THE TRANSBOUNDARY EFFECT

SAFEGUARDING THE POPLAR RIVER IN MONTANA

AN EQC STAFF REPORT

BY

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INTRODUCTION AND SUMMARY OF ISSUES

Beset by delays and objections to alternative hydroelectric sites by Canadian environmentalists, the Province of Sasketchewan announced on Sept. 11, 1974, plans for the first stage of a 1,200-million watt coal-fired elctric power complex to be erected in southern Saskatchewan near the international border with Montana. A strip mine, dam and reservoir for cooling water and the first of four 300-million watt generating stations were to be built in the headwaters drainage of the East Fork Poplar River to meet power demands forecast by the Saskatchewan Power Corporation (SPC), an agency of the provincial government.

Despite its distance from populated areas, the proposed complex received immediate public attention in the province. And almost immediately, cries arose on both sides of the international border that the project was ill-conceived and would be environmentally destructive. Canadians questioned the need for the project, even its $150 million first stage. Americans questioned Saskatchewan's planned use of obsolete environmental controls, antiquated engineering design, and what seemed to be a cavalier claim to large portions of the Poplar River, which as a waterway shared by the U.S. and Canada, is to be regulated by formal agreements under the 1909 Boundary Waters Treaty.

Even as Saskatchewan gave swift approval to the project, Montana elected officials and the Montana Congressional delegation spent months seeking information from federal agencies and the Canadian government and prodding the U.S. State Department before securing action by the International Joint Commission (IJC),

an adjudicatory body working under provisions of the Boundary Waters Treaty. To a joint U.S.-Canadian Task Force the IJC delegated a study of the a portion of the controversy, namely equitable apportionment of Poplar River Basin water between the U.S. and Canada. The Task Force began its work on April 8, 1975. Notwithstanding Montana concerns over air and water quality degradation from the strip mine, power plants, and dam site, the Canadian Ministry of the Environment approved the Saskatchewan Power Corporation plan on April 29, 1975, leaving open the final determination of water apportionment and leaving unanswered the U.S. call for an international study of air and water quality degradation expected from the entire project, including its first phase.

Even before the IJC met in the spring of 1976 to take public comments on the Task Force's basic recommendation of a 50-50 split of Poplar River system water, Saskatchewan Power Corporation was allowed to take matters into its own hands and appropriate much of the river's East Fork flow during the spring runoff to fill the partly completed power plant reservoir two miles north of the border. SPC's action has since been held by the U.S. State Department as being within Canada's rights under the Boundary Waters Treaty.

Deliberations of the IJC on apportionment were delayed by months by the failure of the two nations to reach agreement on whether instructions should be issued to the IJC for a study and recommendation on protecting water quality in the Poplar River Basin. On July 11, 1976, the Canadians formally agreed to allow IJC consideration of the question, but negotiations stalled again pending Canada's response to U.S. suggestions on wording for instructions to the IJC. In the fall of 1976, the IJC was expected to announce its apportionment recommendation before the end of the year.

Meanwhile, studies under a $400,000 federal appropriation to the U.S. Environmental Protection Agency are scheduled to begin to secure information

for an environmental impact statement (EIS) and a special report by the Environmental Protection Agency. The State Department is required to issue an EIS on ratification of terms of the agreements that may be reached in the Poplar River case under the Boundary Waters Treaty.

Questions linger in the wake of the cumbersome, high-level actions and negotiations of the sovereign nations concerning the Poplar River. One question concerns international pollution, an emerging pattern in which governments agree to negotiate the acceptability of polluting each other's land, air and water to the detriment of environmental quality but in the interest of diplomatic "compromise" or economic development, leaving little room for objections by those who will be breathing the dirty air and drinking the degraded water.

Another important issue is what Montana's lieutenant governor has called a "cloud of secrecy" placed on the negotiations by the two governments as they discussed the Poplar River problem under the Boundary Waters Treaty. The negotiations tenatively apportioning the Poplar River's flows across the international boundary were conducted without public review and with only indirect opportunity for citizen participation, even though statutory, Constitutional, common law and domestic Indian treaty rights to property and health were at stake in the negotiations.

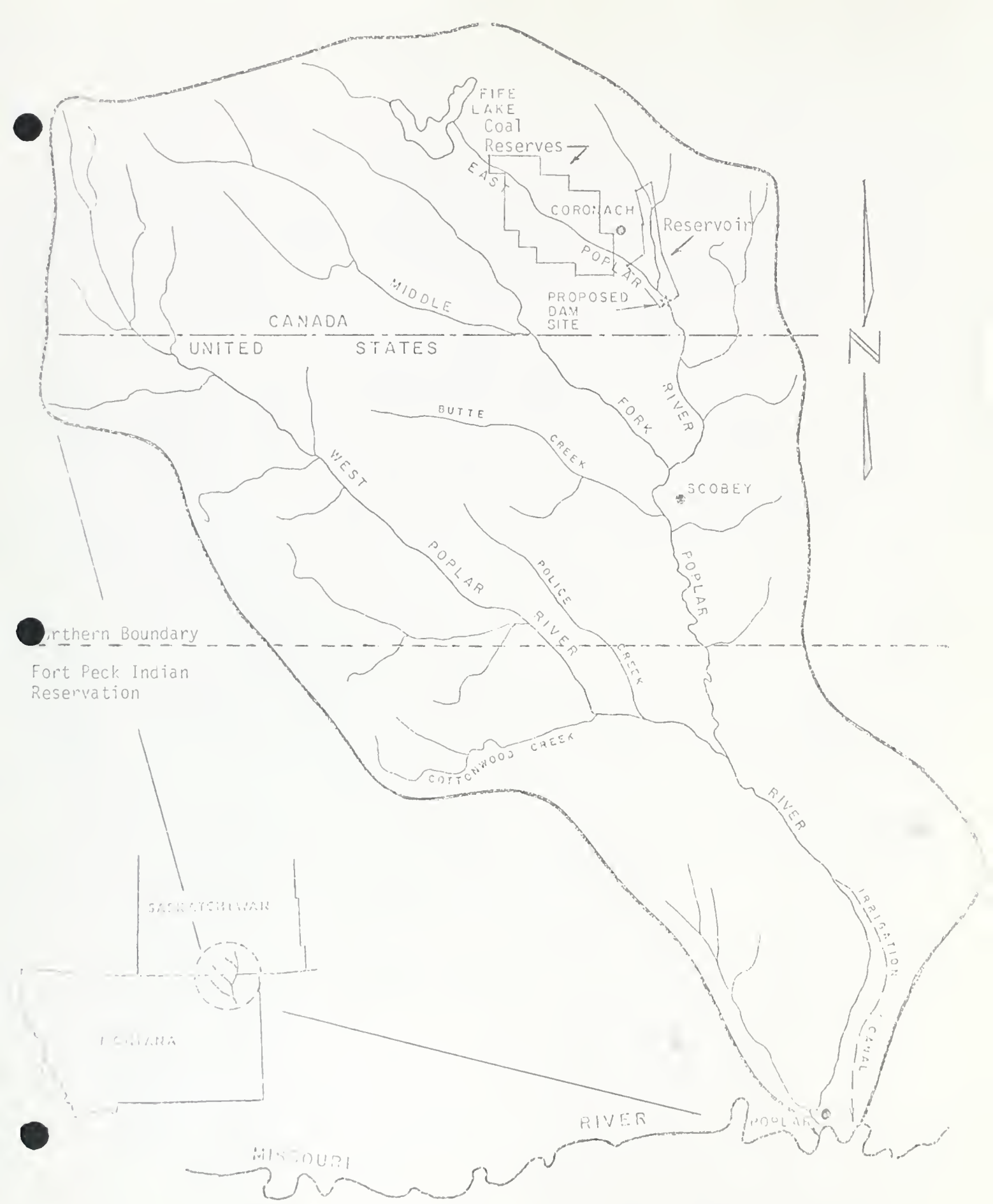
The accelerating pace of development along the U.S.-Canadian border is rapidly discounting the effective role that the Boundary Waters Treaty once had. The treaty mechanism's emphasis on secrecy, its distance from the problems and people affected, and its inherent limitation of considering problems piecemeal and in isolation from the desires of affected citizens may mean the 1909 treaty is in need of overhaul, replacement or revision.

POPLAR RIVER BASIN PEOPLE, LAND AND ECONOMY

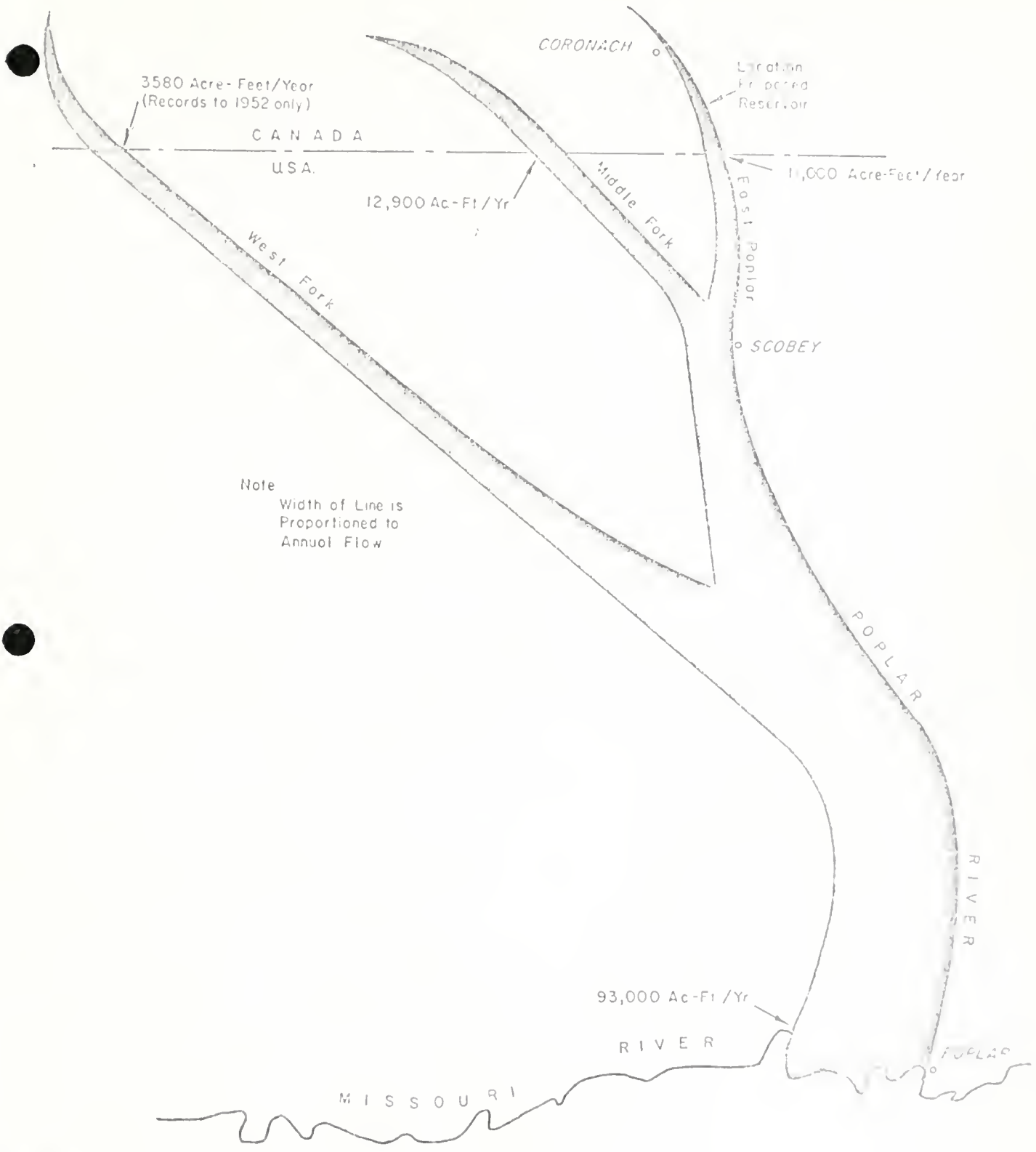
About 8,000 persons--two-thirds of them Americans--live in the Poplar River Basin, which is shaped like an inverted pear (see Map). Major waterways of the basin run generally northwest to southeast toward the Missouri River in Montana (1)The Poplar River has three principal branches, all originating in Canada. Two of the branches (the East and Middle Forks) join to form the main stem a few miles north of Scobey in Montana. The West Fork meets the main stem roughly midway between Scobey and Poplar, Montana. The rivers drain rolling hills, crops and rangeland covering 3,329 square miles--more than a third of which is in Canada.

