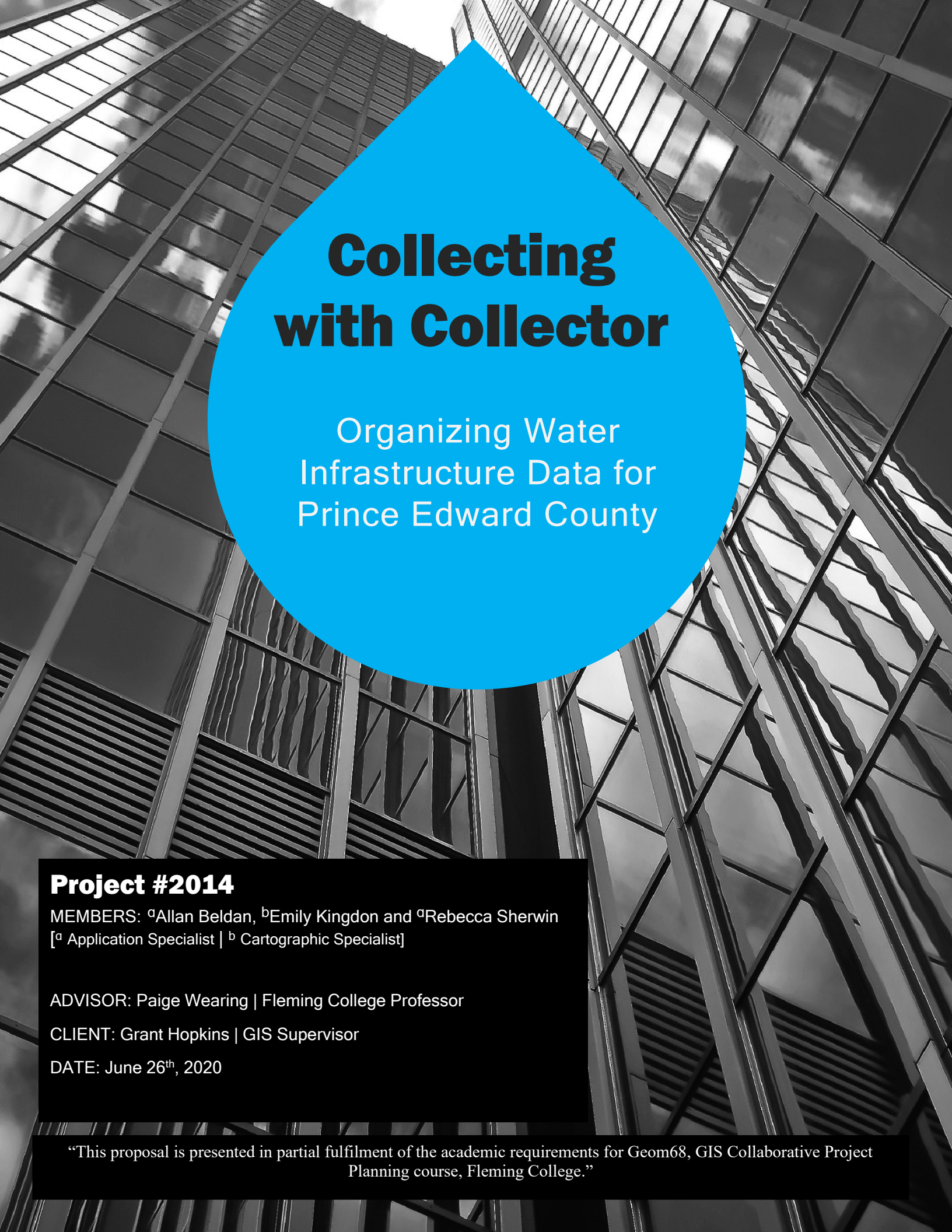

Collecting with Collector

Organizing Water Infrastructure Data for Prince Edward County

Project #2014

MEMBERS: [a]Allan Beldan, [b]Emily Kingdon and [a]Rebecca Sherwin
[[a] Application Specialist | [b] Cartographic Specialist]

ADVISOR: Paige Wearing | Fleming College Professor

CLIENT: Grant Hopkins | GIS Supervisor

DATE: June 26th, 2020

"This proposal is presented in partial fulfilment of the academic requirements for Geom68, GIS Collaborative Project Planning course, Fleming College."

Abstract

Prince Edward County lies in Eastern Ontario and has an unreliable form of water infrastructure data collection. The County currently uses paper, screenshots, and emails for updating data which can lead to interpretations and inconsistencies in the data. The client of this project has requested for a fully digital method to enable the water department workers to collect and update water infrastructure data. The client has recommended Collector for ArcGIS as it is used in other departments in The County. The deliverables of this project are documentation on how the client can set up Collector and a worker's user manual. The solution involved publishing the data as a feature service, adding it to a web map in ArcGIS Online and configuring through Collector. As Collector is a mobile app, it is recommended that water department employees update their version of the app regularly as Esri is known to update their products frequently. This configuration of Collector allows the user to easily update/add data with the visual aid of an attractive basemap and intuitive interface.

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Abbreviations

ABBREVIATION	DEFINITION
AGOL	ArcGIS Online
QA/QC	Quality Assurance/ Quality Control
HSV	Hue, Saturation and Value
WGS	World Geodetic System
WKID	Well-Known ID
OSM	Open Street Map
FC	Feature Class
SQL	Structure Query Language

Technology Definitions

NAME	PURPOSE
Collector for ArcGIS	Mobile app used to collect, and update data
SQL Server	Database used for data storage
ArcGIS Server	Server for creating and managing services, applications, and data
ArcGIS Online (AGOL)	Web based platform to create, host and manage web maps.

Introduction

Prince Edward County's (corporately styled as The County) current form for collecting outdoor data for its water department is through paper, screenshots and emails, which leaves the GIS department constantly struggling to maintain and understand the data they receive. The client, Grant Hopkins, the GIS supervisor for The County, would like to be able to remove paper collection and find a fully digital way of collecting data from the water department. The goal is to develop a tool that is easy to use across a wide spectrum of users and allows in-field crews to update the Geodatabase within SQL Server live. The County already uses Collector for ArcGIS for collecting data outside in other departments. However, the Water Department maintains a largely separate system, and thus has been resistant to more closely integrating their systems with the GIS department due to concerns over security, and the need to re-train some employees. This project investigated several alternative apps to Collector, and some did present certain advantages in flexibility, however, the client's preference is that this project maintains an Esri environment for the time being.

Client Information

Grant Hopkins GISP | GIS Supervisor

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Phone: (613) 476-2148 ext. 1064

Fax: (613) 471-2050

Office: 332 Main Street, Picton, Ontario

Study Area

The County is a peninsula in southern Ontario, on Lake Ontario (Figure 1). The county holds a population of around 25,000 people and covers approximately 1,050.45 km^2 (The County of Prince Edward, n.d.). The area of focus was in County's largest community, Picton, which lies on the eastern shore. This is the location of the municipality office where the client works. It has a population of around 4700 and is 5 km^2 (Statistics Canada, 2017).

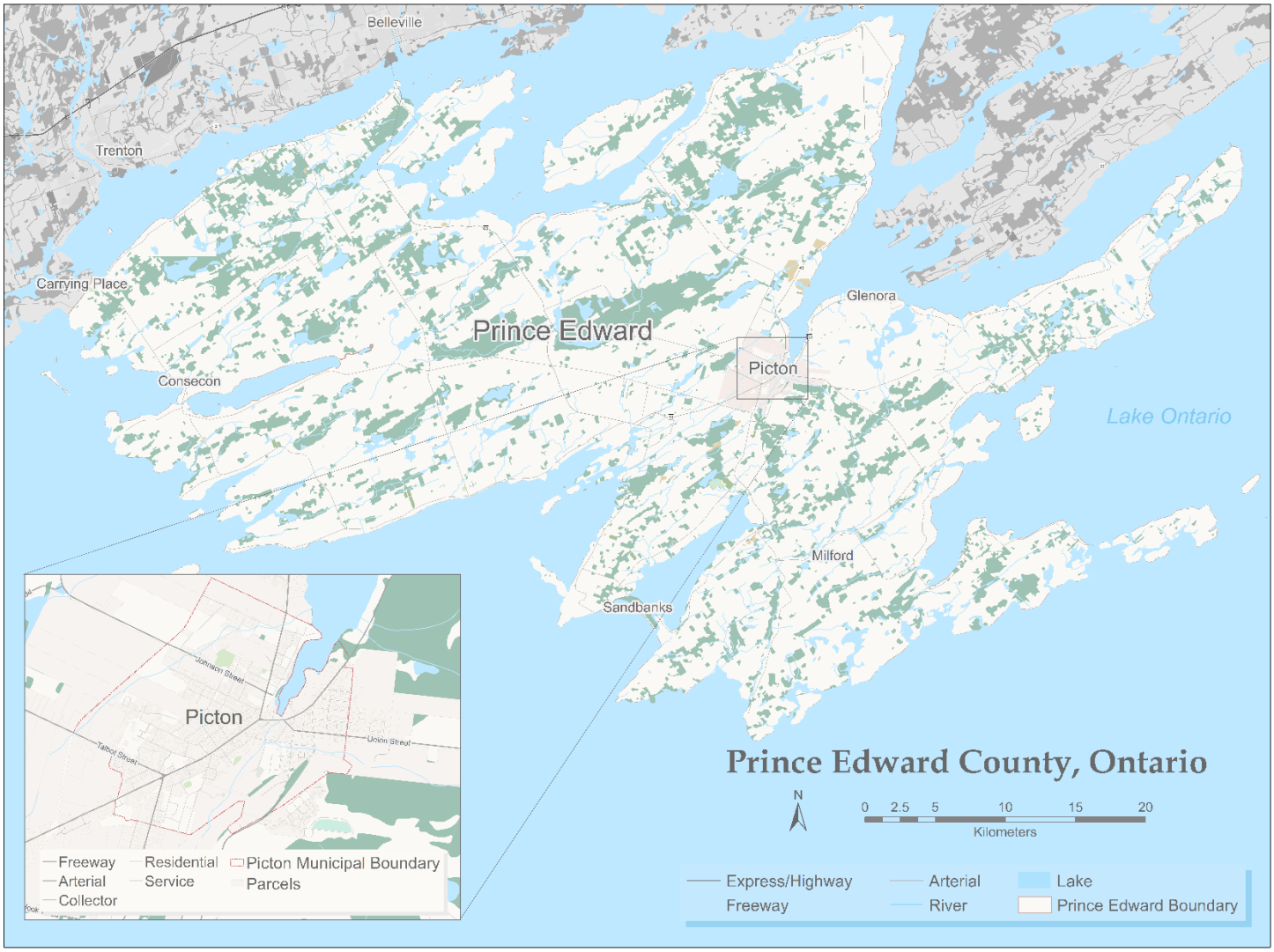


Figure 1. A map of Prince Edward County and surrounding area

Objectives

1. Able to collect data while working outside on infrastructure projects
2. Optimization of user-interface in Collector

Deliverables

- ✓ Client Documentation
- ✓ Worker Documentation

Methodology

Requirements

This is an academic project, which must meet certain requirements in order to demonstrate the team's abilities. This chart shows which of these requirements were met and how (Figure 2).

Data Acquisition and/or Pre-processing	Client Data Mock Data Basemap Data
Database Design and/or Processing	Formatting Domains and Attachments SQL Server
Programming and/or Customization	Data Preparation Python Script Reverse Geocoding Python Script Popup Customization with Arcade Expressions
Visualization	Basemap Symbology of Client and Mock Data
Web Design	ArcGIS Online Popups Configuration of Collector for ArcGIS

Figure 2. Table of requirements and how they were met

This project's solution involved three tiers: data, middle and web. There was the mock data stored in SQL Server (data tier). This was published as a service in ArcGIS Server (middle tier). From there, the service was brought into a web map in ArcGIS Online (web tier). Web maps from ArcGIS Online could then be accessed through Collector for ArcGIS (Figure 3).

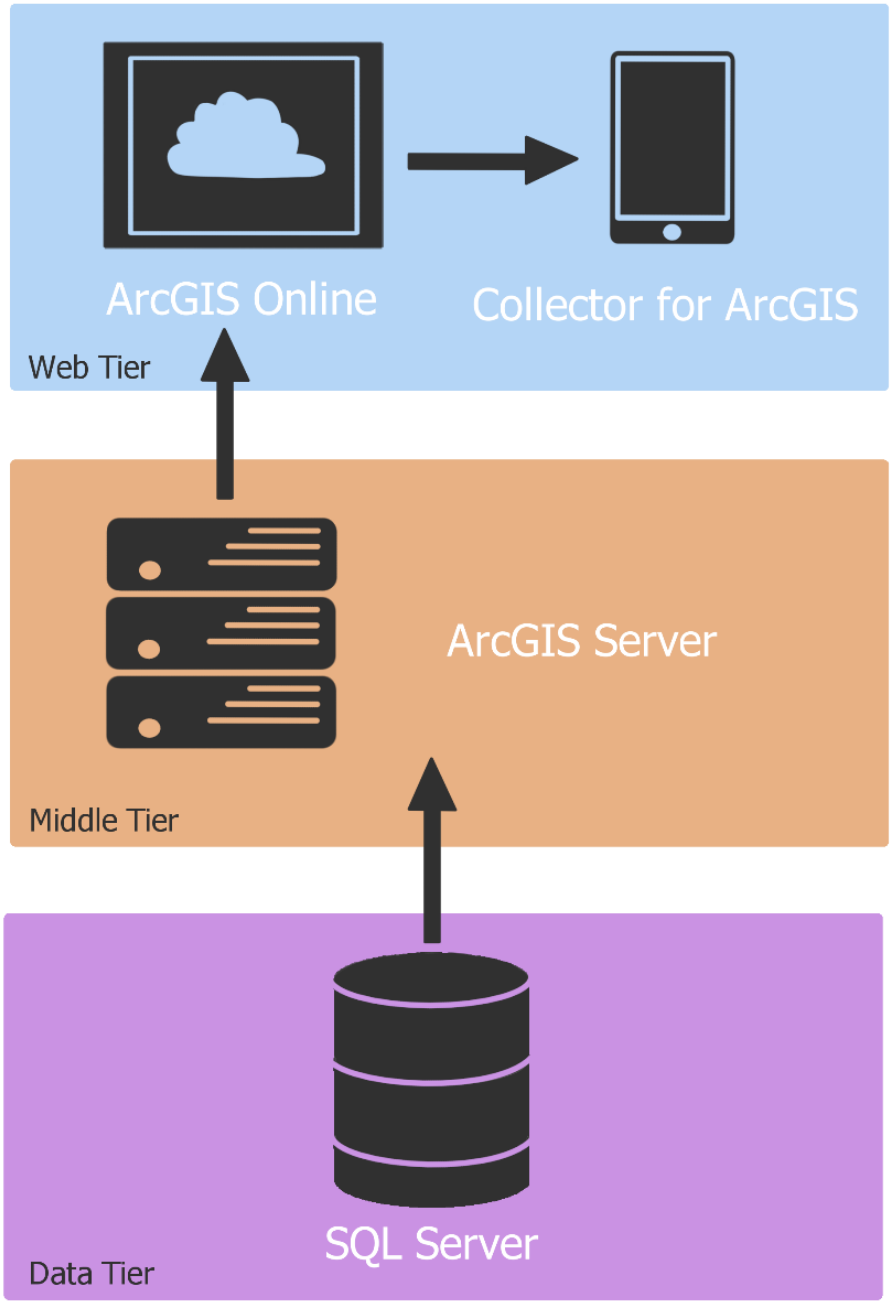


Figure 3. A high-level overview of the workflow, from server to Collector

SQL Server

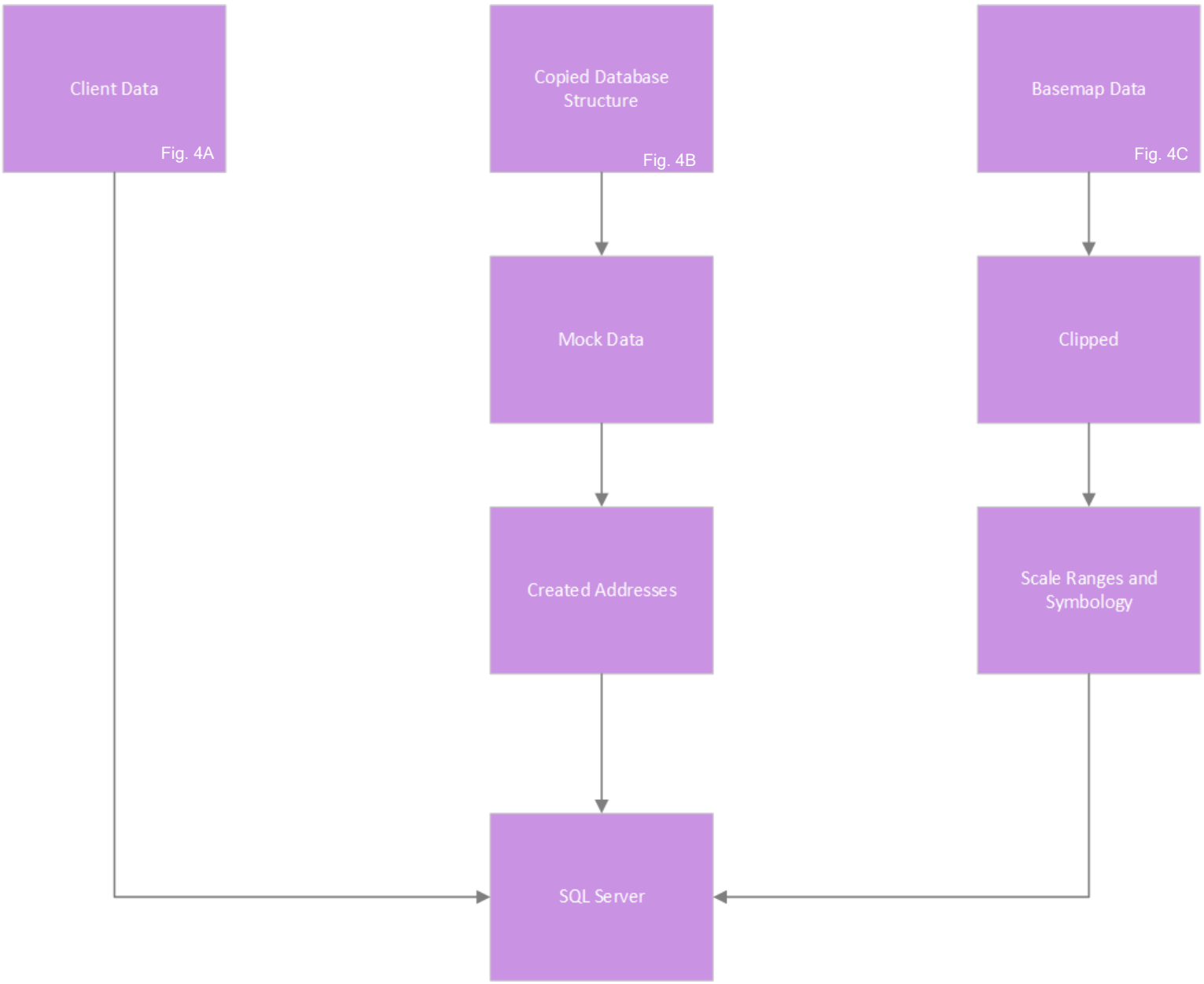


Figure 4. A diagram of the workflow for entering data into SQL Server

Client Data (Figure 4A)

- Used as data structure template (Table 1)
- Attachments were enabled to allow pictures to be uploaded
- Use was restricted due to security concerns (not for use in final submission or archiving)

Basemap Data (Figure 4C)

- Set multiple scales for zoom capabilities
- Altered symbology at each scale
- Copied and pasted data into SQL Server
- Downloaded data from Open Source websites *(Table 4)*
- Clipped data to the study area
- Projected data to WGS 1984 Web Mercator Auxiliary Sphere

Mock Data (Figure 4B)

- Created features from Naperville data structure (Table 2)
- Data was processed with a python script to reverse geocode the data, to match the client's data (Data used for address locator in Table 3)
- Copied and pasted data into SQL Server
- Attachments were enabled to allow pictures to be uploaded

Table 1. A metadata table for feature classes in client data, all features were projected to WGS_1984_Web_Mercator_Auxiliary_Sphere

Collaboration #2014
Collecting with Collector
Base Map Metadata

File Name	Feature Type	Number of Records	Scale Range	Author	Date of Creation	Date Acquired
Water system Valves	Point	17	All	G.Hopkins	May 27 2020	May 29 2020
Water Curb Stop Valves	Point	13	All	G.Hopkins	May 27 2020	May 29 2020
Water Test Stations	Point	0	All	G.Hopkins	May 27 2020	May 29 2020
Water Control Valves	Point	0	All	G.Hopkins	May 27 2020	May 29 2020
Water Abandoned Points	Point	0	All	G.Hopkins	May 27 2020	May 29 2020
Water Services Connections	Point	2	All	G.Hopkins	May 27 2020	May 29 2020
Water Network Structures	Point	0	All	G.Hopkins	May 27 2020	May 29 2020
Water Pumps	Point	0	All	G.Hopkins	May 27 2020	May 29 2020
Water Hydrants	Point	6	All	G.Hopkins	May 27 2020	May 29 2020
Water Elevation Points	Point	0	All	G.Hopkins	May 27 2020	May 29 2020
Water Fittings	Point	23	All	G.Hopkins	May 27 2020	May 29 2020
Water Sampling Stations	Point	1	All	G.Hopkins	May 27 2020	May 29 2020
WaterDistribution_Net_1_Junctions	Point	1	All	G.Hopkins	May 27 2020	May 29 2020
Water Lateral Lines	Line	14	All	G.Hopkins	May 27 2020	May 29 2020
Water Construction Lines	Line	0	All	G.Hopkins	May 27 2020	May 29 2020
Water Casings	Line	0	All	G.Hopkins	May 27 2020	May 29 2020
Water Mains	Line	22	All	G.Hopkins	May 27 2020	May 29 2020
Water Abandoned Lines	Line	0	All	G.Hopkins	May 27 2020	May 29 2020
Water Pressure Zones	Polygon	0	All	G.Hopkins	May 27 2020	May 29 2020
Water Operational Areas	Polygon	0	All	G.Hopkins	May 27 2020	May 29 2020

Table 2. A metadata table for feature classes in mock data, all features were projected to WGS_1984_Web_Mercator_Auxiliary_Sphere

