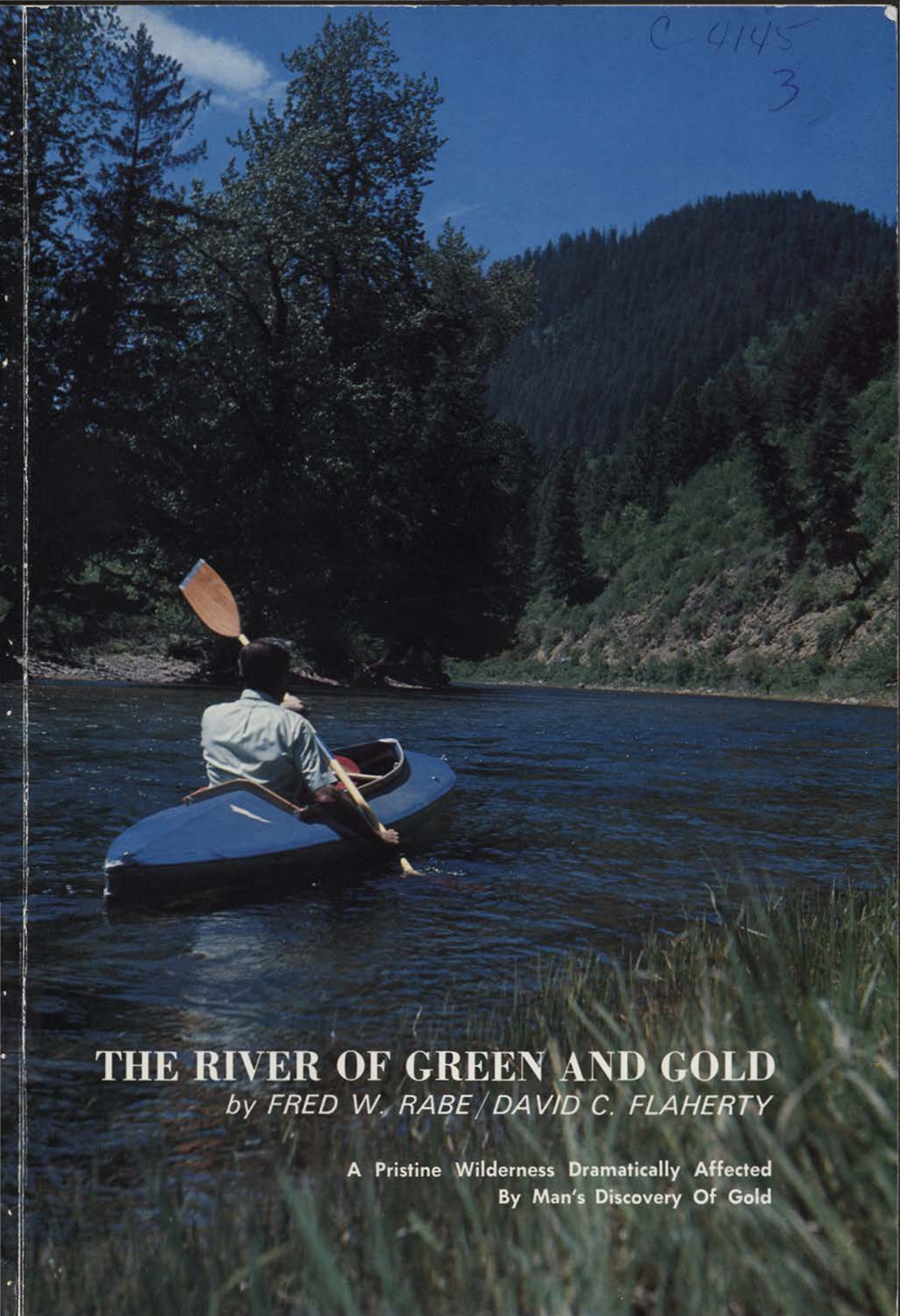

THE RIVER OF GREEN AND GOLD

by FRED W. RABE / DAVID C. FLAHERTY

A Pristine Wilderness Dramatically Affected By Man's Discovery Of Gold

THE RIVER OF GREEN AND GOLD

A pristine wilderness dramatically affected by man's discovery of gold

Fred W. Rabe
and
David C. Flaherty

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CONTENTS

PREFACE

A northern Idaho river valley provides our setting as we trace the Coeur d'Alene River from its source high in the mountains downstream to Lake Coeur d'Alene. The theme concerns a pristine wilderness changed by man to its present altered state, a transition wrought by the settlement of an area by early whites and by their evolving technology.

The book is not meant to be an accusation, but a recording of events. The reader should assess the impact of environmental changes and judge the alternatives. The narrative describes attempts to correct obvious, unpalatable abuses of this glorious region of the northwest and suggests other problems requiring attention in order to pass on to our descendants as much of the inheritance we enjoyed as is compatible with our way of life.

Information presented herein is the result of extensive travel by foot, kayak, car and plane. Interviews were held with foresters, watershed specialists, pioneers, miners, ranchers, fish and wildlife biologists, public health officials, soil conservationists, politicians, environmentalists and industrialists. These interviews together with published literature helped provide the substance of the Coeur d'Alene story.

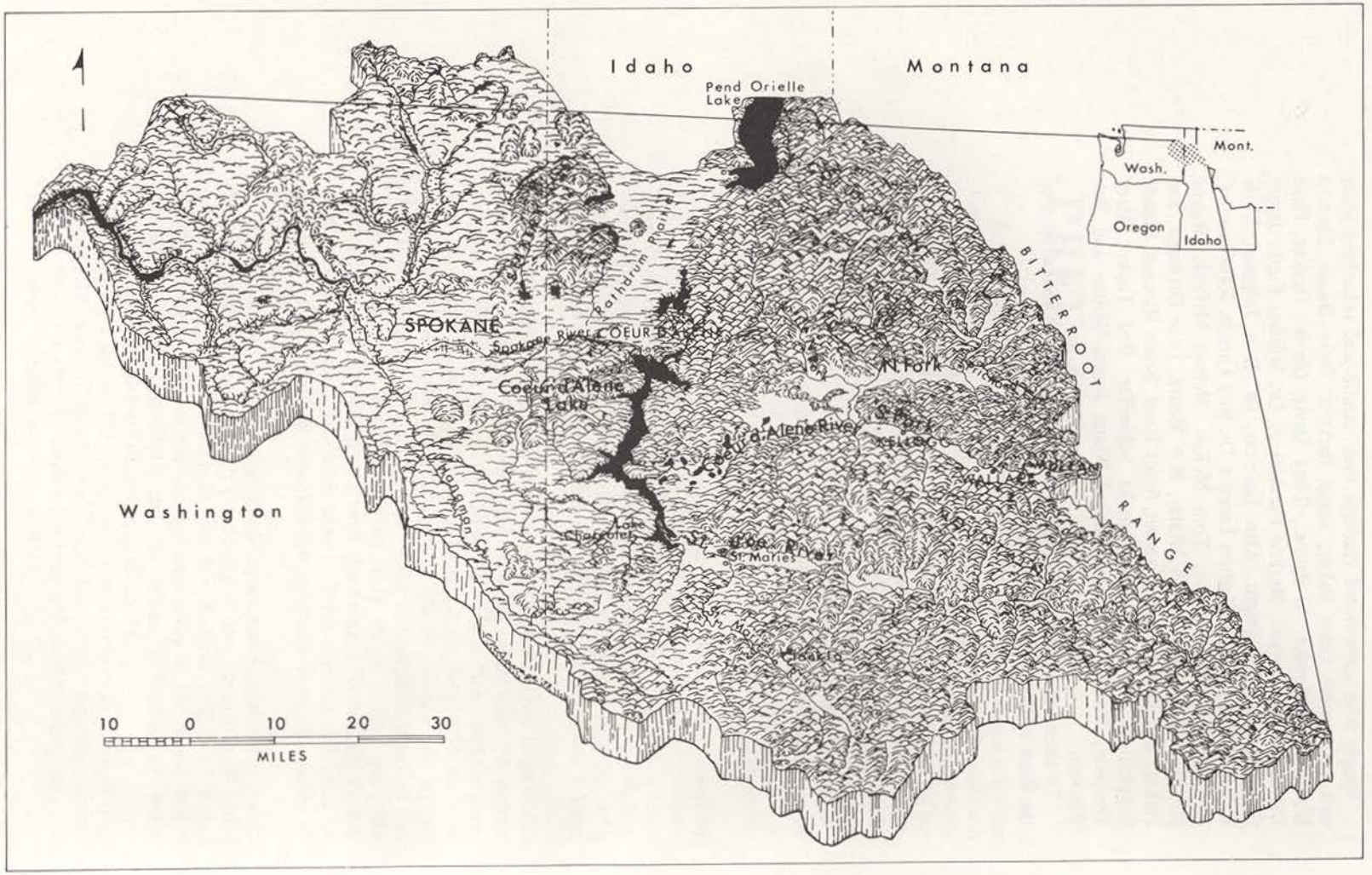
Grateful acknowledgments are due to Dr. Ronald Stark, Dean of the University of Idaho Graduate School, who contributed to several chapters in the book; Carl Savage, Idaho Bureau of Mines and Geology, who provided the geological history of the area, Barbara Petura who edited the book, Anne Hutchins responsible for design and layout; Robert Minter who compiled much of the historical information and Bruce Higgins, who helped bring the story to its present form. We acknowledge use of photographs from the Barnard-Stockbridge Collection at the University of Idaho library. These pictures consisting of scenes from early mining activities are originally from the studio at Wallace, Idaho.

We would also like to recognize the space and equipment provided by the Department of Biological Sciences at the University of Idaho together with financial support by the Federal Office of Water Resources Research and the close cooperation of the Idaho Water Resources Research Institute and the State of Washington Water Research Center in support of the research grants.

We extend a special thanks to our wives who gave so much of their time in the way of typing and correcting copy. An even greater contribution was their boundless patience and understanding over the past two years the book was being written.

People who contributed through their candid and refreshing ideas and views were Gene Baker, Larry Bartlett, Steve Bauer, Elwood Bizeau, Bert Bowler, Al Bruner, Tony Davis, George Deakan, Hans Dierks, Tom Emerson, Marlow Freckleton, Dr. William Funk, James Galbraith, Bill Goodnight, Alan Issacson, Dr. Don Johnson, Verle Kaiser, James Kimball, Vernon Lannen, Dr. Roy Larson, John Leasure, Ken Lustig, Greg Mauser, Tom McKee, Marion McPeak, Wayne Melquist, Leroy Mink, Bob Minter, Bob Moore, Dave Ortmann, Jon Parker, Will Parrish, Dale Ralston, Scott Reed, Bruce Rieman, Claude Sappington, Nancy Savage, Amelia Schaeffer, Bud Taylor, Mary Tempkin, Warren Van, Dr. Richard White, James Winner and Bob Wissmar.

To these concerned individuals who work and live in the country of the River of Green and Gold and love it, our thanks.


Idaho
Montana
Pend Orielle Lake
Mont.
Wash.
Oregon
Idaho
BITTER ROOT RANGE
Rathdrum Prairie
SPOKANE
Spokane River
COEUR D'ALENE
Coeur d'Alene Lake
N. Fork
St. Joe
Coeur d'Alene River
Washington
Lake Chatcolet
St. Maries River
St. Joe River
Hoodoo
10 0 10 20 30
MILES

Chapter 1

CREATION

The watershed of the River of Green had its beginning almost two billion years ago when some of the oldest rocks in North America were deposited in an ancient inland sea which covered vast areas in the western part of the continent. Some millions of years later, these rocks were to become host to fabulously rich mineral accumulations of silver, lead, zinc, copper, antimony – and gold.

A mere sixty-five to 114 million years ago, these rocks of the ancient sea were uplifted into massive mountain ranges and then tilted, folded and bent, sometimes breaking and sliding apart. Beneath the surface materials lies molten lava that was pushed up from below and thrust into the overlying strata, hot water and gaseous vapors surged into cracks and crevices, depositing their lodes of gold, silver, lead and zinc. These processes continued to modify the landscape up to some twenty-six million years ago. The ancestors of the Selkirk, Bitterroot, Cabinet and Coeur d'Alene mountains of British Columbia, Idaho and Montana thus were formed. Rainfall and run-off from these primordial mountains joined together to form an early watershed which drained into the Pacific Ocean that extended farther to the east than at present.

This early drainage system probably had tributaries that flowed roughly parallel to the present beds of the St. Maries, St. Joe and Coeur d'Alene Rivers of Idaho. Vast quantities of run-off water were channeled west and northwest toward Spokane, Washington, joining large rivers draining the present site of Rathdrum Prairie and the area north of Spokane.

Another early river system developed in the area of Wolf Lodge Creek to the southeast of Rathdrum Prairie and east of Coeur d'Alene Lake which flowed south then northwest, excavating the northern end of the present lake basin in the process. The middle portion of the Coeur d'Alene Lake basin likely was the site of a low drainage divide that was gradually eroded away as headwaters of tributaries of a southern drainage system converged. Later events, volcanic and glacial, completed the transition. The entire early Coeur d'Alene-Spokane River produced the highest mountains and deepest valleys of any time in the late geologic history of the region, several hundred feet higher relief than exists today.

Greater disruptions were yet to happen. Large fissures and fractures developed in the crustal rocks, followed by eruptions of lava which caused the surface to sag under a flow of thick molten rock and ashy deposits. These surface movements preceded much more spectacular eruptions which formed the well-known Cascade Range of volcanoes to

Figure 1 – The Present Coeur d'Alene-Spokane River Basin, Washington-Idaho

Upper and lower Stevens' Lakes – appearing in stair-step fashion – were formed as a result of glaciation. They are named for Colonel Stevens who explored the region some 150 years ago. The high ridge above the lakes is part of the Bitterroot Range which separates the Coeur d' Alene drainage from the St. Joe River.

the west. Volcanic materials flowed across streams and up or down their valleys. This not only altered the landscape but formed dams and shifted streams to new courses. Some outlying, jagged remnants of the older, uplifted and eroded rocks were surrounded like islands by seas of lava, similar to Steptoe and Kamiak Buttes in Washington south of Spokane. Temporary lakes or ponds formed behind many lava dams. One such body lay over the present site of the city of Spokane while another probably spread over much of the Lake Coeur d'Alene lowland. Still other dammed areas caused flooding upstream in many valleys over the entire region.

Incoıporated with the sediments – ashy clay, silt and sand which accumulated in the lava-dammed lakes – were leaves, seeds, small fish, cattail reed, snails and insects of a time when the climate was more moist and milder than that of today. These forms of life, now fossilized, may be observed along the walls of Hangman Valley south and southwest of Spokane, in the so-called "Latah Formation", in the upper reaches of the St. Maries River near Clarkia, near Harrison on the east side of Coeur d'Alene Lake, and at numerous places along Interstate Highway 90 across northern Idaho to Spokane.

At the same approximate time, upheavals began which formed the Cascade Mountains to the west, stretching from Canada to California. Violent volcanic eruptions hurled clots of molten lava, cinders and ash into the atmosphere. A widespread cloud of volcanic ash was spewed out over the Pacific Northwest by major explosive events in the vicinity of Glacier Peak in Washington's northern Cascades. This ash settled down over the land during late glacial time approximately 12,000 years ago. A similar spectacular volcanic eruption occurred later when massive Mount Mazama, located at the present site of Crater Lake in Oregon, literally exploded and filled the atmosphere and the region with clouds of windblown ashy pumice.

At least four periods of continental glacial, separated by ice-free times, were instrumental in forming the River of Green and Gold. These ice ages in North America began about 3,000,000 years ago. Later stages of ice accumulation and expansion occurred in northern Idaho moving as far south as Lake Coeur d'Alene. The Rathdrum Prairie-Spokane areas, the present site of Priest River, LaClede, Cocalalla, Pend Oreille Lake and Clark Fork were covered with glacial ice from time to time. Finally, the latest glacial ice was confined only to mountain valleys in the Selkirk and Cabinet Ranges.

Again, as during the time of volcanic eruptions, drainage systems

were disrupted, this time by ice dams and tons of sand and gravel deposited not only by the plow-like action of the ice, but also from melting water transporting debris which had been incorporated with the enclosing ice masses. An early lobe of ice advanced into the north end of the Coeur d'Alene Lake basin and filled it with ponded meltwater and natural runoff from its tributaries. The lowland was the ancestor of the Spokane River of today and "Glacial Lake Coeur d'Alene" was impounded behind this ice lobe dam.

During the waning stages of the last ice age a long valley glacier just east of the town of Clark Fork, Idaho, intermittently dammed the Clark Fork River producing a long natural reservoir called "Glacial Lake Missoula." This ice dam held behind it several large temporary lakes as evidenced by abandoned shorelines and laminated, banded sediments which accumulated in the water. However, the dam also failed several times which caused floods to the west that surged down the Little Spokane River and Rathdrum Prairie Valleys. These waters rushed down into the Coeur d'Alene district and across the present site of the city of Spokane. Huge, dry stream channels called coulees, associated dry waterfalls and huge wave-like deposits in the form of "giant ripples" of sand and gravel, both in eastern Washington and Rathdrum Prairie areas, testify to the awesome power of these late, catastrophic glacial floods.

Along the south side of the Spokane River, from its outlet at the north end of Coeur d'Alene Lake nearly to Spokane, are cliffs of ancient rock which dramatically show the effects of running water held at higher elevations by ice and rock debris along the north side of the present Spokane River Valley. The extensive erosion includes small to moderately large hoodoo-like monoliths and smaller projecting remnants of rock, dry channel scars and dry waterfall scarps abandoned as the stagnating ice melted away from the rock cliffs. In this way the Spokane River eventually formed a channel at its present lower level.

In the Coeur d'Alene-Spokane region, various atmospheric disturbances further altered the landscape. The force of gravity caused loose and soft material to flow, slide or fall downslope where the debris was carried into the great network of streams draining the divides. This material became finer and finer through abrasion and wear, until the finest matter was eventually carried to the ocean. During and after glaciation, strong winds swept the eastern Washington flatlands and silt deposited from the glacial floods were (and are still) blown across eastern Washington, western Idaho, and south into Oregon. The arid, rocky and barren wastelands produced silt-laden dust storms that for hundreds of years deposited silt over the low rolling terrain of the Palouse Country to the south. Often described as an area that looks like a vast, turbulent, wave-agitated sea, this silt-loam deposit, the Palouse Formation, is a world-famous farming country. Its bountiful harvests of grains and other products remain a rich endowment of ancient geological processes.

Thus, from fire and flood and the action of wind and water over millions of years, the River of Green and Gold evolved to its present state. The process continues, volcanic action is still possible, while the winds and the waters continue to erode and reshape the landscape. Nature is assisted and change is accelerated by man's technology and actions – whether destructive or constructive remains to be seen.

Overhanging vegetation provides shade for abundant trout which feed in part on insects falling from the foliage.

Chapter 2

INHERITANCE

The River of Green and Gold flows through a wild and rugged landscape. Sharp-edged ridges twist and turn without rhyme or reason. They could have been fashioned by gargantuan butchers running amok with cleavers, smiting ridge from ridge and peak from peak! All but the highest mountain tops, however, are mantled in deep green, which softens their look.

The river is born of two large streams, one flowing in from the northeast, the other flowing in from the east-southeast. After the merger of the streams, the river turns southwest passing through a meandering valley dotted with small lakes fringed with green vegetation. Further southwest is the glittery-blue expanse of a large lake. At the northern end of the lake is a flat prairie some ten miles across; on the west side, more green ridges enclose yet another river valley.

This is northern Idaho. The ridges are the Coeur d'Alene Mountains, the streams are the North and South Forks of the Coeur d'Alene River which empties into Lake Coeur d'Alene. The flat expanse at the head of the lake is Rathdrum Prairie, and the drainage out of the lake through the valley to the southwest is the Spokane River.

The North Fork

"In shallow places the river is as transparent as cut glass, and the stones upon its bed form a mosaic of many colors; in deeper places it has a lovely pellucid green color, and in its pools that lie at the foot of enormous craggy precipices it becomes an indigo blue. Everywhere the wilderness is unbroken, everywhere the forest covered mountains hug the shore."

Eugene Smalley, 1853

High on the western slopes of the Coeur d'Alene and Bitterroot Mountains bordering Montana, the North Fork of the Coeur d'Alene River finds its beginnings in springs and rivulets which drain rugged ravines and canyons. As the rivulets merge and descend through rocky gorges to become a rapid-studded water course fringed with dense vegetation, it changes pitch from low gurgles and soft splashing to a deeper roar.

The constant flowing water slides and falls between magnificent stands of yellow pine, Douglas fir and grand fir on its north facing slopes and graceful larch, red cedar and hemlock stands on the south facing hillsides. Alders, willows, mountain maple and choke cherries provide dense cover and forage for the abundant game. During the

period of flowering, many of the plant species along the river send out delightful perfumed odors. In the side pools grow watermilfoil and aquatic moss. In places, cathedral-like arches of stately cottonwoods provide a canopy under which the river glides.

The valleys and canyons through which the nourishing waters flow ring with the strident chatter of the common flicker and the clear sustained warble of the handsome goldfinch. Merganser ducks, the white bars on their wings oscillating in metronome-like rhythm, speed along above the sparkling water. Slate-grey water ouzels dance in the spray of the smaller rapids. Red-shafted flickers fill the air with the drum-like tattoo of their hammering as they hollow out homes in the cottonwoods. Swallows, emerging from their secretive burrows in the overhang of the banks, swoop and dive in quest for insects.

The land and water meet, each nourishing the other. Overhanging vegetation provides shade for the abundant fish which lurk in the shadows and dart forth to feed on adult insects which drop from trees and shrubs. The immature aquatic insects abundant in the undisturbed stream beds add to the menu of the thousands of cutthroat and Dolly Varden trout on their way to the sand and gravel beds of the upper stream to spawn.

Many miles downstream, the now impressive river is joined by its last major tributary which originates in the mountains to the north.

The South Fork

"Clothed with evergreen forests, with here and there an open summit covered with grass; numerous valleys intersecting the country for miles around; courses of many streams marked by ascending fog."

Isaac Stevens, 1853

High in the Bitterroot Mountains, a small pool of water surrounded by mats of cushion moss clinging to rock surfaces provides a source to the South Fork of the Coeur d'Alene River. The water is so clear that tiny sprigs of algae in it seem to be suspended in space. The illusion is shattered when a water strider skims over the surface to investigate a fir needle fallen from the forest canopy above.

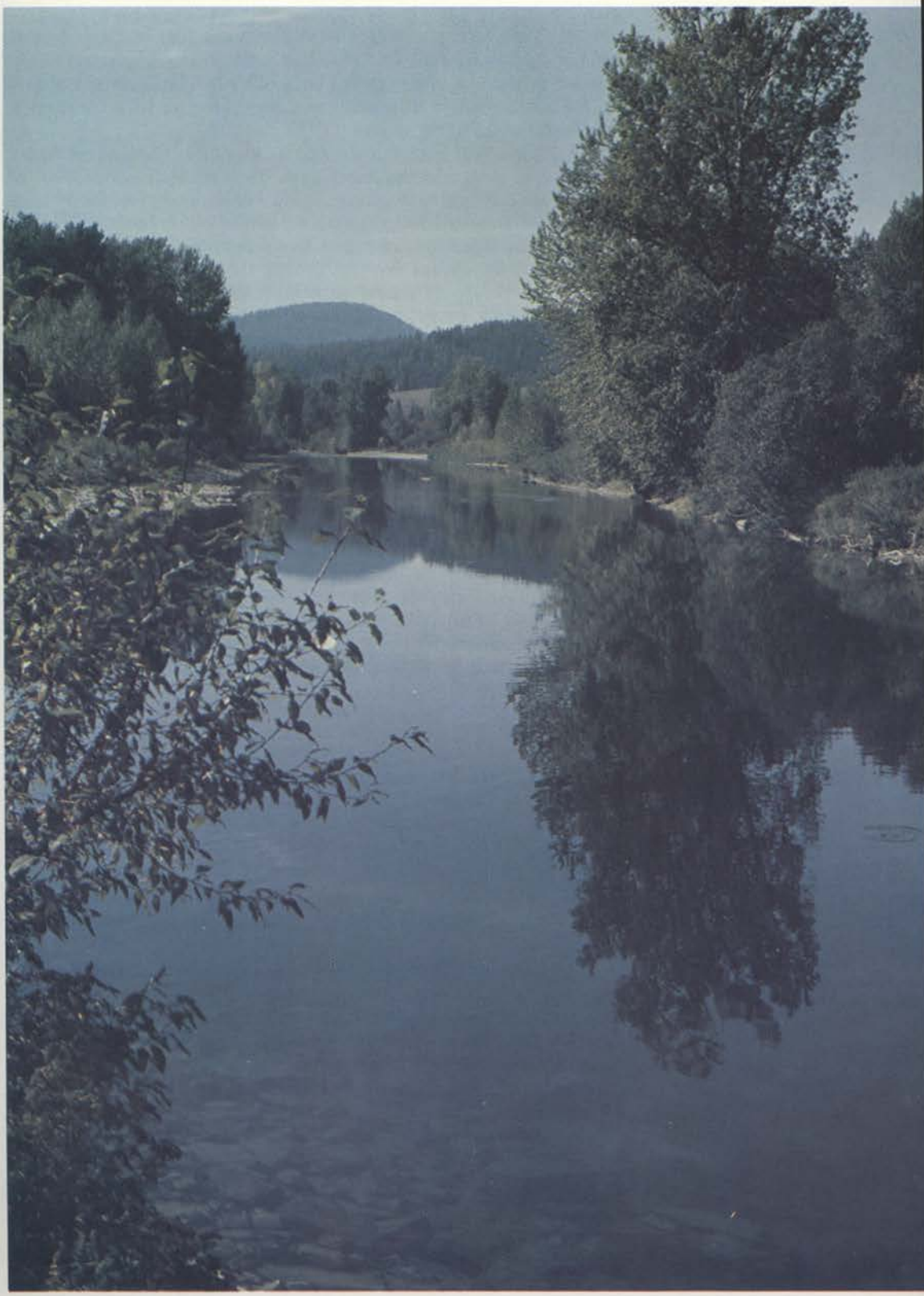
From the pool, a tiny brook threads its way westward down the slopes of the mountain. It gathers strength as additional tributaries add more sparkling water. Soon it is a full-fledged stream coursing down the bottom of a steep canyon, forested with white pine, grand fir, Douglas Fir and spruce. Dense growths of willow and alder along the stream together with the conifers hide it from view of the deer and other forest animals. However, the sound of cascading water guides them over timeworn trails to the water source.

The main stream bed is filled with large angular rocks. A patch of sunlight here and there in the dark canyon reveals slower pool areas which appear green from the reflected color of the canyon's vegetation.

The rapidly flowing stream is able to support entire communities of plant and aquatic animals. The water is always on the move, forcing the creatures living there to adapt to its ways.

The rocks are slick and rather slimy from the colonies of diatoms clinging to their surfaces. These small plant forms are important to the entire stream community since they are capable of manufacturing food sugars while providing oxygen in the process. A tiny, long-legged mayfly grazes on the numerous diatoms. His flattened body and

This is how the Main Stem of the Coeur d'Alene River might have appeared.



grasping legs prevent him from being swept away by the restless current. The grotesque sculpin is another inhabitant of the stream. It reaches lengths of four to five inches, and possesses a large head in relation to the rest of its tapered body. This fish lacks scales and lives on the bottom where it possibly competes for space with the trout in this small section of the stream.

