Montana Fish, Wildlife & Parks

Water Right Call Protocol

July 22, 2022

Montana Fish, Wildlife and Parks

Water Right Call Protocol

July 22, 2022

Introduction: This Water Right Call Protocol is a procedure for deciding where and when to make call on water rights that are junior to instream flow water rights held by Montana Fish, Wildlife & Parks (FWP) for fisheries, fish & wildlife and recreation purposes, and which water rights to include.

Montana was dry in 2021. With lower-than-average snowpack, FWP Water Program and Fisheries Division staff were aware that streamflows were likely to be low and conditions would warrant making call on water rights junior to FWP-held instream flow water rights in some areas. Toward the end of the legislative session and the weeks that followed, Director Worsech was briefed on the various functions of the Water Program, including participation in Montana's water rights adjudication, and engaging with water permit applicants to find creative mitigation solutions. However, when streamflow began to drop quickly, it was clear that the Water Program Manager had not adequately prepared the director and Governor's Office for the prospect of FWP making water right calls. As a result, when the program proposed to make call on juniors in the Smith and Shields River basins, the governor instructed us not to as there was inadequate evidence that the fisheries would benefit from said calls. The governor asked the program to articulate the process we use in determining which water rights we recommend calling and why.

The Water Program, in conjunction with the Fisheries Division, worked to articulate a call process that integrated FWP's historical approach to making call based on flow levels with river-specific fisheries information. The effort culminated in a memo titled: FWP Water Right Call Protocol and Basis for Call (8/17/21). The process described in that memo is largely based on past practice. However, additional steps to ensure timely communication between the Water Program, Fisheries Division and Director's Office were included. An analysis of junior water rights in certain Upper Missouri watersheds was provided as an example for discussion.

In response to the program's proposal to make call in the Smith and Shields, the governor also instructed FWP to engage in watershed planning efforts in those and other basins. The Water Program and Fisheries Division have evaluated water planning activities and identified active watershed groups in various basins. In the protocol described below, the state of watershed planning and local efforts to protect instream flow are strongly considered when assessing where call should be made. FWP Water Program and Fisheries Division staff have for many years participated actively in local watershed planning and drought planning efforts, most often providing technical, financial, and administrative assistance to the local group however possible. Our involvement ideally comes at the request of these local actors and officials; rarely, if ever, has FWP seen success in attempting to initiate such a planning effort on its own, or without local invitation.

The protocol discussed herein for making recommendations on where and when to make call and which water rights to include is largely based on the 8/17/21 memo. However, it has been updated to emphasize the fact that there are many basins where we do not consider call as there are alternative approaches to maintaining instream flow.

At each step of the process, we must clearly explain the reasons for our recommendation. Therefore, along with discussions of non-call basins and the call protocol itself, this document contains an appendix of individual watershed assessments. These assessments describe the individual watershed, local efforts to address flow, factors such as the presence of commissioners in the watershed, and river-specific fisheries information. They also list the number of junior water rights and discuss how many would be recommended for call under the requisite streamflow conditions, and why. The intent of this exercise was to assemble all relevant information in one place, make a preliminary determination of which basins would be recommended as call-eligible and clearly explain why. The intent is also for these documents to be iterative: conditions change from year to year, watershed groups can form but also dissolve, and commissioners can be appointed one year and not the next. Our intent is for these assessments to be updated as needed and help inform the ultimate decision on whether call will be made.

FWP's Instream Water Rights. FWP's instream flow rights have been established through administrative and judicial processes that required FWP to prove the amount of water necessary to protect (primarily) fishery resources. The department holds instream flow water rights throughout the state, but not in all Montana streams and rivers. Figure one shows Murphy rights (filed pursuant to legislation and named for the sponsor), instream flow reservations and two judicially recognized rights, but omits a limited number of recreation claims and the Upper Clark Fork instream flow right recognized by the Confederated Salish and Kootenai Tribes (CSKT) Water Compact.

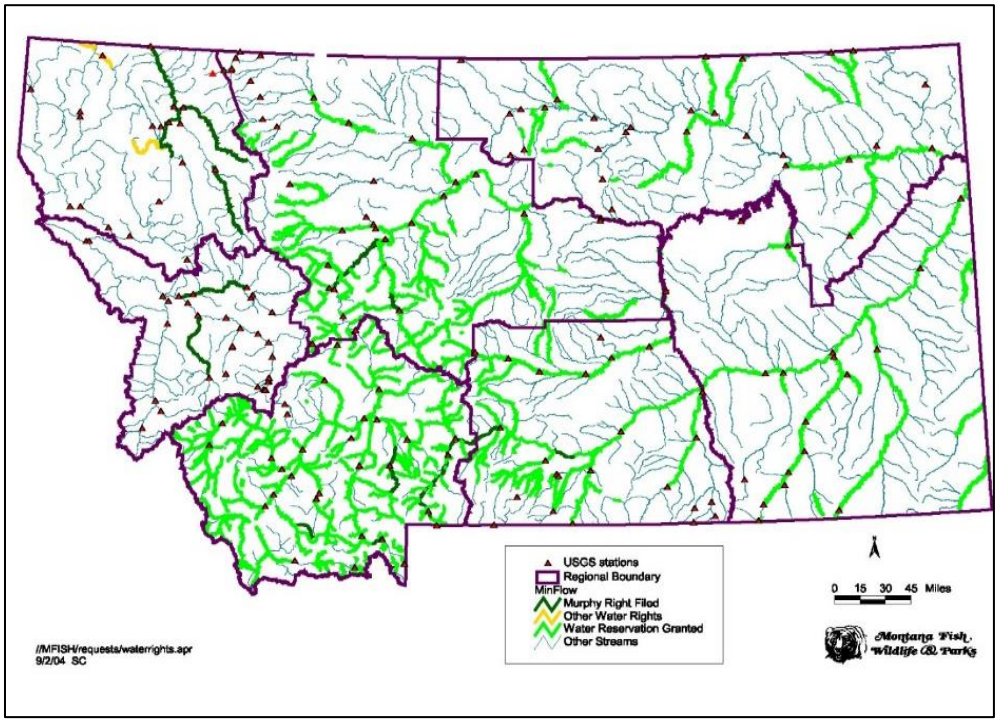


Fig. 1: Montana instream flow reservations and "Murphy" rights

Objective of a Call: The objective of making a water right call is to maximize the amount of habitat available to fish and other aquatic life under low flow conditions.

In the Upper Missouri basin, flow levels of FWP's instream rights are mostly based on the wetted perimeter (wetted-p) methodology. This methodology was designed to identify a flow level that protects macroinvertebrate production in riffles, which in turn provides food for fish. Other methods were used to set instream flow levels in other areas, but generally when a stream is below its instream flow level, a relatively small increase in flow can benefit the fishery by providing improved habitat conditions. There are additional benefits to protecting flow in riffles, including providing adequate water depth so that fish can move between habitats. This is especially important when water temperatures are high and fish are seeking out deeper, cooler water. Protecting flow through riffles also increases the area of habitat along banks of rivers where fish can find cover.

Calls on tributary streams may yield a small amount of water relative to the instream water right level on the associated mainstem river, but the additional water in the tributary may provide significant benefit to that stream. Calls on tributaries can provide localized cool water refugia for fish in addition to moderating overall water temperatures on mainstem rivers.

Note that a call may or may not produce enough added flow that it can be easily observed at a gage given the size of the diversion and/or distance from the gage. However, even if it is not observed, a call may help slow the decline in flow.

Call Recommendation Protocol

Step One: Streamflow Monitoring. Each year, when high flows begin to recede, Water Program staff monitor streamflow gages and compare the data against FWP instream right levels using an FWP-created application (https://apps.fwp.mt.gov/gis/maps/waterRights/). The application automatically compares current streamflow conditions to the level of FWP's instream flow water rights and can both identify juniors and map their location. See Figures 2 and 3 below.

Catchment	Current Flow (cfs)	Current In-Stream Flow Requirement (cfs)	Current Flow Caclulation
Blackfoot R Abv Clearwater	597	500	+ 295.0 cfs (USGS 12338300) + 302.0 cfs (USGS 12335100)
Boulder R	247	490	+ 247.0 cfs (USGS 06200000)
Boulder R	28.1	47	+ 28.1 cfs (USGS 06033000)
Boulder R Abv Cold Spring	28.1	8	+ 28.1 cfs (USGS 06033000)
Boulder River Above Little Boulder River	28.1	20	+ 28.1 cfs (USGS 06033000)
Boxelder Crk	unknown	7	No associated gauges
Clarks Fork Yellowstone R	429	1640	+ 429.0 cfs (USGS 06208500)
Clear Crk Abv Clear Crk Rd	0.08	5	+ 0.08 cfs (USGS 06142400)
Dearborn R	80.4	110	+ 80.4 cfs (USGS 06073500)
East Fork Poplar R	15.3	4	+ 15.4 cfs (USGS 06181000) - 0.1 cfs (USGS 06178000)
East Gallatin R	304.13	170	+ 304.13 cfs (DNRC 41H 08900)
East Gallatin R Abv Bozeman STP Outlet	28.9	42.4	+ 28.9 cfs (USGS 06048650)
East Gallatin R Abv Thompson Spring Crk	28.9	90	+ 28.9 cfs (USGS 06048650)
Flathead R Abv SF Flathead R	3600	3945	+ 1770.0 cfs (USGS 12355500) + 1830.0 cfs (USGS 12358500)

Fig. 2: Table comparing measured streamflow to FWP instream rights

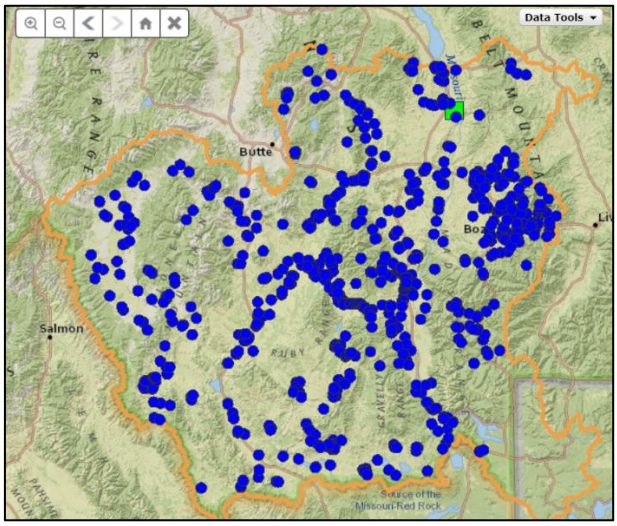


Fig. 3: Upper Missouri basin showing stream gage and junior water rights

Many instream flow reaches do not have active streamflow gages, so only those with readily available data from United States Geological Survey (USGS) or Department of Natural Resources and Conservation

(DNRC) are monitored. When a gauged stream is below FWP's instream water right and is expected to stay below it for several weeks to months, the basin is identified as a candidate for a call on water rights junior to FWP's instream flow rights.

Step Two: Determine Non-Call Basins. There are many basins where FWP has not historically made call. Obviously, where there are no instream flow water rights, or no water rights junior to instream flow rights, there would be no call. Where FWP does have instream rights, we first determine which basins would not be called because a call would be impractical or moot. For example:

- The Bitterroot River is an important fishery and recreational resource. As such, adequate instream flows are important. There, flows have historically been addressed not through call but through storage. FWP holds the rights to 15,000 acre-feet of storage in Painted Rocks Reservoir and an additional 3,037 in Lake Como. This water is released and left instream to maintain summer flows.

- In the Musselshell River, there are water rights junior to FWP's instream flow reservation. However, water rights in the Musselshell are administered by a court-appointed water commissioner from the confluence of the North and South Forks to below the USGS gauge at Mosby. As flows in the river drop, the commissioner adjusts the priority date at which water is available for use. The lower the flow, the earlier the priority date. Any water user junior to FWP is precluded from diverting water under all but high-water conditions. There is simply no practical reason to make call.

Step Three: Analyze Basin Specific Considerations.

In those basins not eliminated from call consideration in step one, a stream flowing below the level of FWP's instream rights does not automatically qualify it (or every junior in the basin) as a call candidate. A variety of factors are considered before recommending call. These factors may apply to an entire basin or part of one. They may influence when to make calls and on whom. Junior rights are eliminated from consideration for call for a variety of reasons:

- In some basins, a watershed group or community-based organization has water management or community drought response plans that are implemented under low flow conditions. For example, in the Blackfoot there is a drought committee (of the Blackfoot Challenge) that works with water users on individual drought plans. The committee's drought plan excuses cooperators from a call but requests that FWP make call on select juniors when flows at the Bonner gage fall below 700 CFS. In 2021, FWP received a request to make call from the drought committee and did make call on junior users who do not have individual drought plans.

- Some FWP instream rights, particularly in the Yellowstone basin, change each month with several having steep declines between their July and August levels. For example, the Yellowstone River instream flow right at Miles City drops from 10,278 CFS in July to 3,862 CFS in August. As of July 16, 2021, streamflow was 5,830 CFS which is well below the July instream

value, but above the August value. Under those conditions, a call would not be recommended until the right was reassessed in August to prevent a call being made just prior to FWP's right being met in early August.

- Water rights being administered by a court-appointed water commissioner are not recommended for call. As noted above, FWP has not made a call in the Musselshell River since commissioners began administering water nearly two decades ago. In a basin where water commissioners are administering only some of the junior rights, those under a commissioner's supervision would typically not be recommended for call.

- Domestic water rights are not called unless they include an irrigation component. Livestock water rights are not called unless they include a diversion of water into a ditch or some other type of highly inefficient use.

- Other junior water rights are evaluated to determine if cessation of use would provide any benefit. FWP's internal application allows staff to use aerial photographs to assess whether a call would result in water contributing to instream flow. For example, a right for a pond on a small stream that would most likely no longer be flowing would not be called. Local fisheries biologists are consulted for additional information. Figures 4 & 5 show an example of where a call may not be warranted: The point of diversion (red dot) is from Sheep Creek (flowing from right to left across the maps) which is technically tributary to the Beaverhead River. However, the topographic map and aerial photograph show the stream does not reach the Beaverhead River. The former path of the stream is now covered by fields with center pivots. Even if the stream did flow across the irrigated fields, it would be intercepted by East Bench Canal which is shown prominently on the left side of the maps. Because it is highly unlikely the cessation of this right would result in additional water reaching the Beaverhead River, it would not be called.

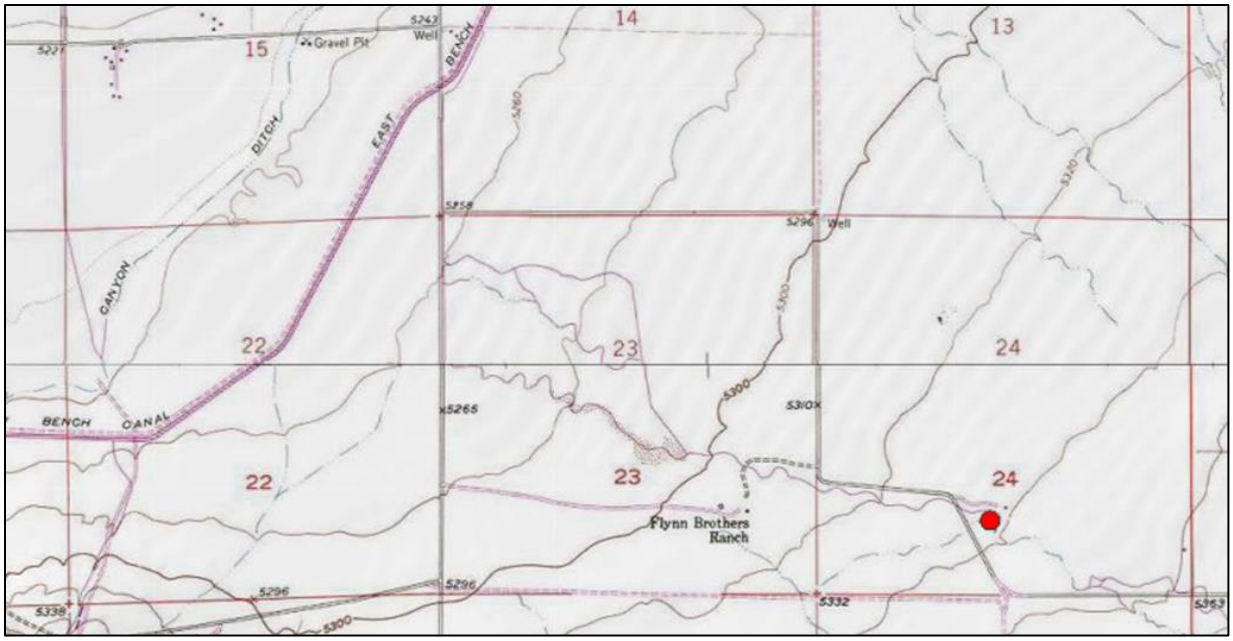


Fig.4: Topographic map junior water right diversion (red dot) on Sheep Creek above East Bench Canal


Fig.5: Aerial photograph showing same area as in Fig. 4

Historically, Water Program staff have been contacted by regional fisheries managers and fisheries biologist asking if call will be made or urging that it be made. Alternatively, Water Program staff have initiated contact with regional and field fisheries staff. Contact is generally maintained throughout the process of making a call recommendation and notice is provided once call is made.

Under the protocol developed in Summer 2021, once Water Program staff have determined which water rights in candidate basins should be eligible for call based on considerations described above and in the example provided, the Water Program manager would contact and consult with the Fisheries Division administrator and/or designated division staff, the regional fisheries manager and area fisheries

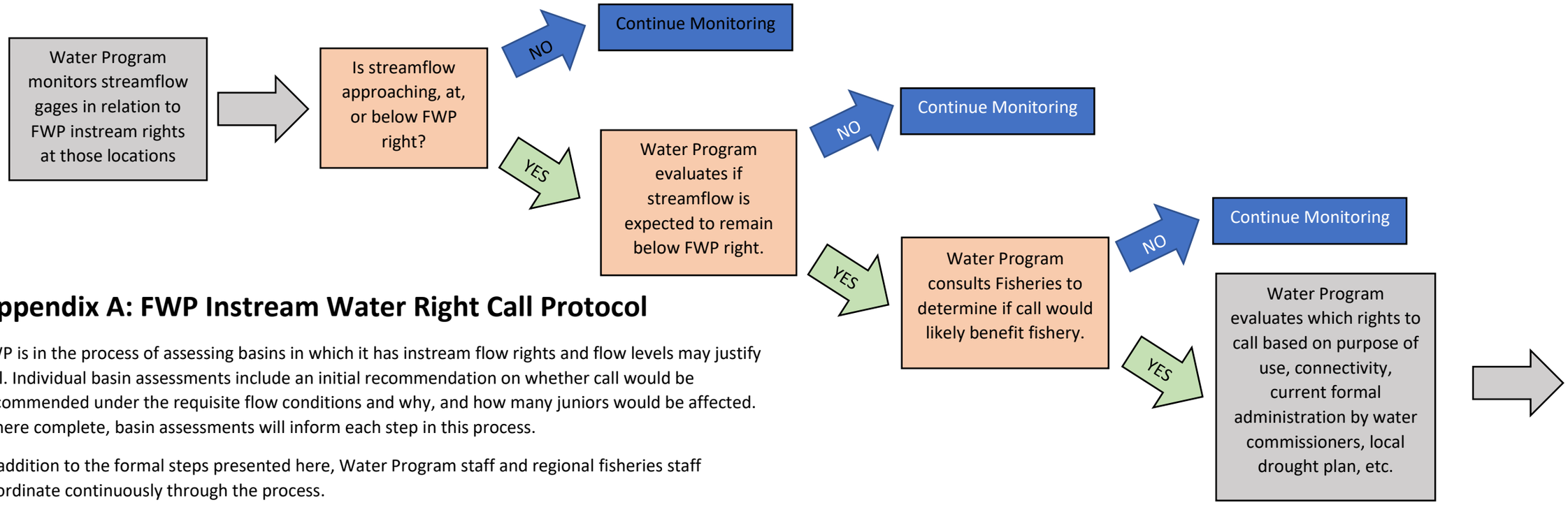
management biologist. For each hydrologic basin for which the Water Program provides a list of recommended juniors to call, the Fisheries Division Administrator would direct regional staff to prepare a statement or brief report on the potential fishery benefit of that call. If the report prepared by Fisheries supports the call, Fisheries and the Water Program will jointly submit the call recommendation to the Director's Office.

Under this revised protocol, this formal consultation will still occur as individual basins are recommended for call. However, with the development of individual basin assessments, which are done in consultation with fisheries staff, the goal is to minimize the need for last-minute information from field staff.

Step Four: Final Call Recommendation and Director's Office Review

The goal of having individual basin assessments is to be prepared for potential call. However, when a basin is recommended for call, a clear explanation of the recommendation will be provided to the FWP Director's Office. If approved, a call letter is sent to the junior water user. (An example call letter is attached as Exhibit C.) Because many water users hold both junior and senior water rights, the water right abstract(s) for the water right(s) being called are enclosed with the letter so that it is clear which water rights are being called. The letter includes potential options for water users to mitigate their water use instead of simply shutting off. Often, when a call letter is sent, several water users contact FWP to inform us of the actions they have taken or to discuss the nature of their water use and whether it is impacting streamflow. Information from these interactions provides valuable data on whether to include those rights in future water right calls.

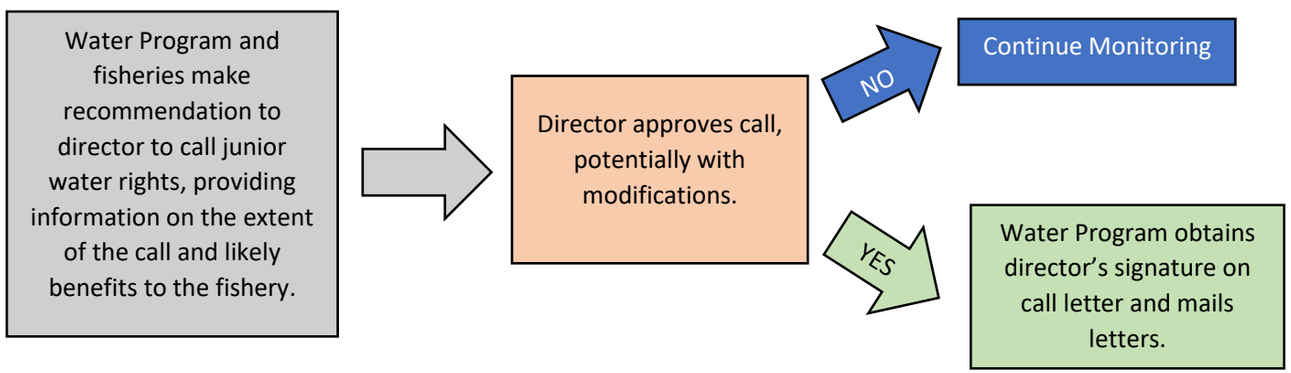
Conclusion. River basins vary and many demand unique considerations. Therefore, the process described above is adaptable. Unforeseen circumstances, requests to make call by some water users and changes in local conditions can all be considered. Accordingly, it should apply to most, if not all basins where FWP may seek to call junior water rights, with minor variations to account for unique local conditions.



Appendix A: FWP Instream Water Right Call Protocol

FWP is in the process of assessing basins in which it has instream flow rights and flow levels may justify call. Individual basin assessments include an initial recommendation on whether call would be recommended under the requisite flow conditions and why, and how many juniors would be affected. Where complete, basin assessments will inform each step in this process.

In addition to the formal steps presented here, Water Program staff and regional fisheries staff coordinate continuously through the process.



Appendix B – 2022 Preliminary Call Recommendation Guidelines

The following table summarizes FWP's preliminary recommendation on whether to call junior water rights in basins where FWP holds instream flow water rights under flow conditions that would legally justify the call. It is not a final recommendation or prescription as many factors must be considered. For example, if flow drops below the level of an FWP instream right on July 15, we may recommend call. However, if it does not drop to that level until September 15, we may not recommend call because days are getting shorter, and nights are getting cooler. There are many other factors that could change from year to year, or within any given year. Therefore, these guidelines are reviewed and revised annually and as conditions warrant.

Basin/River	Type of Instream Right	Will Call be Considered?	Rationale
Clark Fork Basin			
Bitterroot	Recreation Claim	Not at this time	Instream flow provided by storage.
Blackfoot	Murphy	Yes	As requested by Blackfoot Drought Committee.
Rock Creek	Murphy	Yes	Important tributary in the Upper Clark Fork and spawning habitat for bull trout and westslope cutthroat trout.
Upper Clark Fork	Compact	Not at this time	Right not enforceable until April 24, 2025.
Flathead and Kootenai Basins			
Young Creek	Fish & Wildlife Claims	Yes	FWP investments in westslope cutthroat trout spawning and rearing to mitigate impacts from Libby Dam. Call has been made in the past.
Tobacco River	Fish & Wildlife Claims	Yes	River and its tributaries developed to mitigate fisheries loss caused by construction of Libby Dam. Presence of T&E species in the drainage.
Flathead River	Murphy	Evaluating	Many junior rights. Recent activity limited to request to conserve water rather than official call.
Flathead River, North Fork	Murphy	Evaluating	Recent activity limited to request to conserve water rather than official call.
Flathead River, South Fork	Murphy	Not at this time	Only two junior USFS rights with bucket diversions.
Flathead River, Middle Fork	Murphy	Evaluating	Recent activity limited to request to conserve water rather than official call.
Upper Missouri Basin			
Smith River	Murphy	Possible	Fisheries Division conducting comprehensive basin assessment and possible community involvement and investment. Preference is that local efforts will lead but call still possible.

Sun River	Reservation	Not at this time	Nearly all junior rights to be called are in Muddy Creek basin where reduction in flow is desired.
Dearborn River	Reservation	Not at this time	No contributing rights to call.
Missouri River above Canyon Ferry	Murphy	Possible	Frequent fishing restrictions and closures in headwater streams (Jefferson, Madison, and Gallatin).
Jefferson River	Reservation	Possible	Voluntary drought plan and few irrigation rights junior to reservation but could be called with Missouri (Toston).
Gallatin River	Murphy and Reservation	Yes/Partial	Active water commissioner on the West Gallatin, but several juniors in the East Gallatin basin could be called.
Madison River	Murphy and Reservation	Possible/Partial	Northwestern Energy FERC license guides how flows are managed between Hebgen and Ennis Lakes rendering call impractical. Possible call on juniors below Ennis Lake with Missouri (Toston).
Big Hole River	Reservation	Not at this time	Active community drought plan in place and CCAA participation.
Beaverhead River	Reservation and Recreation	Not at this time	Water commissioner and BOR manage distribution and releases.
Red Rocks River	Reservation	Not at this time	Flows are dominated by reservoir storage between Lima Reservoir and Clark Canyon.
Ruby River	Reservation	Possible	Flows managed by Ruby Reservoir (DNRC) and several water commissioners on tributary streams. Could be called with Jefferson and Missouri (Toston).
Missouri River below Canyon Ferry	Murphy	Evaluating	Dependent on releases from Canyon Ferry Dam. Calls have been made in the past during significant drought.
Lower Missouri Basin			
Marias River	Reservation	Evaluating	During significant drought calls have been made above and below Tiber Dam.
Teton River	Reservation	Not at this time	Active water commissioners throughout basin.
Judith River	Reservation	Yes	During significant drought call has been made in the past on the limited number of junior water rights in the basin.

Big Spring Creek	Murphy	Possible	The local watershed group has developed a draft drought plan, but it has not been necessary to implement it yet. Preference is that local efforts will lead but call still possible.
Musselshell	Reservation	Not at this time	Active water commissioners on north and south forks and mainstem.
Yellowstone Basin			
Shields River	Reservation	Yes/Partial	No call where commissioner is active. Possible call where there is no commissioner. Watershed group is active but does not work on flow issues.
Yellowstone River above Boulder River	Murphy	Yes	Important recreational fishery. Local drought planning efforts may provide alternative in the basin above the Shields River.
Boulder River (Big Timber)	Reservation	Possible	Call has been made in the past, but active local watershed group may provide alternate approaches. Preference is that local efforts will lead but call still possible.
Stillwater River (Columbus)	Reservation	Possible	Call has been made in the past, but active local watershed group may provide alternate approaches. Preference is that local efforts will lead but call still possible.
Clarks Fork Yellowstone River	Reservation	Possible/Partial	Newly forming watershed group in basin interested in exploring alternatives to call. Preference is that local efforts will lead but call still possible. Rock Creek portion of basin administered by water commissioner.
Yellowstone River at Billings	Reservation	Evaluating	Call has been made in the past.
Bighorn River	Reservation / Public Recreation	Not at this time	Streamflow is regulated by Yellowtail Dam. Most large junior water users now using CD reservation which is senior to FWP reservation.
Tongue River	Reservation	Yes	FWP has made significant investment in removing barriers in this river. Low flows during drought negatively impact the fishery.
Powder River	Reservation	Evaluating	Call has been made in the past.
Yellowstone River at Sidney	Reservation	Evaluating	Call has been made in the past. The necessity of call is largely dependent on releases from Yellowtail Dam.

Appendix C - Sample Water Right Call Letter

FWP.MT.GOV

THE **OUTSIDE** IS IN US ALL.

(Date)

(Return Address)

Dear _____River Basin Water Right Owner:

You have received this letter because you own a water right junior in priority to Montana Fish, Wildlife & Parks' instream flow water right for the _____River. Flow in the river has fallen below levels required by FWP's instream flow rights. An abstract(s) for your junior water right(s) is enclosed.

Under the water right priority system of Montana water law, standard procedure for allocating water during time of shortage is for the older (senior) water right holder (in this case FWP) to require you as the newer (junior) water user to cease using your junior water right immediately. This approach does not consider other water management or conservation measures that some water users are already taking.

FWP is aware that voluntary and informal water management and drought responses are used in several river basins of Montana. Senior water users are in some cases already making significant reductions in water diversion in order to maintain flow in the rivers during times of drought.

If you have already ceased using this junior water right or reduced the use of senior water rights to help maintain streamflow your efforts are greatly appreciated. If you have not taken steps to mitigate or cease diversion of water under your junior water right, FWP requests that you either:

- cease use of this junior water right, or
- seek a means to offset or mitigate your use of that junior water right.

