

Exhibit H-1



**Franklin Soil and Water
Conservation District**

Creating Conservation Solutions for Over 60 Years

City of Columbus

Proposal to Develop Urban Watershed Delineations

2018



Contents

	Page
1.0 Introduction	1
2.0 Project Understanding	1
3.0 Technical Experience	2
4.0 Proposed Staffing.....	3
5.0 Primary Office Location	5
6.0 Project Approach	5
6.1 Delineation Review	
6.2 Primary Data for Deriving Watershed Delineations and Source	
6.3 Basemaps	
6.4 Project Adaptation	
6.5 Project Constraints	
6.6 Data Format	
7.0 Intergovernmental Working Agreement	9

1.0 Introduction

Franklin Soil and Water Conservation District is pleased to offer the following proposal for providing continued assistance to the City of Columbus with developing urban delineations and associated services to assist with the Blueprint Columbus effort currently underway and projects supporting the results of the study. The focus of this effort is eliminating sanitary sewer overflows while also investing in Columbus neighborhoods and the local economy by using means other than gray infrastructure. The following provides an overview of our organization, elaborates on our understanding of the scope of services required for this project, and outlines a proposal for undertaking the project.

Franklin Soil and Water Conservation District

Franklin Soil and Water Conservation District (FSWCD) is the natural resource agency in Franklin County with the sole purpose of promoting conservation and responsible land use for better water quality and natural resource management. This is accomplished through establishing partnerships, providing technical guidance, and engaging communities. All of our programs are focused on protecting or improving water quality and natural resources for the benefit of Central Ohio residents.

With a staff of 19 experienced and highly qualified individuals, we have been developing and implementing conservation solutions for over 70 years in Franklin County and are excited to continue this challenging effort. Stormwater management is central to our work, and we continually strive to develop new ideas, tools, and approaches to increase the visibility and implementation of stormwater management approaches and practices. This project aligns very well with our organization's mission and we believe it is a responsible and worthwhile endeavor continuing to promote and pursue.

FSWCD has intergovernmental working agreements with a majority of the municipalities in Franklin County, Franklin County, and all 17 townships. Included in these partnerships is the City of Columbus (City), which has been a supporter and beneficiary of our stormwater management efforts for many years. Starting in 2001, FSWCD and the City initiated a partnership for the mapping of stormwater infrastructure and surface water resources. These efforts include refinement of surface water flow routes, in-field verification and mapping of outfalls, and connectivity of stormwater lines throughout Columbus as well as a majority of the municipalities within Franklin County.

2.0 Project Understanding

By means of meetings, correspondence, and discussions with City staff and employees of Arcadis, the following is FSWCD's understanding of the services being requested by the City of Columbus for this ongoing effort. Note that some of the following are excerpts from The City of Columbus Department of Public Utilities website.

In recent years, the US Environmental Protection Agency started encouraging the adoption of an integrated planning approach to address Clean Water Act (CWA) requirements. This approach is intended to be an option to help municipalities meet their CWA obligations by optimizing the benefits of their infrastructure improvement investments through the appropriate prioritization and sequencing of work. This policy encourages cities to integrate the work needed to comply with both stormwater regulations and elimination of sewer overflows, and strongly promotes the use of green infrastructure to meet these challenges.

The City submitted a proposal (titled: Blueprint Columbus) to Ohio EPA as an alternative to the City's 2005 Wet Weather Management Plan in September of 2015. On December 1, 2015 the City received an official approval letter from Ohio EPA granting the City to proceed with Blueprint Columbus. We were very pleased to hear of the approval and are grateful that we have been able to contribute to this new comprehensive approach to managing stormwater!

Core to implementing an integrated plan is having a thorough understanding of the municipal separate storm sewer system (MS4) including, but not limited to: the extents of the system, system components and system connectivity, as well as land cover, land use, and land ownership across the landscape contributing flows to the MS4. However, when evaluating urban watersheds in an environment such as Columbus, understanding the makeup of watersheds is complicated by the fact that subsurface drainage changes the configuration of watersheds from boundaries which originally corresponded to naturally occurring surface drainage to configurations dictated by the extensive network of stormwater pipes and appurtenances.

The intent of this project is to continue the process of developing and refining urban watershed delineations in Blueprint Columbus project areas and summarizing a variety of statistics for the delineations. The approach to this project will be to utilize 'best available data' from the City and FSWCD using a GIS. This data will then be provided to the City in file geodatabase format for review, comment and use.

