BEFORE THE BOARD OF
NATURAL RESOURCES AND CONSERVATION
OF THE STATE OF MONTANA

IN THE MATTER OF APPLICATION FOR RESERVATION OF WATER NO. 10006-r BY THE MONTANA DEPARTMENT OF HEALTH AND ENVIRONMENTAL SCIENCES	FINDINGS OF FACT AND CONCLUSIONS OF LAW OF APPLICATION NO. 10006-r

The above-entitled matter came on regularly for hearing starting on or about August 17, 1977, in Billings, Montana, before the Montana Board of Natural Resources and Conservation and its duly appointed Hearing Examiner, James Driscoll. The Applicant appeared by and through its counsel of record, Mona Jamison. The Montana Department of Natural Resources and Conservation appeared by and through its counsel of record, Richard Gordon. The fourteen applicant conservation districts appeared by and through their counsel of record, Gary Spaeth. The City of Billings appeared by and through its counsel of record, Calvin Calton. Utah International, Inc., appeared by and through its counsel of record, Urban Roth. The Intake Water Company appeared by and through its counsel of record, Henry Loble and Boyd Henderson. The Montana Power Company appeared by and through its counsel of record, Robert Woodahl. The Montana Water Development Association appeared without benefit of counsel. Witnesses were duly sworn, and oral and documentary evidence was introduced.

The Board, having read and fully considered the complete record, makes the following Findings of Fact and Conclusions of Law relating to the Montana Department of Health and Environmental Sciences, Application No. 10006-r:

FINDINGS OF FACT

1. On November 4, 1976, the Montana Department of Health and Environmental Sciences applied for a reservation totaling 6,643,000 acre-feet of water per year (af/y) for instream use in the Yellowstone River at Sidney, Montana (Map DHES-1). Table DHES-1 quantities this request by reach of river and month (Montana Department of Health and Environmental Sciences, Application No. 10006-r).

Findings Related to the Purpose of the Reservation (89-890(3)(a)).

2. The purpose of DHES' reservation request for instream flow of the Yellowstone River is to:

(1) assure that the water quality standards will not be violated so as to insure that the Yellowstone River remains suitable for public water supplies, wildlife, fish and aquatic life, agriculture, industry, recreation and other beneficial uses, and

(2) to carry out the non-degradation policy enunciated in Title 69, Chapter 48, R.C.M. 1947 (Tr. Vol. 7, p. 2).

3. It is established to the satisfaction of the Board that a purpose for the reservation has been shown.

Findings Related to the Need for the Reservation (89-890(3)(b)).

4. A major effect of the increased development of irrigation, energy, and municipal water supply facilities in the Yellowstone River Basin will be to reduce to some degree the streamflow of the Yellowstone River (Montana Department of Health and Environmental Sciences, Application No. 10006-r, p. 5).

5. Dewatering, a major result of increased development in the Yellowstone River Basin reduces te stream's ability to transport and assimilate waste, decreases the sediment carrying capacity, lowers the water level of the river, increases water temperature, and concentrates the inorganic and trace elements (Tr. Vol. 5).

6. Because of increased diversions (dewatering) from the Yellowstone River, increased wasteload discharges resulting from industrial and municipal sources, and irrigation return flows, there is a need for an instream flow reservation in the Yellowstone River to maintain the waters of the Yellowstone suitable for existing beneficial uses (Tr. Vol. 5).

7. Although the increase in suspended sediment during the high flow period detracts from its quality, the quality of water in the Yellowstone River is best at upstream sites and at high-flow period. There is a general degradation in the quality of the river downstream to Sidney (Tr. Vol. 5).

8. The quality of the river is generally good above Miles City and its waters are suitable for most uses throughout this reach, but, below Miles City, dissolved solids, sulphate, and suspended sediment levels might restrict some uses in low flow period due to the marked lowering of water quality through this segment.

9. An instream reservation is needed to maintain water quality and to offset the general water degradation of the stream.

10. If sufficient oxygen is maintained in the river, the end products will be stable forms of carbon, nitrogen, sulfur and phosphorus, but in the absence of oxygen, decomposition is incomplete and will be accompanied by unsightly scum, sludges and offensive odors (Tr. Vol. 5).

11. Domestic wastes require a large amount of dissolved oxygen while rivers naturally contain a limited quantity of dissolved oxygen (Tr. Vol. 5, p. 10).

12. Streams have a natural ability to assimilate a certain amount of organic waste, including that from domestic wastewater treatment facilities (Tr. Vol. 5, p. 12).

13. If the stream flow is reduced, a municipality may have to increase its degree of wastewater treatment with resultant increases in associated costs in order to prevent pollution of the receiving state waters (Tr. Vol. 5, p. 12).

14. There is a need for an instream reservation in order for the Yellowstone River to maintain enough water for dillution of industrial and municipal discharges.

