



**ENGINEERING**  
RESOURCE ASSOCIATES



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**PROPOSAL FOR:**  
Stormwater Master Plan Phase I

**PREPARED FOR:**  
Ken Dado  
Utilities Operations Manager  
Village of Orland Park  
15655 S. Ravinia Avenue  
Orland Park, IL 60462

**DUE:**  
June 28, 2021 at NOON

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### ***Project Background***

The Village is requesting a proposal to complete the first phase of their Stormwater Master Plan. It involves performing an inventory of all Village-owned stormwater management facilities within Orland Park's municipal boundary. There are 88 dry bottom basins and 90 wet bottom basins that collect stormwater runoff in 7 watersheds which encompasses all 22 square miles of the Village in Cook County, IL.

The Village has identified deficiencies in the past 5-10 years of some of the basins and has taken remedial action to address them. The hired consultant for this proposed work will evaluate and inventory all Village-owned detention basins and provide a cost estimate for identified repairs and maintenance issues. This will provide the Village with a proactive approach to budgeting and planning the maintenance needs of its 178 stormwater management facilities.

### ***Project Understanding***

Asset management is an important undertaking for Public Works departments to manage their capital assets, work activities and catalog their infrastructure data. The Village currently uses GIS to track their capital assets and maintenance work. ERA proposes to supply the detention basin inspection information in a way that can be seamlessly integrated into the Village's existing GIS asset management tracking software using ArcGIS. ERA can supply the data in either a raw form or directly using the Village's applications/process to update information. The "paper copy" reports, that will summarize the recommendations for each basin, though important, frequently can get "put on a shelf". Then the studies/reports are not incorporated as readily available information in the daily workflow of the field crews maintaining the public infrastructure assets. ERA will focus their efforts on the inventory database and integration with the Village's asset management system.

### ***Project Approach & Schedule***

The Village is seeking to have all detention basins evaluated with recommendations and budget numbers by October 6<sup>th</sup>. The project schedule calls for a 12-week timetable. ERA proposes the following work plan schedule to complete the work by October 6<sup>th</sup>.

#### **Week 1 (Week of July 12<sup>th</sup>)**

- Village awards project.
- Obtain the Village's available Data. Included in the request for data will include maintenance records on detention basins for the past 5-10 years and a record of recent (last 3-5 years) resident complaints of detention basins.
- Hold a kickoff meeting with Village and ERA project team members to clarify project aims, confirm project schedule and next action steps.
- Hold a meeting with the Village's and ERA's GIS technical specialists to collaborate on the data integration for the Village's asset management tracking software.

#### **Week 2 (Week of July 19<sup>th</sup>)**

- Modify ERA's standard Stormwater Facility Engineering Site Inspection Checklist to
  - conform with the Village's 18-point site inspection listed in the RFP and,
  - conform with the seamless integration into the Village's GIS database.

- ERA proposes to rank the basins and complete thorough site evaluations on the top 36 basins in the first weeks of the project schedule by:
  - Ordering the basins, using GIS, by volume. Detention facilities that attenuate the most volume of stormwater provide the greatest benefit to a watershed.
  - Ordering the basins, using GIS, by the tributary area to those basins. Basins with large tributary areas can frequently experience bounce which can affect vegetation and increase erosion. In addition, they may be more prone to overtopping and control structures may need more frequent maintenance.
  - Ordering the basins based on the High Impact ranking that was performed on the 2011 best management practices contract. Or if that information is not complete, based on high visibility within the Village's center and corridor.
  - Review the complaint records for the past 3-5 years and include the basins with the most complaints.
  - Removing any basins that have had maintenance performed in the past 5-years.

**Week 3 (Week of July 26<sup>th</sup>)**

- Based on the evaluation in GIS from Week 2 and the kickoff meeting with the Village from Week 1, the lead engineer on the project will provide a ranking of the top 36 basins to send the field crew to visit this week.
- Send out two, two-person teams into the field for the second half of the week and inspect the first 36 basins. Each field team will be led by an ERA environmental and stormwater technician with experience evaluating stormwater management facilities. They will be accompanied by an ERA summer college intern who will record the information into the digital site inspection checklist and create photographic documentation of the condition of the detention basin.
- ERA's field crew has experience making recommendations to address deficiencies in the stormwater basins and they will document their recommendations during the site visit.
- It is expected that for this week's inspections, it will take 1.5-2 hours per basin. This accounts for both the natural learning curve of a new project and the expected complexity of evaluating the largest stormwater facilities within the Village. In addition, it provides enough time for the field crew to communicate with the in-office engineers and GIS specialist if more information or clarifications are needed.

**Weeks 4-6 (Week of August 2<sup>nd</sup>, August 9<sup>th</sup>, August 16<sup>th</sup>)**

- The in-office engineers will review the inspection documentation and begin developing deficiency resolution alternatives.
- The GIS technician will work to ensure that the data from the inspection documentation is in the correct format that works with the Village's asset management system.
- GIS technician creates and maintains a progress map to track the status of each detention basin in the workflow that is available to be viewed by the project team at ERA and the Village based on
  - site inspection, resolution alternatives, costs and summary report
- The two, two-person field teams will visit the remaining detention basins based on geographical location to minimize drive time between facilities.

**Week 7 (Week of August 23<sup>rd</sup>)**

- A progress meeting with the Village and ERA's project team to provide a status update and discuss project issues.
- A one-person field crew visits any missed detention facilities and/or facilities named by the in-office engineering staff as needing more information.
- In-office staff continue with the reviewing of the inspection documentation, finishing deficiency resolution alternatives and developing cost estimates.

