77 First Critical Rule Curve and Assured Refill curve for Duncan, Arrow and Mica and the whole of Canadian storage.	Exhibit 1
b.	1976-77 Second Critical Rule Curve for Duncan, Arrow and Mica and the whole of Canadian storage.	Exhibit 2
c.	1976-77 Third Critical Rule Curve for Duncan, Arrow and Mica and the whole of Canadian storage.	Exhibit 3
d.	1976-77 Lowest Rule Curve based on 1936-37 Hydro Conditions.	Exhibit 4
e.	1976-77 Flood Control Refill Curve and Variable Refill Curve Procedures.	Exhibit 5
f.	1977-78 Second Critical Rule Curve for Duncan, Arrow and Mica and the whole of Canadian storage.	Exhibit 6
g.	1977-78 Third Critical Rule Curve for Duncan, Arrow and Mica and the whole of Canadian storage.	Exhibit 7
h.	1977-78 Fourth Critical Rule Curve for Duncan, Arrow and Mica and the whole of Canadian storage.	Exhibit 8
i.	1978-79 Third Critical Rule Curve for Duncan, Arrow and Mica and the whole of Canadian storage.	Exhibit 9

j. 1978-79 Fourth Critical Rule Curve for Duncan, Arrow and Mica and the whole of Canadian storage. — Exhibit 10

k. 1979-80 Fourth Critical Rule Curve for Duncan, Arrow and Mica and the whole of Canadian storage. — Exhibit 11

l. The First, Second, Third and Fourth Critical Rule Curves and Energy Content Curve for Libby — Exhibit 12

m. Duncan Reservoir, Storage Above Elevation 1794.2 feet (Based on B.C. Hydro table dated 21 February 1973.) — Exhibit 13

n. Arrow Lakes, 7.1 million acre-feet below elevation 1444 feet (Based on B.C. Hydro Combined Storage Table dated 28 February 1974.) — Exhibit 14

o. McNaughton Lake Storage Above Elevation 1865 Feet (Based on B.C. Hydro table dated 25 March 1974.) — Exhibit 15

p. Libby Storage Above Elevation 2287 feet (Based on U.S. Corps of Engineers' DM #4, File No. E53-49-21.) — Exhibit 16

5. SCHEDULING STORAGE REGULATION

a. The Operating Committee will exchange all current operating data necessary for the regulation of Canadian storage projects as soon as available, including the beginning and end of the flood control season.

b. Seasonal runoff volume forecasts for Canadian Treaty Projects shall be made available by the Canadian Section no later than the seventh of each month, as required. Forecasts of seasonal runoff volume at periods other than those representing month-end conditions may be requested by the Operating Committee if hydrologic conditions warrant. Seasonal runoff volume forecasts for the Columbia River at The Dalles, Oregon, shall be made available by the U.S. Section on the second working day of each month as required.

c. Unless otherwise agreed, requests by the U.S. Section of the Operating Committee for the regulation of the Canadian Storage content will be made to the Canadian Section of the Operating Committee on a regular basis in accordance with the following procedures:

(1) Weekly Requests for Storage Regulation During the Storage Drawdown Season

(a) Timing of Requests. A preliminary request will be made not later than noon each Thursday, followed by a final request by noon Friday, if necessary.

(b) Confirmation of Requests. Written confirmation of the request will be dispatched on Friday in accordance with the following format unless otherwise agreed: This message will confirm our verbal request of this date for the (storing/drafting) of ____ ksfd (in/from) the whole of Canadian storage for the period ____ through ____. (This request is based on an estimated

average regulated inflow of ____kcfs to Arrow Reservoir, ____kcfs to Duncan Reservoir, ____kcfs to Mica Reservoir, and ____kcfs to Libby Reservoir during the above mentioned period, and an average discharge of ____kcfs from the Arrow Project, ____kcfs from the Duncan Project, ____kcfs from the Mica Project, and ____kcfs from the Libby Project.)

(c) Period Covered by Request. The period covered by the request shall be from 0800 hours on the Sunday following the date of weekly request to 0800 hours on the Sunday a week later.

(d) Release Determination. The amount of water released or stored during the period of the request will be determined by the changes in reservoir contents based on the recorded lake stage and storage capacity tables for Duncan (Exhibit 13), Arrow (Exhibit 14), and Mica (Exhibit 15). The change in Arrow storage content will be determined using the recorded lake stage at the gauge near Fauquier, B.C.

(e) Delivery. Requested storage releases will be made effective at the Canadian-United States border. The request will be deemed to have been fulfilled if the total amount of storage water requested is released from Duncan, Arrow and Mica reservoirs, provided an amount equal to or greater than the Duncan storage water release is concurrently discharged from Kootenay Lake.

(f) Modification. If any modification to a written request is agreed by the Operating Committee, a further written request superseding the original written request will be dispatched immediately by the U.S. Section of the Operating Committee to the Canadian Section of the Operating Committee.

(g) Non-Routine Operation. Any special operation which is agreed by the Operating Committee will be suitably documented.

(2) Daily Request for Storage Regulation During the Flood Control Season.

(a) Forecasts. Day-to-day streamflow forecasts will be accomplished by use of computer simulation by the Columbia River Forecasting Service. The regulation center required by the Flood Control Plan for the flood regulation will be located in the North Pacific Division Office, Corps of Engineers, Portland, Oregon.

(b) Daily Requests for Project Outflows. Pursuant to the operating rules in the Flood Control Plan, the outflows from individual Canadian storage projects are specified on a day-to-day basis. Requests will be coordinated by telephone daily or on an as needed basis, by conference calls between members of the Operating Committee or their representatives. The requests will normally prescribe the requested outflows as a mean daily discharge in cubic feet per second, for the 24-hour period from noon to noon

of each day. Daily requests for project ouflows will be documented by message dispatched on the Columbia Basin Teletype Circuit from the regulation center in Portland, Oregon. Acknowledgment of the teletype request will be made by the Canadian authority by teletype message. The project outflows from Canadian projects will be determined by methods as agreed upon for the Hydrometeorological Reporting Network. Any modification of the documented daily request shall be agreed by the Operating Committee before being put into effect, and shall be documented by teletype immediately thereafter.

(3) Regulation During Winter Floods. Daily requests for project outflows from Canadian projects are normally confined to the flood control refill period. During periods of high winter flows in the Lower Columbia River, if a special regulation of Arrow storage becomes necessary to preserve the natural flood control storage effect, the outflows from Arrow will be regulated on a day-to-day basis in accordance with the requests of the U.S. Section of the Operating Committee. The requests for such regulation will be in accordance with procedures described above.

6. OPERATING LIMITS

a. Duncan Project

(1) Maximum outflow - 20,000 cfs through outlets

(2) Minimum average weekly outflow - 100 cfs

(3) Maximum rate of change in outflow - 4,000 cfs per day

(4) Normal full pool elevation 1,892.0 feet

(5) Normal minimum pool elevation - 1,794.2 feet

b. Arrow Project

(1) Maximum outflow - Physical limits only

(2) Minimum average weekly outflow - 5,000 cfs

(3) Maximum rate of change in outflow - 25,000 cfs per day

(4) Normal full pool elevation - 1,444.0 feet

(5) Normal minimum pool elevation - 1,377.9 feet

(6) Advance notice for changes in outflow for:

(a) Drop in downstream level of:

1/2 foot	None
1 foot	1 hour
2 feet	2 hours
3 feet or more	24 hours

(b) Rise in downstream level of:

1/2 foot	None	
1 foot	1 hour	
2 feet	2 hours	
3 feet	7 hours	only if notice is received early (before 1000 hours) in the day. Otherwise 24 hour notice is required.
More than 3 feet	24 hours	

Note: Each 5,000 cfs change causes about one foot variation in the downstream level.

c. Mica Project

In accordance with the 1976-77 Assured Operating Plan the Mica Project will be operated to the following monthly average outflows except as qualified in (1)-(6) below:

August	20,000 cfs, or inflow if reservoir is full
September	10,000 cfs, or inflow if reservoir is full
October-November	15,000 cfs
December-February	21,000 cfs
March	8,000 cfs minimum
April-June	8,000 cfs - 15,000 cfs
July	8,000 cfs minimum

(1) March and July monthly average outflows will be adjusted to allow the Mica reservoir to reach stipulated rule curve elevations subject to the 8,000 cfs minimum release and the maximum release noted in (7) below.

(2) Mica monthly average outflows will be increased in the months from October to June if required to avoid violation of the Flood Control Storage Reservation Curve.

(3) If the end-of-month storage content at the Arrow project is:

- - below 500 ksfd in any month from October through January, then the Mica monthly average outflow in the following month will be increased by 5,000 cfs over that specified above.

- - below 100 ksfd in any month from October through January, then the Mica monthly average outflow in the following month will be increased by 10,000 cfs over that specified above.

(4) Mica monthly average outflows will be increased in the months of April through June from 8,000 cfs (to the extent the additional generation is usable in the B.C. Hydro Integrated System) up to a maximum outflow of 15,000 cfs.

(5) Mica storage releases in excess of 7 million acre-feet that are required to maintain the minimum Mica outflow specified under this plan, will be made at the discretion of the Canadian Section of the Operating Committee and will be retained in the Arrow Reservoir, subject to flood control requirements at Arrow.

(6) Mica monthly average outflows will be increased up to maximum outlet capacity during the month of July in an abnormally low streamflow year in order to maintain the Arrow Reservoir above a storage content of 1,000 ksfd on 31 July 1977.

(7) The maximum outflow is 35,000 cfs at full pool elevation ranging down to 30,000 cfs at elevation 2400 feet; however, outflows may be controlled from time to time due to construction requirements.

d. Libby Project

(1) Maximum outflow

(a) When the spillway capacity is insufficient to pass the required flow, the regulating outlets may be used. Maximum gate opening permitted at elevation 2459.0 feet is 10.0 feet, at elevation 2405.0 feet and lower it is 14.0 feet. Maximum gate openings between elevations 2459.0 and 2405.0 feet will be determined on a straight-line basis between 10 and 14 feet.

Forebay Elevation	One Sluice	Three Sluices
2459 ft.	8,300 cfs	24,900 cfs
2425 ft.	10,400 cfs	31,200 cfs
2405 ft.	11,800 cfs	35,400 cfs
2350 ft.	10,200 cfs	30,600 cfs
2287 ft.	7,800 cfs	23,400 cfs

(b) Desirable maximum outflow will be maintained to avoid overtopping the Deep Creek Bridge until construction work under contract is completed. Completion of this work is expected during October 1976. The corresponding stage at Bonners Ferry, Idaho, is about 10 feet (20,000 - 30,000 cfs).

(2) Minimum instantaneous outflow - 2,000 cfs; desirable minimum daily outflow - 3,000 cfs.

(3) Maximum rate of change

(a) May - September - 1 ft. per hour

4 ft. per 24 hours

(b) October - April - 1 ft. per 1/2 hour

6 ft. per 24 hours

(4) Normal full pool elevation - 2459.0 feet

(5) Minimum pool elevation - 2287.0 feet

7. PROCEDURE FOR CALCULATING HYDROELECTRIC POWER LOSSES BY CANADA AS A RESULT OF OPERATING ON-CALL STORAGE

a. Consideration for On-Call Storage

Consideration for the need for On-Call storage will be initiated by the United States Section in consultation with the Canadian Section as soon after January 1 as conditions indicate that a call may be necessary. Results of these considerations will be reported to the respective Entities, together with the assessment of the effects of the drawdown on the production of power. A formal call for On-Call storage space may be made by the United States Entity following the above consultation.

b. Studies Required Upon Initiation of On-Call Request

Upon acceptance of a request for On-Call storage use by the Canadian Entity, the Operating Committee will make a set of seven-month system studies for the period January 1 to July 31 of the current Operating Year in the following manner:

(1) The studies will be based on a selected set of streamflow conditions from the available hydrologic record in which the January-July volume at The Dalles, Oregon, was greater than or equal to the most probable January-July runoff volume forecast at The Dalles, Oregon, for the current Operating Year. If the forecast indicates a probable flood of unprecedented size, reasonable estimates of the natural flows that could be expected will be used.

(2) The system studies will incorporate the rule curves, operating rules, etc., for Canadian storage contained in this Detailed Operating Plan adjusted for current conditions. The purpose of the studies is to estimate Mica and downstream Canadian projects' monthly outflows revised from those indicated in the DOP for the remainder of the current Operating Year if On-Call storage were not requested.

(3) The outflows used in the studies in (2) above shall not be less than those indicated in the Detailed Operating Plan.

