MEASURING DEVICES ON MILL CREEK

A TRIBUTARY OF THE UPPER YELLOWSTONE RIVER

FINAL REPORT

Prepared by

Department of Natural Resources and Conservation
Water Measurement Program

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Summary

This report on Mill Creek was prepared by the Department of Natural Resources and Conservation (DNRC). The purpose of the report is to examine the likelihood that installing devices to control and measure water flow will solve chronic dewatering on Mill Creek, or resolve conflicts among water right holders.

The DNRC has determined that Mill Creek be designated as a chronically dewatered watercourse and measuring devices be required for all diversion. Public comments were considered on a draft report.

DNRC has determined that Mill Creek, for the reach beginning at the North Side Ditch and extending downstream to its confluence with the Yellowstone River, be designated as a chronically dewatered watercourse on which measuring devices and necessary controlling devices must be installed, operated, and maintained within two years or by April 15, 1996.

An environmental assessment is included in this report as Appendix III.

Background

Water Measurement Program

The Water Measurement Program was created in the 1991 Legislative Session, Ch 543, L. 1991. The Board of Natural Resources and Conservation has adopted administrative rules establishing a two-year deadline for the acquisition and installation of water measuring devices and controlling devices on chronically dewatered watercourses or portions of watercourses (Montana Code Annotated 85-2-113, 1993). The law lists factors or guidelines that DNRC must consider to identify chronically dewatered watercourses (Montana Code Annotated 85-2-150, 1993). It also authorizes DNRC to consider Water Development Program grant and loan applications for the installation of required measuring devices (Montana Code Annotated 85-1-602, 1993).

The purpose of the law is to facilitate increased management of water diversions by water users where chronic dewatering significantly impairs beneficial uses, such as fisheries, agricultural, industrial, municipal, and recreational uses. The use of controlling and measuring devices on diversions in chronically dewatered watercourses or portions of watercourses ensures that appropriators beneficially use the amounts to which they are entitled under valid appropriation rights and water use permits. It is intended to provide water users an additional management tool for the beneficial use of the water. If a decision by DNRC is made to require measuring and controlling devices on a certain watercourse, the owners or operators will be required to record and report (to DNRC or another designated entity) water measurements at reasonable intervals.

Designation Process

There are four main steps in designating a watercourse as chronically dewatered.

I. DNRC has selected watercourses to be studied based on information suggesting that one or more of the statutory factors may be met. DNRC requested input from interested organizations and other agencies to compile a list of possible watercourses that might benefit from the use of measuring devices under the water measurement program. Public informational meetings were held, including one at Livingston, Montana, in March of 1993. Participants suggested that Mill Creek should be a candidate stream for the water measurement program. Also, as part of a lease agreement for instream flows between the Montana Department of Fish, Wildlife and Parks (DFWP) and the Mill Creek Water District, both parties requested DNRC to consider Mill Creek as a chronically dewatered watercourse.

II. DNRC screened over 150 suggested candidate watercourses and selected five for which study reports would be prepared at this time. Mill Creek was one of the five selected streams. The selection was based on local interest; information available; an endorsement of Mill Creek by several individuals, agencies, and groups; and the probability that statutory factors will be met. The DNRC Director approved the list of five candidate watercourses. As the program progresses and study reports are completed, other watercourses will be added.

III. The Mill Creek water users and other interested parties met with DNRC in July 1993 at Pray, Montana, to discuss measuring devises on Mill Creek. The DNRC Water Measurement Program Officer toured Mill Creek with Russell Smith, a member of the Mill Creek Pipeline Project, and observed and photographed Mill Creek Diversion structures and gathered information from water users along the stream.

IV. The information received from meetings and from other agencies, organizations, and individuals was used in this study report. The report will be distributed and a public meeting held. Corrections or additional information will be included in a final report. DNRC will determine whether Mill Creek fits the criteria of a chronically dewatered watercourse and would benefit from the use of measuring devices and controlling devices.

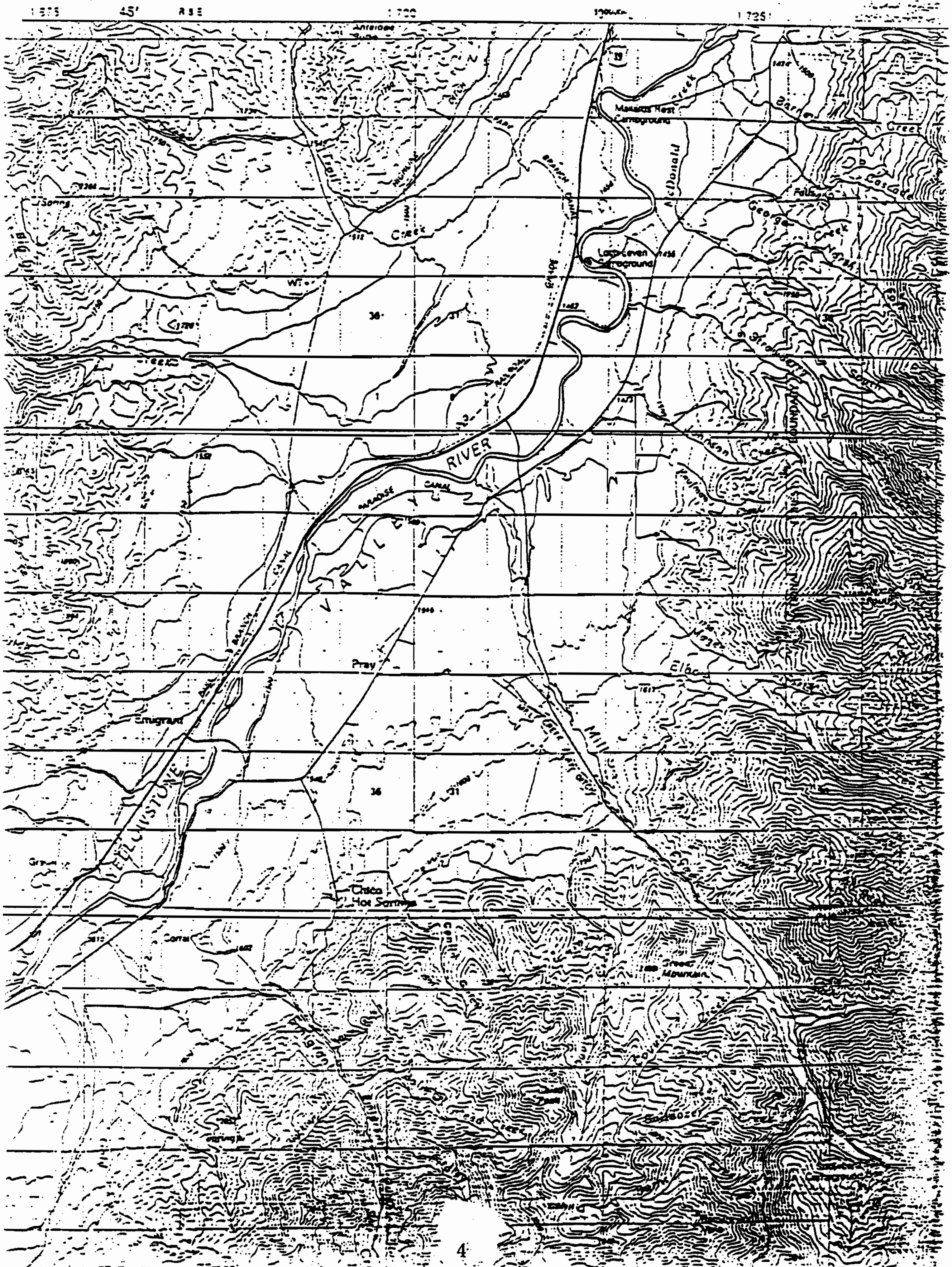
Mill Creek

Mill Creek, a 22-mile tributary to the upper Yellowstone River, is located in Park County about 20 miles south of Livingston, Montana, and 30 miles north of Yellowstone National Park (location map enclosed). It rises in the Gallatin National Forest in the high peaks of the Absaroka Mountain Range, and flows through a steep canyon and broad high bench along the east side of Paradise Valley before discharging into the Yellowstone River. Mill Creek drains an area of about 150 square miles. Lands within the drainage are used for outdoor recreation, lumbering, livestock grazing, and irrigated agriculture. Most of the water diverted from the stream is used to irrigate about 4,300 acres of lands used for pasturing livestock and the production of alfalfa, grass hay, and some barley. The Yellowstone River, into

which Mill Creek flows, is a nationally recognized trout stream. It is especially famous for the Yellowstone cutthroat trout. The Mill Creek road is a major access route to public recreation and forest lands in the Gallatin National Forest. Livingston is the county seat for Park County and the principal service center for the area.

The Mill Creek area is a ranching community; irrigation is an important part of producing feed for livestock. The irrigated area is a smooth, broad, gravelly flat consisting of coarse, well-rounded cobblestone gravel intermixed with one- to two-foot boulders. The area is either an outwash glacial terrace or an old alluvial fan of Mill Creek. Most of the soil is deep and well drained. It has a six-inch thick gravelly loam surface layer. The subsoil, to a depth of about 17 inches, is very gravelly loam. Below this, to a depth of 60 inches, the subsoil is extremely gravelly sand. In some areas, these soils have a cobbly loam surface layer. Permeability is moderate to a depth of about 17 inches and very rapid below that depth. The available water holding capacity is very low (Soil Conservation Service (SCS) 1986).

The major irrigation diversions occur about six miles above the confluence with the Yellowstone River, where the stream breaks out of the canyon. These ditch diversions include the Northside, Upland, Mill Creek Flat, Carter, Mill Race, Melin-Allen, Titus, Bryant-Ellison, and the Mill Creek Pipeline. Historically, water has been conveyed in open ditches, and a large portion of the return flows go to the Yellowstone River, not back into Mill Creek. Since the completion of the Mill Creek Pipeline project in 1992, almost 75 percent of the irrigated lands are serviceable by gravity sprinklers.


Mallards Rest Campground
Loch Leven Campground
McDonald
Barney Creek
George Creek
Cascade
RIVER
PARADISE CANAL
Pray
Emigrant
YELLOWSTONE
Chico Hot Springs
Mill
Corral

Legal Guidelines

To guide DNRC when weighing the decision of whether to designate a watercourse as chronically dewatered, the legislature spelled out nine factors for consideration (Montana Code Annotated 85-2-150, 1993). These factors are addressed below.

1. Extent, Duration, and Frequency of Dewatering

Mill Creek is fed primarily by snowmelt from the Absaroka Range. Streamflows are adequate to meet irrigation demands through May and June, but flows in Mill Creek rapidly diminish in July and August. Irrigation shortages begin in mid-July during dry years and occur every year after August 15.

In 1986 the Park Conservation District, The Mill Creek Water District, and the SCS published a watershed plan for Mill Creek. The document describes a plan for water conservation using land treatment and structural measures to improve on-farm and delivery irrigation efficiencies. This report also stated that in six years out of ten, there is zero flow for a seven-day period in the lower reach of Mill Creek (SCS 1986).

The general consensus of the Mill Creek water users present at a public meeting in July 1993, was that Mill Creek normally goes dry somewhere between the Paradise Canal feeder diversion and the mouth of the creek sometime in August. Some of the participants at the meeting felt that so much water is lost through the streambed that reducing upstream diversions would not eliminate the dry streambed in lower Mill Creek.

Currently there are no active U.S. Geological Survey (USGS) gaging stations located on Mill Creek. USGS records indicate a gage was located on Mill Creek on a private bridge 3.5 miles southeast of Pray, Montana, from March 1951 to September 1956. We recognize that this is a relatively short period of record, but these data are the best available for Mill Creek. Diversions to irrigate about 900 acres lie above the station, with an additional 3,400 acres of irrigation below the station.

The stream's average discharge for the period of record was 128 cubic feet per second (cfs) and 92,670 acre-feet. The maximum flow recorded was 2,300 cfs on June 6, 1952. The minimum flow recorded was 3.9 cfs on November 9, 1952, and February 9, 1953.

For the period of record from 1951 to 1956, the following table lists (in cfs) the average monthly flow and monthly flows typical of a dry year. The flows given for a dry year would be exceeded, on average, in of 8 years out of 10.

	Average	Dry Year
April	60.7	48.6
May	354.5	283.6
June	634	507.2
July	217	173.6

August	47.8	38.2
September	34.7	27.8
October	25.5	20.4

If we use the rule-of-thumb that for each irrigated acre it takes a diversion of one miners inch, we can see that the 3,400 acres irrigated below the gaging station could divert 3,400 miners inches or 85 cfs, much more than the average flows in August and September, resulting in dewatered conditions downstream.

The USGS made discharge measurements in 1983 on Mill Creek two miles downstream from the East Fork, which is above the old USGS gaging site and any irrigation diversions. The measurements were taken to establish flow data for instream flow reservations granted to DFWP in 1978. Mill Creek and other ungaged tributaries to the Yellowstone River were measured in 1983. The results were published in *USGS Water Resources Investigation Report 86-4009.* The flows were 538 cfs in July, 111 cfs in August, and 64.1 cfs in September. The purpose of the instream water lease by DFWP, described in more detail later in this report, is to preserve some flows in the lower reaches of Mill Creek. There have not been any published streamflow measurements since the USGS report in 1983.

Water right holders divert water from the stream in the order of the priority date of appropriation. The exception on Mill Creek is the water rights leased by DFWP for instream flows. DFWP is currently working with USGS to rate and establish two water measurement sites, one above the major irrigation diversions and the other at the mouth of Mill Creek. The purpose of the proposed measurements is to monitor flows and their effectiveness for instream uses, and to preserve the water rights leased on Mill Creek.

The extent of dewatering, before DFWP's instream flow leases, is normally limited to the lower reaches of Mill Creek from its confluence with the Yellowstone River to about six miles upstream.

2. Impact of Dewatering on Fish, Wildlife, and Other Natural Resources

Fisheries - A pure strain of Yellowstone cutthroat trout (*Salmo clarki bouvieri*) inhabits the upper Yellowstone River (Hadley 1984). The Yellowstone cutthroat is a fish classified by the American Fisheries Society as a "Species of Special Concern" in Montana. This classification denotes a severe limitation in organisms and/or their preferred habitats (Holton 1986). This species was originally the only trout living in the Yellowstone River basin and resided in all the river's tributaries as far east as the Tongue River (Hadley 1984). It has been displaced from much of its former range by competition from introduced species of fish, and many of the remaining populations have been genetically contaminated through hybridization with rainbow and golden trout, and other cutthroat strains (Hadley 1984). Other reasons for the decline of the Yellowstone cutthroat are human-caused habitat changes, including stream bank destruction, dewatering of spawning tributaries, in-channel

sedimentation, and degraded water quality. Pure-strain Yellowstone cutthroat currently occupy only eight percent of their original range (Hadley 1984).

Several small tributaries that enter the Yellowstone River upstream from Springdale are the only documented spawning sites for the river population of Yellowstone cutthroat trout (Clancy 1985). Mill Creek has been dewatered so long it is unknown if the stream was once was a spawning site but Mill Creek has the potential with instream flows maintained to be an important spawning site. Yellowstone cutthroat trout display a strong homing instinct during spawning, returning to the stream in which they were hatched (SCS 1985). Berg (1978) and Clancy (1985) showed that portions of this population will migrate long distances in the Yellowstone River to spawn in its tributary streams. Dewatering of the lower reaches of some of these tributaries during the irrigation season reduces the reproductive success of cutthroat trout and, consequently, limits the production of new recruits for the river fishery (Berg 1975; Clancy 1984, 1985). Studies by DFWP have shown tributary dewatering to be an important, if not the major factor regulating the numbers of adult Yellowstone cutthroat that reside in the Yellowstone River (Clancy 1988).

Yellowstone cutthroat begin entering the spawning tributaries in mid-June, with the spawning peak occurring in early to mid-July (Berg 1975; Clancy 1985). Eggs incubate in the spawning gravels for about 30 days before emerging as fry. By the end of September, most fry have migrated out of the tributaries into the main river. But severe dewatering in some tributaries prevents the completion of this process or limits the reproductive potential for the tributary streams (Clancy 1988). Mill Creek is one of those streams.

Some years only small numbers of cutthroat spawners enter Mill Creek (Berg 1975; SCS 1985). During June and July 1983, only four migratory cutthroat were electrofished on four occasions in a half-mile section of lower Mill Creek (SCS 1985). For the few that succeed in laying eggs, reproductive success has been poor because the lower creek is commonly dry when the eggs should be incubating in the gravel and when fry should be emerging and migrating to the main river (SCS 1985).

DFWP instream flow leases - Because Mill Creek is dewatered, spawning success of Yellowstone cutthroat trout is significantly impaired. In an effort to provide some spawning success from Mill Creek, DFWP has entered into two lease agreements to maintain a water supply in the creek during critical times of the year.