After the South Fork has plunged its way down the steepest slopes, the gradient eases and the water slows. Here is ample evidence of the work of nature's master engineer . . . the beaver. Dams erected by these super-active animals have created a number of ponds in this part of the canyon. The standing water acts like a receiving basin for nutrients supplied by the stream flowing through the pond. Consequently the beaver ponds support a rich assortment of fish-food organisms and aquatic vegetation together with more adult fish per surface acre than the shallow and narrow stream.

These ponds also aid in water retention in the canyon. Their bushy dams create reservoirs which help stabilize the water level during heavy runoff of melting snow in the spring resulting in less bank erosion downstream.

The heavily timbered canyon of the upper South Fork also provides shady, cool temperatures so that any snow which falls during the winter takes a long time to melt.

Further down the valley, additional small streams, some of them having as a source a mountain lake, add to the volume of the river. Near its confluence with the main stem, the South Fork passes through heavily timbered canyons. The river slips quietly through large grassy meadows and marshy flats with ranks of cottonwoods along its banks.

Upon completing their precipitous journeys from the mountains, the North and South Forks join to form a wide placid channel, the main stem of the Coeur d'Alene.

The Main Stem

"The Coeur d'Alene River was one of the most beautiful streams imaginable; it was clear as crystal, deep with the cottonwoods and silver beaches on both banks almost forming an arch overhead. Between the trees were glimpses of flat meadowland covered with rich grasses running back to pine-clad mountains. The stream was alive with trout and other fish . . . they could be seen by the thousands in the clear water."

Ruby El Hult, 1952

The main stem winds its way quietly westward through vast meadows. In the distance, timbered ridges climb away from the valley floor, their dark green spines attesting to luxuriant growths of pine and fir. The river increases rapidly in size and depth, fed by nine flanking lakes, which escort the main stem to its destination.

These marsh-fringed lakes together with the lowland river valley are frequent hosts to Canadian Geese, whistling swans and pelicans. Their banks shelter the elusive muskrat and the waters teem with cutthroat trout coming up from the big lake. Cranes, bitterns, bustards and snipe abound in the shallow weedy aquatic environment.

Crystal clear waters of the main stem slide peacefully through the more gentle wooded valley to merge uneventfully with the waters of Lake Coeur d'Alene. From the south, the meandering St. Joseph River drains the southern portion of the Bitterroot Mountains, adding to the

immensity of the lake.

Grand Lake

"A noble sheet of water filled with an abundance of delicious salmon trout."

Captain Mullan, 1858

Father Nicolas Point, who lived in the area during the middle of the nineteenth century, first referred to Lake Coeur d'Alene as Grand Lake. For over twenty-two miles it stretches from north to south flexing in width from less than a mile to almost three miles. Rocky ridges descend to the shore throughout most of its 300 or more miles of shoreline. The southernmost tip of the lake system is a huge marsh bisected by the meandering St. Joseph River. Along the lake's peripherey are many coves and bays which provide refuge for water fowl and young fingerling trout. The open waters are constantly being stirred and mixed by prevailing winds out of the north.

Most of the ridges enclosing this glacial trough are heavily timbered and interspersed with grassy meadows – probably the result of ancient and persistent wildfires. To the north stretches a flat, tree-speckled plain, called the Rathdrum Prairie, compressed by the latest Ice Age. The Spokane River is the outlet that leads the greenish-blue waters to their ultimate destination, the Pacific Ocean.

The banks, marshes and waters of the lake teem with muskrat, beaver, otter, mink and fish supported by unlimited sources of smaller plant and animal life. Rooted aquatic plants of the southern marshes provide forage for an occasional moose. The meadows, bushes and saplings fringing the shores are succulent repasts for deer and elk; berry bushes abound. The pine marten feeds on squirrels in the neighboring forest while the speedy fisher pounces on a showshoe rabbit on the ground or overtakes a marten in the tree canopy. Wolves, weasels, mountain lions, badgers, wolverines, bears and field mice help make up the diverse animal life in the Coeur d'Alene drainage.

Within the lake, multiples of aquatic plants, midge fly larvae, water mites, caddis worms and aquatic earthworms provide the base supply for vast schools of "salmon-trout" that were to amaze newcomers to the land. Ospreys – large brown and white fish hawks – feed in peace, descending from their untidy nests in fire-killed snags along the shore. Eagles soar on the updrafts from the lake watching for the smaller denizens of the lake shores and meadows.

This was the inheritance the white man would wrest from the original inhabitants of the land. A land of extremes from mountain peaks to marshes; from glacial cirques to massive lakes; from roaring, rapid-studded streams to broad, placid, deep-running rivers; from massive Douglas firs and cedars to microscopic plants clinging to rocks; from austere crags almost devoid of life to a land teeming with fish, fowl and animal life. For hundreds of centuries it had been thus but it was to undergo a transition; a transition as remarkable in its way as the manner in which the land was created. A transition which had its counterpart in all portions of the American continent.

Chapter 3

TRANSITION

The Sharp Hearts

In the middle of the nineteenth century, there were about 2,000 inhabitants of the country of the River of Green and Gold. A number of them were settled on the east shore of Grand Lake where fish and game was plentiful and required little effort to obtain.

"Is there an abundance of game in the Coeur d'Alene country? Perhaps nowhere does so small an area contain such a variety."

Father Nicolas Point, 1842

The catch of fish was so abundant in the lake that the Indians' canoes were filled within a space of a few hours. A barrier made of wicker screens attached to a line of tripods was solidly joined together by traverse poles. This rig was placed in the lake outlet that forms the Spokane River. The fish together with the game procured was distributed equally.

Hunting was most profitable when the deep snow in the surrounding mountains drove the animals onto the plain. Often the hunters on snowshoes could easily overtake the deer that had bogged down in the soft snow. The Indians would lay down their rifles, bows and arrows and proceed to kill the deer by taking hold of the antlers and twisting their necks. This method saved them time, powder, and the game was not damaged. On one particular hunt, 100 braves returned to camp with 600 deer.

The Coeur d'Alene Indians paid homage to a number of wild animals but the most celebrated ones worshiped were the deer, bear and golden eagle. They treasured their land and apparently recognized that permanent settlement by whites would not be to their advantage. Thus when early mountain men and trappers found the riches of beaver inhabiting the streams, they attempted to barter with the Indians. However, the Coeur d'Alenes insisted on trading some distance from their villages.

They were not taken in by the baubles and beads of the early traders but demanded hard goods – knives, blankets and metals for their furs, fish and game. For these attributes they earned the name the "Sharp Hearts" (Coeur–heart; Alene–awl) and this became the name of the area, lake and river.

Aside from the early invasion of trappers and explorers in the early 1800's, there was little to disturb the placid existence of the Sharp Hearts. They were not aware that Lewis and Clark had opened a way

The Cataldo Mission on the Coeur d'Alene River was first established in 1846 by Jesuit missionaries. It served as a place of worship for the Indians as well as providing a welcome stop for the occasional traveler.

west over the Lolo Pass and down the Clearwater River to the Columbia. They were undoubtedly aware of the trading post established in 1809 by David Thompson on Lake Pend Oreille; however, the number of migrant visitors for the next forty years, though increasing, was small. The westward migration of white men largely avoided this rugged, isolated, country. To the west on the eastern plains of Washington there were only a few thousand settlers in 1850, connected with the coast by wagon trails. Communication and travel to the east was by more southerly routes, on foot, horse or wagon.

The Black Robes

The first permanent white settlers in the Coeur d'Alene area were the Jesuits or "Black Robes" as the Indians called them. Father Pierre-Jean De Smet, missionary to the neighboring Flathead Indians, directed Father Nicholas Point to establish a mission on the shores of the lake at the largest Indian encampment. This was later to be the site of Fort Sherman and presently is the location of North Idaho Junior College in the city of Coeur d'Alene.

In the spring of 1843, the Sacred Heart Mission was moved to a site on the flood-plain of the St. Joe River near the present Mission Point. Under the direction of Father Point, a small village was built around the mission. Three years later, the church was badly damaged by high water.

It was moved again in 1846 to Cataldo on the Coeur d'Alene River. Father Anthony Ravalli from St. Mary's Mission in Montana worked on the Cataldo Mission from 1848 through 1855. The Black Robes apparently learned their lesson about floods since they built the worship place on a knoll well above the Coeur d'Alene River with a

soul-satisfying view of the valley. (An exceptionally large flood in January, 1974, failed to even reach the doorstep of the mission.) The dwelling proved to be a welcome rest stop in the wilderness for the occasional traveler through this part of the west.

In the meantime, the tribe population had dwindled from around 2,000 to 320 over about a ten-year period, mainly due to a small pox epidemic.

The Road Builders

Small but visible changes began to appear in the Coeur d'Alenes after the mid-century. The era of the western railroads was beginning and white settlements in the Northwest such as Puget Sound, Walla Walla and Colville were demanding more convenient transportation to the east and protection from Indians who were now beginning to react to the takeover of their homelands.

In 1853, Isaac Stevens, later to become governor of Washington, passed over the Bitteroot Mountains and down the upper South Fork in his search for a railroad passage from Minnesota to Puget Sound. A military road from Fort Benton, Montana, to Walla Walla was approved by a distant government and in 1858 Captain John Mullan and his surveyors saw Lake Coeur d'Alene for the first time. By 1862, after three years of herculean effort hacking a wagon road through swamps, over hundreds of ridges and bridging many streams, the Mullan Road was completed.

The route led directly through the Coeur d'Alene country, coming down the canyon of the South Fork to the Cataldo Mission on its way west. Later surveys and the development of machines that defied topography changed the road to what today is Interstate 90 to accommodate other forms of transportation and the railroad. All that is left now of Mullan's historic route is a dirt road that runs eastward from the beginning of the South Fork into Montana and westward to Mullan, Idaho.

The watershed was no longer isolated. A wagon trail ran through its heart and, within a decade, a railroad would provide passenger service for immigrants and freight service for the lumber and raw materials necessary for settlement and commerce. Sawmills began to spring up in various locations to provide lumber.

In 1871, Frederick Post negotiated a treaty with the Indians for land on the Spokane River on which to build a gristmill to handle settlers' wheat and corn. This was later sold to the newly established Washington Water Power Company for a dam site to provide power for the area. Still, the numbers of settlers were few for this was a rugged land.

But two events occurred which prompted occupation of the area and led to the first real impact on the Coeur d'Alene environment. In 1883, Prichard and Keeler discovered gold near the North Fork and, in 1885, Noah Kellogg unearthed the mineral treasures of the South Fork.

Chapter 4

THE GOLDEN CREEKS

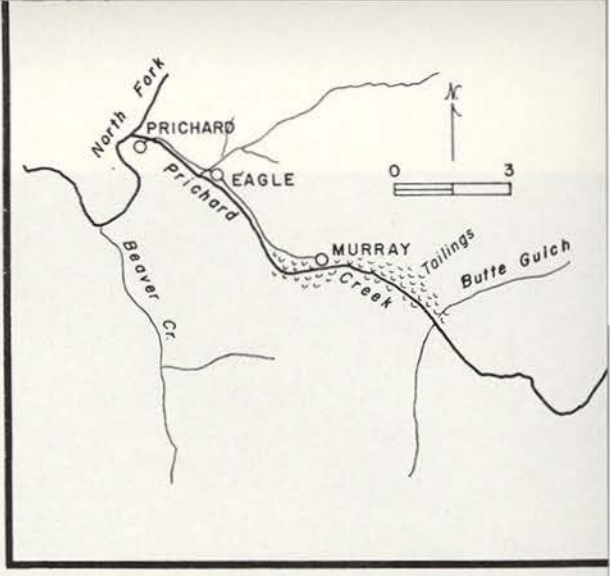


Figure 2 – Prichard Creek, a tributary to the North Fork of the Coeur d'Alene River, has been altered over half its length by dredge mining operations. Great piles of rock have been deposited where the creek used to meander.

Oil on a Trout Stream

The harsh call of a passing raven, flying close by, racketed through the narrow canyon. In the silence which followed, we could hear only the high frequency buzzing of some wild bees.

Above us, the flickering leaves of a small cottonwood tree were playing a stop-and-go game with the warm rays of the August sun. From where we were standing at one side of the canyon, it was about 500 feet to the pines and western larch which hid the opposite ridge behind a tapestry of bright green.

As we left the shade to walk over a crude road between large piles of jumbled, tannish-red rocks, we became aware of the smell of warm oil. After a few steps, we reached the edge of a pool of water. Irregular in shape, it was about twenty feet long and ten feet wide. Lined with sharp-edged rocks, it appeared to be about three feet deep.

The bottom layers were clear. But here and there on the surface, thin films of oil could be seen. These oil slicks were repeatedly forming into eddies, then breaking apart, only to reform again under the influence of the current passing through the pool.

In addition to the oily films, several other things were unusual about this pool. Black plastic sheeting had been placed along the sides in several spots. Across one end, a yellow rubber barrier had been suspended from the surface. It extended about a foot down into the water. Thin pads, about ten by fourteen inches, of a beige-colored, fibrous material were floating here and there.

Weird growths in the depths of the pool caught our attention. Ranging in color from a light-green to a dull brown, the gauzy filaments gently undulated in the current. These massive growths of green algae were strikingly different from the microscopic plants in the nearby Prichard Creek.

The unnatural condition of the pond was the result of a break in a large oil pipeline which zig-zags across northern Idaho, carrying petroleum products from Montana to eastern Washington. Environmental agencies had instituted monitoring efforts to detect effects of the oil, if any, on the stream life. At the time no significant changes had been noted.

For some communities, an incident such as the oil spill which

occurred near Murray, Idaho, in May, 1973, would be considered a drastic insult to the environment. But here, the spill of "liquid gold" was a minor disruption in comparison to the consequences of the discovery of yellow gold in the Coeur d'Alene watershed almost a century before.

The First Environmental Upset in the Coeur d'Alenes

It was during the 1880's and 1890's that people started to change the Coeur d'Alenes. It all began rather quietly and on a small scale but, before long, man began to drastically alter the canyons and forests of the region.

A rather quiet fellow, prospector Andrew J. Prichard, first found gold along the banks of Eagle Creek which flows into Prichard Creek about five miles below Murray. Prichard had been looking for the shiny stuff, of which dreams are made, since the end of his Civil War service. His search had taken him through the dry canyons of the Southwest's Superstition and Panamint Ranges, as well as up and down the pine-clad slopes of California's Sierra Nevadas.

But until he came to the dense forests of the Coeur d'Alenes, his panning had not yielded the gold nuggets and dust he sought.

Historians have not clearly established when it was that Prichard first found the gold in Eagle Creek – or indeed whether it really was Prichard or fellow prospectors Markson, Gelatt and Gerard who actually found the gold. Most accounts, however, give credit for the discovery to Prichard.

Most historians also seem to agree that in 1883, Prichard, accompanied by mountain man Bill Keeler, rode out of the Coeur d'Alenes and into the small village of Spokane Falls, some eighty miles to the east of Murray. When they got there, their "buckskin pokes" were heavy with gold. What followed was the Coeur d'Alene Stampede.

There were still plenty of prospectors and would-be miners in the West in the 1880's ready to respond to the siren call of "GOLD IN THE HILLS!" It had been more than thirty years since the gold rush to California had been touched off by the finding of a nugget at John Sutter's sawmill in the Sierra Nevada Range and more than twenty years since the stampede to the area around Orofino, Idaho, some eighty-five miles to the south of Prichard Creek.

Many men who had failed to strike it rich at any of these earlier mining "diggins" were all too willing to try it again. Each had hopes of making the lucky strike that would enable him to assume a life of fabulous ease in San Francisco, New Orleans or Paris.

Many men were drawn just by the adventure of going on a stampede. There always was the chance of sudden riches, and it beat walking behind a plow or tamping spikes on a railroad construction crew.

So thousands of people poured in. The Northern Pacific Railroad, which had a line running to the north of the Coeur d'Alenes through the Clark Fork River Canyon, was not adverse to selling tickets by advertising the wealth supposedly to be had at Eagle and Prichard Creeks. Handbills replete with seductive adjectives were distributed by the railroad company throughout the United States.

The advertisements asserted that "the placers will yield their riches to anyone who has a pick, pan and shovel – and the muscle to use them." Another pointed out in large-sized type that $100 per man per day are being taken out of the rimrock of the gulches, while in the

Miles of dredge tailings from the air look like rhythmic coils of tannish-red intestines left behind by a gigantic, prehistoric monster. The cluster of buildings is all that remains of Murray, once a bustling mining community.

gulches twenty-five to forty dollars per man per day are being panned out."

The Northern Pacific also called attention to the fact that its line was "the only line running to the Coeur d'Alene District, Belknap, Rathdrum and Spokane Falls being local stations on its road, and reached by no other line."

There apparently were lots of takers. Large numbers of people also traveled to the Coeur d'Alenes from the closer region of eastern Washington and northern Idaho. As a result, as many as 5,000 men and scores of women, who thought they had an opportunity to share in the wealth, made their way to the strike during the winter months of January, February and March, 1884.

Two crude and tough camps soon sprang up to accommodate the adventurers who struggled through the deep snows to the golden creeks. Eagle City was hastily constructed, near where the creek of the same name flows into Prichard Creek. At least twenty saloons, dance halls and casinos were built along the one long street of this camp in the wilderness.

Next to be hammered and sawn into being was Murrayville, later to be shortened to Murray, about five miles up Prichard Creek from Eagle City. Eugene V. Smalley, who visited the mining district in July, 1884, had few kind words for the bustling mining camp of Murray:

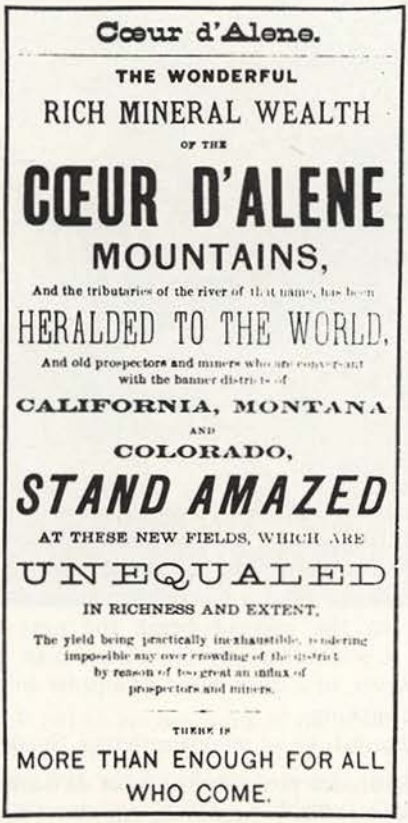
"A little farther down the stream, wedged in a narrow crease between precipitous mountains, is Murray, now the chief town of the Coeur d'Alene country. It is composed of a hideous half-mile long street of huts, shanties, and tents, with three or four cross streets that run against the steep slopes after a few rods of progress . . . A more unattractive place than Murray I have seldom seen. The trees have been cleared away, leaving a bare gulch into which the sun pours for sixteen hours a day with fervor which seems to be designed by nature to make up for the coolness of the short July nights, when fires are needed. Stumps and half-charred logs encumber the streets, and serve as seats for the inhabitants."

By the following fall, thousands of persons were more or less snuggly ensconced in the two towns and on the surrounding slopes. Placer gold was being panned and sluiced out of the waters and rocks worth hundreds of dollars each day.

In a general way, the gold deposits on Eagle and Prichard Creeks were similar to those discovered earlier at Orofino and at Sutter's Mill in California. Through the process of erosion, rock containing gold is broken up into small pieces which are moved from their source (mother lode) by the action of running water and glacial action. Being heavier, the gold particles settle to the bottom of the stream and move slowly along the bedrock until they are caught in cracks and crevices.

A prospector often used an ordinary ten-inch frying pan – with the handle removed – to pan for gold. It is interesting to watch an old-timer perform this operation. He fills his pan about two-thirds full of sand and gravel from the stream bed and places it in the stream. The clumps of soil are broken up and the larger rocks discarded. He then tilts the pan away from him and the contents are shaken from side to side until the lighter materials are washed out and the gold settles to the bottom.

A. J. Prichard is reported to have recovered forty-two dollars in one



Advertising by the Northern Pacific Railroad lured thousands of people to the Coeur d'Alene Mountains in search of gold.

pan of soil from what is now called Tributary Gulch. However, it was more common to get no more than a nickel's worth from each pan full. It was extremely painstaking work to swirl the sand, gravel and water out of the pan to obtain only a few flecks of gold.

When a stream having sufficient flow was available, the miners might make a sluice box out of rough-cut lumber. The stream was then diverted into it. Sand and gravel supposedly containing gold was shoveled or dumped in at the top of the sluice. Strips of wood placed across the bed of the boxes made tiny riffles and stilling pools where the heavier gold dropped out. Sluicing was considerably more efficient than panning in terms of gold recovery, but also more effective in altering the landscape!

Hydraulic mining was often used to recover placer materials located on higher ground. In one case, water from a mountain lake in Montana was conveyed by flume over a distance of about fifteen to twenty miles. It was channeled into a twelve-inch pipe and forced through a nozzle under intense pressure so that it was necessary to mount the apparatus on a stand permitting the nozzle to swivel in any direction. This method was used in Butte Gulch above the town of Murray where large amounts of gold-bearing materials were blasted loose from the hillside. Regulations today do not permit these practices.

At the Eagle and Prichard Creek "diggins," many feet of soil and gravel had to be removed to reach bedrock where the gold lay. Thus, despite the ballyhoo of the Northern Pacific Railroad, it took more than just a pick, shovel and muscle to reap a handsome reward. Many

Early placer miners used a pick, shovel, and pan to search for gold.

placer miners became discouraged since it required an enormous amount of labor and a goodly sum of money to buy equipment to reach the well-covered metal they were seeking.

As a result, an exodus of the stampeders out of the Coeur d'Alene mountains to the railroad began the next spring after Prichard's discovery. It was not a way for a poor man to get rich. No account exists, however, of a disgruntled stampeder suing the Northern Pacific for false advertising.

In his observations of mining activities, Smalley wrote:

"The placers are probably the most difficult to work that have ever been discovered. First, there is the enormous timber growth, then thick alluvial soils, and further down lies from five to twenty-five feet of gravel and boulders, before the bedrock is reached. Besides, the water of the streams soaks down through the ground, and must be taken out of the ditches and shafts by pumping."

Hydraulic mining did great damage to the terrain since it involved removing part of the hillside with water under great pressure.

So with all of these difficulties, it was not surprising that by late spring, many of the El Dorado seekers were on their way out of the Coeur d'Alenes. And for those who stayed behind it was not too long before their boom came to an end. Within a few short months, the gravel yielded the last of its flakes and nuggets, at least those which could be obtained by the technology of that decade.

It was not until thirty-three years later that a large-scale effort was mounted once again to recover gold from beneath the ten to twenty-five feet of gravel and rocks of Prichard Creek. Dredging operations were started above Murray in 1917 by the Yukon Gold Company. In the next nine years, the dredging produced gold valued in excess of one million dollars.

The dredge was a monstrously large, self-contained facility that floated on a pool of water. Sticking out in front was a large boom on which a continuous chain of hard edged buckets was mounted. Each bucket took a seven and one half cubic foot bite out of the stream bed, allowing 5,000 cubic yards of material to be worked through in a day. Such a giant could remove material from depths of fifty feet or more, and bring it into the dredge where the gold was separated from the rock. The leftover boulders, gravels and sand were "spewed out" behind. Huge piles of dredge tailings thus were formed for about seven miles through the valley, looking from the air like rhythmic coils of tannish-red intestines left behind by a gigantic, prehistoric monster.

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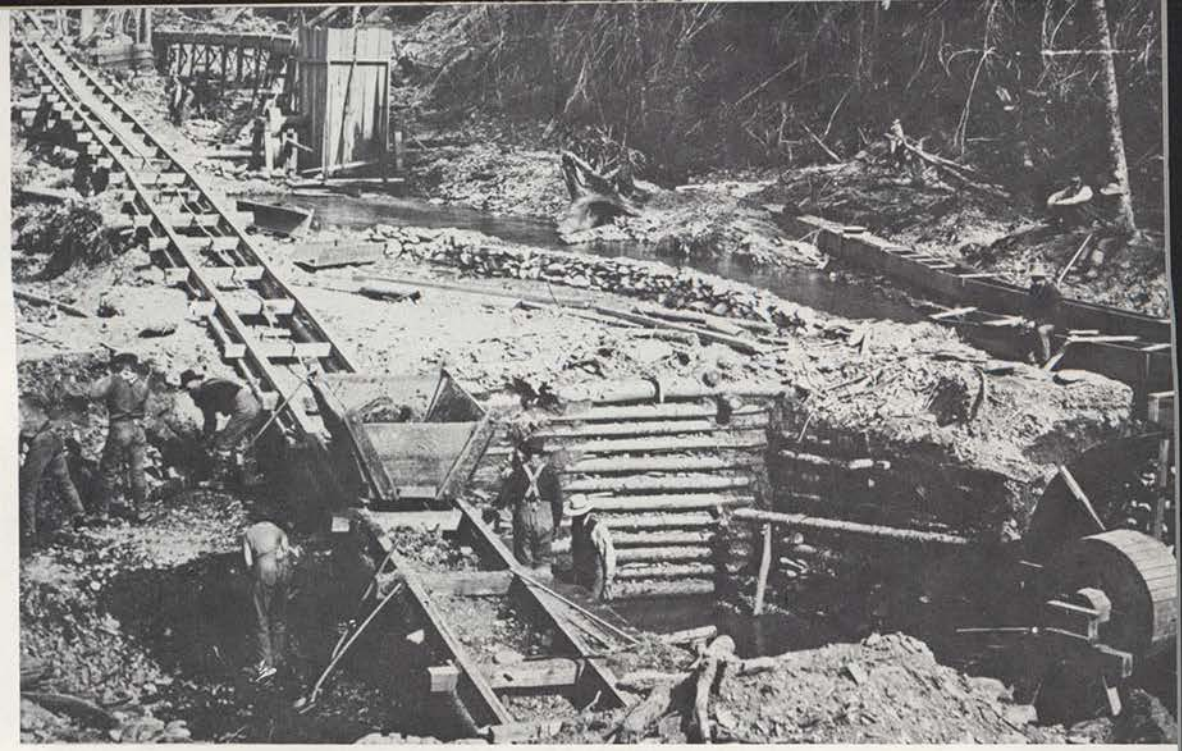


Flumes, ditches, and water wheels constructed on site enabled the miners to work their diggings faster.

Murray Today

"The dredge only took out about one-third of the gold in Prichard Creek. Two-thirds is still there." Will Parrish of Murray was talking. "But that kind of dredging will not be allowed again in this country."

We had come on present-day Murray suddenly. Only a sign indicating an up-coming twenty mile speed limit on a corner lined with cottonwood trees warned that something was ahead. As we drove around the corner, we could see a single lane stretching ahead for what seemed to be three-quarters of a mile. We pulled to the side of the narrow asphalt-covered street to let two motorcyclists speed on by. The loud roar of their engines disrupted the serenity of the canyon, warm in the August sunlight. After they had disappeared down the street, two men, clad in working clothes, slowly emerged from one side and sauntered at an angle across the now vacant road. They vanished behind a pickup truck, complete with the ubiquitous camper top.