(4) If the On-Call storage request is accepted after January 1, the system studies will be performed utilizing the most current conditions relating to initial reservoir elevations and outflows; the study period may then be shortened to less than seven months.

(5) The studies above will be completed in a timely manner so that United States liabilities for capacity and energy may be computed as indicated in paragraph c.

c. Procedure for Estimating Losses

The Canadian Section of the Operating Committee will perform the following daily calculations from the time that On-Call storage evacuation of Canadian storage is initiated to the end of the current operating year:

(1) The energy and capacity at Mica and downstream projects in Canada will be calculated based on actual recorded inflows and the monthly outflows computed in paragraph b. above.

(2) The actual daily energy and capacity at Mica and downstream projects in Canada will be tabulated.

Energy and capacity computations will take into account the actual availability of generating units throughout the January-July period.

The capacity loss (or gain) in Canada at Mica and at downstream projects will be computed on a daily basis by subtracting the capacity in (2) above from that in (1) above.

The energy loss (or gain) will be accumulated on a daily basis by adding the daily ene rgy difference obtained by subtracting the energy capability in (2) above from that in (1) above.

If the volume runoff forecast at The Dalles changes significantly after initiation of the daily calculations in (1) and (2) above, monthly outflows may be adjusted accordingly at the request of either Entity. Such adjustment shall consider Mica project at site volume forecasts as well as Canadian system energy/capacity requirements.

d. Delivery of Capacity and Energy to Canada

(1) Capacity Deliveries

If a capacity loss occurs based on the computations of paragraph c above, then daily capacity deliveries up to the daily loss will be scheduled by the U.S. Entity based on the need as stated by the Canadian Entity. If agreed to by both Entities, loss in capacity can be offset by gains in energy if energy is usable in the Canadian system.

(2) Energy Deliveries

It will normally not be possible to determine whether a net loss of energy has occurred until the end of the Operating Year. Nevertheless, energy deliveries will be scheduled by the Entities, based on the need as stated by the Canadian Entity, to compensate for any reduction in energy in Canada in the interim period.

(3) Resources

The United States Entity will provide sufficient resources to cover actual Canadian energy and capacity losses.

e. Liability of United States Entity

The procedure established in the paragraphs above is designed as a practical means of estimating, measuring, and offsetting power losses in Canada which could reasonably be considered as a result of On-Call Operation.

However, there remains the remote possibility that some combination of unforeseen circumstances, coupled with an operation of On-Call storage,

could prevent the Canadian storage from refilling during the current Operating Year. In that unlikely event, special procedures based on the particular circumstances may have to be instituted by the Entities to cover any losses not covered by the procedures above.

The period of potential liability of the United States Entity to offset capacity or energy losses in Canada will begin when On-Call storage evacuation begins, and will end when each of the Canadian storages reaches its normal Operating Rule Curve computed for the current or succeeding year, unless the Entities otherwise agree.

Exhibit 1

DETAILED OPERATING PLAN FOR CANADIAN TREATY STORAGE
FIRST CRITICAL RULE CURVE AND ASSURED REFILL CURVE FOR 1976-77

End-of-Month Usable Storage Content in 1000 SFD

Month	Critical Rule Curve				Assured Refill Curve 1/			
	Duncan	Arrow	Mica	Total	Duncan	Arrow	Mica	Total
August 15	705.8	3579.6	3529.2	7814.6	37.8	0.0	552.6	590.4
August 31	685.8	3309.6	3529.2	7524.6	98.4	0.0	1055.2	1153.6
September	644.0	2727.4	3529.2	6900.6	165.3	0.0	1513.3	1678.6
October	644.0	2624.5	3286.8	6555.3	196.0	0.0	1530.4	1726.4
November	454.4	2588.2	2974.1	6016.7	213.5	0.0	1438.3	1651.8
December	254.4	2090.0	2449.8	4794.2	224.7	0.0	1289.2	1513.9
January	254.4	1244.3	1954.9	3453.6	234.5	0.0	1125.8	1360.8
February	198.0	963.7	1459.5	2621.2	244.0	0.0	974.1	1218.1
March	108.0	882.8	1093.3	2084.1	258.1	0.0	823.4	1081.5
April	75.9	199.6	731.6	1007.1	236.5	267.3	625.1	1128.9
May	193.1	955.6	1021.6	2170.3	343.8	1443.3	1113.7	2890.8
June	467.0	2731.1	2420.1	5618.2	532.8	2993.7	2452.3	5978.8
July	652.7	2748.4	3135.1	6536.2	705.8	3579.6	3529.2	7814.6

1/ The Assured Refill Curve indicates the end-of-month storage content required to assure refill of Canadian storage by 31 July based on 1931 historical volume of inflow for the whole or remaining portion of the refill period. The year 1931 represents the second lowest historical January-July volume inflow for the system as measured at The Dalles, Oregon. The natural volume of inflow at each reservoir is reduced by deducting the Power Discharge Requirement, nonpower requirements at site and upstream and water required for refill at upstream reservoirs.

The Power Discharge Requirement for each reservoir is defined in Exhibit 5, assuming 80 maf January through July volume at The Dalles.

Exhibit 2

DETAILED OPERATING PLAN FOR COLUMBIA RIVER TREATY STORAGE
SECOND CRITICAL RULE CURVE
1976-77

End-of-Month Usable Storage Content in 1000 SFD

Month	Duncan	Arrow	Mica	Total
August	520.5	2663.2	3529.2	6732.3
September	283.2	2039.5	3529.2	5851.9
October	98.9	1561.4	3306.3	4966.6
November	27.7	1136.0	2963.6	4127.3
December	27.7	456.0	2405.7	2889.8
January	0.0	81.3	1657.2	1738.5
February	0.0	150.8	849.4	1000.2
March	0.0	28.6	490.4	519.0
April	33.1	511.6	535.6	1080.3
May	147.8	1636.0	906.2	2690.0
June	366.5	2083.1	2214.7	4664.3
July	473.9	1911.1	3347.0	5732.0

Exhibit 3

DETAILED OPERATING PLAN FOR COLUMBIA RIVER TREATY STORAGE
THIRD CRITICAL RULE CURVE
1976-77

End-of-Month Usable Storage Content in 1000 SFD

Month	Duncan	Arrow	Mica	Total
August	705.8	1627.9	3288.8	5622.5
September	580.8	881.7	3529.2	4991.7
October	370.8	305.2	3312.2	3988.2
November	226.8	0.0	2712.2	2939.0
December	164.8	0.0	1925.2	2090.0
January	26.6	25.4	1013.4	1065.4
February	26.6	0.0	229.4	256.0
March	26.6	0.0	0.0	26.6
April	26.6	243.5	0.0	270.1
May	183.5	974.3	713.7	1871.5
June	420.5	457.0	2141.1	3018.6
July	643.0	548.9	2717.7	3909.6

Exhibit 4

DETAILED OPERATING PLAN FOR COLUMBIA RIVER TREATY STORAGE
LOWEST RULE CURVE BASED ON 1936-37 HYDRO CONDITIONS
1976-77

End-of-Month Usable Storage Contents in 1000 SFD

Month	Duncan	Arrow	Mica	Total	Libby
January	139.8	683.6	1074.0	1897.4	548.1
February	72.6	353.1	534.8	960.5	342.2
March	20.2	89.9	111.3	221.4	64.1

Exhibit 5

DETAILED OPERATING PLAN FOR COLUMBIA RIVER TREATY STORAGE
1976-77 FLOOD CONTROL REFILL CURVE
AND VARIABLE REFILL CURVE PROCEDURES

The Flood Control and Variable Refill Curves indicate the end-of-month storage content required to refill Canadian storage based on forecasts of natural inflow volume. The probable forecast volume at each reservoir is reduced by deducting the 95% confidence forecast error, project discharge requirement, nonpower requirements upstream, and water required for refill at upstream reservoirs. Studies made for the U.S. Coordinated System Operation for 1976-77 indicate that the Power Discharge Requirement for all cyclic reservoirs must be greater than project minimum release to allow filling in accordance with the Principles and Procedures coincident with carrying system firm load when The Dalles natural January-July runoff volume is lower than 95 million acre-feet. The following schedule for Power Discharge Requirements will apply for 1976-77:

POWER DISCHARGE REQUIREMENT, CFS
FOR JANUARY-JULY VOLUME, THE DALLES, OREGON

	80 MAF			90 MAF			95 MAF
Project	Jan Feb Mar	Apr May Jun	Jul	Jan Feb Mar	Apr May Jun	Jul	All Periods
Mica	8,000	11,600	14,600	8,000	8,000	8,000	8,000
Arrow	5,000	17,500	34,500	5,000	9,600	14,000	5,000
Duncan	100	1,700	1,700	100	900	900	100
Libby	3,000	4,200	4,200	3,000	3,000	3,000	3,000

If the forecasted natural January through July volume at The Dalles is less than 80 MAF, the Power Discharge Requirement in the 80 MAF schedule will be used. If the forecasted natural volume at The Dalles is greater than 95 MAF, the Power Discharge Requirement will be project minimum release. For intermediate forecasted volumes, the Power Discharge Requirement will be interpolated linearly between the values shown above. The Dalles volume forecast made at the beginning of each applicable month shall be recognized in computing the Variable Refill Curve.

It is recognized that the Canadian Section has the right to make changes to the refill curves for individual projects provided the effect of these changes is consistent with the composite refill curve for Total Canadian storage.

Exhibit 6

DETAILED OPERATING PLAN FOR COLUMBIA RIVER TREATY STORAGE
SECOND CRITICAL RULE CURVE FOR 1977-78

End-of-Month Usable Storage Content in 1000 SFD

Month	Duncan	Arrow	Mica	Total
August	536.8	2475.3	3529.2	6541.3
September	299.5	2361.5	3529.2	6190.2
October	88.8	2229.4	3302.5	5620.7
November	65.5	1661.4	2959.9	4886.8
December	65.5	664.0	2401.0	3130.5
January	42.8	122.1	1590.6	1755.5
February	42.8	629.1	820.0	1491.9
March	42.8	779.0	286.2	1108.0
April	42.8	677.4	286.5	1006.7
May	65.5	1250.8	688.0	2004.3
June	283.2	2404.0	2027.0	4714.2
July	499.6	2986.7	3028.0	6514.3

Exhibit 7

DETAILED OPERATING PLAN FOR COLUMBIA RIVER TREATY STORAGE
THIRD CRITICAL RULE CURVE
1977-78

End-of-Month Usable Storage Content in 1000 SFD

Month	Duncan	Arrow	Mica	Total
August	375.8	1906.6	3529.2	5811.6
September	250.3	1864.5	3529.2	5644.0
October	45.7	1664.4	3322.0	5032.1
November	0.0	1173.3	3018.4	4191.7
December	0.0	130.5	2456.4	2586.9
January	0.0	130.3	1472.4	1602.7
February	0.0	125.4	575.2	700.6
March	0.0	23.1	0.0	23.1
April	0.0	0.0	0.0	0.0
May	38.8	1107.7	36.5	1183.0
June	256.7	1196.3	945.5	2398.5
July	237.3	840.0	1906.4	2983.7

Exhibit 8

DETAILED OPERATING PLAN FOR COLUMBIA RIVER TREATY STORAGE
FOURTH CRITICAL RULE CURVE
1977-78

End-of-Month Usable Storage Content in 1000 SFD

Month	Duncan	Arrow	Mica	Total
August	705.8	364.0	2848.5	3918.3
September	465.8	237.2	2638.5	3341.5
October	255.8	383.2	2275.2	2914.2
November	110.8	481.8	1825.2	2417.8
December	26.6	343.2	1124.6	1494.4
January	0.0	618.6	275.2	893.8
February	0.0	0.0	0.0	0.0

Exhibit 9

DETAILED OPERATING PLAN FOR COLUMBIA RIVER TREATY STORAGE
THIRD CRITICAL RULE CURVE
1978-79

End-of-Month Usable Storage Content in 1000 SFD

Month	Duncan	Arrow	Mica	Total
August	471.3	2516.9	3529.2	6517.4
September	345.3	2460.7	3529.2	6335.2
October	125.3	2378.9	3163.1	5667.3
November	26.7	2093.4	2859.6	4979.7
December	26.7	1360.1	1990.6	3377.4
January	0.0	1099.8	1068.7	2168.5
February	0.0	598.2	227.5	825.7
March	0.0	116.7	0.0	116.7
April	0.0	0.0	0.0	0.0
May	143.7	327.0	374.5	845.2
June	264.0	732.9	1313.1	2310.0
July	264.0	507.5	1902.4	2673.9