The two leases are held under the provisions of Montana Code Annotated 85-2-436 (1993), which allows leasing for instream flow purposes. One lease is between DFWP and John O. and Donna B. Gray for 2.0 cfs of water right claim number 43B-W-035249 with a priority date of June 30, 1880; and 4.13 cfs of water right claim number 43B-W-035251, with a priority date of June 1, 1903. DFWP uses these water rights to provide a flow of water at the lower end and

mouth of Mill Creek to enhance cutthroat trout spawning (DFWP lease agreement). The change in purpose-of-use to a use as instream flow was approved by DNRC on January 27, 1993, and the lease agreement became effective on April 1, 1993. The term of the lease is for ten years and may be renewed for an additional ten years upon the agreement of the parties or their successors and approval by DNRC. Both the Grays and DFWP will, no later than July 1 of each year during the term of the lease, jointly petition the District Court for the appointment of a water commissioner for Mill Creek to measure and distribute the water to water users on Mill Creek in accordance with the provisions of Montana Code Annotated 85-5-101 (1993). DFWP pays all costs associated with installing gaging stations or providing personnel to measure the streamflows of Mill Creek. DFWP leases the Grays' water rights subject to the Montana Water Court adjudication process. The Grays' leasing of these water rights does not constitute abandonment of the water rights.

A quantification of the flow needed to maintain spawning and incubation habitat for cutthroat trout in Mill Creek is not available. The current low use by cutthroat spawners has not allowed adequate observation of spawning redds. Therefore another method was used to derive a rough estimate of the flow needed to maintain spawning and incubation habitat for cutthroat trout. As a general guideline for mountain streams, fishery maintenance flows should not be less than a stream's base flow, which is defined as the lowest mean monthly flow in winter (Leathe and Nelson 1986). Base flow for Mill Creek is about 27 cfs (Parrett 1985). DFWP has assumed that one-half the base flow (13 cfs) will suffice as a spawning flow for Mill Creek (DFWP 1990). The 6.13 cfs of leased water will not make up the entire shortage under extreme conditions, but will improve the flows at least part of the time.

The second lease is between DFWP and the Mill Creek Water District. The purpose of the lease is to provide for instream flows in Mill Creek for a period of 60 hours during August of each year to flush cutthroat trout fry from the creek to the river. DNRC approved the change in use to instream flow use on January 27, 1993, and the lease agreement became effective on August 1, 1993. The lease is for ten years and can be renewed for an additional ten years upon the agreement of the parties or their successors and the approval of DNRC. DFWP will designate a 60-hour period within the first three weeks in August during which DFWP will require the water rights of the owners to remain instream pursuant to the lease agreement. A flow of approximately 41 cfs will be available for instream flow purposes as long as this amount of water is physically available at the point of diversion and provided the water is not diverted from Mill Creek under valid rights senior to the water rights leased by DFWP. The Mill Creek Water District will petition the District Court before July 1 of each year to appoint a water commissioner for Mill Creek. The Mill Creek Water District has encouraged DNRC to designate Mill Creek as a chronically dewatered watercourse and to require measuring devices for all diversions in accordance with Montana Code Annotated 85-2-150 (1993). DFWP has leased the water rights subject to the Montana Water Court adjudication process. The leasing of these water rights does not constitute an abandonment of these water rights.

The 1993 irrigation season was the first during which DFWP leases were in effect. No results are available to determine the success of the leases for the spawning of Yellowstone cutthroat trout. There was water in the lower reach of Mill Creek during August of 1993, but this was probably due to the extremely wet year rather than the instream flow leases or water saved by the pipeline project.

Other wildlife - Dewatering also affects waterfowl and other birds and wildlife that commonly inhabit water environments. Reduced numbers of fish may limit the available food supply for bald eagles, ospreys, herons, mink, otters, and other fish- eating predators. Drying of the streambed eliminates aquatic insects, which are the food source of the American Dipper (*Cinclus mexicanus*) and other small birds.

The elimination of aquatic plants may reduce the food supply for local waterfowl. However, a benefit to wildlife may be the fact that as the water recedes into smaller areas the available fish become more accessible to predators.

Natural resources - The limited area and duration of dewatering probably does not have a major impact on other natural resources such as trees or other plant growth in the riparian zone along Mill Creek. There do not appear to be any wetlands which are impacted by the dewatering of lower Mill Creek. In fact, more wetlands may be created because of the irrigation diversions. Other than agriculture and a small amount of gravel production, no known extractive or consumptive uses of natural resources occur in the lower or normally dewatered reaches of Mill Creek.

3. Particular Species of Fish and Wildlife Impacted
See No. 2 above.

4. Impact of Dewatering on Other Offstream Uses, Including But Not Limited to Agricultural, Industrial, Municipal, and Recreational Uses

Irrigation - Mill Creek is the second largest tributary of the Yellowstone River between Yellowstone National Park and Springdale, Montana, a distance of 85 miles. It is a free flowing, unregulated stream with no upstream storage reservoirs. Irrigators are dependent on the natural fluctuating flow in the stream for their water supply. Over 90 percent of the flow comes between April and September, with 40 percent of the annual flow occurring during June. The rapidly diminishing streamflow in July and August is the determining factor in water shortage problems for both irrigation water users and the stream's fishery. The affect on irrigated agriculture is that crop production has averaged only 39 percent of the potential production (SCS 1986). The gravelly soils have a total available water-holding capacity of about 2.7 inches. Light, frequent applications of water are required for high crop production. During the peak growing season, irrigation should take place on a five-day frequency. These soils also have a high intake rate, which makes surface flood irrigation difficult. Crop production and water use efficiency

have been greatly improved with the addition of sprinkler irrigation. Principal irrigated crops and yields per acre are shown with flood and sprinkler irrigation in the tables below (SCS 1986).

Irrigated crops and yields

Crop	Flood irrigated yield	Sprinkler irrigated yield
Barley-hay	2.0 tons	2.3 tons
Alfalfa Hay	2.5 tons	3.0 tons
(fall grazing)	1.0 AUM	1.0 AUM
Pasture	2.5 AUM	3.0 AUM

The weighted average of the crop water requirement (based on a ratio of 55 percent of the crop being alfalfa, 30 percent grass, and 15 percent grain) is 3.78 inches per acre during August. To meet the demand of irrigation diversions for 3,400 acres diverted below the old USGS gaging station, with a 30 percent application and delivery efficiency, 3,750 acre-feet are needed. This would require an average flow rate of 61.1 cfs during the month of August. However, the USGS records show the average monthly streamflow for August to be only 47.8 cfs. Clearly a shortage of water for irrigation exists in an average year during August.

Mill Creek Pipeline - In the past, seasonal water shortages and low delivery and on-farm efficiencies regularly damaged crops, causing reduced yields and loss of net farm income. In an effort to find a solution to these problems, about 30 water users (irrigating 3,300 acres) formed the Mill Creek Water District to construct and operate a gravity pipeline project. The project was designed and constructed by the SCS under the authority of the Watershed Protection and Flood Prevention Act, Public Law 83-566, with funding by the federal law, the DNRC Water Development Program, and the water users. Cost of the system was approximately $3 million. This new gravity pipeline system replaced three parallel canals and included one new diversion structure, 4.2 miles of canal, 11.6 miles of pressurized delivery pipelines, and new sprinkler systems on 2,160 acres of land formerly flood irrigated (DFWP lease proposal). The project was completed in 1991 and first used for the 1992 irrigation season. The operation, maintenance, and replacement of structures is the responsibility of the Mill Creek Water District. SCS will review the Water District's inspection, operation, and maintenance activities. Completion of the project reduced annual diversions of water from Mill Creek by approximately 15,800 acre-feet. Average August and September flows downstream from the project diversion should increase by about 2,400 acre-feet. This is equivalent to an additional flow of 20.2 cfs for these months. Some of this water will become available for junior appropriators, but the frequency of suffering zero flow at the mouth of Mill Creek for a seven-day period will be reduced from about 60 percent to about 20 percent (SCS 1986). Irrigation shortages may still occur, but less often. Appendix V, *The Yellowstone Cutthroat of the Upper Yellowstone River, Montana,* is included in this document to explain the fishery and the effects of the pipeline project on it.

There are no water right claims filed for municipal or industrial uses from Mill Creek.

Recreation in the form of fishing and possibly hunting occur on the lower dewatered reach of Mill Creek. There are no campgrounds or other recreational developments in this section of Mill Creek, and access is mostly through private land. The Montana Stream Access Law may allow some recreational use access, but permission to trespass should be pursued for recreational uses.

5. Probable Cause of Dewatering

Mill Creek has more of its water appropriated for irrigation use than the normal streamflow provides during certain periods of the year. In 1938, the District Court decreed 69 irrigation water rights on Mill Creek totaling 4,611 miners inches or 115.3 cfs. The temporary preliminary decree issued by the Montana Water Court in 1985 includes about 215 water right claims for consumptive use totaling 338.17 cfs or 13,526.8 miners inches.

It appears that much of the irrigation return flows and losses to groundwater re-enter the Yellowstone River rather than Mill Creek.

After the snowpack-induced runoff has subsided (normally in mid-summer), the diversion of water for irrigation and loss of water through the porous streambed are the primary causes of dewatering on Mill Creek.

At a public meeting to discuss this draft report there was a concern that there may not be a need to designate Mill Creek as a chronically dewatered stream if the new pipeline project would cause enough water to be left in the stream so it was no longer chronically dewatered. The pipeline project has not been in operation long enough to determine the actual effect. The pressurized pipeline outlet capacity above the pressurized pipeline inlets is 78 cfs and the combined inlet capacity of the pressurized pipeline is 60 cfs. The pressurized pipeline serves or is planned for approximately 3000 acres or 11.67 gpm per acre at the pipeline's creek diversion. Assuming the balance of the irrigated acres on Mill Creek use this water rate on the balance of the 1400 acres, then an additional 36 cfs is needed to satisfy the water needs if there were also on a pressurized sprinkler system similar to the one just installed. The 1400 acres are irrigated instead with a combination of open flood ditches, field pumped sprinkler irrigation systems that clearly use more water. At the very minimum the total demand if water is available is easily 114 cfs for 4300 acres. From the USGS records of the gaging station that was above diversions for 3400 acres and a computed demand of 88.5 cfs, the 10 year average flow during an average year is exceeded. This means that on the average the water demand exceeds these flows in August and September by 45 and 88 percent respectively. It appears that the existing water rights usually are able to fully utilize the flows of Mill Creek. Of course the water rights purchased for instream flow would remain in the creek.

6. Existence of Temporary or Final Decrees

Water Rights - On April 7, 1938, in the District Court of the Sixth Judicial District, State of Montana, Park County, Judge Berg, in case 7583, issued an order decreeing the waters of Mill Creek. Mill Creek water users indicated during a July 1993 public meeting that a water commissioner was normally appointed for Mill Creek. Park County records show that for the ten years prior to the unusually cool and wet 1993 irrigation season, a Water Commissioner was appointed. The Water Commissioner records for 1988-1990 show that by September first, irrigation water deliveries averaged less than 2,000 miners inches. That amount is about 40 percent of the water decreed by Judge Berg in case 7583. This would indicate that water demand exceeds water supply in most years.

On July 22, 1964 Judge Brownlee issued a supplemental decree for Mill Creek which which decreed three flood rights for 967 miners inches with a June 3, 1963 priority date and 30 flood rights for 5883 miners inches with a June 4, 1963 priority date.

As a part of the statewide adjudication of Montana's water, the Montana Water Court issued a temporary preliminary decree of the water rights in the Upper Yellowstone River Basin(43B) on January 16, 1985. Mill Creek is in this drainage basin. Water right issues brought out by objections or on motion of the court are currently being resolved. It is unknown at this time when all of the issues will be resolved and a preliminary decree issued. Appendix IV of this document includes a list of the water rights from Mill Creek included in the temporary preliminary decree, and permits and change authorizations that have been issued by DNRC for Mill Creek water.

Of the 338 cfs claimed and included in the temporary preliminary decree, 55 cfs are based on filed or use rights not included in the District Court decree. The Water Measurement Program would require measuring devices on all diversions from Mill Creek in the designated reach. Although the District Court can require measuring devices to administer the 1938 decree, not all of the claimed water uses on Mill Creek were included in that decree.

7. History, if any, of Conflict Among Water Right Holders on the Watercourse

The District Court issued the decree in case 7583 on April 7, 1938, to settle water right disputes on Mill Creek. The Court has since, upon the petition of owners of decreed water rights, hired a water commissioner to maintain the order of priority and diversion of the decreed water rights on Mill Creek. Even during the spring runoff the has been water shortages during low runoff years. The flood rights were decreed in 1964. This has been a normal procedure for most years. On other streams a conflict often exists between the decreed and non-decreed rights because the District Court does not administer rights not included in the District Court decree. The Water Measurement

Program, by requiring measuring devices on all diversions, can ensure that the mechanism is in place for a certain amount of self-policing.

Although serious controversy has been avoided by the district courts administration during times of shortage, both DFWP and the Mill Creek Water District have asked DNRC to designate Mill Creek as chronically dewatered and to require measuring devices on all diversions to help protect the instream flow leases and to minimize any future conflicts.

8. Practicality and Reasonableness of Installing Measuring Devices on Diversions Along the Watercourse

Measuring devices - The administrative rules do not specify that any particular type of measuring device must be installed. Examples of some measuring devices that would be adequate are parshall flume, weirs, constant head orifice, long throated flume, propeller flow meter, and metergate. Other devices may also adequately measure the flows and are adaptable to situations on Mill Creek. DNRC is required to approve plans and/or specifications of the measuring device prior to installation. This is intended to ensure that the measuring devices are of adequate size and suited to the situation.

During an August 3, 1993, informational tour of Mill Creek by Ron Schofield of DNRC Water Measurement Program, and Russell Smith, a Mill Creek pipeline water user, it was observed that some of the Mill Creek diversions have had measuring devices in the past. Most of these have deteriorated or are otherwise not currently operational. About eight diversions were observed, ranging in size from approximately 5 cfs capacity up to about 30 cfs capacity. There may also be several smaller diversions in the area where measuring devices may be considered.

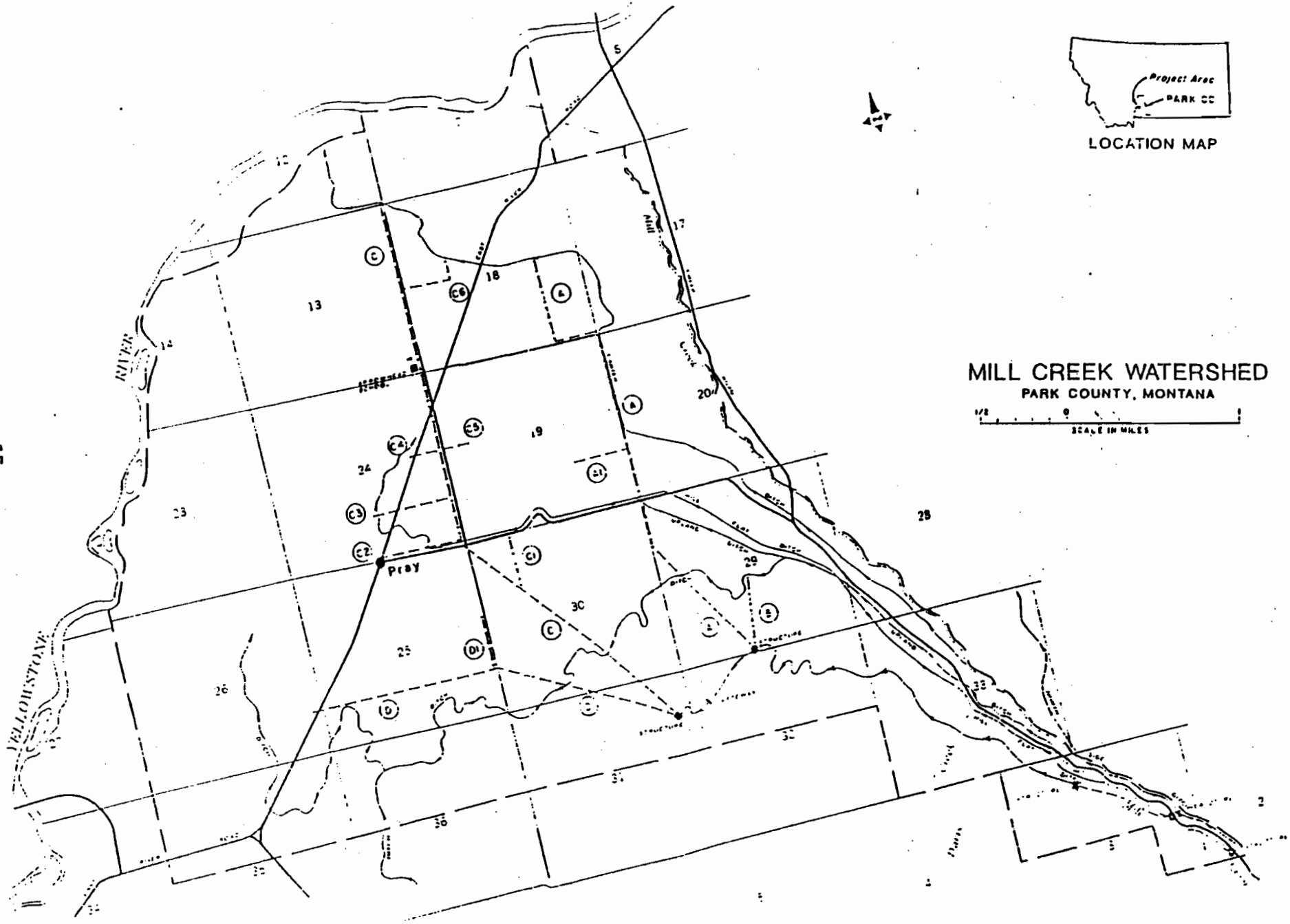
The Mill Creek pipeline has a four-foot parshall flume in good working condition that was installed when the project was built in 1992. This was the only operational measuring device that was observed during the informational tour on August 3, 1993. The diversions on Mill Creek seem to be readily accessible for installation, operation, and maintenance activities relating to measuring devices. Appendix VI consists of photographs of several diversions from Mill Creek and measuring devices or structures in the ditches.

