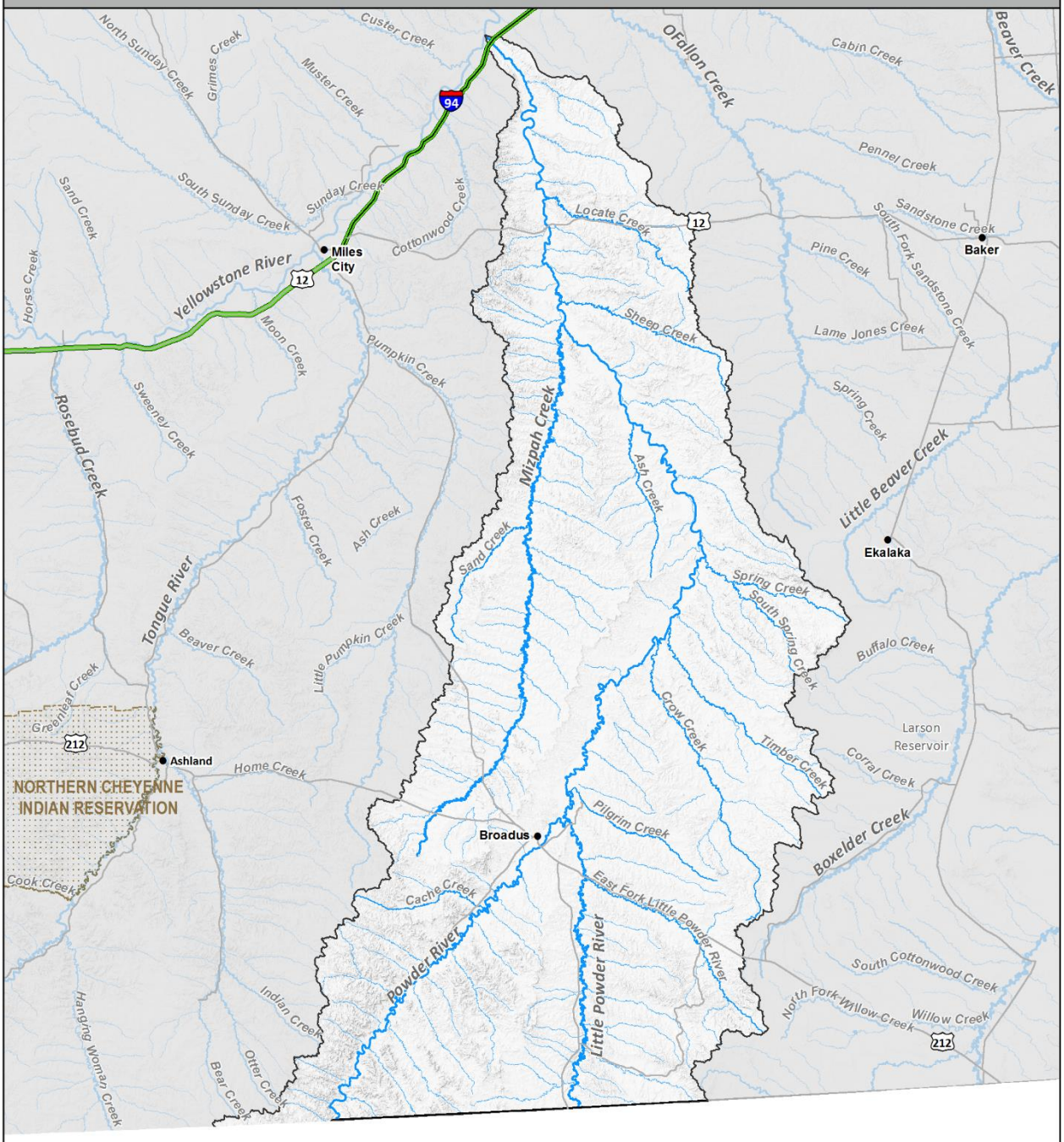
Powder River Drainage

MONTANA **FWP**



Tribal Lands

Drainage Boundary

N

Area of Interest

Map Produced by:
ASP - Geographic Data Services
ISR 43965 - Nov 23, 2018

Administrative boundaries and FWP Lands data from Montana Fish, Wildlife & Parks, Helena, MT. Background Imagery from ESRI

0 15 30
Miles

Powder River Drainage

Physical Description

The Powder River drainage includes the Little Powder River and two intermittent tributaries (Mizpah Creek and Locate Creek) and drains portions of Carter, Powder River, Custer, and Prairie counties. The headwaters of the Powder River and Little Powder River are in Wyoming. The Little Powder River flows approximately 72 miles from the Wyoming state line before converging with the Powder River. The confluence of the Powder River with the Yellowstone River is approximately 220 river miles downstream from the Wyoming border. Additionally, 550 miles of fish bearing streams exist in 44 streams or creeks within the drainage.

