



FINAL REPORT – DAM REMOVAL AND FISH PASSAGE RESTORATION IN MINERAL SPRINGS CREEK – LAKE MICHIGAN BASIN



BACKGROUND / OVERVIEW

1. *Briefly summarize the project description as outlined in the original proposal.*

Ozaukee County and partners will remediate a failing dam and a four barrel culvert crossing in Mineral Springs Creek. The stream is heavily manipulated and multiple fish passage projects are underway downstream of the dam site. Project activities will reconnect 1.02 stream miles and 25.3 acres of high quality wetland habitat to Lake Michigan, directly benefiting seasonal spawning runs of northern pike, suckers and redhorse, Chinook salmon, Coho salmon, and steelhead. General project goals include:

- Remediate two large-scale fish passage impediments in Mineral Springs Creek
 - Restore aquatic life access to existing high quality spawning and rearing habitat
 - Improve recruitment from existing high quality habitats
 - Demonstrate successful utilization of the stream through active fisheries monitoring
 - Improve genetic and biological diversity of remnant and/or desirable fish species
 - Help supplant the need for artificial stocking or habitat manipulation in undesirable areas
2. *Was the project completed as originally intended? If not, indicate how the final outcome(s) differed from what was anticipated. Does your experience suggest that original expectations were realistic? What factors hindered or helped progress?*

All project goals, outcomes, and metrics were met as stated in the original grant proposal, suggesting that the original expectations were realistic. As noted in the original grant application, a culvert remediation/modification project was initially proposed for the Park Street location based on best available conceptual design efforts and not on full engineering and design. Upon full engineering and design

for the Park Street culvert, it was noted that the existing four barrel culverts at the Park Street road/stream crossing that were conceptually proposed for modification to accomplish fish passage were actually failing structurally and hydraulically, something that could not have been known prior to engineering and design. Hence, the engineering and design consultant recommended a full culvert replacement at the Park Street location. A full culvert replacement required additional time for the Department to seek and secure additional funding, which was described in the 6/26/15 no-cost time extension request letter and subsequent phone conversations with GLFT staff. The culvert replacement plans required significant coordination with the various utility companies to determine the best way to manage the multiple utilities at the Park Street crossing, which included a high capacity sanitary sewer line, abandoned and active water mains, fiber optic cable, telephone cable, and electric lines. In addition, additional, unforeseen work was required for permitting and NEPA requirements for NFWF SOGL grant funding due to new federal designations associated with the northern long-eared bat, unknown at the time of grant proposal submittals. In recognition of these challenges, the Department secured the services of an additional project engineer (Alfred Benesch & Co) to refine and finalize the plans and specifications to best work around and with the existing utilities. The Department also retained the services of Inter-fluve for detailed hydrologic and hydraulic modeling for culvert sizing, floodplain impact analysis, and for aquatic life passage criteria at a much greater level than previously completed. As such, a subsequent no-cost time extension request was submitted on 12/7/16 (which was approved by GLFT staff on 12/20/16) to accommodate for these additional engineering, design, coordination, and management needs.

OUTCOMES

- 3. Whether they were intended or unintended, what do you consider the most important benefits or outcomes of this habitat restoration project?*

Improperly sized or installed culverts, low-head dams, and other aquatic organism passage impediments fragment streams and allow only a fraction of the Lake Michigan Basin's existing high quality habitats to reach their full ecological potential. These projects, supported by GLFT funding, removed or remediated two significant fish passage impediments on Mineral Springs Creek, a Lake Michigan tributary, that prevented access to existing, historical spawning and rearing habitats crucial to native and imperiled fish and other aquatic life. Project goals and intended outcomes included: (1) Remediate two large-scale fish passage impediments in Mineral Springs Creek; (2) Restore aquatic life access to existing high quality spawning and rearing habitat; (3) Improve recruitment from existing high quality habitats; (4) Demonstrate successful utilization of the stream through active fisheries monitoring; (5) Improve genetic and biological diversity of remnant and/or desirable fish species; and (6) Help supplant the need for artificial stocking or habitat manipulation in undesirable areas. Environmental monitoring (see below) demonstrated successful fish passage through the project areas after construction and restoration activities were completed. In addition, these projects were synergistic with and provided a catalyst for additional connectivity and stream restoration work downstream by We-Energies (see below for a more detailed description).