The cost to acquire, install, and maintain a measuring device will vary with the size of the measuring device, the type, and its location. The cost should not be excessive compared to the normal operation and maintenance costs of an irrigation system. Selection of a type of measuring device and capacity design-help may be available from SCS, MSU Extension Service, manufacturers and/or suppliers of measuring devices, and natural resource consultants. Sources of financing for measuring devices may include the DNRC Water Development Program, SCS, and local banks or other lending agencies.

After checking the telephone directory and talking to local people it appears that contractors are readily available in the area. No specialized equipment should be required, and a small backhoe or hand labor and hand tools may be all that is necessary to install and maintain measuring devices. No delays in the Mill Creek Pipeline Project construction were experienced because of non-availability of contractors, materials, or equipment.

Installation time-frame - If the DNRC determines that Mill Creek is chronically dewatered and measuring devices are required, each diversion must have a suitable controlling device and measuring device operational no less than two years after the determination.

MILL CREEK PIPELINE



Installation extension - The Board of Natural Resources and Conservation may establish a deadline for acquiring and installing measuring and controlling devices, beyond two years from DNRC's identification of watercourses as chronically dewatered, for certain circumstances and conditions. A complete explanation of deadline extensions is found in the Appendix I of this report.

Permits - Various permits, which are required for working on or near a stream, might be needed by a water user to install and maintain measuring or controlling devices. The permit requirements (if any) for each situation may be different. It appears that the two-year time frame is sufficient to acquire any necessary permits and not delay the installation of measuring and controlling devices. A summary and explanation of the relevant permits is included in the Appendix II. It will be the responsibility of the owner or operator of the diversion to comply with any necessary permit requirements.

Recordkeeping - The diversions of water will be measured and a record of the amount of water diverted shall be kept by the owner or operator of the diversion. If the district court directs records to be kept by a court appointed water commissioner, then those records may be substituted for the period the commissioner records the water diverted. The water user should make a measurement and record of that measurement each time the amount of water diverted is started, stopped, or substantially changed. The records may be examined at any time by the DNRC.

A record of the water diverted for each diversion for the season shall be submitted to the DNRC on an annual basis by December 1, of each year. The water diversion records will be summarized and a report will be submitted to the Mill Creek water users at an annual meeting for their purpose of reviewing the previous season's water use and discussing water use for the next season.

9. Likelihood that the Installation of Measuring Devices will Significantly Help to:

Solve the chronically dewatered condition of the watercourse - DFWP has leased water rights on Mill Creek for instream flows to help solve the dewatered condition of the lower six miles of the stream. One of the leased water rights is part of the right with the earliest priority date on the stream. The SCS watershed plan for Mill Creek, the DFWP leasing study for instream flows, and statements from individuals all affirm that the lower reach of Mill Creek is commonly dewatered. The Mill Creek water commissioner records show that by September 1 (during the period of record), only 40 percent of the water rights decreed in case 7583 are satisfied. If we considered the water rights claimed in the statewide adjudication process, only 15 percent are satisfied. Requiring measuring and controlling devices to be installed, operated, and maintained and water diversions to be measured and recorded can provide the tools to ensure the instream water rights leased by DFWP are administered in their proper order of priority.

DFWP, Lessees; John Gray, Lessor; and the Mill Creek Water District, Lessor; have all requested the DNRC Water Measurement Program to consider Mill Creek a chronically dewatered watercourse and require measuring devices. This constitutes most of the water right holders on Mill Creek. Confidence that water is being administered accurately according to priority seems to be a goal of the Mill Creek water users.

Resolve conflicts among water right holders on the watercourse - Water use from Mill Creek is undergoing a major change as a result of the development of the Mill Creek Pipeline Project. Overall irrigation efficiency is expected to improve from a pre-project level of 8 percent to 44 percent in the affected project area. Crop yields will increase from 39 percent to 90 percent of potential yield. The benefits of the pipeline project include less water being diverted by the pipeline users. This is making more water available in Mill Creek. Some of this water has been leased by DFWP for instream flows, and part will become available for junior water rights. Measuring devices can help ensure that each user is getting the water to which he or she is entitled, also assuring junior users that each right is getting only the water to which it is entitled. DFWP has leased water for instream flows and has installed stream measuring stations. Both the Mill Creek Water District and DFWP have requested DNRC to consider requiring measuring devices on Mill Creek. With headgates and water measuring devices, the water users have the tools to monitor and manage their water use. DNRC has consulted with other agencies and groups and has considered the factors identified by the legislature in Montana Codes Annotated 85-2-150 (1993).

During the process of gathering information on Mill Creek and meetings with water users to discuss measuring devices, not once has an objection been made to measuring water. There are concerns about cost, authority, and reporting, but no one has objected to the concept of water measurement.

Conclusion

DNRC has determined that Mill Creek, for the reach beginning at the North Side Ditch and extending downstream to its confluence with the Yellowstone River, be designated as a chronically dewatered watercourse on which measuring devices and necessary controlling devices must be installed, operated, and maintained within two years or by April 15, 1996.

APPENDIX I

Extension Of Deadline For Installation

Extension Of Deadline For Installation (quote from Administrative Rules)

The BNRC may establish a deadline for acquiring and installing measuring devices beyond two (2) years from the department's identification of a chronically dewatered watercourse or portion of a watercourse for the following circumstances:

I. The BNRC may consider an extension of the deadline for installation of measuring devices on a watercourse or portion of a watercourse identified by the DNRC as chronically dewatered if the owners of at least fifty per cent (50%) of the appropriation facilities or the owners of twenty (20) appropriation facilities, which ever is less, petition the board to establish a deadline beyond two (2) years from the DNRC's identification of a watercourse or portion of a watercourse as chronically dewatered. The petition must be accompanied by a written justification addressing the finding that must be made by the BNRC. The petition must be received by the BNRC at least one hundred eighty (180) days prior to the ordered deadline. The BNRC must approve or deny the extension within ninety (90) days of receiving the petition. The BNRC may extend the deadline by a maximum of two (2) years. The BNRC's finding must be made from information presented by petitioners and participants at a scheduled BNRC meeting.

   A. At a minimum the BNRC must find:

      1. The two (2) year deadline is not practical for at least fifty per cent (50%) of the appropriation facilities.
      2. Installation of measuring devices is not practical because of factors including the availability of materials, labor and construction equipment, the time period necessary to obtain permits and to finance, acquire, and install controlling and measuring devices.
      3. The public welfare will not be negatively impacted by an extended deadline because:
         a. there are no significant adverse environmental impacts; and
         b. there are no adverse effects on the quality of water for existing beneficial uses.

II. An owner or owners of an individual appropriation facility on an identified watercourse may request an extension of a deadline for installation of measuring devices. The request for extension must be presented to the BNRC at least one hundred eighty (180) days prior to the ordered deadline. The BNRC will determine if an extension is to be granted and if so will specify a length of the extension. The BNRC may request the DNRC to investigate the request and report it's findings to the BNRC. Additional requests for individual extensions may be considered by the BNRC. Reasons for an individual extension will be limited to:

   A. extreme health or financial circumstances
   B. circumstances beyond the owner's control which delay any necessary permits from being obtained; or

C. an owner who takes possession of the appropriation facility with insufficient time to acquire and install controlling and measuring devices before the established deadline.

III. The BNRC may extend the deadline for having a suitable controlling device and measuring device installed on an appropriation facility which is not currently used because the land to which the water is applied is contracted under a state or federal conservation set-aside program or the existing water right is leased pursuant to Montana Code Annotated 85-2-436 (1993), or the existing water right has a temporary change pursuant to Montana Code Annotated 85-2-407 (1993). However, the appropriation facility must have a suitable controlling and measuring device before it can be put into service. It is the responsibility of the owner or operator of the appropriation facility to request the BNRC to consider an extension of the deadline.

IV. The BNRC may extend the deadline for having a suitable measuring device for an established instream water right for a beneficial use dependent upon an appropriation facility on an identified chronically dewatered watercourse or portion of a watercourse. If there are no junior water rights or a measuring device will probably not help to solve the chronically dewatered condition or resolve conflicts among water right holders, an extension of the deadline may be granted by the BNRC. The owner or owners of an instream water right must request an extension from the BNRC. The extension will be for up to two (2) years. Additional requests for extensions may be considered by the BNRC.

A. Instream water rights for livestock drinking directly from a watercourse and waterspreading and natural overflow irrigation rights will not be required to have a measuring device.

V. A one (1) year extension of the deadline for acquiring and installing measuring devices may be granted by the BNRC for the owner or owners of appropriation facilities who are consolidating diversions or ditches.

APPENDIX II

Environmental Assessment

Environmental Assessment

The following is a brief summary of environmental information about the Mill Creek area.

I. Threatened or endangered species - When the United States Department of Agriculture, Soil Conservation Service (SCS) wrote a watershed plan for the Mill Creek pipeline project, the U.S. Fish and Wildlife Service (USFWS) was consulted. USFWS indicated that three species listed as threatened or endangered may occur in or adjacent to the pipeline project area. Any water measuring devices required by the water measurement program would also be within the watershed plan area.

   A. Grizzly bears are found in the upper Mill Creek basin within the Absaroka-Beartooth Wilderness of the Gallatin National Forest. But there have been no known grizzly bear sightings in recent years in the area where measuring devices may be required.
   B. Bald eagles occasionally roost in the riparian woodland of lower Mill Creek when feeding out of the Yellowstone River. Any additional flows resulting from improved water management may benefit bald eagles by increasing the forage base available to the eagles.
   C. Peregrine falcons may fly through the area, but their use of the area is incidental and no roosting or nesting is known to occur.

II. Wetlands - Measuring devices and controlling devices on diversions of water from Mill Creek should not have any affect on wetlands. But if improved water management and efficiency results from the use of measuring devices, irrigation-induced wetlands may be altered.

III. Historic and archaeological resources - A cultural resources inventory was conducted in 1985 for the SCS watershed plan report for the Mill Creek pipeline project. No sites were identified that were eligible for the National Register. J. Michael Ryan, Archaeologist with the United States Department of Agriculture conducted the inventory, and a Montana State Historic Preservation Officer was consulted and concurred with his findings.

IV. Floodplains - Measuring devices and controlling devices would probably be within the floodplain. All installation and construction must be compatible with the Montana Floodplain and Floodway Management Act.

V. Visual - Structures are already in place on some of the diversions from Mill Creek. These have not appeared to be objectionable. Any new installations and the associated construction activities should quickly blend with the existing surroundings. No detrimental visual impact is anticipated.

VI. Water quality - No serious water quality problems are anticipated. Any construction associated with the installation or maintenance of measuring devices and/or controlling devices must comply with the permits that may be necessary for activities within a streambed. If measuring devices help to solve

the dewatered condition of Mill Creek, the overall water quality may be improved.

VII. Wildlife - Use of the area for wildlife should not be adversely affected. However, construction or maintenance activities could cause minor adjustments to the normal routine of area wildlife. If measuring devices help to solve the dewatered condition of the watercourse, wildlife on the lower end of the stream may benefit from the increased flows.

VIII. Unique areas - No ecologically unique and/or sensitive environments have been identified in this area. Installation will take place on areas which have already been disturbed from past activities.

There do not appear to be any significant environmental problems that could be caused by the decision to require installation and maintenance of water measuring devices on Mill Creek. In fact, it may prove beneficial if measuring devices help to more efficiently manage water diversions and the chronically dewatered situation in Mill Creek is reduced. Based on the information currently available, an environmental impact statement should not be required. However, site-specific conditions at each point of diversion requiring a measuring or controlling device will be examined by DNRC at the time of approval of the plans or specifications of the project.

APPENDIX III

Permits

Permits

This is a list of permits which should be considered before installing any measuring or controlling device. Part of this information has been excerpted from A GUIDE TO STREAM PERMITTING IN MONTANA developed by the Montana Association of Conservation Districts.

Montana Stream Protection Act (124 Permit)

Who must apply: Any agency or subdivision of federal, state, county, or city government proposing a project which may affect the bed or banks of any stream in Montana.
Activities requiring a permit: Any project including the construction of new facilities or the modification, operation, and maintenance of any existing facility which may affect the natural existing shape and form of any stream or its banks or tributaries.
Administered by: Montana Department of Fish, Wildlife and Parks (DFWP).
Comments: This is a one page permit application. It requires a preliminary set of plans or sketches to be included. The permit application is processed by the Region 3 fish manager, Dick Vincent, at 1400 South 19th, Bozeman, MT 59801. The Region 3 phone number is (406) 994-4042. The application is very straightforward and should not be a hardship to complete. DFWP has up to 60 days to approve, modify, or deny the application. Usually the processing time has been much less, three to seven days. There is no fee for submitting the application. Remember this permit is required only of an agency or subdivision of government. You should probably check to see if this permit is needed if you are part of an irrigation district or your project has government funding or sponsorship.

Montana Floodplain and Floodway Management Act (Floodplain Development Permit)

Who must apply: Anyone planning new construction within the designated 100-year floodplain.
Activities requiring a permit: New construction including, but not limited to, placement of fill, roads, bridges, culverts, transmission lines, irrigation facilities, storage of equipment or materials, excavation, and new construction of or additions to mobile homes and residential and commercial buildings.
Administered by: local floodplain coordinator, who may be the city/county planner, sanitarian, building inspector, town clerk, or county commissioner.
Comments: The 100-year floodplain for Mill Creek has been designated. The local floodplain coordinator is Ellen Woodbury at 414 E. Callender, Livingston, MT 59047, phone: (406) 222-6120. The application process may take up to 60 days and fees are set by the local government.

Short-term Exemption from Montana's Surface Water Quality Standards (3A Authorization)

Who must apply: Any person, agency, or entity, both public and private, initiating a short-term activity that may cause unavoidable short-term violations of state surface water quality standards for turbidity, total dissolved solids, or temperature.
Activities requiring an authorization: Any activity in any state water that will cause unavoidable short-term violations of water quality standards.
Administered by: Water Quality Bureau, Montana Department of Health and Environmental Sciences.
Comments: This application will be processed by Jack Thomas of the Department of Health and Environmental Sciences, Water Quality Bureau, Room A-206, Cogswell Building, Helena, MT 59620. The application is a two-page request for information which seems to be fairly easy to complete. The normal time frame for processing this application is 5 to 10 working days. There is no application fee for processing this permit. Although the DFWP may waive this permit requirement if it is reviewing a project under the Natural Streambed and Land Preservation Act (310 permit) or the Stream Protection Act (124 permit), it may be wise to make sure all the requirements are in order. This permit seems fairly easy to comply with, does not require a long period of time to process, and has no filing fee, but noncompliance could be a real problem to any project. Be sure to check on this one.

Montana Natural Streambed and Land Preservation Act (310 Permit Program)

Who must apply: Any private non-governmental individual or corporation that proposes to work in or near a stream on public or private land.
Activities requiring a permit: Any activity that physically alters or modifies the bed and banks of a stream.
Administered by: Board of Supervisors of the conservation district in which the project takes place.
Comments: This permit is for **non-governmental** individuals or corporations and is administered by the Board of Supervisors of the Park County Conservation District located at 414 E. Callender, Livingston, MT 59047, phone: (406) 222-6120. A team consisting of a conservation district supervisor, a DFWP biologist, and the applicant will conduct a site inspection. There is no charge for a 310 permit and the supervisors have 60 days to approve or deny a permit. You can expect the local conservation district personnel to help you through this permit.

Montana Land-use License or Easement on Navigable Waters

Who must apply: Any entity proposing a project on lands below the low water mark of navigable waters as determined by the Department of State Lands.
Activities requiring a permit: The construction or placement of a structure or improvement on lands below the low-water mark of navigable streams. Customary and historic maintenance and repair of existing irrigation facilities or activities that do not alter, modify, or change the existing shape or impact the potential navigability of the waterway are exempt.
Administered by: Montana Department of State Lands (DSL).

