Deuchler Environmental, Inc.
CONSULTING ENGINEERS

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IDNR CONSERVATION PLAN FOR REDHORSE FISH SPECIES

FOX METRO WATER RECLAMATION DISTRICT: FOX RIVER CROSSING FOR WAUBONSIE INTERCEPTOR

KENDALL COUNTY, ILLINOIS

NOVEMBER 2014
REVISED MAY 2015

Prepared for:
Illinois Department of Natural Resources
Division of Natural Heritage
One Natural Resources Way
Springfield, IL 62702

On Behalf of:
Fox Metro Water Reclamation District
682 State Route 31
Oswego, IL 60543

And

Walter E. Deuchler Associates, Inc.
Consulting Engineers
230 Woodlawn Ave.
Aurora, IL 60506

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1.0 INTRODUCTION

This Conservation Plan (Plan) has been written to comply with the provisions of the Illinois Endangered Species Protection Act and the regulations adopted pursuant to this Act in Title 17 Illinois Administrative Code, Chapter I, Part 1080. This Plan was developed pursuant to a request from the IDNR in a letter dated May 6, 2014. This letter, included as **Appendix A**, requests that an Incidental Take Authorization (ITA) is applied for as part of the Plan. The two species of concern are the state-listed endangered Greater Redhorse (*Moxostoma valenciennesi*) and the state-listed threatened River Redhorse (*Moxostoma carinatum*).

The project applicant is the Fox Metro Water Reclamation District (FMWRD). The FMWRD is located in unincorporated Kendall County and is designed to treat 42 million gallons a day of wastewater generated by a population of approximately 300,000 from Aurora, North Aurora, Boulder Hill, Montgomery, Oswego, Sugar Grove, and portions of Yorkville and Batavia. As the population continues to increase in the Fox Valley area and environmental regulations become more stringent, the existing wastewater treatment facility is in need of expanding its infrastructure. This proposed project consists of the construction of various wastewater treatment structures for the improvement of the existing wastewater treatment plant, south of the existing facility. This new facility is referred to as the South Plant throughout this Plan. Associated with the South Plant project, there will also be a river crossing with a 36" interceptor and temporary coffer damming of the Fox River, which is the proposed project covered by this Plan. **Figure 1** depicts an overview of the river crossing portion of the project as designed by FMWRD's consulting engineers, Walter E. Deuchler Associates, Inc.

This Plan and the ITA will allow the FMWRD to conduct the river crossing portion of the project while avoiding or minimizing risk to the two fish species of concern. The elements of this Plan follow the IDNR guidance information as follows: Impact Description, Impact Minimization and Mitigation Strategies, Alternative Actions, Continued Survival of the Species, and Implementation Agreement.

2.0 IMPACT DESCRIPTION

a. Location, Ownership, and Permits

The river crossing is located in Section 5, Township 37N, Range 8E of the 3rd P.M. in unincorporated Oswego Township, Kendall County. The Fox Metro Water Reclamation District (FMWRD) will be the owner of the 36" interceptor that is to be installed for the River Crossing and has procured all necessary easements, permissions, and permits for the installation.

The owner of the affected property is Commonwealth Edison (Com-Ed). The interceptor's alignment is through the Com-Ed right-of-way as it crosses the river in this location. A copy of FMWRD's easement agreement with Com-Ed is included in **Appendix B**.

Per the request of IDNR's Office of Resource Conservation, provided in **Appendix C** is copies of two additional permits for this project. The first permit is from IDNR's Office of Water Resources for the installation of the interceptor. The second permit is from the U.S. Army Corps of Engineers Rock Island District for the installation of the interceptor and the associated South Plant improvement project.

b. Biological Data on the Listed Fish

The state-listed endangered Greater Redhorse (*Moxostoma valenciennesi*) and the state-listed threatened River Redhorse (*Moxostoma carinatum*) are both compressed red-tailed redhorse with dark spots on the scales of the back and sides. Both species have plicate lips with the lower lip broadly U-shaped and a convex or straight edged dorsal fin. The species are differentiated from each other by their head shape, pharyngeal teeth, and caudle peduncle scales. The River Redhorse has a large head with a square snout, heavy and molar-like pharyngeal teeth, and 12 to 13 scales around the caudal peduncle. The Greater Redhorse has a bluntly rounded snout, thin and comb-like pharyngeal teeth, and 14 to 17 scales around the caudal peduncle (Becker 1983).

The Greater Redhorse is uncommon or rare in most of their range. The Greater Redhorse was thought to be extirpated from Illinois with the only known specimen collected in 1901 from Salt Creek, Du Page County at the time Fishes of Illinois was written (Smith 1979). It is thought that the populations are reduced due to siltation and other forms of pollution. Since the Greater Redhorse is sensitive to chemical pollution and turbidity, small populations could be vulnerable. They live in medium to large rivers and prefer clear water over sand, gravel and boulders. Spawning occurs in May or June in moderately rapid water at water temperatures of 16.7 to 18.9 Celsius (Becker 1983).

The River Redhorse in Illinois occurs in deep, swift, gravelly riffles of small to medium

rivers. Like the Greater Redhorse, they are intolerant of silty bottoms, turbid water, and pollution and local populations can be vulnerable. The River Redhorse is common in the Kankakee River but extremely uncommon throughout the rest of Illinois. Spawning has been observed from April to July at water temperatures of 20 to 24.4 Celsius over gravel and rubble bottoms with moderate current (Becker 1983).

Since 2009, Deuchler Environmental, Inc. (DEI) has been collecting biological data on the Fox River and tributaries within the FMWRD service area from Aurora to Oswego. Each year, DEI obtains a Scientific Collection Permit from the IDNR. A copy of 2015's Scientific Permit is included in **Appendix D**. The Scientific Permit stipulates that "if endangered and threatened species are taken, the IDNR Division of Natural Heritage, Endangered Species Coordinator must be notified. The Endangered Species Coordinator must approve the disposition of the specimens." As part of the Scientific Permit's requirements, an Annual Scientific Permit Report is submitted to the IDNR and an Endangered/Threatened Species Occurrence and Sighting Report (EOR) form is submitted to the Illinois Natural Heritage Database Program Manager at IDNR. An example sheet from the 2013's EOR is included in **Appendix E**.

DEI has also obtained a Permit for Possession of Endangered or Threatened Species. The 2015 Permit is included in **Appendix F**. This permit specifically lists the Greater Redhorse collection. The other three species listed on this Permit are for a different project being conducted in Lake County by DEI.

The area for the proposed project is included within the DEI's routine sampling area. Through October 2014, over 95,739 fish have been collected as part of the biological sampling. **Table 1** shows the number of Greater Redhorse and River Redhorse collected by year.

Table 1. Number of State-listed Redhorse collected by year.

Year / Species	2009	2010	2011	2012	2013	2014
Greater Redhorse	0	11	1	1	10	7
River Redhorse	0	0	0	0	0	0

Figure 2 shows the locations of the Greater Redhorse captured near proposed river crossing. It is important to note that these locations are approximate because the symbol designates the upstream end of the electrofishing zone. Each electrofishing run is sampled for approximately 30 minutes and the traversed distance is dependent upon flow conditions.

c. Description of the Activities that will result in the taking of T&E species:

- The estimated number of fatalities is expected to be zero. However, the construction

activities may result in incidental take.

- The location and amount of suitable habitat to be impacted is limited to the work zone when each half of the river is dammed, as shown in **Figure 3**. The work zone consists of an approximately 29,880 square foot area on the right descending bank (west bank) and a 28,650 square foot area on the left descending bank (east bank).

- The timeline for the project is 8 to 16 weeks in total. Only one half of the river is under construction at a time. Steps for the project include: Installation and inflation of the coffer dam, pumping down of the water, excavation for the pipe, placement of the pipe in the trench, placing concrete over the trench, and restoration of the river bed. This series of activities will be repeated for each side of the river. While the east side of the river is open, jack and bore operations will occur under the Oswegoland Park District bike path and Illinois State Route 25. The jack and bore operation will continue for another 2 weeks.

- The Contractor will restore the area to the existing conditions as shown on the Plan and Profile Sheet of Figure 1. Standard Details-Civil is provided as **Figure 4** to show the Concrete Encasement Detail for the River Crossing. The notes on the Standard Details show the excavated materials being replaced on top of the PVC-pipe.

d. Explanation of the anticipated adverse effect on the listed species:

It is anticipated that the number of fatalities will be zero. The construction activities are short-term, temporary effects that will not extirpate the species of concern from this area of the Fox River. Construction specifications call for restoring the river bed to its existing condition upon the completion of the project. Minimization and mitigation strategies are outlined in **Section 3**.

However, since the definition of take includes adverse effect, such as harass or pursue, incidental take may occur via construction activities. These take activities might include direct impact from heavy machinery, the potential of getting harmed in equipment during pumping activities, displacement, and/or injury during coffer dam installation.

Based on DEI's 2009-2014 fish sampling results in **Table 1**, the estimated number of take of Greater Redhorse is a maximum of 5 individuals and River Redhorse is 2 individuals. These individuals will be relocated as discussed in **Section 3**.

3.0 IMPACT MINIMIZATION AND MITIGATION STRATEGIES

a. Plans to minimize the area and number of individuals affected:
Strategies to minimize the effect include:

- A narrow permanent construction easement. The width of the permanent construction easement is only 7 feet, which is the 5 foot width of the pipe plus 1 foot on either side of the pipe. The amount of impact to the river and shallow banks is anticipated to be 7 feet wide by 420 linear feet of pipe to total approximately 2100 square feet of disturbance. (The temporary construction easement is described in 2.0c.)
- Only damming one-half of the Fox River at a time to allow fish bypass on the undammed portion of the river.
- No in-stream construction activities from March 15 to June 30 to minimize impacts during the spawning season.
- DEI's fisheries biologist and other trained staff will be present during the dewatering process per the direction of Walter E. Deuchler Associates, Inc., the Consulting Engineer for FMWRD. DEI staff will relocate all fish and mussels at this time, including any Greater Redhorse or River Redhorse. Since several Greater Redhorse have been identified during the biological survey, it is likely that DEI can prioritize the Redhorse relocation and maximize the survival chances. Any fish that appear to be struggling for oxygen will be placed in an oxygenated tank and allowed to recover before being released.

b. Plans of the management of the area affected by the project that will enable continued use of the area by the T&E species:
The primary mechanism that will allow the continued use of the Fox River by all fish is the coffer dam system as shown on the River Crossing Phasing Plan sheet provided by Walter E. Deuchler Associates, Inc. (**Figure 3**).

c. Description of all measures to be implemented to minimize or mitigate the effects.
See Item a. above on the minimization of effect.

Mitigation efforts proposed by FMWRD are described in Item d. below.

d. Plans for monitoring the effects of measures implemented to minimize or mitigate the effects of the proposed action on endangered or threatened species, such as monitoring the species and habitat prior to and after construction activities.
As part of FMWRD's existing biological monitoring project, DEI has completed several years of pre-construction monitoring, as described in **Section 2.0.** On behalf of FMWRD, DEI is submitting a Pre-Construction Monitoring Report to IDNR based on the existing data for the Greater Redhorse and River Redhorse in **Appendix G** of this Conservation Plan.

Current sampling protocols are for this area to be surveyed in spring, summer, and fall

annually as part of the existing biological program. Results are already submitted to the IDNR and will continue to be submitted to IDNR or the appropriate state agency in the future. Periodic addendums to the pre-construction monitoring report with the available new sampling results, as the data is available, are proposed.

The entirety of this South Plant improvement project is scheduled to be completed by December 31, 2019. Post-construction monitoring has been approved by the United States Environmental Protection Agency as part of FMWRD's Combined Sewer Overflow (CSO) Long-Term Control Plan (LTCP). This CSO LTCP calls for 5 years of post-construction monitoring. No later than 12 months after the completion of the 5 years of post-construction monitoring, DEI will submit a Post-Construction Monitoring Report on the Greater and River Redhorse on behalf of FMWRD.

Since the specifications call for restoration of the river bed to its pre-construction condition and the construction activities are limited to 2 months, no significant permanent habitat impacts are anticipated. The habitat was assessed in 2010 and 2012 using the Qualitative Habitat Evaluation Index (QHEI) as part of the biological project. The QHEI allows a quantitative assessment of the physical characteristics of a sampled stream and is a standard method used in Illinois to assess habitat. The QHEI will also be calculated after project completion and submitted as part of the Post-Construction Monitoring Report.

e. Adaptive management practices that will be used to deal with changed or unforeseen circumstances.

In conformance with DEI's Scientific Collection Permit, if any threatened or endangered individuals are taken, DEI will notify the IDNR Division of Natural Heritage, Endangered Species Coordinator. DEI will also abide by the recommendation for the disposition of the specimens.

f. Verification that adequate funding exists to support and implement all mitigation activities described in the conservation plan.

FMWRD intends to finance the construction of the project with a low interest loan through the Illinois Environmental Protection Agency (IEPA) Water Pollution Control Loan Program. The loan will be repaid through user charge fees. The user rates are scheduled to increase in small increments each year until the year 2020 to assist in repaying this loan and loans from other projects.

Any future, post-construction monitoring will be paid from FMWRD's user fees, collected bimonthly from its customer base.

4.0 ALTERNATIVE ACTIONS

This project is for a wastewater treatment facility. The wastewater flows from the east side of the Fox River must be conveyed efficiently to the wastewater treatment plant on the west side of the Fox River.

FMWRD submitted a Long Term Control Plan (LTCP) document to the IEPA several years ago which detailed plans to help reduce or eliminate combined sewer overflows (CSOs). A portion of the LTCP called for a new river crossing for the Waubonsie Interceptor in order to divert the separated flows to the west side treatment facility. Therefore, this new interceptor helps reduce the potential for a CSO event at the WWTP. Also, the diversion of the flow from the Waubonsie Interceptor to the new South Plant allows the wastewater treatment plant to gain capacity at the existing North facility. The increased capacity will be utilized for biological phosphorus removal. Phosphorus removal is mandated by the United States Environmental Protection Agency (USEPA) and the Illinois Environmental Protection Agency. This project is part of FMWRD's efforts to reduce phosphorus inputs to the Fox River. The benefits to both FMWRD and the environment outweigh the temporary impact to the Fox River.

Alternative actions were considered and rejected for various reasons as detailed below.

Jack and Bore

Jacking and boring under the entire Fox River is not an option. The bedrock is too shallow in this location and it is not possible to jack and bore through bedrock.

Use Existing Waubonsie Interceptor

Another alternative would be to use the existing Waubonsie interceptor along the northern boundary of the North Plant and then pump the flow along the right descending bank to the South Plant facility. There are many problems with this alternative. First, this scenario adds many linear feet of unnecessary pipe, which is expensive to install and maintain. There would be larger impacts to the river bank and wetland along the right descending bank of Fox River. There are many existing pipes and structures for the various WWTP processes and it is unlikely that there is sufficient underground space to install this pipe properly.

Overhead Piping

An alternative to this project would be to have exposed and overhead piping instead of underground piping. At the location of the proposed interceptor, the invert elevation of the existing sewer is 615.8 feet. At the location of the proposed crossing, the crown of Illinois Route 25 is approximately 617 feet. To install an overhead pipeline, an additional pump station would be required within the Com Ed right of way to create a forcemain over the roadway and Fox River. The additional infrastructure for a pump station would be costly and permission for installation would likely not be granted by Com-Ed. The overhead piping would also require large footings in the Fox River to support the pipe, making a smaller but

permanent impact to the river bed as the proposed project's temporary impact. Finally, the pipe would need installation of heat-tracing to protect the pipe from freezing, requiring additional construction and operating costs.

None of these alternatives are truly feasible nor cost effective to the rate payers.

5.0 CONTINUED SURVIVAL OF THE SPECIES

Since the project is temporary in nature, the habitat will be properly restored to its existing condition, and the anticipated number of taken individuals is zero, we anticipate that the proposed project will not reduce the likelihood of the survival of the Greater Redhorse or River Redhorse in the wild. The additional proposed step of relocating the fish during the dewatering process should further minimize the potential of any threatened or endangered species take.

DEI's previous biological work over the past several years has demonstrated that the Greater Redhorse are present in limited numbers under current conditions. To date, no River Redhorse have been found. Therefore, when current conditions are restored after the project's completion, the fish populations should be the same as present currently.

6.0 IMPLEMENTING AGREEMENT

A. Names and Signatures of Participants in the Execution of the Plan

I certify that the Conservation Plan will be followed as described within the document and provide the required projects updates and reports.

Thomas F. Muth, Manager, Fox Metro Water Reclamation District

Thomas F. Muth — Signature

5/14/2015 — Date

John W. Frerich, Principal, Walter E. Deuchler Associates, Inc.

John W. Frerich — Signature

5/11/15 — Date

Karen K. Clementi, Senior Biologist, Deuchler Environmental, Inc.

Karen K. Clementi — Signature

5/11/15 — Date

B. Obligations and Responsibilities of Identified Participants

Fox Metro Water Reclamation District shall be responsible for implementation of the proposed conservation plan. Walter E. Deuchler Associates, Inc. shall be responsible for coordination of contractor activities with the biologists at Deuchler Environmental, Inc. Deuchler Environmental, Inc shall be responsible for the minimization strategies outlined in Section 3.0(a) and the proposed reporting documents outlined in Section 3.0 (d).

C. Assurance of Compliance with Regulating Authorities

The IDNR Office of Water Resources states that "The Department has the power to take all measures necessary for the conservation, preservation, distribution, introduction, propagation, and restoration of fish, mussels, frogs, turtles, game, wild animals, wild fowls, and birds." (Civil Administration Code of Illinois, 2000). The necessary permits are included in the Appendices.

D. Copies of Existing Authorizations

See Appendices.

7.0 REFERENCES

Becker, G. C. 1983. Fishes of Wisconsin. University of Wisconsin Press, Madison, WI.

Civil Administrative Code of Illinois. 2000. Section 91-239.

Smith, P. W. 1979. The Fishes of Illinois. University Press, Urbana, IL.

FIGURES

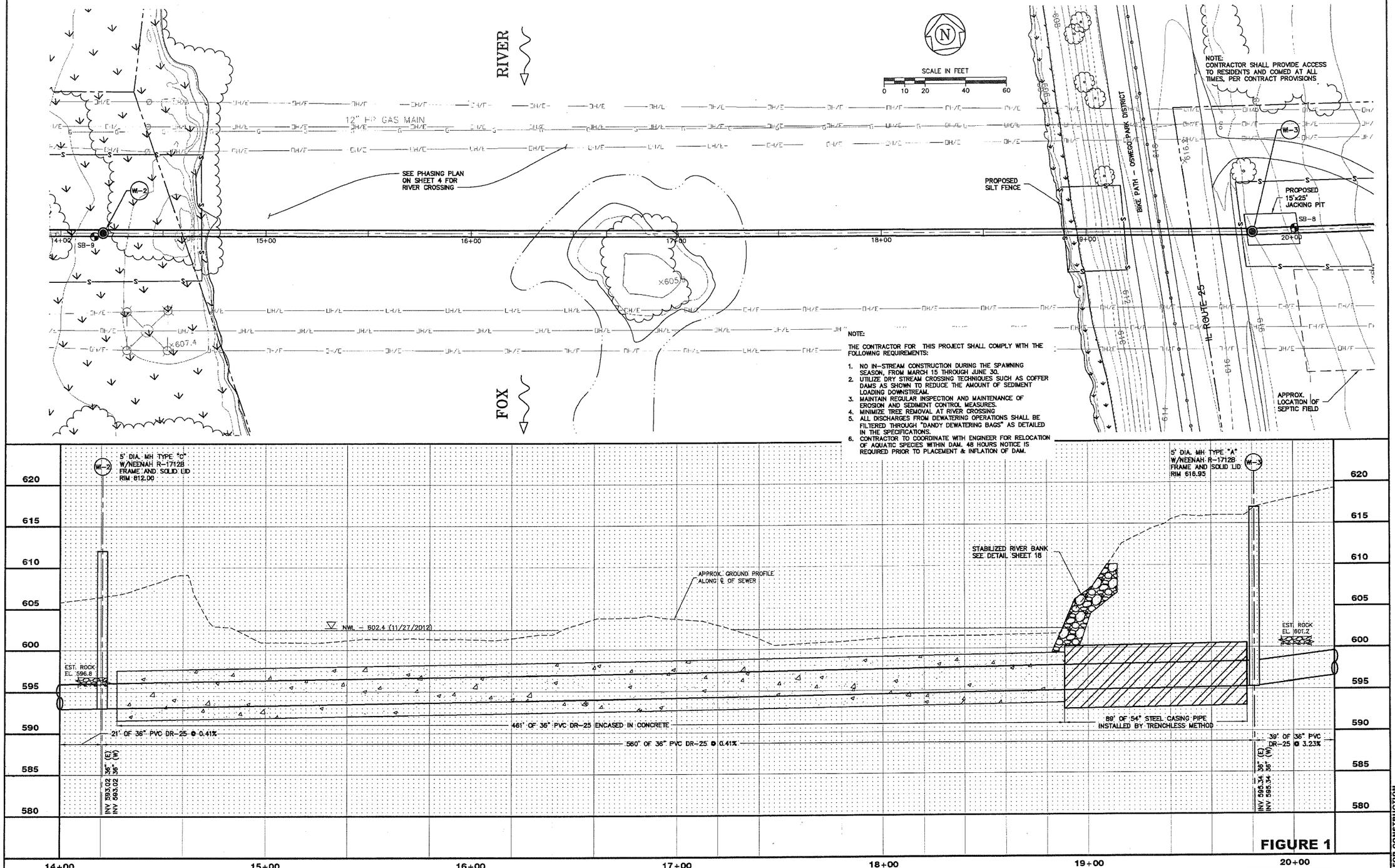

FIGURE 1

DRAFT - NOT FOR CONSTRUCTION

WALTER E. DEUCHLER ASSOCIATES, INC.
Consulting Engineers — Aurora, Illinois
©

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SCALE:	SHOWN	DRAWN:	AS
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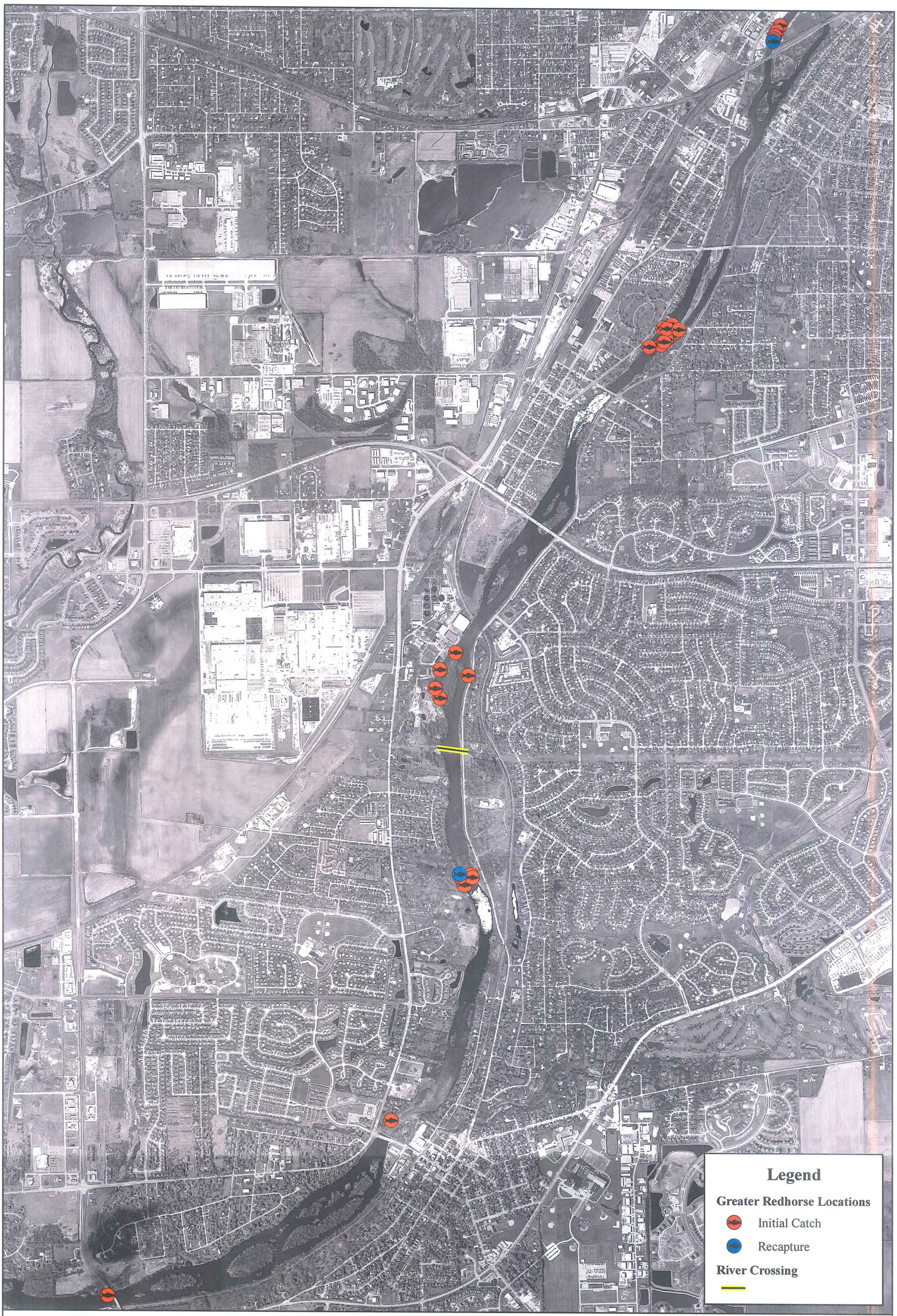
FIELD BOOK NO.:	NA		

