

RIVER RECREATION SURVEY: WENATCHEE RIVER AND ICICLE CREEK NEAR LEAVENWORTH



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TABLE OF CONTENTS

Introduction.....	3
Section 1. A description of river recreation use	4
Section 2. A community survey to identify issues associated with river recreation	7
Section 3. A description of infrastructure and existing conditions at launch and take-out sites.....	10
Section 4. A summary of user counts to record observations of river use.....	15
Section 5. Summary of existing environmental conditions in Icicle creek and the Wenatchee River....	16
Section 6. Conclusion and description of next steps.....	19

Appendix A Figures 1-20

Appendix B Survey Questions

Appendix C Tables 1-14

Appendix D Written Survey Responses

Appendix E Photos

Appendix F December 2020 Community Meeting Notes

RIVER RECREATION SURVEY

WENATCHEE RIVER AND ICICLE CREEK NEAR LEAVENWORTH

Introduction

Local residents and visitors to the Leavenworth area enjoy river recreation activities on the Wenatchee River and Icicle Creek. River recreational opportunities include swimming, visiting the beach, fishing, and floating the river in rafts, stand up paddle boards, inner tubes, and inflatable floating objects. There are several commercial outfitters that rent equipment and/or provide guided trips. Regardless of the launch site, most users float through the town of Leavenworth and/or exit the river within Leavenworth City limits.

The Wenatchee River and Icicle Creek are important for recreation but at the same time are primary habitat for multiple species of mammals, birds, insects as well as federally listed fish species. Both rivers have tributaries that originate in wilderness areas and preserving the water quality for all species needs to be taken into consideration.

River recreation attracts visitors and boosts the local economy. River recreation connects people to nature, lowers stress levels, and can have health benefits. River recreation also has the potential to have negative impacts if unmanaged. Planning and management can help address issues that may arise such as user conflicts with wildlife, water quality, neighbors, parking, bank erosion, etc.

The purpose of this study is to gather data on river users that may be used in future planning and management efforts. For example, improving infrastructure for river launch facilities ranked as a high priority action in the Parks and Recreation Plan Update for the Chelan County Comprehensive Plan (2017).

The goals of this work include:

- To characterize existing boating recreation within stream reaches that pass through the City of Leavenworth;
- Describe existing conditions for boater launch and take-out facilities;
- Estimate the number of river users during peak season; and
- Identify issues associated with river recreation use in these stream reaches.

The information in this report has been organized into five sections which are described below:

Section 1. A description of river recreation use within the study area.

Section 2. A community survey to identify issues associated with river recreation in the study area.

Section 3. A description of infrastructure and existing conditions at launch and take-out sites.

Section 4. A summary of user counts to record observations of river use.

Section 5. Summary of existing environmental conditions in Icicle creek and the Wenatchee River

Section 6. Conclusion and description of next steps

Section 1. A description of river recreation use within the study area

This section of the report describes the boundaries of the study area and the following baseline information: flows, river access sites, permits for commercial river access, river rescue, and estimated number of low water river users.

There are two stream reaches within study area for this report (Figure 1):

1. The Wenatchee River from the Icicle Road bridge crossing to the City owned Barn Beach Reserve and
2. Icicle creek from the fish hatchery boat launch to the confluence with the Wenatchee River.

Flows in both river reaches are high from May – June with a falling hydrograph through the month of July and lower water levels starting in August and extending through the remainder of the water year (Figures 2 and 3). The type of river recreation watercraft varies depending upon flows and season. During high water, river flows are fast and cold so rafts and kayaks are more common forms of watercraft. During low water, river users are more likely to be found on innertubes, Stand Up Paddle boards (SUP's), inflatable kayaks, and floaty toys. When flows drop below 200 cfs on Icicle creek (as measured at the Snow creek gage), water depths become very shallow.

There are several sites within the study area where the public and commercial boating companies access the river. Existing conditions at these of these access sites will be summarized in Section 3, however, the following text summarizes river users at each river access site. Access sites are numbered and the locations are depicted on Figure 4.

On the Wenatchee River, here is a summary of the public and commercial launch and take-out sites with the property owner listed in parenthesis:

Launch sites:

1. Icicle Road bridge (City of Leavenworth and Chelan County)– Leavenworth Outdoor Center and the public launch from this location.
2. End of Wilson street (Fromm property)– Blue Sky, River riders, and Osprey use this location for river access as well as some members of the public. Blue sky, Osprey, and River Riders use this site to launch rafts during high water floats (May-June), however, those trips may be fairly limited in 2020. Blue sky also uses this site to launch tubers.
3. Enchantment park (City of Leavenworth)– Orion Expeditions, YD Adventures, North Cascades, Wildwater, and Wet Planet use Enchantment park to launch boats during high flows.