Exhibit 10

DETAILED OPERATING PLAN FOR COLUMBIA RIVER TREATY STORAGE
FOURTH CRITICAL RULE CURVE
1978-79

End-of-Month Usable Storage Content in 1000 SFD

Month	Duncan	Arrow	Mica	Total
August	161.6	578.6	2029.7	2769.9
September	27.5	649.2	1943.8	2620.5
October	0.0	543.1	1676.9	2220.0
November	0.0	439.1	1229.4	1668.5
December	0.0	63.6	407.1	470.7
January	0.0	95.0	0.0	95.0
February	0.0	0.0	0.0	0.0
March	0.0	0.0	0.0	0.0

Exhibit 11

DETAILED OPERATING PLAN FOR COLUMBIA RIVER TREATY STORAGE
FOURTH CRITICAL RULE CURVE
1979-80

End-of-Month Usable Storage Content in 1000 SFD

Month	Duncan	Arrow	Mica	Total
August	75.7	250.5	2433.1	2759.3
September	75.7	169.2	2347.5	2592.4
October	75.7	50.4	2080.8	2206.9
November	0.0	214.1	1633.4	1847.5
December	0.0	261.7	718.2	979.9
January	0.0	271.0	0.0	271.0
February	0.0	23.8	0.0	23.8
March	0.0	0.0	0.0	0.0

CRITICAL RULE CURVE AND ENERGY CONTENT CURVE
LIBBY RESERVOIR

End-of-Month Usable Storage Content in 1000 SFD

Month	Critical Rule Curve									Energy Content Curve 1976-77
	1st 1976-77	2nd 1976-77	3rd 1976-77	2nd 1977-78	3rd 1977-78	4th 1977-78	3rd 1978-79	4th 1978-79	4th 1979-80	
August 15	2487.3	2046.4	2487.3	2487.3	2487.3	2119.0	2487.3	2487.3	2408.3	2487.3
August 31	2444.2	1934.4	2487.3	2487.3	2487.3	1900.2	2487.3	2443.9	2436.3	2444.2
September	2282.7	1886.4	2254.3	2283.6	2337.3	1874.0	2337.3	2176.3	2176.3	2282.7
October	2041.3	1862.4	2004.9	2057.3	2060.6	1535.5	2181.0	1671.3	1671.3	2041.3
November	1714.8	1411.0	1778.7	1607.3	1777.3	1184.5	1777.3	1187.3	1187.3	1714.8
December	1324.7	852.8	1282.2	1297.3	1456.3	785.8	1456.3	787.3	787.3	1384.1
January	997.5	305.9	827.3	987.3	1091.7	386.4	1091.7	387.3	387.3	1364.7
February	933.4	328.3	831.4	887.3	1083.6	0.0	1067.9	0.0	0.0	1340.8
March	627.3	346.3	633.1	737.3	1088.7	0.0	1046.7	0.0	0.0	1319.7
April	644.7	612.7	674.6	971.6	1073.2	0.0	1058.4	0.0	0.0	1295.4
May	1158.7	1158.9	1190.9	1482.5	1595.2	0.0	1545.1	0.0	0.0	1744.9
June	2731.0	2139.6	1790.5	2177.3	2206.9	0.0	2120.8	0.0	0.0	2284.6
July	2483.3	2487.3	2057.3	2487.3	2487.1	0.0	2360.7	0.0	0.0	2487.3

Exhibit 12

DUNCAN RESERVOIR
STORAGE ABOVE ELEV 1794.2
IN 1000 S.F.D.[1]

LAKE ELEVATION IN FEET	TENTHS OF FEET										AVERAGE DIFFERENCE PER TENTH	LAKE ELEVATION IN FEET
	0	1	2	3	4	5	6	7	8	9		
1895	732.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00	1895
1894	723.7	724.6	725.5	726.4	727.3	728.2	729.1	729.9	730.8	731.7	.90	1894
1893	714.7	715.6	716.5	717.4	718.3	719.2	720.1	721.0	721.9	722.8	.89	1893
1892	705.8	706.7	707.6	708.5	709.4	710.3	711.2	712.1	712.9	713.8	.89	1892
1891	696.9	697.8	698.7	699.6	700.5	701.4	702.2	703.1	704.0	704.9	.89	1891
1890	688.0	688.9	689.8	690.7	691.6	692.5	693.4	694.2	695.1	696.0	.89	1890
1889	679.2	680.1	680.9	681.8	682.7	683.6	684.5	685.4	686.3	687.1	.89	1889
1888	670.4	671.2	672.1	673.0	673.9	674.8	675.6	676.5	677.4	678.3	.88	1888
1887	661.5	662.4	663.3	664.2	665.1	665.9	666.8	667.7	668.6	669.5	.88	1887
1886	652.8	653.6	654.5	655.4	656.3	657.2	658.0	658.9	659.8	660.7	.88	1886
1885	644.0	644.9	645.8	646.6	647.5	648.4	649.3	650.1	651.0	651.9	.88	1885
1884	635.3	636.1	637.0	637.9	638.8	639.6	640.5	641.4	642.3	643.1	.87	1884
1883	626.6	627.4	628.3	629.2	630.0	630.9	631.8	632.7	633.5	634.4	.87	1883
1882	617.9	618.7	619.6	620.5	621.3	622.2	623.1	624.0	624.8	625.7	.87	1882
1881	609.2	610.1	610.9	611.8	612.7	613.5	614.4	615.3	616.1	617.0	.87	1881
1880	600.6	601.4	602.3	603.2	604.0	604.9	605.8	606.6	607.5	608.4	.86	1880
1879	592.0	592.8	593.7	594.6	595.4	596.3	597.1	598.0	598.9	599.7	.86	1879
1878	583.4	584.2	585.1	586.0	586.8	587.7	588.5	589.4	590.3	591.1	.86	1878
1877	574.8	575.7	576.5	577.4	578.3	579.1	580.0	580.8	581.7	582.5	.86	1877
1876	566.3	567.1	568.0	568.9	569.7	570.6	571.4	572.3	573.1	574.0	.85	1876
1875	557.8	558.6	559.5	560.3	561.2	562.0	562.9	563.7	564.6	565.4	.85	1875
1874	549.3	550.2	551.0	551.8	552.7	553.5	554.4	555.2	556.1	556.9	.85	1874
1873	540.9	541.7	542.5	543.4	544.2	545.1	545.9	546.8	547.6	548.5	.85	1873
1872	532.4	533.3	534.1	535.0	535.8	536.6	537.5	538.3	539.2	540.0	.84	1872
1871	524.0	524.9	525.7	526.5	527.4	528.2	529.1	529.9	530.7	531.6	.84	1871
1870	515.7	516.5	517.3	518.2	519.0	519.8	520.7	521.5	522.3	523.2	.84	1870
1869	507.3	508.1	509.0	509.8	510.6	511.5	512.3	513.1	514.0	514.8	.83	1869
1868	499.0	499.8	500.6	501.5	502.3	503.1	504.0	504.8	505.6	506.5	.83	1868
1867	490.7	491.5	492.4	493.2	494.0	494.8	495.7	496.5	497.3	498.2	.83	1867
1866	482.4	483.3	484.1	484.9	485.7	486.6	487.4	488.2	489.0	489.9	.83	1866
1865	474.2	475.0	475.8	476.7	477.5	478.3	479.1	480.0	480.8	481.6	.82	1865
1864	466.0	466.8	467.6	468.5	469.3	470.1	470.9	471.7	472.6	473.4	.82	1864
1863	457.8	458.6	459.5	460.3	461.1	461.9	462.7	463.5	464.4	465.2	.82	1863
1862	449.7	450.5	451.3	452.1	452.9	453.7	454.6	455.4	456.2	457.0	.81	1862
1861	441.6	442.4	443.2	444.0	444.8	445.6	446.4	447.2	448.0	448.9	.81	1861
1860	433.5	434.3	435.1	435.9	436.7	437.5	438.3	439.1	439.9	440.7	.81	1860
1859	425.4	426.2	427.0	427.8	428.6	429.4	430.2	431.0	431.9	432.7	.81	1859
1858	417.4	418.2	419.0	419.8	420.6	421.4	422.2	423.0	423.8	424.6	.80	1858
1857	409.4	410.2	411.0	411.8	412.6	413.4	414.2	415.0	415.8	416.6	.80	1857
1856	401.4	402.2	403.0	403.8	404.6	405.4	406.2	407.0	407.8	408.6	.80	1856

1/ Table taken directly from B.C. Hydro's table dated Feb. 21, 1973. Storage below elevation 1794.2 feet has been subtracted out.

DUNCAN RESERVOIR
STORAGE ABOVE ELEV 1794.2
IN 1000 S.F.D.1/

LAKE ELEVATION IN FEET	TENTHS OF FEET										AVERAGE DIFFERENCE PER TENTH	LAKE ELEVATION IN FEET
	0	1	2	3	4	5	6	7	8	9		
1855	393.5	394.3	395.1	395.9	396.7	397.5	398.3	399.0	399.8	400.6	.79	1855
1854	385.6	386.4	387.2	388.0	388.8	389.5	390.3	391.1	391.9	392.7	.79	1854
1853	377.7	378.5	379.3	380.1	380.9	381.7	382.4	383.2	384.0	384.8	.79	1853
1852	369.9	370.7	371.5	372.2	373.0	373.8	374.6	375.4	376.2	376.9	.78	1852
1851	362.1	362.9	363.7	364.4	365.2	366.0	366.8	367.6	368.3	369.1	.78	1851
1850	354.3	355.1	355.9	356.7	357.4	358.2	359.0	359.8	360.5	361.3	.78	1850
1849	346.6	347.4	348.1	348.9	349.7	350.5	351.2	352.0	352.8	353.6	.77	1849
1848	338.9	339.7	340.4	341.2	342.0	342.7	343.5	344.3	345.1	345.8	.77	1848
1847	331.2	332.0	332.8	333.5	334.3	335.1	335.8	336.6	337.4	338.1	.77	1847
1846	323.6	324.4	325.1	325.9	326.6	327.4	328.2	328.9	329.7	330.5	.76	1846
1845	316.0	316.8	317.5	318.3	319.0	319.8	320.6	321.3	322.1	322.8	.76	1845
1844	308.5	309.2	310.0	310.7	311.5	312.2	313.0	313.7	314.5	315.3	.76	1844
1843	300.9	301.7	302.4	303.2	303.9	304.7	305.4	306.2	306.9	307.7	.75	1843
1842	293.5	294.2	294.9	295.7	296.4	297.2	297.9	298.7	299.4	300.2	.75	1842
1841	286.0	286.7	287.5	288.2	289.0	289.7	290.5	291.2	292.0	292.7	.74	1841
1840	278.6	279.3	280.1	280.8	281.6	282.3	283.0	283.8	284.5	285.3	.74	1840
1839	271.2	272.0	272.7	273.4	274.2	274.9	275.6	276.4	277.1	277.9	.74	1839
1838	263.9	264.6	265.4	266.1	266.8	267.6	268.3	269.0	269.8	270.5	.73	1838
1837	256.6	257.3	258.1	258.8	259.5	260.3	261.0	261.7	262.4	263.2	.73	1837
1836	249.4	250.1	250.8	251.5	252.3	253.0	253.7	254.4	255.2	255.9	.72	1836
1835	242.2	242.9	243.6	244.3	245.0	245.8	246.5	247.2	247.9	248.7	.72	1835
1834	235.0	235.7	236.4	237.2	237.9	238.6	239.3	240.0	240.7	241.5	.72	1834
1833	227.9	228.6	229.3	230.0	230.7	231.4	232.2	232.9	233.6	234.3	.71	1833
1832	220.8	221.5	222.2	222.9	223.6	224.3	225.1	225.8	226.5	227.2	.71	1832
1831	213.8	214.5	215.2	215.9	216.6	217.3	218.0	218.7	219.4	220.1	.70	1831
1830	206.8	207.5	208.2	208.9	209.6	210.3	211.0	211.7	212.4	213.1	.70	1830
1829	199.9	200.5	201.2	201.9	202.6	203.3	204.0	204.7	205.4	206.1	.69	1829
1828	193.0	193.6	194.3	195.0	195.7	196.4	197.1	197.8	198.5	199.2	.69	1828
1827	186.1	186.8	187.5	188.2	188.8	189.5	190.2	190.9	191.6	192.3	.68	1827
1826	179.3	180.0	180.7	181.4	182.0	182.7	183.4	184.1	184.8	185.4	.68	1826
1825	172.6	173.2	173.9	174.6	175.3	175.9	176.6	177.3	178.0	178.6	.67	1825
1824	165.9	166.5	167.2	167.9	168.6	169.2	169.9	170.6	171.2	171.9	.67	1824
1823	159.2	159.9	160.6	161.2	161.9	162.6	163.2	163.9	164.5	165.2	.66	1823
1822	152.6	153.3	154.0	154.6	155.3	155.9	156.6	157.3	157.9	158.6	.66	1822
1821	146.1	146.8	147.4	148.1	148.7	149.4	150.0	150.7	151.3	152.0	.65	1821
1820	139.6	140.3	140.9	141.6	142.2	142.9	143.5	144.2	144.8	145.5	.65	1820
1819	133.2	133.9	134.5	135.1	135.8	136.4	137.1	137.7	138.3	139.0	.64	1819
1818	126.8	127.5	128.1	128.8	129.4	130.0	130.7	131.3	131.9	132.6	.64	1818
1817	120.5	121.2	121.8	122.4	123.1	123.7	124.3	125.0	125.6	126.2	.63	1817
1816	114.3	114.9	115.6	116.2	116.8	117.4	118.0	118.7	119.3	119.9	.62	1816

1/ Table taken directly from B.C. Hydro's table dated Feb. 21, 1973. Storage below elevation 1794.2 feet has been subtracted out.