4. *What activities were pursued in relationship to the intended outcomes, and to what extent did you achieve the intended outcomes listed in your proposal?*

The following activities were completed to support intended outcomes and ecological performance measures:

A request for proposals for professional engineering and design services for the Mineral Springs Dam removal and stream restoration project and Park Street road and stream crossing project was issued on 11/19/13. A pre-proposal meeting was held on 12/6/13 and proposals were due and opened 12/16/13. A total of five proposals were received, and the Ozaukee County Natural Resources Committee awarded the professional services contract to Stantec, Inc. based on a review of qualifications, experience, and cost at their 1/9/14 meeting. Ozaukee County signed a professional services agreement with Stantec on 3/31/14. Stantec staff began initial morphological data collection in April 2014, and significantly completed topographic survey work by 7/30/14. Stantec submitted a draft report of field observations to Ozaukee County on 9/9/14 and a conceptual design memo on 9/26/14, which detailed multiple design options for each site. After a thorough review, Ozaukee County met with Stantec on 10/21/14 and directed Stantec to proceed with the design of a full dam removal and site and channel restoration to emulate a step pool sequence found in adjacent channel reaches. The final dam removal and stream restoration plans were delivered on 5/14/15. The USACOE permit was issued on 7/22/15 and the WDNR permit was issued on 9/9/15. Initial clearing and grubbing and materials (e.g., stream bed and grade control structures) procurement activities were completed in December 2015. A sheet pile coffer dam and bypass pumping system was installed on 5/31/16 and major dam removal activities occurred during the week of 6/6/16. Stream restoration activities completed in conjunction with dam removal activities included the reconstruction of approximately 210' of stream channel in a step pool sequence as found in adjacent channel reaches set at a 2.5% – 3.1% average grade, and placement of boulders on the banks and within the stream channel for grade and bank controls and habitat enhancements. Stream flow was restored on 6/14/16 and final site restoration was significantly completed by 6/22/16.

Stantec recommended a full culvert replacement (e.g., either a new aluminum arch culvert set on concrete footings or a concrete box culvert) at the Park Street crossing as portions of the original culverts were badly corroded and backwatered during high flows. Draft final plans were provided on 6/19/15 with the aluminum arch culvert replacement design that incorporated retaining the existing two northern culverts to provide for bypass flows during construction and to act as floodplain relief culverts during periods of high flows. The WDNR permit was issued on 7/30/15 and the USACOE non-reporting permit was issued on 8/26/15.

Department staff secured the services of an additional Project Engineer, Alfred Benesch & Company (Benesch) in July 2016 to complete final plans to accommodate for multiple site complexities, including utility conflict coordination and complex hydraulic and hydrologic modeling associated with this steep-gradient stream, as well as public bidding support and construction oversight activities. Benesch conducted additional site surveying and completed detailed hydraulic and hydrological modeling via its subcontractor, Interfluve, to

assist with fish passage criteria and analysis, impact to floodplain analysis, and culvert sizing methodology. A final design/modeling memo was completed and final plans were issued on 3/8/17 that included a pre-cast 84' long x 4' high x 13' wide concrete box and removal of the proposed bypass culverts to better align with utility management needs and fish passage criteria. Benesch and Department staff coordinated with the City on utility management during construction and with private utilities on relocation plans. A Class II public notice advertisement for bids for the furnishing of labor, equipment, and materials to complete the Park Street culvert replacement project was published in the Ozaukee Press on 3/9/17 and 3/16/17. Ten bids were publicly opened and read aloud on 3/24/17. Benesch provided a letter recommending awarding the bid to Advance Construction, Inc. Advance Construction, Inc. was the lowest responsible and responsive bidder. The Benesch recommendation was also the staff recommended bid based on a review of qualifications, scope of work, references, complete and accurate bid submittal and price (lowest responsible and responsive bidder). The Ozaukee County Natural Resources Committee approved awarding the bid to Advance Construction at their 4/6/17 meeting and the final contract was executed on 5/12/17.