Take-out sites

4. East Leavenworth (Steelhead) boat launch (City of Leavenworth)– this site is used by the public and many of the permitted commercial launches from USFWS fish hatchery also use this site to take out watercraft.
5. Above barn beach (City of Leavenworth)– Leavenworth Outdoor Center and Blue Sky use this site as a take-out for river tubers. Osprey and Beayoutiful Yoga also use this site to take out paddle boards. The public also uses this area as a take-out site for various types of watercraft.
6. End of Wilson street (Fromm property)- Osprey rafting uses this site to take out rafts from their

'high adventure' float which starts near their property upstream from the Icicle Road bridge.

On Icicle creek, here is a summary of the public and commercial launch sites with the property owner in parenthesis (river users take-out on the Wenatchee River at the sites listed above):

7. Fish Hatchery boat launch (USFWS)– Commercial outfitters and the public launch from this site; see permitting process described below.
8. County spur road river access (between the Delzer property and fish hatchery) – Leavenworth Outdoor Center launches river tubers from this location.
9. East Leavenworth Road bridge and Old Bridge Road– members of the public park in the County road right-of-way (ROW) and access the river near the bridge crossing.
10. WDFW River Access pull-out off of East Leavenworth Road at “stump hole” (WDFW).
11. County ROW at the end of Shore Street – this river access is primarily used by local landowners.

In order for commercial operators to launch boaters from land owned by the City of Leavenworth and USFWS, they must obtain a permit. In 2019, City of Leavenworth issued permits for rafting companies to launch from Enchantment Park (Orion, YD Adventures, Wildwater, Wet Planet, Osprey, and North Casades). Permittees pay the City \$2.50/person for rafting clients.

The City also issued permits for commercial operators to use the parking area in Waterfront Park to collect river users. Specially, Blue Sky and Leavenworth Outdoor Center have permits to collect tubes from customers at this location. There is also one company that is issued a permit for exiting and entering at Waterfront Park for Kayak/Paddleboard lessons. Leavenworth Outdoor Center also has a permit to access the Wenatchee River at the Icicle Bridge. Part of this permit requires them to provide trash receptacles, porta potty, user information, and trash pick-up. Tubing fees are paid based upon a percentage of sales from these companies. In total, for 2019, the City received \$35,084 in permit fees for commercial operators using City land to access the river; over 75% of that revenue was paid by Leavenworth Outdoor Center and the remaining split amongst the 7 other permittees. These fees were used to offset the City's cost for park maintenance which totaled \$648,808 in 2019.

USFWS requires commercial operators to obtain a Special Use Permit to launch from their boat launch on Icicle creek. There are currently no operators with permits to launch tubers. The following operators have had SUP's (over the last few years) to launch guided raft, kayak, and fishing trips: Boeing Employee Whitewater and Touring Club (BEWET), Wildwater River Guides, Osprey Rafting Company, Austin's Northwest Adventures (fishing), Leavenworth Outdoor Center, Hurd's Guide Service (fishing), and Alpine River Runners.

Chelan County does not currently require any permits for commercial operators to launch from road right of way (ROW). Chelan county code chapter 8.38 and 9.12 detail allowable ROW use and enforcement. This section of code defines nuisance activities within the ROW as a misdemeanor. For example, obstructing or impeding passage is an unauthorized use of road ROW. Chapter 9.12 provides a list of ROW locations within the County where parking is restricted. For example, within the study area, along East Leavenworth Road approximately 1/2 mile northwest of the Icicle River Bridge, parking is restricted to areas safely away from the traveled way and limited to one-hour duration. The

board of Chelan County commissioners may, by resolution, establish no-parking zones on any portion of the right-of-way of any county road where such parking would constitute a hazard to passing vehicles. Such zones shall be marked by properly erected and maintained “NO PARKING” signs. Parking any vehicle in any no-parking zone properly marked by “NO PARKING” signs shall constitute a traffic infraction punishable by a fine of \$105 dollars. In the event that the initial fine is not paid within the first fifteen days following the date of issuance of the citation for such infraction, the fine shall increase to fifty dollars. The county does post No Parking signs throughout the county where they are warranted. For example, in the Leavenworth area, there is a No Parking sign adjacent to the Cascade Orchards Bridge.

Commercial use on the Wenatchee River during high water flows has been ongoing for the past 30+ years. The Wenatchee River is one of the most popular whitewater rafting runs in the Pacific Northwest. More recently, the popularity of commercial use during low water season has increased. For example, in 2016, Leavenworth Outdoor Center launched 16,000 river users on the Wenatchee and Icicle creek and that number has increased approximately 40% to 26,500 river users launched in 2019. Blue Sky, the only other commercial company that launches tubers within the study area, launched approximately 5,700 tubers on the Wenatchee River in 2019. Prior to preparation of this report, there had been no official counts of the number of public river users. Section 4 of this report contains information about river use numbers based upon 2020 survey counts.