EXHIBIT 13
Page 2 of 3

DUNCAN RESERVOIR
STORAGE ABOVE ELEV 1794.2
IN 1000 S.F.D.[1]

LAKE ELEVATION IN FEET	TENTHS OF FEET 0	1	2	3	4	5	6	7	8	9	AVERAGE DIFFERENCE PER TENTH	LAKE ELEVATION IN FEET
1815	108.1	108.7	109.4	110.0	110.6	111.2	111.8	112.4	113.1	113.7	.62	1815
1814	102.0	102.6	103.2	103.8	104.5	105.1	105.7	106.3	106.9	107.5	.61	1814
1813	96.0	96.6	97.2	97.8	98.4	99.0	99.6	100.2	100.8	101.4	.60	1813
1812	90.0	90.6	91.2	91.8	92.4	93.0	93.6	94.2	94.8	95.4	.60	1812
1811	84.1	84.7	85.3	85.9	86.5	87.0	87.6	88.2	88.8	89.4	.59	1811
1810	78.3	78.9	79.4	80.0	80.6	81.2	81.8	82.4	82.9	83.5	.58	1810
1809	72.5	73.1	73.7	74.3	74.8	75.4	76.0	76.6	77.1	77.7	.57	1809
1808	66.9	67.4	68.0	68.6	69.1	69.7	70.3	70.8	71.4	72.0	.57	1808
1807	61.3	61.8	62.4	63.0	63.5	64.1	64.6	65.2	65.7	66.3	.56	1807
1806	55.8	56.3	56.9	57.4	58.0	58.5	59.1	59.6	60.2	60.7	.55	1806
1805	50.4	50.9	51.5	52.0	52.6	53.1	53.6	54.2	54.7	55.3	.54	1805
1804	45.1	45.6	46.2	46.7	47.2	47.7	48.3	48.8	49.3	49.9	.53	1804
1803	39.9	40.4	40.9	41.5	42.0	42.5	43.0	43.5	44.1	44.6	.52	1803
1802	34.8	35.3	35.8	36.3	36.8	37.3	37.9	38.4	38.9	39.4	.51	1802
1801	29.8	30.3	30.8	31.3	31.8	32.3	32.8	33.3	33.8	34.3	.50	1801
1800	25.0	25.5	26.0	26.4	26.9	27.4	27.9	28.4	28.9	29.4	.48	1800
1799	20.3	20.7	21.2	21.7	22.1	22.6	23.1	23.6	24.0	24.5	.47	1799
1798	15.7	16.2	16.6	17.1	17.5	18.0	18.4	18.9	19.4	19.8	.46	1798
1797	11.3	11.7	12.2	12.6	13.0	13.5	13.9	14.4	14.8	15.3	.44	1797
1796	7.1	7.5	7.9	8.3	8.7	9.2	9.6	10.0	10.4	10.9	.42	1796
1795	3.0	3.4	3.8	4.2	4.6	5.0	5.4	5.8	6.3	6.7	.40	1795
1794	.7	.4	0.0	.4	.7	1.1	1.5	1.9	2.3	2.7	.38	1794
1793	4.2	3.9	3.6	3.2	2.9	2.5	2.2	1.8	1.5	1.1	.35	1793
1792	7.4	7.1	6.8	6.5	6.2	5.8	5.5	5.2	4.9	4.6	.31	1792
1791	10.2	9.9	9.6	9.4	9.1	8.8	8.5	8.2	8.0	7.7	.28	1791
1790	12.6	12.4	12.1	11.9	11.7	11.4	11.2	10.9	10.7	10.4	.24	1790
1789	14.6	14.5	14.3	14.1	13.9	13.7	13.4	13.2	13.0	12.8	.21	1789
1788	16.4	16.2	16.0	15.9	15.7	15.5	15.4	15.2	15.0	14.8	.17	1788

[1]/Table taken directly from B.C. Hydro's table dated Feb. 21, 1973. Storage below elevation 1794.2 feet has been subtracted out.

ARROW LAKES
7.1 MAF STORAGE BELOW ELEVATION 1444.0
IN 1000 S.F.D.

LAKE ELEVATION IN FEET	TENTHS OF FEET										AVERAGE DIFFERENCE PER TENTH	LAKE ELEVATION IN FEET
	0	1	2	3	4	5	6	7	8	9		
1450	3979.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1450
1449	3912.3	3919.1	3925.8	3932.6	3939.3	3946.1	3952.8	3959.6	3966.4	3973.1	6.75	1449
1448	3845.1	3851.8	3858.6	3865.3	3872.0	3878.7	3885.4	3892.1	3898.9	3905.6	6.72	1448
1447	3778.3	3784.9	3791.6	3798.3	3805.0	3811.7	3818.3	3825.0	3831.7	3838.4	6.69	1447
1446	3711.7	3718.4	3725.0	3731.6	3738.3	3745.0	3751.6	3758.3	3764.9	3771.6	6.65	1446
1445	3645.5	3652.1	3658.7	3665.3	3672.0	3678.6	3685.2	3691.8	3698.5	3705.1	6.62	1445
1444	3579.6	3586.2	3592.8	3599.4	3605.9	3612.5	3619.1	3625.7	3632.3	3638.9	6.59	1444
1443	3514.1	3520.6	3527.2	3533.7	3540.3	3546.8	3553.4	3559.9	3566.5	3573.1	6.55	1443
1442	3448.9	3455.4	3461.9	3468.4	3474.9	3481.4	3488.0	3494.5	3501.0	3507.6	6.52	1442
1441	3384.0	3390.5	3397.0	3403.4	3409.9	3416.4	3422.9	3429.4	3435.9	3442.4	6.49	1441
1440	3319.5	3325.9	3332.3	3338.8	3345.2	3351.7	3358.1	3364.6	3371.1	3377.5	6.45	1440
1439	3255.2	3261.7	3268.1	3274.5	3280.9	3287.3	3293.7	3300.2	3306.6	3313.0	6.42	1439
1438	3191.4	3197.7	3204.1	3210.5	3216.9	3223.3	3229.7	3236.0	3242.4	3248.8	6.39	1438
1437	3127.8	3134.2	3140.5	3146.8	3153.2	3159.5	3165.9	3172.3	3178.6	3185.0	6.35	1437
1436	3064.6	3070.9	3077.2	3083.5	3089.8	3096.2	3102.5	3108.8	3115.1	3121.5	6.32	1436
1435	3001.7	3008.0	3014.3	3020.6	3026.8	3033.1	3039.4	3045.7	3052.0	3058.3	6.29	1435
1434	2939.2	2945.4	2951.7	2957.9	2964.2	2970.4	2976.7	2982.9	2989.2	2995.5	6.25	1434
1433	2877.0	2883.2	2889.4	2895.6	2901.8	2908.0	2914.2	2920.5	2926.7	2932.9	6.22	1433
1432	2815.1	2821.2	2827.4	2833.6	2839.8	2846.0	2852.2	2858.4	2864.6	2870.8	6.19	1432
1431	2753.5	2759.7	2765.8	2772.0	2778.1	2784.3	2790.4	2796.6	2802.7	2808.9	6.15	1431
1430	2692.3	2698.4	2704.5	2710.6	2716.8	2722.9	2729.0	2735.1	2741.3	2747.4	6.12	1430
1429	2631.5	2637.5	2643.6	2649.7	2655.8	2661.8	2667.9	2674.0	2680.1	2686.2	6.08	1429
1428	2570.9	2577.0	2583.0	2589.1	2595.1	2601.2	2607.2	2613.3	2619.3	2625.4	6.05	1428
1427	2510.7	2516.7	2522.7	2528.8	2534.8	2540.8	2546.8	2552.8	2558.9	2564.9	6.02	1427
1426	2450.8	2456.8	2462.8	2468.8	2474.7	2480.7	2486.7	2492.7	2498.7	2504.7	5.99	1426
1425	2391.2	2397.2	2403.1	2409.1	2415.0	2421.0	2426.9	2432.9	2438.9	2444.8	5.96	1425
1424	2331.9	2337.8	2343.7	2349.6	2355.6	2361.5	2367.4	2373.4	2379.3	2385.3	5.94	1424
1423	2272.8	2278.7	2284.6	2290.5	2296.4	2302.3	2308.2	2314.1	2320.0	2325.9	5.90	1423
1422	2214.1	2220.0	2225.8	2231.7	2237.5	2243.4	2249.3	2255.2	2261.0	2266.9	5.87	1422
1421	2155.7	2161.5	2167.4	2173.2	2179.0	2184.9	2190.7	2196.5	2202.4	2208.2	5.84	1421
1420	2097.7	2103.5	2109.3	2115.1	2120.9	2126.7	2132.5	2138.3	2144.1	2149.9	5.80	1420
1419	2040.1	2045.9	2051.6	2057.4	2063.1	2068.9	2074.6	2080.4	2086.2	2091.9	5.76	1419
1418	1982.9	1988.6	1994.3	2000.0	2005.8	2011.5	2017.2	2022.9	2028.7	2034.4	5.72	1418
1417	1926.1	1931.8	1937.4	1943.1	1948.8	1954.5	1960.1	1965.8	1971.5	1977.2	5.68	1417
1416	1869.6	1875.2	1880.9	1886.5	1892.2	1897.8	1903.5	1909.1	1914.8	1920.4	5.65	1416
1415	1813.5	1819.1	1824.7	1830.3	1835.9	1841.5	1847.1	1852.7	1858.4	1864.0	5.61	1415
1414	1757.8	1763.3	1768.9	1774.4	1780.0	1785.6	1791.2	1796.7	1802.3	1807.9	5.57	1414
1413	1702.4	1707.9	1713.4	1719.0	1724.5	1730.0	1735.6	1741.1	1746.7	1752.2	5.54	1413
1412	1647.4	1652.8	1658.3	1663.8	1669.3	1674.8	1680.3	1685.8	1691.3	1696.9	5.50	1412
1411	1592.7	1598.1	1603.6	1609.1	1614.5	1620.0	1625.4	1630.9	1636.4	1641.9	5.47	1411

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ARROW LAKES
7.1 MAF STORAGE BELOW ELEVATION 1444.0
IN 1000 S.F.D.