After a trial run, starting in 2016, FSWCD has, and will continue to produce preliminary base maps for the project areas. This mapping includes impervious surfaces, stormwater related structures, and non-stormwater related structures. Additional priority areas and associated needs will be identified by the City in conjunction with Arcadis as this effort continues to develop during the upcoming years. (See Section 6.3 below)

This effort is being undertaken with the understanding that priorities and emphasis may change. For the City, Jason Sanson is to be the point of contact and Fang Cheng will assist in coordination with the delineations. The following sections describe in more detail the approach to this effort.

3.0 Technical Expertise

This urban watershed delineation project is GIS-based, utilizing data provided by the City and developed by FSWCD. The GIS software used in this project will predominantly be ESRI's ArcMap package and associated ArcInfo level geoprocessing tools.

Core to FSWCD's current operations is the use of GIS and associated mapping, and core to this effort is the district's Geomatics program. FSWCD has made extensive use of GIS supported by thirteen years of field data acquired by district staff using GPS equipment. This combination of customized, accurate field data, supplemented by substantial amounts of base data throughout Franklin County, is central for the day-to-day operations of the organization and has improved the services and products that the District is able to provide to the central Ohio community. The ability to use GIS has established ongoing partnerships, has allowed FSWCD to expand services, and further organizational goals by producing more comprehensive, accurate products.

Work directly related to urban watershed delineations include the following efforts developed and maintained by FSWCD: Stream Resource Mapping, Stream Resource Geodatabase and Urban SubH2Oshed (Subwatershed) Initiative.

- **Stream Resource Mapping**
Initiated in 2001, FSWCD, in partnership with the City of Columbus and Franklin County Commissioners, started an effort to create a high-resolution dataset of surface drainage throughout Franklin County. This effort was predominantly completed in 2007 and resulted in over 1,600 miles of streams being walked by staff members and over 40,000 features identified, documented with pictures, and managed with a GIS.
- **Stream Resource GeoDatabase**
Started in 1998 prior to the Stream Resource Mapping effort, a comprehensive database of surface water drainage and subsurface stormwater infrastructure was created and is continually updated and improved for the extents of Franklin County as an ongoing effort. Over the past 20 years, FSWCD has mapped almost all the surface drainage in the county, including previously unmapped headwater streams and outfalls into streams. This

information has been reconciled with existing storm sewer data in most communities, including the City of Columbus. Features include an array of information including historical data and directionality of flow. This dataset consists of over 8,500 miles of drainage and over 350,000 features.

- **Urban SubH2Oshed (Subwatershed) Initiative**

The Urban SubH2Oshed Initiative is a Geodesign based watershed management methodology and supporting technology for professionals to leverage geographic information resulting in mitigation plans and designs that more closely follow natural systems. These mitigation plans can provide a comprehensive review of the watershed, its land use characteristics, watershed hydro-modifications, and a strategy to aid in assuring funding for applications where projects with the highest ecological and economical cost-benefit can be pursued for implementation.

4.0 Proposed Staffing

FSWCD is prepared to continue this project upon execution of applicable contracts. FSWCD has a seasoned staff with many project staff members employed at FSWCD for over five years. FSWCD is a dynamic and flexible organization capable of engaging and managing additional staff if workload and available funding permit. For this urban subwatershed project, oversight and coordination of the project will be conducted by Josh Garver. Day-to-day planning, coordination, and delineations and creation of basemaps will be conducted by Ryan Pilewski, Katie Phillips, and Kyle Sohner. Coordination of updating GIS layers for stormwater lines and surface drainage to be conducted by Jeff Pierce. Additional GIS support will be provided by Aaron Hebert.

Josh Garver, GISP, Assistant Director

Josh Garver is assistant director at FSWCD. Josh has been with FSWCD for nine years where he has also been employed as the GIS natural resources specialist and member of the geomatics team. He provides technology guidance and support to staff, maintains GIS data layers, and is involved in a variety of projects providing GIS expertise and support. Josh also coordinates GIS-based projects with various Franklin County agencies and local municipalities, which focus on improving water quality and meeting requirements of the NPDES permit held by Franklin County and its townships. Josh has a Master's Certificate in GIS from North Carolina State University, a minor in City and Regional Planning from The Ohio State University and a BS in Landscape Architecture from The Ohio State University. Prior to joining FSWCD, Josh worked several years in landscape architecture and planning firms as a project landscape architect, designing and managing a variety of urban, park and GIS-centric projects.