Close to where we stopped our car were several mobile house trailers in various stages of age and upkeep, and festooned with the usual TV antennaes.

When we looked beyond the house trailers, it seemed as if the canyon walls were almost close enough to touch. The ridge to the south of the tiny community appears especially steep. To ascend it would require pulling oneself upward from one tree to the next.

Almost wider than the town are the highly visible piles of dredge tailings. These extend into the edge of Murray itself, almost as if the dredge operator had not been watching where he was going. The buildings of the town are a strange mixture. There are some neat small houses, some ancient, chinked log cabins, and a few abandoned structures about whose original functions one could only guess. However, two new houses were under construction.

A sign on the small post office, located in an old building, proclaims the hours of business as being from eleven to five during the week, and from ten to two on Saturdays. The main establishments are the Courthouse Tavern and the Sprag Pole Tavern. On the afternoon of our

Will Parrish, owner of the Sprag Pole Tavern in Murray, proudly displays the wooden headboard from the grave of Molly b'Dam. She was well thought of in the early mining community though a member of the "red-light" profession.

visit, the Courthouse Tavern seemed to have more business. Five pickup trucks were nuzzled up to the front and sides of the building, waiting in silence while their operators sought refreshment and diversion inside.

Seeking perhaps to rectify this apparent imbalance in patronage, we went inside the Sprag Pole. Here owner-manager Will Parrish told us about the dredging and how outsiders still come to Murray nearly every week during the summer "looking for land to enter mining claims on or to buy."

As Parrish, a medium-sized man with intense blue eyes and an elegantly twirled mustache, reminisced about the past, time seemed to slow down inside the Sprag Pole. (The tavern is named for a pole used to support the roof of an underground mine tunnel.) Later, Parrish proudly posed with the wooden headboard from the grave of Molly b'Dam. She was the most famous of the "ladies" who came to ply their trade in the rough mining camp of the 1880's according to the Murray resident.

Molly b'Dam (whose real name was Maggie Hall) was noted for her nursing of a sick miner back to health. When she passed away in Murray on January 17, 1888 – at the age of thirty-five – a huge crowd came to her funeral.

The headboard was rotting away in the tiny graveyard on the southern slope of the canyon above Murray, when the townspeople replaced it with a permanent one. Parrish, who worked in the mines in Alaska, proudly keeps the original in the front window of the Sprag Pole. He told us that fresh flowers still are placed on her grave on the anniversary of her death.

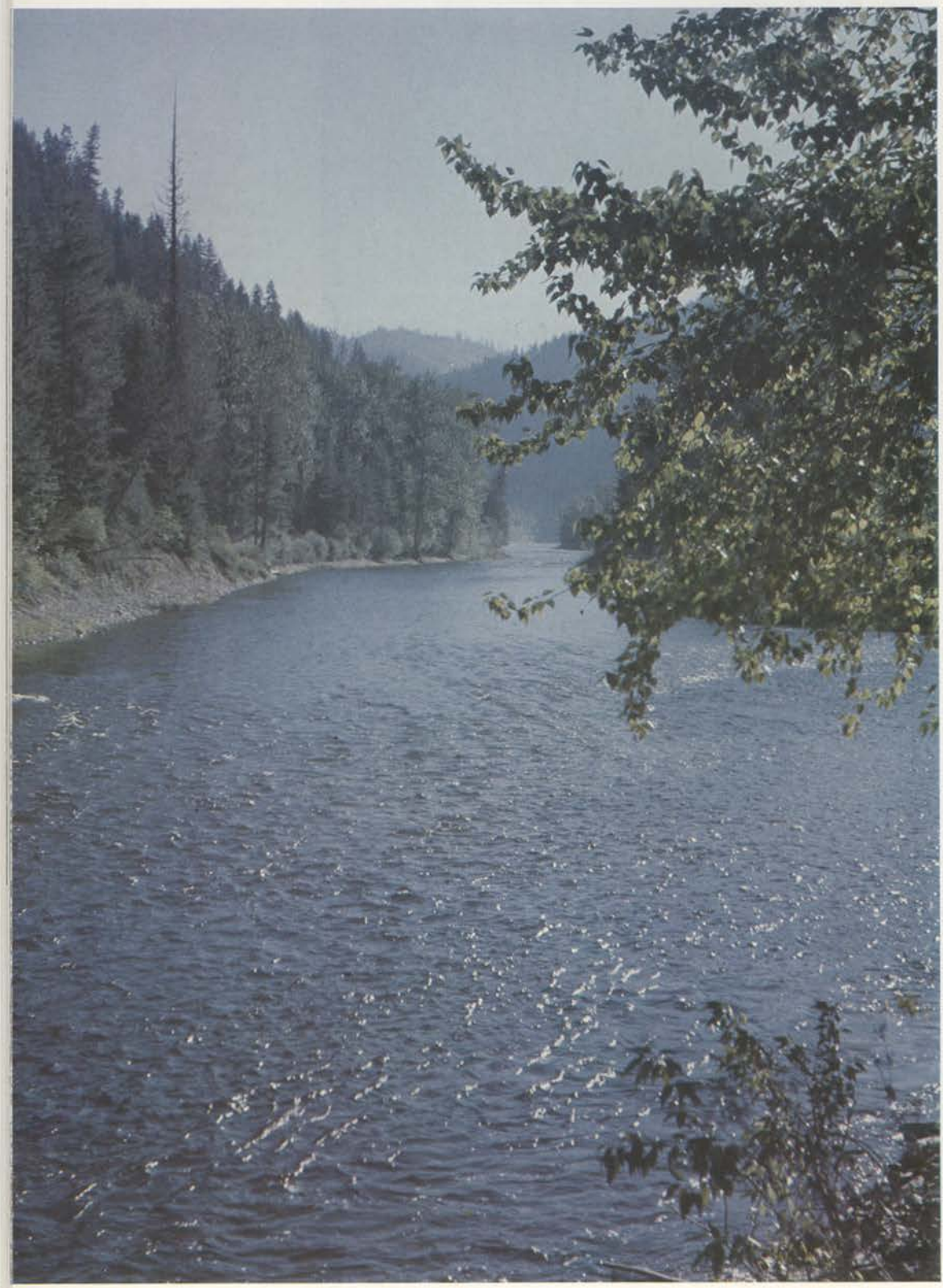
As we emerged from the Sprag Pole and drove down the canyon in the late afternoon sunlight, the past seemed to be riding with us. What stories the piles of dredge tailings and the old abandoned stamp mill about a mile below Murray could relate.

But there is little else left to remind one of the boisterous people who once worked and played in this northern Idaho canyon. Where Eagle City once had its brief flowering, several houses are all that remain. A large basin which must have served as a holding pond for a deserted sawmill was also visible.

The number of houses at Prichard, located at the confluence of Prichard Creek and the North Fork of the Coeur d'Alene River were

Huge dredge operating on Prichard Creek was capable of removing placer gold beneath twenty-five feet of coarse gravel and boulders.

also few in number. We counted four small, weather-beaten frame homes, one unpainted A-frame – looking most incongruous with the rest of the conventional structures – three taverns, two overflowing litter barrels – and a pack of friendly dogs wandering about hoping in vain that something exciting would happen.



Chapter 5

THE NORTH FORK

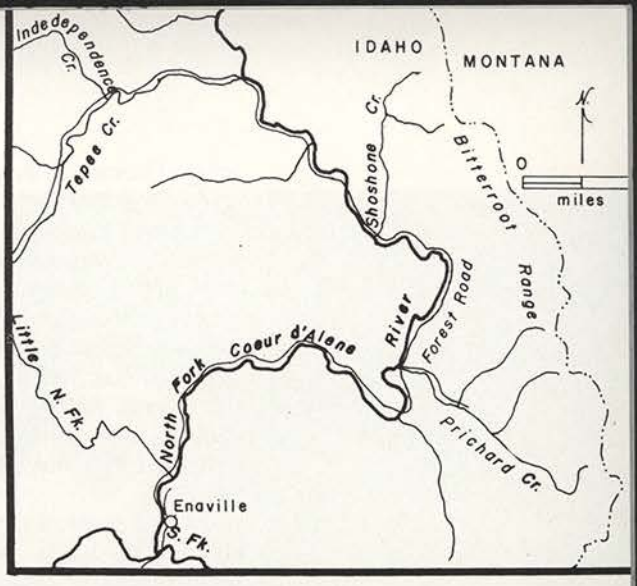


Figure 3 – The North Fork of the Coeur d'Alene River[1] heads in the Coeur d'Alene Mountains overlooking Lake Pend Oreille and the Bitterroot Range. This range separates Idaho from Montana. The entire drainage is noted for its pristine water, recreation in the form of floating, fishing and swimming, and beautiful vistas along its river corridors.

The Sometimes Quiet World of the North Fork

The river has changed its pitch. A roar has taken over from low gurgles and light splashing sounds. But from our low seats in the rubber and canvas kayak, we cannot see the end of the pool-like stretch through which we are gliding. The increase in noise, however, has alerted us to rapids several hundred feet ahead.

Along the shore, a pickup truck camper has stopped on the dirt road, its occupants watching our progress. There is no holding back. The current has a firm grip on the kayak and is pulling us onward. The tall cottonwoods along the shores are slipping by faster and faster.

Moments later we see the waves and broken water. We have a choice of three channels, formed by huge tree stumps lodged on some rocks by high water. We have only seconds to decide the deepest route; to dip the paddles hard into the foam-flecked green water.

All too soon, the front of the kayak swirls into a standing wave, flexes, then rises over the submerged tree trunk we can dimly see down in the water. There is a slight bump and we are past. The rubberized fabric of the blue kayak and its flexible wooden frame twist and bounce in the waves. Cold water splashes on our arms.

But a green pool, deep and calm, lies ahead. We turn and smile at each other.

It is mid-May and we are floating the North Fork of the Coeur d'Alene River. That morning, when we awoke in a campground farther up river, there had been crystal droplets of dew on the tall grass where we had rolled out our sleeping bags the night before. Wisps of fog drifted in the middle reaches of the canyon.

Higher up, through breaks in the mist, we could see the bright green of the pine and fir. Somewhere up there, the morning sun was shining. But the campground, deserted then except for us, was in shadow. At the water faucet, installed through the courtesy of the U. S. Forest Service, the frozen washclothes – used the evening before – attested to the chill of the past night.

Later, after we had spent nearly an hour matching "red end A" of one wooden rod to "red end A" of another part of the kayak's varnished frame, we slipped on the blue rubber cover and launched the buoyant craft. Before the day was to end, we were to float some fifteen

1

On present roadmaps this stretch is known as the Coeur d'Alene River and the Little North Fork is termed the North Fork.

miles of beautiful, unspoiled river to end up in water so filthy we would shrink from any contact with it.

Around mid-day we halted at a campground where a number of trucks, campers and small vacation trailers were parked. Their owners were sitting in camp chairs, gripping cans of beer. Raucous shouts echoed across the small open space. Nearly all of the pickup trucks were accompanied by a motorbike hanging from an auxiliary rack.

Occasionally during the day's float, we passed fishermen, hip-deep in the stream, flicking long casts over the water in what seemed to be studied slow motion. None were actually observed in the act of catching a fish, but all seemed in tune with the tempo of the peaceful river.

At one point, a pair of merganser ducks repeatedly took to the air ahead of the kayak. Now and then we would see slate-gray birds – the water ouzels, or dippers – dancing in the spray of the smaller rapids, and bank swallows dipping and swerving overhead for insects.

Too soon we came to the end of the North Fork – to its confluence with the South Fork. It had been an idyllic day: immersed in the quiet, the green ranks of conifers ascending the ridges, and the stately cottonwoods lining the river.

The pleasantness of our float trip did not extend as far as the Mission at Cataldo. As soon as the confluence with the South Fork was reached, the quality of the water changed. In just a few feet the sparkling clarity was gone. Yellow-brown scum floated on the surface, along with greasy-appearing bubbles. A septic-tank odor was all too clearly noticeable along some stretches. Physical contact with the waters of the North Fork had been enjoyable during the middle of the warm day. But here on the South Fork, late in the afternoon, we shrank from even the drops of water which ran off our paddles.

The cause of our revulsion will become clear later as we see the impact of man on the South Fork of the Coeur d'Alene River.

The Fish of the North Fork

Later in the summer, after our float trip down the river, we began to wonder why we hadn't seen more fish caught by the numerous fishermen working the North Fork. Was our timing just bad, or has the North Fork declined as a good trout stream?

We talked to several biologists from the Idaho Fish and Game Department, including Dave Ortmann. At the time he was Regional Fisheries Biologist and his territory was the Coeur d'Alene region, but since that time he has been named to take charge of Idaho's anadromous fish programs, with headquarters at Boise, the state capital.

Ortmann told us that both rainbow and cutthroat trout – the latter so-called because of a red slash mark which runs along each branch of the lower jaw, are planted in the North Fork by the Idaho Fish and Game Department. Some of these fish do well in the stream, for Ortmann asserted that anglers occasionally catch cutthroats from sixteen to seventeen inches in length and rainbows as long as twenty inches.

Another biologist with the Idaho Fish and Game Department, Bert Bowler, also contributed considerable information about the fishing conditions in the North Fork. A recent graduate of the University of Idaho, Bowler believes that the North Fork today is a productive river. One reason is the abundant aquatic insects such as the caddis fly larvae

Hefty three pound cutthroat caught in 1952 from Independence Creek, a tributary of the North Fork is happily displayed by Ron Walker. Fish of this size are becoming more difficult to catch in the Coeur d'Alene drainage.

that cover the bottom and thus provide a favorite food for trout. Another sign is the growth rate of North Fork trout. "A North Fork fish that is four years old will often measure about twelve inches in length while a four-year-old that has spent its life in the nearby St. Joe River will be only about ten inches long," Bowler said.

Old time residents of the Coeur d'Alene area have told Bowler about seeing very large fish coming up the North Fork from Lake Coeur d'Alene. Bowler believes they must have been Dolly Varden trout. This species, which attains lengths of two to three feet, no longer exists in the Coeur d'Alene drainage.

Where Do the Big Ones Come From?

Although the larger Dolly Vardens no longer inhabit the waters of the North Fork, anglers still catch cutthroats and rainbows. Just where these "whoppers" come from has the fishery biologists scratching their heads. They do not believe the fish would attain that size in the river alone. Do these large-sized specimens come up from Lake Coeur d'Alene, more than fifty steam miles away?

Ortmann, for one, is skeptical. He brought to our attention how toxic the main stem of the river is from mining wastes dumped into the South Fork between Mullan and Smelterville. Tests have shown that young cutthroats put in boxes suspended in the South Fork die within a few days.

Bowler disclosed that he had picked up a dead rainbow, twenty inches long, between Enaville and Prichard in 1973. He knew of seven other fish similar in size which were found dead in this stretch of the North Fork. The question is why? Was it old age? Or did they die from the toxic conditions encountered while migrating up the main river?

Whether or not the cutthroats migrate from spawning creek to a lake and back again is a critical question. The answer may determine whether this particular species of trout will continue to be part of the North Fork fish population. If most of the North Fork cutthroats are migratory, or have been so in the past, then the more toxic conditions of the main river – or other environmental factors in the lake – may be preventing their ascent into the North Fork. But if these attractive game fish are true homebodies of the North Fork, then one would have to look for possible changes within this part of the river for the recent decline in cutthroat catches.

Bowler does believe that there has been too much fishing pressure on cutthroats out of the North Fork, and that something should be done about it. The Fish and Game man sees the same thing happening with the North Fork, as took place several years ago on the St. Joe River. Once an extremely productive stream, the St. Joe – which empties into the far southern end of Coeur d'Alene Lake – has been heavily overfished. A couple of years ago, the anglers using the St. Joe were cut back to a limit of three cutthroats, and each had to be longer than thirteen inches. According to Bowler, the people of the St. Joe region overwhelmingly support these restrictions as they do not want to see their cutthroat fishery come to an end. The same choice may have to be made soon by the North Fork area residents.

Who Fishes the North Fork?

The local residents fish the North Fork because it is convenient; outsiders come because they have heard that it was a good fishing stream; and some fishermen who usually work the riffles and pools of

Cool idea on how to spend a hot afternoon is exhibited by author's sons, Craig and Brad Rabe.

the St. Joe come to the North Fork to get away from the three-cutthroat-trout limit.

These findings came to light during a creel census made by the Idaho Fish and Game Department during the summer of 1973 on the North Fork and some feeder creeks. Bert Bowler was in charge of the survey, made to find out what kinds and sizes of fish were being caught and to determine the attitudes of anglers toward different management ideas, such as restrictions on catch.

The survey confirmed that most fishermen come to the North Fork in late spring and early summer. The "success ratio" went down late in the summer, along with the numbers of fishermen, according to the creel census data. Fishing for trout, however, is reported to pick up again in the fall.

Bowler emphatically believes the upper tributaries of the North Fork, such as Trail Creek and Independence Creek, are important because their sand and gravel beds are excellent spawning places for the cutthroats. After spawning, the eggs are covered over with the fine sand and gravels which give the developing eggs some protection but also allows them to be well aerated. Siltation by natural and human activities, however, can clog the sand and gravel so that the developing embryos simply suffocate from lack of oxygen.

Cutthroat trout are not as prevalent in the upper tributaries as they used to be, Bowler said. Those remaining are found mostly in the upper reaches of the North Fork and the Little North Fork.

Rainbow trout live primarily in the lower end of both streams. There is some overlap between the two territories and extensive hybridization has taken place between the rainbows and the cutthroats, according to Bowler.

Some work being done at the Hale Fish Hatchery near Mullan, Idaho, may reverse the decline in the North Fork cutthroat fishery. Details of these efforts are given in Chapter Six.

It would be a shame if the colorful cutthroats were eliminated from

Purchase of lands along river usually denies access to public. This, together with easy road access, puts more pressure on the few campgrounds and beaches along North Fork.

the North Fork and its tributaries. What remained would be a "put and take" rainbow fishery where anglers rush out on opening day to catch the "planters" which just a few days earlier had been swimming in the sheltered existence of the hatchery tank. There they were fed their "daily bread," and such lethal things as hooks and lines were beyond their ken.

Improved Road Means Decreased Environmental Quality?

During our kayak float down the North Fork, we had noted new bridges being built as part of a road improvement project. This construction and its long-time effects may be the scale-tipper as far as the North Fork cutthroats are concerned.

"With the new road being punched through, more anglers will reach more streams. Based just on my own observations, fishing pressure is a big part of the decline in cutthroats. This new road the Forest Service is building is not going to help any," noted Bruce Rieman who helped Bowler with the creel census.

Bowler, too, believes that the "opening up of the river" through better roads and more campgrounds may eliminate the cutthroat trout.

"Their desire to cut more timber out of the North Fork mountains led the U. S. Forest Service to build the new road. Recreation could only be a secondary factor," Bowler asserted.

Since the road seemed to be a subject of considerable controversy, the authors brought it up during a visit to the headquarters of the Coeur d'Alene National Forest, located in Coeur d'Alene, Idaho. A secretary directed us to the modest office of John Leasure, Chief Forester. In reply to our question, he walked to a large-scale map on the wall. "There is a major road contract out now for about three and a half million dollars – to make this road a double-lane paved standard road from the Interstate to the junction of the Coeur d'Alene River with Trail Creek." As he was saying this, his finger traced a route from Enaville to a point about thirty miles up the North Fork to where Trail Creek enters the river.

A big reason for letting the road contract was to improve the section above the Forest Service's Shoshone Work Center, according to

Leasure. "From about seven to eight miles above the Work Center to the rest of the way up the river, the road was low in quality. It was built in the CCC days and is not adequate for log hauling. It really is only one lane wide with turnouts."

The new road will improve the flow of logs from the North Fork region, Leasure said. We asked him if considerably more logging was anticipated in the North Fork area. He replied: "There are stands in the upper area that are about sixty to eighty years of age. We are not interested in cutting them right now. But if the market does develop for commercial thinning, it would be possible."

The federal forester then pointed to his wall map and said: "From Senator Creek down, the logs along the river have not been harvested in the last forty to sixty years. Some were not even cut before that."

When asked what building this improved road might do as far as increasing the recreational load on the river, Leasure replied: "We know we will have quite an influx of people once (the improved) road becomes known."

Later in the fall, another viewpoint on the desirability of the road was expressed by Al Issacson, watershed management specialist assigned to the Coeur d'Alene National Forest. "I was against the road personally, not so much from a resource damage (standpoint) but . . . there already are a lot of people out there – like the elderly – that don't belong in the woods. With the paved road they will get out there in poor weather, in snow, and get themselves into trouble."

Issacson, who grew up in the Coeur d'Alene region, feels that part of the justification for the new road was the closeness of the North Fork region to the relatively large numbers of people living in Spokane, Washington. The thinking (according to Issacson) was that an unimproved road already ran along the river, and the cutthroat trout fishing was not all that good. Thus, why not improve the road so that the North Fork area could be used by more people as a recreational area?

The new highway would not open up additional logging areas

Warren Van, retired rancher who lives along North Fork, believes river corridor should be zoned to prevent promiscuous building on the flood plain.

because the branch roads leading off the main road go into rocky country with little commercial timber, Issacson said. In addition, the scenic areas along the North Fork corridor would be closed to most all logging because of the heavy recreational use. Limited helicopter logging would be practiced instead, the watershed expert related. In essence, he admitted that the building of the road amounted to a tradeoff between opening up the area to many more people and eliminating the cutthroat trout.

Early Logging Damage

The streams of the North Fork region have not recovered completely as yet from the "splash dams" and log chutes of the 1800's and early 1900's. Splash dams were built the entire length of the Little North Fork with log chutes or flumes being constructed up the side streams, according to Issacson. "You can still see a lot of the damage," he said.

Splash dams were a device used to boost delivery of the logs down to where the current was strong enough to move them. Water was backed up behind each dam, then let go in a semi-flood, so as to carry the accumulated logs downstream to the next dam where the process was repeated. Such periodic small "floods" wrecked havoc with the stream banks.

The spash dams and log chutes were not alone in causing damage. The logging railroads which were built up by many of the watercourses in the Little North Fork drainage did considerable harm, according to Issacson. "It is hard to tell now what damage was caused by the splash dams and what by the railroad logging. But the Coeur d'Alene (country) recovers pretty well. Some of these creeks that were really ravaged are in pretty good shape now. But they are still in a recovery stage," the watershed scientist said.

Clear Cutting on the North Fork

"Most of the drainage on the Little North Fork is pretty well cut over. Yellow Dog and Grizzly . . . all these tributaries . . . have been heavily cut. We have cut too much in the last ten to fifteen years.

"From a watershed viewpoint, the only way I can see that we can keep up the cutting we are doing is straight salvage. We have clear cut too much out of each drainage," Issacson told us.

"U. S. Forest Service rules specify that a twelve percent increase in the mean annual water flow is the cutoff point for additional logging. This increase in water runoff has been reached on many drainages in the North Fork region," Issacson said.

What can be done now? Issacson related that a partial cut of thirty-five percent of the merchantable timber could be made without increasing the water flow. This partial cutting could be of diseased and insect-infested white pine, white fir, Douglas fir and spruce.

However, partial cutting is not without its drawbacks. It takes more labor, for one thing. To clear cut, according to Issacson, all that is involved is to "cruise the timber, paint the boundary and you are done."

In partial cutting, each tree has to be marked. This takes a lot more time and funds, neither of which the U. S. Forest Service has in abundance, especially with the recent administration's economy drive.

What happens back in the verbal forests and political thickets of the nation's capital may have a great deal to do with what happens on the timbered slopes and cut-over areas of the Coeur d'Alene forest. On

Flooded condition in January, 1974 shows why the river corridor should be classed as a flood plain, thus discouraging building along its banks.

September 25, 1973, a panel appointed earlier by President Richard M. Nixon, recommended that the nation's logging firms be allowed to turn their chain saws loose on "substantial" amounts of the national forest. In a 541-page document, the group asserted that cutting in the forests of the West could be jumped as much as fifty to 100 percent. The President issued an immediate endorsement of the panel's report, and agreed with the panel's statement that "timber sales from national forests be raised."

This assessment of the amount which might be cut from the national forest was challenged by Brock Evans, Washington, D. C. representative of the Sierra Club. Evans said the group's recommendations were "simply the latest in a long series of actions by the current administration on behalf of the timber industry."

The debate over the specific practice of clear cutting in the nation's forests has been growing more heated each year. Defenders of the practice say that it is a cheaper way to get timber out of the woods. They also claim that the clear cutting, followed by burning of the leftover slash, simulates nature's way of clearing the forest through wildfires. Attention is also called to the fact that some species, such as Douglas fir, must have open sunlight in which to grow.

The opponents' point of view was summed up by H. Anthony Ruckel, a lawyer for the Sierra Club: ". . . clear cutting (is) – a practice which strips practically all timber from each acre cut, impedes natural forest regeneration, disturbs water regimes, and harms the soil base."

It is difficult for the layman to know which group of "experts" is correct. However, even a stranger to the forests of the West would probably conclude that many clear cut patches on a forested slope are anything but attractive.

The anti-clear cutting forces got a major boost to their cause with the decision in November, 1973, by a U. S. District Court judge in West Virginia, Robert Maxwell. Ruling on a suit brought against the Secretary of Agriculture and the U. S. Forest Service, Maxwell stated that clear cutting was an illegal practice. The jurist's order called for a halt in clear cutting in the Monongahela National Forest in West Virginia.

In his decision, the District Court Judge cited the Organic Act of 1897 which established the national forests and created the U. S. Forest Service. Maxwell then went ahead to state that the Forest Service exceeded its authority in going to clear cutting as a forestry practice.

The Organic Act, he said: "constitutes a clear directive from Congress, to the persons charged with the administration of the national forests, that trees can be sold and cut only if they are 'dead, matured or large growth' and then may be sold only when the sale serves the purpose of preserving and promoting the younger growth of timber on the national forests."

The jurist went on to say: "Congress has consistently refused to abdicate its legislative control over the harvesting of timber from the public domain. It has from time to time kept the public forest current to the demands of the nation. It has never retreated, however, from its commitment to the ultimate preservation of the forests by controlling the woodsman's axe, now seen in the form of the remarkable power saw, the awesome tree-log skidders and log loaders of a highly sophisticated logging industry."

Environmentalists have contended for some time that the U. S. Forest Service works hand in glove with the nation's large timber firms

– or, at best, is strongly influenced by the companies. The response of the head of the Forest Service, John R. McGuire, to Judge Maxwell's decision would seem to bear out this contention. McGuire said that to comply with the ruling while still trying to maintain the same yields from the forest could cost as much as $300 million a year for road building and other costs.

According to McGuire, one-third of the timber logged from the forests is clear cut and accounts for sixty percent of the total volume. The Forest Service chief indicated that Maxwell's decision would be appealed to the next level of the federal courts. Should the West Virginia jurist's thinking be upheld, new guidelines would have to be prepared for the management of all federal timberlands, including those along the North Fork of the Coeur d'Alene River.

Less Water in the River?