LAKE ELEVATION IN FEET	TENTHS OF FEET										AVERAGE DIFFERENCE PER TENTH	LAKE ELEVATION IN FEET
	0	1	2	3	4	5	6	7	8	9		
1410	1538.4	1543.8	1549.2	1554.6	1560.1	1565.5	1570.9	1576.4	1581.8	1587.2	5.43	1410
1409	1484.5	1489.9	1495.2	1500.6	1506.0	1511.4	1516.8	1522.2	1527.6	1533.0	5.39	1409
1408	1430.9	1436.3	1441.6	1446.9	1452.3	1457.7	1463.0	1468.4	1473.7	1479.1	5.36	1408
1407	1377.7	1383.0	1388.3	1393.6	1398.9	1404.3	1409.6	1414.9	1420.2	1425.6	5.32	1407
1406	1324.7	1330.0	1335.3	1340.6	1345.9	1351.2	1356.5	1361.8	1367.1	1372.4	5.29	1406
1405	1272.1	1277.4	1282.6	1287.9	1293.1	1298.4	1303.7	1308.9	1314.2	1319.5	5.26	1405
1404	1219.5	1224.8	1230.0	1235.3	1240.5	1245.8	1251.0	1256.3	1261.6	1266.8	5.26	1404
1403	1167.2	1172.5	1177.7	1182.9	1188.2	1193.4	1198.6	1203.8	1209.1	1214.3	5.22	1403
1402	1115.4	1120.6	1125.8	1130.9	1136.1	1141.3	1146.5	1151.7	1156.9	1162.1	5.19	1402
1401	1063.9	1069.0	1074.2	1079.3	1084.5	1089.6	1094.8	1099.9	1105.1	1110.2	5.15	1401
1400	1012.8	1017.9	1023.0	1028.1	1033.2	1038.3	1043.4	1048.5	1053.7	1058.8	5.11	1400
1399	962.5	967.6	972.6	977.6	982.6	987.6	992.7	997.7	1002.7	1007.8	5.03	1399
1398	912.7	917.6	922.6	927.6	932.6	937.6	942.6	947.5	952.5	957.5	4.99	1398
1397	863.2	868.1	873.1	878.0	882.9	887.9	892.8	897.8	902.8	907.7	4.95	1397
1396	814.1	819.0	823.9	828.8	833.7	838.6	843.5	848.4	853.3	858.3	4.91	1396
1395	765.2	770.1	775.0	779.8	784.7	789.6	794.5	799.4	804.3	809.2	4.88	1395
1394	716.2	721.1	726.0	730.9	735.8	740.7	745.6	750.5	755.4	760.3	4.90	1394
1393	667.5	672.4	677.2	682.1	687.0	691.8	696.7	701.6	706.4	711.3	4.87	1393
1392	619.3	624.1	628.9	633.7	638.5	643.3	648.2	653.0	657.8	662.7	4.83	1392
1391	571.4	576.2	581.0	585.7	590.5	595.3	600.1	604.9	609.7	614.5	4.78	1391
1390	524.2	528.9	533.6	538.3	543.0	547.7	552.5	557.2	562.0	566.7	4.73	1390
1389	477.9	482.5	487.1	491.8	496.4	501.0	505.6	510.2	514.9	519.5	4.63	1389
1388	432.3	436.8	441.4	445.9	450.5	455.0	459.6	464.2	468.8	473.3	4.57	1388
1387	387.2	391.6	396.1	400.6	405.1	409.6	414.2	418.7	423.2	427.7	4.51	1387
1386	342.6	347.0	351.4	355.9	360.3	364.8	369.3	373.7	378.2	382.7	4.46	1386
1385	298.5	302.9	307.2	311.6	316.0	320.5	324.9	329.3	333.7	338.1	4.41	1385
1384	254.6	259.0	263.3	267.7	272.1	276.5	280.9	285.3	289.7	294.1	4.39	1384
1383	211.2	215.5	219.9	224.2	228.5	232.8	237.2	241.5	245.9	250.2	4.34	1383
1382	168.4	172.6	176.9	181.2	185.4	189.7	194.0	198.3	202.6	206.9	4.29	1382
1381	126.1	130.3	134.5	138.7	142.9	147.1	151.4	155.6	159.9	164.1	4.23	1381
1380	84.3	88.5	92.6	96.8	100.9	105.1	109.3	113.5	117.7	121.9	4.17	1380
1379	43.2	47.3	51.4	55.5	59.6	63.7	67.8	71.9	76.1	80.2	4.11	1379
1378	2.7	6.7	10.8	14.8	18.8	22.9	26.9	31.0	35.1	39.1	4.05	1378
1377	-37.1	-33.1	-29.2	-25.2	-21.2	-17.3	-13.3	-9.3	-5.3	-1.3	3.98	1377
1376	-76.2	-72.3	-68.4	-64.5	-60.6	-56.7	-52.8	-48.9	-45.0	-41.0	3.91	1376
1375	-114.6	-110.8	-107.0	-103.2	-99.3	-95.5	-91.7	-87.8	-83.9	-80.1	3.84	1375

PCH - ENERGY MANAGEMENT SECTION
FEBRUARY 28, 1974

EXHIBIT 14
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MC NAUGHTON LAKE
STORAGE ABOVE ELEVATION 1965
IN 1000 S.F.D.

LAKE ELEVATION IN FEET	TENTHS OF FEET 0	1	2	3	4	5	6	7	8	9	AVERAGE DIFFERENCE PER TENTH	LAKE ELEVATION IN FEET
2475	10121.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2475
2474	10067.5	10072.9	10078.2	10083.6	10089.0	10094.3	10099.7	10105.0	10110.4	10115.8	5.36	2474
2473	10014.1	10019.4	10024.8	10030.1	10035.5	10040.8	10046.1	10051.5	10056.8	10062.2	5.34	2473
2472	9960.8	9966.2	9971.5	9976.8	9982.1	9987.5	9992.8	9998.1	10003.4	10008.8	5.33	2472
2471	9907.8	9913.1	9918.4	9923.7	9929.0	9934.3	9939.6	9944.9	9950.2	9955.5	5.31	2471
2470	9854.8	9860.1	9865.4	9870.7	9876.0	9881.3	9886.6	9891.9	9897.2	9902.5	5.29	2470
2469	9802.1	9807.3	9812.6	9817.9	9823.2	9828.4	9833.7	9839.0	9844.3	9849.5	5.28	2469
2468	9749.5	9754.7	9760.0	9765.2	9770.5	9775.8	9781.0	9786.3	9791.5	9796.8	5.26	2468
2467	9697.1	9702.3	9707.5	9712.8	9718.0	9723.2	9728.5	9733.7	9739.0	9744.2	5.24	2467
2466	9644.8	9650.0	9655.2	9660.5	9665.7	9670.9	9676.1	9681.4	9686.6	9691.8	5.23	2466
2465	9592.7	9597.9	9603.1	9608.3	9613.5	9618.7	9623.9	9629.2	9634.4	9639.6	5.21	2465
2464	9540.8	9546.0	9551.2	9556.3	9561.5	9566.7	9571.9	9577.1	9582.3	9587.5	5.19	2464
2463	9489.0	9494.2	9499.4	9504.5	9509.7	9514.9	9520.1	9525.2	9530.4	9535.6	5.18	2463
2462	9437.4	9442.6	9447.8	9452.9	9458.1	9463.2	9468.4	9473.5	9478.7	9483.9	5.16	2462
2461	9386.0	9391.2	9396.3	9401.4	9406.6	9411.7	9416.9	9422.0	9427.1	9432.3	5.14	2461
2460	9334.8	9339.9	9345.0	9350.1	9355.3	9360.4	9365.5	9370.6	9375.8	9380.9	5.13	2460
2459	9283.7	9288.8	9293.9	9299.0	9304.1	9309.2	9314.3	9319.4	9324.5	9329.7	5.11	2459
2458	9232.8	9237.9	9242.9	9248.0	9253.1	9258.2	9263.3	9268.4	9273.5	9278.6	5.09	2458
2457	9182.0	9187.1	9192.2	9197.2	9202.3	9207.4	9212.4	9217.5	9222.6	9227.7	5.08	2457
2456	9131.4	9136.5	9141.5	9146.6	9151.6	9156.7	9161.8	9166.8	9171.9	9177.0	5.06	2456
2455	9081.0	9086.1	9091.1	9096.1	9101.2	9106.2	9111.2	9116.3	9121.3	9126.4	5.04	2455
2454	9030.8	9035.8	9040.8	9045.8	9050.8	9055.9	9060.9	9065.9	9071.0	9076.0	5.02	2454
2453	8980.7	8985.7	8990.7	8995.7	9000.7	9005.7	9010.7	9015.7	9020.7	9025.8	5.01	2453
2452	8930.8	8935.8	8940.7	8945.7	8950.7	8955.7	8960.7	8965.7	8970.7	8975.7	4.99	2452
2451	8881.0	8886.0	8891.0	8895.9	8900.9	8905.9	8910.9	8915.8	8920.8	8925.8	4.97	2451
2450	8831.4	8836.4	8841.3	8846.3	8851.3	8856.2	8861.2	8866.1	8871.1	8876.1	4.96	2450
2449	8782.0	8787.0	8791.9	8796.8	8801.6	8806.7	8811.7	8816.6	8821.5	8826.5	4.94	2449
2448	8732.8	8737.7	8742.6	8747.5	8752.5	8757.4	8762.3	8767.2	8772.2	8777.1	4.92	2448
2447	8683.7	8688.6	8693.5	8698.4	8703.3	8708.2	8713.1	8718.0	8722.9	8727.9	4.91	2447
2446	8634.6	8639.7	8644.6	8649.4	8654.3	8659.2	8664.1	8669.0	8673.9	8678.8	4.89	2446
2445	8586.0	8590.9	8595.8	8600.6	8605.5	8610.4	8615.3	8620.1	8625.0	8629.9	4.87	2445
2444	8537.5	8542.3	8547.2	8552.0	8556.9	8561.7	8566.6	8571.4	8576.3	8581.2	4.86	2444
2443	8489.1	8493.9	8498.7	8503.6	8508.4	8513.2	8518.1	8522.9	8527.8	8532.6	4.84	2443
2442	8440.8	8445.6	8450.4	8455.3	8460.1	8464.9	8469.7	8474.6	8479.4	8484.2	4.82	2442
2441	8392.7	8397.5	8402.3	8407.1	8411.9	8416.7	8421.6	8426.4	8431.2	8436.0	4.81	2441
2440	8344.8	8349.6	8354.4	8359.2	8364.0	8368.8	8373.5	8378.3	8383.1	8387.9	4.79	2440
2439	8297.1	8301.8	8306.6	8311.4	8316.2	8320.9	8325.7	8330.5	8335.3	8340.0	4.77	2439
2438	8249.5	8254.2	8259.0	8263.8	8268.5	8273.3	8278.0	8282.8	8287.5	8292.3	4.76	2438
2437	8202.1	8206.8	8211.6	8216.3	8221.0	8225.8	8230.5	8235.3	8240.0	8244.8	4.74	2437
2436	8154.8	8159.6	8164.3	8169.0	8173.7	8178.4	8183.2	8187.9	8192.6	8197.4	4.72	2436

BCH - CIVIL INSPECTION DEPARTMENT
MARCH 25, 1974

EXHIBIT 15
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MC NAUGHTON LAKE
STORAGE ABOVE ELEVATION 1865
IN 1000 S.F.D.

