



**CONSERVATION PLAN #237
FOR THE RAINBOW MUSSEL**

**GRUNDY COUNTY HIGHWAY V27 OVER COLLINS RUN CREEK
GRUNDY COUNTY, ILLINOIS**

Prepared for
ILLINOIS DEPARTMENT OF NATURAL RESOURCES

Prepared on behalf of
GRUNDY COUNTY HIGHWAY DEPARTMENT

APRIL 2022

Prepared by
Hutchison
Engineering, Inc.



Illinois Department of Natural Resources
CONSERVATION PLAN
(Application for an Incidental Take Authorization)
Per 520 ILCS 10/5.5 and 17 Ill. Adm. Code 1080

150-day minimum required for public review, biological and legal analysis, and permitting

PROJECT APPLICANT: *GRUNDY COUNTY HIGHWAY DEPARTMENT*

PROJECT NAME: *COUNTY HIGHWAY V27 OVER COLLINS RUN CREEK*

COUNTY: *GRUNDY COUNTY*

AMOUNT OF IMPACT AREA: *0.58 ACRE OF COLLINS RUN CREEK*
 COLLINS RUN CREEK IN THE VICINITY OF THE
 PROPOSED BRIDGE REPLACEMENT ON COUNTY
 HIGHWAY V27.

The incidental taking of endangered and threatened species shall be authorized by the Illinois Department of Natural Resources (IDNR) only if an applicant submits a conservation plan to the IDNR Incidental Take Coordinator that meets the following criteria:

1. A **description of the impact likely to result** from the proposed taking of the species that would be covered by the authorization, including but not limited to -

A) Identification of the **area to be affected** by the proposed action, include a legal description and a detailed description including street address, map(s), and GIS shapefile. Include an indication of ownership or control of affected property. Attach photos of the project area.

The project construction area involves the superstructure replacement of the structure on Grundy County Highway V27 (Brisbin Road) over Collins Run Creek. The structure is located approximately 0.3 miles north of Interstate 80 at Exit 116, 2 miles west of the City of Channahon. The project is located on the section line of Sections 13 and 18 in Township 34N along the Range line of 7E and 8E of the 3rd Principal Meridian. The structure is included on the Minooka Quadrangle Topographic map and may also be located as Latitude 41.42528°N, Longitude 88.36505°W.

*The closest postal address to the project location is:
9520 N Brisbin Road, Morris, IL 60450.*

Grundy County has ownership of the roadway right of way through the project location. The existing right of way varies from 25 to 85 feet east of the centerline and 285 feet west of the centerline of County Highway V27. Proposed right of way from private property owners will not be necessary to complete the project.

Please see attached location map, topographic map, and project photographs. Electronic GIS shapefiles of the project area will also be submitted.

B) **Biological data** on the affected species including life history needs and habitat characteristics. Attach all pre-construction biological survey reports.

State-Listed Mussel Species: *A mussel survey was conducted in Collins Run Creek in the vicinity of the proposed structure rehabilitation on August 3-4, 2021. Among the live species collected was one state-endangered species, the Rainbow (Villosa iris). No live federally-listed species were collected. The state listed mussel species is described below.*

State-Listed Fish Species: *A fish survey was not conducted in Collins Run Creek in the vicinity of the proposed structure rehabilitation on August 3-4, 2021.*

The Aquatic Survey Report completed by the Illinois Natural History Survey is attached.

Rainbow Mussel (Villosa iris)

Habitat: *The species is found in small to medium rivers, in riffles along the edges of emerging vegetation. They favor areas with moderate to strong currents with gravel and sand substrates.*

Reproduction: *Rainbow mussels are short-term brooders. Females retain glochidia in their gills from May to August. Glochidia are released and temporarily parasitize a host fish. Rainbow glochidial host fish include rainbow darter (Etheostoma caeruleum), bluebreast darter (Etheostoma camurum), green sunfish (Lepomis cyanellus), smallmouth bass (Micropterus dolomieu), largemouth bass (Micropterus salmoides), and yellow perch (Perca flavescens).*

Population: *Rainbow mussel populations are shrinking due to heavy sediment loadings associated with river/water management and impacts from the invasive zebra mussel.*

Range in Illinois: *In Illinois, rainbow mussels have been found in the Vermilion River and Fox River basins.*

Incidental Take Authorizations: *The Department has 3 previously issued or pending Incidental Take Authorizations for rainbow mussel related to bridge projects in Vermilion and Kane Counties and an erosion control project in Vermilion County.*

C) **Description of project activities** that will result in taking of an endangered or threatened species, including practices and equipment to be used, a timeline of proposed activities, and any permitting reviews, such as a USFWS biological opinion or USACE wetland review. Please consider all potential impacts such as noise, vibration, light, predator/prey alterations, habitat alterations, increased traffic, etc.

The existing superstructure on Grundy County Highway V27 over Collins Run Creek will be rehabilitated and widened with new precast prestressed concrete deck beams. The initial construction activities will include removal of the existing bridge deck, supporting pier caps, and supporting abutment caps. The existing substructure including pier foundations and stems and abutment foundations will remain in place. The existing bridge deck is composed of individual precast concrete deck beams that will be removed individually with a crane. Removal of the deck beams from the center span will be over the channel of Collins Run Creek and may include minor debris falling into the creek.

Construction of the new bridge will begin with placement of a temporary crossing for Collins Run Creek. The temporary crossing will be necessary to move heavy equipment, materials, and personnel from one side of the creek to the other throughout construction. These temporary crossings are generally constructed with aggregate materials over temporary metal culvert pipes or concrete beams from existing or other structures supported by aggregate materials. For the

construction of this project, the Contractor shall construct the temporary crossing west of Brisbin Road on the upstream side of the structure and utilize a two span temporary crossing with multiple concrete beams, which will be removed from the existing structure, on piles of aggregate material. This method will not require pipe culverts to be placed in the stream and will allow for less disturbance of the stream. Please see attached general illustration of a temporary creek crossing that will most likely be used for construction of this project.

The construction of the temporary support system, bridge abutment caps and bridge deck should not have any impact on the channel of Collins Run Creek.

The construction of the temporary creek crossing has the potential to bury and crush mussel species within the footprint of the temporary crossing.

It is anticipated the project will be advertised for bid on the June 2022 IDOT letting and construction activities for this project commencing as early as September 1, 2022. This date is dependent on the approval of the ITA and relocation of any existing mussels from the construction area. Construction is scheduled to be complete by Spring 2023.

The U.S. Army Corp of Engineers has reviewed the project specifics for this structure replacement to determine compliance with Section 404 of the National Clean Water Act as a Linear Transportation Project. Their review considered cultural, historical, biological, and wetland resources as part of the Nationwide Permit Number 14 issuance. A copy of the Nationwide Permit #14 approval letter is attached.

D) Explanation of the anticipated adverse effects on listed species;

- How will the proposed actions impact each of the species' life cycle stages?

The Rainbow is a tachytictic breeder, with females brooding their young short-term, from May through August, which is the height of construction season, before they are released as glochidia (Baker 1928). Once the glochidia are expelled from the female's gills, they attach to fish gills or fins by clamping onto them with their valves. The glochidia live as parasites on the host fish until they develop into juvenile mussels, at which point they detach from the fish and fall to the streambed as free-living mussels. The mussel will then burrow into the soft streambed and remain there unless flooding events scour the streambed and relocate the mussel.

If not relocated, mussels would likely be buried or otherwise crushed or killed by construction activities. The potential adverse impacts would result from constructing the temporary creek crossing, removal of the existing deck beams and bridge pier caps, and construction of the new pier caps.

It will be especially important to relocate female Rainbow mussels from the construction footprint as they will be brooding their young during the construction timeframe.

- Describe potential impacts to individuals and the population. Include information on the species life history strategy (life span, age at first reproduction, fecundity, recruitment, survival) to indicate the most sensitive life history stages.

The largest potential impact to individual mussels and the population in general will be from crushing during the construction of the temporary creek crossing. If all of the mussels are not relocated from the footprint of the temporary crossing, there is the potential they

will be buried under several feet of embankment material used to build the temporary crossing.

There is also the possibility of the construction operations increasing the turbidity of the water downstream of the construction process. Construction of the temporary creek crossing, removal of the existing bridge deck and pier caps, and construction of the proposed bridge pier caps will all require some amount of activity in the creek channel. These operations will be minimized as much as possible, but are unavoidable for the construction of the proposed bridge.

- Identify where there is uncertainty, place reasonable bounds around the uncertainty, and describe how the bounds were determined. For example, indicate if it is uncertain how many individuals will be taken, make a reasonable estimate with high and low bounds, and describe how those estimates were made.

The direct footprint of the proposed construction project includes an area 75 feet long and 92 feet wide. The 75-foot length is along the creek channel from proposed construction limits. The 92-foot width is from creek bank to creek bank in between the existing bridge abutment locations. The indirect footprint of the proposed construction project may include the migration of some smaller construction pieces downstream during flooding events, as well as an increased turbidity of the water downstream of the construction project.

*The mussel survey conducted on August 3-4, 2021 recovered 119 live mussels from a 102-foot length of Collins Run Creek directly under and adjacent to the structure to be replaced. The 119 live mussels included three (3) live Rainbow mussel (*Villosa iris*). It is uncertain how many live Rainbow mussels may be taken as part of this construction project; however, a reasonable estimate would be one (1) to five (5) live Rainbow mussels.*

2) Measures the applicant will take to **minimize and mitigate** that impact and the **funding** that will be available to undertake those measures, including, but not limited to -

A) Plans to **minimize the area affected** by the proposed action, the estimated **number of individuals** of each endangered or threatened species that will be taken, and the **amount of habitat** affected (please provide an estimate of area by habitat type for each species).

The construction of a temporary channel crossing, most likely on the upstream side of the structure, is necessary for the movement of heavy equipment from one end of the project to the other. The footprint area of this crossing will be minimized as much as possible, and the duration of the temporary channel crossing will be minimized as much as possible.

*The mussel survey conducted on August 3-4, 2021 recovered 119 live mussels from a 102-foot length of Collins Run Creek directly under and adjacent to the structure to be replaced. The 119 live mussels included three (3) live Rainbow mussel (*Villosa iris*). It is uncertain how many live Rainbow mussels may be taken as part of this construction project; however, a reasonable estimate would be one (1) to five (5) live Rainbow mussels.*

The temporary channel crossing will impact an area of approximately 1,800 square feet of silty / sandy streambed habitat. This will be a temporary impact as the crossing will be removed as part of the construction process.