Section 2. A community survey to identify issues associated with river recreation in the Leavenworth area.

Survey Methods

A survey questionnaire was developed to document and understand river recreation use in the Leavenworth area. Chelan County drafted the survey questions with input from a stakeholder working group. The survey was administered through survey monkey and the survey monkey link was sent to >2000 landowners in the Leavenworth area on a postcard mailer. Residents who live adjacent to the river within the study area were also sent a paper copy of the survey that they could fill out and mail back to Chelan County. Responses received on paper surveys were manually entered into the survey monkey database. The survey link was also distributed to business owners who are members of the Leavenworth Chamber of Commerce, Icicle Valley of Trout Unlimited, and the stakeholder working group to obtain their input. The survey was available for 3 weeks from July 23 – August 10. A copy of the survey questions are included in Appendix B. The following text summarizes the survey results.

Demographics of survey participants:

There were 798 responses to the survey and ~90% of the participants identified themselves as local landowners with 41% of those local landowners living adjacent to the river within the study area (Figure 5; Figures are included in Appendix A). The remainder of the survey responses came from local businesses, government entities, river outfitters, individuals who live > 50 miles away, and a few (3%) who identified as the ‘other’ category. Most of the individuals who responded to the survey (96%) said that they also recreate within the study area and 56% of the responders said they are out on the river over 7 times per year (Figure 6). The most popular recreation activity amongst survey participants is using the beaches and swimming (27% of responses), however, tubing, rafting, fishing, stand up paddle boards, and kayaking were also listed as popular activities (Figure 7).

Concerns

Approximately 92% of survey participants indicated that they had some concerns about river recreation use within the study area (Figure 8). There were 66 survey participants who indicated that they had no concerns about river recreation within the study area and 88% of those responses came from local landowners.

Survey participants were asked to list any and all concerns for the launch and take out sites on the Wenatchee River and for launch sites on Icicle Creek. The number of responses for each concern was tallied in order to summarize what are the most commonly listed concerns for each launch and take out site (Tables 1-9 in Appendix C). Interestingly, two of the top three most common concerns checked for all sites were garbage and public behavior. This does not mean those are the biggest concerns; they are the most commonly cited concerns. The other most commonly listed concerns falling in the top three concerns were bathrooms or parking with the exception of Enchantment park where bank erosion was one of the top three most commonly listed concerns.

In summary, the most commonly listed concerns for launch and take out sites were garbage, public behavior the third varied for each site and is listed below:

Wenatchee River Launch sites:

- Icicle Road Bridge - Parking
- End of Wilson Street (private land) - Bathrooms
- Enchantment Park – Bank erosion

Icicle River Launch Sites:

- USFWS Fish Hatchery boat launch - Bathrooms
- End of County spur road (formerly Old Bridge Road) – Bathrooms
- East Leavenworth Road bridge - Parking
- Shore street – Parking

Wenatchee River Take out sites:

- East Leavenworth Road Boat Ramp - Bathrooms
- Above Barn Beach – Parking

Participants were asked to rank their concerns about the public while they float down the Wenatchee River and Icicle creek. Interestingly, the rankings were the same for both rivers (Tables 10 and 11 Appendix C). Survey participants were most concerned about environmental impacts associated with river recreation use within the study area. The next highest concerns listed were garbage and public behavior which is consistent with two out of three of the most commonly cited concerns for the launch and take out sites. Next on the list of concerns was safety, then noise, and finally trespassing. When asked to rank their concerns about environmental impacts, survey participants indicated that the biggest environmental concern was about fish habitat followed by water quality. Concerns about garbage ranked third and wildlife concerns were last on the list of four environmental concerns. Survey respondents were also asked to write in comments about issues or concerns with launch sites and take out sites. The lists below contain a few of the comments provided and all responses are available in tables included as Appendix D.

A few of the write in comments about concerns:

- Wilson street traffic volumes and speeds (associated with commercial launch site)
- Pilings and safety near the East Leavenworth road boat ramp
- Death on Icicle Road due to parking
- Public inebriation
- Lack of signage
- Lack of life jackets/safety

A few of the write in comments about possible solutions:

- No music
- Additional tests/studies about water quality (for example, test fecal coliform levels), fish impacts, and bank erosion
- Permit system to limit numbers with perhaps a daily cap and/or maximum number of users/hour and/or hours of the day
- Ban alcohol or ticket for inebriation
- No parking signage and enforcement
- Fines if emergency services are provided
- Staffing at launch sites for educating the public and/or river rangers for enforcement
- Create a water park or wave play area near barn beach

- Fund improvements/changes from fees paid by commercial users
- No dogs
- Reform lodging tax and shift funds from marketing towards improving infrastructure for visitor experiences (and reducing conflict with locals)
- Ordinances
- Add guides for commercial operations to regulate behavior
- Improved signage

Section 3. Site Assessment Characterization

This section of the report describes site conditions for 11 river access sites within the study area. The location for each site is depicted on Figure 4 and the site descriptions follow the numbering on Figure 4. For each site, this section describes the location, an overall site description, and information about parking and infrastructure. Most river access sites do not have permanent infrastructure, however, several locations have portable toilets and garbage cans provided by commercial users or landowners. The text for this section is also summarized in Table 12 (Appendix C). Photos of each site are included in Appendix E and a description of each photo is included in the narrative below.

