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Water Resources Survey

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Part I:
HISTORY OF LAND AND WATER
USE ON IRRIGATED AREAS

and

Part II:
MAPS SHOWING IRRIGATED AREAS
IN COLORS DESIGNATING THE
SOURCES OF SUPPLY



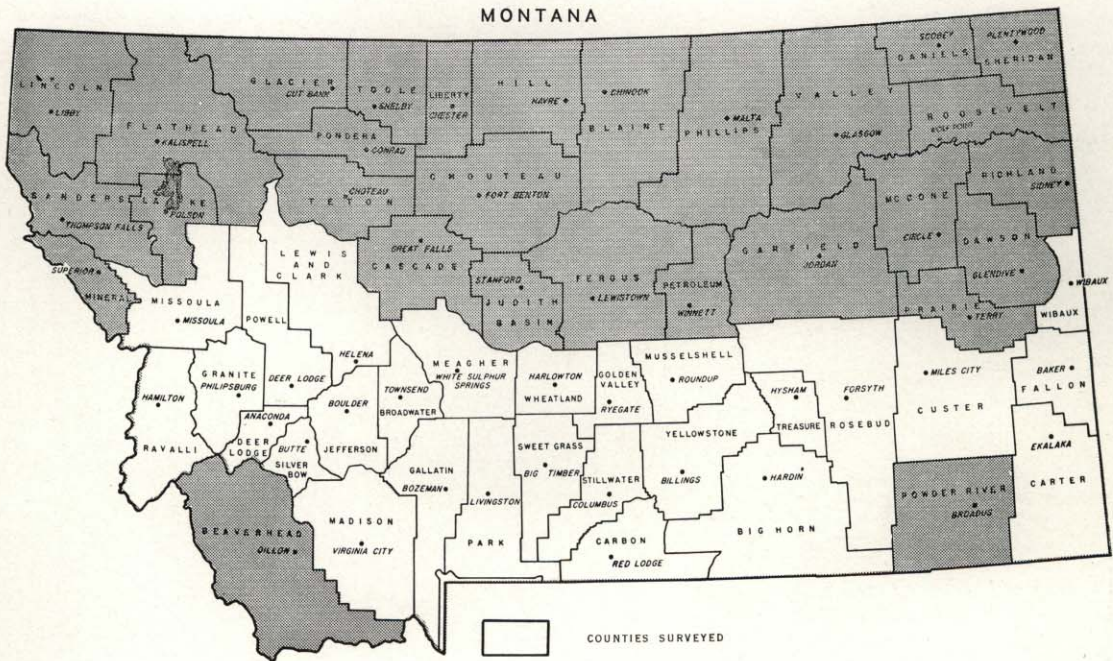
Carter, Fallon, and Wibaux Counties, Montana

Published by
STATE ENGINEER'S OFFICE
Helena, Montana, June, 1960



WATER RESOURCES SURVEY

CARTER, FALLON, AND
WIBAUX COUNTIES,
MONTANA



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Hans L. Bille Assistant Engineer
C. Sumner Heidel Deputy Engineer
A. D. McDermott Accountant for State Engineer & SWCB

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June, 1960

Honorable J. Hugo Aronson
Governor of Montana
Capitol Building
Helena, Montana

Dear Governor Aronson:

Submitted herewith is a consolidated report on the Water Resources Survey of Carter, Fallon and Wibaux Counties, Montana.

This work is being carried on with funds made available to the State Engineer by the 36th Legislative Session, 1959, and in cooperation with the State Water Conservation Board and the Montana State Agricultural Experiment Station.

The report is divided into two parts. Part I consists of history of land and water use, irrigated lands, water rights, etc., and Part II contains the township maps in the counties showing in color the lands irrigated from each source or canal system.

Work has been completed and reports are now available for the following counties: Big Horn, Broadwater, Carbon, **Carter**, Custer, Deer Lodge, **Fallon**, Gallatin, Golden Valley, Granite, Jefferson, Lewis and Clark, Madison, Meagher, Missoula, Musselshell, Park, Powell, Ravalli, Rosebud, Silver Bow, Stillwater, Sweet Grass, Treasure, **Wibaux**, Wheatland and Yellowstone.

The office files contain minute descriptions and details of each individual water right and land use, which are too voluminous to be included herein. These office files are available for inspection to those who are interested.

The historical data on water rights contained in this report can never become obsolete. If new information is added from time to time as new developments occur, the records can always be kept current and up to date.

Respectfully submitted,

FRED E. BUCK, State Engineer

ACKNOWLEDGMENTS

A survey and study of water resources involves many phases of both field and office work in order to gather the necessary data to make the information complete and comprehensive. Appreciation of the splendid cooperation of various agencies and individuals who gave their time and assistance in aiding us in gathering the data for the preparation of this report is hereby acknowledged.

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S. L. Groff Ground-Water and Fuels Branch, Mont. School of Mines
M. G. Burlingame Dept. Head of History, Mont. State College
Gene Hoff County Extension Agent, Carter and Fallon Counties
LeRoy Luft County Extension Agent, Wibaux County
R. A. Dightman
State Climatologist U. S. Dept. of Commerce, Weather Bureau
David R. Cawlfild
State Soil Scientist U. S. Dept. of Agriculture, S. C. S.

Frank Stermitz District Engineer, U. S. Geological Survey
Joseph Wirak, Work Unit Conservationist
U. S. Dept. of Agriculture, S. C. S. Carter County
Roy Houser, Work Unit Conservationist
U. S. Dept. of Agriculture, S. C. S. Fallon County
Charles Bordsen, Work Unit Conservationist
U. S. Dept. of Agriculture, S. C. S. Wibaux County
Clinton G. Bishop Fisheries Biologist, State Fish and Game Dept.
Chas. L. Tebbe
Regional Forester U. S. Dept. of Agriculture, Forest Service
W. B. Wallace Area Administrator, U. S. Bureau of Land Management

The State Engineer's Office, Water Resources Survey, hereby expresses sincere appreciation to the many ranchers, farmers and stockmen who have given their helpful cooperation in this survey.

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FOREWORD

MONTANA'S WATER RIGHT PROBLEMS

Our concern over surface water rights in Montana is nearly a century old. When the first Territorial Legislature, meeting in Bannack, adopted the common law of England on January 11, 1865, the Territory's legal profession assumed that it had adopted the Doctrine of Riparian Rights. This doctrine had evolved in England and in eastern United States where the annual rainfall is generally more than twenty inches. It gave the owners of land bordering a stream the right to have that stream flow past their land undiminished in quantity and unaltered in quality and to use it for household and livestock purposes. Since the law restricted the use of the water to riparian owners and forbade them to reduce appreciably the stream flow, the early miners and ranchers in Montana favored the Doctrine of Prior Appropriation which permitted diversion and diminution of the streams. Consequently, the next day the legislature enacted a law which permitted diversion by both riparian and non-riparian owners. Whether or not this action provided Montana with one or two definitions of water rights was not settled until 1921 when the Montana Supreme Court in the *Mettler vs. Ames Realty Co.* case declared the Doctrine of Prior Appropriation to be the valid Montana water right law. "Our conclusion," it said, "is that the common law doctrine of riparian rights has never prevailed in Montana since the enactment of the Bannack Statutes in 1865 and that it is unsuited to the conditions here . . ."

The appropriation right which originated in California was used by the forty-niners to divert water from the streams to placer mine gold. They applied to the water the same rules that they applied to their mining claims—first in time, first in right and limitation of the right by beneficial use. Those who came to the Montana gulches brought with them these rules, applying them to agriculture as well as to mining.