B) Plans for management of the area affected by the proposed action that will **enable continued use** of the area by endangered or threatened species by maintaining/re-establishing suitable habitat (for example, native species planting, invasive species control, use of other best management practices, restored hydrology, etc.).

During construction, the adjacent areas of land will contain erosion and sediment control features. The IDOT erosion and sediment control policy will be followed and the project will be in compliance with Section 404 of the Clean Water Act as regulated by the U.S. Army Corp of Engineers, the water quality certification policies of the Illinois EPA, and the requirements of the NPDES construction permit. All work in the channel is temporary. It is expected, after the in-stream work is completed, the area will be available for recolonization by all species of mussels.

C) Description of all measures to be implemented to avoid, minimize, and mitigate the effects of the proposed action on endangered or threatened species.

- Avoidance measures include working outside the species' habitat.
- Minimization measures include timing work when species is less sensitive, reducing the project footprint, or relocating species out of the impact area.
- Mitigation is additional beneficial actions that will be taken for the species such as needed research, conservation easements, propagation, habitat work, or recovery planning.
- It is the **applicant's responsibility to propose mitigation measures**. IDNR expects applicants to provide species conservation benefits 5.5 times larger than their adverse impact.

Completely avoiding effects to the Rainbow mussel and general mussel population in the construction footprint will be next to impossible. A temporary creek crossing will need to be installed for the contractor to mobilize from one side of the creek to the other throughout the construction process. However, as much as possible, the construction of the new bridge pier caps will be done with minimal disturbance to the existing creek bottom.

The current plan to minimize the effects of the construction project on the Rainbow mussel is to relocate all mussel species from the project footprint immediately before construction begins. The project is currently scheduled to be advertised on the June 2022 IDOT letting and construction processes beginning as soon as September 1, 2022. The relocation of all live mussels from the project area will take place during July or August 2022 depending on weather and creek conditions.

A moving transect method of mussel collection will be utilized during the relocation process. Transects of one meter (3.28 ft) in width will be established perpendicular to the stream flow from downstream to upstream within the area of direct impact from the project plus a buffer zone. The total area sampled will be at least 31 meters (102 ft) in length centered upon the midpoint of the bridge. The creek bottom will be disturbed to approximately two inches deep to uncover any buried mussels. The temporary holding of mussels will be in containers that allow the mussels to remain moist and uncrowded. All mussel relocation protocols will be followed. IDOT will be responsible to coordinate the mussel relocation.

The best relocation area will be determined by the team performing the relocation efforts. The team may use the same one utilized during the initial mussel salvage survey conducted on August 3-4, 2021. This relocation area is approximately 300 yards downstream of the project location. The relocation area contains similar substrate and habitat as the project

location. The relocation area also contains similar native mussel communities as to what was collected from the project location during the initial mussel salvage survey.

The project cost savings which are realized by not placing stone riprap and filter fabric in the creek bottom will be used as a compensatory payment for the conservation of the Rainbow mussel. This payment will be made by Grundy County to the Illinois Wildlife Preservation Fund to be earmarked for the conservation and protection of the Rainbow mussel. The project cost savings are estimated to be \$5,600.00. The compensatory payment to the Illinois Wildlife Preservation Fund will be in the amount of \$5,600.00.

D) Plans for **monitoring** the effects of the proposed actions on endangered or threatened species, such as monitoring the species' survival rates, reproductive rates, and habitat before and after construction, include a plan for follow-up **reporting to IDNR**. Monitoring surveys should be targeted at reducing the uncertainty identified in Section 1.d.

INHS will conduct follow up mussel surveys under the new bridge and at the relocation site at one year and five years after the construction project is complete. The INHS reports will be forwarded to the IDNR and IDOT.

E) **Adaptive management practices** that will be used to deal with changed or unforeseen circumstances that may affect the endangered or threatened species.

- Adaptive management is a way to make decisions in the face of uncertainty by monitoring the uncertain element over time and adjusting to the new information. Adaptive management requires identifying objectives and uncertainties, thinking through a range of potential outcomes, developing triggers that will lead to different actions being taken, and monitoring to detect those triggers.
- Consider environmental variables such as flooding, drought, and species dynamics as well as other catastrophes. Management practices should include contingencies and specific triggers. Note: Not foreseeing any changes does not qualify as an adaptive management plan.

Mussel relocation is dependent on the flow and volume of water in the creek at the time of the mussel salvage and relocation operations. If the flow is swift and / or the water levels are high, the relocation effort will not take place and the instream work of the construction project will be delayed. Mussel relocation will occur only when water levels are low and stream current / flow conditions are moderate or low.

The mussel relocation area will be carefully screened to assure the habitat is suitable for the transported mussels. Risks of external threats to the relocation area (siltation, chemical spills, etc.) will be evaluated and minimized.

The project proposal is to rehabilitate the existing superstructure components of the bridge at this location. There is a very slight chance of complete structure failure during the removal process. The existing structure is composed of precast, prestressed concrete deck beams. These beams form the bridge superstructure and driving surface all in one. These beams will be removed one at a time by crane and transported away from the project site. There is a slight possibility one, or multiple, beams could fall into the creek during the removal process. Procedures will be taken to quickly and completely remove the beam(s) from the creek.

The existing concrete pier caps will also be completely removed. These cast in place concrete features will likely be pulled and broke over or cut off for removal. The concrete and steel rebar

debris will be collected and removed from the project site. There is a possibility that during removal the pier cap could fall into the creek. Procedures will be taken to quickly and completely remove the materials from the creek.

Instructions will be added to the General Notes on the plan sheets to avoid dropping materials into Collins Run Creek. Instructions will also be added to quickly and completely remove any and all material that does fall into Collins Run Creek.

F) Verification that adequate funding exists to support and implement all minimization and mitigation activities described in the conservation plan. This may be in the form of bonds, certificates of insurance, escrow accounts, or other financial instruments adequate to carry out all aspects of the conservation plan.

Grundy County will enter into a federal aid agreement with the State of Illinois, Department of Transportation, for the construction and observation of this project. Approval of the agreement and expenditure of the federal funding is contingent upon the county, and contractor, following the approved Conservation Plan.

3) A description of **alternative actions** the applicant considered that would reduce take, and the reasons that each of those alternatives was not selected. A **“no-action” alternative** shall be included in this description of alternatives. Please describe the economic, social, and ecological tradeoffs of each action.

- Consideration of **alternative actions** is an important tool in conservation planning as it allows for thinking of other options and evaluating the potential outcomes in terms of all relevant objectives. However, to be useful it requires creativity in developing alternatives and systematic analysis in evaluating the alternatives.
- In evaluating alternatives, describe the economic, social, and ecological tradeoffs of each.

No Build Alternative

The only alternative that would not result in the possibility of taking a state listed species is the “no build” alternative. However, this would result in leaving a structure which is functionally obsolete and structurally deficient in place to the traveling public. The structure has a sufficiency rating of 34.5 out of 100. A new structure is needed for the safe passage across Collins Run Creek for the residents of Grundy County, as well as to match the existing roadway cross section to the south and north. Leaving the existing structure in place will only result in more deterioration as time passes and potential weight and size restrictions on vehicles allowed to cross the structure. A structure posted with weight and size restrictions will have a negative impact on the agricultural community in this area. Forcing detours around this location for farming implements and loaded grain delivery trucks will have a negative impact on the economy in this area.

Three Span Structure Utilizing Existing Piers

This alternative would reconstruct the bridge superstructure (beams and deck surface) as well as the bridge abutment caps and pier caps, and leave the existing abutment and pier foundations in place. This alternative eliminates the removal process of the existing piers from the creek channel and the construction of new pier foundations (with cofferdams) in the creek channel. However, this alternative does not eliminate the need for a temporary creek crossing during the construction activities.

Three Span Structure With New Piers and Abutments

This alternative would completely reconstruct the bridge over Collins Run Creek at this location. This alternative includes removing the existing piers from the creek channel and constructing new bridge piers. This alternative requires the removal process of the existing piers from the creek, the construction of the

new pier foundations (with cofferdams) in the creek channel, and the need for a temporary creek crossing during the construction activities. This alternative would also require excavation of the creek channel and placement of fabric and riprap in the channel for scour protection of the new piers.

The three span structure utilizing existing piers was chosen for construction at this location to minimize construction cost and to minimize the amount of in-stream work in the creek channel.

4) Data and information to indicate that the proposed taking **will not reduce the likelihood of the survival** of the endangered or threatened species in the wild within the State of Illinois, the biotic community of which the species is a part, or the habitat essential to the species existence in Illinois.

Suitable habitat exists both upstream and downstream of the proposed bridge construction site in Collins Run Creek. This is evident as the relocation site for the mussel salvage conducted by INHS on August 3-4, 2021 was only 300 yards downstream of the proposed construction site. Due to the small area affected by construction of the new bridge and the relocation of the mussels from areas to be affected by construction activities, it is expected the Rainbow mussel will continue to exist in this reach of Collins Run Creek.

It should also be noted there are other populations of the Rainbow mussel located in Illinois that will not be affected by this project. Therefore, this project should not affect the survivability of the species in the wild in Illinois.

5) An **implementing agreement**, which shall include, but not be limited to (on a separate piece of paper containing signatures):

A) Names and signatures of all participants in the execution of the conservation plan;

B) The obligations and responsibilities of each of the identified participants with schedules and deadlines for completion of activities included in the conservation plan and a schedule for preparation of progress reports to be provided to the IDNR;

C) Certification that each participant in the execution of the conservation plan has the legal authority to carry out their respective obligations and responsibilities under the conservation plan;

D) Assurance of compliance with all other federal, State and local regulations pertinent to the proposed action and to execution of the conservation plan;

E) **Copies of any final federal authorizations for a taking already issued to the applicant**, if any.

Please see the attached Implementing Agreement.