Mitigation examples:

1. You have a newer but junior irrigation system that is critical to your operation and is more efficient than a more senior water right. Perhaps you might "trade water". Some irrigators cease or reduce the diversion under a senior water right to offset the continued use of the more efficient, cost effective, and often more productive irrigation system operated under a junior water right.

2. Use of water in a pond operated under a junior water right could be similarly mitigated. Ditch losses and evaporative losses from the ponds decrease pond outflow. The quantity of water returned to the source is also reduced. Again, if you also have a senior irrigation right, a reduction in the amount of water being diverted for irrigation could offset the flow reduction caused by evaporation from the pond.

3. If you don't have a senior irrigation right to offset the use of your junior water right, collaborating with a neighbor who does have a senior right and working out a reduction in use of that right is an option. (Such agreements can be formalized under Montana's law via the temporary change of use provisions.)

Use of your junior right must either stop, or that use must be mitigated until streamflow in the _____River improves to at least (list instream right flow rate(s) and applicable time period(s)). You can determine current flow in the river by accessing the U. S. Geological Survey (USGS) site for stream gauges (insert link to station) and then reading the current flow for station number (insert station number and name). Clicking on the station number will take you to a more detailed page, which will show trends at this gauge over the past several days. Long-term flow records indicate that under present water supply conditions, flow in the _____River generally does rise above FWP's instream flow water right through (applicable month).

If you have any questions or ideas regarding this issue, please contact (name) ____at (phone number) or at (email) _____.

Sincerely,

(Name)
(Title)

c: DNRC –Regional Office

Appendix D – Individual Basin Assessments

Young Creek

Young Creek is a tributary to the Kootenai River, originating in the Purcell Mountains and flowing approximately 14 miles before entering Lake Koocanusa roughly 2.5 miles south of the Canadian border. The creek was developed as a spawning and rearing tributary for westslope cutthroat trout to mitigate losses resulting from the construction of Libby Dam and remains one of the most important westslope cutthroat trout spawning tributaries to Lake Koocanusa.

Demand for irrigation water often exceeds typical low flows during the summer and fall months. FWP has invested substantial resources on the fisheries and associated habitat, including chemical treatments to remove non-native fishes, migration barrier removal, habitat restoration, and fish screening on major diversions. Improving flows can help protect both fisheries and investments made on the resource.

Drought Planning
Currently, there are no watershed groups in the region that handle water allocation issues. FWP has worked with water users when call has been made in previous years and this relationship may serve as a starting point for future drought planning activities.

Water Commissioners
According to DNRC's January 20, 2021 water commissioner list, there are no active commissioners in Lincoln County. Call responsibility is left to affected senior users.

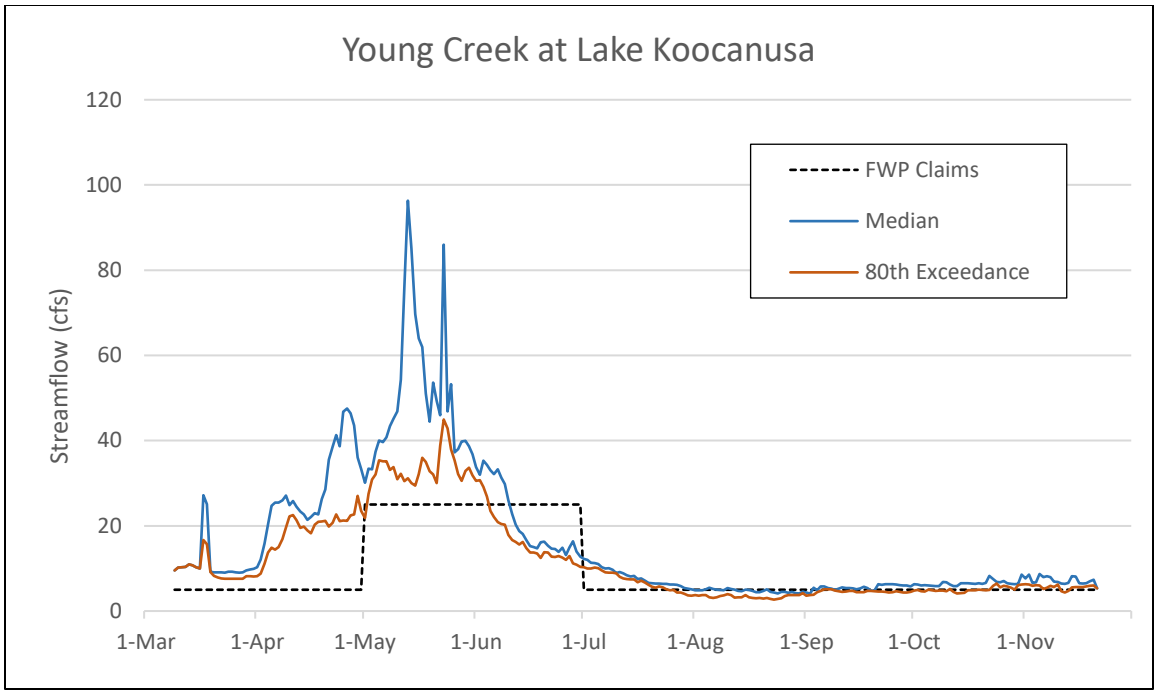
Necessity of Call
Seasonal flow recommendations represent thresholds for westslope cutthroat trout at various life stages. With dewatering negatively impacting both fisheries and recreational opportunities, a call on junior water rights is justified in cases where the water being left instream is likely to improve overall streamflow or slow its decline.

Basis of Call
Call on junior water rights is predicated on FWP's two statements of claim on Young Creek, from the headwaters in the Purcell mountains to the mouth at Lake Koocanusa. The flow rates are supported by wetted-p methodology, used to establish flow at critical periods for westslope cutthroat trout. The priority date for these instream flow claims is **March 19, 1968**.

FWP's instream flow statements of claim vary throughout the year as follows:

Statement of Claim No.	Months	Flow (cfs)
76D 110407-00	May - June	25
76D 110408-00	Jan - April; July - December	5

A call would not be made late in a month when the instream flow reservation for the subsequent month is substantially lower. For example, if flow was 20 cfs the last week in June, a call would not be made because on July 1, the instream flow reservation value would decrease to 5 cfs, which is substantially lower than flow would likely be at that time.



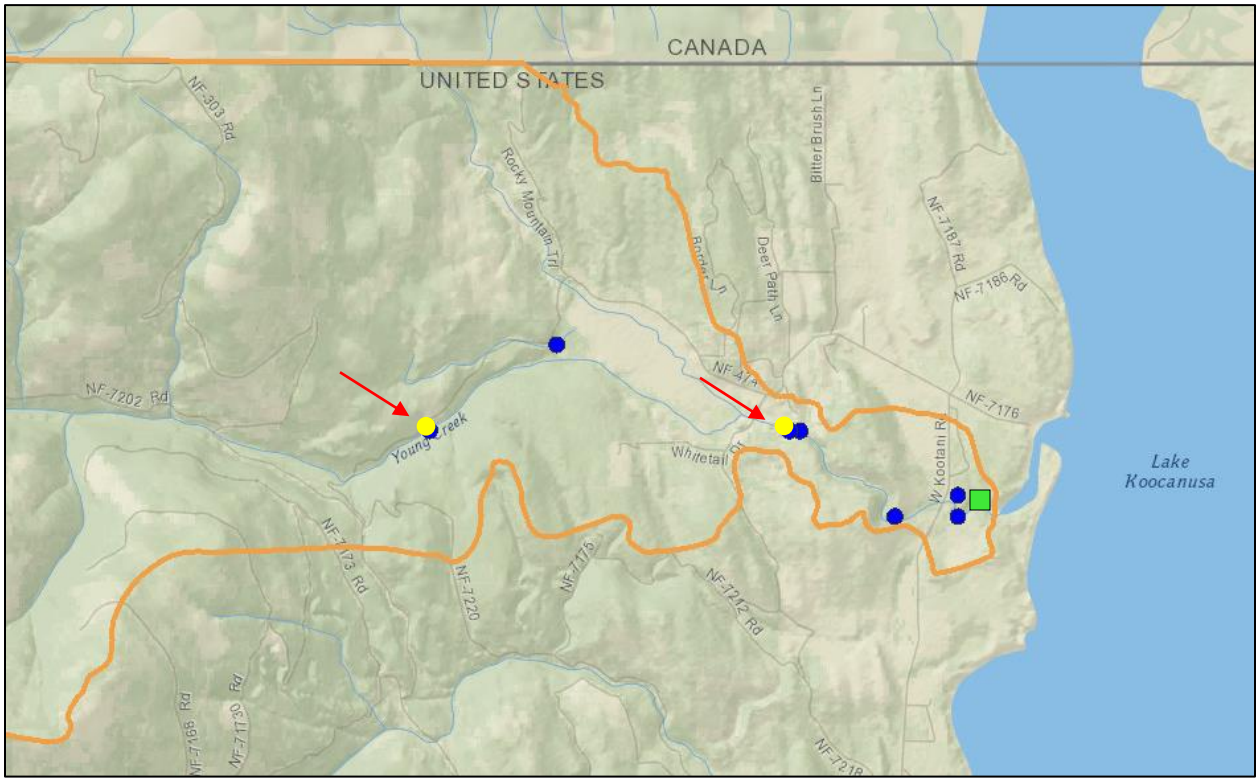
The hydrograph above compares FWP's instream flow reservation (dotted black line) with the median and 80th percentile exceedance flow obtained from seven years of flow data collected less than a mile upstream from the outlet at Lake Koocanusa (2013-2019). In 5 out of 10 years (median shown in blue), streamflow generally meets or exceeds instream flow requirements excepting the latter half of June. The 80th percentile exceedance (shown in brown) represents streamflow met or exceeded 8 out of 10 years and generally falls below the instream flow requirements during both June and August. The dataset indicates that over the period of streamflow record, a call on junior water rights would commonly occur in the month of June and occasionally in the month of August. Due to the cyclical nature of drought and issues inherent with limited data sets, the actual frequency with which call would be made is unknown; however, FWP has successfully worked with water users in the past to limit diversions on this source during periods of low flow.

Junior Water Rights

DNRC's water rights database includes 44 junior water rights in the Young Creek basin, excluding an instream flow right held by the USFS. Each water right was reviewed to determine if cessation of diversion would likely result in additional flow to Young Creek. Based on those findings, FWP classified junior rights into two categories: those that would likely result in flow increases if call were made (Call) and those that would not (No Call). The following table lists the water rights by general purpose category.

Purpose	**Call**	**No Call**	**Total Called Flow Rate**
Irrigation	40	1	16.55 cfs
Stock	0	1	-
Fish & Wildlife	1	0	0.33 cfs
Lawn & Garden/Stock	0	1	-
Total	**41**	**3**	**16.88 cfs**

The following map shows the diversion location of all junior water rights; there are multiple shared diversions on Young Creek identified with a single blue dot. The yellow dots with the red arrows are the diversion points for the three water rights that would not receive call due to the low likelihood of improving flows in the creek; the diversion highest in the system has a low flow rate (10 gpm) and provides for some domestic use while the two rights that share the lower diversion both include stock water as a purpose and have a combined flow rate of 100 gmp. The green square represents the approximate location of the flow measurement device on Young Creek.



Tobacco River

The Tobacco River is the largest Montana tributary to the Kootenai River upstream of Libby Dam, originating at the confluence of Grave and Fortine creeks and flowing approximately 15 miles before entering Lake Koocanusa roughly 7 miles south of the Canadian border. The river provides critical passage for migratory bull trout populations that spawn in Grave Creek, which is the only Montana population residing in Lake Koocanusa. Recreational angling of bull trout is a rare opportunity only allowed in two water bodies in Montana. Lake Koocanusa is one of those fisheries, authorized by a USFWS special permit and contingent upon continued vitality of the Grave Creek population. The Tobacco River and associated 266 miles of perennial streams within the watershed also provide spawning and rearing habitat for westslope cutthroat and rainbow trout that support popular local fisheries.

Demand for irrigation water often exceeds typical low flows during the summer and fall months. FWP has invested substantial resources on the fisheries and associated habitat, including migration barrier removal, habitat restoration, and fish screening on major diversions within the watershed. Improving flows can help protect both fisheries and investments made on the resource.

Drought Planning
Currently, there are no watershed groups in the region that handle water allocation issues. FWP has worked with water users when call has been made in previous years and this relationship may serve as a starting point for future drought planning activities.

Water Commissioners
According to DNRC's January 20, 2021 water commissioner list, there are no active commissioners in Lincoln County. Call responsibility is left to affected senior users.

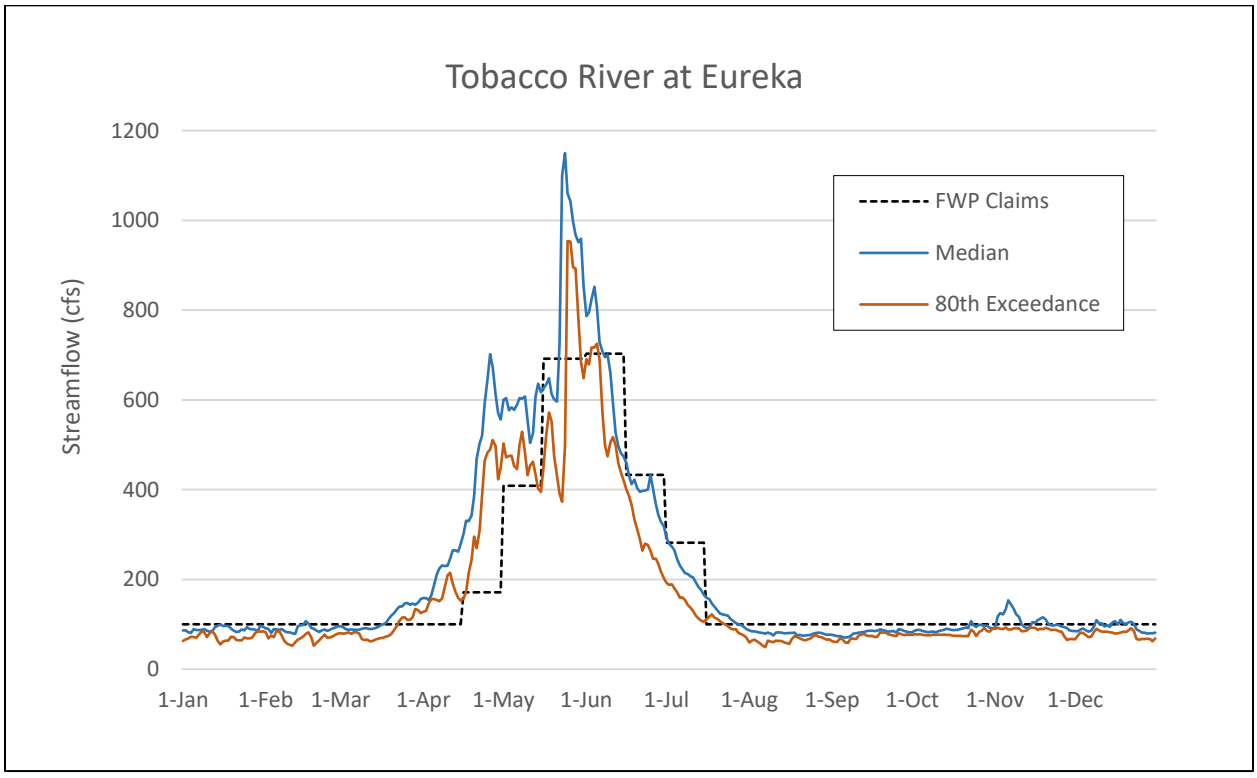
Necessity of Call
Seasonal flow recommendations represent thresholds for westslope cutthroat trout at various life stages. With dewatering negatively impacting both fisheries and recreational opportunities, a call on junior water rights is justified in cases where the water being left instream is likely to improve overall streamflow or slow its decline.

Basis of Call
Call on junior water rights is predicated on FWP's eight seasonal statements of claim on the Tobacco River, from the confluence of Grave and Fortine creeks to the mouth at Lake Koocanusa. The flow rates are supported by wetted-p methodology, used to establish flow at critical periods for westslope cutthroat and rainbow trout. The priority date for these instream flow claims is **February 24, 1965**.

FWP's instream flow statements of claim vary throughout the year as follows:

Statement of Claim No.	Months	Flow (cfs)
76D 122348 00	April 16 – April 30	171
76D 122351 00	May 1 – May 15	409
76D 122370 00	May 16 – May 31	692
76D 122346 00	June 1 – June 15*	1,263
76D 122349 00	June 1 – June 15**	703
76D 122350 00	June 16 – June 30	433
76D 122345 00	July 1 – July 15	282
76D 122347 00	July 16 – April 15	100
*One day flushing flow **15-day flow rate		

A call would not be made late in a month when the instream flow reservation for the subsequent month is substantially lower. For example, if flow was 375 cfs the last week in June, a call would not be made because on July 1, the instream flow reservation value would decrease to 282 cfs, which is substantially lower than flow would likely be at that time.



The hydrograph above compares FWP's instream flow claims (dotted black line) with the median and 80th percentile exceedance flow for USGS Gages 12301300 (1958-2016) and 12301250 (2016-2022) combined. Gage 12301300 was located approximately 3 river miles below 12301250 which is the current gage location on the Tobacco River, in the town of Eureka. Both gages are located along the claimed reach for FWP instream flow. Gage 12301300 includes Ksanka Creek in its measurements.

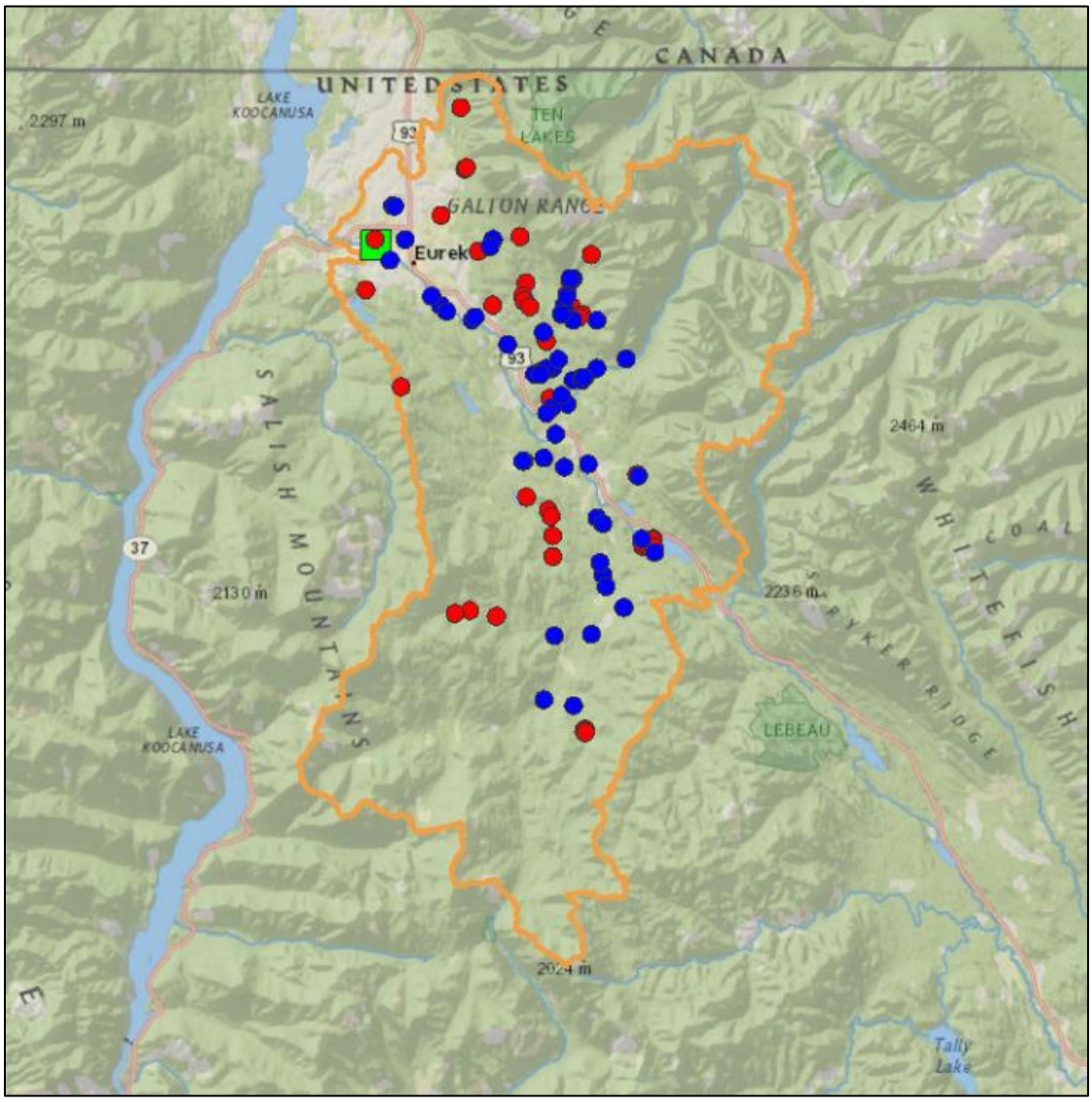
In 5 out of 10 years (median shown in blue), streamflow meets or exceeds instream flow requirements about a third of the time, predominantly during spring runoff and occasionally during late fall and early winter. The 80th percentile exceedance (shown in brown) represents streamflow met or exceeded 8 out of 10 years and generally falls below the instream flow requirements throughout the year, except for spring runoff. The dataset indicates that over the period of streamflow record, a call on junior rights could occur anytime outside of the spring runoff period.

Junior Water Rights

DNRC's water rights database includes 71 junior water rights in the Tobacco River basin, excluding instream flow rights on Therriault Creek, Deep Creek and Canyon Creek held by the USFS and various domestic and stock claims. Claims related to fisheries and wildlife were also excluded if they did not have an active diversion from the source. Each water right was reviewed to determine if cessation of diversion would likely result in additional flow to Tobacco River. Based on those findings, FWP classified junior rights into two categories: those that would likely result in flow increases if call were made (Call) and those that would not (No Call). The following table lists the water rights by general purpose category.

Purpose	**Call**	**No Call**	**Total Called Flow Rate**
Irrigation	43	0	29.53 cfs
Fish & Wildlife/Fishery	17	2	11.88 cfs
Lawn & Garden	2	1	0.11 cfs
Industrial	0	1	-
Power Generation	0	5	-
Total	**62**	**9**	**41.52 cfs**

The following map shows the location of all junior water rights. Those represented by blue dots would be called while those represented by red dots would not. The green square is the location of USGS Gage 12301250.



Upper Clark Fork River

The Upper Clark Fork River extends from the Clark Fork's headwaters near Butte, MT downstream to the mouth of Flint Creek. The drainage includes the uppermost segment of the Clark Fork River and its tributaries, including Silver Bow Creek, Warm Springs Creek, and the Little Blackfoot River. The Clark Fork River begins at the junction of Silver Bow and Warm Springs Creeks, near the small community of Warm Springs. From its headwaters, the river flows northwesterly for approximately 70 miles through Deer Lodge, Powell and Granite Counties. Located in the west-central part of the state, the Upper Clark Fork has a long history of mining-related impacts that have negatively affected the fishery and aquatic resources along much of the river. This has led to the stream being one of the more underutilized rivers in western Montana. However, ongoing environmental cleanup by the state and the U.S. Environmental Protection Agency, as well as a diversity of recreational opportunities, has contributed to an increase in the Upper Clark Fork's popularity in recent years.

The Upper Clark Fork River is primarily a brown trout fishery with a small native westslope cutthroat trout population. It also supports robust populations of native non-game species (mountain whitefish, largescale suckers, etc.). Brown trout numbers in the upper reaches (above Deer Lodge) were once as high as 2000 fish/mile but have recently declined to less than 200 fish/mile. Brown trout and westslope cutthroat trout numbers in lower reaches (below Deer Lodge) have remained relatively stable.

There are many variables that affect trout populations in the Upper Clark Fork, but flows have historically been the key variable driving fluctuations. Flow evaluations based on wetted perimeter/inflection point methods were performed by Fish, Wildlife & Parks starting in 1986; this evaluation indicated a minimum flow of 40 CFS at Galen and 90 CFS at Deer Lodge is necessary to maintain aquatic ecosystem function. The method identifies an inflection point where the rate of habitat loss increases significantly with reduced flow.

Flows routinely drop below minimum flow targets on the Upper Clark Fork River in drought years and maintaining minimum flows is not always possible given other water uses in the basin. However, avoiding the rapid loss of habitat at lower flows and maintaining a trout population that is resilient to drought years is necessary to enhancing and maintaining overall trout populations on the Upper Clark Fork River.

Drought Planning

While there is no formal drought plan in the Upper Clark Fork, FWP and the CSKT have been engaging with local stakeholders to discuss water management options as it relates to future implementation of the Milltown Water Right which becomes enforceable on April 24, 2025. Efforts to improve streamflow in the Upper Clark Fork has been a priority of the Department of Justice Natural Resource Damage Program (NRDP). NRDP has been working with local partners on restoration and flow projects. In the last two years, NRDP has also worked with Trout Unlimited on negotiating a summer release of water for instream flow from Silver Lake which is managed by Butte/Silverbow. In fall of 2021, the Upper Clark Fork Streamflow Group was formed, whose

mission is to “pursue solutions that support and balance the water needs of the Upper Clark Fork River watershed communities”.

Water Commissioners
According to DNRC’s January 20, 2021 water commissioner list, there are three water commissioners on Cottonwood Creek, Dempsey Creek, Racetrack Creek, Lower Willow Creek and Flint Creek which are all tributary to the Upper Clark Fork.

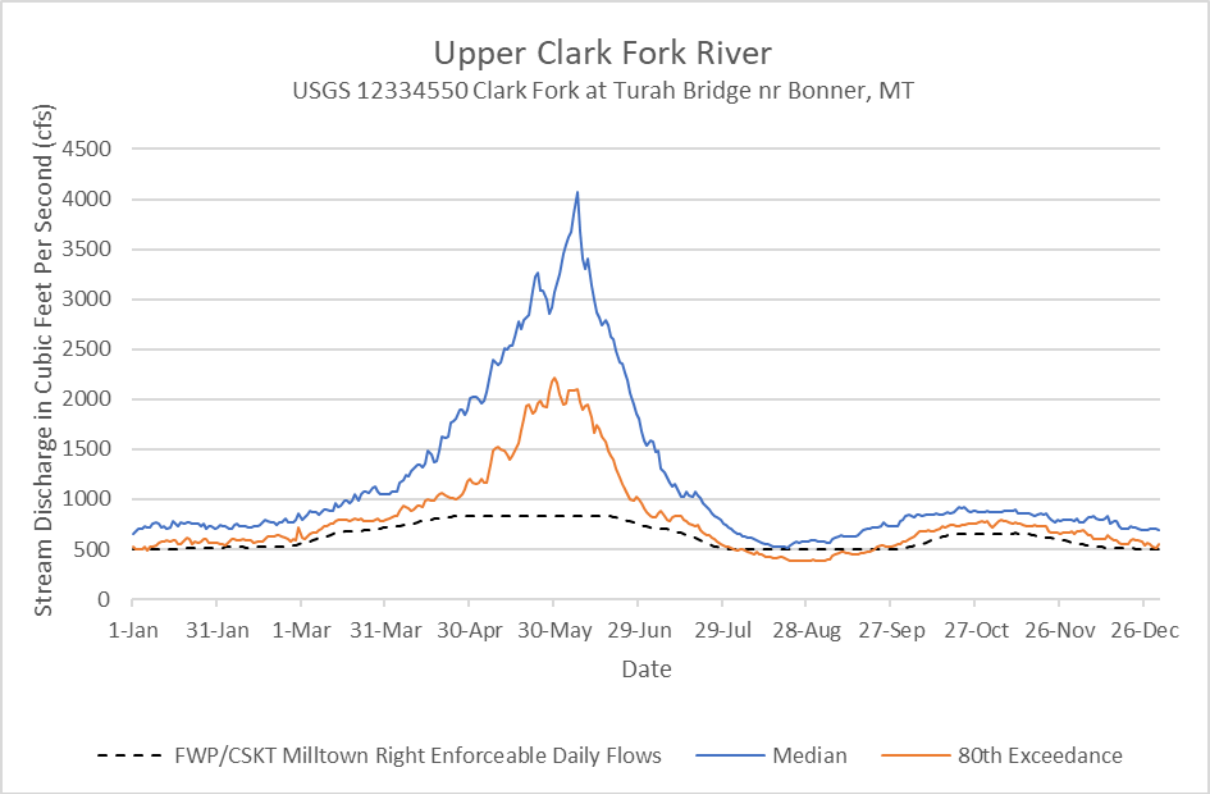
Necessity of Call
With dewatering negatively impacting fisheries, a call on junior water rights would be justified on sources not being administered by a water commissioner and on rights that would likely result in improved or less rapidly declining streamflow.

Basis of Call
Starting in 2025, FWP and/or CSKT calls on junior water rights in the Upper Clark Fork River basin will be predicated on the Milltown water right as measured at the USGS Gage 12334550 (Clark Fork at Turah Bridge nr Bonner MT). Call may be initiated on the day following a five-consecutive-day period where four out of five average daily flows fall below their respective daily enforceable flow values; calls may persist until such time as two average daily flows of the previous five-consecutive-day period are in excess of their respective daily enforceable flow values. The priority date for the Milltown water right is **December 11, 1904.**

FWP/CSKT Milltown water right as enforced at Turah is as follows:

Type of Instream Flow Water Right	**Time Period**	**Flow (cfs)**
Milltown Water Right	January 1-December 31	500[1]

[1] Minimum enforceable stream flow as described in Appendix 31: 76M 94404-01 and 76M 94404-02 Technical Documentation of the CSKT-Montana Compact.



The preceding hydrograph compares FWP/CSKT's Milltown water right (dotted black line) with the median and 80th percentile exceedance flow for USGS Gage 12334550 (Clark Fork River at Turah Bridge nr Bonner MT) based on 36 years of record (1986-2022). In the summer months in 5 out of 10 years, the median flows stay slightly above FWP/CSKT's Milltown right. The 80th percentile exceedance (shown in brown) represents the streamflow met or exceeded in 8 out of 10 years. The gage data indicates that during the driest of years, flows fall below FWP/CSKT's Milltown right's minimum enforceable flow of 500 cfs on or about August 2nd and stay below that level until on or about September 21st.

