



Authorization for Incidental Take and Implementing Agreement

Pursuant to the Illinois Endangered Species Protection Act (Act) (520 ILCS 10/5.5), and the regulations adopted to implement the Act (17 Ill. Admin. Code, Part 1080) authorization is hereby granted to the City of Marion (hereinafter referred to as Marion) for the incidental take of the state-endangered least brook lamprey, *Lampetra aepyptera*, and the state-threatened Indiana crayfish, *Orconectes indianensis*, associated with the construction and operation of a dam and reservoir on Sugar Creek in Johnson and Williamson counties, Illinois. The Illinois Department of Natural Resources (hereinafter referred to as the Department) has determined that this taking is incidental to the construction and operation of the dam and reservoir.

Procedural History

On behalf of Marion, TAMS Consultants, Inc. (hereinafter referred to as TAMS) prepared a conservation plan as described by the Act. That plan and Marion's request for authorization of incidental take were received by the Department on July 17, 2001. Public notice of Marion's request for authorization of incidental take was published in the Southern Illinoisan on September 14, September 21, and September 28, 2001. That notice included a deadline for comments from the public of October 28, 2001. Upon the discovery of a technical error in the public notice, the notice was published again in the Southern Illinoisan on October 27, November 3, and November 10, 2001, and in the Edwardsville Intelligencer on November 3, 2001. Comments were accepted by the Department until December 11, 2001.

Over 100 comments were received from individuals and organizations. Many commentors simply expressed their support for or opposition to the construction of a reservoir without making specific comments about the conservation plan. Others voiced their opposition to any take of endangered or threatened species. Principal criticisms of the conservation plan were related to a lack of sufficient detail on topics such as the magnitude of the incidental take, the extent and location of proposed mitigation activities, and the effects of the anticipated incidental take on the survival and recovery of the two species involved. All comments were forwarded to Marion for their analysis. Marion provided an initial analysis of comments on December 19, 2001, along with a request for additional time to prepare a final analysis. The Department granted an additional 20 days for the analysis and a final analysis was received by the Department on January 10, 2002.

Concurrent with the publication of the public notice and public comment period, copies of the conservation plan were provided to the Office of Realty and Environmental Planning and the Office of Scientific Research and Analysis within the Department. Those copies were circulated among personnel of those offices with expertise in the species involved and aquatic biology for their review and comment. Comments received from Department personnel were used, along with comments received from the public, to identify needs for additional information from Marion.

On February 15, 2002, representatives of Marion and the Department met to discuss additional information that was needed to allow the Department to make a decision on the request for authorization of incidental take. The Department requested greater details on several aspects of the conservation plan, including the assessment of impacts, amount of habitat impacted, types of habitat for which mitigation would be completed, techniques to be used to accomplish the proposed mitigation, the possibility of translocation of animals currently occupying Sugar Creek, post-project monitoring, and estimated costs.

TAMS coordinated the collection of additional information during the spring and summer of 2002. Department and Marion representatives met again on August 20, 2002. At that meeting, Marion presented a summary of the information that had been collected in response to the Department's February request. That additional information was transmitted to the Department in writing and received on September 6, 2002. New information included a numerical estimate of the take of Indiana crayfish and least brook lamprey, a more precise calculation of the amount of stream habitat of various types that would be affected by reservoir construction, potential locations of mitigation activities, monitoring methods and mitigation costs. This new information was circulated among Department staff for review and comment.

Department representatives met with Marion officials on December 19, 2002, to present additional questions about the details of the conservation plan. Major points of discussion included mitigation ratios and the post-project monitoring schedule. A response to those questions was received by the Department on December 30, 2002. That response included an increased mitigation ratio and an increase in the number of years for which monitoring would be conducted after reservoir construction. A follow-up meeting was held on January 24, 2003, at which time the Department requested final details on the methods that would be used to calculate credit for mitigation activities. Marion provided those details in writing on February 19, 2003.

