

COMMON COUNCIL OF THE CITY OF HOBART, INDIANA

ORDINANCE NO. 2014- 40

**An Ordinance to Adopt and Approve an Interlocal Agreement
with the Little Calumet River Basin Development Commission to Develop a
Deep River Flood Risk Management Plan**

WHEREAS, the Common Council ("Council") of the City of Hobart, Indiana ("City") has received a proposed Interlocal Agreement by and between the City and the Little Calumet River Basin Development Commission ("Commission"), a political subdivision of the State of Indiana, to govern the receipt of funds from the Commission for the development of a Deep River Flood Risk Management Plan ("Plan"); and

WHEREAS, at the request of the Commission, the City administration applied for a grant of Commission funds to engage a qualified engineering and environmental sciences firm to study and analyze the hydrologic configuration of Deep River and Lake George in the City. The study consists of the following major elements:

1. Updating/enhancing the existing FEMA floodway model for Deep River between Lake George and Burns Ditch by incorporating newly acquired LIDAR topographic data, supplemented with field data collection and bathymetric survey.
2. Evaluating the potential benefits of added water storage.
3. Evaluating the effects of a deep tunnel to short-circuit portions of Deep River.
4. Hydraulic evaluation of the existing dams in Lake Station and Hobart to determine their roles in watershed management and flood relief.
5. Development of Dam Control Policies for watershed management and flood relief.
6. Identifying potential residential drainage improvements for areas between 27th and 29th Avenues in Lake Station that are prone to flooding; and

WHEREAS, the data collection, surveying and hydraulic modeling work to be completed in the study leading to the Plan can be utilized in completing the following additional Watershed Plan projects that will be incorporated in the City's future requests for funding assistance:

1. Lake George Dredging

2. Shoreline Stabilization and Sediment Control Lake George
3. Brickie Bowl Flooding
4. Wisconsin Street Bridge
5. Lake George Shoreline Restoration; and

WHEREAS, the City has applied for a Commission grant through the City Executive as evidenced by the application letter attached as Exhibit "A" to the proposed Interlocal Agreement with the Commission, said agreement being attached hereto and made a part hereof; and

WHEREAS, the City has selected Short Elliott Hendrickson, Inc. of Indiana ("SEH") to perform the study leading to the Plan, their detailed project proposal including description of the project, its objectives and funding requirements being attached to said proposed Interlocal Agreement as Exhibit "B;" and

WHEREAS, the cost of the study elements contained in said proposal approximate \$260,000 which is to be funded entirely by the Commission grant: and

WHEREAS, a power that may be exercised by an Indiana political subdivision and by one (1) or more other governmental entities may be exercised by one or more entities on behalf of others; or jointly by the entities pursuant to I.C. §36-1-7-2; and

WHEREAS, the Council, in order to make the proposed Interlocal Agreement effective under the law, desires to enact this Ordinance approving and adopting the Agreement and spreading same upon the public record.

THEREFORE, BE IT ORDAINED by the Common Council of the City of Hobart, Indiana as follows:

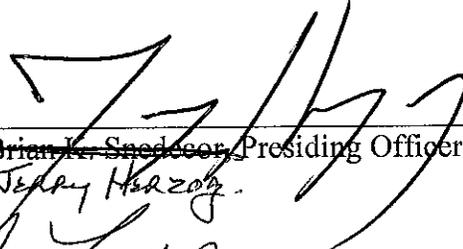
SECTION ONE. The Interlocal Agreement by and between the Little Calumet River Basin Development Commission and the City of Hobart for the development of a Deep River Flood Risk Management Plan which is attached hereto and made a part hereof is hereby approved and adopted in all respects.

SECTION TWO: The Mayor and Clerk-Treasurer of the City are hereby authorized to execute and attest to said Agreement, or one substantially in conformance with it, respectively. Upon such execution, the instrument attached hereto shall constitute the valid and subsisting agreement of the City for the uses and purposes stated therein.

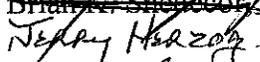
SECTION THREE: The provisions of said Agreement in their entirety, inclusive, are specifically incorporated herein by reference as if fully set out as an integral part of this Ordinance. All ordinances or portions thereof in effect prior to the effective date and in conflict with the provisions of this ordinance are hereby repealed.

SECTION FOUR: This ordinance shall become effective upon adoption in the manner required by law.

