

Orr Affidavit

Exhibit 28

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DEPARTMENT OF
WATER RESOURCES

“Report and Recommendations
to the Federal Power Commission”
by W.G. Swendsen, Idaho State
Commissioner of Reclamation
(Oct. 28, 1922)

Fourth Orr Affidavit
Exhibit 6:

**Report and Recommendation to Federal
Power Commission by W.G. Swendsen,
Commissioner of Reclamation,
representing the State of Idaho
(Oct. 28, 1922)**



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Governor of Idaho

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I certify that this is a true copy of material found in the collections of the Idaho State Historical Society Public Archives and Research Library.

W. G. Swendsen, Commissioner, Department of Reclamation State of Idaho, to Executive Secretary, Federal Power Commission, October 26, 1922; Folder:Reclamation; Folder Department of Reclamation, 1919-1922; No Box; AR 2/12, Governor Papers -- Gov. D. W. Davis, 1919-1923; ISHS.

Amy E. Vecchione, Librarian
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Exhibit A.

October 26, 1922.

Re: Project E-Idaho, Oregon, Washington
No. 293. Pacific Power and Light Company.

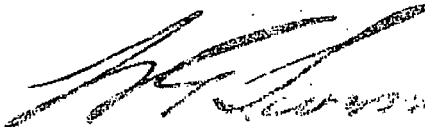
Executive Secretary,
Federal Power Commission,
Washington, D. C.

Dear Sir:

In connection with the application of the Pacific Power and Light Company for preliminary power permits, filed with your Honorable Commission and designated as Project No. 293, I have been requested by the Honorable E. W. Davis, Governor of Idaho, to prepare a statement of facts and recommendations looking to a protection of the State's interests, all for the consideration of your Honorable Commission in connection with the said application No. 293.

In conformity with this request, the attached report is herewith submitted for your consideration.

Very truly yours,


Commissioner of Reclamation

WCS:2

Report and Recommendations to the
FEDERAL POWER COMMISSION By
W. C. BENTLEY, Commissioner of
Reclamation, representing the
State of Idaho.

Re: Project 2-Idaho Oregon and Washington
No. 293. Pacific Power and Light Company.

A consideration of the application of the Pacific Power and Light Company, designated as Project 2-Idaho, Oregon, Washington No. 293, discloses the fact that the permits in question cover perhaps the greatest and most important potential power resource in Idaho, if not in the northwest. A reference to Exhibit A accompanying and attached to this report, upon which is shown the boundary lines of the State of Idaho, with portions of adjacent states, the Snake River and the boundary line of the Snake River water shed, at once discloses the importance of this application for permit, to Idaho.

The Snake River drainage basin comprises 105,000 square miles, approximately three-fourths of which is located in the State of Idaho. In fact, approximately nine-tenths of the State of Idaho is given over to Snake River drainage basin. It is safe to say that 65% of the water available for power at the sites in question, originates in Idaho.

The basic resource throughout this part of the state is agriculture, and because of the arid climate and soil conditions the artificial application of water or irrigation, is essential to the growth of profitable agricultural crops. Any development that related to the use of Snake River water is therefore of supreme and vital importance to the state. Indeed, if it were not for the agricultural development that has heretofore been had through a use of Snake River water for irrigation, approximately three-fourths of Idaho, which is, under present existing conditions, partly developed, would still be given over to non-inhabited desert wastes.

The major portion of this development has been accomplished by diverting the natural flow of the Snake River and its tributaries and through the use of a comparatively small amount of the flood or winter flow after the same has been impounded in storage reservoirs.

A careful consideration of the available water supply for arid lands leads to the conclusion that when the total flow of Snake River and its tributaries are completely controlled in the interest of irrigation, through the construction of storage reservoirs and otherwise, the water supply will be insufficient to accommodate all of the lands susceptible of irrigation.