The main points of consideration under the Doctrine of Prior Appropriations are:

1. The use of water may be acquired by both riparian and non-riparian landowners.
2. It allows diversion of water regardless of the reduction of the water supply in the stream.
3. The value of the right is determined by the priority of the appropriation; i.e., first in time is first in right.
4. The right is limited to the use of the water. Stream waters in Montana are the property of the State and the appropriator acquires only a right to their use. Moreover, this use must be beneficial.
5. A right to the use of water is considered property only in the sense that it can be bought or sold; its owner may not be deprived of it except by due process of law.

The State Legislature has provided methods for the acquisition, determination of priority and administration of the right. No right may be acquired on a stream without diversion of

water and its application to a beneficial use. On unadjudicated streams, the Statutes stipulate that the diversion must be preceded by posting a notice at a point of intended diversion and by filing a copy of it within 20 days in the County Clerk's Office of the county in which the appropriation is being made. Construction of the means of diversion must begin within 40 days of the posting and continue with reasonable diligence to completion. However, the Montana Supreme Court has ruled that an appropriator who fails to comply with the Statutes may still acquire a right merely by digging a ditch and putting the water to beneficial use.

To obtain a water right on an adjudicated stream, one must petition the District Court having jurisdiction over that stream for permission to make an appropriation. If the other appropriators do not object, the court gives its consent and issues a supplementary decree granting the right subject to the rights of the prior appropriators.

Inasmuch as the Montana laws do not require water users to file official records of the completion of their appropriations, it becomes advisable as soon as the demand for the waters of a stream becomes greater than its supply, to determine the rights and priorities of each user by means of an adjudication or water right suit. This action may be initiated by one or more of the appropriators who may make all the other claimants parties to the suit. Thereupon the Judge of the District Court examines the claims of all the claimants and issues a decree establishing priority of the right of each water user and the amount of water he is entitled to use. The court decree becomes in effect the deed of the appropriator to his water right.

Whenever scarcity of water in an adjudicated stream requires an allocation of the supply according to the priority of rights, the Judge, upon petition of the owners of at least 15 per cent of the water rights affected, must appoint a water commissioner to distribute the water. After the Commissioner has been appointed the Judge gives him full instructions on how the water is to be apportioned and distributed in accordance with the terms of the decree.

The recordings of appropriations in local courthouses provides an incomplete record of the water rights on unadjudicated streams. In fact, the county records often bear little relation to the existing situation. Since the law places no restriction on the number and extent of the filings which may be made on an unadjudicated stream, the total amount of water claimed is frequently many times the available flow. There are numerous examples of streams becoming over appropriated. Once, six appropriators each claimed all of the water in Lyman Creek near Bozeman. Before the adjudication of claims to the waters of Prickly Pear Creek, 68 parties claimed thirty times its average flow of 50 cfs. Today, the Big Hole River with an average flow of 1,129 cfs has filings totaling 173,912 cfs. A person is unable to distinguish in the county courthouses the perfected rights from the unperfected ones since the law requires no official recordation of the completion of an appropriation. Recognition by the courts of unrecorded appropriations adds to the incompleteness of these records. To further complicate the situation, appropriators have used different names for the same stream in their filings. In Montana many of the streams flow through several counties; consequently, water right filings on these inter-county streams are found distributed in two or more

county courthouses. Anyone desirous of determining appropriations on a certain river or creek finds it difficult and expensive to examine records in several places. In addition, the records are sometimes scattered because the original nine counties of 1865 have now increased to 56. As the original counties have been divided and sub-divided, the water right filings have frequently not been transcribed from the records of one county to the other. Thus, a record of an early appropriation in what is at present Powell County may be found in the courthouse of the original Deer Lodge County.

It can be readily seen that this system of recording offers little protection to rights in the use of water until they are determined by an adjudication. In other words, an appropriator does not gain a clear title to his water right until after adjudication and then the title may not be clear because the Montana system of determining rights is also faulty. In the first place, adjudications are costly, sometimes very costly when they are prolonged for years. It is estimated that litigation over the Beaverhead River, which has lasted more than twenty years, has cost the residents of the valley nearly a half a million dollars. In the second place, unless the court seeks the advice of a competent irrigation engineer, the adjudication may be based upon inaccurate evidence. In the third place, if some claimant has been inadvertently left out of the action, it is not final and may be reopened for consideration by the aggrieved party. Another difficulty arises in determining the ownership of a water right when land under an adjudicated stream becomes sub-divided in later years and the water not proportioned to the land by deed or otherwise. There is no provision made by law requiring the recording of specific water right ownership on deeds and abstracts.

The Legislative Session of 1957 passed Chapter 114 providing for the policing of water released from storage to be transmitted through a natural stream bed to the place of use. The owner of the storage must petition the court for the right to have the water policed from the storage reservoir to his place of use. If there are no objections, the court may issue this right and appoint a water commissioner to distribute the water in accordance therewith. This law applies only to unadjudicated streams.

Administration of water on an adjudicated stream is done by the District Court, but it has its drawbacks. The appointment of a water commissioner is often delayed until the shortage of water is acute and the court frequently finds it difficult to obtain a competent man for a position so temporary. The present administration of adjudicated streams which cross the county boundaries of judicial districts creates problems. Many of the water decrees stipulate head gates and measuring devices for proper water distribution, but in many instances the stipulation is not enforced, causing disagreement among the water users.

Since a water right is considered property and may be bought and sold, the nature of water requires certain limitations in its use. One of the major faults affecting a stream after an adjudication is the failure of the District Court to have some definite control over the transfer of water rights from their designated places of use. The sale and leasing of water is becoming a common practice on many adjudicated streams and has created serious complications. By changing the water use to a different location, many of the remaining rights along the stream are disrupted, resulting in a complete breakdown of the purpose intended by the adjudication. To correct this situation, legal action must be initiated by the injured parties as it is their responsibility and not the Court's.

At one time or another all of the other Western Reclamation States have used similar methods of local regulation of water rights. Now all of them except Montana have more or less abandoned these practices and replaced them by a system of centralized state control such as the one adopted by the State of Wyoming. The key characteristics of the Wyoming system are the registration of both the initiation and completion of an appropriation in the State Engineer's Office, the determination of rights and administration by a State Board of Control headed by the State Engineer. These methods give the Wyoming water users titles to the use of water as definite and defensible as those which they have to their land.

When Montana began to negotiate the Yellowstone River Compact with Wyoming and North Dakota in 1939, the need for some definite information concerning our water and its use became apparent. The Legislature in 1939 passed a bill (Ch 185) authorizing the collection of data pertaining to our uses of water and it is under this authority that the Water Resources Survey is being carried on. The purpose of this survey is six fold: (1) to catalogue by counties, in the office of the State Engineer, all recorded, appropriated and decreed water rights including use rights as they are found; (2) to map the lands upon which the water is being used; (3) to provide the public with pertinent water right information on any stream, thereby assisting them in any transaction where water is involved; (4) to help State and Federal agencies in pertinent matters; (5) to eliminate unnecessary court action in water right disputes; (6) and to have a complete inventory of our perfected water rights in case we need to defend these rights against the encroachments of lower states.

Ground water and surface water are often intimately related. In fact, it is difficult in some cases to consider one without the other. In times of heavy precipitation and surface runoff, water seeps below the land surface to recharge underground reservoirs which, in turn, discharge ground water to streams and maintain their flow during dry seasons. The amount of water stored underground is far greater at any given instant than the amount of surface water in Montana, and, without seepage from underground sources, it is probable that nearly all the streams in the State would cease to flow during the dry seasons.

It is believed that Montana's ground water resource is vast and only partly developed. Yet this resource is now undergoing a rapidly accelerating development as the need for its use increases and economical energy for pumping becomes available. Continued rapid development will undoubtedly cause waste and depletion of ground water in areas where it is not plentiful. Experience in other states has shown that once overuse of ground water in a specific area has started, it is nearly impossible to stop it, and may result in painful economic readjustments for the inhabitants of the area concerned.