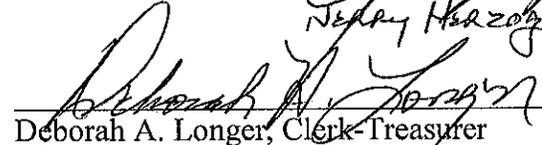
ALL OF WHICH is PASSED and ADOPTED by the Common Council of the City of Hobart, Indiana on this 3rd day of December, 2014.



Brian K. Snedecor, Presiding Officer

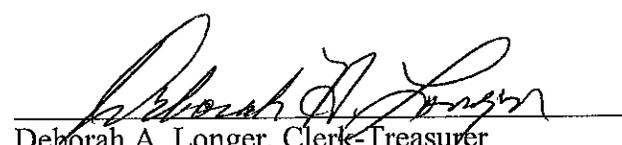

Jerry Herzog

ATTEST:



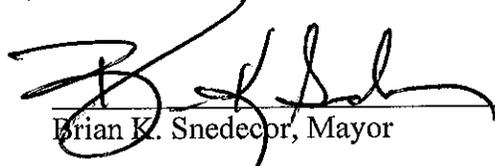
Deborah A. Longer, Clerk-Treasurer

PRESENTED by me to the Mayor of the City of Hobart on the 3rd day of December, 2014 at the hour of 7:00 p.m.



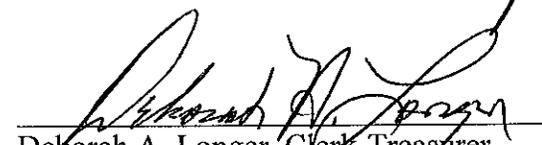
Deborah A. Longer, Clerk-Treasurer

APPROVED, EXECUTED and RETURNED by me to the Common Council of the City of Hobart on this 4th day of December, 2014.



Brian K. Snedecor, Mayor

ATTEST:



Deborah A. Longer, Clerk-Treasurer

**INTERLOCAL COOPERATION AGREEMENT FOR THE
PURCHASE OF CONSTRUCTION SERVICES AND OTHER
SERVICES, SUPPLIES, AND EQUIPMENT FOR MUTUAL BENEFIT**

WHEREAS, Indiana Code I.C. 36-1-7-1, et seq., allows government entities to make the most efficient use of their powers by enabling them to mutually utilize vendors, contractors, equipment, supplies, engineering/construction services and other services for the mutual benefit of each other; and

WHEREAS, the Little Calumet River Basin Development Commission ("LCRBDC"), is created pursuant to I.C. 14-13-2-5 and is created as a public body corporate and politic, with authority to contract on the basis of mutual advantage so as to better provide public services and facilities on a more efficient basis; and

WHEREAS, the Town/City of Hobart ("Town/City") is a political subdivision empowered by the Interlocal Cooperation Act, as amended, (I.C. 36-1-7-1, et seq.) with authority to contract on behalf of other governmental agencies on the basis of mutual advantage so as to better provide public services and facilities on a more efficient basis; and

WHEREAS, LCRBDC and the Town/City desire to enter into an Interlocal Cooperation Agreement ("Agreement") consistent with I.C. 36-1-7-1, et seq., to carry out the construction Project set forth in the Little Calumet River Basin Development Commission Application for Funding-Construction Projects attached hereto and made a part hereof as Exhibit "A" and to provide for the ability to purchase construction services, engineering services, other services, supplies and equipment for the mutual benefit of the participating entities;

NOW THEREFORE, in consideration of the mutual terms, covenants and conditions set forth herein, LCRBDC and the Town/City hereby agree as follows to-wit:

Section 1. **DURATION.** The duration of this Agreement shall be from March 12, 2014 through February 1, 2015 provided said Agreement is adopted by resolution by each of the political subdivisions entering into this Agreement prior to that date, and is renewable each calendar year thereafter by Agreement of the parties, evidenced by the passage of similar resolutions, should the purposes of this Agreement necessitate it.

Section 2. **PURPOSE.** The purpose of this Agreement is to authorize and allow the carrying out of the Project of the Town/City more fully described and set forth on that certain "Little Calumet River Basin Development Commission Application For Funding-Construction Projects" ("Project") attached hereto and made a part hereof as Exhibit "A" and such other documents as may become appended hereto upon execution. Plans and specifications for the Project shall be attached hereto and made a part hereof as Exhibit "B".

Section 3. **ADMINISTRATION.** This Agreement shall be administered through a single entity, namely, the Town/City with oversight by LCRBDC. The Town/City shall be responsible for the ultimate manner of financing, staffing, managing and maintaining a budget for the Project.