Ryan Pilewski, MCRP, Watershed Coordinator

Ryan Pilewski is a watershed coordinator and a member of the geomatics and conservation implementation team at FSWCD. Ryan works with local stakeholders on implementing watershed actions plans and Total Maximum Daily Load reports, including coordinating GIS-based projects with a focus on improving water quality. Ryan also works with municipalities on developing and implementing stormwater management plans as part of the NPDES Phase II permit. Ryan is an appointed member of Mayor Coleman's Green Team, sitting on the Growth & Development Working Group to assist with guiding efforts of Get Green Columbus. Ryan received a BS in Natural Resources Management with a specialization in open space planning from Slippery Rock University of Pennsylvania and a Masters in City and Regional Planning, specializing in watershed management from The Ohio State University. Prior to joining FSWCD, Ryan gained experience evaluating recreational lands with the National Forest Service within the Allegheny National Forest and providing planning and zoning compliance support at the City of Dublin.

Jeff Pierce, GIS Natural Resources Coordinator

Jeff Pierce is GIS natural resources coordinator and a member of the geomatics team at FSWCD. Jeff graduated from Wilmington College (OH) with a BA in English and Communications. He also holds a MS in Educational Leadership and a Master of Environmental Sciences in Applied Ecology and Resource Analysis from Miami University. Jeff has served as a past member of the NRCS statewide GIS committee, as the Chair of the Ohio Geographically Referenced Information Program's statewide hydrology committee, and as a voting member of the Heart of Ohio RC&D Council. He has been with FSWCD since 1995 and founded the first soil and water conservation district GIS program in Ohio.

Katie Phillips, GIS Technician

Katie Phillips is a GIS technician and a member of the geomatics team at FSWCD, where her responsibilities lie predominantly with various aspects of the Columbus Watershed Delineation Project. She is assisting with the development and maintenance of district GIS data. Her emphasis is on developing urban subwatershed delineations within the county to be incorporated into the stormwater management initiative. Katie graduated from Bowling Green State University, with an MS in geology focused in hydrology and paleoclimate studies. Katie also received a BS in geology from Ashland University.

Kyle Sohner, GIS Intern

Kyle Sohner is a GIS intern and a member of the geomatics team at Franklin Soil and Water Conservation District, where his responsibilities include coordination with GIS staff in assisting with the development and maintenance of district GIS programs and watershed implementation initiatives related to current programs and projects. Kyle graduated from Ohio University, with a BA in environmental geography where he focused on environmental and urban planning, cartography, computer mapping and environmental legislation. He received the 2015 Outstanding Graduating Senior award for the Geography Department. Prior to joining Franklin Soil and Water, Kyle directed company affairs for cycling events nationwide

Aaron Hebert, GIS Specialist

Aaron Hebert is GIS specialist and a member of the geomatics team at FSWCD, where his responsibilities include coordination with GIS staff in managing hardware and data related to current programs and projects. Aaron graduated from Western State College of Colorado, with a BA in history with a geography minor. He has also completed a GIS-certificate program at Columbus State Community College. Prior to joining FSWCD, Aaron interned with the Ohio Department of Natural Resources, editing land parcel data in eastern Ohio.

5.0 Primary Office Location

It is expected that all production work related to this project will be conducted on-site at the FSWCD office. Various meetings and coordination will take place with City and Arcadis staff as necessary at locations agreed to by both parties on an as-needed basis. To support the desktop production work, it is expected that occasional, but minimal, field investigations will be necessary. These investigations will be conducted by district staff and will be coordinated from the FSWCD office.

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Josh Garver, GISP, Assistant Director

6.0 Project Approach

The intent of this project is to continue with the development of urban watershed delineations with currently available data. The intent is not to create or otherwise locate additional data outside of what is addressed in this proposal. The bulk of the time and effort related to the watershed delineations will be spent in a GIS desktop capacity. The process will be an iterative process that will focus on deriving delineations by evaluating the relationship between surface elevations, the locations of inlet structures, the flow direction of surface water, and the flow within stormwater infrastructure. Surface elevations will be obtained through data layers provided by the City and the locations and flow direction of stormsewer components will be obtained from the Stream Resource Geodatabase (SRG) maintained by FSWCD as well as updates from the City.