Construction and restoration activities began the week of July 10, 2017. Initial activities included clearing, grubbing, and installation of erosion controls. Advance Construction routed the creek flow into the northernmost culvert and began initial excavation on 7/17/17. Additional activities 7/18/17 – 7/21/17 included utility coordination and relocation and installation of the new box culvert. The channel and choke aggregate was placed in the new culvert on 7/24/17 and flow was restored through the culvert on 7/25/17. Final road grading was completed on 7/28/17 and the road was paved on 8/1/17. Final site grading and restoration (e.g., seeding and matting) was completed the week of 8/7/17.

5. *What audience were you particularly hopeful of reaching? To what extent did you reach them? Did you receive any feedback?*

The Department worked closely with project landowners (e.g., multiple private landowners at the dam removal and restoration site and the City of Port Washington and We-Energies at the Park Street site) in all aspects of the engineering, design and construction work. Specifically, the Department secured memorandums of agreement with the private landowners and access permits with We-Energies (who owns land outside of the Park Street public right of way) which included approval of project plans and permission to complete the project activities (as applicable). The Department had frequent and detailed communication with the landowners on project timing, construction activities logistics, sequencing, and coordination, road closures timelines and detour routes, and restoration goals, as well as meetings with neighbors and concerned citizens. The Department also received detailed feedback and approvals from the City of Port Washington on the management and replacement (as needed) of the public utilities at the Park Street site. In addition, the Department provided regular updates to all other project partners and funders including the WDNR, US Fish and Wildlife Service (USFWS), National Fish and Wildlife Foundation (NFWF), and Fund For Lake Michigan (FFLM).

6. *What relationships or opportunities were developed or strengthened through the work?*

The GLFT, National Oceanic and Atmospheric Administration (NOAA), US Environmental Protection Agency (USEPA), US Fish and Wildlife Service (USFWS), U.S. Forest Service (USFS), Wisconsin Coastal Management Program (WCMP), WDNR, NFWF, FFLM, Wisconsin Energies Foundation (WEF), Brookby Foundation, and other organizations have recognized the importance of aquatic connectivity in the Lake Michigan Basin, funding multiple Ozaukee County Planning and Parks Department projects to inventory, prioritize, and remove/remediate impediments to fish and aquatic life. The County has developed a network of local, regional, and nationally renowned fish and restoration experts and utilized their support throughout the project. The County employed the skills of experienced staff and multiple regional experts to successfully implement the proposed projects. Specifically, this consortium of experts included professional services from Stantec, Benesh, and Inter-Fluve, Inc., a renowned engineering firm that has completed a wide array of river restoration and habitat improvement projects, including several with the County, as well as regional fisheries experts. In addition, the Department shared project design plans and hydraulic and hydrologic modeling information with We-Energies in support of additional aquatic connectivity and stream restoration work downstream (see #9 below).

7. *Was an evaluation included as part of this project? If so, what were the key findings? (Please attach a copy of the evaluation report.)*

In general, the project team (e.g., Department staff and project consultants) reviewed all pertinent data and ensured incorporation of relevant existing information into the design process. Possible data and sources included: available survey data, soils and surficial geology data, existing topographic data, USGS gauge data and County flow data from nearby streams, flood information, historic maps and aerial photographs, utility data, and available and pertinent ecological reports including detailed Tier II impediment inventories and habitat assessment data. In addition, field site surveys supported detailed topographic mapping and hydraulic and hydrologic models. In general, the project team combined the analog or reference reach approach of the U.S. Forest Service (USFS) Stream-Simulation method of designing stream crossings with an analytical approach (e.g. HEC RAS modeling) as well as Fish Xing software to confirm that the hydrology and hydraulics upstream, within, and downstream of the Park Street culvert would support fish and wildlife passage and remain stable. Detailed hydraulic and hydrologic modeling demonstrated no impact to the upstream floodplain for both projects. Crossing flow velocities passable to native fish species were achieved to the extent practical for each design. Final plans met fish passage criteria and landowner usage needs and included all pertinent information to meet regulatory permit requirements.

