



WEST NISHNABOTNA RIVER

WATER TRAIL PLAN

SHELBY COUNTY IOWA 2022

SHELBY COUNTY, IOWA WATER TRAIL PLAN

2022

Acknowledgments

This Water Trail Plan was prepared by multiple entities. Iowa DNR and Golden Hills RC&D are solely responsible for the content of Chapter 1 Existing Conditions. Chapters 2 and 3 were prepared by Mimi Wagner and TJ Hillberry with Stantec Consulting Services Inc. Technical data used in Chapter 3 were contributed by University of Iowa Office of State Archaeologist and Dr. James Pease. The Shelby County Conservation Board and the City of Harlan provided leadership and local support of the project throughout the process. The project steering committee included:

Nick Preston, Shelby County Conservation Board

Tim Miller, Harlan Parks Superintendent

Christina Roelofs, Shelby County Conservation Board

Cat and Sabre Mayhugh, Rural landowners

Jordon Sanders, Shelby County Emergency Management

Karla Berndt, Paddler

Jon Fenner, Pottawattamie County Conservation

Deb Morgan, Paddler

Gene Gettys, City of Harlan

Brent Soll, Paddler and Nish Nut Yakers

Mike Kolbe, Harlan Mayor

Pat Byrnes, Local History Buff

Jeanna Rudolph, Harlan City Council

Tim Swank, Angler

Jenney Kelly, Harlan Municipal Utilities

Mike Yates, Angler

Initiated and funded by the Iowa General Assembly and Governor Kim Reynolds

REVISION DATE: SEPTEMBER 2022

Federal regulations prohibit discrimination on the basis of race, color, national origin, sex or handicap. State law prohibits discrimination on the basis of race, color, creed, sex, sexual orientation, gender identity, religion, national origin, or disability. If you believe you have been discriminated against in any program, activity or facility as described above, or if you desire further information, please write to the Iowa DNR, Wallace State Office Building, 502 E. Ninth St., Des Moines, Iowa, 50319.



Contents

CHAPTER 1: EXISTING CONDITIONS ASSESSMENT	5
WEST NISHNABOTNA RIVER	5
THE RIVER ITSELF	6
WATER TRAIL EXISTING CONDITIONS	7
Recreational Conditions Related to the Water Trail.....	7
River Management Conditions on the West Nishnabotna	8
Existing Water Trail Experience Classification	8
Social Considerations.....	8
PHYSICAL CONDITIONS ON THE WEST NISHNABOTNA RIVER	9
Channelization or Straightening of the West Nishnabotna	9
Streambank Conditions	9
Water Quality	10
CONTEXT OF THE RIVER	10
Watershed Characteristics and Condition	10
Resource Experiences Near the West Nishnabotna River	10
Visual Resources	10
WATER TRAIL POTENTIAL.....	11
CHAPTER 2: SHELBY COUNTY WEST NISHNABOTNA WATER TRAIL VISION	12
WATER TRAIL THEME	12
VISION	12
CHAPTER 3: RECREATIONAL DEVELOPMENT & CONSERVATION RECOMMENDATIONS	13
STATE WATER TRAILS IN IOWA	14
STATE WATER TRAILS PROGRAM GOALS.....	14
ADMINISTRATIVE RULES AND DEFINITIONS	15
PROJECT STUDY AREA	16
The West Nishnabotna River in Shelby County.....	17
Implementation of the West Fork Des Moines River Vision.....	18
Planning Process and Public Input	18
WATER TRAIL PLAN RECOMMENDATIONS	20
River User Management Recommendations	20
Recreational Development Recommendations	20
Natural Resource Enhancement Recommendations	21
Outreach Recommendations	21
Permitting Considerations	21
Potential Partners, Funding Sources and Local Resources	21
References.....	22

CHAPTER 1

EXISTING CONDITIONS ASSESSMENT

WEST NISHNABOTNA RIVER

The West Nishnabotna River in Shelby County is located directly adjacent and connected to the Pottawattamie County segment of the river, which is a state designated water trail. Paddling and fishing are popular activities on this reach of the river, and anecdotal evidence shows that river recreation has been increasing significantly in recent years.

This effort began in 2019 with Shelby County Conservation Board and the City of Harlan expressing interest in improved accesses along the West Nish. Iowa Department of Natural Resources and Golden Hills RC&D worked with Shelby County Conservation Board, City of Harlan, and other local leaders and residents to gauge interest and determine feasibility of water trail designation in Shelby County.

The status of “state-designated” is reserved for water trails that represent the best paddling experiences in each region of the state. A set of Iowa criteria established in 2010 is applied to guide classification of state designated segments. This experience classification system allows paddlers to match water trail routes with their ability level. These criteria also help water trail managers, sponsors and trail volunteers select a classification assignment for each segment based on their management resources and abilities.

Rivers become known as water trails when people paddle on them and begin to organize amenities to support paddling such as parking areas and launches. Water trails, in turn, also support uses beyond paddling. River edge amenities also engage anglers, those relaxing near the river, hunters and students studying the ecosystem. We know that river recreation also has a substantial impact on the Iowa economy. A 2009 study by the Center for Agricultural and Rural Development (CARD) at Iowa State University estimated overall economic impact from recreation on the fifty largest rivers in the state for the year. Results concluded that recreational river use by Iowans supported over 6,350 jobs, \$824 million in retail sales and \$130 million of personal income.

Shelby County Conservation Board has agreed to be the water trail sponsor should the West Nishnabotna receive state designation.





THE RIVER ITSELF

The West Nishnabotna is a non-meandered stream beginning in Carroll county and flowing southwesterly into Fremont County, where it meets the East Nishnabotna River to form the Nishnabotna River. The Nishnabotna River flows south into northwestern Missouri, where it meets the Missouri River.

The study segment begins at Reinig Access northeast of Harlan to the Shelby-Pottawattamie County line near Avoca. The study segment passes through the east side of the City of Harlan (population 5,106), and the unincorporated community of Corley. It passes through Nishna Bend Recreation Area and a small riparian prairie area, both managed by Shelby County Conservation Board. The county line at the southern end is less than a mile from the City of Avoca (pop. 1,506).

The river is currently used for fishing, paddling and tubing. Shelby County Conservation and other groups host occasional float trips. Larger motor boats are typically not able to use the river due to shallow flows. No liveries or boat rental businesses are currently based in Shelby County, though a livery based downstream in Pottawattamie County occasionally uses Nishna Bend as an access for longer paddling trips.

Public accesses are located at Reinig Access and Nishna Bend Recreation Area. The Reinig Access is paved but the Nishna Bend access is not. The Nishna Bend access is on a steep bank several feet high. It is also located in the two-year floodplain. This site is problematic because it is frequently submerged, which causes erosion damage around the access. It also causes heavy siltation and mud deposits after high waters recede, which takes time and effort to clear.

Access to the river is also gained from private land and road crossings. Highway 44 on the east side of Harlan is one of the most heavily used access points, but users must climb more than 200 feet down a steep earthen bank under the highway bridge. On the north side of Harlan, a tributary to the West Nishnabotna is used for access along county road M36. Bridge crossings at county road F58 near Corley, and F66 and G18 near Avoca are also used to access the river but do not have maintained accesses.

The current water trail designation in Pottawattamie County begins at the Shelby County line, but the first access on this stretch of river is about 11 miles downstream from the county line at Botna Bend Park in Hancock. Instead, in Avoca, the water trail access is located on the East Branch of the West Nishnabotna River at Edgington Memorial Park, a city park on the east side of Avoca. The East Branch meets the main branch two miles south of Avoca. The East Branch has a smaller watershed and thus a narrower channel with different characteristics than the main branch. The Pottawattamie County Water Trail plan recommends a new access on the west side of Avoca. The most likely site for a new access would be along county road G18 (Tamarack Road) less than a mile west of Avoca.

According to the 2009 Iowa Rivers and River Corridors Recreation Study (Iowa State University 2009) the West Nishnabotna River is the most heavily used interior river in southwest Iowa. Nearly 30% of the trips reported to the river in 2009 included use of some form of boat (Table 1). The study segment included the entire West Nishnabotna River in Iowa, and we do not have accurate statistics for the Shelby County portion alone.

There is no formalized local paddling group, although the West Nish Yakers group does organized floats. There is also a Facebook group, "Iowa's Nishnabotna Kayakers," where members share information about group outings on the river. Golden Hills RC&D manages a Facebook page and website for the West Nishnabotna Water Trail in Pottawattamie County and hosts regular educational programs, often in partnership with Pottawattamie Conservation and other groups.

River Segment	Trips Reported to River in 2009	Fishing	Hunting	Boat with Motor	Kayak or Canoe	Swim, Tubing, Play in Water	Trails	Camping	Relaxing, Picnicking	Wildlife Watching
West Nishnabotna	117	63.2%	37.6%	5.1%	23.1%	22.2%	35.0%	35.0%	36.8%	49.6%

Table I
Recreational Use Reported on Southwest Iowa Rivers*
*Source: Iowa Rivers and River Corridors Recreation Survey 2009 (Iowa State University)



WATER TRAIL EXISTING CONDITIONS

No dams are located on this reach of the river. Several hazards have been identified, including woody debris, strainers, and snags. Some junk can be seen from the stream but is generally not in the channel and thus poses little risk to river users, with the exception of one river-wide log jam less than a mile upstream of the proposed Avoca West access. Severe to extreme streambank erosion can be seen along the river, particularly on outer bends.

Based on anecdotal evidence, the most heavily used portion of the river in Shelby County is between Harlan (Highway 44) and Nishna Bend.

In addition to the main branch of the West Nishnabotna, some people access the West Branch, which flows into the main branch just north of Harlan. People currently put in along County Road M36 on the northeast edge of Harlan near the county fairgrounds. Some people also enter farther upstream at County Road F32 east of the Rosman Glendale Farms Golf Course.

Segment	Stream Speed	Paddling Use Volume*	Debris, Trees, Blockage Notes
Reinig Access to Highway 44	Slow	Medium	Some large strainers
Highway 44 to Nishna Bend	Slow	High	Some strainers but not blocking entire channel
Nishna Bend to F66	Slow	Medium	Some strainers but not blocking entire channel
F66 to Avoca West	Slow	Medium	Strainers/debris nearly blocking entire channel

Table 2
Shelby County Segments on the West Nishnabotna Water Trail
*Use volume estimates are relative only to other segments in the county and were generated by anecdotal observations

Facility Where Access is Located	Access Number	Access Owner	Access Manager	Launch Type	Streambank Height
Reinig Access	92	SCC	SCC	Carry Down	15
Nishna Bend	83	SCC	SCC	Carry Down	10

Table 3
Water Trail Access Ownership and Basic Characteristics
SCCB denotes Shelby County Conservation

Public facilities and other recreational opportunities are only available at Nishna Bend Recreation Area (Table 4).