Thus, in the interest of a necessary protection to the State's potential agricultural resources, its water supply must be conserved for and dedicated to irrigation uses. Future development, looking to a use of this water resource for irrigation, power or other purposes, must in the interest of the State, follow a carefully matured general plan, having for its purpose the co-ordination of the various uses to which this water supply may be put, and where complete co-ordination can not be had, power must necessarily give way to irrigation, thus permitting a maximum agricultural development.

The proposed use of Snake River water at the power sites for which permits are requested can, if the State's interest is to be adequately protected, only be developed after such plan, and with the contemplated use of such water as will permit the maximum irrigation expansion.

Agricultural development is necessarily slow and some of the lands which are susceptible of irrigation may not, under present existing conditions, possess sufficient value to warrant the construction of irrigation works. With the increase in population and the consequent added demand for farm products, these lands however, must and will ultimately be developed. It is not sufficient, therefore, to consider merely the present developed and, under present conditions, practicable or feasible projects, but a protection must also be provided for potential irrigation and agricultural resources.

A broad study of the State's potential water power possibilities indicates that the greatest irrigation expansion may be permitted and still leave an aggregate potential water power far in excess of the State's estimated future needs.

Because of the foregoing conditions, it is extremely important that any power permits granted in connection with these applications shall be conditioned upon the State's present and future right to divert, use and impound as much water as may be necessary for a complete development of its agricultural resources, both for irrigation, domestic and other consuming uses.

Due to lack of time within which to present this showing and because of a shortage of funds for such work, nothing but a general study of the State's irrigation possibilities in the Snake River drainage basin has been possible. The following general outline is therefore confined to the more apparent possibilities and is offered herewith largely in support of the foregoing representations.

Irrigation works now in process of planning in the Upper Snake River drainage, contemplate storage reservoirs, including the proposed government storage reservoir at American Falls, which when completed, will provide regulation of the stream flow in the interest of irrigation. While the present tentative plans of the United States Reclamation Service contemplate the release of a small quantity of water at American Falls during the non-irrigating period for power and other purposes, storage

facilities are so sufficient and favorable, and desirable arid agricultural lands are so readily accessible and available, that ultimate plans must necessarily contemplate a dry stream immediately below American Falls dam, except when water is being released for irrigation uses.

Reservoir sites and the various areas of land upon which this water may be used are thought to be so well known that it is deemed unnecessary to verify this conclusion by any further reference to them herein.

In the stretch of stream between American Falls and Milner dam, irrigation diversions will completely exhaust the stream flow, including storage reservoir water. The complete development must, therefore, necessarily contemplate a dry river immediately below Milner dam at all seasons of the year except for such small quantities of water as may find its way into the stream below Lake Valcott, a forebay created by Minidoka dam, it being probable that any water finding its way into the stream between American Falls and Lake Valcott dam and will be conserved in such lake, where a considerable storage capacity now exists.

Almost immediately below Milner Dam, Snake River enters what ultimately becomes a rather deep rock gorge, from which water can not be diverted by gravity for irrigation uses.

Immediately below Milner dam and particularly below Shoshone Falls and extending down river approximately sixty miles, or to the lower end of Hagerman valley, the inflow to the stream is considerable, amounting to approximately 6,000 cubic feet per second of fairly continuous and uniform discharge. An inconsiderable portion of this flow is water that is lost by deep percolation on the Twin Falls North Side and Twin Falls South Side projects, where a total of about 400,000 acres are irrigated. Definite information is not available from which we may determine the exact amount of water contributed to the stream from return irrigation flow. In finally computing or determining the flow available in the lower Snake for power purposes, it should be kept in mind that the return flow from irrigation in these projects may be materially decreased in the future through improvement by concrete lining or otherwise in the canal systems themselves to prevent losses, and through improved methods of irrigation on the farms, which will result in a more uniform and proper use of water. Before final plans for power development are matured and final permits granted, this matter should receive careful consideration.

Little's continuing use of Snake River water in diversions between the lower end of the Hagerman valley and the proposed point of use of this power development is limited to rather a small quantity of water which is pumped for irrigation uses. It is thought that no extensive areas can ultimately be reached by pumping in this stretch of river, since most of the available land is on benches that are too high to make pumping feasible. There are, however, some limited areas which, if they can not under present conditions, be reached, may after land becomes more valuable, be developed by pumping. 150,000 acres will probably cover all such areas. The ultimate plan of power development on down the river should recognize the possibility

of a water demand for these lands in the future and appropriate reservations should be made in the permit.