Site # 1 Icicle Road Bridge over the Wenatchee River

Location: The Icicle Road bridge crosses the Wenatchee River approximately 1 mile south of Hwy 2 near the west end of Leavenworth (Figure 4 and Photo 1; Photos are included in Appendix C). The County bridge and right of way is the northern limit of the river access zone. South of County ROW, the river access site is owned by City of Leavenworth; it is part of a 59 acre parcel that also includes the City water treatment facilities and the Golf Course. The eastern edge of the site slopes up to private land. The river flows south along the western site boundary.

Description: This site is used by the public as a launch area providing access to the Wenatchee River. Leavenworth Outdoor Center (LOC) also has a permit from City of Leavenworth to launch commercial users from this location. River access is provided by a .3 acre area that is approximately 175' long and ~50' wide. There is a gate at the southern end that blocks access to the remainder of the City owned parcel. LOC sets up a tent with tubes at the southern end of the turn around (Photo 2).

Parking: There is an uneven dirt surface area (< 0.2 acres) that contains limited parking and a turn-around for vehicles. Approximately 25 cars have been counted parked in this small area (~8 on City owned land and ~17 within County owned ROW near and under the bridge). There is insufficient parking for the number of river users so vehicles often park in the ROW of Icicle Road extending over ¼ mile north and south of the bridge. Approximately 50 cars have been counted in the ROW of Icicle Road on a given Saturday afternoon. When cars are parked in the ROW, pedestrians and bikes are forced into the travel lanes in an area with limited sight distance due to the road curvature (Photo 3). LOC has two sandwich board signs directing the public to park in the ROW of Icicle Road (Photo 2).

Bank conditions: There is active erosion on the river left bank (Photo 1). The former concrete bridge pillars remain on the bank along with large boulders and some riparian vegetation. Leavenworth Outdoor Center has used logs to create a path for river access (Photo 1-downstream path). There are also several other footpaths to access the river. Near the end of summer, the river bank typically smells like urine.

Infrastructure (garbage, bathrooms, buildings): There are no buildings or permanent bathroom facilities on site. There are 2 portable toilets and 2 signs. There are no garbage cans on site except those provided by the LOC staff during the hours that they staff a tent at this site. The two sign kiosks do not have up to date information posted, however, someone has posted a no parking sign on one of the sign kiosks.

Site # 2 (and 4) End of Wilson Street

Location: Private property owned by the Fromm family at the end of Wilson street is used for commercial river access (Figure 4).

Description: Osprey Rafting, River Riders and Blue Sky Outfitters have permission to launch river users from this private parcel.

Parking: There is a large (approximate 1 acre) area located on private land that commercial vehicles use as a turn-around space to drop off guests for river access.

Bank conditions: River users access the Wenatchee River from two steep narrow paths down to the beach (Photo 4). The remainder of the riparian area is undeveloped and consists of riparian vegetation.

Infrastructure (garbage, bathrooms, buildings): There is one portable toilet in the parking area.

Site # 3 Enchantment Park

Location: Enchantment park provides river access to the Wenatchee River (Figure 4).

Description: This is a public park owned and managed by City of Leavenworth. Several commercial companies have permits to launch watercraft from this site, however, this is a high-water launch site. Noone is currently launching commercial users here in July or August. During spring high flows, commercial operators and guests access the river through a gate on a gravel path to the river.

Parking: The paved parking area has over 80 spaces including 3 longer spaces for buses and 2 handicapped parking spaces.

Bank conditions: Commercial companies used to launch from several beaches in the park but bank erosion at some beaches (Photo 5) has now limited commercial access to one gently sloped beach (Photo 6).

Infrastructure (garbage, bathrooms, buildings): There are permanent bathrooms and garbage facilities.

Site # 5 East Leavenworth Road

Location: The East Leavenworth Road boat ramp (also known as Steelhead boat launch) provides public access to the Wenatchee River from East Leavenworth road (Figure 4).

Description: This boat ramp is accessed from East Leavenworth Road and it is used as a low water take-out by public and commercial operators (Osprey). It is also used as a high water launch site for whitewater runs downstream of Leavenworth. This is a large (~0.75 acre) dirt parking lot with a concrete boat ramp (Photos 7, 8).