Collaboration #2014
Collecting with Collector
Student Data Metadata

File Name	Feature Type	Number of Records	Scale Range	Author	Date of Creation	Date Acquired	Description
SystemValve	Point	5	All	R.Sherwin	June 1 2020	May 29 2020	Water System Valve
CurbStopValves	Point	5	All	A.Beldan	May 282020	May 29 2020	Water Curb Stop Valve
ControlValve	Point	5	All	A.Beldan	May 28 2020	May 29 2020	Water Control Valve
ServicesConnection	Point	5	All	R.Sherwin	June 1 2020	May 29 2020	Water Service Connection
NetworkStructure	Point	5	All	E.Kingdon	May 29 2020	May 29 2020	Water Network Structure
Pump	Point	5	All	R.Sherwin	June 1 2020	May 29 2020	Water Pump
Hydrant	Point	14	All	E.Kingdon	May 28 2020	May 29 2020	Water Hydrant
ElevationPt	Point	5	All			May 29 2020	Water Elevation Point
Fitting	Point	5	All	A.Beldan	May 28 2020	May 29 2020	Water Fitting
SamplingStation	Point	5	All	R.Sherwin	June 1 2020	May 29 2020	Water Sampling Station
PictonWaterDistribution_Net_Junctions	Point	42	All			May 29 2020	Water Distribution Net Junction
LateralLine	Line	12	All	E.Kingdon	May 29 2020	May 29 2020	Water Lateral Line
Main	Line	10	All	E.Kingdon	May 29 2020	May 29 2020	Water Main
Casing	Line	5	All	A.Beldan	May 28 2020	May 29 2020	Water Casing
Structure	Polygon	1	All			May 29 2020	Water Structure
PressureZone	Polygon	0	All			May 29 2020	Water Pressure Zone

Table 3. A metadata table of the Ontario Road Network data used for generating addresses for mock data, feature projected to WGS_1984_Web_Mercator_Auxiliary_Sphere

Collaboration 2014 Collecting with Collector Reverse Geocoding Data	*Scale Range Options:* Full extent
File Name	**Ontario_Road_Network__ORN__Segment_With_Address**
Actual Name	Ontario_Road_Network__ORN__Segment_With_Address
Feature Type	Line
Number of Records	601623
Scale Range	Full extent
Author	GeoHub
Date of Creation	March 17 2020
Date Acquired	June 5 2020
Description	Data was clipped to Prince Edward County boundaries and projected
Comments	Used only for reference data for creation of address locator

Table 4. A metadata table for feature classes in the basemap (continued on next page), all features were projected to WGS_1984_Web_Mercator_Auxiliary_Sphere

Collaboration #2014 Collecting with Collector Base Map Metadata (Part 1)

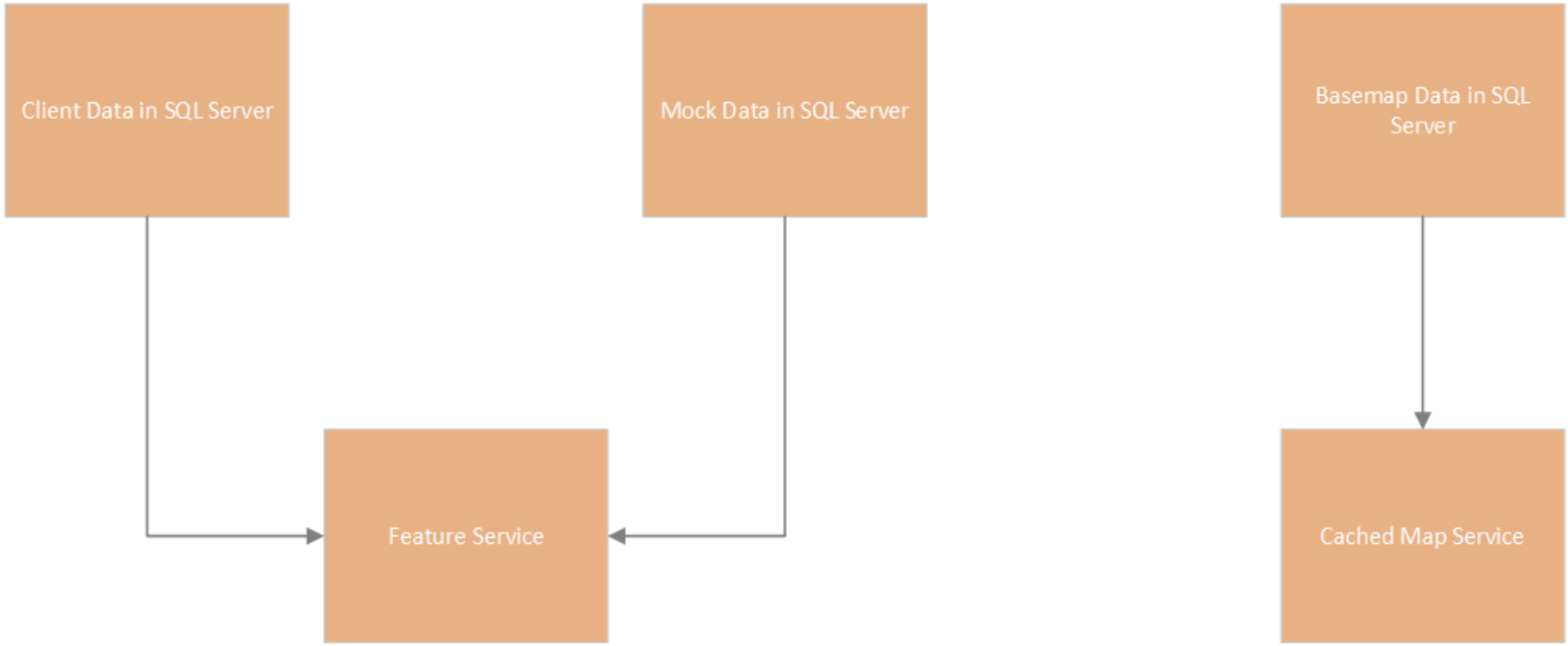
Layer Order	File Name	Actual Name	Feature Type	Number of Records	Scale Range	Author	Date of Creation	Date Acquired
1	**T1SmaleScale_ LabelsAnno**	SmallScale_Labels	Point	11	<None> to 1:150000	Emily Kingdon	June 5 2020	June 5 2020
2	**T2SmaleScale_ LabelsAnno**	SmallScale_Labels	Point	10	1:149999 to 1:100000	Emily Kingdon	June 5 2020	June 5 2020
3	**T3SmaleScale_ LabelsAnno**	SmallScale_Labels	Point	10	1:99999 to1:60000	Emily Kingdon	June 5 2020	June 5 2020
4	**T4SmaleScale_ LabelsAnno**	SmallScale_Labels	Point	10	1:59999 to 1:25000	Emily Kingdon	June 5 2020	June 5 2020
5	**T5SmaleScale_ LabelsAnno**	SmallScale_Labels	Point	10	1:24999 to 1:15000	Emily Kingdon	June 5 2020	June 5 2020
6	**T1Roads_1_ Clip3aAnnoa**	Roads_1_Clip	Line	221	1:300000 to 1: 175000	Emily Kingdon	June 5 2020	June 5 2020
7	**T1Roads_1_ Clip3bAnnob**	Roads_1_Clip	Line	226	1: 174999 to 1:80000	Emily Kingdon	June 5 2020	June 5 2020
8	**T1Roads_1_ Clip3cAnnoc**	Roads_1_Clip	Line	228	1:79999 to 1:40000	Emily Kingdon	June 5 2020	June 5 2020
9	**T2Roads_1_ Clip3Annoa**	Roads_1_Clip	Line	393	1:39999 to 1:25000	Emily Kingdon	June 5 2020	June 5 2020
10	**T2Roads_1_ Clip3bAnnob**	Roads_1_Clip	Line	404	1:24999 to 1:16001	Emily Kingdon	June 5 2020	June 5 2020

Collaboration #2014 Collecting with Collector Base Map Metadata (Part 2)

	File Name	Actual Name	Feature Type	Number of Records	Scale Range	Author	Date of Creation	Date Acquired
11	**T3Roads_1_Clip3Anno**	Roads_1_Clip	Line	382	1:16000 to 1:10000	Emily Kingdon	June 5 2020	June 5 2020
12	**T4Roads_1_Clip3Anno**	Roads_1_Clip	Line	2313	1:9999 to 1:8000	Emily Kingdon	June 5 2020	June 5 2020
13	**T5Roads_1_ClipAnno**	Roads_1_Clip	Line	4053	1:7999 to <None>	Emily Kingdon	June 5 2020	June 5 2020
14	**Rivers_SM_Clip1**	Rivers_SM_Clip 1	Line	2093	All Scale Ranges	OSM	n.d.	February 13 2019
15	**Roads_1_Clip3c**	Roads_1_Clip	Line	8129	All Scale Ranges	OSM	n.d.	February 13 2020
16	**Parcels1_Project**	Parcels1_Project	Polygon	5518	All Scale Ranges	The County of Prince Edward	May, 2010	March 6 2020
17	**Picton_Sim**	Picton_Sim	Polygon	1	<None> to 1:50000, 1:49999 to 1:20000, and 1:19999 to 1:11000	The County of Prince Edward/ Emily Kingdon	n.d.	March 6 2020
18	**Lakes_smo_Clip**	Lakes_smo_Clip	Polygon	575	All Scale Ranges	OSM	n.d.	February 13 2020
19	**Landuse_SM_Clip**	Landuse_SM_Clip	Polygon	4040	All Scale Ranges	OSM	n.d.	February 13 2020
20	**Background_1_Clip**	Background_1_Clip	Polygon	1	All Scale Ranges	Emily Kingdon	February 13 2020	February 13 2020

21	**Buildings_1_Clip**	Buildings_1_Clip	Polygon	2609	1:10999 to 1:8000, and 1:7999 to <None>	OSM	n.d.	February 13 2020
22	**Picton_Boundary_1**	CityLimits_PictonLG	Polygon	1	1:7999 to <None>	The County of Prince Edward	March 22 2020	March 22 2020

ArcGIS Server



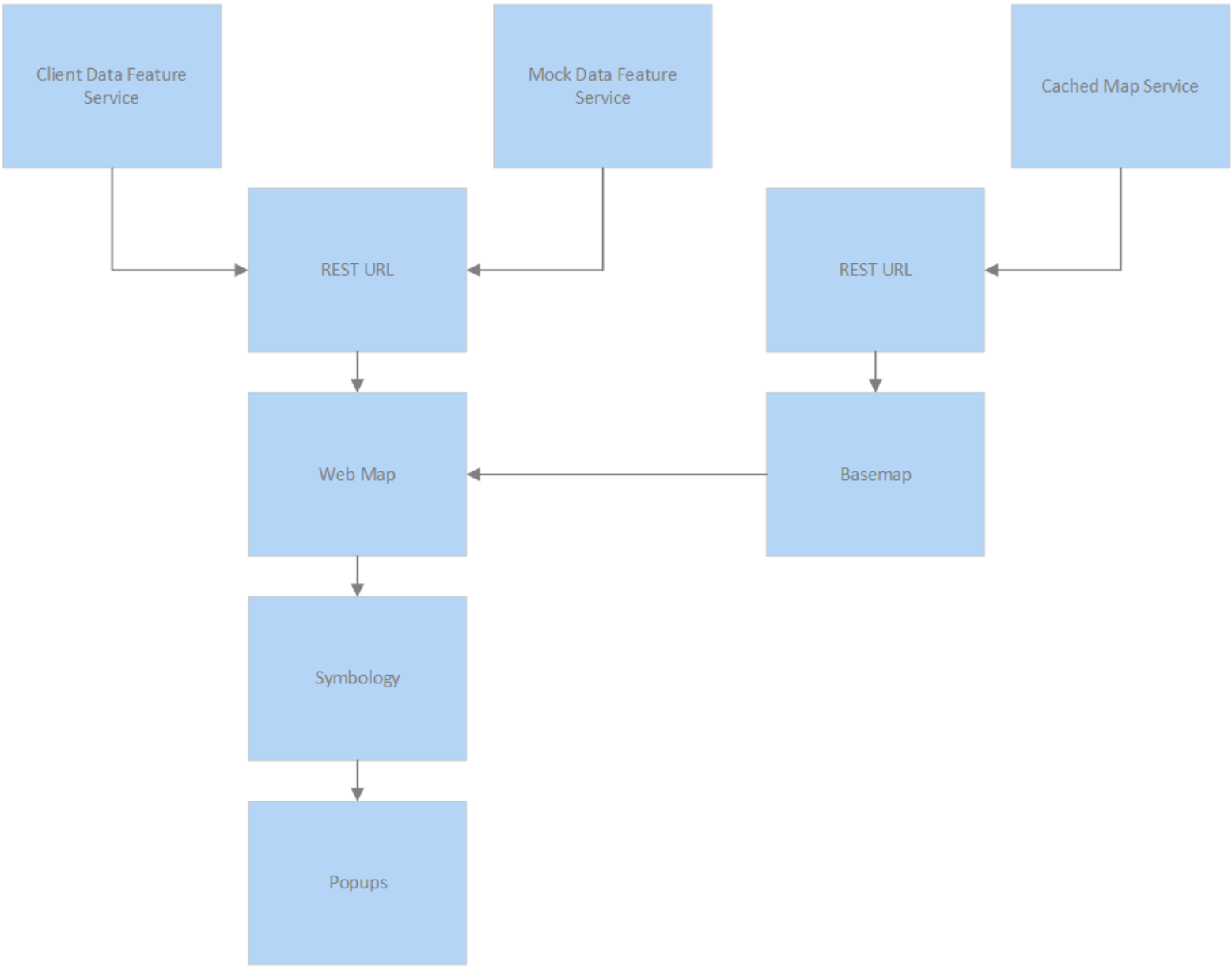
Client Data in SQL Server/ Mock Data in SQL Server

- Published to ArcGIS Server as feature service with feature access enabled

Basemap Data

- Published to ArcGIS Server as a cached map service
- For offline map use *Allow Clients to Export Tiles was* enabled

ArcGIS Online



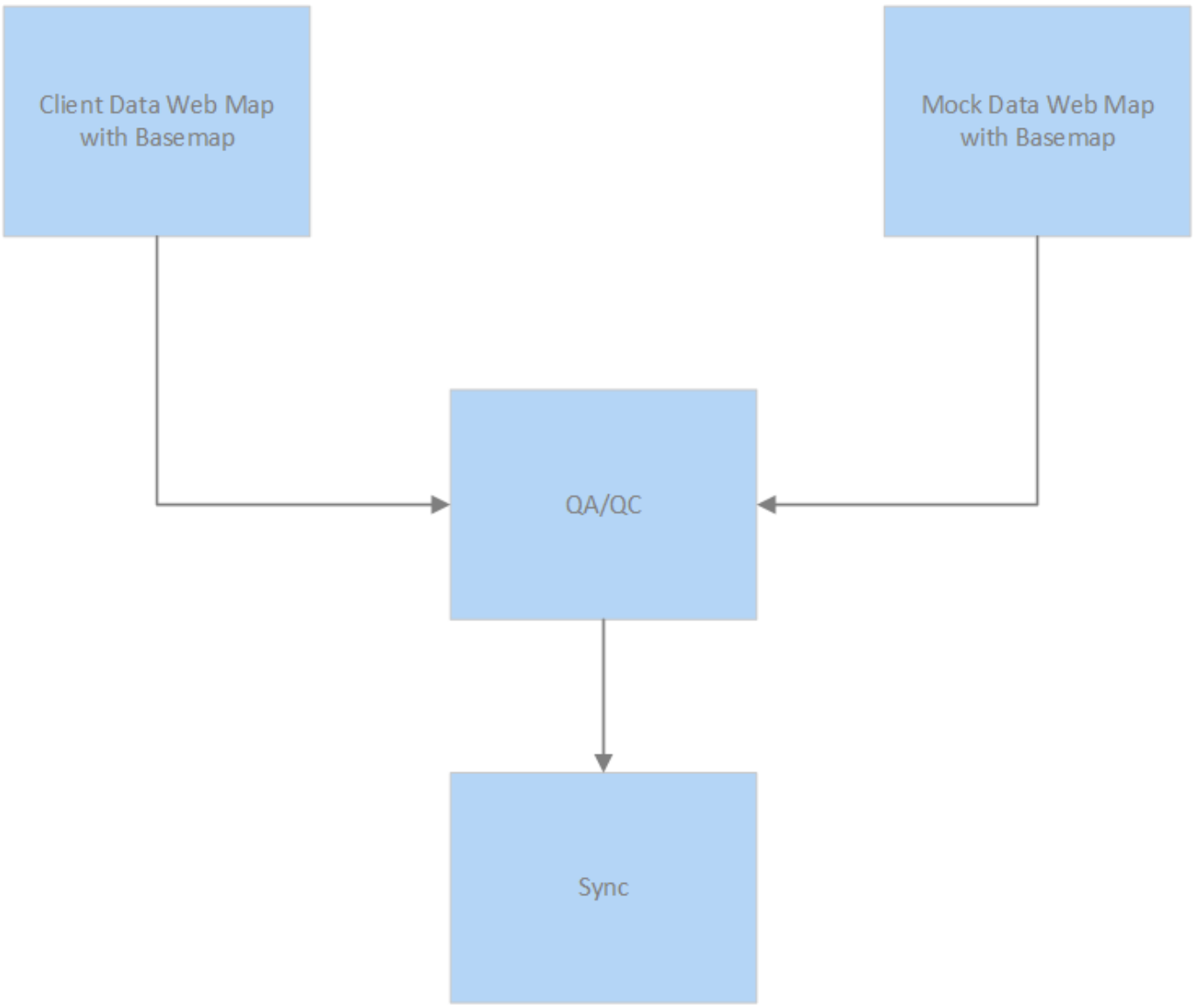
Client Data Feature Service/ Mock Data Feature Service

- ArcGIS Server REST URL added to ArcGIS online
- Data added to a new web map
- ESRI standard for water infrastructure symbology was applied to data
- Pop-ups configured using arcade expressions to show relevant information

Cached Map Service

- ArcGIS Server REST URL added to ArcGIS online
- Map was used as the basemap for the web map

Collector



Client Data Feature Service/ Mock Data Feature Service

- Test synchronization from app to SQL Server
- Client data was not used in final submission or as project archive

Results

1 Able to collect data while working outside on Infrastructure Projects

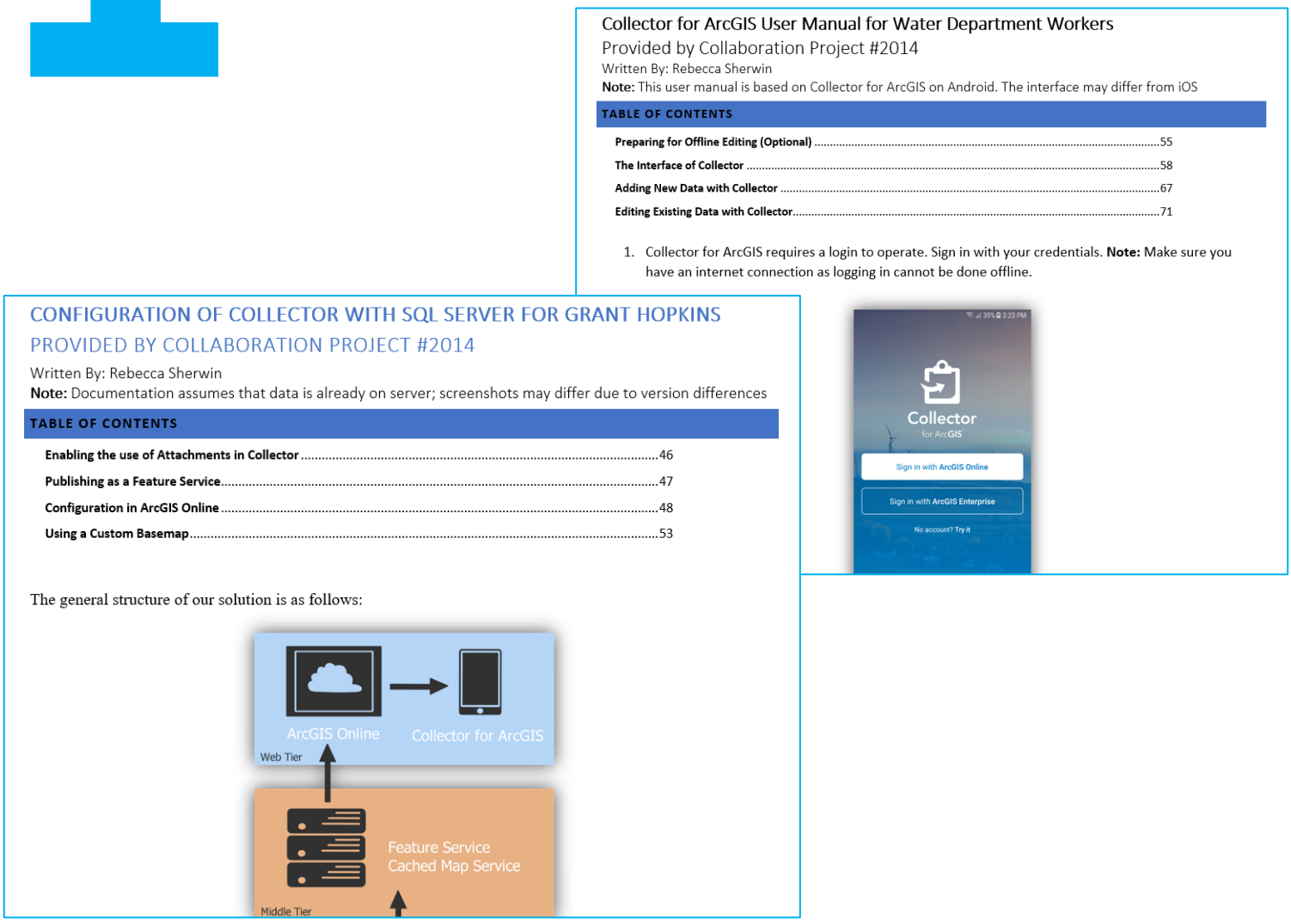


Figure 5. Title pages of the client (left) and worker (right) documentation

> Documentation for workers was supplied to facilitate a user-friendly experience with Collector, especially for workers who are not familiar with technology (Figure 5). Downloading the configuration of Collector is not possible, so the documentation provided for the client helps fulfill the main objective by instructing the client on how to configure this project's solution with the County's infrastructure (Appendix A)