Snow on a cut-over slope does not last long where the area is directly exposed to the sun's radiation. Runoff occurs quickly. In contrast, where a slope is shaded by vegetation, melt-off occurs more gradually.

Some of the people living along the North Fork and Prichard Creek told us that clear cutting had affected the height of the summer flows of the North Fork. They believed that since the clear cutting had been done, the snow had melted much earlier and had come down the creeks and river in higher flows in the spring and early summer. Consequently, the North Fork is much lower in the middle of summer than it used to be.

On the other hand, watershed specialist Issacson said that during the early part of the century there was much more open space in the region's forest than there is now. He said these openings were due primarily to large fires which swept through the forests in 1910, and in the 1920's and 1930's. Such open areas have now revegetated causing water loss by evaporation from plants leaves where it used to be by runoff. Thousands of tons of water are lost daily to the atmosphere by this evaporation process.

Logging and the Stream

Sediment deposition is probably the most insidious result of heavy logging operations adjacent to any stream. On an exposed clear cut slope, water trickling off is apt to carry sediment with it, especially if logging roads have been built carelessly or if the cut-over slopes are excessively steep.

The sediment can be carried long distances before being deposited in a river bed, where it makes it difficult for insects to live and fish to spawn. The aquatic organisms in a stream or river depend on the oxygen dissolved in the water for their "air." Most obtain this oxygen by passing the water through their gills. These delicate tissues exchange oxygen with carbon dioxide which the creatures have accumulated in their life processes.

When a river is clouded with mud, the silt clogs up the gills of the stream creatures. How would man react if he could not breathe because some other species was filling up his lungs with dust? Yet how freely man does this to the tiny life forms in a river or creek! Sediment eroded from land disturbed by any means is a form of pollution to the community of plants and animals in the stream.

Flowing waters are more than just inanimate water courses contain-

ing particles of sand and silt, along with dissolved gases and minerals. They are also places where living communities of plants and animals reside. The tiny phytoplankton, algae and larger aquatic plants bordering the stream are capable of capturing the energy of the sun and transforming this light energy into food sugars through the process of photosynthesis. Certain insects, worms, snails, and other organisms subsist on these water plants, thus transferring the chemical energy through another level in the food chain. Finally, the herbiverous animals are consumed by carniverous fish and insects.

When the plants and animals die, the process of decay transforms the complex materials in the tissues to the "raw" elements that can be used again to sustain new populations of plants and animals. Thus a stream is simply not just a physical entity but a living system of organisms and their nonliving environment.

Certain activities of man can easily disrupt the delicate processes carried out by the biota in the aquatic systems. If the organic plant materials are removed from the soil by the burning of slash following a logging operation, then the ground often tends to freeze to greater depths. Subsequently the runoff is increased substantially since the water is less able to percolate into the soil. As precipitation strikes the ground, it begins to concentrate in small rivulets, picking up particles of rock and other solids which it carries downstream as sediment.

Each different species of insect, fish or animal may consume slightly different foods or occupies slightly different areas in the stream. Thus, a whole assemblage of different species uses the habitat. On the other hand, where physical or chemical conditions alter the environment, some of these different species are not tolerant of conditions and thus are eliminated from the scene. A reduction in diversity is said to lower the stability of the system so that where fewer kinds of plants and animals are available, there is less chance for the system to compensate for further changes imposed upon it.

Can You Save a River from Your Neighbors?

"We know you can't stop progress. No one is saying: 'Everybody stay out!' We just want some controls so that the river is not ruined. Our main concern is to keep this river as near the way it is now as we possible can." A man who has spent much time along the North Fork, Warren Van, was talking.

"Everyone that I have talked to realizes that some controls have to be put on the flood plain of the river. It is an absolute impossibility to put a sewage (collection) system up this river." According to Van, the sewer would have to extend up both sides of the river and that the cost would be prohibitive for the number of residents involved.

The retired rancher, who is also chairman of the North Fork Citizen's Committee, said the majority of people now owning homes along the North Fork were supporting the efforts of the committee.

Van believes if the valley of the North Fork were to be declared a flood plain, planning and zoning of the river corridor could proceed. "We have no zoning, no restrictions, no building code. The only legal leg we have to stand on is the Health Department through the dumping of garbage and sewage (control). But we can't get anyone that has any authority to do anything about the sewage," Van said.

Tony Davis, an Environmental Quality Specialist, with the State of Idaho Department of Environmental and Community Services, told us that the North Fork does not qualify for subdivision building because

its flood plain makes it generally unsuitable for septic tanks. But, he said: "People find ways around regulations and pretty soon the North Fork is going to become developed. When that happens, the nice river will go down the tube."

The Classification Issue

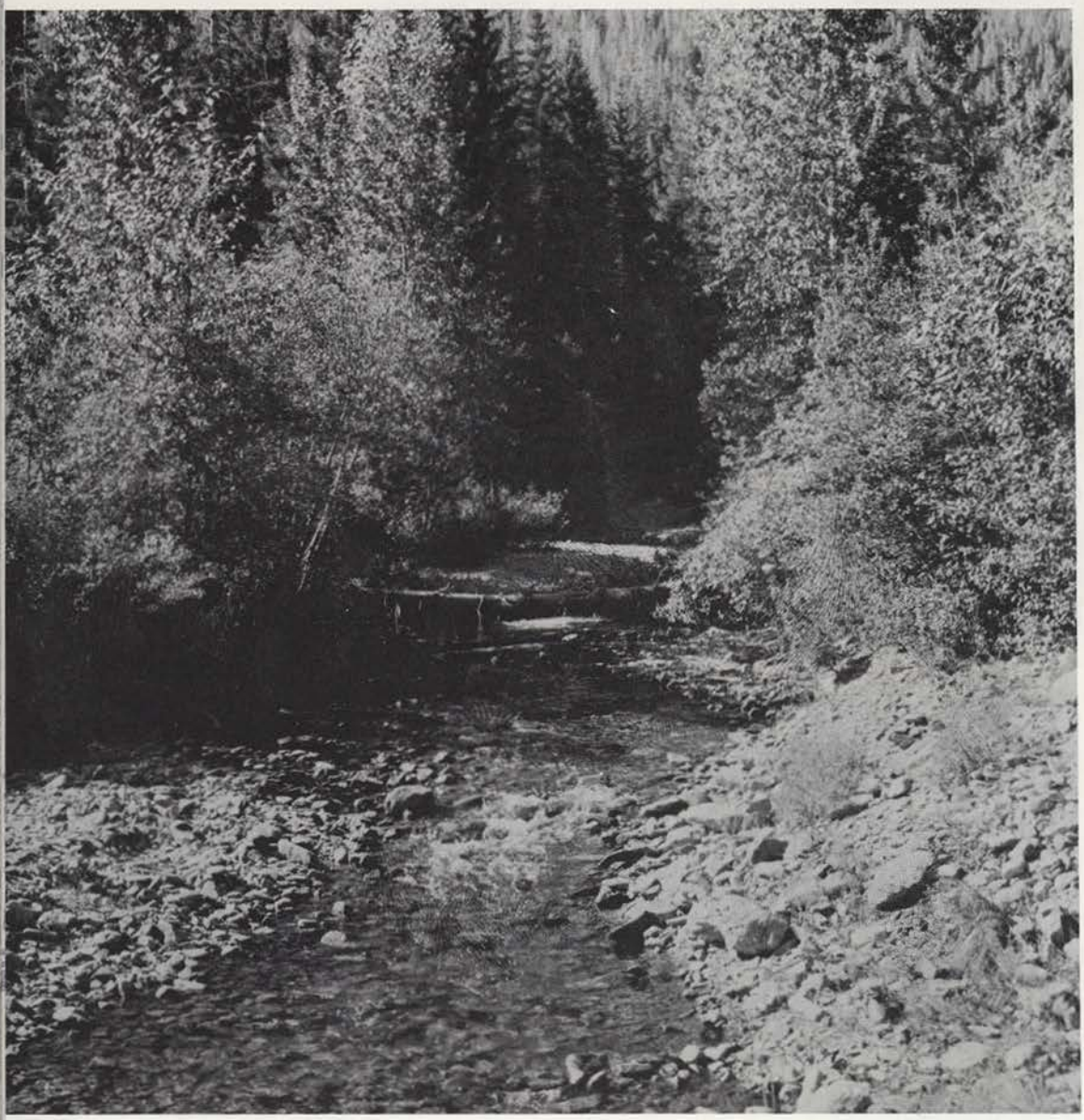
An attempt was made early in 1973 to get some type of control initiated to prevent dredging, logging and cabin development in the river corridor. "In February, the (Idaho) Wildlife Federation called the people together in Prichard to discuss the question of classifying the river which would give it some protection from development. The meeting was extremely well attended. And when the people were asked what they thought (about classification of the North Fork), they were one hundred percent opposed," Davis said.

"What you run into in the State of Idaho is that people are very territorially oriented," Davis explained. "These are people (who) go back two or three generations. They carved out this land. This land belongs to them in the sense of the law."

Van put part of the blame for the negative vote at the Prichard session to people who attended from the St. Joe Valley. According to Van, the proposal of a scenic river classification for the North Fork was "yelled down" by the vocal opposition of the St. Joe representatives. These people warned that "the scenic easements could potentially cripple land owners," Van said.

The issue of protection of a river through a U. S. Forest Service classification as "wild, scenic, or recreational" has been the hottest one to hit the St. Joe River Valley in many years – and as yet it is unresolved. And though there are people who would protect the North Fork, the fate of the beautiful, almost unspoiled river is uncertain.

Clearcut areas along with road scars are visible for many miles in headwaters of the North Fork drainage. The river is seen in lower right.



The South Fork immediately below the Hale Fish Hatchery runs clear and clean.

Chapter 6

UPPER SOUTH FORK

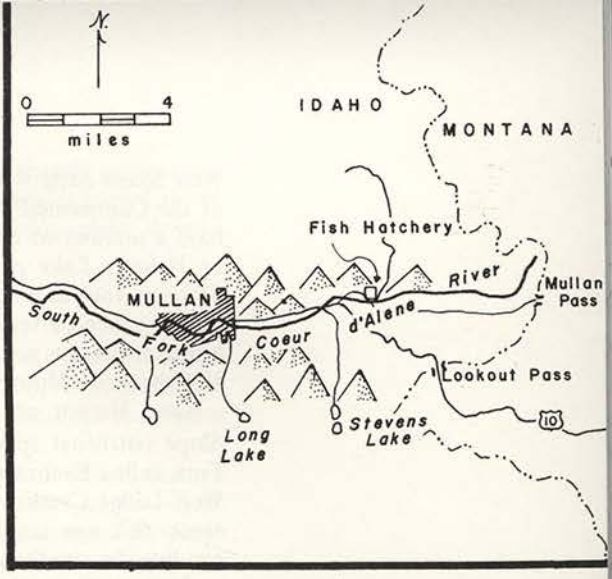


Figure 4 – The South Fork of the Coeur d'Alene originates high atop Mullan Pass. A tiny trickle of water flows down the hillside and merges with other tributaries, some of them having as a source a mountain lake. Downstream lie a series of beaver ponds in the heavy timbered canyons, a fish hatchery and a man-made channel. A short distance further the South Fork runs through the town of Mullan.

Cutthroats for the Coeur d'Alenes

In the early fall of 1973, we drove to the Hale (Shoshone County) Fish Hatchery, located in the South Fork canyon about one mile below a stretch of extensive beaver ponds. We stopped our car beside a large, white-painted two-story structure.

A youngish-appearing man with blond, curly hair, dressed in blue sweatshirt and denim pants, came from beside the building, crossed a stretch of well-tended green lawn and introduced himself as Bob Moore, superintendent of the hatchery. He explained that he was an employee of the Idaho Fish and Game Department but that the hatchery was owned by the Shoshone County Sportsmen's Association. Funds for operation and maintenance of the facilities are raised by a tax levy on the residents of Shoshone County, which includes all of the South Fork and most of the North Fork drainage.

As he escorted us into the main hatchery building, he told us the fish-rearing facility had been started in 1938 through the efforts of Ellis Hale, a labor leader in the South Fork mining district.

Once inside the two-story structure, we could see thousands of tiny fish swimming to and fro in large concrete tanks which ran cross-wise in the building. Each tank was about three feet wide, and slightly deeper.

Moore told us that the hatchery rears some 500,000 cutthroat trout each year which are released into the streams in the five surrounding counties. Plants are also made in the high mountain lakes in the vicinity. In addition, Hale Hatchery serves as a redistribution center for rainbow trout which are trucked all the way from southern Idaho to the hatchery and then planted when nine to twelve inches long for anglers of the Coeur d'Alene region.

While we were admiring the darting hordes of miniature fish, Moore told us about the efforts of the Idaho Fish and Game Department to improve angling in the region by obtaining cutthroat eggs from Henry's Lake, just west of Yellowstone Park. Unfortunately these Yellowstone cutts, as the fishery biologists call them, have not survived too well in the North Fork and other regional waters. They are kept in the hatchery for two years before being released into the streams, which may be a factor in their poor survival.

Moore told us about the efforts being made to establish a brood stock of the "native" West Slope cutthroat trout at the hatchery. The

West Slope cutts – so-called because they are found on the west slope of the Continental Divide which includes the Coeur d'Alene drainage – have a number of characteristics which are superior to the Yellowstone or Henry's Lake cutthroat. In the Coeur d'Alene drainage, the West Slope mature at an earlier age, do not migrate as frequently, and seem to reproduce better than their Yellowstone cousins. However, the West Slope trout do not seem to do as well on hatchery food as do the Yellowstones, Moore said.

Greg Mauser, an Idaho Fish and Game biologist, is collecting West Slope cutthroat spawners in the spring from a tributary to the South Fork called Evans Creek, from the mouth of the St. Joe River and from Wolf Lodge Creek which flows into the Coeur d'Alene Lake. Eggs from these fish are artificially propagated at the Mullan hatchery. The resulting fry are then graded for retention as brood stock.

If these "brooding" efforts are successful, then the wild West Slope cutthroats existing in the drainage will be supplemented with the fish raised at the hatchery. Then perhaps neither the restrictive limits on cutthroat catches nor the "put and take" rainbow plant options will have to be exercised.

The High Lakes of the South Fork

While we were talking to Moore at the hatchery, he told us that brook and rainbow trout are planted in a number of high lakes in the nearby mountains. Aircraft are used to drop the young trout into Upper and Lower Stevens Lakes, Lake Elsie, and another pair – Upper and Lower Glidden Lakes.

A fairly steep hiking trail leads to Upper and Lower Stevens Lakes from the town of Mullan. The lakes are 6,000 feet above sea level in a scenic cirque basin. Small, but attractive, Stevens Lakes were formed as a result of glaciation several thousand years ago.

The lakes are named after Issac Stevens, an early governor of the territory of Washington. In his search for a railroad passage from Minnesota to Puget Sound in 1853, Stevens decided to explore a direct route through the Coeur d'Alene Mountains.

The South Fork mountain lakes are located at the very beginning of a drainage system in which the underlying glacial soils and rock structure have been eroded only slightly. As a result, the headwater streams and seepages into these lakes have contributed little to the mineral content of the waters. Limited nutrients, low water temperatures and a short growing season, together with competition for food and possible space in the lake limit the size of the fish there.

We climbed to the Stevens Lakes in August, 1972. There were many juvenile brook trout in the lower body of water and we concluded that the fish were spawning and reproducing well. But it seemed as if there were too many fish for the carrying capacity of the lake. Too many fish can put a strain on an already meager food supply of small fly larvae and terrestrial insects blown in from the land.

Long Lake, a subalpine water body nearby, can be reached from Stevens Lakes by climbing up and down a ridge separating the two drainages. It is a rather steep ascent but for the fancier of huckleberries, the "pickings" on this ridge are bountiful. As one climbs upward, grasses and shrubs begin to dominate the vegetation. The tree growth at these higher elevations is limited to patches of Mountain Hemlock with their tassled crowns, and subalpine fir, a beautifully symmetrical spire-like tree.

Once at the top of the ridge, the vista is one of sharply geometrical peaks and deep blue lakes. It is wise, when descending to Long Lake to traverse the slope to the north, thus avoiding a hazardous climb down a rock face.

Improved Trails and the Fragile Ecosystem

Al Issacson, a watershed specialist with the Coeur d'Alene National Forest, told us in November, 1973, that no more "improved trails" are presently being planned for the high lakes of the South Fork mountains due to lack of funds.

Environmentalists undoubtedly will applaud this decision, because an improvement in access usually leads to degradation of the scenic resource. If an "improved" trail were built which encouraged people to drive motorized vehicles to the Stevens Lakes, for example, the poorly-developed soil structure and fragile environment surrounding these lake systems would suffer. Easy access to alpine area lakes can quickly bring excessive erosion and littering, coupled with the noise pollution of trail bikes, which would ruin the experience of "getting away from it all."

Besides the thrill of adventure and solitude found in visiting high lakes such as those of the South Fork mountains, the lakes offer a valuable "laboratory" in which to pursue educational and scientific studies. It is becoming increasingly difficult to locate bodies of water that are not polluted or do not contain excessive amounts of nutrients which result in enrichment or eutrophication. The observation and study of natural ecosystems, such as high lakes relatively undisturbed by man, can give us a better appreciation of nature which our society needs desperately today.

If high lakes and their surroundings are not protected now, then their original physical, chemical and biotic characteristics will be changed through such human activities as water diversion and pollution. When an ecosystem is disturbed, certain interrelationships are rearranged, food webs are disrupted, and built in checks and balances are thrown out of kilter. Such upheavals may disrupt the entire biota of a lake.

Mining Firms Cede Surface Rights

A significant environmental step forward was taken in mid-October of 1972 when three mining firms agreed to relinquish their surface

The ridge overlooking Long Lake is covered with tasty huckleberries.

rights in the Stevens Lakes area. South Atlas Mines, Inc., Stevens Peak Mines, and Silver Crest Mines at that time owned twenty-one mining claims encompassing about 470 acres in the Stevens Lake region.

Officials of the firms signed agreements with the U. S. Forest Service. Called an "Easement and Deed of Further Assurance," each agreement essentially separated the surface and sub-surface rights to the land. By these actions, the mining companies gave the Forest Service easements for a public recreational area at the lakes, while keeping their rights to explore and mine any ore bodies lying below the surface. The agreements specify that the sub-surface work shall not disturb the surface area. Thus the mining firms, should they decide that the area merited mining, would have to mine beneath the area by access tunnels or shafts starting from outside the immediate Stevens Lakes region.

The Man-made Trout Stream

Can man do better than nature, especially when it comes to creating a productive trout stream, one of the earth's more complex biotic arrangements? Well, an effort along those lines has been made and, although the final results are not yet in, they appear promising.

This complex attempt took place just east of the town of Mullan, along the South Fork of the Coeur d'Alene River. Nearby is the Lucky Friday mine, operated by the Hecla Company, one of the South Fork mining district's largest firms.

As described in the following chapter, the mines, mills and smelters of the district – stretching from Mullan to Smelterville – once dumped their waste waters and left-over materials into the South Fork. This practice quickly changed the once productive and clear stream into a biologically dead and noxious smelling sewer. But towards the end of the 1960's the mining firms began to construct ponds to catch their leftover tailings.

One such pond was constructed by the Hecla Mining Company at their Lucky Friday mine. However, it soon filled and began to spill into the South Fork. Hecla Mining Company then submitted an application to the Department of Water Administration in compliance with the Stream Protection Act to move the South Fork over several hundred yards from its original course. Initially the Department was not happy about having the stream moved and suggested a number of reasonable alternatives which included seeking out pond sites in adjacent gorge areas, gravity lines down the valley to a stretch of stream without fish, or trucking the tailings out of the valley.

Hecla rejected these proposals as "impractical" or "impossible" and offered instead an idea for designing a new river channel in place of the one they would move.

In June, 1972, the Water Administration grudgingly gave their approval to move the stream channel to one side of the valley and use the old vacated channel as a place to deposit the tailings.

Hecla spent more than $100,000 in the rechanneling project. The new "stream" was built to resemble the real thing in a number of ways with overhangs, pools and ramps being added to a rather narrow, rip-rapped channel.

After the new channel was completed, the Fish and Game Department used an electrical shocking apparatus to stun the fish in the old streambed. The trout were moved to ponds at the Hale Hatchery and held six weeks, until the waters cleared in the new waterway before

being returned to the stream. (The water ran brown for several weeks after the stream bed was rechanneled.)

Nine months later, on August 1, 1973, the Idaho Fish and Game Department took their electrical shocking aparatus back to the "Hecla Channel" to see what had happened to the fish which had been transferred to the new "stream". Bill Goodnight, an Idaho Fish and Game biologist, later revealed that the total "game fish captured on August 1, 1973, represent forty-three percent . . . of those released in November, 1972."

Goodnight added: "Although habitat and resultant fish holding capacity of the new channel has not matched that of the natural channel, it appears that the habitat structures are quite effective in providing fish cover."

James E. Winner, an aquatic biologist with the State of Idaho Department of Water Administration, commented with regard to the forty-three percent recovery: "This is a dramatic decrease but fish numbers will probably increase as the channel stabilizes and the trees and shrubs begin to grow."

"Generally, the new channel created by Hecla Mining Company is recovering. Diversity of bottom insects has increased with each collection . . . The long-lasting effects will be a decrease in aesthetic value and a small decrease of fish and insect habitat. Instead of a meandering stream on the valley floor, it will be a narrow entrenched channel lined with riprap," Winner said.

This is certainly no improvement on nature, as the engineers representing the Hecla Mining Company would have the public believe. Thus far, though, the results of increased insect diversity and fish occupancy are encouraging.

In order for the man-designed stream to remain biologically effective, Hecla should properly maintain the operation by sealing the ramps in the stream and placing large rocks in the channel, according to Bill Goodnight. These actions would direct a current of water against the wing deflectors and also create additional fish habitat. Indeed, if man-created habitats are to compete with natural habitats for productivity and diversity, then man will have to maintain his systems for some time until the natural processes take over.

Chapter 7

THE SOUTH FORK

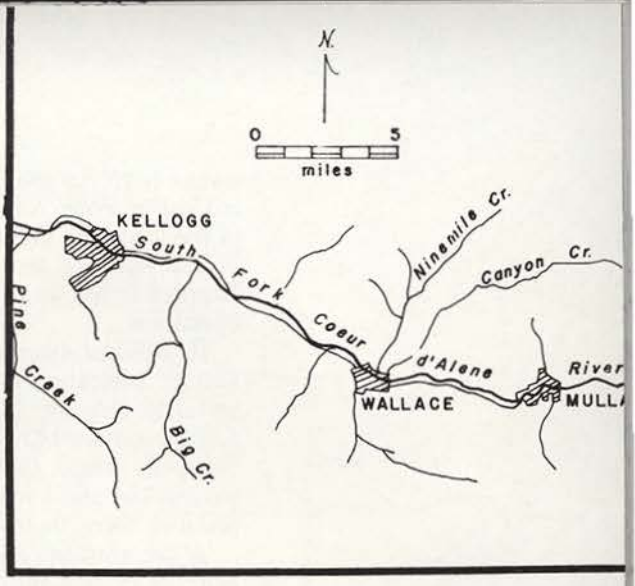


Figure 5 – The South Fork below Mullan receives waste products originating from mining, milling, and smelting of ores together with domestic wastes. Surface water pollution is extensive due to the high water table making contact with old mine tailings rich in lead and zinc. Bulldozers have pushed the river around causing it to take on a braided appearance. Settling ponds, sewage treatment plants, improved facilities to treat metal wastes and a leveed channel will provide a somewhat cleaner and healthier water course.

The Wealthy Valley and the Poor River

The voice in the earphones is muted, yet clear over the background static: "Wind calm, Runway twenty-five indicated. No reported traffic." We acknowledge the radio message and pull the throttle farther back to increase our rate of descent.

We are about eight miles out of the Shoshone County Airport, located between the South Fork of the Coeur d'Alene River and the town of Kellogg, Idaho. Underneath the Cessna is a wide expanse of marsh and earth called Mission Flats. Angling in from the left are two concrete ribbons of major highway. Even from several miles away, cars and large trucks are visible.

At the eastern end of the marshy area, a small white structure stands out clearly. It is the Cataldo Mission, erected in the mid-1800's by pioneering Jesuit missionaries to the Coeur d'Alene Indians and now thought to be the oldest building in Idaho. A couple of miles beyond the structure, the valley tightens, then opens up again into a long canyon of brownish-red rock and dirt. About two miles wide, it appears as if a blowtorch has been used to scorch the ground. Only at the tops of the east-west running ridges is there any forest.

A light-grey haze hangs in the upper reaches of the canyon. The canyon's main features are the squiggly channels of the bright, green river along the north side, the contrasting straight line of the freeway bisecting the valley floor, and some massive yellow-tan piles.

Ahead of us, just southeast of the end of the runway, is a large complex of buildings of many different sizes and shapes. As we pass over these structures, it is apparent that the tall chimneys in the complex are contributing to the smoky pall we noticed several miles out.

The squeak of our tires on the asphalt runway marked our arrival in the "Fabulous Silver Valley," as a Kellogg and Wallace Chamber of Commerce brochure phrases it. As we were to do a number of other times in the summer of 1973, we tied down the Cessna, picked up the keys to the Shoshone's Air Services courtesy car and headed for Kellogg, Idaho.

The valley of the South Fork of the Coeur d'Alene River, source of millions of dollars worth of ore – and large quantities of air and water pollutants.

The Fateful Jackass

Noah S. Kellogg was one of the thousands who took part in the

stampede to the gold diggings at Eagle City and Murrayville, described in Chapter Four. Although he was there, Kellogg played no major role in the Eagle and Prichard Creek developments. Already past the prime of life, Kellogg had done some carpentry work in Eagle City and Murrayville but had taken little part in the actual mining and sluicing operations.

He still had dreams, however, of finding his own glittering bonanza. Kellogg persuaded two of Murrayville's more well-to-do citizens to grubstake him. Dr. J. T. Cooper and contractor O. O. Peck – for whom Kellogg had worked – put up $10 each to buy the old man a supply of "sowbelly, beans, flour and tools." Legend has it that Cooper and Peck put up the small sum more out of the desire to keep Kellogg from pestering them, than out of any real hope he would find anything.

A decrepit and unowned jackass which had been hanging around Murrayville was furnished by Cooper and Peck to carry Kellogg's supplies. In the fall of 1885, the unlikely pair set out over the steep ridges south of Murrayville. Dense growths of fir, cedar and hemlock made their travel extremely difficult.

Kellogg spent a number of weeks climbing up and down while graudally working his way to the southeast. He crossed the South Fork of the Coeur d'Alene River and ascended the ridge on the other side of the stream which ran east and west. He kept swinging his pick at outcroppings, but found nothing he recognized as ore-bearing rock.

What happened next is clouded in history and was the subject of a later legal dispute. One account has it that when his supplies were nearly exhausted, Kellogg decided he had to return to Murrayville, strike or no strike. Getting ready to go, he started to round up his stubborn jackass, which had strayed away from camp, located in a little canyon leading up from the South Fork. Kellogg had called it Milo Gulch, after a distant relative. Pursuing the little beast, he picked up some loose rocks to toss at it, hoping to herd the "mountain canary" the way he wanted it to go.