**PLEASE SUBMIT TO: Incidental Take Authorization Coordinator, Illinois Department of Natural Resources, Division of Natural Heritage, One Natural Resources Way, Springfield, IL, 62702
OR DNR.ITAcordinator@illinois.gov** July 2016

Implementing Agreement
For
Incidental Take Authorization

Grundy County
County Highway V27 (Brisbin Road) over Collins Run Creek

The Grundy County Highway Department will be responsible for the activities related to the County Highway V27 (Brisbin Road) over Collins Run Creek bridge rehabilitation project. Grundy County, in conjunction with the Illinois Department of Transportation, will oversee the activities of the contractor. The project is scheduled to be advertised on the June 2022 IDOT letting, and construction could begin as early as September 1, 2022. This date is dependent on the approval of the ITA and relocation of any existing mussels from the construction area. Construction is scheduled to be complete by Spring 2023. Once the construction project is complete, a report will be submitted to the IDNR summarizing all activities that occurred prior to the commencement of monitoring activities.

As part of the project implementation, Grundy County pledges to contribute \$5,600.00 to the Illinois Wildlife Preservation Fund to be earmarked for the conservation and protection of the Rainbow mussel (*Villosa iris*).

Coordination of this project has taken place with the following agencies:

1. U.S. Army Corp of Engineers
2. U.S. Fish & Wildlife Service
3. Illinois Environmental Protection Agency
4. Illinois Department of Natural Resources
5. Illinois Historic Preservation Agency
6. Illinois Department of Transportation

The U.S. Army Corp of Engineers has issued a Nationwide Permit #14 for Linear Transportation Projects under Section 404 of the National Clean Water Act for the proposed project. A copy of the Nationwide Permit #14 approval letter is attached.

Grundy County certifies it has the authority to complete the construction project and to address the items proposed in the Conservation Plan in the event state listed threatened, or endangered, species are encountered during construction. Grundy County, in conjunction with the Illinois Department of Transportation, will be in responsible charge of the construction project and will assure all applicable federal and state laws will be adhered to during the completion of the project.

Grundy County Board Chairman

Date

Public Notice

Pursuant to Title 17, Chapter 1, Section 1080 of the Illinois Administrative Code, notice is hereby given the Grundy County Highway Department, 245 N. Illinois Route 47, Morris, Illinois 60450, has submitted a Conservation Plan to the Illinois Department of Natural Resources to apply for authorization for the taking of the Rainbow Mussel (*Villosa iris*) incidental to the rehabilitation of the structure on Grundy County Highway V27 (Brisbin Road) over Collins Run Creek.

The project is located in Grundy County, Illinois. The bridge rehabilitation is located approximately 0.3 mile north of Interstate 80 Exit 116, 2 miles west of the City of Channahon, on County Highway V27 (Brisbin Road) over the Collins Run Creek.

The project consists of rehabilitation and widening of the structure over Collins Run Creek. Take of the Rainbow Mussel may result during the project as a result of the work. The Rainbow Mussel is protected under the Illinois Endangered Species Act (520 ILCS 10) and is known to occur within the vicinity of the project.

In order to minimize and mitigate for the take of the Rainbow Mussel incidental to the bridge rehabilitation on County Highway V27 over Collins Run Creek, a mussel salvage survey will be conducted immediately prior to construction with all mussels collected and moved to a similar suitable habitat within Collins Run Creek. The mussel salvage survey will be completed within Collins Run Creek for a distance in excess of the construction limits. The existing bridge pier supports will remain to minimize construction activities within the creek. Finally, no stone rip rap will be required in the creek bed under the rehabilitated bridge in order to maintain a natural, silty, creek bottom.

A copy of the project Conservation Plan is available for inspection by the public at the Three Rivers Public Library District – Minooka Branch, 109 North Wabena Avenue, Minooka, Illinois 60447. The Conservation Plan is also available on the Illinois Department of Natural Resources Incidental Take Authorization website under ITA #237, accessed at:

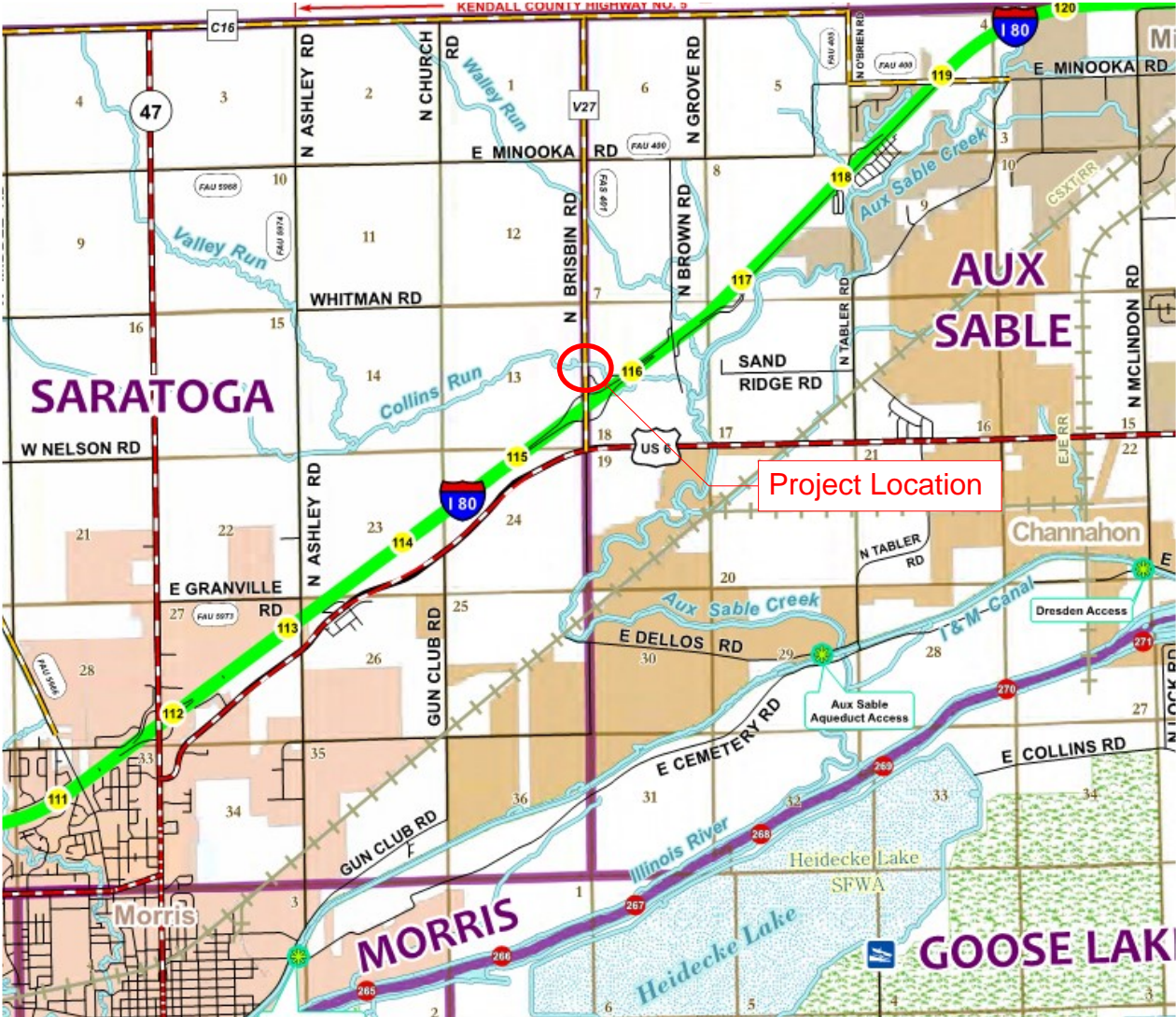
<https://www2.illinois.gov/dnr/conservation/NaturalHeritage/Pages/Incidental-Take-Authorizations.aspx>

Comments pertaining to the Conservation Plan should be sent to:

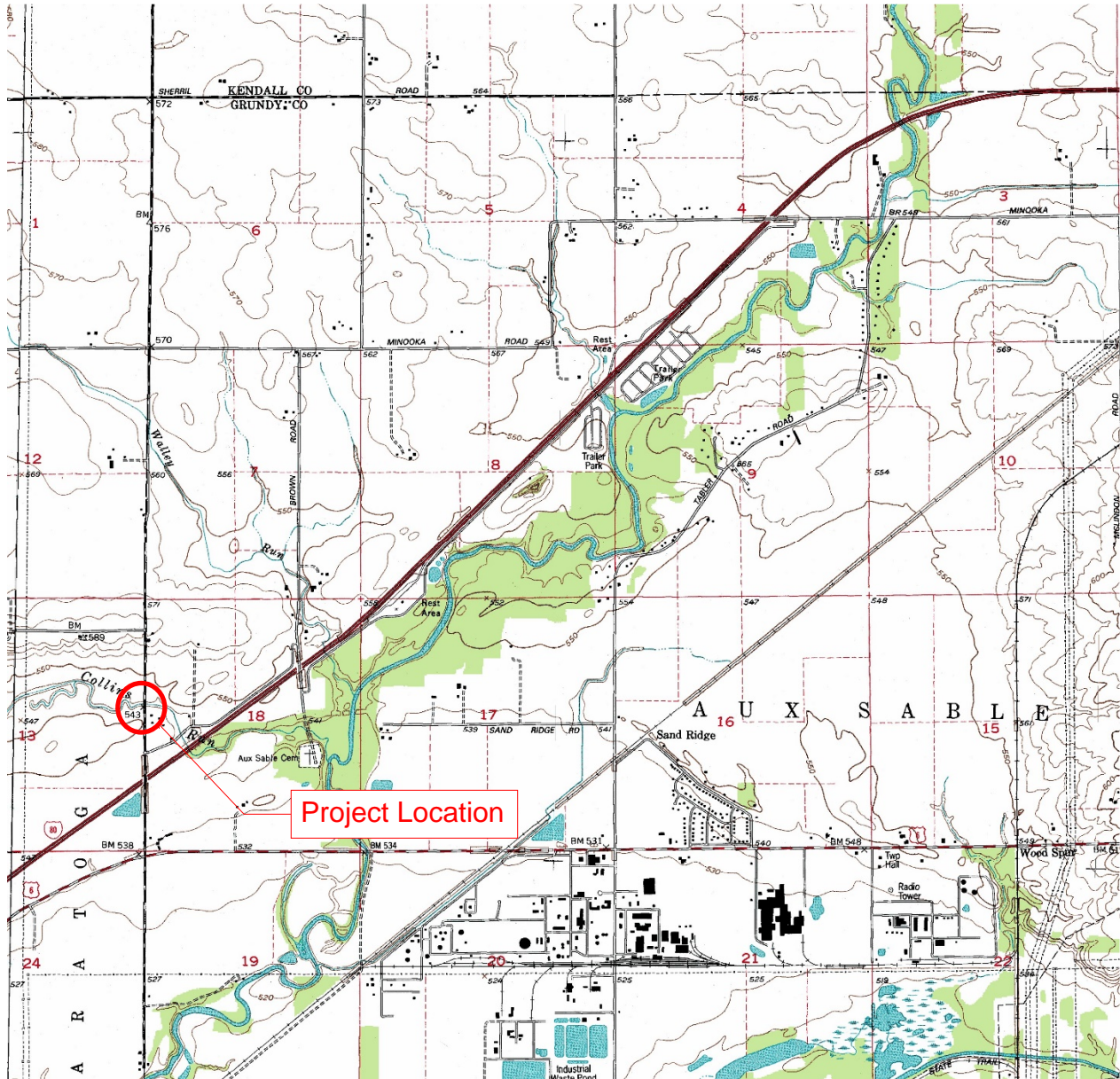
Illinois Department of Natural Resources
Office of Resource Conservation
Endangered Species Program
Incidental Take Authorization Coordinator
One Natural Resources Way
Springfield, IL 62702-1271
(217) 557 – 8243
DNR.ITAcoordinator@illinois.gov

Comments will be accepted through **TBD**.

