Illinois Department of Natural Resources
Office of Resource Conservation

CONSERVATION PLAN FOR THE INCIDENTAL TAKING OF THE STATE ENDANGERED SPIKE MUSSEL (*Elliptio dilatata*)

At Park Court Over Yellow Creek Improvement Project
IDOT FAU 5251
IDOT Sequence No. 21612
Section No. 17-00164-00BR

City of Freeport, Stephenson County, Illinois

Applicant: City of Freeport

January 2021

Introduction

The project described within this document is for the proposed Park Court Road (IDOT FAU 5251) bridge over Yellow Creek Improvement Project (the Project IDOT Sequence No. 21612, Section No. 17-00164-00-BR) in the City of Freeport, Stephenson County, Illinois. The Park Court Bridge is a two-lane structure which carries Park Court over Yellow Creek in the City of Freeport, Stephenson County, Illinois (T26N, R7E, Section 1; 42.277091° N, -89.647176° W). The bridge was originally constructed in 1920, consisting of a single steel span pratt pony truss – eyebar. There have been no reconstructions to this bridge throughout its existence. The existing bridge carries two lanes of traffic over the creek and connects a residential area to a recreational park. The Project is sponsored by the City of Freeport (City), the Illinois Department of Transportation (IDOT), and the Federal Highway Administration (FHWA). The City proposes to remove the existing bridge and replace it with a single span precast prestressed concrete I-beam bridge with a pedestrian walkway in the form of a sidewalk to cross the creek.

The Project, located approximately two miles southwest of downtown Freeport, includes a 62-feet long bridge that carries approximately 25 motor vehicles daily, approximately 24 percent of which are trucks. The bridge was originally constructed in 1920. Although the structure has been regularly maintained, many components are substantially deteriorated and can no longer be economically repaired. The most recent inspection of the bridge found the deck to be in critical condition, the superstructure to be in imminent failure condition, and the substructure to be in poor condition due to advanced deterioration. The bridge is currently closed. The bridge is the one of three bridges connecting residential areas and Freeport to Krape Park. Detailed plan sheets and General Plan and Elevation sheets are located in **Appendix B.**

1. Description of Project Impact Assessment for Illinois State Threatened and Endangered Species

Coordination between IDOT and IDNR resulted in the Illinois Natural History Survey (INHS) mussel survey within the project area (INHS 2019).

The IDNR is requesting that the City obtain an Incidental Take Authorization (ITA) prior to the commencement of construction activities. A mussel survey was completed by the INHS within the project vicinity on July 31 and August 1, 2019. A detailed discussion of the methods utilized during the INHS mussel survey is included in the INHS mussel report (**Appendix C**). The ITA was originally to be obtained due to potential for impact to the spike mussel (*Elliptio dilatata*) and the black sandshell mussel (*Ligumia recta*). Per correspondence with IDNR on July 10, 2020, the black sandshell has been removed from the Illinois State Threatened and Endangered Species list. It should also be noted that the black sandshell mussel was not encountered during the 2019 INHS mussel survey within the project area. In an email dated July 17, 2020, IDOT advised that the black sandshell be removed from the Conservation Plan and ITA for the Park Court over Yellow Creek Improvement Project in order to reflect the change to the Illinois State Threatened and Endangered Species list. As such, the black sandshell mussel will not be considered within the present conservation plan. Emails detailing coordination regarding the delisting of the black sandshell mussel are included in **Appendix D**.

One Illinois State endangered species, the spike mussel is known to be present in Yellow Creek within two miles of the Project Area. Additionally, the spike mussel was found within Yellow Creek in the immediate vicinity of the existing Park Court Bridge during the INHS mussel survey conducted on July 31st and August 1st, 2019 in support of the proposed project (INHS 2019). See **Figure 1 in Appendix A**.

The anticipated take number for the spike mussel assessed for potential impacts as a result of the Park Court Bridge Improvement Project is presented in **Table 1**.

An ITA for the spike mussel is requested by the City to pursue bridge reconstruction.

Table 1[1]

Anticipated Take Numbers for the Proposed Project

Common Name	Scientific Name	Anticipated Take Number (Individuals)
Spike	*Elliptio dilatata*	1

[1]Table 1 presents the estimated take numbers for each state listed species assessed as part of the conservation plan.

No federally protected mussels or fish are known or expected in Yellow Creek.

During the INHS surveys, three live spike mussels were collected. The survey was conducted using hand grabbing and visual detection throughout the entire area of the stream directly under the existing bridge within the ROW for a total of eight person-hours. The INHS survey within the project area resulted in the collection of 76 live mussels (13 species) and three species represented by relic specimens. The mussel community was dominated by muckets (*Actinonaias ligamentina*; 18 specimens), plain pocketbook (*Lampsilis cardium*; 12 specimens), and flutedshells (*Lasmigona costata*; 12 specimens). Muckets and plain pocketbooks are both common and widespread species in Illinois. However, the flutedshell mussel is a Species in Greatest Conservation need as identified and defined by the Illinois Wildlife Action Plan (IWAP) Streams Campaign (IDNR 2017). In addition to the flutedshell mussel, two other Species in Greatest Conservation Need were collected during the surveys: Elktoe (*Alasmidonta marginata*; three specimens) and ellipse (*Venustaconcha ellipsiformis*; two specimens). All other species collected during the surveys are common and widespread in Illinois streams. The majority of the live mussels encountered by INHS staff during survey efforts were collected from an approximate three-yard by three-yard area located within the project area near the east bank of Yellow Creek in substrata consisting of cobble, gravel, and sand.

The INHS previously carried out three mussel surveys within two miles of the proposed project area (Fairgrounds Road in 2011, the Krape Park dam in 2011, and South Walnut Road in 2012). Twenty mussel species were collected during these three INHS surveys, including the state endangered spike mussel. Live spike mussels were only collected during the 2012 survey, and relic spike mussels were collected in both 2011 surveys. While live spikes were not encountered during the 2011 surveys, relict spike shells were recovered. Three live spike mussels were collected during the 2012 survey at S Walnut Road (approximately 1.65 river miles downstream of the project area). These occurrences are recorded in the INHS database. These surveys are summarized in the 2019 INHS Mussel Report and the data is publicly available on the INHS Database.

The anticipated take number was calculated by using the results of the 2019 INHS mussel survey in union with the area of impact for the project. The INHS surveyed approximately 50 yards of stream with a reported width of approximately 16 yards, for a total survey area of approximately 0.165 acre.

Within their survey area, the INHS observed a total of three spikes, for a population density of approximately 18 individual spikes per acre of suitable stream habitat. The area of impact is approximately 0.045 acre. At the calculated population density of approximately 18 individual spikes per acre, the anticipated take is 0.8 individuals per 0.045 acre, which is rounded up to one individual spike.

Table 2 presents the data from the 2019 INHS mussel survey.

Table 2
INHS Freshwater Mussel Survey
Yellow Creek, Stephenson County, Illinois
Park Court Road (IDOT FAU 5251) Bridge
July 31 and August 1, 2019

Common Name	Scientific Name	Conservation Status[a]	Numbers[b]
Mucket	*Actinonaias ligamentina*	--	18
Threeridge	*Amblema plicata*	--	1
Pimpleback	*Cyclonaias pustulosa*	--	6
Spike	*Elliptio dilatata*	SE	3
Wabash pigtoe	*Fusconaia flava*	--	1
Plain pocketbook	*Lampsilis cardium*	--	12
Fatmucket	*Lampsilis siliquoidea*	--	1
Fragile papershell	*Leptodea fragilis*	--	1
Round pigtoe	*Pleurobema coccineum*	--	7
Pistolgrip	*Tritogonia verrucosa*	--	*R*
Ellipse	*Venustaconcha ellipsiformis*	GCN	2
Elktoe	*Alasmidonta marginata*	GCN	3
Cylindrical papershell	*Anodontoides ferussacianus*	--	*D*
Flutedshell	*Lasmigona costata*	GCN	12
Giant floater	*Pyganodon grandis*	--	*D*
Creeper	*Strophitus undulatus*	--	9

[a] SE = Illinois State Endangered Species, GCN = Species in greatest conservation need

[b] Number of live mussels collected by INHS during July 31 and August 1, 2019 freshwater mussel surveys at Park Court Road bridge over Yellow Creek. R = Relict shell(s) collected during survey efforts, D = Dead shell(s) collected during survey efforts.

A) Description of the area to be affected:

The Park Court Bridge is located in Township 26N, Range 7E, in Section 1 within the City of Freeport, Stephenson County, Illinois (42.277138° N, -89.646862° W). The project is under the jurisdiction and maintenance of, owned, and sponsored by the City. The bridge construction will occur within and over Yellow Creek. The Park Court Bridge runs in a southwest-northeast direction over Yellow Creek, between Gladewood Drive and Demeter Drive. See **Figure 2 in Appendix A**. The final alignment for the new bridge/track construction has been developed and is presented in **Appendix B, Preferred Improvement Plan**.

Yellow Creek is approximately 48 feet wide at the Project Location (INHS 2019). During their mussel survey within the project area, the INHS characterized substrates as consisting of boulder, cobble, gravel, sand, and silt, and riffle-run-pool sequences were noted to be present. Water within the project area was turbid at the time of the INHS survey, which was noted to be consistent with general water clarity conditions within the Pecatonica River basin. The INHS characterized the stream habitat within the area to be affected as suitable for freshwater mussels. Surrounding land use on the west bank of Yellow Creek consists of recreational land (Krape Park). Surrounding land use on the east bank consists of residential land. A narrow forested riparian area is present on the east and west banks of Yellow Creek.

B) Biological Data for Various Protected Mussels and Fishes Potentially present in Yellow Creek in Illinois

The Park Court Bridge improvement is situated in Stephenson County bounded on the northwest by the Krape Park Dam in Freeport, approximately 0.3 river miles upstream from the bridge. Yellow Creek's confluence with the Pecatonica River in Silver Creek Township is approximately 6.5 river miles downstream of the bridge. This section of Yellow Creek is the a relatively free-flowing portion of the creek, with few, if any impoundments.

Mussels

1. Spike (*Elliptio dilatata*), Illinois State endangered species.

The spike mussel is found throughout midwestern states and is an inhabitant of small to large streams, where it can be found in slow to fast moving water. Substrates inhabited include compacted silt, sandy substrates and gravelly substrates. The shell can grow to approximately 5.5 inches and is moderately thick. The nacre is often a pinkish or purple color though white nacre is less common. Native freshwater mussels require a fish host to distribute their larvae (glochidia). The spike breeds yearly during the warmer months (May in Michigan), and uses several host fish to carry glochidia including the gizzard shad (*Dorosoma cepedianum*), white crappie (*Pomoxis annularis*), black crappie (*Pomoxis negromaculatas*), and flathead catfish (*Pylodictis olivaris*). (Cummings and Mayer, 1992, Klocek et al, 2008, Watters, et al. 2009.)

The INHS database contains 590 records for spike in Illinois waterways. There are seven records of the spike in Yellow Creek in Stephenson County, Illinois. Of the 27 records for spike mussels, five records range from 2011 to 2019, and the remaining two records are from 2002 and 1976. Spikes have been known to occur in Yellow Creek near Freeport in relatively low numbers as recently as 2013, with relict shells and seven live specimens being collected during a basin-wide sampling effort (Shasteen et al 2013). A summary of Spike Mussel occurrence records within Stephenson County is located in **Table 3.**

Table 3
Spike Mussel Records from Stephenson County, Illinois
Illinois Natural History Survey Database Accessed February 24, 2020

Year Collected	Individual Count	Location
1926	1	Pecatonica River, [1 mi NW] McConnell, North America
1926	3	Pecatonica River, 1 mi E Winslow, North America
1926	3	Pecatonica River, Freeport, North America
1957	28	Pecatonica River, 1 mi NW McConnell, North America
1957	7	Pecatonica River, 3 mi W Pecatonica, Farwell Bridge, North America
1976	1	Yellow Creek, 2 mi S Freeport, off South Walnut Rd., North America
2002	1	Yellow Creek, SE side of Freeport, Krape Park, downstream from dam, North America
2011	1	Yellow Creek, 2.5 mi SW Freeport, Fairgrounds Rd. bridge, North America
2011	1	Yellow Creek, Freeport, Krape Park, downstream from dam, North America
2011	2	Yellow Creek, 6 mi SW Freeport, Bolton Rd. bridge, North America
2011	1	Pecatonica River, E edge of Winslow, Winslow Rd. bridge, North America
2011	1	Pecatonica River, 4 mi W Cedarville, Damascus Landing, North America

Year Collected	Individual Count	Location
2011	1	Pecatonica River, 0.5 mi SW McConnell, Bobstown Landing, McConnell Rd. bridge, North America
2012	1	Yellow Creek, Freeport, Rt. 26 bridge, North America
2019	3*	Yellow Creek, 1.9 mi SW Freeport, Krape Park, Gladewood Dr. and S Demeter Dr., North America

** This occurrence was the result of the INHS mussel survey conducted in support of the proposed Project. Please note that the INHS Database reports the occurrence of two individuals during this survey, but the INHS Report (2019) reports the occurrence of three individuals.*

Summation of Mussel Presence and Relocation

Prior to construction, a survey will be conducted that will sample all proposed causeway and cofferdam areas for mussel resources. All encountered living native mussels will be removed and released by replanting into suitable and similar habitat away from the influence of construction activity. Special survey attention will be paid to areas near sightings of protected species. Living native mussels will be handled in a manner consistent with IDNR standards and guidelines. Relocation of all living mussels will be accomplished by moving mussels upstream of the project area to a site containing appropriate habitat. The relocation site will be determined prior to construction activities commencing. The IDNR may propose relocation areas and protocols for consideration. Post-construction mussel surveys will occur one and five years following the completion of construction activities. IDNR will issue guidance based on current science for post-construction survey methodology and mussel relocation. The IDNR recommends that all mussel work occurs when water temperature is above 59 degrees F.