The rocks seemed heavier than normal. After tossing several at the pack animal, Kellogg reflected that these rocks, from a nearby outcropping, might contain valuable ore. Since he had nothing else to show his grubstakers Cooper and Peck back in Murrayville, Noah kept several to put in the little beast's pack. But when Kellogg got back to Prichard Creek, the doctor told him he had brought back worthless rocks, and terminated their grubstaking arrangement, according to this one account.

As the story continues, a tired and discouraged Kellogg sought solace in a nearby saloon. Here he met Phil O'Rourke, a previous acquaintance. Later described as "an irresponsible, irrepressible, happy-go-lucky Irishman," O'Rourke recognized Kellogg's heavy rocks as rich samples of galena, a mixture of silver and lead.

O'Rourke quickly got together three close friends. Accompanied by Kellogg and five pack horses, the fortune-hunters quietly left Murrayville that same night. Retracing Kellogg's route, the group arrived back at the fateful rock outcropping in Milo Gulch. Two mining claims were posted, one on each side of the gulch. One claim was named the Bunker Hill, and the other, the Sullivan.

The group stayed several days, collecting more ore samples. Then, on September 10, 1885, their heavily-laden pack horses arrived back in Murrayville, accompanied by the elated O'Rourke, Kellogg and friends. A second stampede followed almost immediately. Bonanza-hunters

Outhouses stradling Canyon Creek, a tributary to the South Fork, served as a conduit for raw sewage some fifty years ago.

poured in from Murrayville, Eagle City, Spokane Falls, and eventually, from the distant corners of the world.

What happened next is firmly enshrined in mining history. Additional rich mineral outcroppings and veins were found along the South Fork. The Coeur d'Alene region was recognized as one of the richest mineralized areas of the world. A number of miners and prospectors, including old Noah S. Kellogg, became wealthy beyond their wildest imaginings.

Another version of the Kellogg find was that he did, in fact, recognize the value of the "heavy rocks" and that he and O'Rourke conspired to defraud Cooper and Peck of their share of the discovery. This latter version was the one accepted by U. S. District Court Judge Norman Buck when suit was brought by Cooper and Peck. Buck ruled that Kellogg's grubstakers were entitled ". . . to a judgment of a quarter interest in the Bunker Hill claim." The heat and excitement generated by this trial, as well as the life of the miners, was aptly described by William T. Stoll and H. W. Whicker in the book "Silver Strike". Stoll was one of the attorneys representing Cooper and Peck in the case.

Mining Camps Soon Became Towns

The legal dispute had little effect, however, on the activities along the South Fork. New communities soom came into being. The mining camps of Wardner, Kellogg (named for Noah), Osburn and Wallace were established and grew into lusty towns.

At first, the ore, after being mined out of the hillsides, was transported down the Coeur d'Alene River Valley by pack trains and boats to the town of Coeur d'Alene where it was loaded on railway cars for shipment to a smelter in Montana.

When Kellogg came over the mountain in 1885 in search of gold – and found galena instead – the South Fork must have looked much like what the North Fork does today in the stretch above Enaville. Contemporary accounts describe the South Fork then as being heavily timbered with large grassy meadows and swampy flats. Along the bottomlands were impressive cedar groves and cottonwoods lining the river banks.

The South Fork also had a good population of trout inhabiting its

clear waters. One of the leading citizens, Colonel Wallace, for whom the town of Wallace is named, described in his diary the 247 trout he caught while fishing Placer Creek, a tributary of the South Fork. He further mentions catching three fish at a time.

But neither the handsome scenery nor the good fishing were to continue long. There was fabulous wealth to be had by digging, blasting and tunneling into the slopes above the South Fork, and the claim owners and their workers got at it with muscular gusto and explosives. By late 1885, every major mining claim along the South Fork had been staked and, by 1891, twenty-six of the forty developed properties were producers.

Joining the Bunker Hill, named after the Revolutionary War battle, and the Sullivan were the Tiger-Poorman, Frisco, Hercules and Hecla mines along Canyon Creek. These, along with the Lucky Friday, Morning, and Gold Hunter along the South Fork near Mullan, were all to become producing mining companies. By 1900, the Sunshine, Polaris, Last Chance, Page, Consolidated and Crescent mines also were producing ore.

One of the first mills, or concentrators, to operate was the Bunker Hill mill which started in July, 1886. A simple treatment of reducing rock from the mine to two inches and then one-half inch through a crusher and screens was responsible for the production of twenty tons of ore per day. The waste or tailings material was high in lead because no good method was available at that time to treat the slimes (rock powder). A new mill of 400 tons capacity was built in 1891. By 1906, the capacity had been raised to over 1,000 tons of ore per day.

Early equipment used in processing the ores were stamp mills, using mechanical hammers for crushing the ore to a fine powder. These operations contributed large volumes of waste waters, carrying pulverized rock along with some particles of ore which escaped the horizontal grooves on the jig tables. Zinc was not recovered during the process. The tremendous mass of mill tailings from this period was high in zinc and lead sulfides.

Rod and ball mills were later introduced. These were electrically driven for grinding ore into particles as fine as confectioner's sugar. The finer grinding process increased the silt loads from the mills to the river and created more problems with sedimentation further downstream. Some of the sediment was retained in settling ponds as early as 1902, but the majority of the mines did not have settling ponds until 1968.

In 1928, a more efficient selective flotation method for processing ores was instituted, resulting in the nearly complete extraction of all metals of economic importance. The waste slimes from this process, discharged for the most part directly into the natural drainage, were high in various residues of metals and chemical additives.

Early Environmental Attitudes

When mining and concentrating activities began along the South Fork, "environment" and "ecology" certainly were not household words. Wilderness was still something to be subdued. The pioneers who wrestled with the forests, the prairie sod, the Indians and the ore-bearing strata were the folk heroes of the day.

Although the Wallace/Kellogg/Mullan mining district was one of the world's most highly mineralized areas, much rock had to be blasted, moved and crushed to get at the silver, lead and zinc. The leftover

tailings from all these activities were deposited in the only feasible spot, the bottom of the South Fork canyon. Waste waters from the smeltering operations also were discharged down the river. After all, there were many streams and acres of wilderness in the surrounding region.

This pioneer attitude towards the "highest and best use" of flowing water is illustrated succinctly by the photograph of the outhouses over the fast-moving stream which provided a convenient way of moving wastes downstream. Out of sight, out of mind – a philosophy not extinct today!

As the mining became more extensive, the mine holes, or stopes, were enlarged and extended into the ground so that water was encountered. If this natural water flow passed over rocks containing iron and other metals, it too became a source of pollution.

It was not long until cottonwoods below the Bunker Hill Mill began to die. The fine mining wastes were carried further down the river to Mission Flats. Since the gradient of the river decreases here, the flats become a vast sedimentation area of mine wastes. Much of the fine material, however, continued on to Coeur d'Alene Lake.

At the beginning of the 1930's, following complaints by people living along the mainstem of the river, formed by the joining of the North Fork with the South Fork, the State of Idaho Legislature arranged for a special commission "to make a series of investigations of the pollution problems in the Coeur d'Alene District, not only from a standpoint of property damage and alleged injuries to stock and land, but from all angles affecting the state or its assets." As part of these investigations, an inquiry was authorized into the effect of the mine wastes upon the fisheries of the region.

This latter study was carried out in 1932 by Dr. M. M. Ellis, who at that time was in charge of interior fisheries investigations for the United

Mine tailings dumped in the river corridor at the turn of the century killed off many of the cottonwoods, conifers and other natural vegetation. Top: Bunker Hill and Sullivan Mill and river channel in 1904. Bottom: Same scene in 1909.

States Bureau of Fisheries. Ellis came to the Coeur d'Alene country on July 9, 1932, with researchers. Additional assistance was obtained from Idaho and Washington officials.

Numerous tests, dredging, soundings and surveys were made throughout the lake, up the main stem and on both the North and South Forks, Samples were collected at sixty-five spots. Additional side trips were made into Canada, to the Spokane Valley and to the Seattle office of the U. S. Corps of Engineers. By August 3, Ellis and his crew were on their way back east.

His seventy-two page report, completed later that year, is truly a landmark in the environmental literature on the Coeur d'Alene drainage. Ellis cited the observations of Captain Mullan that twenty years before the mines were opened, the Coeur d'Alene River in the vicinity of Mission Flats provided enough fish to sustain a tribe of some 300 Indians. He continued: "Reviewing all the data, both field and experimental, it is evident that as far as fisheries are concerned, the mine wastes poured in the South Fork in the Wallace-Kellogg area have reduced the fifty miles of the South Fork and main Coeur d'Alene River from above Wallace to the mouth of the river near Harrison, to a barren stream practically without fish fauna, fish food or plankton, and with enormous lateral supplies of potentially toxic materials which as they now stand will continue to poison the waters of the Coeur d'Alene River for a considerable period of time."

One of the interesting things about Ellis' report is his account of his side trip made to the Sullivan Company mill at Kimberley, B.C., some 165 miles from the Coeur d'Alene mining region. He devoted an entire day to sampling, chemical work, and examination of the Sullivan Company's plants in and about Kimberley, particular attention being given to the method of waste disposal and the character of effluent leaving the waste basins. He also reported that "during the trip up, studies were made of the Moyie River, the stream into which the waste waters from the Sullivan Mines plant . . . flow."

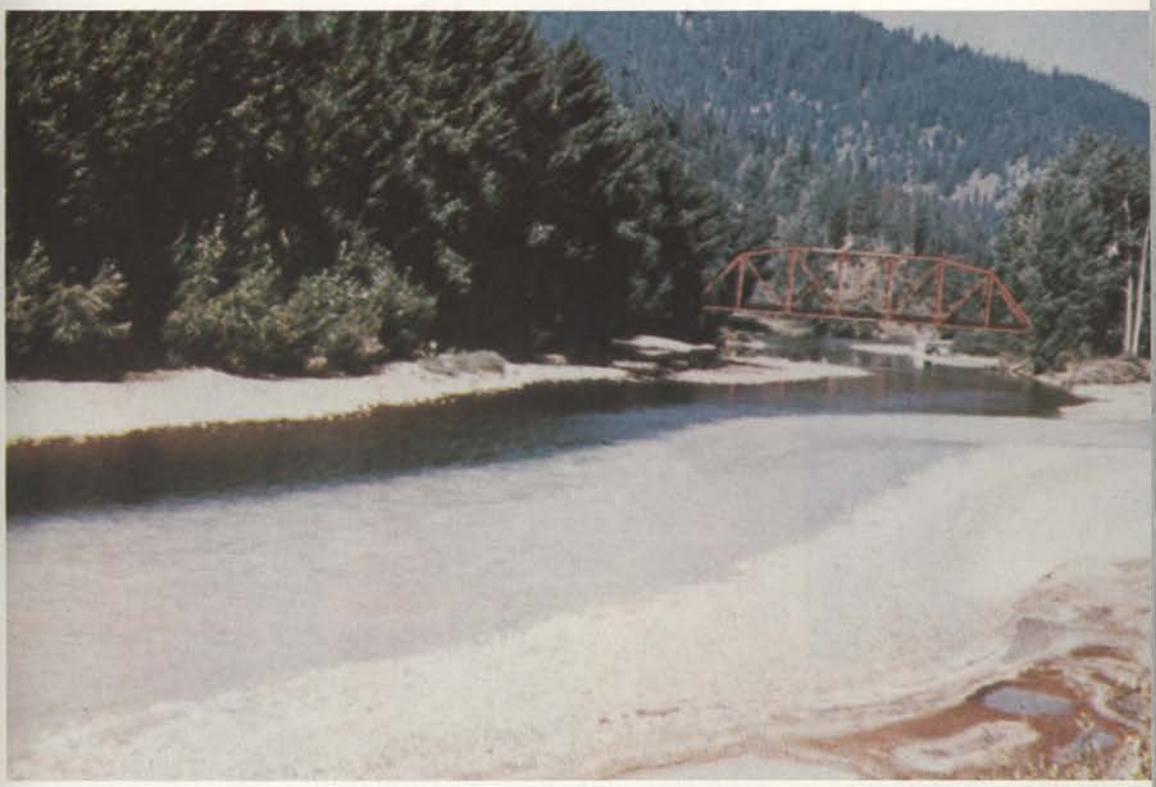
In discussing what he saw at Kimberly, Ellis said in the recommendations part of his report: ". . . the writer visited the Sullivan Mines and Mills at Kimberley, B.C., where a successful disposal system for mine wastes from the same sort of ore as those in the Coeur d'Alene District and milled by the same methods has been worked out. As the Dominion and Provincial laws prohibit the dumping of mill wastes into the natural waters of Canada . . . a settling system has been perfected by the Sullivan Mills which handle an ore tonnage comparing favorably with that of the Coeur d'Alene District." According to Ellis, he was told that the original cost of this settling system was not prohibitive and that the upkeep was nominal.

Ellis described the system as two settling basins arranged so that the mine wastes passed through one and then the other, so that "by the time the water left the second basin it was so reduced in volume and so purified that within a few yards of the mouth of the outlet ditch . . . plankton, algae, aquatic insects and fish were found . . ."

In his report, Ellis recommended a similar treatment be instituted for the South Fork mining wastes: "There is only one complete solution to this problem and that is the exclusion of all mine wastes from the Coeur d'Alene River."

By 1968, after pressure from federal and state agencies, the mining firms along the South Fork had installed the settling ponds that Ellis had recommended in 1932.

Confluence of South and North Fork. Top: Before installation of settling ponds on the South Fork in 1968. Heavy sediment load resembles the color of "dirty-dough". Bottom: After installation of ponds in 1969. Clarity of South Fork has improved considerably with some fine suspended material still remaining.



Government Creek carries large concentrations of zinc and other heavy metals in solution from the Bunker Hill smelter area.

The Settling Ponds

Construction of these large ponds was applauded in a recent brochure prepared by the Idaho Mining Association, headquartered in Boise. In one section entitled "Environmental Awareness," it states: "Since 1968, all mill tailings have been piped to settling ponds for permanent storage. Many of the pond dikes are being revegetated to make them blend in with the natural surroundings. The cost to mining operators for construction and maintenance of the ponds has exceeded two million."

There seems no doubt that the South Fork is running clearer than before the tailings ponds were installed. But clearer does not necessarily mean "safer". In fact, the South Fork waters may now be more toxic than before. The heavy metal ions from mining, metallurgical and smelting operations have not effectively been removed. One reason for the higher toxicity is that the fine clay sediment from the mining operations used to be flushed down the river instead of into the holding ponds. Some of the metal ions combined with the clay particles and thus were taken out of circulation. Now that the fine sediment load is considerably reduced, the metals apparently are not combining as much with the sediment particles. The result is more toxic metal concentrations.

Leroy Mink studied the settling ponds as a means of dealing with mine wastes while attending the University of Idaho. The results of his research indicate that some of the settling ponds, such as on Canyon Creek, may be doing more harm than good. These ponds were built over deposits of old tailings, rich in zinc and lead from the inefficient ore recovery methods practiced until 1930.

The construction of some of these settling ponds has caused the water table to rise and make contact with some of the old jig tails, resulting in a higher concentration of heavy metals getting into the South Fork.

However tailings also are being returned to the underground tunnels of the mines in another attempt to reduce the pollutional load in the South Fork. It has been estimated that sixty percent of the total tailings being created are used to fill the old mine workings.

EPA Holds a Hearing

On June 26, 1973, the U. S. Environmental Protection Agency held a public hearing in Coeur d'Alene, Idaho. The subject was permits governing discharges of toxic dissolved metals into the South Fork. Mining firms affected by the proposed permits included the Bunker Hill Mining Company, Hecla Mining Company, Sunshine Mining Company and the American Smelting and Refining Company. The permits were the first to be issued as a result of the amendments of 1972 to the Federal Water Pollution Control Act.

At the hearing, held before a sparse crowd at Coeur d'Alene's North Shore Inn, representatives of the mining firms generally asserted that restrictions proposed by EPA were "difficult, unreasonable, and in some cases, impossible."

The EPA officials conducting the hearing asserted that the restrictions upon discharges into the South Fork were necessary because the mining wastes plus poor sewage treatment facilities had made the South Fork "one of the most seriously polluted rivers in the Northwest." The EPA representatives explained the proposed restrictions would cut the

Construction of a new Central Treatment Plant by Bunker Hill Company will settle out dissolved metals in solution by combining them with a lime slurry. This will minimize the amount of toxic wastes into the South Fork and hopefully meet state and federal requirements.

amount of zinc being discharged daily into the South Fork from 9,500 pounds to 1,100 pounds. Lead would be cut from 540 pounds to twenty pounds, arsenic from 125 to thirty pounds daily, and suspended solids from 23,000 pounds to 8,000 pounds.

Several citizens speaking at the hearing urged the EPA to monitor the effluent of the mills rather than allow each firm to check its own discharges. They also asked that the EPA consider imposing limits on additional chemical substances such as nickel and sulfate ions, even though these substances are not currently known to pose an imminent hazard to public life or safety.

In September, 1973, waste discharge permits for the firms' mining and milling operations were issued by the EPA. Bunker Hill and Sunshine Mining Co. permit expirations were extended from June 10, 1975, to June 30, 1976, to allow them to put waste treatment systems into operation and evaluate the results before applying for a new permit. All other permits were extended until June 30, 1977, since the EPA said these permits call for the best practicable control technology currently available – the goal required by federal law for 1977.

In September, 1973, Gene M. Baker, Environmental Control Director for the Bunker Hill Mining Company, announced that the company's new wastewater treatment plant was about sixty percent finished, and that it would be completed before the end of that year.

According to Baker, the costs to build the facility were in excess of $1 million with operating expenses to be $702,000 yearly. He said the new treatment plant is being built to minimize the discharge of dissolved heavy metals and to meet the proposed federal and state requirements.

Tom McKee, an environmental engineer also employed by Bunker Hill, said once the new facility is operating, the emissions of lead and zinc into the South Fork will be one-half the amount allowed under the EPA permit issued in September, 1973.

Federal regulations alone will not solve the pollution problems of the South Fork. One conservation organization, the Clean Water Action Council of Washington, D.C., believes that discharge permits do not work. The Council asserts that environmental laws are bucked by bureaucratic inertia and by polluters themselves.

The Council feels that this pattern could be changed if the public supported a permit monitoring project which employed teams of lawyers, biologists and engineers. The teams would have the expertise and impartiality to judge the status of discharge permits.

Water Quality Research on the South Fork

Faculty and students from both the University of Idaho and

Sampling stream insects in the North Fork by Nancy Savage revealed a much greater diversity of species than in the South Fork or Main Stem of the river.

Washington State University have done extensive research in the Coeur d'Alene region on heavy metal concentrations in waters and sediments and their effect on fish, bottom insects and plankton.

A project in 1969 studied the effect of zinc – one of the heavy metals found in the river – on young cutthroat trout. These fish are native to the North Fork but are seldom found in the river. University of Idaho researchers placed cutthroat fingerlings in several aquaria. By exposing these young fish to different concentrations of zinc, they determined the amount of zinc necessary to kill half the fish population.

Results of these tests showed that, over a ninety-six hour period of exposure, fifty percent of the fingerlings tested succumbed at a concentration of 0.09 parts per million (ppm) zinc.

In recent years the amount of zinc in the main river has exceeded this value by many times.

Live Boxes with Dead Fish

Some live-box tests made in the summer of 1973 demonstrated that the South Fork still is a highly unhealthy place for fish. Rainbow trout raised at the Hale Fish Hatchery were placed in boxes at eleven points along the South Fork. Another box was located in the North Fork above Enaville. Within seventy-two hours all were dead, except for the trout in the live-box in the North Fork and in the live-box near Mullan. The trout put in the boxes at Smelterville – in the heart of the mining district – died within five hours after being placed in the water.

In Diversity, There is Strength

Diversity counts of the numbers of different types of animals and plants are a valuable way to test the health and stability of a river's normal ecological community. Where there exist many different species of plants and animals, there is an opportunity for most of the "consumers" to feed on several different organisms and most prey organisms are attacked by more than one predator. To put it another way, where food chains are interlinked, there is a complexity which is, in part, responsible for the stability of the system. The more food chains there are and the more cross-connecting links there are among them, the greater the possibility for the system to compensate for changes imposed upon it.

Such diversity counts of aquatic insect communities have been made at various spots on the South, North and Main Forks of the Coeur d'Alene River since 1968 by the University of Idaho researchers. They found that the North Fork samples, as well as those on the South Fork above the waste effluents of the mining operations, had a relatively large number of individual organisms comprising many different species of stream bottom insects.

The sampling stations in the mining district, and in the river below the district, were a different story. For example, in the fall of 1968, at a spot on the South Fork opposite Smelterville, absolutely no aquatic specimens were found. On the same day, at a point several miles downstream from the confluence of the South and North Forks, 125 individual specimens of one species were all that could be found in one square foot of bottom surface.

In contrast, at a sampling station on the unpolluted North Fork, 368 individual specimens comprising twenty-seven different species were found.

There has been some detectable improvement in total numbers and species present at a few sampling stations on the South Fork since the tailings ponds were constructed. However, the contrast with the North Fork still is striking.

The Twice-Postponed Sewage Collection System

The third time was the charm for householders along the South Fork canyon to collectively decide to do their part toward cleaning up the river. On January 11, 1972 the citizens voted to approve a sewer bond issue; proposals for similar bonds had been defeated in 1968 and 1969. The funds provide for a sewage collection and secondary treatment system. (Sewage from Kellogg already is being treated along with mine wastes in the Bunker Hill tailings pond.)

It may take several years for the new sewage collection system to be completed. Until then, the raw sewage, including wastes from homes and a hospital, will be swirling down the waters of the South Fork.

Tony Davis, a water quality technician with the Idaho Department of Environmental and Community Services, told us: "The main artery of the sewer system was completed in December, 1973 – along the river corridor – but the system will not service laterals such as Burke Canyon." These gulch areas generally contain six to twelve homes.

Four to eight miles of pipe from the main trunk would be necessary to serve these gulches, according to Davis. "From an engineering aspect, this is possible, but from a cost aspect, no," he said.

Each one of the areas would have to form a sewer district and then get enough federal matching funds to hook up, he related. But these federal funds may not be available until 1976, according to Davis. "The thing to do now is get in the main trunk and worry about the laterals later," he said.

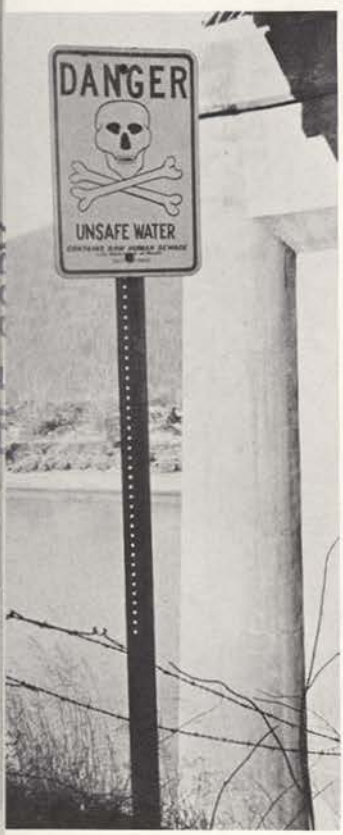
The sewage collection and treatment system along the main trunk of the South Fork is needed, but even with improved and expanded sewage treatment facilities capable of removing most organic matter, an increased population can only result in large amounts of nutrients getting into streams. These nutrients will include phosphates and nitrates which are not removed from the effluents of secondary sewage treatment installations, such as the one being planned for the "Silver Valley."

Newly installed sewer lines along much of the river was made possible by state and federal grants and the willingness of the people to vote affirmatively on a sewer bond issue.

The Light-Grey Pall

"The smelter fumes pose a fallout problem. Any horse within three miles of the smelter . . . will be in danger of being poisoned by antimony, cadmium or lead if he eats off the ground." Dr. Roy Larson, veterinarian from St. Maries, Idaho, who handles most of the large animal practice in the main stem valley of the Coeur d'Alene River, was talking to us.

We had seen the greyish pall of smoke hanging in the Kellogg Valley earlier as we approached the airport. After landing we drove into Kellogg, where we were aware of an acrid smell in the air and a stinging sensation on our lips. But by afternoon, when a strong westerly wind had come up, the cloud of haze and the bad "taste" was gone.



George Deakan, Air Quality Specialist, with the Idaho Department of Environmental and Community Services, pointed out that the Kellogg-Wallace Valley has some of the highest levels of sulphur dioxide gas (SO_2) anywhere in the country. He told us that the high amount is "mainly due to the (air) entrapment in the valley."

There are fifty different stacks at the Bunker Hill mill and smelter. Some emissions come out at night, some every five to ten minutes.

"Most stacks have control devices on them," Deakan said, adding, "We have a five-year plan with them to clean up all the major sources of particulate emissions." Bunker Hill has been working on the emissions for many years. "But they have a gigantic problem," Deakan explained.

As far as sulfur dioxide emissions by the mining firm are concerned, monitoring by Deakan's department (in the past three years) has shown a sixty to seventy percent reduction, but still more controls are necessary.

In 1971, Bunker Hill finished construction of a $3.8 million sulfuric acid plant which reduced the amount of SO_2 gases being discharged into the South Fork Valley air. Tom McKee, the firm's environmental engineer, told us, "Almost all the SO_2 is captured and acid is made of it. This is sold and is also used to reduce phsophate rock to make ammonium phosphate fertilizers. The company can sell all the fertilizer it can make."

Deakan believes it will be tough for Bunker Hill to meet federal and state standards on sulfur dioxide and particulates by 1975. "They have been working hard at it and they have reduced them to a point where they are beginning to come within the range. We will evaluate them closely to see if the standards will be met or whether we will have to look at a tougher approach yet to meet these standards."

Until the smelter stacks cease their noxious belching, the Silver Valley will be a hazardous place for some animals. Veterinarian Roy Larson told us, "Any dog that eats his food in the dirt, up around Smelterville, or Kellogg, simply dies. He may not die today, but he will die tomorrow or the next day or next week. He may have what you think is distemper convulsions, but half the time it will be lead."

The veterinarian has Idaho Fish and Game biologists watching for small animals in the Kellogg area. "They don't find any rodents till they get way out from the smelter. These rodents eat vegetation off the ground and consequently perish. You just try to find a ground squirrel or a rabbit. They don't exist," he said.

Horses do not fare much better, according to Larson. "Horses have a difficult time breathing with sulfides in the air . . . It will burn their lungs and they will go into a spasm and drop dead. These fumes precipitate their death (from) pneumonia."

The heavy metals, such as lead, paralyzes the horses' cranial nerves, Larson asserted. "Their lips will hang flaccid. They can't pick up their food. They cannot eat properly."

Larson called attention to the fact that different animals vary in their ability to handle lead. "Pigs can tolerate maybe 200 parts per million in their livers. They will not show any symptoms. But if you feed a cat that pig liver, in about three meals you have killed your cat," he said.

People also vary in their ability to excrete lead, according to the St. Maries, Idaho, veterinarian. "Some can tolerate it and others can't. Some people work there (in mining) for forty years and it does not bother them."

A New Plan for the South Fork

Dale Ralston, a hydrogeologist with the Idaho Bureau of Mines and Geology, believes holding ponds are an answer to reducing settable solids from the mining waste water, but offer no real mechanism to reduce the heavy metal concentrations.