Rock Creek (Upper Clark Fork River)

Rock Creek is a tributary to the Upper Clark Fork River, originating in the Sapphire Mountains south of Interstate 90 and entering the Clark Fork River roughly 22 miles east of Missoula. FWP has two sequences of Murphy rights on a 14-mile reach, one from the confluence of the East and West forks to Ranch Creek and the other from Ranch Creek to the confluence with the Clark Fork River. The creek is a premier wild trout water body with blue-ribbon status, supporting populations of rainbow, brown, westslope cutthroat, brook, and bull trout and mountain whitefish.

Demand for water often exceeds typical low flows during the non-irrigation season and occasionally the latter half of June and months of August and September. FWP has invested substantial resources on the fisheries and associated habitat, including habitat restoration, diversion reconstruction and fish screening on major diversions on the mainstem and important tributaries. Improving flows can help protect both fisheries and investments made on the resource.

Drought Planning
The Granite Headwaters watershed group is active in the region that includes the Rock Creek watershed; however, they have chosen not to venture into water allocation issues. If that position changes in the future, this established group may provide structural organization to assist in the implementation of drought planning activities.

Water Commissioners
According to DNRC's January 20, 2021 water commissioner list, there are no active commissioners on Rock Creek in Granite County. Call responsibility is left to affected senior users.

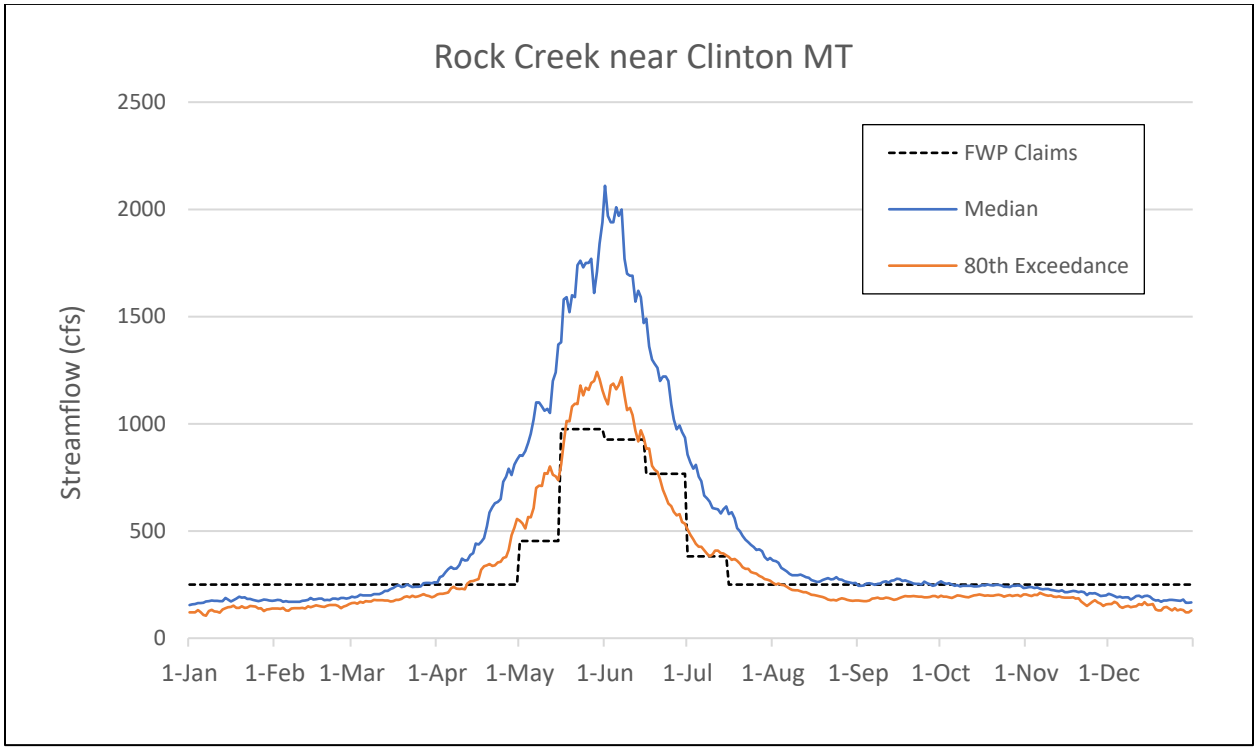
Necessity of Call
Seasonal flow recommendations represent thresholds for native and nonnative trout species at various life stages. With dewatering negatively impacting both fisheries and recreational opportunities, a call on junior water rights is justified in cases where the water being left instream is likely to improve overall streamflow or slow its decline.

Basis of Call
Call on junior water rights is predicated on FWP's six Murphy rights on Rock Creek, from the confluence with Ranch Creek to the mouth at the Clark Fork River. The flow rates are supported by wetted-p methodology, used to establish flow at critical periods for various trout species. The priority date for these instream flow rights is **January 6, 1971**.

FWP's Murphy rights vary seasonally as follows:

Water Right No.	Period of Use (Claim)	Flow (cfs)
76E 133209 00	July 16 – April 30	250
76E 133211 00	May 1 – May 15	454
76E 133213 00	May 16 – May 31	975
76E 133214 00	June 1 – June 15	926
76E 133212 00	June 16 – June 30	766
76E 133210 00	July 1 – July 15	382

A call would not be made late in a month when the instream flow water right for the subsequent month is substantially lower. For example, if flow was 650 cfs the last week in June, a call would not be made because on July 1, the instream flow water right decreases to 382 cfs, which is substantially lower than flow would likely be at that time.



The hydrograph above compares FWP's instream flow water right claims (dotted black line) with the median and 80th percentile exceedance flow for USGS Gage 12334510, based on 51 years of flow data (1972-2022) collected between Stage Station Road and the Clark Fork River, approximately 0.4 miles upstream from the mouth. In 5 out of 10 years (median shown in blue), streamflow generally meets or exceeds instream flow requirements from late March through early October. The 80th percentile exceedance (shown in brown) represents streamflow met or exceeded 8 out of 10 years and generally falls below the instream flow requirements from early August through mid-April, in addition to the latter part of June.

The dataset indicates that over the period of streamflow record, a call on junior water rights may occur in the month of June and occasionally during the warmer months of August and September. Due to the cyclical nature of drought, calls may occur many years in a row; however, with the presence of cooler water temperatures in the months of October through May, the actual frequency with which call would be made is unknown. Due to the limited number of water users in the drainage, call has rarely been used. Since 2000, call has only been made once, in 2015.

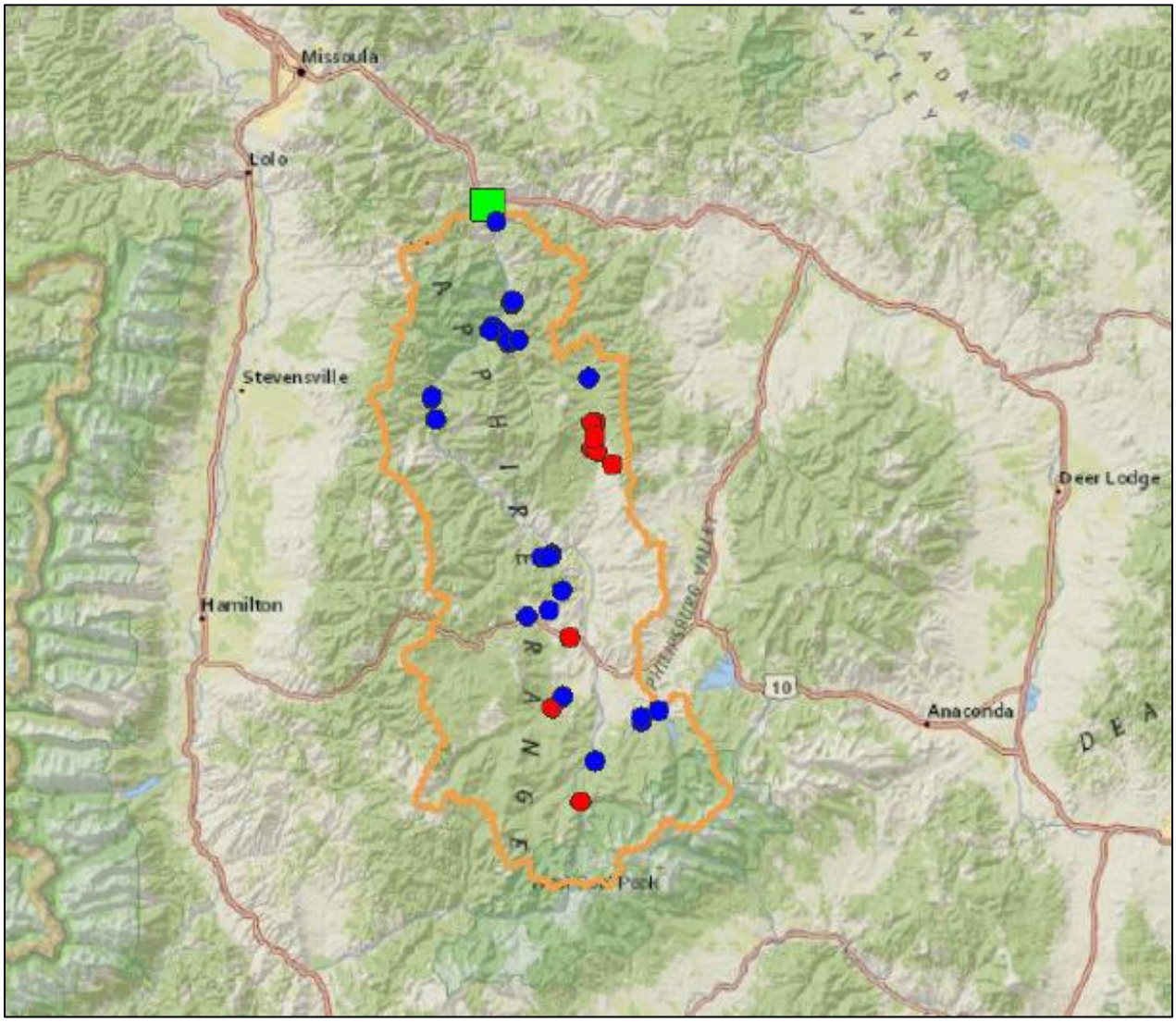
Junior Water Rights

DNRC's water rights database includes 23 junior rights in the Rock Creek basin, excluding instream flow rights, stock directly from the source, and most domestic rights. Each of the remaining water

rights was reviewed to determine if cessation of diversion would likely result in additional flow to Rock Creek. Based on those findings, FWP classified junior rights into two categories: those that would likely result in flow increases if call were made (Call) and those that would not (No Call). The following table lists the water rights by general purpose and category.

Purpose	Call	No Call	Total Called Flow Rate
Irrigation	13	1	6.60 cfs
Commercial/Domestic	2	0	8.34 cfs
Fish & Wildlife	4	0	12.25 cfs
Mining	3	0	1.61 cfs
Total	22	1	**28.80 cfs**

The following map shows the diversion location of all junior water rights. Those represented by blue dots would be called while those represented by red dots would not. The green square is the location of USGS gage 12334510.



Blackfoot River

The Blackfoot River begins at the junction of Beartrap and Anaconda Creeks, located near the Continental Divide between Rogers Pass and Flesher Pass. From its headwaters, the river flows westward for 132 miles through Lewis and Clark, Powell and Missoula Counties, draining a 2,290 square mile basin to Bonner, where it joins the Clark Fork River. Located in the west-central part of the state, the Blackfoot River is one of twelve renowned blue-ribbon rivers in Montana and is one of Montana's most popular rivers for recreation. The Blackfoot River is managed as a wild trout fishery, relying on natural reproduction of native and nonnative trout. Native westslope cutthroat trout and bull trout have been the primary focus of basin-wide protection and restoration activities for over 30 years. Restoration projects, such as instream improvements, fish passage enhancements, fish screening and water leases have been undertaken throughout the basin in order to help recover bull trout, westslope cutthroat trout and other species. This work has occurred on both private and public land.

Drought Planning

The Blackfoot Challenge is an active land and watershed group in the Blackfoot River basin. The group adopted the Blackfoot Drought Plan (BDP) in 2000 and FWP is an active participant and partner in the implementation of the BDP. The implementation plan is based on recommendations of the Blackfoot Drought Committee. The committee meets monthly during the irrigation season when flows and conditions in the Blackfoot River basin dictate drought response. The model of the plan is based on "shared sacrifice" with the goal that all Blackfoot water users (agricultural, irrigators, outfitters, anglers, recreational users, government agencies, homeowner's associations, businesses, conservation groups and others) voluntarily agree to take actions that will result in water savings and/or reduction of stress to fisheries resources during critical low flow periods.

Water Commissioners

According to DNRC's January 20, 2021 water commissioner list, water commissioners are active in Douglas Creek, Washington Creek and Cottonwood Creek. Contract water out of Nevada Creek Reservoir is also managed by the Nevada Creek Water User's Association. Junior water rights from these streams or stream reaches are not called.

Necessity of Call

The Blackfoot Drought Committee's drought response plan has identified triggers for both flow and temperature. The flow trigger is based on FWP's Murphy right of 700 cfs, which was determined by the application of the wetted-p methodology that assesses habitat availability as it relates to wetted channel width in the riffle section of a river. Streamflow influences the physical template and biological processes of rivers, ultimately controlling fish population size and potential. As flows decrease, so does food production, oxygenation and habitat availability. Competition for food and habitat resources increase at low flows, further exacerbating stressful conditions.

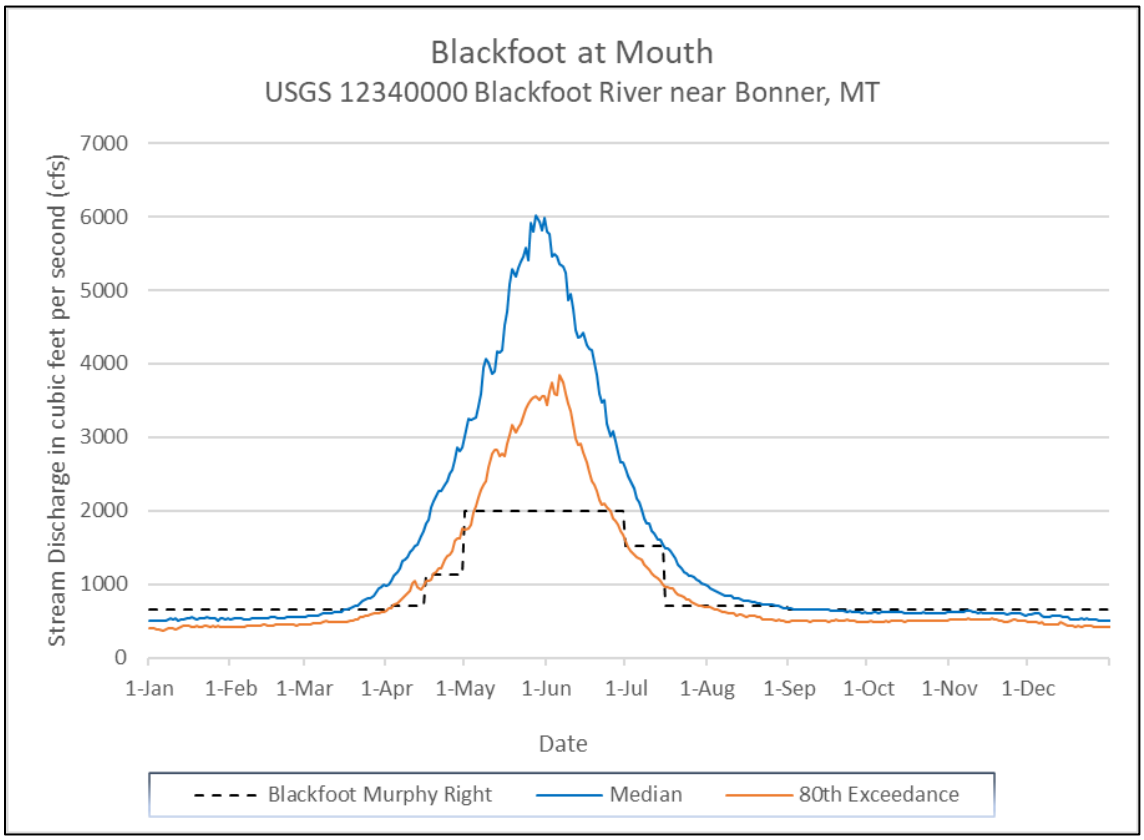
Basis of Call

The Blackfoot drought plan is implemented when flows in the Blackfoot River fall to or below 700 cfs. FWP, in consultation with the rest of the committee and in absence of extenuating

circumstances, will issue a call for water on non-participating water right holders whose continued water use, in the judgement of FWP, warrants a call. If flows in the Blackfoot River fall below 500 cfs, the Blackfoot Drought Committee and FWP will make a call on all junior water right holders with an exception to those who in their drought response plan, are able to exchange or trade water on a 1-to-1 basis[2]. Flow triggers are predicated on FWP's Murphy right on the Blackfoot River as measured at USGS Gage 12340000 near Bonner, MT. The priority date of the Murphy right is **January 6, 1971.**

FWP's Murphy right varies by month as follows:

Period	Flow (cfs)
September 1-March 31	360
April 1-April 15	700
April 16-April 30	1,130
May 1-June 30	2,000
July 1-July 15	1,523
July 16-August 31	700



[2] Water Trades occur when a water user seeks to use water from a junior right in exchange for using their senior right. This is often the case when a water user has a more efficient system associated with a junior right as opposed to a senior right that is associated with a less efficient flood system. In the case on the Blackfoot, a 1-to-1 exchange in a drought plan suggests that the water user is using 0.5 cfs of a junior right in place of a 0.5 cfs senior right.

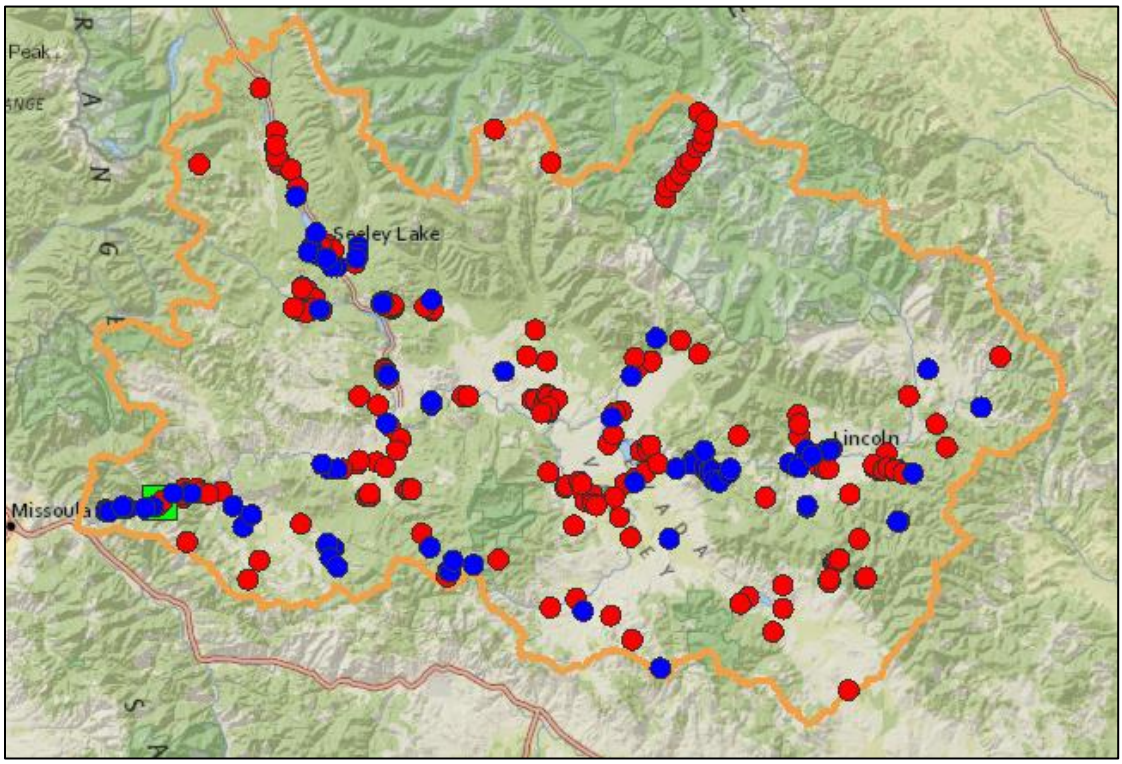
The preceding hydrograph compares FWP's Murphy right (dotted black line) with the median and 80th percentile exceedance flow for USGS Gage 12340000 based on 120 years of record (1900-2020). In 5 out of 10 years (median shown in blue), streamflow generally meets or exceeds the FWP's Murphy right throughout most of the irrigation season. The 80th percentile exceedance (shown in brown) which represents the streamflow met or exceeded in 8 out of 10 years mostly falls below the instream Murphy right. This data indicates that over the period of streamflow record, a call on junior water rights may occur over half of the years. However, much of the call depends on timing of when flows fall below 700. For example, if flows fall below the Murphy right in mid-September when irrigation is beginning to wind down and temperatures are cooler, a call may not be warranted. Also, with the cyclical nature of drought, calls may occur many years in a row. Since the implementation of the BDP in 2000, FWP has called junior water rights in the Blackfoot River basin 12 times.

Junior Water Rights

DNRC's water rights database includes 250 junior water rights in the Blackfoot River basin. Each water right was reviewed to determine if cessation of water use would likely result in additional flow reaching the Blackfoot River. Water rights of those who have an active drought plan were also not recommended for call. The following table lists the recommended junior water rights to call by general purpose category.

Purpose	**Call**	**Total Called Flow Rate**
Fish, Wildlife, Recreation Ponds	3	0.41 cfs
Irrigation	46	55.63 cfs
Domestic w/ irrigation	19	0.96 cfs
Mining	5	1.36 cfs
Total	**73**	**58.36 cfs**

The following map shows the location of all junior water rights. Those represented by blue dots would be called while those represented by red dots would not. The green square is the location of USGS Gage 12340000.



CSKT Compact Milltown Water Right

On April 24, 2015, the Montana Legislature passed the Confederated Salish & Kootenai Montana Water Rights Compact (85-20-1901, MCA). The passage of the compact stipulated that the power generation water right that was once associated with Milltown Dam be split into two separate, active and enforceable instream flow water rights for purposes of protecting the fisheries in both the Upper Clark Fork and Blackfoot Rivers. These water rights have individual minimum flow criteria of 500 cfs in the Clark Fork River and 700 cfs in the Blackfoot River. The priority date of the two water rights is December 11, 1904.

Secretary of the Interior Deb Haaland signed the CSKT Montana Compact on September 17, 2021, which formally executed the Compact that was previously enacted by Congress on December 21, 2020. Under the Compact, the tribes became co-owners of the Milltown right along with FWP. The legislature implemented a 10-year planning period for purposes of allowing both FWP and CSKT to engage water users to develop plans on how best to administer the water rights in the future. The ability for both CSKT and FWP to implement and administer the Milltown right begins on April 24, 2025.

There are about 1,952 junior water users in the Blackfoot River that are junior to the Milltown water right. FWP and CSKT plan to continue to work with the Blackfoot Challenge, irrigators and other stakeholders to build shared knowledge about water management, explore options to improve water management in the future, and look for opportunities to minimize the impact of the Milltown water right on other water users in the basin.

Missouri River (Above Canyon Ferry Reservoir)

The Upper Missouri River drainage includes the Missouri River and tributaries from the confluence of the Jefferson, Madison and Gallatin Rivers (near the town of Three Forks). The upper river reach extends from the headwaters 43 river miles to the upper end of Canyon Ferry Reservoir. The drainage contains fish species common to southwestern Montana. The native species found here include westslope cutthroat trout, mountain whitefish, mountain sucker, longnose dace, longnose sucker, Rocky Mountain sculpin, stonecat and white sucker. Nonnative species include rainbow trout, brown trout, brook trout, northern pike, smallmouth bass, largemouth bass, yellow perch, walleye and common carp. Hybrids of rainbow trout and westslope cutthroat trout are also found in the drainage.

The Upper Missouri River drainage is also home to several conservation populations of westslope cutthroat trout, providing opportunities to preserve this native species in the drainage. The long-term goal of cutthroat conservation in the upper Missouri River Drainage is to have approximately 20% of the historically occupied habitat restored to secure a conservation population of cutthroat trout.

Drought Planning

There is currently no formal drought plan developed for the Upper Missouri River basin. As indicated in other basin assessments of the Gallatin River, Jefferson River and Big Hole River, there are some efforts that have been made to develop comprehensive voluntary drought plans in other Missouri Headwater streams.

Water Commissioners

According to DNRC's January 20, 2021 water commissioner list, there is one water commissioner that administers water on Deep Creek. Other commissioners exist in the Gallatin, Madison and Jefferson River basins and have been described in those specific basin call summaries. Juniors who are on streams being administered by a water commissioner would not be called.

Necessity of Call

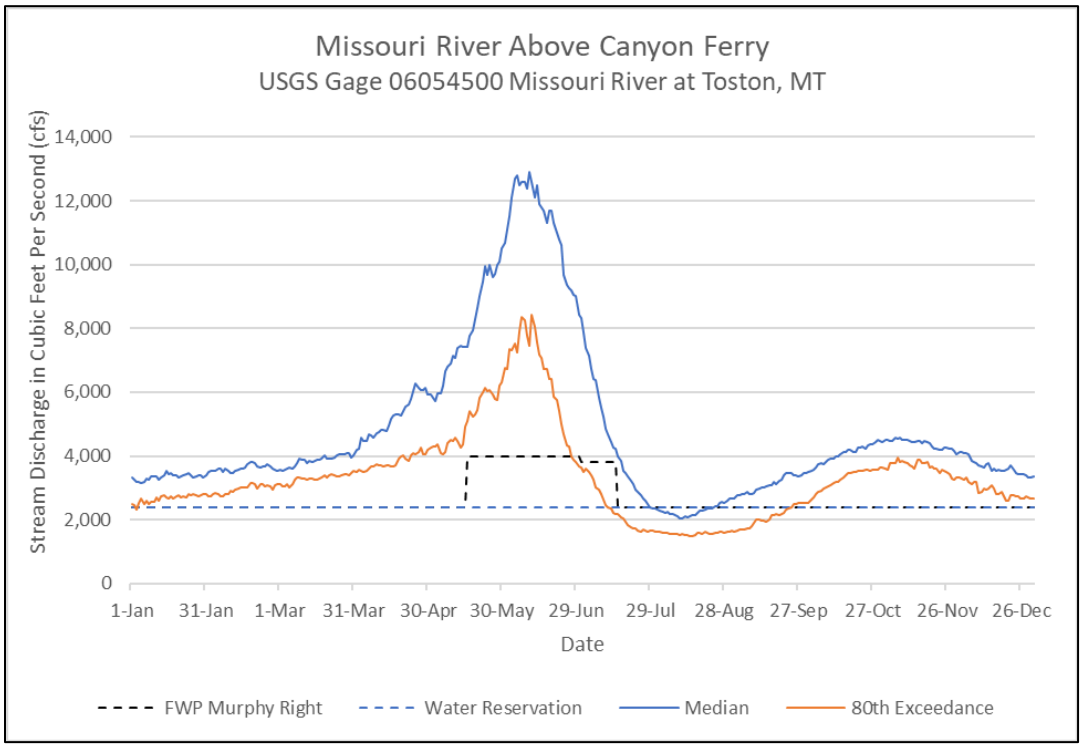
With dewatering negatively impacting fisheries, a call on junior water rights is justified on sources not being administered by a water commissioner and for which a call would likely result in improved or less rapidly declining streamflow. During times of severe water shortage on Missouri River headwater streams, making a call based on the Missouri River above Canyon Ferry may have benefits to headwater streams and tributaries, especially those in the Jefferson River basin where protections are limited to the FWP water reservation which has a later priority date of July 1, 1985.

Basis of Call

FWP calls on junior water rights in the Missouri River Above Canyon Ferry Reservoir are predicated on both a Murphy right and water reservation as measured at the USGS Gage 06054500 (Missouri River at Toston MT). The priority dates for the Murphy right and water reservation are **December 17, 1970** and **July 1, 1985,** respectively.

FWP's instream flow water rights on Missouri River by flow and time period:

Type of Instream Flow Water Right	Time Period	Flow (cfs)
Murphy Right	January 1-January 31	2,400
	February 1-May 15	2,400
	May 16-June 30	4,000
	July 1-July 15	3,816
	July 16-September 14	2,400
	September 15-December31	2,400
Water Reservation	January 1-December 31	2,400



The preceding hydrograph compares FWP's Murphy right (dotted black line) and water reservation (dotted blue line) with the median and 80th percentile exceedance flow for USGS Gage 06054500 based on 130 years of record (1891-2021). In the summer months in 5 out of 10 years, the median flows drop below FWPs Murphy right on or about July 29th and stay below that flow until about August 24th. The 80th percentile exceedance (shown in brown) represents the streamflow met or exceeded in 8 out of 10 years. The gage data indicates that during the driest of years, flows fall below FWP's Murphy right on or about July 16th and stay below that flow until about September 24th. It is also worth pointing out that flows fall below FWP's water reservation days prior to when they fall below FWP's Murphy right. However, making a call on juniors would be predicated on when flows fall below FWP's Murphy right, the more senior of the two rights.

Junior Water Rights

Of the three headwater streams in the Upper Missouri River, the Jefferson River is the only one without streamflow protections based on a Murphy right. Thus, streamflow protection is limited on the Jefferson to its more junior 1985 water reservation while both the Gallatin and Madison Rivers have Murphy rights that are more senior in priority, dating back to 1970. Additionally, the Missouri River's (above Canyon Ferry) priority date is five days earlier than the Murphy rights on both the Gallatin and Madison Rivers, making it the most senior FWP instream flow water right in that part of the Missouri River basin.

During the extraordinary hot and dry conditions that took place during the summer of 2021, FWP conducted an assessment of junior water users based on the Missouri River (above Canyon Ferry) Murphy right and found that the following juniors could be called to increase flows or slow additional declines in streamflow that might not otherwise occur if a call were not made.