Staff completed mark and recapture backpack electrofishing activities at the dam removal and stream restoration site in conjunction with Highway Department construction activities. On 5/31/16, immediately prior to installation of the sheet pile coffer dam (and subsequent dewatering of the work area), staff placed seine nets above and below the project area to prevent fish passage into the work zone

during active construction activities. All resident fish species between the seine nets were sampled, identified, and fin clipped per QAPP protocols and relocated downstream of the downstream seine net. Sampled fish included 59 creek chubs, two central stonerollers, 36 western blacknose dace, 17 mottled sculpin, one bluegill, 22 brook sticklebacks, five central mudminnows, one green sunfish, two greater redhorse, and three fathead minnows. As noted above, stream flow was restored on 6/14/15 and the downstream seine net was removed to allow resident fish passage through the former dam site, with the upstream seine net still in place. On 6/22/16, post construction sampled fish included four creek chubs, 9 western blacknose dace, three central mudminnows, six brook stickleback, one fathead minnow, one central stoneroller, and one longnose dace. No marked fish from the pre-construction sampling were recaptured; however, due to the upstream seine net preventing downstream fish passage from outside the project area and formerly dewatered site conditions during construction activities, it can be inferred that all fish captured during the post-construction survey within the project area were successfully able to pass the former impoundment site in the restored stream channel.

Staff also completed mark and recapture backpack electrofishing activities at the Park Street site in conjunction with Advanced Construction activities. On 7/10/17, prior to installation of a metal coffer dam (and subsequent routing of the creek flow through the single northern most culvert), staff placed seine nets above and below the project area to prevent fish passage into the work zone during active construction activities. All resident fish species between the seine nets were sampled, identified, and fin clipped per QAPP protocols and relocated downstream of the downstream seine net. A heavy rainfall event occurred on 7/12/17, which possibly overtopped the stream nets, so the nets were re-deployed and the project site was sampled again on 7/13/17. Total pre-construction sampled fish included seven black bullhead, one bluegill, two brook stickleback, 13 central mudminnows, five young of the year largemouth bass, six creek chub, 10 western blacknose dace, and two white sucker. As noted above, stream flow was restored on 7/25/17 and the downstream seine net was removed to allow resident fish passage through the former dam site, with the upstream seine net still in place. On 7/28/17, post construction sampled fish upstream of the new culvert included two brook stickleback, one central mudminnow, one creek chub, one young of the year largemouth bass, and four western blacknose dace. Two of the fish (a creek chub and a western blacknose dace) were recaptured fish from the pre-construction sampling that passed through the new culvert.

RELATED EFFORTS

8. *Was this project a standalone effort or was there a broader effort beyond the part funded by the GLFT? Have other funders been involved either during the time of your GLFT grant or subsequently?*

Project activities specifically funded by GLFT have been part of a much broader effort to improve aquatic connectivity on tributaries to the Lake Michigan that has been supported by additional funding entities including USFWS, NFWF, WDNR, FFLM, and Wisconsin Coastal Management Program (WCMP) both during the GLFT grant period and subsequently for the dam removal and restoration and culvert removal projects as well as the inventory of habitat and fish passage impediments on additional Lake Michigan tributary streams (see #9 below). The

Department has completed additional aquatic connectivity work on Mineral Springs Creek in conjunction with GLFT funded activities including modifications to the existing culvert at Division Street to eliminate perched conditions and to improve flow depths, removal of concrete debris from the channel near the Oakland Avenue crossing, and multiple log and debris jam removals throughout the stream corridor completed through volunteer assistance and youth conservation corps (e.g., Trout Unlimited work day).