Ralston told us that each minute 5,000 gallons of waste water come into Bunker Hill's tailings pond and 2,000 gallons per minute leave. A certain amount evaporates but an even larger amount is lost into the ground water system, carrying with it heavy metals in solution. The heavy metals, once in the ground water system, are difficult to flush out. Sampling in the Kellogg, Smelterville and Pinehurst area reveals high concentrations of them in the ground water.

The holding ponds also are rapidly filling up. The new Lucky Friday pond is supposed to have a longevity of only seventeen years. Five ponds dug in 1968 by the Star Mines on Canyon Creek are already nearly full, Ralston reported. The mining companies are thus having to continue to buy property and build more ponds.

A second problem is that from Wallace down to the North Fork confluence, the upper eight to ten feet of the valley floor is composed of a mixture of old jig tailings and gravel that was dumped there by early mine operators. When the spring high water runoff comes, it works through these dumps. "Thus the river is continuously reworking the old jig tailings, providing 'slugs' of heavy metals into the river. The river might run in one channel one year and another channel the following year," Ralston said.

A third problem is that the present wide river channel ties up much

space that could be used for other urban purposes. And to anyone who has seen it, it is obvious that the present river channel is a detriment to the visual environment.

"A solution to all of these problems would involve cooperation between the U. S. Army Corps of Engineers, mining districts, EPA, Chamber of Commerces, University of Idaho and the Soil Conservation District," Ralston said.

What he has in mind is a fairly narrow "channeled river", man-shaped instead of the widely-meandering stream which now exists. Levees six to seven feet high would be used to confine the flow of water. These would provide increased control of floods.

The confined river would eventually wash most of the old tailings from the channel, Ralston believes. This could lead to a significant decrease in the amount of hazardous metals coming down the long-maligned South Fork. Another plus would be the creation of considerable space for long-term tailings disposal.

The U. S. Bureau of Mines is funding an experimental study by Ralston to determine the feasibility of his proposal. The hydrogeologist believes that there must be a reduction in the amount of metals going into the river. "The mines do not have the right to use the South Fork waters as their disposal system," he said.

Trees Along the South Fork Once Again?

There is no doubt that the bottom part of the South Fork Canyon has taken a terrific punishment over the years. Marlow Freckleton, a soil conservationist for the federal government, told us, "The highway has invaded upon the river, and pushed it around, the railroad has pushed it around, the tailings ponds have pushed it around, and it has taken a horrible beating from bulldozers in every way that you can think of . . ."

With this rough physical treatment, plus the water and air contaminants, it is not surprising that the South Fork Canyon looks like a battlefield.

Vernon Lannen, a Shoshone County Commissioner, would like to see vegetation growing again along the South Fork. He recalls the large

A large Central Impounding Area receives wastes from the electrolytic zinc plant, lead smelter, and acid mine drainage from Bunker Hill Mine. Solids are settled out in the impounding area and dissolved metals will be decanted to the Central Treatment Plant which is shown (under construction) at the left and center. The braided and much maligned South Fork runs parallel to the interstate highway.

Air pollution has denuded the slopes for a number of miles in each direction from the smelter. Bunker Hill is presently attempting to comply with state and federal air quality laws by cleaning up its sulfur dioxide and particulate emissions.

cedar trees which used to line the river corridor but were burned off during the Great Idaho Fire of 1910. The stumps of these huge cedars are still visible, scattered up and down the canyon.

Research now underway may help to bring back some vegetation to the scarred bottom and scorched slopes. Dr. Richard White, Assistant Professor of Range Management at the University of Idaho, has been trying out a number of techniques that may lead to both grass and trees growing again along the South Fork.

One study aims to see what will grow in the area and then will undertake revegetation on a demonstration basis. An attempt is being made to grow a wide variety of trees and grasses in the green house on jig tailings and soil from the slopes above Kellogg.

"Tailings are nothing more than ground-up rock so you have to fertilize it with nitrogen and phosphorus in order to possibly grow plants," White said.

The plants that do grow are then performance tested in the South Fork Valley.

University of Idaho foresters are also collecting cottonwood and willow cuttings which commonly grow along the river. These are propagated in the greenhouse and then transplanted to the field. "Conifers are difficult to establish since they are quite sensitive to sulfur dioxide fumes. The hardwoods that have been the most successful are hybrid poplar, golden willow and black locust," White said.

White mentioned that the mountain maple is reinvading the lower slopes of the canyon because of the improved air quality in the valley and expects more native vegetation to return to the slopes if the air pollution continues to decrease.

Chapter 8

THE MAIN STEM

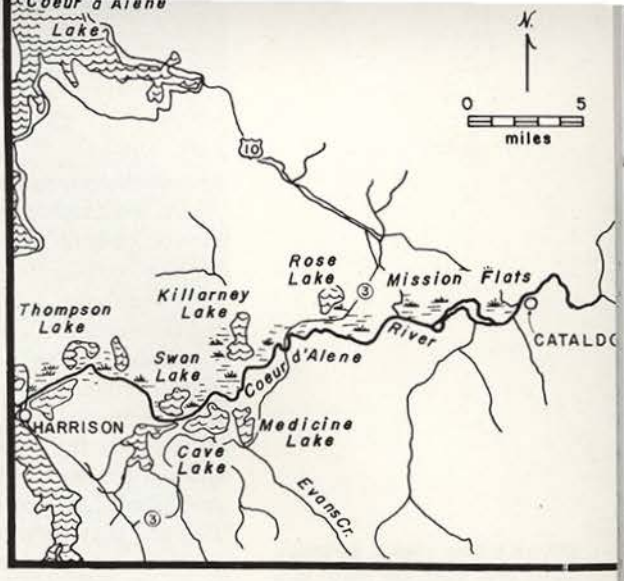


Figure 6 – After the confluence of the South Fork and North Fork, the main river winds its way through a canyon for a few miles and then opens on to a large flood plain called Mission Flats, where the gradient is reduced considerably and the widened river runs slowly in a west-southwest direction. Further downstream, nine lateral lakes are accessible from the river by narrow canals and small streams. The main river enters Lake Coeur d'Alene at Harrison, thirty miles below the confluence.

The Main Stem and Lateral Lakes

"The ones we don't pick up, we'll find later – dead. They can't fly away. They just lie there till they die." We were at the Pring Ranch, listening to a stocky man clad in well-worn blue jeans.

"In early spring, they fly out of Blue Lake or the river, and land in the lower end of our fields. But they can't fly away again." Marion McPeak, a foreman of the ranch which spreads over hundreds of acres along the main stem of the Coeur d'Alene River between Harrison and Lane, Idaho, was telling us about the tragedy which sometimes befalls the whistling swans and Canadian geese.

"Personally, I think it is some kind of lead poisoning they get out of the water. In the spring you will see them going down and pulling the green seedlings out of the river," McPeak said.

He shoved his summer-weight cowboy hat farther back on his well-tanned head and continued: "You can pick the swans and geese up and throw them in the back of the pickup – they can't get out. We bring them up and put them in one of these big barns. Sometimes we will have as many as fifteen."

The northern Idaho cattleman explained that if the ranch workers keep the swans and geese penned up, give them water and feed them uncontaminated grain for three to four days, "they will fly again. This has happened time after time."

We were talking to McPeak by the ranch's red-painted barns, located on a bench about fifty feet above the main flood plain of the Coeur d'Alene River. From where we were standing, the stream could be seen winding its way eastward between some high levees. In the distance, timbered hills climbed away from the valley floor, the dark green of the ridges attesting to thick growths of pine and fir. On one side of the valley, about two miles away, the flat surface of Cave Lake was nestled between the northern ridge and the river's levee.

The landscape against a cloudless sky was a perfect view – except for the strange, turquoise-green river. This unusual color comes from the very fine sediments, known as rock flour, suspended in the water.

The waters of the main stem do more than degrade the view. McPeak filled in the details as we jounced down a rough road to the river in his pickup truck. "We had twelve mares with nursing foals several years ago and put them in this pasture (by the river). We came down a few days later and found all the foals had swollen joints. When they moved their

The Main Stem and some of its lateral lakes.

knee joints popped like rifle shots. We lost all twelve of them."

Dr. Roy Larson, the veterinarian from St. Maries, later told us. "You cannot pasture a mare with a nursing colt anywhere near the river or the foal will die even without drinking the water or eating the forage."

If the foal is old enough to be weaned, it "will die from eating the red top grass," he added.

Researchers at the University of Idaho reported in 1971 that red top grass accumulates heavy metals as zinc, lead and copper which is present in the soil. They discovered that this species of grass can concentrate these metals to a level at least four times greater than what the soil contains. It was found that red top in the Cataldo Mission Flats contained 228 ppm of zinc while the soil had twenty-five. The grass also had fifty-eight ppm of lead as contrasted to fifteen ppm in the soil.

McPeak told us cattle also have to be kept away from the toxic river water. The foreman related that new feed lots were being added at the Pring ranch, and that a separate source of water was being tapped and piped into the feeding area for the ranch's 3,500 cattle.

All in all, it was obvious the river had changed considerably over the past eighty-nine years, since mining started on the South Fork.

The water level in the lateral lakes remains high during the summer but in September drops quickly as water is released from Post Falls Dam on the Spokane River. Initially, water flows from the Coeur d'Alene River at different rates into the lakes. After drawdown, the lakes empty into the river.

During April and May, much of the entire lower Coeur d'Alene Valley is often flooded from the melting snow in the surrounding Bitterroot and Coeur d'Alene Mountains. Heavy metals along with nutrients and raw sewage are transported from the main fork to a number of the adjacent lateral lakes excepting those that are diked to prevent the high waters from spilling over. However, in peak flood years such as occured in December, 1933 and January, 1974, the entire drainage area appears as one large water body.

Metals from the smelter, borne on air currents, also probably contribute significantly to heavy metal loads in the sediments and fish in the lakes. Substantial amounts of these contaminants have been sampled in small lakes at least fifty miles distance from the Coeur d'Alene River indicating that the metal source is probably from the air.

The Once-Virgin Valley

Two residents of the main stem valley, Amelia Schaeffer and Hans Dierks, still have vivid memories of how beautiful and productive the entire valley used to be. Amelia Schaeffer, a spry lady of ninety-three living in Medimont, a tiny main stem valley community of less than fifty people, remembers passing over the Mullan Road "when it was nothing more than a trail."

Gold had been discovered in 1883 and her family was moving from Montana to Spokane to be closer to the diggings. On the way, they passed Cataldo Mission where thirty years before Father Ravalli, a Jesuit missionary, had gathered together the converted Coeur d'Alene Indians. According to Ms. Schaeffer, the Indians were anything but peaceful that day. "They were fighting and rampaging and threatened the lives of those of us in the wagon." Schaeffer recalls, "Even though still a child, I can still remember how frightened I was in the back of the wagon, not knowing what was going to happen."

Pasturing a mare with a nursing colt near the river will often cause the foal to die even if the colt does not drink the water or eat the forage, according to Dr. Roy Larson, veterinarian from St. Maries.

Luckily, one of the priests at the mission convinced the Indians that the little wagon with its occupants was just passing through and did not plan to stay in the immediate vicinity.

Her father went to work on the Eagle Creek Placer claims. "He walked all the way from Eagle City to Coeur d'Alene on snowshoes to visit us one time because he was getting awful lonesome up there without his family," Schaeffer recalls. Today, this is over sixty miles by road.

Schaeffer moved to the Medimont area in 1891 from Spokane with her father who had given up prospecting as a profession. There they claimed squatter's rights amongst the Indian inhabitants to "try their hand at raising crops and a few cattle."

According to this pioneer lady, the building of Post Falls Dam on the Spokane River in 1906 backed up the waters of the Coeur d'Alene Lake into the main stem valley. "This finished off the cattle business. The leaded water inundated our hay fields," she said. "Before the dam went in, the timothy hay and the red top (grass) was so high, you couldn't see the river."

The Washington Water Power Company (owners of the Spokane River Dam) and the "Mining Association" later gave owners of land which had been damaged "piddling payments for easements on their lands," she told us. Schaeffer still holds 300 acres along the river that her father left her. "Most of the other squatters forfeited their land because they failed to pay back taxes."

Hans Dierks, eighty-three when we talked to him in 1973, came to the main stem valley in 1897. He lives in a house built by himself a few years ago. His place is located in Lane, Idaho, a wide spot in State Highway 3, only a few miles distance up the road and across the river from Medimont.

According to Dierks, at one time Lane supported 500 people, a band, and four saloons. Today there is nothing." Tears came to his eyes and his voice choked with emotion when he described the good times people had at barbecues, dances, train rides and boat excursions across

High flood waters in January, 1974 caused the river and adjacent lakes to appear as one large water body which make it possible for heavy metals and nutrients to be easily transported from the river to the lakes. Pring Ranch can be seen at lower left.

the lake. He pointed proudly to a picture on his wall of a smartly dressed band in which he had played.

Dierks remembers that farmers along the banks of the river used to hail the steamboats to a stop if they needed anything from the city of Coeur d'Alene. The next trip up the river, according to Dierks, "brought the supplies almost to our doorsteps. We also sold such commodities as potatoes and cabbage to the mining community. It was carried by rail from Cataldo to Kellogg."

"Steamers could go up the main fork no further than Cataldo because of the shallowness of the river at this point. From there, rail travel carried passengers back and forth to the mines. Metal ore was loaded on the narrow gauge line at Kellogg and transferred to boats at the Old Mission. The boats then carried the ore to Coeur d'Alene where it was unloaded and shipped by rail again to a smelter in Montana," according to Dierks.

As boat traffic began to increase, the banks in places began to slough off due to the waves of the ore boats. This type of erosion was to stop about the turn of the century when railroads replaced the large boats coming up the river.

Farmers in the valley began to notice the lead pollution from the mines in about 1900, Dierks told us. "They tried to dike the lead water out but it didn't work. And to think we could have bought out Frederick Post for a mere $150."

Post negotiated a treaty with Chief Andrew Seltice of the Coeur d'Alene Indians in 1871 to buy the land he needed to build grist and lumber mills. Instead of the farmers purchasing the land from Post, the site was bought by the Washington Water Power Company, a dam constructed and the water level raised some twelve feet. As a result of the Spokane becoming a "working" river, parts of the lower Coeur d'Alene Valley became covered with leaded water. Amelia Schaeffer said the squatters threatened to blow up Post Falls Dam after the waters had risen over their land but a lawyer in the vicinity, after hearing their plans, talked them out of it.

Hans Dierks told of a lawyer, possibly the same one, who was retained to sue the mining companies. "However, the big Scotsman ran off with the farmers' funds," Dierks said. When the case finally did get to court, the judge ruled in favor of the mining firms.

Many years later, the U.S. Army Corps of Engineers improved the dikes that the farmers had constructed, although the spring runoff still flows over them. Ranch foreman McPeak told us that by turning over the soil and exposing it to the sun, some of the soil's original fertility is restored.

The Lovely Laterals

In addition to Cave Lake, which we could see to the east of the Pring Ranch headquarters, and Black Lake, which lies just southwest, there are seven other lakes scattered along the main stem valley. Some have a romantic ring to their names, like Killarney, Rose, Swan, Medicine and Blue. Others have more prosaic titles, like Anderson and Thompson.

Cave Lake is the largest. It consists of about 640 acres of open water during the summer. Medicine Lake and Thompson Lake are the smallest, each being around 100 acres in size. All are shallow, and support extensive growths of submergent and floating aquatic plants.

Most of these charming small bodies of water have marshy areas

surrounding them which vary in size depending on the drawdown of the Coeur d'Alene Lake. These marshes provide a suitable habitat for waterfowl.

A Fatal Stop

As pointed out earlier, for some of the whistling swans (so called because of their high-pitched honking sounds), the marshes and small lakes are their last stop. The deaths of these graceful birds have been documented for many years. A detailed study of the problem was made in 1956 by two biologists, Norman R. Chupp and Paul D. Dalke.

In the report made of their work, Chupp and Dalke wrote: "Sick swans were noted 3-4 weeks after arrival of the first migrants. In early stages of illness, the swans were capable of flying several hundred yards, but did not attempt to keep up with the rest of the flock. Sick birds appeared listless and sought isolation, being frequently found in backwater areas or even on shore. Extreme muscular fatigue was evident, but no paralysis was noted except for the gizzard. Death progressed quite gradually as the birds became more and more emaciated."

The investigators concluded that all of the swans analyzed exhibited conditions generally indicative of lead poisoning.

To find out more about the swans, geese and ducks in the lateral lakes region, we talked to Al Bruner, a wildlife land manager with the Idaho Fish and Game Department.

"Mortality almost always occurs in the spring, usually in a high water year. It just seems to work out that a high water year corresponds to a year when there has been an early fall drawdown from Post Falls Dam leaving the mud flats exposed over a long period of time . . ." Bruner said.

The Fish and Game specialist went on to explain that the water fowl may be exposed to large quantities of heavy metals which are picked up off the mud flats after the early drawdown.

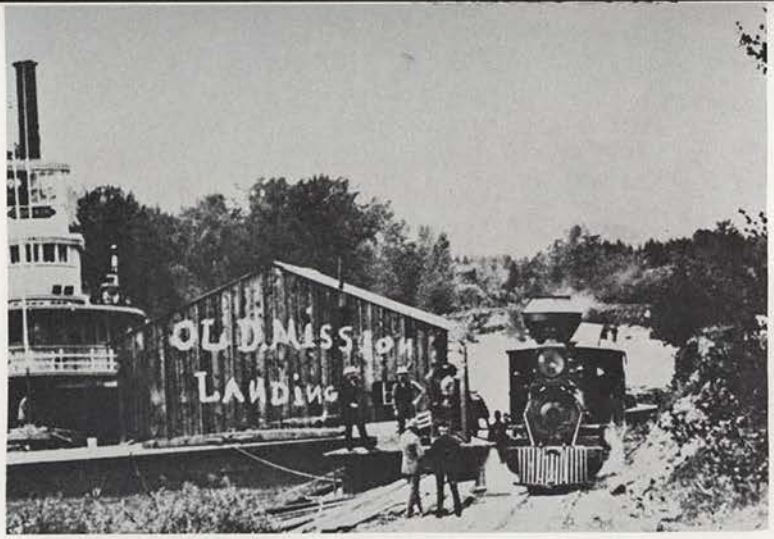
The Idaho Fish and Game and the U.S. Fish and Wildlife Service tried in the 1940's to keep the swans and geese from lingering in the main stem valley. Boats, flares and shots were used in an attempt to get the waterfowl to move away from the lethal feeding grounds. Chupp and Dalke wrote in their report: "The efforts were generally unsuccessful, as the swans merely moved from lake to lake when harassed. Of the 400 - 600 swans frequenting the valley last year, it was believed that over 100 died."

With regard to these attempts to drive the swans and geese out of the main stem valley, Bruner said: "It is my personal opinion that our efforts to harass the waterfowl out of the area may have contributed to their mortality, keeping the birds exhausted and nervous all the time.

"It is better to leave the birds under normal conditions. They'll leave a lot sooner than if you actually try to force a bird to move." However, Bruner did admit that every year there has been high mortality, the birds have stayed in the area much longer than usual.

The River Bank Wreckers

Bruner called attention to another regional problem – too much boat traffic on the main stem of the river. He said that during the past two summers, it was literally unsafe to go out on the river in a canoe or rowboat on a weekend.



A narrow gauge railroad once carried ore from the mines to Mission Landing at Cataldo where it was transferred to boat and transported to Coeur d'Alene city. It was then shipped by rail to a smelter in Montana.

As a result of a big increase in high-speed boats coming up the main river, the banks have washed back as much as ten to fifteen feet. "This also upsets the nesting waterfowl in the spring," Bruner said.

We asked Bruner if there was a way of limiting the size of boats that could get into the lateral lakes. "We are unsure of what we can legally do in the way of blocking commonly used major passages into the lakes," he said. "We are going to do whatever we can to make it so the person with his duck boat can get across the dike. But we don't plan on putting in locks for cruisers."

Bruner suggested that much of the boat traffic and water comes from advertising which claims the river is cleaned up, and that people can swim in the water. "The recreational boater on the Coeur d'Alene drainage was virtually unknown five years ago. Two years ago, it was less than one-tenth of what it is now," he said.

On the Fish and Game Department's overall goal for the lateral lakes region, Bruner said: "Our primary objective is restoration and management for waterfowl. But we've gotten off the game management kick and are trying to do everything possible for all species. Our objective is to stabilize the marshlands and create a good habitat for muskrat.

"When a muskrat family builds a house, they are providing a nearly ideal location for a duck or goose nest, as well as providing a margin around the house for a brood area," he explained.

Bud Taylor, manager of the Cave Lake Resort, is remorseful over the fact that the Fish and Game Department is not dredging out the silt and aquatic weeds which have accumulated in the lateral lakes over the years. The soil and weeds have resulted from both natural causes and improper logging practices, according to Taylor, who claims that "fishing in the waters is of much poorer quality than in past years."

He blames this partially on the turbidity of the lakes, especially in the spring when runoff from surrounding slopes introduces sediment which clouds the waters.

Mary Temkin, who occasionally works at the resort, told us: "Twenty years ago we could fill the bottom of our boat with large bass. Today, you're lucky if you can catch one good sized fish out of the lakes."

The Idaho Fish and Game Department biologists have different ideas about the waters and the surrounding lands. They feel that it would be very expensive to dredge the lakes and that warm water species of fish such as bass, bullheads and perch require little in the way of intensive management practices. Instead, by allowing the natural process of

succession to fill them, the shallow and marshy areas provide additional recreation for the duck hunter and bird watcher.

The "Rubber-Ball Ducklings"

Special efforts are being made to increase the main stem valley population of wood duck, one of the duck family's most colorful members. In addition to their bright plumage, prized by fly-tiers, the wood duck is popular as a game bird.

Researchers in the Wildlife Cooperative Unit at the University of Idaho are presently studying the use of wooden box nests for these ducks. In the 1960's, over 200 boxes were placed on trees in the Coeur d'Alene River Valley. The ducks appear to prefer the wooden boxes as nest sites even though natural tree cavities exist in the area. As a result, the wood duck population has possibly become more concentrated in the vicinity of the boxes.

The boxes offer a good safe place from predators such as raccoons. The female duck may investigate many boxes before she selects one and then she starts her egg-laying. The baby ducklings jump and fall to the ground below when they are ready to leave the nest box. They reportedly bounce like a tennis ball, then scurry to their mother's side.

The Fluctuating Fishery

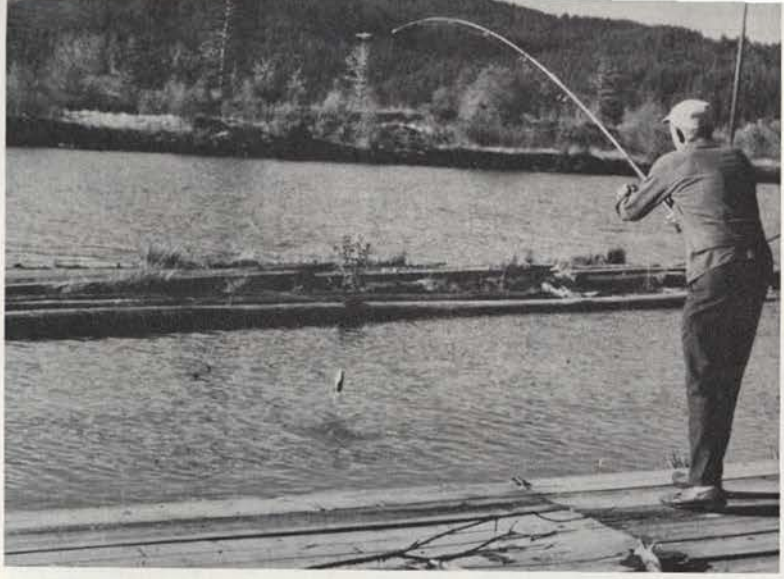
While Captain John Mullan was at the Old Mission at Cataldo in the 1860's, he observed that a tribe of some 300 Indians owed their subsistence to hunting, fishing and cultivating the soil. In the 1890's when excursion boats went up the river, scraps were thrown to the fish that were observed by the thousands in the big eddy below the Old Mission. In fact, trout were featured on the dinner menu aboard the steamers. Hans Dierks mentioned that, before he arrived in the Coeur d'Alenes in 1897, people fished commercially in the river.

In 1932, Ellis described the river as being devoid of life. However. fishermen today are catching bullheads, perch, tench and squawfish off the docks at Springston near where the main stem of the river empties into the lake. Stomachs of catfish taken from the river in 1973 were found to contain fly and caddis larvae indicating that the contaminated river was producing fish-food. Another possibility is that the fish were picking up these morsels from one of the nearby less polluted lateral lakes.

Rainbow trout, on the other hand, do not fare so well in the river. Adult rainbows were placed in boxes at different points along the South Fork and the main stem. Fish in the relatively clean water above Mullan were alive after seventy-two hours of exposure in the river. Most all of the fish in boxes placed in the South Fork and main stem died before forty-eight hours had passed.

Fish and Game biologists believe that the adult cutthroat spawners they collect from a tributary to one of the lateral lakes migrate up the river from Lake Coeur d'Alene.

Greg Mauser, a biologist working for the Idaho Fish and Game told us, "The spawners in Evans Creek, no doubt, come up from the lake because they range in length from eleven to thirteen inches. Six to nine inch fish are most commonly found as native stock in tributary streams such as Evans Creek." He believes the spawners ascend the river just before and during the spring runoff, which usually is during April. It



Catching a bullhead from the lower river near the mouth of Lake Coeur d'Alene. This section is not supposed to support fish. Flesh from a number of fish samples contained relatively high concentrations of zinc.

may be possible that the high waters in the spring are diluted enough to counteract the metal content and trigger a response in the fish to swim up from the lake to spawn.

The shadowy St. Joe flows in a westerly direction separating Chatcolet Lake on the left from Round Lake on the right.

Chapter 9

LAKE CHATCOLET

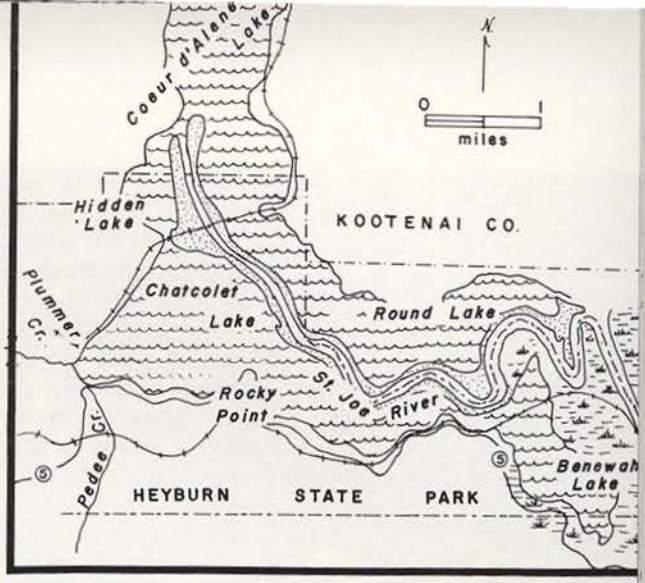


Figure 7 – With the construction of Post Falls Dam near the turn of the century, the water level in Coeur d'Alene Lake was raised about twelve feet, consequently creating several shallow lakes to the south of the main body of water to which they are connected. These converted marshes within Heyburn State Park are separated from each other by a narrow levee-like delta of the meandering St. Joe River, one of the major inlets into the lake system and reportedly the highest navigable river for boat traffic in the world.