For the purposes of this authorization, references to the "conservation plan" are to the plan prepared by TAMS for Marion as amended by subsequent submissions of additional information in response to requests from the Department.

Compliance with the Illinois Endangered Species Protection Act

The Act includes six criteria which must be satisfied for the authorization of incidental take of an endangered or threatened species. These criteria and the Department's determination for each are listed below.

1. The taking will not be the purpose of, but will only be incidental to, the carrying out of an otherwise lawful activity:

The stated and apparent purpose of this project is the construction and operation of a dam and reservoir on Sugar Creek in Johnson and Williamson counties, Illinois. The reservoir will provide raw water for supply to the City of Marion and the Lake of Egypt Water District. It is anticipated that impoundment of Sugar Creek and Maple Branch (a tributary of Sugar Creek) will result in the taking of least brook lampreys and Indiana crayfish that may be present in the affected reaches of those streams. Impoundment will likely render the inundated stream reaches unsuitable for future use by these two species.

2. The parties to the conservation plan will, to the maximum extent practicable, minimize and mitigate the impact caused by the taking:

Marion's conservation plan describes a variety of measures that would be taken to minimize and mitigate the impact of the taking of least brook lampreys and Indiana crayfish. Opportunities for minimization are limited in that creation of the reservoir as designed will permanently alter the affected streams within the reservoir basin. Measures such as limiting construction activity to the reservoir footprint, erosion control along the streams during construction and relocation of least brook lampreys and Indiana crayfish to areas downstream of the dam will reduce the numbers of individuals taken. Mitigation will include enhancement of habitat in Sugar Creek downstream of the dam and protection and enhancement of habitat in other streams in the Saline River drainage where the subject species are known to occur. The amount of mitigation to be completed is based on a measurement of the area of various habitat types (riffles, runs, pools) in the portions of Sugar Creek and Maple Branch that will be inundated. Mitigation is planned to protect or enhance riffles and runs at a 3:1 ratio and pools at a 1.5:1 ratio. The overall mitigation ratio, because of the predominance of pool habitat in the affected streams, will be approximately 1.74:1. The intent of the planned mitigation measures is to provide improved habitat conditions in other streams that will allow expansion and perpetuation of existing populations of the affected species. It is not possible for Marion to "create" new stream habitats to replace those being lost in Sugar Creek and Maple Branch. Consequently, habitat protection and enhancement at ratios of greater than 1:1 is planned in order to achieve benefits to the least brook lamprey and Indiana crayfish in southern Illinois adequate to maintain their overall populations in the state.

3. The parties to the conservation plan will ensure that adequate funding for the conservation plan will be provided:

Marion's conservation plan includes a commitment to allocate \$400,000 from reservoir-related bonds to cover the costs of carrying out the conservation plan. If costs should exceed that amount, Marion is bound by this authorization to provide additional funds adequate to comply with all terms and condition of the authorization.

4. Based on the best available scientific data, the Department has determined that the taking will not reduce the likelihood of survival or recovery of the endangered species or threatened species in the wild in Illinois, the biotic community of which the species is a part, or the habitat essential to the species' existence in Illinois:

The least brook lamprey is listed as a threatened species in Illinois. Illinois is on the northeast limit of this species' range in the United States. The species has been found in five streams in southern Illinois. Sugar Creek is the westernmost of those five streams and is the only known location of the least brook lamprey in the Saline River drainage. All other known locations are in streams that drain directly to the Ohio River. Since 1952, eleven individuals have been collected in Sugar Creek. Three other lampreys believed to be least brook lampreys have been seen in Sugar Creek, but were not captured for positive identification. The species appears to be more abundant in some other streams, particularly Lusk Creek and Hunting Branch, than in Sugar Creek. Breeding has not been observed in Sugar Creek, but observations of adult lampreys in breeding habitat and ammocoetes nearby suggests that breeding does occur in the stream. Least brook lampreys have not been collected in Maple Branch.