The drainage is rural and includes the small community of Broadus. The landscape is dominated by a plains grassland complex but includes a large area of shrub grassland. Cottonwood bottoms dominate much of the riparian area. Land ownership includes state and federal lands but is dominated by private property. Agriculture, primarily ranching and secondarily dry land farming dominate the land use. Industrial exploration and development of the areas rich natural resources includes coal and bentonite mining, natural gas and oil drilling, and wind turbines.

No natural lakes are found in the drainage; however, stock ponds exist and a few with public access are managed and stocked by FWP. In addition to the creeks mentioned above, there are numerous warm water ephemeral prairie streams throughout the drainage. Some of these streams hold game fish and many host several native and introduced fisheries.

Fisheries Management

The Powder River and tributaries are managed primarily as a general/conservation fishery. No fish species are stocked in any of the rivers or creeks in the drainage. The primary management focus for the entire drainage is to improve fish passage where current restrictions exist, such as at culverts and fords, and ensure future structures or projects provide adequate stream function and fish passage.

Historically, fish sampling within the drainage has been limited and sporadic. Sampling efforts were generally limited to seines and electrofishing gear to assess larger scale prairie fish distributions and abundances as well as to collect fish for specific educational activities for school programs. Since 2014, targeted monitoring with radio telemetry of pallid sturgeon and paddlefish within the Powder River has occurred. The goal of telemetry efforts is documenting habitat use, distribution, spawning locations, and spawning aggregations within the Powder River drainage. Annual larval trawling near the Powder-Yellowstone River confluence is also used to detect the presence of eggs or larval fish.

The fish assemblage in the Powder River drainage is largely dominated by 27 native species but also includes 9 introduced fish species. The Powder River hosts four game fish; channel catfish, sauger, walleye, and shovelnose sturgeon. The Little Powder River includes 16 native fish species and four introduced fish species. Channel catfish are the only game fish inhabiting the Little Powder River. Historically, paddlefish were infrequent seasonal migrants into the Powder River in years with high Yellowstone River discharge that allowed fish passage around (via a natural side channel) or over Intake Diversion Dam. Fish passage monitoring through a newly constructed bypass channel at Intake Diversion

Dam in 2022 demonstrates paddlefish migrations to and within the Powder River could be an annual event. Recent telemetry research from 2014-2022 demonstrates pallid sturgeon, a federally listed endangered species, is also attracted to the Powder River in years they can migrate upstream of Intake Diversion Dam.

Recent field studies highlighted the significance of the Powder River to long-lived, migratory river species like paddlefish and pallid sturgeon. Paddlefish spawning was confirmed in 2017 and 2019 and shovelnose sturgeon in 2014, 2017, 2018, and 2019 by capturing larval fish at river mile one in the Powder River. In 2014, three adult wild pallid sturgeon (one gravid female and two males) with radio transmitters migrated upstream of Intake Diversion Dam, via the natural side channel, and into the Powder River in June. Spawning was confirmed by recapturing and assessing the female but only after she entered the Yellowstone River. Body weight comparisons confirmed eggs were deposited either in the Powder River or Yellowstone River near the confluence of the two rivers. The apex of upstream migration for the two males was Powder River mile 8 and 5 while the female migrated up to river mile 20.