Survey Methodology

The INHS conducted a mussel survey within the proposed project area on July 31st and August 1st, 2019. INHS personnel collected mussels by visually surveying and hand grabbing specimens within and approximately 50-yard longitudinal stretch of Yellow Creek, centered on the existing footprint of the bridge and ROW. Personnel sampled for eight person hours, the majority of which was spent directly beneath the bridge. All specimens were identified, measured to the nearest millimeter, aged by counting external growth rings, and returned to their original habitat.

Should further mussel surveys be required, the following methodology will be used. The entire project area will be surveyed for mussels in a manner consistent with the methods used by INHS in their 2019 survey (Appendix A). Measurement and field aging of protected mussels will be accomplished. Native mussels will be relocated to an upstream area that has similar habitat characteristics to that of the area they are removed from. The relocation area should be reasonably close to the collection area without putting the relocated native mussels in jeopardy of construction activities, or other anthropogenic activities that could negatively affect their survival. The IDNR will review and approve the proposed relocation site or offer up another site if necessary.

Survey work will be accomplished under a scientific permit issued by the IDNR. Habitat information will be noted and incorporated into a final report. Special attention will be paid to the three-yard by three-yard area on the east bank of Yellow Creek, within which the INHS observed a relatively diverse mussel community. Substrates will be examined by passing hands through and over the surface layers

of substrate to feel for buried mussels. Rocks and obstructions will be examined for mussels around them.

As mussels are collected, they will be accumulated in a mesh bag and kept submersed in water as much as possible to prevent thermal shock and desiccation. Native mussels will be kept aboard a boat in a tub filled with ambient water for transportation purposes. Collection will continue until all transects are covered. The methodology is similar to those used by state and federal agencies.

Returned specimens of all protected species will be hand placed into the substrate in a natural position (posterior end protruding above the bottom and pointing in the direction collected).

Specimens will be relocated unharmed within approximately six hours following collection. Zebra mussels will be removed from all native mussel shells before native mussels are released. Mussels will remain submersed during transport to the relocation site.

All live specimens of threatened or endangered (T&E) species taken will be photographed, measured (length and height) and, if possible, sexed and aged. No intrusive activities are permitted. Collection of T&E species will be reported to the IDNR Endangered Species Biologist(s) within 48 hours of discovery.

Freshly dead specimens, if encountered, will be preserved according to standard museum practices for fleshy tissue preservation. Old dead shells may be retained without preservation. Dead specimens retained as voucher material may be sent to a public scientific or educational facility or to a museum in the state in which they were collected.

The species locations and release point will be located using Global Positioning System (GPS). The GPS data will be provided to the IDNR for their record keeping and will be utilized for the future years' monitoring efforts.

Identifications will be verified using the *Field Guide to Freshwater Mussels of the Midwest* (Cummings and Mayer, 1992), and *Field Guide to Mussels of the Chicago Wilderness* (Klocek et al.2008).

C) Description of the activities that could result in the taking of a threatened or endangered species:

Construction is proposed to begin in June 2021 with the removal of the existing bridge structure. Prior to work commencing, a mussel survey and relocation will be conducted prior to the removal of the existing bridge. The proposed structure is a single span precast prestress concrete (PPC) I-Beam with a cast in place concrete deck, supported by closed concrete abutments. The east abutment will consist of a reinforced concrete footing keyed into rock, and reinforced concrete abutment and wingwalls. The west abutment and wingwalls will consist of auger cast concrete piles and reinforced concrete apron walls between the auger cast piles. Construction of the proposed structure will consist of removing the existing structure, constructing the footing, abutment wall, auger cast pile and apron wall and wingwalls; set PPC I-beams, pour concrete deck and construct embankment as required for completion of the approach roadway. Equipment used for demolition and construction will vary by contractor, but at this time it is anticipated a backhoe and/or excavator and crane would be used for demolition of the existing structure, excavation for new structure, construction of drilled shafts, placement of PPC I-Beams and pouring concrete deck and rails. It is important to note that equipment will be used from the upland areas adjacent to the stream.

In order to facilitate in-stream work, temporary diversions of flow may be necessary at the discretion of the contractors hired to do the work. Dewatering is only anticipated to occur at the footings of the abutments for a limited period of time while construction is completed, and dewatering would be accomplished by temporarily placing small berms and pumping water out. A conceptual drawing of dewatering structures is included in **Appendix B.** This drawing is conceptual only, and is not intended to represent an engineered design at this point. At this time, it is only anticipated that dewatering will only be necessary at the east abutment. However, should diversion of flow be necessary at both abutments, this will occur one abutment at a time. Any berm placed to divert water would not obstruct more than 30 percent of flow. Pumping and filtration of water from within the diversion berms will adhere to the general conditions the U.S. Army Corps of Engineers (USACE) Nationwide Permits (NWP). It is anticipated that this project will be processed under USACE NWP 14 (Linear Transportation Projects). As such, while the means and methods for temporary structures for in-stream work are at this time unclear, all in-stream construction activities will meet all specifications associated with USACE NWP 14, as well as the NWP General Conditions. These specifications include the use of suitable materials (e.g. non-toxic and non-erodible), implementation of an appropriate soil erosion and sedimentation control plan, submittal of a preconstruction notification, and adhering to State Section 401 water quality requirements while pumping water out of the work area, among others.

Due to the relatively small size of the bridge, the removal of the existing bridge and the subsequent construction of the proposed structure are both anticipated to move quickly, with an anticipated completion date of November 2021.

The construction operations within Yellow Creek will include the placement of temporary water diversion berms as required to facilitate the construction of the abutments and the abutment construction activities. The temporary water diversion berms will be removed upon the completion of the bridge project and the stream will be restored to a natural flow regime.

Direct impact of the causeway and cofferdam construction would impact mussels present by burying them under crushed stone.

The Park Court Bridge over Yellow Creek will not increase the amount of impervious land coverage or increase the amount of stormwater runoff entering Yellow Creek. The quality of the stormwater runoff will be typical of that from roadways in urban areas and will not have an impact on water quality to Yellow Creek.

Sediment is expected to be disturbed temporarily, during construction of the piers and abutments for the new bridge. Temporary water diversion berms may be used for instream work (which only entails the construction of the abutments) to minimize these impacts during construction. The berms will be constructed of a non-erodible material, and they will be used at the contractor's discretion. After construction activities have been completed, these water quality impacts would be expected to cease.

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

Protected mussels will likely not be visible during construction activities and avoidance of mussels will not be possible during in-stream preparations for bridge construction. Protected mussels may be subject to injury or death during in-stream phases of construction. Increased suspended solids and siltation from construction activities may harm protected mussels beneath the bridge or downstream from the construction site unless the mussels are relocated. Suspended solids and siltation have been

shown to produce a negative effect on gravid mussels and reproduction (Gascho-Landis et al., 2014). Literature was unavailable on the effects of siltation on fish carrying glochidia, but Henley et al. 2000 cite negative effects of siltation on fish populations due to sedimentation. Mitigation of the effects of sedimentation on mussel glochidia include removal of mussels and fish from the immediate area and through the use of best construction practices that minimize sediment release into the stream.

The effects of dewatering would be lethal to mussels and their contained glochidia after a short period of time (hours to days). The effects of dewatering on fish hosts carrying mussel glochidia would also be lethal to the fish and glochidia if they were trapped within the dewatered areas. Mitigation for the effects of dewatering could include removing all of the mussels and potential glochidia, and all of the fish within the dewatered areas within a short time during the dewatering event.

Noise and vibration from construction activities (construction of causeways and bridges) may also have an effect on the life history stages of some mussel species. Noise related impacts would only occur during construction activities. The bridge has been closed since August 2017. As no lanes will be added to the bridge, the proposed improvement project will not add to pre-closure traffic conditions. Likewise, it is anticipated that traffic noise levels will be consistent with noise levels prior to the closure of the bridge in 2017.After the mussel survey has been completed and the survey area cleared of any endangered, threatened or native mussels, the temporary water diversion berms would be installed.

2. Measures to minimize and mitigate impacts and funding available to undertake these measures.

A) Plans to minimize affected area, and estimated number of protected mussels that will be taken and amount of habitat affected.

Yellow Creek is approximately 50 feet across at the Park Street bridge crossing, with slight variations in stream width on the north and south sides of the proposed bridge. The proposed bridge will be approximately 31 feet wide, and approximately 73 feet long from the back of the abutments. Two additional feet will be impacted both on the upstream and downstream sides of the proposed bridge due to excavation of the stream bed. Therefore, the area of immediate impact is approximately 1,960 square feet, or approximately 0.045 acre. Although water diversion berms will be placed in the stream for dewatering purposes, they will be placed within the area described above, and as a result, no additional streambed will be impacted. The area of the instream work zone has been reduced to the minimum needed for safe construction practices, which minimizes impact to aquatic habitat. The amount of habitat affected is equal to the area required to complete the instream portion of the work. See **Figure 3 in Appendix A**.

Minimization of the area affected directly is feasible through the judicious use of anti-erosion and sediment blocking construction techniques. All efforts to reduce in-stream siltation and in-stream work will be taken to lessen the impact to mussel species.

During construction, adjacent land areas will be protected with erosion and sediment control features. Erosion and sediment control policy and specifications (Storm Water Pollution Prevention Plan (SWPP) contained in the bid specifications) will be followed and will be in compliance with the U.S. Army Corps of Engineers (USACE) Section 404 permit, the water quality certification policies of Illinois EPA, and the requirements within the NPDES construction permit. Runoff entering the river

will be minimized through the use of silt fences/erosion structures. A designated crew will install, inspect and maintain silt fences.

It is expected, that after the instream work has been completed, the area will be available for re-colonization by all species of mussels.

Per coordination with IDNR in an email dated September 10, 2020, mitigation for the project has been scaled at $5,580 compensatory value.

B) Plans for management of the affected area that will enable continued use by the listed species:

1. Sedimentation and siltation during all phases of construction will be minimized through use of erosion control devices such as silt fences to prevent runoff from entering the river and affecting aquatic habitat, as well as water diversion berms to dewater the project area and divert flow away from loose substrates. Diverted water will be filtered according to the specifications laid forth in the USACE Section 404 permit and the water quality certification policies of the Illinois EPA. A designated crew will inspect and maintain silt fences/erosion structures.

2. It is anticipated that any mussels would not be trapped under the water diversion berms or within the dewatered areas as the berms are being placed following mussel relocation efforts. However, if mussels are located within the proposed dewatering area during construction, all mussels (including protected mussels) will be collected during dewatering of the project area and relocated to an appropriate location outside of the project area using approved methods for handling mussels with minimal stress.

3. After construction is completed, water diversion berms will be removed and the stream bottom will be restored to its approximate original condition and flow pattern, allowing for re-colonization of biota.

C) Description of all measures to be implemented to minimize or mitigate the effects of the proposed action on listed species:

1. Collection of all mussels within the project area will be accomplished before water diversion berms are placed so the placement of the berms does not impact mussels. Mussels will be collected and relocated to suitable habitat upstream of the project area prior to any excavation or other work within the project area. All mussels will be individually planted in secure areas in the proper position with siphons pointing in an appropriate direction (usually upstream but current dependent). If collected during the fall season, mussels will be hand dug into appropriate substrates similar to the substrates removed from. Mussels must be hand buried to avoid having them use excess energy to rebury themselves, which could deplete the stored lipid reserves the mussels will use during the winter season. Protected mussels will be located, aged, sexed, measured, and marked by GPS coordinates.

2. Implementation and maintenance of the soil erosion, and sedimentation control plan will prevent runoff from entering the river.

3. Mitigation for the project has been scaled at $5,580 compensatory value.

D) Plans for monitoring the effects of measures implemented to minimize or mitigate the effects of the proposed action on endangered or threatened species.

1. A mussel survey will be completed within the project vicinity prior to the commencement of construction activities. All native mussels identified during the survey will be relocated to an upstream area that has similar habitat characteristics to that of the area from which they are removed. The relocation site will also be sampled for mussels prior to the relocation. The relocation area should be reasonably close to the collection area without putting the relocated native mussels in jeopardy of construction activities, or other anthropogenic activities that could negatively affect their survival. Please see **Survey Methodology** for a detailed discussion of the methods to be utilized for the mussel survey and relocation.

2. Monitoring of endangered or threatened mussels, if any, will take place approximately two years after relocation to estimate survival. Monitoring will entail removal, logging, and immediate replacement of protected species to their exact location.

3. A monitoring report will be furnished which will include the results of the recapture study for endangered or threatened species including age, numbers, and rationale for mortality of mussels, evidence of recruitment or juvenile mussels, habitat structure, and an analysis of stability or flux of substrates since last monitoring event. A propagation report may be furnished if mussels are not relocated but are propagated instead.