Location Map
CH V27 (Brisbin Road)
Over Collins Run Creek (SN 032-3911)
Section 19-00177-00-BR



USGS Location Map
CH V27 (Brisbin Road)
Over Collins Run Creek (SN 032-3911)
Section 19-00177-00-BR



CH V27 (Brisbin Rd.) over Collins Run

Project Photos



Brisbin at Collins Run, Looking North



Brisbin at Collins Run, Looking South



Brisbin at Collins Run, Looking West



Brisbin at Collins Run, Looking East



1000' Downstream - Looking West



100' Downstream, Looking West



Just Downstream - Looking NW



Just Downstream, Looking SW



1000' Upstream, Looking SE



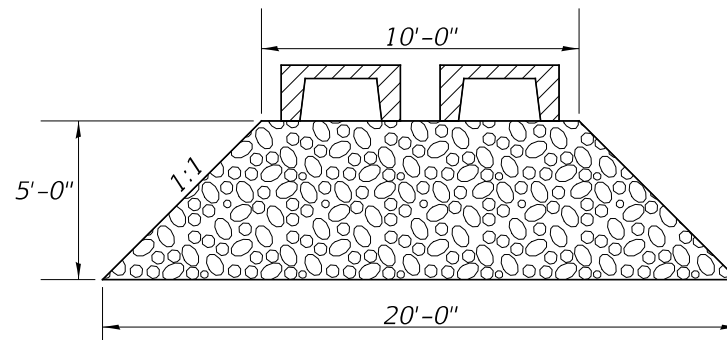
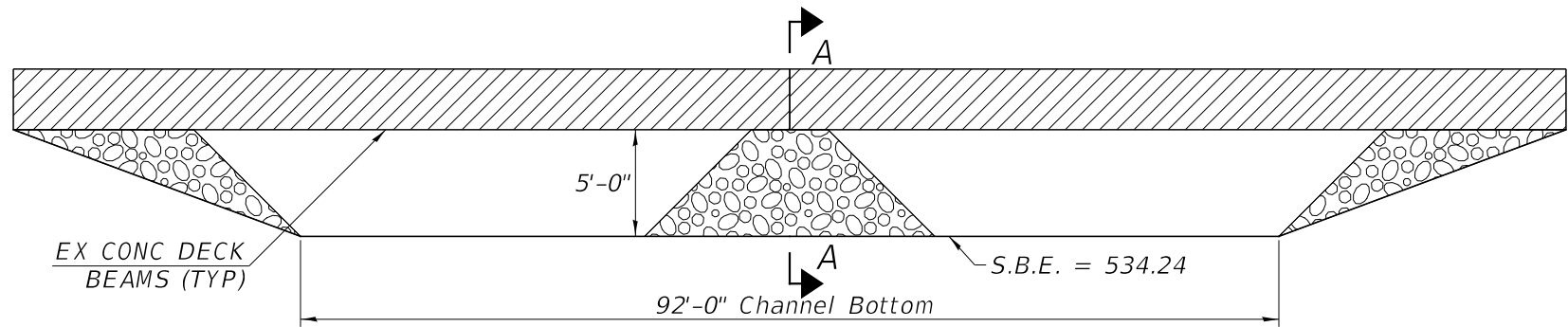
100' Upstream, Looking East



Just Upstream, Looking East



Just Upstream, Looking SE



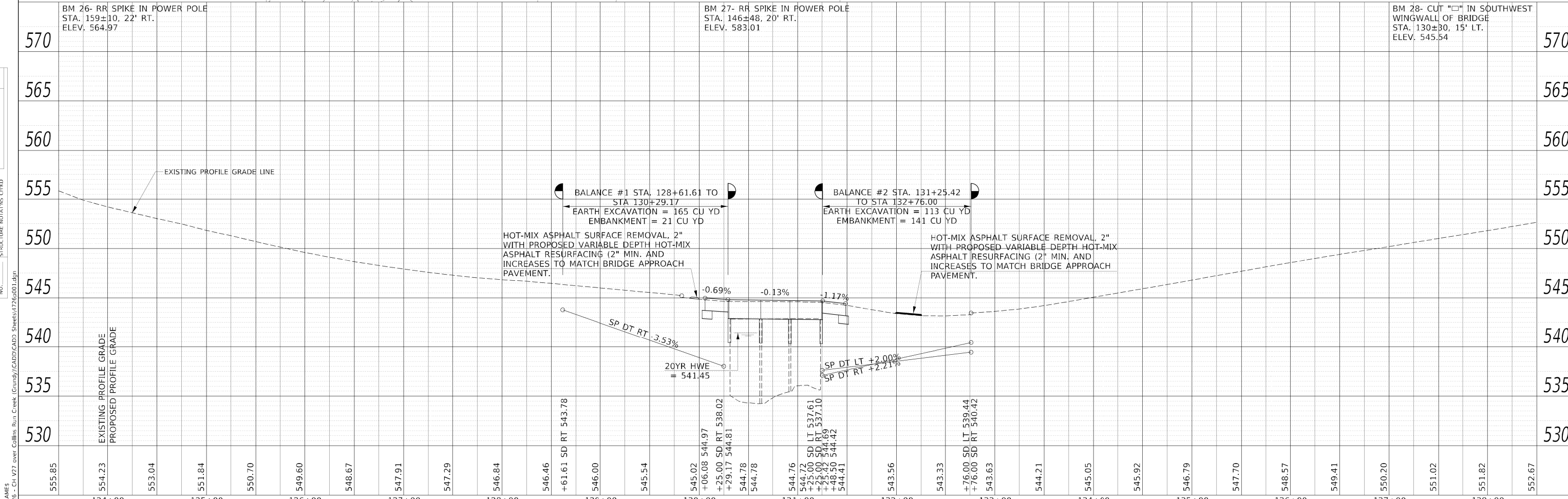
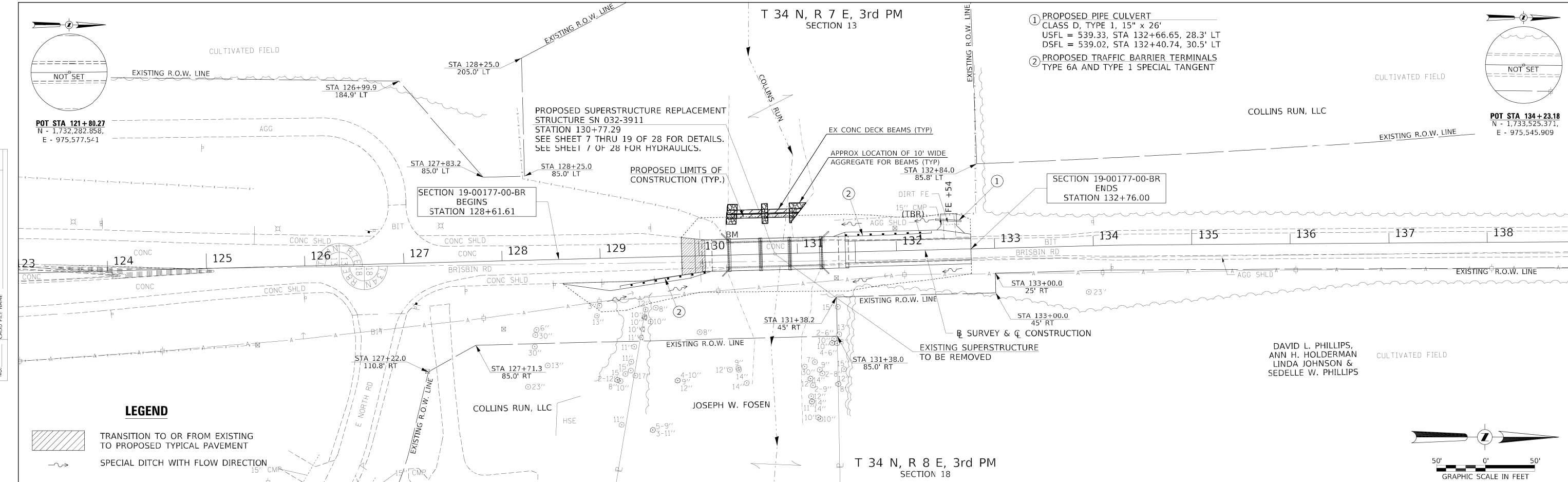
SECTION A-A

GRUNDY COUNTY
SEC. 19-00177-00-BR

TYPICAL TEMPORARY
CROSSING TO BE USED
ONLY DURING CONSTRUCTION

DATE	
BY	
PLAN	
SURVEYED	
PLOTTED	
ALIGNMENT CHECKED	
GRADES CHECKED	
STRUCTURE NOTATIONS CHECKED	
NOTE BOOK NO.	
CADD FILE NAME	