FOX METRO WATER RECLAMATION DISTRICT
SOUTH WASTEWATER TREATMENT FACILITY
WAUBONSIE INTERCEPTOR - RIVER CROSSING
PLAN AND PROFILE

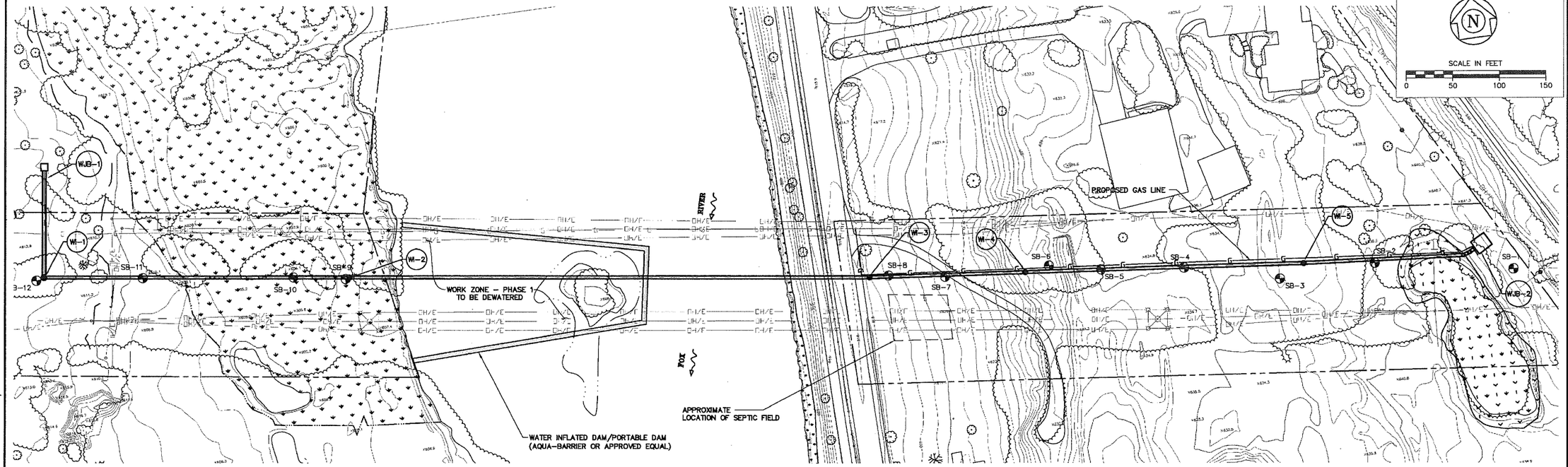
SHT 8
OF 25

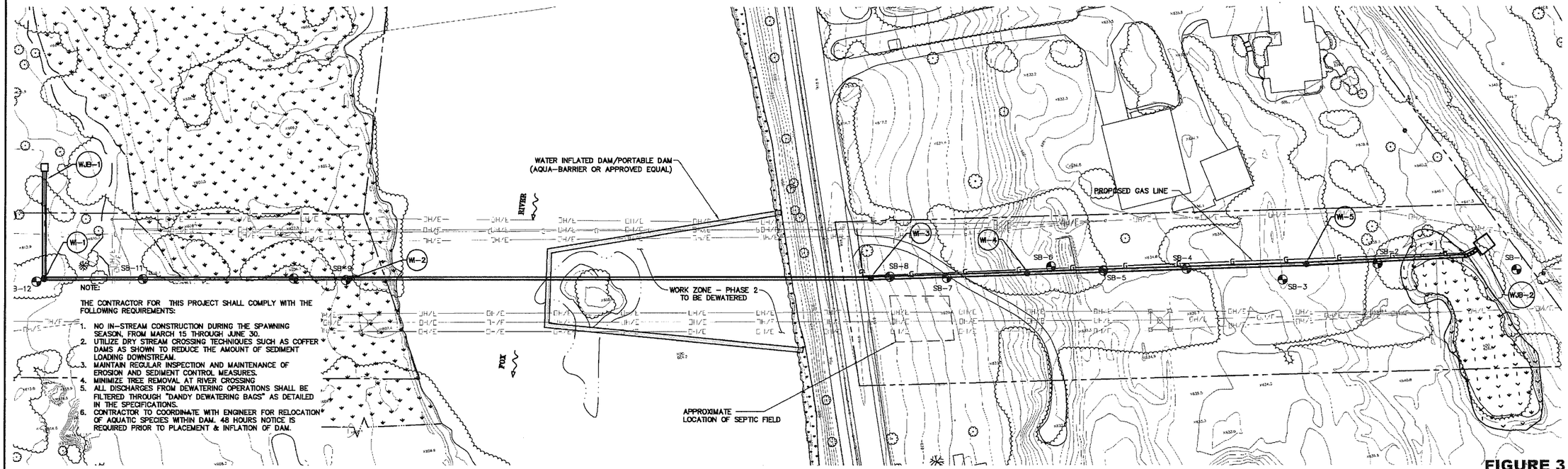


Deuchler Environmental, Inc.
CONSULTING ENGINEERS

2010-2014 Greater Redhorse Locations

Figure 2





NOTE:

THE CONTRACTOR FOR THIS PROJECT SHALL COMPLY WITH THE FOLLOWING REQUIREMENTS:

1. NO IN-STREAM CONSTRUCTION DURING THE SPAWNING SEASON, FROM MARCH 15 THROUGH JUNE 30.
2. UTILIZE DRY STREAM CROSSING TECHNIQUES SUCH AS COFFER DAMS AS SHOWN TO REDUCE THE AMOUNT OF SEDIMENT LOADING DOWNSTREAM.
3. MAINTAIN REGULAR INSPECTION AND MAINTENANCE OF EROSION AND SEDIMENT CONTROL MEASURES.
4. MINIMIZE TREE REMOVAL AT RIVER CROSSING
5. ALL DISCHARGES FROM DEWATERING OPERATIONS SHALL BE FILTERED THROUGH "DANDY DEWATERING BAGS" AS DETAILED IN THE SPECIFICATIONS.
6. CONTRACTOR TO COORDINATE WITH ENGINEER FOR RELOCATION OF AQUATIC SPECIES WITHIN DAM. 48 HOURS NOTICE IS REQUIRED PRIOR TO PLACEMENT & INFLATION OF DAM.

FIGURE 3

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Consulting Engineers — Aurora, Illinois
©

REVISIONS:
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DATE:	3/14/14	DESIGNED:	ARD
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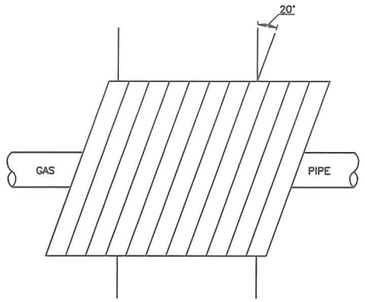
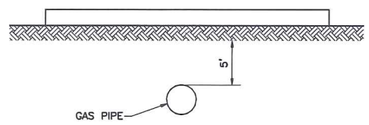
FOX METRO WATER RECLAMATION DISTRICT
SOUTH WASTEWATER TREATMENT FACILITY
WAUBONSIE INTERCEPTOR - RIVER CROSSING
PHASING PLAN

SHT 4
OF 25

DRAFT - NOT FOR CONSTRUCTION



PLAN



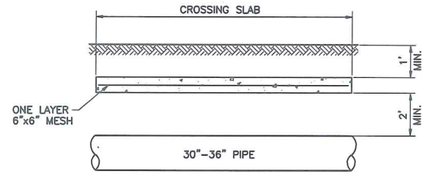
SECTION

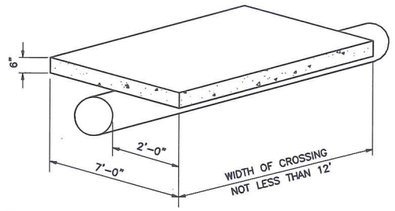
12"x12"x15' TIMBER LAID SIDE BY SIDE ON GRADE – 20° OFF PERPENDICULAR TO CENTERLINE PIPE WITH 2' OF COVER OVER TIMBER.

ALTERNATE CROSSING FOR HEAVY EQUIPMENT OVER PIPE LINES

(AT LOCATIONS OTHER THAN TRENCH)

NORTHERN ILLINOIS GAS Co. 6/9/92





NOTES:

1.) CONCRETE SLAB TO BE A MINIMUM OF 2 FEET ABOVE PIPE, 7 FEET WIDE AND LENGTH EQUAL TO CROSSING WIDTH.

2.) CAST CONCRETE SLAB A MINIMUM OF 7 DAYS IN ADVANCE OF CONSTRUCTION WITH 3000 psi CONCRETE.

3.) CONCRETE MAY BE EARTH FORMED.

4.) PROVIDE TEMPORARY FENCING FOR INDICATING CROSSING LOCATION.

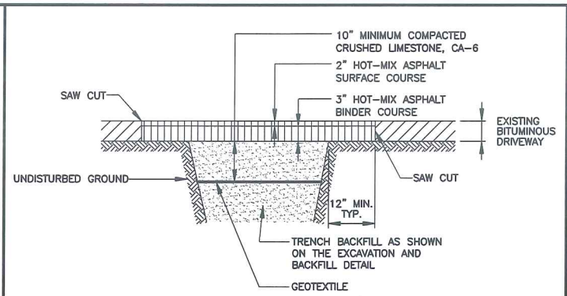
5.) PREVENT CROSSING OF PIPE LINE AT ALL OTHER LOCATIONS.

6.) MAX. LOADING: 15,000# WHEEL LOAD

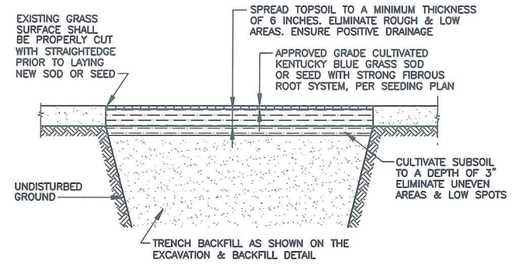
CONCRETE SLAB FOR HEAVY EQUIPMENT CROSSING NIGAS PIPE LINES

(AT LOCATIONS OTHER THAN TRENCH)

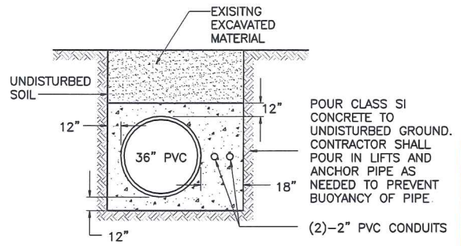
NORTHERN ILLINOIS GAS Co. 7/31/73



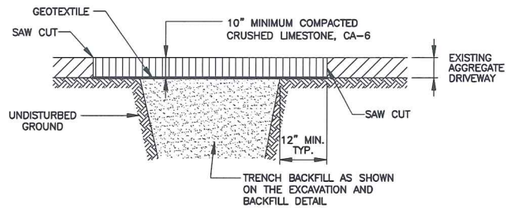
BITUMINOUS DRIVEWAY AND TRAIL REPLACEMENT DETAIL



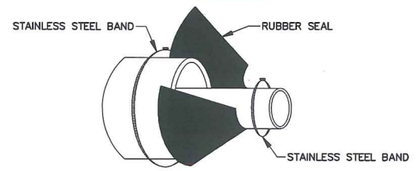
RESTORATION OF GRASSED SURFACES OVER BACKFILL MATERIALS



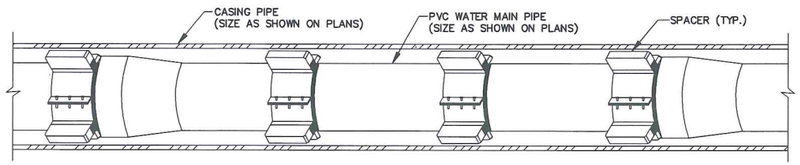
CONCRETE ENCASEMENT DETAIL FOR RIVER CROSSING



AGGREGATE DRIVEWAY REPLACEMENT DETAIL



RUBBER END SEAL



PLACEMENT OF SPACERS ON CARRIER PIPE

1. GENERAL – ONE SPACER SHALL BE PLACED NOT MORE THAN TWO FEET FROM EACH END OF THE CASING. SUBSEQUENT SPACERS SHALL BE PLACED AT 6' INTERVALS WITHIN THE CASING.

2. PVC CARRIER – ONE SPACER SHALL BE PLACED ON THE SPIGOT END OF EACH SEGMENT AT THE LINE MARKING THE LIMIT OF INSERTION INTO THE BELL. WHEN THE JOINT IS COMPLETE, THE SPACER SHALL BE IN CONTACT WITH THE BELL OF THE JOINT SO THAT THE SPACER PUSHES THE JOINT AND RELIEVES COMPRESSION WITHIN THE JOINT. SUBSEQUENT SPACERS SHALL BE PLACED AT 6' INTERVALS.

F:\WED\STDS\S34

FIGURE 4

IEPA REVIEW SUBMITTAL

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Consulting Engineers – Aurora, Illinois
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REVISIONS:	DATE: 4/17/15	DESIGNED: ARD
1.	SCALE: SHOWN	DRAWN: AS
2.	JOB NO. 111–11045–00	APPROVED: MH
3.	FIELD BOOK NO.: 216	
4.		
5.		

FOX METRO WATER RECLAMATION DISTRICT
SOUTH WASTEWATER TREATMENT FACILITY
WAUBONSIE INTERCEPTOR - RIVER CROSSING
STANDARD DETAILS - CIVIL

SHT 19
OF 26

APPENDIX A

IDNR Project #1409865 Response Letter

Illinois Department of
Natural Resources

One Natural Resources Way Springfield, Illinois 62702-1271
http://dnr.state.il.us

Pat Quinn, Governor
Marc Miller, Director

May 6, 2014

Carrie Carter
Walter E. Deuchler Associates
230 Woodlawn Avenue
Aurora, IL 60506

Gary Bingenheimer
Illinois Environmental Protection Agency
1021 North Grand Avenue
Springfield, IL 62794

RE: CSO Long Term Control Plan Phase 2 – Interceptor River Crossing
IDNR Project # 1409865
Kendall County

Dear Ms. Carter and Mr. Bingenheimer:

This letter concerns the Endangered Species Consultation for the Fox Metro Water Reclamation District's upgrades of its south wastewater treatment facility. This consultation (1409865) is just for the interceptor improvement that crosses the Fox River from the west side and the installation of a junction chamber on the east. The project is located in Township 37N, Range 8E, Section 5 in Kendall County, and was submitted for consultation in accordance with the *Illinois Endangered Species Protection Act* [520 ILCS 10/11], the *Illinois Natural Areas Preservation Act* [525 ILCS 30/17], and Title 17 *Illinois Administrative Code* Part 1075.

A cofferdam is proposed for installing the interceptor, and project plans call for keeping half the river open during the construction. The state-listed endangered Greater Redhorse (*Moxostoma valenciennesi*) and state-listed threatened River Redhorse (*Moxostoma carinatum*) are known to occur at the site of the river crossing and construction is likely to adversely affect these species.

The Department recommends that no in-stream work be conducted during spawning season, which occurs from March 1 through June 15. Because use of a coffer dam is likely to result in a prohibited take of the two listed fish species, the Department recommends that you apply for Incidental Take Authorization (ITA) in accordance with *17 Ill Adm. Code Part 1080* (copy enclosed) for both species. Communication concerning the ITA application should be directed to Jenny Skufca, Office of Resource Conservation, 217-557-8243 or Jenny.Skufca@illinois.gov.

Consultation on the part of the Department is completed. In accordance with 17 Ill. Adm. Code 1075.40(h), please notify the Department of your decision regarding these recommendations.

This consultation is valid for two years unless new information becomes available that was not previously considered; the proposed action is modified; or additional species, essential habitat, or Natural Areas are identified in the vicinity. If the project has not been implemented within two years of the date of this letter, or any of the above listed conditions develop, a new consultation is necessary.

If additional protected resources are encountered during the project's implementation, you must comply with the applicable statutes and regulations. Also, note that termination does not imply IDNR's authorization or endorsement of the proposed action.

Please contact me if you have questions.

Sincerely,

Karen M. Miller

Karen M. Miller
Division of Ecosystems and Environment
Phone (217) 785-5500
karen.m.miller@illinois.gov

APPENDIX B

Com-Ed Easement Agreement

When Recorded, Return to:
Stacey Dahlberg
ComEd
3 Lincoln Center, 4th Floor
Oakbrook Terrace, IL 60181

Montgomery-Electric Junction T98-3, 3X, 4
SW ¼ Sec 5 & NW ¼ Sec 8, Twp 37N Range 8E
Oswego Township, Kendall County
PL 472054 & 472082 PIN 03-08-126-001 & 03-05-353-008

SEWER EASEMENT AGREEMENT

THIS Sewer Easement Agreement ("Easement") is made as of this ___ day of _____, 2015, by and between COMMONWEALTH EDISON COMPANY, an Illinois corporation ("Grantor"), with a mailing address of Three Lincoln Centre, 4th FL, Oakbrook Terrace Illinois 60181, and FOX METRO WATER RECLAMATION DISTRICT, 682 State Route 31, Oswego, IL 60543 ("Grantee").

RECITALS:

A. Grantor is the owner of a parcel of land in Oswego Township, County of Kendall and State of Illinois, near 1000 Madison Street (Illinois Route 25) Oswego, IL, described in Exhibit A attached hereto and made a part hereof ("Grantor's Property").

B. Grantor utilizes Grantor's Property for Grantor's own business operations, which operations, for purposes hereof, shall include without limitation the construction, reconstruction, maintenance, repair, upgrade, expansion, addition, renewal, replacement, relocation, removal, use and operation of Grantor's equipment and facilities, whether now existing or hereafter to be installed, in, at, over, under, along or across Grantor's Property (collectively, "Grantor's Operations").

C. Grantee desires to install and maintain 1,543 linear feet of 36-inch (36") sanitary sewer pipe, 91 linear feet of 42-inch (42") sanitary sewer pipe, a diversion structure measuring approximately 17 feet by 20 feet by 6 inches and associated appurtenances, including a chain link fence around the flow diversion structure, along a center line across Grantor's Property in the location shown on the diagram attached hereto as Exhibit B (for the purposes of this Easement, the "Easement Premises" shall be a strip of land sixty inches (60") wide and laying thirty inches (30") inches along either side of the sanitary sewer's center line shown on the diagram attached hereto as Exhibit B).

NOW, THEREFORE, in consideration of Ten and No/100ths Dollars, the payments, covenants, terms, and conditions to be made, performed, kept and observed by Grantee hereunder and other good and lawful consideration, Grantor and Grantee hereby agree as follows:

1. Grant of Easement. Subject to the terms and provisions of this Easement, Grantor hereby grants and conveys, without warranty of title, a perpetual, non-exclusive easement for the right and privilege to use the Easement Premises for the following purposes and for no other purpose whatsoever: construction, maintenance and use of 1,543 linear feet of 36-inch (36") sanitary sewer pipe, 91 linear feet of 42-inch (42") sanitary sewer pipe, a diversion structure measuring approximately 17 feet by 20 feet by 6 inches and associated appurtenances, including a chain link fence around the flow diversion structure in substantial conformity with the engineering plan sheets 7-14, prepared by Walter E. Deuchler Associates, Inc., dated 3/14/2014 and known as Fox Metro Water Reclamation District South Wastewater Treatment

Facility Waubonsie Interceptor – River Crossing attached hereto as Exhibit B and made a part hereof (hereinafter referred to as the "Facilities").

2. Grantee's Use. The following general conditions shall apply to Grantee's use of the Easement Premises:

(a) Grantee shall procure and maintain at its own expense, prior to entry upon Grantor's Property hereunder, all licenses, consents, permits, authorizations and other approvals required from any federal, state or local governmental authority in connection with the construction, placement, use and operation of the Easement Premises and the Facilities, and Grantee shall strictly observe all laws, rules, statutes and regulations of any governmental authorities having jurisdiction over the Easement Premises or Grantee's operations thereon. Grantor may from time to time request reasonable evidence that all such approvals have been obtained by Grantee and are in full force and effect. In no event shall Grantee seek any governmental approvals that may affect in any way Grantor's Operations, including without limitation any zoning approvals, without in each instance obtaining Grantor's prior written consent, which consent may be granted or withheld in Grantor's sole discretion.

(b) In the event any aspect of Grantee's construction, placement, maintenance, repair, use or operation of the Easement Premises and the Facilities at any time violates or is forbidden by any law, statute, rule, regulation, order or requirement of any governmental authority, Grantee shall immediately discontinue such operations and at its own expense take all required corrective action, including without limitation removal of all or any portion of the Facilities from Grantor's Property if required, within the lesser of (i) thirty (30) days from Grantee's notice of such violation or (ii) the period of time required by law for the correction of such violation.

(c) Grantee's use of the Easement Premises shall be conducted in a manner that does not conflict or interfere with Grantor's Operations.

(d) This Easement and the rights granted hereunder are subject and subordinate in all respects to all matters and conditions affecting the Easement Premises (whether recorded or unrecorded).

(e) Grantee's obligations and liabilities to Grantor under this Easement with respect to the Easement Premises and the Facilities and all other matters shall not be limited or in any manner impaired by any agreements entered into by and between Grantee and any third parties, including without limitation any agreements related to the construction or installation of the Facilities, and Grantee shall be and remain liable to Grantor for the installation and operation of the Facilities in accordance with the terms and conditions of this Easement, notwithstanding Grantee's failure or refusal to accept delivery of or title to such facilities from any such third parties.

(f) Without limiting the generality of the foregoing, this Easement and the rights granted hereunder are subject and subordinate in all respects to the existing and future rights of Grantor and its lessees, licensees and grantees, existing roads and highways, the rights of all existing utilities, all existing railroad rights-of-way, water courses and drainage rights that may be present in Grantor's Property. If required, Grantee shall secure the engineering consent of such prior grantees as a prerequisite to exercising its rights hereunder and provide Grantor with a copy of the same.

(g) Grantee's use of the Easement Premises shall be in according with the additional requirements set forth in Exhibit C, attached hereto and made a part here.

3. Term. The term of this Easement shall be perpetual, unless sooner terminated in accordance with the provisions of this Easement, and shall commence as of the date first hereinabove written.

