

KEM

K.E. McCartney & Associates, Inc.

ENGINEERS • PLANNERS • SURVEYORS

Surveying, GPS & GIS Mapping

www.kemccartney.com

Introduction

K.E. McCartney & Associates, Inc. (KEM) is a full service civil engineering and surveying firm operating since 1978. KEM offers a full spectrum of Surveying Services including GIS mapping.



**City of Ontario
MS4 Program & GIS Mapping**

KEM's survey crews and technical personnel are equipped with the latest in surveying instrumentation and support vehicles. They are versed in Global Position System (GPS) Technology and the many applications this system offers, including Geographic Information System (GIS) modeling. KEM survey personnel work closely with the design staff and GIS Technicians to ensure that mapping efforts accurately reflect field conditions. Plan checking in the field by survey personnel is a key element in quality control and is completed on every KEM project.

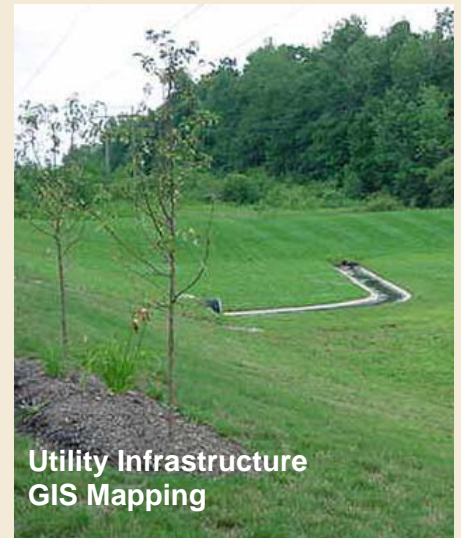
KEM has utilized its knowledge in GPS technology to help clients implement utility mapping and asset management. Increasingly communities are realizing the advantage of integrating their water, wastewater, and storm water utilities into a GIS based system to keep track of the distribution, collection, and drainage networks as well as related planning and customer care. Essential components of this system include data collection based on field locations,

digitization of as built record drawings and preparing CAD data.

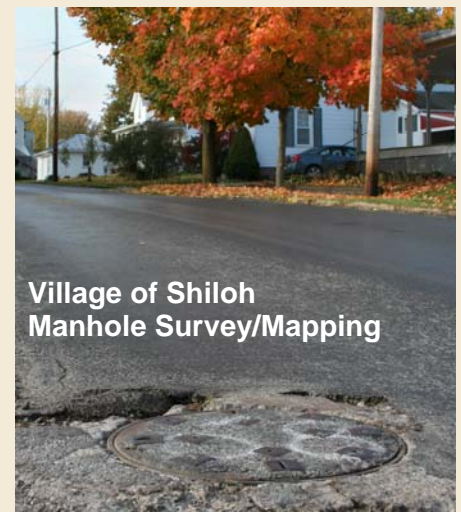
KEM has the technical capabilities, including robotic VRS equipment and ESRI ArcGIS Desktop, to assist their clients in the entire process from identifying needs to developing goals and objectives, developing an implementation plan, field investigation and data collection, database development and GIS interface development. With GIS becoming such an integral part of utility operations, it is important to streamline the updating procedures so that the timeliness and accuracy of the database are of the highest quality. KEM can assist with this by developing a custom maintenance plan.

KEM Services:

- GIS Mapping
- GPS Survey
- Base mapping
- Data migration
- Utility field location
- Database management
- Map production



**Utility Infrastructure
GIS Mapping**



**Village of Shiloh
Manhole Survey/Mapping**

KEM
Quality
since 1978

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Surveying, GPS & GIS Mapping Projects

Lorain County I&I Reduction



KEM prepared plans and provided construction administration and management for the Lorain County I & I Reduction Project. The project consisted of over 12 miles of sanitary sewer, 240 manholes, 4 lift stations and 4 wastewater treatment plants. KEM obtained all existing plans and performed field reconnaissance to help locate system manholes. KEM also performed a system wide GPS survey and manhole evaluation.

City of Ontario Storm Mapping

KEM undertook global positioning system (GPS) mapping of detention and retention systems located within the corporate limits of the City. A sketch was made of each facility which describes the general condition, size and material of the inlets and outlets. Additionally a photograph was taken of each detention/retention facility for use in the Geographic Information System (GIS). To collect the aforementioned data, KEM utilized GPS receivers submeter (rms) position solutions.



Utility Infrastructure GIS Mapping

KEM initiated GPS mapping of utilities for the City of Ontario, along its main traffic corridors. This mapping effort included all storm and sanitary manholes, catch basins, yard basins, water valves, and fire hydrants. To collect this data, KEM used GPS equipment with sub centimeter accuracy. Additionally, field personnel measured invert depths from the top of each structure to determine invert elevations. Field personnel also recorded visual observations of pipe sizes and flow direction. This information was used to set up the utility mapping and asset management system for the utility infrastructure.

Shiloh I&I Reduction



The Village of Shiloh hired KEM to assist them in eliminating two Sanitary Sewer Overflow (SSO) locations within their collection system. KEM obtained all existing plans to help field crews locate system manholes. Following this, KEM performed a system wide GPS survey and manhole evaluation. The mapping effort included coordinates on all manholes, invert depths, and photographs.