At this state of the project, FSWCD expects to be primarily coordinating with the City by means of Fang Cheng as the individual areas for the pilot projects are designed.

An interactive, collaborative team environment internal to FSWCD will be used for the delineations and creation of basemap features. The City and Arcadis will provide an additional quality control component to the delineations with feedback to FSWCD for revisions and refinements of the delineations. Open and timely dialogue between FSWCD, and the City will be required to facilitate efficient production of the delineations.

At this point in the project, the phase I and phase II delineations have been completed for the service areas of Columbus (other than the combined sewer area downtown) and phase III delineations are being conducted for Blueprint Columbus project areas as directed by the City. This third phase of delineations segments the phase II delineations based on catch basins (stormsewer inlets). To this end, for each project area, there are delineations defined for each catch basin and if/as requested by the City, each of these delineations also contains take-off calculations for defined land cover conditions. This level of delineation requires dedicated communication and review by the City to provide and/or confirm current stormsewer components and locations.

For the 2018 year working agreement the current intent is to complete basemap development, impervious surfaces creation, and catch basin delineations for one additional project area defined by the City. Due to recent requests by consultants, in addition to these products, impervious surfaces and extents of drainage to these systems will also be conducted. As has been seen in other project areas, including the extent of the drainage area can increase the overall volume of work very significantly.

In addition to one additional project area, FSWCD will initiate delineation work in the downtown area of Columbus where there are a lot of combined sewers. While the intent is a final product that closely resembles all delineations done to date, this may not end up being the case due to the complexity of the stormsewer network. Rather than being one simple polygon for each delineation, the use of multipart polygons and maybe even points associated with outlet locations will be considered. The development of delineations in this area will be coordinated closely with the City.

The approach to this project is adaptive with priorities, accommodations, and products reviewed, discussed and agreed to periodically by FSWCD, and the City. This project will be reviewed at least on an annual basis to assess the current state of the project, evaluate developing priorities and plan for further efforts. In addition to the larger project reviews, progress and delineation reviews will be conducted as outlines in section '6.1 Delineation Review' below.

6.1 Delineation Review

Planned, periodic updates on the delineations will continue to be provided to the City at the City's request. The intent of these updates will be to promote dialogue between Arcadis, the City and FSWCD and allow all parties to make needed adjustments in the process. The updates are to include:

- A review of the delineations developed

- The most recent GIS files of the delineations

- Questions and concerns encountered during the delineation process which need addressed

At this time, questions and concerns arising during the delineation process will continue to be tracked within a GIS feature class maintained by FSWCD. This feature class will designate the location of the question or concern by means of a point feature and will have associated notes in the attribute table elaborating on the situation encountered. This file will be reviewable by Arcadis and/or Columbus staff at the regularly scheduled meetings or as needed using their GIS. Comments from City staff will be logged in the attribute table and returned to FSWCD for use with the delineations.

In addition, during the creation of stormwater and non-stormwater features associated with the base maps, notes are placed in the attribute table elaborating on questions or clarifications for the features created and how they relate to the most recent data provided by the City.

6.2 Primary Data for Deriving Watershed Delineations and Source

The following are the primary GIS layers used in the urban watershed delineations. These data are currently available, are derived from currently available data and/or include data that may be provided as updates by the City or other local municipalities.

- 1' Contours (City)

- Terrain model (City)

- City stormwater infrastructure (City)

- Stormwater infrastructure in county and surrounding municipalities (Stream Resource Geodatabase: FSWCD)

- Digital Elevation Model (derived from terrain: FSWCD)

- Building/Structure Layer (Auditor data; needs processing)

- Most recent aerial photography (City/State)

- Drainage mapping data and photos (FSWCD)

- Digital copy of engineering plans (City)

- Online aerial photography to assist in evaluating 'on the ground' conditions (Various)

6.3 Basemaps

To assist with the development of Blueprint Columbus, FSWD will be compiling basemaps for use in the planning process. Components of these basemaps will include: impervious services (buildings, roads, driveways, parking lots, sidewalks, and alleys), tree canopy, stormsewer structures (catch basins, crossover inlets & outlets, curb inlets, manholes, pipe inlets, and pipe outlets/outfalls), and other utility structures (fire hydrants, light posts, traffic lights poles, traffic signs, and other utility poles). In addition, DTMs and associated contours will be provided for the study areas.