4. Fees. In partial consideration of this Easement, Grantee shall pay Grantor a certain sum of money as set forth in a separate agreement between Grantor and Grantee, which amount shall be due and payable to Grantor, prior to Grantor's execution of this Easement.

5. Rights Reserved to Grantor.

(a) Grantor's rights in and to the Easement Premises, Grantor's Property and Grantor's Operations are and shall remain superior to Grantee's rights granted hereunder. Grantor shall not be liable to Grantee for damage to the Facilities due to Grantor's Operations and/or the installation, operation, maintenance or removal of any present or future facilities of Grantor.

(b) Grantor reserves the right to grant additional leases, licenses, easements and rights hereafter to third parties through, under, over and across all or any portion of Grantor's Property, including the Easement Premises, so long as there is no material adverse impact on Grantee's rights in and use of the Easement Premises pursuant to the terms of this Easement. In the event of a violation of this Paragraph 5(b), Grantee's sole and exclusive remedy against Grantor shall be seeking an injunction preventing such third party from creating such material adverse impact on Grantee's rights as aforesaid.

6. Relocation and Restoration of Easement Premises. The following terms and conditions shall govern the rights and obligations of the parties with respect to relocation and restoration of the Easement Premises:

(a) In the event any alteration, expansion, upgrade, relocation or other change in Grantor's Operations interferes or conflicts with Grantee's use of the Easement Premises hereunder, Grantor shall notify Grantee in writing of such proposed change and the conflict posed by this Easement or the presence of the Facilities on the Easement Premises. Such notice shall contain Grantor's estimate of the additional costs Grantor will incur if the proposed change in Grantor's Operations must be altered to avoid or minimize any conflict or interference with Grantee's use of the Easement Premises. Within ten (10) days after receipt of such notice, Grantee shall notify Grantor in writing of its election to (i) make such changes in the Facilities, at Grantee's cost, as in the judgment of Grantor may be required to avoid or minimize any conflict or interference with the proposed change in Grantor's Operations, including without limitation the relocation of the Easement Premises and the Facilities to another location owned by and designated by Grantor, or (ii) reimburse Grantor for all additional costs incurred by Grantor in altering the proposed change in Grantor's Operations to avoid or minimize such conflict or interference. In the event Grantee fails to notify Grantor in writing of such election within such ten (10) day period, Grantee shall be conclusively deemed to have elected to reimburse Grantor for its additional costs as provided in clause (ii) hereinabove. In the event Grantee elects to make all changes to the Easement Premises and/or the Facilities, including relocation to another location designated by Grantor, required to avoid conflict with the proposed change in Grantor's Operations, Grantee, at its sole cost and in accordance with all applicable terms and conditions of this Easement, shall promptly take all steps necessary to complete such changes and relocation within a reasonable time but in no event later than sixty (60) days after the date of such election. In the event Grantee elects to reimburse Grantor for the additional costs to be incurred by Grantor, Grantee shall make such payment within thirty (30) days after Grantor's demand therefor.

(b) Grantee agrees that, within thirty (30) days after the termination of this Easement for any reason, Grantee shall, at its sole cost and expense and only if directed to do so by Grantor in Grantor's sole discretion, remove all of the Facilities from Grantor's Property and restore and repair Grantor's Property to the condition existing prior to the installation of the Facilities. In the event Grantee fails to so remove the Facilities and restore and repair Grantor's Property, Grantor may elect to do so at Grantee's sole cost and expense, and, in such event, Grantor may dispose of the Facilities without any duty to account to

Grantee therefor. Grantee shall pay all costs and expenses incurred by Grantor in removing the Facilities, including any storage costs, and any costs incurred by Grantor in restoring and repairing Grantor's Property. Any facilities and equipment that Grantee fails to remove from Grantor's Property within thirty (30) days after the termination of this Easement shall be conclusively deemed to have been abandoned by Grantee and shall become the sole property of Grantor, without liability or obligation to account to Grantee therefor.

7. Condition of Grantor's Property. Grantee has examined the Easement Premises and knows its condition. Grantee hereby accepts the condition of the Easement Premises in its **AS-IS, WHERE-IS CONDITION, WITH ALL FAULTS**. No representations as to the condition, repair or compliance thereof with any laws, and no agreements to make any alterations, repairs or improvements in or about the Easement Premises have been made by or on behalf of Grantor. By accepting possession of the Easement Premises, Grantee shall be conclusively presumed to have accepted the condition thereof and to have unconditionally waived any and all claims whatsoever related to the condition of the Easement Premises.

8. Conditions Governing Construction, Repair, Maintenance and Other Work.

(a) All work performed by Grantee pursuant to this Easement, including without limitation all work related to the installation, alteration, maintenance (excluding only routine maintenance), repair, relocation, replacement or removal of the Easement and the Facilities, shall be performed in accordance with plans and specifications approved in writing by Grantor prior to the commencement of such work. Grantor shall review and approve any amendments, additions or other changes to such approved plans and specifications, prior to the performance of any work identified therein. Grantor shall have the right (but not the obligation) to supervise Grantee's performance of any such work at the Easement Premises (or any component thereof) and, in the event that Grantor so elects, Grantee shall reimburse Grantor for any and all costs of such supervision, together with a charge for Grantor's overhead, as determined by Grantor.

(b) Prior to the performance of any work, Grantee shall (i) obtain all applicable permits, approvals and authorizations required from any federal, state or local governmental authorities and furnish Grantor with satisfactory evidence that all such approvals have been obtained and (ii) furnish Grantor with certificates of insurance for each contractor and subcontractor evidencing such contractor's or subcontractor's compliance with the requirements of Section 11 hereof.

(c) Except for emergency repairs affecting the health and safety of the public, Grantee shall provide Grantor with not less than thirty (30) days advance notice of any work (including routine maintenance) so that Grantor may take such protective actions as Grantor deems necessary to ensure the safety and reliability of Grantor's facilities in the area of Grantee's proposed work. Grantee shall postpone the commencement of its work until such time as Grantor has completed any and all such protective work. Any cost and expense of such protective work shall be borne by Grantee and paid by Grantee within thirty (30) days after receipt of a bill therefor.

(d) Grantee hereby agrees that, in the event that Grantee (or any employee, agent, representative, contractor, licensee, invitee or guest of Grantee) performs any grading, leveling, digging or other work of any kind on the Grantor's Property (to the extent expressly permitted under the terms of this Easement) and damages any improvements, fixtures, facilities, equipment, or other property located (now or in the future) at Grantor's Property, then Grantee will either (at Grantor's sole election), (x) promptly cause any such improvements, fixtures, facilities, equipment or other property to be repaired and restored to the same or better condition as the same were in immediately prior to such damage or destruction, or (y) promptly pay Grantor the amount which Grantor estimates (as set forth in a written notice from Grantor to Grantee) will cover the cost and expense of repairing and restoring such damage or destruction. Prior to

performing any such grading, leveling, digging or excavation work on the Easement Premises (which work shall be subject to Grantor's prior written approval), Grantee will notify J.U.L.I.E. at telephone number (800) 892-0123, C.U.A.N. at (312) 744-7000 if the Easement Premises are located in the City of Chicago, or in the event the Easement Premises are located outside J.U.L.I.E.'s or C.U.A.N.'s jurisdiction, any other services required by the utilities in the jurisdiction where the Easement Premises are located, at least seventy-two (72) hours prior to the commencement of such work in order to locate all existing utility lines that may be present on the Easement Premises.

(e) Except for emergency repairs affecting the health and safety of the public, which emergency repairs should be called in within the first 8-hours of entering Grantor's Property and confirmed by Grantor, Grantee shall (in addition to the notice required under subparagraph (c) above) notify Grantor's Regional Right of Way Agent in Oakbrook Terrace, Illinois, telephone number 866-340-2841, at least forty-eight (48) hours in advance of entering Grantor's Property for the performance of any work (including routine maintenance). The timing and scheduling of such work shall be subject to Grantor's prior approval. In the event Grantee is required to perform any emergency repair work affecting the health and safety of the public, Grantee shall notify Grantor in writing of such repair work within forty-eight (48) hours after the performance of such repairs.

(f) Grantee hereby acknowledges that the Easement Premises may be used from time to time to accommodate equipment and facilities of other persons and/or entities (including, without limitation, pipeline and utility companies) which are (or will be) located on, above or below the surface of the Easement Premises. Grantee agrees that it will contact any such persons and/or entities holding rights to use and/or occupy the Easement Premises, and provide the proper protection required by such persons or entities, in connection with Grantee's use and occupancy of the Easement Premises. Grantee further agrees to furnish Grantor copies of the correspondence between the any such persons or entities and Grantee. Grantee agrees that this requirement shall apply to any installations currently located on, above or below the Easement Premises and any and all future installations on, above or below the Easement Premises.

(g) Grantor may withhold its approval to the performance of any work hereunder whenever any of the following conditions exist: (i) Grantee is in default under this Easement, (ii) the performance of such work and the use and occupancy of Grantor's Property contemplated by such work in Grantor's judgment will interfere with Grantor's Operations or any other then existing uses of Grantor's Property, or (iii) Grantor and Grantee have failed to enter into such supplemental agreements as Grantor deems necessary or advisable regarding the performance of such work. Grantor retains the right to suspend or stop all such work if in Grantor's sole judgment the ongoing performance of such work endangers Grantor's facilities or threatens to interfere with Grantor's Operations, and Grantor shall incur no liability for any additional cost or expense incurred by Grantee or any third parties in connection with such work stoppage.

(h) All work shall be performed in a good and workmanlike manner and in accordance with all applicable laws, statutes, building codes and regulations of applicable governmental authorities. Without limiting the generality of the foregoing, Grantee shall cause all work and the placement of the Easement Premises and the Facilities to meet the applicable requirements of 83 Ill. Admin. Code Part 305, as amended from time to time, and shall cause all workers performing any work on behalf of Grantee, its contractors and subcontractors, to be equipped for and conform to OSHA safety regulations. Upon completion of the work, Grantee shall (i) provide waivers of liens from each contractor and such other evidence of lien-free completion of the work as Landlord may require and (ii) restore all adjacent and other affected areas of Grantor's Property to their original condition preceding the commencement of such work.

(i) Grantee shall promptly notify Grantor of any damage caused to Grantor's facilities arising our of or related to the performance of such work, including without limitation damage to crops, fences, pasture land or livestock, landscaping and the like and Grantee will reimburse Grantor on demand for the cost of any such repairs and other expenses incurred by Grantor as a result of such damage. The formula described in Section 15(b) shall be used to determine the amount due Grantor as reimbursement for the cost of such repairs. No vehicles, equipment or anything else (including, but not limited to, any equipment attached to vehicles or equipment such as antennas) having a height which exceeds the maximum allowable height under applicable OSHA height standards in effect from time to time, shall be driven, moved or transported on the Easement Premises without Grantor's prior written consent.

(j) There shall be no impairment of any natural or installed drainage facilities occasioned by any work related to the Easement Premises and/or the Facilities and Grantee at its cost shall repair and replace all drainage tiles damaged or destroyed during the performance of such work.

(k) The following additional specific requirements shall apply to the performance of the work related to the Easement Premises and/or the Facilities:

(i) Grantee agrees that the Facilities will be installed in strict conformity with the plans attached hereto as Exhibit B.

(ii) Should any proposed changes to the Easement Premises and/or the Facilities be required, either before or after installation, Grantee, or its successors, shall first submit such changes to Grantor, in the form of revised plans for Grantor's review and approval.

(iii) Where the Facilities cross Grantor's fiber optic cable (TBON), Grantor may require that split plastic duct shall be installed and secured around Grantor's underground fiber optic cables in order to protect the fiber optic cable from any damage during any backfilling operation, all of which shall be performed at Grantee's sole cost and expense.

(v) Grantee agrees, upon completion of the installation of the Facilities, Grantee will replace all backfilling material in a neat, clean and workmanlike manner, with the topsoil on the surface of Grantor's Property, together with the removal of all excess soils, including any rocks, debris or unsuitable fill from Grantor's Property that has been displaced by the placement of the Facilities. At Grantor's sole election, Grantor may permit Grantee to evenly spread any portion of the remaining topsoil over the Easement Premises so long as Grantee shall not cause or permit the existing ground grade on the Easement Premises to be increased or decreased in excess of eight (8) inches above or below the existing grade level of the Easement Premises as of the date hereof.

(vi) Grantee agrees that all of Grantor's Property as affected by the construction of the Facilities shall be leveled, dressed and the area re-seeded using grass over and along Grantee's entire construction project site, except for those areas that are either tenant occupied for agricultural purposes and/or those areas that involve in wetland construction, where governmental wetland restoration requirements shall take precedence. Grantee shall manage the re-seeding process until a firm grass growth has been established on Grantor's Property. Grantee agrees to leave Grantor's Property in a neat, clean and orderly condition and to the satisfaction of Grantor, including, but not limited to, the re-seeding of Grantor's Property as required.

(vii) Grantee covenants and agrees that, in the event that Grantee installs (or is required (by Grantor or otherwise) to install) any fencing and/or gates in connection with Grantee's work at the Easement Premises (or its use or occupancy of the Easement Premises), Grantee will install,

maintain and operate such fences and/or gates in strict compliance with any and all fencing and locking rules, regulations and guidelines which Grantor may deliver to Grantee from time to time.

(viii) Grantee acknowledges and confirms that, in connection with Grantor's review and/or approval of the plans and specifications for Grantee's work at the Easement Premises (as provided in Subsection 8(a) above), Grantor may require that barricades ("Barricades") be installed on the Easement Premises in order to protect Grantor's Operations and/or other equipment, improvements and facilities of Grantor and other users and occupants of the Easement Premises. Any such Barricades shall be installed either (at Grantor's sole option): (i) by Grantee, at Grantee's sole cost and expense, in a manner satisfactory to Grantor, or (ii) by Grantor, in which event Grantee shall pay to Grantor, prior to such installation, Grantor's reasonable estimate of the cost of such installation of the Barricades. [OPTIONAL: Grantee shall install, maintain and operate such Barricades in strict compliance with any and all rules, regulations and guidelines regarding barricades which Grantor may deliver to Grantee from time to time prior to or during the Term

9. Covenants of Grantee. Grantee hereby covenants and agrees as follows (which covenants shall survive the expiration or termination of this Easement and Grantee's rights and privileges under this Easement):

(a) Grantee shall obtain and maintain all rights, licenses, consents and approvals required from any governmental authorities or third parties with respect to the installation, use or operation of the Easement Premises and/or the Facilities on Grantor's Property and, at Grantor's request, Grantee shall provide Grantor with evidence thereof. Grantee shall cause the Easement Premises and the Facilities to be maintained at all times in good repair and in accordance with all requirements of applicable law, and Grantee shall not permit any nuisances or other unsafe or hazardous conditions to exist in, on or under Grantor's Property in connection with the Easement Premises and/or the Facilities or Grantee's use or occupancy of Grantor's Property. In the event Grantee fails to fully and faithfully perform all such repair and maintenance obligations, Grantor shall have right (but not the obligation) after thirty (30) days' written notice to Grantee, to cause such repairs and maintenance to be performed and charge the cost thereof to Grantor. In the event Grantor elects to perform such repair and maintenance, the amount due Grantor from Grantee as reimbursement shall be determined using the formula described in Section 15(b) hereof.

(b) Grantee shall install the Facilities and use and occupy the Easement Premises in a manner that avoids any interference with Grantor's Operations. Within fifteen (15) days after Grantor's demand therefor, Grantee shall reimburse Grantor for all costs incurred by Grantor as a result of injury or damage to persons, property or business, including without limitation the cost of repairing any damage to Grantor's equipment or facilities or costs arising from electrical outages, caused by the use and occupancy of the Easement Premises by Grantee, its representatives, employees, agents, contractors, subcontractors and invitees.

(c) Grantee hereby covenants and agrees that it will not cause or permit any lien (including, without limitation, any mechanic's lien) or claim for lien to be asserted against the Easement Premises or any interest therein, whether such lien or claim for lien results from or arises out of any act or omission of Grantee or its employees, agents, consultants, representatives, contractors, subcontractors or materialmen, or otherwise. In the event any such lien or claim for lien is filed, Grantee will immediately pay and release the same. In the event such lien or claim of lien is not released and removed within five (5) days after notice from Grantor, Grantor, at its sole option and in addition to any of its other rights and remedies, may take any and all action necessary to release and remove such lien or claim of lien (it being agreed by Grantee that Grantor shall have no duty to investigate the validity thereof), and Grantee shall promptly upon notice thereof reimburse Grantor for all sums, costs and expenses, including court costs

and reasonable attorneys' fees and expenses, incurred by Grantor in connection with such lien or claim of lien. Grantee hereby agrees to indemnify, defend and hold harmless Grantor from and against any and all liens or claims for lien arising out of or in any way connected with Grantee's use and occupancy of the Easement Premises.

(d) In addition to, and not in lieu of, the other payments which Grantee is required to make under this Easement, Grantee shall pay the following amounts to Grantor in respect of real estate taxes and assessments, in each case no later than thirty (30) days after Grantor's written demand therefor:

(i) All real estate taxes and other assessments which are allocable to any improvements, structures or fixtures constructed, installed, or placed by Grantee at the Easement Premises for all periods during which this Easement is in effect, plus

(ii) Any increase in the real estate taxes and other assessments payable with respect to the Easement Premises (or any tax parcel of which the Easement Premises is a part) which is allocable to this Easement, Grantee's use or occupancy of the Easement Premises, or any improvements, structures or fixtures constructed, installed or placed by Grantee at the Easement Premises (but without duplication of any amount payable pursuant to clause (a) above), for all periods during which this Easement is in effect.

For purposes of this Easement real estate taxes or assessments "for" or "with respect to" any particular period (or portion thereof) shall mean the real estate taxes or assessments which accrue with respect to such period, irrespective of the fact that such taxes or assessments may be due and payable within a different period.

[TO BE USED IF GRANTEE IS A MUNICIPALITY OR OTHER TAX EXEMPT ENTITY:

Grantee hereby covenants and agrees that Grantee shall, no later than the "Tax Exemption Date" (as hereinafter defined), at Grantee's sole cost and expense, execute and deliver all documents, instruments petitions and applications, and take all other actions which may be necessary and/or appropriate, in order to cause the Easement Premises to be exempted from the payment of real estate taxes, to the extent that it is possible, under applicable law. In the event that Grantee is successful in obtaining any such real estate tax exemption for the Easement Premises, then Grantee shall thereafter cause such real estate tax exemption to be continued for each tax year (or portion thereof) during which this Easement is in effect (and Grantee shall execute such documents, instruments, petitions and applications, and take such other actions which may be necessary and/or appropriate, to cause such property tax exemption to be so continued). In the event that Grantee is unsuccessful in obtaining or continuing any such real estate tax exemption with respect to the Easement Premises, then Grantee shall thereafter use commercially reasonable efforts to continue to seek such exemption (or continuance thereof, as applicable) and shall, from time to time if Grantor so requests, take such actions as may be necessary to apply for such exemption (or continuation). For purposes hereof, the term "Tax Exemption Date" shall mean the date that is the earlier of: (i) sixty (60) days after the date of this Easement, or (ii) the deadline for submitting a real estate tax exemption petition or application for the real estate taxes for the year in which this Easement is executed and delivered.]

(e) Grantee shall notify Grantor in writing within thirty (30) days after the date Grantee ceases to use the Easement Premises and/or the Facilities and shall provide Grantor with a properly executed release of this Easement.

10. General Indemnity. To the maximum extent permitted under applicable law, Grantee agrees to protect, indemnify, defend (with counsel acceptable to Grantor) and hold harmless Grantor and

Exelon Corporation, and their respective parents, subsidiaries and affiliates, and their respective officers, directors, shareholders, employees, representatives, agents, contractors, licensees, lessees, guests, invitees, successors and assigns (collectively, the "Indemnified Parties") from and against any and all losses, costs, damages, liabilities, expenses (including, without limitation, reasonable attorneys' fees) and/or injuries (including, without limitation, damage to property and/or personal injuries) suffered or incurred by any of the Indemnified Parties (regardless of whether contingent, direct, consequential, liquidated or unliquidated) (collectively, "Losses"), and any and all claims, demands, suits and causes of action brought or raised against any of the Indemnified Parties (collectively, "Claims"), arising out of, resulting from, relating to or connected with: (i) any act or omission of Grantee or its officers, directors, shareholders, employees, representatives, agents, contractors, licensees, lessees, guests, invitees, successors and assigns ("Grantee Parties") at, on or about Grantor's Property, and/or (ii) any breach or violation of this Easement on the part of Grantee, and notwithstanding anything to the contrary in this Easement, such obligation to indemnify and hold harmless the Indemnified Parties shall survive any termination of this Easement. This indemnification shall include, but not be limited to, claims made under any workman's compensation law or under any plan for employee's disability and death benefits (including without limitation claims and demands that may be asserted by employees, agents, contractors and subcontractors).

11. Waiver. Any entry onto Grantor's Property by Grantee Parties shall be at such parties' sole risk, and Grantor makes (and has heretofore made) no representations or warranties of any kind whatsoever regarding Grantor's Property or the condition of Grantor's Property (including, without limitation, the environmental condition thereof). To the fullest extent permitted under applicable law, each of Grantee Parties hereby waives any and all claims, demands, suits and causes of action against the Indemnified Parties, and fully and forever release the Indemnified Parties, for any loss, cost, damage, liability or expense (including, without limitation attorneys' fees) suffered or incurred by such Grantee Parties in connection with any entry onto Grantor's Property pursuant to this Easement. This Section will survive termination of this Easement.

12. Insurance. (a) Grantee agrees to require its contractors, before commencing any work on the Easement Premises to purchase and maintain, or at the option of Grantee to itself purchase and maintain, at the cost of Grantee or its contractors, a policy or policies of insurance issued by insurance companies authorized to do business in the State of Illinois, having ratings of A-/VII or better in the Best's Key Rating Insurance Guide (latest edition in effect at the latest date stated in the Certificates of Insurance) and in a form satisfactory to Grantor as follows:

COVERAGE #1

Workers' Compensation Insurance with statutory limits, as required by the state in which the work is to be performed, and Employers' Liability Insurance with limits not less than One Million dollars ($1,000,000.00) each accident/occurrence

COVERAGE #2

Commercial General Liability (CGL) Policy or Policies (with coverage consistent with ISO CG 0001 (12 04)) covering all contractors, subcontractors and all their subcontractors with limits not less than Four Million dollars ($4,000,000.00) per occurrence covering liability for bodily injury and property damage arising from premises, operations, independent contractors, personal injury/advertising injury, blanket contractual liability and products/completed operations for not less than

three (3) years from the date the work is accepted. (CGL insurance includes, but is not limited to coverage for claims against Grantor for injuries to employees of Grantee and its contractors or any subcontractors) Grantor shall be added as an Additional Insured providing coverage consistent with ISO Form CG 20 26 11 85 or the combination of ISO Form CG 20 10 10 01 and CG 20 37 10 01.

COVERAGE #3

Automobile Liability in an amount of not less than one million dollars ($1,000,000) per accident for bodily injury and property damage, covering all owned, leased, rented or non-owned vehicles, which shall include automobile contractual liability coverage.

Policies covering contractors may substitute lower limits for any of the policies listed above, provided that contactors maintains an umbrella or excess liability policy or policies which provide a total minimum limit of four million dollars ($4,000,000) per occurrence for general liability and one million dollars ($1,000,000) for automobile liability, and that all other requirements of this insurance clause are satisfied by such umbrella or excess policy or policies.

Grantee will, in any event, purchase and maintain during the term hereof:

COVERAGE #4

Commercial General Liability (CGL) Insurance (with coverage consistent with ISO CG 00 01 12 04) with a limit of not less than four million dollars ($4,000,000) per occurrence covering liability for bodily injury and property damage, arising from premises, operations, independent contractors, personal injury/advertising injury, blanket contractual liability and products/completed operations (CGL insurance includes, but is not limited to coverage for claims against Grantor for injuries to employees of Grantee and its contractors or any subcontractors). Grantor shall be added as an Additional Insured providing coverage consistent with ISO Form CG 2026 (11/85) or combination of ISO Form CG 20 10 10 01 and GC20 37 19 91. (ii) Automobile Liability in an amount of not less than $1,000,000 per accident for bodily injury and property damage, covering all owned, leased, rented or non-owned vehicles, which shall include automobile contractual liability coverage.