The Indiana crayfish is listed as an endangered species in Illinois. The range of this species includes only portions of southeast Illinois and southwest Indiana. In Illinois, the Indiana crayfish has been found in the South Fork Saline River and several tributaries of that river. It has also been documented in two creeks in the Ohio River drainage and one in the Wabash River drainage. Indiana crayfish have consistently been found during sampling of Sugar Creek in recent years. In June 2002, Indiana crayfish were found at 17 of 23 sites sampled in Sugar Creek and Maple Branch. Collection of egg-bearing female Indiana crayfish and numerous young of the year confirm reproduction of this species in Sugar Creek.

It is anticipated that the inundation of approximately 6.2 miles of Sugar Creek and 3.0 miles of Maple Branch will result in the loss of the least brook lamprey and Indiana crayfish from the inundated reaches. Any least brook lampreys within these stream reaches as the reservoir fills will likely die because of their strong reliance on flowing water to survive. Indiana crayfish in the pooled area may survive by moving to the shallow edges of the reservoir, but will not be able to reproduce and maintain a

population in standing water. Marion's conservation plan estimates the potential take of least brook lampreys to range from 636 to 2,548 individuals and the take of Indiana crayfish to range from 3,285 to 18,876 individuals. The number of individuals taken will depend in part on the time of year during which the reservoir is filled, with the greatest mortality likely to occur if the reservoir is filled in the spring when many young of the year of both species are present. Filling in winter and early spring would result in the take of the fewest individuals because of natural mortality that will have occurred through the summer and fall.

The estimated take of least brook lampreys is based on the historic collection data for this species and a series of assumptions developed from life history information for similar species. A direct calculation of take based on Sugar Creek sampling data was not possible because of the limited number of least brook lampreys found in the stream. The estimated take of Indiana crayfish is based directly on Sugar Creek sampling data.

That portion of Sugar Creek downstream of the dam will probably continue to provide habitat for the Indiana crayfish, but their numbers will be reduced relative to the current population in Sugar Creek because of the reduced area of available habitat. The survival and reproduction of least brook lampreys in Sugar Creek downstream of the dam is uncertain, but it is not considered likely that this species will be able to maintain a population in this short reach for the long term. The small population of least brook lampreys that may be present in Sugar Creek downstream of the dam will be vulnerable to stochastic events that could result in the demise of the population.

Available data on the distribution and abundance of least brook lampreys in Illinois indicate that the Sugar Creek population has always been small and, while it has persisted for at least 50 years, may not be one of the most viable populations in Illinois. The limited area of riffles, the preferred spawning habitat for least brook lampreys, in Sugar Creek may be one reason that this population has remained small. Sampling data are not adequate to reveal a trend in the population of least brook lampreys in Sugar Creek. Sampling has been conducted seven times since 1952. On only one occasion has more than one least brook lamprey (ammocoete or adult) been captured in Sugar Creek during a single sampling effort.

Marion proposes to minimize the number of least brook lampreys and Indiana crayfish taken by scheduling the filling of the reservoir during the time of year at which populations will be at seasonal lows. An effort will be made to capture individual animals from the portions of Sugar Creek and Maple Branch to be inundated and move those animals to Sugar Creek downstream of the dam. Other measures, such as erosion control and management of water flow through the dam, will be used to maintain suitable

habitat conditions in the downstream portion of Sugar Creek. Spillway construction will be off-channel. This will help to reduce negative effects on Sugar Creek during dam construction.

Mitigation activities will be carried out on the portion of Sugar Creek downstream of the dam and on other streams in which the least brook lamprey or Indiana crayfish is known to occur. The primary activity will be establishment of conservation easements along currently unprotected stream reaches as a means to protect and gradually enhance existing habitat. The amount of mitigation required will be based on areal measurements of habitat types (riffle, run, pool) in the impounded reaches of Sugar Creek and Maple Branch. Protection of riffles and runs will be at a 3:1 ratio (3 square meters protected for each square meter inundated). Pools will be protected at a minimum 1.53:1 ratio. The overall mitigation ratio is approximately 1.74:1. Mitigation may also be accomplished through direct stream habitat improvement (bank stabilization, riffle construction), and support of research and management efforts being conducted by other parties. Seventy-five per cent of mitigation activities will be completed before the flow of Sugar Creek is interrupted by the closure of the dam. The effectiveness of mitigation actions will be monitored in years 1, 3, 6 and 10 after the completion of dam construction.