The basemap production will be conducted using GIS in a heads-up digitizing capacity. Newly acquired aerial imagery, LiDAR point sets and a terrain model provided by the City will be used for deriving elevations and the locations of the various base map components. A combination of the City's current sewer layers, google streetview and other aerial imagery will be used to make the best determination of the types and locations of structures.

6.4 Project Adaptation

This project is being undertaken in conjunction with the City to implement components of Blueprint Columbus, and as such, this project is continuing with some needs and parameters undefined. FSWCD and the City are undertaking this work in a 'cooperative approach' capacity with the intent of maintaining a "one team" culture for the project to encourage a spirit of cooperation, mutual trust and respect. This approach is to play an important role in the continuation of this project as both FSWCD and the City refine the parameters of the project and better define the formatting of the resulting GIS data.

6.5 Project Constraints

The primary constraining aspects of this project with respect to completing watershed delineations are a lack of data, errant data, and incomplete data. Due to the nature of watersheds not corresponding to political boundaries, the accurate delineation of the watersheds will be limited by the availability and completeness of surface drainage and stormsewer infrastructure data. While the City and FSWCD maintain extensive stormwater datasets which are used for the delineations, the watersheds will encompass areas outside of the Columbus service area and Franklin County. To the maximum extent practical, delineations will be completed with the data available and/or provided to FSWCD during the course of the project. The intent of this project is to develop urban watershed delineations and basemaps with currently available data. The intent is not to create or otherwise locate additional data outside of what is addressed in this proposal.

In addition to the lack and completeness of data, errors in existing data may cause inaccuracies in the delineations. Examples of these errors have been explored by all parties and their possible impacts have been noted and accepted as part of this project. Elevation data obtained from the City will be used to determine surface water flow direction. As such, the accuracy of the delineations will be directly tied to the accuracy of the elevation information received from the City. It is expected that occasional, but minimal, field verification of features will be undertaken by the City, Arcadis, or consulting firms when uncertainty during the desktop work is encountered to verify the existence of features and/or the direction of flow within the stormwater network.

An additional known barrier to accurate delineations involves multiple flow directions within the stormwater network and the inclusion of combined sewers, sewer overflows and current construction projects related to stormwater management. The primary known area of concern for these conditions is the downtown area of Columbus.

6.6 Data Format

All delineations and associated attribution will be provided to the City in ESRI's file geodatabase format. Upon request and in coordination with City staff, an overview exhibit will be produced and maintained for the watershed delineation project showing areas of completion, areas to be

completed, areas of concern/interest, and additional supporting information relevant to the continuation and support of the project.

7.0 Intergovernmental Working Agreement

This working agreement is between the City of Columbus (City) and Franklin Soil and Water Conservation District (FSWCD). This agreement is effective upon execution by the City and terminates on March 31, 2019. This agreement is subject to the limitations of authorities, resources and policies of FSWCD and the City.

FSWCD is a government service agency that is funded by local government grants and state matching funds for the purpose of meeting local soil and water conservation needs. For the services described herein, Columbus shall compensate FSWCD in the form of a working agreement in the amount of \$170,000.00. FSWCD reserves the rights to expend these funds as needed to meet service agreements, overhead, and general program costs. While amounts shown are calculated off of anticipated assistance needed, compensation is not intended to be a fee for service arrangement. Additional services may be provided upon review of available needs, funding and resources.

It is Mutually Agreed:

That FSWCD is a conservation, technical and education service agency and therefore is not granted regulatory authority in the Ohio Revised Code.

That the working relationship will be defined to include lines of communications with appropriate departments.

That the City and FSWCD will meet when necessary to review and coordinate activities with the aim of developing a multi-discipline approach to resource management.

That all parties will provide feedback in a timely manner when requested to assist with project development.

That all parties will review quality of service and address concerns as they arise and at least every six months.

That this working agreement may be amended or terminated at any time by mutual consent, or the agreement may be terminated by either party giving sixty (60) days notice in writing to the other.

Urban Watershed Delineations for the City of Columbus: 2018		
Project	Time Frame	Working Agreement Amount
Undertake urban watershed delineations for the City of Columbus and develop associated basemaps as described herein.	Through March 31, 2019	\$170,000.00