Practical steps aimed at conserving ground water resources and correcting related deficiencies in surface water laws are necessary in Montana. Proposed ground water codes have been rejected by four sessions of the Montana Legislative Assembly, (1951, 1953, 1955, 1959) and proposed improvements of existing surface water laws have also failed to be enacted. The formulation and presentation of a workable ground water code, designed to protect and conserve Montana's ground water resources, to the next Legislature are essential if Montana is to avoid the problems that plague some of our sister states.

A ground water code must be based on full consideration of the intimate relation of

ground water and surface water. A central filing office where all filings, well logs, and other records (past, present, and future) for all water in use—ground or surface—should be provided for by any water code. Accurate records concerning water rights and amount of water available are essential in the administration and investigation of water resources. The availability of these records in a central office under the control of a responsible State agency will surely provide a stronger and more accurate basis for the negotiation of interstate water compacts, as well as set up a means for rapid evaluation of data for in-State litigation.

METHOD OF SURVEY

Water Resources data contained in Part I and Part II of this report are obtained from courthouse records in conjunction with individual contacts of land ownership. A survey of this type involves extensive detailed work in both the office and field to compile a comprehensive inventory of water rights as they apply to land and other uses.

The material of foremost importance used in conducting the survey is as follows: From the files of the county courthouse the data required includes; land ownership, water right records (decrees and appropriations), articles of incorporation of ditch companies and any other legal papers in regard to the distribution and use of water. Deed records of land ownership are reviewed and abstracts are checked for water right information when available.

Aerial photography is used by the survey to assure accuracy in mapping the land areas of water use and all the other detailed information which appears on the final colored township maps in Part II of the reports. Section and township locations are determined by the photogrammetric system, based on government land office survey plats, plane-table surveys, county maps and by "on the spot" location during the field survey. Noted on the photographs are the locations of each irrigation system, with the irrigated and irrigable land areas defined. All the information compiled on the aerial photo is transferred and drawn onto a final base map by the means of aerial projection. From the base map color separation maps are made and may include three to ten over-lay separation plates, depending on the number of irrigation systems within the township.

Field forms are prepared for each land owner, showing the name of the owner and operator, photo index number, a plat defining the ownership boundary, type of irrigation system and source of water supply and the total acreage irrigated and irrigable under each. All of the appropriated and decreed water rights that apply to each ownership by the description of intended place of use are listed on the field form. During the field survey, all water rights listed on the field form are verified with the land owner. Whenever any doubt or complication exists in the use of a water right, deed records of the land are checked to determine the absolute right of use.

So far as known, this is the first survey of its kind ever attempted in the United States. The value of the work has become well substantiated in the counties completed to date by giving Montana its first accurate and verified information concerning its water rights and their use. New development of land for irrigation purposes by State and Federal agencies is not within the scope of this report. The facts presented are as found at the time of completing each survey and provide the items and figures from which a detailed analysis of water and land use can be made.

The historical data contained in these reports can never become obsolete. If new information is added from time to time as new developments occur, the records can always be kept current and up-to-date.

WATER RESOURCES SURVEY

WIBAUX COUNTY, MONTANA

PART I

HISTORY OF LAND AND WATER USE
ON IRRIGATED AREAS

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HISTORY AND ORGANIZATION

Wibaux County was created on August 17, 1914, by petition that was signed by over one half of the qualified voters of the proposed county. In order to avoid the long distance in traveling to Miles City or Glendive to transact county business, the people within the territory comprising the county of Wibaux petitioned the commissioners of Dawson County at Glendive for a new county.

Wibaux County is bounded on the North by Richland County, on the West by Prairie and Dawson Counties, on the South by Fallon County, and on the East by the State of North Dakota.

Land elevations vary from about 2,000 feet along the Yellowstone Valley to a maximum of 3,000 feet so that the average elevation is around 2,700 feet. The table land of the Beaver Creek Divide runs the length of the county North and South. The important Beaver Creek (name derived from the great number of beaver which inhabit the creek), rises in this divide a few miles across the Fallon County line, and flows diagonally across Wibaux County where it empties into the Little Missouri River, in North Dakota. Most of Wibaux County's early industrial history was dependent on Beaver Creek; first, because of its rich hunting and trapping resources and an easy travel route; and later, because of the splendid grazing and abundant water it supplied for range livestock.

Like many of Montana's Eastern Counties, Wibaux County's industrial and economic growth is closely linked with the history of stock ranching. Probably the most prominent and influential man of Wibaux County's early development was Pierre Wibaux.

Pierre Wibaux was born in Roubaix, France, in 1858, where his father operated a large textile mill which had been founded by Pierre's grandfather in 1810. Pierre received a well-rounded basic education and then, to enable him to assume an active part in the management of the firm, he was sent to England to study the British methods of spinning. While there, he heard stories of the range-stock business in the American West and decided to examine these reports for himself.

Wibaux arrived in the United States in 1883 and visited Chicago to investigate the packing industry and to study market conditions at the stockyards. Then in company with the Marquis de Mores (for details of de Mores see history and organization of Carter County in this report) he traveled to the Bad Lands area of what is now Eastern Montana and Western North Dakota and claimed a ranch site. He formed a short-lived partnership in the cattle business with another Frenchman, Gustave Grisy, which was dissolved in 1884.

Wibaux ranched on a small scale until the fall of 1883, when he returned to France and, with the assistance of his father and brother, formed the Pierre Wibaux Company, capitalized at \$200,000. When he returned to the United States in the Spring of 1887, he purchased at a very moderate price large numbers of cattle which had survived the hard winter of 1886-1887. His ranch, the W, operated at its peak during the early 1890's when about 65,000 cattle roamed its range. It was during the early 1890's that Wibaux became involved in extended litigation with Nelson Morris, the Chicago packer. Morris had contracted to purchase many cattle on the range in anticipation of a rising market, but when cattle prices began to decline

he attempted to evade his obligations. Wibaux, who had contracted to sell his dry cows and mature steers to the packer, brought suit against Morris and received damages.

Shortly after the turn of the century, the influx of homesteaders forced Wibaux to close out his cattle interests. He then devoted the remainder of his life to travel and to the supervision of his financial interests, principally the State National Bank of Miles City, Montana, of which he was a large stockholder and president in 1896.

Wibaux succeeded in his ranching activities when many others failed, because he proceeded in a careful and intelligent fashion, because he had adequate financial backing, and because at times fortune seemed to smile upon him. His neighbors coined the term "Wibaux's Luck," in speaking of some of the fortunate events which befell him. He was a man of foresight, influential in his community and well liked by everyone.

Wibaux was a progressive rancher and unhampered by tradition. He made a careful study of livestock markets to determine the types of cattle most in demand and the best methods of marketing them. He raised calves on his range when most ranchers on the Northern Plains stocked yearling steers from breeding centers elsewhere. He seeded a field to alfalfa in 1887, the first to be planted in the Beaver Creek Valley. He did this in order to have feed to carry his horses and a part of his stock through the winter, a practice followed by most successful ranchers today. He joined with his neighbors in the war against prairie fires and wolves, and inaugurated new methods in battling both menaces.

Pierre Wibaux died in Chicago, Illinois, in 1913. The people of Eastern Montana honored him by naming a town and county for him, and a block and a park in Miles City to perpetuate his name. In his memory there stands a bronze statue on a knoll one mile West of the town of Wibaux, facing North, and guarding the range he loved so well.

Wibaux County, today is quite different from the open range country Pierre Wibaux knew during the days of the cattle barons.

Although the county is small, it has a great potential as an agricultural producing region. Being the third smallest county in Montana the land area is only 568,960 acres, of this, 92.6 per cent is in farms, the remainder of the land in roads, streams, and the Oil Field area in the southwest part of the county.

There are 281 farms in the county (1959), of which 275 are classed as commercial farms, containing an average of 1,816 acres.