Comments: Mill Creek is not listed as a navigable water way to which the State of Montana claims ownership of the streambed. **This permit will not be necessary at this time.** However, if Mill Creek becomes a navigable water way by court action or some other means, this permit could be necessary. This is a very difficult, time-consuming, and expensive permit.

Montana Water Use Act (Water Right Permit System)

Who must apply: Any person, agency or government entity intending to acquire new or additional water rights in the state.
Activities requiring a permit: (Form 600) A person must obtain a beneficial water use permit before commencing to construct a new or additional diversion, withdrawal, impoundment, or distribution works for any surface water, or groundwater of more than 35 gallons per minute not to exceed 10 acre-feet per year.
Activities requiring a change authorization: (Form 606) A change authorization is required any time a water user intends to change the point of diversion, place of use, purpose of use, or place of storage. If unsure whether you need a change authorization, contact DNRC for assistance before making the change.
Administered by: Water Rights Bureau of the Department of Natural Resources and Conservation (DNRC).
Comments: The permit or change authorization application would be processed by the DNRC Regional Office located at 201 South Wallace Avenue, Bozeman, MT 59715, phone: (406) 586-3136. The application fee is $100 and the process may take up to six months to complete. Remember, this permit or change authorization is only necessary if you are applying for a new or additional use of water or changing your existing water right as noted above.

Federal Clean Water Act (404 Permit)

Who must apply: Any person, agency, or entity, either public or private, proposing a project that will result in the discharge or placement of dredged or fill material into waters of the United States, including wetlands.
Activities requiring a permit: Any activity that will result in the discharge of dredged or placement of fill material into waters of the United States, including their adjacent wetlands.
Administered by: United States Army Corps of Engineers.
Comments: This permit, if necessary, will be processed by Robert McInerney, U.S. Army Corps of Engineers, 1520 East Sixth Avenue, Helena, MT 59620, phone: (406) 444-6670. A Nationwide Permit may be issued in a week or less, an Individual or General Permit will require a public review and may take 60 to 90 days. The application form is not difficult and the Corps personnel are very willing to help in the application process. Application fees vary and may be up to $100. It is very important to determine whether your project requires this permit and, if so, to follow the application procedures.

APPENDIX IV

List of Water Rights

SOURCE NAME SEARCH
RON REQUEST
INDEX BY POINT OF DIVERSION

WATER RIGHT ID	USE	FLOW RATE		PRIORITY DATE	POINT OF DIVERSION QTR SEC	SEC	TWP	RGE	CN	TRIB	SOURCE NAME	OWNER NAME
43B -W-210762-00	IR	2.25	C	06/01/1930	NESWNE	03	05S	09E	PA		MILL CREEK	WARFIELD RANCH INC
43B -W-037050-00	IR	4.25	C	06/30/1880	SWSESW	08	05S	09E	PA		MILL CREEK	SMITH, JOEL RANCE FAMILY TRUST
43B -O-040329-00	IR			00/00/0000	SWSESW	08	05S	09E	PA		MILL CREEK	SMITH, JOEL RANCE FAMILY TRUST
43B -O-040330-00	IR			00/00/0000	SWSESW	08	05S	09E	PA		MILL CREEK	SMITH, JOEL RANCE FAMILY TRUST
43B -O-040331-00	IR			00/00/0000	SWSESW	08	05S	09E	PA		MILL CREEK	SMITH, JOEL RANCE FAMILY TRUST
43B -W-131379-00	IR	1.00	C	09/01/1889	SWSESW	08	05S	09E	PA		MILL CREEK	PARADISE VALLEY COMMUNITY CHURC
43B -W-196981-00	IR	2.88	C	06/01/1889	E2NW	17	05S	09E	PA		MILL CREEK	FIRST SECURITY BANK OF LIVINGST SHELTON, JR JOHN P
43B -W-191061-00	IR	0.63	C	08/01/1889	NENESW	17	05S	09E	PA		MILL CREEK	WINES WALLY WINES JUDY ADAMS
43B -W-194586-00	IR	75.00	C	06/30/1880	NENESW	17	05S	09E	PA		MILL CREEK	LEE JERRY LEE VANGIE
43B -W-194588-00	ST			06/30/1880	NENESW	17	05S	09E	PA		MILL CREEK	ELVIDGE GARY
43B -W-119354-00	IR	25.00	C	04/01/1958	NESENW	17	05S	09E	PA		MILL CREEK	MONTANA, STATE OF DEPT OF NATUR
43B -W-119355-00	IR			04/01/1958	NESENW	17	05S	09E	PA		MILL CREEK	MONTANA, STATE OF DEPT OF NATUR
43B -W-119357-00	ST			04/01/1958	NESENW	17	05S	09E	PA		MILL CREEK	MONTANA, STATE OF DEPT OF NATUR
43B -W-119358-00	ST			04/01/1958	NESENW	17	05S	09E	PA		MILL CREEK	MONTANA, STATE OF DEPT OF NATUR
43B -W-196982-00	IR	2.63	C	06/01/1889	NESENW	17	05S	09E	PA		MILL CREEK	FIRST SECURITY BANK OF LIVINGST SHELTON, JR JOHN P
43B -W-196983-00	IR	2.88	C	06/01/1889	NESENW	17	05S	09E	PA		MILL CREEK	YOUNG, HENRY O TRUST YOUNG, BETTY M TRUST YOUNG, JR JOHN P FIRST SECURITY BANK OF LIVINGST
43B -W-039201-00	IR	0.38	C	06/01/1890	NWNENW	17	05S	09E	PA		MILL CREEK	WARFIELD NORMA P WARFIELD, IV WILLIAM S
43B -W-039202-00	IR	1.13	C	07/01/1906	NWNENW	17	05S	09E	PA		MILL CREEK	WARFIELD NORMA P WARFIELD, IV WILLIAM S
43B -W-039206-00	IR	0.25	C	08/01/1889	NWNENW	17	05S	09E	PA		MILL CREEK	WARFIELD NORMA P WARFIELD, IV WILLIAM S
43B -W-107140-00	IR	2.75	C	06/01/1889	SENENW	17	05S	09E	PA		MILL CREEK	ALLEN BERNARD N ALLEN MARGARET M

SOURCE NAME SEARCH
RON REQUEST
INDEX BY POINT OF DIVERSION

WATER RIGHT ID	USE	FLOW RATE	PRIORITY DATE	POINT OF DIVERSION QTR SEC	SEC	TWP	RGE	CN	TRIB	SOURCE NAME	OWNER NAME		
43B -W-107143-00	IR	3.79 C	10/20/1934	SENENW	17	05S	09E	PA		MILL CREEK	ALLEN	BERNARD	N
											ALLEN	MARGARET	M
43B -W-196984-00	IR	15.00 C	06/04/1963	SENENW	17	05S	09E	PA		MILL CREEK	FIRST SECURITY BANK OF LIVINGST		
											SHELTON, JR	JOHN	P
											YOUNG, HENRY O TRUST		
											YOUNG, BETTY M TRUST		
43B -W-212609-00	IR	0.90 C	06/01/1913	SENENW	17	05S	09E	PA		MILL CREEK	SCHILLING	EDWARD	L
43B -W-035254-00	IR	4.88 C	06/04/1963	SESENW	17	05S	09E	PA		MILL CREEK	NICHOLS, JOHN Q TRUST		
43B -W-023566-00	ST		06/30/1880	SWSWNE	20	05S	09E	PA		MILL CREEK	WOLTER	MARCIA	B
											WOLTER	NICHOLAS	J
43B -W-023567-00	IR	0.50 C	06/30/1880	SWSWNE	20	05S	09E	PA		MILL CREEK	WOLTER	MARCIA	B
											WOLTER	NICHOLAS	J
43B -W-036724-00	IR	10.00 C	06/04/1963	SWSWNE	20	05S	09E	PA		MILL CREEK	MONTANA RANCH PROPERTIES INC		
43B -W-036726-00	IR	4.00 C	08/05/1911	SWSWNE	20	05S	09E	PA		MILL CREEK	MONTANA RANCH PROPERTIES INC		
43B -W-005342-00	ST		12/31/1962	W2SW	28	05S	09E	PA		MILL CREEK	SCHROEDER III	FRANK	C
43B -G-210767-00	IR	1.50 C	06/01/1890	E2NWSW	28	05S	09E	PA		MILL CREEK	SCHROEDER III	FRANK	C
43B -W-210767-00	IR	0.25 C	06/01/1890	SWSESW	28	05S	09E	PA	UT	MILL CREEK	SCHROEDER III	FRANK	C
43B -W-210768-00	IR	0.75 C	06/04/1963	SWSESW	28	05S	09E	PA		MILL CREEK	SCHROEDER III	FRANK	C
43B -W-210770-00	IR	0.50	06/01/1898	SWSESW	28	05S	09E	PA		MILL CREEK	SCHROEDER III	FRANK	C
43B -W-194537-00	IR	1.76 C	04/01/1912	SWNENE	29	05S	09E	PA		MILL CREEK	MELIN	WANDA	M
											MELIN	ROBERT	L
43B -W-194539-00	IR	0.38 C	06/01/1893	SWNENE	29	05S	09E	PA		MILL CREEK	MELIN	ROBERT	L
											MELIN	WANDA	M
43B -W-194540-00	IR	0.75 C	06/01/1898	SWNENE	29	05S	09E	PA		MILL CREEK	MELIN	ROBERT	L
											MELIN	WANDA	M
43B -W-194541-00	IR	0.63 C	08/06/1911	SWNENE	29	05S	09E	PA		MILL CREEK	MELIN	WANDA	M
											MELIN	ROBERT	L
43B -W-194542-00	IR	1.53 C	06/04/1963	SWNENE	29	05S	09E	PA		MILL CREEK	MELIN	ROBERT	L
											MELIN	WANDA	M
43B -W-193658-00	IR	0.75 C	06/01/1904	NENW	33	05S	09E	PA		MILL CREEK	SILVESTRONE	ROBERT	
											SILVESTRONE	PATRICE	
43B -W-193659-00	IR	1.13 C	06/01/1904	NENW	33	05S	09E	PA		MILL CREEK	SILVESTRONE	ROBERT	

WATER RIGHT ID	USE	FLOW RATE		PRIORITY DATE	POINT OF DIVERSION QTR	SEC	SEC	TWP	RGE	CN	TRIB	SOURCE NAME	OWNER NAME		
													SILVESTRONE	PATRICE	
43B -W-193660-00	IR	1.13	C	06/01/1894	NENW	33	05S	09E		PA		MILL CREEK	SILVESTRONE	ROBERT	
													SILVESTRONE	PATRICE	
43B -W-193661-00	IR	0.50	C	06/04/1963	NENW	33	05S	09E		PA		MILL CREEK	SILVESTRONE	ROBERT	
													SILVESTRONE	PATRICE	
43B -W-194772-00	ST			06/01/1893	NESESE	33	05S	09E		PA		MILL CREEK	LEMONT LAND CORPORATION		
													MALCOLM	PHILIP	R
													MALCOLM	SHARON	S
43B -W-194778-00	IR	0.50	C	06/01/1893	NESESE	33	05S	09E		PA		MILL CREEK	LEMONT LAND CORPORATION		
													MALCOLM	PHILIP	R
													MALCOLM	SHARON	S
43B -W-103502-00	IR	1.13	C	06/01/1894	NWNWSE	33	05S	09E		PA		MILL CREEK	MARCHINGTON	HAROLD	R
43B -W-103503-00	IR	1.13	C	06/01/1904	NWNWSE	33	05S	09E		PA		MILL CREEK	MARCHINGTON	HAROLD	R
43B -W-103504-00	IR	0.38	C	06/01/1904	NWNWSE	33	05S	09E		PA		MILL CREEK	MARCHINGTON	MARGARET	J
													MARCHINGTON	HAROLD	R
43B -W-103505-00	IR	1.13	C	06/01/1894	NWNWSE	33	05S	09E		PA		MILL CREEK	MARCHINGTON	HAROLD	R
43B -W-103506-00	IR	4.50	C	06/04/1963	NWNWSE	33	05S	09E		PA		MILL CREEK	MARCHINGTON	HAROLD	R
43B -W-195243-00	DM	0.06	C	06/01/1903	NWNWSE	33	05S	09E		PA		MILL CREEK	KLARR	MELISSA	A
43B -W-195244-00	DM	0.06	C	06/01/1932	NWNWSE	33	05S	09E		PA		MILL CREEK	KLARR	MELISSA	A
43B -W-030427-00	IR	121.20	G	06/01/1894	NWSWNE	33	05S	09E		PA		MILL CREEK	SCHILLING	EDWARD	L
													DOUBLE AA CORP		
43B -W-030431-00	IR	0.27	C	06/01/1904	NWSWNE	33	05S	09E		PA		MILL CREEK	DOUBLE AA CORP		
43B -W-030432-00	IR	282.80	G	06/04/1963	NWSWNE	33	05S	09E		PA		MILL CREEK	SCHILLING	EDWARD	L
													DOUBLE AA CORP		
43B -W-035249-00	IR	4.25	C	06/30/1888	NWSWNE	33	05S	09E		PA		MILL CREEK	GRAY	JOHN	O
													GRAY	DONNA	B
43B -W-035250-00	IR	0.63	C	08/01/1889	NWSWNE	33	05S	09E		PA		MILL CREEK	GRAY	JOHN	O
													GRAY	DONNA	B
43B -W-101015-00	IR	0.38	C	06/01/1893	NWSWNE	33	05S	09E		PA		MILL CREEK	PETRICH	GERALD	F
													PETRICH	EUNICE	A
43B -W-101016-00	IR	0.38	C	06/01/1893	NWSWNE	33	05S	09E		PA		MILL CREEK	PETRICH	EUNICE	A
													PETRICH	GERALD	F
43B -W-125015-00	IR	422.00	G	06/04/1963	NWSWNE	33	05S	09E		PA		MILL CREEK	GRIFFIN	ROBERT	K

WATER RIGHT ID	USE	FLOW RATE		PRIORITY DATE	POINT OF DIVERSION QTR	SEC	SEC	TWP	RGE	CN	TRIB	SOURCE NAME	OWNER NAME		
43B -W-125016-00	IR	0.40	C	06/01/1904	NWSWNE	33	05S	09E	PA			MILL CREEK	GRIFFIN	ROBERT	K
43B -W-125018-00	IR	180.00	G	06/01/1894	NWSWNE	33	05S	09E	PA			MILL CREEK	GRIFFIN	ROBERT	K
43B -W-193653-00	ST			06/01/1894	NWSWNE	33	05S	09E	PA			MILL CREEK	SILVESTRONE	ROBERT	
													SILVESTRONE	PATRICE	
43B -W-193654-00	ST			06/01/1904	NWSWNE	33	05S	09E	PA			MILL CREEK	SILVESTRONE	ROBERT	
													SILVESTRONE	PATRICE	
43B -W-194335-00	ST			06/01/1894	NWSWNE	33	05S	09E	PA			MILL CREEK	HARTUNG	PHILIP	D
													MEYERS	JERRY	R
													MEYERS	HELEN	R
													STRONG	EVELYN	M
													STRONG	GREGORY	D
													STRONG	H WESLEY	
													STRONG	DONALD	P
													STRONG	SHAWNA	M
													STRONG	PATRICIA	C
43B -W-194337-00	IR	1.42	C	06/01/1894	NWSWNE	33	05S	09E	PA			MILL CREEK	HARTUNG	PHILIP	D
													MEYERS	JERRY	R
													MEYERS	HELEN	R
													STRONG	GREGORY	D
													STRONG	H WESLEY	
													STRONG	DONALD	P
													STRONG	SHAWNA	M
													STRONG	PATRICIA	C
													DAVIDSON	JOE	M
													DAVIDSON	MARY	C
43B -W-194338-00	IR	1.73	C	06/01/1904	NWSWNE	33	05S	09E	PA			MILL CREEK	HARTUNG	PHILIP	D
													MEYERS	JERRY	R
													MEYERS	HELEN	R
													STRONG	GREGORY	D
													STRONG	H WESLEY	
													STRONG	DONALD	P
													STRONG	SHAWNA	M
													STRONG	PATRICIA	C
43B -W-194341-00	IR	2.81	C	06/04/1963	NWSWNE	33	05S	09E	PA			MILL CREEK	HARTUNG	PHILIP	D
													MEYERS	JERRY	R
													MEYERS	HELEN	R
													STRONG	GREGORY	D
													STRONG	H WESLEY	
													STRONG	DONALD	P
													STRONG	SHAWNA	M
													STRONG	PATRICIA	C
43B -W-194469-00	IR	58.34	G	06/01/1894	NWSWNE	33	05S	09E	PA			MILL CREEK	CROCITTO	EDWARD	