E) Adaptive management practices that will be used to deal with changed or unforeseen circumstances affecting the effectiveness of measures instituted:

1. Sediment/erosion control measures may be modified and supplemented to ensure maximum protection of the aquatic system as different phases of construction shift erosion points and channels. Erosion control measures/sediment structures will be evaluated and modified weekly or more often if weather events or shifts in construction area dictate modifications.

2. If the original mussel relocation area becomes untenable due to substrate flux or other factors, immediate consideration should be given to another relocation area.

3. There is a possibility that the demolition of the existing bridge may further destabilize the remaining structure, resulting in portions of the structure collapsing into Yellow Creek. If this were to occur, pieces of bridge material, ranging from small to very large, could fall into the creek. The entire structure will be monitored throughout the demolition process, and netting can be used to catch smaller pieces as they fall. In the event of a catastrophic structural failure, netting is not likely to be strong enough to prevent these pieces from entering the creek. If this were to occur, the contractor would be responsible for removing all bridge or construction materials from the creek. Temporary silt or sedimentation fences can be placed in the stream to prevent the downstream transport of materials that may fall in.

F) Verification of adequate funding to support and implement all activities described in the conservation plan:

The monitoring costs for the two phases of monitoring and any mitigation costs will be borne by the City of Freeport.

The project is 80 percent funded by federal funds and 20 percent by local funds. The construction costs include adequate funding to support and implement all activities and commitments described in the conservation plan. It will be the responsibility of the selected contractor to comply with the environmental commitments of the plan – an allowance is included in the contract cost specifically for environmental project aspects and tasks. Also, as part of the City's construction inspection and project oversite, the City's construction management consultant will provide environmental inspections, reviews and reporting.

3. Description of alternative actions the applicant considered that would not result in take and the reasons that each of those alternatives was not selected. A "no-action" alternative shall be included in this description of alternatives.

The purpose of the project is to reconstruct the Park Court Bridge over Yellow Creek to provide for modern safety concerns and for safer operations by improving the structural integrity and resurfacing the bridge.

The no-action alternative would leave the existing bridge in its current state, which is to say that it would remain closed to vehicular traffic and continue to be unsafe for use. Under this alternative, the current restriction of access to local residents and emergency vehicles would persist. Under current conditions, there is a detour of approximately one mile to get from the residential area east of Yellow Creek to Krape Park on the west side of Yellow Creek.

In addition to the no-action alternative, a rehabilitation alternative was considered. Under this alternative, the existing bridge would be repaired. This alternative was not selected because the rehabilitation of this structure is no longer economically feasible. Beyond repairs to the existing structure, the bridge would need to be updated to meet current geometric requirements, which would result in additional cost. The rehabilitated structure would then need to undergo regular maintenance, adding further to the cost.

A removal-without-replacement alternative was also considered. Under this alternative, the bridge would be removed, and a new bridge would not be built in its place. This alternative was not selected because the restriction of vehicular traffic currently limits access for residents and emergency vehicles on the west side of Yellow Creek to areas on the northeast side of town. Alternative routes include crossing Yellow Creek via the Boulevard Bridge on the northwest side of Krape Park (the aforementioned one-mile detour), or traveling via Woodside Drive, located south of Krape Park, to West Avenue, resulting in a detour of approximately 3.75 miles.

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.

It is anticipated that mussel relocation, if done, will not significantly reduce the population of protected mussels that may occur near the project area. While historical mussel relocations had various success rates from poor (less than 50% survival) to excellent (90% survival), recent relocations report greater than 90% survival success when relocations are properly planned and executed, (Rueter et al. 2001, Baldridge et al. 2007, Cope et al. 2003, Peck et al. 2007). The objective of this Conservation Plan is to remove as many native mussels from the project area as possible with no mortality aside from natural mortality due to age, natural predation, or catastrophic flooding/drought events. Severe flooding events have the potential to move large bedloads of sediment quickly and potentially smother some mussel beds.

Yellow Creek is identified as a relatively rich mussel resource and contains a small, remnant population of protected mussels in Illinois. Mussels in general may not spawn or recruit every year. Spike mussels are known to exist in low numbers at nearby upstream or downstream locations relative to the Park Court Road bridge, and eventual recruitment from nearby populations would not be anticipated. The ultimate success of the relocation would be dependent on finding juvenile protected mussels at a future date during monitoring.

The tables presented for each species presented in *Section B, Biological Data for Various Protected Mussels Potentially present in Yellow Creek in Illinois,* illustrates that the species identified in this Conservation Plan are present in other river systems throughout the state. As a result, this project will not reduce the likelihood of survival of the species listed with the State of Illinois.

5. Implementing Agreement

A) The names and signatures of all participants in the execution of the conservation plan

Names and Signatures are provided at the end of this document.

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 Department

Applicant. The City of Freeport
314 W Stephenson St
Freeport, IL 61032

Conservation Plan Developers.
The City of Freeport, Huff and Huff Inc. (Matt Mackey/Jim Novak)

Conservation Plan Implementers
The City of Freeport (William R. Boyer III / Public Works Director)

Conservation Plan Monitors. Sedimentation/Erosion control monitors are yet to be determined by The City of Freeport. Mussel monitors are yet to be designated by The City of Freeport but will likely include private contractors.

Conservation Plan Funder/Enabler, include designees and sub-contractors. The City of Freeport is the funder/enabler of the Conservation Plan. Mr. William Boyer will be the representative for the City of Freeport during this process.

B) Certification

The City of Freeport certifies that their agency has the authority to complete the project and to address the issues proposed in the Incidental Take Application/Conservation Plan in the event state listed threatened or endangered species are encountered. The City of Freeport is in charge of construction through its designated contractors. The City of Freeport will assure that all applicable state laws will be adhered to during the completion of the project.

Anticipated Project Milestones Schedule

Project Milestone	Anticipated Completion
Mussel Survey & Mitigation & Relocation	May/June 2021
Remove existing structure	June 2021
Construct proposed structure • Excavate and construct temporary water diversion berms • Construct east and west abutments and wingwalls • Set PPC I-beams and pour concrete deck • Construct embankment	June - November 2021
Project Completion	November 2021

Beginning May 2021, it is expected that Progress and Monitoring Reports will be provided to the Department by the City of Freeport (or its contractor) on a monthly basis for the duration of the work occurring within the river.

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

The City of Freeport is compliant with all other federal, state, and local regulations pertinent to the proposed action and execution of the Conservation Plan.

D) Copies of any final federal authorizations for a taking already issued to the applicant.

Federal authorizations for the Park Court Bridge Improvement project at Yellow Creek have yet to be sought out. However, it is anticipated that a USACE Section 404 Permit will be required in order to conduct in-stream work.

Signatories

Name: William R. Boyer III Date: 12/17/2020

City of Freeport Representative Signature: William R Boyer III

WORKS CONSULTED

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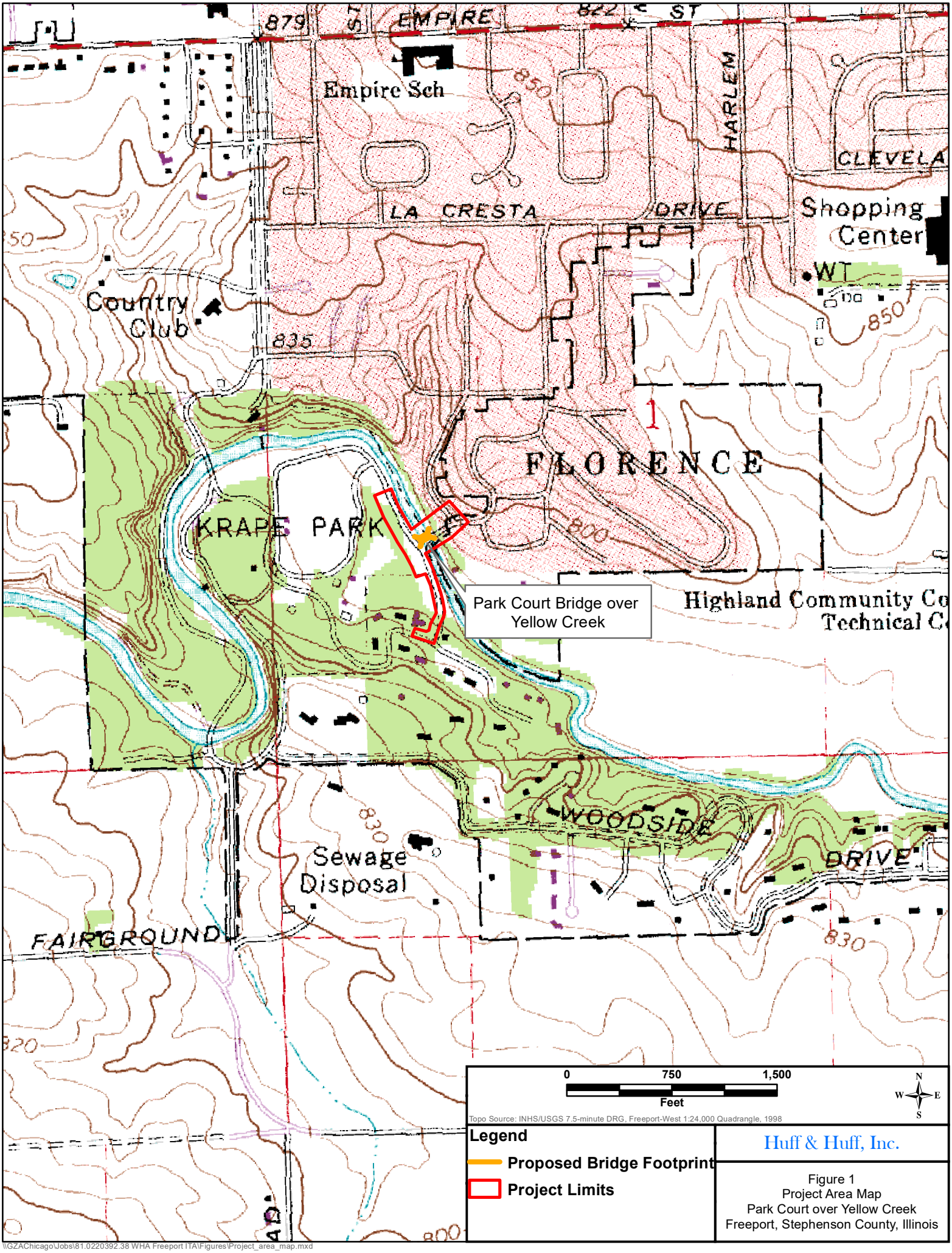
APPENDIX A

Figures



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Huff & Huff, Inc.

Figure 2
Project Limits Map
Park Court over Yellow Creek
Freeport, Stephenson County, Illinois

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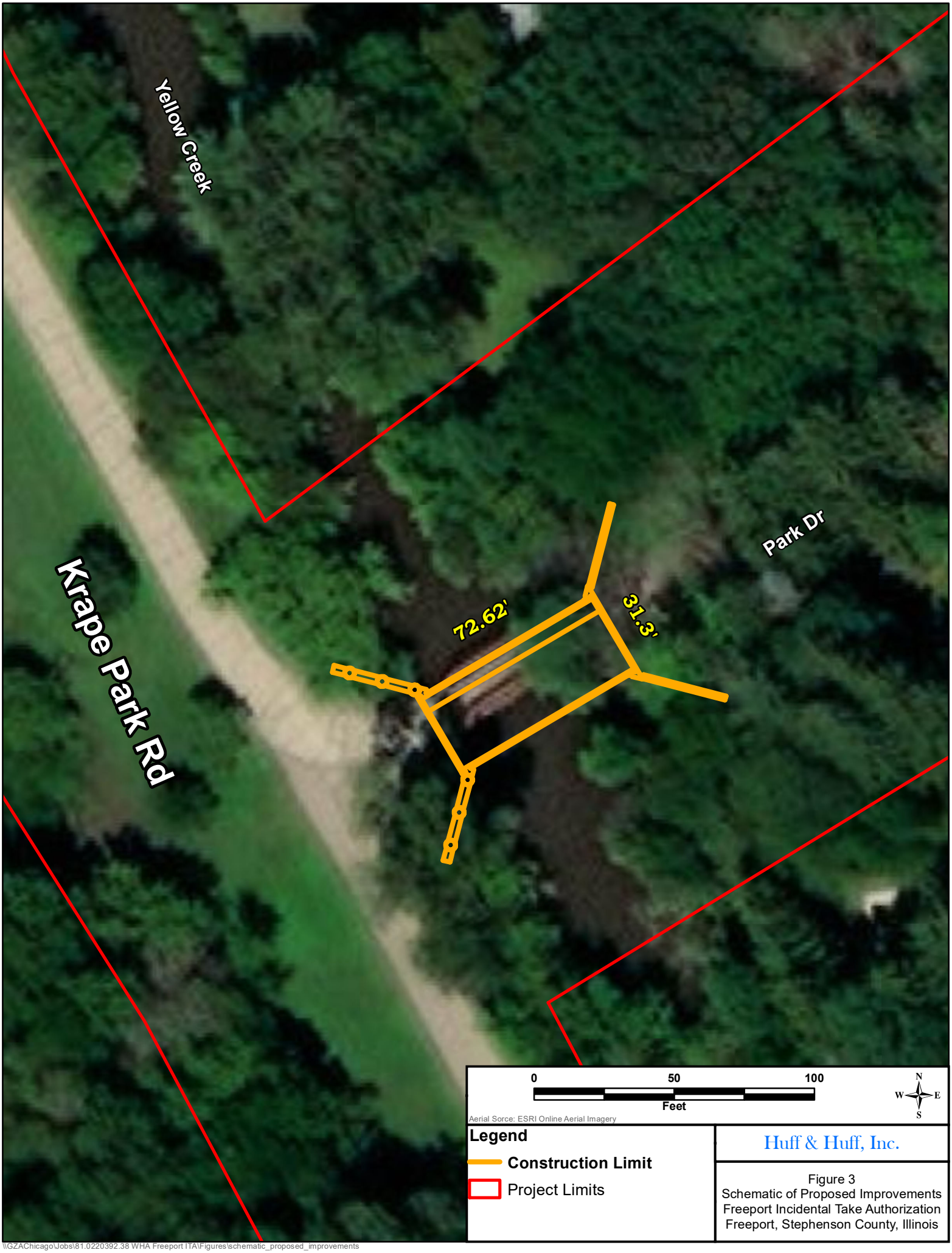
Yellow Creek
Krape Park Rd
Park Dr
72.62'
31.3'
0
50
100
Feet
N
W
E
S
Aerial Sorce: ESRI Online Aerial Imagery
Legend
Construction Limit
Project Limits
Huff & Huff, Inc.
Figure 3
Schematic of Proposed Improvements
Freeport Incidental Take Authorization
Freeport, Stephenson County, Illinois
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APPENDIX B