Missouri River Basin Mainstem			
	Purpose(s)	***Call***	***Flow Rate***
	Irrigation	22	77.49 cfs
	Lawn and Garden	2	0.06 cfs
	Fish, Wildlife and Recreation	4	4 cfs
	Subtotal:	28	81.55 cfs
Jefferson River Basin			
Beaverhead	Irrigation	21	47.91 cfs
	Lawn and Garden	2	.08 cfs
	Mining	1	.62 cfs
	Fish and Wildlife/Recreation	9	6.09 cfs
	Subtotal:	*33*	*54.70 cfs*
Ruby	Irrigation	20	128.88 cfs
	Fish, Wildlife and Recreation	15	19.1
	Subtotal:	*35*	*148.98 cfs*
Big Hole[3]	Irrigation	55	175.62 cfs
	Lawn and Garden	1	0.12 cfs
	Subtotal:	*56*	*175.74 cfs*
Boulder	Irrigation	11	30.35
	Industrial	1	1.11
	Mining	4	1.37
	Subtotal:	*16*	*32.83*
Mainstem	Irrigation	27	55.29 cfs
	Lawn and Garden	2	0.11 cfs
	Recreation	1	0.5 cfs
	Subtotal:	*30*	*55.9 cfs*
Madison River Basin			
	Irrigation	16	33.74 cfs
	Fish and Wildlife/Recreation	2	1.96 cfs
	Subtotal:	*18*	*35.7 cfs*
Gallatin River Basin			
	Irrigation	33	36.35 cfs
	Domestic Lawn and Garden	2	0.71 cfs
	Fish and Wildlife/Recreation	2	2.33 cfs
	Subtotal:	*37*	*39.39 cfs*
	Total:	**253**	**624.79 cfs**

[3] Making any calls to juniors on the Big Hole River would have to be supported by the Big Hole Watershed Committee.

Figure 1: Jefferson River and Missouri Mainstem Juniors

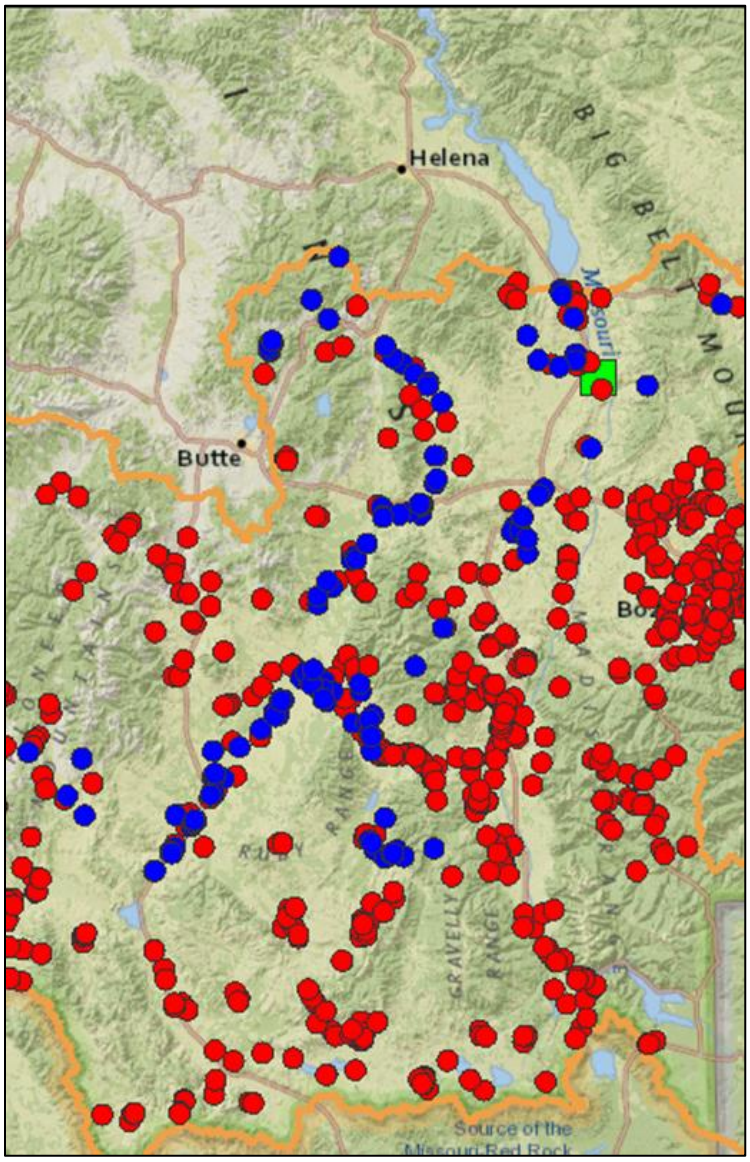


Figure 2: Madison River Juniors

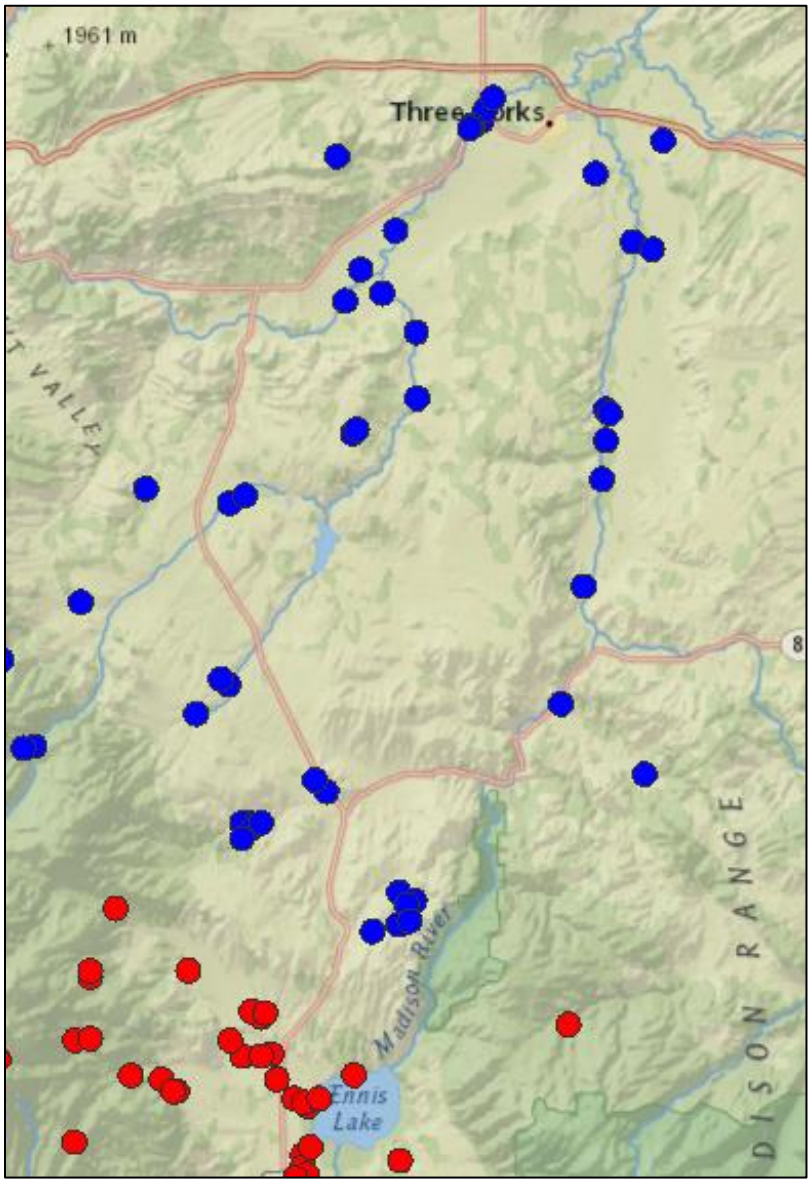
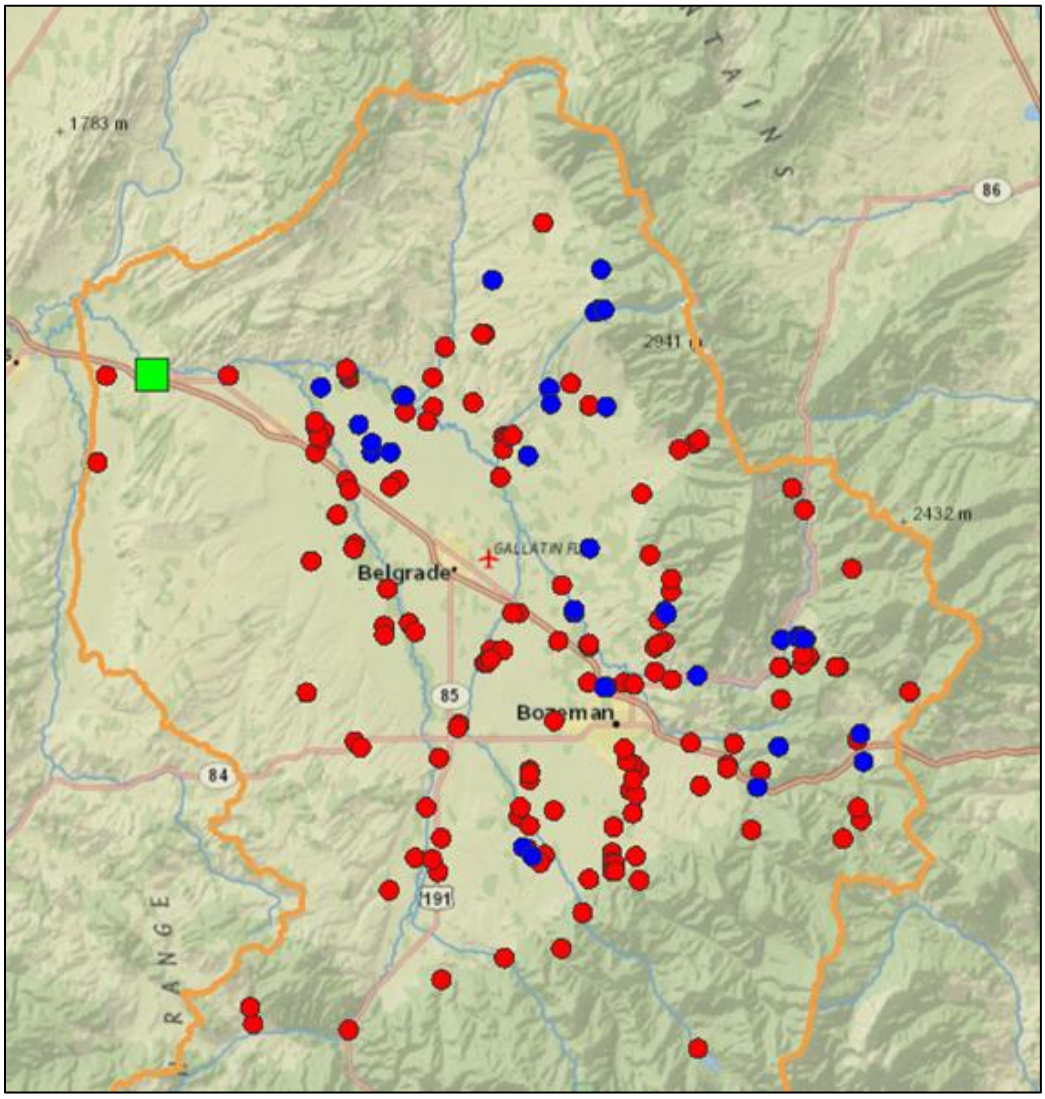


Figure 3: Gallatin River Juniors



Big Hole River

The Big Hole River originates at the outlet of Skinner Lake at an elevation of 7,340 ft in the Beaverhead Mountains of southwest Montana. From its modest beginnings, the river gathers volume and velocity due to numerous tributaries along its 115-mile course until its confluence with the Beaverhead River near Twin Bridges at an elevation of 4,600 ft. The Big Hole drainage encompasses approximately 2,476 square miles. Today, the mainstem river contains fish species common to southwestern Montana including rainbow trout and brown trout. Mountain whitefish and other native suckers and minnow are also common, but westslope cutthroat trout and arctic grayling are rare. Brook trout are the most common trout species in the upper river from Jackson through Wisdom and in most tributary streams. The Big Hole River is a blue-ribbon trout fishery, and its trout population trends are closely monitored. The Upper Big Hole River drainage contains one of the last known fluvial arctic grayling populations in the lower 48 states, with fluvial arctic grayling also occurring in the Madison, Centennial and Ruby Rivers. Active conservation programs are ongoing to enhance habitat conditions for both arctic grayling and westslope cutthroat trout in the Big Hole River. The river and many of its tributaries can become dewatered, particularly during dry years.

Drought Planning

A Drought Management Plan (DMP) was created in 1997 by the Big Hole Watershed Committee (BHWC) and its many technical advisors and partners. The plan sets flow and water temperature targets on the mainstem Big Hole River which is divided into five river sections. In a drought year, the plan begins with voluntary conservation participation by river water users, particularly outfitters/anglers and irrigators. When voluntary conservation targets are not met, state-managed fishing restrictions are implemented and enforced by Montana Fish, Wildlife & Parks. Fishing restrictions can be triggered by high-water temperatures, low streamflows or both.

In addition to the DMP, there are also specific conservation programs that are dedicated to the recovery of arctic grayling in the Big Hole Watershed. These efforts have been directed by the Arctic Grayling Recovery Program (AGRP) and the Candidate Conservation Agreement with Assurances for Fluvial Arctic Grayling in the Upper Big Hole River (Big Hole CCAA). The Big Hole CCAA was developed to help alleviate concerns associated with the potential ESA listing of Montana grayling and incentivize improved habitat conditions for grayling throughout the Big Hole CCAA project area. The project area includes the Big Hole River watershed from Dickie Bridge upstream to the headwaters. Currently, there are 33 enrolled non-federal landowners. Conservation measures outlined in the Big Hole CCAA document are addressed in each site-specific plan by implementing actions that: 1) improve streamflow, 2) improve and protect the function of riparian habitats, 3) identify and reduce or eliminate entrainment threats to grayling, and 4) remove barriers to grayling migration.

Water Commissioners

According to DNRC's January 20, 2021 water commissioner list, there is one water commissioner on Rock Creek.

Necessity of Call

The Big Hole Watershed Committee's DMP has identified flow triggers for five reaches of the Big Hole River. Each flow target in each section is described in in Table 1.

Table 1: Big Hole River DMP Sections and Flow Targets

River Section	Flow Targets
DMP Section I-Saginaw Bridge to Mouth of North Fork of Big Hole River Monitored at Big Hole River bl Big Lake Cr at Wisdom USGS Gage 06024450	April 1-June 30 160 cfs-Water users with CCAA site plans will be required to implement their plans July 1-October 31 60 cfs-Prepare for Conservation 40 cfs-Conserve 20 cfs-MFWP River Closure
DMP Section II-Mouth of the North Fork to Dickey Bridge Monitored at Big Hole near Wise River, MT USGS Gage 06024580	April 1-June 30 450 cfs-Water users with CCAA site plans will be required to implement their plans. July 1-October 31 170 cfs-Prepare of Conservation 140 cfs-Conserve 100 cfs-FWP River Closure
DMP Section III-Dickey Bridge to Maiden Rock FAS Monitored at Big Hole River at Maiden Rock nr Divide, MT, USGS Gage 06025250	May 1-October 31 250 cfs-Prepare for Conservation 200 cfs-Conserve 150 cfs-FWP River Closure
DMP Section IV-Maiden Rock FAS to FWP Tony Schoonen FAS Monitored at Big Hole River near Glen, MT, USGS Gage 06026210	May 1-October 31 290 cfs-Prepare for Conservation 240 cfs-Conserve 190 cfs-FWP River Closure
DMP Section V-Tony Schoonen FAS to Confluence with Jefferson River Monitored at Big Hole River bl Hamilton Ditch nr Twin Bridges, MT, USGS Gage 06026420	May 1-October 31 200 cfs-Prepare for Conservation 150 cfs-Conserve 100 cfs-FWP River Closure

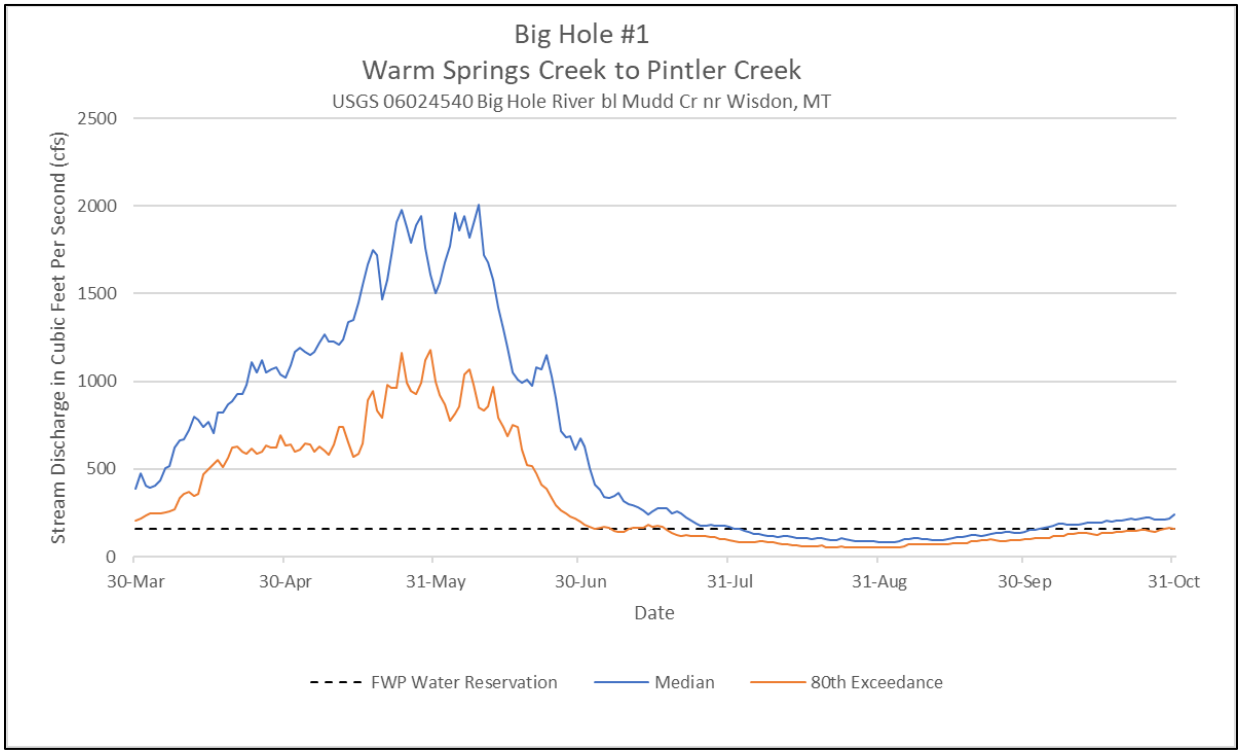
Basis of Call

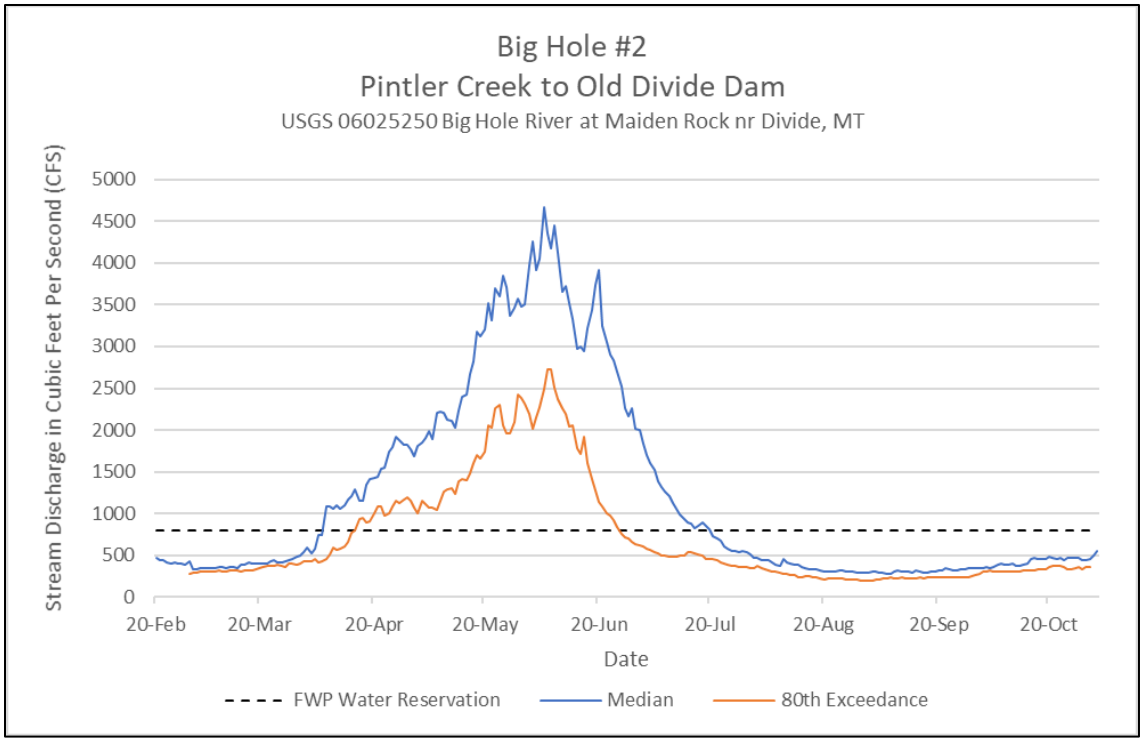
FWP has traditionally relied upon the Big Hole Watershed Committee and its DMP to meet flow and temperature targets needed for sustaining the Big Hole Fishery. However, FWP does have instream flow water reservations on three reaches of the Big Hole River. The priority date for these reservations is **July 1, 1985.**

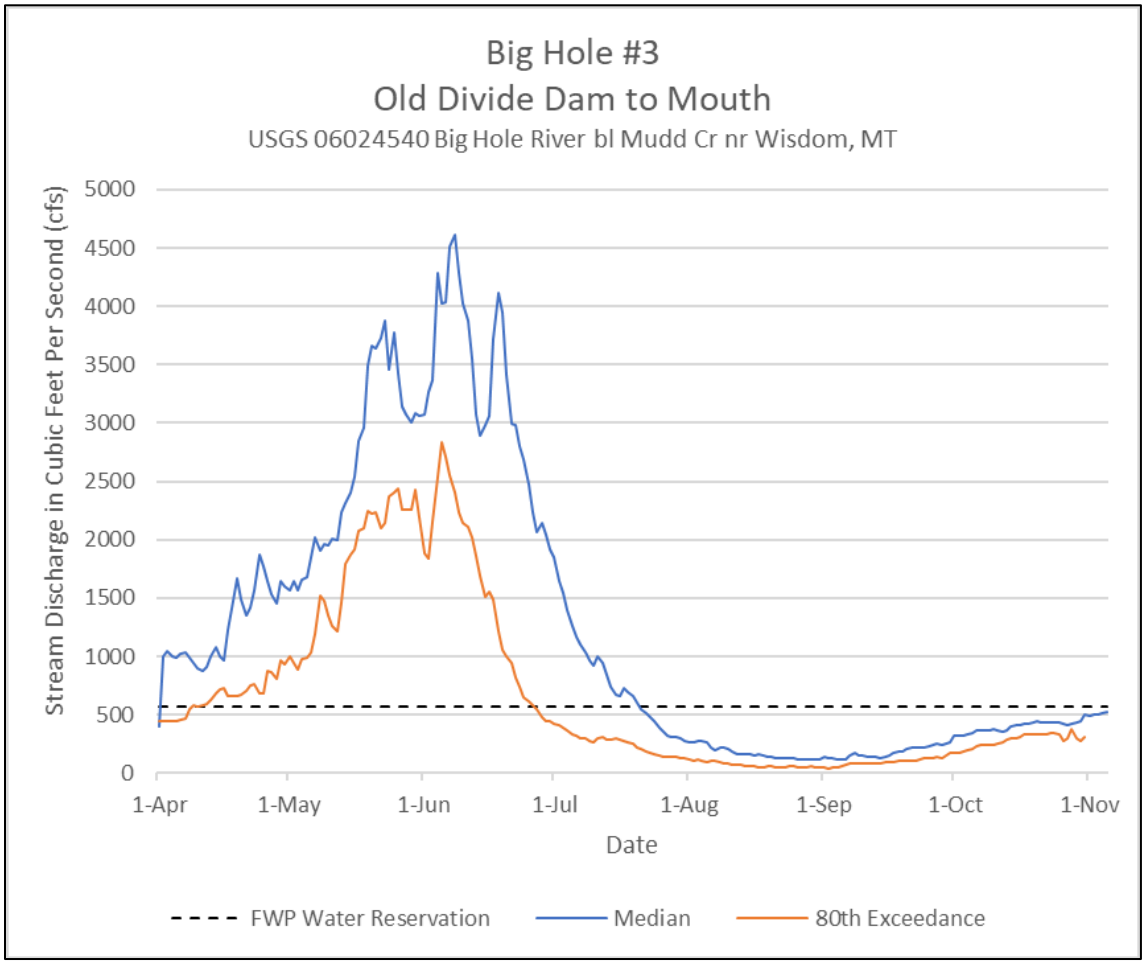
FWP's water reservation is based on a year-round (January 1-December 31) minimum instream flow in three reaches, as described in Table 2.

Table 2: FWP Water Reservations by Reach in the Big Hole River

Reach	Description	Flow (cfs)
Big Hole River #1	Warm Springs Creek to Pintler Creek	160
Big Hole River #2	Pintler Creek to Old Divide Dam	800
Big Hole River #3	Old Divide Dam to Mouth	573




Big Hole #2
Pintler Creek to Old Divide Dam
USGS 06025250 Big Hole River at Maiden Rock nr Divide, MT
Stream Discharge in Cubic Feet Per Second (CFS)
5000
4500
4000
3500
3000
2500
2000
1500
1000
500
0
20-Feb
20-Mar
20-Apr
20-May
20-Jun
20-Jul
20-Aug
20-Sep
20-Oct
Date
FWP Water Reservation
Median
80th Exceedance

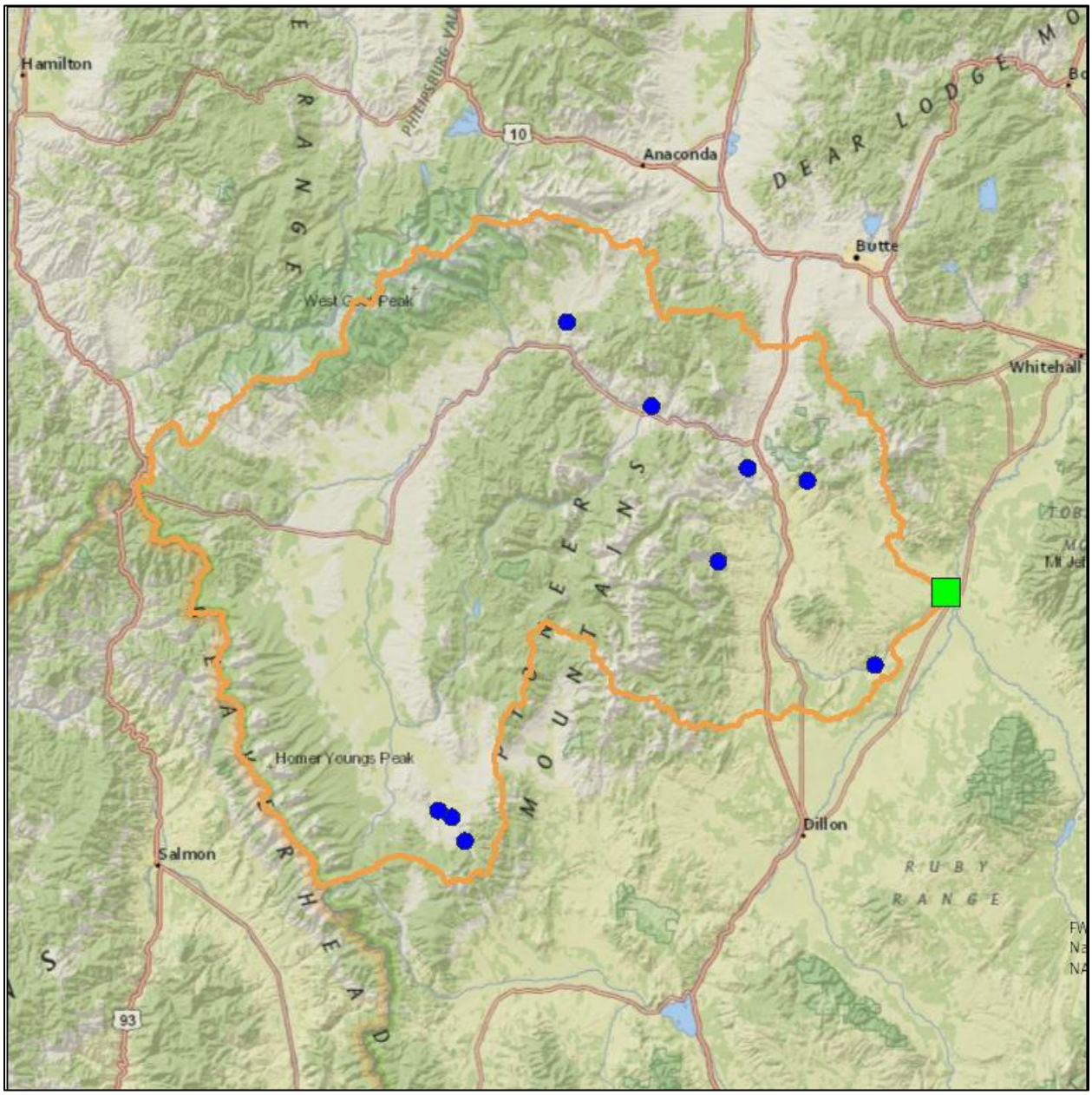

Big Hole #3
Old Divide Dam to Mouth
USGS 06024540 Big Hole River bl Mudd Cr nr Wisdom, MT
Stream Discharge in Cubic Feet Per Second (cfs)
5000
4500
4000
3500
3000
2500
2000
1500
1000
500
0
1-Apr
1-May
1-Jun
1-Jul
1-Aug
1-Sep
1-Oct
1-Nov
Date
FWP Water Reservation
Median
80th Exceedance

The preceding hydrographs compare FWP's water reservation (dotted black line) with the median and 80th percentile exceedance flow in the three stream reaches of the Big Hole River. The reference stream gages for these reaches are USGS Gage 06024540 (Big Hole River bl Mudd Cr nr Wisdom MT), USGS Gage 06025250 (Big Hole River at maiden Rock nr Divide MT), and USGS Gage 06026420 (Big Hole R bl Hamilton Ditch nr Twin Bridges MT). In the summer and fall months in most years, both the median flow and 80th percentile flows are below FWPs instream flow water reservation. The flow triggers identified in the Big Hole DMP provide a good point of reference when critical flows are being reached in the Big Hole River.