WATER RIGHT ID	USE	FLOW RATE		PRIORITY DATE	POINT OF DIVERSION QTR SEC	SEC	TWP	RGE	CN	TRIB	SOURCE NAME	OWNER NAME		
												GENTRY	FRANCES	A
												GENTRY	BERT	D
												PHILLIPS	SHIRLEY	A
43B -W-194470-00	IR	0.13	C	06/01/1904	NWSWNE	33	05S	09E	PA		MILL CREEK	CROCITTO	EDWARD	
												GENTRY	BERT	D
												GENTRY	FRANCES	A
												PHILLIPS	SHIRLEY	A
43B -W-194474-00	IR	139.20	G	06/04/1963	NWSWNE	33	05S	09E	PA		MILL CREEK	GENTRY	BERT	D
												GENTRY	FRANCES	A
												CROCITTO	EDWARD	
												PHILLIPS	SHIRLEY	A
43B -W-194476-00	ST			06/01/1894	NWSWNE	33	05S	09E	PA		MILL CREEK	GENTRY	BERT	D
												GENTRY	FRANCES	A
												CROCITTO	EDWARD	
												PHILLIPS	SHIRLEY	A
43B -W-195240-00	IR	5.00	C	06/04/1963	NWSWNE	33	05S	09E	PA		MILL CREEK	WINES	WALLACE	M
												SUMMER	ROGER	F
												PIHL	RONALD	W
												PIHL	DESIREE CLARK	
												DEANS	WILLIAM	P
												DEANS	WENDY	D
43B -W-195241-00	IR	2.25	C	06/01/1904	NWSWNE	33	05S	09E	PA		MILL CREEK	WINES	WALLACE	M
												SUMMERS	ROGER	F
												PIHL	RONALD	W
												PIHL	DESIREE CLARK	
												DEANS	WILLIAM	P
												DEANS	WENDY	D
43B -W-195242-00	IR	2.25	C	06/01/1894	NWSWNE	33	05S	09E	PA		MILL CREEK	SUMMERS	ROGER	F
												WINES	WALLACE	M
												PIHL	RONALD	W
												PIHL	DESIREE CLARK	
												DEANS	WILLIAM	P
												DEANS	WENDY	D
43B -V-005862-00	FW	41.40	C	04/01/1883	NWSW	02	06S	09E	PA		MILL CREEK	MONTANA, STATE OF DEPT OF FISH		
43B -G-030427-00	IR	2.43	C	06/01/1894	NWSW	02	06S	09E	PA		MILL CREEK	CHURCH UNIVERSAL & TRIUMPHANT I		
43B -V-035249-00	FW	6.13	C	06/30/1888	NWSW	02	06S	09E	PA		MILL CREEK	MONTANA, STATE OF DEPT OF FISH		
43B -P-058435-00	ST			08/08/1985	NWSW	02	06S	09E	PA		MILL CREEK	PIHL	DESIREE	
	NS	50.00	G									PIHL	RONALD	
43B -T-065509-00	NS			00/00/0000	NWSW	02	06S	09E	PA		MILL CREEK	DOUBLE AA CORP		
43B -G-005861-00	IR	8.63	C	06/04/1963	SENWSW	02	06S	09E	PA		MILL CREEK	PIRTZ	DORIS	M

WATER RIGHT ID	USE	FLOW RATE		PRIORITY DATE	POINT OF DIVERSION QTR SEC	SEC	TWP	RGE	CN	TRIB	SOURCE NAME	OWNER NAME		
												PIRTZ	RICHARD	F
43B -G-007354-00	IR	0.65	C	05/01/1904	SENWSW	02	06S	09E	PA		MILL CREEK	MASSENA	SHERMAN	R
												MASSENA	L	L
43B -G-007355-00	IR	0.05	C	05/01/1904	SENWSW	02	06S	09E	PA		MILL CREEK	KNOLL	AMY	
												MAURO, JR	PATRICK	J
												MAURO	AMY	
43B -G-016047-00	IR	0.40	C	06/01/1904	SENWSW	02	06S	09E	PA		MILL CREEK	SHIMMIN	CAROLYN	M
												SHIMMIN	RILEY	E
43B -G-016048-00	IR	0.91	C	06/01/1903	SENWSW	02	06S	09E	PA		MILL CREEK	SHIMMIN	BRUCE	W
												SHIMMIN	ELMA	M
43B -G-023536-00	IR	3.00	C	05/01/1905	SENWSW	02	06S	09E	PA		MILL CREEK	FEARING	CONSTANCE	M
43B -G-035215-00	IR	774.74	G	06/01/1903	SENWSW	02	06S	09E	PA		MILL CREEK	FAIRCHILD	ALAN	
												FAIRCHILD	MARSHA	
43B -G-035249-00	IR	12.51	C	06/30/1880	SENWSW	02	06S	09E	PA		MILL CREEK	GRAY	JOHN	O
												GRAY	DONNA	B
43B -G-035254-00	IR	4.88	C	06/04/1963	SENWSW	02	06S	09E	PA		MILL CREEK	NICHOLS, ELIZABETH H ESTATE OF		
43B -G-037107-00	ST			06/01/1903	SENWSW	02	06S	09E	PA		MILL CREEK	FAIRCHILD	MARSHA	A
	IR	1.88	C									FAIRCHILD	ALAN	E
43B -G-039204-00	IR	4.75	C	06/01/1891	SENWSW	02	06S	09E	PA		MILL CREEK	BAR WALKING Y BAR RANCH		
43B -T-005784-00	IR			00/00/0000	SENWSW	02	06S	09E	PA		MILL CREEK	TAYLOR RANCH WATER USERS INC		
43B -G-101027-00	IR	2.13	C	06/01/1894	SENWSW	02	06S	09E	PA		MILL CREEK	BUSBY	BENNA	K
43B -G-101079-00	ST			01/19/1923	SENWSW	02	06S	09E	PA		MILL CREEK	RIGLER	PAUL	E
	IR	17.00	C									RIGLER	DAVID	G
43B -G-101092-00	IR	0.70	C	05/01/1904	SENWSW	02	06S	09E	PA		MILL CREEK	HATCH	TERRANCE	E
43B -G-103499-00	IR	10.85	C	04/01/1904	SENWSW	02	06S	09E	PA		MILL CREEK	MARCHINGTON	MARGARET	J
												MARCHINGTON	HAROLD	R
43B -G-103676-00	IR	0.05	C	05/01/1904	SENWSW	02	06S	09E	PA		MILL CREEK	BORG	WALTER	R
43B -G-191096-00	IR	4.87	C	06/04/1963	SENWSW	02	06S	09E	PA		MILL CREEK	MALONE	MARTIN	C
												MALONE	GAYLEEN	M
43B -G-193653-00	ST	1.13	C	06/01/1894	SENWSW	02	06S	09E	PA		MILL CREEK	SILVESTRONE	PATRICE	
	FL	1.13	C									SILVESTRONE	ROBERT	
43B -G-193659-00	ST	1.13	C	06/01/1904	SENWSW	02	06S	09E	PA		MILL CREEK	SILVESTRONE	PATRICE	

WATER RIGHT ID	USE	FLOW RATE	PRIORITY DATE	POINT OF DIVERSION QTR SEC SEC TWP RGE CN	TRIB	SOURCE NAME	OWNER NAME		
	IR	1.13 C					SILVESTRONE	ROBERT	
43B -G-193676-00	ST	151.47 G	04/01/1883	SENWSW 02 06S 09E PA		MILL CREEK			
	IR	151.47 G					BUSBY	VERNON	R
	DM	151.47 G					BUSBY	C JENIVE	
43B -G-193695-00	FL	4.50 C	06/01/1903	SENWSW 02 06S 09E PA		MILL CREEK	WARFIELD RANCH INC		
43B -G-193703-00	IR	1.50 C	06/04/1963	SENWSW 02 06S 09E PA		MILL CREEK	SCHRAM	GUY	E
							SCHRAM	MARLENE	A
43B -G-194192-00	ST		04/01/1883	SENWSW 02 06S 09E PA		MILL CREEK			
	IR	1.00 C					RIEBEEK	MICHAEL	
43B -G-194201-00	IR	0.76 C	06/01/1903	SENWSW 02 06S 09E PA		MILL CREEK	NEAL	RUTH	K
							NEAL	ARCHIE	D
43B -G-194335-00	ST		06/01/1894	SENWSW 02 06S 09E PA		MILL CREEK	MEYERS	HELEN	R
	IR	15.65 C					MEYERS	JERRY	R
							STRONG	GREGORY	D
							STRONG	DONALD	P
							STRONG	SHAWNA	M
							STRONG	PATRICIA	C
43B -G-194388-00	ST		06/04/1963	SENWSW 02 06S 09E PA		MILL CREEK			
	IR	0.50 C					HOWE	KATHERINE	
43B -G-194469-00	ST	112.20 G	06/01/1894	SENWSW 02 06S 09E PA		MILL CREEK	GENTRY	FRANCES	A
	IR	539.94 G					GENTRY	BERT	D
							CROCITTO	EDWARD	
43B -W-194767-00	ST		06/03/1963	SENWSW 02 06S 09E PA		MILL CREEK	BERGGREN	FLOYD	R
							MALCOLM	PHILIP	R
							MALCOLM	SHARON	S
							SCHNEIDER	GARY	R
							SCHNEIDER	KAREN	A
43B -W-194781-00	IR	2.75 C	06/04/1963	SENWSW 02 06S 09E PA		MILL CREEK	LEMONT LAND CORPORATION		
							BERGGREN	FLOYD	R
							SCHNEIDER	GARY	R
							SCHNEIDER	KAREN	A
43B -W-194782-00	IR	9.13 C	06/03/1963	SENWSW 02 06S 09E PA		MILL CREEK	LEMONT LAND CORPORATION		
							BERGGREN	FLOYD	R
							SCHNEIDER	GARY	R
							SCHNEIDER	KAREN	A
43B -G-195202-00	IR	0.76 C	06/01/1903	SENWSW 02 06S 09E PA		MILL CREEK	ANDERSON	CYNTHIA	L
43B -W-194543-00	IR	9.73 C	06/03/1963	SWNWSW 02 06S 09E PA		MILL CREEK	MELIN	WANDA	M
							MELIN	ROBERT	L

WATER RIGHT ID	USE	FLOW RATE		PRIORITY DATE	POINT OF DIVERSION QTR	SEC	SEC	TWP	RGE	CN	TRIB	SOURCE NAME	OWNER NAME		
43B -W-194761-00	ST			02/14/1900	NE	03	06S	09E	PA			MILL CREEK	LEMONT LAND CORPORATION		
													MALCOLM	PHILIP	R
													MALCOLM	SHARON	S
43B -W-016047-00	IR	0.13	C	06/01/1904	NENENW	03	06S	09E	PA			MILL CREEK	SHIMMIN	CAROLYN	M
													SHIMMIN	RILEY	E
43B -W-016049-00	IR	1.88	C	06/01/1893	NENENW	03	06S	09E	PA			MILL CREEK	SHIMMIN	CAROLYN	M
													SHIMMIN	RILEY	E
43B -W-016050-00	IR	0.13	C	06/01/1894	NENENW	03	06S	09E	PA			MILL CREEK	SHIMMIN	RILEY	E
													SHIMMIN	CAROLYN	M
43B -W-016051-00	IR	0.63	C	06/04/1963	NENENW	03	06S	09E	PA			MILL CREEK	SHIMMIN	BRUCE	W
													SHIMMIN	ELMA	M
43B -W-016052-00	IR	3.75	C	06/04/1963	NENENW	03	06S	09E	PA			MILL CREEK	SHIMMIN	RILEY	E
													SHIMMIN	CAROLYN	M
43B -W-016053-00	IR	1.88	C	06/01/1893	NENENW	03	06S	09E	PA			MILL CREEK	SHIMMIN	CAROLYN	M
													SHIMMIN	RILEY	E
43B -W-016054-00	IR	0.63	C	04/01/1883	NENENW	03	06S	09E	PA			MILL CREEK	SHIMMIN	RILEY	E
													SHIMMIN	CAROLYN	M
43B -W-020824-00	IR	5.00	C	05/01/1965	NENENW	03	06S	09E	PA			MILL CREEK	TAYLOR RANCH WATER USERS INC		
43B -W-020825-00	IR	1.63	C	06/01/1890	NENENW	03	06S	09E	PA			MILL CREEK	TAYLOR RANCH WATER USERS INC		
43B -W-020826-00	IR	0.88	C	06/01/1906	NENENW	03	06S	09E	PA			MILL CREEK	TAYLOR RANCH WATER USERS INC		
43B -W-020827-00	IR	0.88	C	06/01/1890	NENENW	03	06S	09E	PA			MILL CREEK	TAYLOR RANCH WATER USERS INC		
43B -W-020828-00	IR	1.63	C	06/01/1906	NENENW	03	06S	09E	PA			MILL CREEK	TAYLOR RANCH WATER USERS INC		
43B -W-030428-00	IR	0.27	C	04/01/1883	NENENW	03	06S	09E	PA			MILL CREEK	SCHILLING	EDWARD	L
													DOUBLE AA CORP		
43B -W-030429-00	IR	282.80	G	06/04/1963	NENENW	03	06S	09E	PA			MILL CREEK	SCHILLING	EDWARD	L
													DOUBLE AA CORP		
43B -W-030430-00	IR	0.36	C	06/01/1908	NENENW	03	06S	09E	PA			MILL CREEK	SCHILLING	EDWARD	L
													DOUBLE AA CORP		
43B -W-035251-00	IR	4.13	C	06/01/1903	NENENW	03	06S	09E	PA			MILL CREEK	GRAY	DONNA	B
													GRAY	JOHN	O
43B -W-035252-00	IR	4.13	C	06/04/1963	NENENW	03	06S	09E	PA			MILL CREEK	GRAY	JOHN	O
													GRAY	DONNA	B
43B -W-037051-00	IR	2.13	C	04/01/1883	NENENW	03	06S	09E	PA			MILL CREEK	SMITH, JOEL RANCE FAMILY TRUST		

WATER RIGHT ID	USE	FLOW RATE	PRIORITY DATE	POINT OF DIVERSION QTR SEC	SEC	TWP	RGE	CN	TRIB	SOURCE NAME	OWNER NAME		
43B -W-037051-03	IR	2.12 C	04/01/1883	NENENW	03	06S	09E	PA		MILL CREEK	MOUNT DEXTER, PARTNERSHIP		
43B -W-037051-04	IR	2.12 C	04/01/1883	NENENW	03	06S	09E	PA		MILL CREEK	YELLOWSTONE VALLEY		
43B -W-037051-05	IR	2.12 C	04/01/1883	NENENW	03	06S	09E	PA		MILL CREEK	DAWSON	RICHARD	L
											DAWSON	BARBARA	A
43B -W-037051-06	IR	2.12 C	04/01/1883	NENENW	03	06S	09E	PA		MILL CREEK	NELSON	MICHAEL	A
											NELSON	MARILYN	K
43B -W-037051-07	IR	2.12 C	04/01/1883	NENENW	03	06S	09E	PA		MILL CREEK	CROFT, JAMES FAMILY TRUST		
43B -Q-037052-00	IR		00/00/0000	NENENW	03	06S	09E	PA		MILL CREEK	SMITH, JOEL RANCE FAMILY TRUST		
43B -Q-037052-01	IR		00/00/0000	NENENW	03	06S	09E	PA		MILL CREEK	GALLATIN PARTNERSHIP		
43B -Q-037052-02	IR		00/00/0000	NENENW	03	06S	09E	PA		MILL CREEK	ABSAROKA, AN ARIZONA PARTNERSHI		
43B -Q-037052-03	IR		00/00/0000	NENENW	03	06S	09E	PA		MILL CREEK	MOUNT DEXTER, PARTNERSHIP		
43B -Q-037052-04	IR		00/00/0000	NENENW	03	06S	09E	PA		MILL CREEK	YELLOWSTONE VALLEY		
43B -W-037052-05	IR	2.87 C	06/01/1908	NENENW	03	06S	09E	PA		MILL CREEK	DAWSON	RICHARD	L
											DAWSON	BARBARA	A
43B -Q-037052-06	IR		00/00/0000	NENENW	03	06S	09E	PA		MILL CREEK	NELSON	MICHAEL	A
											NELSON	MARILYN	K
43B -W-037107-00	IR	0.63 C	06/01/1903	NENENW	03	06S	09E	PA		MILL CREEK	FAIRCHILD	ALAN	E
											FAIRCHILD	MARSHA	A
43B -W-037108-00	IR	1.25 C	06/04/1963	NENENW	03	06S	09E	PA		MILL CREEK	FAIRCHILD	MARSHA	A
											FAIRCHILD	ALAN	E
43B -P-038328-00	LG	10.00 G	10/29/1981	NENENW	03	06S	09E	PA		MILL CREEK	HOLYSZKO	THOMAS	A
43B -W-039203-00	IR	4.00 C	06/04/1963	NENENW	03	06S	09E	PA		MILL CREEK	WARFIELD	NORMA	P
											WARFIELD, IV	WILLIAM	S
43B -W-039204-00	IR	2.75 C	06/01/1891	NENENW	03	06S	09E	PA		MILL CREEK	BAR WALKING Y BAR RANCH		
43B -W-042467-00	ST		06/01/1903	NENENW	03	06S	09E	PA		MILL CREEK	FAIRCHILD	ALAN	E
											FAIRCHILD	MARSHA	A
43B -N-044339-00	IR		00/00/0000	NENENW	03	06S	09E	PA		MILL CREEK	BUTLER	MICHAEL	
43B -W-101092-00	IR	22.44 G	05/01/1904	NENENW	03	06S	09E	PA		MILL CREEK	HATCH	TERRANCE	E
43B -W-101093-00	IR	22.44 G	05/01/1904	NENENW	03	06S	09E	PA		MILL CREEK	HATCH	TERRANCE	E
43B -W-101094-00	IR	22.44 G	05/01/1904	NENENW	03	06S	09E	PA		MILL CREEK	HATCH	TERRANCE	E