Preferred Improvement Plan

- Plan and Profile Sheets
- General Plan and Elevation Sheets
- Conceptual Dewatering Drawing

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PLAN		BY	DATE
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PROFILE		BY	DATE
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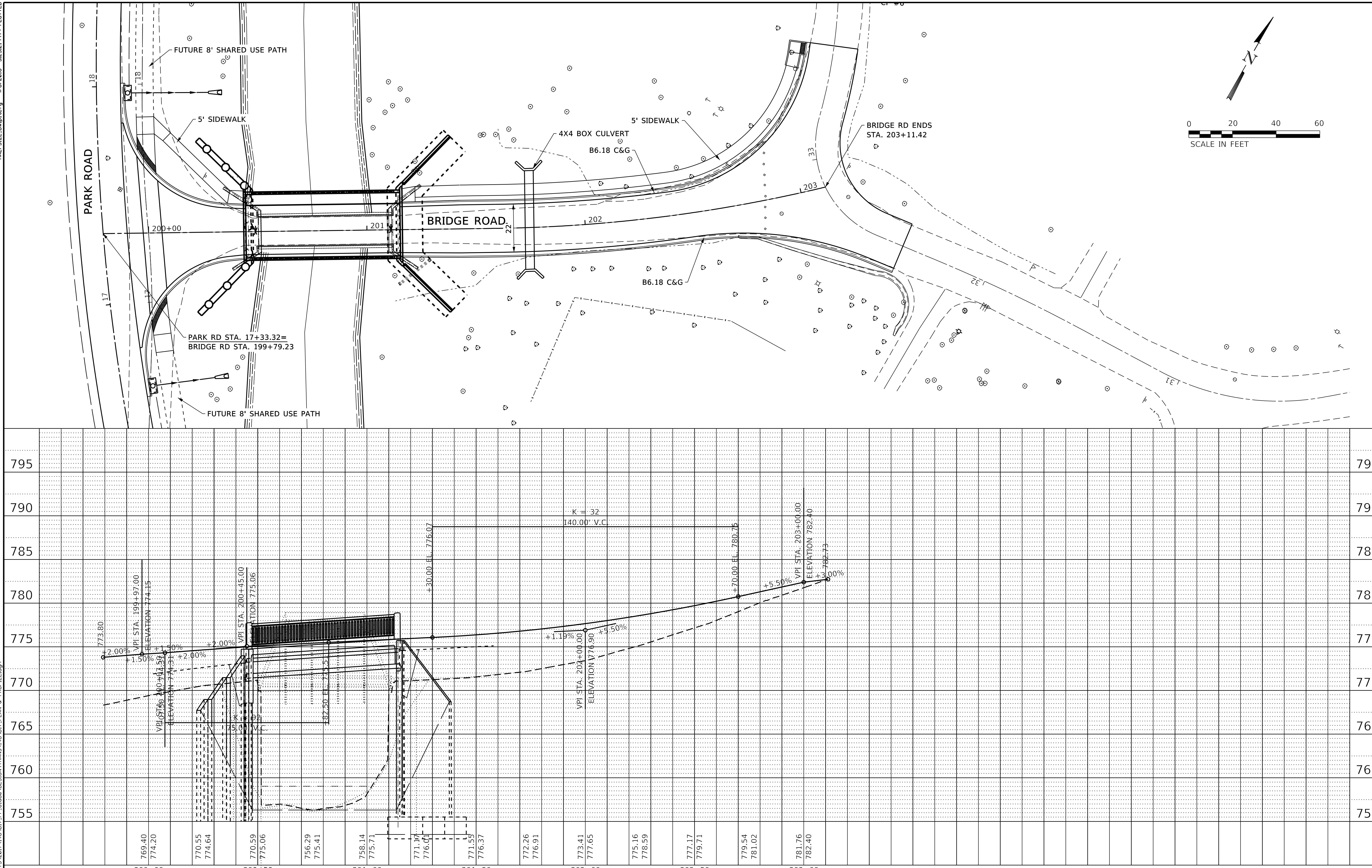

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DRAWN - TBS	REVISED -		
CHECKED - MRL	REVISED -		

CITY OF FREEPORT

PLAN & PROFILE
PARK RD. - STA. 199+79.23 - 203+11.42

STRUCTURAL SHEET NO. 2 OF 2 SHEETS

LOCAL RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
DEMETER DRIVE	17-00164+00-BR	STEPHENSON		
	WHA# 1469D17			
	ILLINOIS FED. AID PROJECT			

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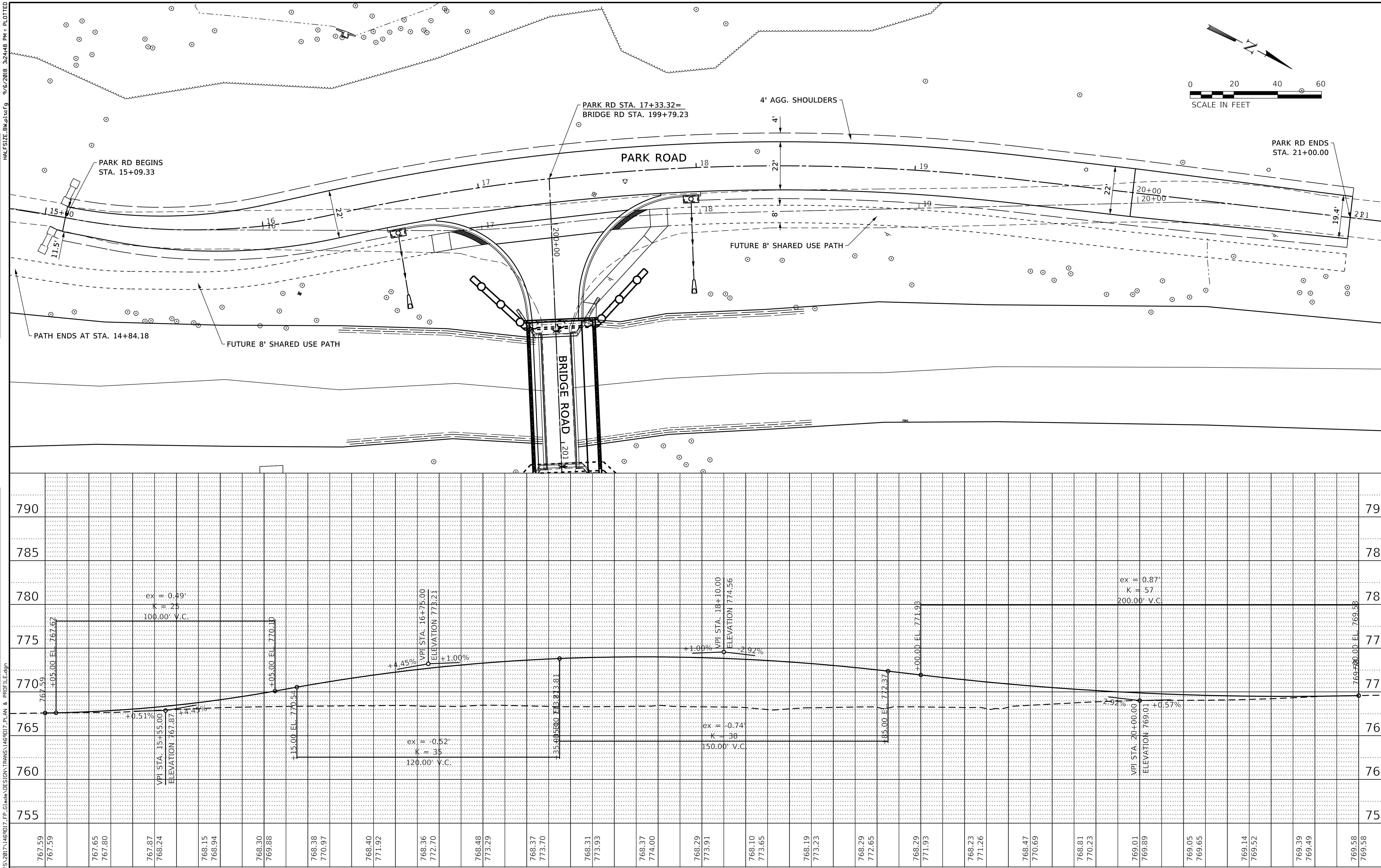

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CITY OF FREEPORT

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PARK RD. - STA. 15+09.33 - 21+00.00

STRUCTURAL SHEET NO. 1 OF 2 SHEETS

LOCAL RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
DEMETER DRIVE	17-00164+00-BR	STEPHENSON		
	WHA# 1469D17			
	ILLINOIS	FED. AID PROJECT		

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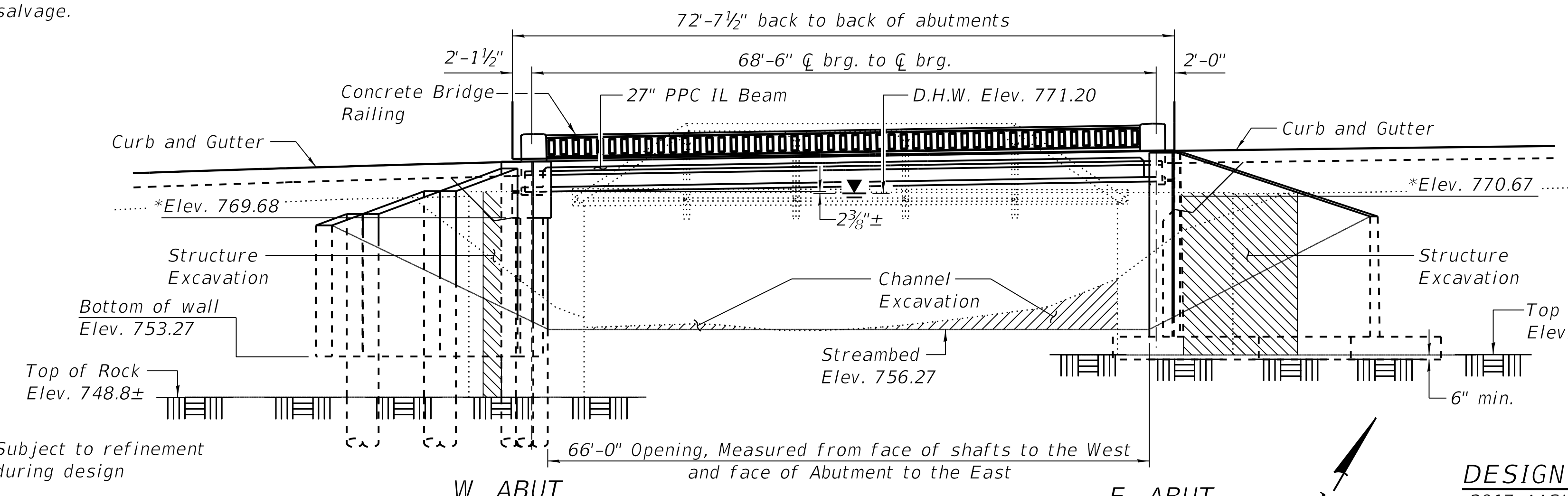
Existing Structure: S.N. 089-6003 Structure consists of single span (1 at 60'-0") steel truss closed bent concrete abutments. The structure measures 61'-8" back to back of abutments and 13'-0" out to out of deck. Structure to be removed and replaced. Road will closed to traffic during construction.

No salvage.