Screaming its defiance and concern, the large brown and white bird steepened its dive, headed toward us. But twenty feet above, it changed its downward plunge to an effortless upward soar. It was a classic exhibition of a flyer trading air speed for altitude.

The object of the bird's hostility was our group of people in two small boats tied up to a lonely piling jutting up from the southern waters of Coeur d'Alene Lake. We were with Dr. Don Johnson, a wildlife biologist from the University of Idaho. He paid little heed to the bird which just passed, nor did he look up when a second one made the same type of pass.

Johnson's concern was for a third bird which he was carefully, yet firmly, holding in his leather-gloved hands. With its brown feathers intermingled with white, it was a smaller "carbon copy" of the two birds which were staging a graceful, if noisy, aerial ballet overhead.

We had accompanied Johnson on a boat trip at the southern end of the lake. The object of the journey was to band young nestlings of osprey, commonly known as the fish hawk.

While we watched, Johnson deftly wrapped a light-blue streamer of plastic around one foot of the young osprey. He secured the streamer above the hooked talons, which the young hawk kept opening and closing.

He then carefully tucked the bird under one arm and cautiously went up the aluminum ladder leaning against the side of the weathered piling. The base of the ladder was resting in the bottom of the boat – a somewhat unstable situation.

His destination was a most untidy assembly of dead tree branches on the top of the piling. These sticks were from two to five feet long, and about a half to one inch in diameter. It was obvious that, although the parent ospreys circling over us had a good supply of fatherly and motherly concern, their architectural efforts left something to be desired aesthetically.

Johnson safely made his way to the top of the piling and deposited his feathery load into the stick nest. He picked up another nestling and made his way back down the ladder. The banding process was quickly repeated, followed by still another ladder trip to bring down a third member of the osprey parents' 1973 family. Soon thereafter, we untied

our boat from the piling, gave the outboard motor cord a couple of quick yanks and headed for another nest on the lake.

Johnson has been studying the ospreys of the Coeur d'Alenes, as well as those around Pend Oreille Lake, some twenty miles to the north, since 1970.

Johnson told us that this part of Idaho contains the largest nesting population of ospreys in the western United States. In 1972, 152 nesting pairs were counted. One hundred and ninety young ospreys were raised by the nesting pairs, making now nearly 500 birds. The ospreys stay in northern Idaho during the spring, summer and fall, then migrate as far south as Guatemala.

When the dam at Post Falls was built at the turn of the century, it backed up waters of Coeur d'Alene Lake. This flooded considerable land around the lateral lakes and Lake Chatcolet, thus providing a good habitat for squawfish, bullheads and crappie.

Fish hawks easily catch these warm-water fish; thus Johnson believes that the number of osprey in the Coeur d'Alenes has increased since the Post Falls Dam was built. "Osprey catch relatively few trout, especially after Coeur d'Alene Lake stratifies and the trout move to lower depths out of reach of the ospreys," he said.

Many lake residents and visitors apparently disagree or are unaware that trout comprise only five to ten percent of an osprey's diet. "Each year reports of osprey shootings are received, young and eggs being taken from nests, and several nests being destroyed. People shoot the ospreys because they think the hawks are catching 'their' fish!" Johnson said.

The National Audubon Society and the American Museum of Natural History have supported the osprey studies. One objective of the present research is to determine if the presence of mercury in the Coeur d'Alene habitat is harmful to the ospreys. "Elevated mercury levels occur in the Coeur d'Alene valley systems of northern Idaho as a result of early mining activities and modern ore processing. The South Fork and main stem of the river are essentially devoid of life as a result of heavy metal contamination and siltation. However, nine lakes adjoining the river possess diverse ecosystems including fish and fish predators," Johnson said.

He pointed out that elevated mercury levels exist in the sediments of the river and adjoining lakes. "Preliminary observations indicate that mercury is transferred through the food chain (or directly assimilated from the water) to fish and eventually to their predators, ospreys and great blue herons," he said.

"Fish predators may be sensitive indicators of environmental contamination, as the pesticide-induced reproductive failures in eastern United States populations have demonstrated. Mercury contamination of terrestrial food chains has received considerable investigation both in Canada and Sweden. Mercury effects on top carnivores in aquatic food chains remains largely unassessed," he added.

The Canary in the Mine

One initial finding made by the university biologists is alarming. The mercury content of osprey eggs from Coeur d'Alene Valley nests is seven times higher than amounts found in osprey eggs taken from an adjacent drainage where the waters have not been affected by mine wastes. Mercury is so toxic, biologically, that any apparent concentra-

This young osprey is about six weeks old. After hatching, it will fledge or leave the nest in a couple of weeks. A Fish and Wildlife Service band is on the bird's left leg and a plastic colored marker on the right one. Subsequent sighting and/or collection will enable the investigator to learn more about migration routes and wintering area.

tion at the top of a food chain should be viewed with concern.

Workers used to keep canaries in the mines to warn them of lethal gases which they themselves could not detect. If the canaries died, it was time to get out. The osprey's success – or lack of success – hatching eggs and raising their young may be a similar "canary in the mine" warning to man about mercury contamination.

Things Are Not As They Seem

It was difficult to think about endangered species, including man, that perfect day out on Lake Chatcolet, as we went from nest to nest. The sky was a soft blue, the green waters were still except for an occasional fish dimpling the surface. Along the shores, above the cabins and houseboats at the water's edge, the green pines, larch and fir "stood in stately array" clear to the tops of the ridges sheltering the lake.

It was only when we looked into the shallow water underneath our boat that we realized that all was not well with this part of the lake. The growths of weeds covering most of the bottom were almost thick enough to impede the passing of our boat.

Scientists who specialize in the study of lakes classify them according to the fertility of the water. If the water is low in the major nutrients such as phosphorus and nitrogen which are needed to make aquatic plants grow, the lake is called oligotrophic, from the Greek oligos: few. If the lake is as loaded with fertilizers as an Iowa cornfield in the springtime, the scientists classify that body of water as eutrophic,

from the Greek eutrophos: well-nourished. When the amount of fertilizing materials in the lake is neither scanty, nor over-abundant, but somewhere in the middle, scientists call that lake mesotropic, from the Greek meso: middle. Other factors are taken into consideration in making these classifications, but the amount of nutrients is a primary one.

Studies have been made in recent years of Coeur d'Alene Lake and river sources by reserachers from the University of Idaho and nearby Washington State University. One study showed the northern end of Coeur d'Alene Lake is oligotrophic, with the exception of several shallower bays which verge on eutrophy during the warm days of late summer. The area about Rockford Bay south to Shingle Bay drew the middle classification of mesotrophic, which the shallowest parts of Lake Chatcolet were heavily enriched and eutrophic.

Rooted aquatic plants – with tongue-twisting names like Potamogeton, Myriophyllum, and Anacharis – grow thickly in the shallow water of Lake Chatcolet which is characterized by having high nutrient levels, shallow light penetration, and a silted bottom. Such conditions are very suitable for growth of aquatic vegetation.

These plants are important as a nesting area for ducks and geese which frequently visit the Chatcolet area and provide a major source of food for the waterfowl. Rotting organic debris of the old plants is home for certain insect larvae, frogs, turtles and water snakes. The warm shallow waters are also a suitable habitat for bullheads and perch which abound in Lake Chatcolet. On the other hand, Kokanee and Cutthroat Trout are more common residents of the cooler deep water of Lake Coeur d'Alene to the north where the predominant plants are planktonic algae rather than the larger rooted or floating varieties.

It should be pointed out that the planktonic algae, especially the diatoms, are vital links in the food chain existing in lakes and reservoirs. Algae utilize the sunlight which filters down through the upper part of the lake waters to synthesize sugars which are stored in the tiny bodies of the algae.

The algae may be "grazed upon" by the protozoa, microscopic-sized animals which live in the water. The protozoa, in turn, may be food for small crustaceans, such as water fleas and shrimp, which also consume algae. Next in the consumption line are the carnivorous fish which may be eaten by the ospreys, herons – and man.

Thus one might draw the gross conclusion that if a large population of fish is desired, then a large population of planktonic algae would also be essential. As a general statement, this would be true. If algae are not present to initiate the biotic part of the food chain, fish will not be present either.

But it should be pointed out, especially to those anglers who would like to head homeward with full creels, that there is a point of diminishing returns when it comes to encouraging the growth of more algae in order to grow more fish. Up to a point, more algae in the lake waters will mean more fish swimming to and fro. But too many nutrients in the lake may cause the algae to go on a population explosion. They may grow so thickly that the oxygen in the lake waters may become depleted. Without oxygen, fish cannot survive.

What happens is that when nutrients such as nitrates and phosphates are available to the algae, these tiny plants become overabundant and die. But in dying, the decomposition process exhausts the dissolved oxygen content of the water. If large masses of dead algae accumulate

Wayne Melquist replaces a nestling osprey after color-marking and banding. The young bird will leave the nest a couple of weeks after hatching. Dr. Johnson steadies the aluminum ladder.

in the bottom layers of a lake during late summer and fall months, then decomposition of the material during the winter may drastically reduce the amount of oxygen to the point that winter kill of fish occurs.

Where Are the Nutrients Coming From?

There are several sources of nutrients which are contributing to the eutrophication of the southern end of Lake Coeur d'Alene. One is the seepage from septic tanks of cabins located along the shore, especially in the Heyburn Park area. Another source, supposed to be eliminated now, is human wastes from the houseboats anchored along the shore, especially at Hidden Lake. Runoff from the farms located in the basins of the streams draining into this part of the lake and decaying vegetation are other sources of nutrients.

Humans, Their Wastes and the Quality of the Lake

A number of officials have gone on record as to the polluted condition of the southern part of Coeur d'Alene Lake. In 1971, Arthur Van't Hull, a regional sanitarian for the then Idaho State Department of Health, was quoted as saying: "Lake Chatcolet is 'overnutrified' by discharge of sewage from cabin sites and a heavy flow of silt from Plummer Creek."

At the same time, Hidden Lake – where most of the houseboats are located – was described by Idaho State Senator Art Manly of Coeur d'Alene, as "a cesspool."

But a sizeable educational task undoubtedly still lies ahead to convince all people who "use" Coeur d'Alene Lake that they will have to change their ways, or "lose" the lake. Ken Lustig, a solid waste disposal specialist with the Idaho Department of Environmental and Community Services, told us that some lakeshore property owners, when advised that their sewage disposal system is inadequate, reply "Prove it!"

Lustig, an intense man whose dedication to the environment is total, said: "If we can find that they have a sewer pipe going down into the lake, then we can prove it. But the burden of proof lies with us (the Health District)." He believes, that for the good of the lake, the concept should be guilty till proven innocent, not the other way around.

Some of the weekend cabin owners are hard to convince that they may be contributing to the degradation of the lake, Lustig reported. "These people say, 'I only use (the cabin) two or three months out of the year.' Some say, 'I only use it eight or nine weekends.'"

Lustig's reply is that a septic tank has to be used regularly for it to be effective. "If you are not feeding this flora (the bacteria in the tank) constantly, when you flush your toilet, the effluents go right on out. There is nothing there (to stop them)."

The Private "Owners" and the State Park

Most of the property owners around the southern end of the lake apparently "got the message" sooner than some of their counterparts farther up the lake. Perhaps the obviously poor condition of Lake Chatcolet, Hidden Lake, Round Lake and Benewah Lake had something to do with their realization. The fact that all of these "lakes" are located in an Idaho state park also played a part.

Heyburn State Park is located at the southern end of Coeur d'Alene Lake. The preserve covers almost 8,000 acres, with Lake Chatcolet, Hidden Lake and part of Benewah Lake making up about one-third of this total. Heyburn has been in existence since 1908 when the U. S. Congress "detached" the acreage from the Coeur d'Alene Indian Reservation.

The statute passed by the Congress, after giving the appropriate boundaries of the park in surveyor's language, stated that the land is "to be maintained by said state (Idaho) as a public park . . ." It was specified that "the lands are to be held by said state, used and maintained solely as a public park, and for no other purpose inconsistent therewith . . . ." The park was named after U. S. Senator Weldon B. Heyburn who aided in the acquisition of the land.

In the 1930's, the Civilian Conservation Corps built public camping and picnicking facilities there. Later, the state leased property along the shore to individuals who built summer homes on their lots. Four "recreation-oriented commerical developments" also were built in the park.

By 1971, it was obvious that something had to be done about the deterioration of this part of Coeur d'Alene Lake. The Idaho State Legislature appropriated funds that year to investigate and implement "procedures necessary to protect and enhance the water quality within Lake Chatcolet." The Idaho State Parks and Recreation Department was handed the responsibility for reaching these goals. This agency, in turn, decided that the situation called for a preliminary engineering study on the water and sewage utilities within the park. The firm of Stevens, Thompson and Runyan of Boise, Idaho, was selected to carry out this study.

In its January, 1973, report, the Boise firm stated:

"Included within the park boundaries are some 167 leased seasonal home sites, thirty-three leased houseboat anchorages, 140 camping sites, 447 picnic sites, a youth camp, park headquarters, and three resorts accommodating a total of 130 persons.

"Most of these facilities are served by separate septic tank systems for sewage disposal . . . The shallow mantle of soil over the basaltic bedrock, steep terrain and close proximity of these facilities to the lakes preclude adequate treatment of sewage by means of septic tanks with drain fields. Seepage from septic tank filter fields currently contaminates the shoreline waters from both a public health and an aesthetic viewpoint and poses a significant potential hazard to groundwater."

After studying the situation, the consulting firm developed a plan for a sewer interceptor, stretching from Hidden Lake to the vicinity of Rocky Point, at the bottom end of Lake Chatcolet. To handle the sewage which would be collected by the interceptor, the Boise firm proposed two alternatives. One was a sewage lagoon located at the mouth of Pedee Canyon where effluent would be lifted 650 feet in elevation and transported south one-half mile to a meadow containing an irrigation land disposal system. The second proposal was to transport the untreated sewage to a treatment plant in Coeur d'Alene by specially constructed barges. The pickup points would be Rocky Point and Chatcolet.

Appropriations totaling $740,650 were made available in April, 1974 to implement the first plan involving the irrigation land disposal

system. The Environmental Protection Agency will supply seventy-five percent of the funding and the State of Idaho the remaining twenty-five percent.

The Erosion Load

Most of the sediment entering Lake Chatcolet comes during the high runoff in the spring. The water is loaded with yellow-tan soil which has been torn loose from the pastures, cropland and hillsides of the St. Joe River and Plummer Creek drainages.

Silt from these streams is filling up the southern portion of Coeur d'Alene Lake, which never was very deep to begin with. "Silt is probably the number one contaminant in the lake," Marlow Freckleton of the Soil Conservation Service told us. He believes that it might not be the most serious contaminant at any given time but that all lakes in the area will eventually disappear under the loads of silt.

A major part of the Coeur d'Alene Lake sedimentation problem is the farm practice of summer fallowing. When this is done, the farmers work the ground over and over, pulverizing it and making it very fine to increase the amount of water retention in the soil and to control weeds. Such a technique is more necessary in drier regions so there will be enough moisture to grow a crop every other year. But as far as northern Idaho and the extreme eastern side of Washington are concerned., Freckleton said, "We always get enough winter moisture to refill the soil profile. Consequently, the fallow program in the watershed such as this one allows the soil moisture to build up in excess and when we get an extra rain coming, it has no place to go except to run off and take the soil with it."

Nitrogen and phosphorus may also go along with the water and soil. "Over-use of nitrogen allows it to be leached out and go with the water," Freckleton said. He noted that phosphorus moves down into a stream with the soil particles.

Verle G. Kaiser, a retired soil Conservation Service agronomist, has

Large mats of algae and aquatic plants cover much of Benewah Lake during the late summer months. Benewah Creek is seen entering the lake on the left.

Sediment runoff into the lake waters is due in part to poor agricultural practices. Top: Severe gully and sheet erosion inspected by Al Braun. Bottom: Same field planted to bluegrass and seeded on the contour is surveyed by Marlow Freckleton. Soil erosion was not measurable. Both men are with the U.S. Soil Conservation Service.

said, "Palouse Country soil is being eroded at a rate not exceeded anywhere in the United States and water is being polluted by silt, making it unfit for human consumption, undesirable for fish and wildlife and destroying its recreational value."

Not all of the eroded Palouse soil is finding its way into Coeur d'Alene Lake. In fact, the bulk probably is carried westward toward the Snake River via the drainage of the Palouse River. But significant quantities still are flowing into the lake via Plummer Creek and other tributaries on the west side of the lake.

Remedies proposed to reduce the runoff of the soil and the fertilizers include eliminating summer fallow for entire fields, going to minimum seedbed tillage, dividing long or steep slopes, farming on the contour, and seeding of permanent grasses on critical erosion areas.

Environmental Protection Agency to Control Farmers?

Although the Soil Conservation personnel have been attempting to halt this grievous loss of soil without total success, they are reluctant to let another federal group, the Environmental Protection Agency, get into the picture. Edward J. Kuhn, chairman of the Spokane County

Conservation District and a Cheney farm operator, says: "(The EPA) doesn't have the experts in this field that the Soil Conservation Service does. If too stringent controls are put on farmers, some will have to quit farming." The soil conservationists are afraid that EPA will use what they term "a meat-axe approach, such as has been used on some industries."

Hurlon C. Ray, an EPA official, was quoted as telling a Spokane convention in 1973 that a permit system designed to solve water pollution problems will be implemented nationwide within five years. Ray said the permit system, authorized under the 1972 Water Pollution Control Act, is necessary because soil runoff is "this country's number one water pollution problem."

Strip cropping would go a long way toward reducing the runoff problem into Lake Coeur d'Alene, Freckleton said. "If one strip has something growing on it, with the other strip (above it) being plowed, the water cannot run very far till it hits vegetation which will filter it out."

Raising lawn and orchard grass seed also is being pushed by Freckleton as a substitute for raising wheat and peas, the Palouse Country's conventional crops. The seed grass fields have to be burned off each fall after the crop of seed has been harvested, Freckleton admitted, but the tradeoff is heavily weighted on the side of seed grass raising. The soil conservationist said the particulate matter which goes off in smoke from the seed grassfields "is very visible, whereas the sediment sinks under the lake and nobody pays any attention to it until (aquatic) weeds begin to grow or a boat runs into it."

The soil conservationist noted that a lot of the farmers have gone to annual cropping. "The farmer that goes with a summer fallowing program might get seventy-five bushels (of wheat) per acre during the year that he grows a crop on the soil. If he goes to annual cropping, he might get (only) 60 bushels. But he gets sixty bushels every year. In the long run, it puts more money in their pocket, and less silt in the lake, and everybody is happier about it."

Who Owns a River?

People who live closest to the land oftentimes appreciate it the least. Sometimes the most effective environmentalists are people from outside an area, individuals who have seen similar resources go down the drain in other states and do not want to see it happen again.

Such a person is Ken Lustig, a solid-waste specialist, who told us: "Developers are coming into Idaho in vast numbers as they are kicked out of other states . . . . So these people move in and one individual can be had for a price on his land, no matter how sacred it is to them. On the St. Joe . . . the land owners are saying let's keep it like it is, local control. We like what we have. We enjoy our life. But in the meantime individually (they are) selling out."

The issue of classification of the St. Joe River has been under discussion for some time. At a series of public meetings held in Idaho, eastern Washington and Montana during the summer of 1973 by the U. S. Forest Service, a variety of opinions were expressed on the virtue – or lack of virtue – in classifying the St. Joe as a scenic wild or recreational river. The degree of support received for the proposal was often in direct proportion to the number of miles the meeting was from the St. Joe. The closer the hearing site to the actual river valley, the less

the support for federal "protection" of the river.

The position of the St. Joe Valley Association was expressed by Polly Hartman, president of the group. She said people in the valley are working on getting local controls which will protect the river. She asserted that the people who lived on the St. Joe had kept the river clean and natural for 100 years and would continue to do so. She was quoted as stating: "We don't need more control from the bureaucracy in Washington, via the Forest Service."

At the hearing conducted in Spokane, Washington, most of those speaking in support of classifying the river admitted that they were not residents of the valley. However, they claimed that they were users of the river who felt that only by classification could the river be saved and preserved from development. These non-residents, but "users," stated that without federal control, the landowners along the St. Joe will subdivide and develop their property. They asserted that such action would destroy the river's wild and scenic qualities.

Development along the flood plain of a river can also be disastrous for the homeowner as demonstrated by the rampaging St. Joe River during the record-breaking flood in January, 1974.

This question of "private property rights" versus the general public's "rights" to an unspoiled river valley may take the wisdom of a Solomon to solve. Richard D. Lamen, writing in the Aspen (Colorado) Times, said:

"Time and time again . . . someone will raise the anguished cry 'you are interfering with my right to do what I please with my property.' Often the only right they mention would be their right to sell the property at windfall prices to a subdivider."

The pressures on a landowner who really may not want to sell his land to subdividers were succinctly described by Harvey S. Rowe of Colorado in a letter to the High Country News. Rowe said: "Someone may say that the owners of the land involved did not have to sell, but it only takes one or two and then the others feel themselves surrounded by proposed subdivisions and feel they have no choice. There is more than one way to put people in the position where they have to sell."

Tom Bell, editor of High Country News, said in a July 6, 1973 column: "People in the West are still too imbued with what some have termed the 'frontier ethic,' or what Oregon Governor Tom McCall has tabbed the 'buffalo-hunter mentality.' We are still too close to the Old West where we ruthlessly exploited the land and all its riches."

Bell conceded that: ". . . local people and local interests have much to contribute to decisions on land use planning, whether it be of zoning a glue factory or designating a wilderness. But too often, special economic interests or selfish private interests get the last word."

There are hazards to even talking too much about holding hearings to classify a river as scenic, recreational or wilderness according to John Leasure, supervisor of the Coeur d'Alene National Forest. He told us: "You have to look pretty hard at when the right time is (to get into a study river classification). There may be some backlash that may actually accentuate the development of the river in the interim before the study is completed and a recommendation made to Congress."

Leasure stated this had happened on the Clearwater River some seventy-five miles to the south of the Coeur d'Alene River. "We had only a year in which to work once the law was passed (making the Clearwater a wild, scenic, or recreational river). In that year's time,

before we could buy any easements, there was a real upsurge in land transactions, subdivisions and so on."

A new voice in the affairs of the region is the Idaho Conservation League (ICL). The League has been created to help concerned citizens throughout Idaho take a more active part in their government. It monitors and lobbies the state legislature and state agencies, helping to foster decisions which will enhance the human and natural environment in Idaho. One of their major tasks in 1974 as the legislature convened was to work for some type of viable land-use legislation.

However, statewide land-use planning legislation failed for the third consecutive year. According to the ICL, the Idaho Senate succumbed to the pressures of lobbyists for homebuilders, realtors and corporations and proposed legislation (SB 1434) was defeated. The bill was different from current law by requiring planning and zoning rather than simply permitting it. General standards to be considered if SB 1434 had survived would have included preserving the quality of land, air and water resources together with economic development comensurate with the character and physical limitations of the land.

Coeur d'Alene Lake, second largest in Idaho, is noted for its sailing, kokanee fishing and beautiful vistas.

Chapter 10

LAKE COEUR d'ALENE

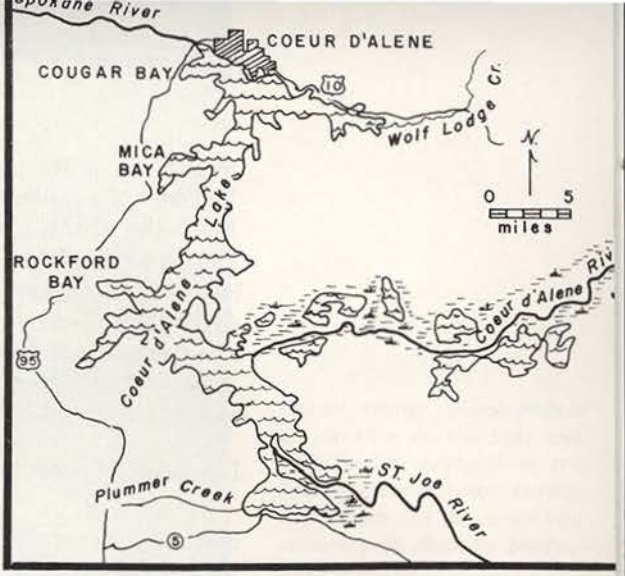


Figure 8 – Ice movements in northern Idaho were in part responsible for gouging out a narrow valley now occupied by Lake Coeur d'Alene. From its southern tip to Coeur d'Alene City, the present water body is about twenty-four miles long, with an average width of two miles. It has more than one hundred miles of shoreline. The lake level is controlled by the Post Falls Dam on the Spokane River nine miles west of the city. The lake outlet is the Spokane River, which eventually empties into the Columbia River.

The white hands of the altimeter were holding steady on the 4500 foot mark as we slowly circled in the Cessna. The sky was completely clear, from distant horizon to distant horizon. Below us, about a half-mile down, the weathered buildings of a small community could be seen. Houses, barns and other structures, reduced in scale to toy size, were tucked randomly on a rocky ridge that descended to the shore of a lake. Directly underneath us, the water was a handsome tint of greenish-blue, but in the far distance it shaded off to a pastel shade. A light wind must have been riffling the surface into tiny waves, for sunbeams were being repeatedly winked up to our aerial vantage point.

It was an excellent spot from which to see how Coeur d'Alene Lake lay with the world. This water body is the destination of all the trickles, creeks, streams and rivers so far described. The miniature town below was Harrison, Idaho, where the main stem of the Coeur d'Alene River ends its geographical existence.

To the south, we could see the railroad causeway at the northern end of Lake Chatcolet, one of several "lakes" at the southern end of Coeur d'Alene Lake. All, however, are parts of the main water body. If we squinted hard enough, we could make out some small white dots along the western shore of Hidden Lake – the houseboats whose owners have been ordered to stop dumping their domestic wastes into the shallow waters.

Where the river emerges into the lake, just northwest of Harrison, large banks of earth can be seen on both sides of the river channel. The difference in the color of the water offshore revealed the presence of an underwater delta where tons of sediments containing heavy metals and other materials have been deposited for almost a century.

After one more circle, we headed north, up the lake. We could see only four motor boats in motion. Their V-shaped wakes of white were highly visible, yet the lake is so big that the boats were but tiny intrusions on the total panorama. As we flew along at 125 mph, we could see roofs of an occasional cluster of cabins peeking out between breaks in the trees along the shore. Most of the ridges enclosing the lake are well-carpeted with green conifers, but here and there some grassy slopes and cleared meadows add variety.

A few minutes after the left wingtip of the plane passed a deep

indentation in the lake's western side – Mica Bay – the streets and buildings of a medium-sized city could be seen ahead. Not too far from the outlet of the lake, the Spokane River, two sailboats were slowly passing a barge-towed raft of logs. A spectacular whorl of ripples on the blue water was being formed by the interaction of the sailboat and tug wakes. The smoke from a sawmill's tepee burner down the Spokane River signaled the logs' destination.