2 Optimization of User-interface in Collector

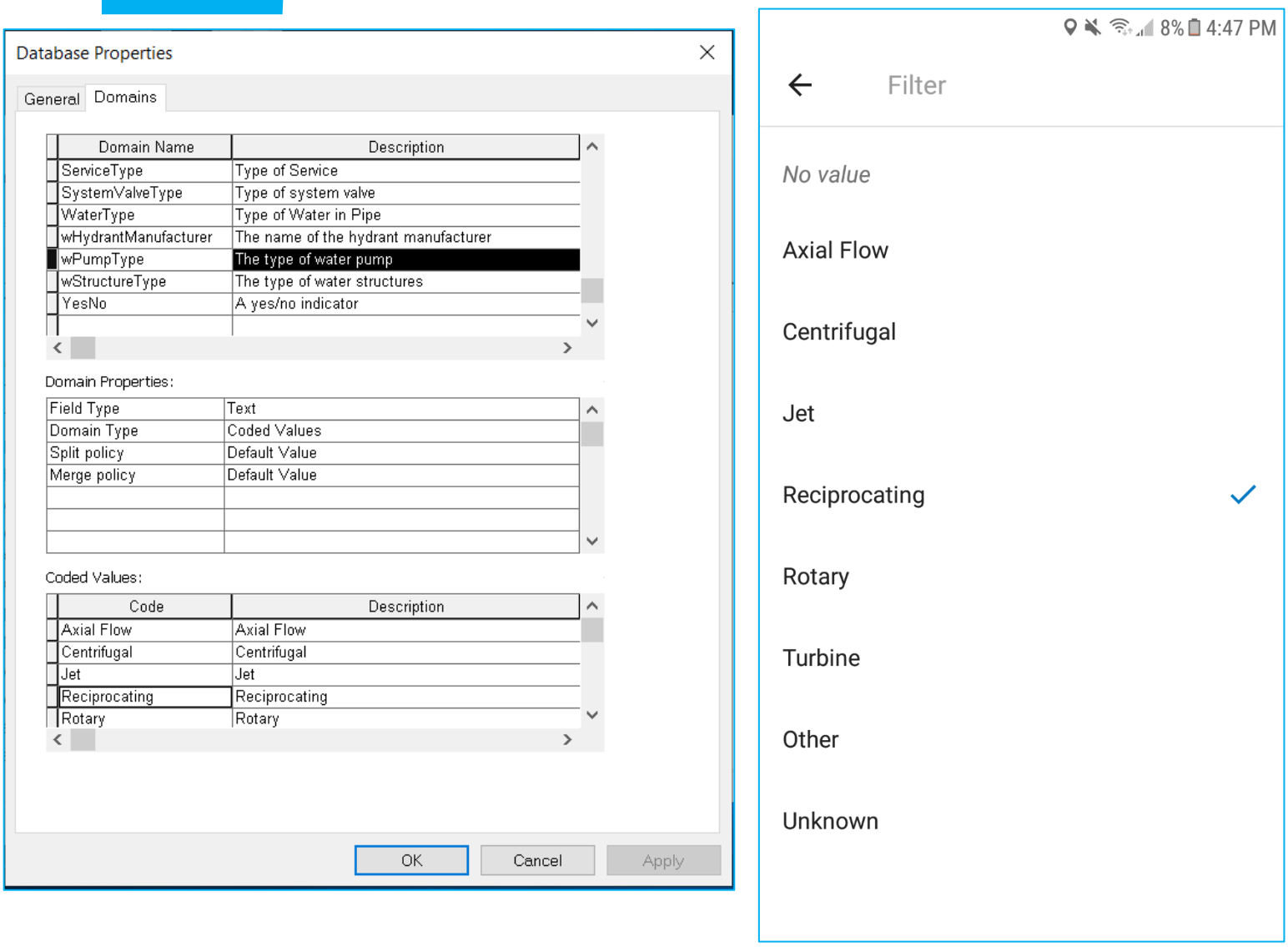
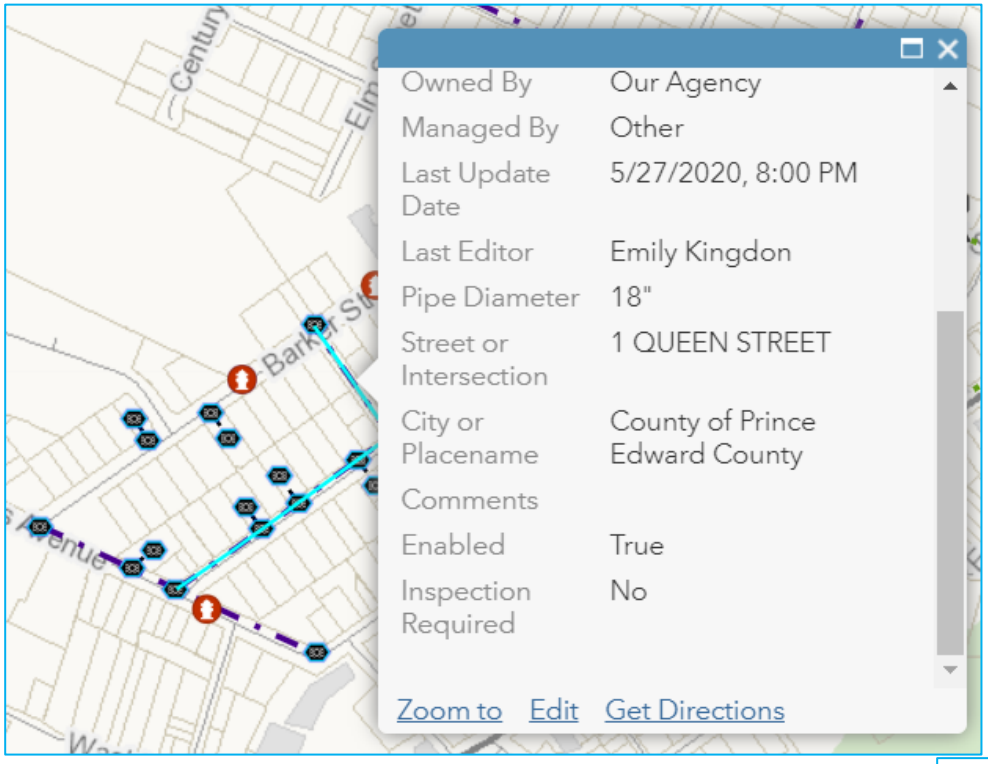


Figure 6. A screenshot of domains in mock data (left) and how it is displayed in Collector (right)

The domains provide a user-friendly interface when using Collector by allowing the user to choose from a list of coded values (Figure 6). These options are in the app as dropdown menus. As per the client's needs, dropdowns were implemented to support the water department employees' range of technological skills.



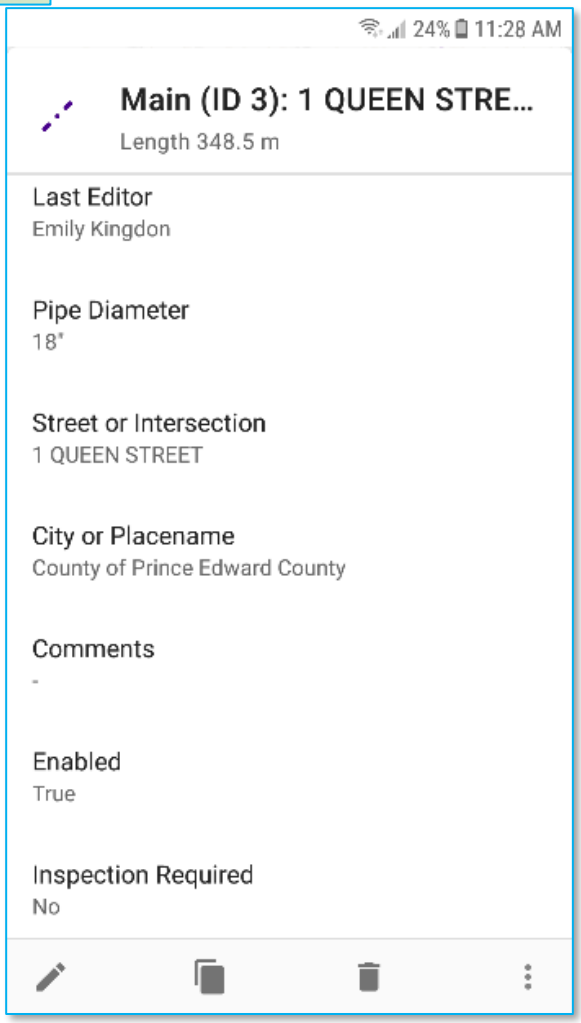


Figure 7. Screenshots of popups in ArcGIS Online (above) and in Collector (right)

The customization of popups in ArcGIS Online displays the information to the user with clarity. The title of the popup has the ID number and the address to aid in locating the feature (Figure 7, top). The Arcade expression tells the user if it has been greater than a year since an inspection. This is seen under the heading *Inspection Required* (Figure 7, right).

The symbology in the web map and in Collector was based on Esri's standard water utility symbology, specifically in ArcMap. This was to ensure that the user was familiar with the symbols and could associate them to the features. Since the symbology available in ArcGIS Online is slightly different than in ArcMap, the closest matching symbols were used (Figures 8 & 9).

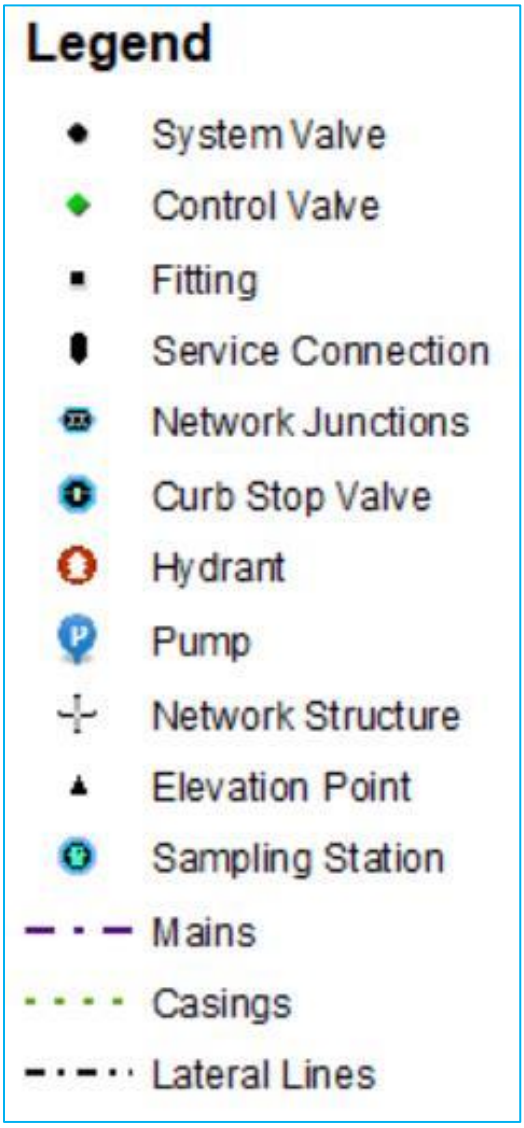


Figure 8. The symbology of mock and client data used in Collector

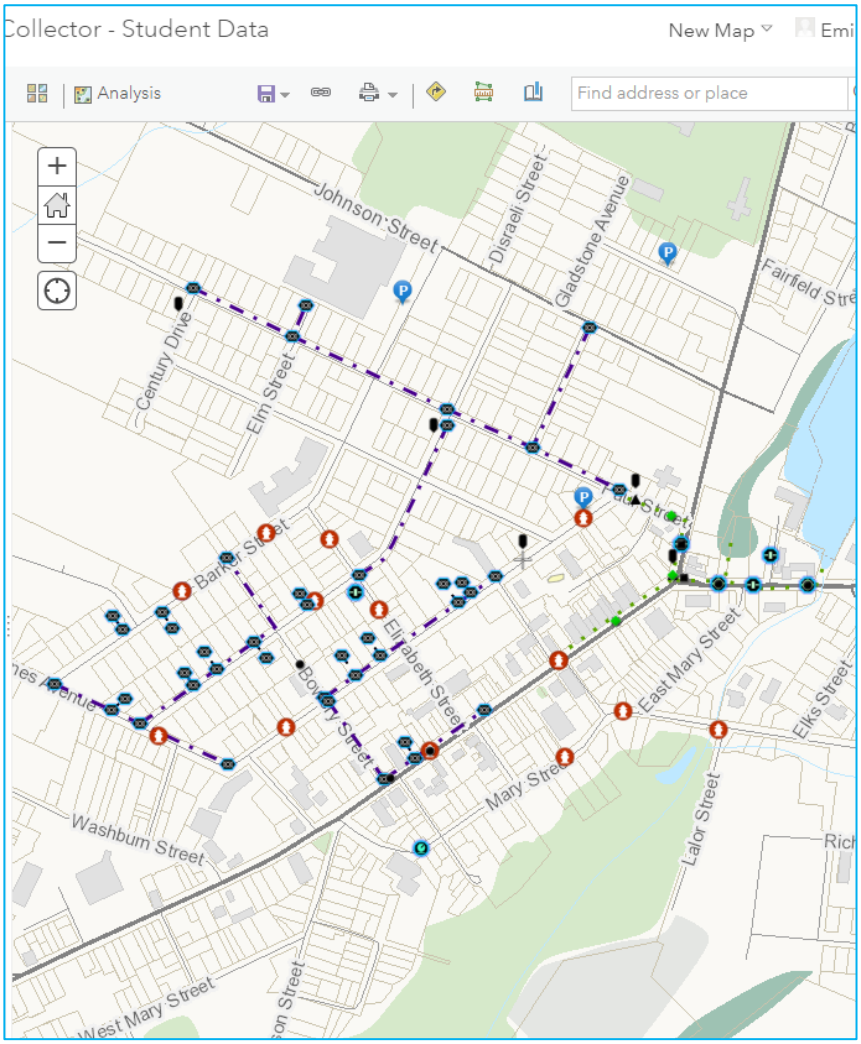
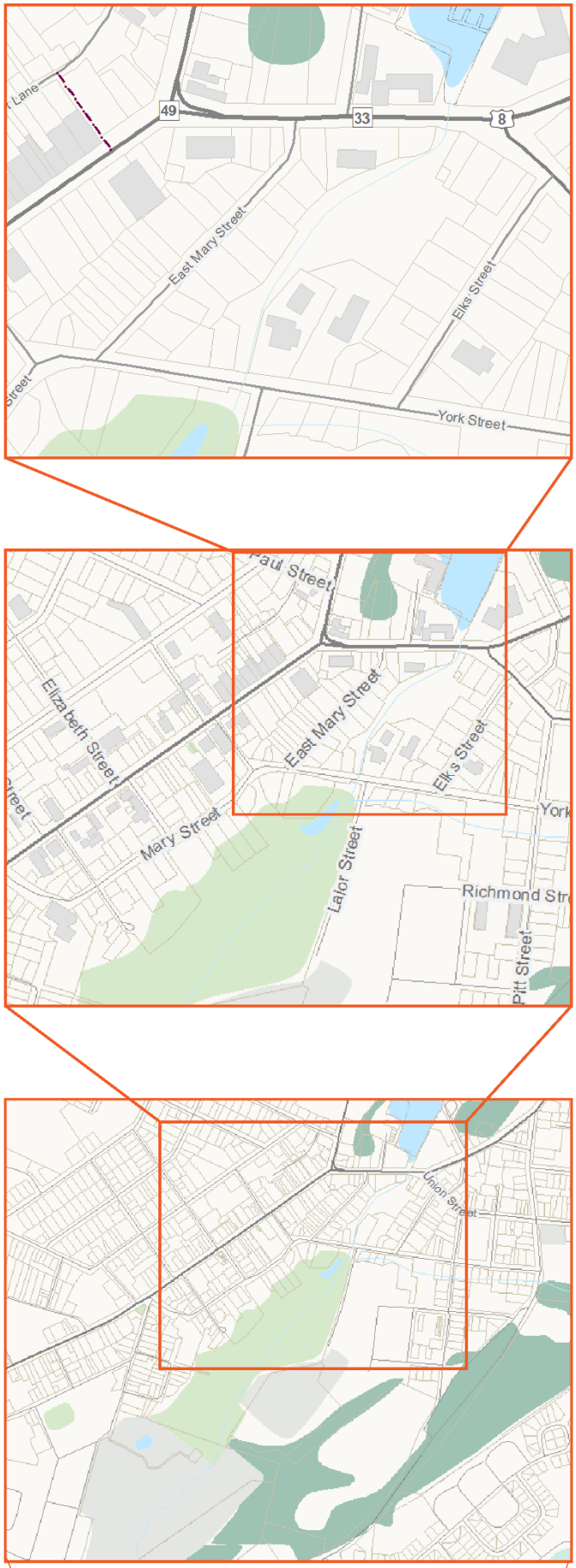
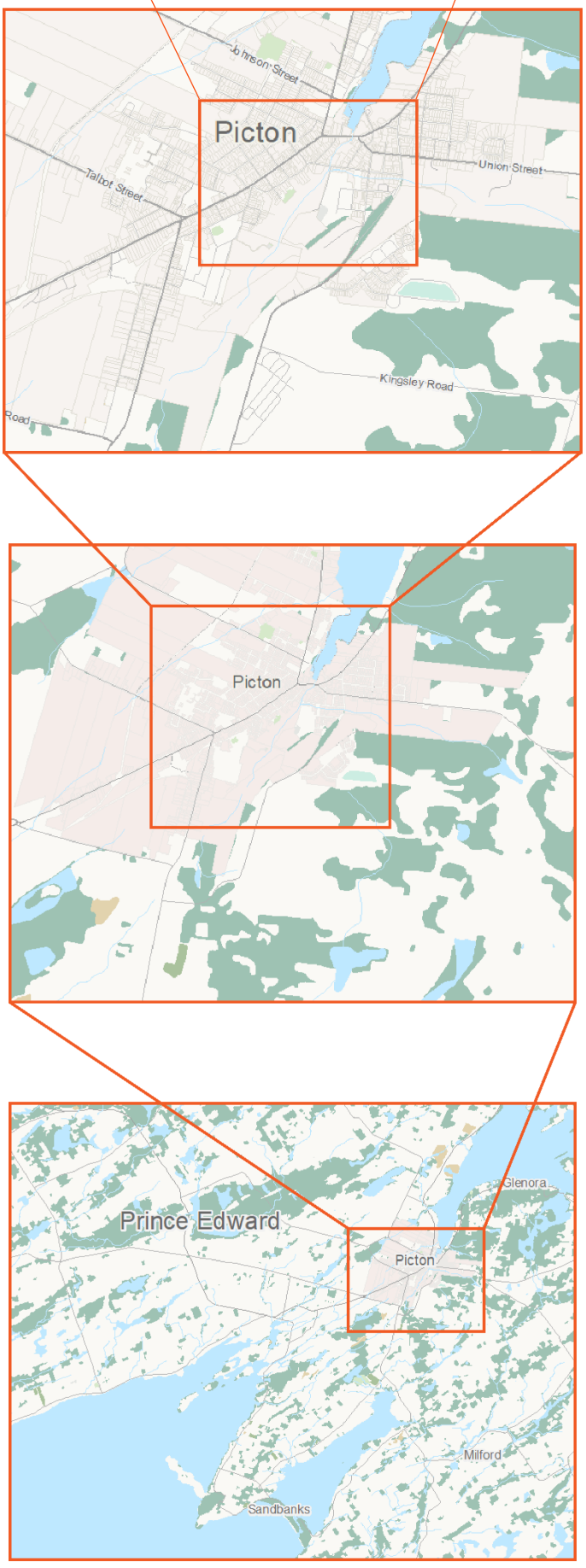


Figure 9. A screenshot of the mock data with symbology applied in ArcGIS Online

Figure 10. Examples of the different zoom levels in Collector




Johnson Street
Picton
Union Street
Talbot Street
Kingsley Road
Road
Picton
Prince Edward
Glenora
Picton
Milford
Sandbanks

The basemap was created to provide a foundation for the County's water department to use in conjunction with Collector. It is in a user-friendly format, that provides the user with the capability to zoom to street level. The colour scheme was based on a typical basic reference map colour scheme. Muted tones were used to avoid distracting the user from the data in Collector. This makes it ideal for large- and small-scale edits of features. Symbology was adjusted at each level to create smooth transitions from one scale to the next by changing the colour, HSV, width/size and shape of the features. Road features were grouped based on Canadian road hierarchy. The symbology was designed to reflect the hierarchy, with express/highway having the largest and darkest lines and on the other end residential, with the lightest and thinnest lines. The pedestrian features were symbolized to be recognizably different from the roads, with a deep red and dotted dashed line. Labels for road features were only created at appropriate scales so that the map was not cluttered.