COVERAGE #5

Workers' Compensation Insurance with statutory limits, as required by the state in which the work is to be performed, and Employers' Liability Insurance with limits not less than One Million dollars ($1,000,000.00) each accident/occurrence.

Grantee may substitute lower limits for any of the policies listed above, provided that Grantee maintains an umbrella or excess liability policy or policies which provide a

total minimum limit of $4,000,000.00 per occurrence for general liability, and that all other requirements of this insurance clause are satisfied by such umbrella or excess policy or policies.

(b) If any work on the Easement Premises involves or includes any contractor handling, transporting, disposing, or performing work or operations with hazardous substances, contaminants, waste, toxic materials, or any potential pollutants, Grantee and/or contractors shall purchase and maintain pollution legal liability applicable to bodily injury; property damage, including loss of us of damaged property or of property that has not been physically injured or destroyed; cleanup costs; and defense, including costs and expenses incurred in the investigation, defense, or settlement of claims; all in connection with any loss arising from the Easement Premises. Coverage shall be maintained in an amount of at least five million dollars ($5,000,000) per loss and aggregate. Coverage shall apply to sudden and non-sudden pollution conditions resulting from the escape or release of smoke, vapors, fumes, acids, alkalis, toxic chemicals, liquids, or gases, waste materials, or other irritants, contaminants, or pollutants. Grantor shall be included as an additional insured and the policy shall be primary with respect to Grantor as the additional insured.

(c) There shall be furnished to Grantor, prior to commencing the work above described a certificate of insurance showing the issuance of insurance policies pursuant to the requirements contained in Coverages #1, #2, and #3 of this paragraph. Insurance coverage as required herein shall be kept in force until all work has been completed. All policies shall contain a provision that coverages afforded under the policies will not be canceled or material change until at least thirty (30) days prior written notice (ten (10) days in the case of nonpayment of premium) has been given to Grantor.

(d) Grantee shall provide evidence of the required insurance coverage under Coverage #4 and #5, which shall be delivered to Grantor upon execution of this document. The insurance under Coverage #4 and #5 shall be kept in force through the term hereof through the above-referred policy, or such subsequent or substitute policy or policies as Grantee may, at its discretion, obtain. Grantee shall also provide Grantor with evidence of all of the insurance required hereunder prior to the effective date of the Lease whenever any insurance policy procured by Grantee hereunder is renewed and whenever Grantee obtains a new insurance policy hereunder.

(e) Insurance coverage provided by Grantee and its contractors shall not include any of the following; any claims made insurance policies; any self-insured retention or deductible amount greater than two hundred fifty thousand dollars ($250,000) unless approved in writing by Grantor; any endorsement limiting coverage available to Grantor which is otherwise required by this Article; and any policy or endorsement language that (i) negates coverage to Grantor for Grantor's own negligence, (ii) limits the duty to defend Grantor under the policy, (iii) provides coverage to Grantor only if Grantee or its contractors are negligent, (iv) permits recovery of defense costs from any additional insured, or (v) limits the scope of coverage for liability assumed under a contract.

(f) To the extent permitted by applicable Laws, all above-mentioned insurance policies shall provide the following:

(1) Be primary and non-contributory to any other insurance carried by Grantor

(2) Contain cross-liability coverage as provided under standard ISO Forms' separation of insureds clause; and

(3) Provide for a waiver of all rights of subrogation which Grantee's, or its Contractors' insurance carrier might exercise against Grantor; and

(4) Any Excess or Umbrella liability coverage will not require contribution before it will apply

(g) Grantor hereby reserves the right to amend, correct and change from time-to-time the limits, coverages and forms of polices as may be required from Grantee and/or its contractors.

(h) WAIVER OF SUBROGATION. Grantee and its contractors shall waive all rights of subrogation against Grantor under those policies procured in accordance with this Easement.

13. Environmental Protection.

(a) Grantee covenants and agrees that Grantee shall conduct its operations on the Easement Premises in compliance with all applicable Environmental Laws (as hereinafter defined) and further covenants that neither Grantee, nor any of Grantee Parties, shall use, bring upon, transport, store, keep or cause or allow the discharge, spill or release (or allow a threatened release) in each case of any Hazardous Substances (as hereinafter defined) in, on, under or from the Easement Premises. Without limiting any other indemnification obligations of Grantee contained herein, Grantee hereby agrees to protect, indemnify, defend (with counsel acceptable to Grantor) and hold harmless the Indemnified Parties from and against any and all Losses and Claims (including, without limitation, (i) reasonable attorneys' fees, (ii) liability to third parties for toxic torts and/or personal injury claims, (iii) fines, penalties and/or assessments levied, assessed or asserted by any governmental authority or court, and (iv) assessment, remediation and mitigation costs and expenses and natural resource damage claims) arising out of, resulting from or connected with any Hazardous Substances used, brought upon, transported, stored, kept, discharged, spilled or released by any Grantee Parties or any other person or entity (except for any person or entity which is an Indemnified Party) in, on, under or from the Easement Premises. For purposes of this Easement, the term "Hazardous Substances" shall mean all toxic or hazardous substances, materials or waste, petroleum or petroleum products, petroleum additives or constituents or any other waste, contaminant or pollutant regulated under or for which liability may be imposed by any Environmental Law. "Environmental Laws" shall mean all federal, provincial, state and local environmental laws (including common law) regulating or imposing standards of care with respect to the handling, storage, use, emitting, discharge, disposal or other release of Hazardous Substances, including, but not limited to, the Resource Conservation and Recovery Act, 42 U.S.C. §§ 6901, et seq., the Clean Air Act, 42 U.S.C. §§7401, et seq., the Federal Water Pollution Control Act, 33 U.S.C. §§1251, et seq., the Emergency Planning and Community Right to Know Act, 42 U.S.C. §§ 1101, et seq., the Comprehensive Environmental Response, Compensation and Liability Act, 42 U.S.C. §§ 9601, et seq., the Toxic Substances Control Act, 15 U.S.C. §§2601, et seq., the Oil Pollution Control Act, 33 U.S.C. §§2701, et seq., any successor statutes to the foregoing, or any other comparable local, state or federal statute, ordinance or common law pertaining to protection of human health, the environment or natural resources, including without limitation the preservation of wetlands, and all regulations pertaining thereto, as well as applicable judicial or administrative decrees, orders or decisions, authorizations or permits.

(b) If there are wetlands on the Easement Premises, or if wetlands should develop on the Easement Premises during the term of this Easement, Grantee shall strictly comply with and observe all applicable Environmental Laws. At Grantor's request, Grantee, at its cost, shall furnish Grantor with a survey of the Easement Premises delineating any wetland areas located on the Easement Premises. Under no circumstances shall Grantee change the physical characteristics of any wetland areas located on the Easement Premises or any adjoining land or place any fill material on any portion of the Easement Premises or adjoining land, without in each instance obtaining Grantor's prior written consent (which may be granted or withheld in Grantor's sole discretion), and only then in compliance with applicable Environmental Laws.

(c) Grantee shall provide Grantor with prompt written notice upon Grantee's obtaining knowledge of any potential or known release or threat of release of any Hazardous Substances affecting the Easement Premises.

(d) This Section shall survive the expiration or other termination of the Easement.

14. Defaults. The occurrence of any of the following shall constitute an event of default ("Event of Default") under this Easement:

(a) Grantee shall fail to pay when due any amount payable to Grantee hereunder and such failure continues for a period of ten (10) days after notice thereof from Grantor; or

(b) Grantee shall breach or violate any of its duties or obligations set forth in Section 9(c) or Section 12 of this Easement; or

(c) Grantee shall at any time be in default in any other covenants and conditions of this Easement to be kept, observed and performed by Grantee and such default continue for more than thirty (30) days (or such shorter time period as may specifically set forth in this Easement) after notice from Grantor; or

(d) A receiver, assignee or trustee shall be appointed for Grantee or if the Grantee shall file bankruptcy, or if involuntary bankruptcy proceedings shall be filed against Grantee; or

(e) Grant shall fail to complete construction of the Facilities on or before 6 months after the date of this Easement or shall fail to operate or maintain the Facilities for a period of twelve (12) consecutive months.

15. Remedies. Upon the occurrence of an Event of Default, Grantor may exercise any one or more of the following remedies (which remedies shall survive the expiration or termination of this Easement and Grantee's rights and privileges under this Easement):

(a) terminate this Easement and all rights and privileges of Grantee under this Easement by written notice to Grantee; or

(b) take any and all corrective actions Grantor deems necessary or appropriate to cure such default and charge the cost thereof to Grantee, together with (i) interest thereon at the rate of nine (9%) percent and (ii) an administrative charge in an amount equal to ten percent (10%) of the cost of the corrective action to defray part of the administrative expense incurred by Grantor in administering such cure, such payment to be made by Grantee upon Grantor's presentment of demand therefor; or

(c) any other remedy available at law or in equity to Grantor, including without limitation specific performance of Grantee's obligations hereunder. Grantee shall be liable for and shall reimburse Grantor upon demand for all reasonable attorney's fees and costs incurred by Grantor in enforcing Grantee's obligations under this Easement, whether or not Grantor files legal proceedings in connection therewith. No delay or omission of Grantor to exercise any right or power arising from any default shall impair any such right or power or be construed to be a waiver of any such default or any acquiescence therein. No waiver of any breach of any of the covenants of this Easement shall be construed, taken or held to be a waiver of any other breach, or as a waiver, acquiescence in or consent to any further or succeeding breach of the same covenant. The acceptance of payment by Grantor of any of the fees or

charges set forth in this Easement shall not constitute a waiver of any breach or violation of the terms or conditions of this Easement.

16. Notices. Whenever notice is required to be given pursuant to this Easement, the same shall be in writing, and either personally delivered, sent by a nationally recognized overnight delivery service, postage prepaid, or sent via United States certified mail, return receipt requested, postage prepaid, and addressed to the parties at their respective addresses as follows:

If to Grantor:

Commonwealth Edison Company
P.O. Box 767
Chicago, Illinois 60690-0767
Attn: Director of Real Estate Services

with a copy to:

Exelon Business Services Company
Law Department
P.O. Box 805379
Chicago, Illinois 60680-5379
Attn: Assistant General Counsel – Real Estate

If to Grantee:

Fox Metro Water Reclamation District
682 State Route 31
Oswego, IL 60543
Attn:

or at such other addresses as any party, by written notice in the manner specified above to the other party hereto, may designate from time to time. Unless otherwise specified to the contrary in this Easement, all notices shall be deemed to have been given upon receipt (or refusal of receipt) thereof.

17. No Assignment by Grantee. This Easement and the rights and obligations of the parties hereto shall be binding upon and inure to the benefit of the parties and their respective successors, personal representatives and assigns and the owners of Grantor's Property, from time to time; provided, however, that Grantee shall have no right to assign all or any portion of its right, title, interest or obligation in this Easement or under this Easement without the prior written consent of Grantor, which consent may be granted or withheld by Grantor in its sole and exclusive discretion. Any attempt by Grantee to assign all or any portion of its interest hereunder in violation of the foregoing shall be void and of no force and effect. The terms "Grantor" and "Grantee" as used herein are intended to include the parties and their respective legal representatives, successors and assigns (as to Grantee such assigns being limited to its permitted assigns), and the owners of Grantor's Property, from time to time. For purposes of this Easement, any transfer, directly, indirectly or by operation of law, of a "controlling" interest in Grantee shall constitute an assignment of this Easement, and shall be subject to the terms and provisions of this Section 17. For purposes hereof, a "controlling" interest in Grantee shall mean: (a) the ownership, directly or indirectly, of a majority of the outstanding voting stock or interests of Grantee, or (b) the possession, directly or indirectly, of the power to direct or cause the direction of the management and

policies of Grantee, whether through the ownership of voting securities or other ownership interests, by statute, or by contract.

18. Entire Agreement. This Easement, the exhibits and addenda, if any, contain the entire agreement between Grantor and Grantee regarding the subject matter hereof, and fully supersede all prior written or oral agreements and understandings between the parties pertaining to such subject matter.

19. Transfer by Grantor. Upon any transfer or conveyance of the Easement Premises by Grantor, the transferor shall be released from any liability under this Easement, and the transferee shall be bound by and deemed to have assumed the obligations of Grantor arising after the date of such transfer or conveyance.

20. No Oral Change. This Easement cannot be changed orally or by course of conduct, and no executory agreement, oral agreement or course of conduct shall be effective to waive, change, modify or discharge it in whole or in part unless the same is in writing and is signed by the party against whom enforcement of any waiver, change, modification or discharge is sought.

21. Further Assurances. Each party agrees that it will execute and deliver such other documents and take such other action as may be reasonably requested by the other party to effectuate the purposes and intention of this Easement.

22. Governing Law, Venue. The terms and provisions of this Easement shall be governed by and construed in accordance with the laws of the State of Illinois. With respect to any suit, action or proceeding relating to this Easement (each a "Proceeding"), the parties hereto each irrevocably: (a) agree that any such Proceeding shall be commenced, brought, tried, litigated and consummated in the courts of the State of Illinois located in the County of Cook or (as applicable) the United States District Court for the Northern District of Illinois, (b) submit to the exclusive jurisdiction of the courts of the State of Illinois located in the County of Cook and the United States District Court for the Northern District of Illinois, and (c) waive any objection which they may have at any time to the laying of venue of any Proceeding brought in any such court, waive any claim that any Proceeding brought in any such court has been brought in an inconvenient forum, and further waive the right to object, with respect to such Proceeding, that any such court does not have jurisdiction over such party.

23. Time is of the Essence. Time is of the essence of each and every provision of this Easement.

24. Severability. In the event that any governmental or regulatory body or any court of competent jurisdiction determines that any covenant, term or condition of this Easement as applied to any particular facts or circumstances is wholly or partially invalid, illegal or unenforceable, such invalidity, illegality or unenforceability shall not affect such covenant, term or condition as applied to other facts or circumstances (unless the effect of such determination precludes the application of such covenant, term or condition to other facts or circumstances) or the validity, legality or enforceability of the other covenants, terms and conditions of this Easement. In the event any provision of this Easement is held to be invalid, illegal or unenforceable, the parties shall promptly and in good faith negotiate new provisions in substitution therefor to restore this Easement to its original intent and effect.

25. No Reinstatement. No receipt of money by Grantor from Grantee, after the expiration or termination of this Easement shall renew, reinstate, continue or extend the term of this Easement.

26. Non-Affiliated. By signing this Easement, Grantee affirms and states that it is not an employee of Commonwealth Edison Company nor Exelon Corporation, and their respective parents,

subsidiaries and affiliates, nor has any affiliated interest in the Commonwealth Edison Company or Exelon Corporation, and their respective parents, subsidiaries and affiliates.

27. Counterparts. This Easement may be executed by the parties in counterparts. Each such counterpart shall be deemed an original and all such counterparts, taken together, shall constitute one and the same agreement.

28. No Assessment. By signing this Easement Grantee agrees that Grantor or its public utility successor shall not be assessed for any improvements to be constructed pursuant hereto as a local improvement project or otherwise charged for the cost of such improvements.

29. No Third Party Beneficiaries. Grantor and Grantee agree and acknowledge that, except as expressly set forth herein, there are no intended third party beneficiaries of this Easement nor any of the rights and privileges conferred herein.

30. Illinois Commerce Commission Approval. Grantor and Grantee acknowledge that Grantor is a public utility regulated by the Illinois Commerce Commission ("Commission") and other governmental authorities, and this Easement and the obligations of the parties hereto are subject to all legal requirements applicable to Grantor as a public utility. Although it is not expected that the Commission's or other governmental authority's approval will be required for this Easement, the rights and obligations of the parties hereunder are conditioned upon the Commission's and any other applicable governmental authority's approval of this Easement, under any circumstances in which such approval is required. It is further agreed and understood that this Easement may be terminated by Grantor immediately at any time in the event that Grantor is required to do so by the Commission or some other governmental authority.

31. Labor Relations. Neither Grantee nor any of Grantee's authorized agents shall, at any time, directly or indirectly, employ, or permit the employment of, any contractor, mechanic or laborer in the Easement Premises, or permit any materials to be delivered to or used in the Easement Premises, if, in Grantor's sole judgment, such employment, delivery or use will interfere or cause any conflict with other contractors, mechanics or laborers engaged in the construction, maintenance or operation of Grantor's Property (or any other property) by Grantor, Grantee or others, or the use and enjoyment of Grantor's Property by Grantor or other lessees or occupants of Grantor's Property. In the event of such interference or conflict, upon Grantor's request, Grantee shall cause all contractors, mechanics or laborers causing such interference or conflict to leave Grantor's Property immediately.

32. Independent System Operator. In the event responsibility for management or operation of all or any portion of Grantor's electrical transmission facilities located in or on the Grantor's Property is transferred or assigned by Grantor to an independent system operator ("ISO") or another third party, then Grantee agrees to recognize the right of such ISO or third party to exercise all or any part of Grantor's rights under this instrument.

IN WITNESS WHEREOF, the parties hereto have caused this Easement to be executed by their proper officers thereunto duly authorized as of the day and year first hereinabove written.

COMMONWEALTH EDISON COMPANY

By: _____
Name:
Title:

FOX METRO WATER RECLAMATION DISTRICT

By: _____
Name: _____
Title: _____

SCHEDULE OF EXHIBITS

A Legal description of Grantor's Property

B Easement Premises

C Additional Requirements

STATE OF _____)
) SS
COUNTY OF _____)

I, the undersigned, a Notary Public, in and for the County and State aforesaid, DO HEREBY CERTIFY, that _____, personally known to me to be the _____ of COMMONWEALTH EDISON COMPANY, is the same person whose name is subscribed to the foregoing instrument, appeared before me this day in person and acknowledged that, as such _____, (s)he signed and delivered such instrument, as his/her free and voluntary act and deed, and as the free and voluntary act and deed of such corporation, for the uses and purposes therein set forth.

Given under my hand and official seal, this ____ day of _____, 20___.

_____
Notary Public

Commission expires:_____

STATE OF _____)
) SS
COUNTY OF _____)

I, _____, a Notary Public in and for the County and State aforesaid, DO HEREBY CERTIFY that _____, personally known to me to be the _____of _____, a _____, and personally known to me to be the same person whose name is subscribed to the foregoing instrument, appeared before me this day in person and acknowledged that as such _____, (s)he signed and delivered such instrument pursuant to authority given by the _____ of such _____, as his/her free and voluntary act and deed, and as the free and voluntary act and deed of such _____, for the uses and purposes therein set forth.

Given under my hand and official seal, this ____ day of _____, 20___.

_____
Notary Public

Commission expires:_____

APPENDIX C

Permits

Illinois Department of
Natural Resources

One Natural Resources Way Springfield, Illinois 62702-1271
http://dnr.state.il.us

Pat Quinn, Governor
Marc Miller, Director

January 16, 2015

SUBJECT: Permit No. DS2015003
Waubonsie Interceptor River Crossing
Fox River, Kendall Co.

Fox Metro Water Reclamation District
ATTN: Thomas F. Muth
682 S. State Rte. 31
Oswego, Illinois 60543

Dear Mr. Muth:

Enclosed is Illinois Department of Natural Resources, Office of Water Resources (IDNR/OWR) Permit No. DS2015003 authorizing the installation of a 36-inch diameter interceptor sewer under and across the Fox River at the site of the proposed South Waste Water Treatment Plant. The South Wastewater Treatment Plant, itself, is to be constructed outside of the river floodway and does not require IDNR/OWR authorization.

This approval is based on 1) the fact that the cofferdams are to be installed in two phases during construction thus leaving the river open at all times; 2) the cofferdams will have a maximum height at the 10-year flood elevation; and 3) there are no significant impacts to properties within one mile upstream of the project site due to the construction. As such, the proposed project complies with our Part 3704 Public Waters and Part 3700 Floodway Construction rules.

This permit does not supersede any other federal, state or local authorizations that may be required for the project. If any changes of the permitted work are found necessary, revised plans should be submitted promptly to this office for review and approval. Also, this permit expires on the date indicated in Condition (13). If unable to complete the work by that date, the permittee may make a written request for a time extension.

Upon receipt and review of this permit and all of its conditions, please properly execute and return the attached acceptance blank within sixty (60) days from the date of the permit. Please feel free to contact Grace Nelson my staff at 217/782-4545 if you have any questions concerning this authorization.

Sincerely,

Michael L. Diedrichsen, P.E.
Acting Manager, Downstate Regulatory Programs

MLD:GEN:crw
Enclosure
cc: Walter E. Deuchler Associates, Inc. (Amy R. Underwood)
U.S. Army Corps of Engineers, Rock Island Dist. (OD-P-2014-1343)
Illinois Environmental Protection Agency (Gary Bingenheimer)
Kendall County (Brian Holderman) w/appl.
IDNR, Office of Resource Conservation (Nathan Grider)

PERMIT NO. DS2015003
DATE: JANUARY 16, 2015

State of Illinois
Department of Natural Resources, Office of Water Resources

Permission is hereby granted to:

FOX METRO WATER RECLAMATION DISTRICT
682 SOUTH STATE ROUTE 31
OSWEGO, ILLINOIS 60543

to construct a 36-inch diameter interceptor sewer crossing under and across the Fox River in the Southwest ¼ of Section 5, Township 37 North, Range 8 East of the 3rd Principal Meridian in Kendall County,

in accordance with an application dated August 25, 2014, and the plans and specifications entitled:

FOX METRO WATER RECLAMATION DISTRICT
CONSTRUCTION PLANS FOR SOUTH WWTP – WAUBONSIE INTERCEPTOR RIVER CROSSING
2014; (Sheets 1 - 4, 8, 15, 20 & 21 of 25, Dated March 14, 2014).

Examined and Recommended:

Michael L. Diedrichsen, Acting Manager
Downstate Regulatory Programs

Approval Recommended:

Loren A. Wobig, Acting Director
Office of Water Resources

Approved:

Marc Miller, Director
Department of Natural Resources

This PERMIT is subject to the terms and special conditions contained herein.

SPECIAL CONDITIONS FOR PERMIT NO. DS2015003
FOX METRO WATER RECLAMATION DISTRICT
SOUTH WWTP – WAUBONSIE INTERCEPTOR RIVER CROSSING

a) The temporary cofferdams shall be constructed and marked such that they will not unnecessarily interfere with navigation of the river or create a hazard to boating safety.

b) Disturbance of streamside vegetation shall be kept to a minimum during construction to prevent erosion and sedimentation. The riverbed and all disturbed floodway areas shall be restored to their original contours. The stream banks and overbank areas shall be seeded or otherwise stabilized upon completion of construction.

c) The Fox Metro Water Reclamation District shall execute an Incidental Take Authorization with the Department of Natural Resource's Office of Resource Conservation for the state-endangered greater redhorse (Moxostoma valenciennesi) and state-threatened river redhorse (Moxostoma carinatum).

d) To minimize impacts to fishes during spawning and migration movements, no in-stream work shall be conducted between March 15 and June 30.

DEPARTMENT OF THE ARMY
CORPS OF ENGINEERS, ROCK ISLAND DISTRICT
P.O. BOX 2004 – CLOCK TOWER BUILDING
ROCK ISLAND, ILLINOIS 61204-2004

REPLY TO
ATTENTION OF

February 13, 2015

Operations Division

SUBJECT: CEMVR-OD-P-2014-1343

Mr. Thomas F. Muth, P.E.
Fox Metro Water Reclamation District
682 South State Route 31
Oswego, Illinois 60543

Dear Mr. Muth:

We are enclosing a modified Department of the Army (DA) "**provisional permit**" (in duplicate) which, when issued, will authorize work in conjunction with the expansion of the Fox Metro Water Reclamation District, including a utility line crossing the Fox River with a two phase temporary cofferdam, in Oswego, Kendall County, Illinois; approximate Fox River mile 45.0. The modification involves a change to the mitigation bank that will be used.