Junior Water Rights

A review of DNRC's water rights database includes a list of 9 water rights that are junior to FWP's water reservation. Of these, there are only two irrigation rights. Six of the water rights are associated with fish and wildlife and one water right is for stock water. The limited number of junior water users may suggest there is limited benefit to making a call on FWP's water reservation in the Big Hole River basin. FWP staff will cross reference the owners of these water rights with those who actively participate in the Big Hole CCAA to determine if there would be any benefit to making call on these water users.

The following map shows the location of all junior water rights. The nine juniors identified in DNRC's water rights database are represented by blue dots. The green square is the location of USGS Gage 06026420 (Big Hole River bl Hamilton Ditch nr Twin Bridges MT).



Jefferson River

The Jefferson River flows for 84 miles from its origin at the junction of the Big Hole and Beaverhead Rivers to its mouth at Three Forks, MT where it joins the Madison and Gallatin Rivers to form the Missouri River. During the irrigation season, virtually all tributaries to the Jefferson are diverted before reaching the river. The Jefferson River basin contains fish species common to southwestern Montana. The sport fishery in the Jefferson River is primarily comprised of brown and rainbow trout. The current trout density is approximately 600 trout per mile in the upper 40 miles of the river and less than 300 trout per mile in the lower 40 miles of the river. Trout abundance is closely associated with streamflow levels, with significant declines in fish populations occurring during drought cycles (late 1980s and 2000-2007), and documented recoveries during recent years of near normal streamflow. The goal of habitat and restoration projects in the Jefferson River and associated tributaries is to sustain 1,000 trout per mile in the upper 40 miles and 500 trout per mile in the lower 40 miles.

Drought Planning

A drought management plan was developed and approved in July, 2000 to attract voluntary participation in meeting streamflow targets in the Jefferson River basin. The plan was modified in 2012 and identifies various flow and temperature targets that once reached, initiate conservation measures to benefit aquatic resources.

Water Commissioners

According to DNRC's January 20, 2021 water commissioner list, water commissioners are active on several first and second order tributaries in the Jefferson River basin. On the Beaverhead River, there is a commissioner on the mainstem as well as Medicine Lodge Creek, Horse Prairie Creek, Big Lake Creek and Rattlesnake Creek. On the Big Hole River, there is a commissioner on Rock Creek. On the Ruby River, there is a commissioner on Wisconsin Creek, Indian Creek and Mill Creek. On the Jefferson mainstem, there are water commissioners for both the Parrot Ditch and Creekln Ditch, and its tributaries of Whitetail Creek, Little and Big Pipestone creeks, Fish Creek and Willow Creek.

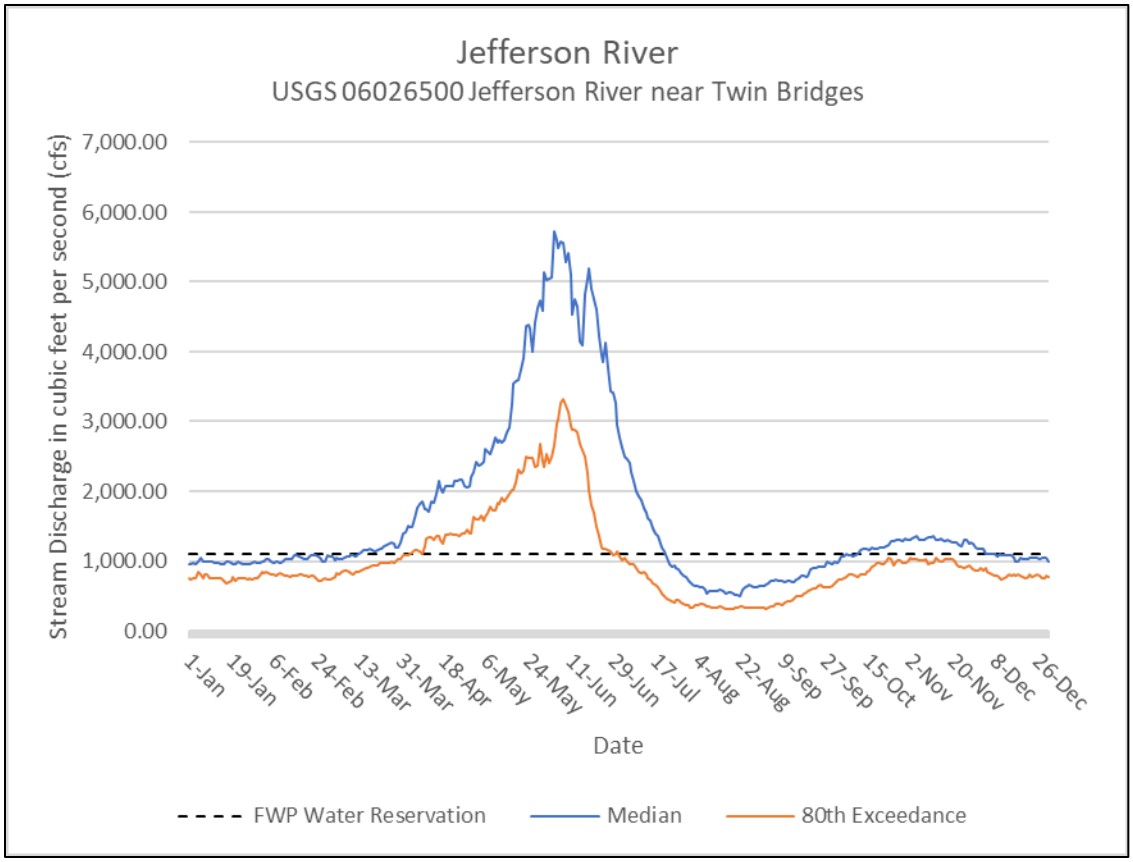
Necessity of Call

As described above, trout abundance in the Jefferson is closely associated with streamflow. While the voluntary drought plan has helped sustain streamflow in the Jefferson during periods of drought, there may be times when call is necessary to support drought efforts, especially in rivers and streams not administered by a water commissioner and would likely result in improved or less rapidly declining streamflow.

Basis of Call

FWP calls on junior water rights in the Jefferson River basin are predicated on FWP's instream flow reservation for the Jefferson River at its mouth as measured at USGS Gage 06026500 (Jefferson River near Twin Bridges MT). The priority date of this instream flow reservation is **July 1, 1985**.

FWP's instream flow reservation is for a year-round (January 1-December 31) flow of 1,095 cfs.



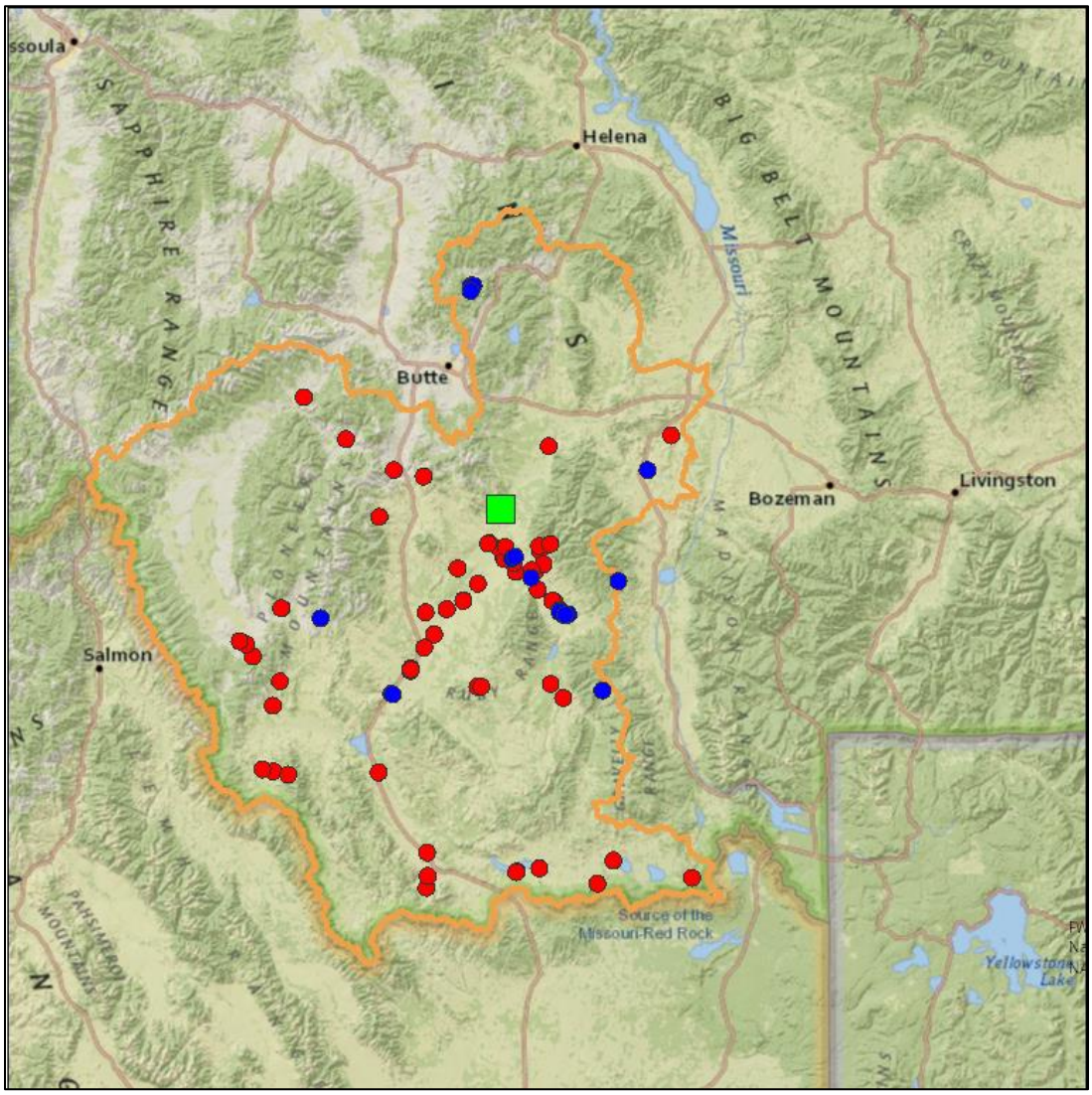
The preceding hydrograph compares FWP's instream reservation (dotted black line) with the median and 80th percentile exceedance flow for USGS Gage 06026500 based on 80 years of record (1941-2021). In 5 out of 10 years (median shown in blue), median flows fall below FWP's water reservation on or around July 20thand stay below the reservation throughout the summer months. The 80th percentile exceedance (shown in brown) represents the streamflow met or exceeded in 8 out of 10 years. The gage data indicates that during the driest of years, flows fall below FWP's water reservation on or around July 2. While the data indicates that flows generally fall below the FWP's instream flow reservation in most years, FWP has typically only recommended making a call once flows fell below FWP's reservation in July during times of drought. Since 2010, FWP has made a call on juniors in the Jefferson River basin 2 times, both times were associated with calling juniors above Toston Dam based on FWP's Murphy right in the Upper Missouri, which includes both the Jefferson and Gallatin River basins.

Junior Water Rights

DNRC's water rights database includes 82 junior water rights in the Jefferson River basin. Each water right was reviewed to determine if cessation of water use would likely result in additional flow reaching the Jefferson River. The following table lists the water rights by general purpose category.

Purpose	Call	Total Called Flow Rate
Mining	4	5.7 cfs
Fish/Wildlife and Recreation	8	7.4 cfs
Total	**12**	**13.1 cfs**

The following map shows the location of all junior water rights. Those represented by blue dots would be called while those represented by red dots would not. The green square is the location of USGS Gage 06026500.



Madison River

The Madison River originates in Yellowstone National Park (YNP) at the junction of the Firehole and Gibbon rivers. It then flows in a northerly direction for 149 miles to Three Forks, MT where it joins the Jefferson and Gallatin Rivers to form the Missouri River. There are two reservoirs on the river: Hebgen Reservoir, located 1.5 miles downstream of the park boundary, and Ennis Lake, located 65 miles downstream from Hebgen Reservoir. From its source in YNP, the Madison crosses a high forested plateau (7,000 ft and higher in elevation) to Hebgen Reservoir. Upon leaving Hebgen Reservoir, the Madison River flows about 3 miles through a narrow canyon to Earthquake Lake, a natural lake formed by an earth slide during a major earthquake on August 17, 1959. Below Earthquake Lake, the river enters the upper Madison River Valley where it flows about 57 miles before entering Ennis Reservoir. Once it leaves Ennis Reservoir, the Madison enters a narrow gorge (Bear Trap Canyon) where it flows about 14 miles before entering the lower Madison River Valley for the final 26 miles to its junction with the Jefferson and Gallatin Rivers.

Flows in the Madison River are regulated by the two reservoirs. Hebgen Reservoir built in 1915 by the Montana Power Company (presently owned and operated by Northwestern Energy), stores water for downstream power generation. Water storage usually occurs during the snow runoff period of mid-May through early June. Stored water is released to downstream reservoirs during the fall (October-December). Fall releases usually range from 1,500 to 2,200 cfs at Hebgen Dam. Ennis Reservoir, built in 1908 by a predecessor of the Montana Power Company (presently owned and operated by Northwestern Energy), has a rather stable water level with little storage capacity of its own. Its primary function is to create head pressure for the power generating facility immediately below Ennis Dam. Outflows from Ennis Reservoir are primarily regulated at Hebgen Dam.

The Madison River is one of Montana's premier wild trout fisheries. High scenic values, good public access and excellent wild trout populations have all contributed to its national reputation as an outstanding sport fishery and have led to its designation as a blue-ribbon trout stream by FWP.

Drought Planning

There is currently no formal drought plan developed for the Madison River basin. The lower Madison River below Ennis Dam suffers from chronic high-water temperatures in the summer. Fish kills have been documented at water temperatures above 82.5°F. Northwestern Energy, which operates the two reservoirs on the river, has in place an operating plan to keep water temperatures in the lower river below the critical lethal temperature for fish. The plan calls for temporarily raised discharges from Ennis Dam (otherwise known as pulsing) which holds water temperatures below 80°F at Black Ford Fishing Access Site.

Water Commissioners

According to DNRC's January 20, 2021 water commissioner list, there are two water commissioners that distribute water on the following streams: Bear Creek and South Meadow Creek. Both streams are above Ennis Reservoir.

Necessity of Call

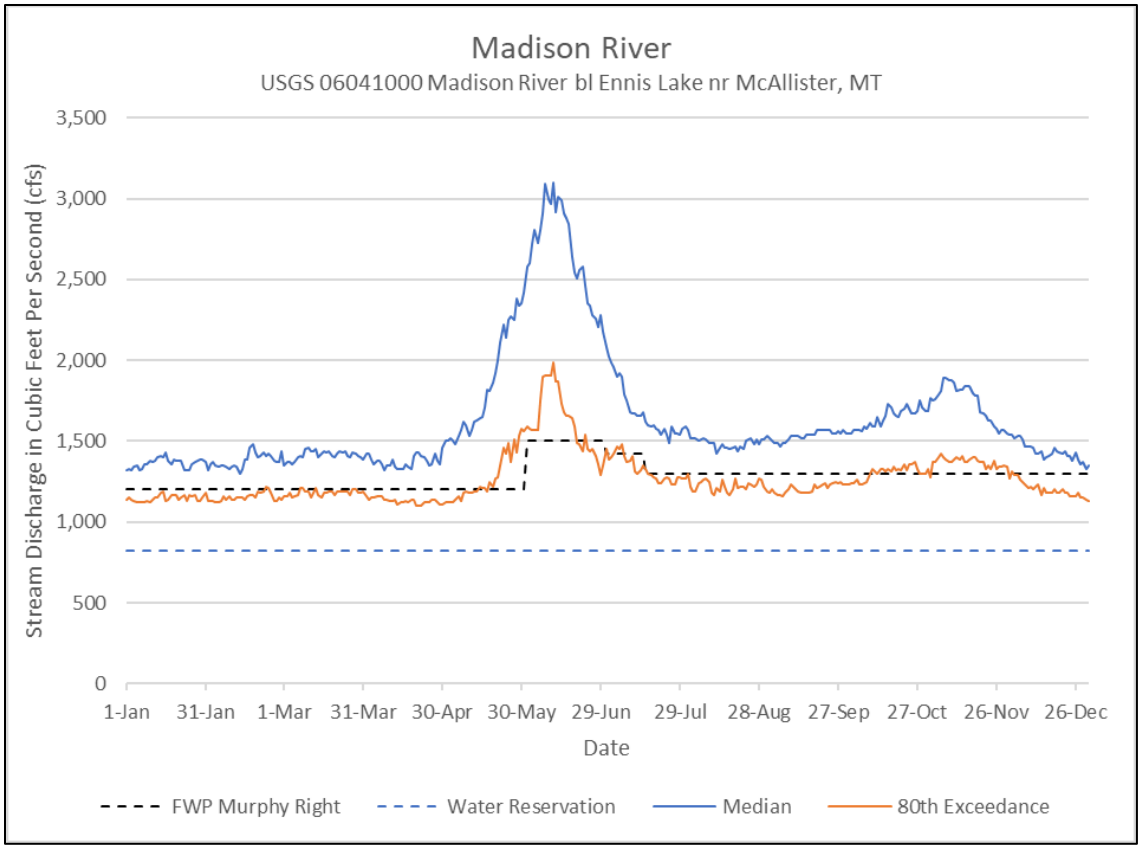
With dewatering negatively impacting fisheries, a call on junior water rights is justified for those drainages not being administered by a water commissioner that would likely result in improved or less rapidly declining streamflow. Given the nature of reservoir management between Hebgen and Ennis reservoirs, there may be little benefit to making a call above Ennis Reservoir. However, there are junior water rights below Ennis Reservoir that when called could benefit the lower Madison River and could complement the pulsing actions taken by Northwestern Energy to protect the fishery.

Basis of Call

FWP calls on junior water rights in the Madison River basin are predicated on both a Murphy right and water reservation as measured at USGS Gage 06041000 (Madison River bl Ennis Lake nr McAllister MT). The priority dates for the Murphy right and water reservation are **December 21, 1970** and **July 1, 1985,** respectively.

FWP instream flow water rights on Madison River by flow and time period:

Type of Instream Flow Water Right	**Time Period**	**Flow (cfs)**
Murphy Right	January 1-May 31 June 1-June 30 July 1-July 15 July 16-December 31	1,200 1,500 1,423 1,300
Water Reservation	January 1-December 31	825



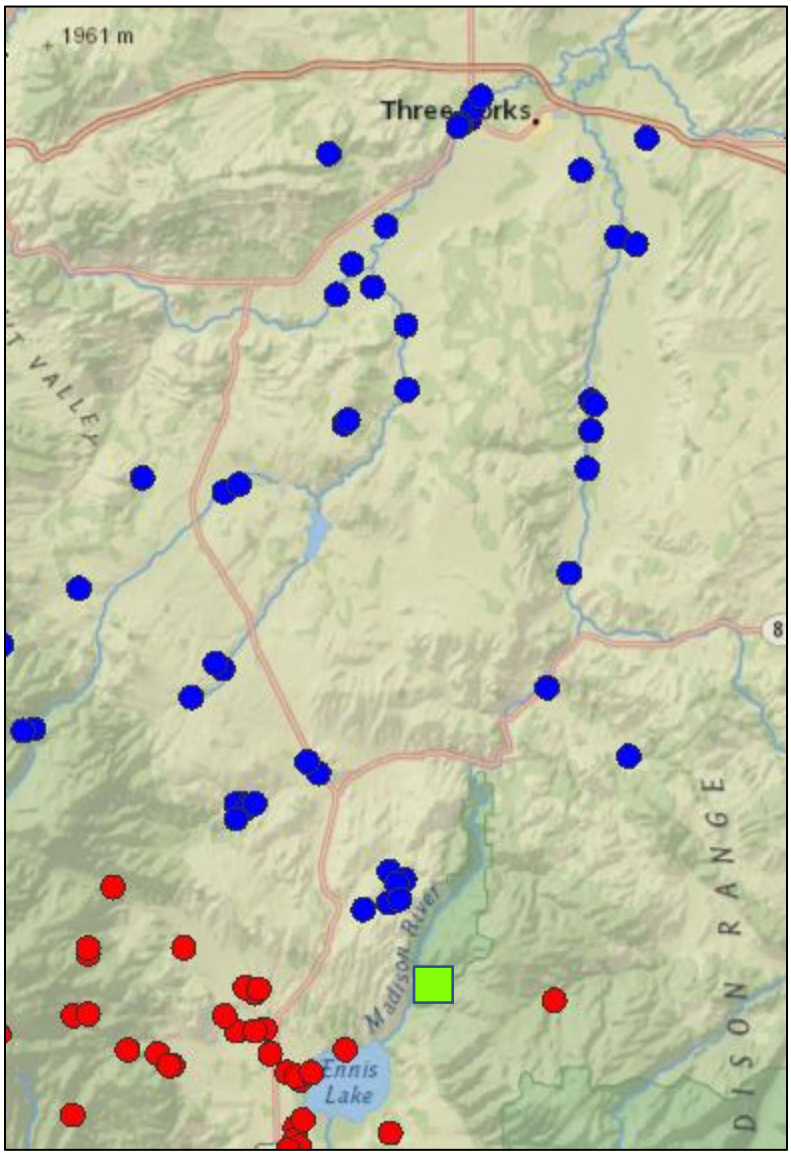
The preceding hydrograph compares FWP's Murphy right (dotted black line) and water reservation (dotted blue line) with the median and 80th percentile exceedance flow for USGS Gage 06041000 (Madison River bl Ennis Lake nr McAllister, MT) based on 83 years of record (1939-2022). In the summer months in 5 out of 10 years, the median flows stay above FWPs Murphy right. The 80th percentile exceedance (shown in brown) represents the streamflow met or exceeded in 8 out of 10 years. The gage data indicates that during the driest of years, flows fall below FWP's Murphy right on or about July 18th and stays below that level until on or around October 9th. However, unlike the Gallatin River, flows stay well above the FWP water reservation throughout the season.

Junior Water Rights

Given the uniqueness of water management above Ennis Reservoir and the measures that are taken by Northwestern Energy to reduce the temperatures in the lower Madison, making a call on the Madison based on its own Murphy right and water reservation may not provide much benefit. However, under severe drought conditions where multiple basins in the Missouri Headwaters are undergoing issues of high temperatures and low flows, making a call on the lower Madison based on FWP's Murphy right above Canyon Ferry (December 17, 1970 priority date) may provide some necessary relief. Under that circumstance, below is a summary of junior water users:

Purpose	**Call**	**Total Called Flow Rate**
Irrigation	16	33.74 cfs
Fish and Wildlife/Recreation	2	1.96 cfs
Total	**18**	**35.7 cfs**

The following map shows the location of all the junior water rights. Those represented by blue dots would be called while those represented by red dots would not. The green square is the location of USGS Gage 06041000.



Gallatin River

The free-flowing Gallatin River originates at Gallatin Lake in Yellowstone National Park at an elevation of 8,834 feet. It flows north for 115 miles to Three Forks, Montana, where it joins the Madison and Jefferson rivers to form the Missouri River. From the park boundary, the river flows about 44 miles through the narrow Gallatin Canyon, then enters the broad Gallatin Valley where it then flows an additional 45 miles to its mouth. Much of the Gallatin River is classified as blue-ribbon by FWP in recognition of its high recreational, fishery and aesthetic values. Most streams in the drainage are managed for nonnative self-sustaining wild trout fisheries that includes brown trout, brook trout, rainbow trout and Yellowstone cutthroat trout. These trout populations are currently stable from year to year. Only one pure population of native westslope cutthroat trout exists in the drainage. Hybridized (westslope cutthroat with rainbow trout) populations exist in a few headwater streams.

Drought Planning

The City of Bozeman adopted a Drought Management Plan (DMP) in 2017. The DMP has three components that include: identifying drought severity indicators, developing drought mitigation and response activities, and developing strategies for curtailing municipal water use during each stage of drought utilizing usage fees and assessing penalties for water use violations. The DMP is limited to those who are connected to city water and sewer and does not cover those who utilize exempt wells for purposes of lawn and garden irrigation. Aside from the city's efforts in adopting a drought plan, a formalized drought plan that addresses rural water use has yet to be developed. However, there has been an informal agreement among water users to ensure the West Gallatin River maintains streamflow throughout the irrigation season.

Water Commissioners

According to DNRC's January 20, 2021 water commissioner list, there are two water commissioners that administer water on the following streams: Baker Creek, Hyalite Creek, Middle Cottonwood Creek, Sourdough Creek, S. Cottonwood Creek, West Gallatin River and Big Bear Creek. Junior water rights on these stream reaches are not called.

Necessity of Call

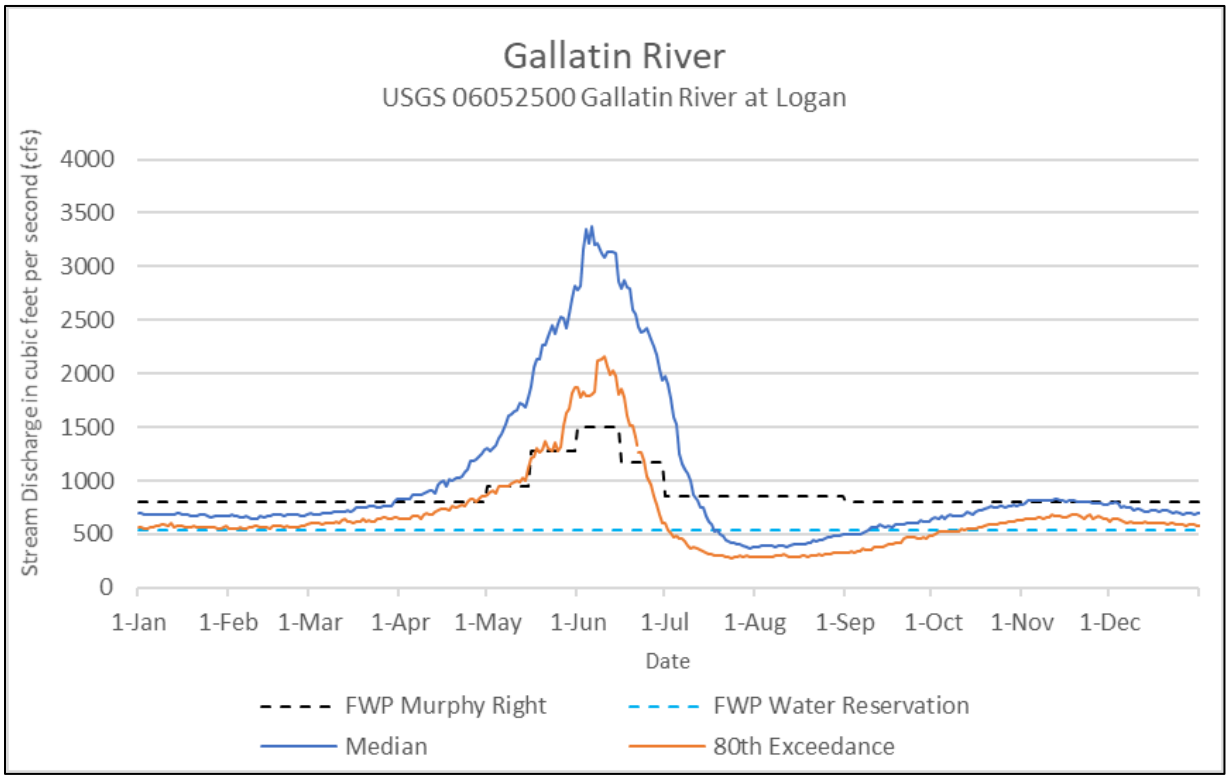
With dewatering negatively impacting fisheries, a call on junior water rights is justified on those sources not being administered by a water commissioner and that would likely result in improved or less rapidly declining streamflow.

Basis of Call

FWP calls on junior water rights in the Gallatin River basin are predicated on both a Murphy right and water reservation below the confluence of the East and West Gallatin rivers as measured at USGS Gage 06052500 (Gallatin River at Logan MT). The priority dates for the Murphy right and water reservation are **December 21, 1970** and **July 1, 1985,** respectively.