Settlement in the Poplar River Basin is sparse, and predominately rural. The basin has several small urban centers--Rockglen and Coronach (combined population 850) in Saskatchewan, and Poplar (population 1,400) and Scobey (population 1,500) in Montana. The Fort Peck Indian Reservation, land of the Sioux and Assiniboine Tribes in Montana, covers about 900 square miles of the basin, generally its lower part. In all areas, production of cereal crops, fodder and ranching dominate the economy.

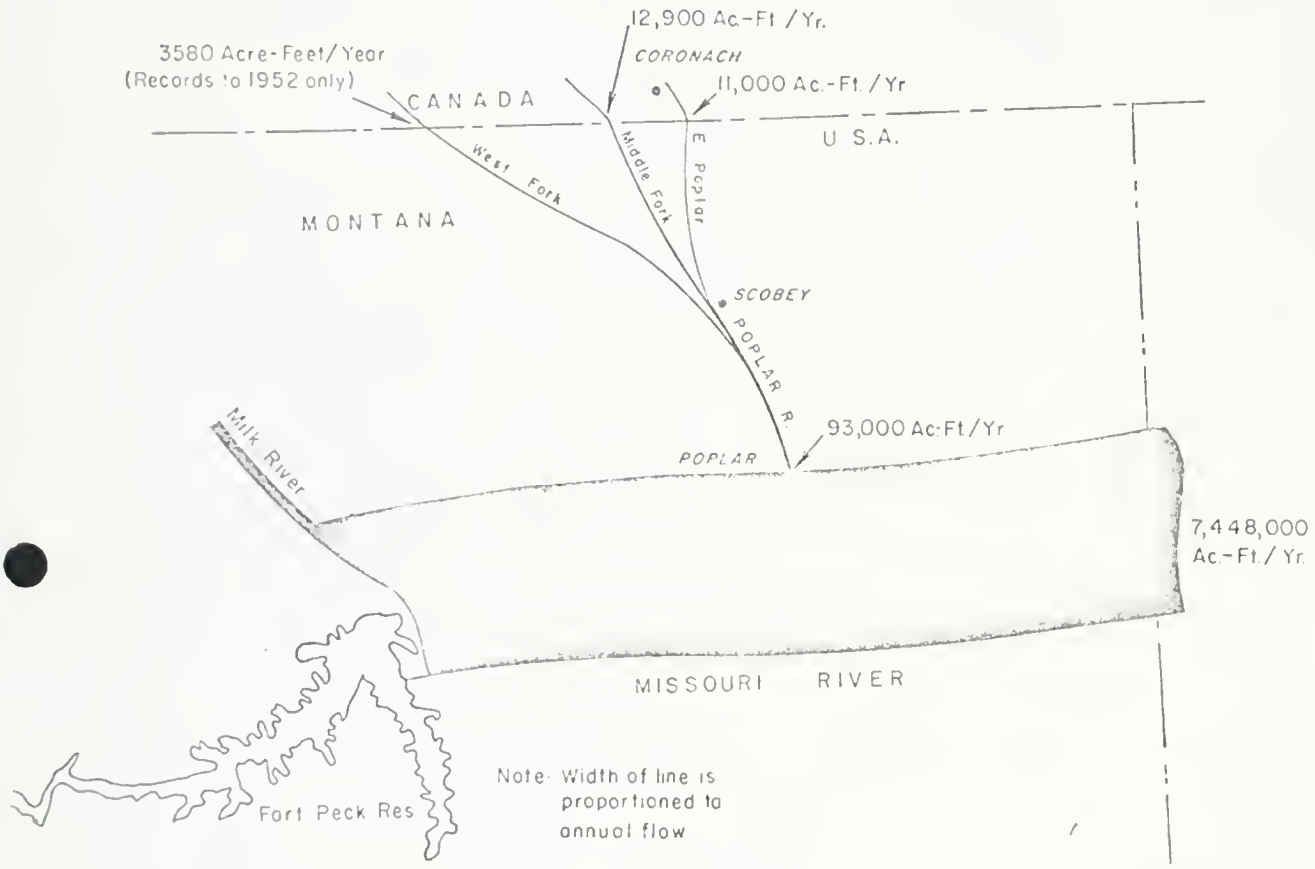
The long-term annual discharge of the Poplar River as measured near its mouth at the Missouri is considerable--133 cubic feet per second--but flows vary with the seasons and the year. In 1952, for example, the flow averaged 437 cubic feet per second. In 1934, though, it was only 20 cubic feet per second. Flows less than 5 cubic feet per second in the fall and winter are common. At times, there is no flow, but fish survive in pools in the stream. Other times, during spring flooding, flow may jump to 37,000 feet per second.



POPLAR RIVER DRAINAGE BASIN -5-



POPLAR RIVER - ANNUAL FLOW



MISSOURI-POPLAR RIVERS — ANNUAL FLOW

The runoff generally peaks in April or May and settles down to 10 or 20 cubic feet per second during the summer. In acre-feet* which measures the volume of water accumulated, the Poplar River averages 92,560 acre-feet a year at its mouth. (See diagrams)

Irrigation by farmers and stockponding by ranchers consume a significant portion of the Poplar River's annual flow. Existing "uses" also include evaporation from the surfaces of hundreds of small reservoirs in the basin. An official survey found that water use in the basin totaled 10,250 acre-feet in 1975, or about 11 percent of total annual flow. Irrigation for crops took 67 percent of the total water used; domestic consumption took 23 percent. The remaining 10 percent was accounted for by evaporation from large reservoirs and by municipal uses. Domestic water uses included consumption by cattle and surface evaporation from small reservoirs. Crops requiring irrigation include alfalfa, natural and mixed seeded hays. Coronach, Sask., and Scobey, Mont., each drew water from wells adjacent to the river or its tributaries, accounting for all municipal uses.

As of 1975, no water had been used for industrial purposes in the Poplar River watershed.

The Poplar River is one of the few prairie streams in Montana that provides a sports fishery. In fact, the Poplar is one of the best warm water stream fisheries in Montana, providing excellent catches of walleye and northern pike. Goldeye and smallmouth bass, the latter introduced in 1967, also are important. Spot checks by the Montana Department of Fish and Game show 173 walleye per

*Acre-foot--the volume of water that would cover one-acre to a depth of one foot; equals 43,560 cubic feet.

mile in the East Fork and 297 per mile in the main stem river below the confluence of the East and Middle Forks. Rainbow trout also have been introduced in the Poplar River system recently. The sport fishery of the system may not extend into Canada due to low and intermittant flows during part of the season. The importance of the upper (Canadian) portion of the basin for spawning of resident game fish populations is therefore unknown.

In water, and particularly in Montana rivers and creeks, algae--as a group--are by far the most important plants, helping regenerate oxygen supplies and recycle plant and animals waste products. They are also useful, individually and collectively, as indicators of environmental quality. The Poplar River system possesses algal flora of perhaps unexcelled diversity and uniqueness among Montana rivers. Moreover, the Poplar River has produced several species and one genus of algal diatom new to Montana according to a 1976 survey. Only one specimen of a new genus--Plagiotropis--was found, implying perhaps that it may be one of the rarest biological organisms in Montana. (2)

On the basis of fishery habitat surveys, water in the Poplar River Basin in 1975 was of sufficient quality to maintain a fishery, but experts say that only a "narrow margin" of water quality and quantity exists to support the game fish described. An international investigating Task Force concluded that, "basin developments which would reduce water quantity or quality could result in habitat changes which could be detrimental to desirable game fish species." (3)

The same investigators found that water quality in the Poplar River system is marginal during low flow periods, especially in summer. Concentrations of

dissolved minerals, and other factors detrimental to agricultural production and the fishery, are critically high sometimes. "Further deterioration of water quality could seriously impair existing or future [agricultural] uses in the basin," the investigation concluded. (4)

WATER RIGHTS

Rights to water in the Montana portion of the Poplar River Basin are as confused and uncertain as they are elsewhere in the state. Since 1973, a slow process of water rights adjudication has been underway in Montana. Rights existing before 1973 have been identified for adjudication by the courts and a permit system now controls the establishment of legal rights to water. Saskatchewan has had a permit system since 1931; in its portion of the basin, a 1975 survey identified about 225 significant projects having or needing to file for water rights permits, accounting for 1,560 acre-feet of year of the existing demand for Poplar River Basin water. (5).

Although water rights adjudication and full implementation of the Montana Water Use Act permit system are incomplete in the Poplar River basin, studies reveal a total of 672 projects in existing use, accounting for use of 8,750-acre feet in 1975, 7,620 of which were associated with agricultural irrigation and evaporation from stockponds.

Permits issued under the Montana Water Use Act since 1973 have tentatively allocated more than 1,500 acre-feet for eventual use in the basin, most of the total awarded to the Montana Department of State Lands for irrigation of land it leases to farmers.

Preliminary studies show that about half the water-use projects in the Poplar River Basin are on the Fort Peck Indian Reservation, where enrolled tribal members collectively have a federally recognized right to an undetermined amount of water from the river system. The international Task Force working to determine an apportionment formula for the river under the Boundary Waters Treaty was of the opinion that federally reserved water rights (as for Indians) are "internal matters to be resolved within the respective countries." (6)

Indeed, the Task Force's main purpose was to determine the upper limits of water available from which both countries could subtract uses and rights and in-stream needs (such as to support fish and wildlife). The Task Force said:

> It was recognized that Canada and the United States should each have the right to independently develop their water resources. In view of the very limited surface runoff in the basin, it is obvious that water related development has definite limits. Therefore, an apportionment agreement should consider the nature and magnitude of existing and future water demands in the basin and should be directed toward the efficient and beneficial use of Poplar River water for both countries. (7)

United States representatives on the Task Force pointed out, however, that in subtraction from rights claimed by the Montana Constitution and conferred by state law, the Supreme Court of the United States has affirmed the existence of federally reserved water rights: rights to present or future water uses within (say) the Poplar River basin and including rights held in trust for the Fort Peck Indians. (8)

According to Bureau of Indian Affairs solicitors, tribal rights to water held in trust by the federal government extend "to fulfillment of the purposes for which the Indian reservation was created, including not only present uses but the reservation of water sufficient to fulfill the future requirements of the Indians."(9) Legal precedents (chiefly Winters v. U.S. [207 U.S. 564, 1908]

and Arizona v. California [373 U.S. 546, 1963]), according to a BIA legal analysis, certify that future water uses by Indians of (say) the Fort Peck Tribes have validity as if they were in existence today:

> The purpose for which these reservations were created was generally more extensive than just irrigation uses, but to turn to any "arts of civilization." Winters, supra. It was to provide a permanent home for the Indians whereon they could establish communities, irrigate the irrigable acres, develop the minerals and other natural resources, and preserve the minimum flow of streams and existence of bodies of water in order to preserve today and throughout the future regardless of when the water is actually put to beneficial use, the environment wherein they lived. It is the protection of this unique feature of the right to the use of water that differs substantially from state created water rights. The unique nature of the Federal Reserved Right of the Sovereign is tantamount to an existing use right and cannot be determined to be but a mere "probable" future use. These rights are "present perfected rights," Arizona v. California, supra. The measure of such vested rights must be given full consideration in weighing the validity of any apportionment negotiations.(10)

A Fort Peck Tribes executive board committee on land and resources, meeting early in 1976, resolved to assert "paramount rights to the present and future use of waters which are geographically related to our [Fort Peck] reservation as to quantity and quality under the Supreme Court Case of Winters v. United States." In addition, the tribal resolution further asked that the United States ensure that any agreement reached with Canada be sufficient to guarantee that the Indian nations "receive the full natural flow upon the reservation of the Poplar River at our proposed reservoir site No. 2 (approximately in the sum of an average flow of 87,000 acre-feet)." (11) [Emphasis theirs] According to the Fort Peck tribal chairman the tribes are concerned that their rights to a fair portion of federally reserved water may be lost forever if an agreement limited those rights is reached under the Boundary Waters Treaty. (12) Later in the

same year, Fort Peck Tribes summarized the thrust of its argument that an apportionment agreement ignoring Indian water rights would be illegal:

> While there is no international precedent, and members of both governments have rejected consideration of the view, the Commission [IJC] is asked to consider the rights of the indigenous people in the Basin, the Fort Peck Assiniboine Tribe. It is our view that when the Treaty with the Sioux and Assiniboine was signed, the United States regarded the Tribes as nations, independent and sovereign. Treaties between the U.S. and the Indian nations were not a grant of rights to the Indians but rather a grant of rights from them and a reservation of those not granted. It is not within the power of either the United States or Canada, therefore, to ignore the rights of the Fort Pecks since neither country granted the rights. Now each country seeks an allocation of water without consideration of the rights of the indigenous people. (13)

INDUSTRIAL AND AGRICULTURAL DEVELOPMENT IN THE POPLAR RIVER BASIN

Big changes are coming to the Poplar River Basin, especially in the development of industry and agriculture. Some of the changes are certainties; others are still in planning or merely speculative.