Parking: This large area parks >50 vehicles in it's current configuration but it is rarely used to it's full capacity for parking. In the late summer, it is dusty and there are some uneven surfaces.

Bank conditions: There is a small beach along the river edge and the bank is lined with large boulders/rip rap (Photo 9). There are also remnant pilings in the river that are exposed at low water which makes it more challenging for recreational users to reach the boat launch at low water conditions.

Infrastructure (garbage, bathrooms, buildings): There is one larger porta potty and one large sized garbage can. There is one sign with limited information posted.

Site # 6 Above Barn Beach

Location: There is a beach just upstream of barn beach that provides access to the Wenatchee River within the City Park (Figure 4).

Description: This gently sloped beach is used as a low water take-out for commercial operators (Blue Sky, LOC, and Osprey) (Photo 10). From the beach, it is ~250' walk along a dirt path through the woods to the parking area. There are 2 large stop signs to help guests locate the take-out. In addition, commercial companies staff this beach to ensure their guests leave the river before entering whitewater downstream.

Parking: The dirt parking area (~0.12 acres) within the City park can fit 32 cars plus there are 4 spaces reserved for commercial operations to collect flotation devices (Blue Sky and LOC) (Photo 11). There are white lines on the ground to maximize the number of parking spaces and aid in traffic flow through the area. LOC guests are also provided additional parking on the privately owned adjacent parcel up the hill.

Bank conditions: This is a gently sloped beach without evidence of erosion. It is located just upstream of barn beach where there is a rip-rap protrusion into the river; a remnant of the former log drive dam across the Wenatchee River.

Infrastructure (garbage, bathrooms, buildings): There are 4 porta potties in the parking area. Garbage cans (3 garbage cans plus 2 recycle bins) are provided at the LOC and Blue Sky staffed areas, however, these are not present when these areas are not staffed.

Site # 7 USFWS Fish Hatchery Boat Ramp

Location: The USFWS fish hatchery boat ramp provides public and commercial river access to Icicle creek from East Leavenworth road (Figure 4).

Description: The fish hatchery has recently improved river access at this site by clearly directing traffic flow and delineating parking areas with signage, large boulders, and fence posts linked with rope. The traffic flow paths and boat ramp surfaces consist of gravel and the parking areas consist of dirt surfaces.

Parking: This large (~2.3 acres) parking area provides parking for >150 vehicles (Photo 12).

Bank conditions: The gently sloped gravel boat ramp (Photo 13) provides access to a narrow beach along Icicle creek. Upstream and downstream of the boat ramp there is bank erosion likely caused by public access trampling vegetation during low water conditions (Photo 14).

Infrastructure (garbage, bathrooms, buildings): There are 2 portable toilets, 1 dumpster, and 1 sign.

Site # 8 End of County spur road (Formerly Old Bridge Road)

Location: Just north of the USFWS fish hatchery boat ramp is a County road that was formerly Old Bridge road where there used to be a bridge over Icicle creek. Old bridge road had been re-aligned east of Icicle creek and this bridge crossing no longer exists. This dirt road ROW crosses private land.

Description: The private landowner who has a segment of their parcel within the current road alignment rents their garage to LOC for commercial operations. LOC also uses this County ROW to launch commercial guests into Icicle creek. This dirt road is about 1 vehicle wide and it ends at the river bank.

Parking: There is space to park 1 or 2 cars near the end of the road, however, if cars are parked there, then there is limited space to turn around (Photo 15).

Bank conditions: The river access is through a steep narrow corridor that is actively eroding (Photo 16). Sandbags and railroad ties have been installed to facilitate two paths to the river for commercial guest river access and to limit erosion during river access.

Infrastructure (garbage, bathrooms, buildings): There are 4 portable toilets near the LOC garage plus 3 garbage cans and 2 recycle bins.

Site # 9 East Leavenworth Road Bridge over Icicle Creek

Location: The East Leavenworth road bridge crosses Icicle creek downstream of the USFWS fish hatchery (Figure 4).

Description: There is a small narrow footpath to access the river right bank on the downstream edge of the bridge (Photo 17).

Parking: Parking for river access at this site is on Old Bridge Road or in the ROW of East Leavenworth Road. There are County 'no parking' signs posted along East Leavenworth Road approximately 1/2 mile northwest of the Icicle River Bridge, however, the public does park SW of the bridge. The road prism is narrow and the bank is steep so parking opportunities in the ROW are limited.

Bank conditions: There is some erosion near the concrete bridge supports and there is a historic bridge abutment in the river on the right bank (Photo 18).

Infrastructure (garbage, bathrooms, buildings): This footpath is in the County ROW near the edge of private land and there is no infrastructure to support public launching from this site.