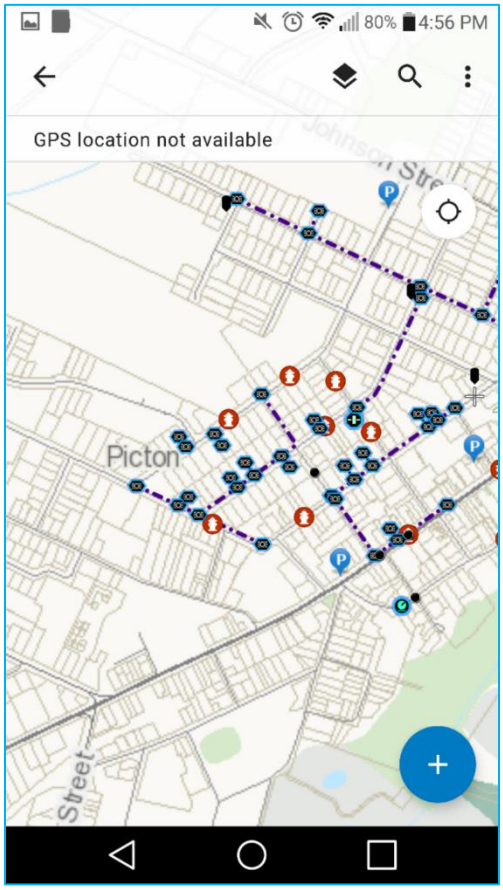


Figure 11. A screenshot of symbology in Collector

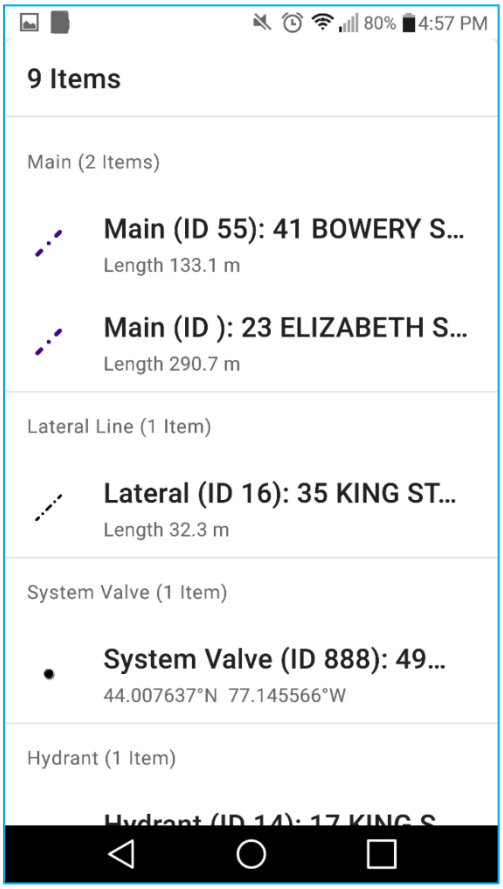


Figure 12. A screenshot of a list of features after clicking on a location in Collector

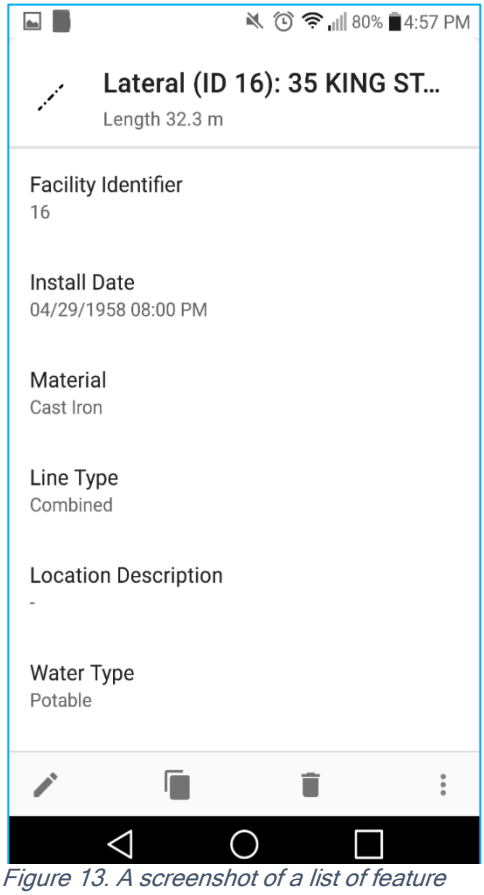


Figure 13. A screenshot of a list of feature attributes in Collector

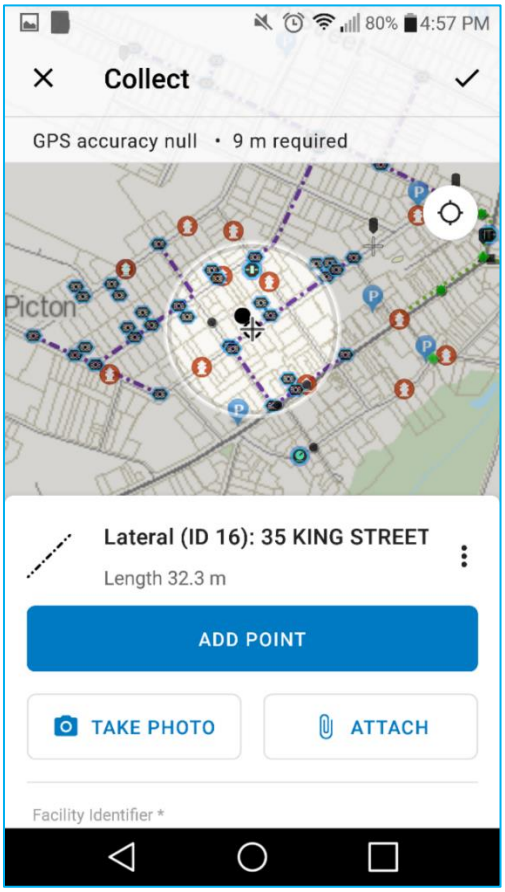


Figure 14. A screenshot of the data collection interface in Collector

Conclusion/Recommendations

Project Summary

Prince Edward County is a single tier municipality in Southern Ontario that has an inconsistent process of updating and maintaining in-field water infrastructure data. The current process involves updating data by using paper, screenshots and emails sent by the water infrastructure crew. This leaves some of the data to be up for interpretation and can lead to inaccuracies. The client of this project, Grant Hopkins, the GIS supervisor for the County, has requested that a user-friendly in-field data collection tool be made in order to facilitate consistent data collection. The tool would provide a direct way for workers to collect and update water infrastructure data to the Geodatabase in a straightforward and reliable manner.

This project provided the client with knowledge on how to customize the interface of Collector for ArcGIS for employees of all technological skill levels. It integrates most of the employees' workflow into a single mobile app that Collector which removes inefficient paper data collection. It has the option to operate offline in areas with limited internet coverage. The app can update or add data to the Geodatabase within SQL Server while workers are collecting data outdoors (Figures 11-14). These objectives fulfill the client's needs by providing the know-how on configuring a data collection app that replaces their old process of paper data collection. The result is a streamlined, fully digital method that promotes ease and user experience.

Risk Assessment and Limitations

Some of the risks associated with this project include that Esri ceases to support Collector or moves to a new version of Collector that requires a reinstall of the app on each phone. The client also indicated plans to upgrade from their current version of ArcGIS, which may require updates to the setup. As Esri is attempting to move their clients away from Desktop and towards ArcGIS Pro and ArcGIS Online, it is likely that continued maintenance will be required as new software updates are released.

Some employees could be averse to the change and not adopt this project's solution as their workflow. Others may experience difficulty in understanding how the app functions. The worker documentation has been supplied to the client to help decrease these risks.

Maintenance/Recommendations

The worker documentation will train current and new employees who are unfamiliar with Collector. In addition, all employees should be made aware of any updates to the app. Frequent updates to the software are recommended. The client will have to configure the County's infrastructure to be compatible with this project's solution. This is namely the app's connection to server and QA/QC of data being updated/added. The basemap may need to be changed if features become outdated. If the client switches to another mobile operating system, a different version of the app may need to be downloaded.

This project will allow Prince Edward County to efficiently collect data with a mobile app that is already familiar to the client. The app allows workers to collect data outside using predefined options for a streamlined workflow. The customized popups within Collector display valuable information for the user. The symbology of the data is standardized to simplify data interpretation for water utility. The basemap aids employees in navigating outdoors and locating infrastructure. Its zooming capabilities allow the workers to choose the level of detail to work with. This project fulfils the client's needs by eliminating paper data collection and providing a fully digital user-friendly experience to collect and update water infrastructure data.

References

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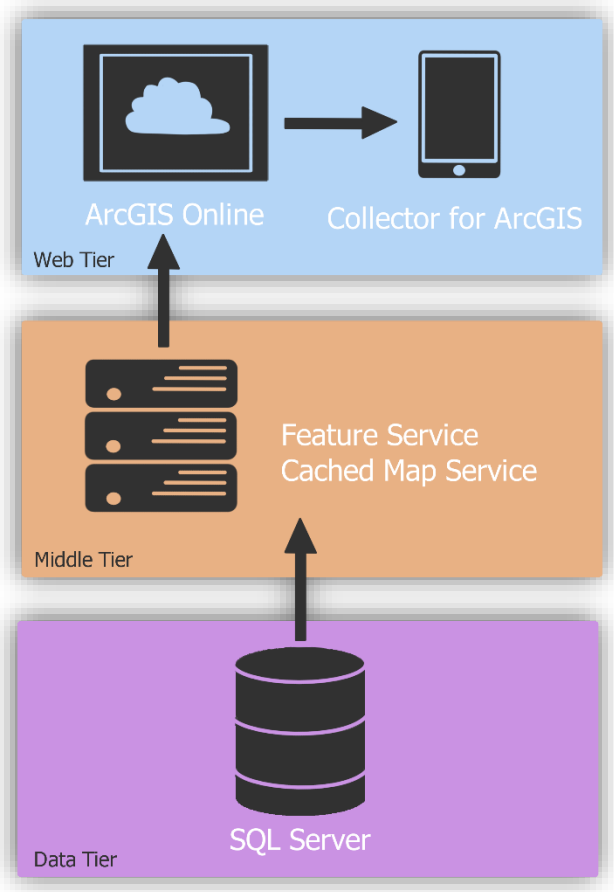
Appendix A

Configuration of Collector with SQL Server for Grant Hopkins Provided by Collaboration Project #2014

Written By: Rebecca Sherwin

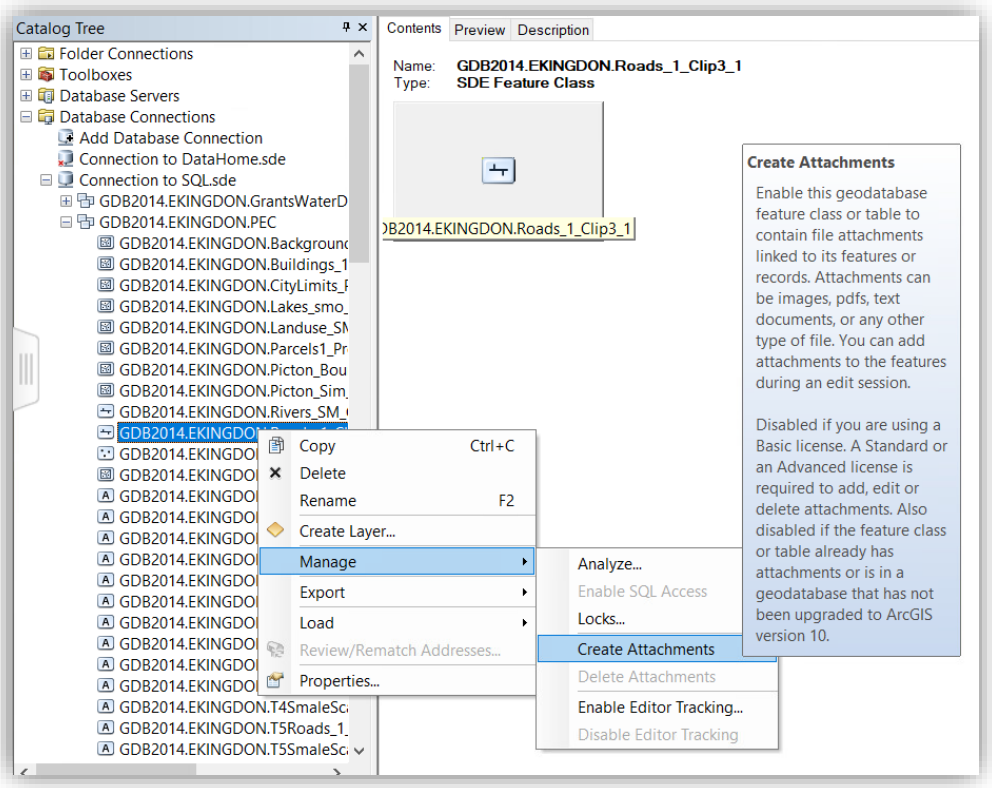
Note: Documentation assumes that data is already on server; screenshots may differ due to version differences

The general structure of our solution is as follows:

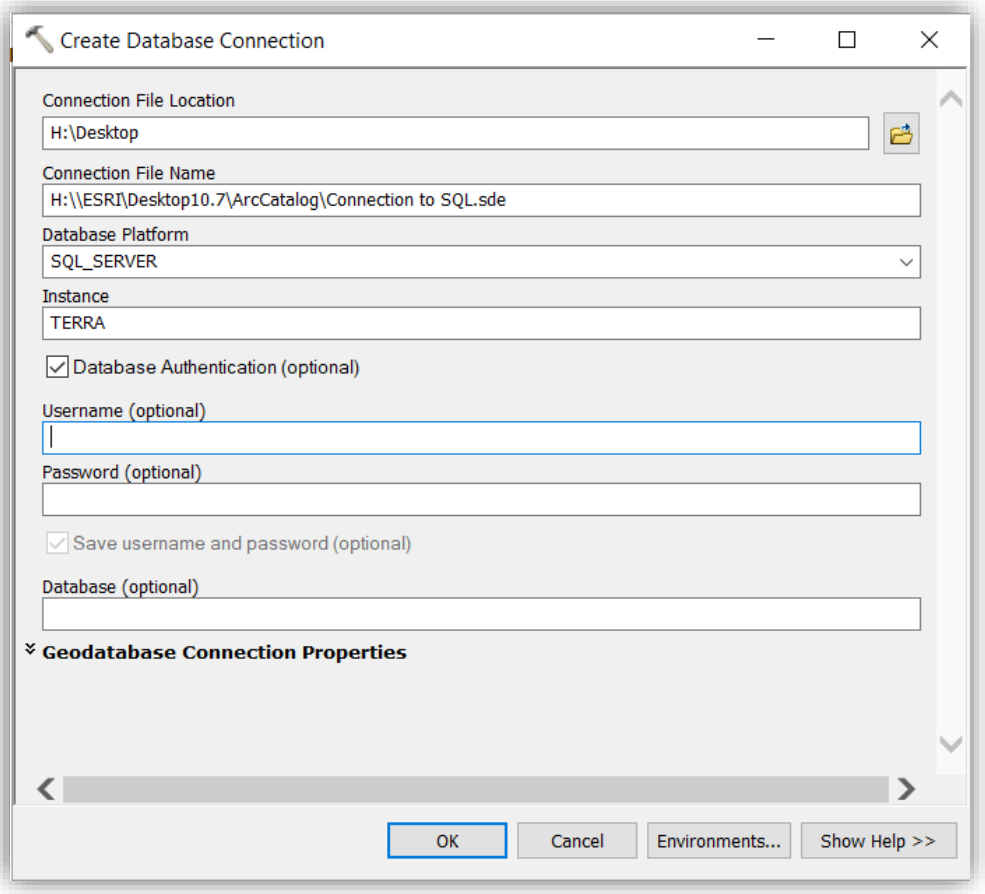


Enabling the use of Attachments in Collector

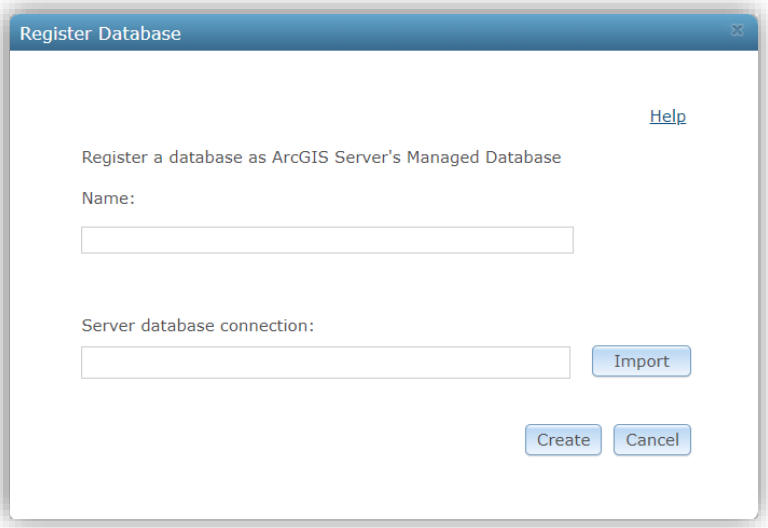
1. In order to use attachments in Collector, make sure that every feature has a global ID and has it enabled as its primary key.
2. **Once global IDs are populated, attachments must be created to enable the attachment of pictures or media in Collector. This can be done in either ArcCatalog or ArcMap within the *Database Connection* of the server. This is done before it is published as a feature service.**



3. Next, the dataset must be registered as versioned with the option **Register the selected objects with the option to move edits to base** checked. (**Note**: If there is a network or topology associated with the data, this option will not be available. As such, the edits performed in Collector will not appear in the data in the database. The contents of the feature service have to be merged with the base table in the database).
4. The database connection must be registered as a data store within the ArcGIS Manger site. First, generate a connection file (.sde) using the *Create Database Connection Tool* within ArcMap or ArcCatalog. The output is a text file with connection information for the database.

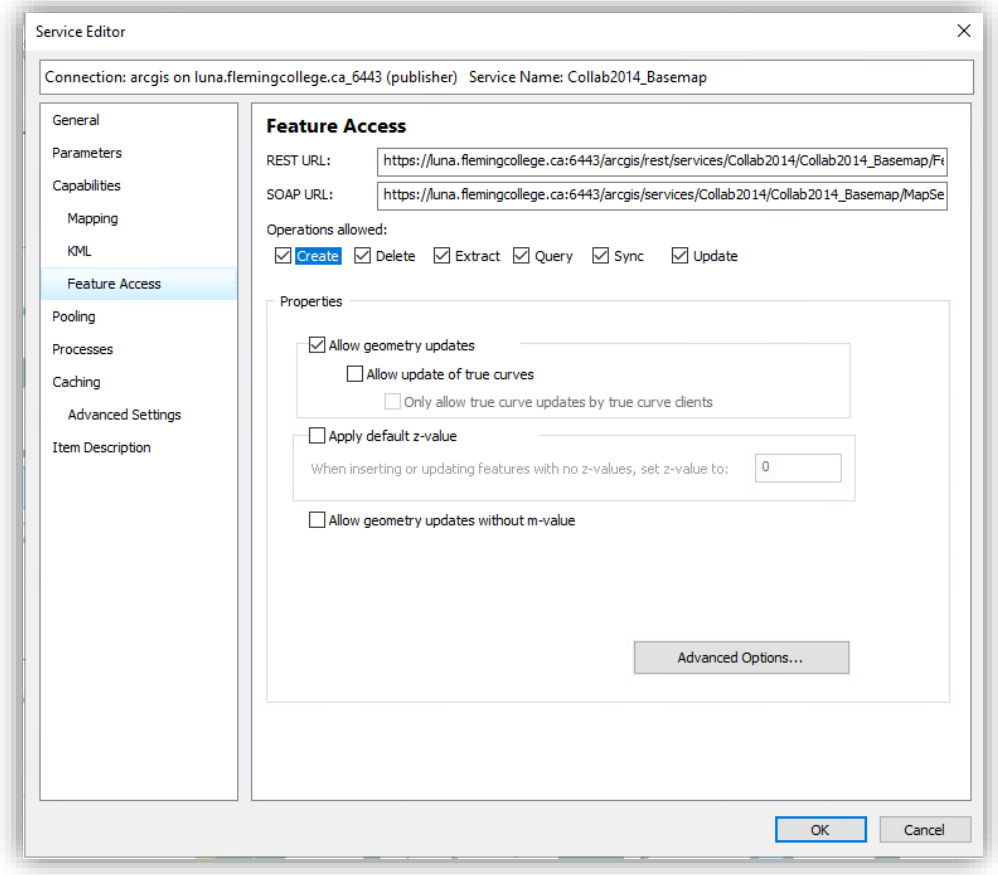


5. In the *Site Manager*, registering a data store is done on *Site* tab and in the *Data Store* tab. **Register** a managed database and the following window appears. **Import** the connection file to the database (.sde).



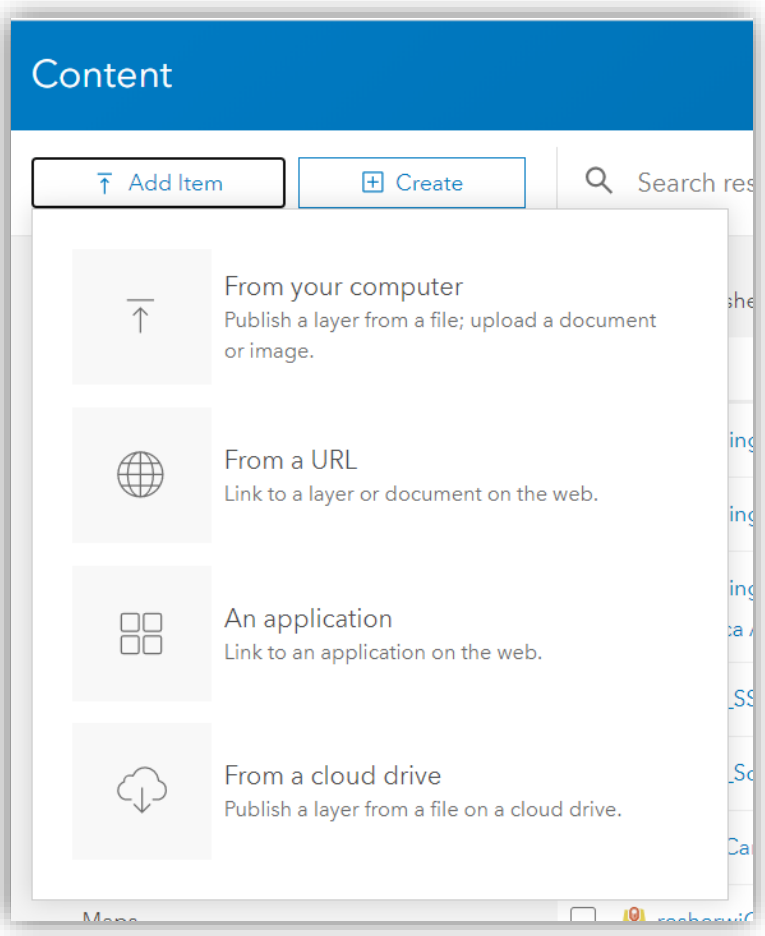
Publishing as a Feature Service

6. The data can now be published as a feature service. In order to be editable, it must have the following Operations Allowed: **Create**, **Delete**, **Extract**, **Query**, **Sync**, **Update.**

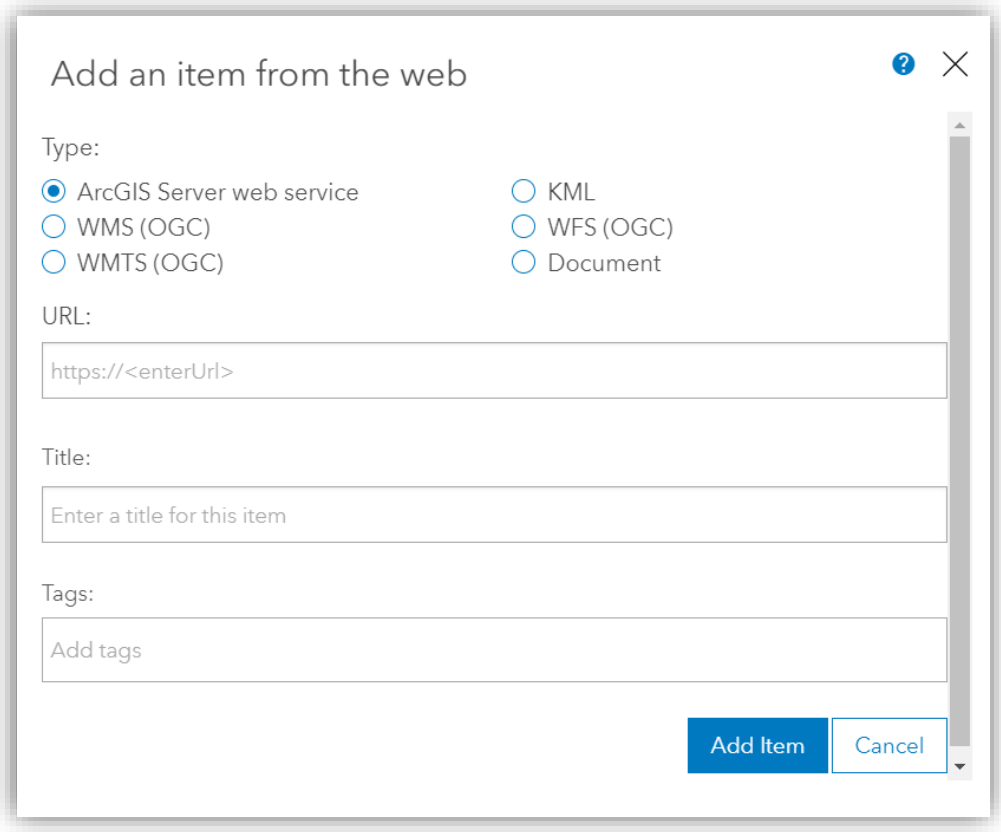


Configuration in ArcGIS Online

7. Once the feature service has been published successfully, the rest URL can be used in ArcGIS Online. The service can be added in the *Content* section by selecting **Add Item** and **From a URL**.