Nonindustrial plans for the basin have generated little public excitement, but they could have profound impact on the people, economy and environment of the basin. Certainly there is potential for direct conflict with plans for industrial development on both sides of the international border. A very cursory investigation and analysis was conducted by the joint U.S. - Canadian Task Force on potential development as it might affect the use of water, but even that brief look revealed a surprising potential. In the Saskatchewan portion of the basin, increases in water used for foreseeable domestic (including livestock), irrigation, municipal, recreational and waterfowl nesting site development purposes total 2,150 acre-feet a year (a 38 percent increase over current use). Foreseeable developments in the Montana Poplar River basin easily could demand up to 67,840 acre-feet, nearly seven times current annual use(14). The figures are conservative because the estimates do not take into account water requirements for nearly 300,000 acres of potentially irrigable non-Indian land in the basin.

Most of the potential for nonindustrial development in the basin is connected with tentative plans for construction of a large reservoir on the Fort Peck Indian Reservation. The most likely site is in Township 30 N., Range 51E, M.P.M.

The reservoir could supply about 60,000 acre-feet annually to portions of the 126,000 acres of irrigable land on the reservation. The Task Force pointedly remarked on the potential for conflict between the tribal irrigation

plans and other proposed water developments in the basin: "The development of the dependable water supply (60,000 acre-feet) would require the full level of the historic streamflow [of the Poplar River] as input to the proposed reservoir." (15) The Fort Peck irrigation project could be supplying water to at least 20,000 acres by 1985, the Task Force estimated. In summary, then, potential nonindustrial developments in the basin for domestic, irrigation, municipal, recreational and waterfowl uses could demand as many as 69,990 acre-feet of water--nearly 76 percent of the average available flow in the entire basin. These estimates say nothing respecting the need to maintain water in the Poplar River system to protect the fishery. The Task Force report was blunt about the feasibility of meeting even the potential demand for irrigation water: "Development of...[Indian and non-Indian irrigation potentials] is possible only if no other development of water in the basin takes place, or if water is imported from another basin." (16)

But other developments requiring water are certain to appear. Industry is coming to the Poplar River Basin. In terms of their effect on water and the general environment of the basin, contemplated industrial plans will have the biggest impact of all. Canadian plans for a Poplar River generating station are the most advanced, but in even the U.S. portion of the basin, future industrial water demands could be significant. Burlington-Northern, Inc., and its corporate affiliates, are planning on developing BN potash holdings north of Scobey, Mont. If solution mining* is used as planned, as much as 7,000 acre-feet of water would be consumed annually by 1985, considering BN's plans alone. The potential for potash mining and processing in and near the Poplar River Basin is great. In

*Solution Mining--Pumping water to soluble mineral deposits underground and concentrating the returned solution to yield a salable mineral.

addition to the Burlington-Northern project. PPG Industries has announced plans for potash processing, using a coal-fired plant and possibly solution mining as BN plans to do. Since early 1975, more than 100,000 acres of northeastern Montana, southeast of the Poplar River Generating Station in Daniels and Sheridan Counties. (17) Of the 100,000 acres leased, the largest blocks are held by Churchill Corporation (PPG Industries' leasing agent), C.F. Industries (a partnership between BN and C.F. Industries), and Continental Fertilizer Corp. (subsidiary of Internation Minerals and Chemicals Corp.). Of the 100,000 acres, 18,000 has been tenatively leased by the Montana Board of Land Commissioners to Churchill Corp. in blocks approved early in 1975. (18)

Lignite coal development in the Montana portion of the basin also is possible. Strippable coal reserves there total 635 million tons, 354 million tons of it on the Fort Peck Indian Reservation. The tribes had no firm plans in 1975 to coal mining or other developments using coal, but water supply would be very important to the feasibility of certain kinds of coal development if the Indian people wished to pursue it.

By far the largest potential industrial development in the Poplar River Basin already is under way in Saskatchewan. Lignite coal reserves there totalling as much as 2.5 billion tons could be the basis for a huge coal development benefitting the province. Construction is well under way on the first 300-million watt coal-burning power plant in the four-unit complex conceived by the Saskatchewan Power Corporation (SPC), a public agency. Crucial to the project is a dependable water supply. SPC has impounded the East Fork Poplar River to supply cooling water for the first of the power plants scheduled for completion in 1979. Cooling water will be pumped from the reservoir, circulated in the plant, and in a heated condition, returned to the reservoir by canal. The heated water will accelerate the reservoir's already substantial evaporation and

thereby cool the remaining water so that it can be recycled again through the plant. The entire cycle has several general characteristics: it consumes water by forcing its evaporation from the reservoir; accelerated evaporation tends to concentrate dissolved minerals, lessening the quality of the stored water; and finally, the water that is discharged to downstream users may be (in addition to being degraded) warmer than is normal for the particular season.

Water demand by the Poplar River Generating Station adds up as follows: The 32,000 acre-foot reservoir will cause evaporation of 2,500 acre-feet per year, regardless of subsequent development. Each power plant will force evaporation of 1,800 acre-feet and consume 140 acre-feet in plant operation, for a total of 10,240 acre-feet a year for the entire 1,200-million watt generating complex. Because some water must be released from the reservoir, and because some years are very dry, the annual average inflow into the reservoir of about 11,000 acre-feet is insufficient to supply all four power plants. The Canadians told the investigating Task Force that:

> supplementary sources of cooling water will be required for full development of the project. A study is currently under way to evaluate various alternatives which include development of local sources, importing water from nearby basins, and importing water from Lake Diefenbaker. (19)

Water demand for the four-unit generating station was estimated by the Task Force and is summarized in Table 1.

Table 1

Water Demands Arising from Poplar River Generating Complex

Year	Installed Capacity (million watts)	Annual Water Requirements (acre-feet/year)
1979	300	4,400
1982	600	6,400
1984	900	8,300
1986	1,200	10,240

Saskatchewan assured the investigating Task Force that neither government nor industry has "firm plans or intents" for further coal development beyond the Poplar River Generating Station before 1985. Based on coal reserves and foreseeable demand for coal-derived products, though, the Canadians leave open the possibility for more coal-fired power plants, coal gasification and liquefaction plants, ammonia and urea plants and more coal strip mining in the Saskatchewan portion of the Poplar River Basin.

If all the foreseeable projects were built and in operation simultaneously, total annual water requirements in or adjacent to the basin would be more than 100,000 acre-feet a year. "More realistically [the Task Force reported], water use by the year 2000 for the development of the [Canadian] coal reserves have been estimated to be about 74,000 acre-feet per year." (20) The foreseeable post-1985 industrial developments and water use in the Canadian Poplar River Basin (in addition to the Poplar River Generating Station) are summarized in Table 2.

Table 2

Possible Post-1985 Canadian Industrial Development in Saskatchewan

Development	Water Use (acre-feet/year)
Power Plant (1,200 megawatt)	10,000
Power Plant (1,500 megawatt)	12,000
Power Plant (900 megawatt)	7,000
Ammonia Plants (2 at 12,500 tons/day)	25,000
Coal Gasification Plants (2 at 250 million cubic feet/day)	32,000
Ammonia Plant (7,500 tons/day)	7,500

The energy made available by possible Canadian power plant construction alone would make the Poplar River Basin the location of one of the largest power complexes in the world. Its presence would encourage development of Saskatchewan's extensive non-energy mineral deposits--quartzite, bentonite,

clay and marl. According to the Task Force:

> Although larger deposits of these minerals may exist outside the Poplar River Basin, the desposits within the basin may be preferred for development because of the close proximity to coal fields and future electrical power sources. No water requirements for the development of these minerals have been estimated. (21)

The Task Force noted that the average 29,000 acre-feet annually available in the Canadian portion of the Poplar River Basin would not be sufficient for planned and foreseeable Canadian industrial developments consuming as much as 74,000 acre-feet a year, to say nothing respecting exisitng and prospective agricultural uses, municipal and in-stream requirements, among others.

The announcement of firm plans and contemplated energy and materials development projects generated considerable discussion as Saskatchewan's plans became known between 1974 and 1976. Surprise and consternation characterized much of the reception, for many reasons. First, Saskatchewan's definite choice among several alternatives to meet forecasted energy demand had not been expected until mid-1975 at the earliest. The surprise announcement in September, 1974, left unclear the status of alternative plans- -hydroelectric projects, energy conservation and power-sharing arrangements with other Canadian provinces. Among the proposed alternatives were the Nipawin dam and powerplant on the Saskatchewan River, a $175 million project that would generate 252 million watts. Another alternative was the Wintego dam and powerplant, a $215 million project on the Churchill River. New generating capacity made available by the Wintego Project would be 455 million watts. Wintego was delayed while Canada and the Provinces of Saskatchewan and Manitoba carried out studies on environmental and social impact. According to the Saskatchewan Power Corporation (which is charged with meeting Saskatchewan energy demands), experts were forced to advance their decision on increasing Saskatchewan's generating capacity because no other alternative would provide the "desired level of provincial energy security" by 1979. In a 1974 report announcing the Poplar River Generating Station decision,

SPC said "originally, it was planned that the Wintego development on the Churchill River and the hydro development at Nipawin would be considered as alternatives to this development." (22) Rising costs and delays in securing equipment and complying with environmental studies forced the decision into 1974, and the announcement for the Poplar River Generating Station was the result. The original outline of the project made no mention of the other contemplated industrial developments in the Poplar River Basin and made no direct reference to compliance with the Boundary Waters Treaty. SPC thought the impoundment of a substantial portion of the East Fork Poplar River would not require a Canadian federal license under the International Rivers Improvement Act, and would therefore not fall under terms of the treaty.

In proposing the Poplar River station, the provincial government took an unprecedented step and formed a Board of Inquiry, which was assigned to receive public comment, disseminate information and propose recommendations to the government on "the adequacy of the plans for mitigation of known or potential social, economic and environmental effects of the project." (23) The hearings were November 4-6, 1974. No representatives of Montana or the United States testified, according to the list of witnesses.

Although the hearings revealed some approval for the project among those who testified, a leading Saskatchewan environmental group strongly protested the accelerated power plant development schedule and seriously questioned the need for the Poplar River Station.

Herman Boerma, representing the Churchill River Basin Study Group (a citizens' group in eastern Saskatchewan), told the Board of Inquiry that the SPC prospectus had failed to deal with the alternative of building "the generating station on an existing body of water near a center of population and moving the coal to the station." (24) In addition, Boerma told the board, Saskatchewan's

construction of the Poplar River station can be seen as encouraging the export of electrical energy from Canada to the United States:

> Is Saskatchewan going to export electrical energy to the U.S.? Not directly; but indirectly we will! Saskatchewan exports every year approximately 700,000,000 kilowatt hours to Manitoba from the Island Falls station on the Churchill River. Manitoba is planning to export electricity to the U.S.,* so, in effect, Saskatchewan is planning to export electrical energy to the U.S. indirectly.

Boerma questioned the need for the Poplar River station given that purchase of energy from Manitoba was possible:

> According to press reports, Manitoba is planning to export 1,000 megawatts of firm electrical capacity to the U.S. over the next ten to ...fifteen years at a price of $25,000,000. per year, which could mean a cost as low as .28¢ per kilowatt hour. Why is Saskatchewan not buying some of this energy? (25)

Later, he expanded on this thought:

> It would appear to be only fair if Saskatchewan asked Manitoba to return the same amount of electrical energy through the southern tie-in between the two provinces as Manitoba is now receiving from the Island Falls plant and at the same price Manitoba is paying for the energy generated at Island Falls.** (26)

Boerma also questioned the government's rush toward construction of the Poplar River station:

> Look at the Poplar River project schedule! The coal reserve study and drilling started in 1972; the water supply study started in 1971; the project was approved in June 1974; the environmental studies started after the project was approved; the public was informed in September, 1974, and was given a pile of information and about six weeks to prepare briefs for this Hearing; in the meantime draglines were ordered and tenders for construction were called; the Board of Inquiry will deliver

*Later, Boerma indicated that the sale is to a Minnesota power company.

**The Island Falls plant is owned by the Churchill River Power Co., which leases the site from the Province of Saskatchewan under an agreement that expires in 1981.