In December 2016, the U.S. Fish & Wildlife Service (USFWS) mandated the Bureau of Reclamation (BOR), owner of Intake Diversion Dam, to translocate telemetered pallid sturgeon that reached the dam. This was an interim mitigation measure until completion of a bypass channel at Intake Diversion Dam. In 2017, six fish were translocated upstream of the dam by BOR staff and 4 additional fish passed upstream of Intake via the side channel. Three of these fish continued upstream to an apex at Powder River miles 97, 90, and 88. In 2018, 7 fish were translocated at Intake and 5 others passed Intake via the side channel. One fish continued upstream to Powder River mile 87. Another fish was near the Powder-Yellowstone confluence for 14 days, but field data could not confirm use of the Powder River. A third fish from the 2018 group also migrated upstream of the Powder-Yellowstone confluence, to approximately Cartersville Dam, but did not use the Powder River. In 2019, two of ten pallid sturgeon translocated at Intake spent time in the Powder River. These observations demonstrate the importance of the Powder River to pallid sturgeon and are expected to become a relatively common occurrence with improved fish passage at Intake. In 2022, four pallid sturgeon entered and used the Powder River. Apex migrations for these four fish included Powder River miles 50, 55, 104 (near Powderville Bridge), and 152 (just upstream of Broadus). Two of these fish were overwinter residents upstream of Intake Diversion Dam and two (one wild male and one hatchery released male) passed through the Intake Bypass Channel prior to reaching the Powder River in 2022.

Documentation of telemetered fish using the Powder River in Montana stimulated coordination with Wyoming Fish and Game. The concurrence of fish telemetry studies in both states, for various reasons and goals, lead to using compatible transmitters and receiver base stations in both states. This ensures each state will document each other's telemetered fish in the Powder River regardless of jurisdictional boundaries.

From 2006-2015, Wyoming Fish & Game has collected multiple adult sturgeon chub in the Powder River as far upstream as Kaycee, Wyoming. Wyoming staff speculate that these fish are Yellowstone River residents that make spawning migrations into Wyoming when river flows are adequate. These findings also demonstrate the importance of the Powder River to native fish species from the Yellowstone River.

The Powder River drainage does not include any large lakes or reservoirs but does support three private ponds and four public ponds that are managed as fisheries in the FWP Region 7 Pond Fishing Program.

The primary justification for stocking these waters is providing a family fishing opportunity. The program is offered to landowners as a public relations opportunity to provide a fishery for the surrounding community. FWP will stock and manage the private fishery in exchange for the landowner granting free public access. Anglers are required to obtain landowner permission each time they want to access the fishery. Rainbow trout and largemouth bass dominate the species available in these systems. The fisheries are sampled at least once every three years to monitor population dynamics. Populations are established or supplemented when needed through stocking from a state hatchery or by wild fish transfers from a donor fishery within the region that through testing has been demonstrated to be free of fish disease and Aquatic Invasive Species.

Habitat

The Powder River is undammed and exhibits a relatively natural hydrograph. Fluctuations of the hydrograph often consist of rapid but short-duration elevated flows resulting from Wyoming mountain snowpack melt or from local rain events. The basin has highly erodible soils consisting of gumbo, clay, and silt. Much of the landscape within the basin is dominated by rough breaks, badlands, and buttes. The combination of highly erosive soils and steep/rough terrain often result in large amounts of suspended sediments within the water column and bed load material dominated by sand and silt. Sediment load of the Powder River has the potential to, and often does, alter water turbidity and substrate of the Yellowstone River downstream of the Powder-Yellowstone River Confluence.

Many native species in the Yellowstone River evolved with and rely upon increased turbidity as a spawning cue and some of these species concentrate downstream of the Powder-Yellowstone River Confluence each spring. Sauger, channel catfish, paddlefish, and shovelnose sturgeon are four native game fishes that rely upon increased turbidity and have been documented to aggregate below the Powder River Confluence. Recent studies confirm the presence of paddlefish, pallid sturgeon, and sturgeon chub during spawning periods in the Powder River and suggest habitat conditions may be favorable for spawning by both pallid sturgeon and paddlefish when river flows are adequate. The significance of elevated turbidity and bed load of the Powder River to the native fish species of the Yellowstone River is likely substantial and may be critical to life history stages. Prior to construction of Tongue River Reservoir and Yellowtail Dam, the Tongue River and Bighorn River had comparable sediment regimes to the Powder River. The Powder River is the last large tributary to the Yellowstone River that provides a natural hydrograph with a high sediment/turbidity regime. Its importance to sustaining the diverse native fish species assemblage in the Yellowstone River is becoming more apparent.

The Powder River drainage is predominately rural and significant habitat changes are somewhat limited compared to other drainages. The use of rock or concrete rip rap to protect roads, bridges, homes, and farmland/ranchland has occurred which affects the natural function of the rivers and streams in this drainage. The installation of culverts, fords, and dams has similar impacts on the function of the waterways and even a greater impact on the seasonal upstream migration of fish. Irrigation demands increase the frequency and magnitude of dewatering the river which creates an additional fish habitat concern within the drainage.