At this time, please carefully review the enclosed permit, and also refer to the enclosed Notification of Applicant Appeal Process (NAP). The decision regarding this action is based on information found in the administrative record, which documents the District's decision-making process, the basis for the decision, and the final decision.

Please note that, by Federal law, a DA permit cannot be issued until a State Section 401 Water Quality Certification has been issued or has been waived. As of this date, the Illinois Environmental Protection Agency (IEPA) **has not** issued water quality certification for your project. You may wish to contact the IEPA to determine the status of the water quality certification for your project. They may be contacted by telephone at 217-782-3362 or by mail at the address at the end of this letter.

Therefore, this provisional permit is **NOT VALID** and you are not authorized to commence work under this permit until:

- You have received the state certification or the certification is considered waived by this District, and
- You and this District have appropriately signed the permit.

Conditions of the State water quality certification, if issued, will become conditions to the final DA permit. We will notify you if the State's action on the required certification or concurrence precludes validation of the provisional permit in its current form, requiring further action. Substantial changes may require a modification of the current provisional permit or possibly re-evaluation, including issuing a new public notice (Page 4).

When you receive the Section 401 water quality certification or we notify you that we consider the certification waived, you may accept this initial proffered provisional permit by signing and dating both copies of the permit on page 4. Return both copies of the permit along with a check for **$100.00** (made payable to the Rock Island District), at the following address:

District Engineer
US Army Corps of Engineers, Rock Island District
ATTN: Regulatory Branch
Clock Tower Building
Post Office Box 2004
Rock Island, Illinois 61204-2004

The permit will become effective when signed by an authorized representative of this office. We will provide a copy of the signed permit to you at that time.

If you do not accept the terms and conditions of this initial proffered provisional permit, you may decline and request that this initial proffered permit be modified by following procedures outlined in Section I.A. of the attached Notification of Appeals Process. If you decline, however, you are not authorized to commence work until you receive the appropriate Department of the Army authorization. Your request must be received by the Rock Island District Engineer at the above address by **April 14, 2015**.

This letter also contains an approved jurisdictional determination for your proposed project. If you object to this jurisdictional determination you may request an administrative appeal under Corps regulations at 33 CFR Part 331. Enclosed you will find a Notification of Appeal Process (NAP) fact sheet and Request for Appeal (RFA) form. If you request to appeal this jurisdictional determination you must submit a completed RFA form to the Mississippi Valley Division Office at the following address:

US Army Engineer Division, Mississippi Valley
ATTN: CEMVD-PD-OD
P. O. Box 80
Vicksburg, MS 39181-0080

In order for an RFA to be accepted by the Corps, the Corps must determine that it is complete, that it meets the criteria for appeal under 33 CFR Part 331.5, and that it has been received by the Division Office within 60 days of the date of the NAP. Should you decide to submit an RFA form, it must be received at the above Mississippi Valley Division address by **April 14, 2015.**

It is not necessary to submit an RFA form to the Division office if you do not object to the jurisdictional determination in this letter.

Thank you for your cooperation. Should you have any questions pertaining to your permit, please contact our Regulatory Branch by letter, telephone or email to Mrs. Kirsten Brown at 309/794-5104 or Kirsten.L.Brown@usace.army.mil.

Sincerely,

Donna M. Jones, P.E.
Chief, Illinois/Missouri Section
Regulatory Branch

Enclosures

Copies Furnished:

Mr. Richard C. Nelson
Field Supervisor
U.S. Department of the Interior
Fish and Wildlife Service
Rock Island Field Office (ES)
1511 47th Avenue
Moline, Illinois 61265 (w/enclosures)

Mr. Mike Diedrichsen, P.E.
Office of Water Resources
Illinois Department of Natural Resources
One Natural Resources Way
Springfield, Illinois 62702-1271
(w/enclosures)

Mr. Dan Heacock
Illinois Environmental Protection Agency
Watershed Management Section, Permit Section #15
1021 North Grand Avenue East
Post Office Box 19276
Springfield, Illinois 62794-9276
(w/enclosures)

Mr. Peter Swensen, Chief
Watersheds & Wetlands Branch
US EPA Region 5
77 West Jackson Boulevard
Chicago, Illinois 60604-3590
(w/enclosures)

U.S. Army Corps of Engineers
Illinois Waterway Project Office
257 Grant Street
Peoria, Illinois 61603 (w/enclosures)

Ms. Amy Underwood, P.E.
Walter E. Deuchler Associates, Inc.
230 Woodlawn Avenue
Aurora, Illinois 60506 (w/enclosures)

DEPARTMENT OF THE ARMY PERMIT

Permit Number: CEMVR-OD-P-2014-1343

Section: 10/404

Permittee: Fox Metro Water Reclamation District
682 South State Route 31
Oswego, Illinois 60543

POC: Thomas F. Muth, P.E.
Tel: 630-892-4378

Effective Date:

Expiration Date: December 31, 2018 – Industrial Development

Issuing Office: U.S. Army Corps of Engineers, Rock Island District
Clock Tower Building - P.O. Box 2004
Rock Island, Illinois 61204-2004

NOTE: The term "you" and its derivatives, as used in this permit, means the permittee or any future transferee. The term "this office" refers to the appropriate district or division office of the Corps of Engineers having jurisdiction over the permitted activity or the appropriate official of that office acting under the authority of the commanding officer.

You are authorized to perform work in accordance with the terms and conditions specified below.

Project Description: To expand the current wastewater treatment facility for the Fox Metro Water Reclamation District (FMWRD). The entire site is approximately 31 acres, of which approximately 23 acres will be disturbed by the proposed project. The undeveloped area will be cleared of all existing improvements, trees, and brush. A 42" interceptor pipe will be installed across the Fox River that will extend east to a new junction box near the Illinois Railnet Line utilizing a two phase temporary cofferdam. A total of 0.13 acres of the 0.24 acre forested wetland that comprises Wetland 1 will be temporarily impacted. A total of 0.012 acres of the 0.02 acre emergent wetland that comprises Wetland 2 will be temporarily impacted. A total of 1.60 acres of emergent wetland from the 11.4 acre emergent and forested wetland that comprises Wetland 3 will be temporarily impacted. A total of 3.40 acres of emergent wetland from the 11.4 acre emergent and forested wetland that comprises Wetland 3 will be permanently impacted. All temporary impacts to wetlands will be restored to preconstruction contours, and reseeded with native hydrophytic vegetation.

Project Location: IL-Aurora South USGS quad sheet.

- Section 8, Township 37 North, Range 8 East at 682 South State Route 31, Oswego, Kendall County, Illinois; Fox River mile 45.0.
- Datum NAD-83. UTM Zone 16, Northing 4 618 882.70807488, Easting 387 457.891510076.
- Latitude: 41.7137815906429. Longitude: -88.3528548171683.

Drawings CEMVR-OD-P-2014-1343 Sheet 1 of 3, Vicinity & Aerial Map
Sheet 2 of 3, Plan View
Sheet 3 of 3, River Crossing

Permit Conditions:

General Conditions:

1. The time limit for completing the work authorized ends on the date specified on page 1. If you find that you need more time to complete the authorized activity, submit your request for a time extension to this office for consideration at least one month before that date is reached.

2. You must maintain the activity authorized by this permit in good condition and in conformance with the terms and conditions of this permit. You are not relieved of this requirement if you abandon the permitted activity, although you may make a good faith transfer to a third party, in compliance with General Condition 4 below. Should you wish to cease to maintain the authorized activity or should you desire to abandon it without a good faith transfer, you must obtain a modification of this permit from this office, which may require restoration of the area.

3. If you discover any previously unknown historic or archaeological remains while accomplishing the activity authorized by this permit, you must immediately notify this office of what you have found. We will initiate the Federal and state coordination required to determine if the remains warrant a recovery effort or if the site is eligible for listing in the National Register of Historic Places.

4. If you sell the property associated with this permit, you must obtain the signature of the new owner in the space provided and forward a copy of the permit to this office to validate the transfer of this authorization.

5. If a conditioned water quality certification has been issued for your project, you must comply with the conditions specified in the certification as special conditions to this permit. For your convenience, a copy of the certification is attached if it contains such conditions.

6. You must allow representatives from this office to inspect the authorized activity at any time deemed necessary to ensure that it is being or has been accomplished in accordance with the terms and conditions of your permit.

Special Conditions:

1. The permittee understands and agrees that, if future operations by the United States require the removal, relocation, or other alteration, of the structure or work herein authorized, or if, in the opinion of the Secretary of the Army or his authorized representative, said structure or work shall cause unreasonable obstruction to the free navigation of the navigable waters, the permittee will be required, upon due notice from the Corps of Engineers, to remove, relocate, or alter the structural work or obstructions caused thereby, without expense to the United States. No claim shall be made against the United States on account of any such removal or alteration.

2. Your use of the permitted activity must not interfere with the public's right to free navigation on all navigable waters of the United States (Section B of Appendix A to 33 CFR 325).

3. In order to compensate for the loss of 3.40 acre emergent wetland, the permittee will purchase 3.43 credits at DeKalb County-Afton Forest Preserve wetland mitigation bank. .

4. The permittee understands and agrees that this permit is not valid until the Illinois Environmental Protection Agency either issues or waives water quality certification. (See also General Condition 5 above.) Any conditions listed in the water quality certification from the Illinois Environmental Protection Agency will be a part of this permit (once issued).

Further information:

1. Congressional Authorities: You have been authorized to undertake the activity described above pursuant to:

☒ Section 10 of the Rivers and Harbors Act of 1899 (33 U.S.C. 403).

☒ Section 404 of the Clean Water Act (33 U.S.C. 1344).

☐ Section 103 of the Marine Protection, Research and Sanctuaries Act of 1972 (33 U.S.C. 1413).

2. Limits of this authorization.

a. This permit does not obviate the need to obtain other Federal, state, or local authorizations required by law.

b. This permit does not grant any property rights or exclusive privileges.

c. This permit does not authorize any injury to the property or rights of others.

d. This permit does not authorize interference with any existing or proposed Federal project.

3. Limits of Federal Liability. In issuing this permit, the Federal Government does not assume any liability for the following:

a. Damages to the permitted project or uses thereof as a result of other permitted or unpermitted activities or from natural causes.

b. Damages to the permitted project or uses thereof as a result of current or future activities undertaken by or on behalf of the United States in the public interest.

c. Damages to persons, property, or to other permitted or unpermitted activities or structures caused by the activity authorized by this permit.

d. Design or construction deficiencies associated with the permitted work.

e. Damage claims associated with any future modification, suspension, or revocation of this permit.

4. Reliance on Applicant's Data: The determination of this office that issuance of this permit is not contrary to the public interest was made in reliance on the information you provided.

5. Reevaluation of Permit Decision. This office may reevaluate its decision on this permit at any time the circumstances warrant. Circumstances that could require a reevaluation include, but are not limited to, the following:

a. You fail to comply with the terms and conditions of this permit.

b. The information provided by you in support of your permit application proves to have been false, incomplete, or inaccurate (See 4 above).

c. Significant new information surfaces which this office did not consider in reaching the original public interest decision.

Such a reevaluation may result in a determination that it is appropriate to use the suspension, modification, and revocation procedures contained in 33 CFR 325.7 or enforcement procedures such as those contained in 33 CFR 326.4 and 326.5. The referenced enforcement procedures provide for the issuance of an administrative order requiring you to comply with the terms and conditions of your permit and for the initiation of legal action where appropriate. You will be required to pay for any corrective measures ordered by this office, and if you fail to comply with such directive, this office may in certain situations (such as those specified in 33 CFR 209.170) accomplish the corrective measures by contract or otherwise and bill you for the cost.

6. Extensions. General condition 1 establishes a time limit for the completion of the activity authorized by this permit. Unless there are circumstances requiring either a prompt completion of the authorized activity or a reevaluation of the public interest decision, the Corps will normally give favorable consideration to a request for an extension of this time limit.

Your signature below, as permittee, indicates that you accept and agree to comply with the terms and conditions of this permit.

_____ _____

Permittee Date

The issuing officer for this permit is Mark J. Deschenes, Colonel, U.S. Army, Commander & District Engineer, Rock Island District.

This permit becomes effective when the Federal official, designated to act for the Secretary of the Army, and in accordance with CEMVR-OD-P appointment order dated 15 January 2008, has signed below.

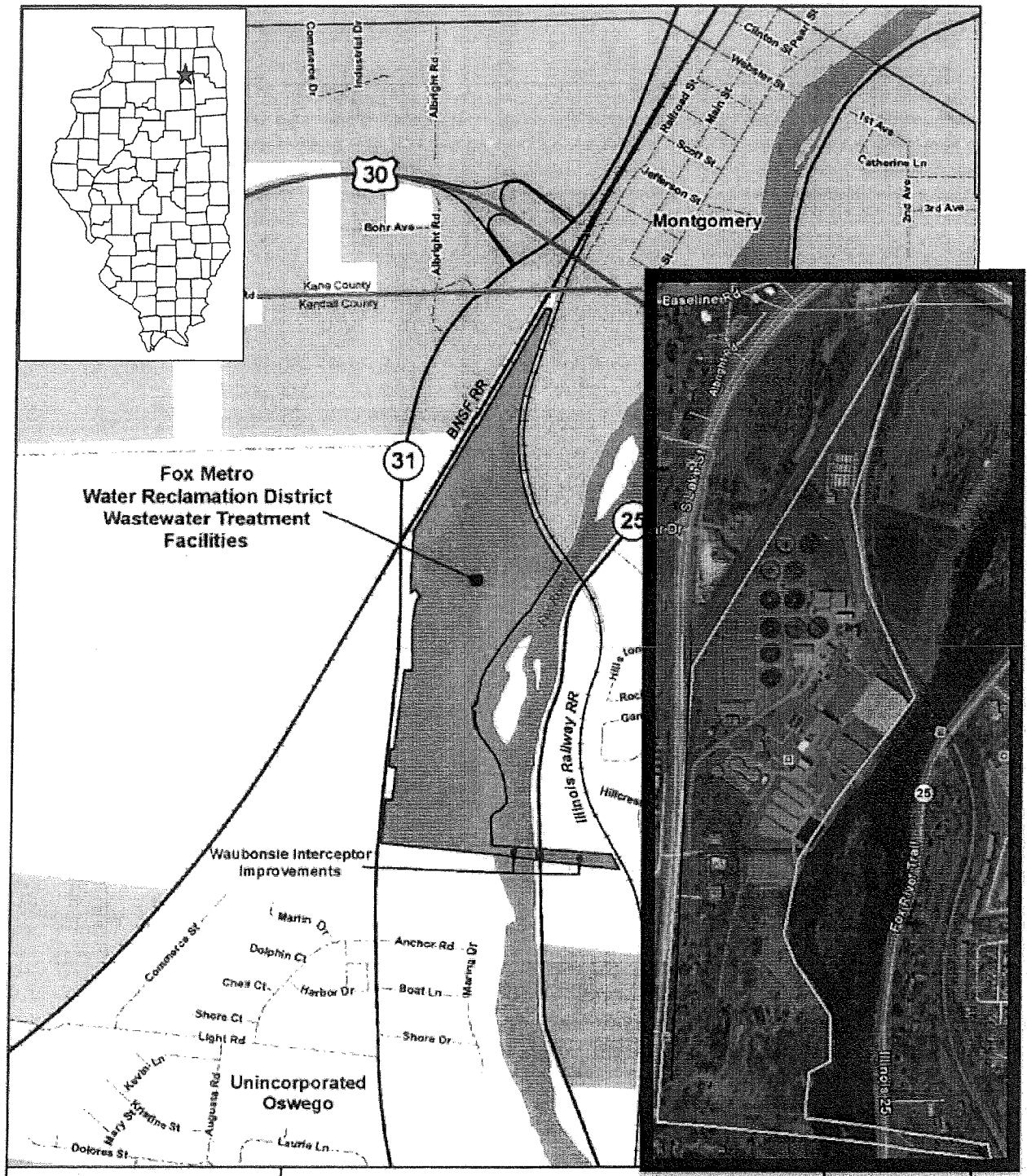
_____ _____

Donna M. Jones, P.E. Date
Chief, Illinois/Missouri Section
Regulatory Branch

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

_____ _____

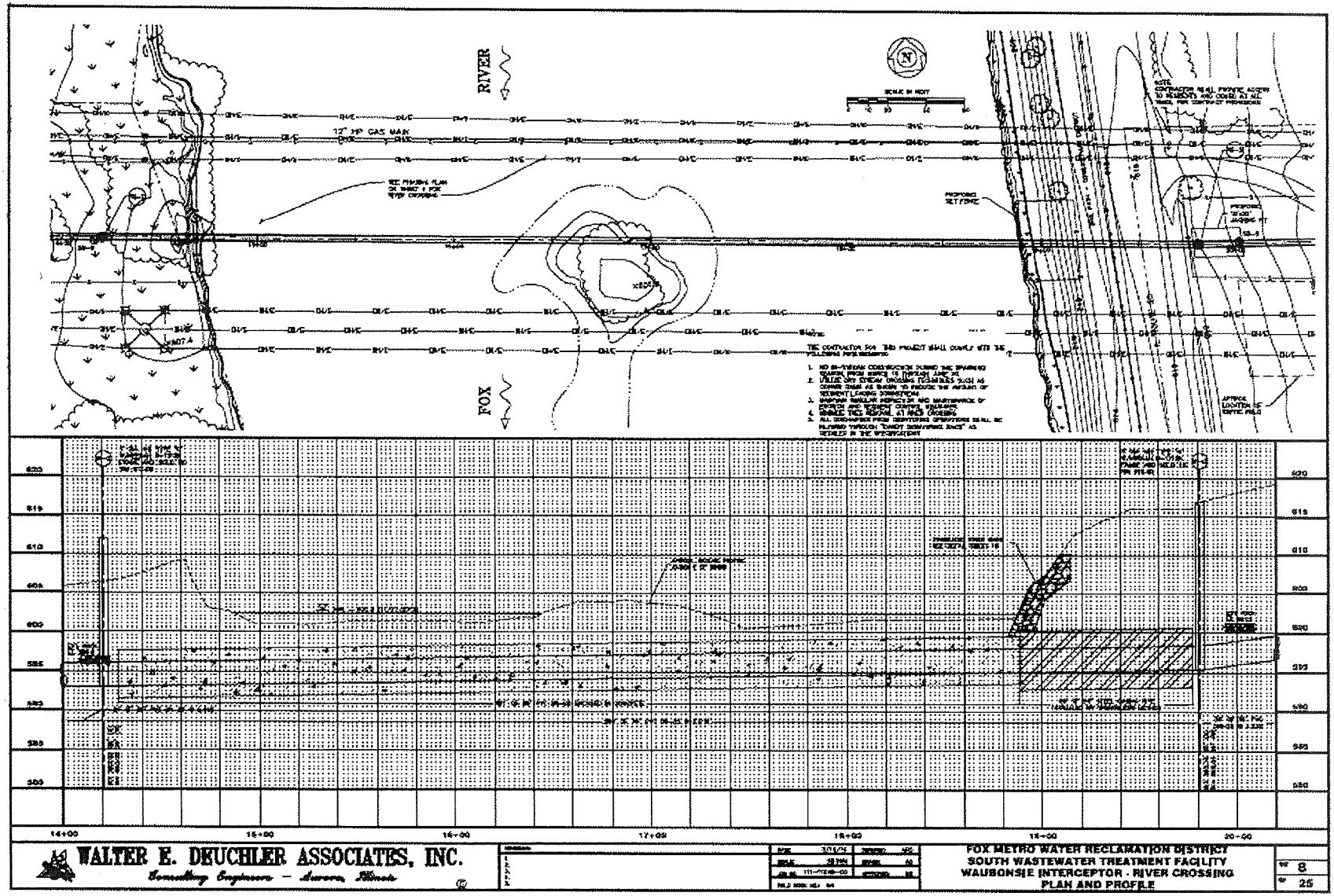
Transferee Date



Walter E. Deuchler Associates, Inc.
CONSULTING ENGINEERS

Fox Metro Water Reclamation District
Wastewater Treatment Facility Location Map
CSO Long Term Control Plan - Phase 2

CEMVR-OD-P-2014-1343
Vicinity & Aerial Map
Sheet 1 of 3



CEMVR-OD-P-2014-1343
River Crossing
Sheet 3 of 3

DEPARTMENT OF THE ARMY PERMIT

Permit Number: CEMVR-OD-P-2014-1343

Section: 10/404

Permittee: Fox Metro Water Reclamation District
682 South State Route 31
Oswego, Illinois 60543

POC: Thomas F. Muth, P.E.
Tel: 630-892-4378

Effective Date:

Expiration Date: December 31, 2018 – Industrial Development

Issuing Office: U.S. Army Corps of Engineers, Rock Island District
Clock Tower Building - P.O. Box 2004
Rock Island, Illinois 61204-2004

NOTE: The term "you" and its derivatives, as used in this permit, means the permittee or any future transferee. The term "this office" refers to the appropriate district or division office of the Corps of Engineers having jurisdiction over the permitted activity or the appropriate official of that office acting under the authority of the commanding officer.

You are authorized to perform work in accordance with the terms and conditions specified below.

Project Description: To expand the current wastewater treatment facility for the Fox Metro Water Reclamation District (FMWRD). The entire site is approximately 31 acres, of which approximately 23 acres will be disturbed by the proposed project. The undeveloped area will be cleared of all existing improvements, trees, and brush. A 42" interceptor pipe will be installed across the Fox River that will extend east to a new junction box near the Illinois Railnet Line utilizing a two phase temporary cofferdam. A total of 0.13 acres of the 0.24 acre forested wetland that comprises Wetland 1 will be temporarily impacted. A total of 0.012 acres of the 0.02 acre emergent wetland that comprises Wetland 2 will be temporarily impacted. A total of 1.60 acres of emergent wetland from the 11.4 acre emergent and forested wetland that comprises Wetland 3 will be temporarily impacted. A total of 3.40 acres of emergent wetland from the 11.4 acre emergent and forested wetland that comprises Wetland 3 will be permanently impacted. All temporary impacts to wetlands will be restored to preconstruction contours, and reseeded with native hydrophytic vegetation.

Project Location: IL-Aurora South USGS quad sheet.

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- Datum NAD-83. UTM Zone 16, Northing 4 618 882.70807488, Easting 387 457.891510076.
- Latitude: 41.7137815906429. Longitude: -88.3528548171683.

Drawings CEMVR-OD-P-2014-1343 Sheet 1 of 3, Vicinity & Aerial Map
Sheet 2 of 3, Plan View
Sheet 3 of 3, River Crossing

Permit Conditions:

General Conditions:

1. The time limit for completing the work authorized ends on the date specified on page 1. If you find that you need more time to complete the authorized activity, submit your request for a time extension to this office for consideration at least one month before that date is reached.

2. You must maintain the activity authorized by this permit in good condition and in conformance with the terms and conditions of this permit. You are not relieved of this requirement if you abandon the permitted activity, although you may make a good faith transfer to a third party, in compliance with General Condition 4 below. Should you wish to cease to maintain the authorized activity or should you desire to abandon it without a good faith transfer, you must obtain a modification of this permit from this office, which may require restoration of the area.

3. If you discover any previously unknown historic or archaeological remains while accomplishing the activity authorized by this permit, you must immediately notify this office of what you have found. We will initiate the Federal and state coordination required to determine if the remains warrant a recovery effort or if the site is eligible for listing in the National Register of Historic Places.

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6. You must allow representatives from this office to inspect the authorized activity at any time deemed necessary to ensure that it is being or has been accomplished in accordance with the terms and conditions of your permit.

Special Conditions:

1. The permittee understands and agrees that, if future operations by the United States require the removal, relocation, or other alteration, of the structure or work herein authorized, or if, in the opinion of the Secretary of the Army or his authorized representative, said structure or work shall cause unreasonable obstruction to the free navigation of the navigable waters, the permittee will be required, upon due notice from the Corps of Engineers, to remove, relocate, or alter the structural work or obstructions caused thereby, without expense to the United States. No claim shall be made against the United States on account of any such removal or alteration.