FWP's instream flow water rights on Gallatin River by flow and time period are as follows:

Type of Instream Flow Water Right	Time Period	Flow (cfs)
Murphy Right	September 1-April 30 May 1-May 15 May 16-May 31 June 1-June 15 June 16-June 30 July 1-August 31	800 947 1,278 1,500 1,176 850
Water Reservation	January 1-December 31	533.5



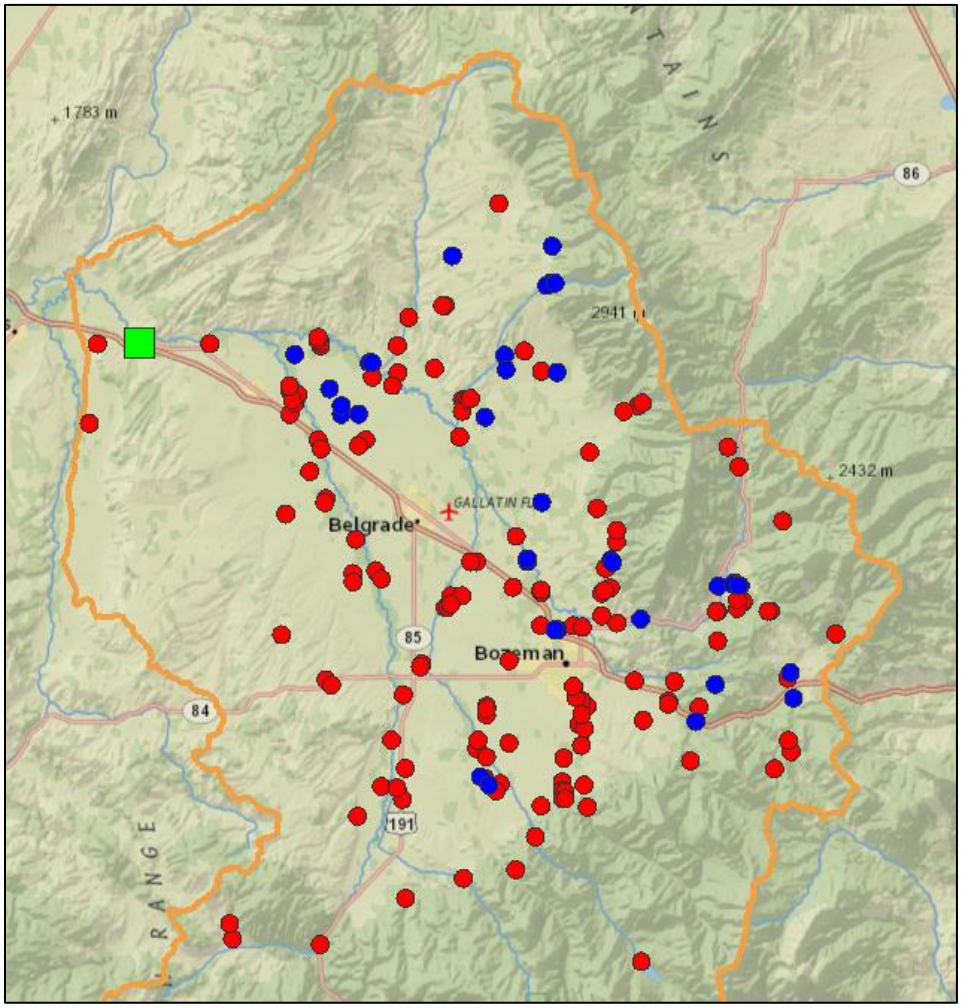
The preceding hydrograph compares FWP's Murphy right (dotted black line) and water reservation (dotted blue line) with the median and 80th percentile exceedance flow for USGS Gage 06052500 based on 127 years of record (1894-2021). In 5 out of 10 years, the median flows fall below FWPs Murphy right on or near the 12th of July and fall below FWP's water reservation on or near July 20th. The 80th percentile exceedance (shown in brown) represents the streamflow met or exceeded in 8 out of 10 years. The gage data indicates that during the driest of years, flows fall below FWP's Murphy right on or about June 25th and fall below FWP's water reservation on or about July 3. While the data indicates that flows generally fall below both of FWP's instream flow water rights in most years, FWP has typically recommended making a call once flows fell below FWP's reservation in July during times of drought. Since 2010, FWP has made a call to juniors in the Gallatin River basin 3 times

Junior Water Rights

Given several active water distribution projects that occur on the West Gallatin River, most junior water users on both the mainstem and tributaries are likely notified by the water commissioner early in the season. FWP's focus is on junior water users who divert water from both the mainstem and tributaries of the East Gallatin River where no water commissioner is currently present. A review of DNRC's water rights database includes a list of 37 junior water rights. Each of the water rights was reviewed to determine if cessation of water use would likely result in additional flow reaching the Gallatin River. The following table lists the water rights by general purpose category.

Purpose	**Call**	**Total Called Flow Rate**
Irrigation	33	36.35 cfs
Domestic Lawn and Garden	2	0.71 cfs
Fish and Wildlife/Recreation	2	2.33 cfs
Total	**37**	**39.39 cfs**

The following map shows the location of all the junior water rights. Those represented by blue dots would be called while those represented by red dots would not. The green square is the location of USGS Gage 06052500.



Smith River

The Smith River is a popular fishery, supporting over 36,333 angler days in 2019. Throughout the Smith River basin, angling opportunities exist for rainbow and brown trout along with other fish species. Elevated water temperature exacerbated by low streamflow often prompt fishing restrictions. Dewatering and associated warm water temperatures routinely negatively impact the Smith River fishery. The Smith River offers a unique and highly valued recreational floating and angling opportunity downstream of Camp Baker through Smith River State Park. Flow conditions generally limit floating opportunity for drift boats below 350 cfs, rafts below 250 cfs and canoes below 150 cfs.

Drought Planning

The Smith River Community Council administers a community benefits program associated with the Black Butte Copper Mine. As this group develops, it may provide a good structural organization to pursue and implement drought planning activities.

Water Commissioners

According to DNRC's January 20, 2021 water commissioner list, a water commissioner is active on the North Fork Smith River. Junior water rights from North Fork are not called.

Necessity of Call

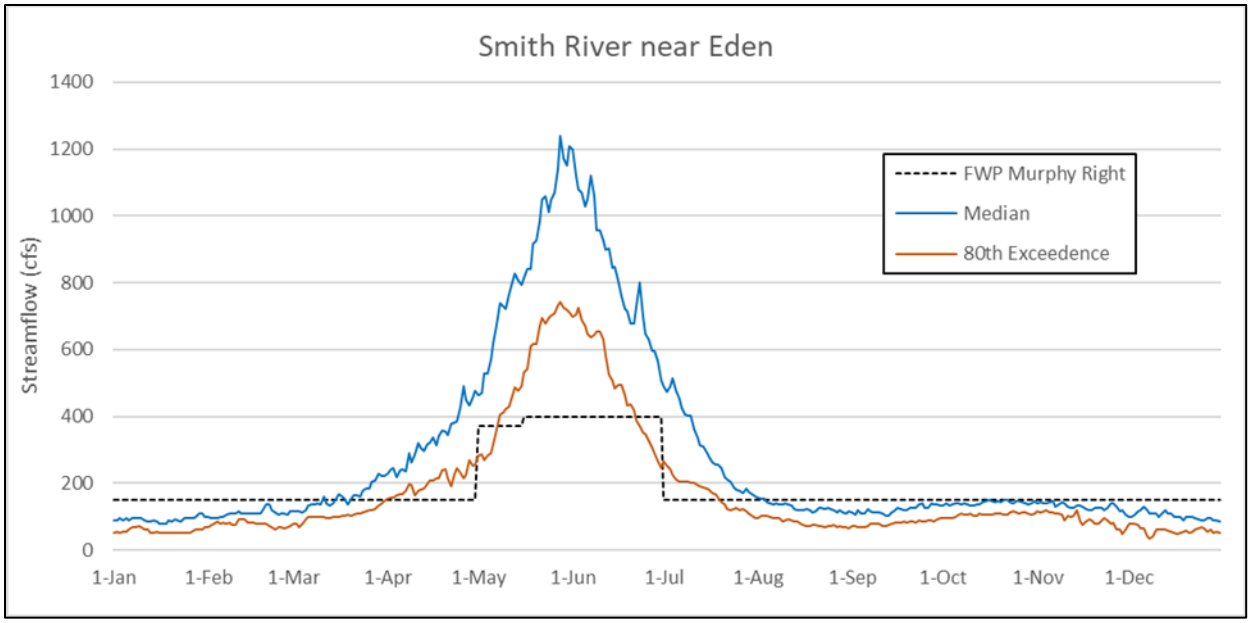
With dewatering negatively impacting fisheries, a call on junior water rights is justified for those not being administered by a water commissioner and that would likely result in improved or less rapidly declining streamflow.

Basis of Call

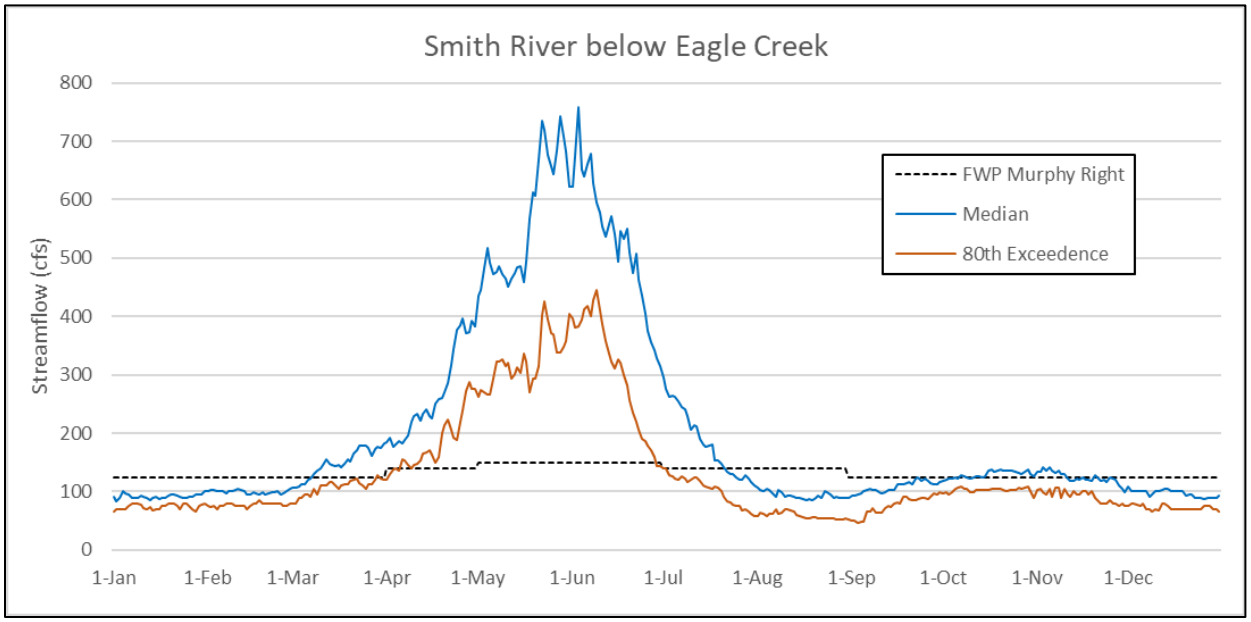
FWP calls on junior water rights in the Smith River basin are predicated on FWP's instream flow Murphy rights which vary by reach and period as follows:

Reach	Priority Date	Period	Flow (cfs)	USGS Gage
Hound Creek to Cascade County line.	December 17, 1970	Jul 1 – Apr 30	150	06077500 Smith River near Eden
		May 1 – May 15	372	
		May 16 – Jun 15	400	
		Jun 16 – Jun 30	398	
Above Cascade County Line	December 22, 1970	Sep 1 – Mar 31	125	0606077200 Smith River bl Eagle Cr nr Fort Logan
		Apr 1 – Apr 30	140	
		May 1 – Jun 30	150	
		Jul 1 – Aug 31	140	

A call would not be made late in a period when the instream flow for the subsequent period is substantially lower. For example, if flow at the Eden Gage was 200 cfs the last week in June, a call would not be made because on July 1 the instream flow value would decrease to 150 cfs which is substantially lower than flow would likely be at that time.



The preceding hydrograph compares FWP's Murphy right (dotted black line) with the median and 80th percentile exceedance flow for USGS Gage 06077500 (Smith River near Eden MT) based on 25 years of record (1979-2022). In 5 out of 10 years (median shown in blue), streamflow generally meets or exceeds the Murphy right until early August and then recovers to near the Murphy right level in October. The 80th percentile exceedance (shown in brown) which represents the streamflow met or exceeded in 8 out of 10 years falls below the Murphy right by late July and does not exceed the Murphy right until the next spring.



The above hydrograph compares FWP's Murphy right (dotted black line) with the median and 80th percentile exceedance flow for USGS Gage 06077200 (Smith River bl Eagle Cr nr Fort Logan MT) based on 24 years of record (1997-2020). The median streamflow generally meets or exceeds the

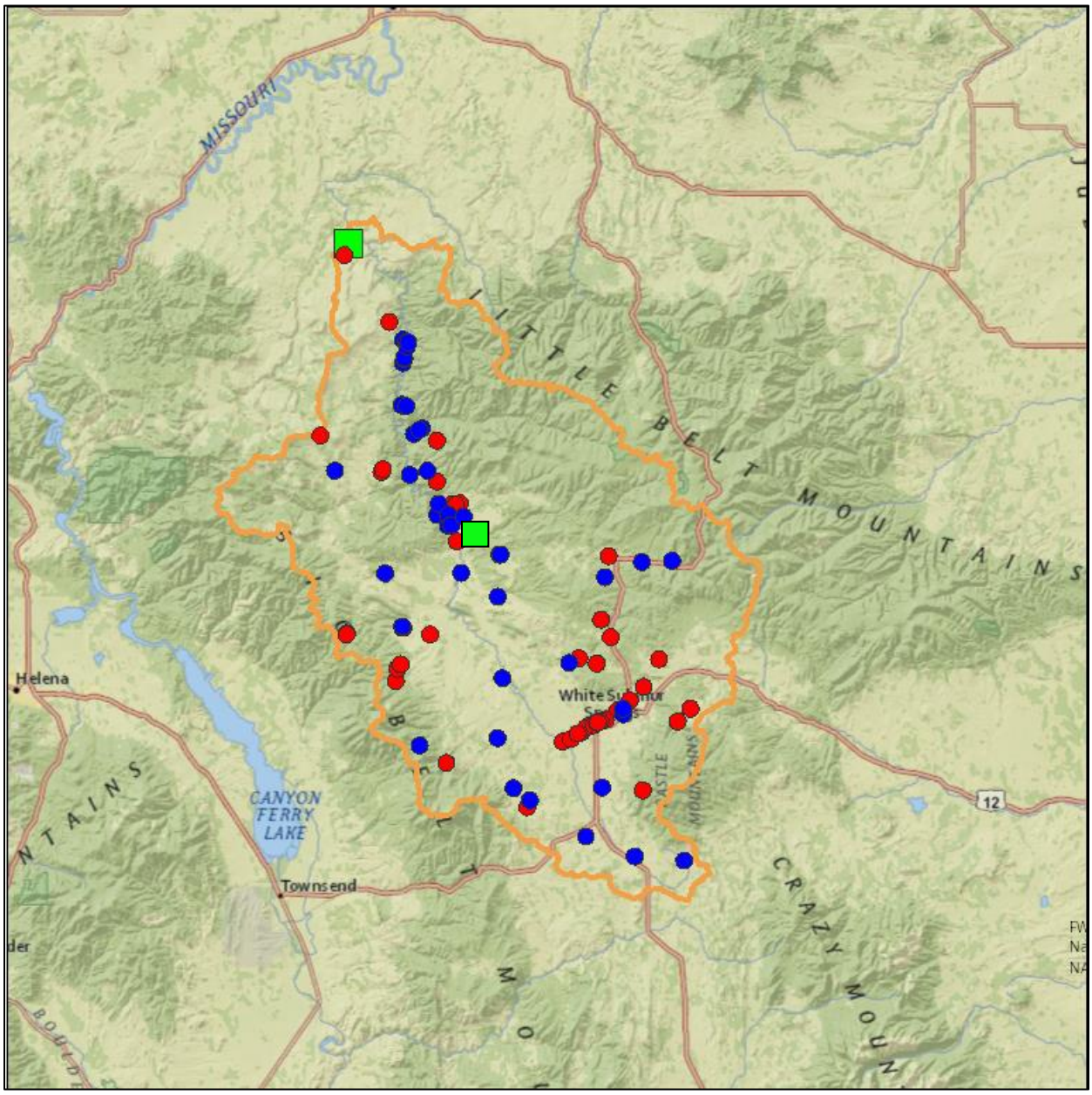
Murphy right until late July and then recovers above this level in October. The 80th percentile exceedance falls below the Murphy right by the beginning of July and does not exceed the Murphy right until the next spring. Data from both hydrographs indicate that over the period of streamflow record, a call on junior water rights may occur in more than half of the years. Since 2000, FWP has called junior water rights in the Smith River basin 11 times, including 2000.

Junior Water Rights

DNRC's water rights database includes junior water rights in the Smith River basin above Hound Creek. Each water right was reviewed to determine if cessation of water use would likely result in additional flow reaching the Smith River. The following table lists the water rights by general purpose category.

Purpose	**Call**	**No Call**	**Total Called Flow Rate**
Fish, Wildlife, Recreation Ponds	5	0	1.92 cfs
Irrigation	28	17	88.62 cfs
Mining	2	8	2.77 cfs
Stock	0	18	-
Domestic	0	3	-
Total	**35**	**46**	**93.31 cfs**

The following map shows the location of all the junior water rights. Those represented by blue dots would be called while those represented by red dots would not. The green squares are the location of the USGS gages with the Eden gage being more downstream toward the top of the map.



Big Spring Creek

Big Spring Creek as the name implies is fed by Big Spring which provides a consistent supply of about 93 cfs. It is an exceptionally productive fishery and for its size is rated as one of Montana's finest fishing waters. Big Spring Creek also experiences significant recreational use in the upper 15 miles. Dewatering during times of drought negatively impacts the fishery as habitat is reduced and fish are concentrated.

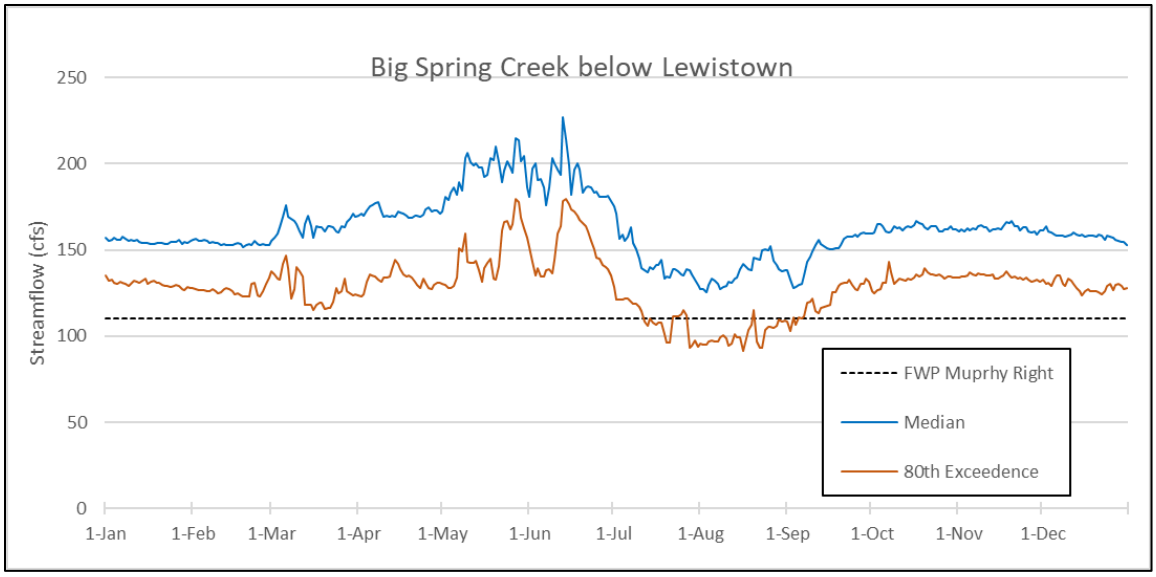
Drought Planning
The Big Spring Creek Watershed Council has developed a drought plan along the lines of the BDP where junior water users not enrolled in the plan are called by FWP when flows drop below the Murphy right. This plan, developed in the 2000s, has not been implemented in recent years as flow has not been an issue.

Water Commissioners
According to DNRC's January 20, 2021 water commissioner list, there are no water commissioners operating within the Big Spring Creek basin.

Necessity of Call
With dewatering negatively impacting fisheries, a call on junior water rights would likely result in improved or less rapidly declining streamflow. Implementation of the Watershed Council Drought Plan would provide an alternative to call participants in the plan while nonparticipants would be called.

Basis of Call
FWP calls on junior water rights in the Big Spring Creek basin are predicated on FWP's instream flow Murphy right as measured at USGS Gage 06111800 (Big Spring Cr at R&B Trading Post nr Lewistown MT). The priority date of this instream flow reservation is **December 21, 1970,** with a year-round flow rate of **110 cfs.**

The following hydrograph compares FWP's Murphy right (dotted black line) with the median and 80th percentile exceedance flow for Big Spring Creek immediately below Lewistown. The median and 80th percentile of flow data is calculated using data from two FWP gages and USGS Gage 06111800, all located in a 2-mile reach downstream of Lewistown with varying periods of record from 2001 to 2021. In 5 out of 10 years (median shown in blue), streamflow exceeds the Murphy right throughout the year. The 80th percentile exceedance (shown in brown) which represents the streamflow met or exceeded in 8 out of 10 years falls below the Murphy right by late July and does not exceed the Murphy right until into September.



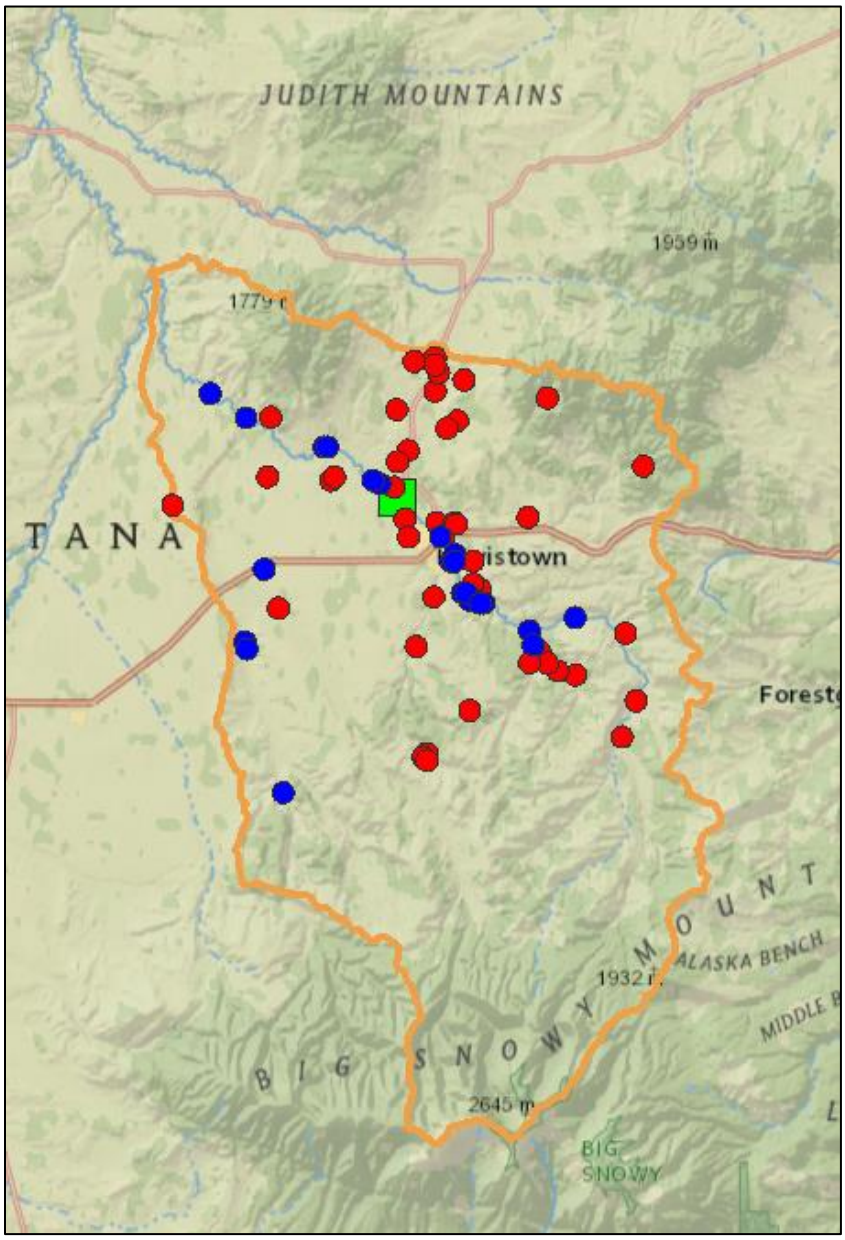
Junior Water Rights

DNRC's water rights database includes junior water rights in the Big Spring Creek basin. Each water right was reviewed to determine if the cessation of water use would likely result in additional flow in Big Spring Creek. The following table lists the water rights by general purpose category.

Purpose	**Call**	**No Call**	**Total Called Flow Rate**
Fish, Wildlife, Recreation Ponds	1	0	-
Irrigation*	24	12	26.12 cfs
Stock	0	10	-
Total	**25**	**22**	**26.12 cfs**

*Includes two "domestic" rights used for lawn and garden irrigation

The following map shows the location of all the junior water rights. Those represented by blue dots would be called while those represented by red dots would not. The green square represents the location of the USGS Gage.



Judith River

The lower Judith River below Big Spring Creek is primarily a warm water fishery supporting sauger, burbot, channel catfish, smallmouth bass, and northern pike with rainbow and brown trout found during cooler seasons. It is an important tributary to the Missouri River, providing important habitat for a variety of species to act out various stages of their life history such as spawning, nursery and residence. Population dynamics of sauger, burbot, channel catfish, northern pike and large river non-game species such as blue sucker and bigmouth/smallmouth buffalo rely on the Judith River. Additionally, endangered pallid sturgeon have recently been documented in the Judith, further highlighting the importance of quality habitat linkage with the Missouri River. Rainbow, brown, brook and westslope cutthroat trout are found primarily in the headwater tributaries into the mainstem Judith above Utica. Dewatering from above Hobson to Big Spring Creek significantly negatively impacts the fishery in this reach.

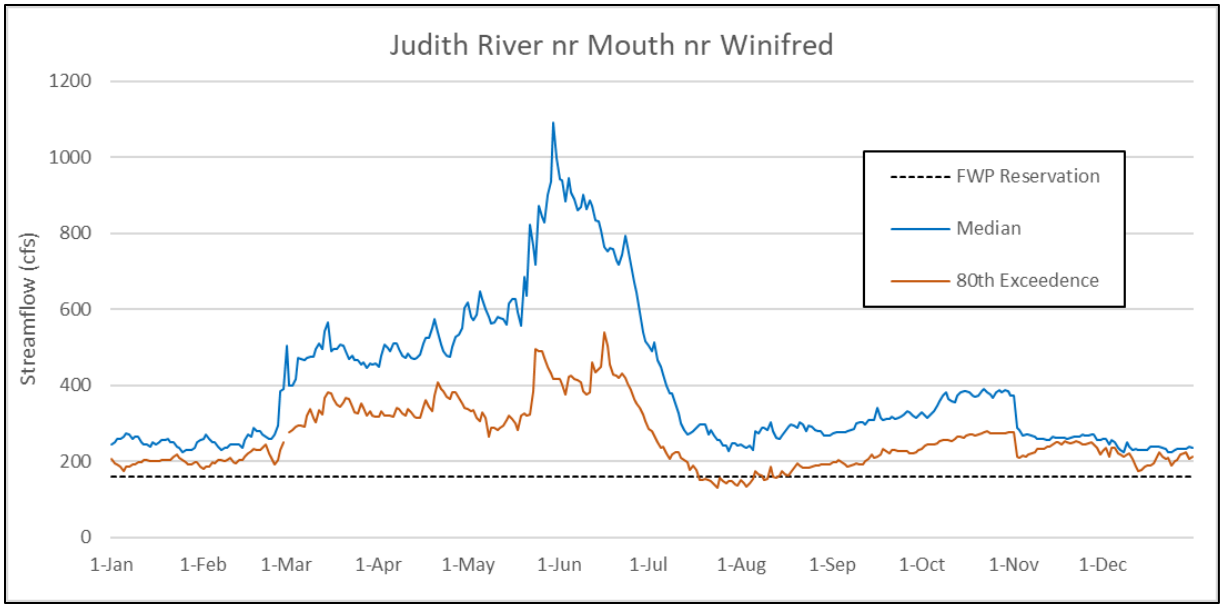
Drought Planning
Outside of the Big Spring Creek basin, which is addressed separately, there is no active watershed group in the basin to take on drought planning.

Water Commissioners
According to DNRC's January 20, 2021 water commissioner list, there are no water commissioners operating within the Judith River basin.

Necessity of Call
With dewatering negatively impacting fisheries, a call on junior water rights likely resulting in improved or less rapidly declining streamflow is justified.

Basis of Call
FWP calls on junior water rights in the Judith River basin, not including the Big Spring Creek drainage, are predicated on FWP's instream flow reservation as measured at USGS Gage 06114700 (Judith River nr mouth, nr Winifred MT). The priority date of this instream flow reservation is **July 1, 1985,** with a year-round flow rate of **160 cfs.**

The following hydrograph compares FWP's water reservation (dotted black line) with the median and 80th percentile exceedance flow for Judith River near its mouth. In 5 out of 10 years (median shown in blue), streamflow exceeds the reservation throughout the year. The 80th percentile exceedance (shown in brown) which represents the streamflow met or exceeded in 8 out of 10 years falls below the reservation by mid-July with flow rebounding above the reservation level by latter August. The hydrographs show a marked drop in November through February as the data for this period was collected only during the 2000s when flow conditions were generally lower. Since 2007 the gage has not operated during the winter as data quality was low due to ice conditions and the gage was difficult to reach to take flow measurements.