Facility Where Access is Located	River Access Number	Restrooms	Amenities at Launch	Drinking Water within ¼ mile	Camping	Other Points of Interest at Access
Reinig Access	92	No	None	No	No	N/A
Nishna Bend	83	Yes		Yes	Yes	Ponds for fishing/paddling; hunting; nature center

Table 4
Water Trail Access Amenities

Recreational Conditions Related to the Water Trail

The existing accesses in the county pose challenges for use (Table 5). The West Nishnabotna channel is deeply incised into the adjacent floodplain in Shelby County with vertical streambank heights of 10' or more. The low gradient channel also transports an enormous amount of sediment. These two factors provide two challenges to recreational use of

the river, particularly at access points. The steep and deep streambanks make developing low gradient river access points difficult without large amounts of earthwork. Launch surfaces on streams of this nature often become clogged with silt and other debris following high flows, requiring clearing. Channel aggradation, mid-channel sediment bars formed from eroded soil entering the river from tributaries, is also a limiting factor for on-river activities.

Facility Where Access is Located	Access Number	Parking Stall Count	Distance Between Parking & River (ft.)	Path Slope Max. %	Vehicle Access to River is Possible	Launch Slope Max. %	Launch Angle to River (degrees)
Reinig Access	92	6	SCC				90
Nishna Bend	83	0	SCC				90

Table 5
River Access & Launch Relating to Use and Maintenance

River Management Conditions on the West Nishnabotna

Law enforcement along the water trail is conducted by the Shelby County Sheriff's office and City of Harlan Police Department. One conservation officer is assigned to Shelby County by Iowa Department of Natural Resources. All law enforcement agencies use compatible communications systems that meet federal requirements. Although there is not a protocol or plan for incidents on the river, DNR staff have ATV's and boats to access the river if necessary. According to the DNR officer, underage drinking and irresponsible activities are the main concerns with law enforcement on this stretch of the river.

As stated earlier, aligning how a river is managed with the type and volume of water trail users is a key goal of the state water trails program. Generally, Iowa DNR finds that the greater the volume of use and the shorter the segment length, the greater need exists for management of people and river conditions. Both types of management are important and needed. River condition management includes the level of ongoing removal of large woody debris snags and the maintenance of launches. Appendix A aligns river management expectations relating to the four types of experience classification on state-designated water trails. People management can include littering and disruptive behavior, as well as illegal activities such as vandalism, alcohol consumption while paddling, and trespassing.

Also mentioned earlier, matching the skill level of river users with river conditions is critical to successful water trail experiences. While rivers are understood to be dynamic systems with changing conditions, some segments are known to be inherently more difficult compared to others. Table 6 defines criteria for estimating and applying skill level ratings to river channel conditions.

Beginner	Intermediate	Advanced
Segments are generally less than six miles. Hazards are few and easy to avoid in normally slow-moving currents. Users can easily access these segments from parking areas, and will not need to portage, except to walk a boat around some shallow riffles or make the going easier around an obstacle.	Segments are generally less than nine miles. Users should have the ability to recognize and avoid hazards in moderate river flow. The need to portage is rare, but users should be able and willing to carry boats and gear a short distance. Access to the river may involve a short portage, and the launch or take-out may be a bit difficult.	Segments may exceed nine miles. Hazards are likely and often occur in fast-moving water. The need to portage may be frequent or may involve carrying boats and gear a long distance. Access to the river may involve a long portage, and the launch or take-out may be from steeper banks or faster moving water.

Table 6
Segment length, hazards present and ease of accessibility are considered in skill level rating estimations.

Existing Water Trail Experience Classification

All segments of the West Nishnabotna River Water Trail in Shelby County as they exist today would be assigned as recreational, which is the most common classification in Iowa. This assignment assumes new accesses will be constructed at several points, as Iowa DNR does not promote entry onto and off the river at road intersections due to safety and trespassing concerns. The Pottawattamie County segment of this water trail is also classified as recreational. Appendix B, Water Trail Experience Classification Summary, summarizes key elements from the classification criteria (Wagner and Hooegeveen 2010).

Social Considerations

Shelby County Conservation Board is supportive of state designation and planning for enhanced conditions on the river. Currently, however, they only own land at the Reinig Access and Nishna Bend. New accesses at bridge crossings will be located within county or state highway rights of way. Additional accesses or on-land amenities would require either land purchase or easements on private property.

Landowners along the study segment were mailed surveys in spring 2019. Forty-four (44) surveys were mailed based on county assessor data, and 18 were returned completed. The primary concerns included trespassing, littering, liability, vandalism, property rights, and costs/funding of construction and maintenance.

Some landowners and nearby residents fear that a state designation would attract "outsiders" to Shelby County. They believe that the river belongs to local residents. Several landowners expressed opposition to a water trail designation in Shelby County. Other concerns included increased traffic and damage to crops, streambanks, and habitat areas along the river. Of the survey respondents,

approximately 50% were "Opposed" or "Strongly Opposed," 11% were "In Favor," and 39% said they need more information to make a decision.

In July 2019, all landowners were invited to a meeting held in Harlan. Eleven (11) landowners attended. Representatives from DNR, Shelby County Sheriff, Pottawattamie County Sheriff, Shelby County Conservation, Pottawattamie Conservation, City of Harlan, and Golden Hills RC&D also attended.

At this meeting, John Wenck with DNR gave an informational presentation about the state water trails program. The presentation included information about who uses water trails, common problems and barriers, and DNR's roles and responsibilities for water trails. Landowners were encouraged to ask questions and express concerns. Landowners asked about liability, trespassing, who is responsible for removing log jams.

One attendee asked how landowners would continue to be engaged through the planning/designation process. Typically the landowners are not continuously engaged after this step of the process, but conservation staff at the meeting agreed to keep that landowner informed moving forward.

In August 2019, a public meeting was held at Nishna Bend for paddlers, anglers and others who currently use the West Nishnabotna recreationally in Shelby County. Ninety-four (94) invitations were mailed to registered canoes and kayak owners (vessels over 13 feet) within 10-mile radius of the West Nishnabotna from Reinig Access to Avoca. Emails were also sent to those owners who included email address in their DNR registration. Similarly, people with fishing licenses in the same area with a listed email address were emailed invitations. A press release was sent to local radio and newspapers, and a Facebook event also helped promote the meeting.

Thirty-two (32) people attended the recreational user meeting. At this meeting, conservation staff gave a brief presentation and DNR discussed the water trail program. Attendees were split into two groups for an interactive mapping activity. One map showed the proposed new water trail, and people were asked to put stickers where they are currently accessing the river for recreation, including both existing accesses and places without an official access. A second map identifying two general areas for new accesses (one near Harlan and one near Avoca) was also presented. Attendees were asked to put up to three dots each on the map

for sites where they would like to see new or improved accesses. The chart below includes a summary of the map activity. Photos of the maps and of the meeting are also below.

Some attendees had questions about accesses (what they might look like), if funding would be available from DNR for improvements, and long-term maintenance of the accesses, but overall there were not many questions or concerns expressed.



Access Name	Currently Accessing at this Point	Support Construction of New/Improved Access
Reinig Access	12	9
M36 Bridge	6	3
F32 Bridge (east of golf course)	3	3
Highway 44 Bridge	15	15
Between Harlan & Corley (near 700th St.)	0	1
Nishna Ave./1120th St.	0	2
Nishna Bend	14	18
F66 Bridge	1	11
Avoca West (G8L Bridge)	3	6

Table 7
Self-reported Paddler Use of Various Access Points in Shelby and Northern Pottawattamie Counties.



PHYSICAL CONDITIONS ON THE WEST NISHNABOTNA RIVER

The West Nishnabotna River is among the most physically altered streams in Iowa. Prior to 1900, streams in the Nishnabotna River watershed were “naturally sluggish and meandering” (Eash and Heinitz 1991). Streamflow characteristics in the watershed were significantly altered by channel straightening beginning in the early 1900’s.

Channelization or Straightening of the West Nishnabotna

Farming in the mid to late 1800’s converted the native prairies in upland areas to intensive rowcrop agriculture, which led to high amounts of soil erosion. This erosion increased sedimentation in the Nishnabotna and its tributaries, which increased flooding (Knauth, 1968, Thomas). To reduce flooding impacts and increase farming on the fertile floodplains, nearly all of the West Nishnabotna River channel in Iowa were straightened in the early 1900’s (Eash and Heinitz 1991).

The shorter, straighter, and steeper alignment produced by channelization creates the conditions for higher water velocities which cause rapid, extreme streambed downcutting, lateral channel migration, and streambank erosion due to channel widening. The water table elevation on the floodplain is drastically lowered, also a result of channelization or straightening, allowing row crop agriculture to replace the wet prairies mapped in the early 1850’s by the General Land Office survey next to the river channel. Flooding continues to substantially impact near-river areas with the first major floods being recorded by USGS beginning in 1918 (Eash and Heinitz 1991).

On the West Nishnabotna, the downcutting and widening progressively advanced upstream, impacting all tributaries in the entire watershed. The downcutting on tributaries will continue until the stream length has resumed a length long enough to allow a gentle enough slope so water velocities do not erode the streambed (Thomas). Some tributaries of the West Nishnabotna River that were once 5 feet deep and 20 feet wide are now 30 feet deep and 160 feet wide (Thomas). The stream channel downcutting and widening in western Iowa has caused an estimated \$1.1 billion in damage to bridge and utility infrastructure, while eroding away thousands of acres of valuable farmland and introducing billions of tons of sediment into the stream system.

Following channelization, the river channel incised and widened. The stream channel downcut significantly, with most places having 10- to 20-foot-high vertical streambanks. In Shelby County, much the stream is still incising, though areas farther downstream have begun to stabilize and

even aggrade. Because of the deep incision, the West Nishnabotna only floods outside of its channel and onto the floodplain during the most extreme flooding events. The amount of aggradation downstream, increases flooding probability.

River management today has moved away from channelization or straightening because of the long term, negative impacts to both the waterbody and the surrounding landscape. Since passage of the Clean Water Act, Federal and state permits are now required prior to river modifications. The modified shorter, straighter alignment produces much higher water velocities which quickly result in the erosion or downcutting of the channel bottom. As channel bottom elevations deepen, streambanks necessarily become steeper and taller. Mass wasting of streambanks and the channel is one obvious impact of this type of channel modification.