As we looked southward, back over the route we had flown, the lake appeared as a most handsome body of water.

Discoloration from Mine Wastes

It has not always been so. Not too many years after mining operations commenced on the South Fork, the waste materials from the mills and smelters began to seep down the South Fork and into the lake. In 1911, Kemmerer – an early naturalist who surveyed a number of western lakes and streams – reported that the suspended material from the Coeur d'Alene River "could be traced well out into the lake." In 1932, Dr. M. M. Ellis, whose investigation of the Coeur d'Alene pollution problems is discussed in Chapter Seven, wrote:

"Local residents informed the writer that at times . . . mine slimes discolored the entire surface of Coeur d'Alene Lake as far as Coeur d'Alene City, Idaho, some twenty-two miles up the lake from the point at which the Coeur d'Alene River enters. . . . These statements were verified by boat captains who regularly ply the Coeur d'Alene Lake."

The settling ponds which the mining firms built in the South Fork Canyon in the late 1960's undoubtedly have helped reduce the sediment input to the lake. Post Falls Dam, on the Spokane River below the outlet of Coeur d'Alene Lake, has raised the water level thus making the main stem of the Coeur d'Alene River into a fifty-mile long settling pond. Marlow Freckleton, a soil conservationist based in Coeur d'Alene, told us, "I really think this (backing up) has been one of the life savers for Lake Coeur d'Alene – to keep some of the contamination out."

The livestock and whistling swans of the main stem valley, however, have paid a high price for this "protection of the lake."

The "Invisible" Pollution

It would be a mistake to assume that since the blue waters of the upper lake sparkle in the sunshine, all is well. Such pollutants as zinc, cadmium and lead are present in the water in a dissolved form. These heavy metals are still being swept down the South Fork and into the lake. In addition, there are large quantities of the hazardous metals in the bottom muds of the lake that have been accumulating there for many years.

Confirmation of the presence of these contaminants in the sediments has been made a number of times since the miners of the South Fork started their tunneling and ore crushing in the 1880's. Ellis found in 1932 that "mine slimes carried by the Coeur d'Alene River could be detected over practically the entire lake floor."

Thirty-nine years later, eleven undergraduates from the University of Idaho, representing the disciplines of biology, chemistry and geology, made a study of the sediments of the lake and of Coeur d'Alene River delta off Harrison, Idaho. The National Science Foundation provided funds for their investigation through the Student Originated Studies program.

Photosynthetic measurements of plankton in the light and dark bottles incubated in the lake for several hours enables Bob Minter and his co-workers to learn more about the productivity of the lake.

The cores of sediment which the students brought up showed lead, zinc, cadmium and copper to be evenly distributed in the delta to at least a depth of a foot and a half. The concentrations of these metals were greater at sampling stations up the river, but sediments of high metal content were found most everywhere at the south end of the lake.

The Inter-University Team

Additional probing into the "health of the lake" has been done by researchers from the University of Idaho and Washington State University. Investigators took a close look at the aquatic forms which inhabit the bottom depths of the lake since they reveal much about the water quality in which they reside. Their presence or absence, for example, may reflect physical or chemical changes in the water over a period of time. The fish-food organisms sampled with a small dredge included fly larvae, aquatic earthworms and caddis worms. The fly larvae made up the majority of organisms collected from the lake bottom; however, they were found in sparse numbers near Harrison where the Coeur d'Alene River emerges into the lake. Their absence there may be explained by the large concentration of heavy metals deposited in the sediments over a long period of time.

Bottom Sediments Reveal Trends

A major part of the study was an investigation of the sediments from the very bottom of the lake. Such an examination provides a "look at the past" in terms of what has happened, both physically and biologically, and may provide a yardstick against which present trends can be measured.

The investigators wanted to know how thick these waste sediments were, how they were interacting chemically with the overlying waters of the lake, and if the rock dust was passing out of the lake and into the upper Spokane River. Underlying the desire for this information was the need to know whether or not the metals from the mining wastes were being concentrated up the food chain – algae to protozoa to fish to fish-eating birds and to man. Considerable attention has been focused in recent years on the concentration of DDT in similar food chains, but little is known about the possibility of the same action

taking place with the mining metals.

To collect the bottom sediments from different spots off the Coeur d'Alene River delta, a special core sampler was constructed at Washington State University and mounted on the environmental engineering department's pontoon boat. Once in position on the lake, the sudden release of a suspended heavy weight built onto the end of the core sampler jammed the device six feet into the lake bottom.

High Concentration of Metals Found in Bottom Cores

Researchers, headed by Dr. William Funk of Washington State University, put the cores through a variety of analyses to determine their chemical and biological content and as was expected, high concentrations of the mining metals were found. In the core drilled just off Harrison, significant amounts of metal were found to extend down to between thirty-one and thirty-two inches. Below that depth, the amount of metals in the sediments dropped dramatically. The sediments below this point are believed to have been deposited before mining operations began.

A study of the tiny plants called diatoms revealed that the diversity of diatom species changed at the same point in the cores as the metal content changed. Also many of the diatom shells found in those sediments containing large amounts of metal were deformed and twisted. The university investigators believe the change in diatoms was caused by the toxicity of the mining wastes, together with turbidity of the water due to the rock flour.

Settling ponds constructed by the mine firms in 1968 may be having a favorable effect on the present diatom population of the lake. More of the types of diatoms commonly found in oligotrophic (non-rich) waters were present in the uppermost layers than in the lower sediments with the high concentrations of mining wastes.

The Tiny Wanderers

In another part of the universities' research into the well-being of the lake, researchers turned to the tiny forms of algae which float in the lake's currents. Called plankton, from the Greek: planktos, or wandering, some varieties of these miniscule plants are so small that hundreds of them could gather on the side of a pinhead and not be crowded.

They placed bottles of lake water and plankton at various depths in the lake and then measured the amount of photosynthesis – the basis for all life – taking place at each depth.

Slight amounts of copper, cadmium and zinc then were added to the bottles and the process repeated. It was found that "low concentrations of copper, cadmium and zinc introduced independently of each other inhibited photosynthesis of the . . . plankton."

Of the three metals, copper was found to be the most toxic to the tiny algae. And when copper, zinc and lead were added together and put in the test bottles, an even greater adverse effect was noted.

The next step taken was to add river water in various concentrations, together with the heavy metals, to the algae bottles. The results showed the more the researchers diluted the river water, the less the algae were able to photosynthesize. The clay particles and various chemicals in the water appear to tie up the metals, rendering them less harmful.

This particular finding led researchers to conclude the Lake Coeur d'Alene waters might be less toxic to plant and animal life than

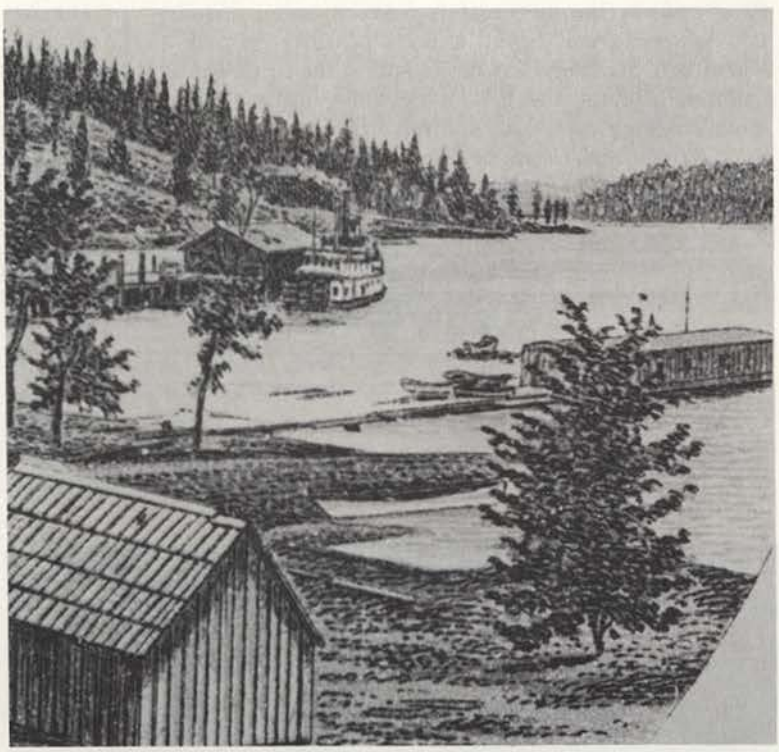
chemical determinations or laboratory tests indicate.

At first glance, this would seem to be a favorable indication. But most of the tailings which contain large amounts of clay particles are retained in the holding ponds built by the mining companies. Since less of the tailings are coming down the South Fork the lake waters might become more toxic with time to the fish and other organisms.

The Red Spawners

Back in 1932, Dr. Ellis wrote:

"That there has been a decline in the trout fishing in Coeur d'Alene Lake from the days of Captain Mullan who in 1858 described Coeur



Shoreline of Coeur d'Alene city. Top: Late nineteenth century. Bottom: 1973 with Northshore Hotel on left and Hagadone structure on right.

d'Alene as a 'noble sheet of water – filled with an abundance of delicious salmon trout' to the present time when trout are cleverly caught off Harrison, cannot be denied. Many causes have contributed to this change in fish populations of this lake."

Some of the Coeur d'Alene Lake "watchers" will agree that the decline which Ellis lamented in 1932 has continued to the present. However, in 1967 Jerry C. Mallet, a biologist for the Idaho Fish and Game, Department, made a study of the fish catch in Coeur d'Alene Lake. When he was finished, he concluded that only Pend Oreille Lake, a larger lake further north in the state, was giving up a bigger fish harvest.

Later, Mallet wrote that "fishing in Coeur d'Alene Lake has passed through many phases over the years. In the early years cutthroat trout were the only game fish present . . . As the years passed, many other species were planted into the lake. Kokanees were first introduced in 1937 and, as the cutthroat population began to falter, the kokanee population expanded until today it provides the bulk of the harvest." Mallet lays the blame for the fall-off in the cutthroat catches to several factors, including the loss of spawning habitat from the effects of mining in the Coeur d'Alene River drainage, deteriorated water quality in the west side streams due to farming operations . . . (and competition) from kokanee population maintained by a large annual planting program.

Dave Ortmann, a biologist now in charge of Idaho's anadromous fish program, told the authors that one million kokanee are stocked in Coeur d'Alene Lake each year. However, he added that kokanee eggs are becoming more difficult to obtain.

The Idaho Fish and Game Department would like to establish kokanee runs up the main stem of Coeur d'Alene River to above Enaville, since natural spawning would be much preferable to making the plants each year. "However, the pollution of the South Fork will have to be cleaned up first," according to Ortmann. "Such kokanee

The lake delta has been a repository for heavy metals from the Coeur d'Alene River for almost one hundred years.

runs could be compatible with cutthroats since the only use they would make of the drainage would be egg deposition, incubation and migration," he said. Kokanee runs were established in 1973 in the St. Joe River tributaries where the water is free of toxic wastes.

"Lake Coeur d'Alene is a family fishing lake." Tom Emerson was talking to us over the transom of his trim cabin cruiser. We had approached Emerson's craft near Conkling Park at the southern end of the lake. The five people in the rear cockpit of the canvas-topped boat, had been trolling for kokanee.

"Kokanee can usually be found in some abundance," Emerson said. "Thus it is a good place for families to come." To prove that he was not "talking through his hat," he held up a nice string of five slender, silvery-bodied fish.

Emerson, vice president of Coeur d'Alene's First Federal Savings and Loan Association gives the credit of good kokanee angling to fish planting by the Fish and Game Department. The Coeur d'Alene resident did assert that the kokanee spawners along the shoreline may die if the Washington Water Power Company pulls the water down prematurely in the lake by opening the generator intake tubes or spillway gates at the Post Falls Dam.

It is a characteristic of the early spawning (August and September) kokanees that they become mottled and then turn red. The flesh is soft and not as palatable then, but still nutritious. The early runs of kokanee spawn in tributary streams. The later runs (November and December) attempt to spawn along the lake's beaches. They do not color up, and are the most common of the two strains.

The Chinese Wall

One of the recent environmental fights in the region involving large numbers of people got started when the Idaho Department of Highways proposed building a major freeway along the north shore of Coeur d'Alene Lake. In 1969, department planners came up with "blueprints" for constructing the freeway adjacent to the north shoreline.

According to Scott Reed, a Coeur d'Alene attorney, "It was intended to be built right directly along the lake shore . . . through a bunch of peoples' houses and property. Because of the nature of a freeway, (it) would block off any public access to and from the lake. It was a Chinese wall."

Reed told us there was opposition at a public hearing called by the Highway Department from Kootenai County Commissioners, the Shoshone County Commissioners, the cities of Kellogg and Coeur d'Alene, a couple of labor unions, the Chamber of Commerce in Kellogg, Wallace, Coeur d'Alene, and from the Idaho Fish and Game Department. "From everybody," Reed said.

"To their credit, the Highway Department listened and determined that in this case there really was some adverse impact. A telegram from Senator Church read at the meeting didn't hurt any.

"Well, the Highway Department went back to the drawing board." In the months that followed, the engineers came up with two alternatives, the hilltop route and the hillside route. Reed commented that the hilltop route basically would take the highway up (above the lake) and in part it would go along the old John Mullan road. With sort of a twinkle in his eye, the Coeur d'Alene attorney referred to Mullan

Washington State University research barge was used to obtain cores of bottom sediments of Coeur d'Alene Lake. Study of such cores reveal water quality trends.

"as the last good highway engineer they had in the State of Idaho."

The hillside route was a compromise between the lakeshore scheme and the hilltop route. "The civil engineers representing the Highway Department – they called themselves environmentalists – deplored the erosion, wildlife barriers, and unsightly scenes that would be caused by the hillside route. But in the same breath, they said that the hilltop route would cause just as much damage," Reed said.

The Coeur d'Alene attorney pointed out that the National Environmental Policy Act does provide the important alternative of doing nothing. He obviously believes that this is the alternative which should be followed with the proposed freeway. He explained that presently there are four lanes from Wolf Lodge through (to) the bridge at Blue Creek. It then narrows down to two lanes for half a mile and then goes up to four lanes for the rest of the distance.

"So, at certain times of the year the traffic tends to slow down. You get a summer weekend and . . . sure, it is a little bit slower. The highway engineers say that the road is not as safe as it might be. And this could well be. No road is ever as safe as it might be."

Reed is hopeful that the press of building highways elsewhere in the state will stop the bulldozers from ever moving in along the north shore of the lake. "If we can stall this thing five years, that (freeway) will never be built. Freeways are on the way out. People have had it with freeways . . . up to their ears. They are just not going to continue to fund this sort of thing. The power behind the freeways is truckers, contractors . . ."

"If you can ever stop a freeway anywhere, you ought to be able to stop this one."

The Spokane River

This book has been concerned with tracing the flow of water through the Coeur d'Alene region's streams, rivers, and lakes together with describing the past and present status of the resources. Now that we have "arrived" at the end of Coeur d'Alene Lake, it might be appropriate to mention the Spokane River, which serves as the outlet for the lake.

From Lake Coeur d'Alene, the river heads westward through the flat lands of Spokane Valley. Small farms and communities dot this area until the eastern edge of the Spokane metropolitan area is reached, about twenty-five miles from the lake.

Back in 1970, the business leaders of Spokane, Washington, began to formulate plans for an environmental exposition to be held in 1974. One of the proposals was for a large-scale "depollution effort" of the entire Spokane River Basin which includes the North and South Forks of the Coeur d'Alene River, the St. Joe River, the St. Maries River and other streams which flow into Spokane west of the city.

The proposal was for a concerted effort by business, industry, state and federal organizations to demonstrate that a total basin-wide pollution cleanup could be achieved. Spokane's mayor David H. Rodgers was quoted at that time as saying, "Our abundant supply of high quality water is the most basic and vital of our bountiful resources. If we all work together on this, and other projects of mutual interest, our children and their children will continue to prosper and enjoy the good life with which our generation has been blessed."

The Spokane River flows through the heart of Expo '74 site and is

the Exposition's main scenic attraction. Thus it was appropriate that the river be clean! But despite the "thinking big," and endorsement of the scheme by Washington Governor Daniel J. Evans and then Idaho Governor Don W. Samuelson, the plans never got beyond being plans. However, some individual projects were brought into being, such as the sewage collection and treatment facilities along the South Fork of the Coeur d'Alene River and the upgrading of Coeur d'Alene's sewage treatment plant, located at the outlet of the lake.

The water quality of the Spokane River as it leaves the lake is relatively good, except that it does contain rather high concentrations of zinc. Cleanliness of the river does take a big tumble, however, when the city is reached. At present, only primary treatment is given to the sewage before it is dumped into the river. However, Spokane is now in the engineering phases of upgrading the city sewage plant and tertiary treatment is part of a long-range project to improve this situation.

Chapter 11

AN ECOLOGIST LOOKS AT THE COEUR d'ALENE WATERSHED

"An equilibrium state would require trading certain human freedoms, such as producing unlimited numbers of children or consuming uncontrolled amounts of resources, for other freedoms, such as relief from pollution and crowding and the threat of collapse of the world system."

Donella and Dennis Meadows
The Limits to Growth, 1972

A small brook, originating on the high slopes of the Bitterroot Mountains, flows into the North Fork of the Coeur d'Alene River several miles above the town of Prichard. In its upper reaches, Shoshone Creek is bordered by fragmented sandstones and mudstones of the very old Belt Series; rocks laid down as sediment in ancient seas and later folded and faulted by geologic forces. Ripple marks in the rocks attest to an era when the region was a beach of an inland sea.

Black bear, bobcat, coyotes, elk, muledeer, weasels and porcupines commonly drink from the one-mile stretch of stream surrounded by 1,000 acres of old growth timber.

On the higher slopes, mountain hemlock, spruce and subalpine fir, (trees more than 200 years old) border the stream in places. Lower in elevation are Douglas Fir, young trees about sixty years old that grew after the Great Fire of 1910. Still lower, Western hemlock, white pine and larch, shade the brook which is also bordered in places by graceful willow, thin leaf alder and dogwood.

This area, together with other unique aquatic and terrestial sites throughout the state, became candidates for preservation as Research Natural Areas by a group of Idaho biologists, foresters, range managers and fish and wildlife personnel, during the spring of 1973. Since such areas are fast disappearing it is mandatory that we act now in preserving them for educational as well as aesthetic purposes.

The early generations of pioneers who settled the Coeur d'Alenes dug for gold and silver and carved farms out of the forest. Their descendants are North Idaho's senior citizens, legislators and land owners. These people, fiercely independent and territorially oriented, are still imbued with the frontier ethic, putting private rights above the public welfare.

As the population of the nation and of the Coeur d'Alene watershed increases, causing open land, forest, streams and lakes to diminish, the issue of private versus public rights becomes critical. The question of

the common good is raised again and again as the need for centralized control over the use and abuse of our environment becomes evident. The development of such control is a slow and laborious process, but if the nation's streams, lakes and forests are to be preserved for perpetual use, if our agricultural land is to be kept productive, it is an essential process.

Examples of overexploitation of land and resources abound, from the dust bowl of Central North America to the list of heavily polluted streams unfit for human use. The citizens of Idaho share their portion of the controversy. One of the few relatively unspoiled areas of the country, Idaho has captured the attention of the nation as attempts are made to restrict the exploitation of Hell's Canyon, the deepest canyon in the nation; the White Clouds, a fragile mountain environment threatened by molybdenum mining; and the Idaho Primitive Area, one of the largest wild areas in the lower forty eight. While less well known, there are controversial issues in the Coeur d'Alene region no less important to the residents.

In the past decade, for example, the water of the North Fork of the Coeur d'Alene River has been put to use more and more for domestic and small farm purposes. No standards exist for the amount of water which must flow in the river at all times. Without such minimum stream flow standards, the North Fork and other rivers like it will continue to dry up, resulting in decreased insect and fish habitat and limited recreational benefits for the people as a whole, the people to whom this portion of the commons belongs.

In the past, the commons – public areas belonging equally to all people – were customarily used by individuals with complete freedom. The challenge facing the residents of the Coeur d'Alenes . . . and our country in general . . . is the need to modify our views concerning unrestricted personal use of the common portion of the environment.

Setting aside Shoshone Creek and its surrounding environs could be an important step in implementing the concept of the commons in the Coeur d'Alenes. However we need to expand our thinking to include the entire North Fork drainage rather than just a one mile stretch of stream.

All the waters of the Coeur d'Alenes eventually reach their final destination, the ocean, where some of the water evaporates and eventually returns as rain or snow, finding its way back into a tributary stream or one of the high lakes. In this manner, the waters are recycled and used over and over.

The North Forks of this nation mediate hydrological cycles, accommodate flood waters, maintain soil fertilities and perpetuate the cycling of valuable nutrients and the flow of energy back and forth from shore to river and river to shore. In a natural condition, they enable us to compare effects of human activities on other streams and rivers, such as the South Fork and to understand that there is an aesthetic and biological difference between them. Without North Forks to use as templates, we would lack viable models to guide us in restoration and proper management of the South Forks of the world.

Preservation of hedgerows, old wood lots, ponds, rivers, non-economic species and other biotic variety to enhance man's landscape can be justified by the educational and scientific benefits as well as aesthetic reasons. Such natural areas also supply gene pool reserves for plant and animal species, particularly for endangered and rare species.

North Forks should be preserved for the same reason that we treasure antiquities or precious works of art. These natural resources are not only beautiful but they remind us of our cultural heritage. If we allow them to be destroyed, we weaken our link with the ecological past and become a species out of context. To understand our very existence, we need fenceless lands and free-flowing rivers to know where we came from; yet we are rapidly becoming cultural and evolutionary orphans, a people without a past. If we continue to embrace the idea that wildlands are a waste and we should develop them, then we destroy much of the meaning of life. It is the same as eliminating Shakespeare from our libraries or Beethoven from the concert halls because most people would rather read Reader's Digest or listen to popular music.

Then too, the North Forks of the land provide a means of relieving pent-up emotions and are of unquestionable value as a therapeutic agent to thousands of citizens living a sedentary existence in cities and towns across the country.

We stand in danger of losing North Forks if we continue to relax enforcement of our environmental laws and attempt to make our lives the most comfortable in the world by using natural resources at a progressively faster rate. On the other hand, if we limit our materialistic expectations, we can continue to enjoy rivers such as the North Fork for many more years. An unchecked population growth, together with greater and greater per capita consumption, is not compatible with clear flowing rivers and a clean, uncluttered environment for very long.

Efforts are underway to begin the process of cleaning up the South Fork. Mining companies have built tailings ponds and installed air pollution equipment. The citizens of the South Fork Valley have passed a bond issue to provide treatment facilities to protect the river from overloads of human wastes.

On a higher level, the passage of the National Environmental Policy Act (NEPA) in 1970 was a monumental step in requiring an impact statement from those discharging substances into the water. The company or individual has to prove that the substance is not harmful to the waterway before being issued a permit.

Another environmental plus is the recent amendments to the Federal Water Pollution Act enabling individuals to work with state and governmental agencies in monitoring our waters. In May of 1974, a large number of officials and citizens gathered in Coeur d'Alene to learn more about how they could keep Idaho's water clean.

Environmental Protection Agency procedures need strengthening to be fully effective. They should realize the need for independent agencies to monitor the discharge of industrial wastes rather than relying on the mining industry to monitor its own effluents. Also, EPA should consider the long term chronic effects of heavy metals on the Coeur d'Alene's plants and animals, as well as on human beings. These problems are currently not discussed in the impact statements.

The forested land at the headwaters of the North Fork as well as other National Forest Land will be spared increased timber cuttings, which is a result of a recent federal court order. Conservation organizations argued that the planned increase would lead to overcutting, in disregard of the sustained yield principle. The National Environmental Policy Act requires an impact statement and a discussion of alternatives for proposed timber sales. The Forest Service acknowledged the more efficient use of harvested timber and reduced

exports would be satisfactory alternatives.

The Idaho Conservation League is becoming an effective lobbyist for environmental concerns, including many that affect the Coeur d'Alene watershed. The league provides information on environmental voting records of legislators and encourages citizens to express their views to the lawmakers during the annual session. Issues that have involved the Coeur d'Alenes are lakeshore protection, litter control, wild and scenic rivers, water quality, and land use planning.

Environmental legislation is only as good as the paper on which it is written. We have a number good laws on the books but many are not implemented. Insatiable demands for more oil at any price or relaxation of air standards in order to burn high sulfur coal are but a few examples of how hard-fought for legislation is being undermined.

The public media has emphasized the beneficial aspects of a technological society. As a result, we are often led to believe that one of our main purposes in life is to acquire property and all the gadgets of a technology oriented world. One of our basic problems is determining when we are getting too much of a good thing – too many gadgets, too much concrete, too many people.

For our children's sake, we simply cannot afford to let this generation grow up in the same state of ignorance about the environment as their parents. How often have we watched small children utterly absorbed in watching the life in a small pond where most grownups see only a mudhole? There is little doubt that children are turned on to nature. But somewhere, we turn them off.

One of our highest priorities must be to give increased attention to environmental education at all levels – kindergarten to college. We must teach our kids the basic ecological and biological facts about the Planet Earth if they are to become wise stewards of the globe. Greater emphasis is needed in writing pamphlets, making films, posters, slides, records, tapes, use of the radio and TV to expound environmental and ecological facts about life on this planet. Direct involvement of individuals and professional people alike is a necessity and a moral imperative. A fence-sitting approach toward environmental education is passe'. It is a betrayal of the young and future generations that follow.

We must recognize that we are an integral part of a natural world and its limited resources, rather than what our past 4000 years of ethical tradition has taught us as being free to benefit from the environment with minimum responsibility for its care. Our traditions have been metaphysical, humanistic and theological, not environmental.

We must be intellectually aware that we are an important part of a vast, mysterious, complex human ecosystem, that can endure indefinitely on earth, if we limit our population size and production and consumption of material goods. By adopting this ecological ethic, we can further maximize the livability of Spaceship Earth for all species.

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*Limited material in this book appeared originally in this Washington State publication edited by David Flaherty.

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Figure 1: The Coeur d'Alene-Spokane River Basin – Carl Savage

Biologist Fred Rabe began research in the Coeur d'Alene watershed six years ago, studying the effects of mining effluent in the South Fork on the water quality of Lake Coeur d'Alene, Idaho's second largest lake. A native of St. Louis, he had come to teach at the University of Idaho in 1965 soon after completing his doctoral degree at the University of Utah. As Rabe and his graduate students traveled throughout the watershed, discovering environmental problems – and concerned people trying to solve them – he saw a fascinating and complex story needing to be told. At once an objective scientist and a concerned conservationist, Rabe found issues of wilderness preservation, water and air pollution clean-up, and fish and wildlife management to be discussed in the framework of human history beginning with Idaho's gold rush in the 1880s.

Writer Dave Flaherty, a graduate of Stanford University, joined Rabe in 1973 for numerous travels in the Coeur d'Alene region on foot, by car, kayak and his own four-passenger Cessna Skyhawk. Flaherty was already familiar with the vast region, having written articles on research by Washington State University faculty in the area.

The River of Green and Gold, then, is a composite of university research and of hours spent in the Coeur d'Alene watershed, seeing the environment in detail and talking to the people.

Idaho Research Foundation, Inc.