2. Your use of the permitted activity must not interfere with the public's right to free navigation on all navigable waters of the United States (Section B of Appendix A to 33 CFR 325).

3. In order to compensate for the loss of 3.40 acre emergent wetland, the permittee will purchase 3.43 credits at DeKalb County-Afton Forest Preserve wetland mitigation bank. .

4. The permittee understands and agrees that this permit is not valid until the Illinois Environmental Protection Agency either issues or waives water quality certification. (See also General Condition 5 above.) Any conditions listed in the water quality certification from the Illinois Environmental Protection Agency will be a part of this permit (once issued).

Further information:

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☒ Section 10 of the Rivers and Harbors Act of 1899 (33 U.S.C. 403).

☒ Section 404 of the Clean Water Act (33 U.S.C. 1344).

☐ Section 103 of the Marine Protection, Research and Sanctuaries Act of 1972 (33 U.S.C. 1413).

2. Limits of this authorization.

a. This permit does not obviate the need to obtain other Federal, state, or local authorizations required by law.

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b. Damages to the permitted project or uses thereof as a result of current or future activities undertaken by or on behalf of the United States in the public interest.

c. Damages to persons, property, or to other permitted or unpermitted activities or structures caused by the activity authorized by this permit.

d. Design or construction deficiencies associated with the permitted work.

e. Damage claims associated with any future modification, suspension, or revocation of this permit.

4. Reliance on Applicant's Data: The determination of this office that issuance of this permit is not contrary to the public interest was made in reliance on the information you provided.

5. Reevaluation of Permit Decision. This office may reevaluate its decision on this permit at any time the circumstances warrant. Circumstances that could require a reevaluation include, but are not limited to, the following:

a. You fail to comply with the terms and conditions of this permit.

b. The information provided by you in support of your permit application proves to have been false, incomplete, or inaccurate (See 4 above).

c. Significant new information surfaces which this office did not consider in reaching the original public interest decision.

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6. Extensions. General condition 1 establishes a time limit for the completion of the activity authorized by this permit. Unless there are circumstances requiring either a prompt completion of the authorized activity or a reevaluation of the public interest decision, the Corps will normally give favorable consideration to a request for an extension of this time limit.

Your signature below, as permittee, indicates that you accept and agree to comply with the terms and conditions of this permit.

_____ _____

Permittee Date

The issuing officer for this permit is Mark J. Deschenes, Colonel, U.S. Army, Commander & District Engineer, Rock Island District.

This permit becomes effective when the Federal official, designated to act for the Secretary of the Army, and in accordance with CEMVR-OD-P appointment order dated 15 January 2008, has signed below.

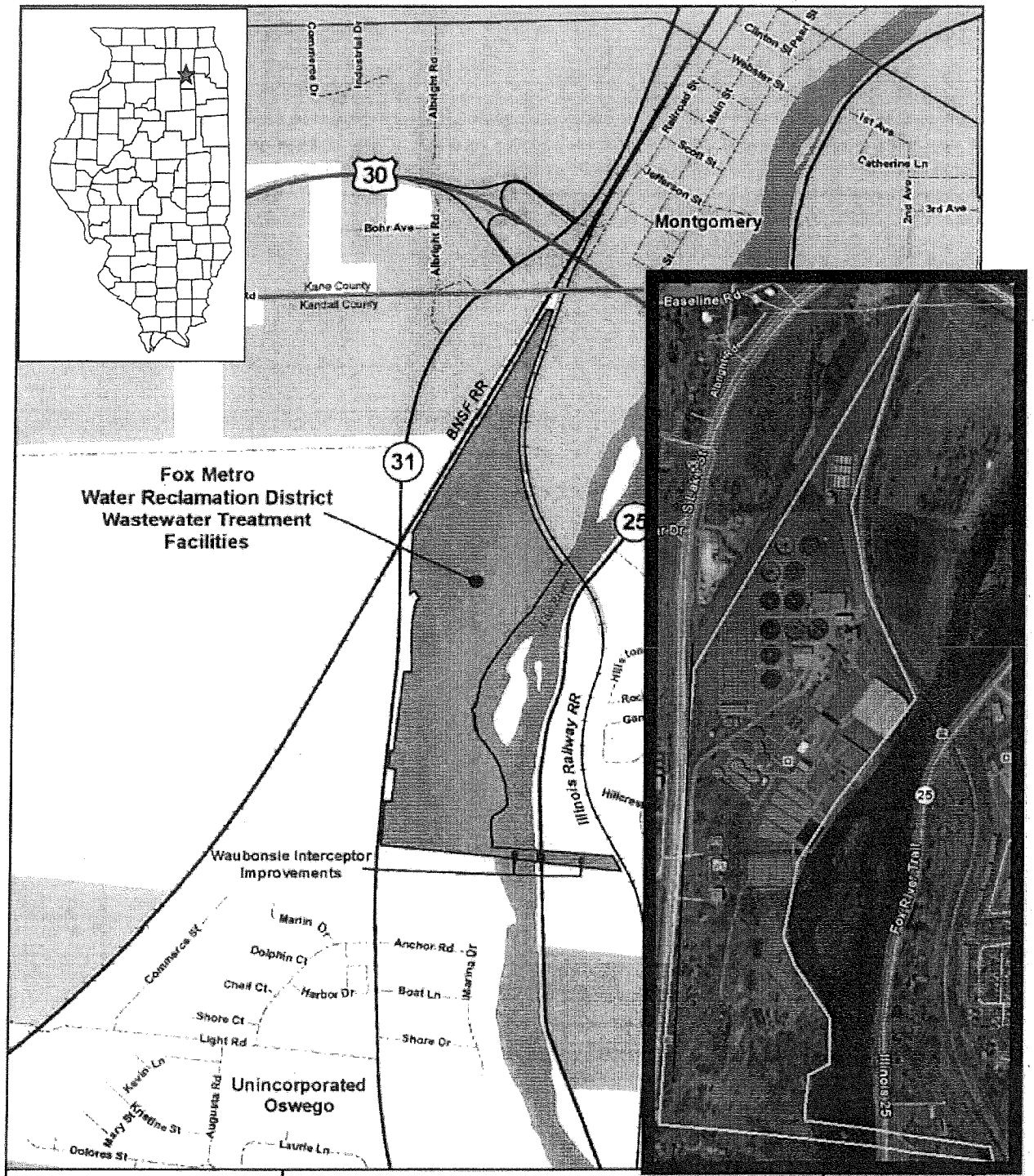
_____ _____

Donna M. Jones, P.E. Date
Chief, Illinois/Missouri Section
Regulatory Branch

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

_____ _____

Transferee Date



Walter E. Deuchler Associates, Inc.
CONSULTING ENGINEERS

Fox Metro Water Reclamation District
Wastewater Treatment Facility Location Map
CSO Long Term Control Plan - Phase 2

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W E
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CEMVR-OD-P-2014-1343
Vicinity & Aerial Map
Sheet 1 of 3

APPENDIX D

2015 DEI Scientific Collection Permit

ILLINOIS DEPARTMENT OF NATURAL RESOURCES

Authorization is hereby granted, under Section 5/3.22, Chapter 520 and Section 5/20-100, Chapter 515 of the Illinois compliled Statues to:

Last Name: **Dane** First Name: **Leonard** Permit Number: **A15.5357**

Issued: **12/19/2014** **Expires: 12/31/2015**

Business Name: Deuchler Environmental, Inc.

Street Address: 230 Woodlawn Avenue

City: Aurora State: IL Zip Code: 60506

for strictly scientific, educational or zoological purposes, to take the Illinois fauna identified below subject to the following provisions:

May legally capture, by scientifically accepted methods, only the specific aquatic species listed on the accompanying Illinois Department of Natural Resources (IDNR) scientific permit application/project proposal (on file in Springfield, IL.) strictly for scientific, educational, and/or zoological purposes (except endangered and threatened species). After data has been humanely collected from these species, all animals shall be released unharmed at or near the original site of capture. Deceased animals and/or animal parts must be buried or given to a public or state scientific educational or zoological institution. A federal permit is required for all projects involving federally regulated species. If endangered and threatened species are taken, the IDNR Division of Natural Heritage, Endangered Species Coordinator must be notified. The Endangered Species Coordinator must approve of the disposition of specimens.
Authorization: Counties of Kane, Lake, and Kendall, exclusive of nature preserves, and IDNR owned and managed properties.

I agree to the following provisions and terms of this Scientific Permit.

Permittee's Signature: Leonard Dane
(Permit not valid unless signed)

Approved By:
Office of Resource Conservation

Date: 12-29-14

TERMS FOR SCIENTIFIC PERMIT

1. Under no circumstances shall a scientific permit be used in lieu of sport or commercial licenses.
2. All taking shall be performed by or under the direct supervision of the permittee. Permitte must be present with persons involved in actual taking.
3. All gear left unattended must be tagged bearing name and scientific permit number of permittee.
4. Permittee must be at least eighteen (18) years of age.
5. Permits are not transferable and PERMITTE SHALL CARRY PERMIT AT ALL TIMES WHEN TAKING FAUNA.
6. Agency, company or institution listed on the application is responsible for the taking activities and reports of the individual issued this permit
7. Scientific permits will not be valid for taking any species appearing on official State List of Endangered and Threatened Vertebrate Species of Illinois (see attached Administrative Rule, Part 1010) without specific written approval from the Department of Natural Resources.
8. A federal Permit is required for the taking of species protected by the Federal Government in addition to the State Scientific Permit.
9. The Division of Wildlife Resources may require special conditions or provsions on any Scientific Permit.
10. Use of rotenone or any other toxic materials for taking must have special written approval from the Department of Natural Resources and may need a variance from the Illinois Environmental Protection Agency.
11. By january 31 of next year, an annual report of the permittee's activies must be submitted to the Division of Wildlife Resources. In addition, the permittee shall submit a copy of all written reports, etc. that result from the permitted activity. Permits will be renewed after these annual reports and appropriate publications have been received.
12. Any permit may be revoked or suspended at any time by the Department of Natural Resources.
13. Permits expire December 31 each calendar year unless otherwise specified.

The Department of Natural Resources is an equal opportunity employer.

Please contact Steve Pescitelli at 630-553-0164, prior to fish population surveys. Thank you.

APPENDIX E

Example EOR

Illinois Natural Heritage Database
Endangered /Threatened Species Occurrence and Sighting Report Form

Name of Species:	Greater Redhorse (Moxostoma valenciennesi)			**Date Observed:**	5-16-2013
New Sighting		**or Update**	X	Entire extent of occurrence is:	**known OR** X **not known**
Naturally Occurring	X	**or**	**Introduced Location**	**When?**	**From Where?**

Location: (For more accurate mapping, please provide a map showing the exact location)

County:	Kendall	**Latitude**	41° 40' 32.37" N (#2)	**Longitude**	88° 22' 41.55" W

Direction from Nearest Landmark: along the right decending bank downstream of the orchard road bridge

Natural Division and Section:

Legal Description: Township	37N	Range	7E	Section	24	Quad name	NE¼, NW¼

INAI Site Name:		**Survey Site Name (alias)**	

Observations : (evidence of breeding or # of ♂,♀& juvenile animals or # fruiting/flowering/seedling plants, etc.): fruiting/flowering/seedling plants

Length: 530 mm
Weight: 1902 g

Description of Area: Right decending bank at orchard Road of the Fox River

Comments: Identified using caudal peduncle scale count, photographed, Floy tagged, and released. Captured by electrofishing

Specimen/voucher #(s):	N/A (Floy tag # 002)	**Where deposited?**	Released back into Fox River

Name of Observer:	Leonard Dane, Marc Briedermann
Observer's Phone Number	(630) 897-8380

Return to: Illinois Natural Heritage Database Program Manager, Illinois Department of Natural Resources, One Natural Resources Way, Springfield IL 62702-1271

Rev 11/07

APPENDIX F

2015 DEI IDNR Endangered Species Permit

Illinois
Department of
Natural Resources
One Natural Resources Way • Springfield, Illinois 62702-1271 www.dnr.illinois.gov

PERMIT FOR POSSESSION OF ENDANGERED OR THREATENED SPECIES

Permit type: _S_ Permit No. 15-014 is issued to: Leonard Dane (Deuchler Environmental, Inc.), 230 Woodlawn Avenue, Aurora, IL 60506 to allow **collecting, handling, measuring, weighing, and releasing** of the following animals or animal products of endangered or threatened species of federal endangered plants:

SPECIES	ITEM	QUANTITY
1. Greater Redhorse	Live Animal	10
2. Blacknose Shiner	Live Animal	20
3. Blackchin Shiner	Live Animal	20
4. Banded Killfish	Live Animal	10

Permit version: Original _X_ Renewal ___ Amended ___

Special conditions: Any Greater Redhorse may be floy tagged. One specimen each of Blacknose Shiner, Blackchin Shiner, and Banded Killfish may be vouchered into a collection with accession numbers provided to the Illinois Department of Natural Resources (Endangered and Threatened Species Program Manager).

Standard conditions:

— **Reporting**- Annual reports must be submitted by January 31 of each year. Changes in inventory of specimens must be reported within 5 days. Changes in personal information or affiliation must be reported within 10 days.

— **Propagation**- Propagation requires a permit for such a purpose, only available under Scientific and Zoological/Botanical permits.

— **Disposal or Transfer**- Applicants must obtain a permit prior to transfer or disposal of specimens.

— **Facilities**: Holding facilities must meet the standards set forth by the Federal Animal Welfare Act.

— **Temporary holding**: Specimens allowed under limited permits may be held temporarily (up to 90 days) by other persons only after written consent of the director.

— **Revocation**: Permits may be revoked if false information was used to obtained permit, reports were not submitted, facility standards were not met, or applicant violates state or federal laws.

THIS PERMIT IF VOID IF IT CONTAINS ANY STRIKE-OUTS, OVERWRITES OR OTHER ALTERATIONS AND IS NON-TRANSFERABLE

ITEMS LISTED ON THIS PERMIT MAY BE SOLD, GIVEN AWAY OR OTHERWISE DISPOSED OF ONLY WITH PERMISSION OF THE ILLINOIS DEPARTMENT OF NATURAL RESOURCES

Signed: _____
Dr. Jim Herkert
Office Director
IDNR Office of Resource Conservation

Date issued: 4-16-15

Expiration Date: December 31, 2015

*This permit is issued pursuant to the Illinois Endangered Species Protection Act and authorizes only those activities listed above. This permit does NOT exempt the permittee from compliance with any other federal, state, or local law, statute, ordinance, or regulation. As a permit holder, the individual/agency acknowledges that all collections of Federal and State listed species be reported to the Endangered Species Program Manager (IL. DNR-Division of Natural Heritage) within 10 days of collection

APPENDIX G

DEI's 2015 Pre-construction Monitoring Report

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Greater Redhorse (*Moxostoma valenciennesi*) and River Redhorse (*Moxostoma carinatum*) Status and Distribution in the Fox River near Aurora, Illinois

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EXECUTIVE SUMMARY

Deuchler Environmental, Inc. (DEI) was contracted by Fox Metro Water Reclamation District (FMWRD) to evaluate the biological condition of the Fox River. The study area consisted of sites upstream and downstream of the FMWRD's CSO and treated effluent discharges to evaluate if the discharges were having any impacts to the river. In the sampling conducted by DEI from 2010 through 2014, no River Redhorse were collected. However, 30 Greater Redhorse were collected by electrofishing. Greater Redhorse were collected throughout the entire study area, both upstream and downstream of the FMWRD CSO and treated effluent discharges. Eleven Greater Redhorse were collected in 2010, one Greater Redhorse was collected in both 2011 and 2012, 10 different Greater Redhorse were collected in 2013, and 7 different Greater Redhorse were collected in 2014. Most of the redhorse were collected in areas of shallow run habitat with gravel, cobble, and boulder substrate. This shallow run habitat is the preferred habitat for the Greater Redhorse and where their food source can be found. The collection of Greater Redhorse was significant as it was a new record to the Aurora area of the Fox River as of 2010. The fact that they have been collected every year since 2010 indicated that there is a viable population within the study area. This was also an indication of favorable water quality conditions and habitat within the study area. The presence of Greater Redhorse was significant since the species was thought to be extirpated from Illinois at one time. Greater Redhorse were found in the Fox River both upstream and downstream of the FMWRD effluent discharges. They were collected in tailwater and run habitats that consisted of a mix of gravel, cobble, and boulders with little to no sediment deposition. Distribution of Greater Redhorse was similar upstream and downstream of the FMWRD discharges at 19 and 13, respectively. The Greater

Redhorse that were collected downstream of the FMWRD discharges were collected from June through August. The treated effluent from FMWRD averaged 5.49 ^{o}C (9.87 ^{o}F) cooler than the mainstem of the Fox River during the summer captures, suggesting that the Greater Redhorse are utilizing the FMWRD treated effluent as thermal refuge during the heat of the summer. Most of the Greater Redhorse collected upstream of the FMWRD discharges were collected in May, June or October. This seasonality of collections seems to be consistent with the downstream findings in that once the river warms up during the summer, the fish seek refuge in areas of cooler, faster moving water.

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1.0 INTRODUCTION

1.1 Greater Redhorse

1.1.1 Greater Redhorse Description

The Greater Redhorse (*Moxostoma valenciennesi*) is one of the largest redhorse (*Moxostoma*) species in the Midwest (Page and Burr 1991). This species is a large, stout fish with a dark brown, olive back, golden, yellowish sides and a white belly (Smith 1979). The scales along the back and sides have a dark spot at their base. The caudal fin is red while the other fins are yellow to a reddish orange. They have 16 (14-17) scales around the caudal peduncle (Becker 1983). They have a large head with thick lips that are covered in folds. Adults have a dorsal fin with a straight or slightly convex edge and the tail fin is forked with two pointed lobes. Like other fish in the Catostomidae family, the Greater Redhorse does not have teeth. They process food using specialized bones in their throat known as pharyngeal teeth. The pharyngeal teeth in Greater Redhorse are thin and bladelike.

1.1.2 Greater Redhorse Biology

The Greater Redhorse spawns between May and June when water temperatures are above 13°C and spawning can last up to 14 days (Becker 1983). The males congregate and hold the spawning grounds, generally moving about slowly and often nudging each other. Females visit the area when ready to spawn. They spawn in groups of one or two females to up to seven males. The males flank the females rolling over each other, while the tail and dorsal fins are vibrated and the

eggs and sperm are released over the substrate. During spawning, males have white tubercles on their tail and anal fins. The female release 32,000 to 72,000 yellow eggs, which will hatch in six to eight days (Cooke and Bunt 1999). Both males and females become sexually mature at five to six years old. After spawning they move to areas of deeper water with slower current up to 15.2 kilometers downstream (Bunt and Cooke 2001). The mean water depth used by Greater Redhorse was 46.3 centimeters and water velocities less than 5 cm/s (Bunt and Cooke 2001). The diet consists of a variety of invertebrates, including aquatic insects, mollusks, aquatic worms, and crustaceans as well as plant materials. They forage mainly on the river bottom. Their preferred food seems to be crustaceans followed by mollusks, aquatic insects, and plants (Healy 2002).

1.1.3 Greater Redhorse Range

In the United States, the range is from Northern Minnesota south to Indiana, Ohio, and Kentucky. It has been recorded in the Great Lakes, Hudson Bay, and Mississippi River basins (Healy 2002). Although it has been reported as far south as Ohio and Kentucky, it may have disappeared from those states. They have become somewhat rare in recent years due to habitat degradation, the building of dams, and the decline in mussel populations in rivers (Healy 2002). Greater Redhorse can be locally abundant during spawning, but are generally rare when they occur (Healy 2002). The Greater Redhorse is the rarest of the six redhorse species known from Illinois (Seegert 1986). In Illinois, only 26 Greater Redhorse were collected from 13 locations within the upper Illinois River Basin from 1980 to 2002 (Retzer and Kowalik 2002). Prior to 1980, the Greater Redhorse was

only known in Illinois from one specimen collected from Salt Creek in DuPage County in 1901 and was thought to be extirpated as recently as 1979 (Smith 1979).

1.1.4 Greater Redhorse Habitat

This freshwater fish is usually found in medium to large rivers and occasionally in lakes. They require clear water without much silt. They prefer sandy or rocky pools or areas of moderate to fast current. They migrate upstream to spawn over cobble or gravel substrates in shallow riffles. Juvenile and young of year prefer shallow, channel margin habitat with slower velocity (Becker 1983). Greater Redhorse have been known to associate with Golden Redhorse (*Moxostoma erythrurum*), Northern Hog Sucker (*Hypentelium nigricans*), Largemouth Bass (*Micropterus salmoides*), Smallmouth Bass (*Micropterus dolomieu*), Bluegill (*Lepomis macrochirus*), Pumpkinseed (*Lempomis gibbosus*), Yellow Perch (*Perca flavescens*), White Sucker (*Catostomus commersoni*), Rock Bass (*Ambloplites rupestris*), Iowa Darter (*Etheostoma exile*), Common Shiner (*Luxilus cornutus*), and Common Carp (*Cyprinus carpio*; Healy 2002, Bunt and Cooke 2001).

1.1.5 Greater Redhorse Threats

Greater Redhorse are sensitive to habitat alterations. The biggest threat comes from siltation and pollution that reduce food sources and degrades the quality of spawning areas. The habitat is further degraded by dams, channelization, alterations to flow regimes, and removal of streamside vegetation. Dams also create barriers along spawning migration routes. Many of the preferred food of

the Greater Redhorse are sensitive to siltation or other forms of non-point and point source pollution, which can indirectly affect the redhorse population (Healy 2002, Bunt and Cooke 2001).

1.2 River Redhorse

1.2.1 River Redhorse Description

The River Redhorse (*Moxostoma carinatum*) in one of the largest redhorse (*Moxostoma*) species in the Midwest (Ross 2001). It is a slightly compressed, red-tailed redhorse with dark spots on the base of the scales along the back and sides. This fish has a large head and a large mouth with heavy, folded lips that form a U-shape on the posterior border of the lower lip. The dorsal fin is convex or straight along the distal edge. Like other fish in the Catostomidae family, the River Redhose does not have teeth. They process food using specialized bones in their throat known as pharyngeal teeth. The pharyngeal teeth in the River Redhorse are heavy and molarlike (Smith 1979). The River Redhorse also has 12-13 scales around the caudal peduncle (Becker 1983).

1.2.2 River Redhorse Biology

The River Redhorse spawns between May and June when water temperatures are above 20°C in large rivers and the upper reaches of large tributaries (Becker 1983; Parker and McKee 1984). Spawning occurs over gravel in water depths less than one meter. Males construct nests known as redds that vary in size from 1.2 to 2.4 meters in diameter (Parker and McKee 1984). The spawning of River Redhorse involves two males to one female. The female approaches the nest created by a

male as the male is performing a nuptial dance, darting back and forth, and then a second male will join in. Once the three are together, the female crowds between the males and all three vibrate across the bottom of the nest, releasing eggs and milt and burying the fertilized eggs in gravel (Hackney 1968). During spawning, males have white tubercles on their head, tail and anal fins. The female can produce 6,000 to 23,000 eggs, which will hatch in three to six days (Parker and McKee 1984). Both males and females become sexually mature at five to six years old and have been known to live 28 years (COSEWIC 2006). The preferred diet of the River Redhorse consists of mollusks. Other organisms consumed include aquatic insects, aquatic worms, and crustaceans as well as plant materials (Becker 1983). They forage mainly on the river bottom.

1.2.3 River Redhorse Range

The River Redhorse is found from central and eastern Mississippi River drainage and the Gulf Slope from Florida to Louisiana. The range extends north into the Great Lakes Basin and St. Lawrence River and is known from 24 states and from the Canadian provinces of Quebec and Ontario (COSEWIC 2006). The River Redhorse has been collected throughout much of the Lower Fox River in Illinois, although in low abundance (Pescitelli and Rung 2011).