Streambank Conditions

The West Nishnabotna River is 6.8 miles longer today than it was in the 1930’s, an increase of 22%. Because the river is deeply incised into the adjacent land, the streambanks are quite tall. This tall and vertical nature easily lends itself to instability when high water levels are present and at areas where the channel is attempting to move laterally (from left to right). The West Nishnabotna in Shelby County has slowly begun to meander into a more natural state since it was channelized. Much of the river lacks perennial buffers and crops are planted up to the top of the bank in many areas. Some areas do have a narrow tree buffer, but usually not more than 100 feet wide. Even fewer areas have perennial

grass buffers, and those that do exist are also mostly less than 100 feet wide.

Aerial imagery shows how some bends have migrated laterally over time, and in many cases continue to advance rapidly. Figure 1 illustrates lateral streambank migration adjacent to Nishna Bend Recreation Area.

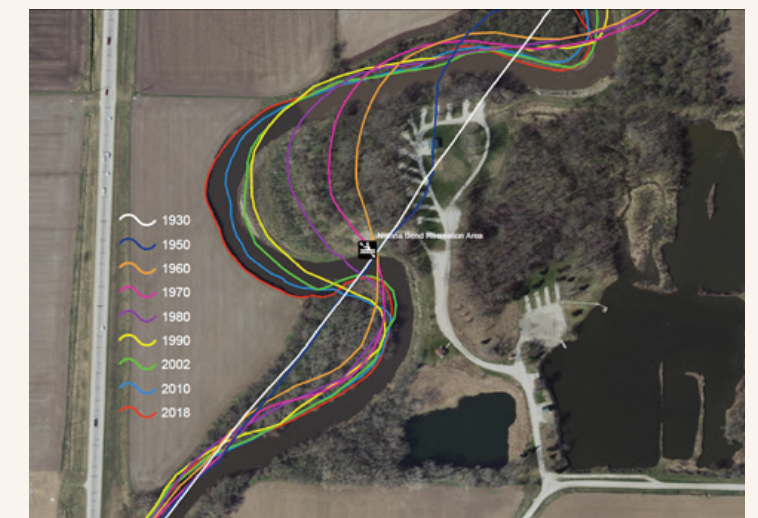


Figure 1. The rate at which river channels migrate laterally post-channelization is based on changes in water velocity and stream edge landcover. Substantial re-meandering is obvious at this site as the channel moves from right to left.

Water Quality

A portion of the West Nishnabotna River in northeastern Shelby County, outside of this water trail area, is included in Iowa's 2020 List of Impaired Waters. Impaired classifications require the collection and analysis of monitoring data. Just because a stream is not included on the Impaired Waters List does not mean that conditions meet the established standards. It is possible that monitoring data was not collected and analyzed to determine conditions. Although the water trail study area is not included on the list, water quality could certainly be improved. As part of the Missouri and Mississippi watersheds, the West Nishnabotna contributes to the hypoxic zone in the Gulf of Mexico. Thus, even though the water quality is not poor enough to be called impaired, it is still contributing to water quality issues downstream.

The West Nishnabotna watershed is designated as a Prioritized Nutrient Strategy Watershed by the Water Resources Coordinating Council, meaning it is a high priority area for demonstrating conservation practices and technologies to reduce nutrient (nitrogen and phosphorus) loading to surface waters.

Golden Hills RC&D coordinates the West Nishnabotna Watershed Management Coalition, a group of local leaders working collaboratively to reduce flood risks to life and property and improve the water quality within the Nishnabotna Watershed for future generations. The watershed plan was completed in 2019. It includes recommendations for practices that improve water quality. Currently the cost-share funding for practice implantation through this program is only available in Fremont and Mills counties, but the plan is intended to help bring additional resources to the entire watershed, including Shelby County.

Golden Hills RC&D also works with several communities in the watershed on installing urban water quality practices like bioretention cells and rain gardens. The City of Harlan is considering adding some of these practices too. Shelby County Soil and Water Conservation District (SWCD) works directly with landowners to implement on-farm conservation practices.

CONTEXT OF THE RIVER

Watershed Characteristics and Condition

The West Nishnabotna River is located in Iowa's Steeply Rolling Loess Prairies ecoregion. The Pottawattamie County segment of the West Nishnabotna is the only state-designated water trail in this ecoregion. An ecoregion is an area of similar climate, soils, and topography, with unique flora, fauna, and ecological patterns.

The Steeply Rolling Loess Prairies ecoregion is characterized by rolling hills of deep loess deposits above glacial till. Most of the ecoregion is prime farmland and thus mostly used for rowcrop agriculture. Major sheet erosion and gullying occurred after the native prairies were plowed for agriculture (Chapman et al. 2002). Much of the loess soil has been washed downhill and into waterways like the West Nishnabotna.

Resource Experiences Near the West Nishnabotna River

Recreation & Tourism in the Region.

Paddlers are the primary type of users for water trails, but rivers are often used for other outdoor recreation such as fishing, hunting, birding and wildlife watching.

There are few recreation and tourism opportunities that exist near the river in Shelby County to complement paddling. Western Skies Scenic Byway passes through Shelby County and crosses the West Nishnabotna on Highway 44. Shelby County has a countywide, multi-use trails plan (Figure 2) that includes a preferred route along the West Nishnabotna River and connections to parks and communities around the county.

Visual Resources

The visual aesthetics of the river are an important consideration for water trail designation. Views of the surrounding landscape that are visible from the water surface should be considered in addition to the stream channel itself. Because the channel of the West Nish is substantially incised, river users may be unable to see beyond the channel in many parts of Shelby County.

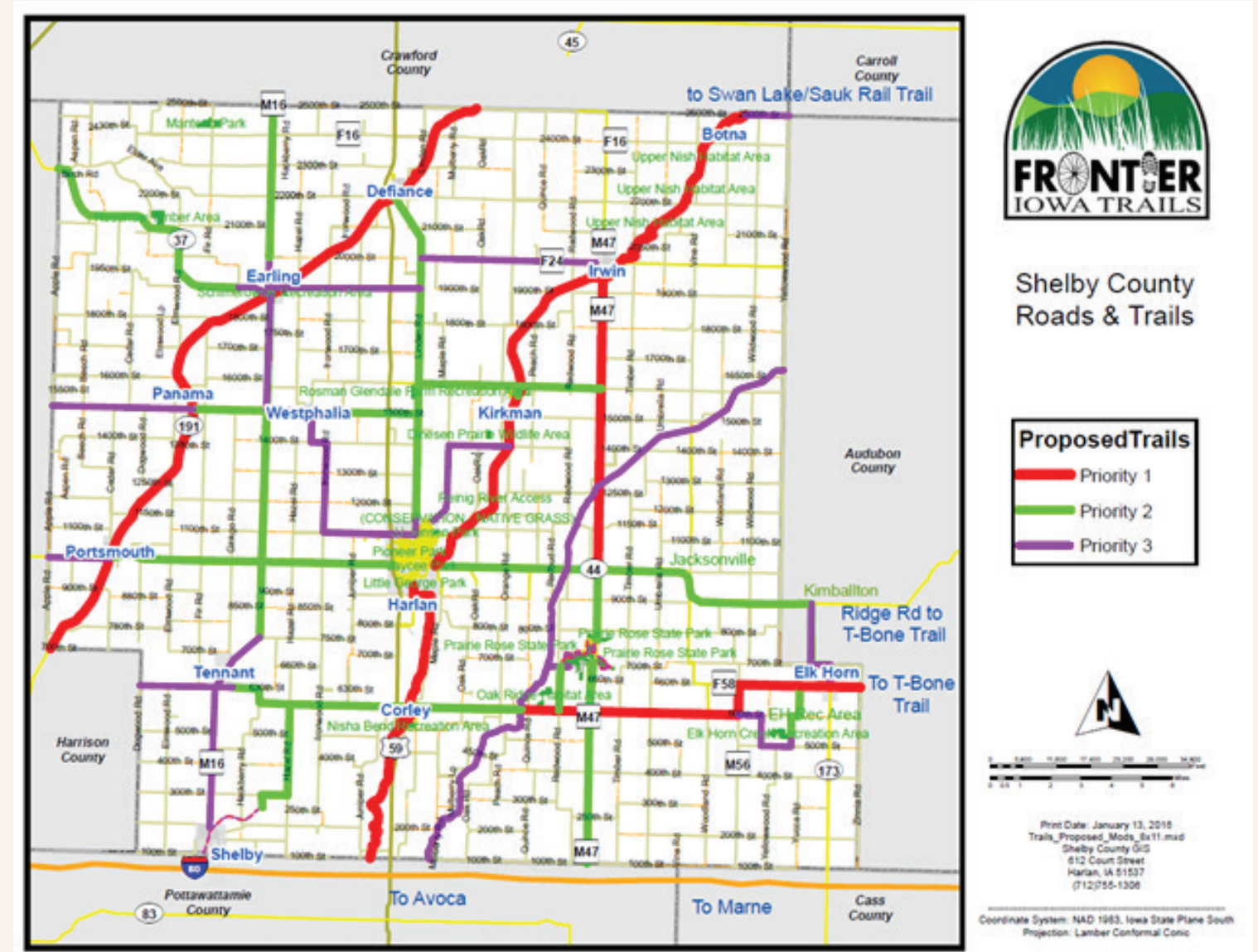


Figure 2. Shelby County Trail Plan

As noted earlier, many sections of the river lack a perennial buffer at the top of the streambank. In many places, annual row crops are planted up to the edge of the streambank, in some cases falling into the river. These high streambanks are vulnerable to massive failures if not restored, reducing water quality and the water trail experience.

Streambank erosion and lack of riparian buffers can lead to a less-than-ideal recreational experience but also provide an educational opportunity for paddlers to learn about the highly-erodible deep loess soils and the long-term effects of stream channelization.



Interpretation Programs and Efforts.

Shelby County Conservation Board has public education programs at Nishna Bend Recreation Area, including some paddling events on the West Nishnabotna.

WATER TRAIL POTENTIAL

Based on the information presented above, this reach of the West Nishnabotna River in Shelby County is recommended for state designation as a water trail. Landowner concerns must be considered and addressed to ensure local support into the future. Shelby County Conservation Board already owns and manages land and accesses on the river, and they have agreed to be the water trail sponsor.