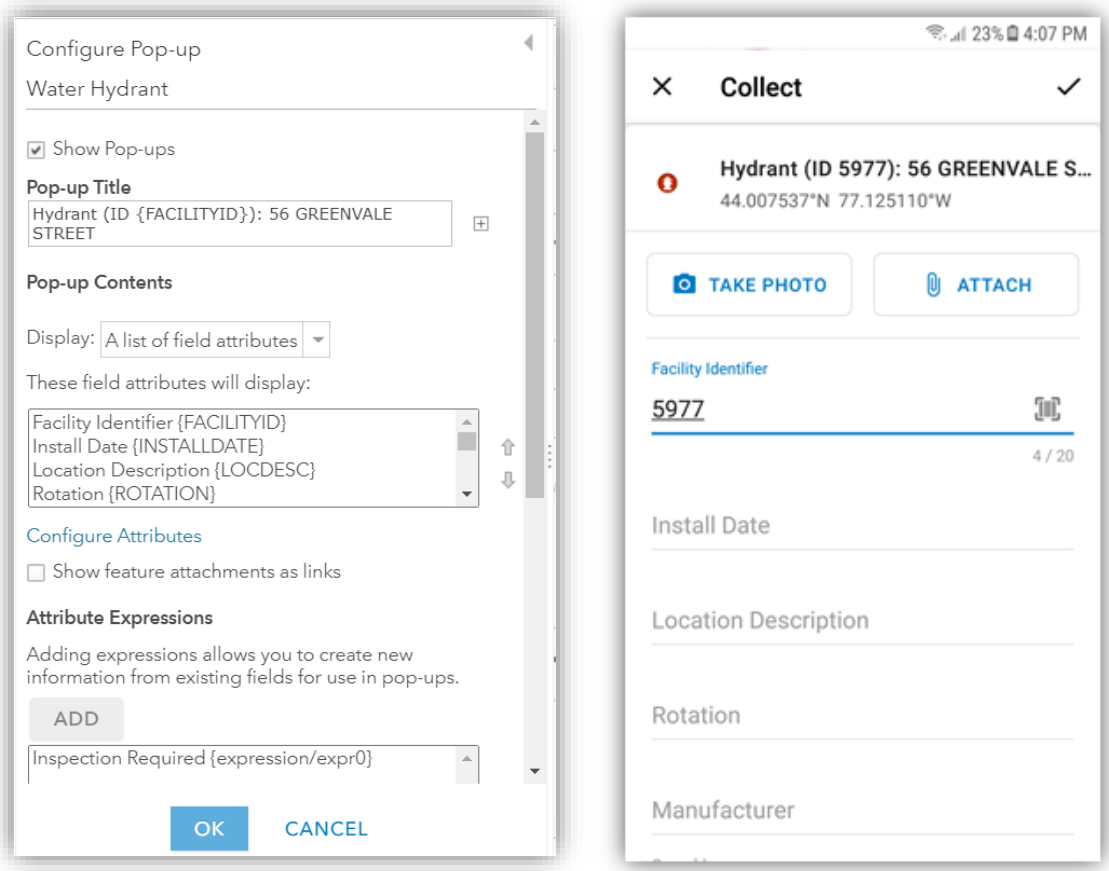


8. The Type is **ArcGIS Server web service** and the URL is the REST URL of the feature service (**Note**: If one layer from the feature service is desired, specify the layer number at the end of the REST URL i.e. /5 for layer 5). The Title and Tags should auto-populate with what was input during the creation of the feature service.

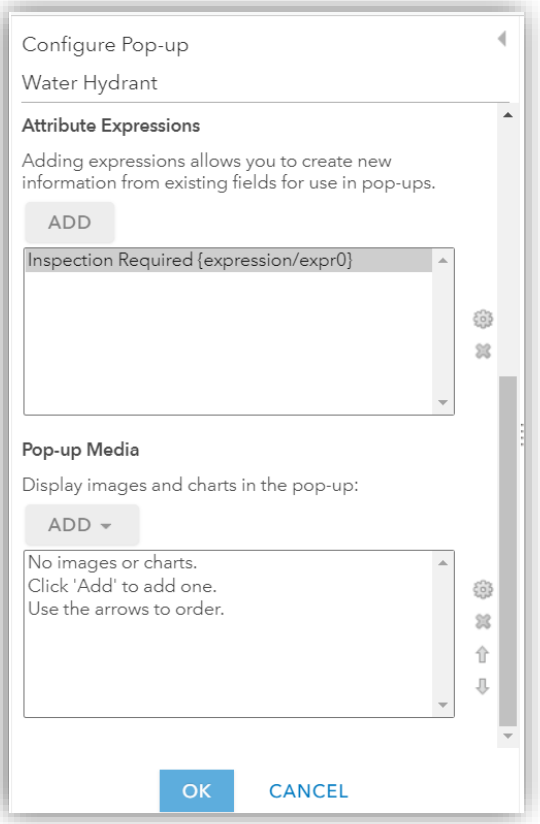


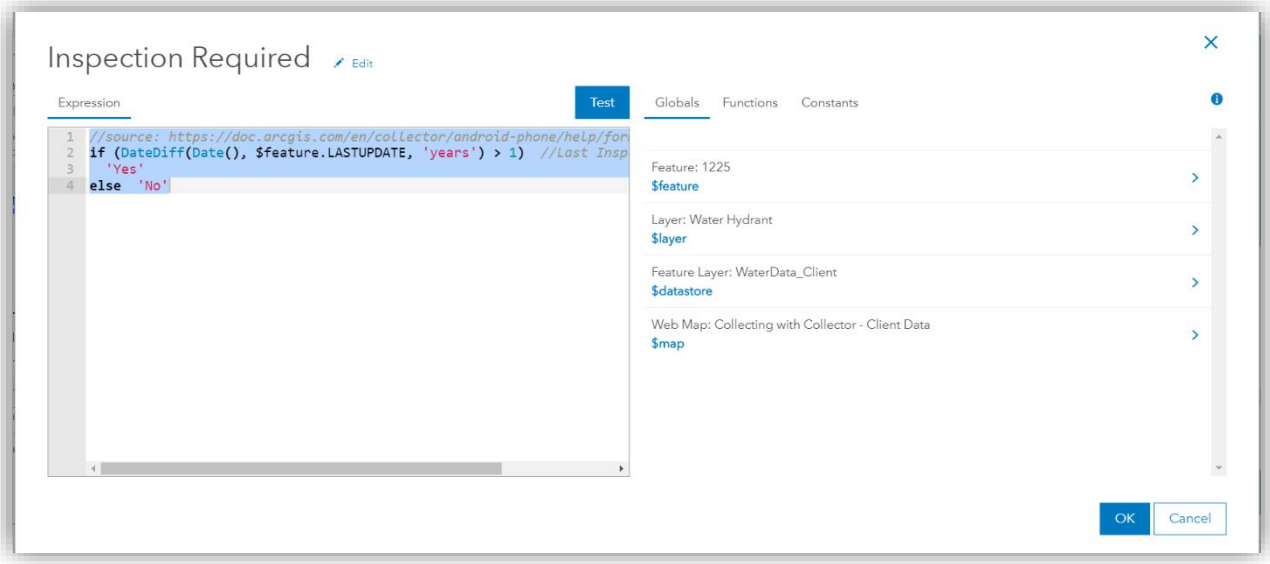
9. The feature service item in ArcGIS Online can now be added to a map. Within the map, popups, symbology, layer names to be shown in Collector can be configured. Popups are what is used to edit data in Collector and they must be configured for every layer. The *Popup Title* is shown at the top of the popup in Collector. It can be configured to display certain attributes of the feature. The *Popup Contents* are what fields are displayed in Collector, the list order can be changed. Feature attachments can be shown as links by enabling **Show feature attachments as links**.

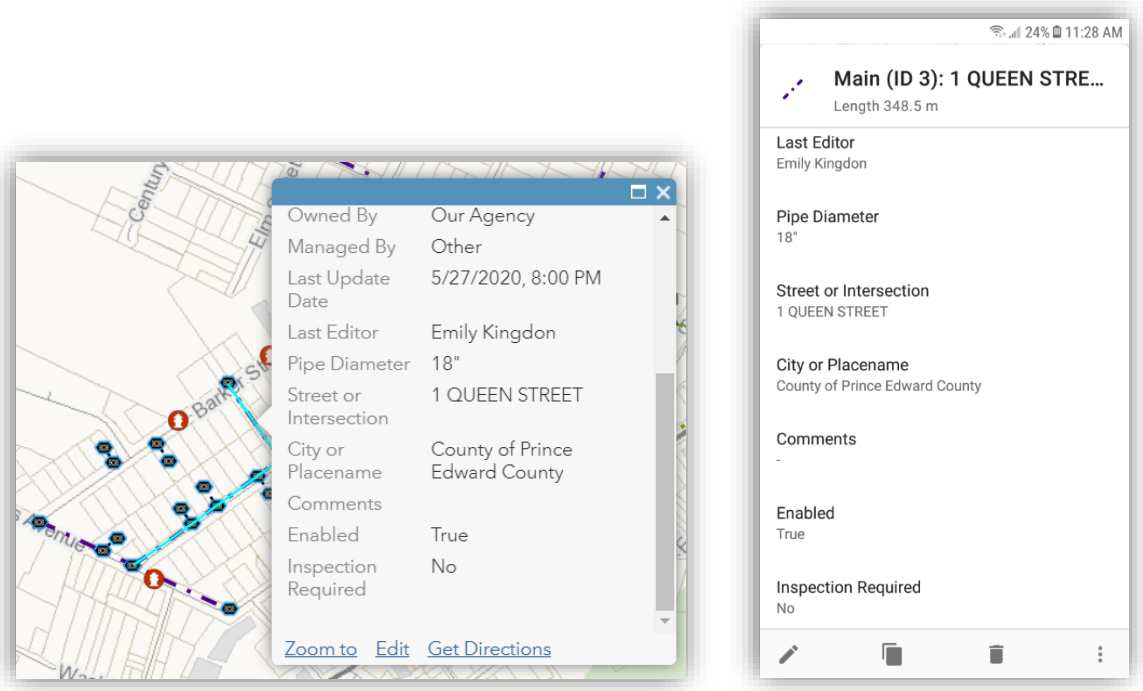
If viewing data in ArcGIS Online, the **Refresh Interval** can be enabled and set in the layer settings. This refreshes the data so that any updates to the data will be displayed.



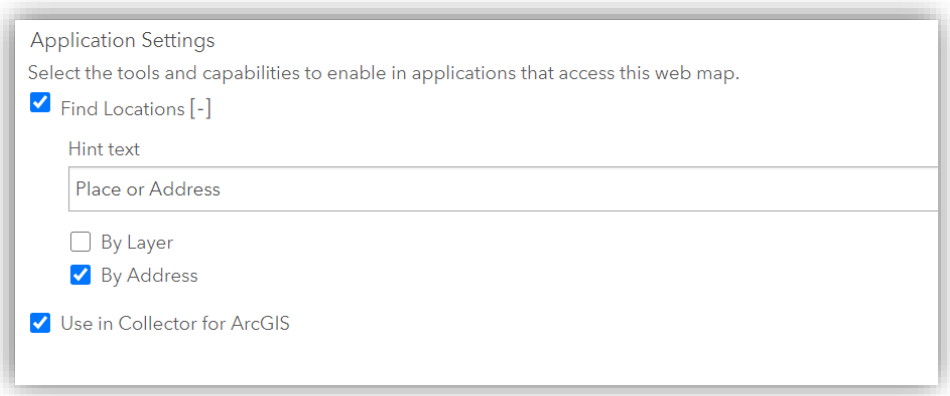
10. *Attribute Expressions* allows for Arcade Expressions to use existing data to populate new information in popups. *Inspection Required* uses the Last Updated field to tell the user if a feature has been last inspected greater than a year ago. If so, it displays *Yes*, if not it displays *No*. (**Note:** Collector does not support some functions used in expressions). Other images or charts can also be put in Collector through *Popup Media*.

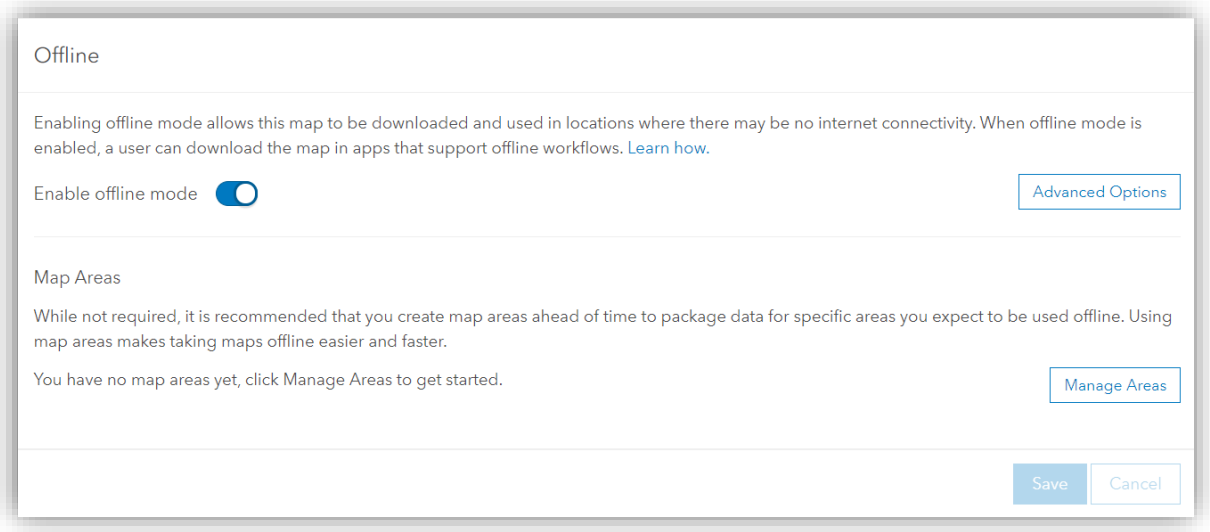

Configure Pop-up
Water Hydrant
Attribute Expressions
Adding expressions allows you to create new information from existing fields for use in pop-ups.
ADD
Inspection Required {expression/expr0}
Pop-up Media
Display images and charts in the pop-up:
ADD
No images or charts.
Click 'Add' to add one.
Use the arrows to order.
OK
CANCEL


Inspection Required
Edit
Expression
Test
Globals
Functions
Constants
//source: https://doc.arcgis.com/en/collector/android-phone/help/for
if (DateDiff(Date(), $feature.LASTUPDATE, 'years') > 1) //Last Insp
'Yes'
else 'No'
Feature: 1225
$feature
Layer: Water Hydrant
$layer
Feature Layer: WaterData_Client
$datastore
Web Map: Collecting with Collector - Client Data
$map
OK
Cancel

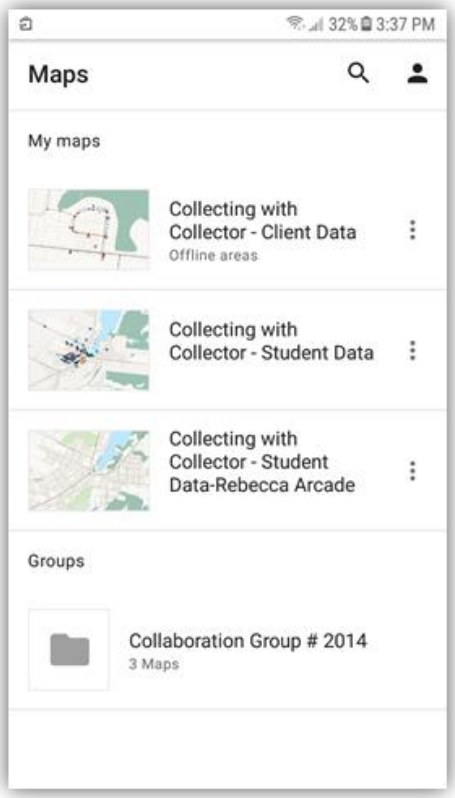


11. To enable this map to be used in Collector, in the *Item Details* of the map, in the *Settings*, in the *Application Settings*, make sure **Use in Collector for ArcGIS** is enabled. Offline editing can also be enabled (**Enable offline mode**) here in the *Offline* section of *Settings.* Offline map areas can be made ahead of time for use in Collector. (**Note:** More server backend configuration may be needed, please consult ESRI support)



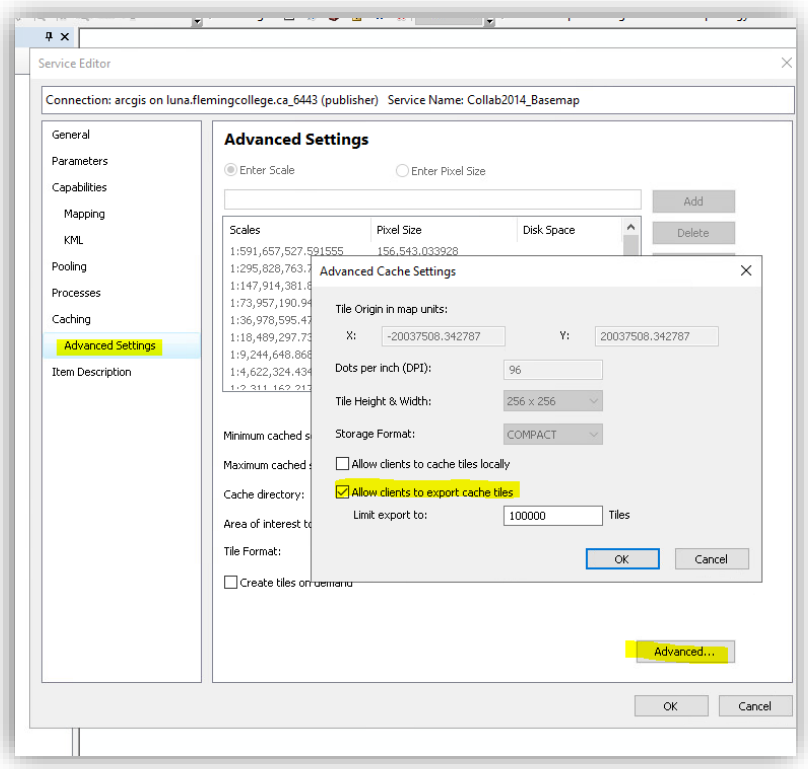


12. Any map with editable data should appear in Collector. (Refer to the Worker User Manual for Collector for explanation of how the app functions).



Using a Custom Basemap

13. (Optional) If a custom basemap is wanted, the basemap should be published as a cached map service. To use it offline in Collector, **Allow clients to export cache tiles** should be enabled when publishing in the *Advanced Settings* in the *Advanced* section. This can also be done after the service is published in the *Service Properties*. After it is published, the REST URL can be added to ArcGIS Online and brought into the map containing the feature service.



Collector for ArcGIS User Manual for Water Department Workers

Provided by Collaboration Project #2014

Written By: Rebecca Sherwin

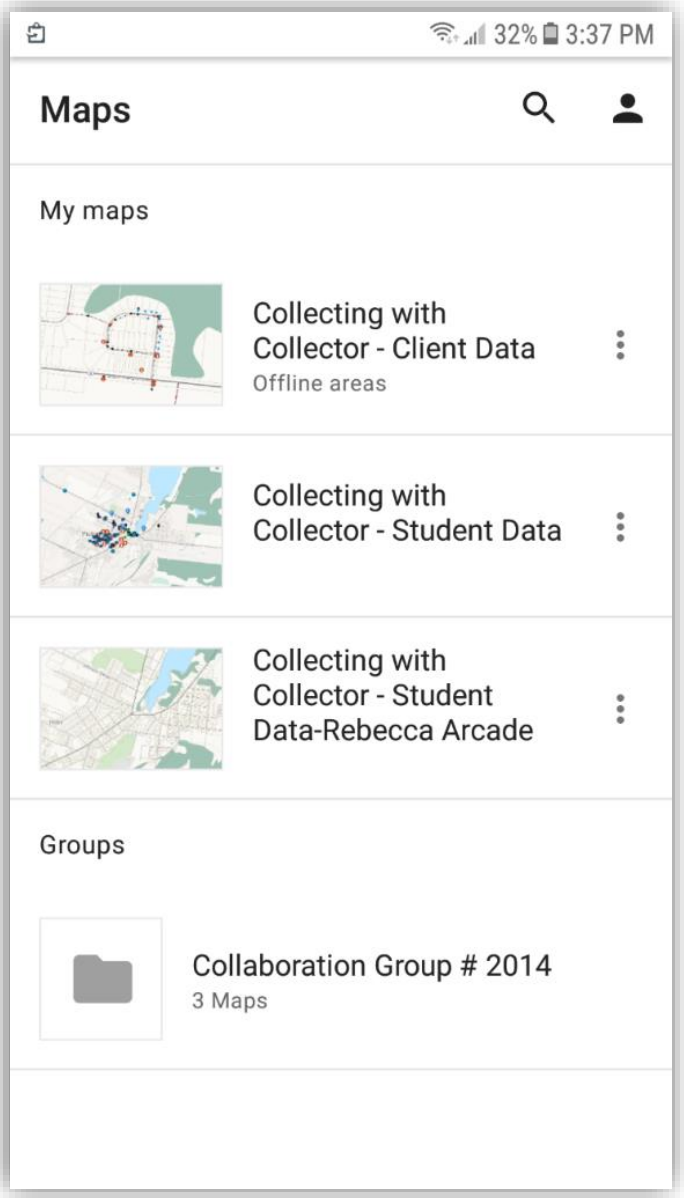
Note: This user manual is based on Collector for ArcGIS on Android. The interface may differ from iOS

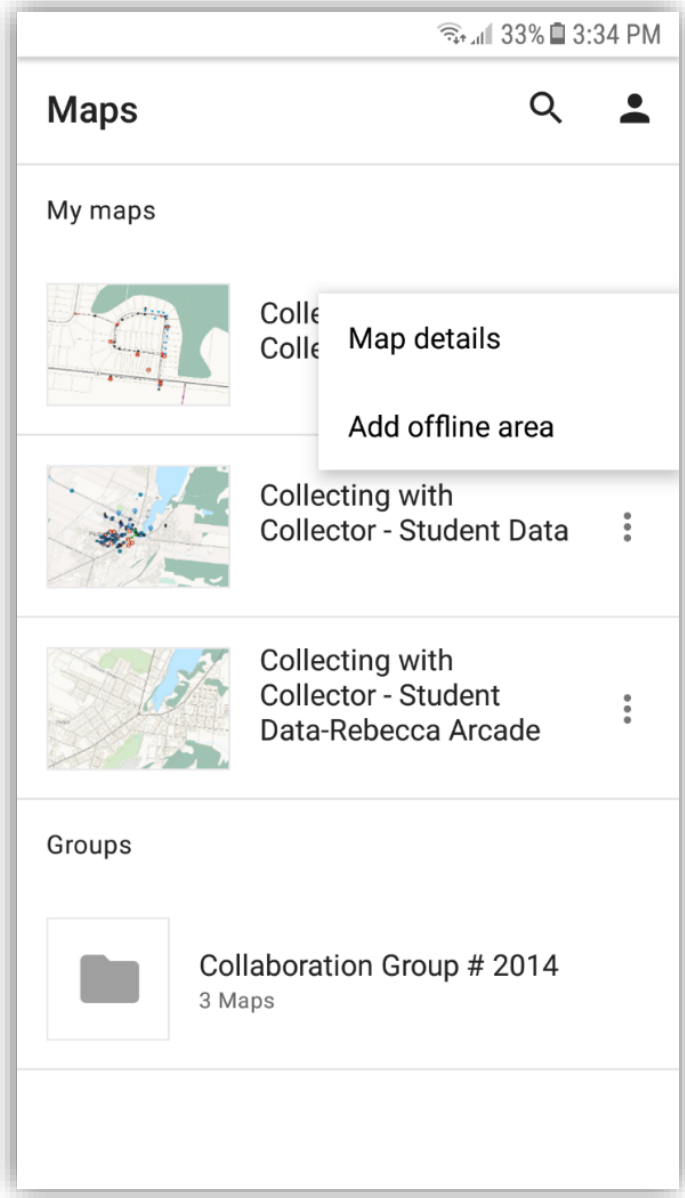
Table of Contents

1. Collector for ArcGIS requires a login to operate. Sign in with your credentials. **Note:** Make sure you have an internet connection as logging in cannot be done offline.