DATE	
BY	
PROFILE	
SURVEYED	
PLOTTED	
GRADES CHECKED	
STRUCTURE NOTATIONS CHECKED	
NOTE BOOK NO.	
CADD FILE NAME	



MODEL: SHORLNAME	USER NAME = BNeibel	DESIGNED - BAN	REVISED -	GRUNDY COUNTY CH 27 (BRISBIN RD) OVER COLLINS RUN	PLAN AND PROFILE SCALE: 1"=50' SHEET NO. 1 OF 1 SHEETS STA. 128+61.61 TO STA. 132+76.00	F.A.U. RTE. 401	SECTION 19-00177-00-BR	COUNTY GRUNDY	TOTAL SHEETS 28	SHEET NO. 6
FILE NAME: V:\2726 - Ch 27 over Collins Run Creek (Grundy)\CADD\CAD3 Sheets\2726001.dgn	PLOT SCALE = 100.0000' / in.	CHECKED - BAN	REVISED -			FED. ROAD DIST. NO. 7	ILLINOIS	FED. AID PROJECT NO. 48WY(452)		
	PLOT DATE = 2/8/2022	DATE - 11/02/2021	REVISED -			CONTRACT NO. 87768				

**Freshwater Mussel Relocation in Collins Run
(Illinois River Basin) at the Brisbin Road (FAU 401)
Bridge in Grundy County, Illinois**

IDOT Sequence Number 23427



Prepared by:
Alison P. Stodola

INHS/IDOT Statewide Biological Survey & Assessment Program
2021:35

18 August 2021



PROJECT SUMMARY

This report is submitted in response to a request from IDOT to INHS for a freshwater mussel relocation in Collins Run (Illinois River drainage) at the Brisbin Road (FAU 401) bridge (IDOT Sequence No. 23427) in Grundy County, Illinois. The mussel relocation was completed by INHS personnel on 3-4 August 2021.

During this relocation, freshwater mussels were collected by completing 31 multiple-pass 3.28 ft-wide transects over a 102-ft-long stretch of the stream directly under the Brisbin Road (FAU 401) bridge. Nine species of mussels were collected from the area under the Brisbin Road bridge and relocated downstream to a recipient area with suitable habitat and a diverse native mussel community similar to that present under the bridge.

We also collected and recorded the presence of Rainbow (*Villosa iris*), which is listed as endangered in Illinois. Rainbow were returned to the area where they were collected.

Surveys Conducted By: Alison P. Stodola, Assistant Aquatic Field Biologist
Kathryn E. Conatser, Hourly Assistant
William E. Nixon, Hourly Assistant
Isabelle L. Hanson, Hourly Assistant
Aaron L. Devine, Hourly Assistant

Report Edited By: Mark J. Wetzel

GIS Layers: Janet L. Jarvis, GIS and Remote Sensing Specialist

University of Illinois
Prairie Research Institute
Illinois Natural History Survey
Statewide Biological Survey and Assessment Program
1816 South Oak Street
Champaign, Illinois 61820

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Cover Photo: Collins Run at the Brisbin Road (FAU 401) bridge, Grundy County, Illinois (Latitude 41.42525°N, Longitude 88.36504°W). Photo was taken from the northeast side of the bridge, facing upstream (west) on 3 August 2021. Photo by A.P. Stodola, INHS.

INTRODUCTION

This report is submitted in response to a request on 11 September 2021 by Vincent Hamer of the Illinois Department of Transportation (IDOT) to Rachel Vinsel of the Illinois Natural History Survey (INHS) for a freshwater mussel relocation in Collins Run at the Brisbin Road (FAU 401; Section 19-00177-00-BR; Structure No. 032-3911) bridge in Grundy County, Illinois [IDOT Sequence No. 23427, INHS Project No. FS-1492]. This reach of Collins Run is contained within the Aux Sable Reach on the Illinois Natural Areas Inventory (INAI) by the Illinois Department of Natural Resources (IDNR) Division of Natural Heritage due to specific suitable habitat for state-listed species or state-listed species relocations (Category II), and unusual concentrations of flora or fauna and high-quality streams (Category VI) (IDNR 2013; INAI 2020). The Grundy County highway department proposes substructure widening and superstructure replacement for the existing Brisbin Road (FAU 401) bridge over Collins Run.

In this report, we summarize the results of the freshwater mussel relocation conducted in Collins Run at the Brisbin Road (FAU 401) bridge by INHS personnel on 3-4 August 2021.

PROJECT AREA

The Brisbin Road project (FAU 401; Section 19-00177-00-BR; Structure No. 032-3911) is located on the Minooka Quadrangle U.S.G.S. Topographic map and occurs approximately 5 miles northeast of Morris in Grundy County, Illinois – on the border of Township 34N, Range 7E, Section 13 and Township 34N, Range 8E, Section 18 at Latitude 41.42525°N, Longitude 88.36504°W (**Figure 1**).

Appendix 1 references an Arc-GIS shapefile with sampling point information for the stream crossing discussed in this report.

HABITAT CHARACTERIZATION

During our site visit on 3-4 August 2021, Collins Run at the Brisbin Road (FAU 401) bridge was approximately 64 feet wide and 0.5 feet deep (ranged from 0.25 to 2.5 feet deep), with a flow of 0.1 feet/second. The entire relocation area was wadeable. Substrate in the relocation area was primarily silt (72%) with small amounts of boulder (1%), cobble (1%), gravel (3%), and sand (23%). The area directly under the bridge and upstream (west) of the bridge were heavily silted, likely from recent cattle ranching that occurred on the land just upstream of the bridge and from previous channelization of this stretch of Collins Run. Abundant, dense submerged aquatic vegetation (primarily American Waterweed – *Elodea canadensis*) was also present throughout the relocation area (**Figure 2**). Just downstream (east) of the relocation area, habitat in Collins Run was primarily a cobble-filled riffle with clear flowing water. Water levels during the relocation effort were at or below baseflow for this stream during this season. There were sections of the relocation area that were not suitable habitat for freshwater mussels, as these areas consisted of stagnant pools with silt layers deeper than one foot. Habitat quality appeared to increase with distance downstream of the bridge. An area approximately 300 yards downstream of the Brisbin Road (FAU 401) bridge was selected to receive the relocated mussels (i.e., recipient area) due to presence of suitable habitat (stable substrates, absence of dense silt or bedrock) and a diverse community of freshwater mussels (**Figure 3**).

BACKGROUND

Collins Run is a small tributary of Aux Sable Creek, which drains into the Illinois River in north-central Illinois. Collins Run is formed by the confluence of Saratoga Creek and Valley Run in Grundy County, and flows only four miles from its origin, approximately five miles northeast of Morris, to its confluence with Aux Sable Creek. The primary land use in the Collins Run drainage is row-crop agriculture, which has altered the natural flow and sinuosity of the creek in several areas (Illinois Environmental Protection Agency 2009; Stodola et al. 2013).

Freshwater mussels have been surveyed at two locations in Collins Run since 2000, including at the Brisbin Road (FAU 401) bridge (Tiemann and Cummings 2015; INHS Mollusk Collections Data 2021; **Table 1**). Sixteen species have been recorded from Collins Run. This reach of Collins Run is an INAI site due to presence of specific suitable habitat for state-listed species or state-listed species relocations (Category II) and unusual concentrations of flora or fauna and high-quality streams (Category VI) (IDNR 2013; INAI 2020). No listed species have been recorded in this stretch of Collins Run and all species known from Collins Run are common inhabitants of central Illinois streams (Cummings and Mayer 1992; Cummings and Mayer 1997; Tiemann et al. 2007). However, Illinois endangered Rainbow (*Villosa iris*) was recently discovered in 2018 in Valley Run at two locations: Sherrill Road and Minooka Road, which are 6 and 5 miles upstream of Brisbin Road, respectively (Illinois Endangered Species Protection Act [IESPA] 2020; INHS Mollusk Collections Data 2021).

METHODS

A relocation for freshwater mussels was conducted in Collins Run at the Brisbin Road (FAU 401) bridge on 3-4 August 2021 by INHS personnel A.P. Stodola, K.E. Conatser, A.L. Devine, I.L. Hanson, and W.E. Nixon.

Mussels were collected using a moving transect method to ensure that most animals were collected and relocated. Transects that were 3.28 feet (1 m) wide and ran perpendicular to stream flow were established within the area of direct impact. The area of direct impact consisted of a 102 foot (34 yards) long stream reach that was centered upon the midpoint of the bridge. During this relocation, 31 transects were established, and transects were sampled from downstream-most to upstream-most transect. Mussels were sampled within each transect using tactile and visual search methods. Substrates were disturbed to a depth of approximately 1.5 inches (4 cm) to uncover buried mussels and transects were searched at a rate that did not exceed 20 seconds/ft² (1 min/m²). Each transect was resampled until the subsequent pass no longer yielded $\geq 10\%$ of the total individuals collected in that transect. All non-listed mussels collected (i.e., those without state or federal listing status; U.S. Department of the Interior, Fish and Wildlife Service [USDI, FWS] 2020; IESPA 2020) were processed separately for each pass within each transect. Each non-listed mussel was identified to species, measured, and affixed with either a batch mark or a unique numbered tag and a passive integrated transponder (PIT) tag to facilitate detection during follow-up monitoring events. Any species on the Illinois endangered species list (IESPA 2020) were identified, measured, and returned to the area where they were collected. All mussels were held in mesh bags in the stream except during processing.

Due to the time-intensive sampling effort required to complete the moving transect method, this relocation occurred over a period of two days. A recipient area, Latitude 41.4243°N, Longitude 88.3625°W, was selected on the first day of the relocation effort based on the presence of suitable habitat (i.e., flowing water, absence of dense silt and absence of bedrock) and a diverse native mussel community that was similar to the community under the Brisbin Road (FAU 401) bridge. The recipient area was qualitatively surveyed for mussels for 0.5 person hours. All non-listed mussels collected were relocated to the recipient area after processing each day.

Nomenclature used for freshwater mussels discussed in this report follows Williams et al. (2017). Voucher material of mollusks collected were deposited in the Illinois Natural History Mollusk Collection and cataloged as INHS 91483 through 91488.

RESULTS AND DISCUSSION

On 3-4 August 2021, 119 live mussels representing nine live species were collected and relocated by INHS personnel from Collins Run in the relocation area at the Brisbin Road (FAU 401) bridge (**Table 1; Figure 4, 5; Appendix 2**). Six species were collected alive in the recipient area, Latitude 41.4243°N, Longitude 88.3625°W, during a 0.5 person-hour survey on 3 August 2021 (**Table 1**). Among the species collected in both the relocation area and the recipient area was the Illinois endangered Rainbow (**Figure 5**). Based on the range of size of individuals collected (**Appendix 2**), it appears that there is a reproducing population of Rainbow in this stream reach. All other mussels collected during the present relocation and survey of recipient area are common inhabitants of central Illinois streams (Cummings and Mayer 1992; Cummings and Mayer 1997; Tiemann et al 2007).