9. *Has there been any spinoff or follow-up work related to this project? Did this work inspire subsequent, related restoration projects involving you or others?*

An existing weir along Mineral Springs Creek on We-Energies property (located immediately upstream of Wisconsin Avenue and downstream of the GLFT project areas) was originally designed and constructed to protect the Port Washington generating plant from the effects of the 50-year and 100-year storm events. The intent of the weir design was to allow lower storm events (< 5 year) to remain in the confines of the creek with higher flows being diverted over the weir and into an overflow channel leading directly to Lake Michigan. In recent years, the creek morphology began to change in the area of the weir. Upstream sedimentation was depositing sediment and debris in the creek along the area of the weir, filling the creek and increasing the bottom elevation of the creek. This resulted in virtually all storm events being routed over the weir, thereby, leaving the downstream portion of the creek with extremely low or no flows unsuitable for fish passage, particularly during the spring of 2016. We Energies worked with a consultant and met regularly with Ozaukee County, the WDNR, and other partners to engineer and design permanent solutions to restore baseflow through the downstream portion of the creek, which included stream channel re-routing and restoration and weir construction. Specifically, several elements from the dam removal and stream restoration project and Park Street culvert replacement project designs were included in the We-Energies plans, including use of hydraulic and hydrologic modeling and stream bed and bank material sizing calculations. Construction activities began in September 2017 and completed in November 2017. Department staff met several times with representatives from We-Energies and contractors in the field during the active construction period to provide feedback and advice on construction sequencing, logistics, and stream restoration activities.

In addition, the WDNR and WCMP have funded additional work on direct tributaries in the Lake Michigan basin to inventory habitat and fish passage impediments and to prioritize subsequent aquatic connectivity projects. The Department and its partners have completed comprehensive habitat and impediment inventories and are developing and refining a GIS-based fish and wildlife habitat decision support tool (Fish and Wildlife Tool), an Ecological Prioritization GIS-Tool (GIS-Tool), and a Stream Reach Prioritization Methodology (SRPM) to prioritize aquatic connectivity and habitat improvement and restoration activities for maximum benefit. The Department's Fish and Wildlife Tool uses an umbrella species concept to match habitat classes that can be mapped from the available land use layers with representative fish and wildlife species that are dependent on those habitat features. The fisheries component of the Tool uses qualitative fish habitat rating assessments on select project streams using a protocol developed by Department staff based on the WDNR's

“Guidelines for Qualitative Physical Habitat Evaluation of Wadable Streams” (WDNR 2001) protocols for streams < 10 m wide. This protocol has been refined to include habitat measurements that are compatible with the USGS Habitat Suitability Index (HSI) (<https://www.nwrc.usgs.gov/wdb/pub/hsi/hsiindex.htm>). The habitat assessment measurements are used in a model based on the USGS HSI to create scores for individual fish species in each habitat assessment station. These habitat assessments can be used in conjunction with fisheries data layers for estimating the overall habitat quality of the various stream reaches and potential for various target species occurrence. The Tool’s Habitat Quality Index (HQI) output gives an indexed score of 1-11 for each habitat zone, with a score of 11 representing the highest quality habitat for the greatest number of species. The Department’s Ecological Prioritization GIS-Tool compiles and analyzes 18 environmental data layers, including the Fish and Wildlife Tool’s HQI output, to create comparable, consistent, implementable information for decision-makers. The GIS-Tool was developed as part of a Coastal Resources Open Space Master Plan (Master Plan) and was funded by the WCMP. (<http://www.co.ozaukee.wi.us/DocumentCenter/Home/View/10849>). The Master Plan studied the watersheds directly draining into Lake Michigan within Ozaukee County and focused on identifying prime locations within the watershed for preservation and restoration activities. The GIS-Tool’s preservation score identifies areas of existing high environmental value that should be protected from land use conversions, while the restoration score identifies areas that have the greatest potential to contribute to desired environmental values with implementation of targeted restoration actions. Preliminary Tool outputs and discussions with local fish and wildlife experts identified that projects on Sauk Creek, Sucker Brook Creek and Silver Beach Creek (direct tributaries to Lake Michigan immediately to the north of Mineral Springs Creek) would provide significant benefits for multiple aquatic species. As such, the Department is seeking additional funding to complete these impediment removal/remediation and habitat restoration projects.