The first important tributary below American Falls which is not already practically fully developed for irrigation use, is Boise River. This stream is already utilized for irrigation purposes until under present conditions, during the irrigation season or period of low summer flow, it contributes little or no water to Snake River. During the non-irrigating season and particularly the period of flood flow, a considerable amount of water finds its way to the Snake from this stream. The construction of known feasible reservoirs in this drainage, together with possible future diversions of flood flow without storage, will act to consume the entire flow, so that from the standpoint of down stream Snake River power, Boise river should not be counted upon as a contributing stream, except to the extent that water lost on the irrigated lands through deep percolation, will ultimately find its way directly to the Snake River.

The following undeveloped storage reservoirs are known to exist on the Boise River and in addition to these, other storage possibilities thus far unexplored may exist.

<u>Name</u>	<u>Location</u>	<u>Capacity</u>
Jay	South Fork Boise River	115,400 acre feet
Carrey	" " " "	64,450 " "
Bassam	" " " "	54,000 " "
Smoky Creek	" " " "	40,000 " "
Twin Springs	Middle Fork Boise River	55,000 " "
Alexander	" " " "	25,000 " "
North Fork	North Fork Boise River	34,000 " "
Total		388,850 "

The new desert lands susceptible of reclamation from Boise River are far in excess of what the surplus water supply will accommodate. Down Snake River power permits should, therefore, contain reservations protecting the State's right to ultimately use the entire Boise river discharge for irrigation or other consuming uses.

Under existing conditions the Payette river supplies a considerable contribution to the flow of Snake river except during the period of low summer stream flow, when practically all of the discharge is now used for irrigation purposes.

Feasible storage sites, including Big and Little Payette Lakes, Little Valley, etc. afford an aggregate capacity sufficient to completely control the discharge of Payette river in the interest of irrigation. The largest undeveloped single project which is under contemplation from this water shed is known as the Black Canyon project, covering an aggregate area of 70,000 acres. There are sufficient additional arid lands susceptible of irrigation from this source of supply, upon which to beneficially use the entire surplus discharge of the stream.

The entire flow of Payette river should, therefore, be reserved in the interest of irrigation.

Weiser river contributes nothing to Snake river during periods of low summer flow, but during the non-irrigating season does contribute quite a considerable amount of water. A consideration of this drainage basin discloses the existence of sufficient storage reservoirs to practically control the entire stream discharge for irrigation uses.

The following is an estimate of the undeveloped storage possibilities in this drainage.

Crane Creek	20,000 Acre Feet.
Price Valley	30,000 acre feet.
Pine Creek	6,000
Mann's Creek, Alexander site	10,000
Mann's Creek, Brown's site	2,000
Barton Dam, Monroe Creek	2,000
Johnson Park	1,000
Big Flat Reservoir, South Crane Creek	1,000
Beaver Creek	2,000
E. Park	1,000
Middle Park	4,000
Other Miscellaneous small sites	8,000
Lost Valley reservoir addition	50,000

Total 120,000 Acre Feet.

When these sites are fully developed Weiser river drainage will contribute little or nothing to Snake river except such water as finds its way to the stream in the way of irrigation waste.

Appropriate reservations should, therefore, be incorporated in any power permits that are granted, dedicating the entire supply of this stream to ultimate irrigation uses.

The feasibility of using considerable flow from Salmon river for irrigation in Idaho has been urged by various engineers and persons familiar with its possibilities. The State has thus far been unable to make a dependable or definite study of this possibility, except to the extent that conclusions may be drawn from a study of the United States Geological Survey topographic maps and stream flow data, together with data filed with the State by individuals.