Section 4. **CLERK-TREASURER.** The duly elected Clerk-Treasurer of the Town/City shall have the duty and responsibility to coordinate all contracts, invoices, and related updates

with respect to the Project. The Clerk-Treasurer shall perform all customary and usual duties and responsibilities associated with the office and required by law as it relates to the Project.

Section 5. **OTHER TERMS.** In further consideration of the mutual promises and covenants contained herein, it is additionally agreed as follows:

(A) The Town/City shall provide the primary administration and supervision over the general construction services related to the Project and as described in Exhibits "A" and "B" herein. The LCRBDC shall only provide oversight to ensure that the Project is executed as applied for and specified herein.

(B) The LCRBDC shall commit the sum not to exceed \$259,960.00 of the overall budget submitted per Exhibit "A" and the Town/City shall be responsible for the remaining amount. The LCRBDC portion shall not exceed the amount of Two Hundred Fifty Nine Thousand Nine Hundred and Sixty Dollars \$259,960.00 and said amount shall be payable on a "draw" basis or in a lump sum as the LCRBDC may determine. The draw will be on a monthly basis until the Project is deemed complete based on the following guidelines:

- Initial Payment: Town/City shall provide LCRBDC documentation per Section 5.(D) below;
- Monthly Progress Payments: Town/City shall provide LCRBDC with progress reports per Exhibit "C", along with attached copies of all approved invoices;
- Final Payment: Town/City shall provide LCRBDC with copies of all final documentation, including, but not limited to, final architectural/engineering drawings, permits, inspection approvals and final invoices.

Any payment by the LCRBDC to the Town/City shall be made within sixty (60) days of receipt of the written request and all associated documentation.

(C) The Town/City hereby agrees to indemnify and hold harmless LCRBDC, its employees, representatives, agents, heirs, executors, successors and assigns from any and all actions, causes of action, claims, and demands for and by reason of the Project contemplated herein.

(D) At the Project's commencement, the Town/City hereby agrees to provide LCRBDC with the following: a complete set of proposed construction drawings, in all forms as requested by LCRBDC; copies of all executed third party contracts; documentation as to who has the authority for the Town/City to direct the Project, including contact person's name/department or affiliation; as well as any other documents required by LCRBDC. In the event there are no such drawings for the Project, then the Town/City shall provide LCRBDC with written documentation outlining the Project, as well as a complete overview of the specifications utilized by the vendor/contractor/department to complete said Project as proposed to LCRBDC per Exhibit "A". The Town/City agrees to comply with all bidding and other State law requirements with regard to the Project.

Section 6. **TERMINATION.** Upon satisfactory completion of the Project and acceptance by the Town/City, LCRBDC and all applicable governmental entities, this Interlocal Cooperation Agreement shall be deemed at an end. All supplies or equipment purchased by the Town/City to complete the Project shall remain the sole property of the Town/City. In the event the Project is terminated prior to completion, the Town/City shall return all unexpended funds of LCRBDC and the obligation of LCRBDC to pay the balance of its funding commitment shall be at an end.

Further, this Agreement may be terminated by either one of the participating entities upon ninety (90) days prior written notice to the other at the address indicated herein. Upon termination, any unexpended funds of LCRBDC shall be returned to LCRBDC, and LCRBDC's further obligation to pay any committed funds shall be at an end and terminated.

Section 7. **COUNTERPARTS.** This Interlocal Cooperation Agreement may be executed in counterparts, each of which when so executed shall be deemed to be an original, and such counterparts, together, shall constitute but one and the same instrument, which shall be sufficiently evidenced by any such original counterpart.

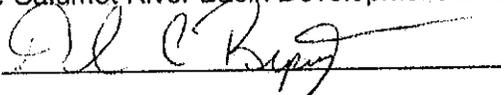
Section 8. **RECORDING.** Before this Agreement takes effect, it must be recorded with the Office of the Lake County Recorder. No later than sixty (60) days after it takes effect and is recorded, this Agreement must be filed with the Office of the State Board of Accounts for audit purposes, all pursuant to I.C. 36-1-7-6.

Section 9. **EFFECTIVE DATE.** This Agreement shall be effective after the same has been ratified by each of the participating entities by ordinance or resolution pursuant to I.C. 36-1-7-2.

Section 10. **MODIFICATION.** No modification of this Agreement shall be effective, in any respect, unless agreed to in writing and executed by the parties or their representatives and appended hereto.