It is the Department's opinion, based on the best available scientific information, that construction and operation of a dam and reservoir on Sugar Creek will not reduce the likelihood of survival or recovery of least brook lampreys or Indiana crayfish in the wild in Illinois, the biotic community of which those species are a part or the habitat essential to the species' existence in Illinois, provided that the minimization and mitigation measures described below under "Authorization" are implemented.

5. Any measures required under Section 5.5 of the Illinois Endangered Species Protection Act [520 ILCS 10/5.5 and Ill. Admin. Code Part 1080.40(b)], will be performed:

Additional measures are listed below under "Authorization." This authorization is, by definition, subject to those terms and conditions and Marion's signature on this authorization indicates their commitment to performing those measures.

6. The public has received notice of the application and has had the opportunity to comment before the Department made any decision regarding the application:

Public notice of Marion's request for authorization of incidental take was published in the Southern Illinoisan on September 14, September 21, and September 28, 2001. That notice included a deadline for comments from the public of October 28, 2001. Upon the discovery of a technical error in the public notice, the notice was published again in the

Southern Illinoisan on October 27, November 3, and November 10, 2001, and in the Edwardsville Intelligencer on November 3, 2001. Comments were accepted by the Department until December 11, 2001. Over 100 comments were received from individuals and organizations.

Authorization

It is the determination of the Department that the measures to be implemented by Marion at the project site will adequately minimize and mitigate the anticipated taking of least brook lampreys and Indiana crayfish associated with the construction and operation of a dam and reservoir on Sugar Creek. Further, it is our opinion that the take authorized herein will not diminish the likelihood of the survival or recovery of the least brook lamprey or Indiana crayfish in the wild within the State of Illinois, the biotic community of which the species are a part or the habitat essential to the species' existence in Illinois.

Pursuant to Section 5.5 of the Illinois Endangered Species Protection Act [520 ILCS 10/5.5 and Ill. Admin. Code Part 1080.40(b)], this authorization is issued to Marion subject to the following additional terms and conditions:

1. This authorization is effective upon signature by the Department and shall remain in effect for a period of 25 years from the date of execution, unless terminated pursuant to Section 5.5 of the Illinois Endangered Species Protection Act (520 ILCS10/5.5 and Ill. Admin. Code Part 1080.80).
2. This authorization does not replace or supercede any other federal, state or local permit, license or authorization that may be required for construction and operation of a dam and reservoir on Sugar Creek. It remains the responsibility of Marion to obtain all such permits, licenses or authorizations prior to the initiation of construction.
3. Marion and the Department shall identify primary and secondary points of contact for all matters related to this authorization. The identified persons shall be responsible for maintaining contact as needed between Marion and the Department and shall maintain a record of contacts for purposes of verifying compliance with these terms and conditions.
4. Marion shall complete mitigation activities that result in a minimum of 120,124 "mitigation credit units." A "mitigation credit unit" shall be defined as: A) protection of one square meter of existing riffle, run, or pool habitat by the establishment of a conservation buffer along a stream either through Marion's own activities or through financial support of the activities of others, or B) construction of one square meter of riffle habitat, or C) protection of one square meter of riffle, run or pool habitat through streambank stabilization, or D) contribution of \$10 to research activities directly

applicable to the conservation of the Indiana crayfish or least brook lamprey. Mitigation credit units resulting from conservation buffers or streambank stabilization shall be calculated on the basis of stream area protected by immediately adjacent mitigation activities. If both banks are protected or stabilized, habitat within the entire area of stream (length x width) shall be included for calculation of credits. If only one bank is protected or stabilized, one-half (50%) of the stream area shall be included for calculation of credits. Funding of surveys, monitoring or other activities required by the terms and conditions of this authorization shall not be considered contributions to research pursuant to D) above. Completion of mitigation activities required by the terms of any other permits or licenses issued for the construction and operation of a dam and reservoir, e.g., a U.S. Army Corps of Engineers permit, shall not earn mitigation credit units as defined above.