The feasibility of irrigating approximately 600,000 acres of land in what is known as the Mountain Home Project at a cost of approximately \$84.00 per acre has been urged. The water supply for this project would, according to present tentative plans, be diverted from upper Salmon river drainage by means of tunnels and aqueducts to the drainage basin of the South Fork of the Boise, from which it would be diverted to the lands in question.

This scheme contemplates the construction of storage reservoirs and a diversion of direct flow from the upper Salmon river watershed aggregating 1,500,000 acre feet.

The State is not in possession of sufficient data to even approximate the probable cost of this development. Its immense importance to the State is at once apparent, when it is considered that if the project can be developed, 500,000 acres of reclaimed land will increase the State's taxable wealth, using present low land values as a basis, at least \$750,000,000, by the use of a resource that will otherwise be wasted, except to the extent that the stream flow may be used for power purposes.

Other possible irrigation development in the Salmon river watershed is not known, but is regarded as comparatively small, owing to the rough character of the country.

The feasibility of impounding water in what is known as Bear Valley on a tributary of the Snake river for use in Snake river drainage basin by diversion to the Payette is urged in a report by the United States Forest Service, which indicates that 715,400 acre feet may be made available for irrigation from this tributary.

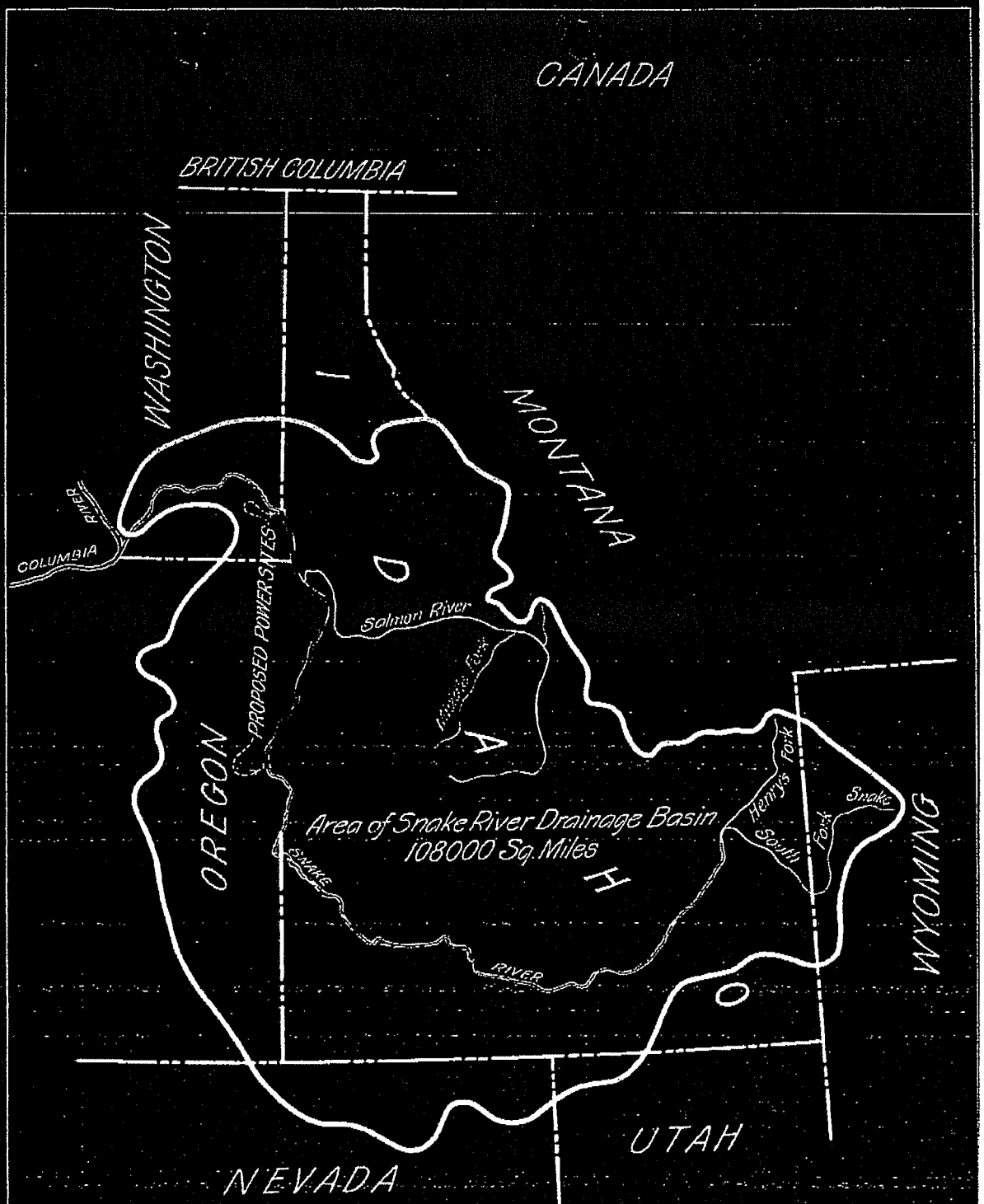
Because of the importance of utilizing Salmon river water supply for irrigation purposes if possible, no permanent power permits should be granted on the Snake river below its confluence with Salmon river until careful investigations have been made of the foregoing and other possibilities and when such permits are granted, appropriate reservations for a protection to irrigation and other consuming uses should be incorporated therein.