Bench Mark: #401 Chiseled "□" in S.W. Corner of wingwall, Elev. 771.61



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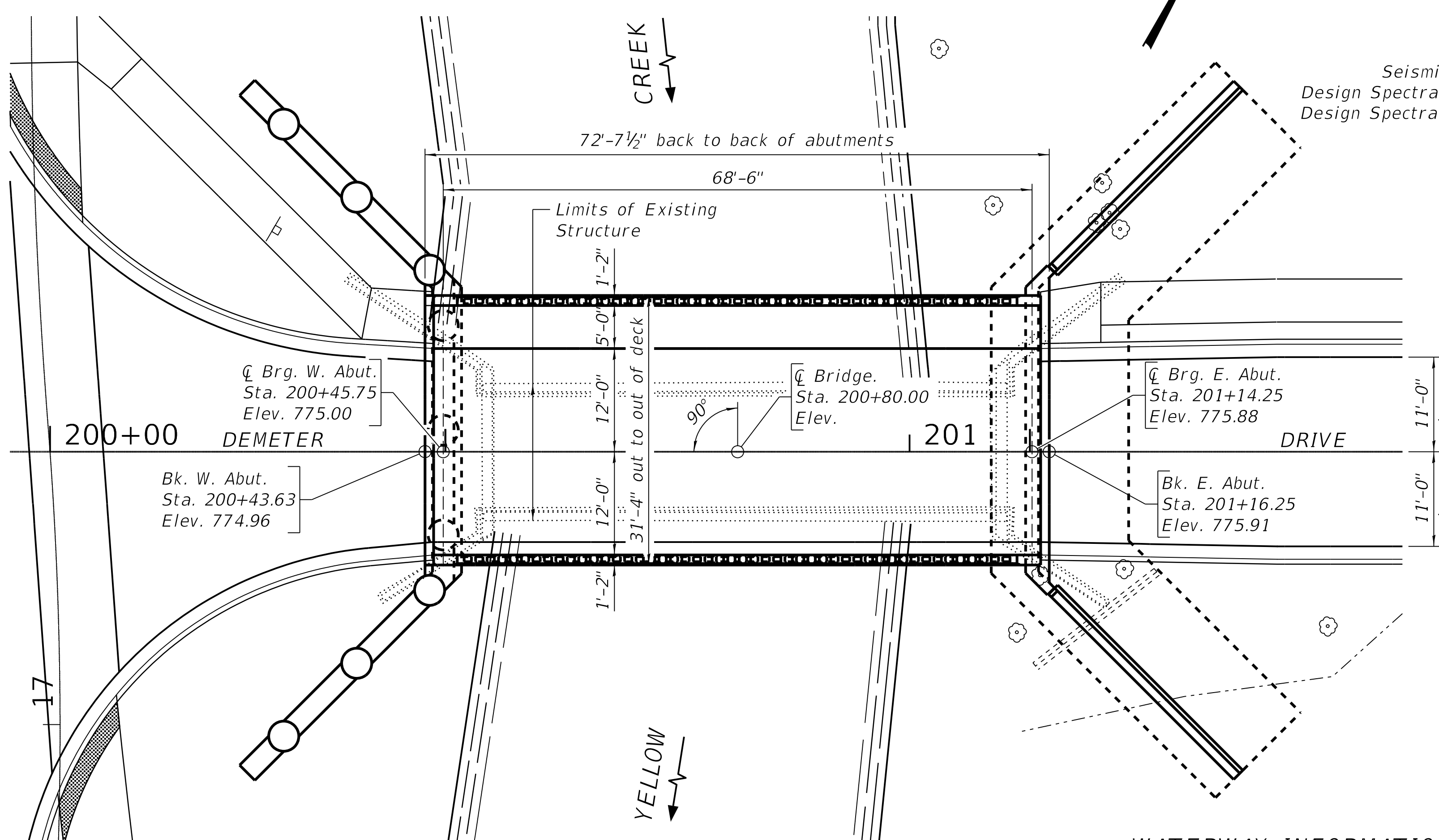

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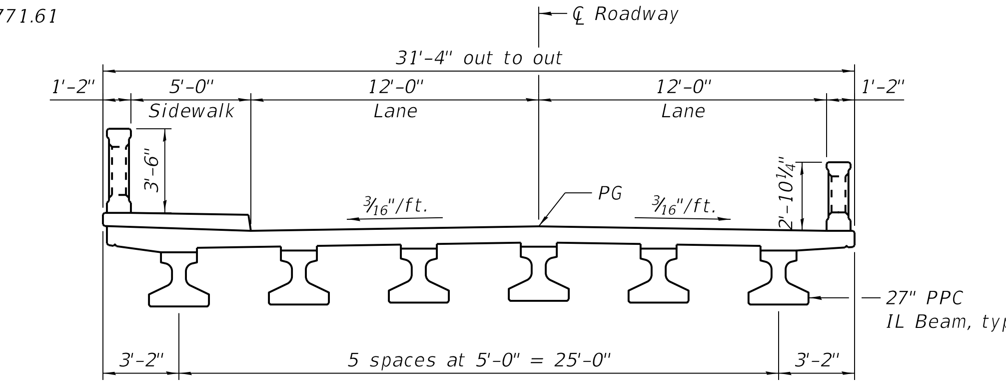
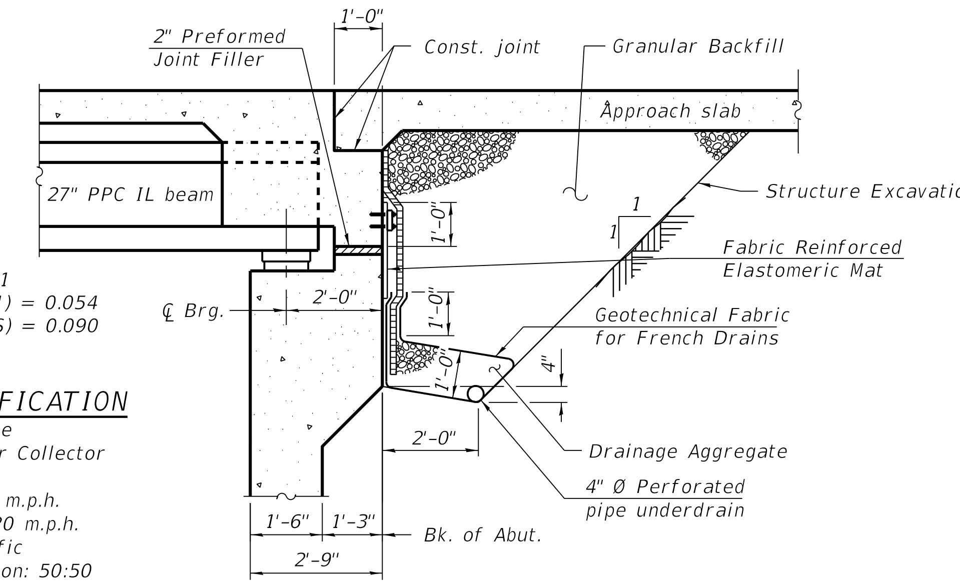


CROSS SECTION

Looking East



SECTION THRU SEMI-INTEGRAL EAST ABUTMENT

(Horiz. dim. @ Rt. ∠'s)

DESIGN SPECIFICATIONS

2017 AASHTO LRFD Bridge Design Specifications, 8th Edition

SEISMIC DATA

Seismic Performance Zone (SPZ) = 1
Design Spectral Acceleration at 1.0 sec. (SD1) = 0.054
Design Spectral Acceleration at 0.2 sec. (SDS) = 0.090
Soil Site Class = C

HIGHWAY CLASSIFICATION

Demeter Drive
Functional Class: Minor Collector
AADT: 25
Design Speed: 25 m.p.h.
Posted Speed: 20 m.p.h.
Two-Way Traffic
Directional Distribution: 50:50

DESIGN STRESSES

FIELD UNITS

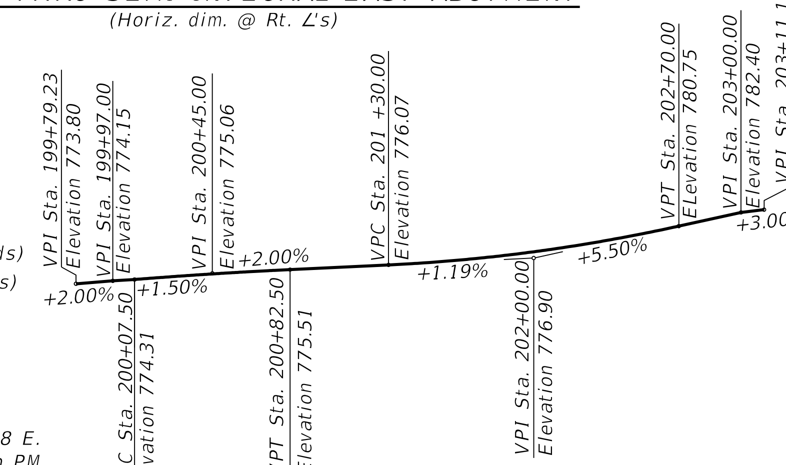
f'c = 3,500 psi
fy = 60,000 psi (Reinforcement)

PRECAST PRESTRESSED UNITS

f'c = 6,000 psi
f'ci = 5,000 psi
f's = 270,000 psi (½" Ø low lax. strands)
fsi = 201,960 psi (½" Ø low lax. strands)

LOADING HL-93

Allow 50#/sq. ft. for future wearing surface.



PROFILE GRADE

(along ℄ roadway)

DESIGN SCOUR ELEVATION TABLE

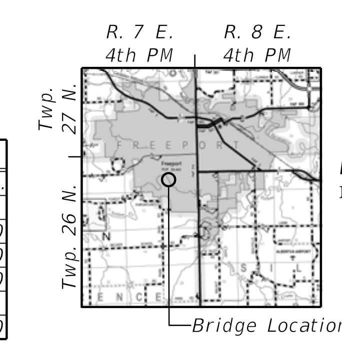
Event / Limit State	Design Scour Elevations (ft.)		
	W. Abut.	E. Abut.	Item 113
Q100	748.8	753.0	5
Q200	748.8	753.0	
Design	748.8	753.0	
Check	748.8	753.0	

WATERWAY INFORMATION

Drainage Area = 161.4 Sq. Mi. Low Grade Elev. 773.80 @ Sta. 199+79.32

Flood	Freq. Yr.	Q C.F.S.	Opening Ft²		Nat. H.W.E.	Head - Ft.		Headwater El.	
			Exist.	Prop.		Exist.	Prop.	Exist.	Prop.
	10	5,160	747	860	770.00	0.40	0.30	770.40	770.30
Design	30	6,934	753	939	771.20	0.50	0.40	771.70	771.60
Base	100	8,880	753	983	772.40	0.40	0.40	772.80	772.80
*Overtopping	——	——	——	——	——	——	——	——	——
Max. Calc.	500	11,600	753	983	773.80	0.40	0.50	774.20	774.30

*Proposed bridge and roadway embankment are not overtopped.
Existing is overtopped at a 25 year event.



LOCATION SKETCH

GENERAL PLAN AND ELEVATION
DEMETER ROAD OVER YELLOW CREEK
SEC. 17-00164-00-BR
CITY OF FREEPORT
STATION 200+80.00
STRUCTURE NO. 089-6004

PLAN	NOTE BOOK NO.	SURVEYED PLOTTED ALIGNMENT CHECKED RT. OF WAY CHECKED CADD FILE NAME	BY	DATE

PROFILE	NOTE BOOK NO.	SURVEYED PLOTTED GRADES CHECKED B.M. NOTED STRUCTURE NOTAT'NS CH'KD	BY	DATE

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809 EAST 2ND STREET, DIXON, IL 61021-0367
T: 815-284-3381 DESIGN FIRM: #184-000918

DESIGNED - MCW	REVISED -		
CHECKED - MRL	REVISED -	CITY OF FREEPORT	
DRAWN - FDL	REVISED -		
CHECKED - MRL	REVISED -		

LOCAL RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
DEMETER DRIVE	17-00164+00-BR	STEPHENSON	1	1
	WHA# 1469D17			
	ILLINOIS	FED. AID PROJECT		

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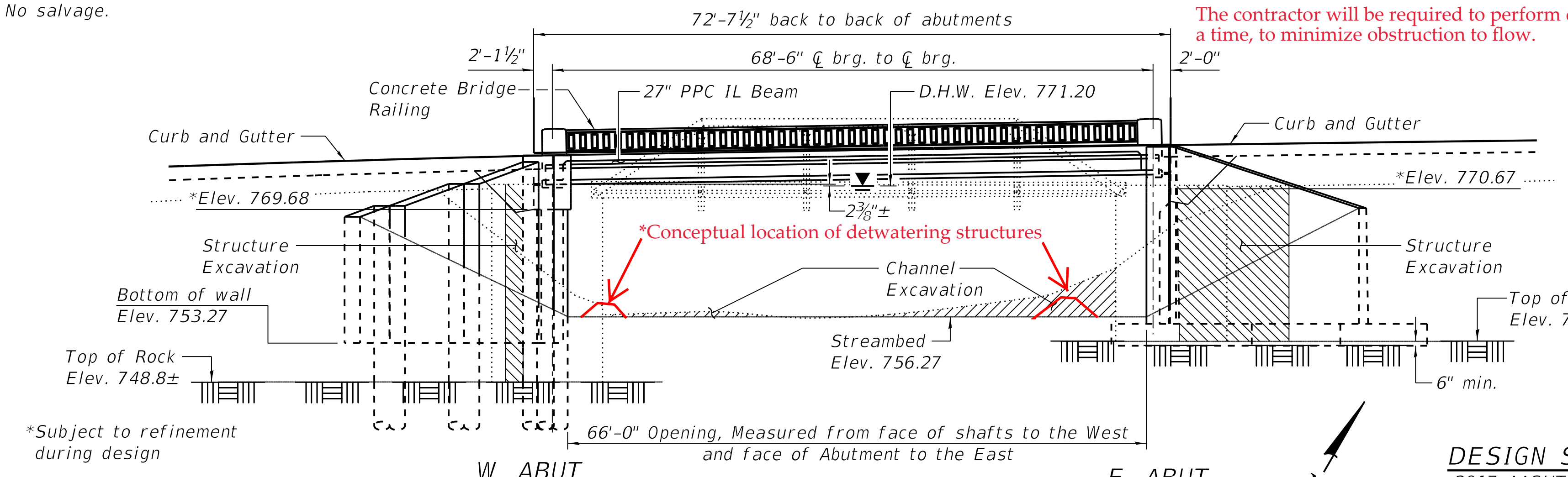
No salvage.