LAKE ELEVATION IN FEET	TENTHS OF FEET 0	1	2	3	4	5	6	7	8	9	AVERAGE DIFFERENCE PER TENTH	LAKE ELEVATION IN FEET
2435	8107.8	8112.5	8117.2	8121.9	8126.6	8131.3	8136.0	8140.7	8145.4	8150.1	4.71	2435
2434	8060.9	8065.5	8070.2	8074.9	8079.6	8084.3	8089.0	8093.7	8098.4	8103.1	4.69	2434
2433	8014.1	8018.8	8023.4	8028.1	8032.8	8037.5	8042.1	8046.8	8051.5	8056.2	4.67	2433
2432	7967.5	7972.2	7976.8	7981.5	7986.2	7990.8	7995.5	8000.1	8004.8	8009.4	4.66	2432
2431	7921.1	7925.8	7930.4	7935.0	7939.7	7944.3	7949.0	7953.6	7958.2	7962.9	4.64	2431
2430	7874.9	7879.5	7884.1	7888.7	7893.4	7898.0	7902.6	7907.2	7911.9	7916.5	4.62	2430
2429	7828.8	7833.4	7838.0	7842.6	7847.2	7851.8	7856.4	7861.1	7865.7	7870.3	4.61	2429
2428	7782.9	7787.5	7792.1	7796.7	7801.3	7805.8	7810.4	7815.0	7819.6	7824.2	4.59	2428
2427	7737.2	7741.7	7746.3	7750.9	7755.4	7760.0	7764.6	7769.2	7773.7	7778.3	4.57	2427
2426	7691.6	7696.1	7700.7	7705.2	7709.8	7714.4	7718.9	7723.5	7728.0	7732.6	4.56	2426
2425	7646.2	7650.7	7655.3	7659.8	7664.3	7668.9	7673.4	7677.9	7682.5	7687.0	4.54	2425
2424	7600.9	7605.5	7610.0	7614.5	7619.0	7623.5	7628.1	7632.6	7637.1	7641.6	4.52	2424
2423	7555.9	7560.4	7564.9	7569.4	7573.9	7578.4	7582.9	7587.4	7591.9	7596.4	4.51	2423
2422	7511.0	7515.4	7519.9	7524.4	7528.9	7533.4	7537.9	7542.4	7546.9	7551.4	4.49	2422
2421	7466.2	7470.7	7475.2	7479.6	7484.1	7488.6	7493.0	7497.5	7502.0	7506.5	4.47	2421
2420	7421.6	7426.1	7430.5	7435.0	7439.4	7443.9	7448.4	7452.8	7457.3	7461.8	4.46	2420
2419	7377.2	7381.7	7386.1	7390.5	7395.0	7399.4	7403.9	7408.3	7412.7	7417.2	4.44	2419
2418	7333.0	7337.4	7341.8	7346.2	7350.7	7355.1	7359.5	7363.9	7368.4	7372.8	4.42	2418
2417	7288.9	7293.3	7297.7	7302.1	7306.5	7310.9	7315.3	7319.8	7324.2	7328.6	4.41	2417
2416	7245.0	7249.4	7253.8	7258.2	7262.6	7266.9	7271.3	7275.7	7280.1	7284.5	4.39	2416
2415	7201.3	7205.6	7210.0	7214.4	7218.7	7223.1	7227.5	7231.9	7236.2	7240.6	4.37	2415
2414	7157.7	7162.0	7166.4	7170.7	7175.1	7179.5	7183.8	7188.2	7192.5	7196.9	4.36	2414
2413	7114.3	7118.6	7122.9	7127.3	7131.6	7136.0	7140.3	7144.7	7149.0	7153.3	4.34	2413
2412	7071.0	7075.4	7079.7	7084.0	7088.3	7092.6	7097.0	7101.3	7105.6	7109.9	4.32	2412
2411	7028.0	7032.3	7036.6	7040.9	7045.2	7049.5	7053.8	7058.1	7062.4	7066.7	4.31	2411
2410	6985.1	6989.3	6993.6	6997.9	7002.2	7006.5	7010.8	7015.1	7019.4	7023.7	4.29	2410
2409	6942.3	6946.6	6950.8	6955.1	6959.4	6963.7	6967.9	6972.2	6976.5	6980.8	4.27	2409
2408	6899.7	6904.0	6908.2	6912.5	6916.7	6921.0	6925.3	6929.5	6933.8	6938.0	4.26	2408
2407	6857.3	6861.6	6865.8	6870.0	6874.3	6878.5	6882.8	6887.0	6891.2	6895.5	4.24	2407
2406	6815.1	6819.3	6823.5	6827.7	6832.0	6836.2	6840.4	6844.6	6848.9	6853.1	4.22	2406
2405	6773.0	6777.2	6781.4	6785.6	6789.8	6794.0	6798.2	6802.4	6806.7	6810.9	4.21	2405
2404	6731.1	6735.3	6739.5	6743.7	6747.8	6752.0	6756.2	6760.4	6764.6	6768.8	4.19	2404
2403	6689.4	6693.5	6697.7	6701.9	6706.0	6710.2	6714.4	6718.6	6722.7	6726.9	4.17	2403
2402	6647.8	6651.9	6656.1	6660.2	6664.4	6668.5	6672.7	6676.9	6681.0	6685.2	4.16	2402
2401	6606.4	6610.5	6614.6	6618.8	6622.9	6627.0	6631.2	6635.3	6639.5	6643.6	4.14	2401
2400	6565.1	6569.2	6573.4	6577.5	6581.6	6585.7	6589.8	6594.0	6598.1	6602.2	4.12	2400
2399	6524.1	6528.1	6532.2	6536.3	6540.4	6544.5	6548.6	6552.8	6556.9	6561.0	4.11	2399
2398	6483.4	6487.4	6491.5	6495.5	6499.6	6503.7	6507.7	6511.8	6515.9	6520.0	4.07	2398
2397	6443.0	6447.0	6451.0	6455.1	6459.1	6463.1	6467.2	6471.2	6475.3	6479.3	4.03	2397
2396	6403.0	6407.0	6411.0	6415.0	6419.0	6423.0	6427.0	6431.0	6435.0	6439.0	4.00	2396

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LAKE ELEVATION IN FEET	TENTHS OF FEET 0	1	2	3	4	5	6	7	8	9	AVERAGE DIFFERENCE PER TENTH	LAKE ELEVATION IN FEET
2395	6363.4	6367.3	6371.3	6375.2	6379.2	6383.1	6387.1	6391.1	6395.1	6399.0	3.96	2395
2394	6324.1	6328.0	6331.9	6335.8	6339.7	6343.7	6347.6	6351.5	6355.5	6359.4	3.93	2394
2393	6285.1	6289.0	6292.9	6296.7	6300.6	6304.5	6308.4	6312.3	6316.2	6320.1	3.90	2393
2392	6246.4	6250.3	6254.1	6258.0	6261.9	6265.7	6269.6	6273.5	6277.3	6281.2	3.86	2392
2391	6208.1	6211.9	6215.8	6219.6	6223.4	6227.2	6231.1	6234.9	6238.8	6242.6	3.83	2391
2390	6170.1	6173.9	6177.7	6181.5	6185.3	6189.1	6192.9	6196.7	6200.5	6204.3	3.80	2390
2389	6132.4	6136.2	6140.0	6143.7	6147.5	6151.2	6155.0	6158.8	6162.6	6166.3	3.77	2389
2388	6095.1	6098.8	6102.5	6106.3	6110.0	6113.7	6117.5	6121.2	6124.9	6128.7	3.74	2388
2387	6058.0	6061.7	6065.4	6069.1	6072.8	6076.5	6080.2	6083.9	6087.6	6091.4	3.71	2387
2386	6021.2	6024.9	6028.6	6032.2	6035.9	6039.6	6043.3	6046.9	6050.6	6054.3	3.68	2386
2385	5984.8	5988.4	5992.0	5995.7	5999.3	6003.0	6006.6	6010.3	6013.9	6017.6	3.65	2385
2384	5948.6	5952.2	5955.8	5959.4	5963.0	5966.6	5970.3	5973.9	5977.5	5981.1	3.62	2384
2383	5912.7	5916.3	5919.8	5923.4	5927.0	5930.6	5934.2	5937.8	5941.4	5945.0	3.59	2383
2382	5877.1	5880.6	5884.2	5887.7	5891.3	5894.8	5898.4	5902.0	5905.5	5909.1	3.56	2382
2381	5841.7	5845.2	5848.8	5852.3	5855.8	5859.4	5862.9	5866.4	5870.0	5873.5	3.53	2381
2380	5806.7	5810.1	5813.6	5817.1	5820.6	5824.2	5827.7	5831.2	5834.7	5838.2	3.51	2380
2379	5771.9	5775.3	5778.8	5782.3	5785.7	5789.2	5792.7	5796.2	5799.7	5803.2	3.48	2379
2378	5737.3	5740.8	5744.2	5747.6	5751.1	5754.5	5758.0	5761.5	5764.9	5768.4	3.45	2378
2377	5703.0	5706.4	5709.9	5713.3	5716.7	5720.1	5723.6	5727.0	5730.4	5733.9	3.43	2377
2376	5669.0	5672.4	5675.8	5679.2	5682.6	5686.0	5689.4	5692.8	5696.2	5699.6	3.40	2376
2375	5635.2	5638.6	5642.0	5645.3	5648.7	5652.1	5655.5	5658.8	5662.2	5665.6	3.38	2375
2374	5601.7	5605.0	5608.4	5611.7	5615.1	5618.4	5621.8	5625.1	5628.5	5631.9	3.35	2374
2373	5568.4	5571.7	5575.0	5578.4	5581.7	5585.0	5588.3	5591.7	5595.0	5598.3	3.33	2373
2372	5535.3	5538.6	5541.9	5545.2	5548.5	5551.8	5555.1	5558.5	5561.8	5565.1	3.31	2372
2371	5502.5	5505.8	5509.1	5512.3	5515.6	5518.9	5522.2	5525.5	5528.8	5532.0	3.28	2371
2370	5469.9	5473.2	5476.4	5479.7	5482.9	5486.2	5489.5	5492.7	5496.0	5499.2	3.26	2370
2369	5437.6	5440.8	5444.0	5447.2	5450.5	5453.7	5456.9	5460.2	5463.4	5466.7	3.24	2369
2368	5405.4	5408.6	5411.8	5415.0	5418.2	5421.4	5424.7	5427.9	5431.1	5434.3	3.21	2368
2367	5373.5	5376.7	5379.8	5383.0	5386.2	5389.4	5392.6	5395.8	5399.0	5402.2	3.19	2367
2366	5341.7	5344.9	5348.1	5351.2	5354.4	5357.6	5360.8	5363.9	5367.1	5370.3	3.17	2366
2365	5310.2	5313.4	5316.5	5319.7	5322.8	5326.0	5329.1	5332.3	5335.4	5338.6	3.15	2365
2364	5278.9	5282.0	5285.2	5288.3	5291.4	5294.6	5297.7	5300.8	5304.0	5307.1	3.13	2364
2363	5247.8	5250.9	5254.0	5257.1	5260.2	5263.3	5266.5	5269.6	5272.7	5275.8	3.11	2363
2362	5216.9	5220.0	5223.1	5226.2	5229.3	5232.3	5235.4	5238.5	5241.6	5244.7	3.09	2362
2361	5186.2	5189.3	5192.3	5195.4	5198.5	5201.5	5204.6	5207.7	5210.8	5213.8	3.07	2361
2360	5155.7	5158.7	5161.8	5164.8	5167.9	5170.9	5174.0	5177.0	5180.1	5183.1	3.05	2360
2359	5125.3	5128.4	5131.4	5134.4	5137.4	5140.5	5143.5	5146.6	5149.6	5152.6	3.03	2359
2358	5095.2	5098.2	5101.2	5104.2	5107.2	5110.2	5113.3	5116.3	5119.3	5122.3	3.02	2358
2357	5065.2	5068.2	5071.2	5074.2	5077.2	5080.2	5083.2	5086.2	5089.2	5092.2	3.00	2357
2356	5035.4	5038.4	5041.4	5044.3	5047.3	5050.3	5053.3	5056.2	5059.2	5062.2	2.98	2356