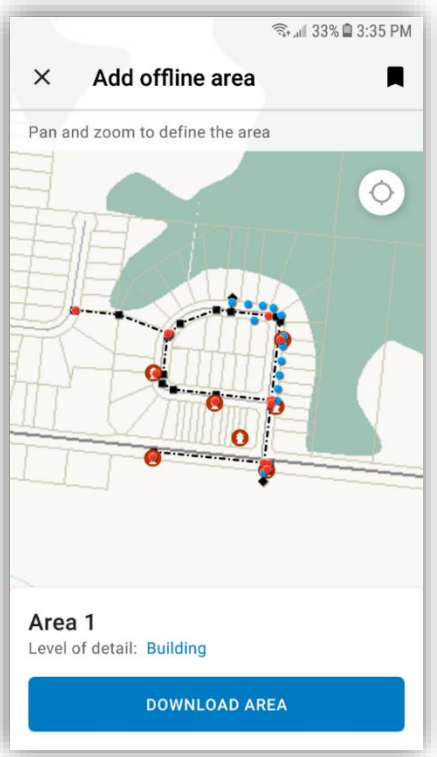
Preparing for Offline Editing (Optional) - These steps must be completed when online

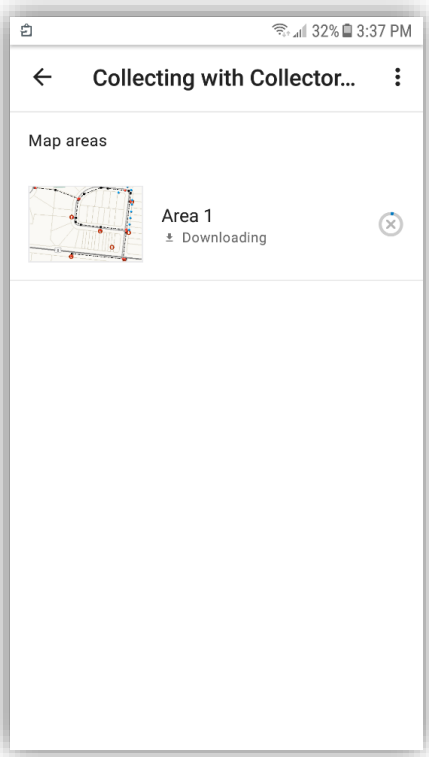
1.1. Once logged in, maps that contain editable data are displayed. If you require for data to be edited offline, tap the three dots ⋮ to the right of the map you wish to edit. A new tab appears, select **Add Offline Area**.

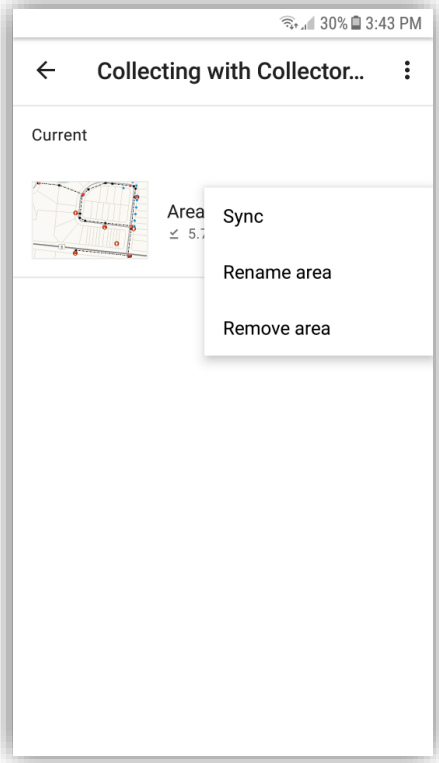


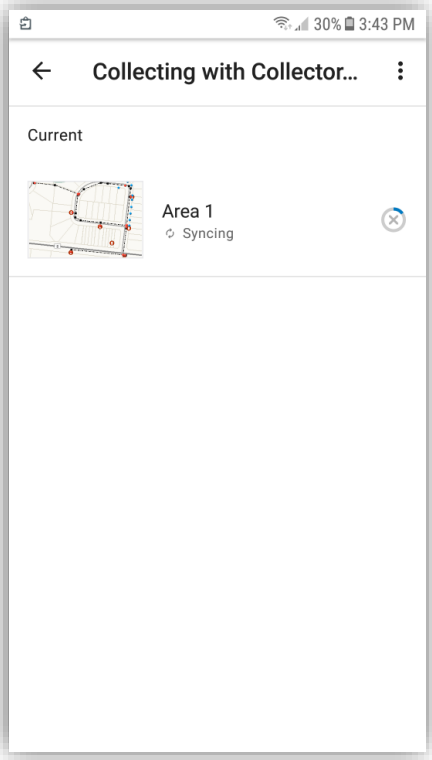


1.2. Zoom in/ out on the map to define the area to be downloaded. Hit **Download Area** when you are satisfied. The icon in the top left of the screen indicates that an offline area download is happening. It also says “Offline Areas” under the map to show that there are offline areas configured for that map. When the map with offline areas is selected, the offline areas for that map are shown. Click the three dots ⋮ to the right of the area for a new tab for **Sync, Rename Area** or **Remove Area**



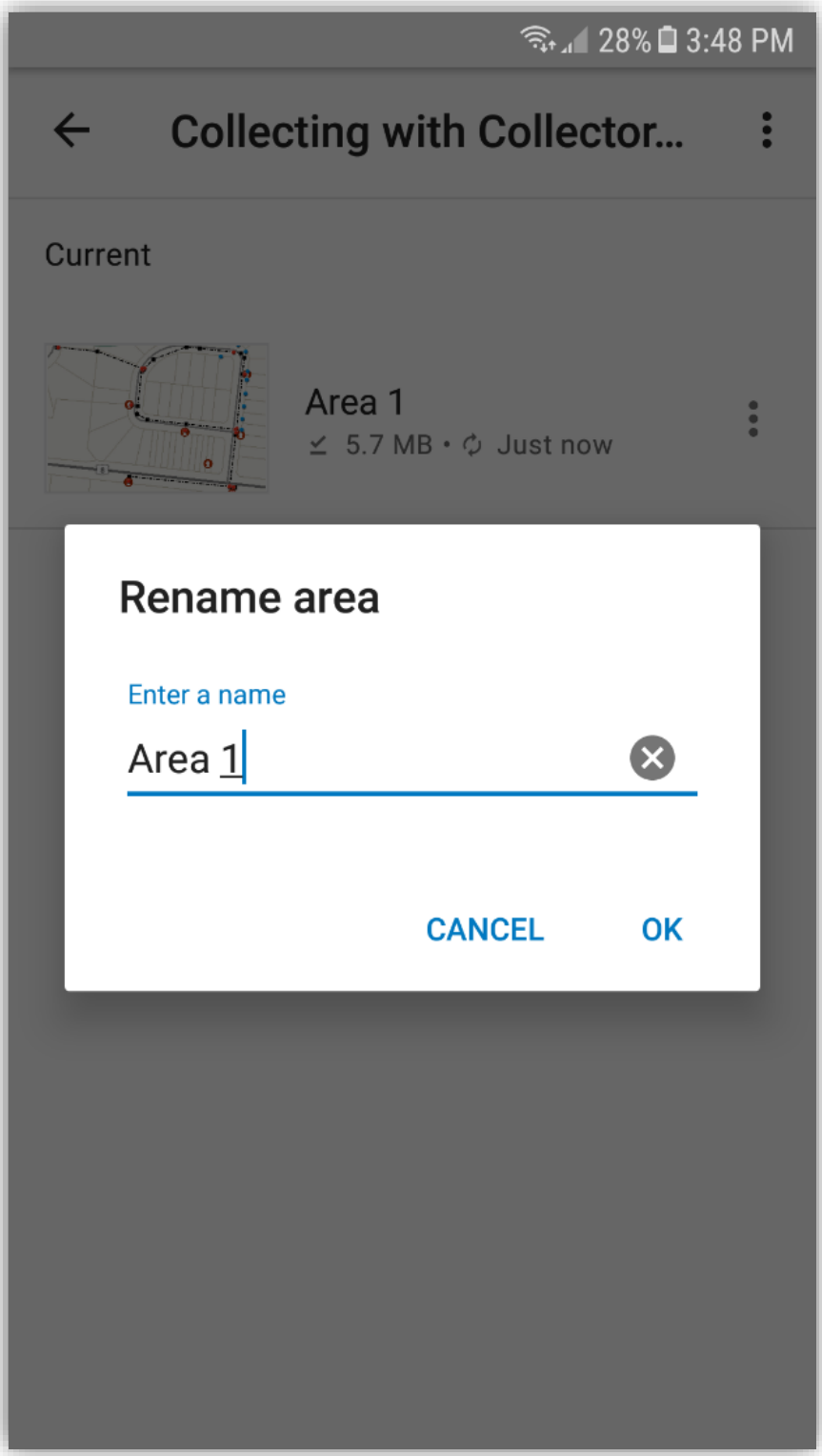






1.3. In order to sync data while offline, the **Sync** option must be selected when back offline on the offline area screen. Syncing can also be done on the map when editing/creating data.

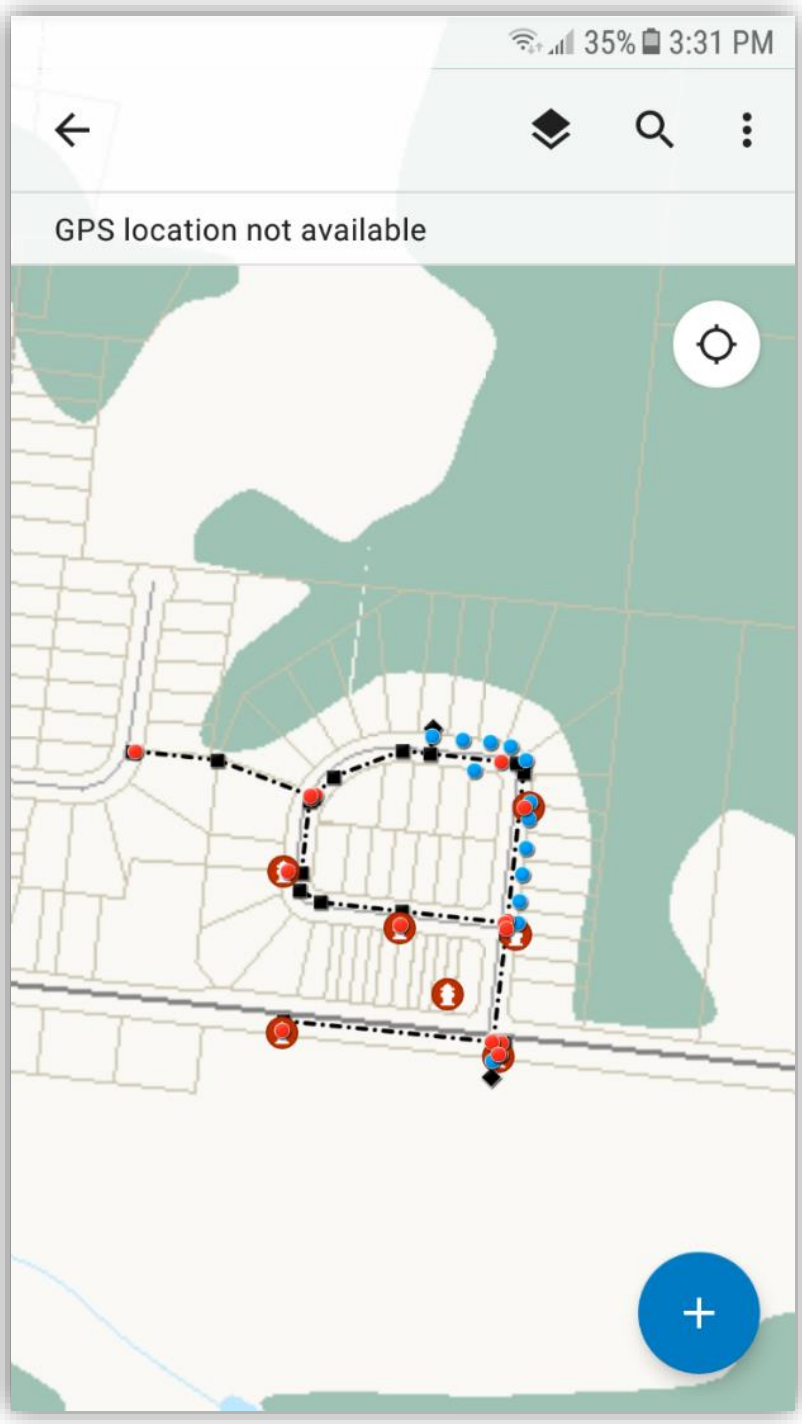
1.4. **Rename Area** allows you to rename an offline area.



1.5. **Remove Area** allows you to remove an unwanted area.

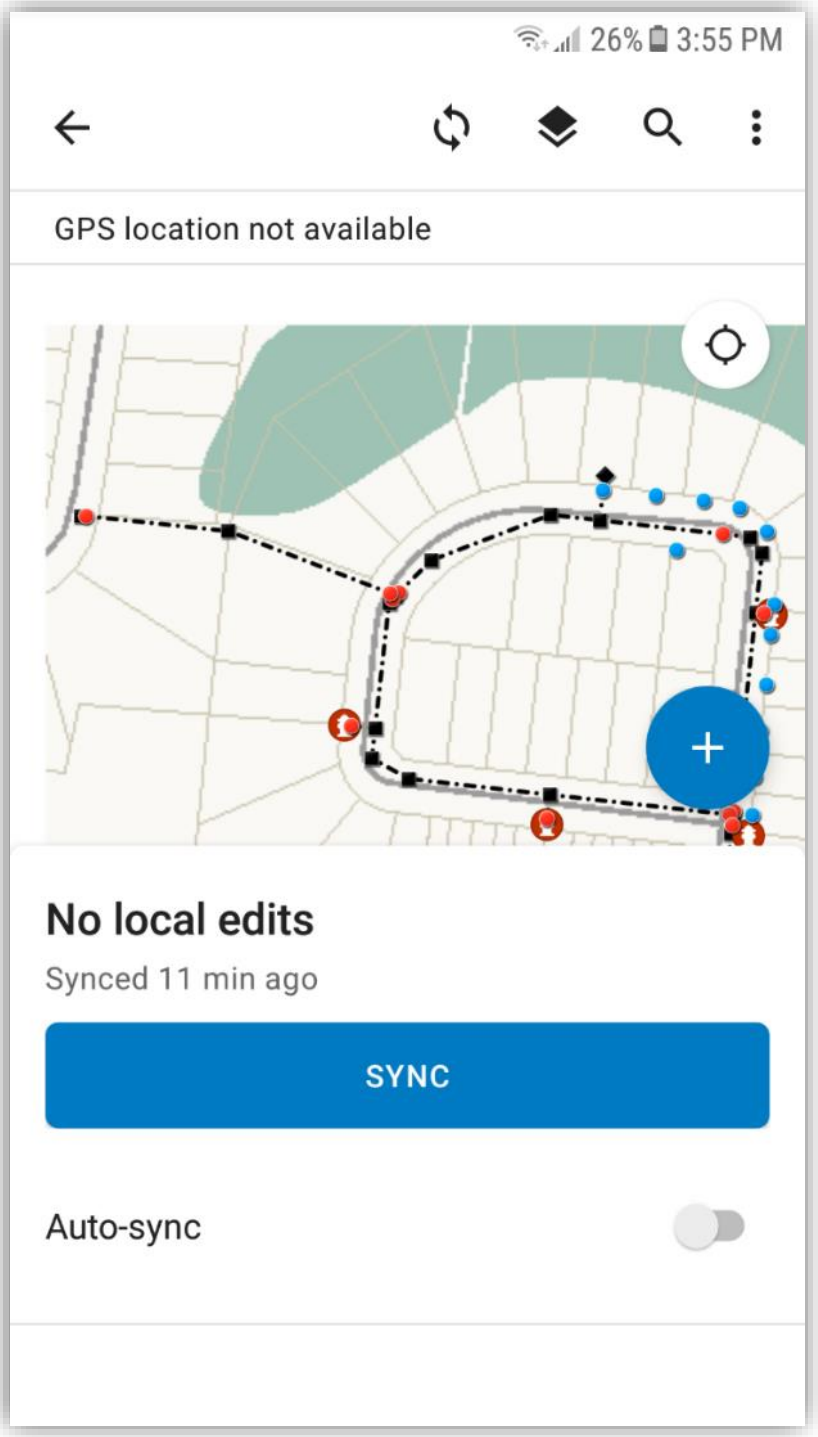
The Interface of Collector

2. Choose the map with the data you wish to edit. If there are offline areas for that map, select the offline area.
3. The map containing the data is displayed. Here is where the data edits will be made.

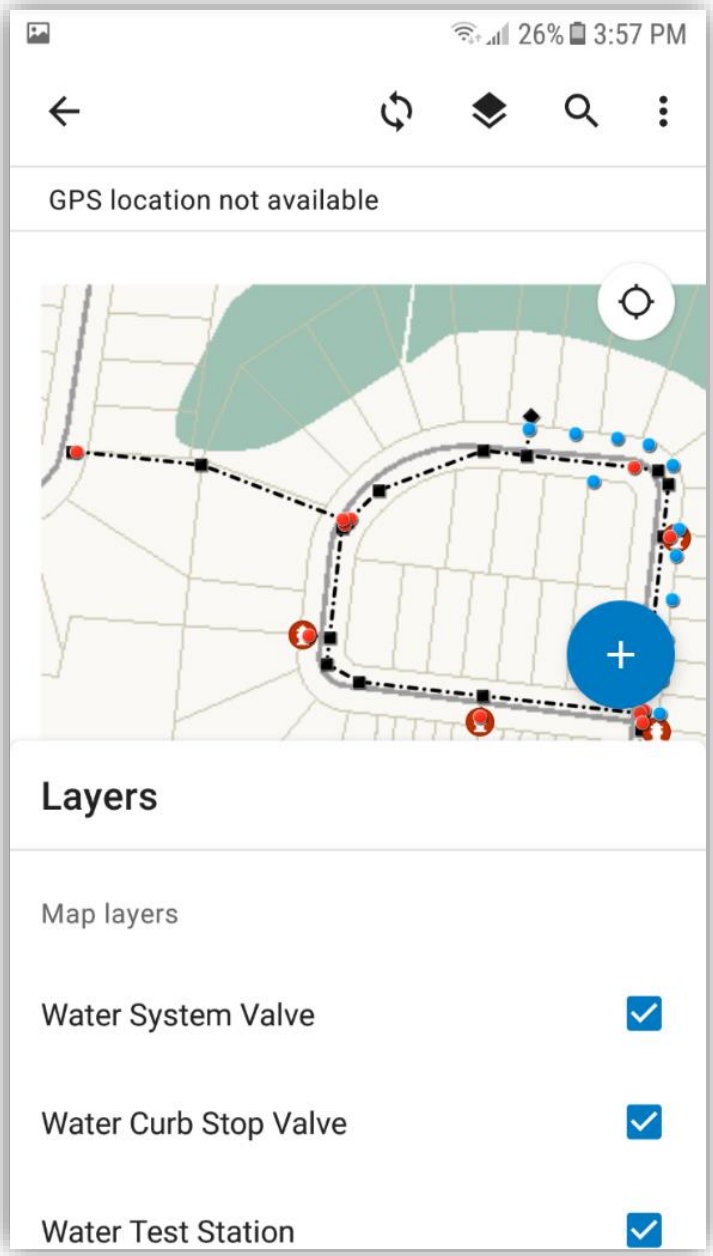


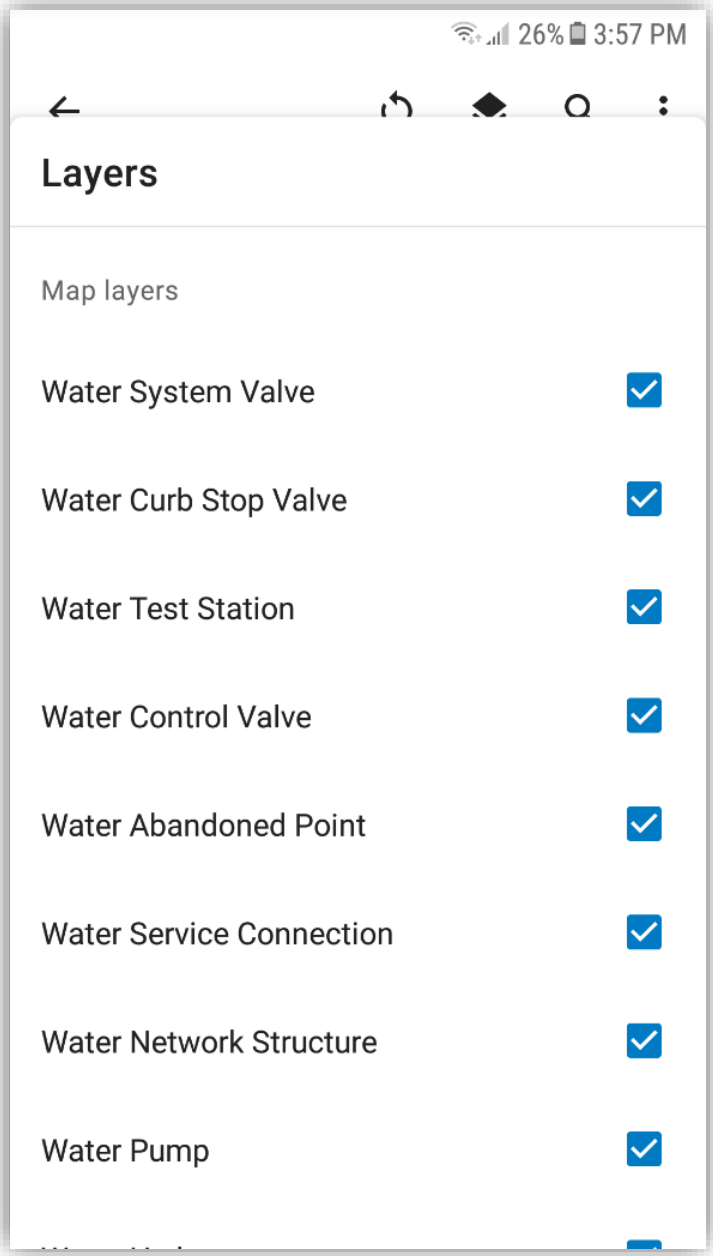
In the top left corner, there is an arrow pointing left that allows you to go back to the other maps.