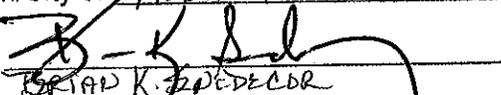
IN WITNESS WHEREOF, the parties have caused this Interlocal Cooperation Agreement to be executed in their names and on their behalf on the 15 day of October 2014.

Little Calumet River Basin Development Commission

By: 

Address: 900 Ridge Road, Suite H
Munster, IN 46321

Town/City of Hobart, Indiana

By: 

Address: 414 Main St.
Hobart, IN 46342

CITY OF HOBART

EXHIBIT A



BRIAN K. SNEDECOR, MAYOR

February 18, 2014

Little Calumet River Basin Development Commission
c/o Mr. William Baker, President
900 Ridge Road, Suite H
Munster, IN 46321

Subject: Deep River Watershed Analysis

Dear Mr. Baker:

I am writing to this letter to express my support of the Commission moving forward with the Deep River Watershed Analysis proposal submitted on behalf of the City of Hobart. The Commission's Executive Director discussed Hobart spearheading a project to analyze the watershed between Lake George and the Little Calumet River. Hobart has provided the Commission with a proposal to complete this analysis. The Deep River analysis is the first in a number of components being developed in an effort to understand and manage stormwater within the watershed. The survey data collected and the computer model created will provide key pieces of information that can be utilized in the development of future watershed management projects.

Hobart realizes the important role that Lake George plays in the management of stormwater in the Deep River Watershed. The Towns of Merrillville and Winfield, the City of Crown Point and portions of Porter County all drain to it. We believe that Lake George can play a beneficial role assisting Hobart and the Commission manage the watershed provided we are allowed the flexibility to control the lake's elevation. The current elevation is controlled by IDNR. If we are able to lower the lake's elevation in anticipation of a large rain event, we may be able to dampen its affects to downstream communities and the Little Calumet River. At this time, we do not know with certainty the effects of lowering the lake's surface elevation. Until we are certain, we will also not be able to convince IDNR to allow us this flexibility.

Project deliverables include a Lake George Dam Control Policy that can be presented to IDNR for approval and adoption by Hobart. This policy will outline the efforts that need to be taken in anticipation of major rain events to minimize the potential for flood damage for us and our neighboring communities. We anticipate that the analysis will yield a number of potential infrastructure projects in addition to the dam control policy.

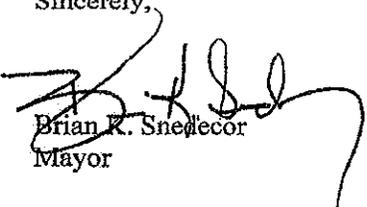


Hobart would like to be one of the first communities to partner with the Commission on a substantial regional drainage project. We intend to submit our Lake George Rehabilitation funding application to the Commission for consideration at your April meeting. Information gathered for the Deep River Watershed Analysis will be utilized to evaluate the effects of the sediment that has been gathering in Lake George since the last dredging in 2002. By the Commission moving forward with the Deep River Watershed Analysis, Hobart will benefit from the use of the information gathered for our Lake George grant application and be ready to implement infrastructure improvements by the summer of 2015. This project will be first in a series of biddable watershed projects that will result from the watershed analysis.

As you know, watersheds do not know political boundaries. We understand the value of a system wide approach to flood control. Again, we urge you to carefully consider moving forward with the Deep River Watershed proposal at your next opportunity.

We are willing and ready to meet with the Commission in person to discuss the proposal in further detail. Hobart is your willing watershed partner and looks forward to doing all it can to protect the watershed for our community and our neighbors.

Sincerely,



Brian R. Sneedecor
Mayor

cc: Commission Members
Mr. Day Repay, Executive Director

January 9, 2014

RE: City of Hobart
Deep River Flood Risk Management Plan
SEH No. HOBAR P- 126563

The Honorable Brian K. Snedecor
Mayor
City of Hobart
414 Main Street
Hobart, IN 46342

Dear Mayor Snedecor:

SEH of Indiana (SEH[®]) appreciates the opportunity to submit this proposal for the development of a Deep River Flood Risk Management Plan (Plan) to benefit the City of Hobart as well as those communities situated downstream of Lake George. The Little Calumet River Basin Development Commission (Commission) having asked Hobart to take the lead on this task on the Commission's behalf shows their confidence in Hobart and its knowledge of the watershed. This proposed Plan is the precursor to your future funding request to the Commission as the data collected and the hydraulic model created is technically necessary for the development of Hobart's long term goals and vision for Lake George.