**Week 8-10 (Week of August 30<sup>th</sup>, September 6<sup>th</sup>, September 13<sup>th</sup>)**

- In-office staff continue with reviewing the inspection documentation, finishing the deficiency resolution alternatives and cost estimates.
- A one-person field crew visits any missed detention facilities and/or facilities named by the in-office engineering staff as needing more information.
- In-office staff provide ranking of basins.
- GIS technician creates GIS deficiency exhibit that visually ranks the basins based on degree of failure and flooding impact matrix.

**Week 11 (Week of September 20<sup>th</sup>)**

- A progress meeting with the Village project team to provide a status update and discuss project issues.
- In-office staff work on cost estimates, priority matrix and summary reports.
- GIS technician creates GIS priority exhibit that visually ranks the basins based on highest priority.

**Week 12 (Week of September 27<sup>th</sup>)**

- In-office staff complete cost estimates and finalize priority matrix/exhibit for October 6<sup>th</sup> deliverable.
- In-office staff package technical summary reports

**October 6**

- Meet with Village staff to review the deliverable package.

**Scope of Services**

The project team will meet and coordinate with staff to refine the Village's ideas concerning the Stormwater Master Plan Phase 1 and to gather the technical basin data and other necessary background data.

The Village desires to categorize stormwater facilities in order to identify problem severity, ensure proper allocation of limited resources and fairly address the funding of solutions appropriate for the areas.

ERA will provide engineering and environmental services in accordance with the following scope of services.

1. **Meetings and Coordination**– Effective meetings and coordination between our Team and Village staff, will be critical to the successful implementation of this project. Based upon our experience on similar assignments and the request for proposals, we anticipate the following meetings:

- a. One (1) kick off meeting.
- b. Two (2) Progress meetings with Village staff to ensure a thorough understanding of the final deliverables is obtained by all relevant parties as the project progresses to the October 6<sup>th</sup> deadline.
- c. General email and phone call coordination throughout the project. Routine updates from team leader to keep Village staff informed of progress.
- d. Meetings in addition to those described above will be performed on an hourly basis and tracked separately to the contract.

**2. *Review of Available Data / Data Collection*** – The project team will obtain and review various mapping products, studies and background data available from the Village and other various agencies to assist with the analysis and development of the reports. It is anticipated that original design documents, planting plans and as-built record drawings are available for each basin. Therefore, no field topographic survey services have been included in the scope of this project. This task includes the review of approved design plans prior to inspection to acquire an understanding of what was approved. The RFP has identified the following documents available on award of the project:

- a. Village Map
- b. Detention Basin location map
- c. Original detention basin development/design plans
- d. GIS shapefiles of:
- e. Detention basin parcels
- f. Roadways
- g. Storm Sewers
- h. Sanitary Sewers
- i. Watermains
- j. Creeks

**3. *Site Inspections*** – The project team will perform a site visit for all basins according to the project schedule. The work for each basin entails the 18-point checklist provided in the RFP, summarized here:

- a. Overall condition, conveyance, capacity, use, erosion, sedimentation and inlet and outlet structure inspection.
- b. An inventory of the vascular plants, Identification of the dominant species within each vegetation zone.
- c. Impact of deficiencies on other utilities.
- d. Photographs
- e. Digital documentation of site inspection

**4. *Deficiency Matrix*** – The project team will identify the detention basins that have visual deficiencies based on the field visit and the site inspection checklist. A deficiency matrix will be developed. The matrix will then be represented graphically in a GIS exhibit.

**5. *Resolution Alternatives*** – The project team will propose improvements to address the deficiencies found at each detention basin. The alternatives will be soft scape and natural wherever possible to improve water quality and aesthetics and minimize

maintenance. Structural intervention will only be recommended where soft measures are not feasible due to slope and adjacent infrastructure. Recommendations may include outfall repairs, control structure repairs, etc.

- 6. *Prioritization Matrix*** – The project team will create a prioritization matrix to order the priority of the basins for maintenance based on urgency, scope of failure and watershed impact. The matrix will then be represented graphically in a GIS exhibit.
- 7. *Estimate of Costs*** -The project team will develop an estimate of costs for each basin that has been identified as needing repairs. This includes an estimate per linear foot of stabilization, erosion control blanket, seeding/plugging and annual maintenance tasks such as herbicide, high mowing/weed whipping, and prescribed burns. Costs may include replacement or repairing inlet and outlet structures, restrictor structures, etc.
- 8. *GIS & Asset management:***
  - a. GIS database management for integration with Village asset management software.
  - b. GIS watershed and basin evaluation for volume and tributary area.
  - c. GIS Exhibits for each detention basin in the summary report.
  - d. GIS based mapping exhibit of deficiency and prioritization basin categorization.
- 9. *Basin Technical Reports*** -Based upon the site inventory and inspections and review of the available plans, ERA shall prepare a technical summary report for each basin. This work entails:
  - a. Site photographs
  - b. The field documentation as noted in the detention basin site checklist.
  - c. Summary narrative indicating the placement of the detention basin in the deficiency matrix and prioritization narrative.
  - d. Description of the recommended remediation to noted deficiencies.
  - e. Cost estimate to repair and maintain the basin.
  - f. Exhibits necessary to support the technical report conclusions.