> its report on the day that the specific environmental studies should be completed and before the environmental report is ready. Construction of the dam will start on that day; the environmental report will be ready when construction of the dam should be well underway! To call this citizen participation is stretching things just a bit. (27)

Boerma called for a "thorough analysis of energy resources production and consumption" in Saskatchewan before approving the Poplar River project. His concerns were echoed by Manley La Foy, member of the Saskatchewan Environmental Advisory Council, a citizen board established by the provincial government in 1973.

"Saskatchewan," La Foy said, "has many potential sources of energy, and the comparative costs--environmental, social and economic--can be evaluated properly only when the merits of all options are considered concurrently." (28) He continued:

> In addition to the three possible energy projects [Nipawin, Wintego, and Poplar River], there are alternatives in other kinds of energy sources, in trans-provincial power exchanges and in a limited extent, in savings through conservation practices. In short we believe that there is not at the moment any searching analysis of the place of electrical energy in the provincial economy nor of the energy options available. (29)

Saskatchewan Power Corporation testimony indicated the extent to which the operation of individual Poplar River power plants would affect water quantity and quality.

> The proposal we have here really involves the entire control of the water in East [Fork] Poplar; we're not proposing to use all the water, but because of the variability of flow, it would not permit the allocation to any other users. Now we propose--the one unit installation--we propose [that we] will use somewhat less than half of the available water in the river, and the two unit installation somewhat less than

> two-thirds.... Considering the Poplar River as a whole we are not...utilizing anywhere near 50 percent of the flow, which I understand...[is] what the requirement could be under the International Water Agreement [Boundary Waters Treaty]. (30)

The effect of the forced evaporation of water from the reservoir would be to concentrate minerals in the water that would normally rush downstream in a clean state during spring runoff:

> The average concentration in the East [Fork] Poplar River during most months of the year might be 800 or 900 parts per million. This will, in a good year...a year of good spring runoff this could be 100 parts per million or less. The concentration...in the reservoir because of our operation will likely be equal to or less than the normal concentration [800 or 900 ppm] in the rever for most of the year now. Likewise, any water that would be spilled from the reservoir [under an apportionment agreement with the U.S., for example] would not have a higher concentration than the concentration in the East Poplar now during the 10 low-flow months of the year. (31)

Two months after the hearing, the Board of Inquiry recommended government approval of the first 300-million watt unit at Coronach. Based on the testimony received that the project would have significant impact on air and water quality in the United States, the board recommended further review of pollution control equipment for the proposed plant, imposing strict procedures to cut down on the influx of chemicals and contaminated groundwater into the reservoir, and the negotiation "as soon as possible" of an apportionment agreement between the U.S. and Canada on the use of the Poplar River.

> It is the view of provincial officials that the project could be exempted under the terms of that [International Rivers Improvement] Act but the province is willing to agree to an interim licensing agreement if such action appears to be more acceptable to the Government of Montana [the board stated]. (32)

The board's review of possible air pollution from the plant convinced it that SPC's

control of 96 percent of the particulate matter (smoke) from the coal was the "maximum" acceptable because "prevailing winds are northwest to southeast, [and] emissions could affect land in the United States." (33) It recommended adoption of stricter controls on emissions of pollutants if "studies reveal any significant possibility of adverse effects on people or land in Saskatchewan or Montana." (34) Concluding, the board said:

> SPC is committed to compensate any existing downstream water users in Canada and Montana who would be adversely affected.... The board finds it difficult to assess other international aspects of the proposed reservoir. It is clear that the effect of the reservoir would be to reduce flows in the East [Fork] Poplar River in Montana. The board recognized that Saskatchewan is taking the necessary steps to keep the Government of Canada informed of SPC's plans. It will be Canada's responsibility to make this information known to the U.S. Government. (35)

Citing the "growing interest from other parts of Canada in Saskatchewan's coal reserves," the board also said "there is a need to explore export markets for electrical energy so that the merits of this use of energy resources can be weighed systematically against the merits of exporting other forms of energy and aginst the merits of conserving these resources." (36) The board also recommended renewed efforts at establishing a Canadian power grid that would facilitate Saskatchewan's export of electrical energy to other provinces.

Consternation characterized the reception outside Saskatchewan to the announcement of plans for the Poplar River Generating Station. State officials had been sensitive to the potential hazards and political explosiveness of coal-fired power plants since the announcement of Colstrip Units 1 and 2 in 1972. After alerting the state's Congressional delegation and making preliminary inquiries with federal agencies, Montana Lt. Gov. Bill Christianson and several other state officials met with Saskatchewan provincial officials on Dec. 30, 1974.

Christiansen and the others were worried that Montanans would be shortchanged on the amount of water released from the (then) proposed dam. The Canadians indicated that a "possible replacement for water which would be drawn down from the East Fork would be supplied to Montana users from the Middle and West Forks, but we didn't get into details of how this might be handled." (37)

The Canadian plan to use the reservoir for evaporative cooling, and thereby concentrating the dissolved solids that represented the principal cause of the Poplar's already poor water quality, also worried the Montanans: "The TDS (total dissolved solids) and electrical conductivity...of the existing waters making up the Poplar River are presently very marginal and any substantial increase of dissolved solids or salinity would have extremely detrimental effects," Christiansen wrote later. (38)

The potential for degradation of air quality worried Christiansen the most. The Canadian plan to use 96 percent efficient electrostatic pollution control devices on the smokestacks would allow 1,800 pounds per hour of dust to escape from the plant. Montana officials remembered the vociferous public criticism of the state's approval of Colstrip Units 1 and 2, criticism based in part on forecasted declines in air quality in eastern Montana. The Colstrip units--each about the size of the proposed Poplar River units, were forecast to emit only 134 pounds of dust per hour, under control of 99.5 percent efficient scrubbing devices, machinery which also was predicted to gain some control over sulfur dioxide, hydrocarbons, and fluorides. The latter pollutants were to be emitted uncontrolled from the Poplar River station.

Christensen observed: "It looks like economics at this time is the sole criteria used for judgment as to what will be the technological procedure used to produce electricity." (39)

Predicting that resort to the International Joint Commission was inevitable, Christiansen concluded: "My personal analysis is that they are going to go on with the very cursory studies allowable within the time frames and that at best only mitigating measures will be taken to minimize some undesirable consequences we have foreseen." (40)

THE BOUNDARY WATERS TREATY, APPORTIONMENT OF THE POPLAR, AND THE INTERNATIONAL JOINT COMMISSION

Forty percent of the 4,400 mile unfortified boundary between the U.S. and Canada passes along rivers and seaways--the St. Croix, the St. Lawrence and Rainy, and along the Great Lakes, Rainy Lake and Lake of the Woods. Dozens of rivers flow across the boundary too--some of them several times. The two nations have long had an international mechanism--the Boundary Waters Treaty--to resolve the many disputes that have arisen regarding the use and development of the waterways that form or cross the boundary between them.

Although its work is not widely known (especially in Montana), a six-member International Joint Commission (IJC) is empowered under the treaty to resolve disput It oversees an array of other boards and commissions that regulate water levels and flows, abate pollution and apportion water for irrigation and water power across the continent.

The 1909 treaty was negotiated to prevent disputes over water apportionment and development. But it included broad terms that allow the IJC to investigate and make recommendations on almost any question referred to it by either government. In 1966, for example, the two governments requested the IJC to study air pollution along the heavily industrialized eastern section of the boundary. The request remains in effect as a general authorization to study potential air pollution problems anywhere along the border.

The Boundary Waters Treaty recognizes four situations in which arbitration and recommendations may be necessary to prevent disputes between the U.S. and Canada: three of which are or have been applicable to the Poplar River system. (41)

As its name implies, the treaty's first concern is boundary water--water along which the international boundary passes and concerning which proposals for water use, obstruction and diversion may have to be regulated. The Poplar River is not a boundary water in this sense.

The treaty's second concern is with downstream water; water that has crossed the international boundary. It may not be obstructed to the extent of raising the natural level at the boundary except by special agreement or with the approval of the IJC. (In 1936, the IJC approved an application of the Montana Water Conservation Board to construct a dam and reservoir on the East Fork Poplar River [which would have backed up water into Canada], but the project was never carried forward.)

The treaty also addressed the appropriation of upstream water by a country. Although precedents have been established for the sharing of flows, the treaty allows the upstream user complete control over river flow on its side of the border, except that upstream interests are liable for damages they may cause by using or appropriating water.

In addition to the recognition of problems specific to upstream, downstream and boundary water, in the treaty's Article IV it is generally agreed that "boundary waters and waters flowing across the boundary shall not be polluted on either side to the injury of health or property on the other."

The sharing of upstream water has been argued by both sides and by the IJC many times. As a principle its roots go to the Boundary Waters Treaty itself, which (in Article V) specifies that water of the St. Mary and Milk Rivers and their tributaries in Montana, Saskatchewan, and Alberta are to be equally divided, except during the irrigation season when the downstream sides may take up to three-fourths of the natural flows.

In a statement to the International Conference on Water for Peace in 1967, former IJC commissioners Matthew Welsh and A. D. P. Heeney described how the IJC's many functions mirror governmental responsibilities:

> The Commission's functions under the 1909 Treaty are partly judicial--passing upon applications for approval of works that affect water levels and flows in the other country--and partly investigative, recommendatory and administrative.... The importance of the Commission's investigative and recommendatory--or planning--role has increased over the years. Of the fifty "cases" to come before the Commission prior to 1944, thirty-nine were applications for approval of specific works and only eleven were references for investigation and recommendations; since 1944, on the other hand, "references" have outnumbered "applications" by twenty-one to thirteen.

Several writers have emphasized the great significance, as an international cooperative landmark, the provisions of Article IX of the Boundary Waters Treaty:

> Any other questions or matters of difference arising between them [the U.S. and Canada] involving the rights, obligations, or interests of either in relation to the other or to the inhabitants of the other, along the common frontier between the United States and the Dominion of Canada, shall be referred from time to time to the International Joint Commission for examination and report, whenever either the Government of the United States or the Government of the Dominion of Canada shall request that such questions or matters of difference be so referred.

Although the IJC's report under Article IX is purely advisory to each government, a former IJC Commissioner observed that "this function of the commission has been utilized more frequently and more comprehensively in recent years and has progressed beyond the concept of analysis of current problems to the objective of long-range planning as well." (42)

Enthusiasts who note the prohibition of "pollution" and the provision to repair "injury" under the treaty should be sobered in learning that the terms are being defined as allowing some pollution and some injury.

In practice, those who claim injury from water pollution have two recourses

under the Boundary Waters Treaty: sue those responsible (the treaty grants them this right) or push for an advisory by the IJC (which the governments are free to ignore). A U.S. Department of State legal analysis reveals that the IJC advice is likely to be against the plaintiff unless clear violation of water pollution-control standards is proven.(43) Much the same can be said concerning cases of alleged air pollution damage, except that the treaty does not authorize citizen suits as it does for water pollution.

According to the U.S. State Department, there is "growing international acceptance" of the notion water pollution is what countries say it is, and that "injury" means substantial damage. It cites articles from the 1966 Helsinki Rules of the International Law Association that define international water pollution as "detrimental change" in quality would cause "substantial injury" to another state's territory. (44)

The U.S. State Department has, in fact, tried to solidify these notions in current negotiation under the Boundary Waters Treaty concerning potential degradation of the Souris and Red Rivers, which flow into Canada:

> Our discussions with the Canadians concerning the Garrison Diversion Unit have apparently established their agreement that "injury" refers to an unreasonable interference with a neighboring State's enjoyment of its own resources, involving material damage, and does not encompass all impacts which might occur. Article IV [of the Boundary Waters Treaty] does not provide that there can be no degradation per se of transboundary waters. (45)

Determining the existence of "injury" under the state department's interpretation, by its own admission, "obviously may not be an easy matter in a 'close case' where, for example, the waters in question are already in a degraded state, or stream flows are intermittent or insubstantial." (46)

Because it was asked to investigate air pollution problems along the U.S.-Canadian border, the IJC has commented on the subject and, in the view of the U.S.

State Department, has thereby established a framework for viewing all air pollution problems between the two countries. In its 1972 Report on Transboundary Air Pollution, the IJC remarked that "air contaminants emitted in one country should not create conditions that are detrimental to the public health or welfare of citizens or to property in another country." Referring to air quality in the Detroit and St. Clair River areas, the commission said air flowing across the international boundary should be:

(a) Free from contaminants which have harmful effects on human health,

(b) Free from objectionable odours, haze, dirt, and other contaminants which interfere with the normal amenities of living or cause adverse aesthetic effects,

(c) Free from contaminants which have deleterious effects on property, materials and vegetation. (47)

In recommending actions for governments to take to achieve the goal of air "free" from contamination, though, the IJC relies on existing regulatory standards on each side. (48)

It is important to note that the leading case with respect to international air pollution (Trail Smelter Arbitration) which was resolved under IJC auspices, reinforces the emerging notion that international air pollution is allowable within limits. (In the Trail Smelter case, awards for damages from air pollution were made after presentation of a case "of serious consequence" and injury "established by clear and convincing evidence." (49)

Told of this existing international framework to investigate and recommend solutions for air pollution, water pollution, and water apportionment conflicts along the U.S.-Canadian border, Montana officials early in 1975 began an effort to have Poplar River problems cleared up by the IJC. They are still trying.