The foregoing should not be considered a final analysis of this problem by the State in so far as irrigation is concerned. A limit in time and money has prevented to date a more exhaustive consideration of the subject. It is thought, however, that the foregoing may serve as a guide in considering the granting of preliminary permits, with the understanding that before final permits are granted, the State will again be given an opportunity to present more complete and additional data.

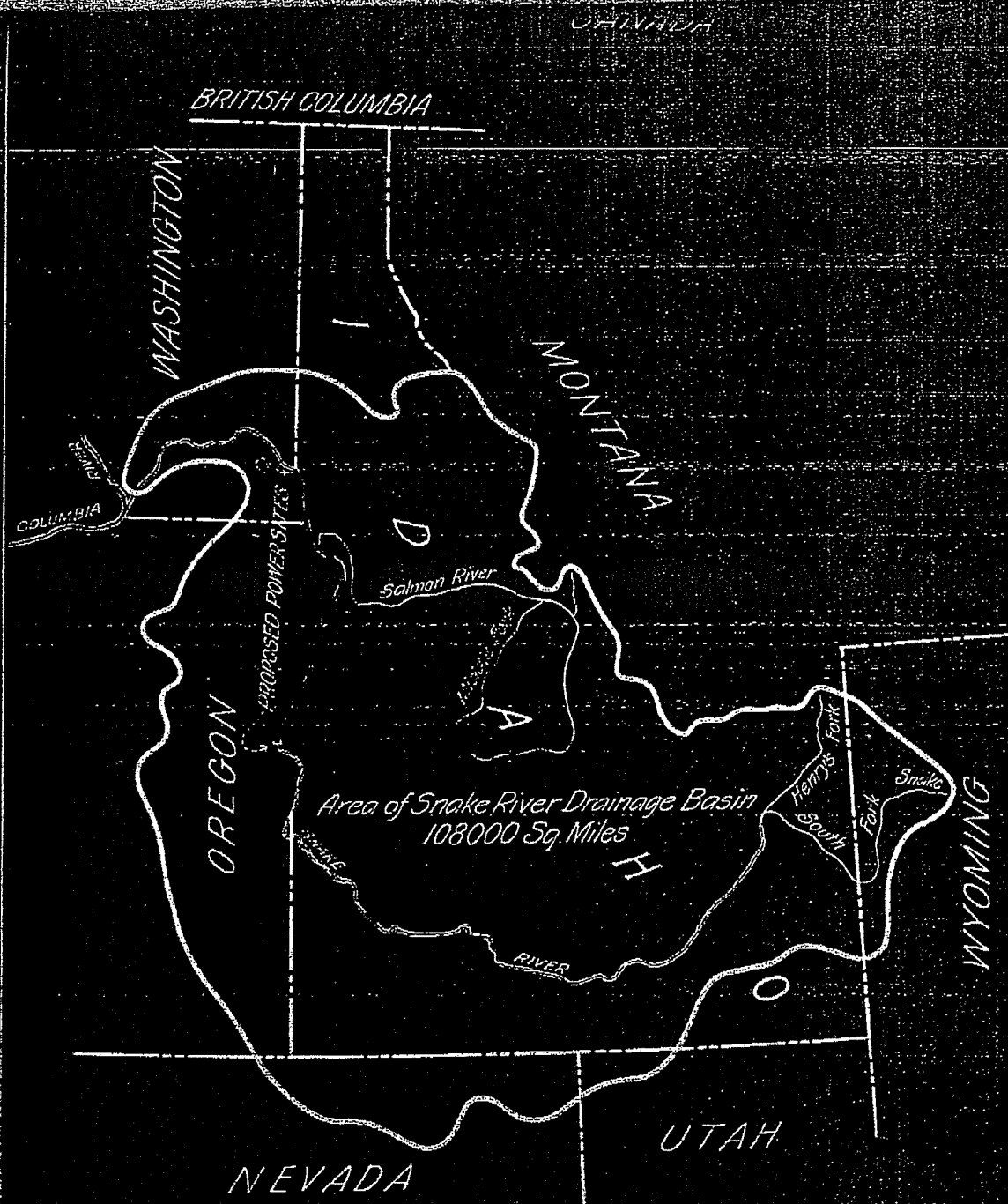
In addition to the question of the State's probable future need and right to Snake river water for consuming purposes, the attention of your Honorable Commission is invited to the fact that approximately 80% of the water supply available for power at the proposed sites originates in Idaho and that 75% to 80% of the drainage area of the stream in Idaho is above these sites; that the power sites in question are on a portion of the river which forms the boundary line between the states of Idaho, Oregon and Washington. The potential power resources in these sites should, therefore, be regarded as largely an Idaho resource. In so far as natural or topographical conditions permit, generating stations and power equipment should therefore be placed on the Idaho side.