15. The quality of water is measured by the total dissolved solids (TDS) in water.

16. The concentration factors noted above for TDS are the result of two processes:

1. The extraction of essentially pure water (nearly distilled by plants in their growth processes, which concentrates the dissolved salts in the water remaining in the soil, and
2. The leaching of additional salts by water as the water percolates through the soil i.e. "salt pickup" (Tr. Vol. 5).

17. In order to maintain a proper control of the TDS and other pollutants in the Yellowstone River, an instream reservation is needed.

18. It is established to the satisfaction of the Board that there is a need for a reservation.

Findings Related to the Amount of Water Necessary for the Purpose of the Reservation (89-890(3)(c)).

19. Both the Department of Health and Environmental Sciences and the Department of Fish and Game have requested reservations of instream flows in the Yellowstone River (Application Nos. 10,006-r and 1781-r).

20. Although the amount of water from the Yellowstone River that is being requested by the Department of Health and Environmental Sciences differs from the amount of water from the Yellowstone River that is being requested by the Department of Fish and Game, an instream water reservation in the Yellowstone River for one of these departments would amount to an instream water reservation for the other.

21. In establishing the amount of water necessary to meet the purpose of the instream water reservation of the Yellowstone River for the Department of

Health and other instream applicants, the Board of Natural Resources has divided the river into four major gauging points, namely:

a) the Yellowstone River at Sidney;

b) the Yellowstone River at Miles City;

c) the Yellowstone River at Billings, and

d) the Yellowstone River at Livingston.

22. The mouth of the Tongue River is at Miles City, Montana (Tr. Vol. 5, pp. 39 through 41).

23. The request by the Montana Department of Health and Environmental Sciences in the Yellowstone River above the mouth of the Big Horn River for August through April is based on flows necessary to maintain TDS at no more than 500 mg/l in the lower river (Tr. Vol. 5, following p. 89, Testimony of Thomas, pp. 38 and 39).

24. The Board of Health and Environmental Sciences has adopted by reference, the recommended limits published in the 1962 U.S. Public Health Service Drinking Water Standards, as water quality standards, and these limits for TDS and SO4 were used to establish the flows in the DHES' reservation request (Tr. Vol. 5, p. 31).

25. Specific limits established by the 1962 U.S. Public Health and Service Drinking Water Standards for Total Dissolved Solids (TDS) are 500 mg/l (Tr. Vol. 7, p. 7).

26. Generally as the flow of an unregulated stream like the Yellowstone decreases the TDS increases (Tr. Vol. 7, p. 33).

27. According to the Department of Health and Environmental Sciences, water quality standards for other criteria probably would not be violated if sufficient water is reserved instream to assure that the TDS standard of 500 mg/l is maintained.

28. For each month, flows were requested that would maintain TDS values equal to or less than the 500 mg/l based on historical relationships between TDS and discharge.

29. The Department of Health and Environmental Sciences used a regression equation between total dissolved solids (TDS) in milligrams per liter and monthly discharge in acre-feet to determine the needed minimum flow in the Yellowstone River for all of the months of the year except May, June, and July (DHES-10,006-r, Finding 49).

30. For May, June and July, flows were selected to represent 7-day, 10-year low flows which is a standard used for the design and operation of waste-water disposed systems (Tr. Vol. 5, p. 38).

31. For those months which the 7-day, 10-year low flow is used, the probability of exceedance in which the TDS and S04 standards would not be violated are greater than 99% (Tr. Vol. 5, p. 38).

32. The upper reaches of the Yellowstone River, and in particular, above the mouth of the Big Horn River, are of a higher water quality than the lower reaches of the Yellowstone River (Tr. Vol. 5, p. 39).

33. In order to maintain control of the TDS concentrations and other water quality standards throughout the entire Yellowstone River, it is necessary for the Department of Health and Environmental Sciences to have an instream reservation throughout the entire Yellowstone River.

34. It has been established to the satisfaction of the Board that an instream reservation for the following amounts are needed to satisfy the purpose of the reservation of the Department of Health and Environmental Sciences.

a) An instream reservation of the Yellowstone River at Sidney, Montana, is granted for the following amounts;

1) A total of 5,492,310 acre-feet per year which is equal to the total of the eightieth percentile of the flow of the Yellowstone River, less depletions from consumptive reservations of the Yellowstone Basin above Sidney, Montana is reserved.

2) The monthly breakdown of this reservation is:

	CFS	AF/Y
January	3,738	229,831
February	4,327	240,281
March	6,778	416,711
April	6,808	405,031
May	11,964	735,528
June	25,140	1,495,644
July	10,526	647,090
August	2,670	164,166
September	3,276	194,917
October	6,008	369,377
November	5,848	347,920
December	3,998	245,814
Average	7,586	5,492,310

b) An instream reservation of the Yellowstone River at Miles City, Montana, is granted for the following amounts:

1) A total of 5,578,892 acre-feet per year which is equal to the total of the eightieth percentile of the month by month flow of the Yellowstone River, less depletions from other reservations of the Yellowstone Basin above Miles City, Montana, and inclusive of Miles City, is reserved.