COMMUNICATION/DISSEMINATION

10. *List publications, presentations, websites, and other forms of formal dissemination of the project deliverables, tools, or results, including those that are planned or in progress.*
11. *Please characterize your efforts to distribute and encourage use of products, processes, programs, etc. developed through this grant.*

As noted above, several elements from the dam removal and stream restoration project and Park Street culvert replacement project designs were included in the We-Energies plans, including use of hydraulic and hydrologic modeling and stream bed and bank material sizing calculations. There is significant research that demonstrates that if individuals are engaged in stewardship activities at the local level they are more likely to become overall environmental stewards. Based on this theory, the project team has made education and outreach core to its aquatic connectivity and habitat restoration projects through volunteer tree planting events, volunteer environmental monitoring activities, and trainings, tours, presentations, and demonstrations. In addition, education and outreach performed as part of this grant built on Department efforts already underway. Public outreach and information dissemination efforts regarding project goals,

progress and results was a joint effort between Ozaukee County and other major stakeholders/project partners. Specific outreach activities used to foster public participation and education as part of the project included:

- Detailed Program information on the Ozaukee County Planning & Parks Department and Ecological Division - Fish Passage Program websites (<http://www.co.ozaukee.wi.us/540/Planning-Parks>), as well as other partner websites.
- Detailed Program information on the Program's Facebook page (<https://www.facebook.com/FishPassageProgram>), routine updates via Twitter (<https://twitter.com/OzCoFishPassage>), and video content on YouTube (<https://www.youtube.com/user/OzaukeeFishPassage>).
- On-going active public relations outreach, with the goal of garnering a showcased example of project activity in print media, including publication of project information in local community newspapers (<https://www.youtube.com/watch?v=mPKwQKvRmxI>).
- Articles in the Planning & Parks Department's newsletters and articles in partner and community action group newsletters (e.g., Great Waters Group Newsletter).
- Presentations and/or Program information provided to over 13,202 people at 90 international, national, regional, state, and local professional and scientific conferences, technical meetings, workshops, webinars, partner meetings, field trips, tours, and other events during the project period, including County Board Road trips (9/21/16 and 9/20/17) and the Southeast Wisconsin Conservation Summit (11/4/18).
- Program and Project information provided to multiple volunteers associated with fisheries community monitoring activities (e.g. Trout Unlimited)
- Inclusion of project information in the Department's posters, pamphlets, and factsheets (see attachment). (e.g. Southeast Wisconsin Conservation Summit)
- On-site visits with residents and interested citizens.

The project area was also featured on the Program's education and outreach video which can be viewed at: <http://www.co.ozaukee.wi.us/619/Fish-Passage> or at https://youtu.be/Tuh_lbsgBsU. Approximately 900 copies of this video were sent to every unit of local government (e.g., counties, cities, villages, towns) in the Lake Michigan Basin as well to multiple schools, environmentally focused non-profit organizations, and other partners throughout southeast Wisconsin.

REFLECTIONS

12. Please describe any unanticipated benefits, challenges or surprises, and/or important lessons learned over the course of the project.

The Park Street site had multiple utilities crossing above and below the original culverts, including a buried large sanitary sewer, abandoned water main, and active water main (public utilities), buried and aerial We-Energies power lines, multiple overhead ATT communication lines, an overhead Charter Communications fiber-optic line, and an overhead private fiber optic line. The Department had been in communications with all utility owners since March 2015 regarding relocation and