WATER RIGHT ID	USE	FLOW RATE		PRIORITY DATE	POINT OF DIVERSION QTR	SEC	SEC	TWP	RGE	CN	TRIB	SOURCE NAME	OWNER NAME		
43B -W-101095-00	IR	22.44	G	05/01/1904	NENENW	03	06S	09E	PA			MILL CREEK	DEMAREE	GARY	F
43B -W-101096-00	IR	22.44	G	05/01/1904	NENENW	03	06S	09E	PA			MILL CREEK	LAY	BRUCE	L
													LAY	PAMELA	A
43B -W-101097-00	IR	22.44	G	05/01/1904	NENENW	03	06S	09E	PA			MILL CREEK	LAY	BRUCE	L
													LAY	PAMELA	A
43B -G-101098-00	IR	0.05	C	05/01/1904	NENENW	03	06S	09E	PA			MILL CREEK	HATCH	TERRANCE	E
43B -W-101098-00	IR	22.44	G	05/01/1904	NENENW	03	06S	09E	PA			MILL CREEK	HATCH	TERRANCE	E
43B -W-101099-00	IR	22.44	G	05/01/1904	NENENW	03	06S	09E	PA			MILL CREEK	HATCH	TERRANCE	E
43B -W-101103-00	IR	22.44	G	05/01/1904	NENENW	03	06S	09E	PA			MILL CREEK	BIGENHO	EDWARD	D
													BIGENHO	CARYL	L
													BIGENHO	CHRISTOPHER	W
													BIGENHO	MICHELLE	L
43B -W-101104-00	IR	22.44	G	05/01/1904	NENENW	03	06S	09E	PA			MILL CREEK	BIGENHO	EDWARD	D
													BIGENHO	CARYL	L
													BIGENHO	CHRISTOPHER	W
													BIGENHO	MICHELLE	L
43B -W-101105-00	IR	22.44	G	05/01/1904	NENENW	03	06S	09E	PA			MILL CREEK	WILSON	ROBERT	J
													WILSON	SHARMAN	L
43B -G-101106-00	IR	0.05	C	05/01/1904	NENENW	03	06S	09E	PA			MILL CREEK	HATCH	TERRANCE	E
43B -W-101106-00	IR	22.44	G	05/01/1904	NENENW	03	06S	09E	PA			MILL CREEK	CASTELLUZO	JAMES	
													CASTELLUZO	SYLVIA	
43B -W-101107-00	IR	22.44	G	05/01/1904	NENENW	03	06S	09E	PA			MILL CREEK	EDDINGTON	TERESA	D
43B -W-101108-00	IR	22.44	G	05/01/1904	NENENW	03	06S	09E	PA			MILL CREEK	HATCH	TERRANCE	E
43B -W-103499-00	IR	0.45	C	04/01/1904	NENENW	03	06S	09E	PA			MILL CREEK	MARCHINGTON	HAROLD	R
43B -W-103500-00	IR	1.25	C	06/04/1963	NENENW	03	06S	09E	PA			MILL CREEK	MARCHINGTON	HAROLD	R
43B -W-103501-00	IR	0.88	C	04/01/1903	NENENW	03	06S	09E	PA			MILL CREEK	MARCHINGTON	HAROLD	R
43B -W-103676-00	IR	22.44	G	05/01/1904	NENENW	03	06S	09E	PA			MILL CREEK	BORG, WALTER R ESTATE OF		
43B -W-103677-00	IR	22.44	G	05/01/1904	NENENW	03	06S	09E	PA			MILL CREEK	BORG, WALTER R ESTATE OF		
43B -W-103678-00	IR	22.44	G	05/01/1904	NENENW	03	06S	09E	PA			MILL CREEK	BORG, WALTER R ESTATE OF		
43B -W-103679-00	IR	22.44	G	05/01/1904	NENENW	03	06S	09E	PA			MILL CREEK	BORG, WALTER R ESTATE OF		
43B -W-103680-00	IR	22.44	G	05/01/1904	NENENW	03	06S	09E	PA			MILL CREEK	BORG, WALTER R ESTATE OF		

WATER RIGHT ID	USE	FLOW RATE		PRIORITY DATE	POINT OF DIVERSION QTR	SEC	SEC	TWP	RGE	CN	TRIB	SOURCE NAME	OWNER NAME		
43B -W-103681-00	IR	22.44	G	05/01/1904	NENENW	03	06S	09E	PA			MILL CREEK	BORG, WALTER R ESTATE OF		
43B -W-103682-00	IR	22.44	G	05/01/1904	NENENW	03	06S	09E	PA			MILL CREEK	BORG, WALTER R ESTATE OF		
43B -W-103683-00	IR	22.44	G	05/01/1904	NENENW	03	06S	09E	PA			MILL CREEK	BORG, WALTER R ESTATE OF		
43B -G-103688-00	SP	22.44	G	05/01/1904	NENENW	03	06S	09E	PA			MILL CREEK	BORG, WALTER R ESTATE OF		
43B -W-103689-00	IR	22.44	G	05/01/1904	NENENW	03	06S	09E	PA			MILL CREEK	BORG, WALTER R ESTATE OF		
43B -W-103690-00	IR	22.44	G	05/01/1904	NENENW	03	06S	09E	PA			MILL CREEK	BORG, WALTER R ESTATE OF		
43B -W-191097-00	IR	2.25	C	06/04/1963	NENENW	03	06S	09E	PA			MILL CREEK	MALONE MALONE	GAYLEEN MARTIN	M C
43B -W-191098-00	IR	1.75	C	05/01/1904	NENENW	03	06S	09E	PA			MILL CREEK	MALONE MALONE	MARTIN GAYLEEN	C M
43B -W-193662-00	IR	0.45	C	06/01/1903	NENENW	03	06S	09E	PA			MILL CREEK	SILVESTRONE SILVESTRONE	ROBERT PATRICE	
43B -O-193663-00	IR			00/00/0000	NENENW	03	06S	09E	PA			MILL CREEK	SILVESTRONE SILVESTRONE	ROBERT PATRICE	
43B -W-193704-00	IR	0.50	C	06/01/1903	NENENW	03	06S	09E	PA			MILL CREEK	SCHRAM SCHRAM	GUY MARLENE	E A
43B -W-194193-00	IR	0.25	C	06/04/1963	NENENW	03	06S	09E	PA			MILL CREEK	RIEBEEK	MIKE	
43B -W-194194-00	IR	0.25	C	06/04/1963	NENENW	03	06S	09E	PA			MILL CREEK	RIEBEEK	MIKE	
43B -O-194195-00	IR			00/00/0000	NENENW	03	06S	09E	PA			MILL CREEK	RIEBEEK	MIKE	
43B -W-194196-00	ST			05/01/1905	NENENW	03	06S	09E	PA			MILL CREEK	RIEBEEK	MIKE	
43B -W-194388-00	IR	0.25	C	06/04/1963	NENENW	03	06S	09E	PA			MILL CREEK	HOWE	KATHERINE	
43B -O-194389-00	IR			00/00/0000	NENENW	03	06S	09E	PA			MILL CREEK	HOWE	KATHERINE	
43B -W-194390-00	IR	0.25	C	06/04/1963	NENENW	03	06S	09E	PA			MILL CREEK	HOWE	KATHERINE	
43B -W-194392-00	ST			05/01/1905	NENENW	03	06S	09E	PA			MILL CREEK	HOWE	KATHERINE	
43B -W-194473-00	IR	139.20	G	06/04/1963	NENENW	03	06S	09E	PA			MILL CREEK	CROCITTO GENTRY GENTRY PHILLIPS	EDWARD BERT FRANCES SHIRLEY	 D A A
43B -W-194626-00	IR	1.25	C	05/01/1904	NENENW	03	06S	09E	PA			MILL CREEK	NICKELSON NICKELSON	HAROLD CAROL	W

WATER RIGHT ID	USE	FLOW RATE		PRIORITY DATE	POINT OF DIVERSION QTR	SEC	SEC	TWP	RGE	CN	TRIB	SOURCE NAME	OWNER NAME		
43B -W-194627-00	IR	1.25	C	06/04/1963	NENENW	03	06S	09E	PA			MILL CREEK	NICKELSON NICKELSON	CAROL HAROLD	 W
43B -O-211298-00	IR			00/00/0000	NENENW	03	06S	09E	PA			MILL CREEK	ANGELL	LARRY	
43B -W-101088-00	IR	5.00	C	06/04/1963	NENWNE	03	06S	09E	PA			MILL CREEK	RIGLER RIGLER	PAUL DAVID	E G
43B -W-005341-00	IR	0.50	C	05/01/1904	NESWNE	03	06S	09E	PA			MILL CREEK	SCHROEDER III	FRANK	C
43B -W-016048-00	IR	3.90	C	06/01/1903	NESWNE	03	06S	09E	PA			MILL CREEK	SHIMMIN SHIMMIN	BRUCE ELMA	W M
43B -W-016056-00	IR	3.75	C	06/04/1963	NESWNE	03	06S	09E	PA			MILL CREEK	SHIMMIN SHIMMIN	BRUCE ELMA	W M
43B -W-023536-00	IR	3.00	C	05/01/1905	NESWNE	03	06S	09E	PA			MILL CREEK	FEARING	CONSTANCE	M
43B -G-023536-01	IR	3.00	C	05/01/1905	NESWNE	03	06S	09E	PA			MILL CREEK	WEETER WEETER	BRUCE DIANE	
43B -W-101027-00	IR	2.13	C	06/01/1894	NESWNE	03	06S	09E	PA			MILL CREEK	BUSBY	BENNA	K
43B -W-101028-00	IR	3.75	C	06/04/1963	NESWNE	03	06S	09E	PA			MILL CREEK	BUSBY	BENNA	K
43B -W-101029-00	IR	1.00	C	04/01/1883	NESWNE	03	06S	09E	PA			MILL CREEK	BUSBY	BENNA	K
43B -W-101084-00	IR	1.50	C	04/01/1883	NESWNE	03	06S	09E	PA			MILL CREEK	RIGLER RIGLER	PAUL DAVID	E G
43B -W-101085-00	IR	3.75	C	05/01/1904	NESWNE	03	06S	09E	PA			MILL CREEK	RIGLER RIGLER	PAUL DAVID	E G
43B -W-101086-00	IR	5.00	C	06/04/1963	NESWNE	03	06S	09E	PA			MILL CREEK	RIGLER RIGLER	PAUL DAVID	E G
43B -W-101087-00	IR	1.75	C	06/01/1895	NESWNE	03	06S	09E	PA			MILL CREEK	RIGLER RIGLER	PAUL DAVID	E G
43B -W-122550-00	IR	0.71	C	06/04/1963	NESWNE	03	06S	09E	PA			MILL CREEK	BALAVAGE BALAVAGE	ANNA JEROME	M E
43B -W-122551-00	IR	0.15	C	04/01/1883	NESWNE	03	06S	09E	PA			MILL CREEK	BALAVAGE BALAVAGE	ANNA JEROME	M E
43B -W-122552-00	IR	0.35	C	06/01/1903	NESWNE	03	06S	09E	PA			MILL CREEK	BALAVAGE BALAVAGE	ANNA JEROME	M E
43B -W-125013-00	IR	0.40	C	04/01/1883	NESWNE	03	06S	09E	PA			MILL CREEK	GRIFFIN	ROBERT	K
43B -W-125014-00	IR	422.00	G	06/04/1963	NESWNE	03	06S	09E	PA			MILL CREEK	GRIFFIN	ROBERT	K

WATER RIGHT ID	USE	FLOW RATE		PRIORITY DATE	POINT OF DIVERSION QTR	SEC	SEC	TWP	RGE	CN	TRIB	SOURCE NAME	OWNER NAME		
43B -W-191096-00	IR	0.25	C	06/04/1963	NESWNE	03	06S	09E		PA		MILL CREEK	MALONE	MARTIN	C
													MALONE	GAYLEEN	M
43B -W-191099-00	IR	0.43	C	06/01/1906	NESWNE	03	06S	09E		PA		MILL CREEK	MALONE	GAYLEEN	M
													MALONE	MARTIN	C
43B -W-191100-00	IR	0.20	C	04/01/1883	NESWNE	03	06S	09E		PA		MILL CREEK	MALONE	GAYLEEN	M
													MALONE	MARTIN	C
43B -W-192650-00	IR	2.50	C	06/01/1903	NESWNE	03	06S	09E		PA		MILL CREEK	DOUBLE AA CORP		
43B -G-192651-00	IR	3.25	C	05/01/1904	NESWNE	03	06S	09E		PA		MILL CREEK	DOUBLE AA CORP		
43B -W-192651-00	IR	3.25	C	05/01/1904	NESWNE	03	06S	09E		PA		MILL CREEK	DOUBLE AA CORP		
43B -W-192730-00	IR	0.23	C	04/01/1883	NESWNE	03	06S	09E		PA		MILL CREEK	BOWMAN	DAVID	K
													BOWMAN	JANICE	G
43B -W-192731-00	IR	0.45	C	06/01/1903	NESWNE	03	06S	09E		PA		MILL CREEK	DAVIDSON	MARK	
													VALENTINE	CARY	R
43B -W-192732-00	IR	0.81	C	06/04/1963	NESWNE	03	06S	09E		PA		MILL CREEK	BOWMAN	DAVID	K
													BOWMAN	JANICE	G
43B -W-193676-00	IR	0.13	C	04/01/1883	NESWNE	03	06S	09E		PA		MILL CREEK	BUSBY	C JENIVE	
													BUSBY	VERNON	R
43B -W-193677-00	IR	0.21	C	06/01/1906	NESWNE	03	06S	09E		PA		MILL CREEK	BUSBY	VERNON	R
													BUSBY	C JENIVE	
43B -W-193678-00	ST			06/01/1906	NESWNE	03	06S	09E		PA		MILL CREEK	BUSBY	C JENIVE	
													BUSBY	VERNON	R
43B -W-193679-00	ST			04/01/1883	NESWNE	03	06S	09E		PA		MILL CREEK	BUSBY	VERNON	R
													BUSBY	C JENIVE	
43B -W-193680-00	DM	0.06	C	06/01/1906	NESWNE	03	06S	09E		PA		MILL CREEK	BUSBY	VERNON	R
													BUSBY	C JENIVE	
43B -W-193681-00	DM	0.06	C	04/01/1883	NESWNE	03	06S	09E		PA		MILL CREEK	BUSBY	C JENIVE	
													BUSBY	VERNON	R
43B -W-193695-00	IR	2.25	C	06/01/1903	NESWNE	03	06S	09E		PA		MILL CREEK	WARFIELD RANCH INC		
43B -W-193703-00	IR	1.00	C	06/04/1963	NESWNE	03	06S	09E		PA		MILL CREEK	SCHRAM	GUY	E
													SCHRAM	MARLENE	A
43B -W-193737-00	IR	3.75	C	06/04/1963	NESWNE	03	06S	09E		PA		MILL CREEK	WALKER	RUBY	J
													WALKER, JR	TAVNER	J
													WALKER, SR	TAVNER	J