Respectfully submitted,


Commissioner of Reclamation



State of Idaho
Department of Reclamation
Map Showing
SNAKE RIVER DRAINAGE BASIN
and Portion of River included in this Report



State of Idaho
Department of Reclamation
Map Showing
SNAKE RIVER DRAINAGE BASIN
and Portion of River included in this Report

Exhibit
2.

Undeveloped Power sites on Salmon River between Salmon, Idaho and its mouth
(estimates of power based on over all efficiency of 70 per cent)
with minimum interference with railroad location.

No.	Name	Miles down stream from Salmon	Head Feet	With existing flow				With 800,000 acre-ft storage, Bruno site.			
				Discharge		Horsepower		Discharge		Horsepower	
				Q	90	Q	90	Q	90	Q	90
				Sec.ft.	Sec.ft.	cent of time	cent of time	Sec.ft.	Sec.ft.	cent of time	cent of time
12JC 1	1 Mile 28	28.	105	1,600	2,040	13,400	17,200	2,100	2,540	17,600	21,300
12JC 2	Shoup	40.8	95	1,640	2,070	12,500	15,800	2,140	2,570	16,300	19,500
12JC 3	1 Mile 45	45	80	1,670	2,110	10,700	13,500	2,170	2,610	13,900	16,700
12JC 4	Long Tom	59.4	178	1,880	2,380	26,800	34,000	2,380	2,880	34,000	41,000
12JE 1	Pinnacle	62.		2,720	3,450			3,220	3,950		
12JE 2	Proctor Falls	65.1	78	2,720	3,450	17,000	21,500	3,220	3,950	20,100	24,700
12JE 3	Horse Creek	73.4	105	2,780	3,520	23,400	29,600	3,280	4,020	27,600	33,800
12JE 4	1 Mile 78.3	78.3	60	2,800	3,540	13,500	17,000	3,300	4,040	15,800	19,400
12JE 5	Black Canyon	89.7	128	2,920	3,690	30,000	37,800	3,420	4,190	35,000	43,000
12JE 6	Dillingers Creek	96.2	107	2,940	3,720	25,200	31,800	3,440	4,220	29,400	36,000
12JE 7	Rattlesnake	99.6	40	2,950	3,740	9,450	12,000	3,450	4,240	11,000	13,600
12JE 8	Growler	111.	165	3,010	3,810	39,700	50,300	3,510	4,310	46,500	57,000
12JE 9	Painted Rock	118.	95	3,020	3,820	23,000	29,000	3,520	4,320	26,800	32,800
12JG 1	Castle	127.6	105	3,500	4,420	29,400	37,000	4,000	4,920	33,400	41,000
12JG 2	Crooked Bar	136.5	60	3,580	4,540	17,200	21,800	4,080	5,040	19,600	24,200
12JG 3	Rhels	146.4	80	3,640	4,610	23,300	29,500	4,140	5,110	26,500	32,700
12JG 4	Orevice	160.	135	3,720	4,700	40,200	50,800	4,220	5,200	45,500	56,100
	Total		1,516			354,750	448,600			419,100	512,800
Below											
Riggins											
12JJ 1	Poodle Dog h	14.	140	3,800	5,300	42,600	59,400	4,300	5,800	48,200	65,000
12JJ 2	Raett h	20.	42	3,800	5,300	13,100	18,200	4,300	5,800	14,800	20,000
12JJ 3	Red Canyon	41.7	190	3,800	5,300	57,800	80,600	4,300	5,800	65,500	88,200
12JJ 4	Green Canyon	53.5	112	3,800	5,300	34,000	47,500	4,300	5,800	38,500	52,000
12JJ 5	Snow Hole	53.5	95	3,900	5,500	29,600	41,800	4,400	6,000	33,400	45,500
12JJ 6	Section Line	72.	62	3,900	5,500	19,400	27,300	4,400	6,000	21,400	29,800
12JJ 7	Lower Canyon	83.	115	3,900	5,500	35,800	50,600	4,400	6,000	40,500	55,200
	Total		757			232,300	325,400			262,300	355,700

GRAND TOTAL

2,373

Salmon Snake Tunnel scheme a

a. Site does not fit in with feasible scheme of development. b. Used as power dams. c. Developed by means
Poodle Dog diversion dam into Snake, would destroy power value of sites 12JJ 1 to 12JJ 7.

681,400 868,500

196,000 265,000

UNDEVELOPED POWER

On Snake River from American Falls to Oxbow Inclusive
(Estimate of Power based on static head and over all plant efficiency of 70%)