Grain crops grown in the county total 83,000 acres, with wheat grown on 41,000 acres, barley on 20,000 acres, and corn on 19,000 acres. Safflower is presently growing in popularity and currently accounts for over 3,000 acres of the cropland.

About 12,000 acres are devoted to the raising of hay and feed crops, all of which is used locally.

The range land in Wibaux County, totals 361,134 acres, most of which lies in the Northern and Southern parts of the county. The majority of the range land is utilized by 12,155 head of range cattle and 7,400 head of sheep.

The county's assessors records list 300 dairy cattle, with most of the milk used locally, and the balance supplied to the one commercial dairy in the county. The records also show 352 swine and 435 horses on farms throughout the county.

The most important town in Wibaux County is Wibaux, the county seat, which is located in the center of the county on U. S. Highway No. 10 and the Northern Pacific Railway. The town of Wibaux was known in the 1880's as Mingusville, but because of confusion in the delivery of mail to Marysville in Montana, the name was changed to Wibaux. Another small community, Carlyle, is located in the extreme southeast corner. Carlyle is a small rural community, located on the branch line of the Northern Pacific Railway and has never been incorporated as a town.

Wibaux County has better than average transportation facilities. Almost any place in the county is accessible to within 30 miles of the Northern Pacific Railway and U. S. Highway No. 10, both of which run parallel to each other across the central part of the county. Improved gravel roads provide year-round travel connections to the rural areas.

CLIMATE

Wibaux County, located near the mid-point of Montana's eastern boundary, does not have the extreme differences in elevation of the state's more mountainous areas. But much of the county is quite hilly, and topography and elevation differences play an important, if not extremely large, part in the climate variations observed from the higher southeast corner to the northwest corner along the Yellowstone River. Elevations range from a little over 3,000 ft. above sea level on some of the higher hills to about 2,000 ft. where the Yellowstone River forms the county boundary along a small segment of the northwest corner. Drainages flow generally in a northerly direction, a factor in the sometimes annoying ice-jams of early spring when southern areas thaw before the ice goes out in northern sections. The principal drainage is Beaver Creek, flowing northward through the county's principal valley, but several drainages along the western boundary, rising in western hill areas, flow northwestward through Dawson County into the Yellowstone River.

Topography appears to play an important role in precipitation distribution on the average, with the wettest areas in general being the higher sections along the Dakota border. Annual average precipitation runs from around 15 inches in the higher country along the Dakota line to about 13 inches a year in lower elevations. It is important to note that, although these totals would tend to classify the area as semi-arid, about three-fourths of these amounts fall in a normal year during the April-September so-called growing season, permitting an extensive and successful dry-land agriculture, devoted principally to types of grain. The heaviest rains usually fall during June, but in some years heavy rainfall occurs in May, or in July or September. Heavy showers occasionally accompany summer thundershowers, and monthly totals during late spring and early summer occasionally exceed six inches. Annual snowfall is relatively light, averaging a little more than 30 inches across the county. This results from the fact that only about a fourth of a normal year's precipitation falls during the October-March season.

Temperature-wise the climate is decidedly continental, with warm and sometimes humid summers, but with cold winters. The daily range between highest and lowest temperatures

is rather large, particularly during clear weather in late fall, winter, and early spring. Temperatures as high as 115° F. can occur in the county's lower elevations near the Yellowstone River, but daytime readings run about 5° cooler in parts along the Dakota boundary. In general, the farther from the Yellowstone River the less severe the summertime heat that occurs almost every year during parts of July and early August, but even at Wibaux the temperature has been as warm as 110° F. These hot summer days, that can and do occur a few times every summer, seldom are oppressive except along the Yellowstone River, because nighttime cooling furnishes relief almost daily. At Wibaux, for example, night low temperatures average about 53° F. during July. Nearer the Yellowstone River, however, nighttime lows for the same month average about 59° F., 6° warmer. Winters generally run quite cold, and several days of below zero weather are observed each year. It has been as cold as 50° to 55° F. below zero over most of the county, but such severe cold only occurs on the order of about once in 20 years. The coldest in most winters is about 25° to 35° below zero. January minimums over the county average about 2° or 3° above zero; maximums about 25° above zero.

Severe weather of several types has been observed over the years. Tornado frequency, one of the highest in the state, is still very low; on the order of about one in the county each 20 years. Records list but one fatality from tornado effects in a matter of 35 years. Summer thundershowers sometimes produce damaging hail or dangerous lightning, or both. Hailstones larger than baseball size have occurred, and seldom does a summer pass without hail damage occurring somewhere within the area. At the same time, hail damage rarely covers a large area, and in the overall sense the moisture received usually about balances crop or property losses. But hail can hurt badly in the localities it strikes. There is considerable windy weather during spring months, but wind speeds seldom are high enough to cause widespread damage. Heavy summer showers can cause local flash flooding over small sections, but this phenomenon occurs only about once in four or five years. Blizzards can occur during the winter, and only occasionally does a year pass without blowing snow combined with cold on a few days. However, these conditions are seldom serious if preparation for them is adequate.

There is considerable sunshine throughout the year, except for occasional persistent periods of cloudiness during the late spring-early summer rainy season. Summer afternoons often are characterized by thunderheads, but the mornings generally are clear. A few humid days are observed most summers, when moisture flowing northward from the Gulf of Mexico sometimes reaches Eastern Montana counties. Generally, however, these humid air masses are pushed eastward by cooler air from the northern Pacific Ocean after a day or two. The following tabulation of a few Wibaux County weather statistics has been augmented by inclusion of Glendive and Savage data—which represent quite well the conditions that prevail over lower elevations, even though both lie outside county boundaries:

WIBAUX COUNTY WEATHER DATA

Station	Years of Record	Average Annual Temperature	Highest	Lowest	Years of Record	Average Annual Precipitation	Wettest Year	Driest Year
Wibaux ¹	18 ²	41.6	110	—55	18 ²	15.04	21.31 (1916)	12.09 (1919)
Wibaux 2 East	12 ³	41.3	110	—38	12 ³	13.23	17.69 (1954)	8.50 (1952)
Glendive (Dawson)	65 ⁵	45.4 ⁴	117	—50	69 ⁵	13.07 ⁴	26.02 (1916)	4.83 (1934)
Savage (Richland)	53 ⁷	43.4 ⁴	111	—53	53 ⁷	13.44 ⁴	27.08 (1906)	5.93 (1934)

¹A large number of months missing for period of record. ²1893 - 1925. ³1946 - 1958. ⁴1931 - 1955. ⁵1892-1958. ⁶1890-1958. ⁷1906-1959.

SOILS

Wibaux County lies in Eastern Montana along the Montana-Dakota boundary and about midway between the Northeast and Southeast corners of Montana. The County is drained by Beaver Creek, Cedar Creek, Glendive Creek, Cottonwood Creek, Smith Creek, and other minor tributaries of the Little Missouri and Yellowstone Rivers.

The soil materials consist of weathered sandstones and shales of Cretaceous Age, a few terrace remnants of old alluvial deposits and recent alluvium in the stream valleys. Soils are mostly within the loam to clay loam texture range, but there are significant areas of sandy loam and loamy sand soils and local areas of dense clay soils. The farming soils are largely confined to the southeastern part of the County. Relief over much of the County is steeply rolling to broken, and soils in these areas are suitable only for grazing.

The soils of Wibaux County belong in the Chestnut, Brown, Regosol, and Lithosol great soil groups. A detailed soil survey has been completed and a report was published in 1958. This report is available to farmers or others who have use for the survey and may be obtained from the Soil Conservation Service or from Montana Agricultural Experiment Station. The map and report provide information needed for planning correct land use and management.