WATER RIGHT ID	USE	FLOW RATE		PRIORITY DATE	POINT OF DIVERSION QTR	SEC	SEC	TWP	RGE	CN	TRIB	SOURCE NAME	OWNER NAME		
43B -W-193738-00	IR	1.30	C	04/01/1883	NESWNE	03	06S	09E	PA			MILL CREEK	WALKER	RUBY	J
													WALKER, JR	TAVNER	J
													WALKER, SR	TAVNER	J
43B -W-193739-00	IR	2.58	C	06/01/1906	NESWNE	03	06S	09E	PA			MILL CREEK	WALKER	RUBY	J
													WALKER, JR	TAVNER	J
													WALKER, SR	TAVNER	J
43B -W-193759-00	IR	0.75	C	05/01/1904	NESWNE	03	06S	09E	PA			MILL CREEK	SACKETT	GARY	T
													SACKETT	ELMO	A
43B -W-194192-00	IR	0.25	C	04/01/1883	NESWNE	03	06S	09E	PA			MILL CREEK	RIEBEEK	MIKE	
43B -W-194201-00	IR	0.38	C	06/01/1903	NESWNE	03	06S	09E	PA			MILL CREEK	NEAL	RUTH	K
													NEAL	ARCHIE	D
43B -W-194202-00	IR	0.38	C	06/04/1963	NESWNE	03	06S	09E	PA			MILL CREEK	NEAL	RUTH	K
													NEAL	ARCHIE	D
43B -W-194339-00	IR	1.73	C	04/01/1883	NESWNE	03	06S	09E	PA			MILL CREEK	HARTUNG	PHILIP	D
													MEYERS	JERRY	R
													MEYERS	HELEN	R
													STRONG	GREGORY	D
													STRONG	DONALD	P
													STRONG	SHAWNA	M
													STRONG	PATRICIA	C
43B -W-194340-00	IR	2.34	C	06/01/1908	NESWNE	03	06S	09E	PA			MILL CREEK	HARTUNG	PHILIP	D
													MEYERS	JERRY	R
													MEYERS	HELEN	R
													STRONG	GREGORY	D
													STRONG	H WESLEY	
													STRONG	DONALD	P
													STRONG	SHAWNA	M
													STRONG	PATRICIA	C
43B -W-194342-00	IR	2.99	C	06/04/1963	NESWNE	03	06S	09E	PA			MILL CREEK	HARTUNG	PHILIP	D
													MEYERS	JERRY	R
													MEYERS	HELEN	R
													STRONG	GREGORY	D
													STRONG	H WESLEY	
													STRONG	DONALD	P
													STRONG	SHAWNA	M
													STRONG	PATRICIA	C
43B -W-194391-00	IR	0.25	C	04/01/1883	NESWNE	03	06S	09E	PA			MILL CREEK	HOWE	KATHERINE	
43B -W-194471-00	IR	0.10	C	06/01/1908	NESWNE	03	06S	09E	PA			MILL CREEK	CROCITTO	EDWARD	
													GENTRY	BERT	D
													GENTRY	FRANCES	A

WATER RIGHT ID	USE	FLOW RATE		PRIORITY DATE	POINT OF DIVERSION QTR	SEC	SEC	TWP	RGE	CN	TRIB	SOURCE NAME	OWNER NAME		
													PHILLIPS	SHIRLEY	A
43B -W-195202-00	IR	1.91	C	06/01/1903	NESWNE	03	06S	09E		PA		MILL CREEK	ANDERSON	CYNTHIA	L
													OVERTON	EDWARD	C
													BOWMAN	DAVID	K
													BOWMAN	JANICE	G
43B -W-195203-00	IR	0.89	C	04/01/1883	NESWNE	03	06S	09E		PA		MILL CREEK	ANDERSON	CYNTHIA	L
													OVERTON	EDWARD	C
													QUESANBERRY	MARVIN	I
													QUESANBERRY	ROSA	S
													BOWMAN	DAVID	K
													BOWMAN	JANICE	G
43B -W-195204-00	IR	3.54	C	06/04/1963	NESWNE	03	06S	09E		PA		MILL CREEK	ANDERSON	CYNTHIA	L
													OVERTON	EDWARD	C
													BOWMAN	DAVID	K
													BOWMAN	JANICE	G
43B -W-210769-00	IR	0.50	C	06/04/1963	NESWNE	03	06S	09E		PA		MILL CREEK	SCHROEDER III	FRANK	C
43B -W-039130-00	IR	3.90	C	05/01/1900	NWNWNE	03	06S	09E		PA		MILL CREEK	CLARK	IRENE	E
													CLARK	DONLEY	D
43B -W-039131-00	IR	1.50	C	04/01/1883	NWNWNE	03	06S	09E		PA		MILL CREEK	CLARK	DONLEY	D
													CLARK	IRENE	E
43B -W-039133-00	IR	7.50	C	06/04/1963	NWNWNE	03	06S	09E		PA		MILL CREEK	CLARK	IRENE	E
													CLARK	DONLEY	D
43B -W-039134-00	IR	1.75	C	06/01/1895	NWNWNE	03	06S	09E		PA		MILL CREEK	CLARK	IRENE	E
													CLARK	DONLEY	D
43B -W-039205-00	IR	2.00	C	08/01/1889	NWNWNE	03	06S	09E		PA		MILL CREEK	BAR WALKING Y BAR RANCH		
43B -W-194475-00	ST			06/01/1908	NWNWNE	03	06S	09E		PA		MILL CREEK	GENTRY	BERT	D
													GENTRY	FRANCES	A
													CROCITTO	EDWARD	
													PHILLIPS	SHIRLEY	A
43B -W-007354-00	IR	22.44	G	05/01/1904	NWNWNW	03	06S	09E		PA		MILL CREEK	SHARP	HEBER	M
43B -W-007355-00	IR	22.00	G	05/01/1904	NWNWNW	03	06S	09E		PA		MILL CREEK	KNOLL	AMY	
													MAURO, JR	PATRICK	J
													MAURO	AMY	
43B -W-007356-00	IR	22.44	G	05/01/1904	NWNWNW	03	06S	09E		PA		MILL CREEK	FLANICK	MATTHEW	W
43B -W-007365-00	IR	22.44	G	05/01/1904	NWNWNW	03	06S	09E		PA		MILL CREEK	QUESENBERRY	NELSON	M
													QUESENBERRY	CAROLYN	H
43B -W-007366-00	IR	22.44	G	05/01/1904	NWNWNW	03	06S	09E		PA		MILL CREEK	SHARP	HEBER	M

WATER RIGHT ID	USE	FLOW RATE	PRIORITY DATE	POINT OF DIVERSION QTR SEC	SEC	TWP	RGE	CN	TRIB	SOURCE NAME	OWNER NAME		
43B -W-007367-00	IR	22.44 G	05/01/1904	NWNWNW	03	06S	09E	PA		MILL CREEK	SHARP	HEBER	M
43B -W-007368-00	IR	22.44 G	05/01/1904	NWNWNW	03	06S	09E	PA		MILL CREEK	SHARP	HEBER	M
43B -W-007369-00	IR	22.44 G	05/01/1904	NWNWNW	03	06S	09E	PA		MILL CREEK	MESSENA	SHERMAN	R
											MESSENA	L	L
43B -W-007370-00	IR	22.44 G	05/01/1904	NWNWNW	03	06S	09E	PA		MILL CREEK	SHARP	HEBER	M
43B -W-007371-00	IR	22.44 G	05/01/1904	NWNWNW	03	06S	09E	PA		MILL CREEK	SHARP	HEBER	M
43B -W-007372-00	IR	22.44 G	05/01/1904	NWNWNW	03	06S	09E	PA		MILL CREEK	BIGENHO	EDWARD	D
											BIGENHO	CARYL	L
											BIGENHO	CHRISTOPHER	W
											BIGENHO	MICHELLE	L
43B -W-007373-00	IR	22.44 G	05/01/1904	NWNWNW	03	06S	09E	PA		MILL CREEK	ELLIS	RAY	C
											ELLIS	BERNADETTE	M
											SHARP	HEBER	M
43B -W-007374-00	IR	22.44 G	05/01/1904	NWNWNW	03	06S	09E	PA		MILL CREEK	PLESHAR	SAMUEL	G
											PLESHAR	PATRICIA	L
43B -W-007375-00	IR	22.44 G	05/01/1904	NWNWNW	03	06S	09E	PA		MILL CREEK	SHARP	HEBER	M
43B -W-193655-00	ST		06/01/1903	NWSWNE	03	06S	09E	PA		MILL CREEK	SILVESTRONE	ROBERT	
											SILVESTRONE	PATRICE	
43B -W-037051-01	IR	2.12 C	04/01/1883	SENENW	03	06S	09E	PA		MILL CREEK	GALLATIN PARTNERSHIP		
43B -O-037052-07	IR		00/00/0000	SENENW	03	06S	09E	PA		MILL CREEK	CROFT, JAMES FAMILY TRUST		
43B -W-188149-00	DM	10.00 G	06/30/1969	SENWNE	03	06S	09E	PA		MILL CREEK	BOURQUE	SANDRA	
											BOURQUE	LEROY	A
43B -G-192651-01	SP	3.25 C	05/01/1904	SENWSW	03	06S	09E	PA		MILL CREEK	DOUBLE AA CORP		
43B -W-101013-00	IR	2.18 C	06/04/1963	SESENE	03	06S	09E	PA		MILL CREEK	PETRICH	GERALD	F
											PETRICH	EUNICE	A
43B -W-101014-00	IR	5.33 C	06/03/1963	SESENE	03	06S	09E	PA		MILL CREEK	PETRICH	GERALD	F
											PETRICH	EUNICE	A
43B -W-005861-00	IR	5.00 C	06/04/1963	SWNWNE	03	06S	09E	PA		MILL CREEK	PIRTZ	DORIS	M
											PIRTZ	RICHARD	F
43B -W-005862-00	IR	0.75 C	04/01/1883	SWNWNE	03	06S	09E	PA		MILL CREEK	PIRTZ	RICHARD	F
											PIRTZ	DORIS	M
43B -W-005863-00	IR	2.88 C	05/01/1901	SWNWNE	03	06S	09E	PA		MILL CREEK	PIRTZ	DORIS	M

WATER RIGHT ID	USE	FLOW RATE		PRIORITY DATE	POINT OF DIVERSION QTR	SEC	SEC	TWP	RGE	CN	TRIB	SOURCE NAME	OWNER NAME		
													PIRTZ	RICHARD	F
43B -W-005864-00	ST			04/01/1883	SWNWNE	03	06S	09E	PA			MILL CREEK	PIRTZ	RICHARD	F
													PIRTZ	DORIS	M
43B -W-016055-00	IR	0.63	C	04/01/1883	SWNWNE	03	06S	09E	PA			MILL CREEK	SHIMMIN	ELMA	M
													SHIMMIN	BRUCE	W
43B -W-035215-00	IR	1.20	C	06/01/1903	SWNWNE	03	06S	09E	PA			MILL CREEK	STEFFESEN	DORCEAN	
													FAIRCHILD	ALAN	
													FAIRCHILD	MARSHA	
43B -W-035216-00	IR	1.13	C	06/04/1963	SWNWNE	03	06S	09E	PA			MILL CREEK	STEFFESEN	DORCEAN	
													FAIRCHILD	ALAN	
													FAIRCHILD	MARSHA	
43B -W-101079-00	ST			01/19/1923	SWNWNE	03	06S	09E	PA			MILL CREEK	RIGLER	DAVID	G
													RIGLER	PAUL	E
43B -W-125017-00	IR	0.54	C	06/01/1908	SWNWNE	03	06S	09E	PA			MILL CREEK	GRIFFIN	ROBERT	K
43B -G-192730-00	IR	2.08	C	04/01/1883	SWNWNE	03	06S	09E	PA			MILL CREEK	BOWMAN	DAVID	K
													BOWMAN	JANICE	G
43B -W-194336-00	ST			06/01/1908	SWNWNE	03	06S	09E	PA			MILL CREEK	HARTUNG	PHILIP	D
													MEYERS	JERRY	R
													MEYERS	HELEN	R
													STRONG	GREGORY	D
													STRONG	H WESLEY	
													STRONG	DONALD	P
													STRONG	SHAWNA	M
													STRONG	PATRICIA	C
43B -W-103688-00	IR	22.44	G	05/01/1904	NENENW	05	06S	09E	PA			MILL CREEK	THORNTON	DEAN	D
													THORNTON	MILDRED	I
43B -W-039132-00	IR	0.50	C	06/01/1882	SWNWSE	20	06S	09E	PA			MILL CREEK	CLARK	DONLEY	D
													CLARK	IRENE	E
43B -W-032974-00	IR	0.25	C	06/01/1901	SENESE	24	06S	09E	PA			MILL CREEK	JOHNSON	THELMA	F
43B -P-074988-00	IG	75.00	G	08/31/1990	SWSENE	24	06S	09E	PA			MILL CREEK	YELLOWSTONE BIBLE ENCAMPMENT		
43B -E-057191-00	DM	25.00	G	00/00/1958	SWSWNE	24	06S	09E	PA			MILL CREEK	YELLOWSTONE BIBLE ENCAMPMENT		
43B -W-194472-00	IR	0.13	C	04/01/1883	SWNWNE	33	06S	09E	PA			MILL CREEK	CROCITTO	EDWARD	
													GENTRY	BERT	D
													GENTRY	FRANCES	A
													PHILLIPS	SHIRLEY	A
43B -W-037051-02	IR	2.12	C	04/01/1883	NENENW	03	06S	09W	PA			MILL CREEK	ABSAROKA, AN ARIZONA PARTNERSHI		

WATER RIGHT ID	USE	FLOW RATE	PRIORITY DATE	POINT OF DIVERSION QTR	SEC	SEC	TWP	RGE	CN	TRIB	SOURCE NAME	OWNER NAME		
43B -W-059953-00	ST		05/01/1935	NESWSW	19	06S	10E	PA			MILL CREEK	USA (DEPT OF AGRICULTURE FOREST		
43B -W-035499-00	IR	1.00 C	06/01/1902	NESENE	30	06S	10E	PA			MILL CREEK	FULLER	HELEN	F
												FULLER	WAYNE	E
43B -W-035500-00	IR	5.00 C	06/04/1963	NESENE	30	06S	10E	PA			MILL CREEK	FULLER	WAYNE	E
												FULLER	HELEN	F
43B -W-035503-00	ST		06/01/1902	NESENE	30	06S	10E	PA			MILL CREEK	FULLER	WAYNE	E
												FULLER	HELEN	F
43B -G-003058-00	ST	15.00 G	06/05/1916	NWNWSE	26	08S	07E	PA			MILL CREEK			
	IR	450.00 G												
	DM	15.00 G										SHRYER	JEFFREY	H
43B -T-017905-00	IR		00/00/0000	NWNWSE	26	08S	07E	PA			MILL CREEK	ARMSTRONG	ELMER	F
												ARMSTRONG	MARY	N
43B -W-122515-00	ST		05/01/1962	SESE	31	08S	07E	PA			MILL CREEK	SARGENT	LEONARD	R
43B -W-059811-00	ST		03/07/1906		32	08S	07E	PA			MILL CREEK	USA (DEPT OF AGRICULTURE FOREST		
43B -W-192207-00	IR	1.97 C	08/18/1900	SWSENE	32	08S	07E	PA			MILL CREEK	MCDONALD, JR	JOHN	A
43B -W-122501-00	IR	5.61 C	05/20/1961	NENWSW	05	09S	07E	PA			MILL CREEK	SARGENT	LEONARD	R
43B -W-122503-00	IR	5.61 C	05/10/1961	NENWSW	05	09S	07E	PA			MILL CREEK	SARGENT	LEONARD	R
43B -W-122504-00	IR	0.42 C	05/15/1901	NENWSW	05	09S	07E	PA			MILL CREEK	SARGENT	LEONARD	R
43B -W-059810-00	ST		03/07/1906		18	09S	07E	PA			MILL CREEK	USA (DEPT OF AGRICULTURE FOREST		

APPENDIX V

The Yellowstone Cutthroat of the Upper Yellowstone River

The Yellowstone Cutthroat of the Upper Yellowstone River, Montana

From its beginning in the Teton Wilderness of northwestern Wyoming to its meeting with the Missouri in North Dakota, the Yellowstone River changes from a cascading mountain stream to a cold-water river of national acclaim to a broad, meandering prairie waterway. Along the way fish populations make equally dramatic changes. The yellowstone is the longest free-flowing river remaining in the United States south of Alaska.

Below Gardner, Montana common game fishes of the upper Yellowstone River including Yellowstone cutthroat rainbow, brown trout and mountain whitefish. Brook trout occur in some tributary streams but not in the river. Common non-game fishes of the upper river are longnose, white and mountain suckers, longnose dace and mottled sculpin.

The upper Yellowstone River supports a nationally renowned cold-water fishery, and has been classified by the Montana Fish and Game Commission as a Blue Ribbon stream from Gardner to Big Timber. This 103 mile reach of river is the longest single stretch of Blue Ribbon Stream in Montana, and contains nearly 25 percent of the state's Blue Ribbon waters. Fishermen come from across the country and the world to fish the upper Yellowstone River. Together with the Madison and Big Hole Rivers, the upper yellowstone is considered among the country's premiere trout fishing waters.

The Yellowstone cutthroat, a species of special concern in Montana, is the only trout native to the upper Yellowstone River. The rainbow and brown trout occurring in the river were introduced around the turn of the century.

Because it is easier to catch them either browns or rainbows, the Yellowstone cutthroat has become a popular sport fish. Under favorable conditions it can grow to trophy size. It inhabits highly scenic environments and is a strikingly beautiful fish–bronze colored with prominent black spots and a scarlet slash under the jaw. Its popularity has warranted restrictive fishing regulations to protect the species.