A water trail theme describes the unique experiences a river and its surrounding area offers the public. Themes are used to distinguish text





CHAPTER 2

Shelby County West Nishnabotna Water Trail Vision

Shelby County offers great opportunities for local and regional paddling, angling, and nature-watching. This water trail is included in one of only a handful of coordinated, multi-county state water trails in Iowa. Although less well-known than the Pottawattamie County section of the West Nishnabotna River, the 15-mile extension to the West Nishnabotna Water Trail provided by this project adds enormous recreational value to western Iowa. Shelby County Conservation has agreed to be the water trail sponsor. In conjunction with the cities of Harlan and Avoca, they are interested in promoting, developing and coordinating it.

WATER TRAIL THEME

The theme of this water trail revolves around providing opportunities for locals and visitors to use the river as a natural area—a place to find quiet spaces, connect with existing recreational areas, and appreciate nature. Most of the paddling that occurs in Shelby County is local. The water trail sponsor and local communities hope that state designation and the addition of new access infrastructure will encourage greater use and longer, multi-day paddle trips between Shelby and Pottawattamie counties. The theme and vision of this water trail identifies many opportunities to grow the population of those who use and/or appreciate these resources as well as adjacent communities and businesses.

VISION

The water trail sponsor and the steering committee are interested in protecting the natural experience that currently exists on the West Nishnabotna River, while upgrading access opportunities and paddling trip options inclusive within Shelby County.

The long-term vision for this water trail includes four types of physical improvements: developing infrastructure to allow river access by a wide range of people; to reduce maintenance costs at accesses; to improve safety conditions by providing off-road parking at all developed accesses; and to add a river access within Shelby County near the southern border. Even longer term, there is interest in someday exploring extension of the water trail upstream of Reinig Access. Water levels and a lack of developed accesses in this reach are current hindrances.



CHAPTER 3 RECREATIONAL DEVELOPMENT & CONSERVATION RECOMMENDATIONS

State water trails in Iowa are examples of important, successful experiences between people and natural resources. Paddlers using the West Nishnabotna River Water Trail in Shelby County can enjoy 15 miles of river (Figure 3). The adjoining land is almost entirely in private ownership. The City of Harlan is an important hub on the water trail route. Existing river access points are limited to two locations, one north and one south of Harlan. River users are informally using bridge crossings at two other locations to enter and exit the river; these locations are also shown on Figure 3. This planning integrated regional and local interests and opportunities for conservation and recreation that support the West Nishnabotna River, particularly existing users such as anglers, paddlers and campers.

In 2010 the Iowa Department of Natural Resources (DNR) completed "IOWA

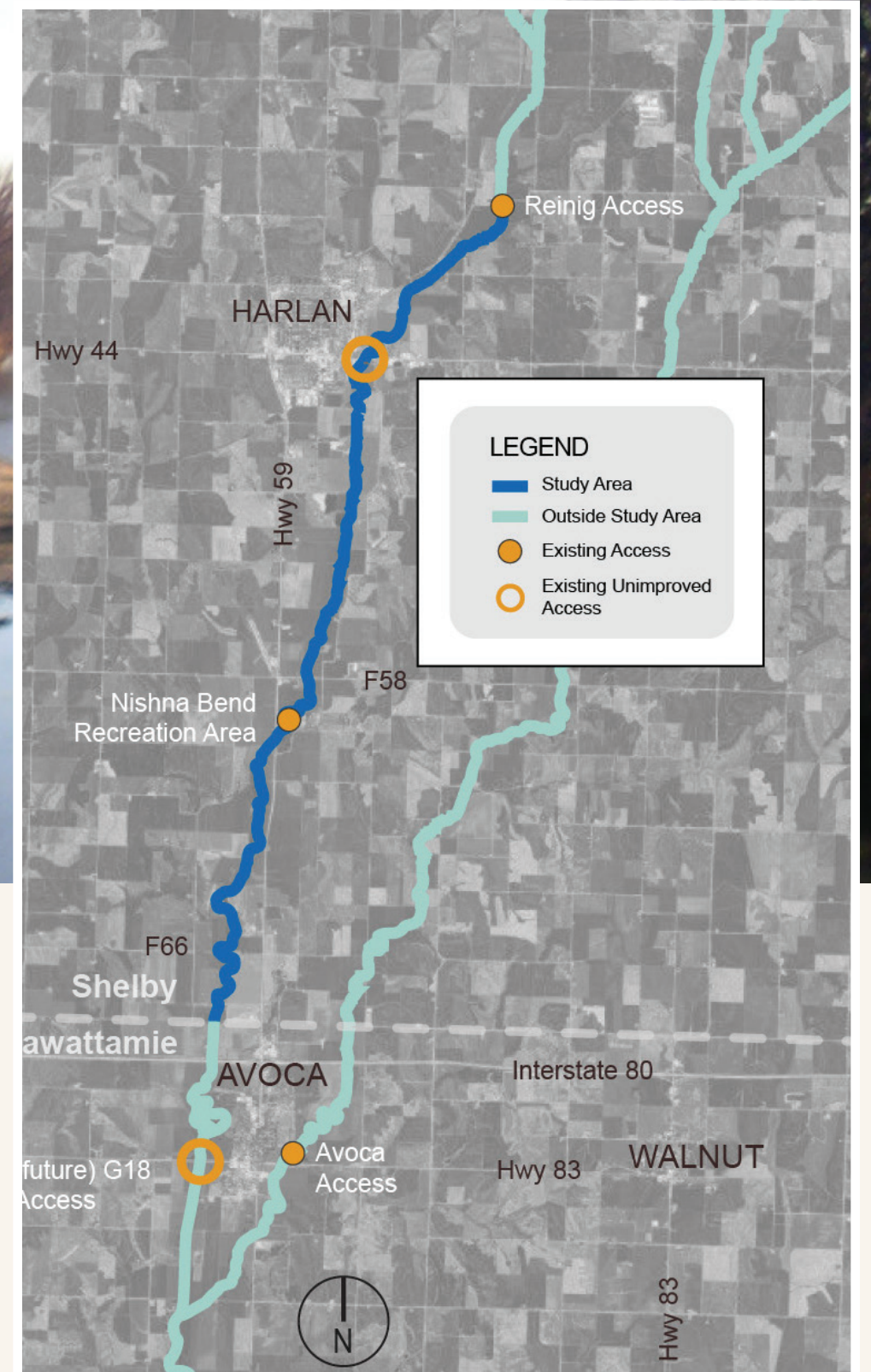


Figure 3. Existing Conditions Map
River users are currently accessing the river through a combination of formal developed accesses and informal access points at bridge crossings. Users of some informal access points park on the edge of gravel roads and bridges causing concern for safety. Informal access points are less developed and often do not provide access for people of all abilities

STATE WATER TRAILS IN IOWA

WATER TRAILS: Connecting People with Water and Resources” (Wagner and Hoogeveen 2010a). This statewide plan was the result of a 2008 mandate for the water trails program. This plan ushered in a new legacy of enjoyment, respect, and care for the navigable waters of Iowa. This recreation development plan adds to that excitement by utilizing the increasing volunteer spirit and local pride communities have for their rivers. The vision for Iowa’s water trails program centers both on expanding recreational experiences as well as protecting and enhancing Iowa’s aquatic and riparian resources. And in addition to providing access to Iowa’s rivers, the vision points to water trails as an entry point for people to become aware of and learn about the challenges facing Iowa’s waterways. Similarly, state water trail plan goals focus on user experiences, natural resource conservation and efficient management.

Recreation planning for state water trails responds to the individual character of each river, the local support present

and landscape conditions. Recommended outcomes focus on enhancing both the recreational infrastructure and the experiences of water trail users. The Iowa Water Trails Program recognizes water trail users as all people using the river as well as the adjacent land. On the river itself this includes paddlers and other boaters, anglers, swimmers and tubers. Active and passive users on land adjacent to the river are also included, such as, land trail users, hunters, picnickers and bird watchers, as well as those who enjoy watching the river from their parked car.

STATE WATER TRAILS PROGRAM GOALS

Goal One:

Provide positive water trail experiences meeting user expectations

Goal Two:

Use water trail development to strengthen natural resources conservation

Goal Three:

Adapt water trail development techniques to the waterway’s individual character

Goal Four:

Support public access to water for recreational purposes

Goal Five:

Create a robust, resilient system for developing and experiencing water trails

Goal Six:

Encourage education in outdoor settings

Goal Seven:

Support positive water trail experiences by initiating strategies to manage intensively used areas



ADMINISTRATIVE RULES AND DEFINITIONS

A number of federal, state and local statutes, rules and ordinances apply to recreational river use in Iowa. These rules govern public use of rivers and behavior while on-water. Current interpretation of statutes, rules and codes related to recreation are summarized in Figure 4.

Meandered vs Non-Meandered Stream:

The stream bed, sandbars and banks of rivers classified as “non-meandered” are considered part of the adjacent property. River users on these “non-meandered” rivers may be allowed to recreate only on the water surface, with additional incidental allowances associated with navigation (see Navigation and Trespass, below) where the bed and banks of the stream are in private ownership. All of the West Nishnabotna River in this plan is non-meandered. Iowa Code 462A.2, 462.69 IOWA WATER NAVIGATION REGULATIONS; Iowa Attorney General Opinion: Smith to Kremer, State Representative, 2-6-96 (#96-2-3).

Navigation and Trespassing:

Paddlers on Iowa rivers are allowed to portage their boat to safely circumvent a channel blockage or hazard. Users also are allowed to portage their boat on dry sandbars and channel bottoms. Iowa Code 462A.2, 462.69 IOWA WATER NAVIGATION REGULATIONS; Iowa Attorney General Opinion: Smith to Kremer, State Representative, 2-6-96 (#96-2-3). Entering privately owned land next to the river without the express permission of the owner is considered trespass. Remaining there after being notified or requested to leave by the owner is considered criminal trespass. Iowa Code 716.7 IOWA DAMAGE AND TRESPASS TO PROPERTY REGULATIONS; Iowa Attorney General Opinion: Smith to Kremer, State Representative, 2-6-96 (#96-2-3).

Tort Liability of Governmental Subdivisions:

Municipal tort law protects cities, towns, and counties from claims of liability for local units of government when recreational infrastructure on rivers is built to current standards. Iowa Code 670 TORT LIABILITY OF GOVERNMENTAL SUBDIVISIONS.