1.2.4 River Redhorse Habitat

River Redhorse have been found in both lakes and medium to large rivers, but access to suitable riverine spawning habitat is required (COSEWIC 2006). The preferred spawning habitat includes moderate to swift current, riffle-run habitat, and clean course substrate (Hackney 1968; Becker 1983). When not spawning

they reside in pool habitats with slow current and abundant aquatic vegetation (COSEWIC 2006).

1.2.5 River Redhorse Threats

River Redhorse have a narrow range of habitat requirements and are sensitive to habitat alterations. The biggest threat comes from siltation and pollution that reduce their food source, degrades the quality of spawning areas and increases turbidity (Parker and McKee 1984). The habitat is further degraded by dams, channelization, alterations to flow regimes, and removal of streamside vegetation. Dams also create barriers along spawning migration routes. Many of the preferred food of the River Redhorse are sensitive to siltation or other forms of non-point and point source pollution, which can indirectly affect the redhorse population (Healy 2002; Bunt and Cooke 2001).

1.3 Greater Redhorse versus River Redhorse

These two species can be hard to separate from each other based on initial appearance. Both species are dark brown on the back, have yellowish sides, and white bellies with a tail that is bright orange. The River Redhorse can be differentiated from the Greater Redhorse by its large head, square snout, large eye, and molariform pharyngeal teeth (Smith 1979). The River Redhorse also has a convex dorsal fin edge, while the Greater Redhorse has a concave dorsal fin margin. The River Redhorse has fewer (12-13) caudal peduncle scales than the Greater Redhorse (14-16; Becker, 1983).

2.0 MATERIALS AND METHODS

2.1 Study Plan

Deuchler Environmental, Inc. (DEI) was contracted by Fox Metro Water Reclamation District (FMWRD) to evaluate the biological condition of the Fox River. Sampling has been conducted from 2009 through 2014. The study area consisted of sites upstream and downstream of the FMWRD effluent discharge to evaluate if the treated effluent was having any impacts to the river water quality. The 2009 sampling will not be discussed since there were no Greater Redhorse or River Redhorse collected that year. In 2010, the study area started at the North Aurora Dam and continued downstream approximately 10.5 miles to Orchard Road (**Figure 1**). In 2011 and 2012, the study area was modified to an area that started at Sullivan Road and continued downstream approximately 12 miles to downstream of Saw Wee Kee Park (**Figure 2**). In 2013 and 2014 the study area was slightly modified again to extend from Sullivan Road to downstream of Orchard Road (**Figure 3**).

The total elevation change from the headwaters of the Fox River to the confluence with the Illinois River is 460 feet with an average slope of 2.5 feet/mile (Santucci 2003). The study area is a high gradient section of the Fox River with an elevation drop of approximately 66 feet from the North Aurora Dam to Saw Wee Kee Park with an average slope of 5.3 feet/mile (Google Earth).

Sampling areas were divided into a left descending bank (LDB) and right descending bank (RDB) location to see if there were any significant differences per bank both upstream and downstream of the effluent discharge. DEI has conducted a conductivity study that has shown the effluent plume tends to hug the RDB (DEI unpublished). Three

tributaries to the Fox River were sampled using an electric seine as part of the project to see if any young of the year were seeking refuge or if there were any other species not present in the main stem of the Fox River. No Greater Redhorse or River Redhorse were found in the tributaries so that sampling will not be discussed in this report.

Each location was electrofished for 30 minutes and sampling was repeated throughout the season. In 2012, shoreline seining was added in an attempt to enhance the species diversity. Sampling was conducted from May to November of each year. Starting in 2012, each location was seined at the upstream end of the shock zone for approximately 100 feet. After the seining, each location was electrofished for approximately 30 minutes and distance was dependent upon flow conditions. No Greater Redhorse or River Redhorse were collected in the seining efforts so those results will also not be discussed.

A 16' Alumacraft boat with a Smith-Root 5.0 GPP electrofisher system was used to sample the main stem of the Fox River (**Photo 1**). Electrofishing was conducted at 120 Hz. The electrode array consisted of the aluminum boat hull as the cathode and 6 droppers suspended from a retractable boom as the anode. Each anode dropper is 3/8" woven steel cable that has a length of three feet. The anodes were suspended from a retractable boom that extends eight feet in front of the bow of the boat. The electrofishing sampling crew consisted of a boat operator and a crew member responsible for netting the stunned fish. Electrofishing was conducted in a downstream direction. A conscious effort was made to net every stunned fish. The electrofishing boat maneuvered alongside banks in the main channel and within any submerged or other type of fish cover. The catch was placed into a 75 gallon stock tank that was aerated with oxygen. After 30 minutes of electrofishing the fish were measured to the nearest millimeter,

weighed to the nearest gram, and analyzed for anomalies before being released back into the Fox River. Smaller fish and minnow species were placed into a jar and preserved for identification and processing in the laboratory.

Photo 1. Boat Electrofishing

The sample area was a mix of riffles, runs, and pools with mostly run habitat. There are three dams currently on this section of the Fox River: North Aurora Dam, Galena Dam and Montgomery Dam. The Hurds Island Dam was formerly located within the study area but was removed in 2005.

Starting in 2012, DEI floy tagged all of the Greater Redhorse collected to monitor for recaptures and to assess any movement upstream or downstream. Once the fish are measured and weighed a numbered tag is attached adjacent to the dorsal fin (**Photo 2**).

Photo 2. Tagged Greater Redhorse

2.2 Sample Location Descriptions

Maps depicting the study area and location boundaries are included as **Figures 1 through 14**. Each sampling location is described below along with the reason why each location was chosen. The years each location was sampled can be found in **Table 1**.

Table 1. Sample Locations by Year

Location	Year 2010	2011	2012	2013	2014
North Aurora Dam Tailwater	X				
Sullivan Road	X	X	X	X	X
Galena Dam Tailwater	X				
Hurds Island			X	X	X
Montgomery Dam Tailwater	X		X	X	X
Jefferson Street/Route 30	X	X	X	X	X
Fox Metro Water Reclamation District	X	X	X	X	X
Violet Patch Park	X	X	X	X	X
Hudson Park	X	X	X	X	X
Orchard Road	X			X	X
Saw Wee Kee		X	X		

2.2.1 North Aurora Dam Tailwater

North Aurora Dam Tailwater location was sampled from the dam downstream approximately 1000 meters (**Figure 4**). This area was only sampled in 2010. It was chosen to assess the tailwater area of the North Aurora Dam as this is a popular fishing destination and represents the conditions of the Fox River upstream of the influence of the City of Aurora's CSOs and the FMWRD effluent. This section of the river was highly modified due to the North Aurora Dam and has relatively fast flow and shallow areas of gravel, sand and rock. The adjacent land use was primarily commercial/industrial and park land. Access was gained by boat at the boat launch at Veterans Island near the Illinois Avenue Bridge.

2.2.2 Sullivan Road

Sampling of Sullivan Road began approximately 100 yards upstream of the bridge (**Figure 5**). Sullivan Road was chosen to represent the conditions of the Fox River upstream of the influence of the City of Aurora's CSOs and FMWRD effluent.

This location was mostly undisturbed with relatively fast flow and shallow areas of gravel, sand and rock. The adjacent land use was primarily commercial/industrial and park land. Access was gained by boat at the boat launch at Veterans Island near the Illinois Avenue Bridge.

2.2.3 Galena Dam Tailwater

Galena Dam Tailwater location was sampled from the dam downstream to North Avenue (**Figure 6**). This area was only sampled in 2010. It was chosen to assess

the tailwater area of the Galena Dam to represent the condition of the Fox River within Aurora's CSO discharge area and upstream of the FMWRD effluent.

This section of the river was highly modified due to the Galena Dam and has relatively fast flow and shallow areas of gravel, sand and rock. The adjacent land use was primarily commercial/industrial and park land. Access was gained by boat at the South River Street Boat Launch in Aurora.

2.2.4 Hurds Island

The Hurds Island location was sampled from the North Avenue bridge downstream to the pedestrian bridge located upstream of the River Street boat launch (**Figure 7**). This section was added in 2012 to get a better representation of the Fox River within Aurora's CSO discharge area and upstream of the FMWRD effluent. This site was also an area that has been sampled by the Illinois Department of Natural Resources (IDNR).

This location was highly modified due to the presence of the Galena Boulevard Dam, and Montgomery Dam, which causes this area of the Fox River to be a shallow moderately flowing stream at the upper end of the zone and a slow flowing pool at the downstream end of the zone. There were also remnants of the former North Avenue dam near the upstream end of this location. The adjacent land use was primarily commercial/industrial, residential, and park land. The LDB near the downstream end of the sampling reach was quite full of trash and discarded home appliances. Access was gained by boat at South River Street Boat Launch in Aurora.

2.2.5 Montgomery Dam Tailwater

Montgomery Dam Tailwater location was sampled from the Montgomery Dam downstream approximately 400 meters of the Mill Street Bridge (**Figure 8**). This area was sampled in 2010, 2012, 2013, and 2014. It was chosen to assess the tailwater area of the Montgomery Dam as this is a popular fishing destination and there was a fish kill in 2012 that included the Illinois Endangered Greater Redhorse. This area was also sampled by the IDNR as well as a monitoring site of the Illinois Environmental Protection Agency (IEPA).

This section of the river was highly modified due to the Montgomery Dam. The adjacent land use was mostly park land with some residential and commercial properties. This segment was accessible by boat off of the Fox Valley Park District's bike path at South Broadway Park in Montgomery.

2.2.6 Jefferson Street/Route 30

Sampling at the Jefferson Street/Route 30 location began at Jefferson Street and continued downstream to midway between the Route 30 Bridge and the railroad bridge that is upstream of Fox Metro Water Reclamation District (**Figure 9**). Jefferson Street/Route 30 was chosen to further represent the conditions of the Fox River downstream of the Aurora CSO area and upstream of the FMWRD effluent.

This section of the river was highly modified and this area of the Fox River was slow flowing under normal conditions. The adjacent land use was mostly residential and park land. This segment was accessible by boat off of the Fox Valley Park District's bike path at South Broadway Park in Montgomery.

2.2.7 Fox Metro Water Reclamation District

Fox Metro Water Reclamation District began at the railroad bridge that is upstream of FMWRD and continued downstream to the Com-Ed power line crossing and includes the FMWRD plant treated discharge and CSO outfall (**Figure 10**). This segment was chosen to represent the conditions of the Fox River downstream of the Aurora and FMWRD CSO outfall and the FMWRD treated effluent discharge point.

The location was primarily undisturbed with relatively fast flow and shallow areas of gravel, sand and rock substrate. The adjacent land use was primarily residential and FMWRD along the RDB and transportation and park along the LDB. Access was obtained by boat off of the bike path at South Broadway Park in Montgomery and at a private boat launch across the river from Violet Patch Park.

2.2.8 Violet Patch Park

Violet Patch Park sampling began at the pedestrian bridge near the upstream end of the park and continued downstream to Millstone/Troy Park (**Figure 11**). This area was chosen to represent the conditions of the Fox River downstream of the Aurora and FMWRD discharge points.

This location was primarily undisturbed with relatively fast flow and shallow areas of gravel, sand and rock substrate. The adjacent land use was park and residential. Access by boat was obtained from a private boat ramp on the RDB across from the park.

2.2.9 Hudson Park

Hudson Park was sampled from the mouth of Waubonsie Creek to just upstream of the bridge at Orchard Road (**Figure 12**). This segment was chosen to further represent the conditions of the Fox River downstream of the Aurora and FMWRD CSO discharge points. This area was also an area that has been sampled by the IDNR.

This area was primarily undisturbed with relatively fast flow and shallow areas of gravel, sand and rock substrate. The adjacent land use was primarily residential. This segment was accessible by boat at the Hudson Crossing Park near Route 34 in Oswego.

2.2.10 Orchard Road

Orchard Road sampling began at the Orchard Road bridge and continued downstream to the Saw Wee Kee Park boat launch (**Figure 13**). This site was sampled in 2010 and added back to the sampling plan in 2013 to assess the river at the point where the effluent becomes fully mixed with the river. This segment was chosen to further represent the conditions of the Fox River downstream of the Aurora and FMWRD CSOs and the FMWRD effluent discharge.

This area was primarily undisturbed with slow flow and shallow areas of gravel, sand and rock substrate. The adjacent land use was primarily residential and park. This segment was accessible by boat at the Saw Wee Kee Park boat launch.

2.2.11 Saw Wee Kee

Saw Wee Kee was located downstream of the Orchard Road bridge to upstream of the Hide-A-Way Campground (**Figure 14**). This segment was chosen to

further represent the conditions of the Fox River downstream of the Aurora and FMWRD CSOs and the FMWRD treated effluent discharge. This location was added in 2011 and discontinued at the end of 2012.

This area was primarily undisturbed with slow flow and shallow areas of gravel, sand and rock substrate. The adjacent land use was primarily residential and park. This segment was accessible by boat at the Saw Wee Kee Park boat launch.

3.0 RESULTS

3.1 Past Studies

The IDNR conducts basin surveys on a rotational basis. The most recent studies on the Fox River were completed in 2002, 2007, and 2012. No state threatened or endangered redhorse species were collected in 2007 or 2012 (Pescitelli and Rung 2014). There were four River Redhorse captured during the 2002 basin survey, two at the Oswego sampling location (DT-03) and two at the Wedron sampling location (DT-36). The IDNR has collected River Redhorse during their surveys and concluded that they are in low abundance. The IDNR has not collected any Greater Redhorse during their basin surveys.

In 2000, the Max McGraw Wildlife Foundation conducted a Fox River fish passage feasibility study investigating the impacts of the dams on the river. During this study no Greater Redhorse were collected and 14 River Redhorse were collected from downstream of the South Batavia Dam to upstream of the Yorkville Dam (Santucci 2003). There were 10 River Redhorse collected in the free flowing area below the Batavia Dam (RM 53.73), one River Redhorse was collected in the free flowing area below the North Aurora Dam (RM 51.45), two River Redhorse were collected in the free flowing area below the Hurds Island Dam (RM 47.51), and one River Redhorse was collected upstream of the Yorkville Dam (RM 42.33) in an area between the Route 34 bridge and the Orchard Road bridge (Santucci 2003).

3.2 DEI Results

In the sampling conducted by DEI from 2010 through 2014, no River Redhorse were collected, however, 30 Greater Redhorse were collected by electrofishing (**Table 2**).

Table 2. Greater Redhorse Catch by Date

Location	Habitat	Date	Total Length (mm)	Weight (g)	estimated age
FMWRD RDB	Run-Effluent	6/16/2010	575	2542	9
N Aurora Dam LDB	Tailwater	6/29/2010	412	845	5
N Aurora Dam LDB	Tailwater	6/29/2010	423	925	5
Galena Dam RDB	Tailwater	7/1/2010	544	2123	7
FMWRD RDB	Run-Effluent	7/15/2010	556	2049	7
FMWRD RDB	Run-Effluent	7/15/2010	586	2493	9
Mont Dam LDB	Tailwater	8/19/2010	423	960	5
Mont Dam LDB	Tailwater	8/19/2010	423	1002	5
Mont Dam LDB	Tailwater	8/19/2010	432	1013	5
Mont Dam RDB	Tailwater	8/20/2010	577	2677	9
Mont Dam RDB	Tailwater	11/3/2010	226	128	3
FMWRD RDB	Run-Effluent	6/6/2011	593	2687	10
Montgomery Dam Tailwater	Tailwater	8/6/2012	384	640	4
Orchard Rd RDB	Run	5/16/2013	530	1902	7
Montgomery Dam LDB	Tailwater	5/20/2013	435	970	5
Hurds Island RDB	Run	5/31/2013	578	2524	9
Hudson Park RDB	Run	6/17/2013	543	1900	7
Violet Patch Park LDB	Run	7/23/2013	521	1692	7
Violet Patch Park RDB	Run	7/23/2013	493	1650	6
Violet Patch Park RDB	Run	7/23/2013	543	1924	7
FMWRD LDB	Run	8/1/2013	435	1068	5
Hurds Island RDB	Run	10/4/2013	485	1524	6
Montgomery Dam LDB	Tailwater	10/14/2013	502	1652	6
Montgomery Dam RDB	Tailwater	10/14/2013	560	2408	8
Hurds Island RDB	Run	6/10/2014	540	2406	7
Violet Patch Park RDB	Run	7/10/2014	570	2292	8
Montgomery Dam LDB	Tailwater	7/11/2014	555	2402	7
Violet Patch Park RDB	Run	8/18/2014	584	2388	9
Hurds Island RDB	Run	8/25/2014	551	2354	8
Hurds Island RDB	Run	10/7/2014	560	2614	8
Violet Patch Park LDB	Run	10/20/2014	540	2328	7
Montgomery Dam LDB	Tailwater	10/28/2014	532	2030	7

Greater Redhorse were collected throughout the entire study area, both upstream and downstream of the FMWRD effluent discharge. In 2010, there was a total of 11 Greater Redhorse collected comprising 0.06% of the total fish collected by electrofishing. Eight were found in tailwater locations of the North Aurora Dam, Galena Dam, and Montgomery Dam. The other three were collected in the effluent plume FMWRD. The first specimen collected was verified by IDNR staff and staff from the Field Museum in Chicago where the specimen is currently part of their collection. Individuals collected since 2010 have been verified by dorsal fin shape and caudal peduncle scale counts. Photos have also been taken of most Greater Redhorse encountered. In 2011 and 2012, only one Greater Redhorse was collected each year comprising 0.01% of the total electrofishing catch each year. The Greater Redhorse collected in 2011 was in the effluent plume of FMWRD and in the Montgomery Dam tailwater in 2012. In addition to the Greater Redhorse collected during the electrofishing sampling in 2012, a dead individual was found on the shore near Mill Street in Montgomery downstream of the Montgomery Dam on July 12, 2012 (**Photo 3**). This individual was photographed and the pictures were sent to the IDNR Region 2 fish biologist for confirmation of identification. It is believed this fish died as a result of the low flow conditions of the Fox River in 2012. During 2012, the Fox River was at drought levels. These low flows lead to large diel fluctuations in dissolved oxygen and increased water temperature and algal blooms causing stress to the fish and leading to the fish kill. There were ten different Greater Redhorse collected in 2013 comprising 0.09% of the total electrofishing catch. Three were collected in the tailwater of the Montgomery Dam, while the rest were collected in run habitat. Two were collected upstream of the FMWRD treatment plant at

the RDB of Hurds Island. The other five were collected downstream of the effluent, one at LDB of Fox Metro, one was collected on the LDB near Violet Patch Park, two were collected on the RDB near Violet Patch Park with one being a recaptured fish that was tagged five weeks earlier from the RDB near Hudson Park, and the other one was collected from the RDB near Orchard Road. In 2014, there were seven different Greater Redhorse collected that comprised 0.07% of the electrofishing catch. Three were collected from the RDB near Hurds Island with one of them being recaptured six weeks after it was initially tagged. Two more were collected from the LDB in the tailwater of the Montgomery Dam. Two were collected from the RDB near Violet Patch Park and the other one was collected from the LDB near Violet Patch Park (**Table 3**).

Photo 3. Dead Greater Redhorse found July 12, 2012.

Length at annuli data for Greater Redhorse collected in Wisconsin was used to generate an average length at age (Becker 1983). The average length at age data was used to assign an age to the Greater Redhorse caught by DEI from 2010 through 2014 based on total length of the individual fish caught (**Table 2**). It was determined that the Greater

Redhorse collected by DEI ranged in age from three to ten. Most of the fish fell in the six to eight year old class.

Shorthead Redhorse is another redhorse species with bright red fins that are commonly found in this area of the Fox River. **Photo 4** compares the Shorthead Redhorse (*Moxostoma macrolepidotum*) to the Greater Redhorse. The Shorthead Redhorse is toward the top of the picture and the Greater Redhorse is toward the bottom. The differences between the two species are evident when compared side-by-side.

Photo 4. Shorthead Redhorse vs. Greater Redhorse.

Table 3. Tagged Greater Redhorse in the Fox River

Tag number	length (mm)	weight (g)	location	date	Recap	length (mm)	weight (g)	location	date
001	384	640	Montgomery Dam Tailwater	8/6/2012					
002	530	1902	Orchard Road RDB	5/16/2013					
003	435	970	Montgomery Dam Tailwater LDB	5/20/2013					
004	578	2524	Hurds Island RDB	5/31/2013					
005	543	1900	Hudson Park RDB	6/17/2013	X	543	1924	Violet Patch Park RDB	7/23/2013
007	493	1650	Violet Patch Park RDB	7/23/2013					
008	521	1692	Violet Patch Park LDB	7/23/2013					
010	435	1068	Fox Metro LDB	8/1/2013					
011	485	1524	Hurds Island RDB	10/4/2013					
012	502	1652	Montgomery Dam Tailwater LDB	10/14/2013					
013	560	2408	Montgomery Dam Tailwater RDB	10/14/2013					
014	540	2406	Hurds Island RDB	6/10/2014					
015	570	2292	Violet Patch Park RDB	7/10/2014					
016	555	2402	Montgomery Dam Tailwater LDB	7/11/2014					
017	584	2388	Violet Patch Park RDB	8/18/2014					
018	551	2354	Hurds Island RDB	8/25/2014	X	560	2614	Hurds Island RDB	10/7/2014
019	540	2328	Violet Patch Park LDB	10/20/2014					
020	532	2030	Montgomery Dam Tailwater LDB	10/28/2014					

4.0 DISCUSSION

Redhorse made up a significant portion of the fish species collected throughout the study area (13% to 28%). This includes Golden Redhorse (*Moxostoma erythrurum*), Shorthead Redhorse, and Silver Redhorse (*Moxostoma anisurum*) as well as Greater Redhorse. Most of the redhorse were collected in areas of shallow run habitat with gravel, cobble, and boulder substrate. This is the preferred habitat for the Greater Redhorse and where their food source can be found (Yoder and Beaumier 1986). The collection of Greater Redhorse was significant as it was a new record to the area as of 2010. The fact that they have been collected every year since 2010 indicated that there was a viable population within the study area. This was also an indication of favorable water quality conditions and habitat within the study area. The presence of Greater Redhorse was significant since the species has been on the decline throughout most of its range and once thought to be extirpated from Illinois (Smith 1979, Yoder and Beaumier 1986). Greater Redhorse were found in the Fox River both upstream and downstream of the FMWRD effluent discharge. They were collected in tailwater and run habitats that consisted of a mix of gravel, cobble, and boulders with little to no sediment deposition.

Distribution of Greater Redhorse was similar upstream and downstream of the FMWRD effluent at 19 and 13, respectively. The Greater Redhorse that were collected downstream of the FMWRD effluent were collected from June through August. Eight of the fish were collected immediately downstream of the FMWRD effluent and two were collected further downstream in the effluent plume. FMWRD's laboratory staff collected weekly water quality data for temperature, dissolved oxygen, pH, conductivity, and ammonia nitrogen at various locations along the mainstem of the Fox River and at the effluent of the plant as it

enters the river. The closest upstream location to the FMWRD effluent was at Mill Street in Montgomery. Using this temperature data from FMWRD, **Table 4** compares the temperature of the effluent to the temperature of the mainstem at Mill Street for those summer dates that Greater Redhorse were captured on the RDB (effluent side) of the Fox River. The effluent from FMWRD averaged 5.49 ^{o}C (9.87 ^{o}F) cooler than the mainstem of the Fox River during the summer captures, suggesting that the Greater Redhorse were utilizing the FMWRD effluent as thermal refuge during the heat of the summer. Further investigation of this temperature gradient with multiparameter sondes is planned as part of future monitoring activities. The other three Greater Redhorse collected downstream of FMWRD were outside of the effluent plume. One was collected in July, one in August, and the other was collected in October.