Background

In addition to its own drainage area, the Little Calumet River (LCR) in Lake County, Indiana, has two main contributing watersheds – Hart Ditch and Deep River. Deep River joins the Little Calumet River in the City of Lake Station, just north of I-94. Downstream of the confluence of the two rivers is considered Burns Ditch. Burns Ditch travels east to the City of Portage where it empties into Lake Michigan. Deep River has a number of major tributaries including Turkey Creek, Duck Creek and Beaver Dam Ditch. Upstream of its confluence with the Little Calumet River, Deep River meanders southward through Lake Station and New Chicago to the City of Hobart where it joins Lake George. Turkey Creek joins with Deep River at the very upstream end of Lake George. Duck Creek empties to Deep River immediately downstream of the Lake George Dam. Approximately 79,000 acres (over 120 square miles) of watershed drain to Lake George.

Two dams exist on Deep River. The first is located in Lake Station just south of I-94. It can be seen west of the Liverpool Road Bridge over Deep River on the downstream

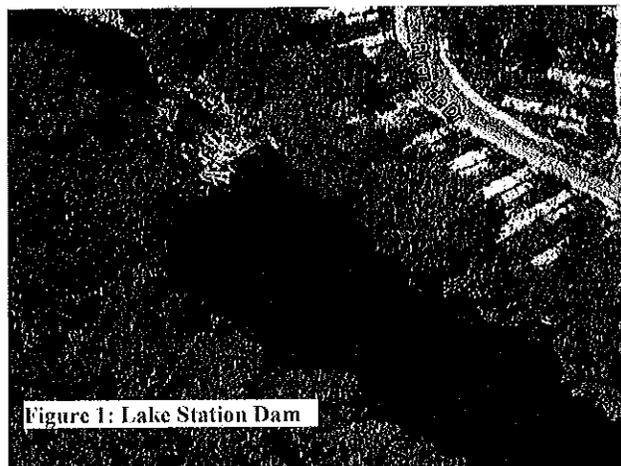


Figure 1: Lake Station Dam

side. The dam provides for an upstream impoundment area and affords Lake Station and New Chicago waterway recreational opportunities. The dam appears to be in poor condition and has no ability to be adjusted to control water levels.

The second dam is located at Lake George and controls waterway levels upstream including Lake George. The dam has been recently renovated and includes a spillway and bypass flow control structure. The dam is located within Hobart's popular Festival Park.

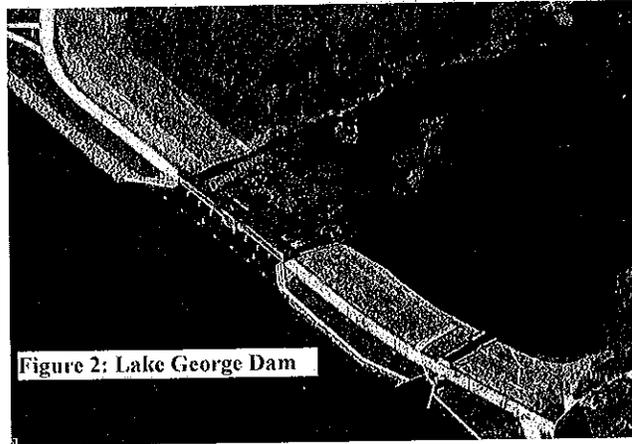


Figure 2: Lake George Dam

Several Deep River improvement projects were identified by the Commission's constituent communities and recorded in the Commission's Comprehensive Watershed Plan (Watershed Plan) completed last fall. These projects include:

1. Burns Ditch Conveyance Improvements (General 4)
2. Storage Adjacent to LCR at I-65/I-94 (General 2)
3. I-65/I-94 Interchange Storage Area Repairs (LCRBDC 15)
4. Lake George Dam Control Policy (Lake Station 7)
5. Deep River Dam Rehabilitation Project (Lake Station 3)
6. Deep River Tunnel (General 5)
7. Residential Drainage Improvements Between 27th and 29th Avenues (Lake Station 6)
8. Lake George Dredging (Hobart 2)
9. Brickie Bowl Flooding (Hobart 5)
10. Shoreline Stabilization and Sediment Control for Lake George (Hobart 16)
11. Lake George Shoreline Restoration (Hobart 15)
12. Wisconsin Street Bridge (LCHWY 20)

Project Description

Hobart as well as its surrounding communities realizes that storage plays a key role in reducing flood risks by dampening peak flows. Is there a way that Lake George can be utilized to control flooding by using the dam to lower the lake level in anticipation of significant storm events to create added storage? While the lake's level is currently controlled by regulatory agencies, there is a desire to have the flexibility to lower its level in anticipation of significant storm events such as those in September of 2008.