Site # 10 Stump Hole (public access to Icicle River off E. Leavenworth Road)

Location: The stump hole provides public river access to Icicle creek from east Leavenworth road (Figure 4).

Description: This 6.45 acre site is owned by Washington State Department of Fish and Wildlife and managed by State Parks. There is a narrow path through the riparian vegetation to access Icicle creek from the gravel parking area adjacent to East Leavenworth road.

Parking: A Discover Pass is required to park in this narrow strip of land (~180' long by 30' wide) adjacent to East Leavenworth road. Photo 19 depicts the parking area at this river access site. Approximately 12-15 cars can fit into this parking strip, depending upon the parking configuration chosen.

Bank conditions: At higher water levels, the path leads to a rock in the river and no beach. At low water conditions, there is a narrow strip of river edge with cobbles and thick riparian vegetation (Photo 20). Bank erosion is limited to a very small area at the bottom of the dirt footpath to the creek.

Infrastructure (garbage, bathrooms, buildings): There are no bathroom or garbage facilities at this site, however, there is a large sign with information posted.

Site # 11 Shore Street

Location: There is public access to Icicle creek near the end of Shore street.

Description: By the end of July, water levels drop and beaches (sand bars) form in Icicle creek near the end of Shore street. Local residents use the Shore street road ROW as river access. Some people may use this area to launch or take out boats, but most people just use this access point as a place to come hang out by the river.

Parking: There is no parking area but three cars can park in front of the guard rail at the end of the road. Cars also park north and south of the road adjacent to private property (Photo 21).

Bank conditions: The river bank at end of the road is lined with boulders/rip rap (Photo 22). The area above and around the rocks is eroding.

Infrastructure (garbage, bathrooms, buildings): There are no bathrooms or garbage cans. There is a County sign at the end of the road.

Section 4 River Recreation User Counts

The number of river users were counted for 7 hours per day for eight days in summer 2020 to document existing use (Figures 10 and 11 in Appendix A and Table 13 Appendix C). The following data was collected: commercial or private boater, type of watercraft, personal flotation device (or not), number of dogs, and number of groups with music. Summer 2020 recreation numbers may reflect lower user numbers due to the COVID 19 pandemic; sales tax revenues in City of Leavenworth were only 75% of the average generated in summer seasons 2017-2019.

On average, there are 1130 people floating Icicle creek on a typical weekend day in July (Range 1115-1152). The average number of people floating Icicle creek during the week is 354 river users (Range 353-356). On average, commercial use represents 34% of the river users on Icicle creek (range 15%-96%); this was calculated based upon the hours that commercial users were launching during the survey (Figure 14). Osprey launches guided nature raft floats on Icicle creek from the USFWS fish hatchery boat launch and Leavenworth Outdoor Center launches river users on inner tubes, kayaks, and stand up paddle boards from the end of the County spur road (formerly Old Bridge Road).

On average, there are 1552 people floating the Wenatchee River on a typical weekend day in August (Range 1507 – 1597). This number was generated from surveys conducted on 2 Saturdays (August 1 and 8) but on August 1, river users launched from Wilson street were not counted so the number of Wilson street launches documented on August 8 was added to August 1 numbers to calculate an estimated total of 1507 for August 1. There were 659 people floating the Wenatchee River on Tuesday August 11; this number could be used to estimate the number of river users during the week (Monday – Thursday) which is approximately 42% of weekend numbers per day. There were 992 people floating the Wenatchee River on Friday August 28; this number could be used to estimate the number of river users on a typical Friday in August (~ 64% of weekend day users). On average, commercial use represents 50% of the river users on weekend days, however, during the week, there are almost twice as many commercial boaters compared to private river users. Commercial operators on this reach include:

- Leavenworth Outdoor Center launches river users on inner tubes, kayaks, and stand up paddle boards from the Icicle Road bridge
- Osprey launches rafts from the banks near Hwy 2 and those river users float down to the beach near the end of Wilson street where they hop onto kayaks and stand up paddle boards. Osprey also launches river users from the beach near the end of Wilson street on rafts.
- Blue Sky Outfitters launches river users from the beach near the end of Wilson street on inner tubes and rafts.
- River Riders launches river users on rafts from the beach near the end of Wilson street.

Figures 12-15 summarize data collected on Icicle Creek on July 11. The trends depicted in these graphs were similar for data collected on other survey days in terms of the bell curve of daily use, different types of watercraft and number of users wearing personal flotation devices.