ECONOMIC MINERAL DEPOSITS

The rocks underlying the area of Wibaux County are classified as sedimentary by geologists. Igneous or volcanic rock and associated metallic mineral deposits are absent, except possibly at great depth. The most valuable mineral deposits are organic in nature and consist of oil, gas, and lignite coal. Economically unrecoverable trace amounts of uranium occur in some of the lignite coal.

Ground water is an important mineral resource that usually receives little consideration. Wibaux County has many small diameter water wells that are essential for stock and domestic use.

Sand, gravel, concrete aggregate, and road metal materials are not plentiful in Wibaux County.

Oil and Gas

Oil is the most valuable mineral resource produced in Wibaux County, but it is difficult to determine the exact production within County boundaries because the limits of oil fields are not related to political boundaries.

The greatest presently producing oil and gas structure in Montana is the Cedar Creek anticline, an elongated arch which extends from northwest of Glendive southeast through Baker into the Dakota's. Oil and gas is produced almost continuously along this structure in Wibaux and Fallon Counties (also, see description and footnotes in Fallon County Section).

Pine Unit Field.—The Pine unit oil and gas field is principally in southwest Wibaux County, but extends into Prairie, Dawson, and Fallon Counties. Since its discovery in December 1951, the Pine unit has become the largest oil producing field in Montana.

Production		
Oil	1959	4,831,930 bbls.
Total through	1959	21,159,000 bbls.
Gas	1959	923,266 million cu. ft.
	1958	993,045 million cu. ft.

In round numbers another 50,000,000 barrels may be produced by ordinary methods. Secondary recovery procedures, such as water injection (apparently successful in the Pine unit), may almost double the ultimate recovery.

Wibaux Field.—The Wibaux field was named for a well drilled about five miles southeast of Wibaux by the Lion Oil Company. This well attained a depth of 11,153 feet and found oil in fractured Red River dolomite. A flow of 118 barrels per day was developed, but water soon appeared and the water/oil ratio increased until the well was abandoned in May 1957, after producing 21,513 barrels of oil.

Coal

Most of Wibaux County is underlain by the lignite coal-bearing Fort Union formation. According to an early (1910) report by the U. S. Geological Survey, Wibaux County lies within the Sidney lignite field, and as many as 11 lignite seams ranging from 2 to more than 10 feet in thickness are found in the Fort Union formation. An earlier report (1907) described a Sentinel Butte lignite field in east-central Wibaux County on either side of the Northern Pacific Railway. The coal seams in this area are readily accessible.

Estimated reserves of lignite in Wibaux County are upwards of 7 billion tons. However,

all the lignite is of low grade and is subject to slacking (breaking up) when exposed to atmospheric conditions. This renders it uneconomic for commercial use.

There is no record of commercial lignite mining in Wibaux County. (For further discussion of lignite coal value, see the Carter County section).

Sand, Gravel, Aggregate, and Road Metal

Large commercial sand and gravel deposits are apparently absent in Wibaux County, though the Yellowstone Valley offers some possibilities in the extreme northwestern part. Small deposits of sand and gravel may be present along Beaver Creek and other streams. Some concrete aggregate and road metal may be derived from weathered outcrops of clinker, as in Fallon and Carter Counties.

WIBAUX SOIL CONSERVATION DISTRICT

The petitions for the organization of the Wibaux Soil Conservation District were circulated in Wibaux County in the fall of 1939. The petitions called for the organization of the entire county, and Wibaux County was the first county-wide Soil Conservation District in the State of Montana. The certificate of organization of the Wibaux District was executed by the Secretary of State on January 15, 1940, and the "Memorandum of Understanding" was signed by the Secretary of Agriculture on March 26, 1940.

The Wibaux Soil Conservation District includes all of Wibaux County, Montana, which is an area of approximately 23 townships or 568,960 acres. The present land use includes 172,200 acres of cropland, 361,134 acres of rangeland and 35,626 as other land. Wibaux is mainly an agricultural county. Wheat is the main cash crop, and permanent pasture would be a better use for much of the acreage in cultivated crops. Much of the cropland is subject to wind and water erosion. Like other Northern Great Plains areas, the county has periods of drought. There are good years, or years of ample moisture, when crops may be above average, and some dry years when crops are produced only on the best sites. When dry years occur in succession they may cause financial disaster on some farms, while on the other hand, when wet years arrive in a row, and particularly when prices are satisfactory, they bring a higher income to the farmer. There are 281 operating units in the District with most of the farmers and ranchers cooperating. Wind erosion in the county has been controlled by most of the farmers by the use of wind strips and stubble mulch tillage practices.

The District has stressed the importance of controlling water erosion, because of the heavy intense rains which occur in the summer and cause severe water erosion especially on summerfallowed land. Cooperating farmers have established an outstanding amount of agronomy type practices to prevent this kind of erosion. Contour stripcropping with grass buffers have been established on the cropland by the farmers to a greater extent than any in any other of the surrounding Districts. In addition, the use of grass waterways and the conversion of cropland to permanent grasses is equally outstanding. There is still a large amount of conservation work to be done on a large acreage subject to water erosion.

Range management practices are also stressed, such as proper stocking, deferred grazing and rotation grazing, along with providing proper water developments in springs, wells and

dams to obtain better utilization of the rangeland. The cooperators in the District have adopted these programs to the extent that 70 percent of the rangeland is in good and excellent condition, which indicates that there is still work to be done on the remaining rangeland. In addition a large number of farmers and ranchers have established "U" shaped windbreaks around their farmsteads and the use of trees is increasing throughout the entire district. These trees protect the farmsteads from the hot winds in the summer and drifting snow in the winter, as well as adding beauty to the farmstead and a home for wildlife.

The District is governed by a board of five supervisors who are elected by the land occupiers of the District. They carry out a program of soil erosion control, water conservation, management practices for cropland and rangeland and proper land use. They also have the power, under state law, to request assistance from any local, State or Federal agency to assist in carrying out the Districts Program. The District helps farmers and ranchers get technical assistance from the Soil Conservation Service of the United States Department of Agriculture on their soil and water conservation work. A complete published soil survey of the entire county is now available to the farmers and ranchers which is part of that technical help. Other technical assistance is provided farm and ranch operators to develop basic conservation plans for their land. These plans include detailed soil surveys, range site and condition surveys, ground water surveys, and other surveys of the engineering type. The various surveys and investigations indicate proper land use and the kind and amount of conservation work needed to prevent erosion and to develop the resources of the farm or ranch to the maximum. The surveys provide basic information needed for the conservation plans developed by the farmer or rancher. The cooperator develops his conservation plan using technical assistance of the Soil Conservation Service. The SCS technicians interprets the surveys and advises the operator concerning limitations and hazards of land use and recommends needed conservation treatment. The cooperator makes the final decisions that are entered in the plan as to what will be done and when the measures will be carried out. When a plan is completed the cooperator is extended further technical assistance, for installation of planned land use adjustments and application of conservation treatment as called for in the conservation plan. A follow up program to promote the continuing use of good crop and range management among cooperators is also maintained by the District.

The Wibaux SCD also promotes a rounded educational program with the cooperation of the Wibaux County Extension Service and all the schools in the county so that all people are kept aware of the benefits of conservation. The District also maintains good relations with all governmental agencies and businesses who are interested in putting good conservation practices on the land.

FISH AND GAME

Wibaux County is located in an area where water is at a premium. Most streams go dry in the summer months running water only in the spring. Some warm water fishing is provided through the storage waters in farm ponds which vary in size from one to fifty acres. These ponds are important to other forms of wildlife such as ducks and antelope as they often provide the only water in an otherwise dry area. Warm water fish for these ponds are provided by the U. S. Fish Cultural Station at Miles City.

Upland birds occur in nearly all parts of the county, with varying degrees of abundance.