SITE	AVAILABLE :			WITH EXISTING FLOW			WITH REGULATED FLOW		
	HEAD :			DISCHARGE :			DISCHARGE :		
	20 :	30 :	50 :	20 :	30 :	50 :	20 :	30 :	50 :
Am. Falls - Increase (a)	-	-	-	50 :	4500 :	6500 :	-	2000 :	10000 :
Eagle Island (a)	-	-	-	46 :	4500 :	6300 :	-	2000 :	10000 :
Milner to head of Twin F. (c)	-	300 :	300 :	300 :	300 :	5000 :	16500 :	24000 :	24000 :
Twin Falls-	-	205 :	205 :	205 :	515 :	5600 :	7200 :	120000 :	120000 :
Pillar & Augur Falls	-	-	-	155 :	850 :	5800 :	8420 :	92000 :	92000 :
Mile 165 above Enterprise	-	-	-	25 :	1650 :	6650 :	10500 :	72000 :	72000 :
Devil's Wash Board	-	-	-	30 :	1710 :	7500 :	3300 :	13300 :	13300 :
Kanoka Rapids-	-	-	-	35 :	2360 :	8200 :	4100 :	18000 :	18000 :
Upper Salmon Falls	-	-	-	80 :	5000 :	10000 :	6600 :	23000 :	23000 :
Lower Salmon - Increase	-	-	-	20 :	5500 :	10900 :	32000 :	64000 :	64000 :
King Hill to Bliss - 3 sites	-	230 :	230 :	230 :	6500 :	11400 :	8800 :	17500 :	17500 :
Crane Falls	-	-	-	25 :	6700 :	11700 :	120000 :	210000 :	210000 :
Halls Ferry	-	-	-	25 :	6800 :	11900 :	13400 :	23400 :	23400 :
Grocker Site	-	-	-	20 :	6900 :	12200 :	13600 :	23800 :	23800 :
Gaffey Site	-	-	-	35 :	6900 :	12500 :	11000 :	19500 :	19500 :
Mile 154-168 above Lewiston	-	-	-	90 :	8000 :	16500 :	19300 :	35000 :	35000 :
Site #1- 145.3 mi. above "	-	-	-	25 :	8000 :	16500 :	6900 :	11200 :	11200 :
Site #2- 143.3 mi. "	-	-	-	25 :	8000 :	16500 :	6900 :	11200 :	11200 :
Site #3- 135.7 mi. "	-	-	-	30 :	8000 :	16500 :	6900 :	11200 :	11200 :
Oxbow	-	-	-	50 :	8000 :	16500 :	6900 :	11200 :	11200 :
Total	-	-	-	-	415520 :	999200 :	32000 :	59400 :	59400 :
Springs combined (b)	-	-	-	-	-	-	415520 :	999200 :	999200 :
GRAND TOTAL	-	-	-	-	-	-	25000 :	25000 :	25000 :
	-	-	-	-	-	-	440520 :	1024200 :	1024200 :

(a) All capacities except Eagle Island and American Falls are from Geological Survey Papers and Reports.