Section 5 Summary of existing environmental conditions in Icicle creek and the Wenatchee River

Water Quality

Water quality in the lower Wenatchee River and Icicle Creek has been studied in order to comply with U.S. Environmental Protection Agency (EPA) requirements for the 1998 303(d) listing for stream temperature. The Washington State Department of Ecology (Ecology) completed a series of Total Maximum Daily Load (TMDL) studies for the Wenatchee River watershed. The initial study included extensive field data collection, stream temperature modeling testing different temperature reduction strategies, and put forth recommendations for management activities. Water quality conditions in the lower Wenatchee River and Icicle Creek are impaired for temperature, as well as for instream flow, pH, and dissolved oxygen. TMDLs are in place for areas where dissolved oxygen, pH, and temperature exceed regulatory thresholds. Low summer instream flow is recognized as an impairment requiring complex solutions to restore more natural conditions.

Washington State Department of Water Quality has developed categories that describe the status of water quality. Within the study area, some stream segments have designated water quality categories of 4A, 4C, and 5 (Figure 16) which are defined as:

- **Category 4a** — already has an EPA-approved TMDL plan in place and implemented.
- **Category 4c** — is impaired by causes that cannot be addressed through a TMDL plan. Impairments in these water bodies include low water flow, stream channelization, and dams. These problems, while not pollutants, require complex solutions to help restore water bodies to more natural conditions.
- **Category 5:** Polluted waters that require a water quality improvement project. This is the list of impaired water bodies traditionally known as the 303(d) list. Starting with the 2004 Water Quality Assessment, Washington's 303(d) list of polluted waters were placed under category 5 in the approved assessment. TMDLs or other approved water quality improvement projects are required for the water bodies in this category.

Fecal coliform is considered an indicator of other specific water quality problems in a watershed. State water quality standards for fecal coliform protect the watershed users from possible harmful, disease-causing pathogens (e.g., bacteria and viruses) associated with human and animal waste. The presence of fecal coliform is an indicator that there could be waterborne diseases such as dysentery, typhoid fever, viral and bacterial gastroenteritis, and hepatitis A. If fecal coliform is detected, this could impact watershed users such as the water supply; stock watering; salmonid and other fish migration, rearing, spawning, harvesting; wildlife habitat; and recreation. Department of Ecology screened for fecal coliform twice a month at the mouths of all tributaries to the Wenatchee River and Icicle Creek during 2002. These surveys confirmed high fecal coliform bacteria counts exceeding standards only in the Mission, Brender, and Chumstick creek watersheds. Thus, follow up surveys for fecal coliform were conducted in those three sub-watersheds in 2003 and 2004 in order to draft a TMDL for fecal coliform in Mission, Brender, and Chumstick creek watersheds.

The Icicle Work Group is working towards collaborative solutions for water resources management within the Icicle Creek Watershed. The Work Group is developing a water resource management strategy (Icicle Strategy) that includes a list of projects to improve environmental conditions in Icicle

Creek. The proposed alternative in the Icicle Strategy identifies a mix of conservation and storage modification projects to achieve reliable water supplies and improved instream flows. Boosting streamflows in the Icicle Creek subbasin will help improve water quality.

The text in this water quality section was paraphrased from the Lower Wenatchee Reach Assessment by Yakama Nation (2017), Chelan County web page about the Icicle Work Group, WA Department of Ecology web site, Wenatchee River Watershed (WRIA 45) Fecal Coliform Bacteria Total Maximum Daily Load Water Quality Improvement Report (2007), and the Wenatchee Watershed Management Plan (2006).

Fish

The lower Wenatchee River is used by spring Chinook salmon, summer/fall Chinook salmon, sockeye salmon (*O. nerka*), coho salmon (*O. kisutch*), steelhead and resident trout (*O. mykiss*), cutthroat trout (*O. clarkia*), and mountain whitefish (*Prosopium williamsoni*). The lower Wenatchee River is also used by non-salmonid species of management interest including Pacific lamprey (*Entosphenus tridentatus*).

Summer Chinook are known to use the lower Wenatchee River for spawning, rearing, and migration. Steelhead and resident rainbow trout are known to use the lower Wenatchee River for spawning, rearing, and migration, as well as incubation. Steelhead begin their upstream migration in the lower Wenatchee in July and are generally finished in March. Spawning occurs mid-February through mid-June, with incubation between mid-February and mid-August, and juvenile rearing year-round. Spring Chinook are known to use the lower Wenatchee River for rearing and migration.

The lower 3 miles of Icicle Creek is a Minor Spawning Area for spring Chinook, and a Major Spawning Area for steelhead, and includes spawning and rearing habitat for spring Chinook salmon, coho salmon, steelhead and bull trout. Figures 17 and 18 depict steelhead and Chinook spawning locations within the project area.

Fish periodicity tables are included as Figures 19 and 20. These tables indicate that adult steelhead in-migration is typically done by March, steelhead start spawning in February, and the fry emerge by early August. These reaches contain juvenile rearing habitat all year. Adult spring Chinook migrate into the Icicle in May – July and spawning starts in July and extends until September. Adult summer Chinook migrate into the Icicle in August – October and spawn in September and October.