The same theory could extend to the existing Lake Station dam. Could a new, upgraded dam, offer the same flexibility of lowering the river level in anticipation of a large storm event? Are there other locations along the river that could be utilized/modified to provide additional storage to aid in flood

management? Could a deep tunnel like the one constructed in the Town of Griffith be installed to "short-circuit" a portion of Deep River and convey water to Burns Ditch via a second conveyance?

The City of Hobart has been asked by the Commission's Executive Director to conduct an Engineering Assessment that would conclude with the development of a comprehensive Flood Risk Management Plan for Deep River downstream of Lake George to Burns Ditch. The assessment will look at several flood risk reduction strategies including nonstructural management alternatives such as implementing no-adverse impact floodplain management processes to structural mitigation alternatives such as levee construction, bypass tunnels and dam improvements. In particular, this Assessment will include:

1. Updating/enhancing the existing FEMA floodway model for Deep River between Lake George and Burns Ditch by incorporating newly acquired LIDAR topographic data, supplemented with field data collection and bathymetric survey.
2. Evaluating the potential benefits of added storage (General 2).
3. Evaluating the effects of a deep tunnel to short-circuit portions of Deep River much as the Town of Griffith did with Cady-Marsh Ditch (General 5).
4. Hydraulic evaluation of the existing dams in Lake Station and Hobart to determine their roles in watershed management and flood relief (Lake Station 3).
5. Development of Dam Control Policies for watershed management and flood relief (Lake Station 7).
6. Identifying potential residential drainage improvements for areas between 27th and 29th Avenues in Lake Station that is prone to flooding (Lake Station 6).

The data collection, surveying and hydraulic modeling work completed in this initial Assessment can be utilized in completing these additional Watershed Plan projects that will be incorporated in Hobart's future request for funding assistance:

1. Lake George Dredging (Hobart 2)
2. Shoreline Stabilization and Sediment Control Lake George (Hobart 16)
3. Brickie Bowl Flooding (Hobart 5)
4. Wisconsin Street Bridge (LCHWY 20)
5. Lake George Shoreline Restoration (Hobart 15)

Further, the Metropolitan Water Reclamation District of Greater Chicago's hydraulic model of the LCR already incorporated Hart Ditch; however, minimal data was incorporated for Deep River and its tributaries. This updated and calibrated hydraulic model can be incorporated into the LCR model to evaluate the following Watershed Plan projects that can be the focus of future Commission projects:

1. Storage Adjacent to LCR at I-65/I-94 (General 2)
2. Burns Ditch Conveyance Improvements (General 4)
3. I-65/I-94 Interchange Storage Area Repairs (LCRBDC 15)

As can be seen, this study is critical in a first step to undertaking many future improvements discussed in the Commission's Watershed Plan.

Project Approach

Phase 1 – Data Collection and Evaluation

The first phase of the Comprehensive Flood Risk Management Plan for Deep River is to collect and review available background information and studies. A comprehensive review and evaluation of the available information will expedite our ability to efficiently assess problem areas and develop feasible solutions. In addition to review and evaluation of the existing reports, we will perform field data collection and a waterway reconnaissance. The field data collection will allow for an evaluation of the existing conditions in the watershed in comparison to the conditions identified in the previous studies. Information and modeling viewed as pertinent to the existing problems analysis will be updated utilizing collected field data for use in evaluation of potential mitigation projects. A stakeholder meeting will also be an important first step in development of a comprehensive flood management plan.

Task 1.1 – Review Existing Previous Reports and Projects

There are several reports available that provide background information for the project area. To date, SEH has collected the following documents for review:

- Lake George Watershed Management Organization – Feasibility Study (SEH, January 23, 1997);
- Deep River, IN – Section 905 (b) Sediment reduction Ecosystem Restoration (USACE, Sept '99);
- Environmental Assessment – Lake George Dredging Project Hobart, Indiana (USACE, Feb '99);
- Estimation of Monetary Value of Simulated Flood Damages along Lake George and Deep River, IN (USACE, Dec. '94);
- Lake George – Hobart, IN – USACE-Chicago District-North Central Diversion-Planning/Engineering Report (USACE, May '95);
- AGNPS Model for Lake George Watershed Lake and Porter Counties (SCS, June 1994);
- HEC-RAS model for Little Calumet, Deep River, Burns Ditch, Hart Ditch, etc.;
- SEH staff preliminary site visit from Lake George downstream to the confluence of Deep River and Burns Ditch (August 19, 2008);
- Little Calumet River Basin Development Commission's Comprehensive Watershed Plan (August, 2013).