Here is a chronology of government decision making that led to a separation of

the problems of water apportionment, water pollution and air pollution and a fragmentation of the United States effort to deal with the problems and allay citizen concerns:

January 23, 1975:

Gov. Thomas L. Judge writes to U.S. Department of State citing potential problems in "maintenance of air quality...quality of water flowing in the East Poplar River; adequacy of flow to meet water right(s)," and formally requests IJC involvement.

February 5, 1975:

House Joint Resolution 52 is introduced in 44th Montana Legislature expressing concern over potential air and water quality problems from Poplar River generating project and calling for studies. Dies for lack of action in Senate Natural Resources Committee.

February 6, 1975

Office of Canadian Affairs, U.S. State Department, replies to Gov. Judge and decides that "the role of the Commission (IJC) should be deferred until we have a better understanding of Canadian intent." On Feb. 10, U.S. diplomatic note to Canada notes possibility of air, water quality and water quantity problems, asks for non-IJC meeting U.S. and Canadian officials to "examine the implications of [illegible]

February 20, 1975

International Joint Commission announces initial division of potential Poplar River problems as follows: IJC's International Air Pollution Advisory Board is to review Canadian project's potential air pollution [illegible] possible." IJC's International Souris-Red Rivers Engineering Board [illegible]... on this proposed use of the [Poplar River] waters... [illegible]

investigate potential water quality problems from Poplar River development because "the Commission has no present authority or institutional arrangement for investigating this aspect." Suggests government "may wish to look into the matter in light of the provisions of Article IV of the Boundary Waters Treaty relating to water pollution."

April 7, 1975

IJC directs the International Souris-Red Rivers Engineering Board to "undertake a study of the apportionment of the flows of the East [Fork] Poplar River" and establishes a Task Force to advise the board. U.S. Section of Task Force is composed of officials from U.S. Geological Survey, U.S. Bureau of Reclamation, and the State of Montana.

April 15, 1975

Canadian and American officials (the latter led by Louis Janowski, U.S. Department of State) meeting in Saskatchewan endorse IJC water apportionment study; recognize need for "further study" of water quality; agree to meet again on air quality impacts and reserve decisions on required air pollution control equipment for Unit 1 of the Poplar River Generating Station pending that meeting.

May 29, 1975

First of eleven meetings of the joint U.S.-Canadian Poplar River Task Force (on apportionment) meets amidst an argument over water quality. Minutes show this exchange:

> The suggested terms of reference did not require that the Task Force consider water quality aspects in the study on apportionment. The State of Montana felt strongly that water quality should be an integral part of the apportionment study.
>
> It is the opinion of the State of Montana (and concurred in by the USBR and USGS representatives of the USA delegation) that an apportionment study cannot properly be concluded without considering water quality. There is concern that no other technical group has been formed to consider water quality and that water quality data will simply be supplied directly to the IJC. It is felt by the US delegation that this task force should be

allowed to consider water quality as it related to apportionment. There may be potential water quality problems that needed to be solved by proper apportionment of the water.

It is quite possible that a mutually acceptable apportionment could be made based on "water quantity" alone but would not be in the best interest of "water quality."

The Canadian delegation recognized the importance of obtaining adequate information on water quality in Canada and the United States so that future changes can be monitored. However, it is felt that existing data or data that could be gathered during the course of the study would not be significant in preparing recommendations on apportionment within the time frame set by the Engineering Board [deadline Feb. 1, 1976]. The Canadian members felt that the exclusion of water quality in the terms of reference was not a serious constraint on the surface water apportionment question and the Task Force should proceed with the assignment and schedule as directed by the Engineering Board. It was decided to report Montana's concerns on water quality to the Engineering Board.

June 2, 1975

International Souris-Red Rivers Engineering Board orders establishment of water quality monitoring network in the Poplar River Basin by U.S. and Canadian agencies supporting the Task Force.

August 21, 1975

International Air Pollution Advisory Board advises IJC that:

> a significant portion of Montana's air assimilative capacity for suspended particulate matter will be taken up by emissions from the proposed Canadian power plant even with the initial 300 MW unit. This will result in considerable deterioration of the air quality unless the power plant is equipped with an electrostatic precipitator to control particulate emissions with an efficiency of 99 +percent.
>
> There will be a slight incursion on Montana's air assimilative capacity by SO_2 [sulfur dioxide] from the initial 300 MW unit. The report shows, however, that as the plant expands to its proposed MW capacity, there will be considerable deterioration of Montana's air quality from transboundary flows of SO_2 emissions. ... Montana does not express a direct concern with NO_2 [nitrogen dioxide] emissions ... there will be considerable incursions on the air assimilative capacity for Montana from this pollutant as well. Our recommendation is that the construction and operation of this plant should incorporate control measures to limit the emissions of particulate matter, ... to the degree necessary to protect the public health standards in Montana. (51)

August 26, 1975

Canadian and American technicians agree that 99 percent efficient particulate emissions control devices should be required at the Poplar River Generating Station Unit 1. They also agree that "continuous in-stack monitoring of the 300 megawatt unit will be considered as a basis for identifying the possible need for further pollution control requirements." Technicians announce that "further study" is needed to determine whether United State's sulfur dioxide standards would be violated in U.S. air space by emissions from Poplar River Unit 1.

October 5, 1975

Canadian and American air quality technicians, including representatives of the U.S. Environmental Protection Agency, meet to consider contradictory data on the air quality impacts of one 300 million watt Poplar River unit and the combined impacts of two. The meeting is considered crucial by some in resolving whether Canadians will be forced to install sulfur dioxide emissions control equipment (wet scrubbers) on the power plants. Pending more testing, though, technicians agree to hold back judgment on impact on Montana air quality of 600 million watt installation. Issue statement that "a 300 MW station would create no transboundary air pollution problems from the emissions of sulfur dioxide, nitrogen dioxide, suspended particulate matter and fluorides," and drop debate on SO_2 controls for initial unit, even though air pollution from the initial generating unit would use up half the allowable increment for sulfur dioxide under limits imposed by the Prevention of Significant Deterioration rules of the U.S. Environmental Protection Agency.

January 15, 1976.

Fort Peck Tribes' committee protests inadequate investigation of air quality

ine. Tribes write to an array of officials and blast U.S. State Department for pressuring apportionment agreement between Montana and Saskatchewan against the best interests of citizens and tribal members.

January 30, 1976

Last meeting of the Poplar River Task Force opens almost in argument over whether the Task Force report should include mention of the issue of water quality in the Task Force report recommending apportionment of Poplar River water. Task Force agrees to say 'the water quality effects of a change in the flow regime are unknown," and recommends continued "consideration" be given to the water quality implications of the proposed Poplar River apportionment.

The United States section of the Task Force recommends several specific studies of water quality impacts; Canadian section expresses that it "does not feel qualified" to recommend water quality studies.

February 22, 1976

State Department's Richard Vine announces decision to propose an investigation by the IJC of Poplar River water quality "to assess the transfrontier effects of the projects first 300 megawatt unit, and to assure that proposed additional units will not result in injurious pollution of waters entering the United States."

February 27, 1976

International Souris-Red Rivers Engineering Board forwards tentative apportionment recommendations to the IJC suggesting basically, 75 [illegible] of the natural flow across the international border of the Poplar River

except that Saskatchewan could take more than half the flow of the East Fork Poplar River and the U.S. could demand extra water for irrigation in its portion of the East Fork basin at certain times (see Appendix).

March 5, 1976:

Canadian, United States, Montana and Saskatchewan officials meet in Regina and agree on "the need for a formal bilateral mechanism to address water quality issues." U.S. proposes that the IJC do the work and drafts a set of instructions to guide the study. State Department announces that it will issue an environmental impact statement before it considers any IJC apportionment recommendation.

April 2, 1976:

Montana Environmental Quality Council unanimously recommends "an immediate bilateral reference to the International Joint Commission of all the potential transboundary effects" of the "mining, the power plant(s), the dam and reservoir, and all the ancillary facilities." Investigating task forces under IJC control should "include strong input from Montana citizens and public officials," the legislative agency recommends.

April 7, 1976:

Montana government officials reiterate their insistence that the U.S. State Department should ask the IJC to investigate air quality impacts of the proposed Saskatchewan energy development.

April 14, 1976:

U.S. State Department cites previous studies of transboundary air pollution and water use regarding Poplar River project and states it "does not believe that additional requests to the Commission (IJC) with respect to these particular problems is necessary at this time," but promises to press for IJC study of water quality issues.

April 19, 1976:

State Department reiterates its position that [illegible] grounds at present on which to base a United States [illegible] guards" beyond those already agreed to regarding [illegible] the first 300-million watt generating station in Saskatchewan. It states:

> When the first 300 megawatt unit is completed in 1979, monitoring of emissions from the project will begin, and Canadian authorities have assured us that this data will be provided to the United States authorities. If actual emissions are significantly different from the results predicted in [illegible] studies, and if it appears that transboundary air pollution could result, the United States government would expect to request further bilateral negotiations with the Canadian Government and similarly to request the International Air Pollution Advisory Board to conduct further studies. (52)

On April 29, the state department adds that:

> to ressurrect the air quality issues now, after we have engaged in detailed and constructive discussions with the Canadians on that subject, could have serious implications on our negotiations for a joint water quality reference and settlement of the apportionment question. Such a step could be taken as an indication of bad faith on our part.

May 26, 1976:

At IJC hearing in U.S. concerning proposed apportionment of Poplar River system water, Lt. Gov. Bill Christiansen announces Montana's [illegible] the apportionment recommendation "contingent upon an indication by the International Joint Commission, that the apportionment agreement will not, in any way preclude future negotiations in resolving water [illegible]

Fort Peck Tribal Chairman calls [illegible] consideration [illegible] apportionment without study of downwind and downstream [illegible] Montana-Dakota and asks for halt to SPC power plant construction [illegible] 90-10 split of Poplar River Basin water favoring [illegible] historical use.

Saskatchewan proposes interim apportionment agreement to apply until IJC apportionment recommendations (when they issue) are endorsed by the U.S. and Canada. Interim apportionment under the Saskatchewan plan means release into East Fork Poplar River, one cubic foot per second across the international border plus 300 acre-feet a year on demand (an attempt to meet some existing irrigation requirements of U.S. farmers in the Poplar River Basin).

May 27, 1976

At IJC hearing in Canada concerning proposed apportionment, Canadian officials indicate continued resistance to IJC investigation of water quality aspects of apportionment. Saskatchewan, citing International Law Association principles, calls for IJC apportionment of Poplar River system in a 70-30 split favoring Canada, and asks that the IJC consider as an "existing use," the 1972 reservation of 6,000 acre-feet of the East Fork Poplar River by the Saskatchewan Power Corporation..

July 12, 1976

U.S., Canadian, Saskatchewan and Montana representatives meet in Washington, D.C., to negotiate a bilateral order to the IJC on a water quality investigation after U.S. State Department argues that "questions of water quality and stream flows are inextricably interrelated." Canadians reject proposed U.S. wording of water quality reference; promise to return for further negotiation of water quality reference to IJC.

September 23, 1976

Gov. Thomas L. Judge writes to IJC and reiterates Montana's belief that "water [quality] and air quality problems of the Poplar River Basin are integral to the question of water apportionment and [we] would prefer that any international agreement affecting the resources of the Basin address all three problems."

Gov. Judge argues further that IJC compliance with Canada's demand for a 70-30 split of Poplar River Basin water favoring Canada would violate international

precedent and "be running to the echoes of [illegible] fishery and affected wildlife." Gove[illegible] use claim to 6,350 acre-feet a year as [illegible]

September 21, 1976

Three Corners Boundary Association, of [illegible], writes to Montana state governments to recognize the full extent of [illegible] trial plans; cites continuing Canadian plans to use "inferior [illegible] control devices" and calls for U.S. insistence on Canadian use of best available control technology."

"Anything short of this would set a dangerous precedent for future negotiations on the Poplar River Power Project and elsewhere [illegible] such as Cabin Creek [British Columbia]," TCBA says.