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LAKE ELEVATION IN FEET	TENTHS OF FEET										AVERAGE DIFFERENCE PER TENTH	LAKE ELEVATION IN FEET
	0	1	2	3	4	5	6	7	8	9		
2355	5005.8	5008.7	5011.7	5014.7	5017.6	5020.6	5023.5	5026.5	5029.5	5032.4	2.96	2355
2354	4976.3	4979.3	4982.2	4985.1	4988.1	4991.0	4994.0	4996.9	4999.9	5002.8	2.95	2354
2353	4947.0	4950.0	4952.9	4955.8	4958.7	4961.7	4964.6	4967.5	4970.5	4973.4	2.93	2353
2352	4917.9	4920.8	4923.7	4926.6	4929.5	4932.4	4935.4	4938.3	4941.2	4944.1	2.91	2352
2351	4888.9	4891.8	4894.7	4897.6	4900.5	4903.4	4906.3	4909.2	4912.1	4915.0	2.90	2351
2350	4860.1	4863.0	4865.9	4868.8	4871.6	4874.5	4877.4	4880.3	4883.2	4886.1	2.88	2350
2349	4831.5	4834.3	4837.2	4840.1	4842.9	4845.8	4848.6	4851.5	4854.4	4857.3	2.87	2349
2348	4803.0	4805.8	4808.7	4811.5	4814.3	4817.2	4820.1	4822.9	4825.8	4828.6	2.85	2348
2347	4774.6	4777.4	4780.3	4783.1	4785.9	4788.8	4791.6	4794.4	4797.3	4800.1	2.84	2347
2346	4746.4	4749.2	4752.0	4754.8	4757.7	4760.5	4763.3	4766.1	4768.9	4771.8	2.82	2346
2345	4718.3	4721.1	4723.9	4726.7	4729.5	4732.3	4735.1	4738.0	4740.8	4743.6	2.81	2345
2344	4690.4	4693.2	4696.0	4698.7	4701.5	4704.3	4707.1	4709.9	4712.7	4715.5	2.79	2344
2343	4662.6	4665.4	4668.1	4670.9	4673.7	4676.5	4679.2	4682.0	4684.8	4687.6	2.78	2343
2342	4634.9	4637.7	4640.4	4643.2	4646.0	4648.7	4651.5	4654.3	4657.0	4659.8	2.77	2342
2341	4607.4	4610.1	4612.9	4615.6	4618.4	4621.1	4623.9	4626.6	4629.4	4632.2	2.75	2341
2340	4580.0	4582.7	4585.4	4588.2	4590.9	4593.7	4596.4	4599.1	4601.9	4604.6	2.74	2340
2339	4552.7	4555.4	4558.1	4560.8	4563.6	4566.3	4569.0	4571.8	4574.5	4577.2	2.73	2339
2338	4525.4	4528.1	4530.9	4533.6	4536.3	4539.0	4541.7	4544.5	4547.2	4549.9	2.72	2338
2337	4498.3	4501.0	4503.7	4506.4	4509.1	4511.8	4514.5	4517.3	4520.0	4522.7	2.72	2337
2336	4471.2	4473.9	4476.6	4479.3	4482.0	4484.7	4487.4	4490.1	4492.8	4495.5	2.71	2336
2335	4444.1	4446.8	4449.5	4452.2	4454.9	4457.6	4460.3	4463.1	4465.8	4468.5	2.70	2335
2334	4417.2	4419.9	4422.6	4425.3	4428.0	4430.7	4433.4	4436.1	4438.8	4441.4	2.69	2334
2333	4390.3	4393.0	4395.7	4398.4	4401.1	4403.8	4406.5	4409.1	4411.8	4414.5	2.69	2333
2332	4363.6	4366.2	4368.9	4371.6	4374.3	4376.9	4379.6	4382.3	4385.0	4387.7	2.68	2332
2331	4336.8	4339.5	4342.2	4344.9	4347.5	4350.2	4352.9	4355.5	4358.2	4360.9	2.67	2331
2330	4310.2	4312.9	4315.5	4318.2	4320.9	4323.5	4326.2	4328.8	4331.5	4334.2	2.66	2330
2329	4283.6	4286.3	4289.0	4291.6	4294.3	4296.9	4299.6	4302.2	4304.9	4307.6	2.66	2329
2328	4257.2	4259.8	4262.5	4265.1	4267.8	4270.4	4273.0	4275.7	4278.3	4281.0	2.65	2328
2327	4230.8	4233.4	4236.0	4238.7	4241.3	4244.0	4246.6	4249.2	4251.9	4254.5	2.64	2327
2326	4204.4	4207.1	4209.7	4212.3	4215.0	4217.6	4220.2	4222.9	4225.5	4228.1	2.63	2326
2325	4178.2	4180.8	4183.4	4186.1	4188.7	4191.3	4193.9	4196.6	4199.2	4201.8	2.62	2325
2324	4152.0	4154.6	4157.2	4159.9	4162.5	4165.1	4167.7	4170.3	4172.9	4175.6	2.62	2324
2323	4125.9	4128.5	4131.1	4133.7	4136.3	4139.0	4141.6	4144.2	4146.8	4149.4	2.61	2323
2322	4099.9	4102.5	4105.1	4107.7	4110.3	4112.9	4115.5	4118.1	4120.7	4123.3	2.60	2322
2321	4074.0	4076.6	4079.1	4081.7	4084.3	4086.9	4089.5	4092.1	4094.7	4097.3	2.59	2321
2320	4048.1	4050.7	4053.3	4055.9	4058.4	4061.0	4063.6	4066.2	4068.8	4071.4	2.59	2320
2319	4022.3	4024.9	4027.5	4030.1	4032.6	4035.2	4037.8	4040.4	4042.9	4045.5	2.58	2319
2318	3996.6	3999.2	4001.8	4004.3	4006.9	4009.5	4012.0	4014.6	4017.2	4019.8	2.57	2318
2317	3971.0	3973.6	3976.1	3978.7	3981.3	3983.8	3986.4	3988.9	3991.5	3994.1	2.56	2317
2316	3945.5	3948.0	3950.6	3953.1	3955.7	3958.2	3960.8	3963.4	3965.9	3968.5	2.55	2316

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LIBBY
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ELEV FEET	TENTHS OF FEET .0	.1	.2	.3	.4	.5	.6	.7	.8	.9
2459.0	2487.3	2489.7	2492.0	2494.4	2496.7	2499.1	2501.4	2503.8	2506.1	2508.5
2458.0	2463.9	2466.3	2468.6	2470.9	2473.3	2475.6	2478.0	2480.3	2482.6	2485.0
2457.0	2440.7	2443.0	2445.3	2447.6	2450.0	2452.3	2454.6	2456.9	2459.3	2461.6
2456.0	2417.5	2419.8	2422.1	2424.5	2426.8	2429.1	2431.4	2433.7	2436.0	2438.4
2455.0	2394.5	2396.8	2399.1	2401.4	2403.7	2406.0	2408.3	2410.6	2412.9	2415.2
2454.0	2371.6	2373.9	2376.2	2378.4	2380.7	2383.0	2385.3	2387.6	2389.9	2392.2
2453.0	2348.8	2351.1	2353.3	2355.6	2357.9	2360.2	2362.5	2364.7	2367.0	2369.3
2452.0	2326.1	2328.4	2330.6	2332.9	2335.2	2337.4	2339.7	2342.0	2344.2	2346.5
2451.0	2303.6	2305.8	2308.1	2310.3	2312.6	2314.8	2317.1	2319.3	2321.6	2323.9
2450.0	2281.1	2283.3	2285.6	2287.8	2290.1	2292.3	2294.6	2296.8	2299.1	2301.3
2449.0	2258.8	2261.0	2263.2	2265.5	2267.7	2269.9	2272.2	2274.4	2276.6	2278.9
2448.0	2236.6	2238.8	2241.0	2243.2	2245.5	2247.7	2249.9	2252.1	2254.3	2256.6
2447.0	2214.5	2216.7	2218.9	2221.1	2223.3	2225.5	2227.8	2230.0	2232.2	2234.4
2446.0	2192.6	2194.8	2197.0	2199.2	2201.4	2203.5	2205.7	2207.9	2210.1	2212.3
2445.0	2170.8	2173.0	2175.1	2177.3	2179.5	2181.7	2183.8	2186.0	2188.2	2190.4
2444.0	2149.1	2151.3	2153.4	2155.6	2157.8	2159.9	2162.1	2164.3	2166.4	2168.6
2443.0	2127.5	2129.7	2131.8	2134.0	2136.1	2138.3	2140.4	2142.6	2144.8	2146.9
2442.0	2106.1	2108.2	2110.4	2112.5	2114.7	2116.8	2118.9	2121.1	2123.2	2125.4
2441.0	2084.8	2086.9	2089.0	2091.2	2093.3	2095.4	2097.6	2099.7	2101.8	2104.0
2440.0	2063.6	2065.7	2067.8	2069.9	2072.1	2074.2	2076.3	2078.4	2080.5	2082.7
2439.0	2042.5	2044.6	2046.7	2048.8	2050.9	2053.0	2055.2	2057.3	2059.4	2061.5
2438.0	2021.6	2023.7	2025.8	2027.8	2029.9	2032.0	2034.1	2036.2	2038.3	2040.4
2437.0	2000.7	2002.8	2004.9	2007.0	2009.0	2011.1	2013.2	2015.3	2017.4	2019.5
2436.0	1980.0	1982.1	1984.1	1986.2	1988.3	1990.3	1992.4	1994.5	1996.6	1998.6
2435.0	1959.4	1961.4	1963.5	1965.5	1967.6	1969.7	1971.7	1973.8	1975.9	1977.9
2434.0	1938.9	1940.9	1943.0	1945.0	1947.0	1949.1	1951.1	1953.2	1955.3	1957.3
2433.0	1918.5	1920.5	1922.5	1924.6	1926.6	1928.6	1930.7	1932.7	1934.8	1936.8
2432.0	1898.2	1900.2	1902.2	1904.2	1906.3	1908.3	1910.3	1912.4	1914.4	1916.4
2431.0	1878.0	1880.0	1882.0	1884.0	1886.0	1888.1	1890.1	1892.1	1894.1	1896.1
2430.0	1857.9	1859.9	1861.9	1863.9	1865.9	1867.9	1869.9	1872.0	1874.0	1876.0
2429.0	1838.0	1839.9	1841.9	1843.9	1845.9	1847.9	1849.9	1851.9	1853.9	1855.9
2428.0	1818.1	1820.1	1822.1	1824.0	1826.0	1828.0	1830.0	1832.0	1834.0	1836.0
2427.0	1798.4	1800.3	1802.3	1804.3	1806.3	1808.2	1810.2	1812.2	1814.2	1816.1

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TENTHS OF FEET

ELEV FEET	.0	.1	.2	.3	.4	.5	.6	.7	.8	.9
2426.0	1778.7	1780.7	1782.7	1784.6	1786.6	1788.5	1790.5	1792.5	1794.4	1796.4
2425.0	1759.2	1761.2	1763.1	1765.1	1767.0	1769.0	1770.9	1772.9	1774.8	1776.8
2424.0	1739.8	1741.8	1743.7	1745.6	1747.6	1749.5	1751.5	1753.4	1755.3	1757.3
2423.0	1720.5	1722.5	1724.4	1726.3	1728.2	1730.2	1732.1	1734.0	1736.0	1737.9
2422.0	1701.4	1703.3	1705.2	1707.1	1709.0	1710.9	1712.9	1714.8	1716.7	1718.6
2421.0	1682.3	1684.2	1686.1	1688.0	1689.9	1691.8	1693.7	1695.6	1697.5	1699.5
2420.0	1663.3	1665.2	1667.1	1669.0	1670.9	1672.8	1674.7	1676.6	1678.5	1680.4
2419.0	1644.5	1646.4	1648.2	1650.1	1652.0	1653.9	1655.8	1657.7	1659.6	1661.4
2418.0	1625.7	1627.6	1629.5	1631.4	1633.2	1635.1	1637.0	1638.9	1640.7	1642.6
2417.0	1607.1	1609.0	1610.8	1612.7	1614.6	1616.4	1618.3	1620.1	1622.0	1623.9
2416.0	1588.6	1590.5	1592.3	1594.1	1596.0	1597.8	1599.7	1601.6	1603.4	1605.3
2415.0	1570.2	1572.0	1573.9	1575.7	1577.6	1579.4	1581.2	1583.1	1584.9	1586.8
2414.0	1551.9	1553.7	1555.6	1557.4	1559.2	1561.0	1562.9	1564.7	1566.5	1568.4
2413.0	1533.7	1535.5	1537.4	1539.2	1541.0	1542.8	1544.6	1546.4	1548.3	1550.1
2412.0	1515.7	1517.5	1519.3	1521.1	1522.9	1524.7	1526.5	1528.3	1530.1	1531.9
2411.0	1497.7	1499.5	1501.3	1503.1	1504.9	1506.7	1508.5	1510.3	1512.1	1513.9
2410.0	1479.8	1481.6	1483.4	1485.2	1487.0	1488.8	1490.5	1492.3	1494.1	1495.9
2409.0	1462.1	1463.9	1465.6	1467.4	1469.2	1471.0	1472.7	1474.5	1476.3	1478.1
2408.0	1444.5	1446.2	1448.0	1449.7	1451.5	1453.3	1455.0	1456.8	1458.6	1460.3
2407.0	1426.9	1428.7	1430.4	1432.2	1433.9	1435.7	1437.4	1439.2	1440.9	1442.7
2406.0	1409.5	1411.2	1413.0	1414.7	1416.5	1418.2	1420.0	1421.7	1423.4	1425.2
2405.0	1392.2	1393.9	1395.7	1397.4	1399.1	1400.8	1402.6	1404.3	1406.0	1407.8
2404.0	1375.0	1376.7	1378.4	1380.1	1381.9	1383.6	1385.3	1387.0	1388.7	1390.5
2403.0	1357.9	1359.6	1361.3	1363.0	1364.7	1366.4	1368.1	1369.8	1371.6	1373.3
2402.0	1340.9	1342.6	1344.3	1346.0	1347.7	1349.4	1351.1	1352.8	1354.5	1356.2
2401.0	1324.0	1325.7	1327.4	1329.0	1330.7	1332.4	1334.1	1335.8	1337.5	1339.2
2400.0	1307.2	1308.9	1310.5	1312.2	1313.9	1315.6	1317.3	1318.9	1320.6	1322.3
2399.0	1290.5	1292.2	1293.8	1295.5	1297.2	1298.8	1300.5	1302.2	1303.8	1305.5
2398.0	1273.9	1275.6	1277.2	1278.9	1280.5	1282.2	1283.9	1285.5	1287.2	1288.8
2397.0	1257.4	1259.1	1260.7	1262.4	1264.0	1265.7	1267.3	1269.0	1270.6	1272.3
2396.0	1241.1	1242.7	1244.3	1246.0	1247.6	1249.2	1250.9	1252.5	1254.1	1255.8
2395.0	1224.8	1226.4	1228.0	1229.6	1231.3	1232.9	1234.5	1236.2	1237.8	1239.4
2394.0	1208.6	1210.2	1211.8	1213.4	1215.1	1216.7	1218.3	1219.9	1221.5	1223.2
2393.0	1192.5	1194.1	1195.7	1197.3	1198.9	1200.5	1202.1	1203.8	1205.4	1207.0
2392.0	1176.5	1178.1	1179.7	1181.3	1182.9	1184.5	1186.1	1187.7	1189.3	1190.9