Mule deer are numerous in the western part of the county and occur to a lesser degree in the eastern portion. The prairie areas of the county, not devoted to farming, have moderate antelope populations. As in other portions of southeastern Montana, stock-water ponds produce considerable waterfowl which usually migrates south prior to the hunting season.

IRRIGATION SUMMARY OF WIBAUX COUNTY BY RIVER BASINS

	Present Irrigated Acres	Irrigable Acres Under Present Facilities	Maximum Irrigable Acres
MISSOURI RIVER BASIN			
*Yellowstone River	0	0	0
Cabin Creek	0	0	0
Horse Creek	0	13.00	13.00
Unnamed Coulee	23.00	0	23.00
Cedar Creek	0	0	0
West Fork Cedar Creek	10.00	0	10.00
Unnamed Stream	62.00	0	62.00
Box Elder Creek	0	0	0
Dry Wash	15.00	0	15.00
Total Yellowstone River and Tributaries	110.00	13.00	123.00
Little Missouri River	0	0	0
Beaver Creek	156.00	0	156.00
Unnamed Draw	25.00	0	25.00
Total Little Missouri River and Tributaries	181.00	0	181.00
Total Irrigation in Wibaux County (Yellowstone and Little Missouri River Basins)	291.00	13.00	304.00

*Names of streams indented on the left-hand margin indicate that they are tributaries of the first stream named above which is not indented.

WATER RIGHT DATA — WIBAUX COUNTY
APPROPRIATIONS BY STREAMS

APPROPRIATIONS
(Filings of Record)

STREAM	Total No. of Filings	Total Miner's Inches	Total Cu. Ft. Per Sec.
MISSOURI RIVER BASIN			
*Yellowstone River	0	0	0
Cabin Creek	1	200	5.00
Horse Creek	1	1,000	25.00
Unnamed Stream	1	4,000	100.00
Cedar Creek	0	0	0
Unnamed Stream	9	21,040	526.00
Crow or Maggie Creek	1	500	12.50
Piney Draw	1	4,000	100.00
Box Elder Creek	1	1,000	25.00
Dry Wash	1	All	All
Cottonwood Creek	0	0	0
South Fork Cottonwood Creek	4	1,240	31.00
Smith Creek	0	0	0
Parson Creek	1	540	13.50
Total Yellowstone River and Tributaries	21	33,520	838.00
Little Missouri River	0	0	0
Beaver Creek	13	8,887	222.16
Rattlesnake Creek	1	All	All
Unnamed Coulee	1	All	All
Lame Steer Creek	3	9,120	228.00
Springs	1	4,000	100.00
Group of Springs	1	500	12.50
Dry Wash	1	All	All
Stockade Creek	2	1,000	25.00
Little Beaver Creek	1	200	5.00
Total Little Missouri River and Tributaries	24	23,707	592.66
Total Missouri River Basin	45	57,227	1,430.66

*Names of streams indented on the left-hand margin indicate that they are tributaries of the first stream named above which is not indented.