Fort Peck Tribes writes to IJC and reiterates claim to Poplar River [illegible] water under reserved water rights doctrine and 1888 treaty with U.S.; it argues that a 70-30 split of Poplar River water between U.S. and Canada is appropriate considering natural flow and existing (1975) water use in both countries; suggests that tribes will seek court test to establish legal right to [illegible] of Poplar River system and undetermined amount from Missouri River.

September 29, 1976

At suggestion of Lt. Gov. Bill Christiansen, U.S. Department of State and Environmental Protection Agency officials hold public meetings in Wolf Point and Poplar, Mont., to brief citizens on status of Poplar River negotiations and indicate scope of studies in preparing forthcoming EIS and [illegible]. State Department's Karl Jonietz announces that interim U.S.-Canada [illegible] on air pollution controls for the first 300-million-watt demonstration in Saskatchewan will be reopened if new analysis of test results shows [illegible] predictions of air pollution differ substantially from assumptions of technical meetings in mid-1975. Announces that IJC will appoint citizens to

technical advisory boards in the future to assure that deliberations reflect local concerns; also announces that Department of State will not conclude apportionment agreement with Canada on Poplar River until IJC completes investigation of water quality questions.

MONTANA ENVIRONMENTAL DEGRADATION FROM CANADIAN ENERGY DEVELOPMENT

Whatever the eventual success of citizen protest, legal maneuver, litigation and diplomatic negotiations, the fact remains that the environment of Montana's portion of the Poplar River Basin is going to be degraded by Canadian industrial development. Whether the degradation will be called pollution is a legal question having little to do with the environment.

The apportionment formula for Poplar River basin water recommended by the International Souris-Red Rivers Engineering Board to the International Joint Commission (see Appendix) would degrade water quality by reducing water quantity, because the two are as one in any discussion of water pollution. The Appendix reprints the recommended apportionment agreement and methods of administration as proposed to the IJC. Regarding the impact of the proposed apportionment, the Task Force said:

> Requirements of the two countries have been met by specific recommendations on individual streams. A base flow will be maintained on the East Poplar River where under natural conditions the flow at the international boundary occasionally dropped to zero. In addition to base flow, provision is made for releases on demand each year to satisfy special needs in Montana. Canada, in turn, will have the right to store a greater precentage of larger flows on the East Poplar River for future consumptive use. (PC)

Calculations of the amount of water to be received in Montana under the proposed agreement are complicated by the existing withdrawals, by the [illegible] of flow in the basin and because guesses on future availability are based on historical records which are incomplete. According to the U.S. Geological Survey, though, the percentage reduction of natural historical flow [illegible] uses plus expected reductions from the impact of the [illegible] ment can be viewed in two ways. [illegible] Canadian use:

Table 3

East Fork Poplar River Percentage of Natural Flow

Under Proposed International Apportionment Agreement[a] (56)

Years	Percentage at Intern'l Boundary
Average year	15.1
Maximum year	5.6
Minimum year	38.7

[a]Assumes Canadian use of all water of the East Poplar River allotted to it under the proposed agreement (no spills from the reservoir during spring runoff--an unlikely situation in the long run).

Table 4

Impact of Proposed Apportionment Agreement Assuming

Occasional Spills from Coronach Reservoir and Evaporative

Consumption Caused by 300 Megawatt Power Plant (57)

Location	Mean Flow Year		Maximum Flow Year		Minimum Flow Year	
	acre-ft	% of Natural Flow	acre-ft	% of Natural Flow	acre-ft	% of Natural Flow
E. Poplar River at Int. Bndry.	6,170	49.5	42,700	91.3	1,020	38.7
Poplar R. nr. Scobey	34,300	84.4	135,000	96.4	5,300	75.6
Poplar R. nr. Poplar	85,800	92.7	328,000	98.4	12,400	86.1

Natural spills from the power plant cooling reservoir [illegible] spring runoff volumes are likely in some years, however. [illegible] Geological Survey prediction of the percentage reduction [illegible] portions of the Poplar River system. The prediction assumes [illegible] uses plus theoretical reductions caused by impact of one 300 million watt power plant and its cooling reservoir (scheduled for operation in 1979).

According to the U.S. Geological Survey, the proposed [illegible] allows the Canadians to store the high flows in the East Poplar River which have not been used previously in either the United States or Canada.

Information prepared for Montana state government officials on the water quality effects of Canadian coal development in the Poplar River basin indicates that the proposed apportionment regime could make the water useless for irrigation and could destroy the river's fishery.

The East Fork Poplar River has a relatively high concentration of total dissolved solids (TDS), a condition that could be aggravated by the proposed regulation of stream flow. TDS concentration is lowest during the spring runoff (March and April) and increases during the summer and winter; TDS [illegible] 1,700 milligrams per liter have occurred. The Soil Conservation Service has recommended the discontinuance of irrigation when the TDS exceeds 1,000. Studies show that existing TDS concentrations are [illegible] in the [illegible] of the Poplar River in Montana.

Boron, proposed as a [illegible] water quality indicator, [illegible] river water in a range from 0.1 to 3.1 milligrams per liter, [illegible] varies independently of flow. Thus high boron levels can be obtained [illegible]

of relatively high flow. Critical boron concentrations for cereal crops and alfalfa are generally given as 2 and 4 milligrams per liter, respectively. Thus, water quality in the undisturbed East Fork Poplar River is adequate for irrigation of alfalfa, but is generally unsuitable for irrigating cereal crops.

Evaporation of 5,000 acre-feet a year from the East Fork basin (the projected impact of the first 300-million watt power plant) could result in a two to three-fold increase in total dissolved solids in the water entering Montana.* The same increase is probable for the boron concentrations, which could wipe out the usefulness of the East Fork water for irrigation of alfalfa. In addition to the increase in TDS and boron by evaporation, substances added to the reservoir as by-products of power plant operation, and drainage from the strip mines, also could degrade water quality in the Poplar River system. Full use by the Canadians of suggested apportionment for the Middle Fork Poplar River would reduce the Middle Fork's water quality to a comparable extent, according to Montana state water quality experts, and affect more of the river's main stem too.

Increases in TDS and boron as predicted and the possible introduction of toxic substances into the water could have serious impacts on the usefulness of the water not only for irrigation, but for livestock watering and support of the aquatic ecosystem. Relatively minor alteration in water quality and quantity and temperative (all likely due to Canadian energy developments) could destroy the Poplar River's status as one of the few worthwhile warm water fisheries in Montana.

The recommended apportionment for the East Fork Poplar River assures delivery of only 15.1 percent of the mean annual flow. According to the Montana Department of Fish and Game, the guaranteee is inadequate to maintain the integrity of the aquatic ecosystem. It is projected that additional water in

*Canadian computer simulations predict that TDS concentrations in water discharged to the U.S., under influence of one power plant, would be 1.4 times the present average.

the form of spills from the Coronach reservoir will be regulated by [illegible]
44 years or the average. The low, stable flows proposed [illegible] would totally alter the natural flow regime of the river. [illegible] said stable flows

> would contribute to the accelerated eutrophication of the river. Assurance for release of early spring water which is of superior quality is requested to maintain channel integrity and to provide water of a better quality for all downstream uses. Flow regimens that generally resemble existing conditions, particularly with reference to spring flows, are essential if existing sport fish populations are to be maintained.
>
> The Middle Fork Poplar River contains one of the most important segments of the sport fishery. To maintain a quality fish population in the Middle and West Forks, a detailed plan for water release must be developed whereby, greater consideration is given to duplication of seasonal flow patterns. Water apportionment as presently described, does not indicate the extent or timing of releases, and therefore, meaningful evaluations of impacts cannot be ascertained.

In addition, the municipal water supplies for the towns of Scobey and Culbertson may be indirectly affected by the Coronach development. Although both communities obtain their municipal supplies from groundwater, their wells are close to the Poplar River. Water quality changes in the river caused by the Coronach development ultimately may influence closely associated aquifers and thereby degrade the municipal water supplies. Proposed water quality monitoring in the U.S. and Canada could resolve many of the foregoing questions.

The 400-foot stacks of the coal-fired power plants under construction north of the Montana border in Saskatchewan will emit gaseous and particulate pollutants that will be carried into Montana by prevailing winds. U.S. concerns over effects on air quality therefore focus on probable significant air quality [illegible] of Montana

pollutants; that is, the probable concentration of pollutants in the air around and downwind of the plant. Some Montana air quality standards apply to emissions--the volume of pollutants allowable from individual smokestacks. American emissions standards cannot be applied to the Canadian development, but Canadians themselves could pass strict laws to limit emissions.

The debate whether the Poplar River Generating Station will cause air "pollution" in Montana is complicated considerably by two factors: one is that "pollution" is a legal term that usually has little to do with the reality, which is air quality degradation. Second, degradation of air quality under recent interpretations of Clean Air Act requirements in the United States is strictly limited to incremental amounts. Such incremental limitations are designed to comply with "prevention of significant deterioration" (PSD) requirements of the law as interpreted by the courts. Hence, under requirements of the Clean Air Act, air quality in Montana generally may be degraded only to a certain point, not as high as the limits of standards designed to protect human health and welfare. Under this legal interpretation, a pollution source could "use up" the allowable air quality deterioration limit in a region and effectively prevent the installation of other pollution sources. The debate over air quality impacts of the Poplar River Generating Station then, first is whether it could cause illegal violation of standards designed to protect human health, and second whether it would "use up" the region's legal freedom to develop polluting industries in Montana.

Complex computer simulations of ambient air concentrations resulting from the plants are based on weather information and on assumptions about the characteristics of the coal to be burned and the boilers that will be burning it. Disputes

over the validity of predictions usually [illegible] assumptions. U.S. officials have [illegible] claim that 40 percent of the sulfur in the lignite coal [illegible] plants would be retained in the ash (rather than going [illegible] dioxide, a pollutant, out the stacks). A Saskatchewan [illegible] burn of the coal indicates that sulfur retention is [illegible] even this figure is disputed by some U.S. engineers as [illegible] siderable Canadian optimism.

Working mostly under Canadian [illegible] assumptions, [illegible] of the U.S. Environmental Protection Agency have calculated the [illegible] air quality from the operation of the Poplar River Generating [illegible] katchewan at its 300, 600, 900 and 1,200-megawatt development [illegible]

Results of the EPA study (60) show that, beyond the [illegible] development level, the Poplar River Generating Station is predicted to cause pollution in excess of allowable PSD increments and violation of U.S. air quality standards. Table 5 summarizes the findings.

The findings in the table are for 24-hour standards (that is, standards pertaining to maximum permitted concentrations of pollutants in a 24-hour period). A similar pattern of violations and excesses would appear in annual ambient air pollution concentrations averaged [illegible] The violations of the plants violating Saskatchewan ambient air standards would be [illegible] greater than the table seems to indicate, because the data is based on [illegible] tration predictions of pollutant concentrations at the [illegible] some miles from the plant site. Saskatchewan accepts [illegible] supply at the plant site itself, where pollutant levels would [illegible] fumigation conditions.

Table 5

24-Hour Maximum Air Pollution Impacts on Montana of Poplar River Power Plants[a,e]

Plant Size (megawatts)	Particulate Concentrations at 99 Control (ug/m^3) Increment/Total[c]		Sulfur Dioxide Concentrations at Retention (ug/m^3) 40%	30%	Allowable Pollution Increment[b] Class I Partic./SO_2		Class II Partic./SO_2		Ambient Air Standards (ug/m^3) U.S. Partic./SO_2		Montana Partic./SO_2		Saskatchewan Partic./SO_2	
300	18	150	50	58	[10]	[5]	30	100	150	365	200	262	[120]	157
600	38	170	100	116	[10]	[5]	[30]	[100]	[150]	365	200	262	[120]	157
900	58[d]	190	150	175	[10]	[5]	[30]	[100]	[150]	365	200	262	[120]	157
1,200	90	222	200	233	[10]	[5]	[30]	[100]	[150]	365	[200]	262	[120]	[157]

[a] Major pollutants only, at international border, winter season, winds from northwest
[b] Poplar River Basin in Montana currently is a Class II zone
[c] Total particulate includes background dust concentration of 132 ug/m^3 as measured by the Montana DHES
[d] Estimated
[e] Boxed numbers indicate ambient air or PSD incremental violations of air quality standards at particulate control and sulfur dioxide retention efficiencies claimed by Saskatchewan Power Corporation

Source: EPA data

Concentrations listed in the table are [illegible] at the international border. As the smoke plume travelled further into Montana the concentration of pollutants would decrease in intensity. This would work slightly in Canada's favor when the argument is presented that the level, impact of air pollution from the Coronach development would be [illegible] increments of air quality degradation and thereby preclude industrial development (air quality degradation) on the U.S. side of the border. Additional pollution modeling would be necessary to determine a locally acceptable distance between the Poplar River Generating Station and some proposed [illegible] in this situation.