Thirty-one transects (each 3.28 feet wide) were sampled. Wetted stream widths ranged from 59 to 71 feet and averaged 64 feet (**Appendix 3**). The total length of transects sampled was 1982.4 feet, which calculates to an area of 6505.4 ft². A total of 119 mussels were collected in the relocation area, thus density of freshwater mussels in the relocation area was 0.02 mussels/ft², or roughly 1 mussel for every 50 ft².

ACKNOWLEDGMENTS

INHS personnel Aaron L. Devine, Isabelle L. Hanson, Kathryn E. Conatser, and William E. Nixon assisted with field work. Janet L. Jarvis (INHS) prepared the map in **Figure 1** and the associated shape file referenced in **Appendix 1**, and Mark J. Wetzel edited early drafts of the report.

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Table 1. Freshwater mussel collections from Collins Run (INHS Mollusk Collections Data 2021. Mussels collected by INHS personnel on 3-4 August 2021 at the Brisbin Road (IDOT Sequence No. 23427; Section 19-00177-00-BR; Structure No. 032-3911) project area, Grundy County, Illinois, are bounded by a black border. SE= Illinois endangered

		----Brisbin Road bridge----		I-80 bridge	
		relocation transects	recipient area	2015	2003
<i>Alasmidonta marginata</i>	Elktoe	relict			relict
<i>Alasmidonta viridis</i>	Slippershell	relict		relict	relict
<i>Anodontoides ferussacianus</i>	Cylindrical Papershell			dead	relict
<i>Lasmigona complanata</i>	White Heelsplitter	dead		1	
<i>Lasmigona compressa</i>	Creek Heelsplitter			relict	
<i>Pyganodon grandis</i>	Giant Floater	6		1	dead
<i>Strophitus undulatus</i>	Creeper	2	1	dead	dead
<i>Amblema plicata</i>	Threeridge	35	1	34	dead
<i>Fusconaia flava</i>	Wabash Pigtoe	12		8	dead
<i>Lampsilis cardium</i>	Plain Pocketbook	2	2	3	dead
<i>Lampsilis siliquoidea</i>	Fatmucket	24	1	1	dead
<i>Leptodea fragilis</i>	Fragile Papershell				dead
<i>Obliquaria reflexa</i>	Threehorn Wartyback			dead	
<i>Potamilus alatus</i>	Pink Heelsplitter	1		dead	
<i>Toxolasma parvum</i>	Lilliput	relict		dead	
<i>Venustaconcha ellipsiformis</i>	Ellipse	34	1	8	dead
<i>Villosa iris</i> - SE	Rainbow	3	1		
Total Live Species		9	6	7	0
Total Species		13	6	14	11



Mussel relocation on Collins Run near Brisbin Road (Sequence no. 23427) Grundy County, Illinois.

- Project Boundary
- Mussel Relocation Area
- Mussel Recipient Area
- Stream

0 100 200 400 600 Feet



Figure 1. Collins Run project (IDOT Sequence No. 23427) at the Brisbin Road (FAU 401) bridge (Section 19-00177-00-BR; Structure No. 032-3911) site, Grundy County, Illinois, where a freshwater mussel relocation was conducted by INHS personnel on 3-4 August 2021.



Figure 2. Habitat at the Brisbin Road (FAU 401) bridge site in Grundy County, Illinois. Image was taken from the bridge on 3 August 2021, facing upstream (west), and shows dense American waterweed throughout the wetted area and fine sediment present upstream and under the bridge.



Figure 3. Habitat at recipient area in Collins Run, Grundy County, Illinois, at Latitude 41.4243°N, Longitude 88.3625°W on 4 August 2021. Image was taken facing upstream (west) and shows a cobble and gravel riffle. Photos by A.P. Stodola, INHS.



Figure 4. Representatives of species collected in Collins Run at the Brisbin Road (FAU 401) bridge, Grundy County, Illinois, by INHS personnel on 3-4 August 2021. In rows from left to right, starting at top left: Three ridge, Plain Pocketbook, Pink Heelsplitter, Fatmucket, Wabash Pigtoe, Creeper, Giant Floater, Ellipse, Rainbow (Illinois Endangered). Photos by A.P. Stodola, INHS.



Figure 5. Rainbow (*Villosa iris*) specimens collected from the relocation area in Collins Run at the Brisbin Road (FAU 401) bridge (Section 19-00177-00-BR; Structure No. 032-3911) site, Grundy County, Illinois. Photos by A.P. Stodola, INHS.

Appendix 1

Appendix 1: The appendix references an ArcGIS shapefile < 23427_Mussel_Survey_GIS.zip > with sampling point information for the stream crossing of Collins Run at the Brisbin Road (FAU 401) bridge (IDOT Sequence No. 23427; Bridge Section 19-00177-00-BR; Structure No. 032-3911), Grundy County, Illinois (Latitude 41.42525°N, Longitude 88.36504°W), where a freshwater mussel relocation was conducted by INHS personnel on 3-4 August 2021.

The ArcGIS shapefile and this report were both submitted to IDOT via the IDOT Site Assessment Tracking System extranet website (Frostycap) on 18 August 2021.

Appendix 2

Appendix 2: Raw mussel data associated with freshwater mussels collected in Collins Run at the Brisbin Road (FAU 401) bridge, Grundy County, Illinois, by INHS personnel on 3-4 August 2021.

Data collected during transects: mm=total length in mm of mussel; GRC=external growth ring count; Sex=Sex of mussel (if determinable).

Transect	Pass	Species	mm	GRC	Sex	Left tag	Right tag
1	1	<i>Amblema plicata</i>	93	8		glitter	
1	1	<i>Amblema plicata</i>	80	9		glitter	
1	1	<i>Amblema plicata</i>	85	9		glitter	
1	1	<i>Amblema plicata</i>	82	7		glitter	
1	1	<i>Fusconaia flava</i>	52	8		glitter	
1	1	<i>Fusconaia flava</i>	43	7		glitter	
1	1	<i>Lampsilis siliquoidea</i>	62	4	female	glitter	
1	1	<i>Lampsilis siliquoidea</i>	51	4	male	glitter	
1	1	<i>Villosa iris</i>	65	5			
2	1	<i>Amblema plicata</i>	70	7		glitter	
2	1	<i>Amblema plicata</i>	81	9		glitter	
2	1	<i>Amblema plicata</i>	77	8		glitter	
2	1	<i>Amblema plicata</i>	90	11		glitter	
2	1	<i>Amblema plicata</i>	79	9		glitter	
2	1	<i>Fusconaia flava</i>	60	11		glitter	
2	1	<i>Fusconaia flava</i>	43	6		glitter	
2	1	<i>Fusconaia flava</i>	38	6		glitter	
2	1	<i>Lampsilis cardium</i>	102	8	male	glitter	
2	1	<i>Lampsilis siliquoidea</i>	74	6		glitter	
2	1	<i>Pyganodon grandis</i>	95	10		glitter	
2	1	<i>Venustaconcha ellipsiformis</i>	47	5		glitter	
2	1	<i>Venustaconcha ellipsiformis</i>	38	4		glitter	
3	1	<i>Fusconaia flava</i>	40	8		3DD.003B9C5083	318/319
3	1	<i>Lampsilis cardium</i>	104	6	male	glitter	
3	1	<i>Lampsilis siliquoidea</i>	46	3	male	glitter	
3	1	<i>Lampsilis siliquoidea</i>	70	5	male	glitter	
3	1	<i>Potamilus alatus</i>	115	13		3DD.003B9C50C5	321/320
3	1	<i>Pyganodon grandis</i>	110	11		glitter	
3	1	<i>Pyganodon grandis</i>	81	6		glitter	
4	1	<i>Amblema plicata</i>	80	7		glitter	
4	1	<i>Strophitus undulatus</i>	45	4		glitter	
4	1	<i>Venustaconcha ellipsiformis</i>	29	5		glitter	
4	1	<i>Venustaconcha ellipsiformis</i>	45	8		glitter	
4	1	<i>Venustaconcha ellipsiformis</i>	39	6		glitter	
4	1	<i>Venustaconcha ellipsiformis</i>	38	4		glitter	
4	1	<i>Venustaconcha ellipsiformis</i>	39	5		glitter	
5	1	<i>Amblema plicata</i>	90	11		glitter	
5	1	<i>Amblema plicata</i>	84	10		glitter	