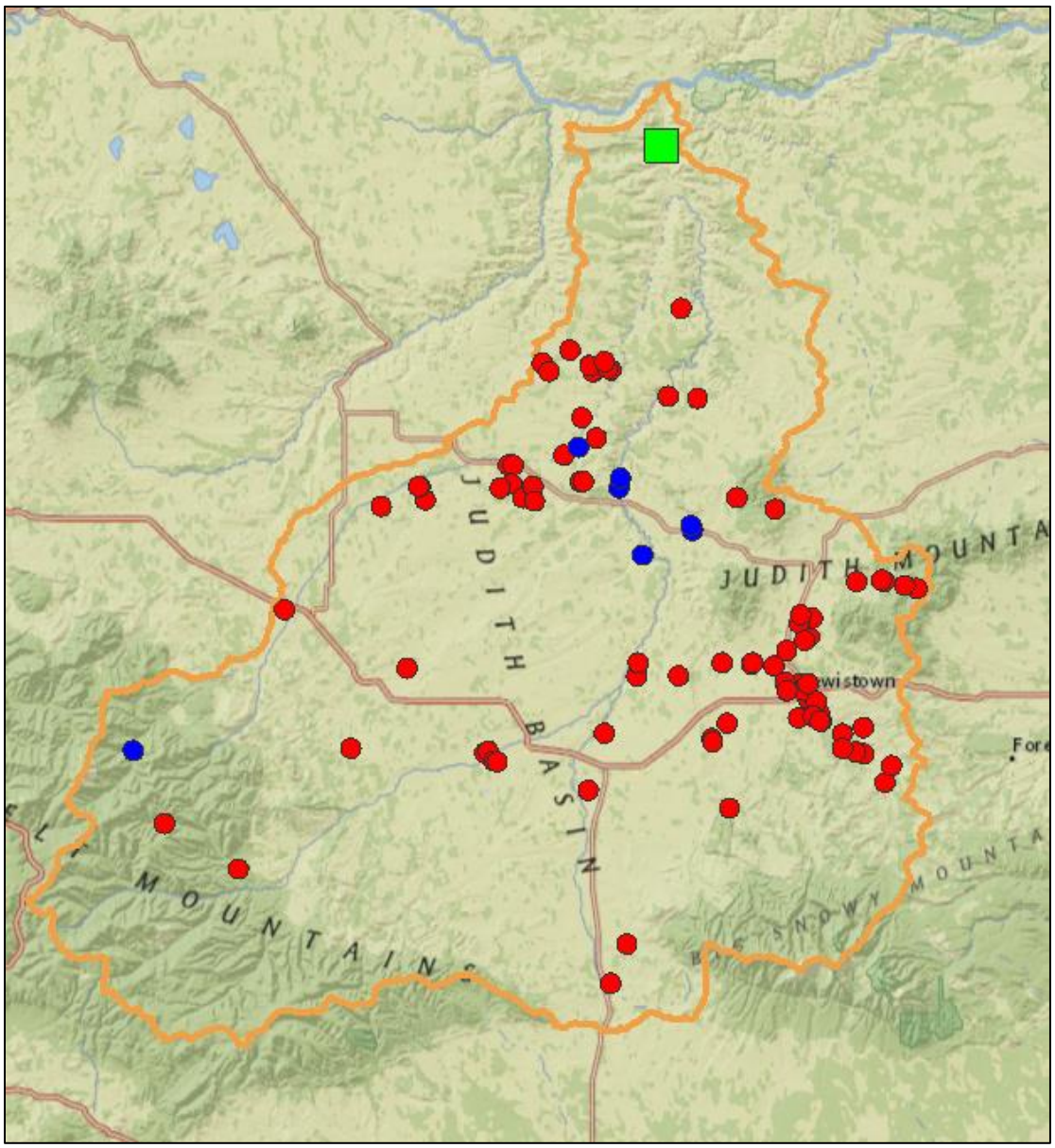
FWP holds a sperate water reservation for 25 cfs on the Judith River upstream of Big Spring Creek. Limited available streamflow data as well as observations indicate that this reservation is often not met in the reach from above Hobson to Big Spring Creek. However, the only real-time gage is located well upstream of the dewatered reach and does not provide a good basis on which to base a call on junior rights.

Junior Water Rights

Junior water rights in the Judith River basin being evaluated do not include the Big Spring Creek basin which is addressed separately. Each water right was reviewed to determine if cessation of water use would likely result in additional flow reaching the Judith River. The following table lists the water rights by general purpose category.

Purpose	**Call**	**No Call**	**Total Called Flow Rate**
Fish, Wildlife, Recreation Ponds	3	37	-
Irrigation	3	5	6.79 cfs
Stock	0	10	-
Mining	0	4	-
Total	**6**	**56**	**6.79 cfs**

The following map shows the location of all junior water rights. Those represented by blue dots would be called while those represented by red dots would not. The red dots include all junior rights in the Big Spring Creek basin that are addressed separately. The green square is the location of the USGS gage near the mouth of the Judith River.



Yellowstone River above Boulder River

The Yellowstone River basin upstream of the Boulder River provides a high quality and popular rainbow, brown and Yellowstone cutthroat trout fishery, although Yellowstone cutthroat decline moving downstream as water temperatures warm. Protection and restoration of native Yellowstone cutthroat is a priority within the basin. Tributary streams and their connectivity to the Yellowstone mainstem are crucial for fish reproduction, particularly for Yellowstone cutthroat. Connected tributaries can provide refuge during times of low flow and warm water temperatures as well.

This summary does not include water rights junior to FWP's water reservation for the Shields River which would likely have already been called when a call on the Yellowstone River is justified.

Drought Planning

The Upper Yellowstone Watershed Group operating in the Paradise Valley includes drought response and preparedness in its list of goals. A group of local stakeholders has been working with DNRC in the initial stages of drought planning. As this effort develops, an across the board call on junior water rights could shift to alternative approaches under a drought plan.

The Shields Valley Watershed Group is an active and productive watershed group. However, they have chosen to not venture into water allocation issues. If that position changes in the future, this established group may provide a good structural organization to implement drought planning activities.

Water Commissioners

According to DNRC's January 20, 2021 water commissioner list, water commissioners are active on the upper Shields River (above Wilsall), Cottonwood Creek, and Rock Creek in the Shields River basin and on Big Timber Creek north of Big Timer. Junior water rights from these areas are not called.

Necessity of Call

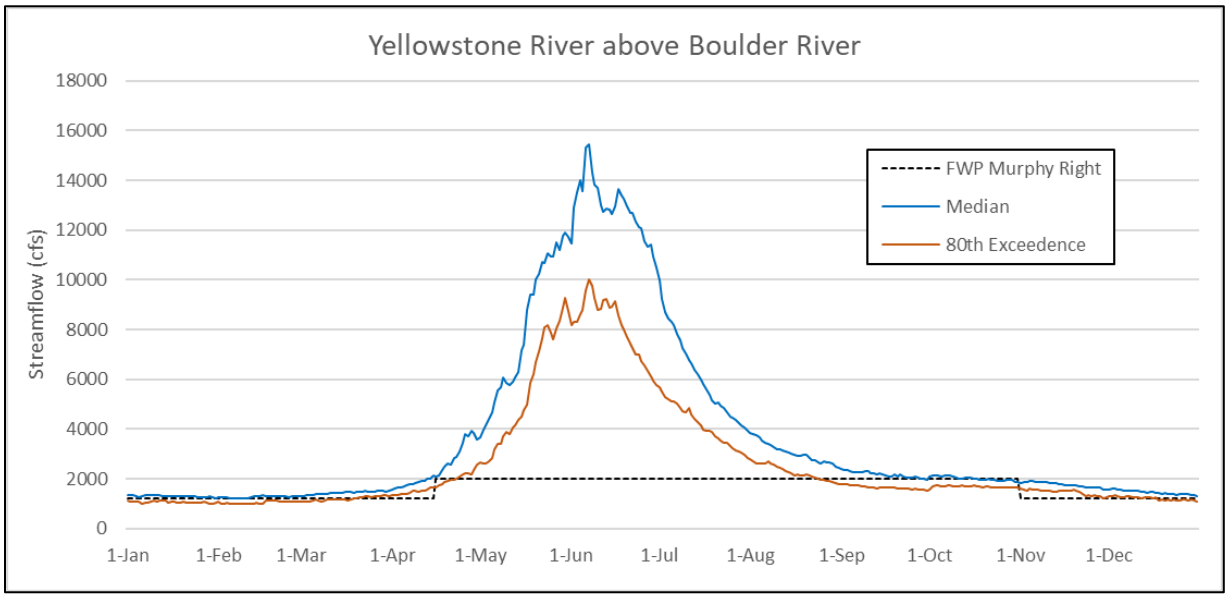
With dewatering negatively impacting fisheries, a call on junior water rights is justified on those sources not being administered by a water commissioner and that would likely result in improved or less rapidly declining streamflow.

Basis of Call

FWP calls on junior water rights in the Yellowstone River basin above the Boulder River are predicated on FWP's instream flow Murphy rights which vary by period as follows:

Reach	Priority Date	Period	Flow (cfs)	USGS Gage
Boulder River to Tom Miner Creek.	December 14, 1970	Nov 1 – Apr 15	1200	06192500 Yellowstone River near Livingston + 06195600 Shields River near Livingston
		Apr 16 – Oct 31	2000	

As there is no USGS gage on the Yellowstone River immediately above the Boulder River, streamflow is estimated to be the sum of the Yellowstone River near Livingston gage and the Shields River near Livingston gage. Contributions of other tributaries below the Yellowstone River gage near Livingston are minor and do not offset diversions of water through this reach. This method of estimating the flow immediately above the Boulder River somewhat underestimates the actual flow and does not risk calling junior water rights when not justified.



The preceding hydrograph compares FWP's Murphy right (dotted black line) with the median and 80th percentile exceedance flow for the sum of USGS Gage 06192500 (Yellowstone River near Livingston, MT) and USGS Gage 06195600 (Shields River nr Livingston MT) based on 25 years of record (1979-2022). In 5 out of 10 years (median shown in blue), streamflow generally meets or exceeds the Murphy right. The 80th percentile exceedance (shown in brown) which represents the streamflow met or exceeded in 8 out of 10 years falls below the Murphy right by late August and does not exceed the Murphy right until the beginning of November.

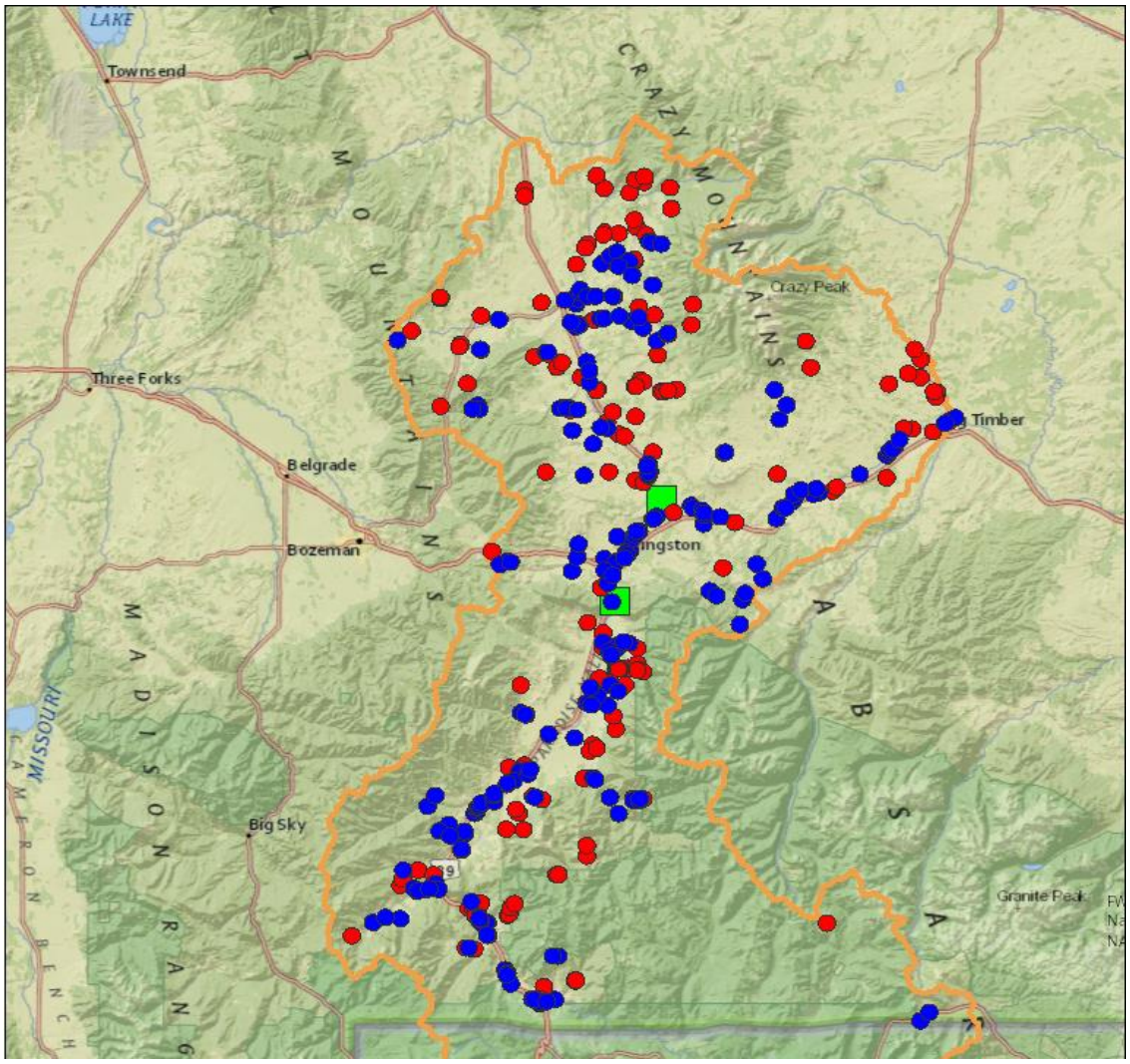
Since 2000, FWP has called junior water rights in the upper Yellowstone River basin 3 times, including 2000.

Junior Water Rights

DNRC's water rights database includes junior water rights in the Yellowstone River basin above the Boulder River. Each water right was reviewed to determine if cessation of water use would likely result in additional flow reaching the Yellowstone River. The following table lists the water rights by general purpose category.

Purpose	**Call**	**No Call**	**Total Called Flow Rate**
Fish, Wildlife, Recreation Ponds	39	22	31.24 cfs
Irrigation	185	92	359.85 cfs
Mining	2	3	0.04 cfs
Stock	0	33	-
Domestic	0	10	-
Other including hydropower	0	8	-
Total	**226**	**168**	**391.13 cfs**

The following map shows the location of all junior water rights. Those represented by blue dots would be called while those represented by red dots would not. The green squares are the locations of the USGS Gages.



Shields River

The Shields River is a major tributary to the upper Yellowstone River, providing a quality rainbow and brown trout fishery below the Chadborne Diversion, approximately 11 miles from the mouth. Above this diversion, the basin holds a relatively intact distribution of Yellowstone cutthroat trout. No other watershed in Montana has retained this spatial extent of Yellowstone cutthroat trout and thus, the Shields River basin is a core area for conservation and restoration of the species.

Dewatering and associated warm water temperatures routinely negatively impact the fishery of the basin with high-water temperatures and fragmented habitat increasing stress and mortality. During high temperature periods, improved flows can counteract the effects of high temperature and improve fish survival.

Drought Planning
The Shields Valley Watershed Group is an active watershed group; however, they have chosen not to venture into water allocation issues. If that position changes in the future, this established group may provide a suitable structural organization to implement drought planning activities.

Water Commissioners
According to DNRC's January 20, 2021 water commissioner list, water commissioners are active on the upper Shields River above Wilsall, Cottonwood Creek and Rock Creek. Junior water rights from these streams or stream reaches are not called.

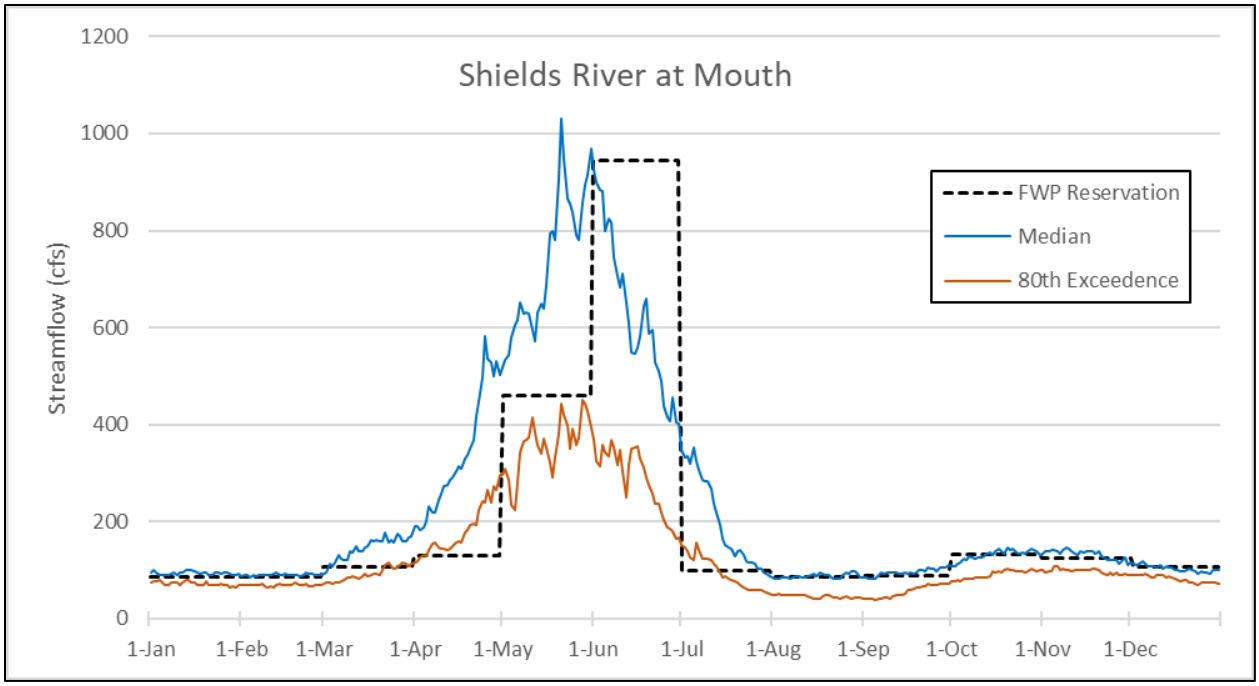
Necessity of Call
With dewatering negatively impacting fisheries and recreational opportunities, a call on junior water rights is justified in subbasins not being administered by a water commissioner and on rights that are likely to contribute to improved or less rapidly declining streamflow.

Basis of Call
FWP calls on junior water rights in the Shields River basin are predicated on FWP's instream flow reservation on the Shields River at its mouth, as measured at USGS Gage 06195600 (Shields River nr Livingston MT). The priority date of this instream flow reservation is **December 15, 1978**.

FWP's instream flow reservation varies by month as follows:

Month	Flow (cfs)	Month	Flow (cfs)
January	86.2	July	99.0
February	87.3	August	85.6
March	106	September	87.5
April	131	October	132
May	460	November	125
June	945	December	107

A call would not be made late in a month when the instream flow reservation for the subsequent month is substantially lower. For example, if flow was 500 cfs the last week in June, a call would not be made because on July 1, the instream flow reservation value would decrease to 99.0 cfs which is substantially lower than flow would likely be at that time.



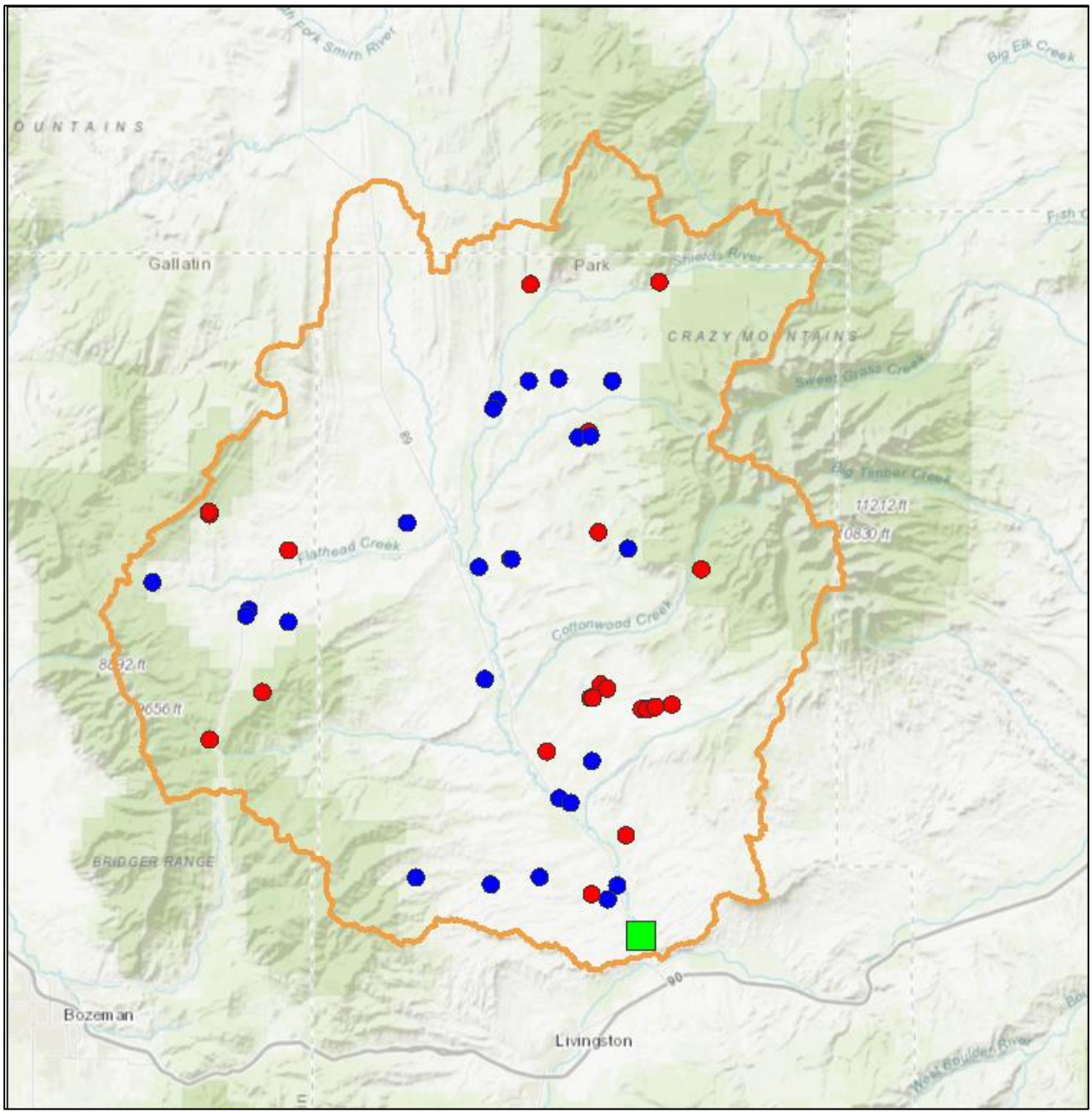
The preceding hydrograph compares FWP's instream flow reservation (dotted black line) with the median and 80th percentile exceedance flow for USGS Gage 06195600 based on 43 years of record (1978-2021). In 5 out of 10 years (median shown in blue), streamflow generally meets or exceeds the instream reservation. The 80th percentile exceedance (shown in brown) represents streamflow met or exceeded in 8 out of 10 years and frequently falls below the instream reservation. This data indicates that over the period of streamflow record, a call on junior water rights may occur somewhat less than half of the years. However, with the cyclical nature of drought, calls may occur many years in a row. Since 2000, FWP has called junior water rights in the Shields River basin 6 times.

Junior Water Rights

DNRC's water rights database includes 43 junior water rights in the Shields River basin. Each water right was reviewed to determine if cessation of diversion would likely result in additional flow reaching the Shields River. The following table lists the water rights by general purpose category.

Purpose	**Call**	**No Call**	**Total Called Flow Rate**
Fish, Wildlife, Recreation Ponds	12	14	5.76 cfs
Irrigation	13	1	16.45 cfs
Stock	0	3	-
Total	**25**	**18**	**22.21 cfs**

The following map shows the location of all junior water rights. Those represented by blue dots would be called while those represented by red dots would not because of the low likelihood of improving flow in the river. The green square is the location of USGS Gage 06195600.



Boulder River (Yellowstone)

The Boulder River is a major tributary to the upper Yellowstone River supporting wild trout, mountain whitefish and other species. The headwaters are home to pure Yellowstone cutthroat trout. Dewatering is a concern primarily in the lower reaches of the East and West Boulder rivers, as well as the Boulder River downstream of Natural Bridge.

Drought Planning
The Boulder River Watershed Association is an active watershed group in the basin. This group may provide a good structural organization to implement drought planning activities.

Water Commissioners
According to DNRC's January 20, 2021 water commissioner list, there are no water commissioners operating within the Boulder River basin.

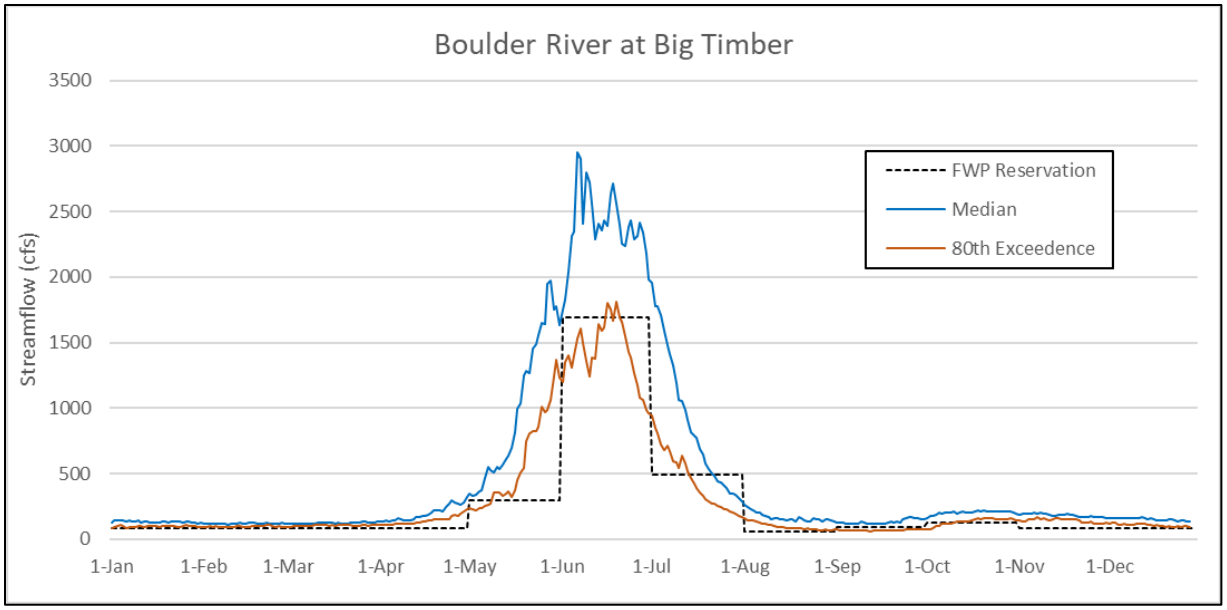
Necessity of Call
FWP will pursue an alternate approach, working with the watershed group to engage all water users in developing strategies and plans for dealing with drought and low streamflow. A list of junior rights may provide initial contact information for drought planning purposes, engaging this group of water users that would otherwise be called by FWP.

Basis of Call
FWP calls on junior water rights in the Boulder River basin are predicated on FWP's instream flow reservation for the Boulder River at its mouth as measured at USGS Gage 06200000 (Boulder River at Big Timber MT). The priority date of this instream flow reservation is **December 15, 1978**.

FWP's instream flow reservation varies by month as follows:

Month	Flow (cfs)	Month	Flow (cfs)
January	80	July	490
February	80	August	60
March	80	September	95
April	80	October	130
May	300	November	80
June	1690	December	80

A call would not be made late in a month when the instream flow for the subsequent month is substantially lower. For example, if flow was 300 cfs the last week in July, a call would not be made because on August 1 the instream flow value would decrease to 60 cfs which is substantially lower than flow would likely be at that time.



The preceding hydrograph compares FWP's instream reservation (dotted black line) with the median and 80th percentile exceedance flow for USGS Gage 06200000 based on 43 years of record (1979-2021). In 5 out of 10 years (median shown in blue), streamflow generally meets or exceeds the instream reservation. The 80th percentile exceedance (shown in brown) which represents the streamflow met or exceeded in 8 out of 10 years falls below the instream reservation from late August through mid-October. This data indicates over the period of streamflow record, a call on junior water rights may occur about 2 out of 10 years or less. However, with the cyclical nature of drought, calls may occur many years in a row. Since 2000, FWP has called junior water rights in the Boulder River basin once, in 2003.

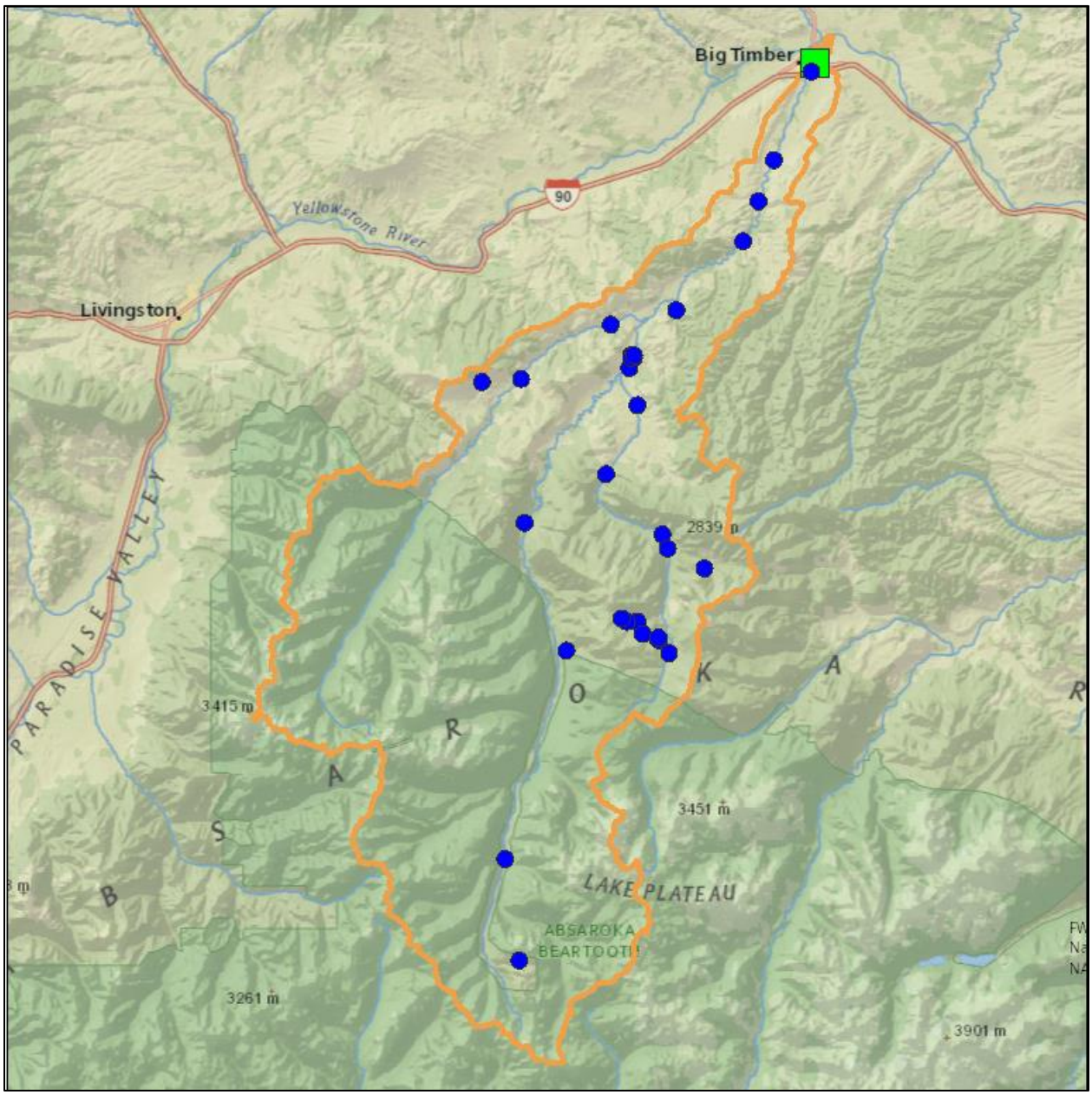
Junior Water Rights

DNRC's water rights database includes 16 junior water rights in the basin. The following table lists the water rights by general purpose category.