Bench Mark: #401 Chiseled "□" in S.W. Corner of wingwall, Elev. 771.61

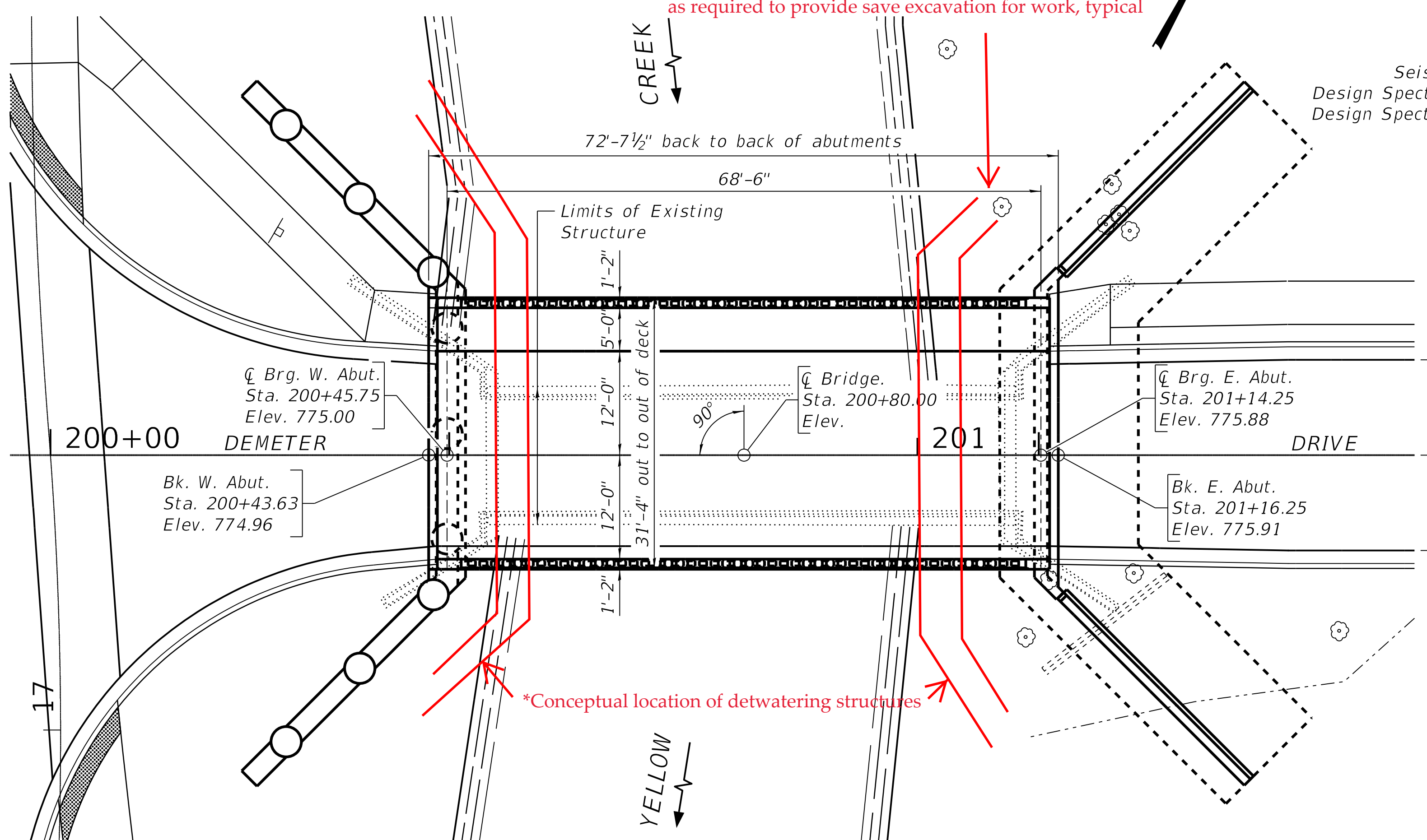
* Dewatering structures will be utilized as required by the contractor for footing excavation and abutment construction.

The contractor will be required to perform dewatering at one abutment at a time, to minimize obstruction to flow.

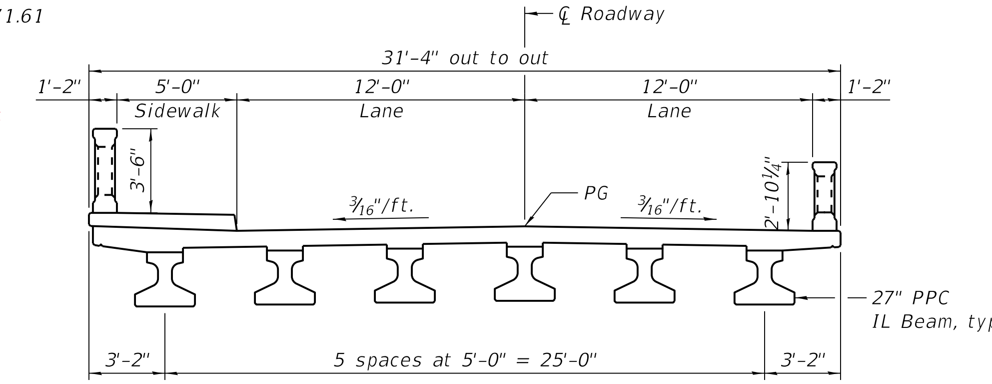


ELEVATION

Structures will be tied into existing channel bank as required to provide save excavation for work, typical

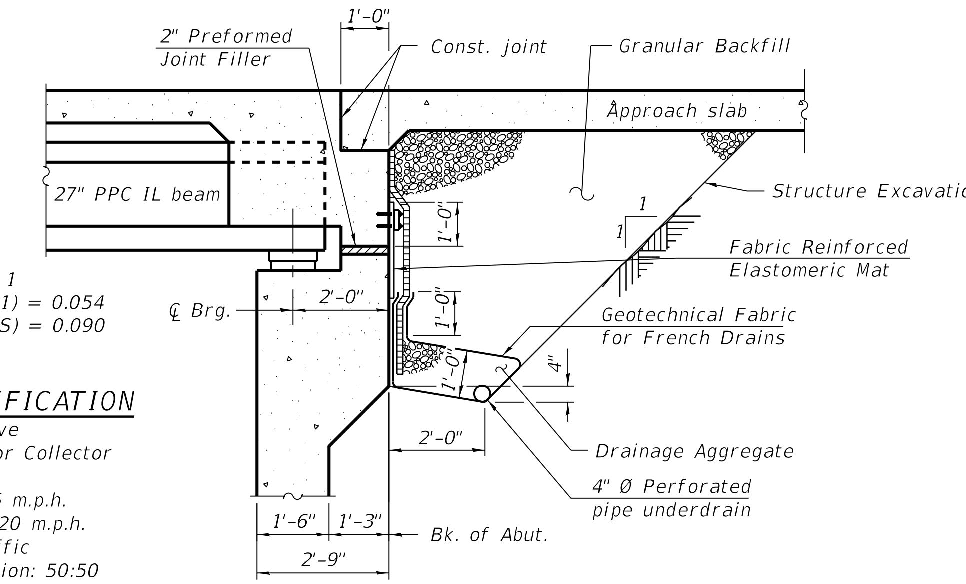


PLAN



CROSS SECTION

Looking East



SECTION THRU SEMI-INTEGRAL EAST ABUTMENT

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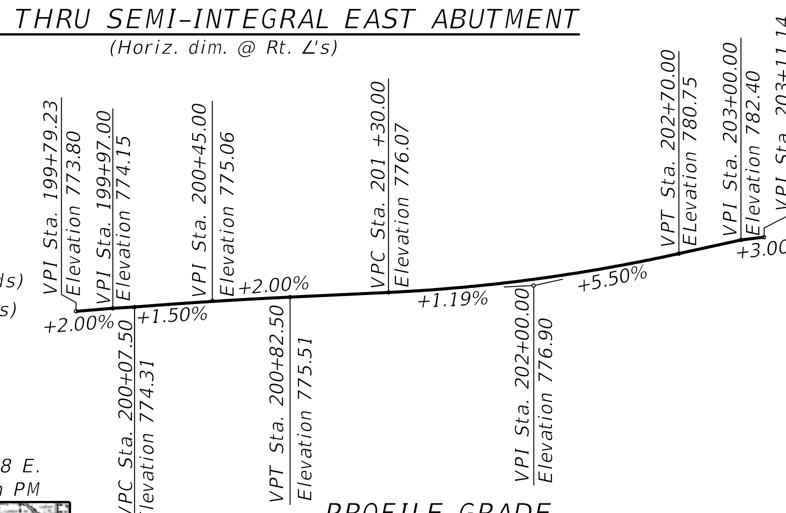

PROFILE GRADE

(along ℄ roadway)

DESIGN SCOUR ELEVATION TABLE

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	10	5,160	747	860	770.00	0.40	0.30	770.40	770.30
Design	30	6,934	753	939	771.20	0.50	0.40	771.70	771.60
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*Overtopping	——	——	——	——	——	——	——	——	——
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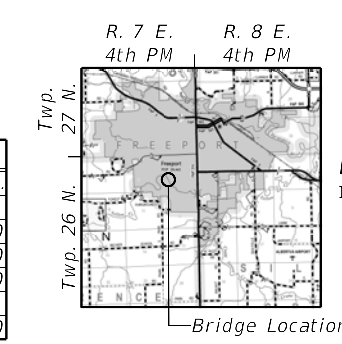

LOCATION SKETCH

GENERAL PLAN AND ELEVATION
DEMETER ROAD OVER YELLOW CREEK
SEC. 17-00164-00-BR
CITY OF FREEPORT
STATION 200+80.00
STRUCTURE NO. 089-6004

WILLETT HOFMANN & ASSOCIATES INC
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809 EAST 2ND STREET, DIXON, IL 61021-0367
T: 815-284-3381 DESIGN FIRM: #184-000918

DESIGNED - MCW	REVISED -	
CHECKED - MRL	REVISED -	
DRAWN - FDL	REVISED -	
CHECKED - MRL	REVISED -	

CITY OF FREEPORT

LOCAL RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
DEMETER DRIVE	17-00164+00-BR	STEPHENSON	1	1
	WHA# 1469D17			
	ILLINOIS FED. AID PROJECT			

PLAN | NOTE BOOK NO. | SURVEYED | PLOTTED | ALIGNMENT CHECKED | RT. OF WAY CHECKED | CADD FILE NAME | BY | DATE

PROFILE | NOTE BOOK NO. | SURVEYED | PLOTTED | GRADES CHECKED | B.M. NOTED | STRUCTURE NOTAT'NS CH'KD | BY | DATE

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APPENDIX C

INHS Mussel Survey Report (2019)

ILLINOIS
Illinois Natural History Survey
PRAIRIE RESEARCH INSTITUTE

Aquatic
Survey Report

Survey for Freshwater Mussels in Yellow Creek (Pecatonica River Basin) at the Park Court Road (IDOT FAU 5251) Bridge in Stephenson County, Illinois

IDOT Sequence Number 21612

Prepared by:
Alison P. Stodola

INHS/IDOT Statewide Biological Survey & Assessment Program
2019:50

8 August 2019

PROJECT SUMMARY

This report is submitted in response to a request from IDOT to INHS for freshwater mussel surveys in Yellow Creek (Pecatonica River drainage) at the Park Court Road (IDOT FAU 5251) bridge (IDOT Sequence No. 21612, Section No. 17-00164-00-BR) in Stephenson County, Illinois. The mussel survey was conducted by INHS personnel on 31 July and 1 August 2019.

During this survey, freshwater mussels were collected by hand-picking in a 50 yard stretch of the stream directly under and adjacent to the Park Court Road bridge for 8 person hours. Thirteen species of mussels were collected alive, including three live Spike (*Eurynia dilatata*) – Illinois Threatened; three additional species were collected as shell only.

Approved By: Kevin Cummings, Further Studies Aquatics
Group Coordinator-Malacologist

Surveys Conducted By: Alison P. Stodola, Assistant Aquatic Field Biologist
Rachel M. Vinsel, Data Curator
Zachary A. Rozansky, Graduate Research 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: Yellow Creek at the Park Court Road (IDOT FAU 5251) bridge, Stephenson County, Illinois (Latitude 42.27716°N, Longitude 89.64690°W). Photo is taken from downstream of the bridge, facing upstream (northwest), on 1 August 2019. Photo by A.P. Stodola, INHS.