In addition to the list above, SEH will search for additional studies and construction plans for facilities in the project area that may be available from the County, Indiana Department of Natural Resources, Indiana Department of Transportation (bridge crossings) or Lake County Surveyor.

Task 1.2 – Field Data Collection and Waterway Reconnaissance

Field data collection is a critical task to not only updating and verifying past studies and models, but to also ensuring the solutions proposed will mitigate the issues as intended. Waterway Reconnaissance (conventional field and bathymetric surveying) comprises a large portion of the project effort.

Waterway reconnaissance will be performed from the confluence of Deep River and Turkey Creek to Burns Ditch to identify changes to the hydraulic characteristics of the channel and floodplain along with any new or modified hydraulic structures that are not properly represented in the existing hydraulic model for the study reach. All hydraulic structures in the study reach will be field surveyed as well as bathymetric surveys of Lake George and portions of Deep River for verifying the validity of the existing hydraulic model and incorporation into the updated modeling. Georeferenced photographic documentation of each hydraulic structure will be obtained and included in the updated hydraulic modeling and a GIS database to make the hydraulic model more user-friendly and allow for easier future updating and maintenance of the hydraulic model. In addition to updating and verifying the hydraulic modeling, the reconnaissance will also serve to identify flow obstructions and bottlenecks in the system, potential waterway maintenance activities, and possible locations for floodplain/stream restoration and/or areas for additional floodplain storage increases.

Task 1.3 – Stakeholders Meeting

Past reports and studies do not always tell the whole story of past water quality and flooding issues. SEH proposes to host a meeting with key stakeholders (local community officials, permitting agencies, etc.) to familiarize the project team with past watershed problems. This meeting will be held in a conference room with maps for participants to mark up known problem areas, offer their observation of problems areas, and openly discuss their opinions of potential reasons for these past problems. In addition, stakeholders will be encouraged to offer possible mitigating measures and solutions to those problems. The stakeholder meeting is recommended (versus a public forum format) because of the problem/solution format and the more productive gathering of project information.

Phase 2 – Project Identification, Feasibility Evaluation & Prioritization

With available background information collected, SEH will develop an updated hydraulic model and develop and evaluate a comprehensive list of projects that may be implemented to mitigate flooding issues.

Task 2.1 – Deep River Floodplain Management and Flood Risk Reduction

Deep River from its confluence with Turkey Creek downstream to the confluence with Burns Ditch, a distance of approximately nine miles, will be studied in detail to analyze and develop floodplain management and flood risk reduction strategies. The existing USACE HEC-RAS model for the Deep River system contains many bridge crossings that are modeled with an outdated hydraulic modeling routine (using Yarnell equation) or cross-section ground shots modified to represent piers, 20-percent of the cross-sections interpolated, and other cross-sections which appear very approximate. Building off of the information from Phase 1, recently obtained LIDAR for Lake County, and information from the existing USACE HEC-RAS model, we will develop an updated and georeferenced HEC-RAS model for the study reach. The updated model will have the capability to perform an unsteady state analysis such that the existing floodplain storage and potential effects on peak flow rates may be analyzed. This updated model will be used to investigate potential flood mitigation strategies along the study reach.



A secondary (and potentially even more significant) benefit of georeferencing and updating the model with the recent LIDAR information, is the ability to automate floodplain delineation and mapping for the Deep River system. This will allow for quick generation of floodplain inundation mapping and provide a visual representation of the areas flooded or potentially removed from the floodplain under various management and mitigation strategies. This update will allow for the model to serve as an important tool for future watershed and waterway planning activities and public education and outreach.

Nonstructural floodplain management and flood mitigation approaches are important tools in the overall floodplain management toolbox, and they are especially important for areas in which structural measures are either not feasible or would result in adverse impacts elsewhere in the watershed. We will develop and evaluate nonstructural solutions, such as structure acquisition, relocation, and floodproofing; as deemed appropriate for areas along the study reach because typically grant funding is more readily available for projects of this type. Nonstructural floodplain management strategies reviewed will also include utilization of floodplain storage, channel and floodplain conveyance improvements, and evaluation of the effects of reduced outflows from the Hobart Dam on the flooding conditions.