Today the stronghold for the Yellowstone cutthroat is the Yellowstone National Park. Outside the park, however, this fish has suffered many of the same declines experienced by other subspecies of cutthroat. Today the Yellowstone cutthroat is found only in a fraction of its original range. This decline can be attributed almost entirely to the activities of man. The principal reasons were genetic contamination of the native stock by crossbreeding with closely related species, competition with introduced species such as brown and brook trout, and alteration of cutthroat habitat.

The upper Yellowstone still contains a highly regarded but remnant population of cutthroat, however, many tributaries no longer contain viable populations in their lower reaches. Dewatering for irrigation, removal of streamside vegetation and increased soil erosion resulting from logging and other watershed disturbances have

eliminated cutthroat from many tributary streams. Streams dewatered for irrigation during July and August can interrupt Yellowstone cutthroat spawning runs and have a severe impact on the recruitment of cutthroat to the Yellowstone River. It appears this fish does not spawn in the river.

Yellowstone cutthroat live most of the year in the mainstem of the Yellowstone River and ascend suitable tributaries to spawn during June and July. The tributaries of the upper river illustrated in Figure 1, with the exception of Mill Creek, support significant spawning runs of cutthroat. Following spawning, adult cutthroat return to the Yellowstone River leaving their eggs to incubate in the gravels of tributary streams. In about 4½ to 6 weeks cutthroat fry emerge from the gravels and drift downstream to the Yellowstone where they will spend their lives.

Between Gardner and Big Timber approximately 18 major tributary streams do not support significant spawning runs of Yellowstone cutthroat. The most common explanation for the lack of spawning is the dewatering of streams during spawning and the period following when eggs are in the gravels. The dewatering of potential spawning streams has had a profound impact on the population levels of Yellowstone cutthroat. On the average, many tributary streams of the upper Yellowstone begin to dry up by late July and most are dry during August. The effectively eliminates successful hatching because of the desiccation of eggs in stream gravels. Hence, these dry tributaries contribute little to the recruitment of cutthroat to the Yellowstone River.

A study of migration patterns of adult Yellowstone cutthroat trout conducted by the Montana Department of Fish, Wildlife and Parks points to the importance of maintaining flows in tributary streams during the summer months.

Yellowstone cutthroat trout display a high degree of homing instinct during spawning to what is probably their natal tributary. It appears adult cutthroat return to spawn in the stream in which they were hatched. Cutthroat in reaches of the Yellowstone River which have a number of spawning streams nearby migrate only a short distance to spawn, while cutthroat inhabiting reaches of the river with few spawning tributaries must travel much longer distances to spawn. Cutthroat that live in the extreme upper river reach near Gardner (Figure 1, Section A) move short distances to spawn in Bear, Mol Heron, Cedar and Tom Miner Creeks, and most cutthroat that inhabit the lower reach (Section D) near Springdale move into Locke and Peterson Creeks to spawn. Cutthroats inhabiting the mid reach of the upper river (Figure 1, Sections B & C) must migrate longer distances to spawn. Trout in Section B must migrate upstream between 25 and 35 miles to successfully spawn, while trout in Section C must move upstream 8 to 12 miles to reach Nelson Spring Creek, their principal spawning tributary.

These migratory spawning patterns demonstrate that many cutthroats inhabiting the Yellowstone River in Paradise Valley were hatched in tributary streams many miles upriver. The apparent reason for such a long upstream spawning migration is that nearly all tributary streams are dewatered during the summer and are unfit for cutthroat spawning. Under existing conditions, very few cutthroat trout are able to ascend to Mill Creek to spawn. Should satisfactory flows be maintained in the lower

six miles of Mill Creek during July, August and early September, this major tributary stream could contribute significantly to the recruitment of cutthroat trout to the Paradise Valley region of the Yellowstone River.

Cutthroat Trout Populations of the Upper Yellowstone River, Montana

The average number of cutthroat trout, ten inches long or longer, occurring in four sections of the upper Yellowstone during 1982-1985 is presented in Table 1.

Table 1

Average Number of Yellowstone Cutthroat Trout Ten Inches or Larger per Mile in Four Yellowstone River Sections During 1982-1985.

Section 1/	No. Yellowstone Cutthroat
A	192
B	70
C	71
D	144

1/Refers to Figure 1 for location of river sections

As can be observed, sections A and D support the greatest number of large cutthroat trout in the upper river. This is believed attributable to their close proximity to suitable spawning tributaries--streams that maintain flows through the summer and early fall.

Projected Increases in Yellowstone Cutthroat Numbers

Predicting increases in Yellowstone River cutthroat trout numbers resulting from improvement of Mill Creek spawning habitat is both difficult as well as complex. The following discussion provided by the Montana Department of Fish, Wildlife and Parks is based on reasonable assumptions.

As stated earlier, very few cutthroat trout are able to ascend Mill Creek to spawn. During June and July of 1983, only four migratory trout were electrofished on four occasions in a one-half mile section of lower Mill Creek. During the same period electrofished sampling in Tom Miner, Mol Heron and Cedar Creeks revealed strong spawning migrations within these streams.

Data show that in the Upper Yellowstone River where perennial tributaries flow, the cutthroat population of ten inch and longer fish is 2.75 times larger than the river population in the vicinity of Mill Creek. Mill Creek has the potential to support a level of cutthroat recruitment to the Yellowstone River equal to or greater than either Mol Heron or Cedar Creeks of the upper river. Since Mill Creek is a larger stream it contains more potential spawning sites and greater potential to add recruitment to

the Yellowstone than either upper basin streams. Mill Creek will produce 1.5 times the difference in recruitment between river Sections A and B, and assuming a 50 percent mortality, 92 additional catchable size cutthroat trout per mile could be added to the mid river population. This figure would apply to at least eight miles of river. A smaller figure, one half the projected increase, or 46 fish would be added to an additional ten miles of river. These increases would be as follows:

8 miles of river x 92 -	736
10 miles of river x 46 -	460
Total additional fish	1,196

A conservative increase of about 1,200 cutthroat trout ten inches or longer would be added to an 18 mile reach of the upper Yellowstone River as a result of maintaining satisfactory spawning flows in Mill Creek as part of the Mill Creek Watershed Project. A catchable trout is considered to be any fish longer than seven inches in length. Using this criteria, an additional 1,000 trout between seven and ten inches in length would be added to the river trout population. This would increase catchable cutthroat trout by approximately 2,200 fish in 18 miles reach of the upper Yellowstone River. These increases in fish numbers pertain to population levels anticipated approximately six years or longer following completion of the watershed project.

The increase of 2,200 catchable trout in the Yellowstone River equates to 1,830 additional fishermen days per year when, on the average, each fish is caught 2.5 times per year, and three fish constitutes a fisherman day.

$$2{,}200 \times 2.5 \div 3 = 1{,}830$$

Resident trout in Mill Creek would also benefit from year-round flows. Current data suggests that resident populations are quite low, even where year-round flows exit. Current populations are probably in the range of 30 fish per 1,000 feet of stream and consist of cutthroat and rainbow trout and mountain whitefish. If an additional 30 trout per 1,000 of stream were added to the 6.4 miles of Mill Creek benefiting from the project, an increase of 155 trout (all age classes) per mile could be expected with project.

APPENDIX VI

Photographs

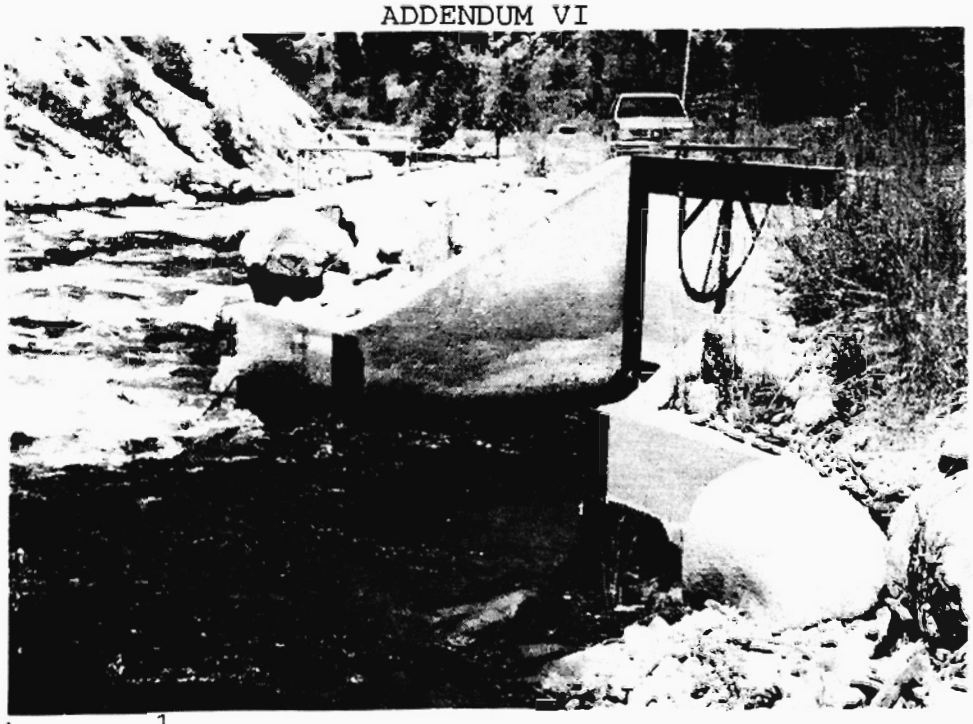


PHOTO #: 1
DATE: August 3, 1993
SUBJECT: North Side Ditch Diversion From Mill Creek

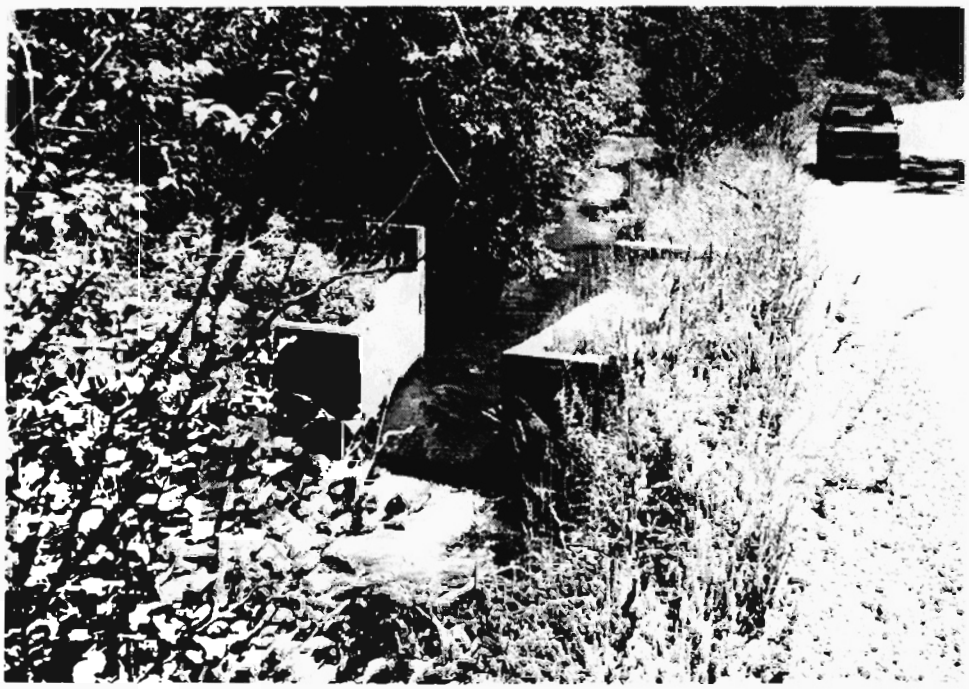


PHOTO #: 2
DATE: August 3, 1993
SUBJECT: Concrete Structure In North Side Ditch

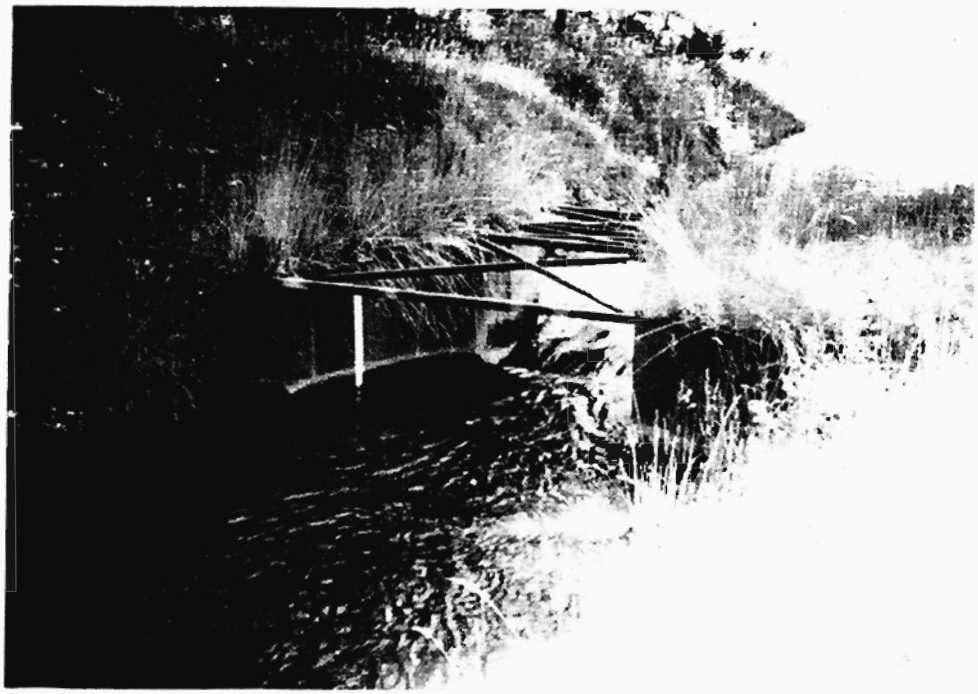


PHOTO #: 3
DATE: August 3, 1993
SUBJECT: Four Foot Parshall Flume In Mill Creek Pipeline Project Feeder Canal

PHOTO #: 4
DATE: August 3, 1993
SUBJECT: Mill Flat Ditch Diversion From Mill Creek

PHOTO #: 5
DATE: August 3, 1993
SUBJECT: Check Structure In Mill Flat Ditch

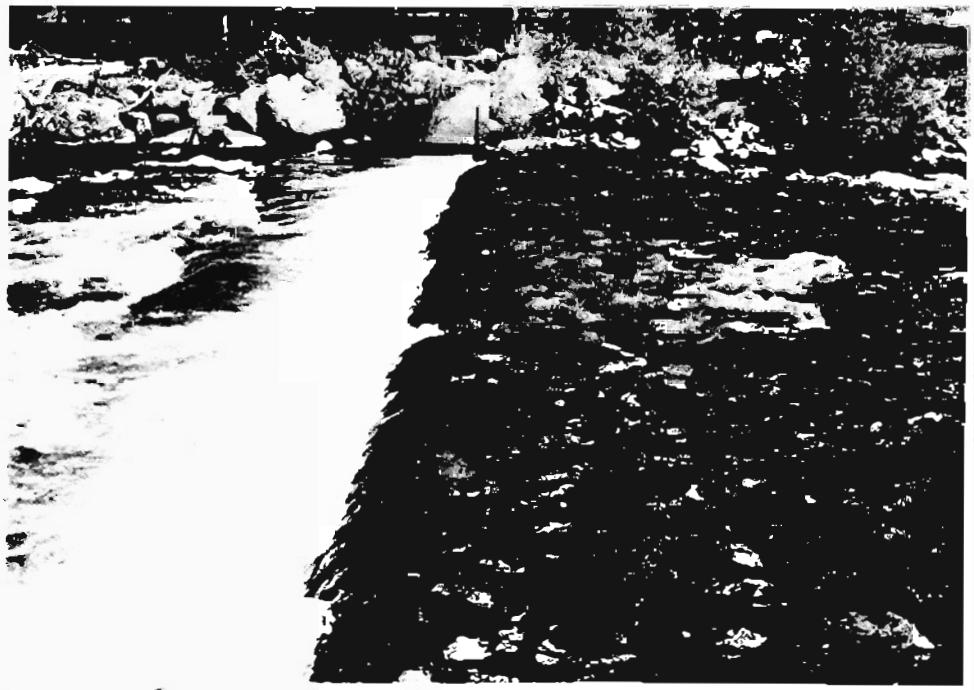


PHOTO #: 6
DATE: August 3, 1993
SUBJECT: Diversion Dam For Carter Ditch

PHOTO #: 7
DATE: August 3, 1993
SUBJECT: Concrete Structure In Carter Ditch

PHOTO #: 8
DATE: August 3, 1993
SUBJECT: Wooden Structure In Paradise Canal Feeder Ditch

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