WATER RESOURCES SURVEY

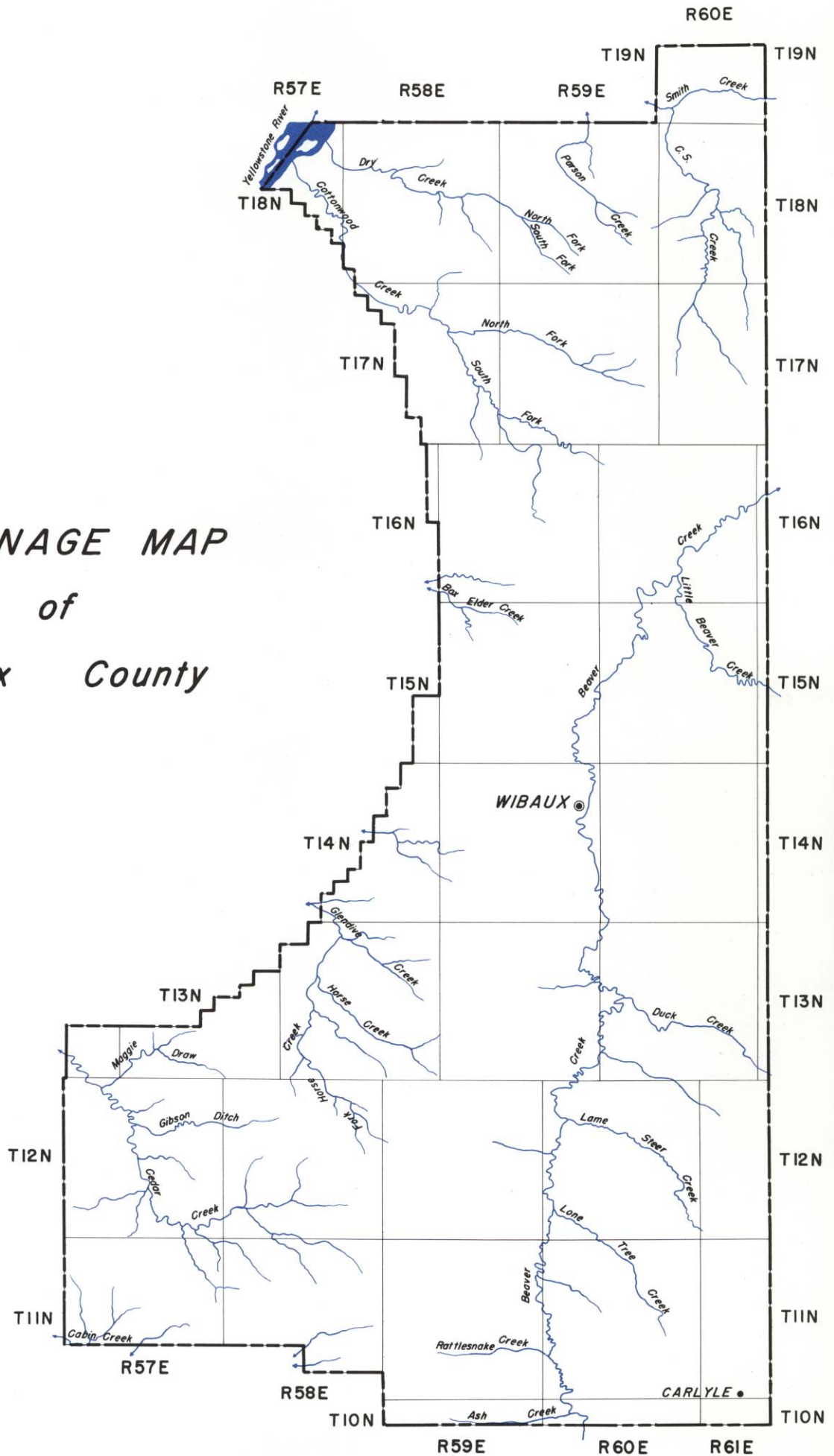
WIBAUX COUNTY, MONTANA

PART II

MAPS SHOWING IRRIGATED AREAS

Published by
STATE ENGINEER'S OFFICE
Helena, Montana
June, 1960

DRAINAGE MAP
of
Wibaux County



MAP INDEX

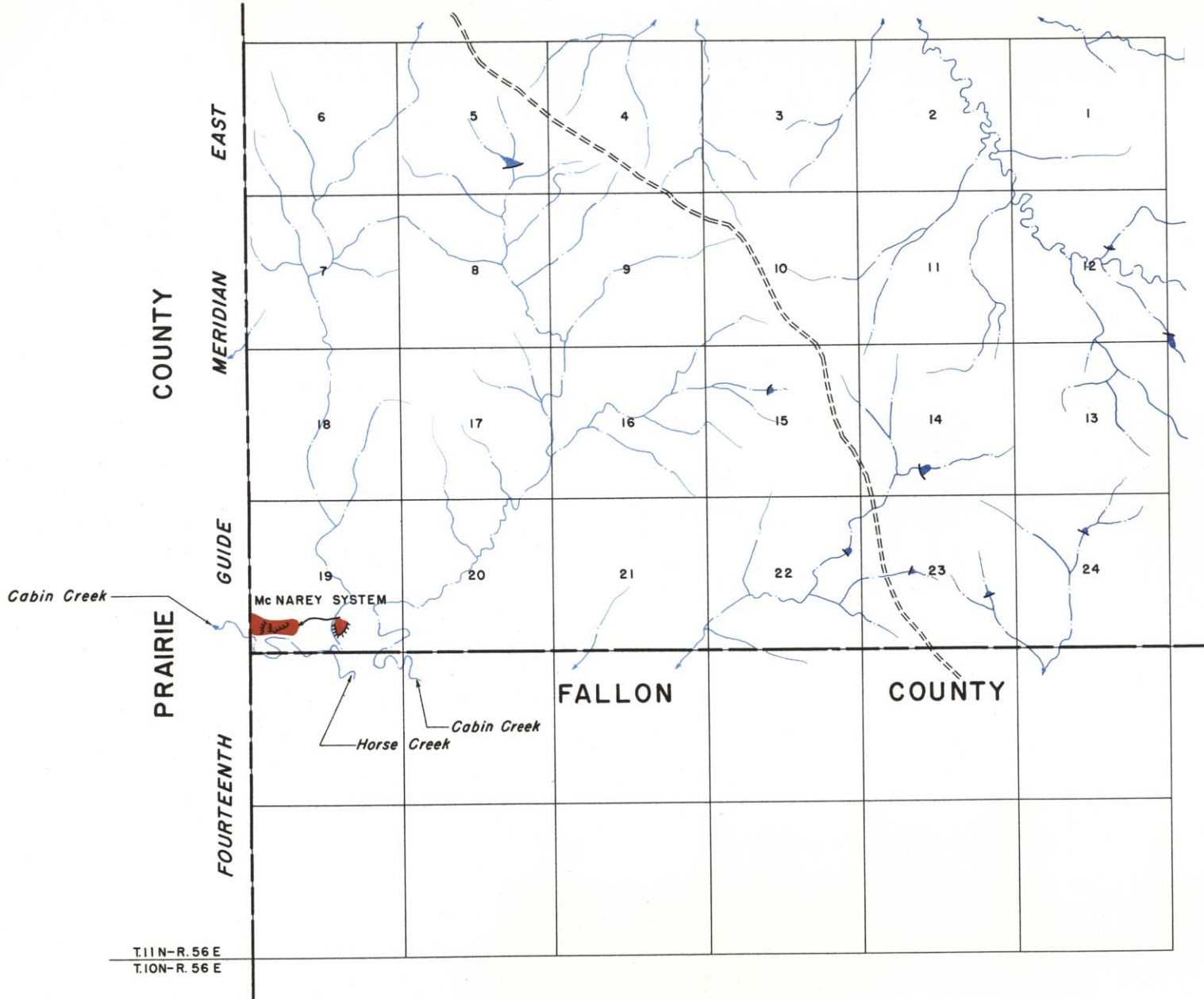
Township	Range	Page	Township	Range	Page
11 North	57 East.....	1	14 North	59 East.....	4
11 North	60 East.....	2	14 North	60 East.....	4
12 North	57 East.....	3	16 North	59 East.....	5
13 North	57 East.....	3			