Iowa’s Recreational Use Statute:

Under the Iowa recreational use statute, a landowner is encouraged to open their land and water for public recreational use, (swimming, boating and hunting to name a few) by receiving immunity from liability except for injuries resulting from the landowner’s willful or malicious acts, or when a landowner charges a fee for recreational use. Iowa Code 461C PUBLIC USE OF PRIVATE LANDS AND WATERS.

Littering: Discarding litter onto water or land is prohibited. Additional fines or penalties may exist based on the jurisdiction of the littering incident such as county or municipal-owned property. Iowa Code 455B.363 LITTER.

Motorized Vehicle Use in River:

The use of motorized vehicles, including ATVs, in all parts of certain navigable streams, such as the West Nishnabotna River, is prohibited at all times and conditions. Iowa Administrative Code 461, Chapter 49 provides a list of those navigable streams in which off-highway vehicle use is prohibited. Specific exceptions exist and relate to agricultural access. In meandered streams, motor vehicles shall not be operated on any part of the stream at any time, including on dry sand bars. Iowa Administrative Code 571, Chapter 49 OPERATION OF MOTOR VEHICLES IN MEANDERED STREAMS, NAVIGABLE STREAMS AND TROUT STREAMS; Iowa Code 321I.14.g ALL TERRAIN VEHICLES.

Livestock Fences Across Streams:

The owner of the bed of a non-meandered, navigable stream has a right to erect fences, including electric fences, across the stream as necessary to contain livestock on his or her land in a manner that affords boaters safe passage. Methods of affording safe passage typically include setting the wire high over deep water that cattle avoid, or the use of a non-conductive rubber hose over the electric wire to allow river users to raise the wire. It is recommended that fences be flagged as a warning for river users. Iowa Code 657.2(3) WHAT DEEMED NUISANCES and Iowa Attorney General Opinion: Smith to Kremer, State Representative, 2-6-96 (#96-2-3).

Consuming Alcohol and Intoxication:

Operating a motorboat or sailboat while under the influence of alcohol (.08 alcohol blood level or higher), controlled substances, or illegal chemicals is unlawful. In addition, public intoxication may be enforced in public places. Local ordinances may vary in terms of allowing alcohol consumption in public places such as city or county parks. Iowa Code 123.46 CONSUMPTION OR INTOXICATION IN PUBLIC PLACES.

Personal Floatation Devices (PFDs):

All vessels are required to have at least one personal floatation device (PFD) or life vest for each person onboard. PFDs must be readily accessible in an emergency. All children under the age of 13 on a vessel are required to wear a PFD. Iowa Code 462.A WATER NAVIGATION REGULATIONS.

Boat Registration:

Registration is not required for inflatable vessels seven feet or less in length, and canoes and kayaks 13 feet or less in length that have no motor or sail. It is also not required for vessels properly registered in another state and using Iowa waters for 60 days or less. Iowa Code 462A WATER NAVIGATION REGULATIONS.

Cultural Resource Protection:

To streamline construction on all sites recommended for infrastructure in this plan, the Desktop Cultural Review has already been completed. For more information about the disruption of cultural resources, see Cultural Resources Desktop Evaluation of the West Nishnabotna Water Trail Corridor through Portions of Carroll, Crawford, Pottawattamie, and Shelby counties (Kendall, B., 2019); Section 404 of the Clean Water Act; Section 106 of the National Historic Preservation Act of 1966. Federal transportation funded projects also have additional specific cultural review requirements in Section 4(f) of the Department of Transportation Act of 1966.

Illegal Dumping:

The dumping or depositing of solid waste or debris in rivers, on streambanks, in public areas, and on others’ property is illegal. This includes tires, appliances, construction and demolition waste, trash, and hazardous chemicals. Iowa Code 455B.307 Dumping.

Farm Waste: Farm waste includes machinery, vehicles, and equipment used in conjunction with crop production or with livestock or poultry raising and feeding operations and trees, brush, and grubbed stumps from the same property. Farm waste and farm buildings cannot be dumped or deposited within 100 feet of streams, lakes, ponds, or intermittent streams. IOWA ADMINISTRATIVE CODE 567–100.4(455B).

Floodplain Filling, Changing a Channel, Placement of Rip Rap or Rubble on Streambanks:

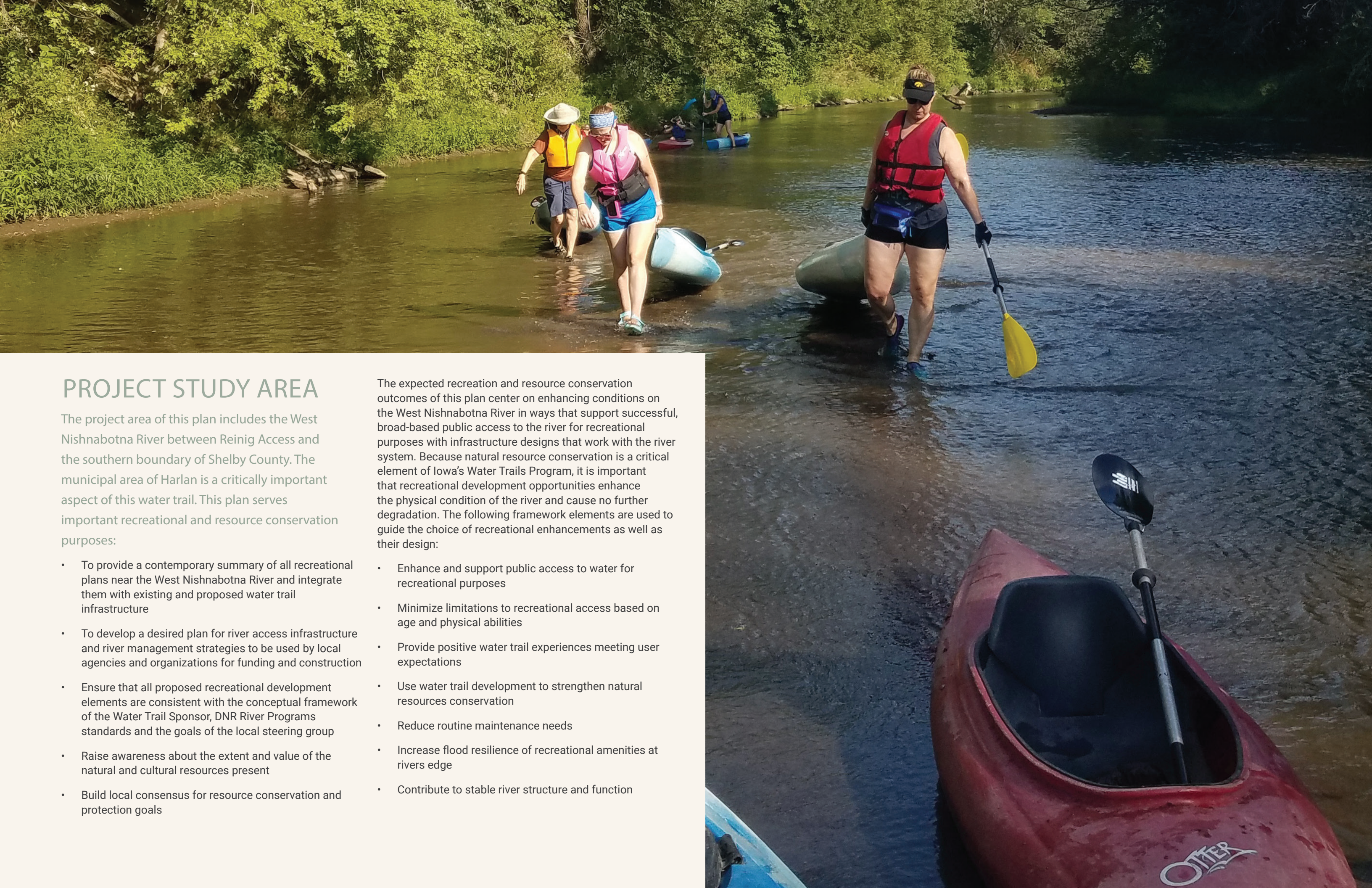
A permit is required when floodplain elevation or channel alignment changes are proposed and when rip rap or rubble is proposed. A joint permit application is required that includes federal and state reviews. At the federal level, the U.S. Army Corps of Engineers issues permits under Section 404 of the Clean Water Act. In the state of Iowa, Iowa DNR grants floodplain and sovereign land permits. Iowa Administrative Code 571, Chapter 13; Iowa Administrative Code 567, Chapters 71, 72; Section 404 of the Clean Water Act. A county floodplain development permit is also required in Shelby County.

Logjam Clearing:

Large woody debris piles often block parts or all of river channels the size of the West Nishnabotna River. Any trees or other large wood that comes to rest on the bottom of a channel is owned by the adjacent landowner. Therefore, modifying log jams for navigation or conservation purposes requires landowner permission. Log jams, while they can be impediments or natural hazards for navigation, also can function as habitat for aquatic species. DNR Fisheries biologists should be involved in decisions about cutting wood in channels, and balanced solutions should be found.



Figure 4. Iowa regulations providing the framework for use and behavior of public waters are constantly evolving. These interpretations were developed with assistance from the Iowa Attorney General’s Office and Iowa DNR staff.