The bar at the top varies if there is an offline map area. This icon is only present with an offline map area, it syncs the map's data. **Auto-sync** can be enabled here which automatically syncs data. **Auto-sync** is encouraged when multiple people are editing simultaneously.

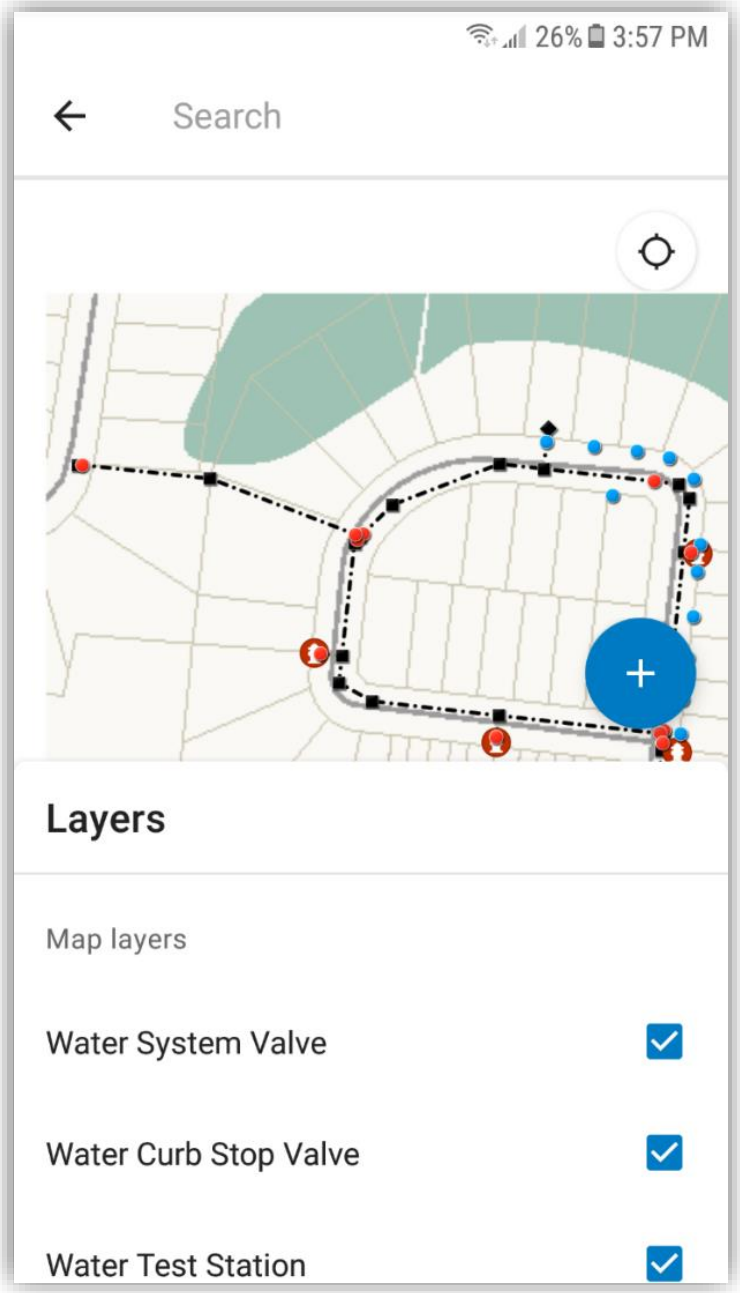


Selecting this icon , displays all the map's data layers. Scroll down to view all layers. These can be toggled on/off by clicking the checkmarks to the right of them.

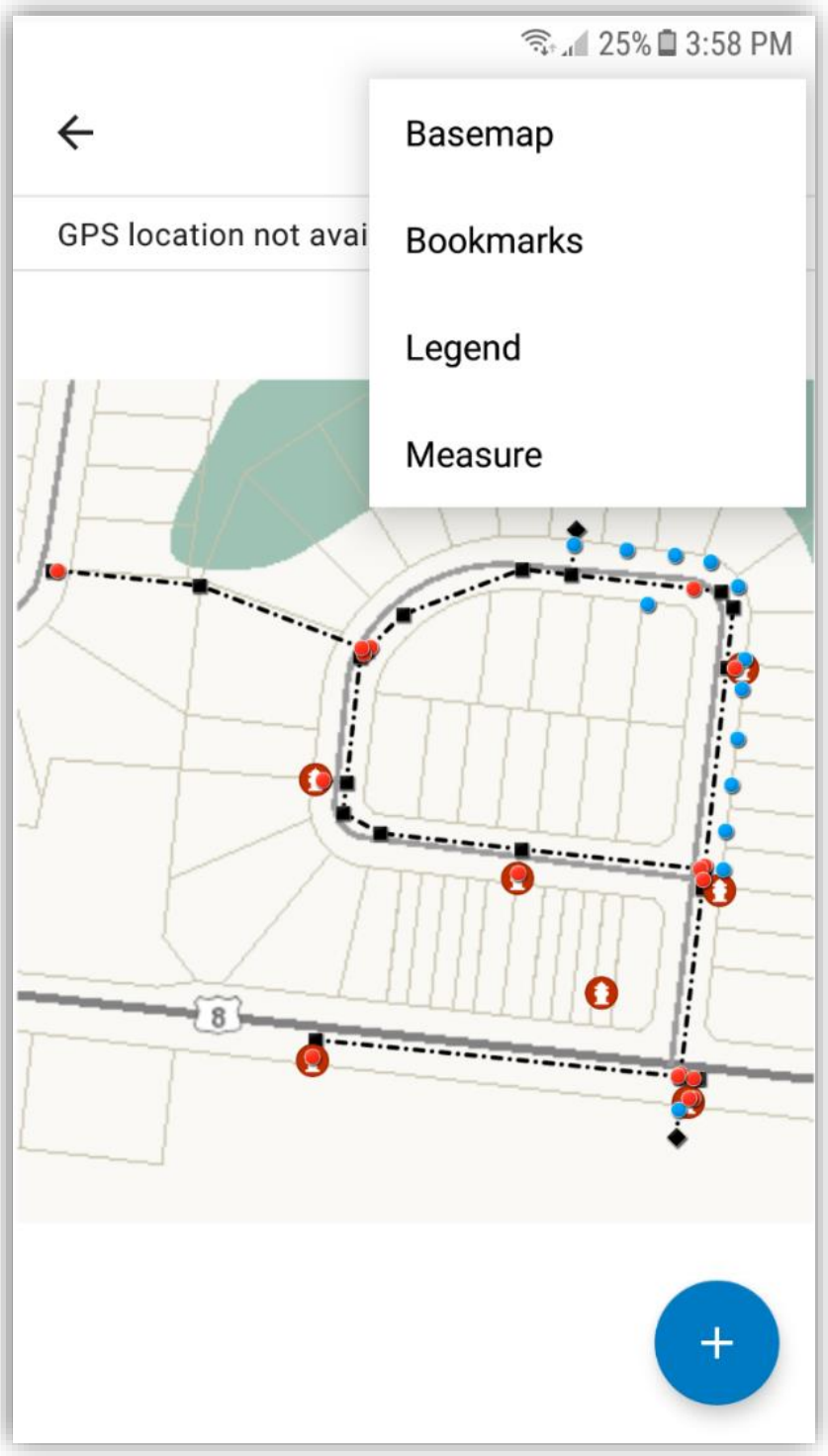




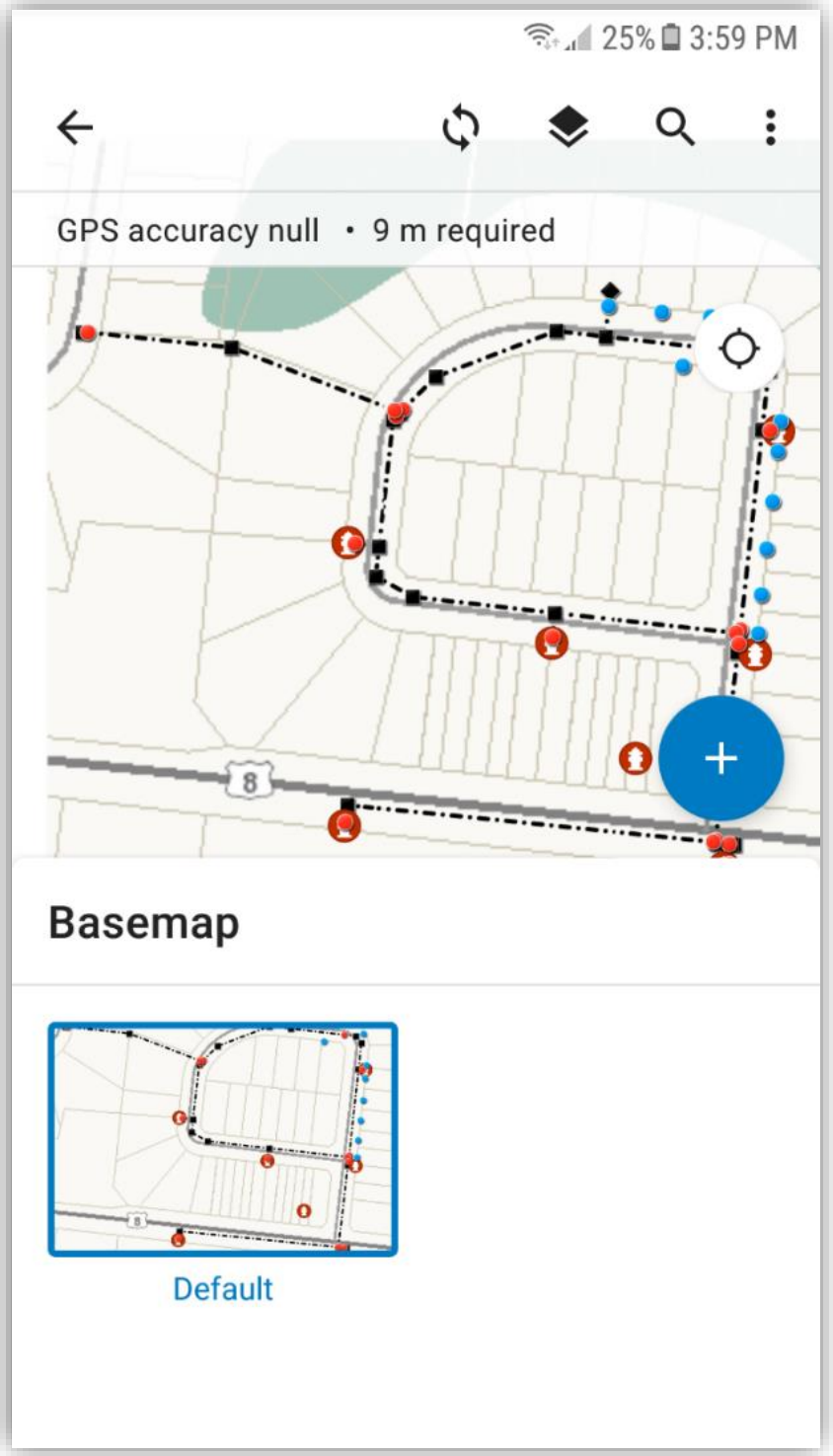
Selecting this icon , allows to search for specific features by typing them in.



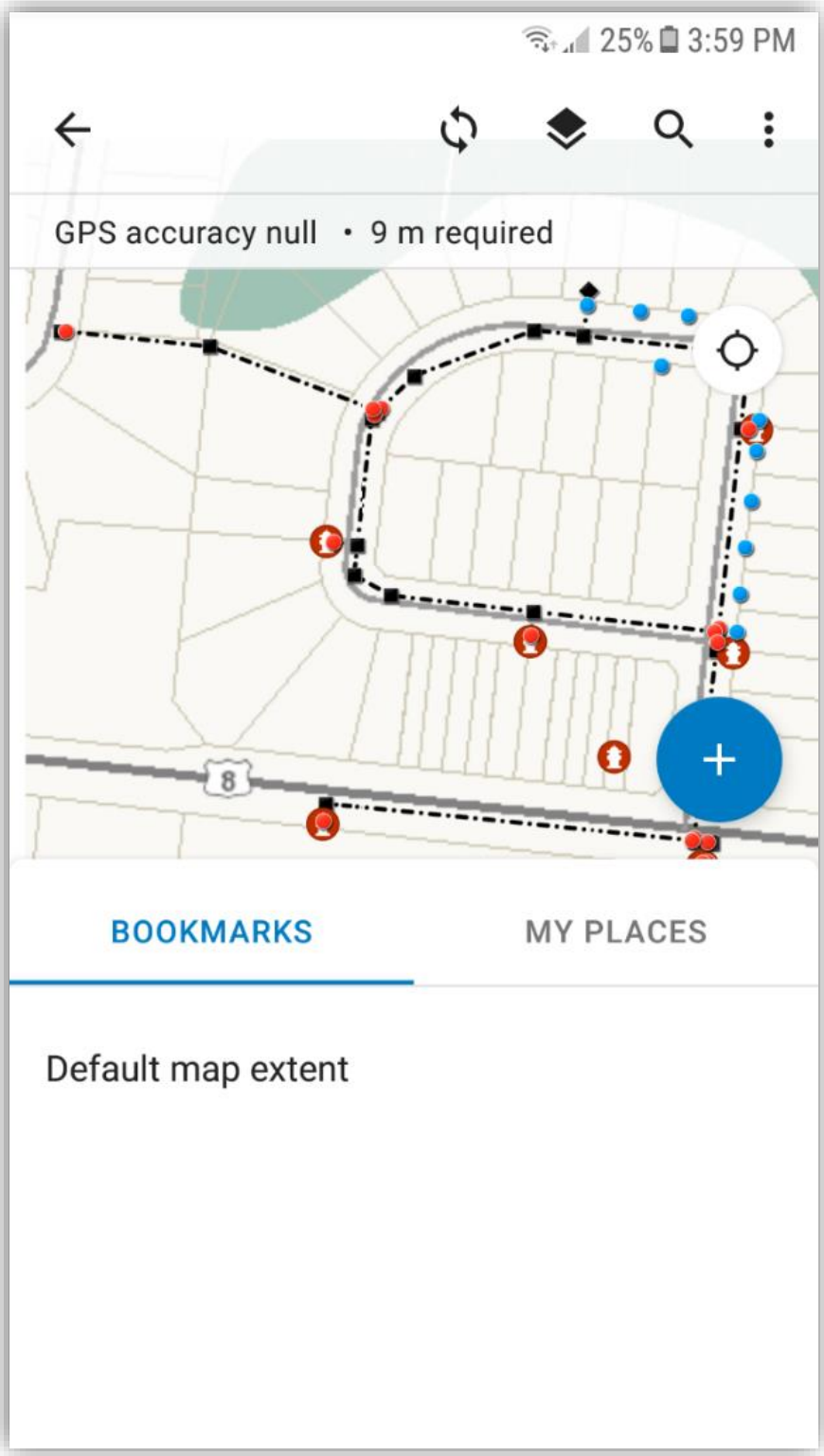
Selecting the three dots ⋮ , brings up a tab with several options.



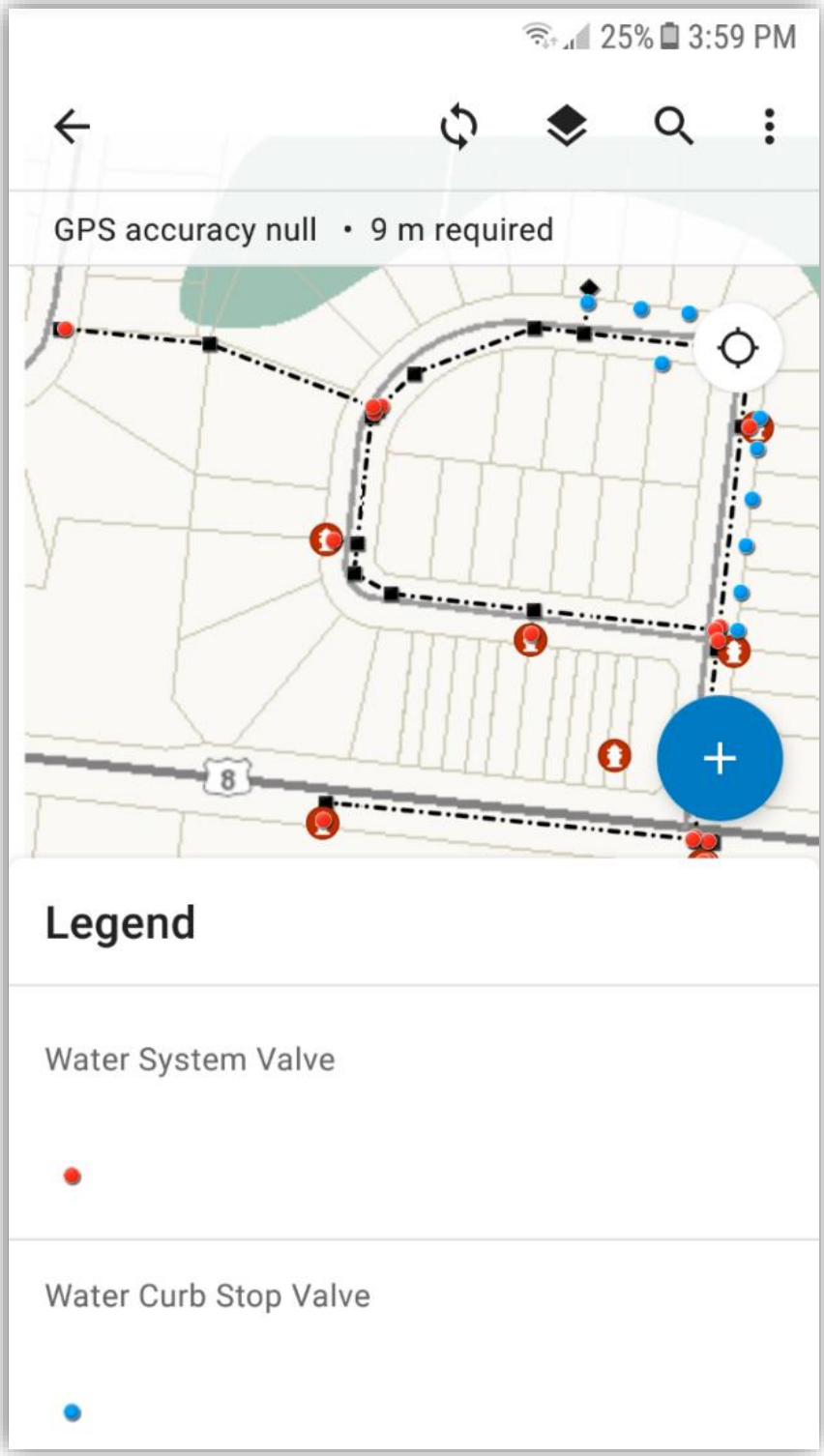
Basemap allows you to change the basemap to another.



Bookmarks allows you to toggle different zoom levels on the map if they are configured.



Legend shows the symbology of each feature on the map.



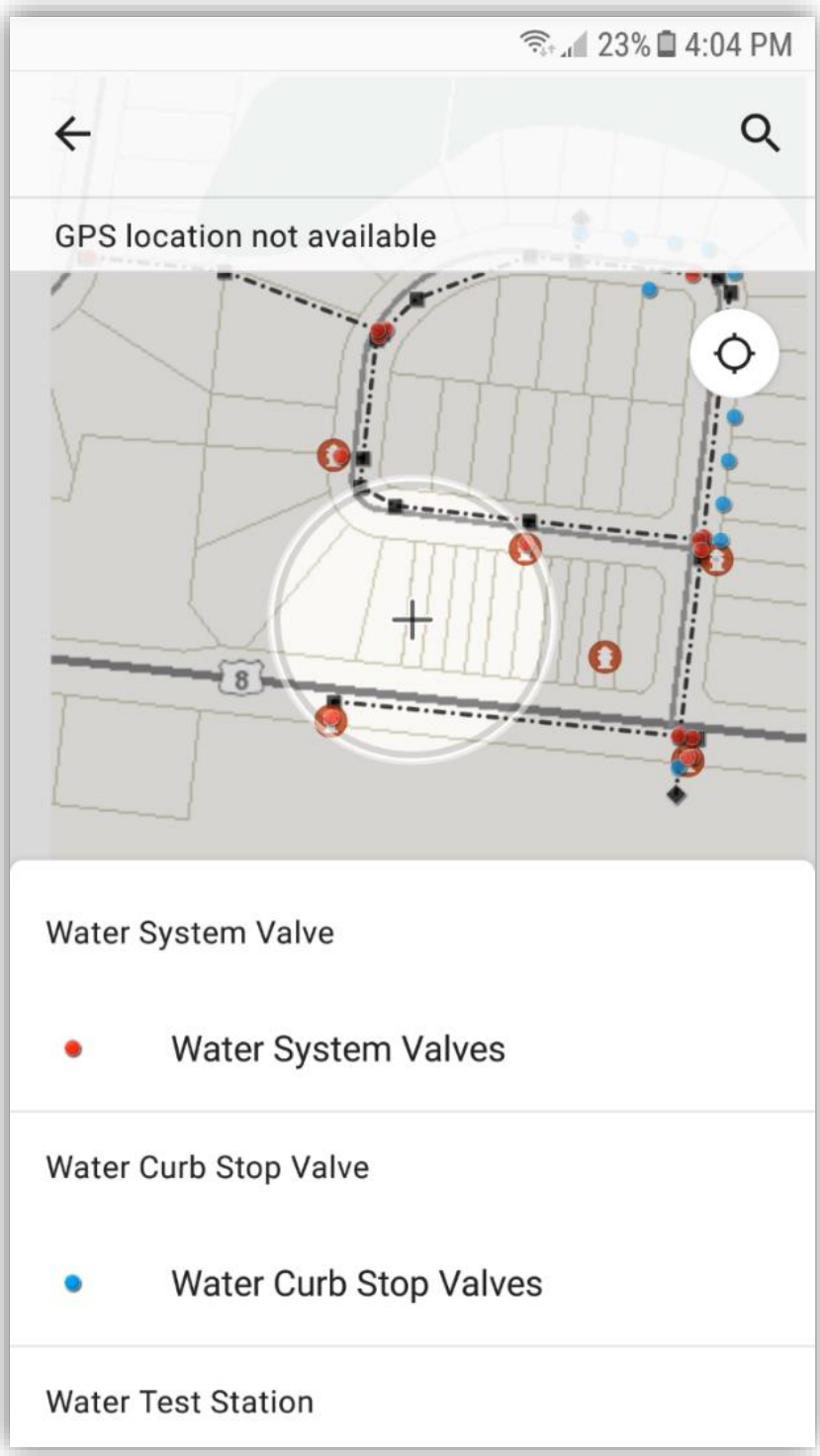
Measure allows you to measure a distance on the map.