Air pollution experts at the Montana Department of Health and Environmental Sciences dispute the EPA estimates. Studies in Montana predict concentrations of sulfur dioxide at the international border more than twice as high as the EPA's estimates at various levels of development. [illegible] results, if applied to Table 5, would increase greatly the number of predicted violations of Montana, U.S., and Saskatchewan ambient air quality standards for sulfur dioxide.

Also according to the Montana Department of Health, "Longer degradation of the air quality could severely affect the respiratory disease rate [illegible] the Poplar River Basin. (62) Three Montana counties (Sheridan, Roosevelt and Daniels) have high death rates for circulatory diseases. Sheridan County has a high death rate due to lung cancer and Roosevelt County has a high death from pneumonia. All are conditions aggravated by air pollution, according to the Montana Department of Health."

AN ENVIRONMENTAL IMPACT STATEMENT ON APPORTIONMENT

It became obvious to U.S. Department of State and Environmental Protection Agency officials early in 1976 than an agreement with Canada on apportionment of the Poplar River would, as an action likely to have a significant impact on the human environment, require issuance of a federal environmental impact statement on the decision. The Department of State has been designated lead agency. At the U.S.-Canadian negotiations on March 5, 1976, it was agree that conclusion of the apportionment agreement also would have to await IJC establishment of a water quality board which would investigate water quality impacts resulting from the apportionment and from the construction and operation of the power plant an appurtenant facilities, including the coal mine and Poplar River reservoir at Coronach, Sask. (63) The EPA Region VIII administrator expressed these views about the proposed board and the conduct of studies for the EIS:

> The U.S. section of the board should be constituted with membership from EPA, other federal agencies, the State of Montana, the Fort Peck Tribes, and local representation. EPA Region VIII would be an appropriate lead agency. We are available to assist with framing the terms of reference. Consideration should also be given to establishing a single board to cover both air and water quality considerations.... We belive that the EIS should include impact on air quality as well as water quality. (64)

Funding of $400,000 has emerged from Congress to support the Department of State EIS and a joint program of Poplar River Basin research by the State of Montana and the U.S. Environmental Protection Agency. The appropriation will be used by the State Department to prepare an EIS on the proposed apportionment agreement and by the EPA to prepare an "assessment report" on the full range of environmental impacts from the Saskatchewan Power Corporation development. Collecting information for the EIS and assessment report will use up about half the money and take a year's time. EPA plans to hire a consulting firm with the other half the money to perform the environmental analysis on the information. Water quality studies under the study program will include surface water sampling

[illegible] analysis, fisheries and furbearers studies, [illegible] well-water sampling to discover the [illegible] or the Poplar River basin, and computer modeling to [illegible] under various flow regimes.

Air quality studies will include air quality measurements to determine existing pollution levels for particulate, sulfur dioxide and nitrogen oxides, meteorological observations to determine inversion frequency, intensity, and a program to determine the range of visibility. Coal analyses to determine trace elements expected in the water and air, and another [illegible] possible effects of predicted sulfur dioxide pollution on [illegible] (65)

According to officials involved, any IJC studies of water quality impacts of the proposed apportionment would be separately funded.

State and federal agencies expended considerable [illegible] during the 1973-1975 period of unorganized and ad hoc investigations of the Poplar River problem. Informal checks with officials revealed the following approximate original expenditures:

U.S. Environmental Protection Agency [illegible]

(grants to Montana state agencies for water quality work, and its own fisheries, air and water quality investigations)

Department of Interior, Bureau of Reclamation [illegible]

(Grants to federal and state agencies for water quality investigations, and its own water quality studies on apportionment)

Department of Interior, U.S. Geological Survey [illegible]

(Water quality analysis, responsibilities as lead agency in International Souris-Red River Task Force negotiations representing the United States)

Montana Department of Fish and Game [illegible]

(Water quality and fisheries investigations)

Montana Department of Health and Environmental Sciences - Air Quality Bureau	$4,000
(Air pollution modeling, monitoring)	
State of Montana - Office of the Lieutenant Governor	$5,000
(Research and writing)	
TOTAL	$202,500

Programs and studies connected with the ongoing water quality monitoring program and further basic data gathering in the Poplar River Basin will mean continued expenditures.

DIPLOMACY, SECRECY AND CITIZEN PARTICIPATION: A FUNDAMENTAL DISAGREEMENT

By early 1976, those concerned with the outcome of the private technical and diplomatic negotiations between the U.S. and Canada concerning the Poplar River question began to object to the system. A debate ensued that shows little sign of waning.

Norman Hollow, Ft. Peck Tribes executive board chairman, mailed a complaint in February, 1976, to an array of federal and staff officials. The complaint castigated the U.S. State Department's handling of the Poplar River negotiations:

> In the negotiations with the Canadians, it was apparent that the Canadians were experienced, professional international negotiators, who operated as an arm of their External Affairs Department (comparable to our State Department) and their own International Joint Commission section, to work for the best possible arrangement for Canada. In contrast, the members of the United States Task Force who did the main negotiating were technicians who have not been involved in this type of negotiation before. They were not told what to expect, nor were they briefed as to how to represent the interests of the United States in the negotiation. Neither the State Department nor the International Joint Commission prepared them in any way for their duties. (66)

The tribes' criticism of the state department also said the negotiation was "a

complete failure in protecting the Tribes' interest, the interests of the people of Montana, and those of the United States."

In the tribes' view the State Department rushed to get an agreement so that the Canadians could start filling Canadian dams at the early runoff." But the tribes said, the Canadians are in no discernible hurry to put down their objections (based on water quality) to the Garrison Diversion Project, which would affect the Souris and Red Rivers in the midwest.

The Fort Peck Tribes also complained that no member of the tribes had been appointed to the Task Force, and that their attempts to observe the negotiations were extremely restricted. "Other concerned interests, such as the Environmental Protection Agency and the representatives of the town of Scobey were not allowed to attend as observers," they said.

Similar complaints about lack of citizen participation in the Poplar River apportionment negotiations came from the Montana Governor's Office, the Bureau of Indian Affairs (on behalf of the Indians), the Three Corners Boundary Association (a citizens' group formed to provide information to Montana residents of the Poplar River Basin), and others. The Environmental Protection Agency's Region VIII office called for broad-based citizen participation in any future negotiations, and so did the Montana Environmental Quality Council, an agency of the legislature.

The Three Corners Boundary Association also was critical of the State Department's strategy in handling the IJC Commission and Poplar River issues. "We are disappointed," said a spokesman, "to see that the Poplar River Power Project is continuing to be negotiated in a piecemeal fashion.

> We adamantly oppose [the continued] ... [illegible] that allows or says that the Saskatchewan Power Corporation can build their first 300 megawatt plant without pollution control devices (which they are not [illegible]) and then

> wait and see if there are any problems. This type of planning is painfully shortsighted and subjects the health and welfare of the people of northeastern Montana to an unnecessary gamble. If there are any mistakes or miscalculations, the people of northeastern Montana will bear the costs of increased air pollution through loss of crop yields, dirtier air, or increased respiratory and circulatory diseases. (67)

To the objections of the Fort Peck Tribes, the Department of State's Richard Vine, Deputy Assistant Secretary for Canadian Affairs, issued a comprehensive response. He called attention to the fact that members and observers of international negotiations are admitted by mutual consent of the governments involved, and added:

> at no time were United States members of the [International Souris-Red Rivers Engineering] Board or its Task Force on the Poplar instructed or otherwise directed by an officer of the Department of State. It is a hallmark of the practice of the International Joint Commission that its Boards and their members, while frequently officials of Governments at various levels on both sides of the boundary, shed national interests in the conduct of an impartial and independent study on behalf of and at the direction of the International Joint Commission. Consistent with this practice, it is the Commission itself which determines the composition of its Boards. (68)

To those who want to serve on such boards, Vine recommended correspondence with the IJC.

Vine called the task force work a "technical function," but said hearings by the IJC on the apportionment recommendations provided full opportunity for citizen comment and "careful scrutiny" by other federal agencies. He also said the negotiations on Poplar River apportionment questions have been conditioned by cold realities, that the Canadians have the upper hand at the outset. Nations sharing an international river, he noted, have the right to equitable use of the water, but nations also have a right to develop the natural resources of an international river basin. The Boundary Waters Treaty grants each nation the exclusive

even though it might be held liable [illegible]

> The Department of State [illegible] that the Fort Peck Tribes have [illegible] under treaty rights on the Poplar River and [illegible] fully consider those rights in weighing [illegible] may be reached with the Canadian Government. The Department is equally aware, however, that the Canadian Government is in no way obliged to comply with a treaty to which it is not a party. In short, the United States Government is not under international law or treaty to assure to the Fort Peck Tribes the continued full flow of the Poplar River across the international boundary from Canada. (6)

[illegible] the fact that existing and foreseeable uses [illegible] exceed the river's flow make an apportionment agreement essential if U.S. water users are to have a secure supply:

> In the absence of an apportionment regime, it is likely that diversions of Poplar waters under Article II of the Boundary Waters Treaty will occur which, if unplanned, may lead to more unfavorable results for United States interests than would be secured under such a regime agreed between the two Governments. Injured interests would be free to pursue their Article II rights, or, in the event Canadian diversions exceeded equitable apportionment consistent with international legal norms, to such remedies as might be available to the United States Government under international law. The uncertainty, legal complexities, and time factors inherent in such a result should be borne in mind in weighing the advisability of an apportionment agreement. (7)

To the objections of the northeastern Montanans, the State Department's [illegible] has promised his department's review of the [illegible] and careful consideration of water quality findings in the [illegible] an apportionment agreement with Canada concerning the [illegible] Department is not out to pollute you [illegible] or let [illegible] waste water. We're going to see to it that the [illegible] also...that the environment [illegible]

Footnotes

1. The information on the Poplar River Basin and its people was taken mainly from "Joint Studies for Flow Apportionment--Poplar River Basin in Saskatchewan and Montana," Main Report, International Souris-Red Rivers Engineering Board, February 1976, pp. 9ff.

2. Montana Department of Health and Environmental Sciences, Poplar River Algae Survey by Dr. Loren L. Bahls (unpublished).

3. International Souris-Red Rivers Engineering Board, "Joint Studies for Flow Apportionment--Poplar River Basin in Saskatchewan and Montana," Appendix A, Existing and Historical Surface Water Use, February 1976, p. A-27.

4. International Souris-Red Rivers Engineering Board, Main Report, p. 12.

5. Much of the discussion on water rights comes from "Joint Studies for Flow Apportionment--Poplar River Basin in Saskatchewan and Montana," Appendix A (see footnote 3), and from unpublished records of the Water Resources Division, Montana Department of Natural Resources and Conservation.

6. International Souris-Red Rivers Engineering Board, Main Report, p. 22

7. International Souris-Red Rivers Engineering Board, Main Report, p. 6.

8. International Souris-Red Rivers Engineering Board, Appendix A, p. A-25.

9. International Souris-Red Rivers Engineering Board, Appendix A, p. A-26

10. International Souris-Red Rivers Engineering Board, Appendix A, p. A-26

11. Fort Peck Tribal Executive Board, Resolution 1-76-1, 15 January 1976.

12. Fort Peck Tribal Executive Board, "Poplar River Apportionment," paper released February 9, 1976, by Norman Hollow, Tribal Chairman, in letters to state and federal officials.

13. Morrison-Maierle, Inc., "A Technical Review of Poplar River Apportionment Considerations," presented to the IJC on behalf of the Fort Peck Sioux and Assiniboine Tribes, Sept. 24, 1976, pp. 15-16.

14. Figures on the probable and possible future water demand in the Poplar River Basin are taken from International Souris-Red Rivers Engineering Board, "Joint Studies for Flow Apportionment--Poplar River Basin in Saskatchewan and Montana," Appendix C, Probable Future Use, February, 1976, pp. C-4 to C-14.

15. International Souris-Red Rivers Engineering Board, Appendix C, p. C-12

16. International Souris-Red Rivers Engineering Board, Appendix C, p. C-14.

17. Three Corners Boundary Association [illegible], "Air Quality in the Poplar River Area," [illegible] sent to Lt. Gov. Bill Christiansen, Sept. [illegible], 1975, p. [illegible].

18. Three Corners Boundary Association, Supra, p. [illegible].

19. International Souris-Red Rivers Engineering Board, [illegible].

20. International Souris-Red Rivers Engineering Board, [illegible].

21. International Souris-Red Rivers Engineering Board, Appendix, [illegible].

22. Saskatchewan Power Corporation, "Poplar River Power Project - Outline of Proposed Project and Environmental Studies, [illegible], 1974, p. 6.