Many of the private and public ponds in the drainage are limited by water depth. Most ponds have a maximum depth of 10-11 feet which is marginal for overwintering fish during winters with sustained

snow accumulations. The severity and prevalence of winterkills may be reduced by installing windmill aerators. Some landowners and the Bureau of Land Management (BLM) have installed aerators at their expense in attempt to reduce fish winterkill occurrences. The regional FWP fisheries program has refrained from installing aerators primarily because of the time and expenses required to service and maintain the structures.

Special Management Issues

Post Intake 5-Year Telemetry Fish Passage Monitoring

Completion of the fish bypass channel at Intake Diversion Dam in 2022 is expected to substantially change the lower Yellowstone fishery, including the Powder River. Monitoring of the fishery will include a telemetry study of five native species (pallid sturgeon, shovelnose sturgeon, paddlefish, sauger, and blue sucker) at Intake and upstream from 2022-2025 that will be compared to fish passage documented during a pre-construction study completed 2015-2018. Data from monitoring efforts will be used to guide adaptive management actions identified for the bypass channel.

Standardized Larval Sampling

Annual sampling began in 2019 to document *Acipenseriform* larval fish (pallid sturgeon, shovelnose sturgeon, and paddlefish) production at two locations upstream of Intake Diversion Dam. The Tongue River site includes three sample locations, one in Tongue River and two in the Yellowstone River (one upstream and one downstream of the Tongue River). The Powder River site includes the one sample in the Powder River and two in the Yellowstone River (one upstream and one downstream of the Powder River confluence). Crews from BOR will also collect larval samples upstream of Intake Diversion Dam, downstream of Intake Diversion Dam, within the bypass channel, and within the Lower Yellowstone River Irrigation Canal. Efforts and data collected by both agencies will be summarized collectively to evaluate spawning activities for all three fish species. Larval samples will be genetically identified to species through genetic analysis.

Pallid Sturgeon Larval Seeding Experiment

Coordinate with partners (USFWS, U.S. Geological Survey, and BOR) to release hatchery produced larval pallid sturgeon upstream of Intake Diversion Dam. The primary goal is quantifying if larvae released from potential spawning locations in the Powder or Yellowstone rivers have adequate drift distance to become settled larvae before reaching the anoxic zone at the headwaters of Lake Sakakawea in North Dakota. The study includes releasing large numbers of genetically unique family groups of 1 day post hatch pallid sturgeon free embryos at specific locations and sampling for settled larvae mid- to late-summer in downstream reaches.

Paddlefish Harvest Monitoring

Montana and North Dakota jointly manage harvest of paddlefish from the Lake Sakakawea paddlefish population as outlined in a 10 year joint management plan. Harvest in each state is currently capped at 1,000 fish. Paddlefish season in Montana runs from May 15 – June 30. Monitoring paddlefish harvest

includes on-site creel at Intake Diversion Dam, self-reporting stations at multiple public access points, and anglers self-reporting online or via a phone hotline. Historically, 80% of the annual paddlefish harvest in Montana occurred at Intake Diversion Dam due to concentration of fish blocked by the dam. With a new fish bypass channel completed at Intake Diversion Dam, fish concentrations are expected to decline at Intake as the fish distribute further upstream. Monitoring paddlefish harvest and collecting jaw sections to age harvested fish will become a new and significant challenge as anglers and paddlefish distribute upstream. Considerable effort will be needed, including a roving creel, to determine how to efficiently evaluate and monitor harvest. Changes to paddlefish regulations may also be warranted if paddlefish migrations and angler harvest rates change considerably.

Coal and Coal Bed Methane Extraction Activities

The Powder River Basin in Wyoming is rich with coal deposits and associated extraction activities (strip mining, methane wells, pipelines, and railroads) which can challenge management of the Powder River water and aquatic resources. Water discharge into the Powder River and tributaries from methane wells, although depressed at the current market, continues to have long-term impacts to irrigation practices, which have not been adequately quantified. Management of the Powder River and fisheries requires involvement with all extraction issues as they evolve to ensure the aquatic resources are understood and evaluated by natural resource managers and political decision makers.