INTRODUCTION

This report is submitted in response to a request on 28 August 2018 by Vincent Hamer of IDOT to Wendy Schelsky of INHS for a freshwater mussel survey in Yellow Creek at the Park Court Road (IDOT FAU 5251; Job No. C-92-060-18; Section No. 17-00164-00-BR; Structure No. 089-6003) bridge in Stephenson County, Illinois [IDOT Sequence No. 21612, INHS Project No. FS-1314]. IDOT inquired to INHS about the status of mussels in Yellow Creek because the City of Freeport proposes removal of existing closed single span steel pratt pony truss bridge and replacing it with a single span precast prestressed concrete I-beam bridge, with approach roadway work as well. Additionally, the bridge opening will require significantly raising the roadway profile to meet freeboard requirements and increasing the grade. A watermain running under the bridge on the west side of the creek, adjacent to Krape Park, is also proposed for replacement.

A plan and profile sheet was unavailable at time of survey, thus exact area of direct impact and relevant buffer could not be determined during the biological surveys.

In this report, we summarize the results of the freshwater mussel survey conducted in Yellow Creek at the Park Court Road (IDOT FAU 5251) bridge by INHS personnel on 31 July and 1 August 2019.

PROJECT AREA

The Park Court Road project (IDOT FAU 5251; Job No. C-92-060-18; Section No. 17-00164-00-BR; Structure No. 089-6003) is located on the Freeport West Quadrangle Topographic map and occurs approximately 1.9 miles southwest of Freeport in Stephenson County, Illinois - in Township 26N, Range 8E, Section 1 at Latitude 42.27716°N, Longitude 89.64690°W (**Figure 1**). The project will impact Gladewood Drive and Park Court Road, which currently has a bridge over Yellow Creek that is closed. The original bridge was constructed in 1920 and requires replacement.

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 31 July and 1 August 2019, Yellow Creek at the Park Court Road (IDOT FAU 5251) bridge was approximately 16 yards wide and 1.5 feet deep (ranged from 0.5 to 2.5 feet deep), with a flow of 1 ft/second. Substrate in the assumed project area (i.e., the area directly under the bridge and within the right-of-way) was a mix of boulder, cobble, gravel, sand, and silt. Water clarity was somewhat turbid, though this is not unusual for the Pecatonica River basin. The habitat within the project area was characterized by well-defined riffle-run-pool sequences and was compact cobble and boulder with sand and gravel in interstitial spaces between rocks. The entire project area had flowing water and was considered suitable habitat for freshwater mussels.

The project site was bordered by Krape Park on the west side of the creek and an established residential area on the east side. The immediate stream edge was forested, with lawn and park

habitat beyond. We were unable to see the watermain referenced in the tasking, thus were unable to determine whether replacement of the watermain would require in-stream work.

BACKGROUND

Yellow Creek is a tributary to the Pecatonica River in northwestern Illinois. It rises near Stockton in Jo Daviess County, Illinois, and flows southwesterly through Stephenson County for approximately 30 miles before it joins the Pecatonica River downstream (east) of Freeport, Illinois. The location of the site in this report is approximately six miles upstream (west) of the mouth of Yellow Creek. Land use in the Yellow Creek basin is primarily agriculture, both rowcrop and cattle ranching, but areas of forest are present in the lower basin. One lowhead dam is present along Yellow Creek and is located in Krape Park, approximately 0.25 miles upstream of the project location at the Park Court Road (IDOT FAU 5251) bridge.

No previous freshwater mussel surveys have been conducted at the Park Court Road (IDOT FAU 5251) bridge. However, Yellow Creek has been surveyed by INHS several times within a 2 mile radius of the Park Court Road (IDOT FAU 5251) bridge prior to this survey; a total of 19 species, including Black Sandshell (*Ligumia recta*) and Spike (*Eurynia dilatata*), both Illinois threatened species were recorded in those surveys (**Table 1**). Live Spike and Black Sandshell were collected in 2012 in a stretch of Yellow Creek approximately 1 mile downstream of the present survey location. Additionally, live Spike were collected during separate surveys in two locations more than 2 miles downstream or upstream of the present survey location: Hollywood Road in 2012 (n=2) and Illinois Route 17 in 2012 (n=2)(INHS Mollusk Collection Data, accessed August 2019).

Black Sandshell are found in medium to large rivers in riffles or raceways in gravel or firm sand (Cummings and Mayer 1992). They are widely distributed throughout the Midwest yet relatively uncommon. Although listed as threatened in Illinois, Black Sandshell populations are believed to be stable and increasing, especially in smaller streams, throughout Illinois (Douglass and Stodola 2014).

Spike are found in medium to large rivers in gravel or mixed sand and gravel; they generally prefer riverine conditions with stronger flow (Cummings and Mayer 1992). Spike are found throughout the Midwest but are becoming increasingly sporadic and isolated, particularly in Illinois (Douglass and Stodola 2014).

METHODS

A survey for freshwater mussels was conducted in Yellow Creek at the Park Court Road (IDOT FAU 5251) bridge on 31 July at 1400 hours and 1 August 2019 at 900 hours by INHS personnel A.P. Stodola, R.M. Vinsel, and Z.A. Rozansky. Live mussels were surveyed by hand grabbing and visual detection (e.g., trails, siphons, exposed shell). Efforts were made to search all available habitat types present within the project area. Personnel sampled for 8 person-hours over approximately 50 yards of the stream, which was centered on the existing bridge (**Figure 1**). Each 2-person-hour sampling event was recorded separately to track species accumulated within the project area (**Appendix 2**). Sampling concluded once the entire assumed project area (i.e., the area directly under the bridge and within the right-of-way) was covered. Due to the unknown extent of instream work and impact in the stream, we used best professional

judgement to establish the survey area, and nearly all sampling time was spent in the area immediately under the bridge. All mussels collected were identified, measured to nearest mm, external growth rings were enumerated, and mussels were returned to the area where collected.

Nomenclature used for freshwater mussels discussed in this report follows Williams et al. (2017). The current statuses of threatened and endangered species discussed in this report are taken from the Illinois Endangered Species Protection Board (IESPB)(2015). Voucher material of mollusks collected were deposited in the Illinois Natural History Mollusk Collection and cataloged as INHS 90747-90752.

RESULTS AND DISCUSSION

On 31 July and 1 August 2019, 76 live mussels representing 13 live species were collected by INHS personnel from Yellow Creek in the area surveyed at the Park Court Road (IDOT FAU 5251) bridge, and an additional three species were collected only as shell (**Table 1**). The live mussels collected included 3 live Spike (*Eurynia dilatata*), an Illinois Threatened species (IESPB 2015)(**Figure 2**). Additionally, three species in greatest conservation need (Illinois Department of Natural Resources 2017) were collected alive: Elktoe (*Alasmidonta marginata*), Flutedshell (*Lasmigona costata*) and Ellipse (*Venustaconcha ellipsiformis*)(**Figure 3**). The other mussel species collected during the present survey are common inhabitants of Illinois streams (Cummings and Mayer 1992; Cummings and Mayer 1997; Tiemann et al. 2007). However, collecting 13 species alive within such a small area of a stream is unusual and demonstrates that this project area in Yellow Creek has valuable freshwater mussel habitat present. Nearly all mussels collected were found in a 3-yard by 3-yard area near the right (east) bank of Yellow Creek in cobble, gravel and sand (**Figure 4**).

ACKNOWLEDGMENTS

INHS employees Rachel M. Vinsel and Zachary A. Rozansky assisted with field surveys. 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 mussels collections by INHS from Yellow Creek within 2 miles of the Park Court Road (IDOT FAU 5251) bridge (IDOT Sequence No. 21612; Section No. 17-00164-00-BR; Bridge Structure No. 089-6003) project area. Mussels collected for this project by INHS personnel on 31 July and 1 August 2019 are bounded by a black border. Data are from the INHS Mollusk Collection, accessed 2 August 2019. Number = live individuals, D = dead shell, R = relict shell. ST= Illinois Threatened.

	Location	**Fairgrounds Rd.**	**Krape Park, near dam**	**Krape Park, Park Court Rd.**	**S Walnut Rd**
	Year	**2011**	**2011**	**2019**	**2012**
Scientific Name	**Common Name**				
Actinonaias ligamentina	Mucket		4	18	66
Amblema plicata	Threeridge	1	1	1	19
Cyclonaias pustulosa	Pimpleback	R	12	6	11
Eurynaia dilatata - ST	Spike	R	R	3	3
Fusconaia flava	Wabash Pigtoe	D	2	1	2
Lampsilis cardium	Plain Pocketbook	R	2	12	6
Lampsilis siliquoidea	Fatmucket	R		1	D
Leptodea fragilis	Fragile Papershell			1	
Ligumia recta - ST	Black Sandshell				1
Pleurobema sintoxia	Round Pigtoe	4	2	7	13
Toxolasma parvum	Lilliput		D		
Tritogonia verrucosa	Pistolgrip			R	
Venustaconcha ellipsiformis	Ellipse	3	4	2	3
Alasmidonta marginata	Elktoe	1	5	3	9
Anodontoides ferussacianus	Cylindrical Papershell	R	1	D	
Lasmigona complanata	White Heelsplitter	R	R		2
Lasmigona compressa	Creek Heelsplitter	1			
Lasmigona costata	Flutedshell		1	12	20
Pyganodon grandis	Giant Floater	D	D	D	
Strophitus undulatus	Creeper	2	7	9	D
	Total Live	**6**	**11**	**13**	**12**
	Total Species	**14**	**15**	**16**	**14**

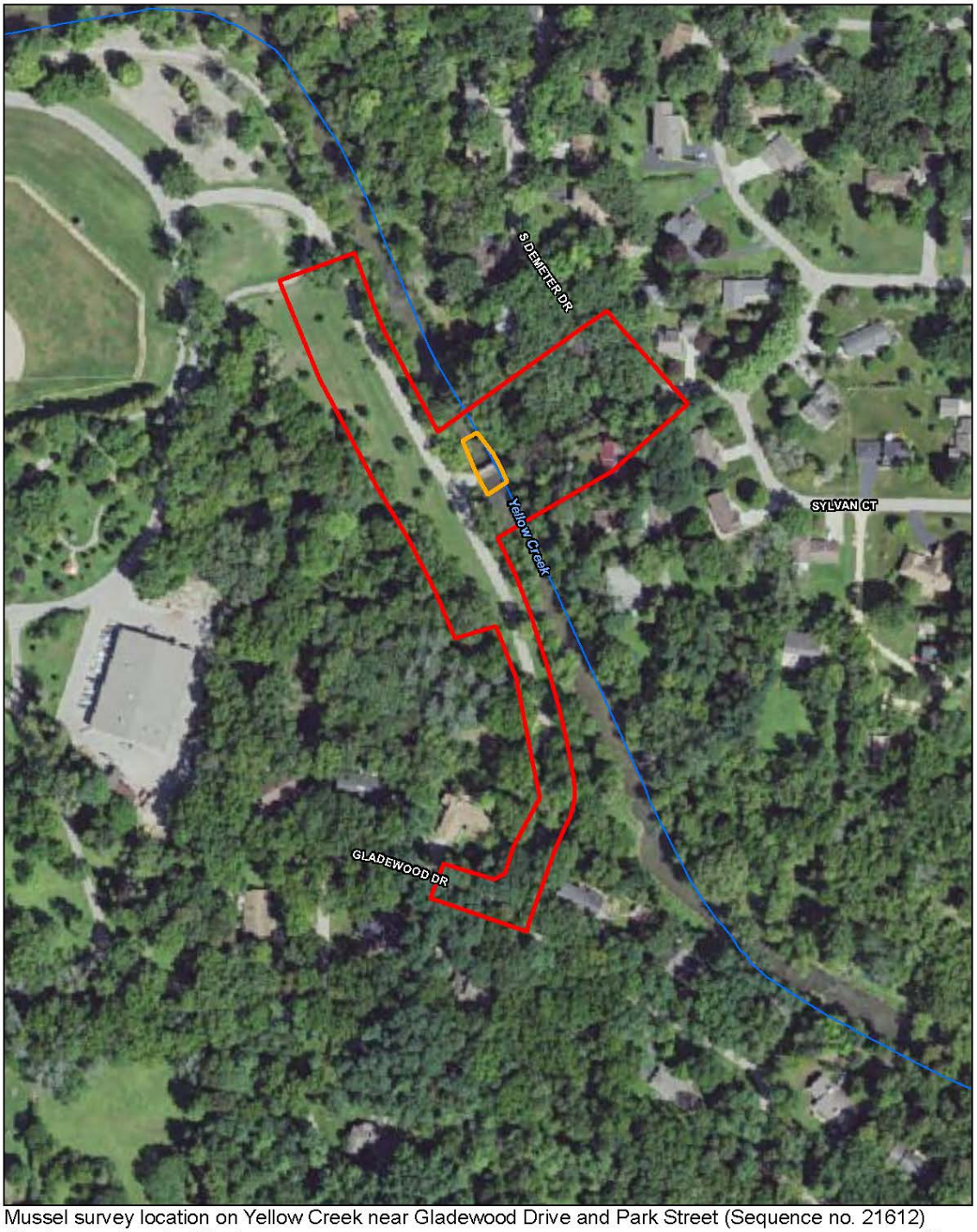

Figure 1. Yellow Creek project (IDOT Sequence No. 21612) at the Park Court Road (IDOT FAU 5251) bridge (Section No. 17-00164-00-BR; Bridge Structure No. 089-6003) project site in Stephenson County, Illinois, where a survey for freshwater mussels was conducted by INHS personnel on 31 July and 1 August 2019.