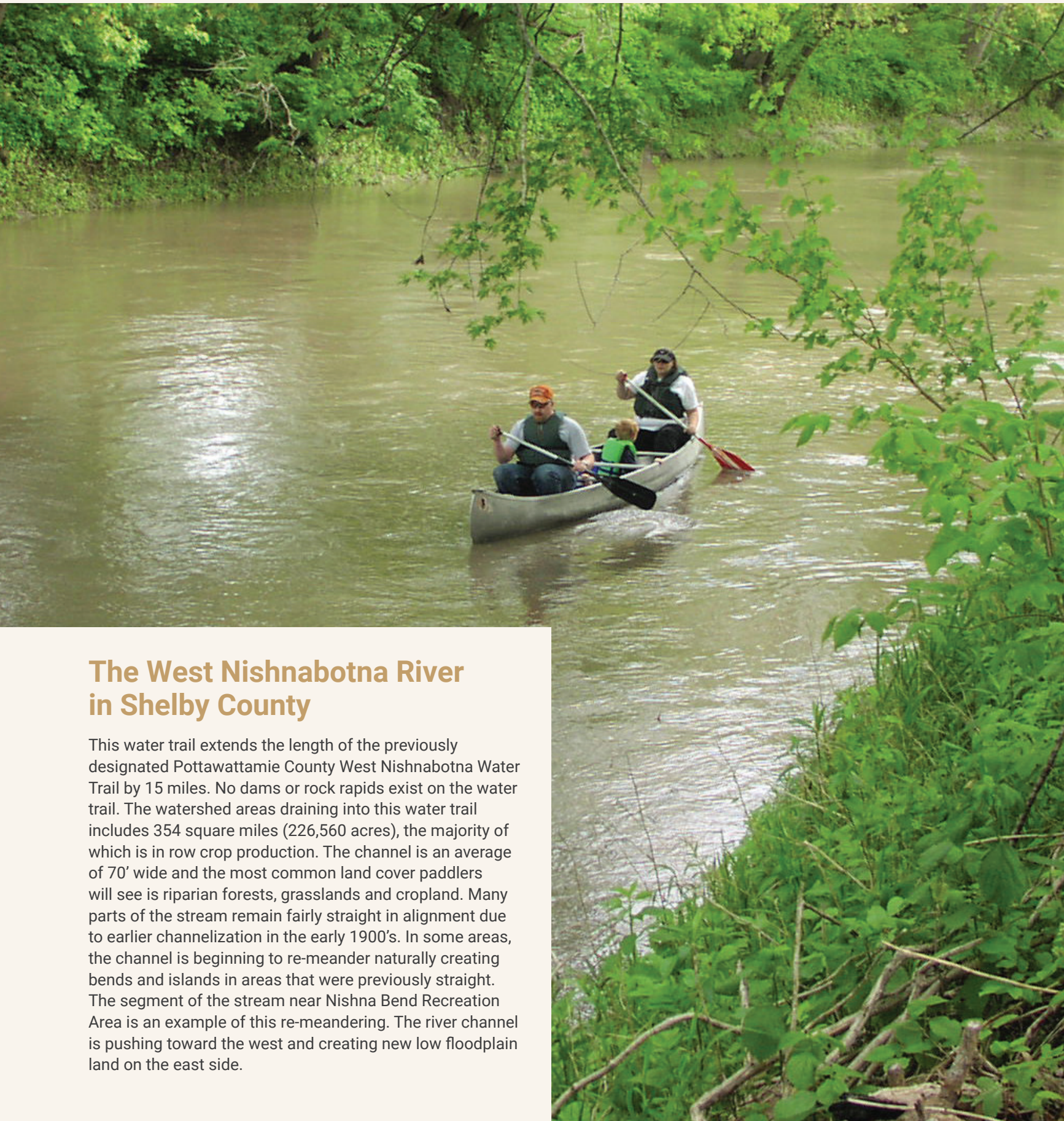
PROJECT STUDY AREA

The project area of this plan includes the West Nishnabotna River between Reinig Access and the southern boundary of Shelby County. The municipal area of Harlan is a critically important aspect of this water trail. This plan serves important recreational and resource conservation purposes:

- To provide a contemporary summary of all recreational plans near the West Nishnabotna River and integrate them with existing and proposed water trail infrastructure
- To develop a desired plan for river access infrastructure and river management strategies to be used by local agencies and organizations for funding and construction
- Ensure that all proposed recreational development elements are consistent with the conceptual framework of the Water Trail Sponsor, DNR River Programs standards and the goals of the local steering group
- Raise awareness about the extent and value of the natural and cultural resources present
- Build local consensus for resource conservation and protection goals

The expected recreation and resource conservation outcomes of this plan center on enhancing conditions on the West Nishnabotna River in ways that support successful, broad-based public access to the river for recreational purposes with infrastructure designs that work with the river system. Because natural resource conservation is a critical element of Iowa's Water Trails Program, it is important that recreational development opportunities enhance the physical condition of the river and cause no further degradation. The following framework elements are used to guide the choice of recreational enhancements as well as their design:

- Enhance and support public access to water for recreational purposes
- Minimize limitations to recreational access based on age and physical abilities
- Provide positive water trail experiences meeting user expectations
- Use water trail development to strengthen natural resources conservation
- Reduce routine maintenance needs
- Increase flood resilience of recreational amenities at rivers edge
- Contribute to stable river structure and function



The West Nishnabotna River in Shelby County

This water trail extends the length of the previously designated Pottawattamie County West Nishnabotna Water Trail by 15 miles. No dams or rock rapids exist on the water trail. The watershed areas draining into this water trail includes 354 square miles (226,560 acres), the majority of which is in row crop production. The channel is an average of 70' wide and the most common land cover paddlers will see is riparian forests, grasslands and cropland. Many parts of the stream remain fairly straight in alignment due to earlier channelization in the early 1900's. In some areas, the channel is beginning to re-meander naturally creating bends and islands in areas that were previously straight. The segment of the stream near Nishna Bend Recreation Area is an example of this re-meandering. The river channel is pushing toward the west and creating new low floodplain land on the east side.

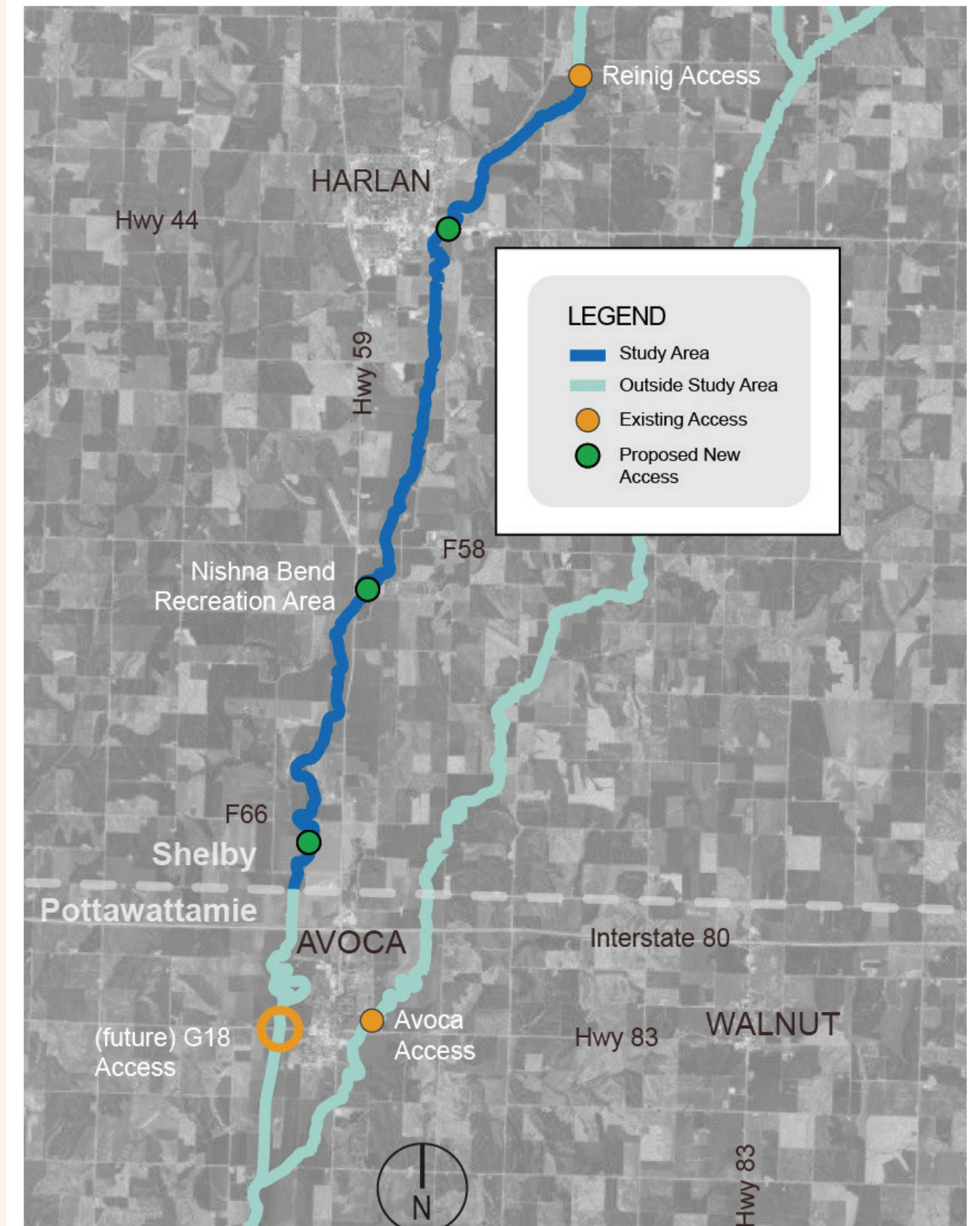


Figure 5. Location Map with Recreational Recommendations
The full build out of Shelby County's vision includes three separate segments for river users within the county with each offering a 3-4 hour paddle in normal water level conditions

Implementation of the West Fork Des Moines River Vision

A large part of the vision for this water trail is to provide opportunities for locals and visitors to use the river as a natural area – a place to find quiet spaces, connect with existing areas, and appreciate nature. Full build out of Shelby County’s vision for the water trail includes construction of three new river accesses within the county. Following completion of these facilities, paddlers will have several options for 3-4 hour floats within the county during normal water level conditions. New proposed accesses in Harlan, Nishna Bend Recreation Area and in southern Shelby County are planned. Figure 5 illustrates these access locations. No existing developed access infrastructure exists at any of these three locations. This will provide a total of four access points over the 15-mile water trail length (Table 8).

Segment	River Miles	Skill Level
Reinig Access - Harlan	3	Intermediate
Harlan Hwy 44 – Nishna Bend Access*	6	Intermediate
Nishna Bend – Southern Shelby County	5 (approx.)	Beginner

Table 8. Five miles of this water trail could be considered beginner friendly. New accesses will need to be constructed at Harlan, Nishna Bend and southern Shelby County are required in order to reach these skill levels.

The Shelby County segment of the West Nishnabotna River Water Trail is designated with a recreational classification, which is typically for users with intermediate skills but can be for beginners also. This assignment assumes new accesses included in their vision are constructed. Skill level rating estimations, also included in Table 8, are determined for each individual segment based on the segment length, number and type of hazards, and access conditions. There are both beginner and intermediate ratings on this water trail.

Another steering group priority is to support water quality enhancement particularly through establishment of native vegetation along stream edges.

Planning Process and Public Input

This vision was developed through a two-year planning process integrating stakeholders, agencies and landowners. A county level steering group composed of individuals with specialized interests and skills were developed in Shelby County with approximately 10 members. The steering group included representation from the water trail sponsor, municipal and county staff as well as special interests such as angling, paddling, land trails, conservation, history, public safety and rural landowners. This group guided the overall development of both the vision and this plan.