2) The monthly breakdown of this reservation is:

	CFS	AF/Y
January	3,829	235,400
February	3,998	221,995
March	6,359	390,929
April	5,848	347,957
May	12,280	754,904
June	26,188	1,557,980
July	10,278	631,856

	CFS	AF/Y
August	3,862	237,415
September	4,338	266,682
October	5,849	359,578
November	5,508	327,730
December	4,009	246,466
Average	7,705	5,578,892

c) An instream reservation of the Yellowstone River at Billings, Montana, is granted for the following amounts:

1) A total of 3,914,458 acre-feet per year of the Yellowstone River at Billings is reserved.

2) The monthly breakdown of this reservation is as follows:

	CFS	AF/Y
January	2,489	153,058
February	2,488	138,186
March	2,889	177,643
April	3,589	213,541
May (1-20)	5,143	204,006
May (21-31)	12,224	266,658
June (1-7)	17,268	239,708
June (8-30)	19,068	869,707
July (1-20)	10,310	408,904
July (21-31)	5,510	120,194
August	4,090	251,457
September	3,415	203,185
October	3,589	220,680
November	3,489	207,592
December	2,789	171,501
Average	5,312	3,846,025

Plus dominant discharge of + 34,507 + 648,430 acre-feet for one 24 hour period

Total Reservation (Av. 5,406 cfs) 3,914,455 af/y

d) An instream reservation of the Yellowstone River at Livingston, Montana, is granted for the following amounts:

1) A total of 1,879,813 acre-feet per year which includes the dominant discharge for one 24 hour period of 18,200 cfs and 36,091 acre feet of the Yellowstone River at Livingston is reserved. For May, June, July, August and September, this reservation is approximately the ninety-fifth percentile flow. For the seven other months the reservation amounts to approximately the twentieth percentile flow.

2) The monthly breakdown of this reservation is:

	CFS	AF/Y	APPROX. %tile
January	1,330	81,760	20
February	1,320	73,292	20
March	1,350	82,989	20
April	2,490	148,132	20
May (1-10)	2,500	49,575	95 for May
May (11-20)	1,900	37,677	
May (21-31)	4,700	93,202	
June (1-10)	7,700	152,693	95 for June
June (11-20)	9,000	178,472	
June (21-30)	8,000	158,642	
July (1-10)	5,400	107,083	95 for July
July (11-20)	3,800	73,355	
July (21-31)	2,500	49,575	
August (1-10)	1,600	31,728	95 for August
August (11-31)	2,125	88,492	
September	1,555	92,508	95
October	2,350	144,463	20

	CFS	AF/Y	APPROX. % tile
November	1,790	106,488	20
December	1,490	91,596	20
Average	2,553 cfs	1,843,722 af/y	

Findings Related to the Public Interest (89-890(3)(d)).

35. The instream reservation flow request of the DHES is in the public interest since it will assure that the specific standards established by the DHES to protect water quality for beneficial uses will not be violated (Tr. Vol. 5).

36. The instream reservation flow request of DHES is in the public interest since the flows requested will also assure that the Yellowstone River can safely dilute and assimilate waste from industry, municipalities and non-point sources (Tr. Vol. 5).

37. The instream reservation flow request of DHES is in the public interest since it will protect fish and aquatic life, water fowl, furbearers, and recreationists from the adverse impacts of dewatering on water quality (Tr. Vol. 5).

38. It is established to the satisfaction of the Board that instream reservation in the amounts stated above are in the public interest.

CONCLUSIONS OF LAW

1. Chapter 8, Title 89, R.C.M. 1947, and in particular, Section 89-890, R.C.M. 1947, authorize the adoption by the Montana Board of Natural Resources and Conservation of orders reserving water to qualified applicants for reservation of water.

2. If ordered adopted, a reservation must be ordered adopted in accordance with Chapter 8, Title 89, R.C.M. 1947, and any rules adopted thereunder.

3. The Applicant, Montana Department of Health and Environmental Sciences, is an agency of the State of Montana and as such is entitled to apply to reserve waters within the State of Montana in accordance with Section 89-890 R.C.M. 1947, and any rules adopted thereunder.

4. All pertinent statutes and rules of the State of Montana have been adhered to in review of this reservation application, both by the Montana Department of Natural Resources and Conservation and by the Montana Board of Natural Resources and Conservation.

5. Based upon the above Findings of Fact, and specifically based upon any condition, limitation, or modification of the full application appearing in said Findings, all pertinent criteria delineated in Section 89-890, R.C.M. 1947, and any rules adopted thereunder providing for the adoption of an order reserving water have been met.

6. Nothing found herein has bearing upon the status of water rights claimed by the Applicant other than those herein newly applied for, nor does anything found herein have bearing on the status of claimed water rights of any other party except in relation to those rights herein newly applied for, to the extent necessary to reach a conclusion herein.