5. No more than twenty-five percent (25%) of the mitigation credit units may be assigned to any one habitat type.

6. At least 4,406 mitigation credit units shall be attributable to activities related to protection or enhancement of riffle habitat in streams known to be occupied by the least brook lamprey.

7. At least 10,656 mitigation credit units shall be attributable to activities related to protection or enhancement of run habitat in streams known to be occupied by the least brook lamprey

8. At least 45,000 mitigation credit units shall be attributable to activities related to protection or enhancement of pool habitat in streams known to be occupied by the least brook lamprey

9. At least 4,406 mitigation credit units shall be attributable to activities related to protection or enhancement of riffle habitat in streams known to be occupied by the Indiana crayfish.

10. At least 10,656 mitigation credit units shall be attributable to activities related to protection or enhancement of run habitat in streams known to be occupied by the Indiana crayfish.

11. At least 45,000 mitigation credit units shall be attributable to activities related to protection or enhancement of pool habitat in streams known to be occupied by the Indiana crayfish.

12. Marion shall complete mitigation activities accounting for no fewer than 90,093 mitigation credit units (75% of 120,124) prior to any interruption of flow in Sugar Creek or Maple Branch caused by construction activities or placement of fill.
13. Marion shall complete all required mitigation activities no later than two years after the interruption of flow in Sugar Creek or Maple Branch caused by construction activities or placement of fill. This deadline may be extended through agreement between Marion and the Department upon presentation of evidence of delays beyond the control of Marion.
14. Marion shall prepare a prioritized list of locations at which they propose to carry out mitigation activities and the type of mitigation planned at each location. That list shall be reviewed by the Department and modified as agreed between Marion and the Department. Changes to the list of locations or types of mitigation shall be made only with approval of the Department.
15. Plans for riffle construction, streambank stabilization or any other structural mitigation measures shall be developed by Marion and reviewed by the Department prior to implementation.
16. All calculations of mitigation credit units prepared by Marion shall be reviewed by the Department. Mitigation credit units will be considered valid only upon Department approval. A record of mitigation credit units earned shall be maintained by Marion and the Department. That record shall be reviewed periodically upon request of Marion or the Department.
17. The Department shall have the right to examine any mitigation measures implemented by Marion for effectiveness and compliance with previously reviewed plans. The Department shall identify any concerns to Marion in writing. Marion shall respond to those written concerns within 30 days of receipt.
18. Marion shall conduct, or cause to be conducted, surveys for least brook lampreys in the area of Sugar Creek downstream of the dam (or proposed dam) and in streams on which mitigation activities are planned or have been executed for the benefit of least brook lampreys. Surveys shall be conducted at least 90 days but not more than 180 days prior to the interruption of flow in Sugar Creek and one year, three years, six years and ten years after the interruption of flow. Surveys shall use methods approved by the Department. Results of surveys shall be reported to the Department in writing no later than 60 days after completion of each survey.

19. Marion shall conduct, or cause to be conducted, surveys for Indiana crayfish in the area of Sugar Creek downstream of the dam (or proposed dam) and in streams on which mitigation activities are planned or have been executed for the benefit of Indiana crayfish. Surveys shall be conducted at least 90 days but not more than 180 days prior to the interruption of flow in Sugar Creek and one year, three years, six years and ten years after the interruption of flow. Surveys shall use methods approved by the Department. Results of surveys shall be reported to the Department in writing no later than 60 days after completion of each survey.