Public engagement occurred at several different points during the final stages of planning. Organizations and entities with representation on the steering group provided input on things they appreciate about the river, their ideas for change and the current issues they see. Figure 6 summarizes the input.

A follow up public survey was created to collect feedback from within and outside Shelby County related to designation and development of the water trail. Links to the survey were circulated to the public through local organizations as well as on the project Facebook page during spring 2022. A total of 45 responses were generated to the survey. The steering group evaluated these responses. Twenty percent of respondents reported they do not kayak, canoe or tube on rivers and 56% of the total reported living in Shelby County for at least 20 years.

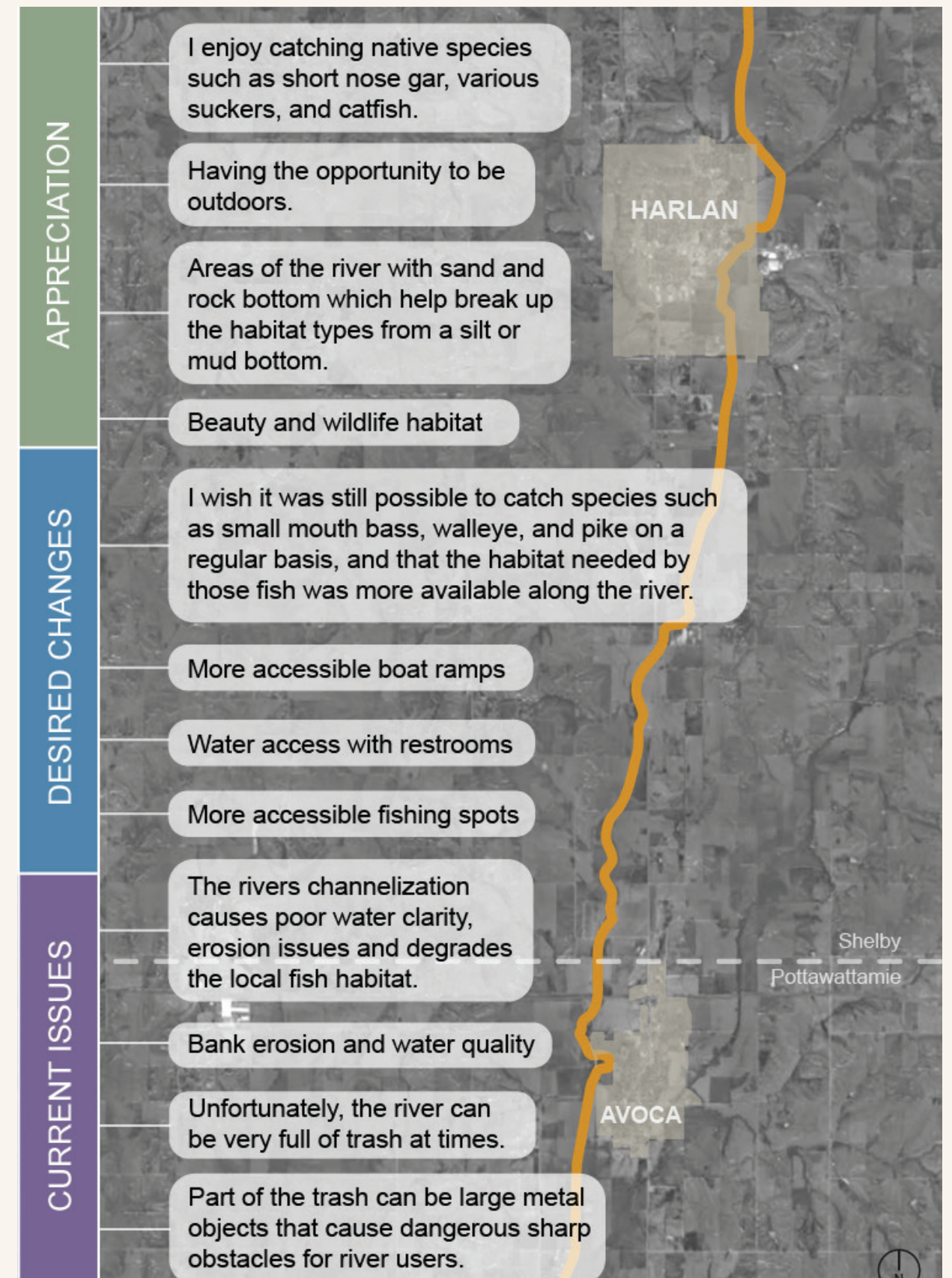


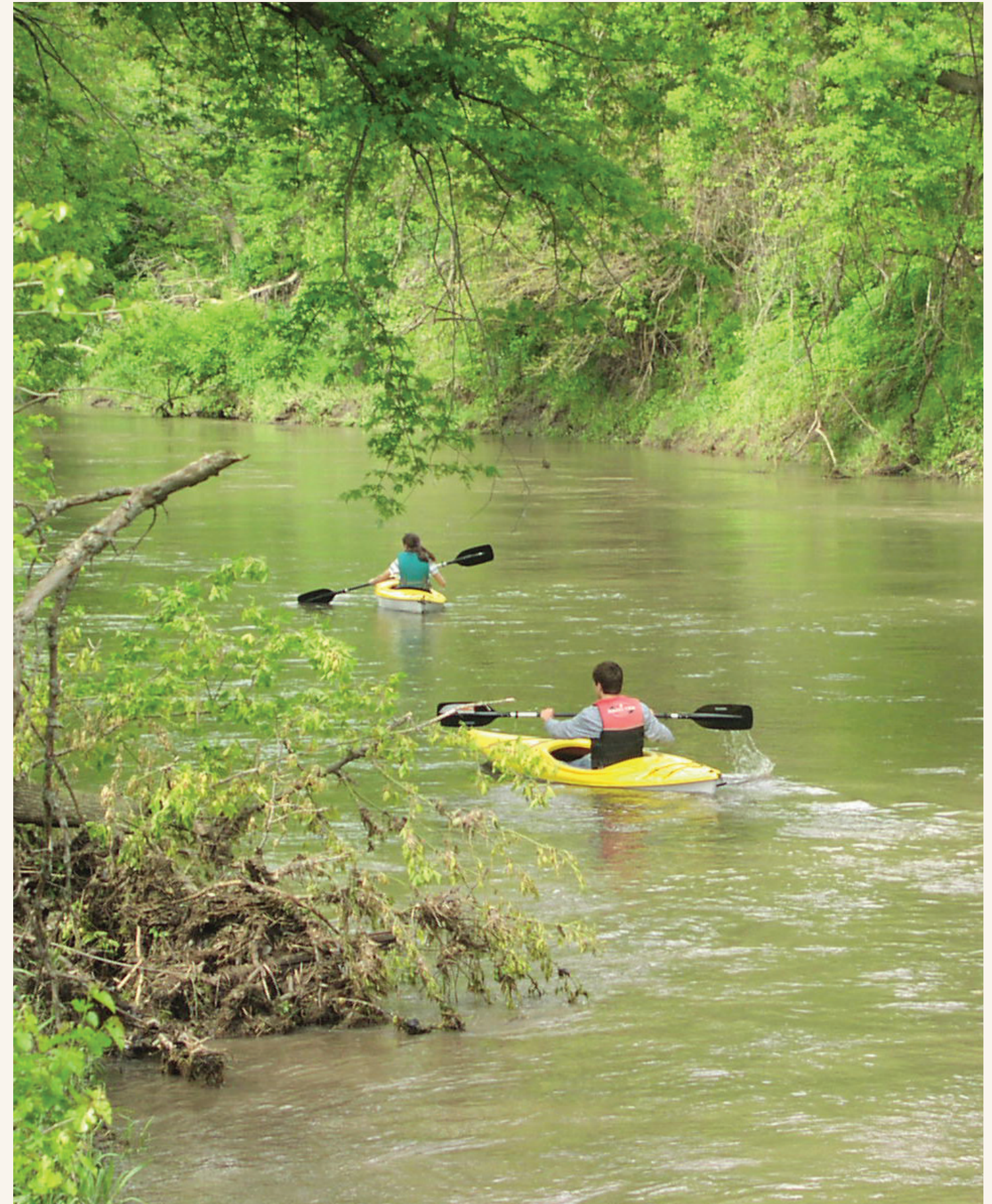
Figure 6. Priorities, Appreciation and Issues from within Shelby County Local feedback on the water trail route demonstrated appreciation for the resource, and the desired changes noted are very attainable including the issues of concern.

Table 9 illustrates survey responses to potential outcomes of this water trail plan. The outcomes with the highest weighted average score are those identified as most important to the highest number of people. The lowest weighted average scores are those identified as less important by participants. Recreation-related outcomes such as construction of new accesses were important to participate but water quality and habitat-related elements were even more important.

Potential Outcome of Water Trail Plan	Weighted Average Score
Enhance water quality in the river	3.7
Improve habitat for fish and other aquatic animals	3.6
Support public river clean up event to remove trash from the river	3.6
Restore eroding streambanks	3.5
Develop a new river access / boat ramp in Harlan	3.4
Promote additional in-stream fish habitat structures in conjunctions with local anglers and Iowa DNR	3.2
Improve the existing Reinig Access / boat ramp north of Harlan	3.2
Build a new river access / boat ramp in southern Shelby County near the county line	3.2
Build a new river access / boat ramp at Nishna Bend Recreation Area	3.2
Build new fishing access points on the West Nishnabotna River	2.9

Table 9. Participants ranked the importance of each potential outcome on a scale of 1 to 4. Rankings were multiplied by the number of participants selecting them to develop a weighted average ranking score for the group.

From a recreational use standpoint, establishing the river access in Harlan ranked the highest with all other proposed access construction or improvements ranking slightly lower. The steering group prioritized the recreational recommendations utilizing these scores as well as information they had on potential sources of funding to pay for the improvements. Prioritizations are included below with the description of each recommendation.





WATER TRAIL PLAN RECOMMENDATIONS

Four types of recommendations are included: river management, recreational development, natural resource enhancement, and outreach. Each addresses needs identified during planning.

River User Management Recommendations

R 1 On-Water Rescue Capacity

Four types of recommendations are included: river management, recreational development, natural resource enhancement, and outreach. Each addresses needs identified during planning.

R 2 Communication to Users

Enhanced communication with users before they get to the river is recommended. River users will feel better prepared for their experience with updated water trail maps; printed maps as well as downloadable pdf online versions are recommended.