Structural flood mitigation alternatives, such as levee construction to reduce the flood risk in the vicinity of the Lake Station Dam will also be evaluated for the Deep River through the study reach. Other structural flood risk reduction opportunities evaluated will include hydraulic structure improvements, such as modification of the Lake Station Dam and improvement of bridge crossings, a potential bypass tunnel from Deep River to Burns Ditch just west of Route 51, construction of floodplain storage and detention, and additional flow control modifications to the Hobart Dam.

Water quality and sediment management along the Deep River will also be considered in the evaluation of alternatives. Sediment retention and management may be a key component of future management strategies for the Deep River downstream of the Hobart Dam if an active dredging program is not implemented on Lake George. As Lake George fills up with deposits, the permanent pool volume is decreased and the sediment load entering the lake will no longer settle out within the impoundment area and will likely end up being carried downstream and deposited in floodplain and low velocity channel areas leading to a decrease in overall floodplain storage and conveyance capacity resulting in increased flood risk for this reach.

Task 2.2 – Prioritize Projects

SEH will review the project list prepared in Tasks 2.1 with the appropriate project stakeholders to determine which projects should be advanced to Phase 3 – Preliminary Design and Project Cost Estimation. The goal is to filter out projects that appear to be cost prohibitive/not compatible with the available funding resources; as well as those that may take too long to implement or are difficult to implement due to political, easement, or permitting issues.

The goal is to advance the projects that have a high probability of obtaining funding or require little funding and can be implemented in the very near future. Some of the more involved projects or projects requiring further analysis outside of the scope of this proposal may be included in the preliminary cost phase as project studies versus actual estimated construction implementation costs.

Phase 3 – Preliminary Design and Project Cost Estimation of Project Costs and Funding Discussion

For each of the structural projects identified in the prioritized list, a preliminary design will be completed to develop a scope of work, an estimate of anticipated construction cost and a quantification of the level of permitting effort required for implementation. Construction cost estimates will be based on past project experience and to the extent practical utilize linear estimates which allows for quick reevaluation of cost if additional project components are added and thus a full reevaluation of the project is not required. The cost estimates will include larger than normal contingencies to ensure the project costs can be covered by potential funding sources that are available. The cost will also include an estimate of Permitting, Engineering, Legal and Administrative costs to make sure all projects costs are included in the estimate and thus a total project cost is presented.

Non-Structural projects/Policies will be developed with the local communities and input from the appropriate regulatory agencies. These Policies can then be presented by the local communities to the regulatory agencies for adoption/approval.

Phase 4 – Permitting and Agency Coordination

SEH will discuss the proposed construction projects/policies with the permitting agencies to develop and identify potential hurdles to project permitting and to gauge the level of permitting effort for implementation. We will summarize the potential permitting agency issues and challenges in implementing the flood mitigation solutions developed. This will include a summary of the permits required for construction along with an estimate of required time length to receive approval.

Phase 5 – Final Report

SEH will prepare a comprehensive written report which summarizes the analysis methodologies, field investigations, hydraulic and hydrologic procedures and alternatives development. Survey information and model data will be provided for use in future projects. The report will be accompanied by appropriate graphics, tables, and figures to clearly convey the intent and findings of the study.

For projects of a structural nature, we will prepare scopes of work/preliminary designs, potential regulatory requirements, and opinions of probable construction and maintenance costs for each prioritized project. For non-structural projects, draft policies will be provided.

Schedule

Work on this project can begin immediately upon written Notice to Proceed. Weather permitting, we anticipate providing a draft report six months from receiving the Notice to Proceed. The collection of bathymetric topography is dependent upon our ability to traverse the waterways with boats. We will most likely not be able to complete this work until the end of May. Final model development cannot be completed until bathymetric survey data is available.

Fee

We propose to complete this work for the lump sum amount of \$259,960. The following table summarizes the fee:

| | |
|---|------------------|
| Task 1: Data Collection and Evaluation | \$110,000 |
| Task 2: Project Identification, Feasibility Evaluation and Prioritization | \$ 82,975 |
| Task 3: Preliminary Design and Project Cost Estimation | \$ 35,500 |
| Task 4: Permitting and Agency Coordination | \$ 12,085 |
| Task 5: Final Report | <u>\$ 19,400</u> |
| TOTAL | \$259,960 |

We are excited to assist the City of Hobart, the Commission and the Deep River Watershed communities in the preparation of this most important plan. If you have any questions, feel free to contact me at 219.513.2529 or by email at chendrix@sehinc.com. We look forward to hearing from you.

Sincerely,

Craig Hendrix, PE
Senior Project Manager

Attachments

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