Instream Flows and Water Compact

Continued work is needed with the States of Wyoming, Montana, and irrigation needs to ensure FWP's instream flows are provided at the confluence of the Powder and Yellowstone Rivers. Sustaining or improving the water quality in the Powder River for both fisheries and irrigation needs is also warranted. Native fish species migrations into the Powder River for spawning is substantial and recent documentation of paddlefish and pallid sturgeon use and spawning in the Powder River stresses the value of protecting instream flows in the Powder River. Wyoming also documented nearly annual use by sturgeon chub in the Powder River in Wyoming. Given the near dewatering of the Powder River during the month of August, improved outreach to the public and other agencies about the need to secure improved instream flows for fisheries benefits is needed. The following instream reservations at the Yellowstone River confluence were granted in 1978: 31.9 cfs in January; 71.8 cfs in February; 291 cfs in March; 347 in April; 424 cfs in May; 184 cfs in June; 70 cfs in July; 14.5 cfs in August; 8.8 cfs in September; 9.4 cfs in October; and 61.6 cfs in November and December.

Fishing Contest Restrictions

Interest in fishing contests on rivers continues to grow in eastern Montana. To address biologic and social concerns related to fishing contests, the following Fishing Contest Stipulations and Recommendations apply to the Powder River. Additional stipulations or considerations for fishing contests can be found in Appendix B.

Stipulations incorporated into Contest Rules under Authority of 87-3-121 MCA:

1. Contest approved only for single water body (i.e., distinct reservoir, lake, or river (12.7.802 ARM)).
2. No tournaments allowed on Holiday Weekends (12.7.805 ARM) including Easter, Mother's Day, Memorial Day, Father's Day, 4th of July, Labor Day, Columbus Day, and Veterans Day.
3. Only one tournament per weekend will be allowed. A body of water cannot have consecutive weekend tournaments (12.7.805 ARM)
4. No contests for ESA listed species, species of concern, or for wild trout (12.7.807 ARM).
5. Walleye tournaments: sauger are defined as any *Sander* (sauger/walleye) with multiple small, distinct black spots on the spiny (first) dorsal fin ray membrane. Fish meeting this criterion are classified as sauger and are not allowed for weigh in.
6. Live bait and fish must be transported in clean domestic water when allowed in current fishing regulations (12.5.706 ARM).
7. Vessels and equipment approaching a department inspection station must stop as directed (12.5.706 ARM).
8. Vessels and equipment entering the state that do not approach a department inspection station must be inspected for aquatic invasive species prior to launching in any Montana water body (12.5.706 ARM).
9. Tournament boundaries must be clearly defined in the contest application. Proposed boundary size should be minimized to reduce tournament related fish mortality caused by fish being held in livewells for extended periods and/or traveling long distances.
10. A shotgun-style start for boat tournaments on rivers can be extremely dangerous and must be evaluated by tournament sponsors. If boats are required to start at one location, tournament sponsors need to implement an orderly, single file, timed start for every boat or other method (e.g., use of multiple boat ramps) to reduce the safety risks and liability associated with a rapid start.
11. Contests are prohibited in August due to high water temperatures. Additional stress from a fishing contest dramatically increases the likelihood of delayed fish mortality.
12. Participants cannot possess more than a daily limit at one time.
13. Catch and release formats only.
14. Limit two poles per person.
15. No setlines, trot lines, or hoop nets allowed.
16. No stringers.
17. Livewells and other fish holding containers such as coolers are required to have aeration running when fish are held, and water exchanged at minimum on an hourly basis.
18. Sponsors are encouraged to penalize anglers or teams with dead fish.
19. Landowner permission required at private boat ramps or on private property of weigh-ins.
20. No off-site weigh-ins, they must occur on the water or at shoreline. Weigh-ins conducted throughout the day will get preference over weigh-ins at days end.