Selecting this icon , makes the map center on your current GPS position.

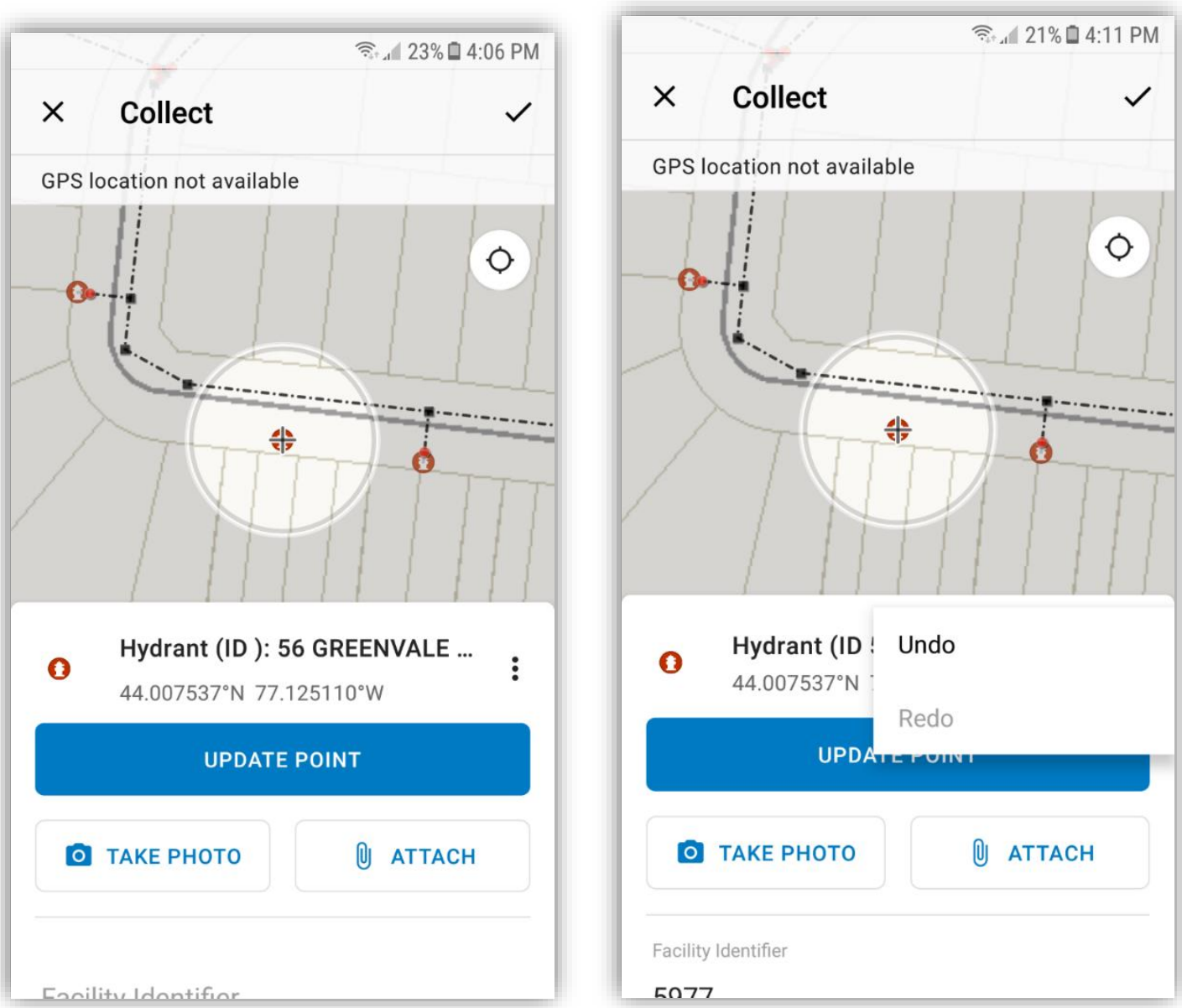
Selecting this icon , allows you to edit/ add features

Adding New Data with Collector

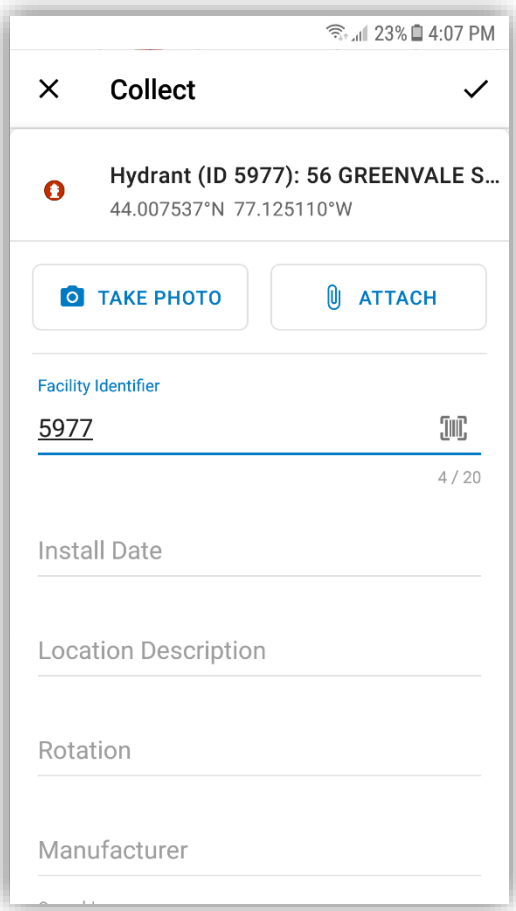
4. The crosshair in the middle of the map is where your new feature will be placed. Select what the feature is below.

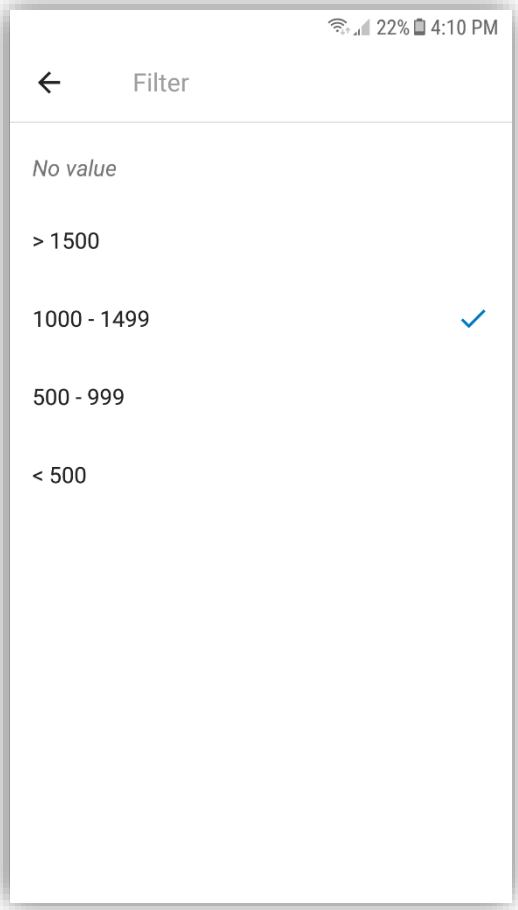


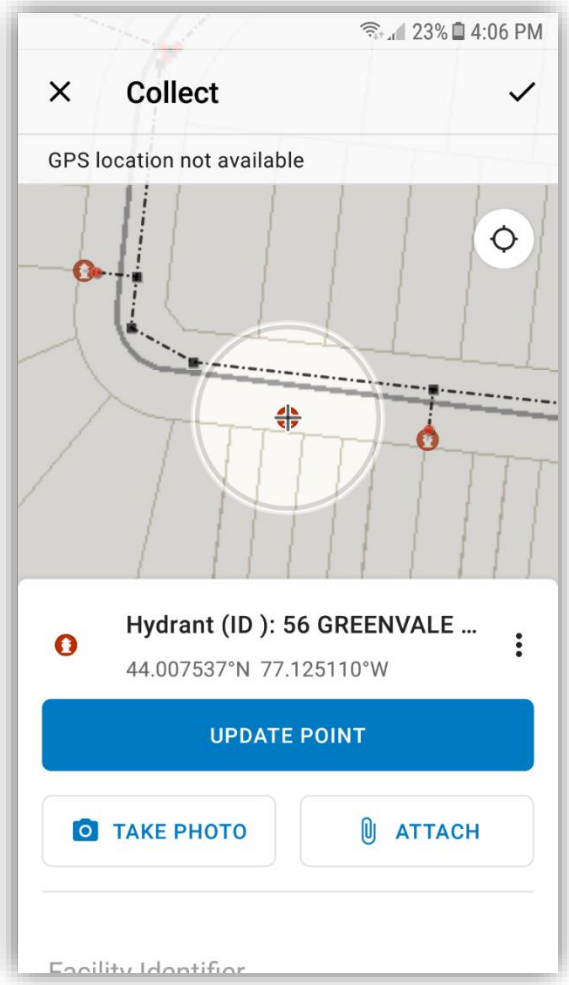
5. A picture can be added by selecting **TAKE PHOTO**. A previously taken video or photo can be added by selecting **ATTACH**. If mistakes are made, select the three dots to the right of the feature title and hit **Undo**. **Redo** can redo previous actions.



6. The attributes of the feature are be added here by selecting each field. Some of the fields have predetermined values to select. When the data of the new feature is completed, select the checkmark ✓ at the top right of the screen to submit. The X ✕ in the top left corner allows you to discard the feature.

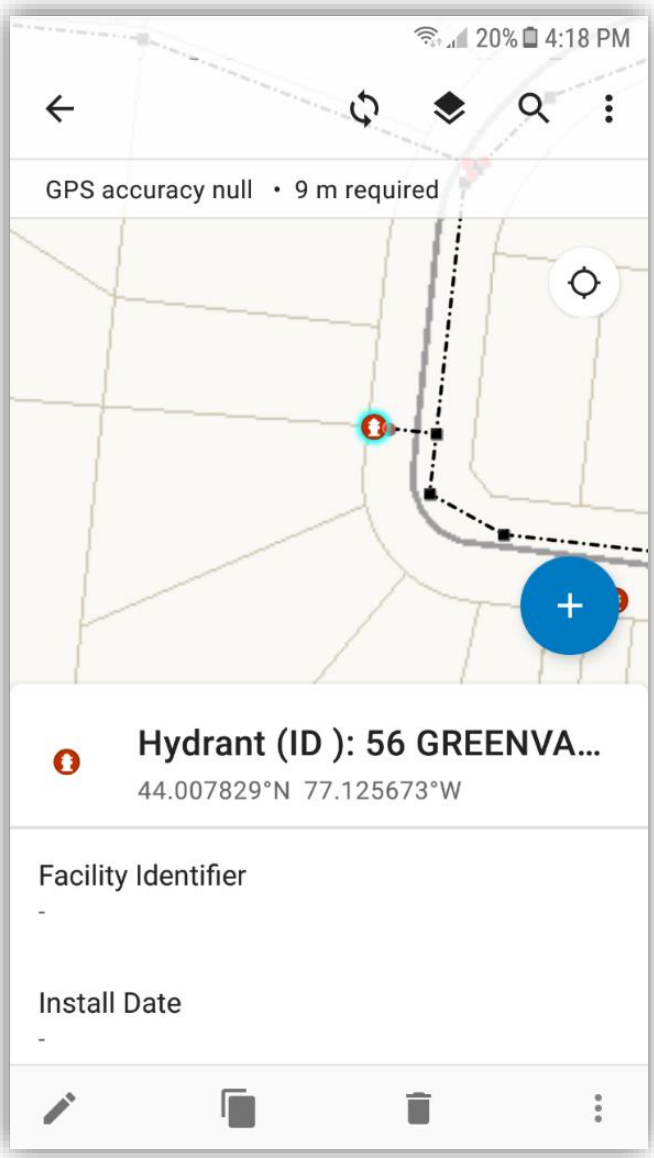

23% 4:07 PM
Collect
Hydrant (ID 5977): 56 GREENVALE S...
44.007537°N 77.125110°W
TAKE PHOTO
ATTACH
Facility Identifier
5977
4 / 20
Install Date
Location Description
Rotation
Manufacturer

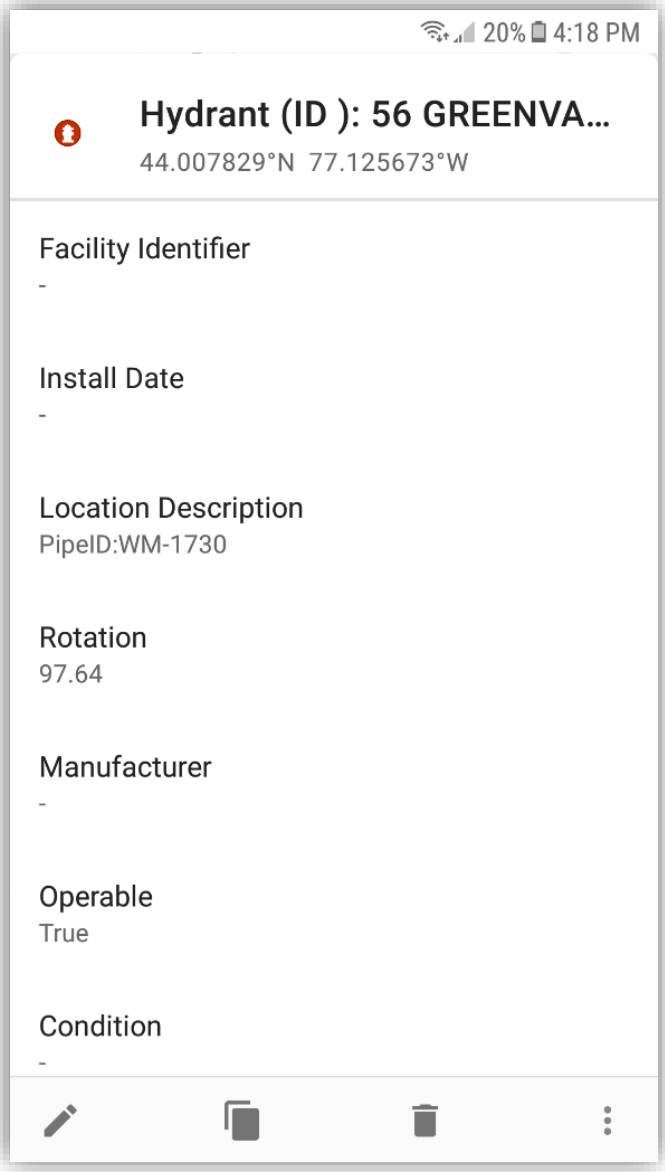

22% 4:10 PM
Filter
No value
> 1500
1000 - 1499
500 - 999
< 500



Editing Existing Data with Collector

7. To edit existing data with Collector, select a feature on the map. **Note:** The location you tap will display all features in the area if not sufficiently zoomed in.



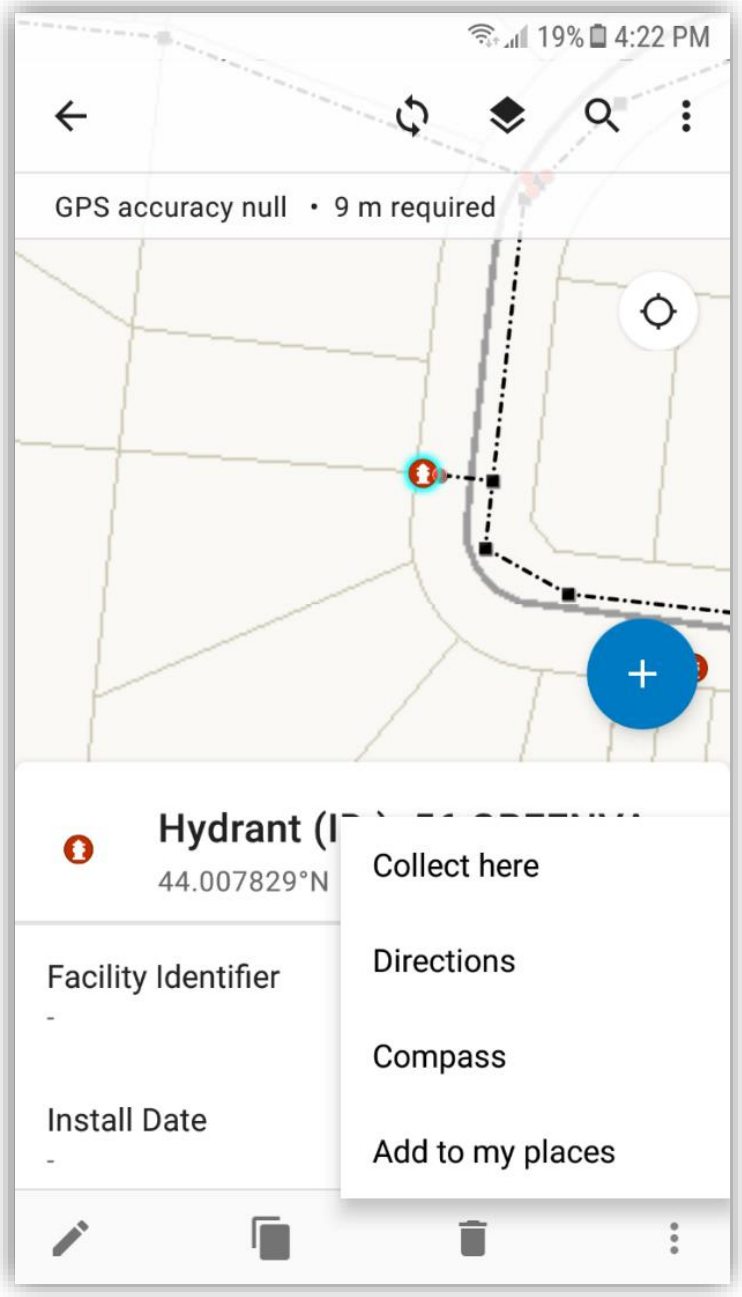


8. When a feature is selected for editing, select the pencil in the bottom left corner to edit. There are also other options:

Selecting this icon , allows to make a new feature with the same data. This feature can be moved by panning around with the crosshair.

Selecting this icon , allows to delete a feature.

Selecting the three dots , has more options:

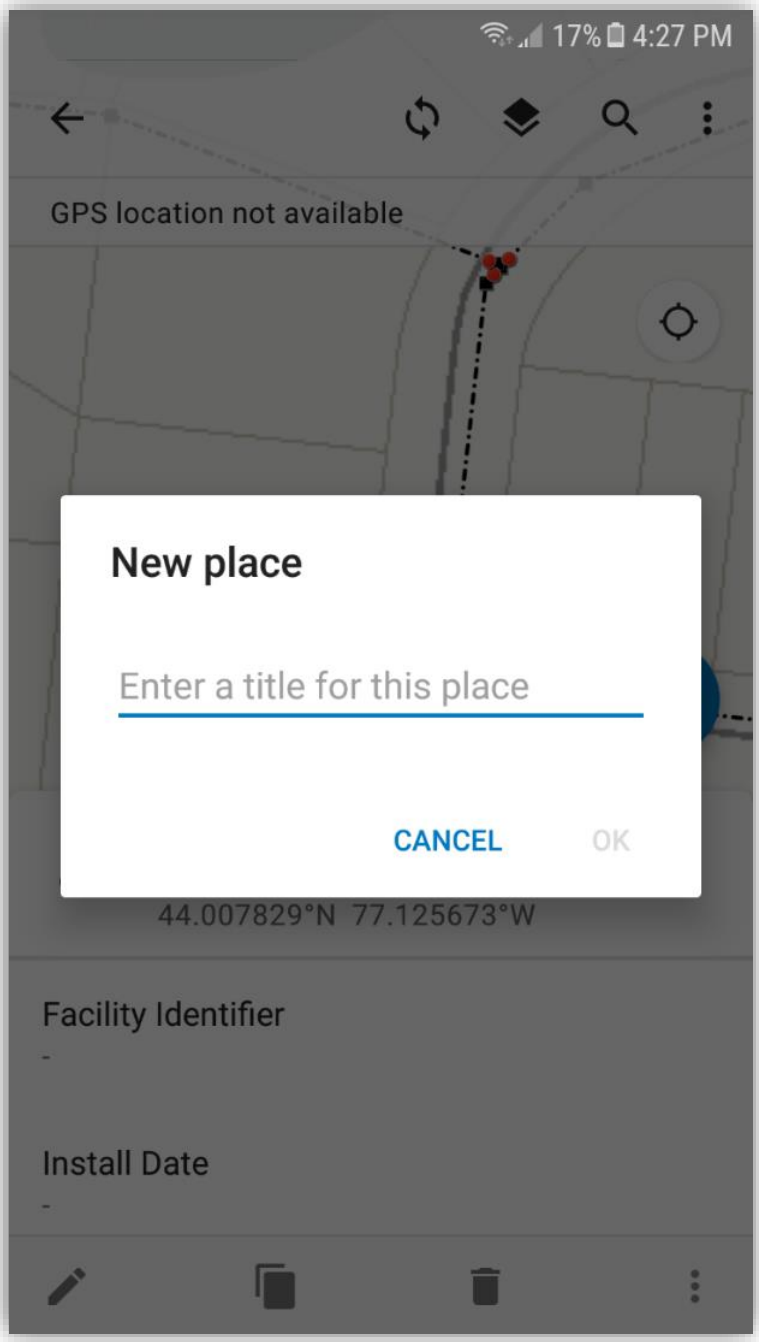


Collect Here makes a new feature in the exact location of the current selected feature.

Directions opens Google Maps and gives directions to the current selected feature.

Compass allows navigation with bearings and distance

Add to my Places allows to add the location of the current selected feature to “My Places” which is in bookmarks



9. After selecting the pencil, the process is the same as making a new feature. When done editing data, select the checkmark in the top left corner or hit **UPDATE**.