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ELEV FEET	TENTHS OF FEET .0	.1	.2	.3	.4	.5	.6	.7	.8	.9
2391.0	1160.7	1162.2	1163.8	1165.4	1167.0	1168.6	1170.2	1171.8	1173.3	1174.9
2390.0	1144.9	1146.4	1148.0	1149.6	1151.2	1152.8	1154.3	1155.9	1157.5	1159.1
2389.0	1129.2	1130.8	1132.3	1133.9	1135.5	1137.0	1138.6	1140.2	1141.7	1143.3
2388.0	1113.6	1115.2	1116.7	1118.3	1119.8	1121.4	1123.0	1124.5	1126.1	1127.6
2387.0	1098.1	1099.7	1101.2	1102.8	1104.3	1105.9	1107.4	1109.0	1110.5	1112.1
2386.0	1082.8	1084.3	1085.8	1087.4	1088.9	1090.4	1092.0	1093.5	1095.1	1096.6
2385.0	1067.5	1069.0	1070.5	1072.1	1073.6	1075.1	1076.6	1078.2	1079.7	1081.2
2384.0	1052.3	1053.8	1055.4	1056.9	1058.4	1059.9	1061.4	1062.9	1064.5	1066.0
2383.0	1037.3	1038.8	1040.3	1041.8	1043.3	1044.8	1046.3	1047.8	1049.3	1050.8
2382.0	1022.3	1023.8	1025.3	1026.8	1028.3	1029.8	1031.3	1032.8	1034.3	1035.8
2381.0	1007.4	1008.9	1010.4	1011.9	1013.4	1014.8	1016.3	1017.8	1019.3	1020.8
2380.0	992.6	994.1	995.6	997.1	998.5	1000.0	1001.5	1003.0	1004.5	1005.9
2379.0	978.0	979.4	980.9	982.4	983.8	985.3	986.8	988.2	989.7	991.2
2378.0	963.4	964.9	966.3	967.8	969.2	970.7	972.1	973.6	975.0	976.5
2377.0	948.9	950.4	951.8	953.3	954.7	956.2	957.6	969.1	960.5	962.0
2376.0	934.6	936.0	937.4	938.9	940.3	941.7	943.2	944.6	946.1	947.5
2375.0	920.3	921.7	923.2	924.6	926.0	927.4	928.9	930.3	931.7	933.1
2374.0	906.1	907.6	909.0	910.4	911.8	913.2	914.6	916.0	917.5	918.9
2373.0	892.1	893.5	894.9	896.3	897.7	899.1	900.5	901.9	903.3	904.7
2372.0	878.1	879.5	880.9	882.3	883.7	885.1	886.5	887.9	889.3	890.7
2371.0	864.3	865.6	867.0	868.4	869.8	871.2	872.6	874.0	875.3	876.7
2370.0	850.5	851.9	853.2	854.6	856.0	857.4	858.7	860.1	861.5	862.9
2369.0	836.8	838.2	839.6	840.9	842.3	843.7	845.0	846.4	847.8	849.1
2368.0	823.3	824.6	826.0	827.3	828.7	830.0	831.4	832.8	834.1	835.5
2367.0	809.8	811.2	812.5	813.8	815.2	816.5	817.9	819.2	820.6	821.9
2366.0	796.5	797.8	799.1	800.5	801.8	803.1	804.5	805.8	807.1	808.5
2365.0	783.2	784.5	785.8	787.2	788.5	789.8	791.1	792.5	793.8	795.1
2364.0	770.1	771.4	772.7	774.0	775.3	776.6	777.9	779.2	780.6	781.9
2363.0	757.0	758.3	759.6	760.9	762.2	763.5	764.8	766.1	767.4	768.7
2362.0	744.0	745.3	746.6	747.9	749.2	750.5	751.8	753.1	754.4	755.7
2361.0	731.2	732.5	733.8	735.0	736.3	737.6	738.9	740.2	741.5	742.8
2360.0	718.4	719.7	721.0	722.3	723.5	724.8	726.1	727.4	728.6	729.9
2359.0	705.8	707.0	708.3	709.6	710.8	712.1	713.4	714.6	715.9	717.2
2358.0	693.2	694.5	695.7	697.0	698.2	699.5	700.7	702.0	703.3	704.5
2357.0	680.8	682.0	683.2	684.5	685.7	687.0	688.2	689.5	690.7	692.0

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ELEV FEET	TENTHS OF FEET .01	.1	.2	.3	.4	.5	.6	.7	.8	.9
2356.0	668.4	669.6	670.9	672.1	673.3	674.6	675.8	677.0	678.3	679.5
2355.0	656.1	657.3	658.6	659.8	661.0	662.2	663.5	664.7	665.9	667.2
2354.0	643.9	645.2	646.4	647.6	648.8	650.0	651.2	652.5	653.7	654.9
2353.0	631.9	633.1	634.3	635.5	636.7	637.9	639.1	640.3	641.5	642.7
2352.0	619.9	621.1	622.3	623.5	624.7	625.9	627.1	628.3	629.5	630.7
2351.0	608.0	609.2	610.4	611.6	612.7	613.9	615.1	616.3	617.5	618.7
2350.0	596.2	597.4	598.6	599.7	600.9	602.1	603.3	604.5	605.6	606.8
2349.0	584.5	585.7	586.8	588.0	589.2	590.3	591.5	592.7	593.9	595.0
2348.0	572.9	574.0	575.2	576.4	577.5	578.7	579.8	581.0	582.2	583.3
2347.0	561.3	562.5	563.6	564.8	565.9	567.1	568.2	569.4	570.6	571.7
2346.0	549.9	551.0	552.2	553.3	554.4	555.6	556.7	557.9	559.0	560.2
2345.0	538.5	539.6	540.8	541.9	543.0	544.2	545.3	546.4	547.6	548.7
2344.0	527.2	528.3	529.4	530.6	531.7	532.8	534.0	535.1	536.2	537.4
2343.0	516.0	517.1	518.2	519.3	520.4	521.6	522.7	523.8	524.9	526.1
2342.0	504.8	505.9	507.1	508.2	509.3	510.4	511.5	512.6	513.7	514.9
2341.0	493.8	494.9	496.0	497.1	498.2	499.3	500.4	501.5	502.6	503.7
2340.0	482.8	483.9	485.0	486.1	487.2	488.3	489.4	490.5	491.6	492.7
2339.0	471.9	473.0	474.1	475.2	476.2	477.3	478.4	479.5	480.6	481.7
2338.0	461.1	462.1	463.2	464.3	465.4	466.5	467.6	468.6	469.7	470.8
2337.0	450.3	451.4	452.5	453.5	454.6	455.7	456.8	457.8	458.9	460.0
2336.0	439.6	440.7	441.8	442.8	443.9	445.0	446.0	447.1	448.2	449.2
2335.0	429.0	430.1	431.2	432.2	433.3	434.3	435.4	436.5	437.5	438.6
2334.0	418.5	419.6	420.6	421.7	422.7	423.8	424.8	425.9	426.9	428.0
2333.0	408.1	409.1	410.2	411.2	412.2	413.3	414.3	415.4	416.4	417.5
2332.0	397.7	398.7	399.8	400.8	401.8	402.9	403.9	405.0	406.0	407.0
2331.0	387.4	388.4	389.5	390.5	391.5	392.5	393.6	394.6	395.6	396.7
2330.0	377.2	378.2	379.2	380.2	381.3	382.3	383.3	384.3	385.4	386.4
2329.0	367.0	368.1	369.1	370.1	371.1	372.1	373.1	374.1	375.2	376.2
2328.0	357.0	358.0	359.0	360.0	361.0	362.0	363.0	364.0	365.0	366.0
2327.0	347.0	348.0	349.0	350.0	351.0	352.0	353.0	354.0	355.0	356.0
2326.0	337.0	338.0	339.0	340.0	341.0	342.0	343.0	344.0	345.0	346.0
2325.0	327.2	328.1	329.1	330.1	331.1	332.1	333.1	334.1	335.0	336.0
2324.0	317.4	318.3	319.3	320.3	321.3	322.3	323.2	324.2	325.2	326.2
2323.0	307.6	308.6	309.6	310.6	311.5	312.5	313.5	314.4	315.4	316.4
2322.0	298.0	299.0	299.9	300.9	301.8	302.8	303.8	304.7	305.7	306.7

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ELEV FEET	TENTHS OF FEET .0	.1	.2	.3	.4	.5	.6	.7	.8	.9
2321.0	288.4	289.4	290.3	291.3	292.2	293.2	294.2	295.1	296.1	297.0
2320.0	278.9	279.8	280.8	281.7	282.7	283.6	284.6	285.6	286.5	287.5
2319.0	269.5	270.4	271.3	272.3	273.2	274.2	275.1	276.1	277.0	278.0
2318.0	260.1	261.0	261.9	262.9	263.8	264.8	265.7	266.6	267.6	268.5
2317.0	250.7	251.7	252.6	253.5	254.5	255.4	256.3	257.3	258.2	259.1
2316.0	241.5	242.4	243.3	244.2	245.2	246.1	247.0	248.0	248.9	249.8
2315.0	232.3	233.2	234.1	235.0	235.9	236.9	237.8	238.7	239.6	240.6
2314.0	223.1	224.0	225.0	225.9	226.8	227.7	228.6	229.5	230.4	231.4
2313.0	214.0	215.0	215.9	216.8	217.7	218.6	219.5	220.4	221.3	222.2
2312.0	205.0	205.9	206.8	207.7	208.6	209.5	210.4	211.3	212.2	213.1
2311.0	196.1	197.0	197.8	198.7	199.6	200.5	201.4	202.3	203.2	204.1
2310.0	187.2	188.0	188.9	189.8	190.7	191.6	192.5	193.4	194.3	195.2
2309.0	178.3	179.2	180.1	181.0	181.8	182.7	183.6	184.5	185.4	186.3
2308.0	169.5	170.4	171.3	172.2	173.0	173.9	174.8	175.7	176.6	177.4
2307.0	160.8	161.7	162.6	163.4	164.3	165.2	166.0	166.9	167.8	168.7
2306.0	152.2	153.0	153.9	154.7	155.6	156.5	157.3	158.2	159.1	159.9
2305.0	143.6	144.4	145.3	146.1	147.0	147.8	148.7	149.6	150.4	151.3
2304.0	135.0	135.9	136.7	137.6	138.4	139.3	140.1	141.0	141.8	142.7
2303.0	126.5	127.4	128.2	129.1	129.9	130.8	131.6	132.5	133.3	134.2
2302.0	118.1	119.0	119.8	120.6	121.5	122.3	123.2	124.0	124.9	125.7
2301.0	109.8	110.6	111.4	112.3	113.1	113.9	114.8	115.6	116.4	117.3
2300.0	101.5	102.3	103.1	103.9	104.8	105.6	106.4	107.3	108.1	108.9
2299.0	93.2	94.1	94.9	95.7	96.5	97.3	98.2	99.0	99.8	100.6
2298.0	85.1	85.9	86.7	87.5	88.3	89.1	90.0	90.8	91.6	92.4
2297.0	77.0	77.8	78.6	79.4	80.2	81.0	81.8	82.6	83.4	84.3
2296.0	69.0	69.8	70.6	71.4	72.2	73.0	73.8	74.6	75.4	76.2
2295.0	61.0	61.8	62.6	63.4	64.2	65.0	65.8	66.6	67.4	68.2
2294.0	53.1	53.9	54.7	55.5	56.3	57.1	57.9	58.6	59.4	60.2
2293.0	45.3	46.1	46.9	47.7	48.5	49.2	50.0	50.8	51.6	52.4
2292.0	37.6	38.4	39.1	39.9	40.7	41.5	42.2	43.0	43.8	44.6
2291.0	29.9	30.7	31.5	32.2	33.0	33.8	34.5	35.3	36.1	36.8
2290.0	22.3	23.1	23.9	24.6	25.4	26.1	26.9	27.6	28.4	29.2
2289.0	14.8	15.6	16.3	17.1	17.8	18.6	19.3	20.1	20.8	21.6
2288.0	7.3	8.1	8.8	9.6	10.3	11.1	11.8	12.6	13.3	14.1
2287.0	0.0	0.7	1.4	2.2	2.9	3.6	4.4	5.1	5.9	6.6

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