(b) Includes several sites such as Clear Lakes, Box Canyon, Malad Springs and others.

(c) First 200 feet off all below Milner assumed to have no power possibilities because of low flow.

(d) Head for Cuffey site and those above would vary somewhat with stream flow, but these variations are not stated in Geological Survey Reports.

UNDEVELOPED POWER SITES

Snake River between Homestead, Oregon, and Lewiston, Idaho.
(Estimate of power based on static head and over all plant efficiency of 70 per cent.)

LOCATION	MI. UP-:	STREAM :	FROM :	MAXIMUM :	HEAD :	DISCHARGE :	WITH EXISTING FLOW	HORSEPOWER :	DISCHARGE :	WITH REGULATED FLOW	HORSEPOWER :
Site 12HK #4	123.2	50	45	8,000	16,500	32,000	59,400	6,900	11,200	27,600	40,300
#5	120.8	65	60	8,000	16,500	41,600	79,200	6,900	11,200	35,900	53,800
#6	118.7	75	70	8,000	16,500	48,000	92,400	6,900	11,200	41,400	62,700
#7	112.2	150	140	8,000	16,500	96,000	185,000	6,900	11,200	83,000	125,000
#8	101.0	280	270	8,000	16,500	179,000	356,000	6,900	11,200	154,000	242,000
#9	97.2	275	265	8,000	16,500	176,000	350,000	6,900	11,200	152,000	237,000
#10	95.7	350	340	8,000	16,500	224,000	450,000	6,900	11,200	193,000	305,000
#11	83.5	475	460	8,000	16,500	304,000	608,000	6,900	11,200	262,000	412,000
#12	77.4	540	530	8,000	16,500	345,000	700,000	6,900	11,200	298,000	475,000
#13	52.7	190	180	8,000	16,500	122,000	238,000	6,900	11,200	105,000	161,000
Site 12HN #1	50.7	220	210	8,000	16,500	140,000	277,000	6,900	11,200	121,000	187,000
#2	41.5	260	250	15,000	21,500	312,000	430,000	12,200	16,300	254,000	326,000
Salmon Snake											
Tunnel Site	77.4	530	530	3,800	5,100	161,000	216,000	3,800	5,100	161,000	216,000
TOTAL							818,000	1,346,000		713,000	1,017,000

NOTE: Total includes only those sites which will utilize full fall of river, namely, Nos. 12 HK 12/ and Salmon-Snake Tunnel Site.