20. Marion shall conduct, or cause to be conducted, annual inspections of all structural mitigation measures (constructed riffles, bank stabilization, etc.) for a period of eight years after these measures are implemented. Inspections shall be done between June 1 and July 31 of each calendar year. If any structural measures are found to have failed or significantly deteriorated, Marion and the Department shall devise remedial measures which shall be implemented by Marion to correct the identified problems.

21. All conservation buffers established as part of the mitigation required under this authorization shall be encumbered by conservation easements or similar means to assure their perpetual function in stream protection. Any buffer areas acquired by Marion shall remain in their ownership unless transfer to another owner is approved by the Department. Marion shall be the holder of all easements granted by landowners for the establishment of conservation buffers unless transfer of those easements to another entity is approved by the Department. Any transfer of easements shall be in accordance with the Illinois Real Property Conservation Rights Act (765 ILCS 120/0.01 et seq.).

22. Marion shall prepare and provide to the Department a general management plan for areas acquired or placed under conservation easements for purposes of habitat protection. That plan shall include, but not be limited to, a schedule for inspection of managed areas, management goals in terms of types of vegetative cover to be maintained, and methods to be used to maintain desired conditions. This management plan shall be provided to the Department for review and approval no later than 12 months after execution of this authorization and implementing agreement.

23. Marion shall conduct, or cause to be conducted, surveys of streams within the South Fork of the Saline River drainage to determine if previously undocumented populations of least brook lamprey and/or Indiana crayfish may occur in those streams. If additional populations are located, mitigation activities may be undertaken in those streams with the approval of the Department.

24. Marion shall regulate flows through the dam on Sugar Creek in order to simulate flow patterns that would occur in the portion of Sugar Creek downstream of the dam under pre-construction conditions. Flow regulation shall be according to the Reservoir Release

Plan included as Appendix A in the Conservation Plan prepared by Marion and dated September 4, 2002, unless modified by agreement between Marion, the Department and all other state and federal agencies having jurisdiction over this aspect of the management of the dam and reservoir.

25. Marion shall monitor the temperature of water being released through the dam into Sugar Creek and shall adjust release flows to provide water temperatures that will minimize alteration of naturally-occurring temperatures in Sugar Creek downstream of the dam.

26. Marion shall immediately notify the Department of the discovery of any dead or injured listed species on the project site. Within three days of such discovery, Marion shall provide a written report to the Department detailing the circumstances, location, etc. of any such finding.

27. Marion shall control erosion and sedimentation as required under regulations of the Illinois Environmental Protection Agency.

28. Marion and its contractors shall establish construction staging areas and storage for vehicles, equipment and materials at locations that will preclude the introduction of contaminants or debris to Sugar Creek or Maple Branch.

29. Marion shall delineate all construction, staging and storage areas and shall limit project activities to those delineated areas. All contractors shall be informed of construction limits and contracts shall include a provision requiring adherence to established limits.

30. Marion shall include funding to ensure completion of all mitigation activities in a bond issue for construction of the reservoir on Sugar Creek. In the event that funds included in the bond issue are not adequate to cover the costs of all mitigation activities, Marion shall secure additional funding in an amount adequate to ensure that mitigation can be completed.

31. The effective period of this authorization may be altered by mutual agreement between Marion and the Department.

32. This authorization may be revoked pursuant to Section 5.5. of the Illinois Endangered Species Protection Act (520 ILCS 10/5.5 and Ill. Admin. Code Part 1080.80) if the Department finds that Marion has failed to comply with any of these terms and conditions or has been responsible for the taking of least brook lampreys or Indiana crayfish beyond that which is incidental to the construction and operation of a dam and reservoir on Sugar Creek in Johnson and Williamson counties, Illinois.

33. The Marion official identified below is authorized to execute this agreement. Execution by Marion indicates acceptance of all terms and conditions as described in this document.

For the Department of Natural Resources:

Brian D. Anderson

Brian D. Anderson, Director
Office of Resource Conservation

May 12, 2003
Date

For the City of Marion:

Robert L. Butler
Signature

ROBERT L. BUTLER, MAYOR
Printed Name and Title

MAY 2, 2003
Date