5	1	<i>Amblema plicata</i>	83	11		3DD.003B9C506B	322/323
5	1	<i>Amblema plicata</i>	90	10		glitter	
5	1	<i>Fusconaia flava</i>	50	6		3DD.003B9C507E	316/317
5	1	<i>Fusconaia flava</i>	65	8		glitter	
5	1	<i>Lampsilis siliquoidea</i>	66	7	female	glitter	
5	1	<i>Pyganodon grandis</i>	81	6		glitter	
5	1	<i>Venustaconcha ellipsiformis</i>	46	5		glitter	
5	1	<i>Venustaconcha ellipsiformis</i>	37	5		glitter	
5	1	<i>Venustaconcha ellipsiformis</i>	34	4		glitter	
5	1	<i>Venustaconcha ellipsiformis</i>	30	6		glitter	
5	1	<i>Venustaconcha ellipsiformis</i>	29	6		glitter	
5	1	<i>Villosa iris</i>	36	4			
5	2	<i>Venustaconcha ellipsiformis</i>	40	6		3DD.003B9C5079	309/308
6	1	<i>Amblema plicata</i>	85	17		glitter	
6	1	<i>Amblema plicata</i>	57	10		glitter	
6	1	<i>Lampsilis siliquoidea</i>	74	5	female	glitter	
6	1	<i>Lampsilis siliquoidea</i>	55	4	female	glitter	
6	1	<i>Pyganodon grandis</i>	83	9		glitter	
6	1	<i>Strophitus undulatus</i>	56	3		glitter	
6	1	<i>Venustaconcha ellipsiformis</i>	33	4		glitter	
6	1	<i>Venustaconcha ellipsiformis</i>	50	7		glitter	
6	1	<i>Venustaconcha ellipsiformis</i>	42	5		glitter	
6	1	<i>Venustaconcha ellipsiformis</i>	38	4		glitter	
6	1	<i>Venustaconcha ellipsiformis</i>	40	5		glitter	
6	1	<i>Villosa iris</i>	57	8	male		
6	2	<i>Venustaconcha ellipsiformis</i>	36	4		glitter	
7	1	<i>Amblema plicata</i>	52	9		3DD.003B9C50C4	314/315
7	1	<i>Fusconaia flava</i>	57	10		glitter	
7	1	<i>Venustaconcha ellipsiformis</i>	39	4		glitter	
8	1	<i>Lampsilis siliquoidea</i>	80	6	female	glitter	
8	2	<i>Venustaconcha ellipsiformis</i>	44	7		glitter	
9	1	<i>Lampsilis siliquoidea</i>	82	11	female	glitter	
9	1	<i>Venustaconcha ellipsiformis</i>	50	7		3DD.003B9C53F7	311/310
9	1	<i>Venustaconcha ellipsiformis</i>	37	5		glitter	
10	1	no mussels					
11	1	<i>Amblema plicata</i>	67	7		glitter	
11	1	<i>Lampsilis siliquoidea</i>	66	6	male	glitter	
11	2	<i>Lampsilis siliquoidea</i>	68	4	female	glitter	
12	1	<i>Amblema plicata</i>	43	7		3DD.003B9C50CA	312/313
12	1	<i>Fusconaia flava</i>	61	10		glitter	
13	1	<i>Amblema plicata</i>	83	12		glitter	
13	1	<i>Amblema plicata</i>	57	9		glitter	
13	1	<i>Amblema plicata</i>	55	9		glitter	
13	1	<i>Lampsilis siliquoidea</i>	75	6	male	3DD.003B9C5075	307/306
13	1	<i>Venustaconcha ellipsiformis</i>	42	8		glitter	
13	1	<i>Venustaconcha ellipsiformis</i>	46	7		glitter	
13	1	<i>Venustaconcha ellipsiformis</i>	52	7		glitter	
14	1	<i>Amblema plicata</i>	90	11		glitter	
14	1	<i>Amblema plicata</i>	82	13		glitter	
14	1	<i>Amblema plicata</i>	55	8		glitter	
14	1	<i>Lampsilis siliquoidea</i>	85	9	male	glitter	

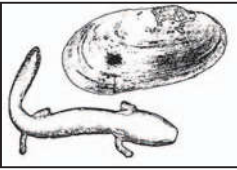
14	1	<i>Pyganodon grandis</i>	87	8		glitter	
14	1	<i>Venustaconcha ellipsiformis</i>	30	5		glitter	
15		no mussels					
16	1	<i>Amblyma plicata</i>	90	9		glitter	
16	1	<i>Amblyma plicata</i>	81	8		glitter	
16	1	<i>Amblyma plicata</i>	82	10		glitter	
16	1	<i>Amblyma plicata</i>	78	5		glitter	
16	1	<i>Lampsilis siliquoidea</i>	87	8		glitter	
16	1	<i>Lampsilis siliquoidea</i>	71	5		glitter	
16	1	<i>Lampsilis siliquoidea</i>	71	5		glitter	
16	1	<i>Venustaconcha ellipsiformis</i>	38	5		glitter	
16	1	<i>Venustaconcha ellipsiformis</i>	42	5		glitter	
17	1	<i>Amblyma plicata</i>	83	11		glitter	
17	1	<i>Amblyma plicata</i>	58	6		glitter	
17	1	<i>Amblyma plicata</i>	51	5		glitter	
18	1	<i>Amblyma plicata</i>	82	9		glitter	
18	1	<i>Lampsilis siliquoidea</i>	76	6	male	3DD.003B9C5072	304/305
18	1	<i>Lampsilis siliquoidea</i>	79	5	male	glitter	
19	1	<i>Lampsilis siliquoidea</i>	87	8		glitter	
19	1	<i>Venustaconcha ellipsiformis</i>	38	6		glitter	
20	1	<i>Venustaconcha ellipsiformis</i>	43	4		glitter	
20	1	<i>Venustaconcha ellipsiformis</i>	47	6		glitter	
21	1	<i>Lampsilis siliquoidea</i>	72	7		glitter	
22	1	<i>Amblyma plicata</i>	75	8		glitter	
22	1	<i>Lampsilis siliquoidea</i>	86	6		glitter	
23	1	<i>Lampsilis siliquoidea</i>	79	7	female	glitter	
23	1	<i>Venustaconcha ellipsiformis</i>	41	7		glitter	
24	1	<i>Fusconaia flava</i>	51	8		glitter	
24	1	<i>Venustaconcha ellipsiformis</i>	30	3		glitter	
25	1	no mussels					
26	1	<i>Fusconaia flava</i>	66	10		glitter	
27	1	no mussels					
28	1	<i>Amblyma plicata</i>	82	8		glitter	
29	1	no mussels					
30	1	no mussels					
31	1	<i>Lampsilis siliquoidea</i>	80	4	male	glitter	
recipient area	0.5 ph	<i>Amblyma plicata</i>					
recipient area	0.5 ph	<i>Lampsilis cardium</i>					
recipient area	0.5 ph	<i>Lampsilis cardium</i>					
recipient area	0.5 ph	<i>Lampsilis siliquoidea</i>					
recipient area	0.5 ph	<i>Strophitus undulatus</i>					
recipient area	0.5 ph	<i>Venustaconcha ellipsiformis</i>					
recipient area	0.5 ph	<i>Villosa iris</i>					

Appendix 3

Appendix 3: Raw habitat data associated with freshwater mussels collected in Collins Run at the Brisbin Road (FAU 401) bridge, Grundy County, Illinois, by INHS personnel on 3-4 August 2021. Transects are ordered from downstream-most (1) to upstream-most (31).

Data collected from transects: substrate percentage (boulder, cobble, gravel, sand, silt, and transect width (ft)).

transect	boulder	cobble	gravel	sand	silt	width (feet)
1	0	5	0	10	85	59.0
2	0	5	0	10	85	60.0
3	1	0	0	5	94	62.3
4	0	5	5	10	85	64.9
5	1	4	5	5	85	65.6
6	0	0	5	10	85	68.9
7	0	5	0	10	85	68.9
8	0	5	0	10	85	69.5
9	0	5	0	10	85	67.2
10	0	5	0	10	85	66.6
11	0	0	10	20	70	65.6
12	0	0	10	20	70	67.2
13	0	0	10	30	60	66.3
14	0	0	5	35	60	66.6
15	0	0	5	35	60	67.9
16	0	0	0	40	60	70.8
17	0	0	0	50	50	61.3
18	0	0	0	50	50	61.3
19	0	0	0	50	50	61.3
20	0	0	0	50	50	61.3
21	0	0	5	40	55	61.3
22	0	0	5	40	55	61.7
23	0	0	10	30	60	61.7
24	0	5	15	20	60	61.7
25	0	0	0	20	80	62.3
26	0	0	0	15	85	62.3
27	0	0	0	15	85	61.7
28	0	0	0	15	85	62.3
29	0	0	0	15	85	62.0
30	0	0	0	15	85	60.4
31	0	0	0	15	85	62.3



Rainbow *Villosa iris*

Subfamily Lampsilinae

external views

State Listed as Endangered: IL, WI

ID. Aids:

External Surface – Small, elongate, thin-shelled, with double-looped beak sculpture and yellow to brown color with broken green rays.

Internal Surface – Bluish white, highly iridescent nacre. Small but distinct teeth.

Distinguishing Features:

Similar Species – Ellipse, fatmucket, mucket.

Compared To – The rainbow has broken green rays, is thinner shelled, and has a distinct beak sculpture, compared to the fatmucket, ellipse, and mucket of similar sizes.

Beak Sculpture – Usually three to six sharply defined raised, double-looped lines that are rounded at the top.

Beak Cavity – Shallow.

Color – Broken green rays on a yellowish to tan background color in younger shells. Some older shells may appear brown, with many broken, very dark green rays that can be indistinct.

Nacre – Very shiny, bluish to silvery white. Very iridescent especially on posterior half of shell. The iridescence is less noticeable on all but the freshest shells.

Teeth/Hinge – Pseudocardinal teeth small, but distinct. Somewhat triangular, elongated and heavily serrated and grooved, two in left valve, one in the right, often with a much smaller accessory tooth anteriorly. Lateral teeth long, thin, well developed and straight to slightly curved.

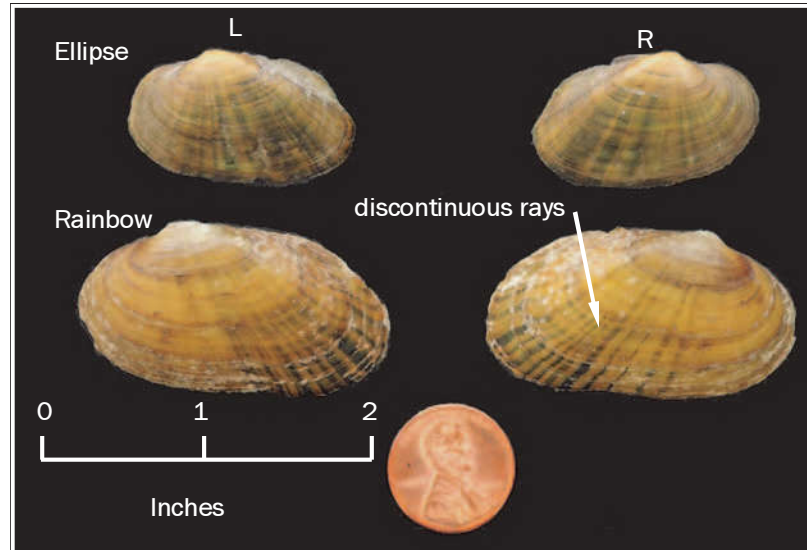
Size/Thickness – To three inches. A 2.4 inch, (60 mm), shell is 0.8 mm thick.

Environmental Profile:

Habitat – Small to medium sized rivers in silty sand, to gravel.

Hosts – Mottled sculpin, greenside darter, rainbow darter, green sunfish, largemouth bass, smallmouth bass, striped shiner, yellow perch, rock bass, and other species outside of the Chicago Wilderness region.