FWP also provides the following recommendations for fishing contests:

1. Tournaments that don't transport fish to a centralized weigh-in will be given preference over centralized weigh-in tournaments. Bank fishing is discouraged unless fish measurements are recorded by anglers or roving measurement staff and fish are released on site. This prevents handling time and associated stress on fish from poor handling and hauling techniques (e.g., five-gallon buckets). Hauling fish away from a waterbody and then releasing it back into the source water after transportation via vehicle on a county road or highway is technically illegal (see 87-5-701 *et seq.* MCA).
2. Contest sponsor(s) are responsible for safe fish handling procedures and to ensure fish are released back to the source water. Stipulations for tournaments with large geographic boundaries may be required to separate fish taken from different locations and return them to specified locations as part of the permit requirements. This may require sponsors to have tanks large enough to hold fish (1/2 lbs. of fish per gallon of water is a general recommendation for holding and transporting fish), have oxygenation systems, and the ability to haul fish.
3. Discourage contest on the Powder River during the critical spawning period for channel catfish and walleye (same as sauger). Channel catfish spawn between 75^{o}F to 85^{o}F which typically occurs from June 15 – July 15 on the Powder River. Walleye and sauger spawn at 50^{o}F which typically occurs in April.

FISHERIES MANAGEMENT DIRECTION FOR POWDER RIVER DRAINAGE

Water	Miles/acres	Species	Recruitment Source	Management Type	Management Direction
Powder River	220 miles	Sauger (N) Channel catfish (N)	Wild	General	Maintain harvest level, relative abundance, and size structure through regulations.
		Shovelnose sturgeon (N)	Wild	General	Manage as a recreational fishery with some harvest opportunity. Monitor health of this long-lived native species.
		Pallid sturgeon (N), Paddlefish (N)	Wild	Conservation	Monitor usage, degree of residency and spawning activity in the river.
		Blue sucker (N)	Wild	Conservation	Monitor population and investigate life history and movements.
		Multi species	Wild	General/ Conservation	Manage for recreational fishing opportunity where applicable. Monitor nongame, native, and sport fish assemblage and overall ecosystem health.
Habitat needs and activities: Dewatering is a threat to game and non-game fish, work with Wyoming adjudication process to evaluate compact interpretation and meet the following instream reservations: 31.9 cfs in January; 71.8 cfs February;291 cfs March; 347 cfs April; 424 cfs May; 184 cfs June; 70 cfs July; 14.5 cfs August; 8 cfs September, 9.4 cfs October, and 61.6 cfs November and December. Reduce fish entrainment into irrigation intakes.					
Little Powder River	72 miles	Channel catfish (N)	Wild	General	Maintain harvest level, relative abundance, and size structure through regulations.
		Multi species	Wild	General/ Conservation	Manage for recreational fishing opportunity where applicable. Monitor nongame and native fish assemblage and overall ecosystem health.
Habitat needs and activities: Improve fish passage at current restrictions (culverts, fords, dams) and ensure future structures provide for adequate creek flow and fish passage.					

Water	Miles/acres	Species	Recruitment Source	Management Type	Management Direction
Intermittent Streams: Mizpah Creek, Locate Creek Ephemeral Streams: 10 with documented fish populations	 150 miles 42 miles Various	Multi species	Wild	General/ Conservation	Manage for recreational fishing opportunity where applicable. Monitor nongame and native fish assemblage and overall ecosystem health.
Habitat needs and activities: Improve fish passage at current restrictions (culverts, fords, dams) and ensure future structures provide for adequate creek flow and fish passage.					
Small Private Ponds/Reservoirs	Numerous	Trout	Hatchery	Put-Grow-and-Take	Public relations opportunity with landowners to provide local fishing opportunity for rural community. Maintain fishery through monitoring, regulations, and annual stocking.
		Bass, Walleye, Northern pike	Wild/ Hatchery	General/ Put-Grow-and-Take	Public relations opportunity with landowners to provide local fishing opportunity for rural community. Maintain fishery through monitoring, regulations, and stocking when necessary.
		Crappie, Yellow perch, Bluegill	Wild/ Transfer	General	Public relations opportunity with landowners to provide local fishing opportunity for rural community. Provide panfish angling opportunity, supplement population through wild fish transfers when necessary.
Habitat needs and activities: Water depth (less than 12 feet deep) is a common limitation that leads to frequent winterkills; limitation offset by frequent sampling and stocking or wild fish transfers.					

Water	Miles/acres	Species	Recruitment Source	Management Type	Management Direction
Public Trout Ponds: Beardsley Rest Boulware	 2 acres 1 acre 1 acre	Trout	Hatchery	Put-Grow-and-Take	Annual stocking of trout for angler opportunity.
Habitat needs and activities: Water depth (less than 12 feet deep) is a common limitation that leads to frequent winterkills; limitation offset by frequent sampling and stocking.					