Purpose	**Rights**	**Total Flow Rate**
Fish, Wildlife, Recreation Ponds	9	6.13 cfs*
Irrigation	4	3.87 cfs
Stock	1	-
Industrial, Mining	2	0.62 cfs
Total	**16**	**10.62 cfs**

*Does not include a 10 cfs right for the Dry Creek Canal that is held jointly between the canal company and FWP to preserve brown trout redds in the upper reaches of the canal through the winter.

The following map shows the location of all junior water rights. As the current approach is to pursue drought planning efforts with the local watershed group, rights that would be called are not differentiated from those not to be called as this time. The green square is the location of USGS Gage 06200000.



Stillwater River (Yellowstone)

The Stillwater River is a major tributary to the upper Yellowstone River, supporting mountain whitefish and wild trout species, including Yellowstone cutthroat trout. Dewatering is a concern primarily in tributary streams; however, at times there are low flow issues on the mainstem Stillwater River.

Drought Planning
The Stillwater Valley Watershed Council is an active watershed group in the basin. This group may provide a good structural organization to implement drought planning activities.

Water Commissioners
According to DNRC's January 20, 2021 water commissioner list, there are no water commissioners operating within the Stillwater River basin.

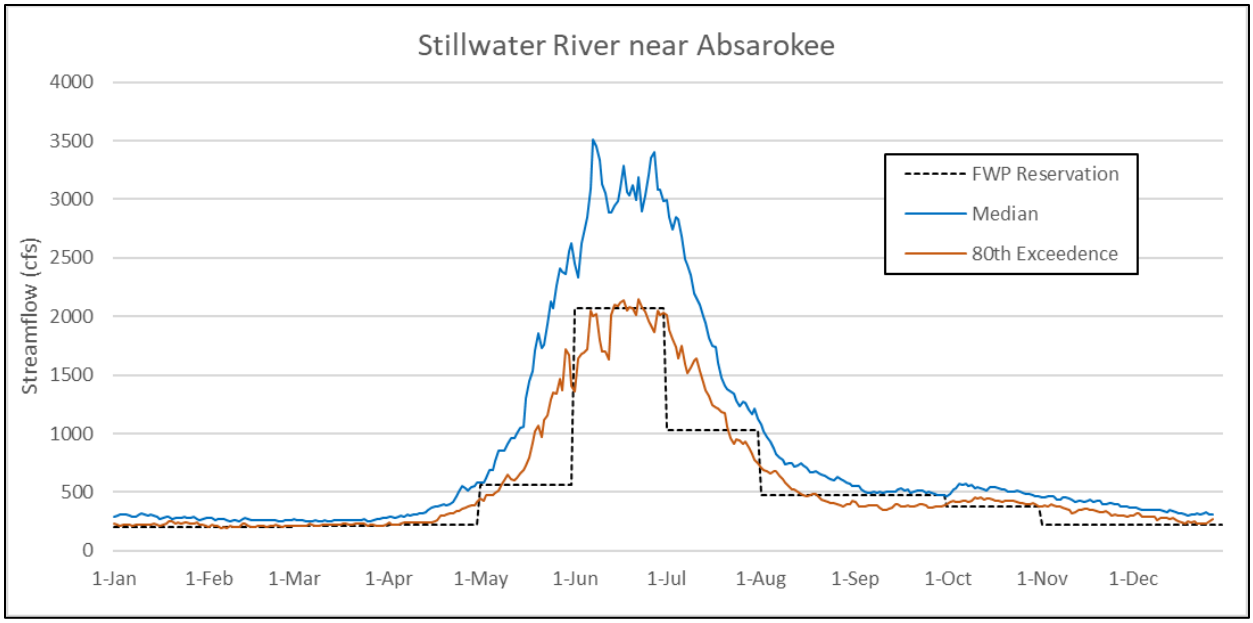
Necessity of Call
FWP will pursue an alternate approach working with the watershed group to engage all water users in developing strategies and plans for dealing with drought and low streamflow. A list of junior rights may provide an initial contact list for drought planning purposes, engaging this group of water users that would otherwise be called by FWP.

Basis of Call
Call on junior water rights is predicated on FWP's instream flow reservation on the Stillwater River at its mouth, as measured at USGS Gage 06205000 (Stillwater River near Absarokee MT). The priority date of this instream flow reservation is **December 15, 1978**.

FWP's instream flow reservation varies by month as follows:

Month	Flow (cfs)	Month	Flow (cfs)
January	200	July	1030
February	205	August	480
March	210	September	480
April	225	October	380
May	560	November	225
June	2075	December	225

A call would not be made late in a month when the instream flow for the subsequent month is substantially lower. For example, if flow was 600 cfs the last week in July, a call would not be made because on August 1 the instream flow value would decrease to 480 cfs, which is substantially lower than flow would likely be at that time.



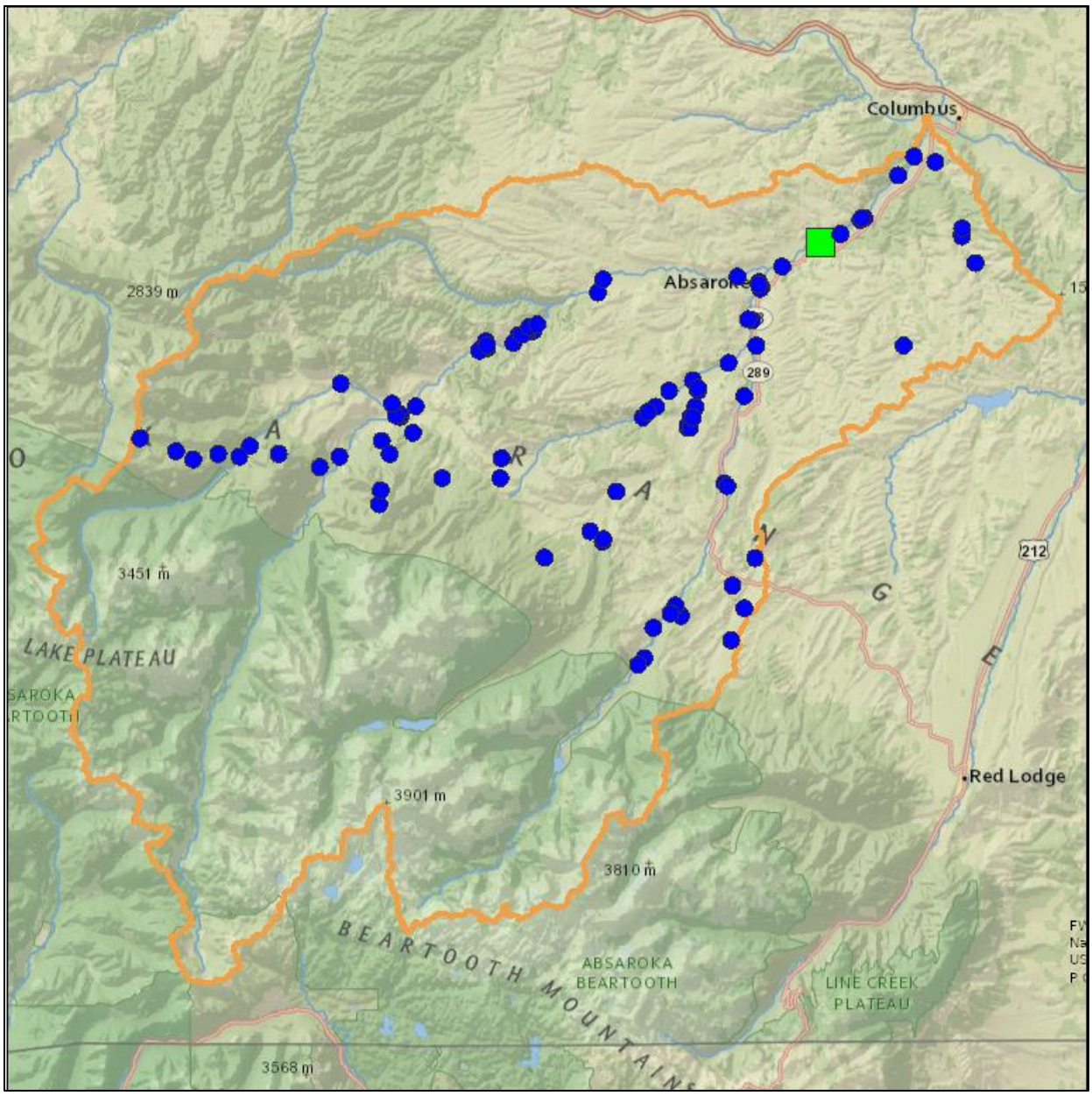
The preceding hydrograph compares FWP's instream reservation (dotted black line) with the median and 80th percentile exceedance flow for USGS Gage 06200000 based on 37 years of record (1979-2020). In 5 out of 10 years (median shown in blue), streamflow generally meets or exceeds the instream reservation. The 80th percentile exceedance (shown in brown) which represents the streamflow met or exceeded in 8 out of 10 years falls below the instream reservation from late August through September. This data indicates that over the period of streamflow record, a call on junior water rights may occur about 2 out of 10 years. However, with the cyclical nature of drought, calls may occur many years in a row. Since 2000, FWP has called junior water rights in the Stillwater River basin in 2007, based on the Stillwater River USGS gage, and in 2000, 2001 and 2013, based on the Yellowstone River at Billings water reservation.

Junior Water Rights

DNRC's water rights database includes 105 junior water rights in the Stillwater basin. The following table lists the water rights by general purpose category.

Purpose	**Rights**	**Total Called Flow Rate**
Fish, Wildlife, Recreation Ponds	23	10.67 cfs
Irrigation	67	29.25 cfs
Stock	4	0.21 cfs
Domestic	2	0.06 cfs
Industrial, Mining	9	0.93 cfs
Total	**105**	**41.12 cfs**

The following map shows the location of all the junior water rights. As the current approach is to pursue drought planning efforts with the local watershed group, rights that would be called are not differentiated from those not to be called at this time. The green square is the location of USGS Gage 06205000.



Clarks Fork of the Yellowstone River

The Clarks Fork of the Yellowstone River is a major tributary to the upper Yellowstone River supporting wild trout, burbot and other native species. Dewatering in the Clarks Fork of the Yellowstone River suppresses fisheries with burbot being a particular concern. Rock Creek is a major tributary of the Clarks Fork, entering low in the basin. It also supports a wild trout fishery with brown trout and rainbow trout being a focus of conservation efforts. Dewatering in the Rock Creek basin is severe if not complete in some reaches.

Drought Planning

The Clarks Fork Yellowstone Partnership is newly formed and has expressed a strong interest in drought planning. A watershed group in the Rock Creek drainage is in the early stage of formation with drought being one of the driving factors. These groups may provide a good structural organization to implement drought planning activities.

Water Commissioners

According to DNRC's January 20, 2021 water commissioner list, water commissioners are active on Rock Creek. If a call were made based on the Clarks Fork Yellowstone water reservation, it would not include the Rock Creek basin. However, a separate call on junior water rights above Cooney Reservoir may be warranted.

Necessity of Call

With nascent watershed groups in the basin interested in drought planning, FWP will pursue an alternate approach working with these groups to engage all water users in developing strategies and plans for dealing with drought and low streamflow. A list of junior rights may provide initial contact information for drought planning purposes, engaging this group of water users that would otherwise be called by FWP.

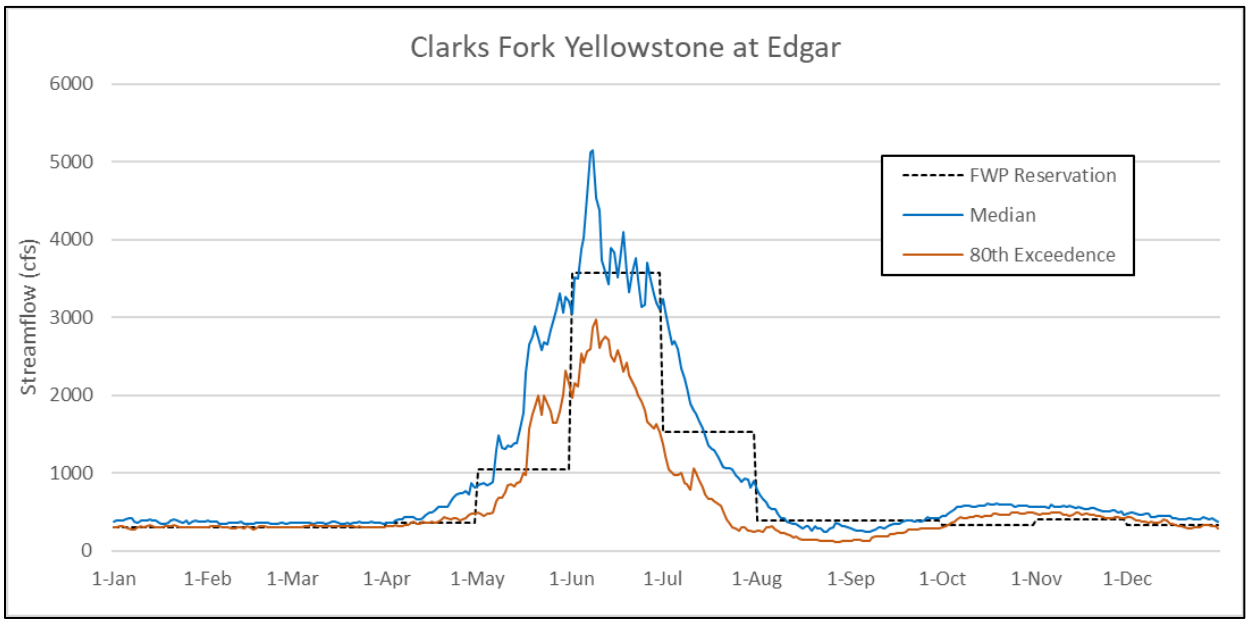
Basis of Call

FWP calls on junior water rights in the Clarks Fork basin are predicated on FWP's instream flow reservation for the Clarks Fork at its mouth as measured at USGS Gage 06208500 (Clarks Fork Yellowstone River at Edgar MT). The priority date of this instream flow reservation is **December 15, 1978**.

FWP's instream flow reservation varies by month as follows:

Month	Flow (cfs)	Month	Flow (cfs)
January	300	July	1537
February	299	August	399
March	308	September	393
April	357	October	332
May	1051	November	401
June	3569	December	330

A call would not be made late in a month when the instream flow for the subsequent month is substantially lower. For example, if flow was 1200 cfs the last week in July, a call would not be made because on August 1 the instream flow value would decrease to 399 cfs which is substantially lower than flow would likely be at that time.



The preceding hydrograph compares FWP's instream reservation (dotted black line) with the median and 80th percentile exceedance flow for USGS Gage 06208500 based on 34 years of record (1987-2021). In 5 out of 10 years (median shown in blue), streamflow generally meets or exceeds the instream reservation except for late summer. The 80th percentile exceedance (shown in brown) which represents the streamflow met or exceeded in 8 out of 10 years mostly falls below the instream reservation from July through September. This data indicates that over the period of streamflow record, a call on junior water rights may occur about half of the years. However, with the cyclical nature of drought, calls may occur many years in a row. Since 2000, FWP has called junior water rights in the Clarks Fork Yellowstone River basin in 2006 and 2007.

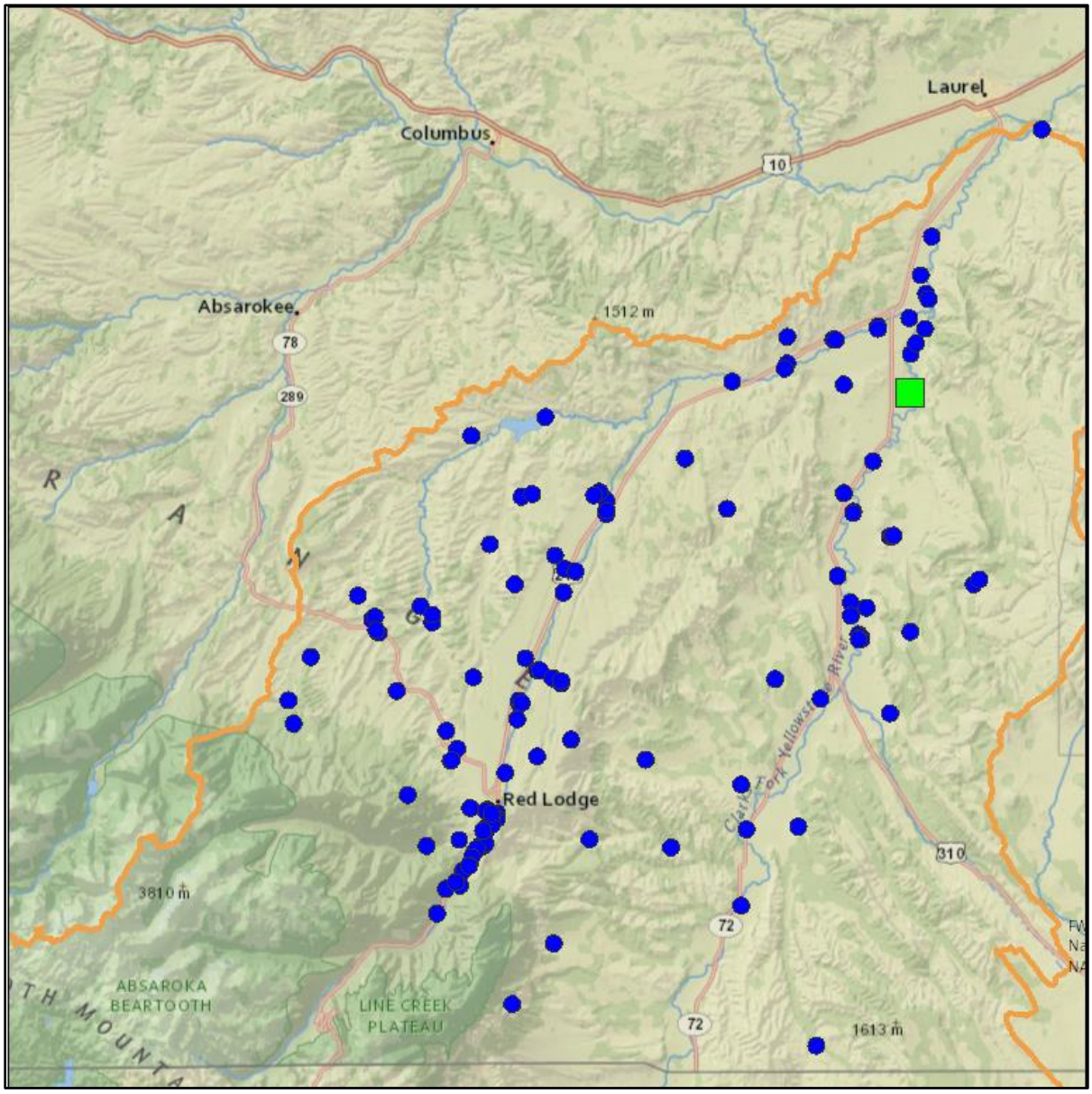
Junior Water Rights

DNRC's water rights database includes 115 junior water rights in the basin. The following table lists the water rights by general purpose category.

Purpose	**Call**	**Total Called Flow Rate**
Fish, Wildlife, Recreation Ponds	60	37.82 cfs
Irrigation	41	34.31 cfs
Stock	6	-
Domestic	2	-
Other	6	52.66 cfs*
Total	**115**	**124.79 cfs**

*Includes 50 cfs in hydropower that impacts bypass reaches

The following map shows the location of all the junior water rights. The green square is the location of USGS Gage 06208500.



Tongue River

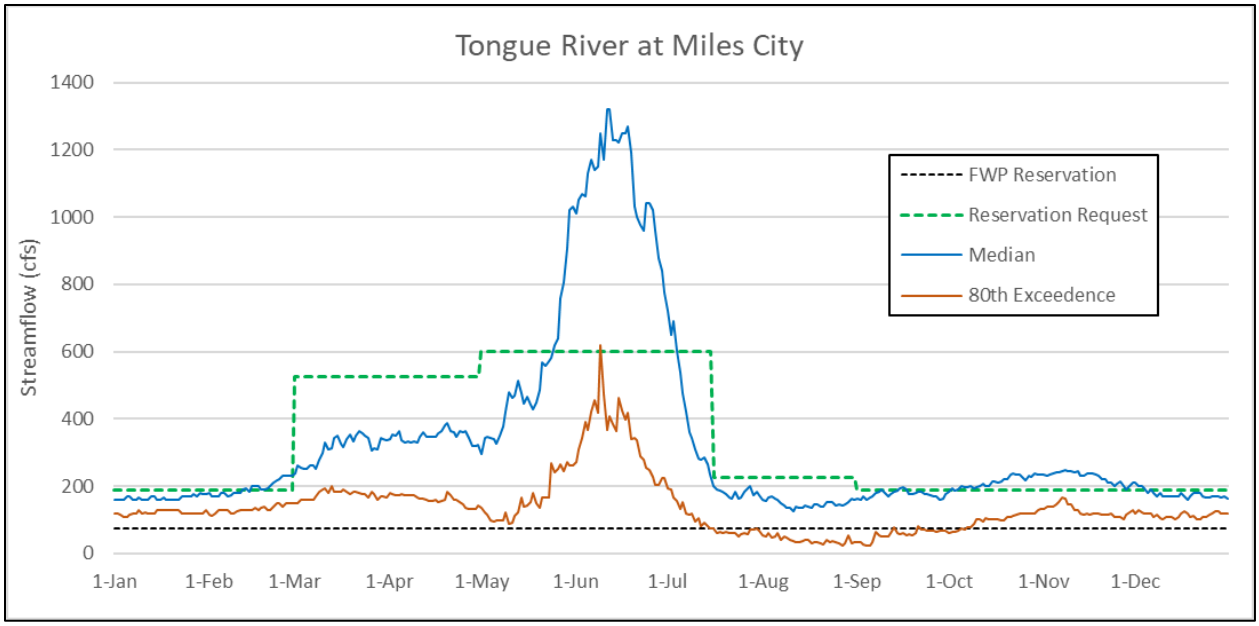
The Tongue River is a major tributary to the lower Yellowstone River and is home to many warmwater fish species along with rainbow and brown trout in the tailwater of Tongue River Reservoir. FWP has worked with irrigators, agencies, and other organizations to improve fish passage and reduce fish entrainment, opening 165 miles of previously fragmented habitat. Dewatering routinely impacts the fishery of this basin. In 2006, DNRC used emergency funding to purchase water from the Northern Cheyenne Tribe to prevent the river from drying up. The Tongue River was also the subject of suit between Montana and Wyoming specifically, Wyoming's over-use of water under provisions of the interstate compact. Instream rights are not considered a beneficial use under the compact, and FWP is precluded from issuing a call if the State of Montana has made call on Wyoming. However, a call from Montana on Wyoming ultimately affects more junior Montana users than a FWP call would.

Drought Planning
Currently there is no active watershed group in the Tongue River basin to take on drought planning.

Water Commissioners
According to DNRC's January 20, 2021 water commissioner list, there are no water commissioners operating within the Tongue River basin. Tongue River Reservoir is located near the Wyoming line, owned by DNRC, and managed by the Tongue River Water Users Association which regulates releases of water to contract holders.

Necessity of Call
With dewatering negatively impacting fisheries, and assuming no interstate call is in effect, a call on junior water rights would likely result in improved or less rapidly declining streamflow. As explained previously, FWP cannot place call on junior Montana users if an interstate call exists.

Basis of Call
FWP calls on junior water rights in the Tongue River basin are predicated on FWP's instream flow reservation at its confluence with the Yellowstone River as measured at USGS Gage 06308500 (Tongue River at Miles City, MT). The priority date of this instream flow reservation is **December 15, 1978,** with a year-round flow rate of **75 cfs.**



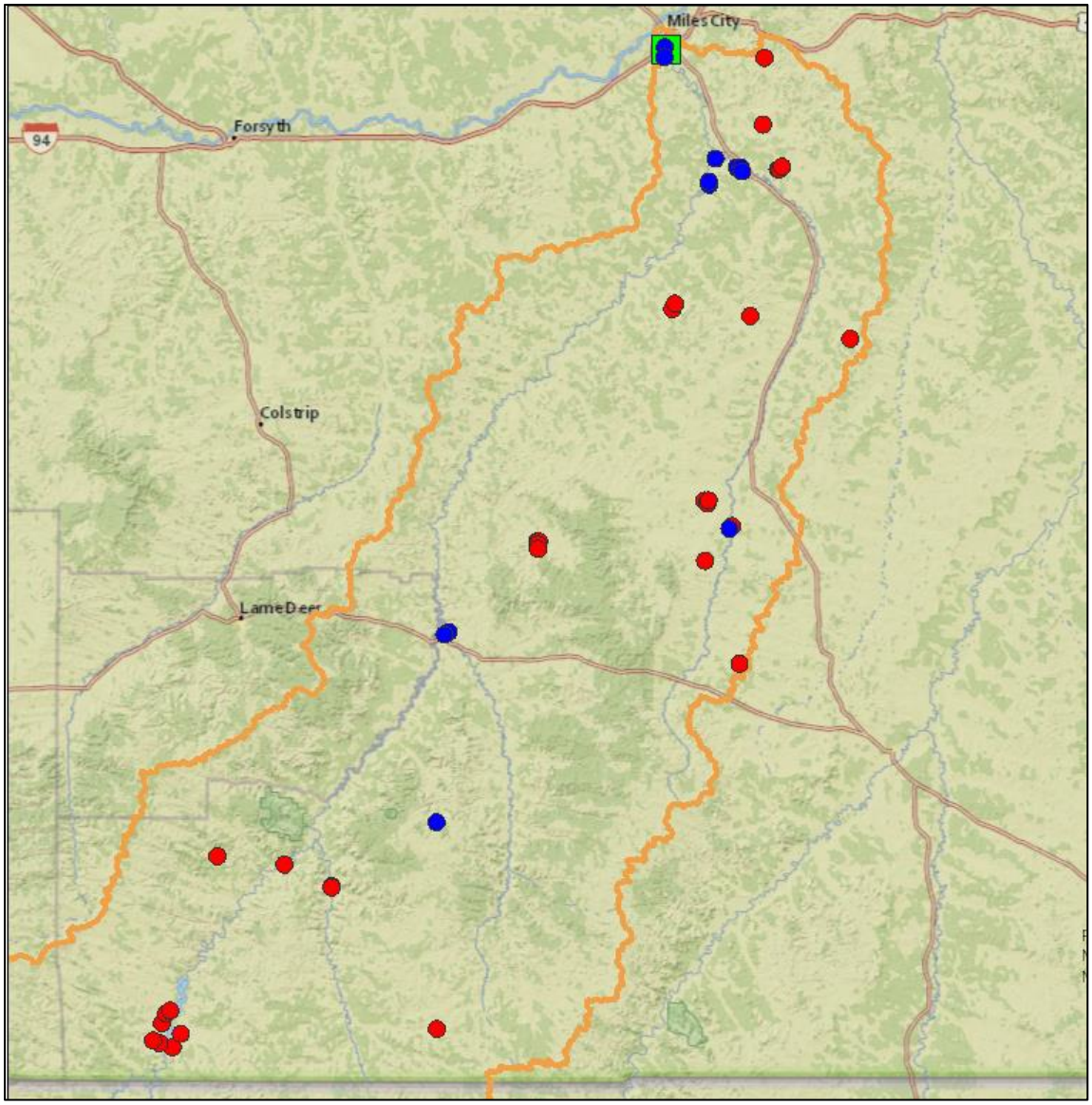
The preceding hydrograph compares FWP's instream reservation (dotted black line) with the median and 80th percentile exceedance flow for USGS Gage 06308500 based on 79 years of record (1939-2021). In 5 out of 10 years (median shown in blue), streamflow exceeds the instream reservation. The 80th percentile exceedance (shown in brown), which represents the streamflow met or exceeded in 8 out of 10 years, falls below the instream reservation during the summer. This data indicates that over the period of streamflow record, a call on junior water rights may occur about 2 out of 10 years. However, with the cyclical nature of drought, calls may occur many years in a row. Since 2000, FWP has called junior water rights in the Tongue River basin 3 times. As stated above, FWP cannot place call on Montana junior water rights if Montana has placed call on Wyoming rights.

Junior Water Rights

DNRC's water rights database includes 35 junior water rights in the Tongue River basin. Each water right was reviewed to determine if cessation of water use would likely result in additional flow reaching the Tongue River. The following table lists the water rights by general purpose category.

Purpose	**Call**	**No Call**	**Total Called Flow Rate**
Fish, Wildlife, Recreation Ponds	2	3	6.68 cfs
Irrigation	10	8	14.58 cfs
Stock	0	7	-
Industrial	0	5	-
Total	**12**	**23**	**21.26 cfs**

The following map shows the location of all the junior water rights. Those represented by blue dots would be called while those represented by red dots would not. The green square is the location of USGS Gage 06308500.


Miles City
Forsyth
94
Colstrip
Lame Deer