Distribution /Status – Endangered in IL and WI, of special concern in IN, imperiled in MI.

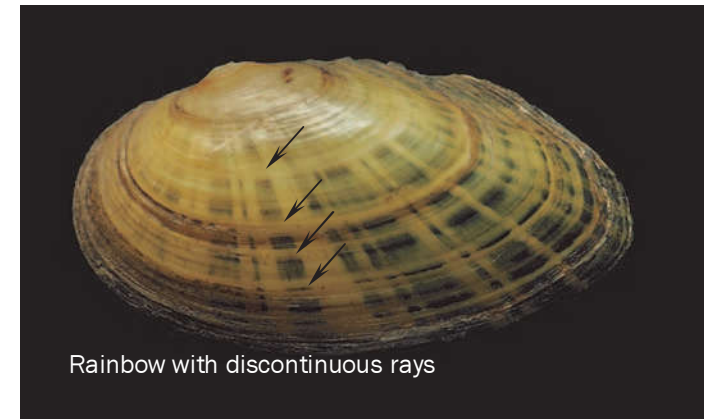


Rainbow Umbo

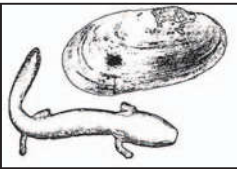


Young ellipse with continuous rays

The rays on the ellipse tend to be continuous, without a break. By contrast the rays on the rainbow mussel are often broken up by patches of background color; they are discontinuous. This can be difficult to discern even with the close-up photography being used here. A magnifier is useful when trying to distinguish these two species. Rays fade and become indistinguishable as the ellipse shell ages and becomes darker. The ellipse generally has a thicker shell than comparably sized rainbow specimens.



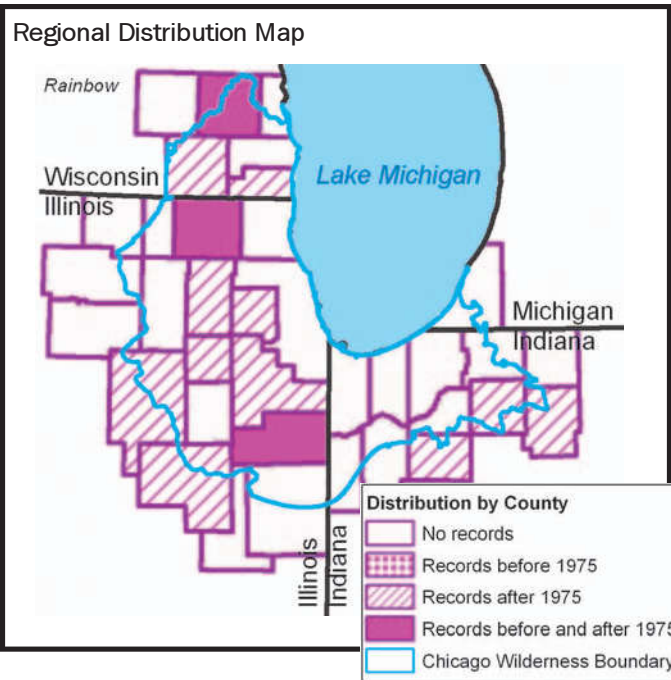
Rainbow with discontinuous rays



Rainbow *Villosa iris* Subfamily Lampsilinae

State Listed as Endangered: IL, WI

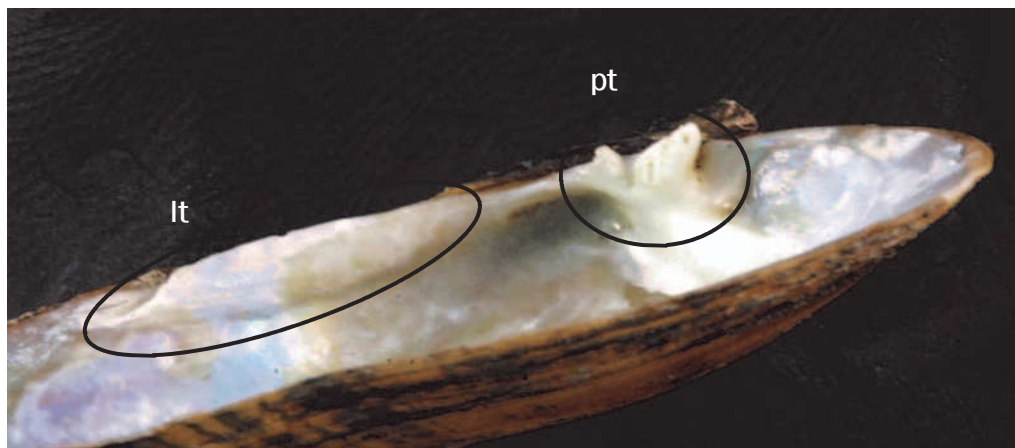
internal views



Left valve of the ellipse (back) and the rainbow (front). The pseudocardinal teeth of the ellipse have been described as “heavy, roughened and divergent.” The pseudocardinal teeth of the rainbow have been described as “small, triangular, and somewhat divergent.” Internal configurations of teeth are very similar in the rainbow and the ellipse.



Right valves of the ellipse (back) and the rainbow (front). The shells of the ellipse are thicker for their relative size than those of the rainbow. It would be very difficult to distinguish the two species based on teeth alone.



Left valve of the rainbow showing two divergent pseudocardinal teeth (pt) and a single lateral tooth (lt). Remember this is NOT the usual condition for the left valve. Normally there are two lateral teeth in the left valve.



The rainbow is noted for its iridescence and this is probably how it got its name. Both the ellipse and rainbow can be iridescent. The thicker shell of the ellipse, however, tends to make it more opaque across the anterior half of the shell. Note that iridescence will change with the camera or viewing angle.



REPLY TO
ATTENTION OF

**DEPARTMENT OF THE ARMY
CORPS OF ENGINEERS, ROCK ISLAND DISTRICT
PO BOX 2004 CLOCK TOWER BUILDING
ROCK ISLAND, ILLINOIS 61204-2004**

April 14, 2022

Regulatory Division

SUBJECT: CEMVR-RD-2021-1619

Mr. Eric Gibson
Grundy County Highway Department
245 N. Illinois 47
Morris, Illinois 60450

Dear Mr. Gibson:

Our office has reviewed your application received March 24, 2022, concerning the proposed replacement of the Brisbin Road bridge over Collins Run Creek in Section 13, Township 34 North, Range 7 East, Grundy County, Illinois. This project will result in the construction and placement of a bridge superstructure with a temporary construction crossing/pad resulting in 0.04 acres of temporary impact to Collins Run Creek.

Your project is authorized under Nationwide Permit No. 14, provided you meet the Nationwide Permit terms and conditions which are contained in the enclosed Fact Sheet No. 9(IL) including the Illinois Regional Conditions which are also included in the Fact Sheet, and any special conditions that have been included in this nationwide permit verification letter. The Corps has made a determination of no effect on federally threatened and endangered species or critical habitat. The decision regarding this action is based on information found in the administrative record, which documents the District's decision-making process, the basis for the decision, and the final decision.

Please contact our office if the project plans change and there are different impacts caused by dredged or fill material into Corps' regulated waters. This may require modification of your Department of the Army 404 authorization.

This verification is valid until March 14, 2026, unless the nationwide permit is modified, reissued or revoked. It is your responsibility to remain informed of changes to the nationwide permit program. We will issue a public notice announcing any changes if and when they occur. Furthermore, if you commence or are under contract to commence this activity before the date the nationwide permit is modified or revoked, you will have twelve months from this date to complete your activity under the present terms and conditions of this nationwide permit.

This authorization does not eliminate the requirement that you must still obtain other applicable Federal, state, and local permits. If you have not already coordinated your project with the ILDNR, please contact them by telephone 217/782-6302 to determine if a floodplain development permit is required for your project. You may contact the IEPA Facility Evaluation Unit at 217/782-3397 to determine whether additional authorizations are required from the IEPA. Please send any electronic correspondence to EPA.401.bow@illinois.gov.

You are required to complete and return the enclosed "Completed Work Certification" form upon completion of your project in accordance with General Condition No. 30 of the nationwide permits.

Should you have any questions, please contact our Regulatory Division by letter, telephone 309/794-5213, or email william.p.ruth@usace.army.mil.

Sincerely,

James C. Kelley
Acting Chief, Eastern Branch
Regulatory Division

When the structure(s) or work authorized by this nationwide permit are still in existence at the time the property is transferred, the terms and conditions of this nationwide permit, including any special conditions, will continue to be binding on the new owner(s), of the property. To validate the transfer of this nationwide permit and the liabilities associated with compliance with its terms and conditions, have the transferee sign and date below.

Transferee

Date

Copies Furnished:

w/o enclosures:

Mr. William Milner, P.E.
Section Chief - Downstate Regulatory Programs
Illinois Department of Natural Resources
Office of Water Resources
1 Natural Resources Way
Springfield, Illinois 62702
bill.milner@illinois.gov

Mr. Darin LeCrone, P.E.
Manager, Permit Section, 15
Division of Water Pollution Control
Illinois Environmental Protection Agency
1021 North Grand Avenue East
P.O. Box 19276
Springfield, Illinois 62794-9276
darin.lecrone@Illinois.gov

Mr. Benjamin Nebel, P.E., S.E.
Hutchison Engineering, Inc.
1801 Lafayette Avenue
Jacksonville, Illinois 62651
ndarling@hutchisoneng.com

COMPLETED WORK CERTIFICATION

Permit Number: CEMVR-RD-2021-1619

Name of Permittee: Mr. Eric Gibson, Grundy County Highway Department.

County/State: Grundy / Illinois

Date of Issuance: April 14, 2022

Upon completion of the activity authorized by this permit and any mitigation required by the permit, sign this certification and return it to the following address:

U.S. Army Engineer District, Rock Island
ATTN: Regulatory Division
Clock Tower Building
Post Office Box 2004
Rock Island, Illinois 61204-2004

Please note that your permitted activity is subject to a compliance inspection by a U.S. Army Corps of Engineers representative. If you fail to comply with this permit, you are subject to permit suspension, modification, or revocation.

I hereby certify that the work authorized by the above reference permit has been completed in accordance with the terms and conditions of the said permit, and required mitigation was completed in accordance with the permit conditions.

Signature of Permittee

Date

WR