Figure 2. Spike (*Eurynia dilatata*), Illinois Threatened, collected in Yellow Creek at the Park Court Road (IDOT FAU 5251) bridge (DOT Sequence No. 21612; Section No. 17-00164-00-BR; Bridge Structure No. 089-6003), Stephenson County, Illinois, on 31 July 2019 by INHS personnel.

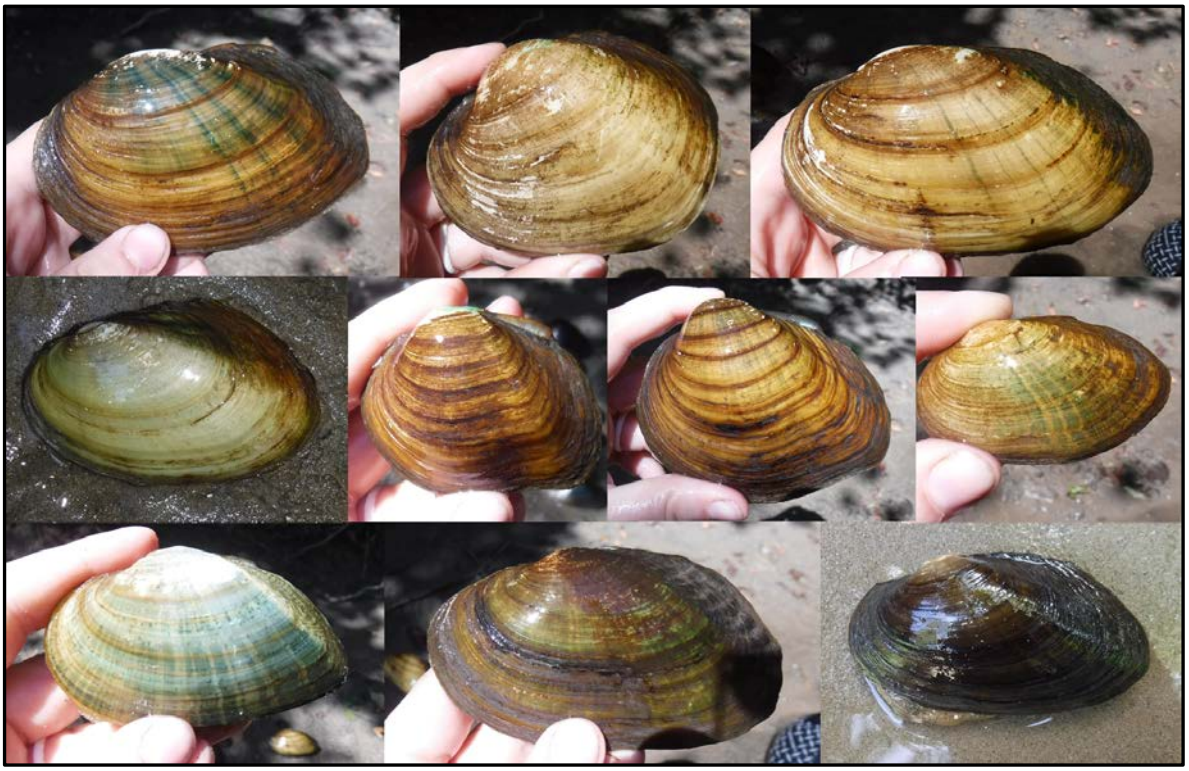

Figure 3. Representatives of species collected in Yellow Creek at the Park Court Road (IDOT FAU 5251) bridge, Stephenson County, Illinois, on 31 July -1 August 2019 by INHS personnel.From L to R, starting at top left: Mucket, Plain Pocketbook, Fatmucket, Fragile Papershell, Wabash Pigtoe, Round Pigtoe, Ellipse, Elktoe, Flutedshell, Creeper. Pimpleback and Threeridge are not featured in photos.

Figure 4. Survey area at Yellow Creek at the Park Court Road (IDOT FAU 5251) bridge.Photo was taken from left (west) bank of the creek, facing east on 1 August 2019 by A.P. Stodola, INHS.

Appendix 1

The appendix references an ArcGIS shapefile < 21612_Mussel_Survey_GIS.zip > with sampling point information for the stream crossing of Yellow Creek at the Park Court Road (IDOT FAU 5251) bridge (IDOT Sequence No. 21612; Section No. 17-00164-00-BR; Bridge Structure No. 089-6003), Stephenson County, Illinois (Latitude 42.27716°N, Longitude 89.64690°W) , where a survey for freshwater mussels was conducted by INHS personnel on 31 July and 1 August 2019. The ArcGIS shapefile and this report were both submitted to IDOT via the IDOT Site Assessment Tracking System extranet website (Frostycap) on 8 August 2019.

Appendix 2

Raw data associated with freshwater mussels collected in Yellow Creek at the Park Court Road (IDOT FAU 5251) bridge, Stephenson County, Illinois, on 31 July and 1 August 2019 by INHS personnel.

Person hours	Species	Length (mm)	Growth Rings
2	*Actinonaias ligamentina*	115	9
2	*Actinonaias ligamentina*	136	23
2	*Actinonaias ligamentina*	138	21
2	*Lampsilis cardium*	90	6
2	*Lampsilis cardium*	108	11
2	*Lampsilis cardium*	105	7
2	*Pleurobema sintoxia*	30	4
2	*Alasmidonta marginata*	79	9
2	*Amblema plicata*	75	12
2	*Lasmigona costata*	95	10
2	*Lasmigona costata*	102	10
4	*Venustaconcha ellipsiformis*	60	5
4	*Cyclonaias pustulosa*	75	14
4	*Cyclonaias pustulosa*	80	15
4	*Cyclonaias pustulosa*	60	13
4	*Cyclonaias pustulosa*	62	11
4	*Actinonaias ligamentina*	114	15
4	*Lampsilis cardium*	125	13
4	*Actinonaias ligamentina*	121	13
4	*Actinonaias ligamentina*	110	18
4	*Actinonaias ligamentina*	126	14
4	*Actinonaias ligamentina*	132	29
4	*Actinonaias ligamentina*	118	23
4	*Actinonaias ligamentina*	109	19
4	*Actinonaias ligamentina*	120	19
4	*Strophitus undulatus*	79	10
4	*Strophitus undulatus*	79	13
4	*Strophitus undulatus*	82	11
4	*Strophitus undulatus*	78	8
4	*Strophitus undulatus*	79	10
4	*Strophitus undulatus*	75	14
4	*Lasmigona costata*	101	14
4	*Lasmigona costata*	104	23
4	*Lasmigona costata*	107	19
4	*Lasmigona costata*	105	20

Sampling Hours	Total Species Collected
2	6
4	9
6	11
8	13

4	*Lampsilis cardium*	97	13
4	*Lampsilis cardium*	90	14
4	*Lampsilis cardium*	95	13
6	*Leptodea fragilis*	89	5
6	*Alasmidonta marginata*	70	10
6	*Cyclonaias pustulosa*	78	20
6	*Cyclonaias pustulosa*	59	13
6	*Lasmigona costata*	97	19
6	*Strophitus undulatus*	74	7
6	*Strophitus undulatus*	87	12
6	*Actinonaias ligamentina*	135	24
6	*Actinonaias ligamentina*	121	18
6	*Actinonaias ligamentina*	124	21
6	*Pleurobema sintoxia*	79	14
6	*Pleurobema sintoxia*	70	11
6	*Pleurobema sintoxia*	39	4
6	*Eurynia dilatata*	104	10
6	*Eurynia dilatata*	100	10
6	*Lampsilis cardium*	90	6
6	*Lampsilis cardium*	109	9
8	*Eurynia dilatata*	105	20
8	*Actinonaias ligamentina*	136	18
8	*Actinonaias ligamentina*	119	13
8	*Actinonaias ligamentina*	128	11
8	*Actinonaias ligamentina*	107	10
8	*Alasmidonta marginata*	69	6
8	*Venustaconcha ellipsiformis*	49	7
8	*Lampsilis cardium*	105	17
8	*Lampsilis cardium*	97	13
8	*Lampsilis cardium*	85	9
8	*Pleurobema sintoxia*	106	15
8	*Pleurobema sintoxia*	88	12
8	*Pleurobema sintoxia*	36	5
8	*Lasmigona costata*	117	11
8	*Lasmigona costata*	97	10
8	*Lasmigona costata*	94	13
8	*Lasmigona costata*	97	12
8	*Lasmigona costata*	94	10
8	*Strophitus undulatus*	85	9
8	*Lampsilis siliquoidea*	115	10
8	*Fusconaia flava*	51	11

APPENDIX D

Agency Coordination

Matthew Mackey

From: Mike Leslie <mleslie@willetthofmann.com>
Sent: Friday, July 17, 2020 10:13
To: Matthew Mackey
Cc: James Novak
Subject: FW: ESR 21612 - D2 - Stephenson Co - Freeport Sec 17-00164-00-BR; Bio/T_E delistings Status

Matt,

Received the below email from IDOT District 2 regarding Park Drive over Yellow Creek in Freeport a few minutes ago and wanted to pass it along. Also, there have been changes at Freeport City Hall. Dennis Carr (Public Works Director/City Engineer) and Lowell Crow (City Manager) are no longer with the City. The new Director of Public Works is William (Rob) Boyer and the new City Manager is Randy Bukas. To my knowledge, there is not a city engineer. We are going to set up meetings with Rob and Randy to go over projects we have with them, including the bridge project, and we will see who they want on any documents as far as primary contact. I am assuming it will be Rob.

Let me know if you have any questions.

Thanks
Mike

Michael R. Leslie, P.E., S.E.
Vice President
Moline Office Manager

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From: Connolly, Laura J <Laura.Connolly@illinois.gov>
Sent: Friday, July 17, 2020 9:34 AM
To: Mike Leslie <mleslie@willetthofmann.com>
Subject: FW: ESR 21612 - D2 - Stephenson Co - Freeport Sec 17-00164-00-BR; Bio/T_E delistings Status

Good morning Mike,
I hope all is well with you. I had not heard anything about the mussel delisting that we have been waiting for, so sent an email asking. Please see directly below from Vince in our Central Office Environment. If you have any questions, let me know and I find out for you.

I did not have a City of Freeport contact so did not copy anyone from there. Please forward for their information.

Thank you! Stay safe.

Laura

Laura Connolly
IDOT/District 2
819 Depot Avenue
Dixon, IL 61021
Phone: 815-284-5388
Email: laura.connolly@illinois.gov

From: Hamer, Vincent
Sent: Friday, July 17, 2020 8:29 AM
To: Pearcy, Elmer <Elmer.Pearcy@illinois.gov>
Cc: DeLong, Douglas <Douglas.DeLong@illinois.gov>; DOT.LocalAgencyESR <DOT.LocalAgencyESR@illinois.gov>
Subject: RE: ESR 21612 - D2 - Stephenson Co - Freeport Sec 17-00164-00-BR; Bio/T_E delistings Status Request

This project is still subject to an ITA with the Spike mussel still being listed. The Black Sandshell has been delisted but the ITA will still stand for the Spike mussel. We can update the EcoCAT consult once their files have been updated (might be a few more weeks) or they can write the ITA for the Spike mussel with a portion that explains the de-listed Black Sandshell and it will not be addressed.

If you have any other questions just let me know.

Thanks

Vince

Matthew Mackey

From: Hayes, Bradley <Bradley.Hayes@illinois.gov>
Sent: Friday, July 10, 2020 07:47
To: Matthew Mackey
Subject: Re: Black Sandshell and Spike Mussels

Matt,
The rumor is partly true. Black Sandshell is off the list, Spike is still on. However, Slippershell and Little Spectaclecase have also been removed, as far as mussels. Unfortunately, databases and websites updates aren't keeping pace with the new information, so they still show up in EcoCAT as hits and no new list has been published yet. I attached the list of proposed changes, I believe all the proposed changes were finalized. Apologies if that isn't 100% accurate, there might have been a few minor changes I'm not aware of.

https://www2.illinois.gov/dnr/ESPB/Documents/92019_Final_Summary_%20of_ESPB_preliminary_approvals_.pdf

> Summary of all ESPB Proposed Changes - Illinois.gov
>
> Summary of all ESPB preliminary listing decisions for the Illinois List review and revision ending in 2020 . Confirmed at the 183rd meeting, August 16, 2019 . Change from Endangered to Threatened:
>
> www2.illinois.gov

Thanks,
Brad

From: Matthew Mackey <Matthew.Mackey@gza.com>
Sent: Thursday, July 9, 2020 5:18 PM
To: Hayes, Bradley <Bradley.Hayes@illinois.gov>
Subject: [External] Black Sandshell and Spike Mussels

Hi Brad,
I'm emailing to see if the Black Sandshell and Spike mussels have been de-listed. I have heard rumors that they were, but I am struggling to find this detailed anywhere.

Thank you,

Matt

Matt Mackey
Environmental Scientist
Huff & Huff, a Subsidiary of GZA | 915 Harger Road, Suite 330 | Oak Brook, IL 60523
o: 630.684.4418 | c: 312.639.5091 | matthew.mackey@gza.com | www.gza.com | www.huffnhuff.com | GZA LinkedIn

***Please note*: Our office is currently working remotely. I can be reached at 312.639.5091.**

GEOTECHNICAL | ENVIRONMENTAL | ECOLOGICAL | WATER | CONSTRUCTION MANAGEMENT

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