Table 4. All RDB Downstream WWTP Capture Locations: Comparison of Effluent vs. Mainstem Temperatures

Location	Greater Redhorse Collection Date	Temp. of Effluent (^{o}C)	Fox River at Mill St. (^{o}C)	Data Collection Date	Difference between Effluent and River (^{o}C)
FMWRD RDB	6/16/2010	18.30	23.49	06/17/2010	-5.19
FMWRD RDB	7/15/2010	20.48	26.99	07/14/2010	-6.51
FMWRD RDB	6/6/2011	18.24	26.32	06/08/2011	-8.08
Orchard Rd RDB	5/16/2013	15.52	19.24	05/16/2013	-3.72
Hudson Park RDB	6/17/2013	17.61	23.01	06/20/2013	-5.40
Violet Patch Park RDB	7/23/2013	19.89	25.15	07/24/2013	-5.26
Violet Patch Park RDB	7/10/2014	18.73	24.40	07/11/2014	-5.67
Violet Patch Park RDB	8/18/2014	20.72	24.78	08/21/2014	-4.06
MEAN					**-5.49**

Most of the Greater Redhorse collected upstream of the FMWRD effluent were collected in May, June or October. This seasonality of collections seemed to be consistent with the downstream findings in that once the river warmed up during the summer, the fish would seek refuge in areas of cooler, faster moving water. There were seven collected in July/August and six of these were in tailwater habitat and one in the run habitat. Five of the collections occurred in 2010 and all in tailwater habitat of the Galena Dam and Montgomery Dam, one was collected in 2012 in tailwater habitat of the Montgomery Dam and the other one was collected in 2014 in run habitat. All of the collections took place over gravel, cobble, and boulder substrate. This is the preferred habitat for the Greater Redhorse and where their food source can be found (Yoder and Beaumier 1986). The dams inhibit fish passage and further investigation of the tailwater areas between downstream of the North Aurora Dam to upstream of the Montgomery Dam is suggested.

Tagging began in August of 2012 to track the movement of the species and to monitor recapture rates. Since the tagging began, DEI tagged 18 Greater Redhorse and recaptured two of the tagged fish. One of the tagged fish was collected five weeks after it was initially encountered and it moved upstream approximately 2.0 miles from where it was released. The other recaptured fish was collected in the same area in which it was tagged so stayed in the same area in which it was originally collected.

No young-of-year (YOY) or juvenile Greater Redhorse were collected. Many of the Greater Redhorse collected in Illinois have been adults indicating that either reproduction or recruitment are low in Illinois, or that YOY are more difficult to collect than adults (Burr et al. 1996). Searches for spawning reaches and YOY and juvenile Greater Redhorse in

Illinois are needed. Other studies of the Greater Redhorse indicate that YOY and juveniles seek refuge in along vegetative shores in shallow, slow velocity pools (Healy 2002) and moderate sized streams or tributaries and backwater areas provide suitable habitat for juveniles (Jenkins 1970). Preferred vegetation included filamentous algae with patches of aquatic plants growing in slack water areas (Parker 1984) and water willow (*Justicia americana*, Retzer and Kowalik 2002). Large predatory fish were less common in the shallow pools, indicating the use of this habitat was consistent with predation risk and the presence of slow velocity habitats along channel margins was vital to maximize survival of YOY redhorse (Healy 2002). There have been some projects done along the Fox River by the IDNR, Friends of the Fox River, and the Sierra Club in which water willows have been planted. Further investigation of these sites may show whether any YOY or juvenile redhorse are using these areas. It is recommended that further plantings continue along the river to create favorable conditions for redhorse YOY and juveniles.

According to Healy (2002), year-to-year reproductive success can vary depending on weather conditions such as spring flooding and snowmelt. In rivers where flows are modified by dams, cues required to initiate spawning may be disrupted and larvae may be flushed downstream or stranded, possibly resulting in reduced reproductive success (Healy 2002). The abundance of larval catostomids, such as redhorse species, has been found to vary greatly among years and was much lower in rivers regulated by a dam when compared to free-flowing rivers. The year when the highest abundance of larval catostomids was recorded in a regulated river was when the dam was discharging for long periods of time due to high spring river flows (Healy 2002). Within DEI's study area, there are currently three dams which impede the movement of fish upstream of these dams. Also, the pools behind

the dams have collected sediment deposits which are detrimental to the Greater Redhorse habitat and food sources. The removal of the dams along the Fox River will be beneficial to the survival of the Greater Redhorse and River Redhorse. There is a Denil fishway at the Yorkville Dam and various bypass structures have been suggested along the Fox River in lieu of dam removal. It was found that Greater Redhorse were rarely successful at ascending Denil fishways at weirs (Cooke and Bunt 1999). This is further indication that the removal of the dams would be of significant benefit to the species.

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FIGURES

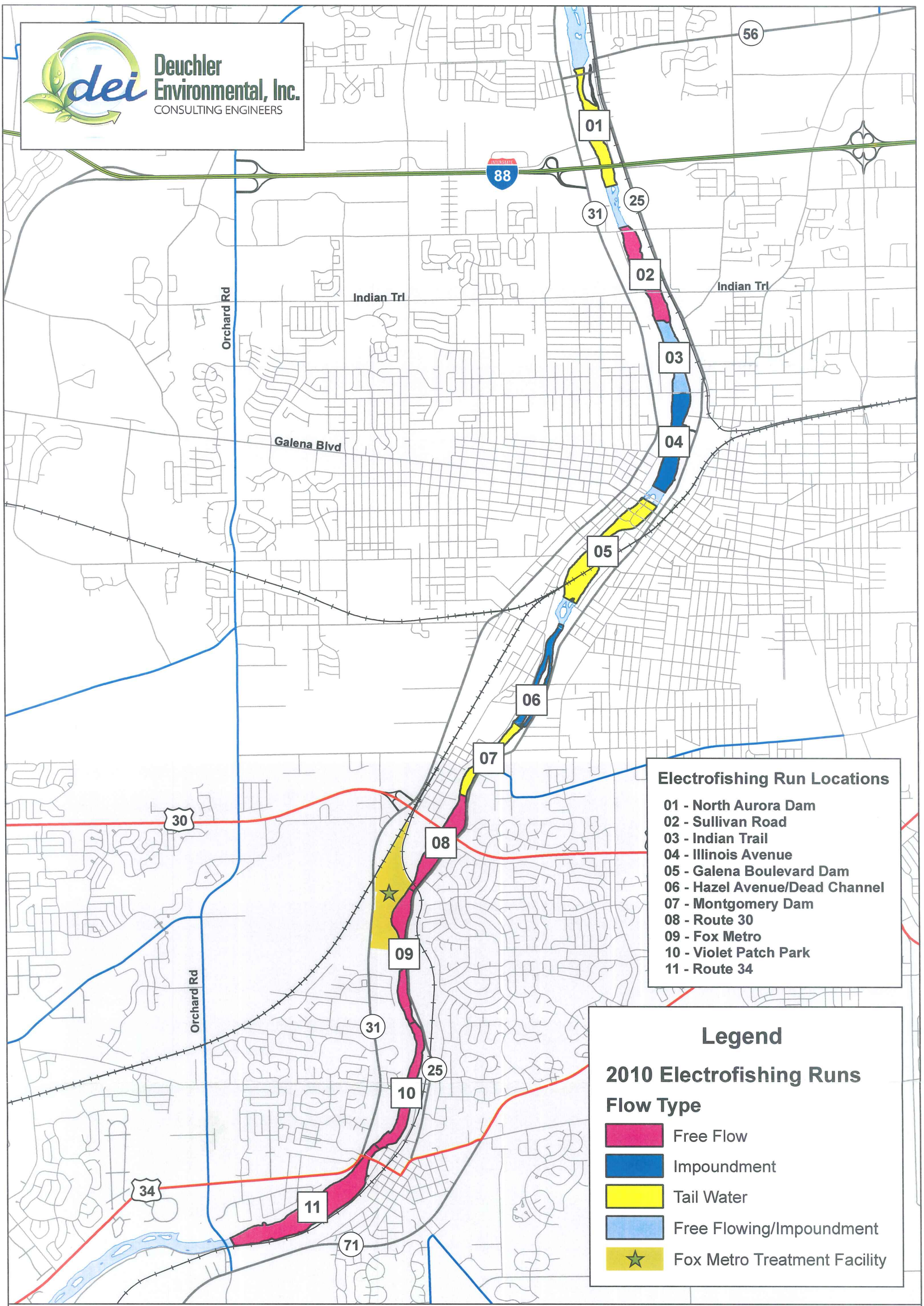

Figure 1
Study Area, 2010

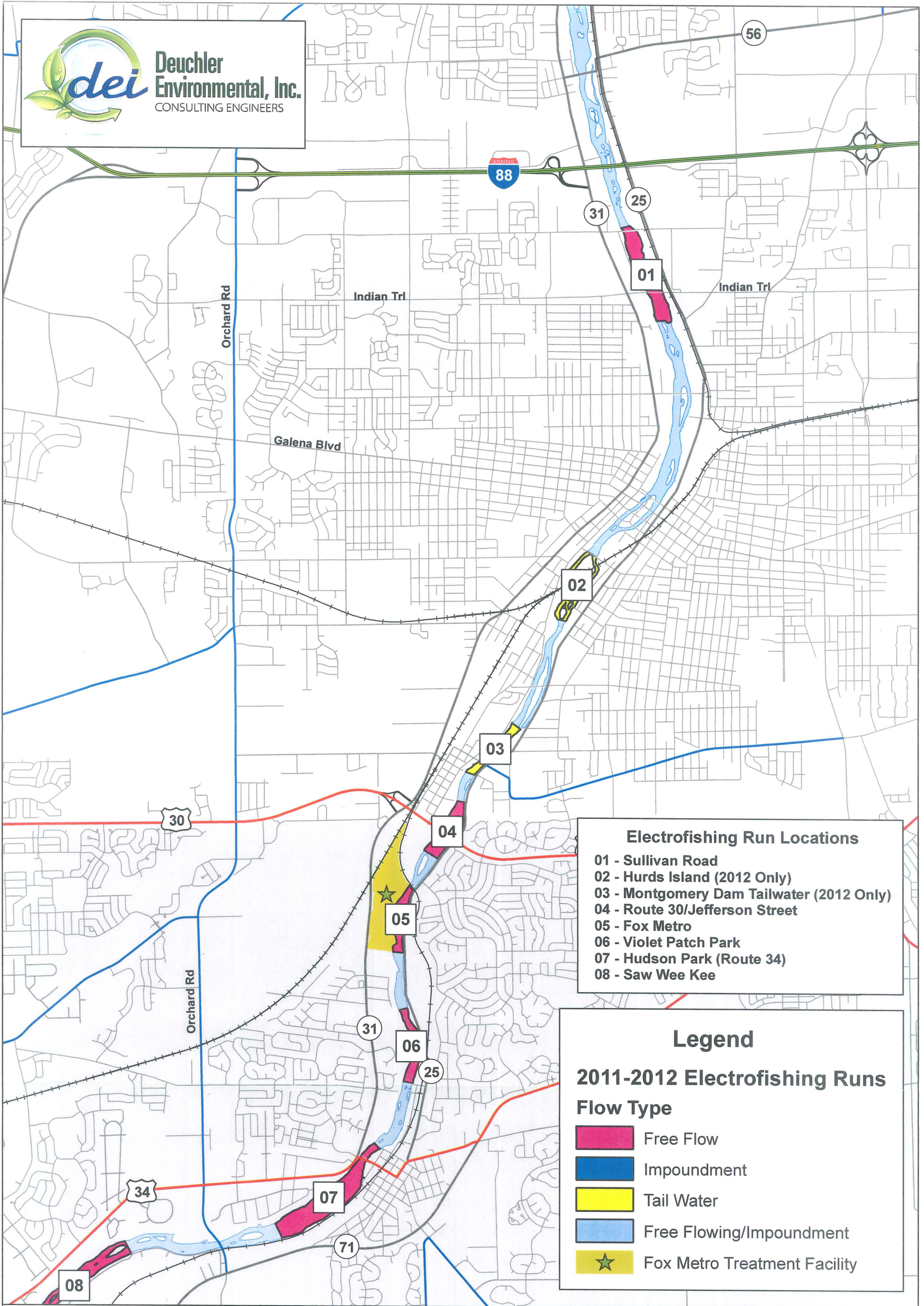

Figure 2
Study Area, 2011-2012

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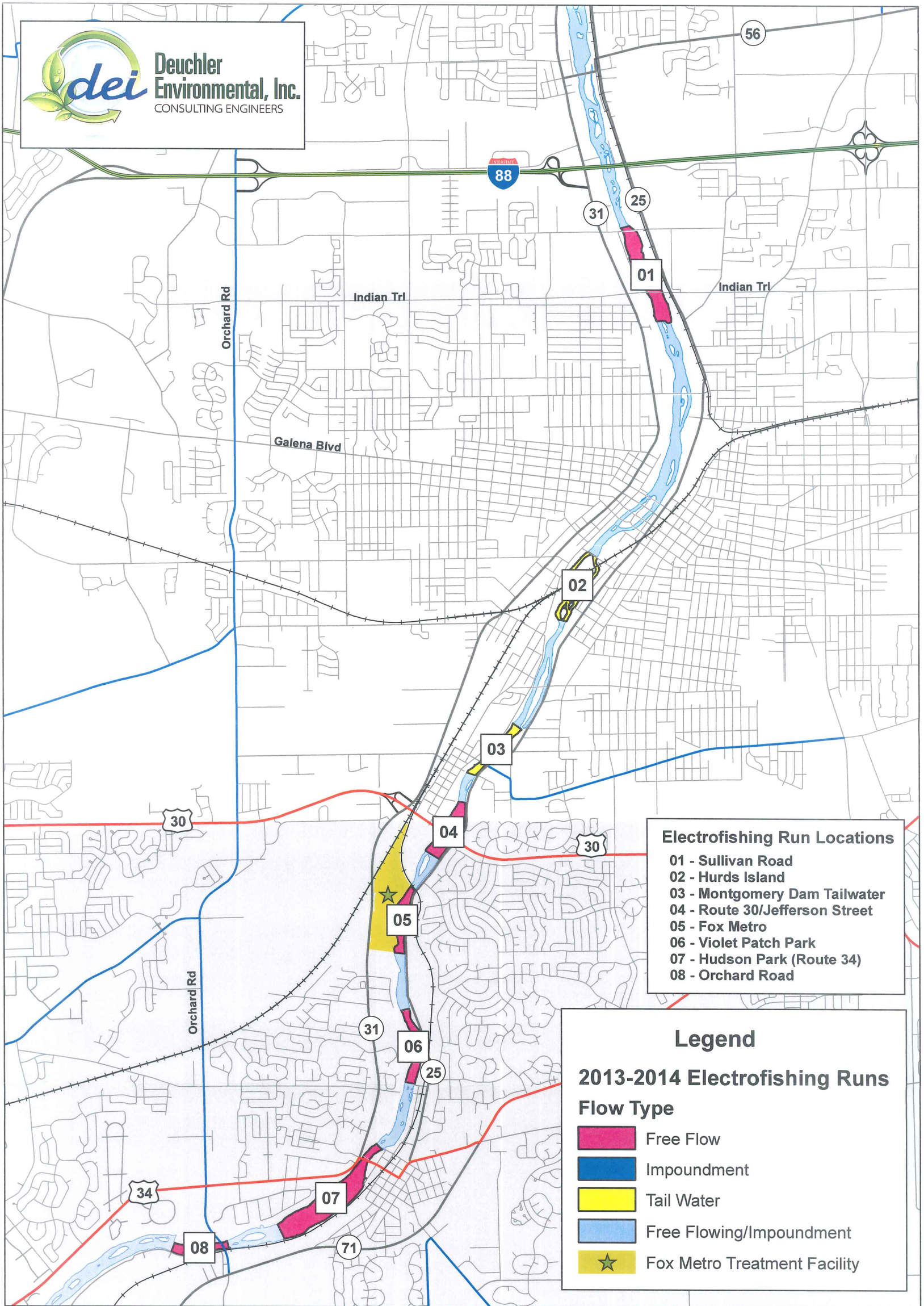

Figure 3
Study Area, 2013-2014

0 0.25 0.5 1 1.5 2

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Electrofishing Sampling Areas

Figure 4: North Aurora Dam Tailwater

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Figure 5: Sullivan Road

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Figure 6: Galena Dam Tailwater

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Figure 7: Hurds Island

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Electrofishing Sampling Areas

Figure 8: Montgomery Dam Tailwater

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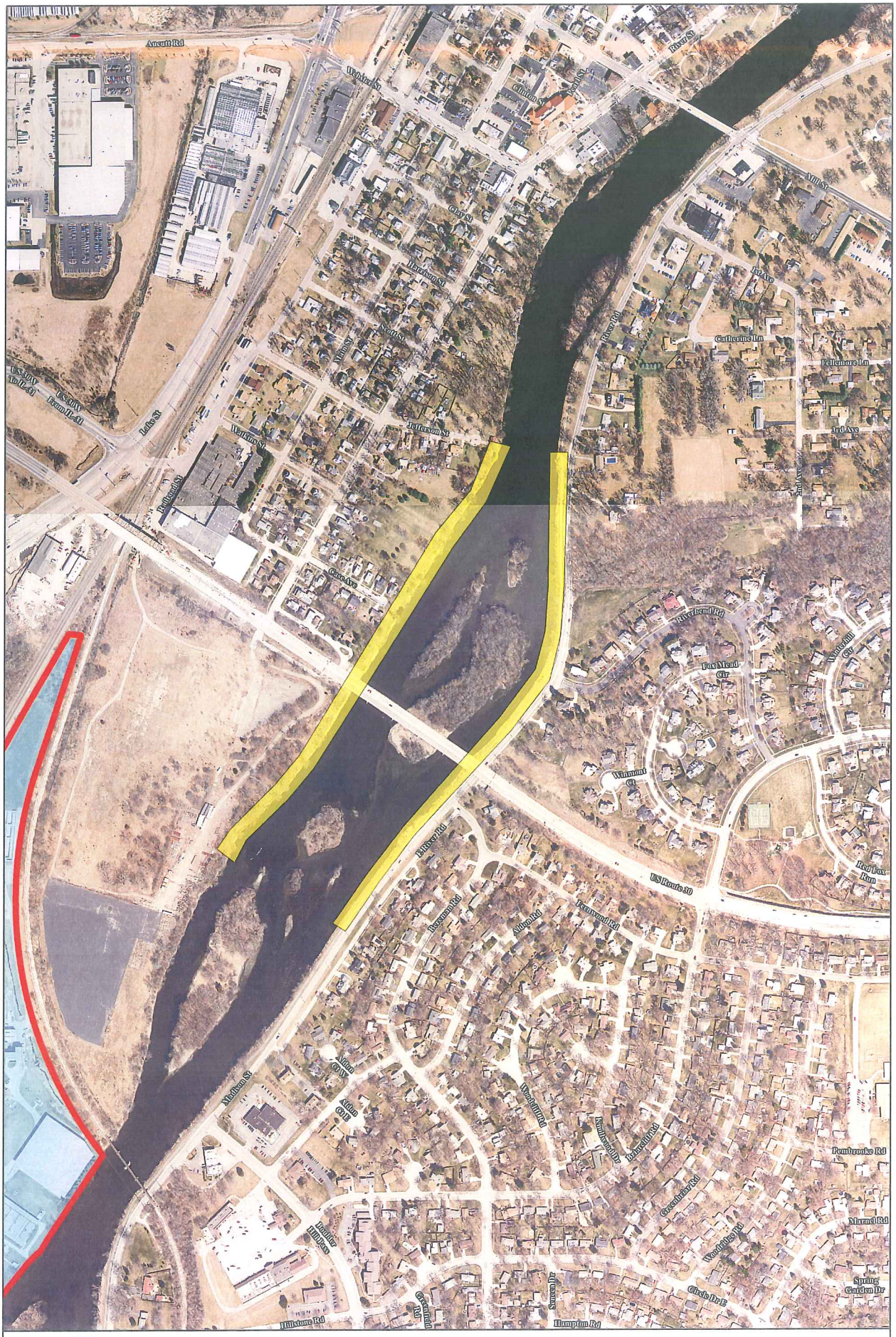

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Electrofishing Sampling Areas

Figure 9: Jefferson Street-Route 30

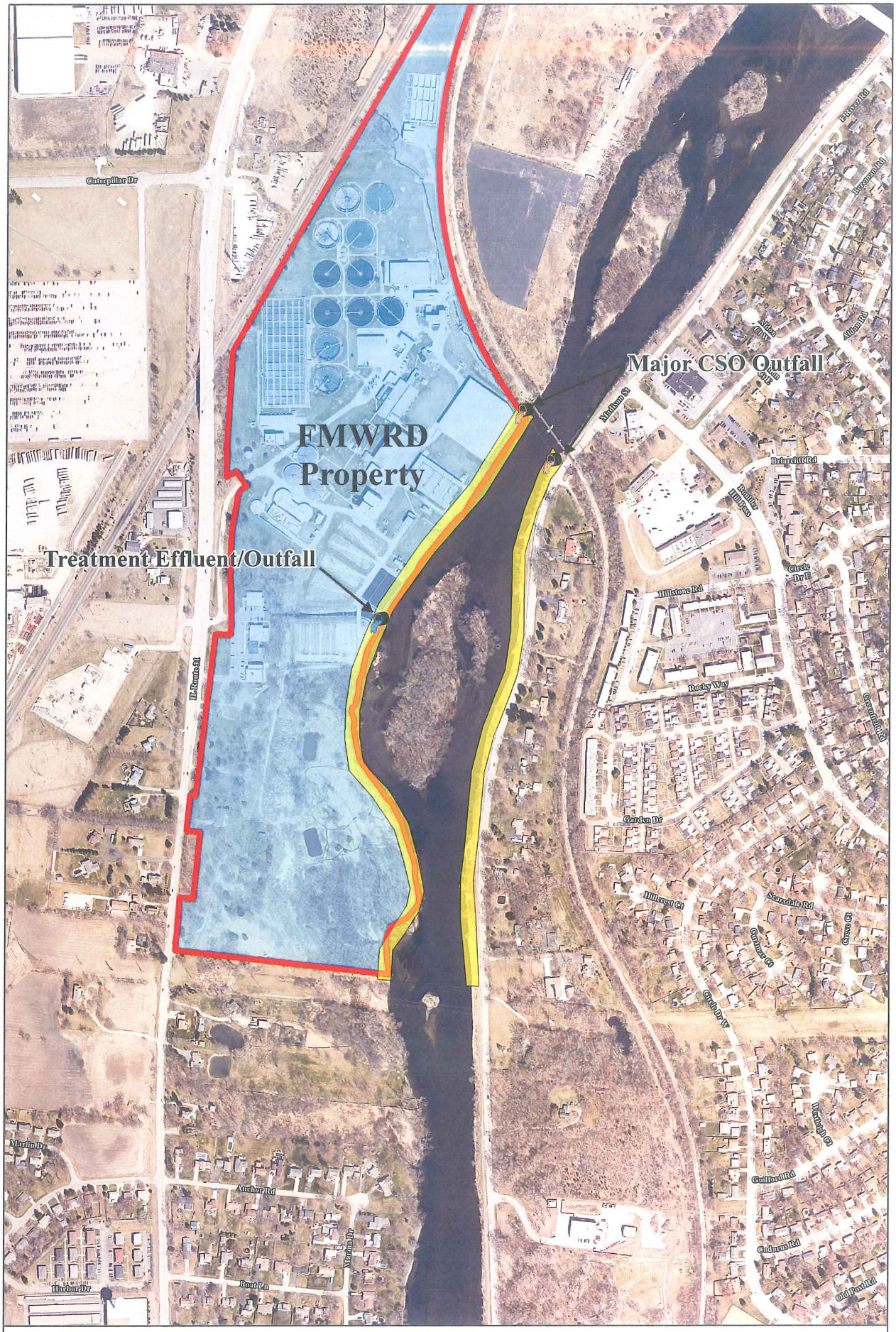

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Figure 10: Fox Metro Water Reclamation District

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Figure 11: Violet Patch Park

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Figure 12: Hudson Park

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Figure 13: Orchard Road

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W E
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Figure 14: Saw Wee Kee