R 3 Enhanced Communication between Water Trail Access Managers

A formalized system of communication is recommended between County Conservation staff and the City of Harlan. Regular communication can enhance coordination of water trail activities and issues and can result in more consistent, efficient and timely removal of sediment and debris from launches, inspect water trail signs, and other ordinary maintenance tasks.

Recreational Development Recommendations

Recreational infrastructure recommendations are located throughout Shelby County. Local prioritizations are included in each recommendation description. A priority of 1 indicates the highest priority and a ranking of 3 indicates the lowest.

R 4 Reinig Access Upgrade local priority ranking 3 out of 3 Lead jurisdiction: Shelby County Conservation

Reinig Access plays an important role in accessing the river in Shelby County. Improvements are recommended to bring the parking and launch up to current standards. Phase I archeological investigations will likely be required if improvements are made at this access.

R 5 New Harlan Access local priority ranking 1 out of 3 Lead jurisdiction: Shelby County Conservation

A 12' wide motorboat launch and parking is recommended at Nishna Bend. Also desired is enhanced angler access at the river edge. Construction plans have been developed and construction funding secured. The launch and parking will be located adjacent to the existing park shelter.





R 6

New Nishna Bend Recreation Area

Access: local priority ranking 1 out of 3

Lead jurisdiction: City of Harlan

A 12' wide motorboat launch and parking is recommended at Nishna Bend. Also desired is enhanced angler access at the river edge. Construction plans have been developed and construction funding secured. The launch and parking will be located adjacent to the existing park shelter.

R 7

Expand Camping at Nishna Bend Recreation Area:

local priority ranking 1 out of 3

Lead jurisdiction: Shelby County Conservation

Expansion of the existing camping spaces at Nishna Bend Recreation Area are desired to meet local demand.

R 8

New Access in Southern Shelby County:

local priority ranking 2 out of 3

Lead jurisdiction: Shelby County Conservation

A river access in southern Shelby County is highly desired to facilitate half-day paddles in the county. Construction of a new motorboat style of boat ramp is recommended. The location of this access has not yet been determined as there is no public land downstream of Nishna Bend Recreation Area. This access will greatly reduce the existing pattern of river users parking on gravel roads near bridges and trespassing on private land to reach the river edge. If the F66 bridge location is selected for this access, no further archeological investigations will likely be required for construction as this location has already been surveyed for construction of the bridge and the adjacent wellfield.

Natural Resource Enhancement Recommendations

The local importance of enhancing the condition of natural resources was demonstrated in both forms of public outreach and in discussions with the steering group.

R 9

Support Water Quality Enhancement:

local priority ranking 1 out of 3

Support for water quality enhancement was the highest ranking outcome desired by survey participants. Steering group members understand, value, and support the work of agencies and organizations directly involved in water quality issues. They look for continued ways to support this work in Shelby County.

R 10

Restore Eroding Streambanks:

local priority ranking 3 out of 3

A 12' wide motorboat launch and parking is recommended at Nishna Bend. Also desired is enhanced angler access at the river edge. Construction plans have been developed and construction funding secured. The launch and parking will be located adjacent to the existing park shelter.

R 11

Investigate Additional Fish Habitat Potential:

local priority ranking 1 out of 3

Providing enhanced habitat conditions for fish is important in Shelby County. The steering group is interested in investigating what potential in-stream habitat practices might be suitable in the county. Iowa DNR fisheries biologists often provide this type of information, and they understand the fish population and river condition.

Outreach Recommendations

R 12

Support Public River Cleanup Events:

local priority ranking 1 out of 3

Trash cleanups on the river are an excellent way to generate interest in the resource and practice good river stewardship. The cleanup of trash and large debris in the river has become a common, popular river activity in Iowa. Local organizations and individuals can organize public floats to collect this material and to arrange for proper disposal.

R 13

Coordinate Promotion and Marketing:

local priority ranking 1 out of 3

Engage with local economic development and tourism organizations to promote and market the water trail locally and regionally.

R 14

Promote Native Vegetation on Streambanks:

local priority ranking 1 out of 3

Promoting the planting of native vegetation buffers on the river is a high priority locally and was mentioned by multiple survey respondents.

Permitting Considerations

Some recommended elements require earthwork and other disturbance. As with all construction on and near rivers, multiple permits may be required prior to any disturbance. The following are expected:

- Local City and County ordinances or policies may require permitting processes for developing on a floodplain

- Joint permit application shared between the DNR flood plain development program, the DNR sovereign lands program, and the U.S. Army Corps of Engineers. Prior to, or at the time of applying for the joint permit, request an environmental review from Sovereign lands at the DNR, and specifically ask if a mussel impact survey is needed. The full permit can sometimes take 6 months or more.
- A Cultural Resources Desktop Evaluation has already been completed for all existing river access locations. As noted in the recommendation descriptions, one site, the Harlan Access, was not included in this Desktop Evaluation. One additional site, Reinig Access, will likely require a Phase I Field Survey prior to being cleared for construction by OSA.

Potential Partners, Funding Sources and Local Resources

Funding and development of each plan element is the responsibility of the lead jurisdiction with oversight from the water trail sponsor. A number of local and state partner organizations and agencies are organized and positioned to assist with development of individual plan elements.

Likely funding partners to supplement local funds include federal and state agencies and grant programs such as Resource Enhancement and Protection (REAP), State Low-Head Dam Public Hazard Program grants, State Water Trail grants, state and federal recreational trails program funding, regional Transportation Alternative Program funding, statewide Transportation Enhancements Program funding, the Land and Water Conservation Fund, Wildlife Conservation and Appreciation funds from U.S. Fish and Wildlife Service.

References

CARD - Center for Agricultural and Rural Development. (2010). Understanding the Usage Patterns and Most Desirable Characteristics of Iowa's Rivers and Streams. Ames, Iowa: Iowa State University.

Knauth, O. (1968, October 27). "The Once Idyllic Nishnabotna and What Man Has Done to It." Des Moines Sunday Register.

Schafer, Marlyn. Personal correspondence. (2012, March 31).

Thomas, John. Personal correspondence. (2015, September 28).

Wagner, M., & Hoogeveen, N. (2010). Iowa Water Trails: Connecting People with Water and Resources. Des Moines, IA: Iowa DNR

Appendices

APPENDIX A.

River Management Elements Relating To Water Trail Classification

	GATEWAY	RECREATIONAL	CHALLENGE	WILDERNESS
RIVER USER SAFETY	Public communication describes river and access conditions, and identifies appropriate skill level for segment.			
	Emergency action plan is recommended, and includes egresses including private lane accesses with land owner's approval . Plan is communicated among landowners and responders; E911 communication framework for locating distraught users established	Emergency action plan recommended and communicated among landowners and responders; E911 communication framework for locations established		
RIVER USER BEHAVIOR	Water trail sponsor locally leads in litter control, etiquette, and promotes safety education and enforcement programs and campaigns. Trash receptacles available at controlled settings.	Water trail sponsor participates in litter control, etiquette, and safety education and enforcement programs and campaigns		
	Law enforcement is briefed in dealing with problem users	Law enforcement presence is occasionally visible and law enforcement is briefed in dealing with problem users	Law enforcement presence rarely visible; however, law enforcement may need to be briefed in dealing with problem users.	
	Leave No Trace ethic is encouraged through materials and literature.			
SERVICES	Explore managing liveries through the use of concessionaire agreements, fees, and conditions placed on operation.	Management of liveries through low-cost concessionaire agreements with some conditions placed on operation is encouraged.	Skilled guide services or instruction may be more appropriate than standard rental businesses. System to vet guides and/or instructors for use of public access may be considered for public safety.	Guide services may be more appropriate than standard rental businesses

APPENDIX B.

Water Trail Experience Classification Summary

	GATEWAY	RECREATIONAL	CHALLENGE	WILDERNESS
USER EXPECTATIONS	<ul style="list-style-type: none"> Most predictable experience; typically in a controlled urban setting A paired launch and landing with ramped, hard-surface or well-maintained compacted aggregate Slopes generally 12% or less on motorized boat ramps and 8% or less on side-walk or paths down to river's edge. Widths for boat ramps no less than 12' and side-walks or paths no less than 4'. A readily enjoyable setting that will be attractive to all users 	<ul style="list-style-type: none"> Less predictable experience; typically in a more rural setting Typically for users with intermediate skills, but can be for beginners, too. Varied settings Basic level of navigational aid available and hazard warnings (maps, signage, portages) 	<ul style="list-style-type: none"> User expects to manage risk in hands-on ways Good boat control necessary Launch and/or parking may be slightly to very difficult to use --Typically for users with advanced skills Basic level of navigational aid available and hazard warnings (maps, signage, portages) 	<ul style="list-style-type: none"> Some degree of solitude and wildlife viewing Padding endurance and skill required --Typically for users with intermediate to advanced skills Launch and parking areas can be very undeveloped in context with the setting Basic level of navigational aid available and hazard warnings (maps, signage, portages)
TYPICAL DEVELOPMENT GOALS	<ul style="list-style-type: none"> Exposing the greatest number of new users to water trails Appropriate for extended families and groups of friends Part-day trip opportunity Strong emphasis on building user confidence through signage and ultra-easy launch and parking Launches, parking, trails designed with Universal Design standards May include white water park or features, family tubing opportunities, specified angling areas, etc. 	<ul style="list-style-type: none"> Offers a typical Iowa water trail experience Part-day trip to Day-trip opportunity Family and group experiences Access points may be less developed compared with Gateway experience Access surfaces may not be as stable as Gateway Some parking areas may be small or limited and parking surfaces may be gravel rather than cement 	<ul style="list-style-type: none"> Day- and multi-day-trip opportunity Low-impact access development may result in more difficult movement from parking to launch: steep slopes, tight turn on trails, or long distances from parking to launch 	<ul style="list-style-type: none"> Day- and multi-day-trip opportunity Less development, more restoration and protection of habitats May include parking in already impacted areas, rustic launches, and rustic remote campsites Low-impact practices required in all water trails-related construction
ACCESSES	≤ 6 miles apart	>5 miles	Varies	>9 miles
AMENITIES <small>such as restrooms, running water, picnic areas, camping</small>	<ul style="list-style-type: none"> Often available at accesses Liveries and shuttles likely available 	<ul style="list-style-type: none"> May be available but usually not as developed Liveries, shuttle desirable but usually not available 	<ul style="list-style-type: none"> May be available but usually not encouraged Guided experiences may be encouraged 	<ul style="list-style-type: none"> Any facilities present, such as remote campsites, are minimal, primitive, and without signage Guided experiences may be encouraged over rental