23. Poplar River Power Project Board of Inquiry, "Report of the Board of Inquiry," January, 1975, p. iii.

24. Poplar River Power Project Board of Inquiry, "Official Transcript, Volume 2, November 4, 5, and 6, 1974, p. 19.

25. Poplar River Power Project Board of Inquiry, Official Transcript, p. [illegible].

26. Poplar River Power Project Board of Inquiry, Official Transcript, p. [illegible].

27. Poplar River Power Project Board of Inquiry, Official Transcript, [illegible].

28. Poplar River Power Project Board of Inquiry, Official Transcript, p. [illegible].

29. Poplar River Power Project Board of Inquiry, Official Transcript, [illegible].

30. Poplar River Power Project Board of Inquiry, Official Transcript, Vol. [illegible], pp. 97-98 (testimony of E. Roy Smith).

31. Poplar River Power Project Board of Inquiry, Official Transcript, Volume 1, p. 99

32. Poplar River Power Project Board of Inquiry, Report, p. [illegible].

33. Poplar River Power Project Board of Inquiry, Report, p. [illegible].

34. Poplar River Power Project Board of Inquiry, Report, p. [illegible].

35. Poplar River Power Project Board of Inquiry, Report, p. [illegible].

36. Poplar River Power Project Board of Inquiry, Report, p. [illegible].

37. Lt. Gov. Bill Christiansen, Memo to Gov. [illegible], [illegible], p. [illegible], p. 3.

38. Lt. Gov. Bill Christiansen, Memo, p. 3

39. Lt. Gov. Bill Christiansen, Memo, p. 4

40. Lt. Gov. Bill Christiansen, Memo, p. 4

41. Much of the discussion on the Boundary Waters Treaty and the International Joint Commission is taken from Eugene W. Weber, "Functions of the International Joint Commission," in Proceedings of the American Society of Civil Engineers (Journal of the Power Division), November, 1968, pp. 177-181.

42. Weber (see footnote 41), pp. 179-180

43. K. Scott Gudgeon, Memo to Region VIII U.S. Environmental Protection Agency from the Office of Legal Adviser of the Department of State, Washington, D.C., March 13, 1976, p. 3.

44. Gudgeon, p. 3

45. Gudgeon, p. 2

46. Gudgeon, p. 2

47. Quoted in Gudgeon, Memo, p. 4

48. Gudgeon, p. 4

49. Gudgeon, p. 4

50. International Poplar River Task Force, "Final Minutes, First Task Force Meeting," May 29, 1975, pp. 2-3.

51. Quoted in International Air Pollution Advisory Board, "Progress Report Number 19," October 2, 1975, pp. 12-13.

52. Richard D. Vine, letter to Norman Hollow, April 19, 1976, p. 6

53. International Joint Commission, "Transcript, International Joint Commission Hearing Held in Scobey, Montana, May 26, 1976," issued September, 1976, p. 22.

54. Gov. Thomas L. Judge, letter to Henry P. Smith, III, (IJC, U.S. Section Chairman, Washington, D.C.), Sept. 23, 1976. This in-depth discussion of the International Law Association's Helsinki Rules governing international water apportionment seems to conflict in several respects with U.S. State Department interpretation of the rights of downstream counties.

55. International Souris-Red Rivers Engineering Board, Main Report, p. 39

56. George M. Pike, Helena District Chief, U.S. Geological Survey, letter to Lt. Gov. Bill Christiansen, March 12, 1976.

57. Pike

58. Pike

59. Two documents stand out and are the source of most of the discussion on water quality impacts: "Water Quality Effects of Canadian Coal Development on the Poplar River System in Montana," (unpublished), and "Suggested Poplar River Comments," (unpublished).

60. Terry Tinsley and Jim Henderson, [illegible] Poplar River power plant, in a letter to Thomas [illegible] Oil and Hazardous Materials Division, U.S. Environmental Protection Agency, Region VIII, April 30, 1976.

61. Jim Gelhaus, "Poplar River Thermal Generating Station [illegible] Summary, May 18, 1976.

62. Gelhaus, p. 2.

63. John A. Green, Administrator, U.S. Environmental Protection Agency, Region VIII, memo to Associate Administrator for International Activities (EPA Washington, D.C.), March 19, 1976.

64. Green

65. International Joint Commission, Transcript, pp. 75-76

66. Fort Peck Trival Executive Board, letter (see footnote 9)

67. Three Corners Boundary Association, paper, p. 5.

68. Richard D. Vine, letter to Norman Hollow, February 27, 1976, p. 2.

69. Vine, p. 4.

70. Vine, p. 5.

71. Quoted from notes taken at the public discussion of existing and proposed monitoring activities by U.S. agencies in the Poplar River Region, Sidney, Montana, Sept. 29, 1976.

APPENDIX

Proposed Poplar River Basin Water Apportionment Formula*

FLOW APPORTIONMENT AND ADMINISTRATION

Various apportionment alternatives were examined by the Task Force during the course of this study. These alternatives encompassed various percentage splits of streamflow on the tributaries and streams in the Poplar River Basin at the international boundary. Also, continuous minimum flows and short term volume releases in varying quantities were considered on the East Poplar River. The storage reservoir near Coronach, which is presently under construction, will facilitate this form of water delivery to the United States on the East Poplar. After these apportionment schemes were proposed, they were examined to determine their effect on both existing and future water uses in the basin. Desired modifications to these alternatives produced new apportionment alternatives during this formulation process until the Canadian and United States sections of the Task Force determined a mutually acceptable method of dividing the flows of the Poplar River.

Apportionment Recommendations

The Poplar River Task Force unanimously recommends that the waters of the Poplar River and its tributaries should be apportioned on the following basis:

A. The aggregate natural flow of all streams and tributaries in the Poplar River Basin crossing the international boundary shall be divided equally between Canada and the United States subject to the following conditions:

1. The total natural flow of the West Fork Poplar River and all its tributaries crossing the international boundary shall be divided equally between Canada and the United States but the flow at the international boundary in each tributary shall not be depleted by more than 60 percent of its natural flow.

*From Report of the International Souris-Red Rivers Engineering Board, Poplar River Task Force, February 27, 1976, pp. 32-38.

2. The total annual flow of [illegible] shall be delivered [illegible] :

a) [illegible] percent of the natural flow of the Milk River [illegible] at the international boundary, as measured [illegible] confluence of Cross Creek and Milk River.

b) The delivery of water [illegible] the East Poplar River shall be determined [illegible] first day of June of each year as follows:

i) When the total natural flow of the [illegible] River, as determined below the confluence [illegible] during the immediately preceding [illegible] period does not exceed 4,600 cubic decametres (3,730 acre-feet), then a continuous rate of 6.0 cubic metres per second (1.0 cubic feet per second) shall be delivered to the United States on the East Poplar River at the International boundary throughout the succeeding 12 month period commencing June 1st. In addition a volume of 370 cubic decametres (300 acre-feet) shall be delivered to the United States [illegible] at any time during the 12 months commencing June 1st.

ii) When the total natural flow of the Milk [illegible] River, as determined below the confluence [illegible] during the immediately preceding [illegible] period exceeds 4,600 cubic decametres (3,730 acre-feet), but does not exceed 9,200 cubic decametres (7,460 acre-feet), then a continuous rate of 0.566 cubic metres per second (20.0 cubic feet per second) shall be delivered to the United States on the East Poplar River at the International boundary throughout the succeeding 12 month period commencing June 1st. In addition a volume of [illegible]

of 0.028 cubic metres per second (1.0 cubic feet per second) shall then be maintained from September 1st through to May 31st of the following year. In addition, a volume of 617 cubic decametres (500 acre-feet) shall be delivered to the United States upon demand at any time during the 12 month period commencing June 1st.

iii) When the total natural flow of the Middle Fork Poplar River, as determined below the confluence of Goose Creek, during the immediately preceding March 1st to May 31st period is greater than 9,250 cubic decametres (7,500 acre-feet), but does not exceed 14,800 cubic decametres (12,000 acre-feet), then a continuous minimum flow of 0.085 cubic metres per second (3.0 cubic feet per second) shall be delivered to the United States on the East Poplar River at the international boundary during the succeeding period June 1st through August 31st. A minimum delivery of 0.057 cubic metres per second (2.0 cubic feet per second) shall then be maintained from September 1st through to May 31st of the following year. In addition, a volume of 617 cubic decametres (500 acre-feet) shall be delivered to the United States upon demand at any time during the 12 month period commencing June 1st.

iv) When the total natural flow of the Middle Fork Poplar, as determined below the confluence of Goose Creek, during the immediately preceding March 1st to May 31st period exceeds 14,800 cubic decametres (12,000 acre-feet) then a continuous minimum flow of 0.085 cubic metres per second (3.0 cubic feet per second) shall be delivered to the United States on the East Poplar River at the international boundary during the succeeding period June 1st through August 31st. A minimum delivery of 0.057 cubic metres per second (2.0 cubic feet per second) shall then be maintained from September 1st through to May 31st of the following year. In addition, a volume of 1,230 cubic decametres (1,000 acre-feet) shall be delivered to the United States upon demand at

c) [illegible]

3. [illegible]

Administration of Apportionment

[illegible] Poplar River Task Force recommends that a Poplar River Board of Control be appointed by the International Joint Commission to administer the apportionment agreement under the direction of the Commission and the following terms of reference and responsibilities [illegible]:

Poplar River Board of Control

Membership

The membership of the Board of Control will consist of [illegible] two representatives from each country appointed by the Government of Canada and the United States respectively and one representative [illegible] appointed by the Government of the State of Montana and the Government of Saskatchewan respectively. A co-chairman will be appointed by the International Joint Commission from each country and each co-chairman will preside at [illegible] meetings held in his country. A representative of the [illegible] (see Item 30) will be one of the two representatives [illegible] Government of Canada and the United States.

[illegible]

The Board of Control will report to [illegible].

[illegible]

the water division computations and estimates, describe any problems which have arisen and make recommendations on matters outside the delegated responsibilities of the Board of Control.

Network Design and Computation Methods

The Board of Control will be responsible for the design of the stream gauging and other monitoring networks including location, frequency of observation and standards necessary to carry out the division of the water under the terms of the apportionment agreement. It will also be responsible for determining when and where indirect methods of calculating depletions and runoff are sufficient.

Division Periods for Water Deliveries

The Board of Control will be responsible for determining division periods for natural flow computations when it becomes necessary to divide the waters of the streams and tributaries crossing the international boundary because of increasing levels of depletion in the upstream country.

Schedule for Water Deliveries on East Poplar River

The Board of Control shall determine the rules and procedures to be used in meeting the requirements for the volumetric releases to the United States on the East Poplar River. Consideration shall include minimum notification for the release, scheduling, monitoring and liaison contacts.

Disagreements

In the event of disagreement between the two sections of the Poplar River Board of Control, the matters in controversy shall be referred to the International Joint Commission for decision.

Other Considerations

Monitoring Agencies

The Poplar River Task Force further recommends that the monitoring agencies be the Water Resources Division, United States Geological Survey, Department of the Interior and the Water Survey of Canada, Environment Canada.

[illegible]

[illegible] stream-gaging stations, equipped [illegible] and designed specifically to provide [illegible] low range, be constructed on the East Poplar River at the international boundary and the Middle Fork Poplar River below the [illegible].

A continuous record of flows will be maintained on the East Poplar River at the international boundary on a year round basis. Additionally, continuous record of flows will also be maintained on the Middle [illegible] River below the confluence with Goose Creek from March 1 to [illegible]. In the derivation of natural flows for this period are not [illegible] to reflect water delivery to the United States on the East Poplar.

Methods of Calculation

The method of computation of natural flows should be determined to some extent by the level of depletion in the basin with a view to minimum monitoring requirements and computational effort. The methods of [illegible] should be periodically reviewed by the Poplar River Board of Control and Altered when required for efficient administration of the apportionment agreement. General concepts that should be adopted have been identified and are listed below:

1. The natural flow at the international boundary of any tributary or stream will be determined by adding the depletions upstream to the recorded or estimated flow at the international boundary.

2. Water use in those portions of the basin which contribute to streams crossing the international boundary less frequently than once in two years will not be considered in determining the depletion of the natural flow.

3. Depletions for minor domestic projects will be ignored in the determination of natural flow unless the depletions on any stream exceed one percent of the [illegible] flow of any stream or tributary at the international boundary.

4. Indirect estimating procedures will be used to determine the flow in tributaries or streams crossing the international boundary where depletions in the upstream country are significantly less than the limits specified in the apportionment agreement.