ALL MAPS HAVE BEEN MADE FROM AERIAL PHOTOGRAPHS

Twp. 11 NORTH
Rge. 57 EAST

LEGEND

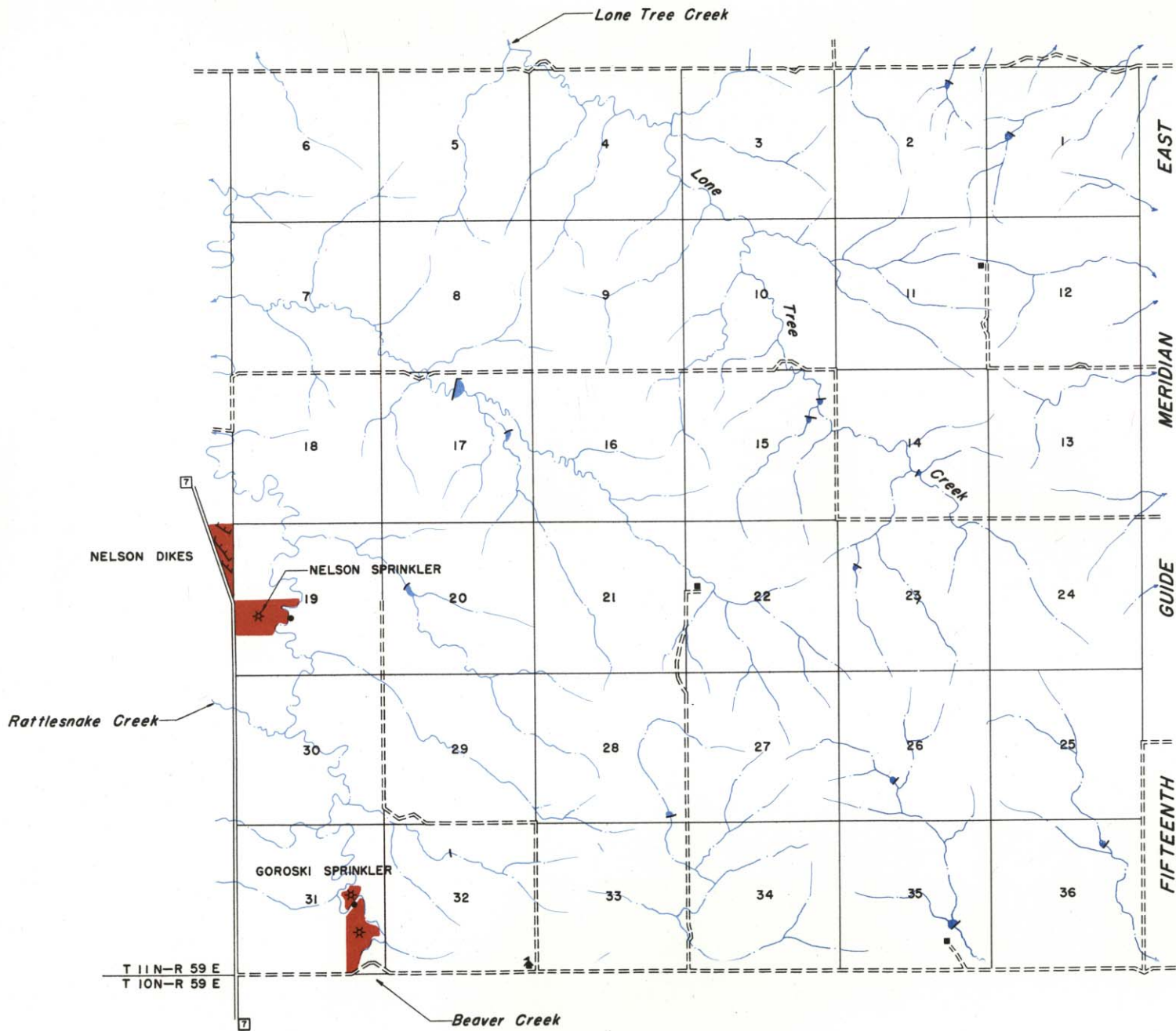
 Private Irrigation



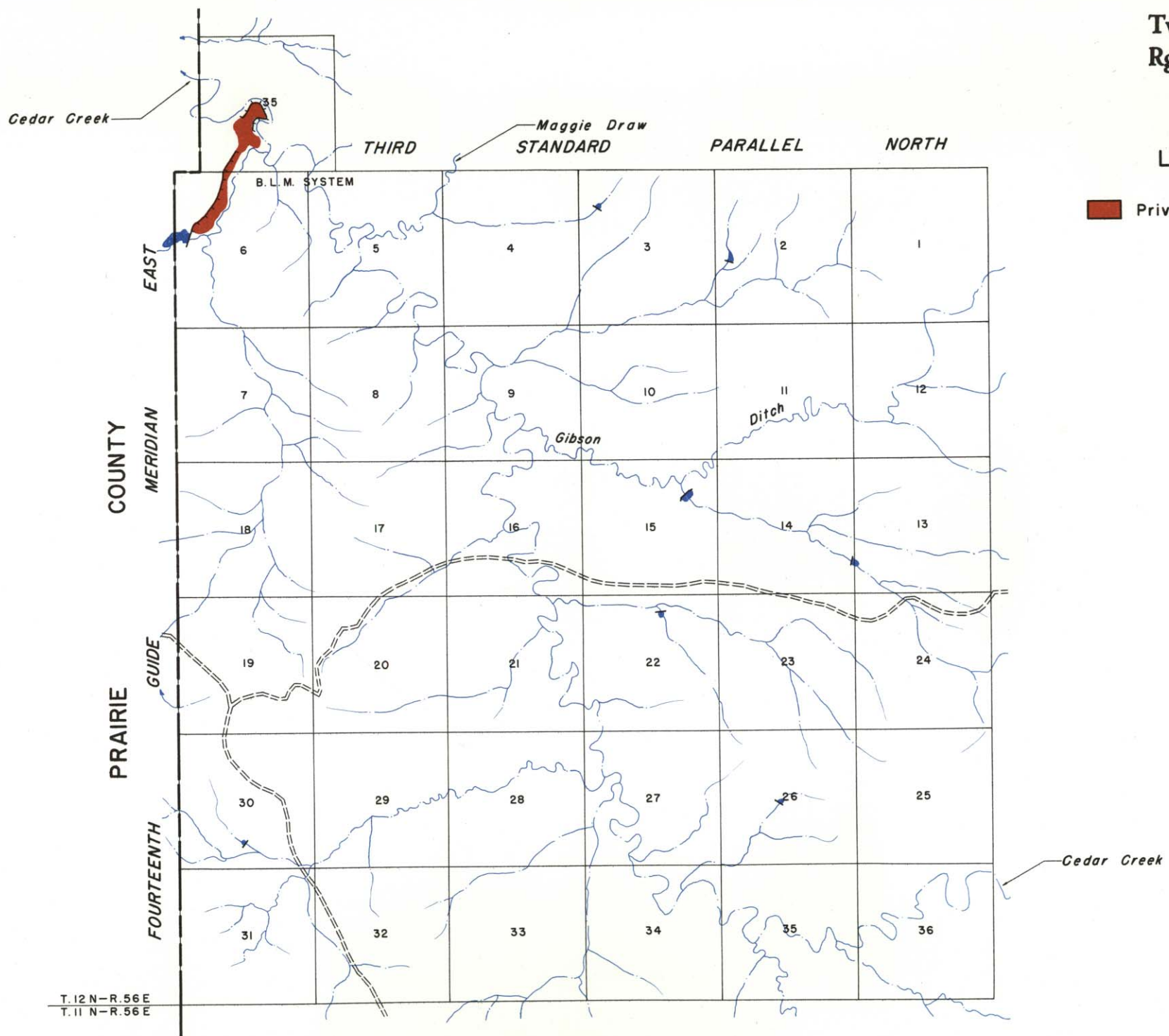
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Rge. 60 EAST

LEGEND

 Private Irrigation



Twp. 12 NORTH
Rge. 57 EAST




LEGEND

 Private Irrigation

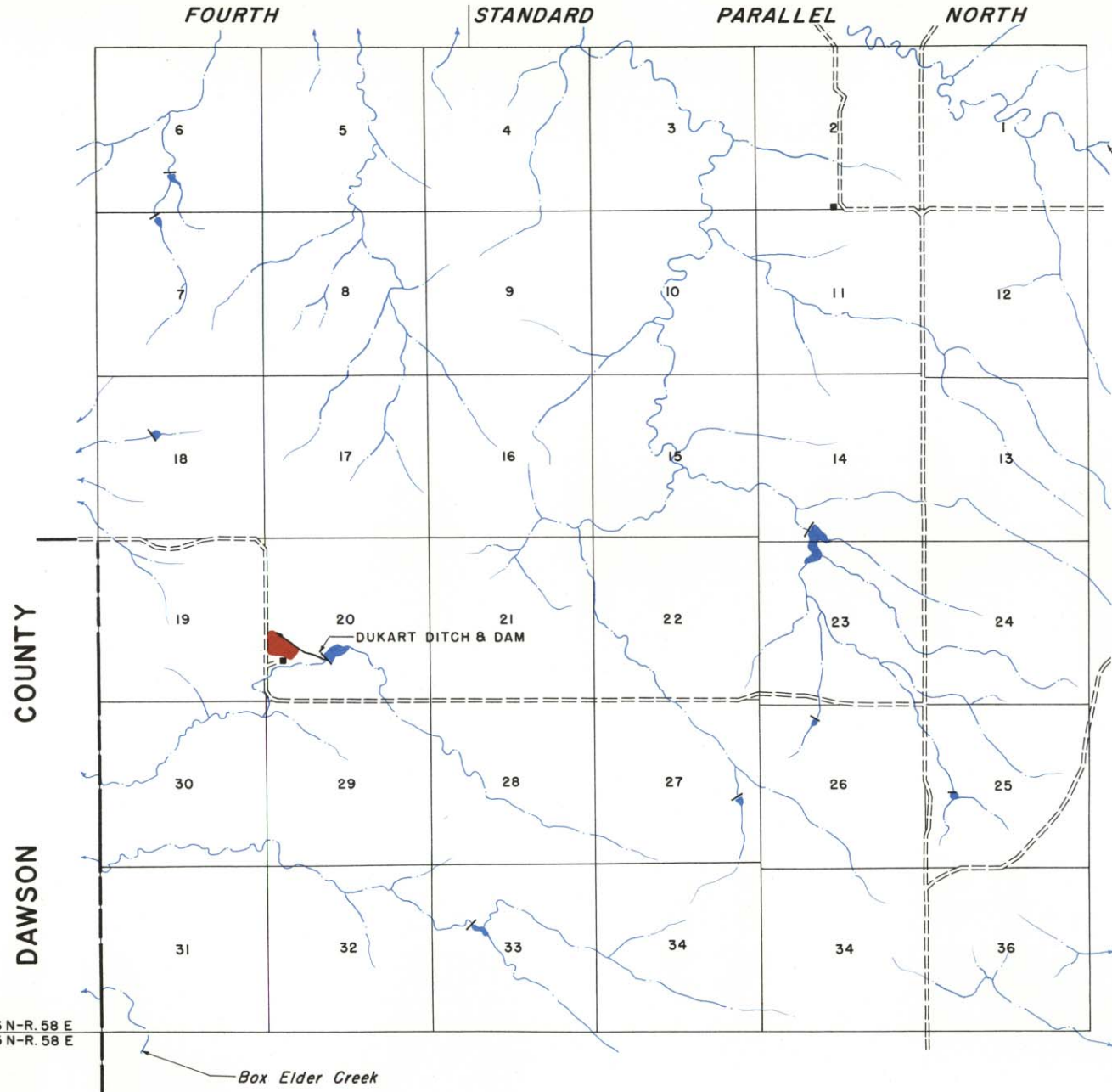
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T. 11 N - R. 56 E

LEGEND

 Private Irrigation



Twp. 16 NORTH
Rge. 59 EAST



LEGEND
■ Private Irrigation

Cottonwood Creek

Box Elder Creek

T. 16 N-R. 58 E
T. 15 N-R. 58 E