management needs during construction. The overhead lines (with the exception of the private fiber optic line) were all removed or buried prior to construction. We-Energies as-built drawings showed the buried power lines under the original culverts, and We-Energies determined that the power lines would not be in conflict of the new culvert. However, initial hand excavation by Advance Construction determined the power lines were actually above the existing culverts (about 3.5 ft. below the surface of the road) and in conflict with the new culvert. In addition, Charter buried their fiber-optic and communications adjacent to the power line, also in conflict with the proposed culvert. It was also originally assumed by We-Energies that the private overhead fiber optic line was owned by Charter; however, Charter confirmed that they did not own the line when they were onsite. As such, it took several days for We-Energies to determine the overhead line was originally owned and operated by a private company in the area which had since closed business and the line was no longer active, and to develop a de-energizing plan for the power lines during construction. This information by We-Energies (e.g., inaccurate power line as-built drawings and lack of fiber optic ownership information) delayed Advance Construction excavation activities for several days until We-Energies de-energized and cut the power lines and overhead fiber optic cable and Charter temporary relocated their lines outside the work zone. In addition (and as noted above), the final plans called for the culvert to set just below the cast-iron sanitary sewer line. The elevation of the sanitary sewer was confirmed prior to construction via as-built surveys and completing measure-downs during the engineering and design process. However, during excavation, a large flange/bell joint protruding approximately 4 inches from the main line was found immediately above the location of the new culvert alignment. Multiple concrete box sections had already been placed at the time of this discovery, preventing any changes to the culvert alignment or elevation. As such, the original cast iron pipes and flange/bell joint were removed and replaced with modern PVC piping and furnco joints to enable placement of the remaining box culvert sections per the original plan.

Southeastern Wisconsin experienced abnormal amounts of rainfall in spring and summer of 2017, which delayed other Program construction and restoration projects in the area. Fortunately, construction activities at the Park Street site occurred during one of the only dry times of the summer. In addition, bypassing the creek through the northern original culvert was a very effective approach to keeping the work area dry, which minimized the need for bypass and or dewatering pumping. In addition, the Ozaukee County Highway Department effectively bypassed Mineral Springs Creek into an adjacent storm sewer near Modern Equipment Company, which drained into a small tributary ravine to the creek downstream of the project area.

13. What recommendations (if any) would you make to other project directors working on similar efforts or to the GLFT?

As noted above, the presence of multiple private and public utilities adjacent to and within the Park Street project's disturbed area resulted in project delays (e.g., NEPA permitting associated with the northern long-eared bat) and additional expenses, despite attempts to thoroughly identify and locate these utilities in advance of construction activities. It is recommended that project directors working on similar efforts, particularly in urban areas, plan for utility coordination and management well in advance of construction activities and have contingency or alternate plans in place

in the event of unexpected issues. It is also recommended that there be flexibility in funding to accommodate for scope and project modifications for greatest ecological benefit as well as maximum safety and effectiveness.

PICTURES

14. Provide at least three photos of the completed project (if applicable).

Project photos are attached.

15. The GLFT requires each project it funds to have suitable permanent public acknowledgement of GLFT assistance. If applicable, the GLFT will provide a sign to you (via mail) and requires photo verification of the posting of the sign before it will process your final reimbursement request.

Permanent public signage is not feasible at either project location. The dam removal and restoration site is privately owned by two unique industrial/manufacturing companies and is not publically accessible. The Park Street site is located on a corner of a heavily used portion of the road with no sidewalks and limited shoulders which make pedestrian traffic unsafe. However, as noted above, the Department met regularly with We Energies and other partners during the engineering, design, construction, and restoration of a channel re-routing and restoration and weir reconstruction project at the downstream portions of the creek. In support of these efforts, the Department also developed draft educational signage in conjunction with We Energies that will be displayed either on Wisconsin Avenue adjacent to the We-Energies project site or in the City of Port Washington's Coal Dock Park immediately downstream of the We-Energies project site. This signage includes comprehensive information about all efforts to improve aquatic connectivity on Mineral Springs Creek, highlighting 7 projects completed by the City, Ozaukee County, and We-Energies, including the dam removal and restoration site and the Park Street site. This signage will be finalized in Spring/Summer 2018 once the We-Energies site is fully restored and also includes the GLFT logo as a funding source and project partner. A copy of this draft signage is attached to this report. If available, the Department requests that an individual GLFT sign be provided to will be placed adjacent to the educational signage.

ATTACHMENTS

16. Please attach any reports or materials developed throughout the grant.

Project plans, H&H modeling, design reports.