Icicle creek is the #3 priority sub-watershed for implementation of fish habitat restoration actions in the Wenatchee basin. The top three ecological concerns for fish habitat restoration in Icicle creek include: 1) Improving the amount of habitat (habitat quantity) by removing natural fish passage barriers; 2) Improving the amount of habitat (habitat quantity) by removing man-made (anthropogenic) fish passage barriers; and 3) improving water quantity (increasing low flows).

The lower Wenatchee River is the #5 priority sub-watershed for fish habitat restoration actions in the Wenatchee basin. The top three ecological concerns for fish habitat restoration in the lower Wenatchee River include: 1) improved connections to side channel and wetland habitats (peripheral and transitional habitats); 2) improving riparian conditions; and 3) improving water quantity (increasing low flows).

The text in this Fish section was paraphrased from the Lower Wenatchee Reach Assessment by Yakama Nation (2017), the Lower Icicle Geomorphic and Hydraulic Assessment for the identification of Protection and Restoration Actions (CCNRD and Natural Systems Design 2017), the Icicle creek fish passage evaluation for the Leavenworth National Fish Hatchery (USFWS 2013), the Biological Strategy (Upper Columbia Regional Technical Team 2013), and the Salmon, Steelhead, and Bull Trout Habitat Limiting Factors for the Wenatchee Subbasin (Andonaegui 2001).

Wildlife – Priority Habitats and Species

Washington State Department of Fish and Wildlife publishes a list and mapped locations of Priority Habitats and Species. Priority habitats are habitat types with unique or significant value to a large number of species. Priority species include those listed as State Endangered, Threatened, Sensitive, and Candidate species; vulnerable animal groups (e.g., seabird concentrations, heron rookeries, bat colonies); and vulnerable species of recreational, commercial, or tribal importance. Species are often considered a priority only within a “priority area” such as a nest, roost, foraging area, breeding area, regular gathering area, or migration corridor.

Within the project corridor, the following fish are considered priority species: summer steelhead, rainbow trout, summer Chinook, bull trout, spring Chinook, sockeye, and westlope cutthroat. The following priority habitats are located in or near the project area: Riverine, freshwater emergent wetland, and freshwater forested/shrub wetland. The sharptailed snake, a species that is currently a candidate for listing as a priority species, is known to occur in the same quarter section as the project area. The following species are known to occur within the Township but they may not be present in the study area: golden eagle, grizzly bear, little brown bat, northern spotted owl, and Yuma myotis (vesper bat).

Section 6 Conclusion and next steps

In summary, this report characterizes the existing boating recreation within stream reaches that pass through the City of Leavenworth. This report also describes existing conditions for eleven sites used for boater launch and take-out facilities. River user counts estimate the number of river users during peak season on a week day, Friday, and weekend days in Icicle creek and the Wenatchee River. A community survey identified issues associated with river recreation use in these stream reaches.

Survey results indicated that respondents are concerned about river recreation impacts to the environment so existing environmental conditions were also summarized in this report. This report will be circulated to the following regulatory agencies in order to obtain input on the potential impacts of river recreation on fish, water quality, and wildlife in Icicle creek and the Wenatchee River: NOAA Fisheries, US Fish and Wildlife Service, Washington State Department of Fish and Wildlife, Washington State Department of Ecology and the Colville and Yakama Tribes.

River safety, river rescues, and the cost to the community were also listed as concerns in the community survey. Data on river rescues and the associated cost will be provided by the Chelan County Sheriff Office and used as part of the consideration for follow up management actions.

The results from this report were shared with the public in a December 2020 community meeting with 35 participants (Appendix F). The following changes were made to the draft report in order to incorporate comments from the meeting: Table 14 edits, photos of river users were added to the report (Photos 1, 9, and 23-26 depict river users), updated the cost of parking fines from \$30-105, and a summary of Leavenworth sales tax revenues and possible impact on river use counts was added to page 16. Additional public engagement will be needed in order to make decisions about any future management actions.

Data in this report can be used to inform possible future management actions by addressing concerns raised during the survey and data collected on river users and infrastructure surveys. For example, future management actions might include one or more of the following scenarios:

1. Landowners at launch and/or take out sites could improve infrastructure to support the number of users. Improved infrastructure might include addition of bathrooms, signage, garbage, and improved parking (including shuttles).
2. Enforcement of existing laws and County code for trespassing, public inebriation, parking, and speeding could reduce some conflicts associated with public behavior.
3. A river use permit system could be implemented to regulate the number of river users.
4. Education and outreach about river safety.
5. Consideration of seasonal closures and/or closures by location and/or user type.
6. Funding sources could be explored to implement future management actions. For example, commercial operators already pay fees to City of Leavenworth. A public fee system, lodging tax, and/or grants could also help pay for future management actions such as infrastructure improvements and/or enforcement.